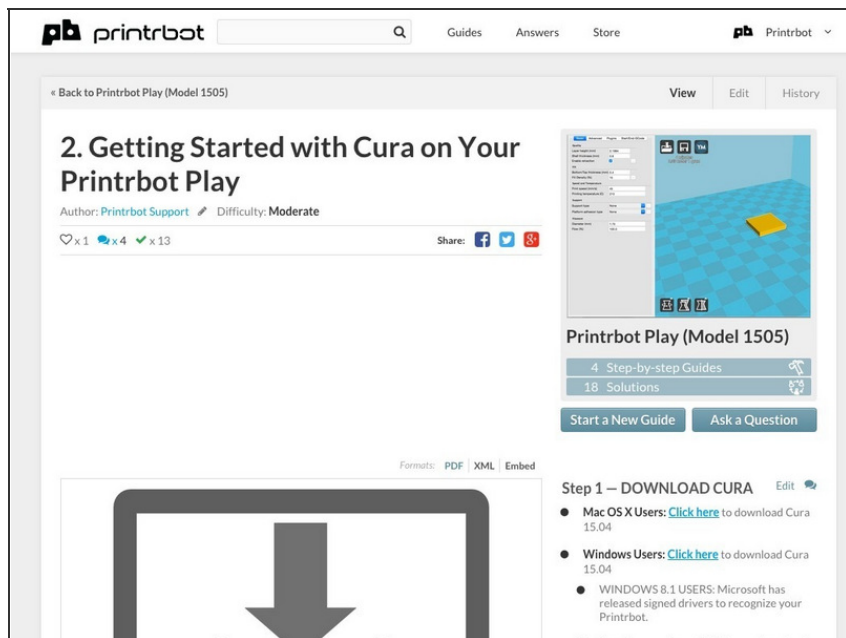




3. Using Cura to Set Up Your Auto-Leveling Probe and Create Your First Print for the Printrbot Play

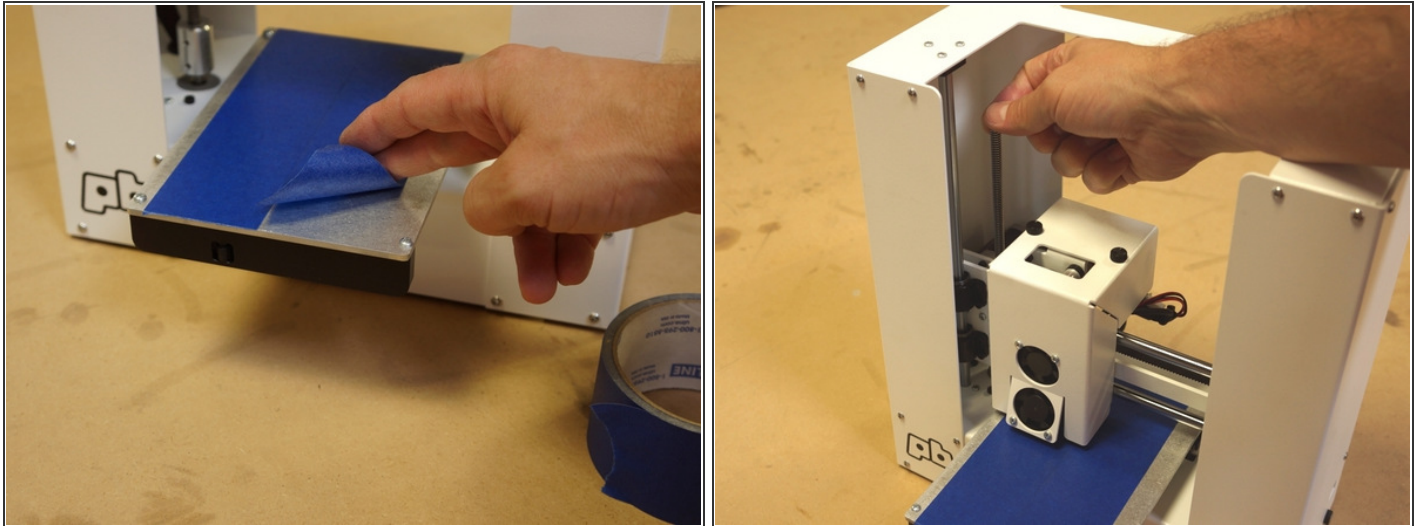
Written By: Printrbot Support

Step 1 — PRE-CALIBRATION



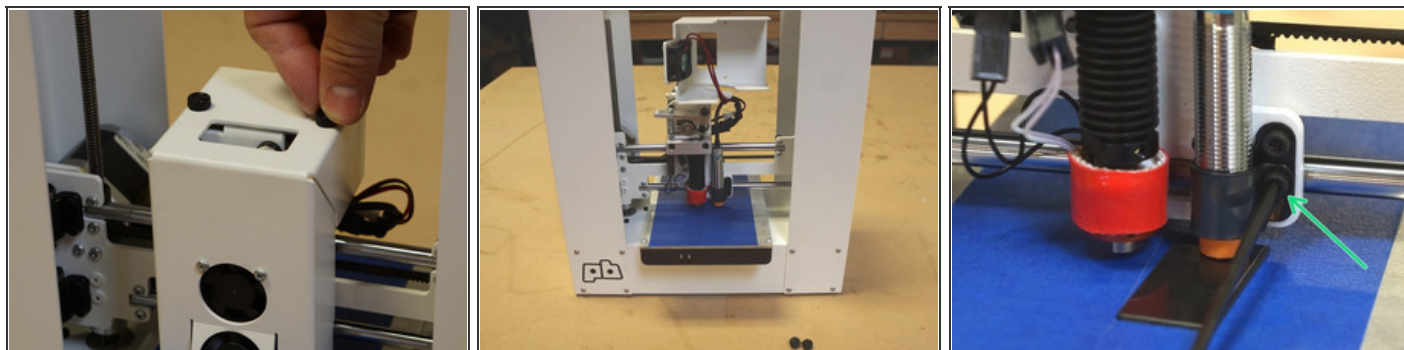
- If you have an assembled Printbot, it was already calibrated and tested before leaving our shop. However, the Auto-Leveling Probe may need some adjustment from time to time.
- This calibration process is absolutely necessary for kit builders.
- **REQUIREMENTS:**
