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MakerBot Replicator+
3D Printer

Quick Start Guide

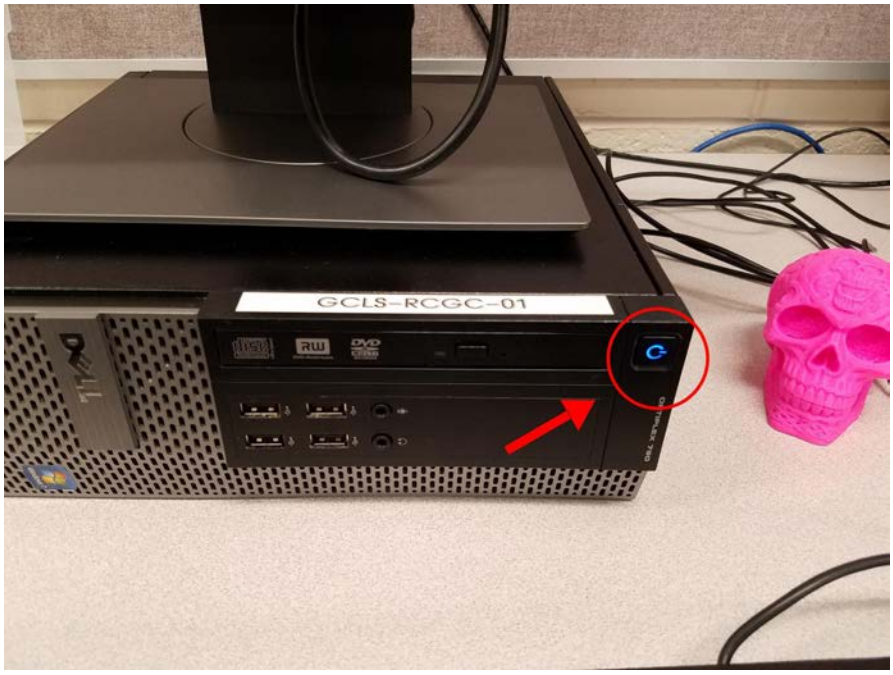
Safety Warning

During the course of normal operation of the Replicator+ a couple potentials for injury will arise. The extruder (or print nozzle) will reach temperatures of around 230 C (446 F). The extruder and other metal parts nearby will cause burns if care is not taken. The Replicator+ also has several “pinch points”. While the Replicator+ is printing the user should never place their hands or other body parts inside the machine. Long hair or dangling attire over the printer may also become snagged in the printer’s moving parts. Please be sure to work cautiously and ask staff for assistance if you are unsure on operating procedures. At any time the printer can be paused by using the MakerBot Print software or the Replicator+’s onboard controls. When in doubt, ask.

