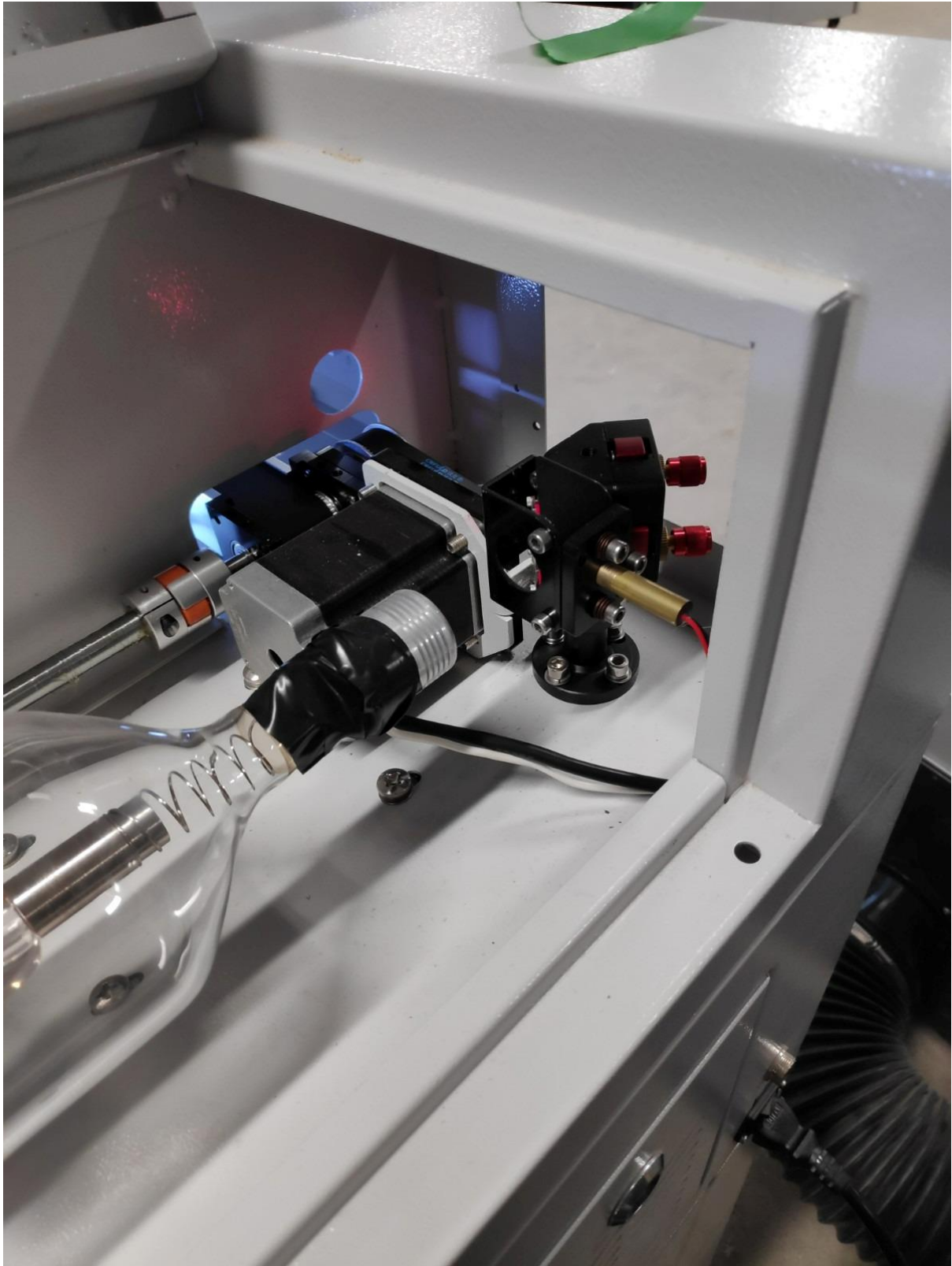


Mirror alignment is a crucial skill to learn when owning a CNC laser. It can depict the cut quality immensely. It is a fairly long and tedious process the first time you go through it but it's a great skill to have.