 - [Click here](#) to review "Getting Started With Cura on Your Printbot Play".
 - [Click here](#) to download the 3mm box STL . We will be using this file as the test print throughout the guide.

Step 2 — PRE-PRINTING



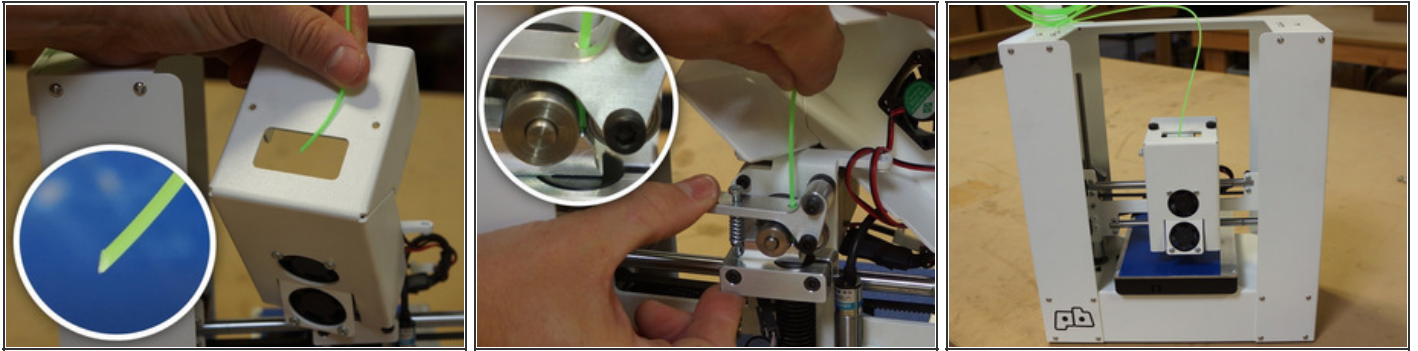
- Put some basic painters tape down on the bed to improve adhesion for the first layer of your print.
 - ⓘ *TIP: Most common types of painters tape will work, but if you would like to use what we use at PBHQ, [click here](#).*
- Turn the threaded rod (Z axis) counter clockwise until the hot end tip touches the print bed.

