

UR Makers

Field Guide to Using the MakerBot Replicator 2



MakerBot

Version 1.2

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This document supplements the MakerBot User Manual:

<http://www.makerbot.com/support/replicator2/documentation/manual/>

Please refer to the manual for additional information, pictures, and troubleshooting tips.

For additional information, please visit the MakerBot support homepage:

<http://www.makerbot.com/support/replicator2>

Before You Start

Please be respectful of the equipment. It's a shared resource. Please don't print inappropriate things. Ask for help if you're not sure what you're doing. Please report problems so that we can fix them. It's up to you to make a great Maker community.

Creating Your Model

Before you can print anything, you need to model your part using 3D/CAD software such as SolidWorks, AutoCAD, Maya, Sketchup, or even Blender. Most of these are installed in Rettner 201 and other campus computers. Blender is free and cross-platform. There are many tutorials for all of these on the web. But take note: 3D modeling take some practice. Be prepared to learn if you're new to 3D.

Export your model as a “.stl” file.

Buy Filament

You need to provide your own PLA filament (the plastic material used by the printer):

<http://store.makerbot.com/filament>

Or other vendors...

Preparing for Printing

Process your model using the “MakerBot Desktop” (formerly “MakerWare”) software:

<http://www.makerbot.com/desktop/>

Add the part by selecting its STL file.

Position the part on the platform using the Move, Turn (formerly Rotate), and Scale tools. Note that there is an “On Platform” feature that can be very useful. You can place multiple parts on the platform if you want.

If your computer is connected to the MakerBot via USB, then you can start setting up the printer.

Otherwise you need to “Export Print File”. This will create a “.x3g” file. Save or copy the X3G file to an SD card (no bigger than 2GB, FAT formatted) and take it with you to the printer.

Use the default settings when making unless you know to do otherwise.

Use a raft (under the part) unless you know to do otherwise.

Makerbot Desktop will show you material and build time estimates when you export the print file. (Previously you needed to use “Advanced Options” > “Preview before Printing”.)

Power On

The power switch is on the rear of the machine, right-hand side (looking from the front).

Tape the Build Platform

The build platform should be covered in blue painter's tape to prevent parts from sticking and to protect the build platform from the tools used to remove parts.

Remove any previous tape unless it's in perfect condition (at least where you'll be printing).

Apply tape from the middle out along the long axis of the platform, unless you know otherwise will work better for your part.

Try to have an absolute minimum of overlap between the strips.

Please don't skip this step. It's selfish not to take a few moments to look after the equipment before using it.

Level the Build Platform

Follow the procedure in the manual for leveling the build platform.

Essentially this involves using the arrow keys on the front panel of the machine to select "Utilities" and then "Level Build Plate," and then following the prompts.

Use the MakerBot card to measure the gap between the extruder nozzle and the build plate (if the card is missing, use a sheet of paper or a thin card). The prompts will direct you to measure and adjust at three positions, then another three positions, then one last check.

Doing this right (and doing it at all) is key to getting a good build.

Load Filament

If the build platform is right up against the extruder after leveling, use "Utilities" > "Jog Mode", navigate to "Z+", and move it down.

If filament is already loaded and the machine is cold or has been sitting for more than a few minutes, follow instructions below for unloading it, then reload it.

Make sure you have a clean edge on the filament (use scissors, cutters, putty knife, etc.).

Place your filament spool on the holder at the rear of the machine so that it unspools at the bottom. Remove the filament tube from the extruder. Feed the filament up the filament tube until you can grab it.

Select "Utilities" > "Change Filament" > "Load" and follow the prompts.

The machine will heat the extruder then start pulling in filament. Feed your filament in until it starts coming out the extruder. You may see leftover filament from a previous job. Let it run a few seconds then press the "M" to stop extruding.

If filament does not feed, it is likely that the drive gear needs to be cleaned. The instructions are in the manual. Please don't attempt this if you don't know what you're doing.

Otherwise you're ready to print.

Print Your part

If your computer is connected to the MakerBot via USB, you can “Make” it and select “Make It Now”. Use the default settings when making unless you know to do otherwise. Use a raft (under the part) unless you know to do otherwise.

If you exported an X3G file to an SD card, insert the card in the MakerBot above the keypad. Then select “Build from SD Card” from the menu and select your model.

WATCH YOUR BUILD. Do not walk away. Many things can go wrong and you need to be ready to pause or more commonly cancel the build using the keypad.

Watch that the filament is unspooling properly, not getting unwound from the spool, and not getting kinked. Any of these will stop the feed and although the extruder will still move, no filament will be extruded.

Remove Your Part

Parts stick to the build plate even with painter’s tape.

Release the build plate by unclipping at the back before you try to remove your part.

Taller parts can be snapped off by hand. Some parts need a tool, such as the putty knife. **Be careful** that you don’t cut yourself when the tool slips or the part pops off.

Replacing the painter’s tape is a nice thing to do for the next person.

Unload Filament

Go to “Utilities” > “Change Filament” > “Unload”.

The printer will heat up the extruder and then start running the drive gear backwards. Pull gently on the filament until it comes out.

Do not leave filament to cool inside the extruder as this leads to problems later.

Take your filament with you unless you like to share.

Power Off

If you’re done and no one else is waiting, please turn off the power to the printer.

Please clean up blue tape, bits of filament, etc.

Again: **It’s up to you to make a great Maker community.**

Report problems to rettner.hall@gmail.com