Keep in mind, we suggest using 2 pieces (or more) of **PAINTERS TAPE** stuck to each other. Numerous pieces help keep flare up from the pulses down.

First we can test the pulse from the laser tube, to make sure that it is pulsing close to the center of the Mirror 1 housing.

(this may not be necessary for your machine if the Mirror 1 housing is close to in line with your laser tube)

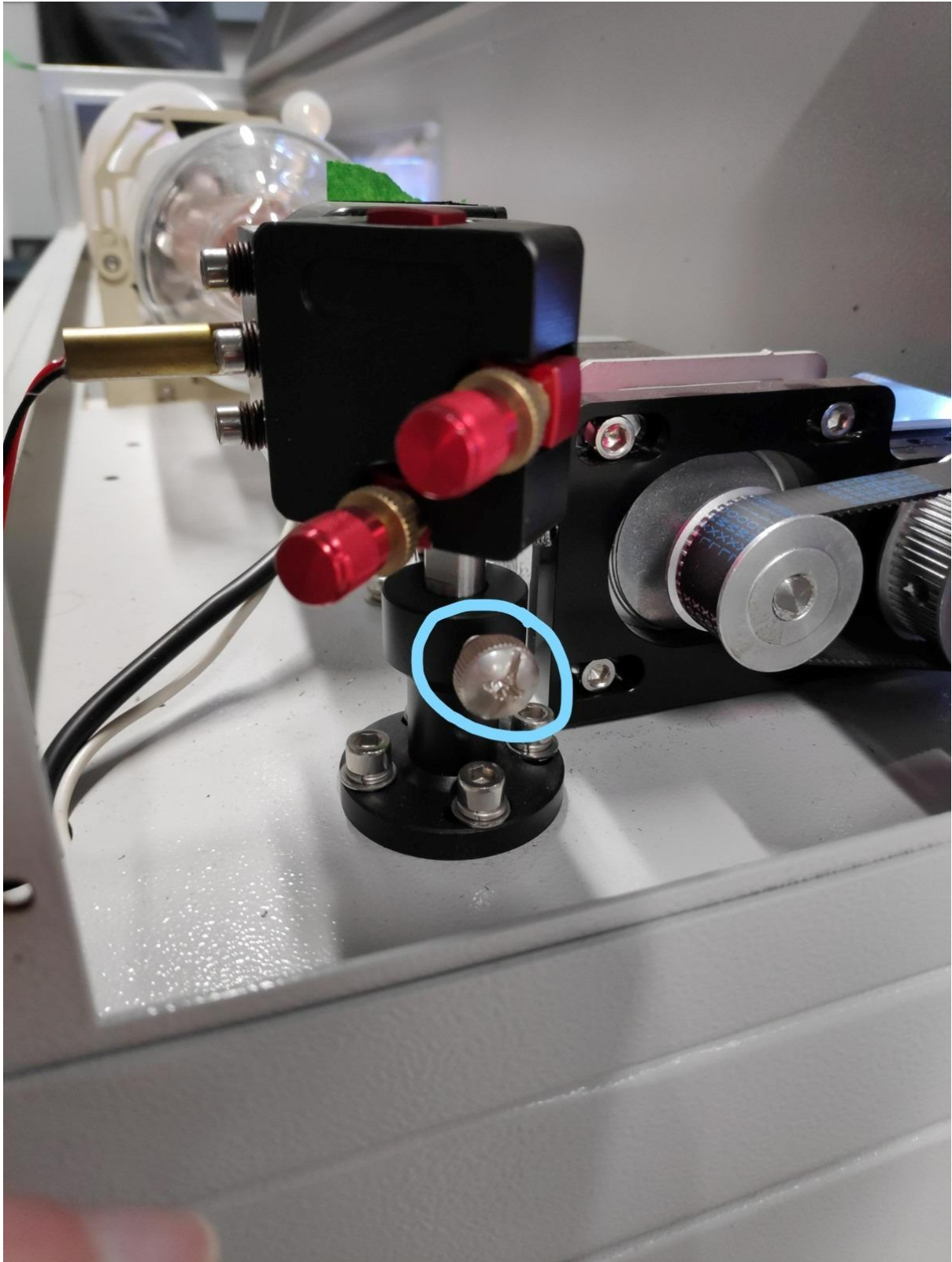


Here we can see the red dot light (beam combiner) is showing the laser is closely aligned in the center of the Mirror 1 housing (**this may not be necessary for your machine if the Mirror 1 housing is close to in line with your laser tube**) :



