

DETERRENCE DISPENSED

PRESENTS

**GETTING YOUR FIRST
3D-PRINTER
AND HOW TO USE IT**

**NO PRIOR 3D-PRINTING
KNOWLEDGE NEEDED**

BY JSTARK1809

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INTRODUCTION

3D printing is the process of using a computer controlled assembly to move a nozzle along the X(left/right), Y(away from you/toward you), and Z(up/down) axes, through which filament is forced by extrusion and heat and thus transformed from a solid to a melted form, then layered onto a printer's bed.

The heated nozzle assembly, known as a hot-end, moves along the X and Y axis to place a layer of melted plastic. Immediately after the heated plastic has been laid down, it is cooled by a fan, or the ambient air temperature. On the Ender 3, the hot-end moves up one layer height after each layer has been printed, to place a new layer on top of the previous one, which has now been cooled. This is how fused deposition modeling(FDM) 3D printers work.

The most cost effective FDM 3D printer currently available, allowing the majority of our released designs to be printed, is the Creality Ender 3. As of December 2019, it can be generally be found to cost approximately \$179 USD.

In this guide you will learn where you should buy the printer, how to properly assemble it, which upgrades improve it the most, and how to get the most effective use from it.

BUYING THE PRINTER

To ensure the Creality Ender 3 you are getting has the latest hardware and software revisions added by Creality, you should order your printer from the official Creality AliExpress store:

aliexpress.com/item/32858931045.html

Do not order a Creality Ender 3 Pro/3X !
Get the regular Creality Ender 3 !

The reason is that you'll end up with a better 3D-printer if you buy the Ender 3 and buy upgrades for it rather than getting the Ender 3 Pro/3X.

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OVERVIEW

CUSTOMER REVIEWS (3075)

SPECIFICATIONS

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UPGRADES

To maximize the potential of your Ender 3 , it is highly recommended that you upgrade the printer with various parts, both purchased and printed(with your new printer).

1. Bed springs. <https://tinyurl.com/yxp4kqvf>
2. Glass bed upgrade. <https://tinyurl.com/y4xpdho6>
3. Nozzles (0.4mm). <https://tinyurl.com/y5wabup8>
4. Metal extruder kit. <https://tinyurl.com/y5o7ypm5>
5. Bowden Tubing+Couplers. <https://tinyurl.com/y6q58dhe>

3D-Printed:

1. Filament guide. <https://tinyurl.com/yb6qjdqs>
2. Mainboard fan guard. <https://tinyurl.com/y8qmx5oc>
3. Control Panel Cover. <https://tinyurl.com/y5pxdlh8>
4. Cable clips. <https://tinyurl.com/y65l9sos>
5. Cable channel cover. <https://tinyurl.com/y295jkfj>



ASSEMBLING THE 3D-PRINTER

It is extremely important that you assemble your Ender 3 carefully, and that you follow the instructions of the assembly video closely.

To help you with the assembly watch this assembly video tutorial:

<https://www.youtube.com/watch?v=me8Qrwh907Q>

Before you commence with the assembly make sure you have watched the above video in its entirety as well as this video that covers the upgrades:

<https://www.youtube.com/watch?v=hKlsJZJ4aJ8>

It is a good idea to watch both the assembly and upgrade videos multiple times before starting. This helps to ensure a better understanding of how to assemble the printer, as well as *when* to add the upgrades while assembling it.

Make sure that the surface you put your Ender 3 on top of is level. Additionally, make sure the base of your Ender 3's frame is level when you begin the assembly. Ender 3's have been known to have a slight wobble when placed on a flat surface. If your Ender 3 appears wobbly, loosen the frame bolts on each side, and ensure your frame is square before tightening them again. Continue assembly after this step.

Be cautious not to over tighten or over torque the screws during the assembly. If a screw appears hard to install, immediately stop and gently remove it.

HOW TO USE A SLICER

Initially you begin a print with a 3D model. To print that model, it has to be converted to a program language called g-code(.gcode). This happens using software commonly called a slicer(due to the model being “sliced” into many individual layers, which are printed on top of each other).

The .gcode file contains all information that your 3D-printer needs to print the sliced 3D-model. From the beginning of the print(preheating the hot-end and bed), through the layer by layer build, to the end(cooling down these same two components using the fans and ambient temperature).

For the Ender 3, I recommend the user-friendly slicer "Cura". I've put together a package with included instructions to install a reliable version of Cura with improved functions:

https://jstark1809.keybase.pub/DetDisp_3D_Printing_Guide_Slicer_Package.zip?dl=1

The following steps explain how you will usually generate a .gcode file from the .stl files provided with our releases. The standard filament to use is PLA(1.75mm diameter)

1. Double click the .stl file or open it in Cura
2. Click the object on the virtual bed. Using the menu context options on the left side of the screen, rotate the object to obtain the proper printing orientation.
3. Choose your profile(e.g. Dynamic Quality 0.16mm)
4. Choose infill Density(For Max strength=100% Infill)
5. Choose hotend/printing bed temp(Hotend:205°C, Bed:60°C)
6. Click Slice. Copy .gcode file to the 3d-printer sd/tf card.

LEVELING THE BED

It is absolutely crucial to keep the print bed as level as possible. If it is not leveled well, there is a high potential for your prints to come out very poorly, or even to fail completely. Properly leveling the print bed will be the biggest challenge for you when starting out with your 3D printer. To help you learn how to level the bed as fast and as easy as possible, this video will assist in understanding the basics:

<https://www.youtube.com/watch?v=5eqTmb01cBk>

After you have roughly leveled your bed, with either the paper method or feeler gauges, use the [first provided leveling .gcode file](#) to start a spiral styled print on the bed. As the spiral is getting printed, adjust your print bed on each corner very carefully while the printing is happening, watching how the thickness of the lines change, as well as whether they stick over the entire area of your print bed. After a while, the printer will begin a second layer. Stop the print at this stage, removing the initial layer and beginning again. Continue using the first .gcode until you have successfully put down a uniform spiral that sticks perfectly over the entire area of the print bed, and has an even thickness through the same area.

Now, use the [second leveling .gcode file](#) with 5 squares. Make sure all 5 squares end with a uniform texture/surface finish, and that all stick well to the print bed. If this is not the case, return to the first .gcode, and adjust the distance between the nozzle and the bed(changing how much the lines are squished) , as well as ensuring the line thickness is truly even throughout the spiral.

PRINTING TIPS

1. If your nozzle ever scrapes across your build plate, you should replace it. Watch this video to understand how to replace the nozzle: <https://youtu.be/FRzsGttNMyk?t=525>
2. Before you level the print bed and before major prints, always make sure to clean your upgraded glass print bed with alcohol wipes. Afterwards, wipe the print bed with tap water to remove any residue from the alcohol wipes.
3. After a print finishes, let the print bed cool off to have an easier time removing the print. Cautiously use a razor blade, along with the Creality supplied spatula/scrapper, to shimmy the print from the glass bed.
4. If you want to have an easier time when putting in your microSD/TF card into the printer, get a SD card to microSD/TF card adapter with a long white ribbon cable. This will also prevent breaking the microSD/TF card slot of the printer over time.
5. Get a craft/exacto knife. It will come in very handy when removing printing imperfections (small blobs, stringing nibs).
6. When instructions in the readme call for supports to be used when slicing, a slot drive/flat head screwdriver can be cautiously used to assist in support removal.
7. Remember to apply silicone/PTFE grease onto the z-axis lead screw every few weeks.