Thank you for choosing the LulzBot® Mini 2 Desktop 3D Printer. This Quick Start Guide will familiarize you with the proper use and operation of your LulzBot Mini. By the time you finish, you will have your very own 3D printed rocktopus, the quality control mascot of the LulzBot Mini.

This guide is also available in video format at LulzBot.com/Mini-2-QSG.

If you have questions while setting up your LulzBot Mini, please contact our technical support team by emailing ***support@LulzBot.com*** *or calling* **+1-970-377-1111***. Learn more at LulzBot.com/support.*

Read the included User Safety Sheet completely before beginning the Quick Start Guide.

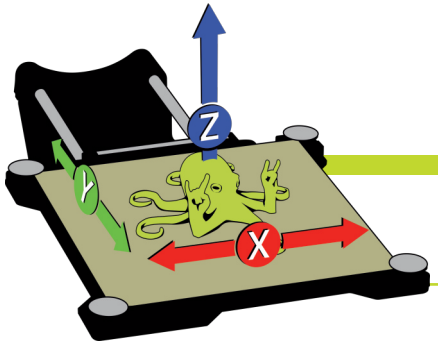
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KNOW YOUR MACHINE

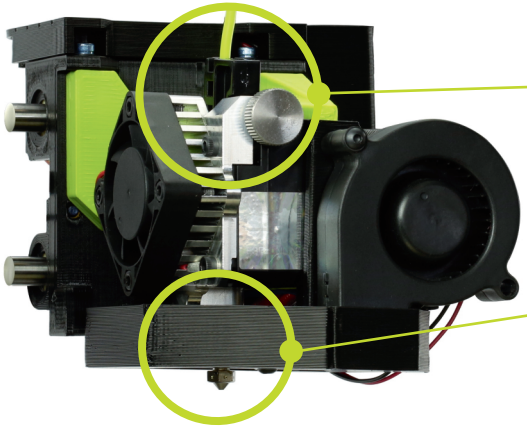


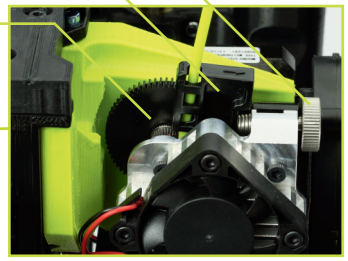
Filament Reel
Filament Holder
Aluminum Frame
Graphical LCD
SD Card Slot
Control Knob

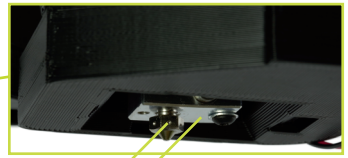
Tool Head



Idler Adjustment Knob
Idler
Drive Gear







Nozzle
Heater Block

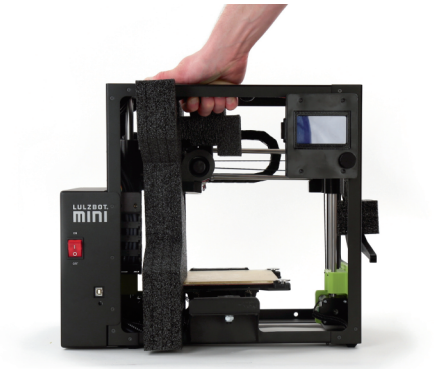
The Cartesian Coordinate Robot

The LulzBot Mini 2 can move on three linear axes: X, Y, and Z.

STEP
1

Unpack Your LulzBot Mini Desktop 3D Printer

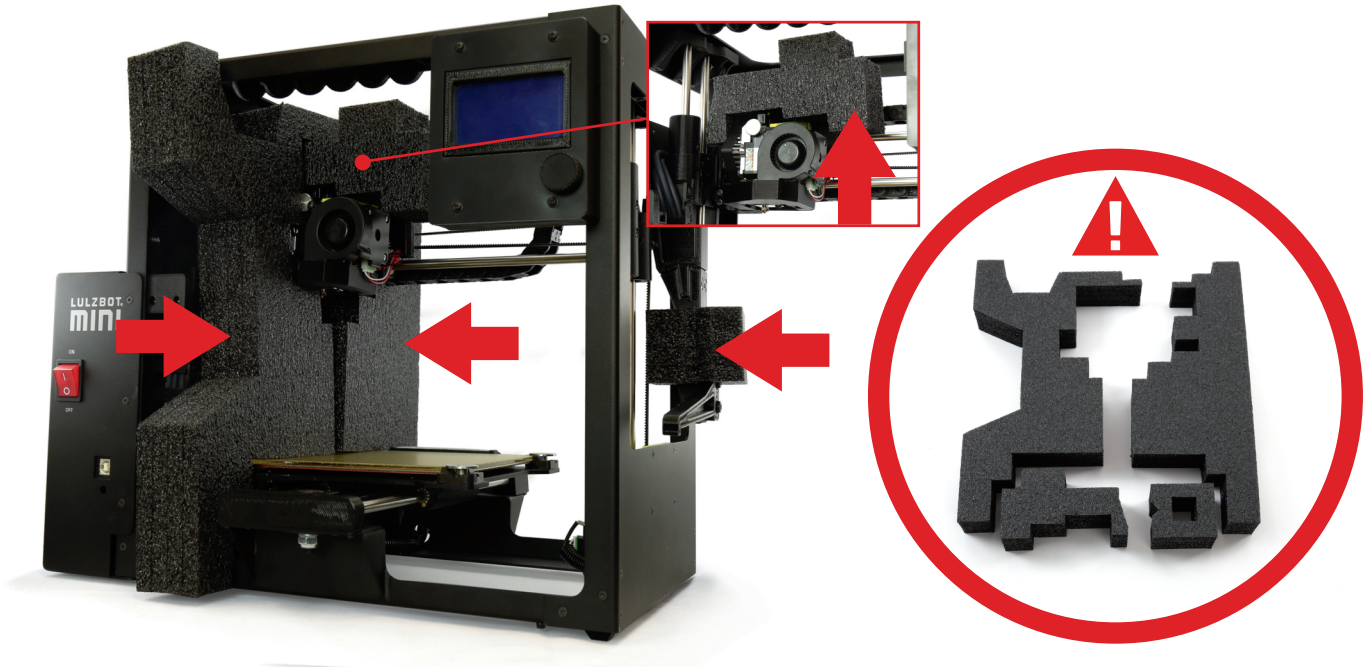
1A Carefully remove the top piece of protective foam and other included materials. Then grasp the handle under the front left of the frame as shown in picture and place your LulzBot Mini in a well-ventilated area on a flat and level surface with 30 centimeters (12 inches) of clearance in every direction.



Your LulzBot Mini comes with an octopus that was made by your 3D printer during the final stage of quality assurance. A full tool kit for maintaining your LulzBot Mini is also included. Learn more about how to use them in the maintenance section at the end of this Quick Start Guide.



1B Remove all packaging foam and confirm everything on the Packing List has been removed from the box. Save all of the provided packaging materials in case you need to transport your 3D printer or ship for warranty service in the future.



STEP
2

Download and Install Software

Cura LulzBot Edition, the recommended software to control your 3D printer, includes built-in support for over 30 materials. Find installation instructions, troubleshooting information, and more at **LulzBot.com/Cura**.

Already have Cura LulzBot Edition? Update now to get additional material support and new slicing profiles. Expert help and advice is available at **LulzBot.com/Support**.

