

Open Hardware Assembly Instructions

LulzBot Mini 2 Aerostruder v2 Micro Tool Head Installation Workflow **1**Getting Started

Follow the instructions below to quickly install your LulzBot Aerostruder v2 Micro on a LulzBot Mini 2 3D Printer.

LulzBot Aerostruder v2 Micro



2Included Materials

(1) <u>LulzBot Aerostruder v2 Micro Tool Head (Fully Assembled)</u>

LulzBot Aerostruder v2 Micro



3Additional Items Required

You will also need

- 2.5 mm metric hex key, included with your LulzBot Mini 2
- USB cable, included with your LulzBot Mini 2
- GNU/Linux/Windows/Mac-based computer

Additional Items Required



4 Power Off Your LulzBot 3D Printer

4A

Power off and unplug the power cord from the rear of the printer.

4**B**

Unplug the USB cable from the front of the printer if installed.

Power off your Mini 2



5 Remove Connector Cover

5A

Using the 2.5 mm hex key included with your LulzBot Mini 2, remove the three M3 screws.

5B

Lift off the cover, exposing the tool head connector.

Remove 3 screws



Cover removed



6

Depress the retaining tab on the connector housing and gently wiggle the connector free. Do not pull on the wires, only the connector housing.

Retaining tab



Unplug the tool head connector from the wiring harness



7Remove Tool Head

7A

The tool head is attached with three screws. The print surface can be damaged if the tool head is allowed to fall onto the print surface. With one hand, support the tool head while following removal steps below.

7B

Using the 2.5mm hex key, **unscrew** the three M5 screws securing the tool head to the X-axis carriage. Remove the **rear** screw first, followed by the remaining top two screws.

7C

Remove the tool head from the printer by moving the tool head away from the printer.

Note: In previous versions of our tool heads, the Esteps (Extruder Steps Per Unit) were listed along the back of the tool heads for the customer to update. For the new Aerostruder tool head however, the Esteps are now set up within the firmware, and no manual updates are required.

Rear screw



Top screws



8 Mount the New Tool Head

8A

Press the tool head onto the X-axis carriage, aligning the cutouts on the back of the new tool head. Do not pinch any wires between the mount and the carriage.

8B

Secure it to the X-axis carriage by loosely screwing in the top two screws. Leave the top two screws loose.

8C Loosely screw in the last screw through the rear of the X-axis carriage.

8D Tighten the top two screws.

8E Tighten the rear screw.

Align the tool head.



Aligning and install the top two screws, followed by the rear screw



9Plug in Tool Head

Connect the two connectors, making sure to **fully seat the connectors until they lock**.

Ready to connect



Fully seated and locked



10Install Cover

10A

Cover the connector with the connector cover and attach it to the X-axis carriage using the three M3 screws and the 2.5 mm hex key.

10B

Channel the wires together going to down the vertical pathway on the cover mount, and try not to pinch any of the wires when securing the cover. Slide down carefully into place, and **hold while** screwing in.

Screw in cover using three M3 screws



11Install or Update Cura LulzBot Edition

11A

Install the latest version of Cura LulzBot Edition. It is important to have the LulzBot Edition of Cura, as it has preset machine configuration profiles built into it.

11**B**

Cura LulzBot Edition is available from <u>http://LulzBot.com/Cura</u>.

11C

Plug in your LulzBot Mini 2 3D printer to the power supply and power on your 3D printer.

11D

Once powered on **connect** your 3D printer to your computer using the USB cable.

11E **Open** Cura LulzBot Edition. Power on your 3D printer and plug in USB cable



Open Cura LulzBot Edition

Ele Edit View Settings Exte	ensions Plugins Pre	ferences Help	Cura LuizBot Edition	- 3.2.25		• . E X
CURA	Prepare	Monitor		Solid View 👻	LuizBot Mini 2	1.1.5
					Category Material j Profile Print Setup Infill Generate Support Build Plate Adhesion	All PolyLite PLA (Polymaker) Standard - 0.25mm
	-				Please load a 3D mo	del
				0.0 x 0.0 x 0.0 mm	00h 00min 0.00m / ~ 0g	Save to File

12Setup New Tool Head in Cura

12A

In the top right-hand menu for Cura LE, **Select the Settings drop-down arrow > Printer > Add Printer**

12B Select LulzBot Mini 2, Aerostruder Micro, and click Add Printer.