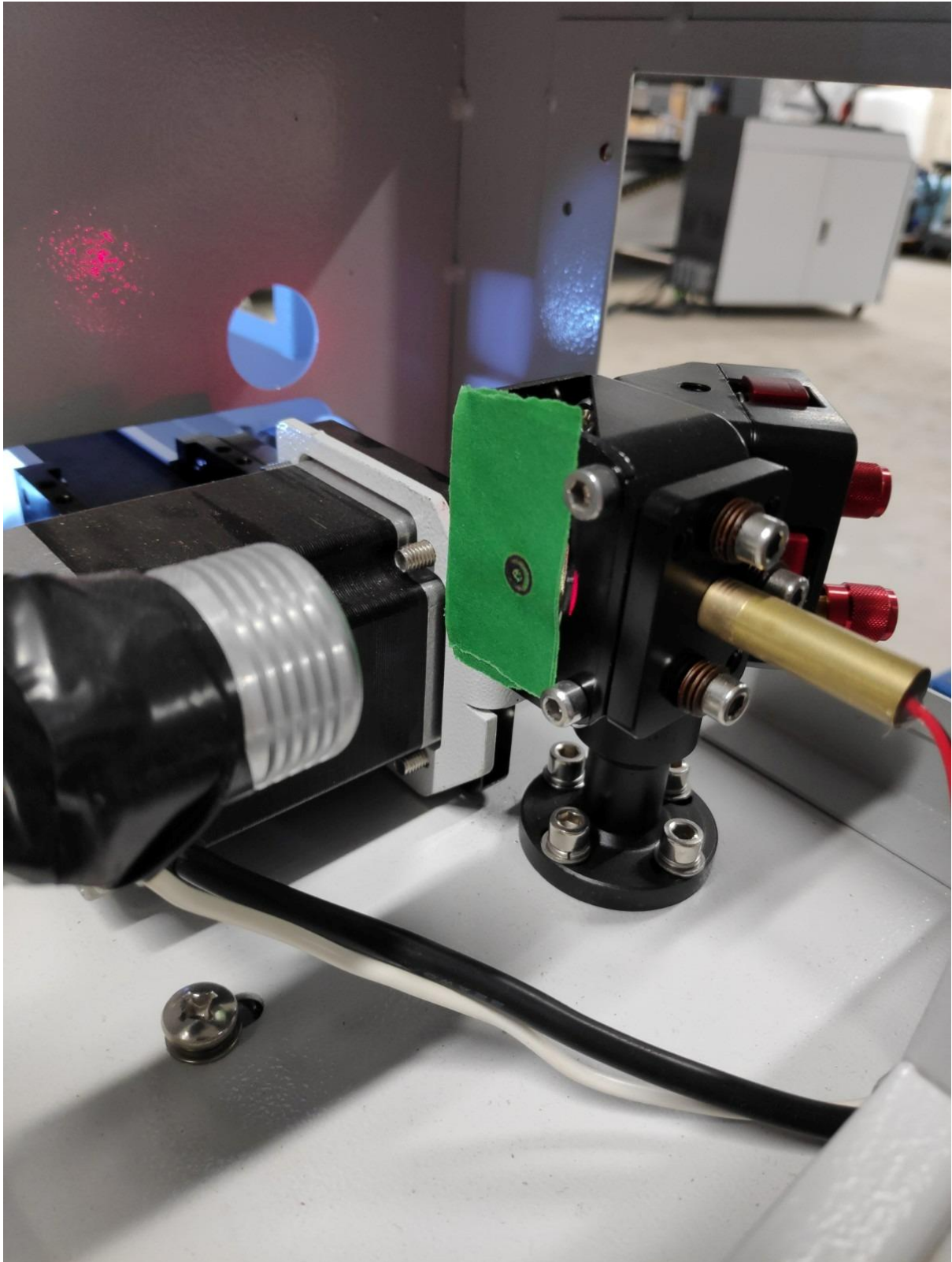
If you need to move the Mirror 1 housing left or right, or up and down to get the pulse to be in the center of this housing, you can loosen this thumb screw (circled in light blue) **(this may not be necessary for your machine if the Mirror 1 housing is close to**

