# 4. Using Cura to Set Up Your Auto-Leveling Probe and Create Your First Print
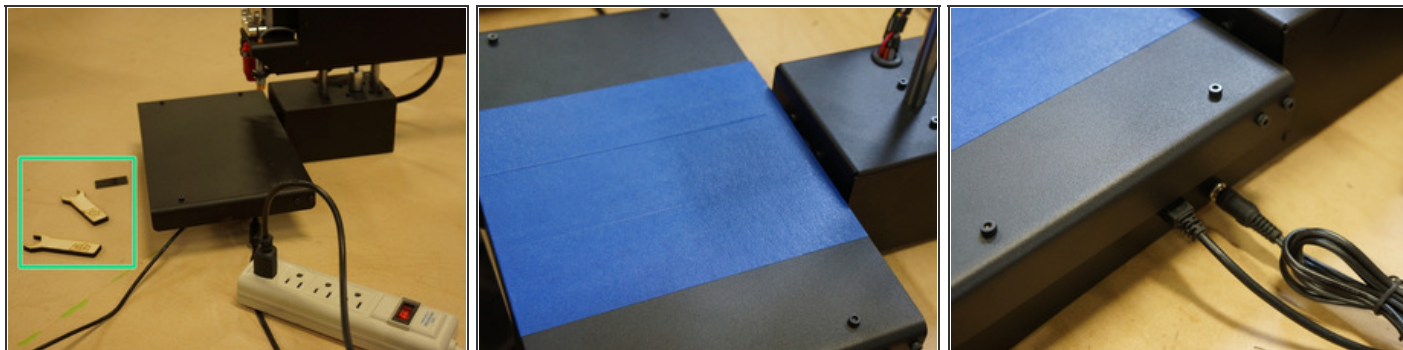
Give a short summary.

Written By: Printrbot Support

## INTRODUCTION

Outline what you are going to teach someone how to do.

**Step 1 — 4. Using Cura to Set Up Your Auto-Leveling Probe and Create Your First Print**



- Be sure you have gone through the Cura setup guide here.

- If you have an assembled Printrbot, it was already calibrated and tested before leaving our shop. However, the Auto-Leveling Probe may need some adjustment from time to time. The photos in this guide use the Simple Metal (Model 1403) as the example. However, the steps for calibration are the same for any Printrbot with an Auto-Leveling Probe.

- First, put down some basic painters tape to improve adhesion for the first layer of your print. It can also make removing completed prints easier.

  - *Most common types of painters tape will work, but if you would like to use what we use at PBHQ, click here.*

- The power and USB connections on your Simple are under the print bed, on the side of the Printrbot. There is no "on/off" switch on your Simple. Once the laptop power supply is plugged in to the Printrbot, the machine is on.

  - *TIP: To verify that your Simple is receiving power, you can check the green LED light on the Printrboard on the underside of the bot.*

- For this set up process you will need the wooden wrenches and small plastic spacer that came with your Printrbot.