Copyright Notice

Loading and Unloading Filament

1. Turn on computer connected to the MakerBot Replicator+ (if not on already).

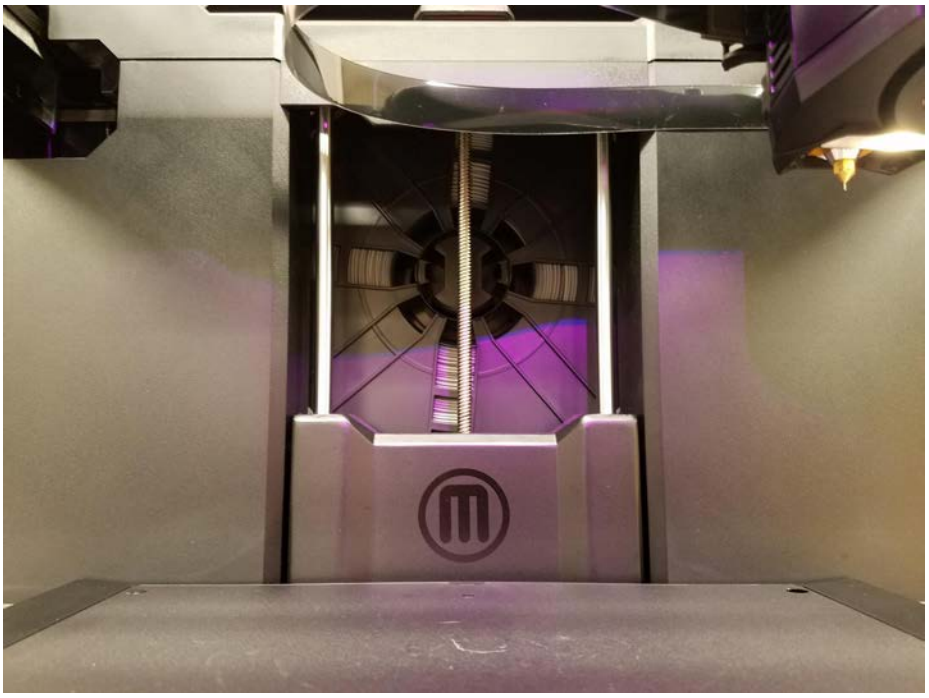


2. Locate power switch in the bottom rear of the MakerBot Replicator+ and turn on (if not on already).

3. Changing Filament: The easiest way to change the filament for your MakerBot Replicator+ is to use the control panel on the front of the

machine. The large dial to the right of the display is also your main button.

Please note If filament is already in the printer as seen below, follow this step. If the printer is already empty of filament, skip to **step X**.



On the **control panel**, select **Filament > Unload Filament.**

The Smart Extruder+ will now start to heat up. Remove the filament from the extruder only when prompted by the control panel. Attempting to remove the filament prematurely will damage the machine.

4. Open the filament drawer by pushing down on the tab in the photo below and pulling up on the drawer.

5. Once lifted up as shown in the photo below, the drawer will stay in place.

6. Now, unload the filament by rotation filament spool clockwise. Be sure to grab ahold of the end of the filament (as seen below). While holding onto the spool and the end of the filament, gently pull the spool towards you to remove from the machine.

7. Now, place the end of the filament into one of the four sets of holes on the outside of the filament to prevent unwinding. First use the closest hole of the set and then the furthest as shown in the photo below.

8. We are now ready to place the new spool of filament into the filament drawer. If the drawer is closed refer to **Step 4** on how to open. Be sure to align the spool so that the filament feeds out clockwise and into the guide tube (the white tube).

9. Trim the end of the filament (if needed) so that there is a clean edge. Begin feeding the filament into the guide tube. Continue feeding until an inch or so of filament is sticking out of the end of the guide tube nearest the extruder (as shown).

10. On the front control panel select **Filament > Load Filament**. The printer may need to heat back up again. Once the printer is ready the onboard display will prompt you to insert the filament into the top of the extruder. Follow the on screen display for instructions.

11. Once your filament is extruding you should cancel the operation by pressing the button (dial). *Please note* if you are changing from one color to another, you will see the original color extruding first and then your new color. Wait until your color is extruding before cancelling loading.

12. Now, close the filament drawer gently (do not let it drop). Make sure the guide tube is snugly tucked into the top of the extruder.

13. Be sure to double check that the build plate is empty and properly secured, your filament is loaded correctly, and that there are no foreign objects inside the printers area of operation.

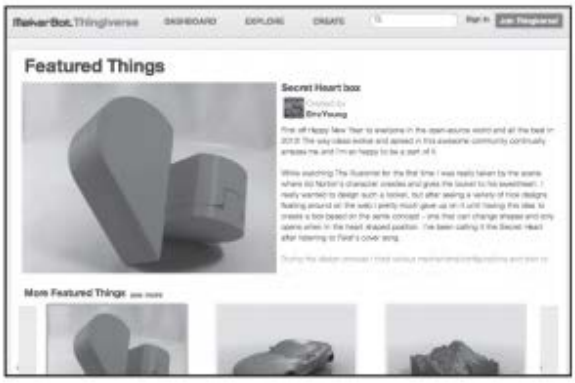
LOADING AND PRINTING A FILE

1. You can print a design of your own creation, or find many free designs online at a site like **Thingiverse.com** or **myminifactory.com**. These are sites where members of the 3D Printing community share designs out with other users. Thingiverse has a wide selection, but does not guarantee the printability of everything on the site. Myminifactory has a more limited selection, but vets every design for printability. In the next steps, we'll use Thingiverse to download a design. Open a web browser on the computer and visit: **http://www.thingiverse.com**

