



Startup procedure...

Laser machine is expected to be powered off. The key switch is in the OFF position and the Emergency Stop button is pressed down.

Twist the key switch from “OFF” to the “ON” position.

Many laser machines are wired such that the lights can be “ON” while the emergency stop button is pressed in the not-safe position. This light can give you the opportunity to check the inside of the laser machine without worrying if the machine might move.

Open the main lid. 1) Check if there is any damage from a previous user. 2) Make sure that there isn't a cat or other animal that found a temporary place to sleep. 3) May need to convert the machine to use the rotary attachment or remove the rotary attachment. 4) Check what position is the table, laser head, and materials.

Release the emergency stop button by slightly twisting the button. The button should pop up. The “Emergency Stop Up” position is the “ok to power on the machine” position. With the key in the “ON” position also, the laser machine will power on.

The laser machine will take several seconds to completely power on. There are normal sounds, alarms, and boot screens that occur.

The operator panel will go through its boot process. The screen will show the startup message with the firmware number. This firmware number is for the operator pad only. That firmware number is NOT for the main motion controller. Once the operator pad has finished booting and is communicating with the motion controller, the display will show the file name, speed, and power settings.

- If the operator pad uses more than 10 seconds to completely turn, then it might have a communications problem with the main motion controller.

Test the operator pad by pressing the “right arrow” button. This will move the display cursor.

Test the machine movement by pressing the “Z down arrow”. This should move the worktable down.

Prepare to move the X and Y axis to the home position by ensuring that there are no objects that might block or hit the laser head. Press the “XY-0” button to reference the machine to the workable range. The button for referencing the axis could also be labelled as “Datum”.

- If the X and Y axis are not “datumed”, then the laser head could try to move beyond the travel limits. If the axis moves beyond the travel limit, then it can damage the belt, drop ball bearings from the pillow-block, or cause extreme vibration to tilt the mirrors out of proper beam alignment.

Use the X and Y arrow buttons to move the laser head to the front center of the laser machine. This will make it easier to test the auto-focus sensor.

It is a very good practice to test the auto-focus sensor each day. The wires to the auto-focus device undergo a lot of movement and they are the most likely of all wires to break from continuous bending.

- Test the auto-focus sensor by holding the switch in the “activated” position. Use your other hand to press the “Z up arrow”. The panel might beep, but the Z table should not go up.
- Release the auto-focus sensor switch and just test the work table ability to move up and down. Press the “Z up arrow” button to make the table go up. Press the “Z down arrow” to make the table go down.
- Test the auto-focus feature. Have your left hand ready to actuate the sensor switch. Use your right hand to press the “Z-0” button. As the work table is moving up, use your hand to actuate the auto-focus sensor switch. The worktable should stop going up. The worktable should move down. The laser motion controller tracks the distance of movement and should stop when it has reached the Z offset value. This automated position puts the focal lens at the proper distance from the material surface. The lens is ready to fire the laser beam with the focal point at the surface of the material. (Since you used your hand to actuate the sensor, it isn't really focused onto any proper surface).
- If the worktable doesn't stop moving when you press the auto-focus sensor... Something is going wrong. Press the “Stop” button or the big “Emergency Stop” button. The worktable could continue to move up and would damage many laser machine parts.

If you have changed the machine to use the rotary (or removed the rotary attachment), you will need to use the LaserCut software to download the correct machine configuration.

- Open LaserCut software. Make sure you are using the correct software version and “machine option parameters”.
- Press the “Download” button.
- Press the “Download CFG” to transfer the software’s configuration settings to the laser machine.
- If you have downloaded new settings, then it is a good practice to “Datum” the laser axis to the home reference position again.

@@The laser machine should be ready to run your projects.

How to turn the laser machine off...

- Press the “Emergency Stop” button or twist the key switch to “OFF” position.

Notes:

- Do not leave the machine unattended while the laser is active.
- Do not turn the power off and on quickly. The rush of electrical current can damage the power supplies.
- If your laser beam alignment is correct, then it should not matter where you cut/engrave the material. Some laser users prefer to put all projects in the back-left corner. Some users prefer to align all projects to the front-left corner. I like to put all my work in the middle of the table.
- If you find that a new project isn't working correctly, then try to run a project that you have confidence as working correctly. Do not immediately blame the laser machine. The laser machine can act improperly if:
 - 1) The laser machine has a bad communication with the computer,
 - 2) The AC voltage is wrong or fluctuating,
 - 3) The laser machine has encountered a power spike,
 - 4) The laser machine was recently moved and the frame is slightly twisted,
 - 5) The laser beam alignment is incorrect,
 - 6) The lenses or mirrors are dirty (carbon dust, sap, acrylic fumes, glass dust, oil, water vapor)
 - 7) The laser power is diminished because the mirrors are oxidized.