in line with your laser tube)):

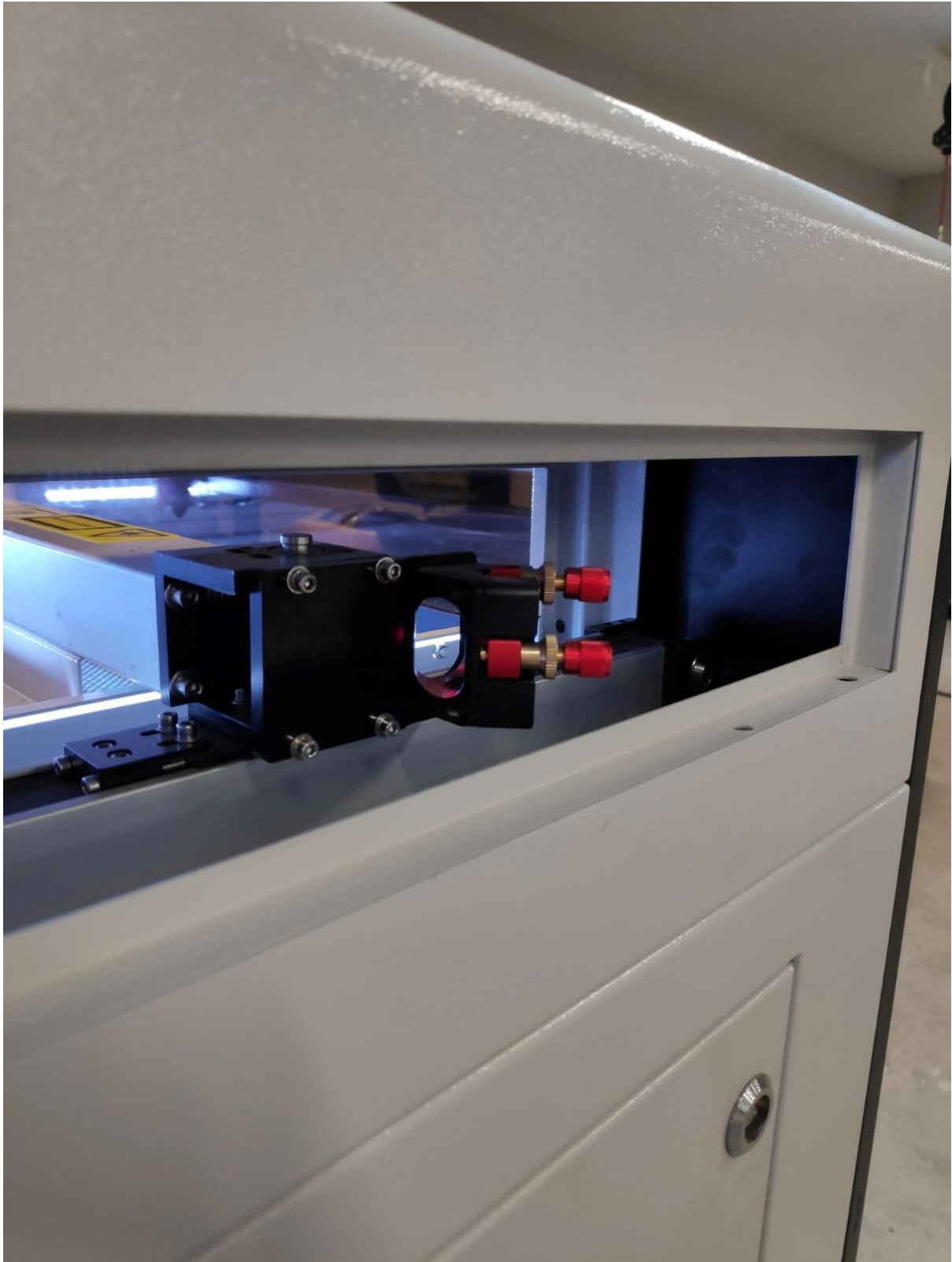


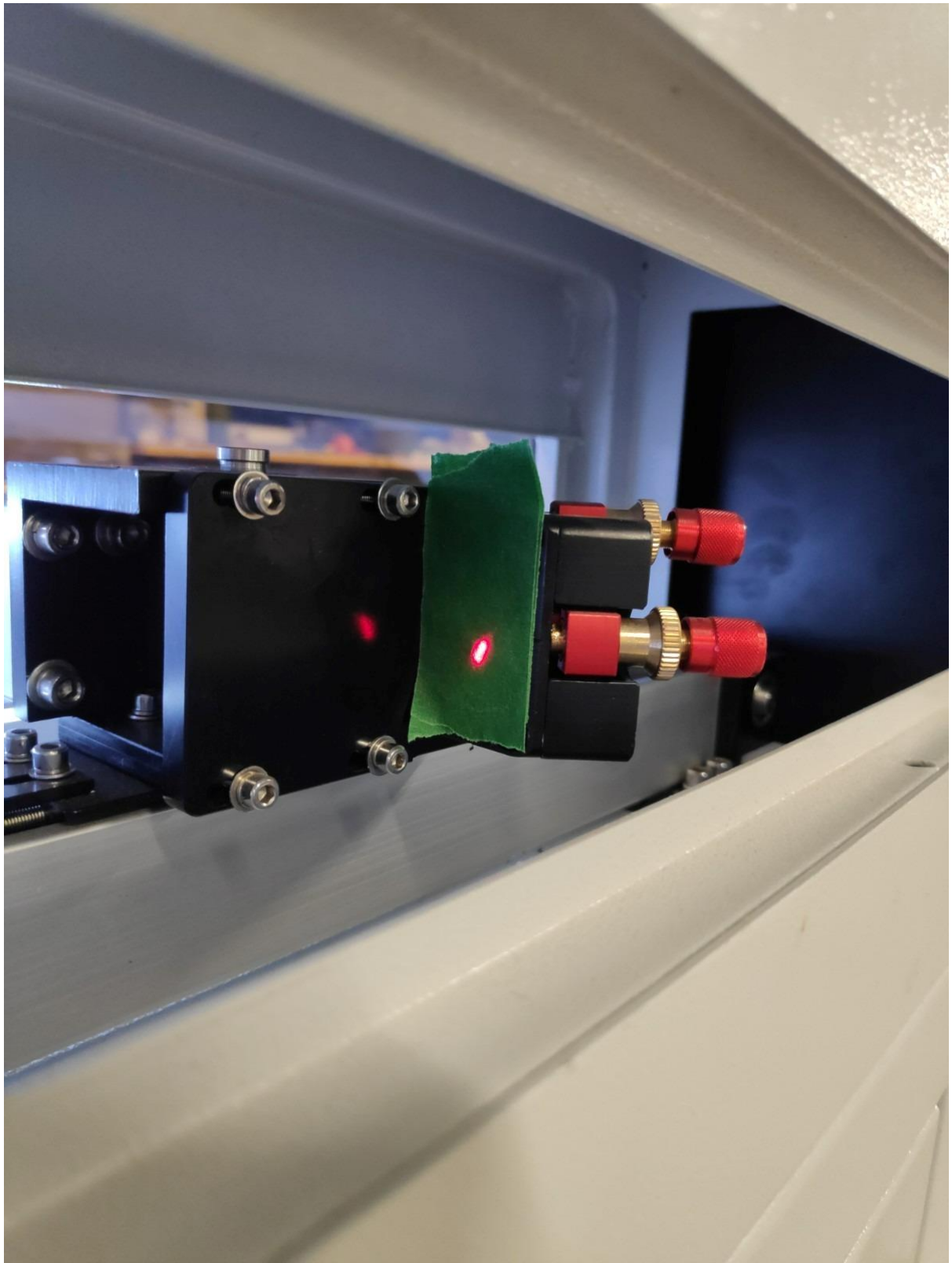
We do a quick pulse and can see the laser tube creates a good pulse (**this may not be necessary for your machine if the Mirror 1 housing is close to in line with your laser**