2 Download an Object From MakerBot Thingiverse

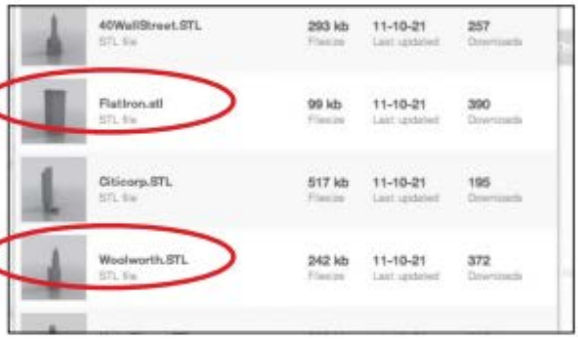
Thingiverse is a website where MakerBot users and others can share design files.

2a. Open a browser session and go to www.thingiverse.com. Use the search field at the upper right to search for "Minimalist NYC buildings." Your search results should include "Minimalist NYC buildings by JonMonaghan." Click on the link.



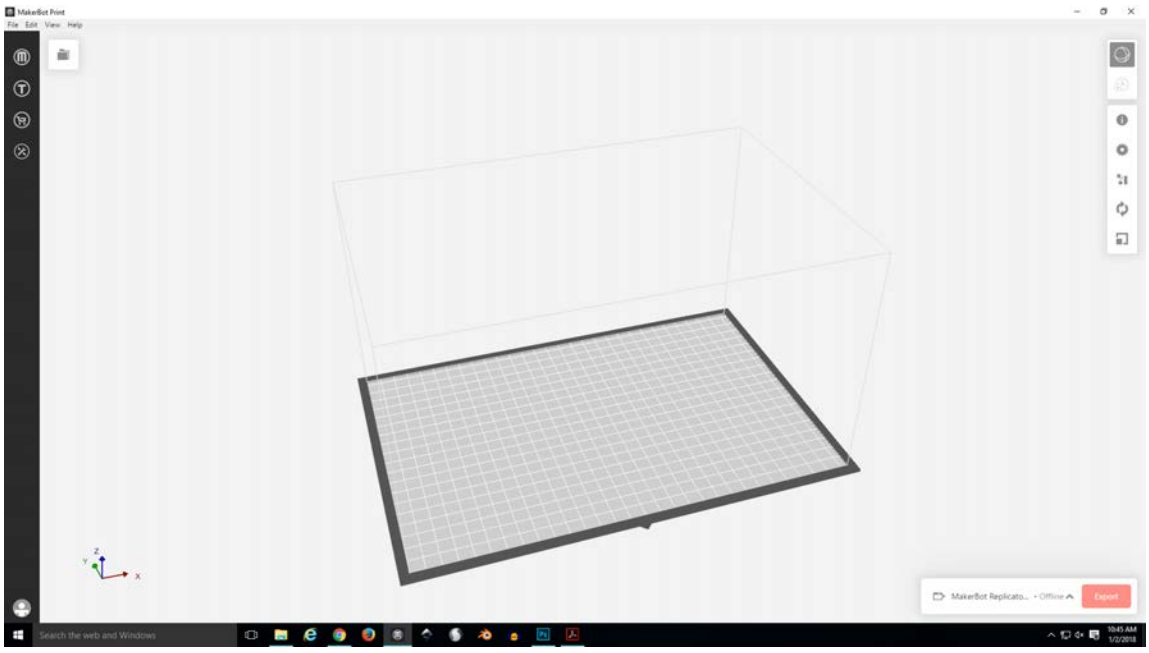
2b. At the right of the page you will see a button that says "Download This Thing!" Click this button to open the Downloads window.

2c. For this example we chose the Flatiron Building and the Woolworth Building. Find "FlatIron.stl" and "Woolworth.stl" in the list of available downloads and click the file names to save them to your computer.



3. Open **MakerBot Print Software** located on the desktop of the computer.

Once open, you should see this screen:



CHOOSING A 3D MODEL

Every 3D print starts with a 3D model. If you want to print a 3D model you designed yourself, export it from your 3D modeling application in a compatible format. You can also download 3D models on Thingiverse®.

To open an object from your local computer, open the Project Panel, click **Add Models**, and navigate to the location of the saved file. Select the file and click **Open** to import it into MakerBot Print. You can also click **File > Insert File** to import the object into MakerBot Print. Once a model has been added, it is available to be used on your build plate.

