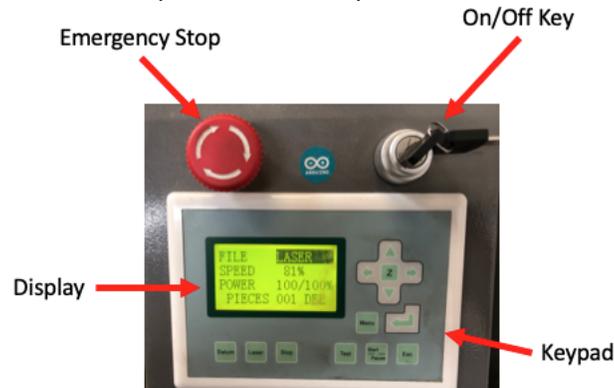




Operating the Big Laser

The big laser is a gantry type laser used for cutting and engraving of typically flat objects. The laser is operated by the control panel on the top front of the machine.



- Turn on the laser by rotating the On/Off key clockwise to the on position (~45°)
- The laser should boot up, the chiller and exhaust fan should turn on. If not, please stop and send an email to broken@hive13.org.
- Next, position your workpiece on the work table. Assure your workpiece will not get hit by the laser head. If your piece is thick you may need to shift the work area down by pressing “Z” and then the □ button on the keypad. Press “Z” again to return to the main menu.
- Press “Esc” and then move the laser head to a position above your workpiece by pressing the □□□□ buttons. The small red aiming laser dot can help guide you.
- Press “Z” to go into the Z menu. Assure the laser is over your workpiece and press the “Datum” key. The work area should move up and engage the red tip of the auto-Z probe. (It will be close to the exit port of the laser, might want to keep your hand over the E-stop in case the probe fails to stop the vertical travel). Once the probe is tripped, the work table will lower itself to a vertical position ~120mm from the focusing lens (the optimal Z for the smallest spot).
- Download your cut profile from the big laser computer into the laser. It should show up across from FILE on the display.
- Press “Test” to trace the outline of your cut job over the workpiece. This helps verify your workpiece is positioned correctly. If everything looks OK, press “Start”, and the laser will perform the job.
- Upon job completion, raise the cover and remove your workpiece.

Spot Size	Chart and Discussion																								
	<div data-bbox="574 310 1386 1087"> <table border="1"> <caption>Data points from the Spot Size Chart</caption> <thead> <tr> <th>Z Distance</th> <th>Spot Diameter</th> <th>Spot Area</th> </tr> </thead> <tbody> <tr> <td>-30</td> <td>~1.9</td> <td>~2.9</td> </tr> <tr> <td>-20</td> <td>~1.6</td> <td>~1.9</td> </tr> <tr> <td>-10</td> <td>~1.3</td> <td>~1.2</td> </tr> <tr> <td>0</td> <td>~1.0</td> <td>~0.6</td> </tr> <tr> <td>10</td> <td>~1.0</td> <td>~0.8</td> </tr> <tr> <td>20</td> <td>~1.5</td> <td>~1.8</td> </tr> <tr> <td>30</td> <td>~2.0</td> <td>~3.0</td> </tr> </tbody> </table> </div> <p data-bbox="574 1094 1386 1318"> As you vary the Z distance out of the focus plane, the laser spot gets larger. As the spot gets larger, the same laser power gets spread out over more area so the less work the laser can do on the material. Use the correct Z distance for the lens. </p>	Z Distance	Spot Diameter	Spot Area	-30	~1.9	~2.9	-20	~1.6	~1.9	-10	~1.3	~1.2	0	~1.0	~0.6	10	~1.0	~0.8	20	~1.5	~1.8	30	~2.0	~3.0
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