12C Select **Finish**.

Add Printer

LulzBot Mini 2	i	i	
LulzBot Mini 2 LulzBot TAZ 6			
Add Printer Manage Printers			

Select LulzBot Mini 2, and Aerostruder Micro

	Add Printer		
Printer	Tool Head	Graphical LCD	
○ LulzBot Mini ● LulzBot Mini 2 LulzBot TAZ 5 LulzBot TAZ 6	 Aerostruder Aerostruder Micro 	● Yes ○ No	
Printer Name: LulzBo	ot Mini 2 Aerostruder v2 Micr	o Other	Add Printer

Add Printer

	Add Printer	• •
Machir	ne Settings	
Printer	Hot End	
Printer S	ettings	Printhead Settings
X (Width)	162 mm	X min 20 mm
Y (Depth)	162 mm	Y min 10 mm
Z (Height)	180 mm	X max 10 mm
Build plate	shape Rectangular	Y max 10 mm
Origin a	t center	Gantry height 9999999 mm
✓ Heated	bed	Number of Extruders 1
Start Gco	ode	End Gcod
;This G M75 G26 G21 M107 G90	Code has been generated specifical	y for the LulzBot Mini 2 ; Start GLCD Print T: ; clear potential 'p ; set units to Millin ; disable fans ; absolute positionin M107 G92 E5
		•
		Back Finish Cancel

13Update Firmware

13A

From the drop-down menu at the top right-hand side of Cura LE, Select Manage Printers

13B

Confirm that the LulzBot Mini 2 Aerostruder v2 Micro is selected, and click Upgrade Firmware.

13C

Select **Automatically Update Firmware**. The **Update EEPROM** checkbox should be checked by default. Close any dialog windows after the firmware has been updated.

Select Manage Printers

LulzBot Mini 2 Aerostruder v2 Micro		i	i	
LulzBot Mini 2 ● LulzBot Mini 2 Aerostruder v2 Micro LulzBot TAZ 6				
Add Printer Manage Pr <u>i</u> nters Standard - 0.2mr	11			

Select Upgrade Firmware

	Preferen	ces 🔶 🗇 🖻		
General Settings	Printers			
Printers Materials Profiles Plugins	Activate Reset to defaultAdd	Remove Rename		
	LulzBot Mini 2 LulzBot Mini 2 Aerostruder v2 Micro	LulzBot Mini 2 Aerostruder v2 Micro		
	LulzBot TAZ 6	Connect OctoPrint Machine Settings Upgrade Firmware		
		Printer type: LulzBot Mini 2 Aerostruder v2 Micro Connection: The printer is not connected.		
Defaults		Close		

Automatically Upgrade Firmware

Upgrade Firmware 🔶 🗉 🗙					
Upgrade Firmware					
Your LulzBot 3D Printer ships from our factory ready to help you Make Everything, right out of the box. Get the latest features and the most performance out of your LulzBot 3D Printer by keeping your firmware updated.					
WARNING: The firmware updating process will overwrite certain parameters. Restore the tuned values by following the steps below after the firmware update is complete.					
Please have the following recorded <u>before</u> upgrading firmware: • Extruder steps per unit (<u>E-steps</u>) • Z-axis offset (<u>Z-offset</u>)					
You will need to restore the E-steps and restore the Z-offset after firmware upgrade.					
Automatically upgrade Firmware Upload custom Firmware					
✓ Update EEPROM					
Close					

14Set Hotend Temperature

14A

Select **Print Monitor Control Tab** from the menu above the virtual print interface.

14B Click **Connect**.