tube) :



Next, jog the gantry to the front so that we can put tape on the mirror housing:

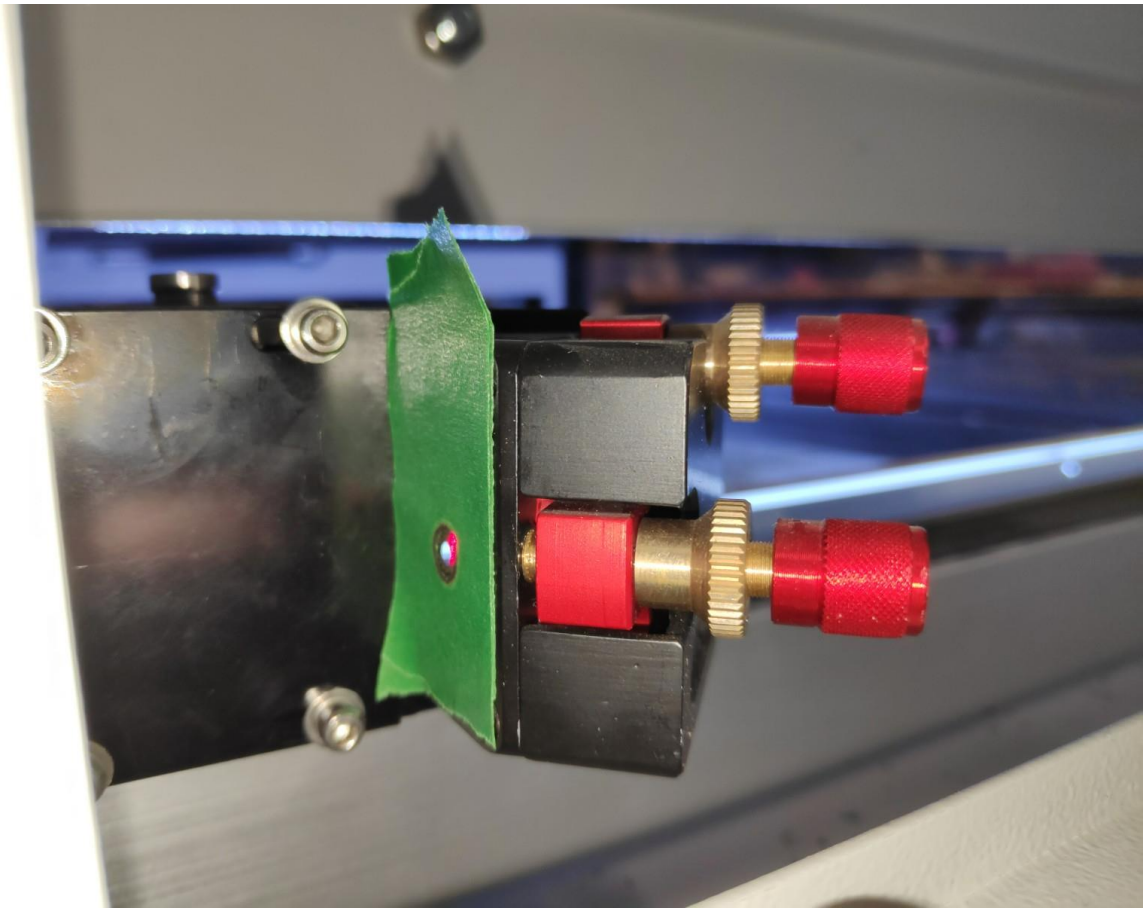