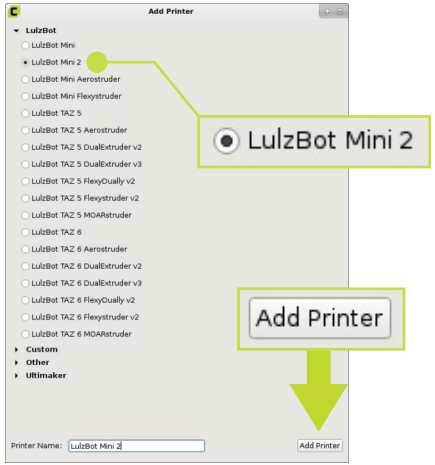
No Internet access? Contact our technical support department to have an SD Card with the latest version of Cura LulzBot Edition sent to you.

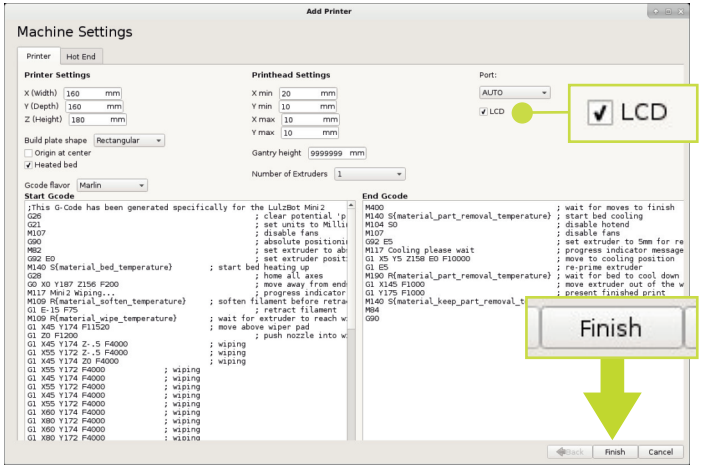


STEP
3

Configure Cura LulzBot Edition for Your LulzBot Mini

3A Launch Cura LulzBot Edition. The **Add Printer** menu will automatically appear. Select **LulzBot Mini 2** and click **Add Printer**. If this is not the first time Cura LulzBot Edition has been launched, click on the **Settings** dropdown menu and select **Printer**, then **Add printer...**.



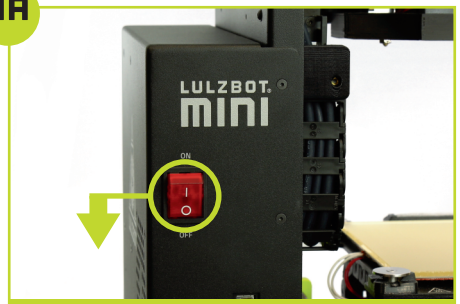


3B Confirm that the LCD box is checked, then click **Finish** to complete the printer setup. Cura LulzBot Edition is now ready for use with your LulzBot Mini 2.

STEP 4

Connect and Power On Your LulzBot Mini

4A



Check that the power switch is off

4B



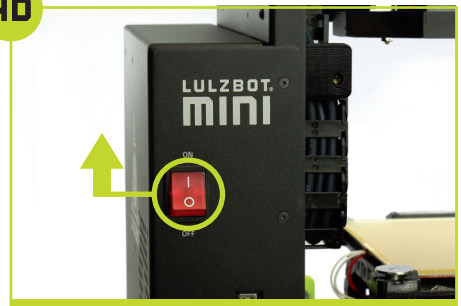
Connect the USB cable

4C



Connect the power cord

4D



Power on

STEP
5

Prepare the Model for Your First 3D Print

5A A 3D model named ***rocktopus*** will automatically load onto Cura LulzBot Edition's virtual print bed the first time you run the software. The rocktopus is the first object you will 3D print. If you have already opened Cura, the model can be found by clicking on the **File** dropdown, then selecting **Open Recent**.

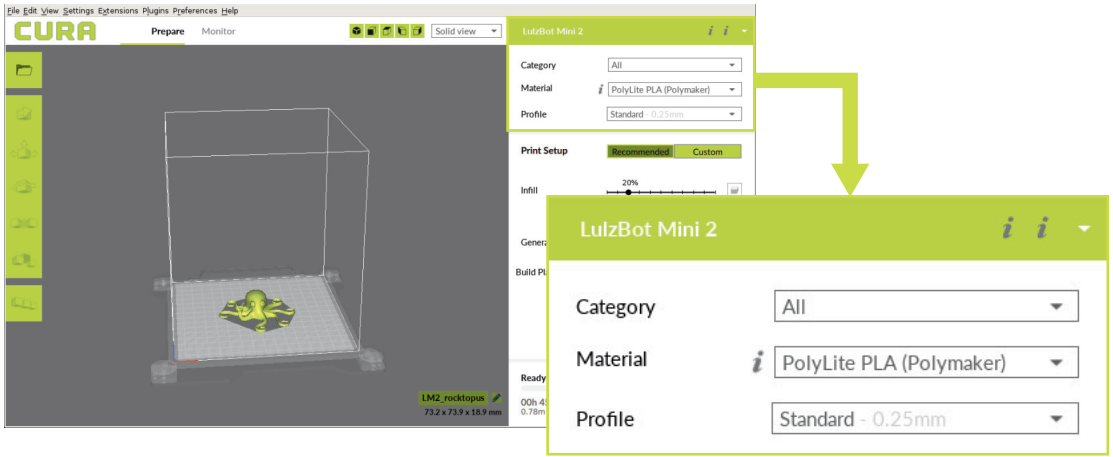
*If the rocktopus model is not present on the virtual print bed, you can download it from **LulzBot.com/rocktopus** or from the included SD card, then load it onto the virtual print bed using the **Open File** button in the main Cura interface.*

5B Locate the included sample coil of green PLA filament. We strongly recommend using the included PLA sample filament for your first rocktopus 3D print.

*Filament is the term for the materials your LulzBot Mini uses to 3D print objects. The included sample filament, PLA, is made from natural renewable resources. PLA and other types of filament can be purchased at **LulzBot.com/filament**.*

STEP 5 *Continued...*

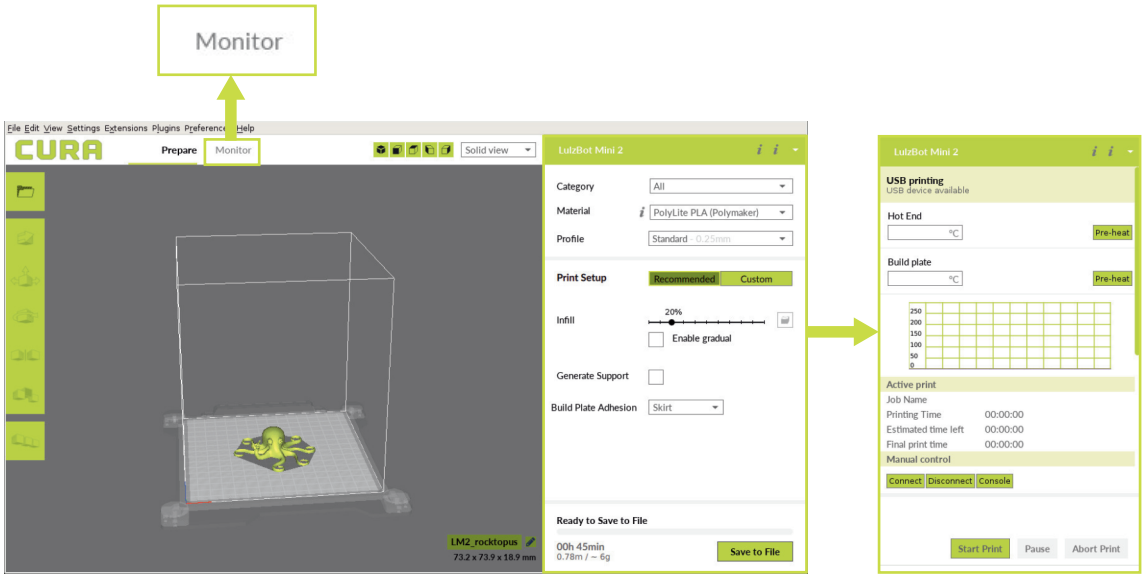
5C In the **Prepare** sidebar on the right side of the screen, confirm that **PolyLite PLA (Polymaker)** is selected for **Material**. Then select **Standard** for the **Profile** to be used for printing.



