Loading or Changing Filaments

Change or load a new filament on the MakerGear M2.

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INTRODUCTION

Follow this tutorial by itself, or refer to it after completing Step 4 of the MakerGear M2 Basic Printing tutorial.

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**TOOLS:**
- Wire cutters (1)

**PARTS:**
- 3D Printer Filament (1)
Step 1 — Heat the extruder head

- Click on the gear icon to open the Control Panel.
- Select COM4 as the port, and ensure a baud rate of 115200.
- Press "Connect".

If you have trouble connecting to the printer or COM4 does not appear in the dropdown menu, please review step 3 of the Basic Printing tutorial, and then press "Refresh". If you still encounter issues, please see the Lab Director or a Maker-E Technician.

- Set the extruder head temperature to 215° C.
- Press "On" and wait for the extruder to heat to the set temperature. You can monitor the current temperature of the extruder to the right of the set temperature.
Step 2 — Retract filament from printer head

- Once the temperature of the extruder nozzle has reached 215˚ C, navigate to the "Jog Controls" tab.

- Press "-100" in the "Retract" column to begin removing the filament loaded in the printhead.

- Only 50 mm of filament stays inside the printhead mechanism at any time. Thus, this step can also be accomplished by retracting the filament 10 mm at a time.

- Pull the filament completely out of the printhead.

Step 3 — Remove old filament spool

- Remove the bolt, plastic collar, and filament spool from the steel tube.
Step 4 — Get a new spool of filament

- Extra filament spools can be found in the cabinets underneath the laser cutter and above the Shark Rocket.
- There are a number of colors of PLA filament in stock. If you would like to see another color, please ask the Lab Director.

Step 5 — Put on new filament spool

- Use wire cutters to clip off roughly an inch from the end of the new spool (i.e., past the "teeth marks"). Doing so will prevent the filament from getting jammed in the printhead.

⚠️ Please pay attention to the previous bullet point. **If the filament becomes jammed, the extruder will have to be disassembled.**

- Place the new spool of filament on the steel tube, replace the plastic collar, and lock the collar in place with the bolt.

- In preparation for the next step, place the spool on the steel rod, orienting the filament to point toward you from the bottom of the spool. (The descriptive decal will face to the right.)
Step 6 — Feed new filament into the printer head

- Let out a bit of filament from the spool.
- Twist clockwise so that the end fits into the small hole in the orange acrylic.
  
  If you put the spool on the opposite way, it may be more difficult to guide the filament end down to the printhead.

- Press "100" under the "Extrude" column in the Machine Control Panel.

- Guide the filament down into the printhead, and push gently on the filament. It may take some maneuvering of the filament for the motor gears to get a proper grip.

- Keep the motor extruding filament until you see melted filament coming out of the heated nozzle at the bottom of the printhead.
Step 7 — Cleaning up

- With a pair of wire cutters (found in one of the top-right drawers of the yellow DeWalt cabinet), snip the end of the used filament spool.

- With the waste filament extruded from the previous step, put the waste filament and any other larger scraps into the cardboard box labelled "PLA Recycling".

⚠️ When removing extruded filament from the nozzle, be careful not to touch the nozzle!
Step 8 — Store old filament spool in cabinet

- Before storing the spool, tuck the end of the old filament into one of the holes on the edge of the spool.

The above action prevents stored filament from unraveling and getting tangled, which will cause problems with future prints.

- Place the old spool of filament in one of the blue cabinets, and you're done!