Step 3 — ADJUST PROBE HEIGHT



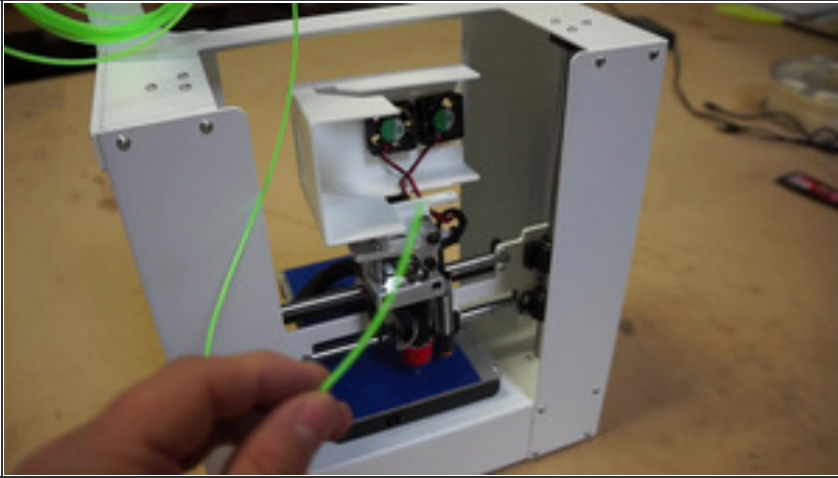
- Unscrew the M3 6mm thumb screws (x2) to remove the fan shroud and rest it on top of your extruder. Do not disconnect the fan wires.
- ✦ Not finding your thumb screws? The earliest Plays shipped with M3 6mm button head screws (x2) to attach the shroud. [Click here](#) to view a picture of this.
- Now that you have a better view of your extruder, place your delrin spacer under the Auto-Leveling Probe.
- The plastic spacer should fit "snug" under the Auto-Leveling Probe.
- You can adjust the height of the probe by loosening the lower M3 hex screw holding the sensor bracket in place. Once the screw is loose, adjust the sensor by hand. If you ordered an assembled unit, you will probably not need to adjust the height of your probe.
- ⓘ *TIP: If you don't have the delrin spacer, a credit card or library card will do the trick. The idea is to create ~1mm of space between the print bed and the probe while the nozzle is "kissing" the bed.*
- Once the probe is properly spaced, tighten the M3 hex screw to hold the probe in position.

Step 4 — LOAD FILAMENT



- Use micro-cutters or pliers to clip the filament at an angle.
- Direct the filament through the top of the fan shroud (unattached).
- Compress the extruder arm and feed the filament into the extruder.
 - ...through the filament hole of the extruder arm.
 - ...between the drive gear and 624 bearing.
 - ...into the filament hole of the extruder base, and into the hot end.
- Push the filament down into the hot end until it stops.
- Re-attach the shroud to the extruder with the thumb screws.

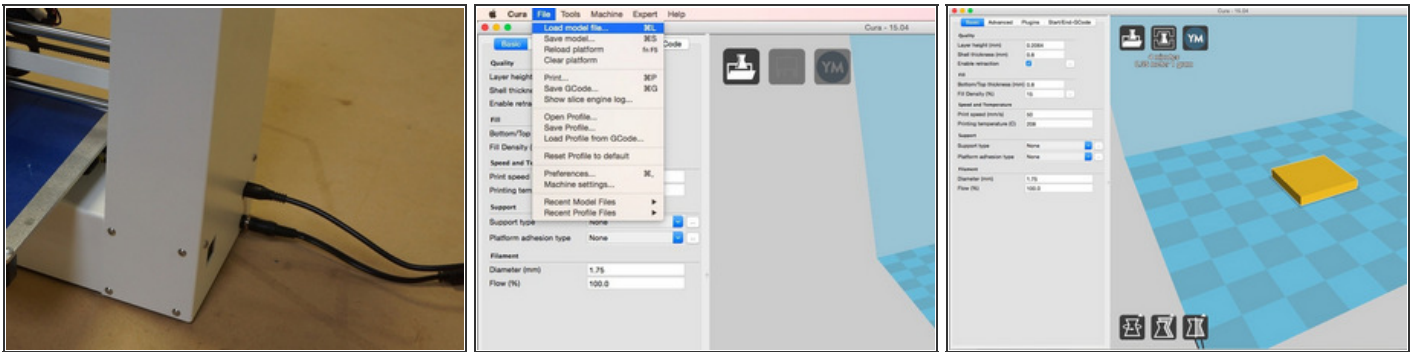
Step 5 — VIDEO EXAMPLE OF LOADING FILAMENT



