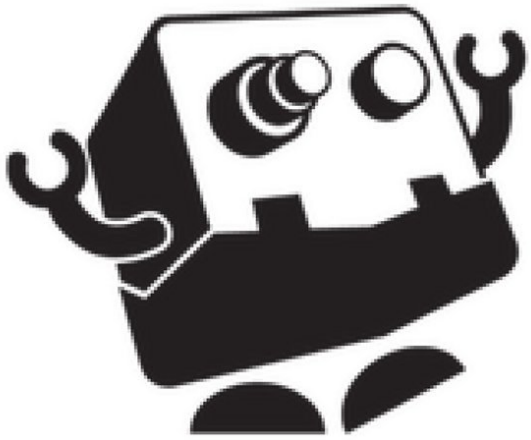
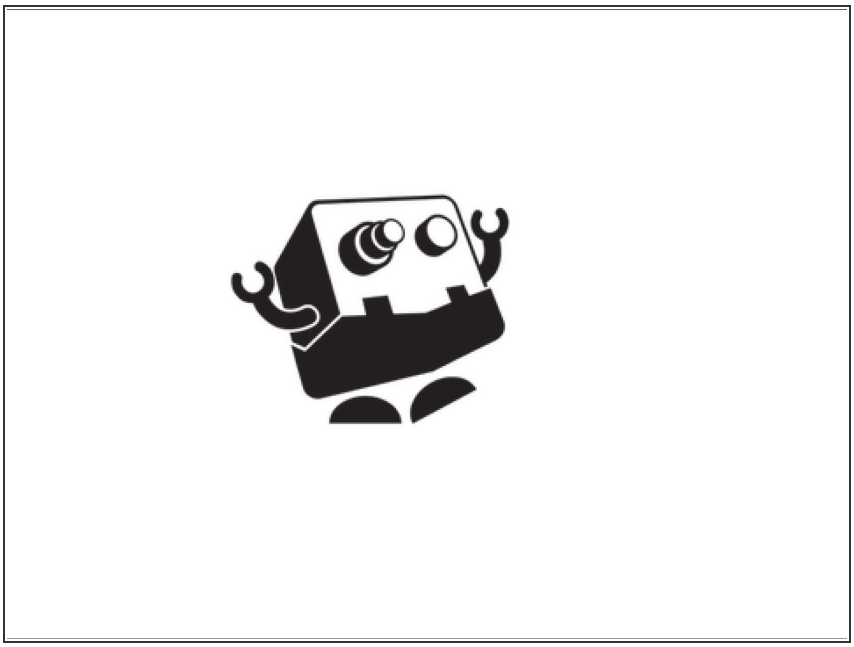
Laser Focus Fine Tuning