File

- Allows you to create new projects, open/save projects, insert/import files, and access system preferences.
- If you have a multi-file STL assembly, select **File > Insert STL Files Assembled.**

Edit

- Allows you to undo an action, redo an action, as well as, copy and paste objects.

View

- Allows you to view your model from an array of 2D views, 3D views, and multiple perspectives.

Help

- Enables Help with MakerBot Print and allows you to check for updates.

Login Account

- Log into your MakerBot account. You can also switch to a different MakerBot account.

Explore MakerBot

- Log in with your MakerBot account to find technical support for your 3D printer as well as access the MakerBot store to purchase the materials necessary for your printing needs.

Explore Thingiverse

- From MakerBot Print, you can navigate out to Thingiverse for exploring hundreds of thousands of free 3D printable files.

Export

- Export your 3D model to a .makerbot file, which is the product of a sliced 3D file that creates the instructions for your 3D printer to follow. These instructions create your 3D object.

Print

- The print option is only available when MakerBot Print is connected to a 3D printer.

Project Panel

- Click the Project Panel to import models into MakerBot Print.
- The heading shows the name of the project. To rename the project, select **File>Save Project As...**
- You can also create multiple build plates to manage large build projects. Under Build Plates, click the **+** button to insert another build plate.

- To delete a build plate, right-click the build plate preview and select **Delete Build Plate**. Models that were on the deleted build plate become hidden, but they are not deleted.

Model View

- Prepare and arrange your 3D models on the build plate.
- Click and hold the right mouse button and move the mouse to be able to view your model from any angle.
- Press and hold the **Shift** key and the right mouse button together to move the build plate in space.
- Zoom using a trackpad or the scroll wheel on your mouse.

Print Preview

- Slices the 3D model into layers so that you can view the path the Smart Extruder+ tool will make while printing the model.
- **Play Preview** shows all the layers that make up the sliced model and animates them. Play preview shows you how your 3D model will be printed before any printing is even done.
- **Layer Range** allows you to view sliced the model up to a certain layer. You can slice the model and view all layers, up to a certain layer, a single layer, a single layer with one layer above and a single layer with one layer below.
- **Select Layer** allows you to set which layer you would like to view up to.
- **Head Moves** the number of moves the extruder head makes in creating your 3D print.
- **Display** allows you to turn on or off certain information regarding the slice preview.

Select the **Model Material** checkbox to turn on or off viewing the rendering of your 3D model.
Select the **Support Material** checkbox to view the support structures that may be part of your 3D model.
Select the **Head Moves** checkbox to view the travel moves from a project. Travel moves are parts of the extruder path where the Smart Extruder+ moves without extruding any plastic.
Select the **Layer Highlight** checkbox to highlight the selected layer.
In Print Preview, drag the **Layer Slider** up and down to change the selected layer.
In Print Preview, drag the **Move Slider** left and right to change the selected tool path movement.

Model Info

- Allows you to change the units that your 3D model is measured in. You can cycle between mm, cm, m, in, and ft.

Print Settings

- Select **Extruder Type** to choose which type of extruder you are using. MakerBot Print will automatically detect the extruder type if already connected to a printer.
- Select **Layer Height** to set the thickness of your printed object's individual layers. A lower layer height will result in a smoother surface. An object with a higher layer height will print faster.
- Select **Shells** to set the number of outlines the extruder prints on each layer before printing the infill. More shells make an object stronger and heavier and increase print times.
- Adjust the Infill percentage to set the density of your printed object's internal support structure. A higher percentage will result in a heavier, stronger object.
- Select the **Supports** checkbox to print support structures on your model. MakerBot Print will automatically generate supports for any overhanging sections of your object. Supports will be easily removable once you detach your finished object from the build plate.
- Select the **Rafts** checkbox, which is selected by default, to have your 3D object printed on a raft. The raft acts as a base for your object and any support structures. It ensures that everything adheres well to the build plate. The raft will be easily removable once you detach your finished object from the build plate.

Arrange

- If there are multiple objects on the build plate, select the **Arrange Build Plate** to move the objects to the most optimal placement on the build plate.
- If there are multiple objects on the build plate and all of the objects can't fit on the original build plate, select **Arrange project** to arrange the objects to the most optimal placement on the build plate. Objects that can't be arranged on the original build plate will be moved to another build plate and arranged optimally as well.
- Use the right-click menu to copy, paste, hide, or delete your model from the build plate.