## Step 2
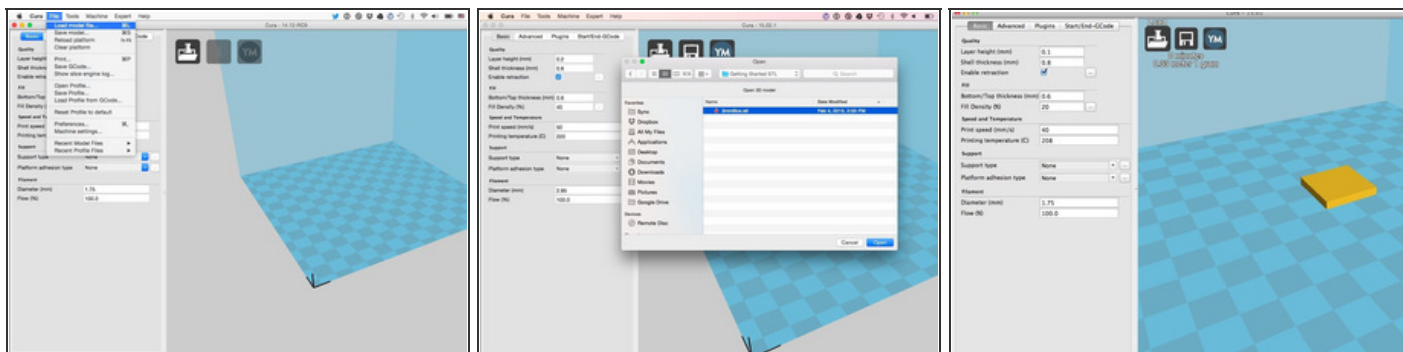


- Open Cura, and load the 3mm Box STL file by selecting "File", "Load Model File", and then opening the 3mm Box file from your hard drive.
  - The 3mm Box STL file can be found at the Printrbot Knowledge Base under "Downloads".
- The 3mm Box model will appear on the "platform" in Cura.

## Step 3 — PRONTERFACE UI (USER INTERFACE)
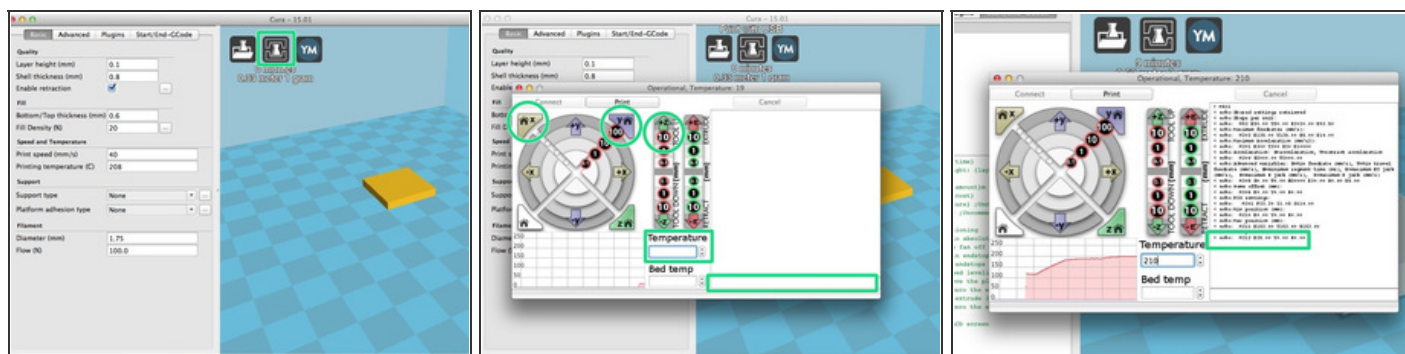


- To open the Pronterface UI (user interface), Click the "Print with USB" icon in the upper left hand corner of the screen.

  ⓘ *TIP: Not seeing the "Print with USB" icon? Windows users be sure that you have installed drivers for your Printrbot. See STEP 1 of the guide on "Getting Started with Cura on your Printrbot Simple" - click here.*

- Pronterface will appear and begin connecting to your Printrbot. The Pronterface UI will not appear unless an STL file is loaded onto the platform in Cura.

- Once connected, click "10" under the "+Z" icon three times. This will raise the Z axis of your Printrbot 30mm. Next, click the "Home X" and "Home Y" icons, in that order. This will home the X and Y axes on your Printrbot.

- Enter "210" in the "Temperature" command bar. Tab out of this field. This will begin to bring the hot end to 210 degrees celsius. You will see the graph reflect the rise in temperature.

- Enter "M501" (case sensitive) into the command line. This will display the settings on your Printrbot.

- To calibrate the Auto-Leveling Probe, the "Z" value of the "M212" line will have to be adjusted. In this example, the Z value is zero.