STEP 6

Control Your LulzBot Mini and Set the Temperature

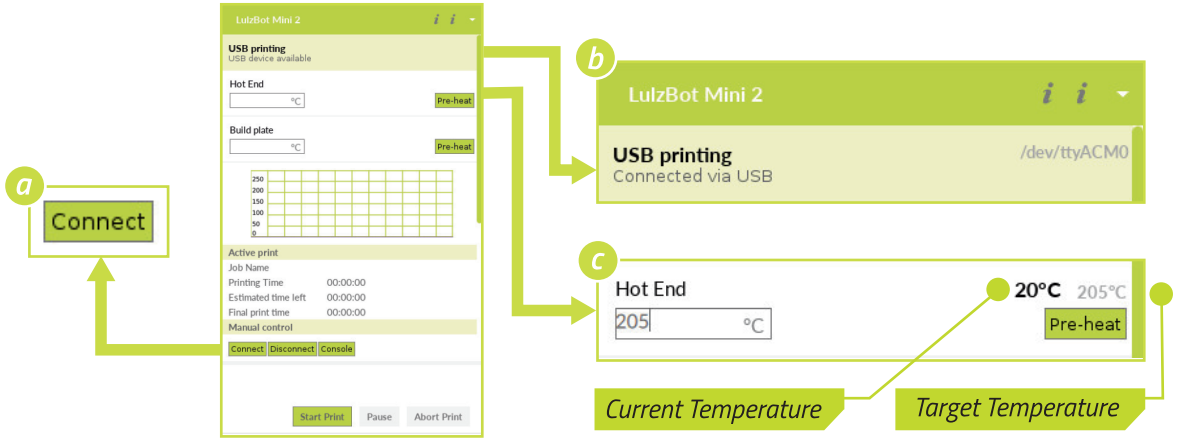
6A Click the **Monitor** button at the top of the main Cura interface. This will change the sidebar on the right side to show printer information and controls.



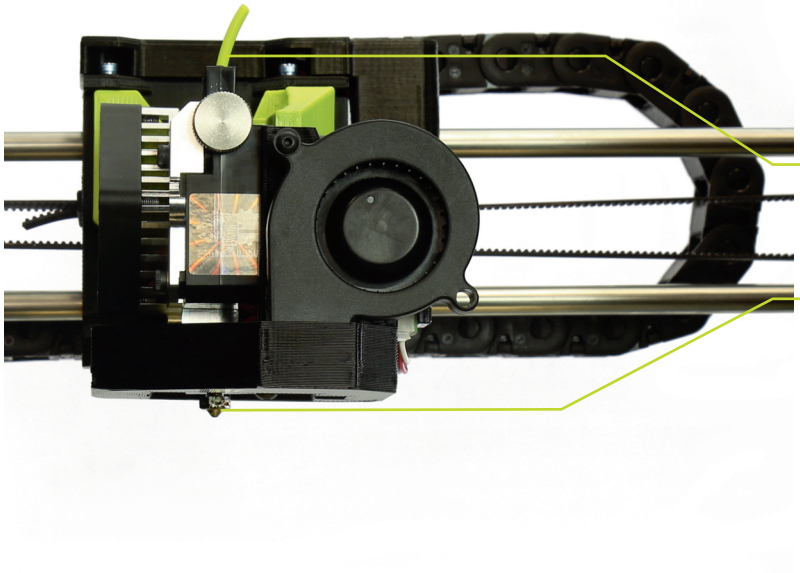
STEP 6 *Continued...*

Your LulzBot Mini was tested for quality assurance before being packaged. You will need to remove the remaining filament left in the tool head from this process before loading new filament for your next print. 205°C is the required hot end temperature to remove PLA from the tool head. See Step 13 for the required temperature for other materials.

6B Click the **Connect** button under **Manual Control** (a) to connect to the printer. Once connected the top status bar will change from "USB device available" to "Connected via USB" (b). Under **Hot End** type **205** and click **Pre-heat** (c). Here you will see the current and target temperature as the hot end heats up.



The hot end is now heating up to 205°C (401°F) and can burn your skin.



STEP
7

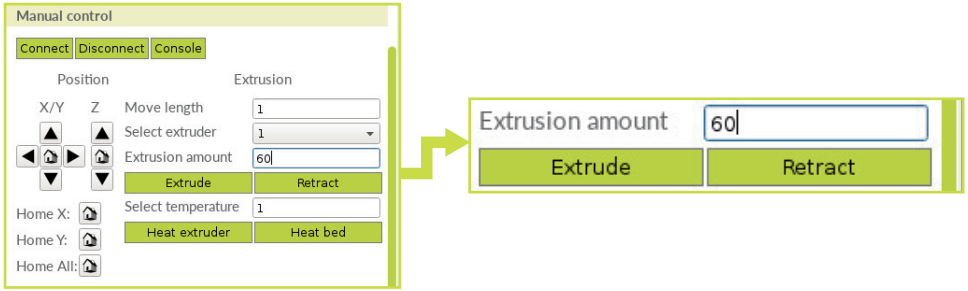
Retract Filament and Remove from Tool Head

7A Wait until the temperature has reached 205°C as shown in the **Monitor** sidebar.

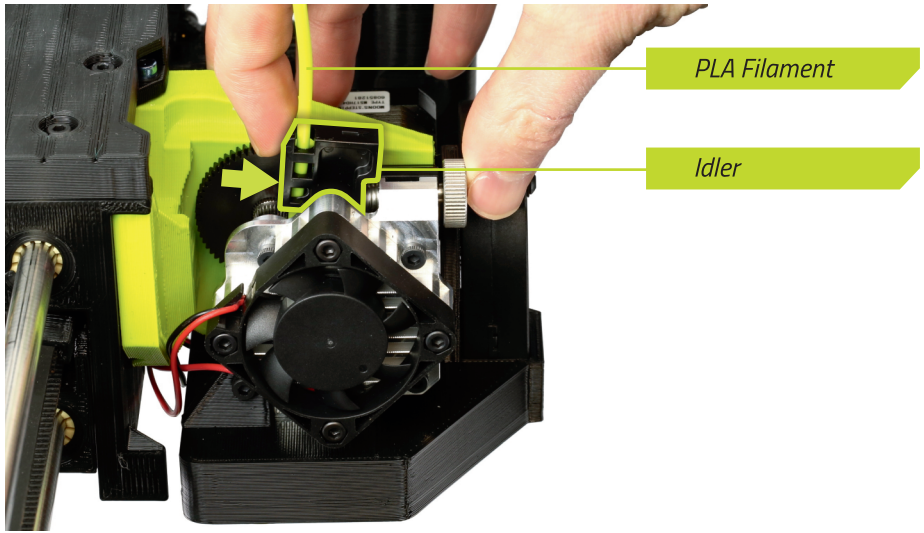


Always heat the hot end to extrusion temperature before attempting to remove filament as this will prevent clogging or jamming in the filament chamber of your tool head.