This guide will explain how to manually focus your Laser Attachment

Written By: BoXZY

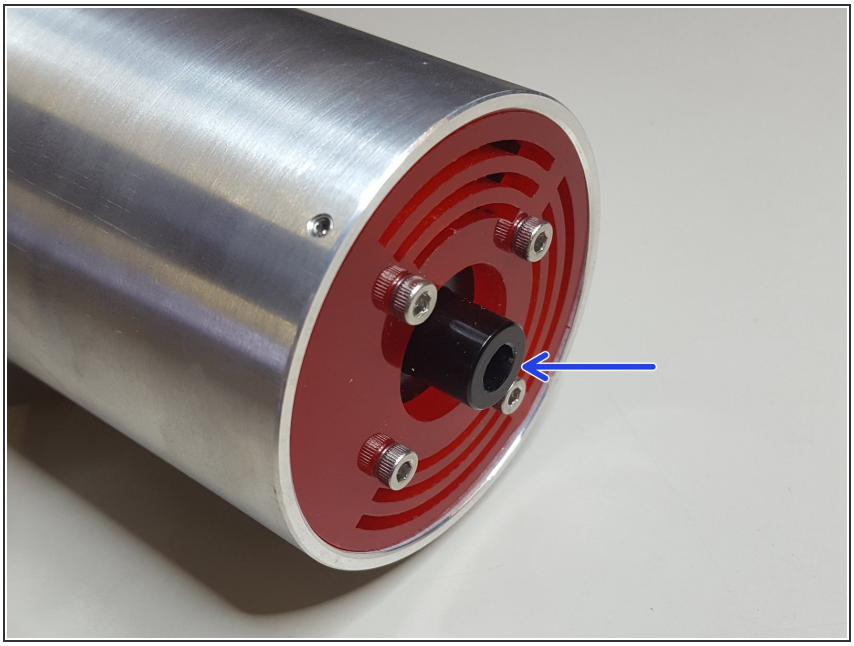


Step 1 — Laser Focusing: Part I



- **Remove** any *Attachments, Material or Clamps* in BoXZY
- **Select** the **Home All** button in the *BoXZY Interface Manual Control Tab*
  - **Insert** the **Leveling Platform** and level it, if it is not level already
- **Insert** the **Laser Attachment** into the *Attachment Mount*
  - **Connect** the **Wiring Harness** to the Laser Attachment

Step 2 — Laser Focusing: Part II

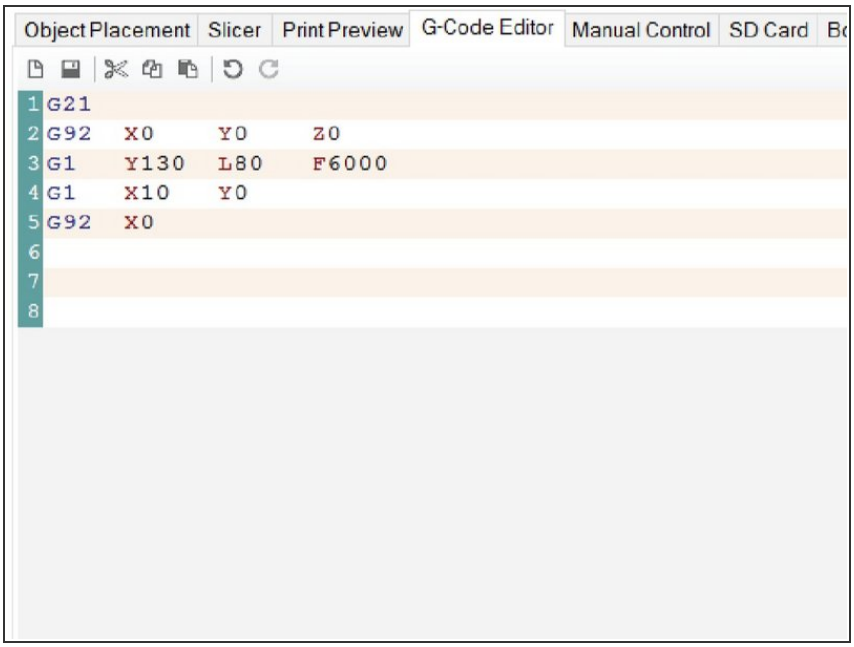


- At the **bottom** of the *Laser Attachment* you will see a **Focal Adjustment Knob** that the laser travels through
  - This knob can be turned, rotated, to fine tune the focal quality of the laser's surface contact point along a path

Do Not adjust the Focal Adjustment Knob before you see the quality of Etching it produces

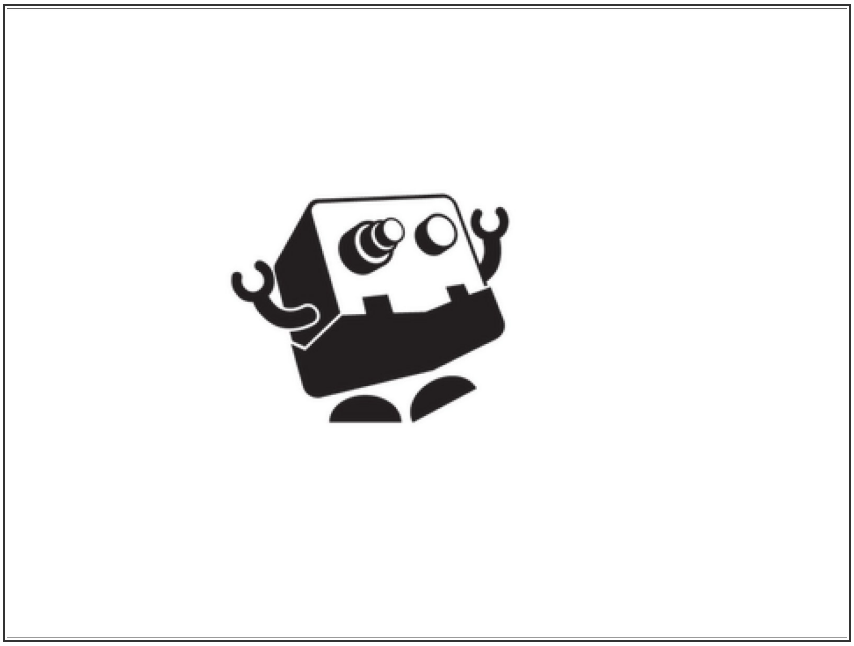
When turning the Focal Adjustment Knob keep track of which direction, clockwise or counter-clockwise, that you are turning it