  - *Don't worry if you are having trouble reading the lines in Pronterface, we will zoom in on them throughout the rest of the guide. If you would like to be able to zoom in on your own screen, you may be interested in the "Zoom It" app. Apple users click here for more info. Windows users, click here.*

**Step 4 — LOADING FILAMENT**
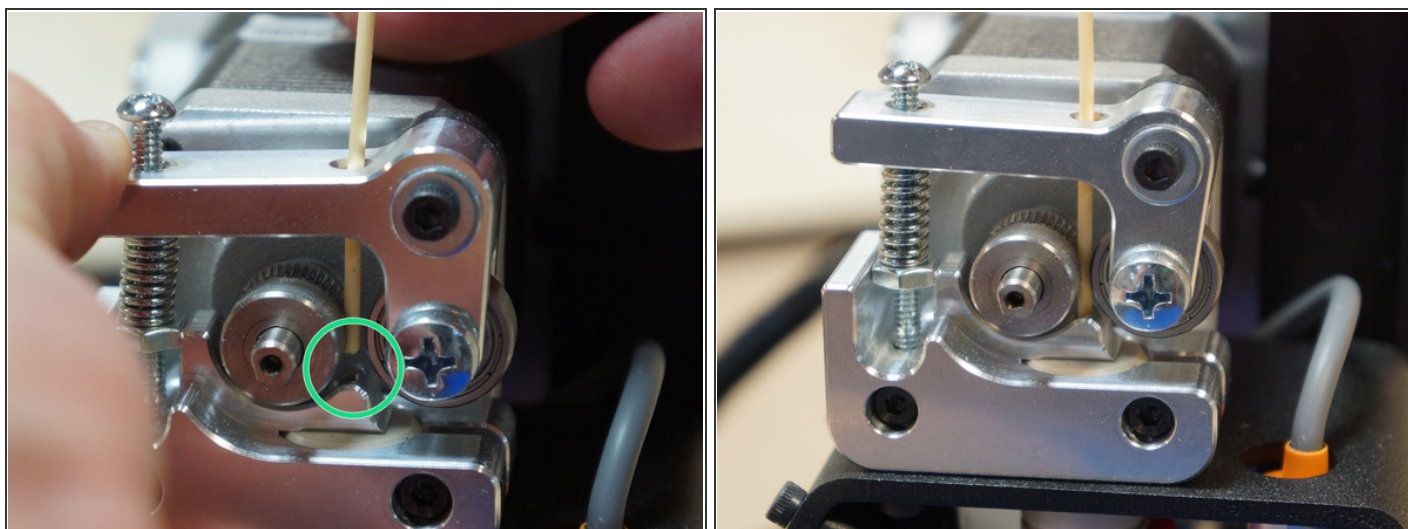


- Once the hot end is "at temp" (210C), insert the filament.

  - Compress the extruder spring, by pushing down on the extruder arm.

  - Guide the filament into the top of the extruder, past the drive gear and down the guide into the hot end.

  - Be sure that the filament sits in the teeth of the drive gear and is feeding straight into the hot end.

- BE CAREFUL - THE HOT END WILL BE HOT!