7B Scroll down in the **Monitor** sidebar to see the **Manual Control** menu. Under **Manual Control**, change the extrusion amount by typing **60** in the window next to **Extrusion amount** and clicking **Retract**. This will take approximately one minute.



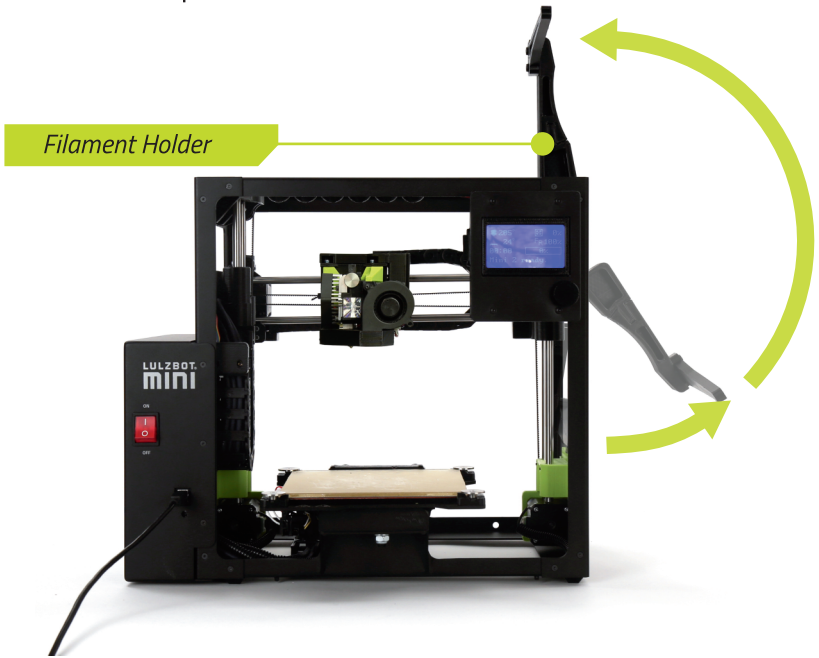
7C When the printer has finished retracting filament, squeeze the idler as shown and pull the filament up to remove it from the tool head.



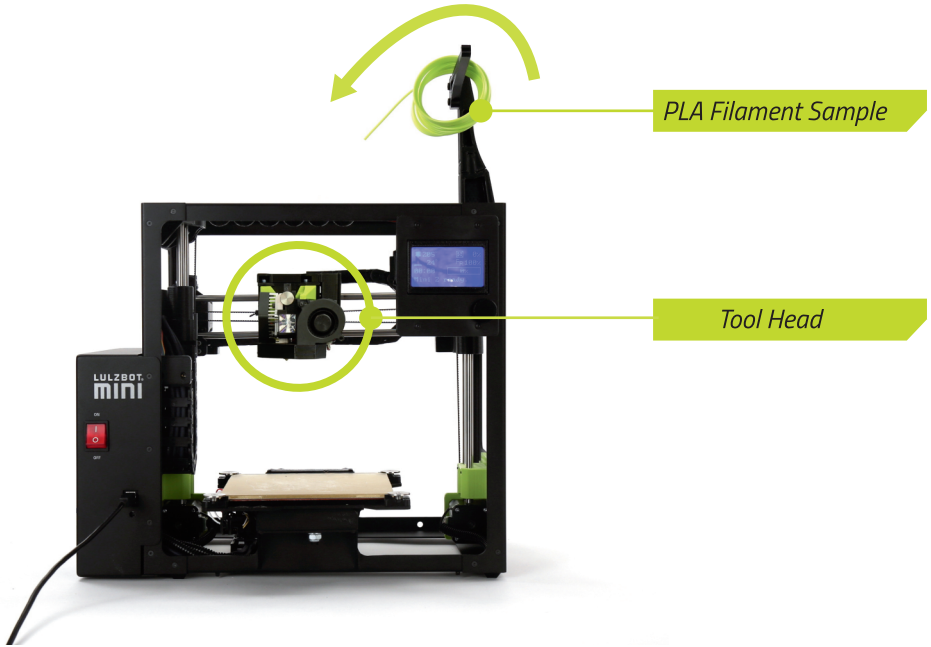
STEP
8

Prepare and Load Filament

8A Face the front of your LulzBot Mini. Find the filament holder, which is mounted to the top right corner of the printer frame. Rotate the filament holder counterclockwise into an upright and locked position.



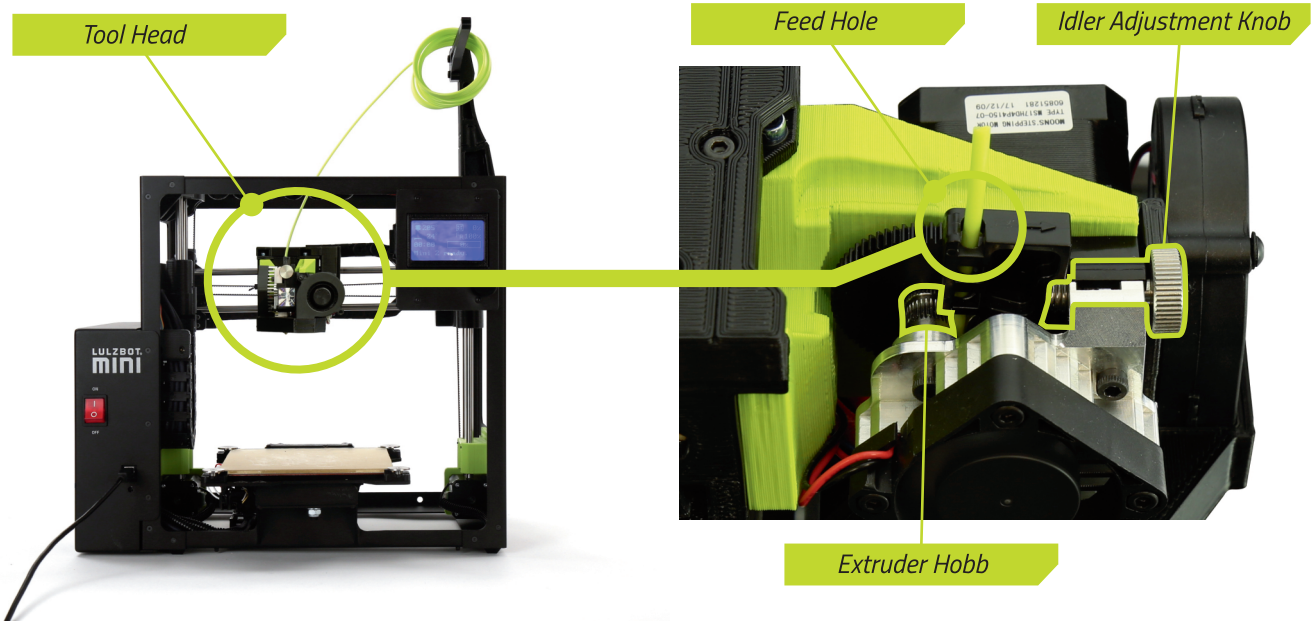
8B We strongly recommend using the included PLA filament sample for your first rocktopus print. Mount the PLA filament sample on the filament holder so the filament can feed down into the tool head.