- As you become more comfortable with loading filament into your extruder, it will not be necessary to remove the fan shroud every time. This is the recommended technique for beginners. Experienced users can simply load the filament while the fan shroud is attached.

i *TIP: If you find that you are having trouble guiding the filament down into the hot end, it can be helpful to de-compress the extruder arm and allow the drive gear to direct the filament while you push it down manually.*

Step 6 — LOAD STL FILE



- Connect the USB and power cables to your Printbot Play on the side of the bot. The top fan in the fan shroud will begin running as soon as the bot receives power.

⚠ DO NOT PROCEED if the top fan is not running after powering on your Printbot. If you have checked power connections and verified that the bot is powered on, but the top fan is not running, contact support at printrbot.com/support.

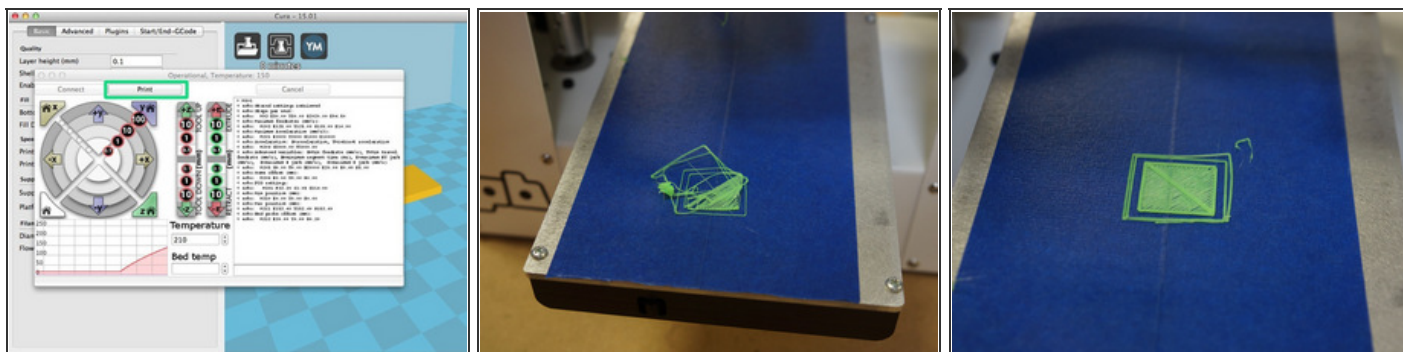
- Open Cura v15.04, and load the [3mm Box STL](#) file by selecting "File", "Load Model File", and then opening the 3mm Box file from your hard drive.
- The 3mm Box model will appear on the "platform" in Cura.
- ① *TIP: If the [Ultimaker Robot](#) model is still on your platform, simply click on the model and press "delete". Once the model has been removed, you can load the 3mm box.*

Step 7



- To open the Pronterface UI (user interface), Click the "Print with USB" icon in the upper left hand corner of the screen.
- **i** *TIP: Not seeing the "Print with USB" icon? Windows users be sure that you have installed drivers for your Printbot. See STEP 1 of the guide on "Getting Started with Cura on your Printbot" - [click here](#).*
- Pronterface will appear and begin connecting to your Printbot.
- Once Pronterface shows as "Operational", click "10" under the "+Z" icon three times. This will raise the Z axis of your Printbot 30mm. Next, click the "Home X" and "Home Y" icons, in that order. This will home the X and Y axes on your Printbot.
- 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 Printbot.
- 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 8 — STRINGY PRINT - EXTRUDER IS TOO HIGH



- Once the temperature graph shows 210C, click "Print" and monitor your Printrbot.