## Step 5
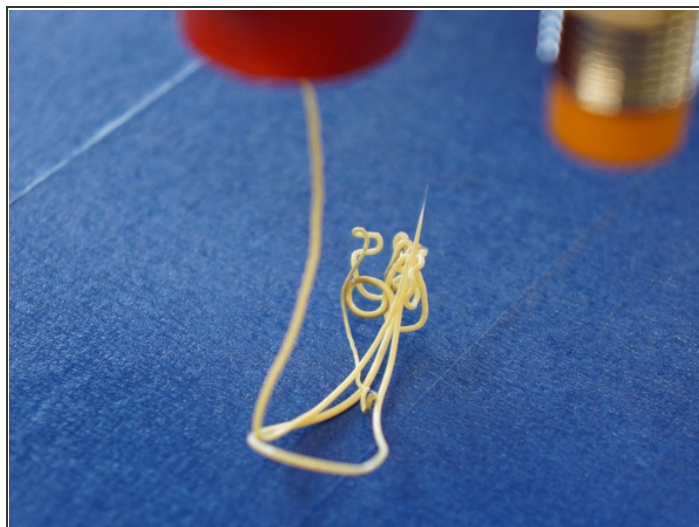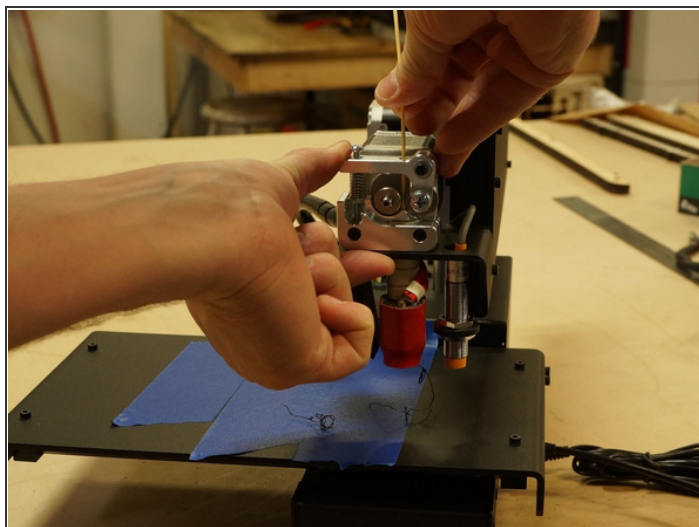


- Manually feed the filament through the hot end by compressing the extruder spring and pushing the filament down further into the extruder. The filament should feel a little "mushy" as it is fed through the hot end.

- (i) *TIP: Do not be alarmed if the filament coming out of the hot end is a different color than what you are pushing in. We test and calibrate each assembled model. There will probably be left-over filament in the nozzle from testing at PBHQ.*

**Step 6**



● Turn the threaded rod (Z axis) counter clockwise to touch the hot end tip on the bed.

  *(i) TIP: For best results, the hot end should be brought to temp so that all of the metal has expanded to the size that it will be when you are printing.*

● The plastic spacer should fit "snug" under the Auto-Leveling Probe. You may notice that the LED on the probe lights up as it nears the print bed. The light indicates that the probe is sensing metal.

● You can adjust the height of the probe by turning both nuts with your wooden wrenches. If you ordered an assembled unit, you will probably not need to adjust the height of your probe.

  *(i) TIP: To raise the sensor, turn the lower nut clockwise, then turn the upper nut clockwise. To lower the sensor, turn the upper nut counter-clockwise, then turn the lower nut counter-clockwise.*

● BE CAREFUL - THE HOT END WILL BE HOT

## Step 7



⚠️ **Warning** When printing or homing the Z axis for the first couple times. Trigger the sensor with a piece of metal before the hotend touches the bed. To make sure the sensor is functioning. Failure to do so may result in a gouged bed.

## Step 8 — PRINT
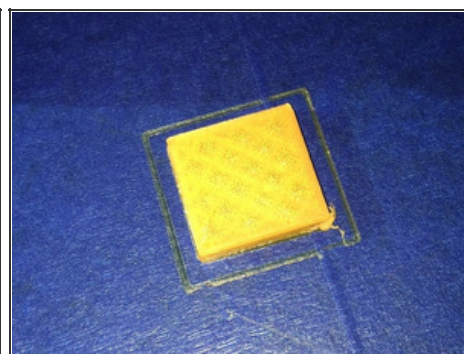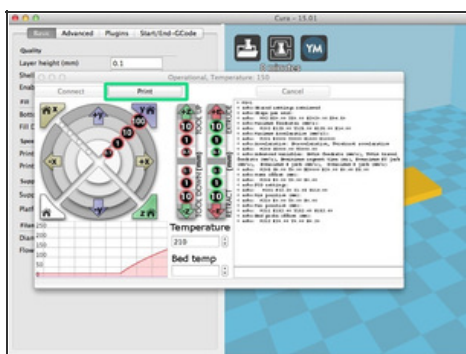


- Click "Print" and monitor your Printrbot.

⚠️ NOTE: Stay near by and monitor the machine while it is printing. DO NOT LEAVE YOUR BOT RUNNING UNATTENDED.

- To reduce the risk of scraping your print bed, be ready to kill the power on your Printrbot as the print is starting.

  - *TIP: Plug your Printrbot into a power strip so that you can turn the on/off switch quickly if needed.*

- Do not be discouraged if your first attempt goes poorly. The print will likely be stringy. If this is the case, the probe is not adjusted correctly. We will do this in the next step by changing the Z value.