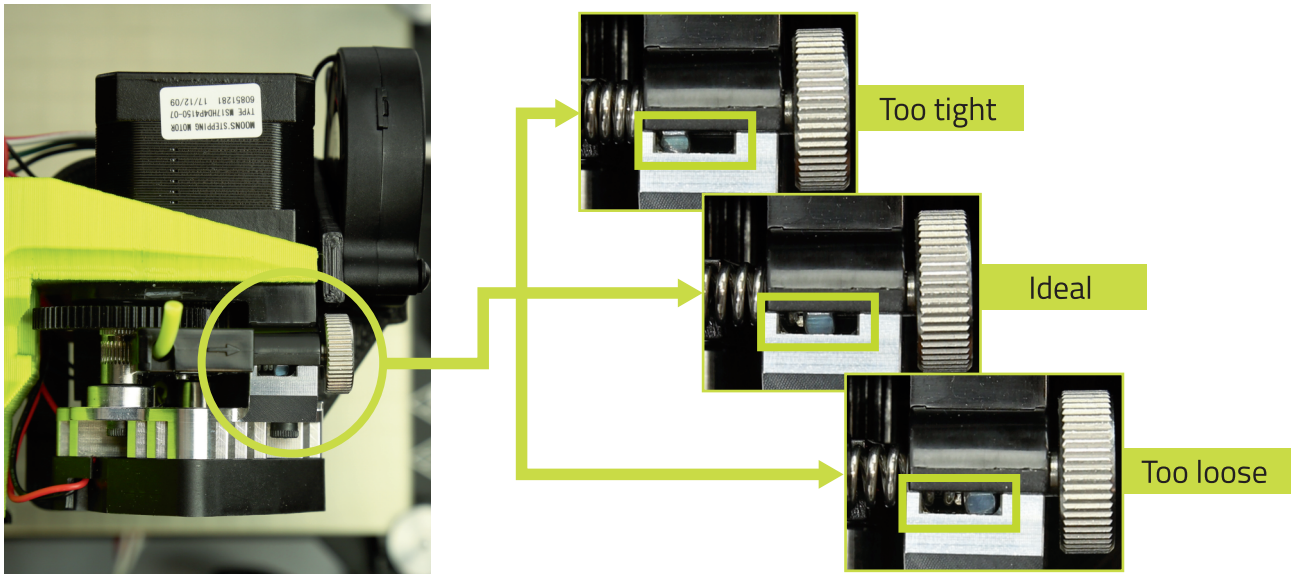
STEP 8 *Continued...*

8C Locate the feed hole on the idler where you removed the loaded filament during Step 7. Filament feeds through this hole and down into the hot end for printing. The idler adjustment knob controls how much pressure is applied to the filament by the Idler.

The hot end is still heated to 205°C (401°F) and can burn your skin.

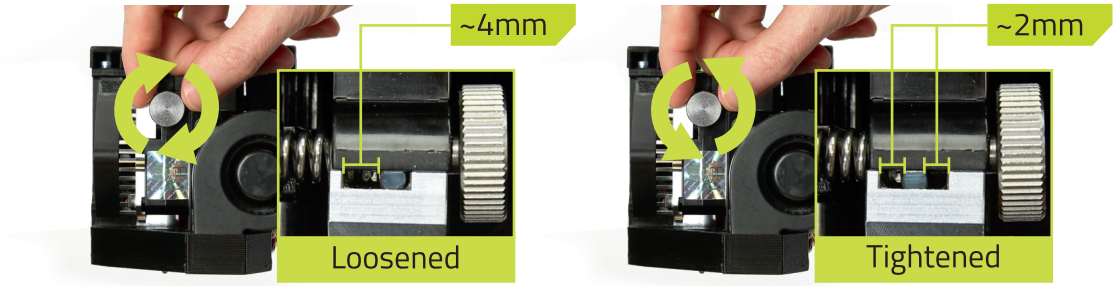


During printing, the idler holds filament against the extruder hobb which pushes filament down into the hot end. Correct idler tension is important for keeping filament flowing properly during the printing process. The idler tension can be seen by looking at the tool head from above. Rotating the idler adjustment knob clockwise will loosen the idler, while rotating counterclockwise will tighten the idler.



8D Loosen the idler as needed by turning the silver idler adjustment knob clockwise. Squeeze in on the idler and insert filament into the feed hole and all the way through the idler until it is held in place by the extruder hobb. Once the filament is in place, re-tighten the idler to the tension shown below with about 2 millimeters on either side of the nut as seen through the window.

The PLA filament sample should travel approximately 60 millimeters (slightly more than 2 inches) down through the extruder body and into the hot end.



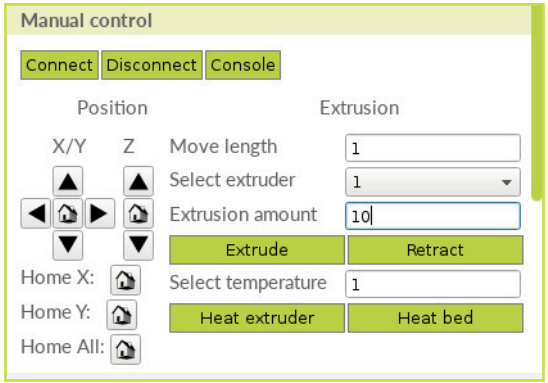
The filament must be inserted past the extruder hobb for filament to extrude properly. If there is resistance while pushing filament through the feed tube, trimming the filament at a 45° angle may help.

STEP 9

Verify Print Extrusion

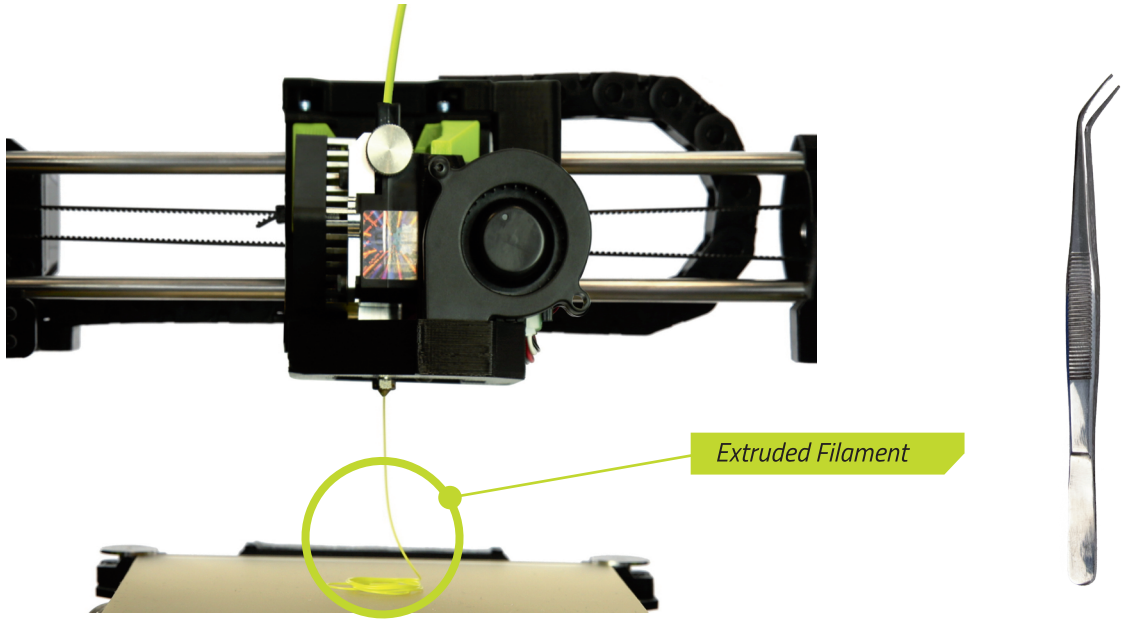
9A Make sure your LulzBot Mini 2 is ready for printing by verifying the printer's ability to extrude filament. Under **Manual Control**, change the **Extrusion amount** to **10** and click **Extrude** to feed filament through the nozzle.