14C Type **205** into the **Select temperature** field.

14D Select **Heat Extruder**.

Select Monitor tab



Click Connect

Manual cont	rol				
Connect	Disc	onnect	Console		
Posit	tion			Extrusion	
X/Y	Ζ	Move le	ength	1	
		Select e	extruder	1	•
		Extrusio	on amount	1]
			Extrude		Retract
Home X:		Select t	emperature	1	
Home Y:	2	H	eat extruder		Heat bed
Home All:	2				

Set Hot End Temp to 205, select Heat Extruder

Connect	Disconnect	Console		k
Posi	ition	E	xtrusion	
X/Y	Z Movel	ength	1	
	Select	extruder	1	*
< @ >	Extrus	ion amount	1	
•		Extrude	Retract	
Home X:	Select	temperature	205	
Ho	H H	leat extruder	Heat be	ł

15Remove Factory Calibration Filament

Note: **Always** heat the hot end to extrusion temperature **before**attempting to remove filament. If switching between different material types, set the hot end to the approximate average extrusion temperature of the two materials.

15A

_Once the hot end has reached the extrusion temperature of **205**, **remove** the test filament used during factory calibration by entering **5**for the **Extrusion amount** in Cura LE. Click the **Extrude** button. Change the value to **60** and click the **Retract** button.

15B

Once filament has retracted 60 mm, **squeeze** idler inwards, and **pull** the filament out. You may need to loosen the idler slightly by turning the silver idler wheel clockwise.

15C

Tighten the idler by turning the silver idler wheel counter-clockwise if loosened.

Extrude first, then retract filament



16Load Filament

Filament Loading Tip: Cutting the filament at an angle will help with inserting into the extruder.

16A

Load the sample filament into the extruder. Squeeze the idler arm inward and **insert** the filament into the extruder filament guide.

16B

Enter 60 in Extrusion amount and click the Extrude button.

16C

Purge factory filament by continuing to select the **Extrude** button until the hot end extrudes material.

16D

Level the X-axis by clicking the Level X Axis button.

Insert filament



Extrude Filament

Position		E	xtrusion		
X/Y	Ζ	Movelength	1		
		Select extruder	1		
< @ >		Extrusion amount	60		
	T	Extrude	Retract		
	~	Select temperature	1		
Home X:	6	Heat extruder	Heat bed		
Level X-ax	kis				
Predefir	ned Cor	nmands			
Preheat nozzle		Wipe nozzle	Cool nozzle		
Prehe	at bed	Cool bed	Cold pull		
		Motors off	Level X Axis		

173D Print Rocktomek Test Model

Your first print: the LulzBot Rocktomek: Download and Save

1

Load the <u>RocktomekPose05.stl</u> 3D model.

2 Select the sample material: PolyLite PLA (Polymaker) and the Profile: High Detail.

3 Press the **Print via USB** button to start your print!

All Hail the LulzBot Rocktomek



Starting the print



18Improve Adhesion By Tuning Your Z-Offset

You may need to fine tune your Z-axis offset, also known as Z-offset, to get the perfect first layer. Follow the instructions in the Advanced section of the LulzBot Mini 2 User Manual for detailed instructions.

More Information: LulzBot Mini 2 User Manual - Adjusting Z-offset

Adjust your Z-offset during the first layer of the print by following these steps:

18A

Press in on the Graphical LCD Controller knob on the LulzBot Mini 2 and select Tune.

18B Select Z Offset

18C

Rotate the knob **counterclockwise** to bring the hot end nozzle **closer** to the print surface. Rotate the knob **clockwise** to move the hot end nozzle **farther away** from the print surface.

18D

Note the Z-offset value once adjusted. Follow the instructions at <u>LulzBot.com/z-offset</u> to store your ideal Z-offset.



Tune

Z offset



Adjust as desired



Ideal first layer height



https://ohai.lulzbot.com/project/lulzbot-mini-2-aerostruder-v2-micro-installation/ 9-13-18