## Step 9
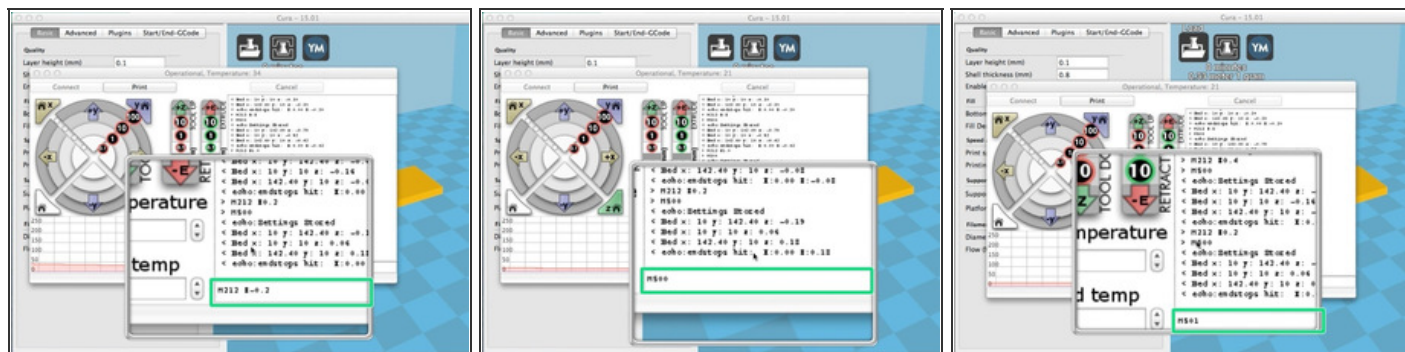


- Now try entering the G-Code command:

  - **M212 Z-0.2**

    - *This G-code command sets the Z axis home position at negative 0.2mm.*

  - **M500**

    - *This G code command saves the new value to the Printrbot.*

  - **M501**

    - *This G code commands displays the current settings of the Printrbot.*

## Step 10
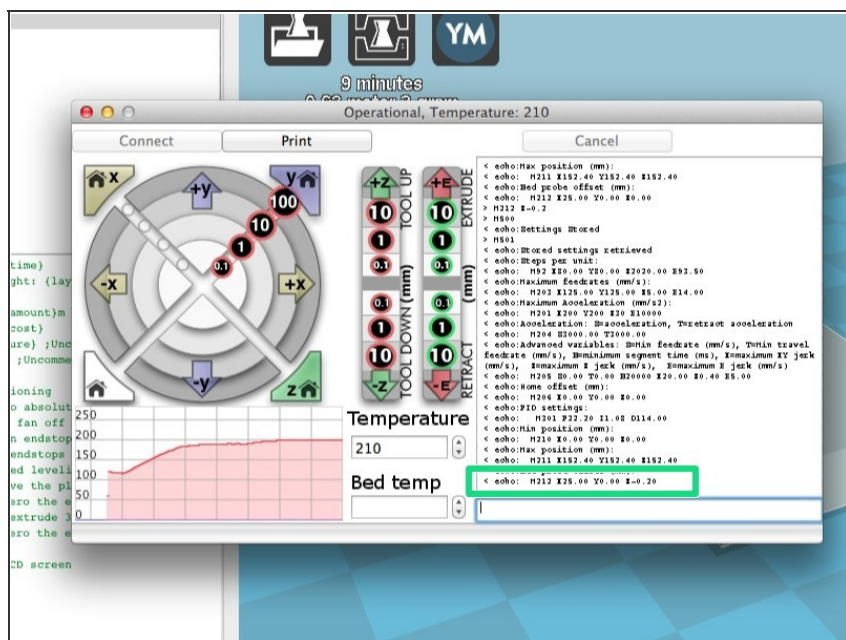


- M501 will display your current settings, which should be "M212 X25.00 Y0.00 Z-0.20".

- The more that you decrement the negative value, the lower the hot end will drop before the leveling probe senses the metal bed.

  - For example, if you want the Z axis to home lower, try a value of -0.4. If you want the Z axis to home higher, try a Z value of 0.0, or a positive value of 0.2.

⚠️ **WARNING** - Adjusting the Z value too dramatically could result in gouging your print bed. Make adjustments 0.2mm at a time.