Extrusion is the term for filament feeding through the tool head and out the nozzle.



STEP 9 *Continued...*

9B If you do not see filament coming through the nozzle and the drive gear stops moving, click the **Extrude** button once more and wait. Repeat as needed until you see consistent and repeatable extrusion.



9C Wait ten seconds for the filament to cool, then remove the extruded filament with the included tweezers.

STEP
10

Start Your First Print

Wait! Are you sure you are ready to print? The hot end is still hot, use caution:

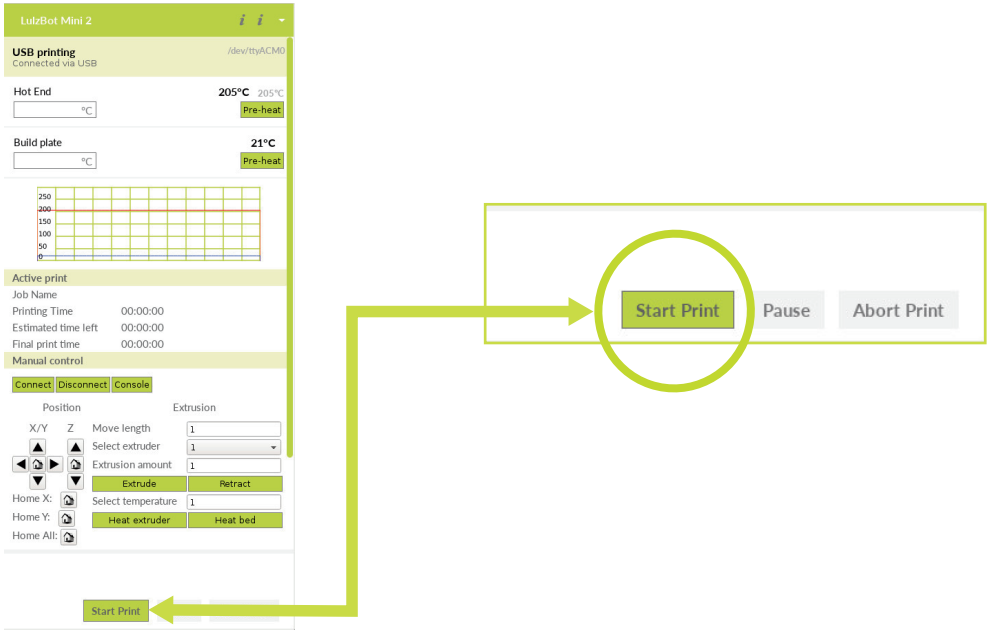
- *Check one final time to make sure you removed all the packaging foam from your LulzBot Mini during Step 1.*
- *Verify that the 3D printer is in a well-ventilated area, on a flat and level surface, and with 30 centimeters (12 inches) clearance in all directions.*

*If you need to make changes to your model, switch back to the **Prepare** sidebar in Cura. Once changes are made, Cura will automatically begin implementing the changes (also known as reslicing).*

*During shipping the X Axis may have come out of level. It can be releveled by switching to the **Monitor** sidebar and clicking on the **Level X Axis** button under **Predefined Commands**.*

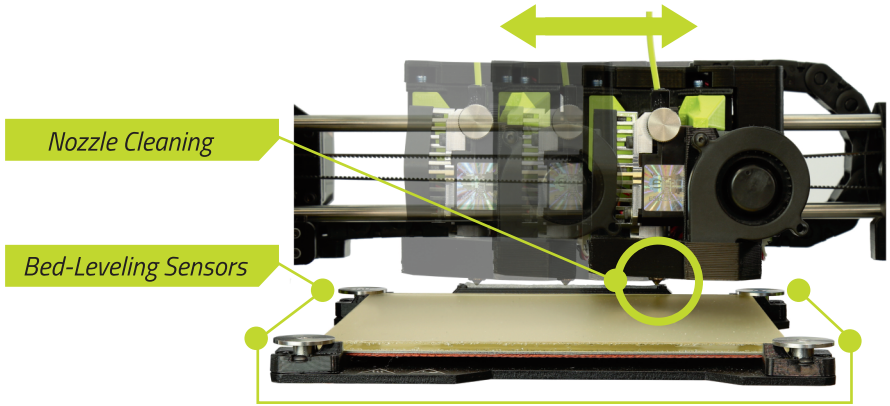
STEP **10** *Continued...*

10A Click **Start Print** below the **Monitor** sidebar to start your first 3D print, then watch your LulzBot Mini 2 automatically prepare itself for 3D printing.



10B Your LulzBot Mini will first move its tool head to the top left corner and allow the hot end to cool down prior to starting its cleaning process. Depending on ambient air temperature, this can take two to five minutes.

10C The tool head will then move to the back of the bed to clean off the nozzle. After cleaning, your LulzBot Mini will conduct an automated self-leveling sequence by touching each bed-leveling sensor, heating up to final temperature, and starting to print. This process can take approximately two to four minutes.



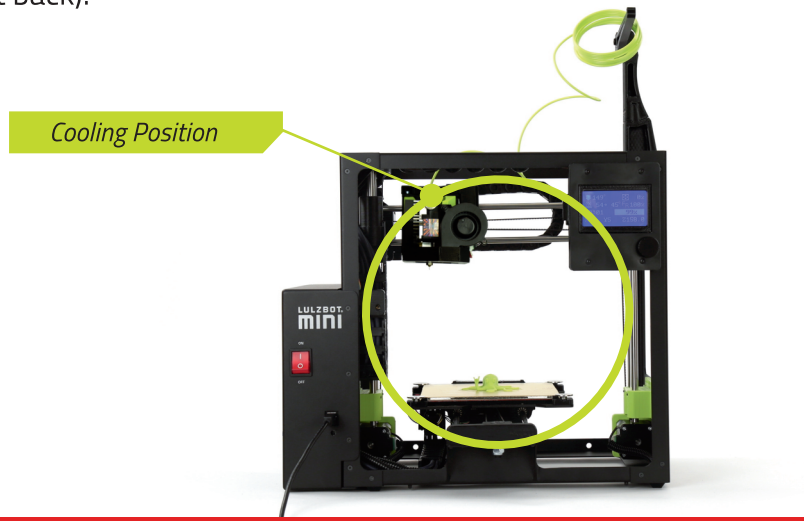
If probing fails to detect one of the bed corners, the printer will attempt self-cleaning again, then repeat probing. If this fails more than three times, or if the bed corner is visibly pushed down during probing, the printer requires manual nozzle cleaning. Refer to the Maintenance section at the end of this guide for details on nozzle cleaning.