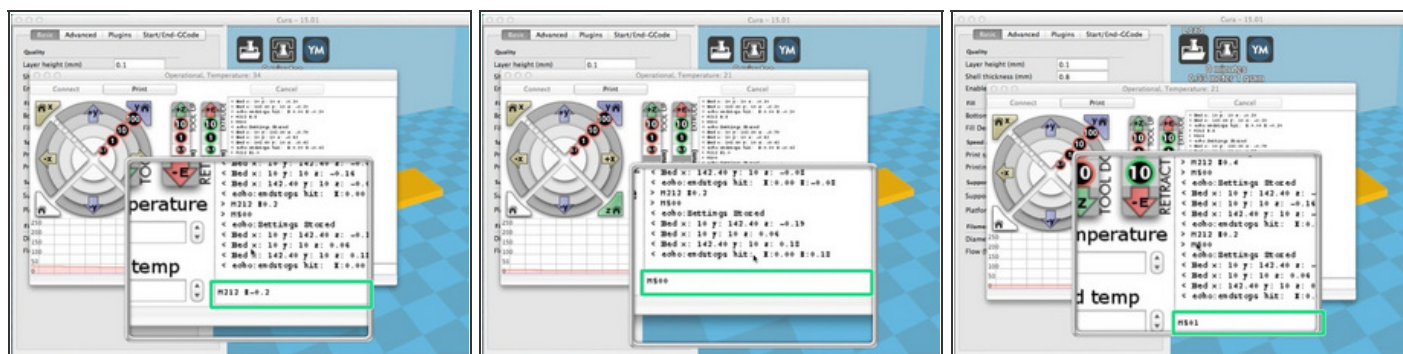
⚠ CAUTION: DO NOT LEAVE YOUR BOT RUNNING UNATTENDED. Stay near by and monitor the machine while it is printing.

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

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

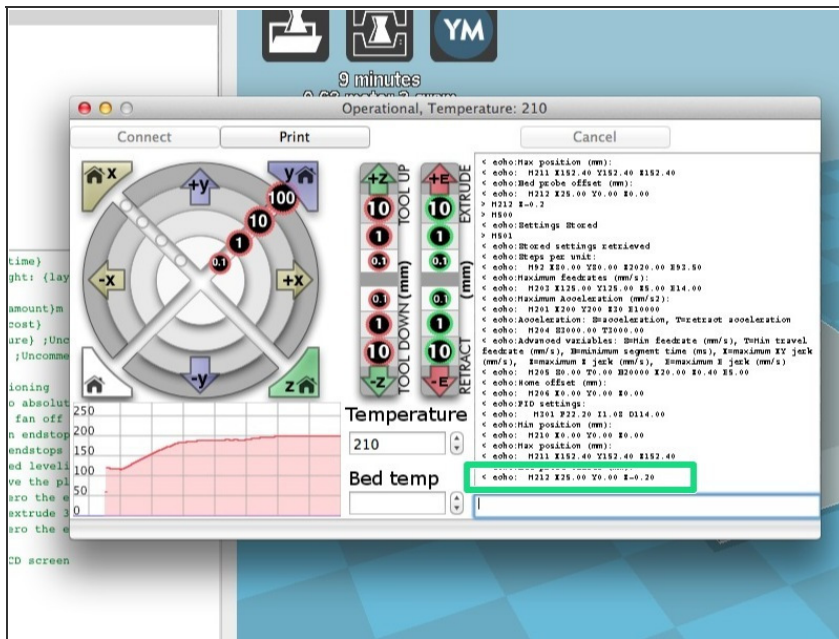
- Do not be discouraged if your first attempt goes poorly. The print will likely be "stringy".

Step 9



- Enter the new M212 values to adjust your probe offset.
 - **M212 Z-0.2**
 - *This G-code command sets the Z axis offset at negative 0.2mm.*
 - **M500**
 - *This G code command saves the new value to your Printbot.*
 - **M501**
 - *This G code commands displays the current settings of your Printbot.*