Adjust Orientation

- Select **Place Face on Build Plates** to lay your model flat on the build plate
- Rotate your model by 90 degrees or by a specific number of degrees along the x-, y-, or z-axis.

Adjust Scale

- Select **Uniform Scaling** to adjust the scale of your model equally along the x-, y-, or z-axis. Enter the percentage of how much you want your model scaled.
- De-select **Uniform Scaling** to scale the model by a specific amount along the x-, y-, or z-axis.

Printer Panel

- Select the 3D printer to be used with your project.
- Select the printer drop-down and **Add a Printer > Add a Network Printer** on your local network or **Add an Unconnected Printer** for exporting files.
- Once finished editing your 3D model, select **Export** to export your model into a sliced file or **Print** to print your file if it MakerBot Print is connected to a printer.

Export

- Export your 3D model to a .makerbot file.

Print

- The print option is only available when MakerBot Print is connected to a 3D printer.

SYSTEM PREFERENCES

If you want to change any system preferences before printing, click **File>System Preferences.** Here, you can specify options that will affect the quality of your printed object and MakerBot Print experience, like graphics quality and view manipulation.

Unit Controls

Select the default model unit that you wish to use when you insert a model into MakerBot Print.

Display Settings

Choose Low, Medium, or High resolution to specify the display resolution of the object in MakerBot Print.
Note: These resolution profiles only affect the object in screen preview. The printed model quality is not affected.

Warning Settings

Select the checkbox to allow warnings regarding graphic performance. This option will check to see if you are using an integrated graphics processor.

View Manipulation

Edit the default Zoom, Pan, and rotate button configurations.

Privacy

Select the checkboxes to automatically send anonymous usage statistics and personal statistics to MakerBot.

BEGINNING A PRINT WITH THE MAKERBOT REPLICATOR+

There are three ways in which you can begin your printing an object. You can use the MakerBot Mobile App, the control panel on the MakerBot Replicator+, and MakerBot Print.

When you are ready to print your model, click **Print** in MakerBot Print to slice the model using the current settings and send a .makerbot print file to your MakerBot Replicator+. You will be reminded to clear the build plate and asked to initiate the print on the control panel. You can also select **Begin Printing** on the control panel after starting the file transfer or tap Print on the MakerBot Mobile App.

If MakerBot Print is connected to your MakerBot Replicator+, the print file will be sent directly to your 3D printer. If MakerBot Print is not connected to your MakerBot Replicator+, this button will open a dialog allowing you to export and save a .makerbot print file. You can transfer the print file to your MakerBot Replicator+ using a USB drive. Click **Show Print Preview** in MakerBot Print to open a preview of the sliced model.

If you so choose, you can have your object printed on a raft. The raft acts as a base for your object and any support structures and ensures that everything adheres well to the build plate. The raft will be easily removable once you detach your finished object from the build plate.

HOW TO PAUSE OR CANCEL A PRINT

To pause a print, push the menu button on the MakerBot Replicator+ and select **Pause** with the dial. You can also select the printer in MakerBot Print and select **Pause.**

To cancel a print, push the menu button on the MakerBot Replicator+ and select **Cancel** with the dial. You can also select the printer in MakerBot Print and select **Cancel.**

TO ADD AN OFFLINE PRINTER

1. Open the printer panel and click Add a printer.
2. Select Add an Unconnected Printer and then click on MakerBot.
3. Select a printer, and the build plate will update to the appropriate size.

AFTER YOU PRINT

REMOVING THE PRINT FROM THE BUILD PLATE

When your print finishes, remove the flexible build plate from the MakerBot Replicator+. Remove the print from the build plate by simply bending the flexible build plate. The print will peel off the smooth grip surface. Peel the raft off of the bottom of the print, if you printed the object with a raft. When you have removed the print from the build plate, make sure to clean the build plate of any debris before reloading the build plate into the MakerBot Replicator+.

Note: When you bend the flexible build plate, some pieces of the raft may remain on the plate. Simply bend the flex build plate again or use a flat, non-sharp tool to remove the raft pieces. Never use a knife to remove pieces of the raft. You can damage the build plate.