10D Watch as a rocktopus is made before your eyes! The total print time is approximately 45 minutes.

STEP
11

Remove Your 3D Printed Object

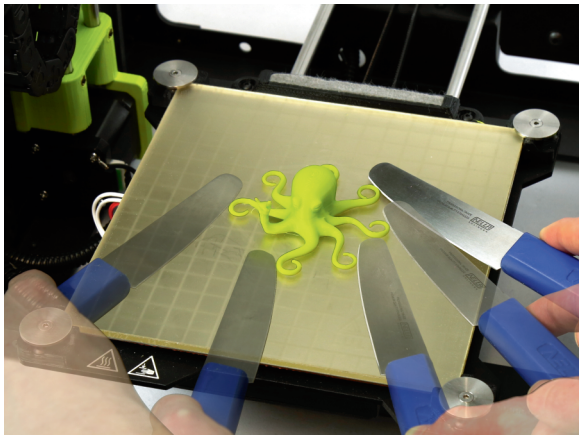
11A After your LulzBot Mini is finished 3D printing, the tool head and print bed will automatically move into the cooling position (with the tool head in the top left and print bed set back).

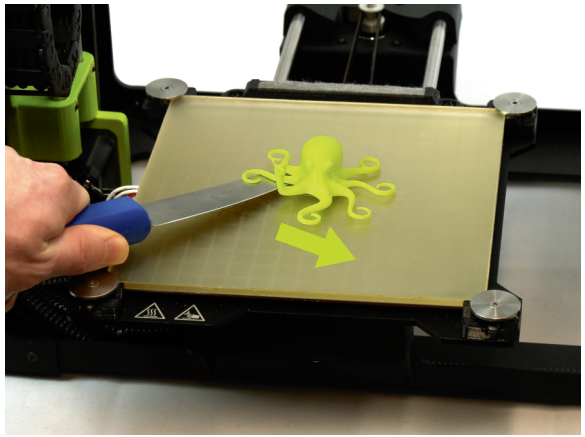


Your printer is now actively cooling. Do not attempt to remove your 3D printed object before the print bed moves forward. Attempting to do so could either burn your skin on the hot end or print bed, damage your printer, or damage your 3D printed object.

11B Once finished cooling to the proper removal temperature, the tool head will move to the top right and the print bed will move forward. After the print bed moves forward, remove the thin outer print layer. Then remove your rocktopus by lifting gently underneath it with the included blue-handled knife. Carefully pry under each tentacle, then slide the blade under the center until it separates from the bed.

The blade of the blue-handled knife is very sharp, so exercise caution when using it. The blade should be nearly parallel with the print bed. Carefully pry away from the bed, with the sharp edge between the object and print bed.





STEP
12

Rock On

Congratulations! Now that your LulzBot Mini 2 Desktop 3D Printer is up and running, share your 3D printing skills using ***#rocktopus*** on your social media platform of choice. Don't forget to tag us in your post and follow us for the latest news.



Next, join us on the LulzBot Forum at ***Forum.LulzBot.com***!

Need ideas for what to print next? Get inspired by projects, case studies, and news available at ***LulzBot.com/next***.

STEP
13

Your Next Print

13A There is a small length of the PLA filament sample remaining in the hot end after your first rocktopus print. You can remove this remaining filament by following Step 6 and Step 7.

i

After removing filament (as outlined above), a small residual amount remains in the hot end that needs to be cleared out through a process called purging.

13B If you plan to use a filament other than PLA for your next print there may be a difference in the temperature required for purging the residual filament in the hot end, and then 3D printing with the new filament.

Using the **Monitor** sidebar, set the hot end to a temperature that splits the difference between the two purging temperatures. For example, if the recommended temperature for one filament is 240˚C and the other is 200˚C, set the hot end temperature to 220˚C. Load the new filament following the procedures in Step 7. The chart on the next page lists purging temperatures for common filaments.

STEP 13 *Continued...*

Purging, Part Removal, and Bed Preparation Guide

Filament	Purging Temperature (˚C)	Safe Print Bed Temperature for Part Removal (˚C)	Print Bed Preparation (See maintenance section for more information)
ABS, HIPS	240	50	Isopropyl alcohol wipe
PLA	205	45	Isopropyl alcohol wipe
Magnetic Iron and Stainless Steel PLA	220	50	Isopropyl alcohol wipe
nGen	230	50	PVA glue stick
WoodFill	190	40	Isopropyl alcohol wipe
INOVA-1800, t-glase	245	50	PVA glue stick
Bridge, PCTPE, 910	240	50	PVA glue stick
Ninjaflex, Polyflex	225	Fully Cooled	Plain Glass

Your LulzBot Mini Desktop 3D Printer is capable of printing advanced and expert level filament materials including: Conductive PLA, PC-ABS, polycarbonate, PVA, and more. In addition, new materials are frequently added to our catalog. Shop our full range of filaments by visiting **LulzBot.com/filament**.

Splitting the difference in temperature between the two filaments is important, otherwise you may lower the quality of your next print or even clog the nozzle. Additionally, PLA should never be heated above 220 °C.

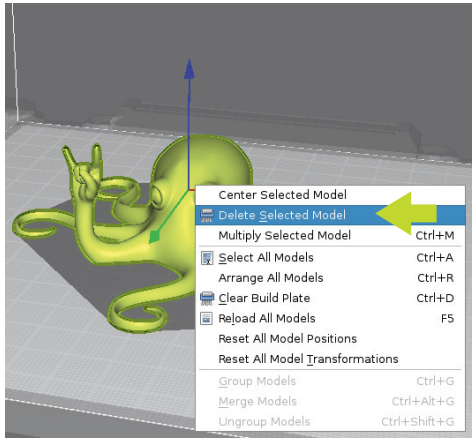
13C Purge the residual filament in the hot end using the **Extrude** button, as shown in Step 9B. Wait until the drive gear stops moving and repeat as needed until you see consistent and repeatable extrusion of the new filament.

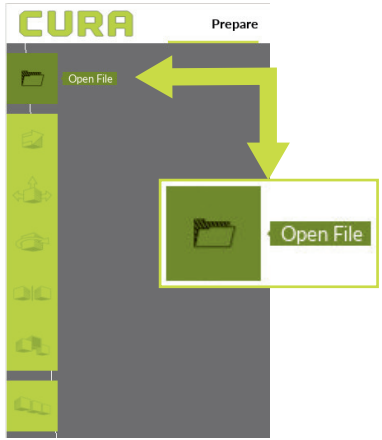
13D Turn off the hot end by setting temperature to 0˚C, then switch back to the **Prepare** sidebar. Once the **Prepare** sidebar is selected, select the appropriate filament and profile for your new filament as shown in Step 5C.