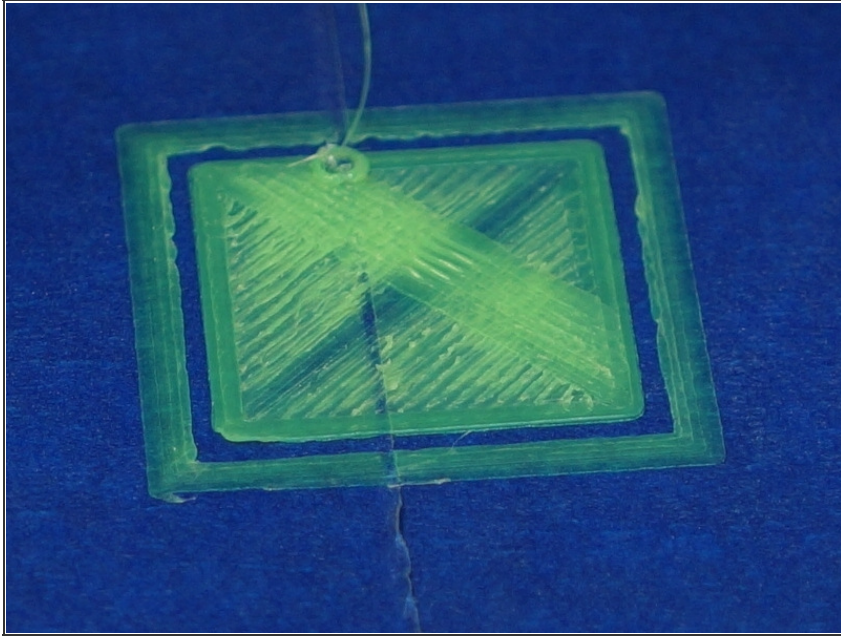
Step 10



- 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 extruder will go towards the print bed before beginning the print.
- For example, if you want the extruder to print closer to the bed, try a value of -0.4. If you want the Z axis to print higher, try a Z value of 0.0.
- If the M212 Z value is set at 0.0 and the extruder is still printing too high above the print bed. Revisit the steps explaining how to physically adjust the probe using the delrin spacer. Your probe is not close enough in relation to the print bed.

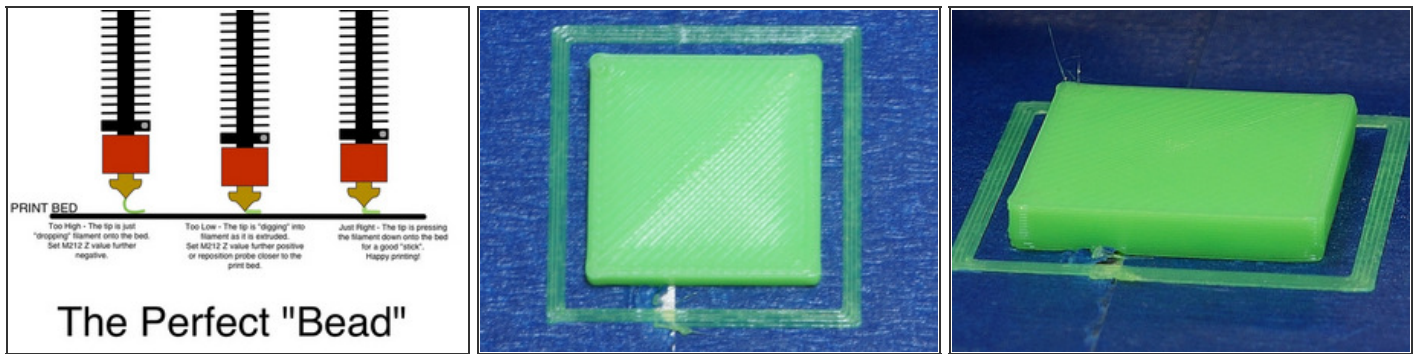
⚠ WARNING: ADJUST THE M212 VALUE IN 0.2mm INTERVALS. - Adjusting the M212 Z value too dramatically could result in gouging your print bed.

Step 11 — SMASHED PRINT - EXTRUDER TOO LOW



- 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 M212 Z-0.1 does not work, try M212 Z0.
- Again, if your M212 value is set at Z0 and the layers still appear smashed, physically adjust the leveling probe closer to the bed.

Step 12 — THE PERFECT "BEAD"



- You are looking for the perfect "bead" as the filament extrudes. The hot end tip should just press the filament onto the bed as it extrudes. 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 carefully pry the print up from the bed.
- **NEXT STEPS:**
 - Sign up for "Play User News" at printrbot.com/play. You will receive pro-tips, maintenance, and troubleshooting pointers directly from PBHQ.
 - Visit YouMagine for more printable files available for free download.
 - Visit printrbot.com/support for help, downloads, and other resources.

This document was last generated on 2015-10-20 09:49:17 AM.