## Step 11
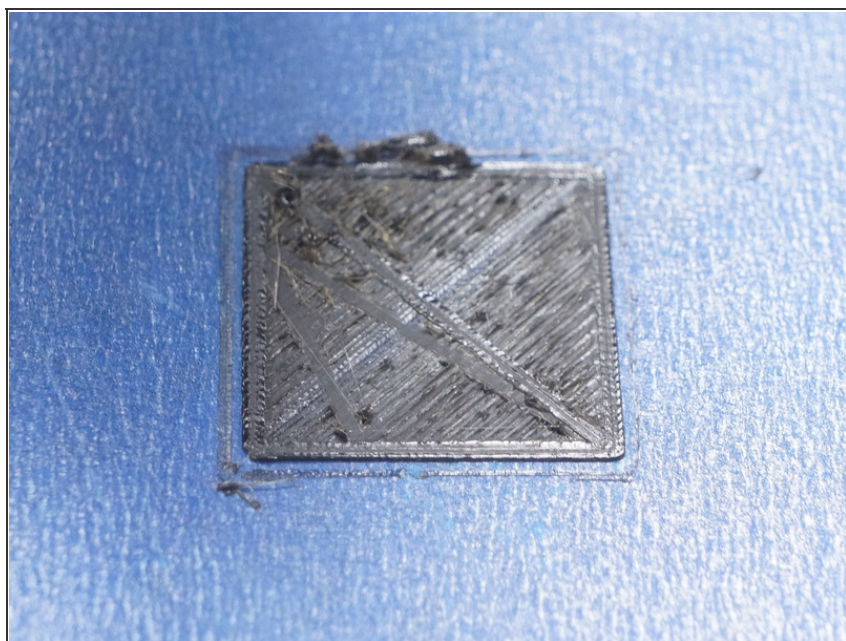


- If the negative Z value is set too far negative, the print layers will look flat or smashed.

- If this is the case, work the other way by giving a value closer to zero. Please note that the Z adjustments are not cumulative. If Z-0.1 does not work, try Z-0.15 etc.

  - M212 Z0 or M212 Z-.1

  - If your M212 value is set at Z0 and the layers still appear smashed, try using the wood wrenches to adjust the leveling probe closer to the bed.

- (i) *TIP: The auto-leveling probe is inductive and usually detects the bed a few mm before actually touching it.*