*While the **Monitor** sidebar is active, the print area is grayed out and changes cannot be made to the print or any print settings. You must switch back to the **Prepare** sidebar in order to make changes.*

STEP **13** *Continued...*

13E Clear the virtual print bed by right clicking (or holding control and clicking) the rocktopus model and selecting **Delete Selected Model**. Then upload the new model that you want to print next by clicking **Open File** in the **Prepare** window.





13F When your new object loads, Cura will automatically start slicing it as shown by the progress bar in the bottom right of the window. Once this process is complete, click **Print**.

13G When your print is complete and the bed has moved forward, follow the object removal instructions outlined in Step 11.

Important Information About Your 3D Printer

Warranty and Support
Your machine comes with a comprehensive one-year warranty and customer support period including Colorado, USA based technical support available by email at **support@LulzBot.com** and over the phone at **+1-970-377-1111**. For more information please visit us at **LulzBot.com/support**.

Extended Warranties of one, two, and three years may also be purchased to further protect your investment. Email **sales@LulzBot.com** for more information.

Source Files
This product is certified Open Source Hardware and runs with Free Software because we respect your freedom to see how it works, make modifications, and share your modifications with others. Find the source files online at **Download.LulzBot.com**, and see what's next by following our research and development online at **Devel.LulzBot.com**.

Filament Materials
Your LulzBot Mini 2 utilizes an open format filament system. We strongly recommend you purchase your 3D printing filament materials from **LulzBot.com**, where every filament has been thoroughly tested to work on your printer and comes with optimized Quickprint settings for easier printing.

If you choose to purchase elsewhere, avoid low quality filaments that can lead to failed prints and even damage your LulzBot Mini. Low quality filament can contain foreign objects, unlisted materials, blends, voids and density variations, and varying filament diameter. Purchasing consistent and reliable filament is key to protecting your investment in a LulzBot Desktop 3D Printer.

LCD Controller and SD Card Printing
Your LulzBot Mini 2 can be operated without a USB connection to a computer by using the LCD controller and included SD card. Refer to **LulzBot.com/support** for detailed instructions.

Maintaining Your LulzBot Mini 2 3D Printer

Make sure that the hot end and print bed are at room temperature before beginning any cleaning or maintenance unless otherwise noted.

Print Bed

Adhesion to your LulzBot Mini's modular heated print bed is the foundation of a great 3D print. The bed can be used in three supported configurations: PEI, PEI with Glue Stick, or Plain Glass. Your LulzBot Mini 2 ships with the PEI surface facing up since it's the most commonly used print surface. Refer to the chart in Step 13 of this guide for bed preparation for specific materials.

Following these tips will help you get the most out of your print bed:

PEI: Oil on your skin and accumulated dust can negatively affect print adhesion to PEI. For optimal performance, lightly wipe the print bed and corner washers with a dry paper towel between prints. To deep clean the PEI print surface and corner washers, wipe with diluted Isopropyl Alcohol (1:10 IPA to water ratio) and a clean cloth.

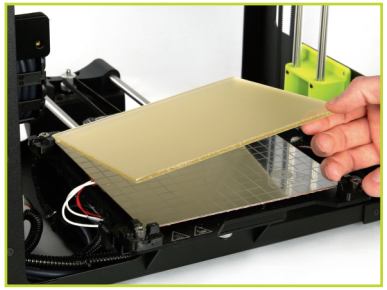


Always wait for your PEI print surface to cool to removal temperature before attempting to remove 3D printed objects. Treated appropriately, PEI is highly durable, but note that even well-treated PEI will not last forever. It will need to be replaced periodically and is considered a consumable item. Replacement PEI sheets as well as additional glass/PEI surfaces can be purchased at **LulzBot.com**.

PEI with Glue Stick: For some filaments a polyvinyl alcohol (PVA) glue stick, such as an Elmer's® brand glue stick is necessary for bed adhesion and/or release. Apply glue stick in light, even coats. Remove accumulated glue with a damp paper towel occasionally to maintain a flat, smooth base for your 3D prints.

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Plain Glass: The ability to print on plain glass is especially useful for TPU filaments such as Ninjaflex. To use the glass surface, unscrew each corner washer holding the print bed in place with the supplied 2 millimeter hex key, then flip the print surface and place it back on the heater with the glass side up. Screw in each corner washer to hold the bed in place. Using care not to over-tighten, make sure that the washers are flat and parallel with the surface of the glass.



Electronics Box Cleaning
Unplug the USB cable and power cord and remove filament from the filament holder before beginning any maintenance on the LulzBot Mini's control box.

Unscrew the three front, three back, and two bottom screws holding the control box in place and gently slide the control box away from the frame, being careful not to pull on wires traveling between the frame and control box. Using compressed air, clear the fans, power supply, and area around the control board of any dust or debris that may have collected inside.

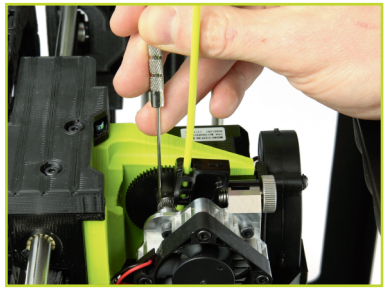
Nozzle Wiping Pad
A clean nozzle tip is critical to your LulzBot Mini's performance, ensuring metal-to-metal contact in the leveling sequence. If you are experiencing leveling failures or have noticed prints starting too close to the bed, your nozzle wiping pad may require attention.



The wiping pad is both reversible and replaceable. To remove the pad, pry up on it with the dental pick or tweezers from your LulzBot Mini's tool kit. Then, either flip the pad over if the other side is unused, or replace the pad with one of the spares included in the tool kit. Additional pads can be purchased online at **LulzBot.com**.

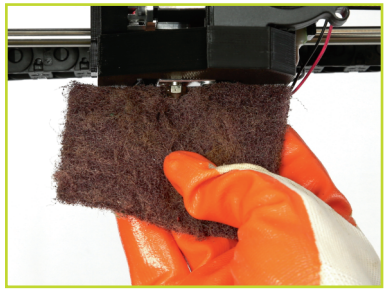
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Tool Head Cleaning
A dental pick is included with your printer for cleaning the Hardened Steel Titan Extruder Hobb component of the tool head. (The Hardened Steel Titan Extruder Hobb is the small grooved metal part of the tool head that feeds filament into the extruder). Use compressed air to clear any residual filament from the tool head.



Check both fans on the tool head to ensure that they are functioning properly during printing. Note that the extrusion cooling fan on the front of the tool head may not turn on until later in the print depending on filament used. Blow out both fans with compressed air to clear any dust or debris.

Over time you may also experience an accumulation of filament on the nozzle and heater block. To clean off this accumulated filament, heat the hot end up to 205°C (356°F) and then carefully wipe affected areas using the maroon Scotch-Brite™ scrubbing pad from your Mini's tool kit. **Never clean the hot end with metal utensils.**



Smooth Rod Cleaning
Wipe down the smooth rods on the X, Y, and Z axes using a clean, dry cloth. The bushings that allow movement along the smooth rods are self-lubricating. **Never apply lubricant to the smooth rods.**

Print Area Cleaning
With regular use, dust and debris can collect underneath the printer that may cause interference with Y axis motion. Periodically clean and dust the area under and surrounding the printer to prevent this.

Leveling the X Axis Gantry
If the X Axis gantry comes out of level, it can be releveled through Cura LulzBot Edition by switching to the **Monitor** sidebar and clicking on the **Level X Axis** button under **Predefined Commands.**