Step 3 — Laser Focusing: Part III



- In the **BoXZY Interface** select the **G-Code Editor**
- **Enter** the **G-Code** you see in the image *exactly as it is*
- This test file will etch one line along the Y axis then move back to the Y starting position and move 10mm along the X axis and set that location as the 0,0,0 location
  - This G-Code will allow you to simply select **Print** after you adjust the *Focal Adjustment Knob*

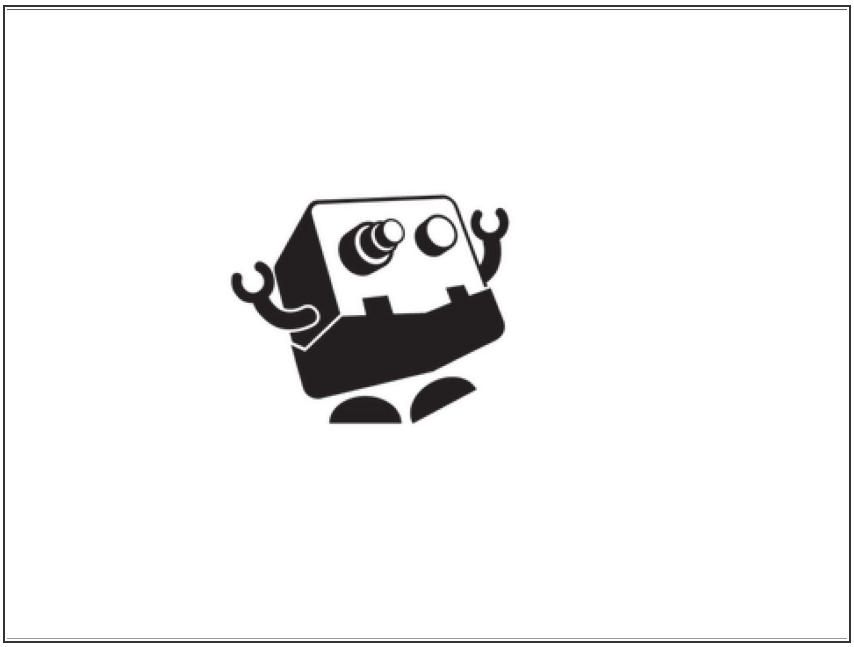
Step 4 — Laser Focusing: Part IV



- **Move** the *Z axis down (positive)* **50.7mm**, you can do this manually or by typing *G1 Z50.7* in the **G-Code Sender Line**
- **Measure** the thickness of a piece of cardboard and **place** it inside BoXZY on the *Leveling Platform*
- **Move** the *Z axis down (positive)* the thickness of the cardboard
  - The *Total Z distance* moved should be **50.7mm + the cardboard thickness**

You can also *Set* the **Focal Distance** by using the BoXZY Laser tab *Focus Panel*

Step 5 — Laser Etching: Part V



BoXZY should now be in it's Machine Home location for the X and Y axes and the Z axs should be at the correct Focal Distance

Wear your Laser Safety Glasses

- "Select **"Print**
  - The Laser will etch one single line
  - When the Laser is done moving adjust the Focal Adjustment Knob on the Laser Attachment by turning it either Clockwise or Counter Clockwise **1/8 of a full turn**
  - *Select* **Print** and repeat the last part off this step. Make sure you turn the Focal Adjustment Knob in the same direction
- We want to make a series of etched lines while incrementally turning the Focal Adjustment Knob for the full length of the BoXZY X axis

Step 6 — Laser Etching: Part VI

- **Send** the X and Y axis to their *Machine Home* positions
- **Repeat** the last step of this guide
  - This time turn the Focal Adjustment Know in the opposite direction until the Etched line looks ideal

The Laser Etched Lines will look different in person, compared to the Image shown