**Step 12**
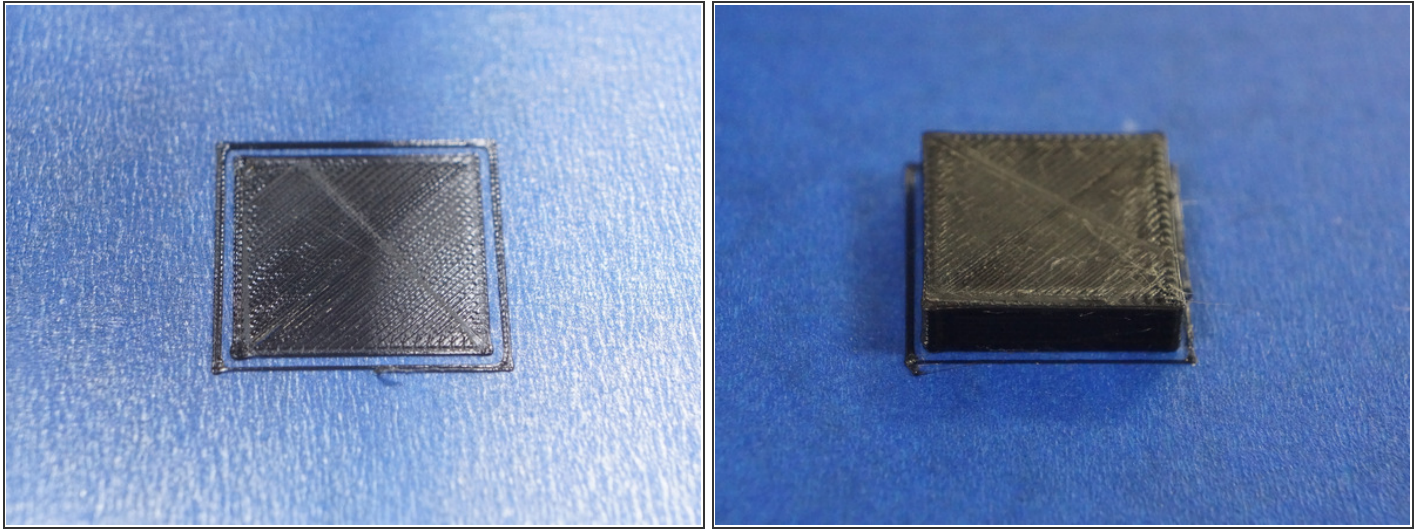


- Keep experimenting with the negative Z value (M212 command) until you find the correct setting for your printer. It can seem like a tedious process, but be patient. The greater care you take now, the better your results in the long run.

- Great job! To remove the print, some users prefer using a putty knife to pry the print up from the bed.

**Step 13**
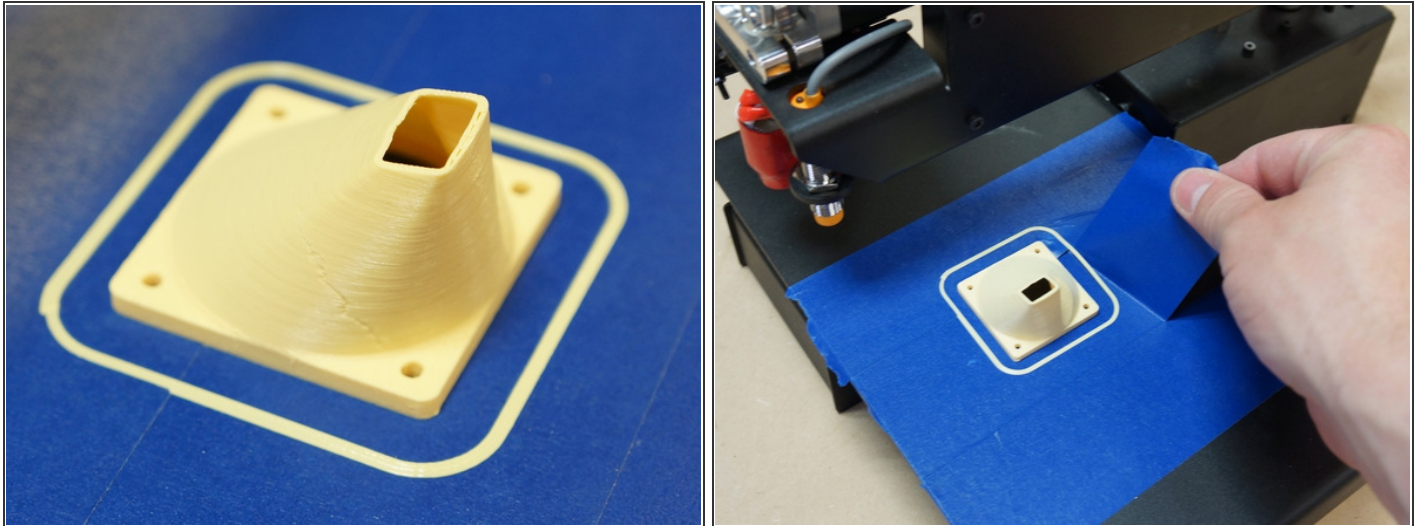


- The next step is to print the Fan Shroud for your new Printrbot. Download the file from here. Unpack the zip file and use Cura to load the STL file as you did previously with the 3mm cube.

- This print will take a bit longer than the cube, but it's a more interesting print to watch! To remove your print, you can pull the tape up under it. Some users prefer using a putty knife to pry the print up from the bed.

- Use the existing M3 screws and hex nuts on the fan to attach your awesome new fan shroud to your Printrbot Simple.

- Check out Microsoft's guide to 3D printing. It's a great resource for getting started: http://channel9.msdn.com/Series/3D-Print...

- For more info on getting started with your Printrbot Simple, go to Printrbot.com/Simple or get involved at our forum, help.printrbot.com/answers/advice. We have an awesome community and we invite you to make it even better by becoming a part of it. Happy printing!

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