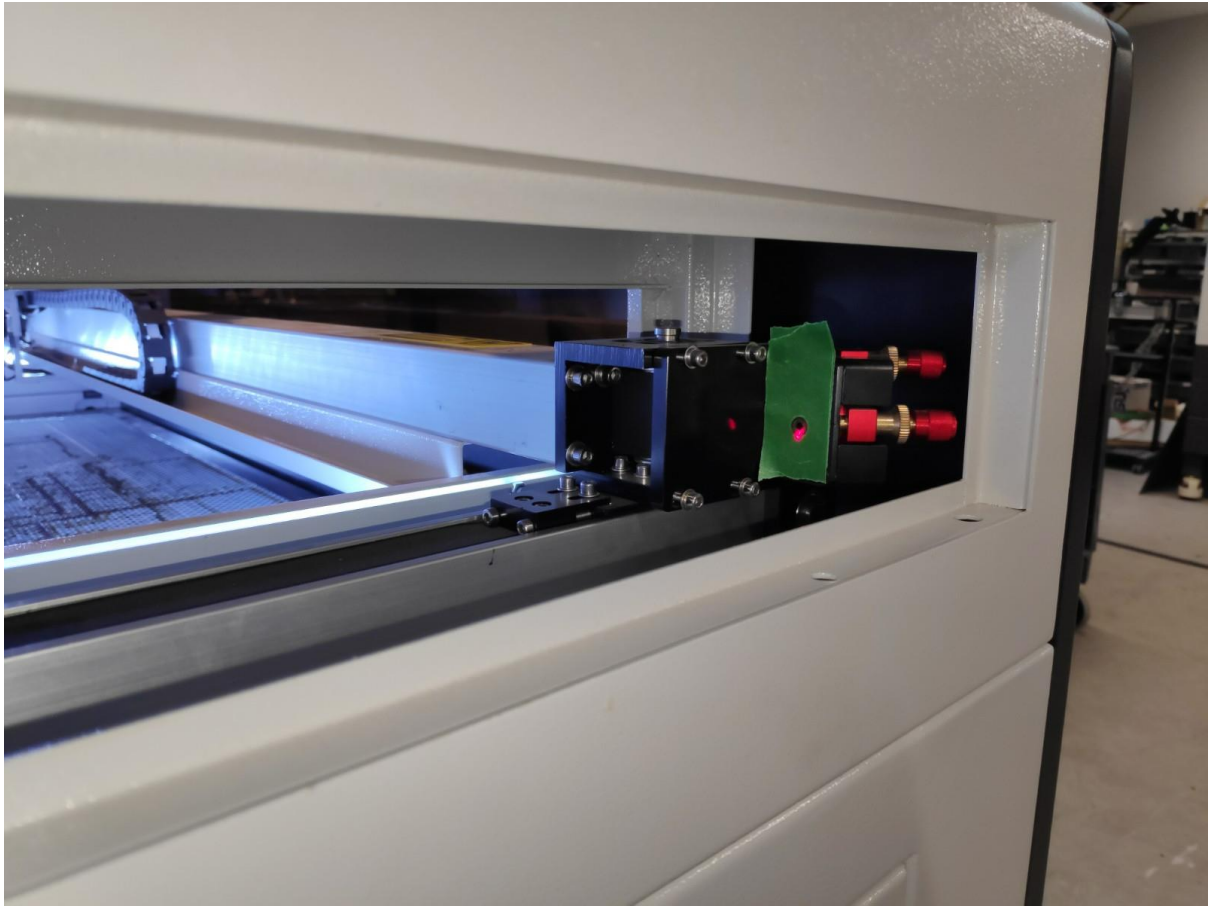
Once the tape has been installed on Mirror 2 housing, jog the gantry all the way to the back and pulse the laser:



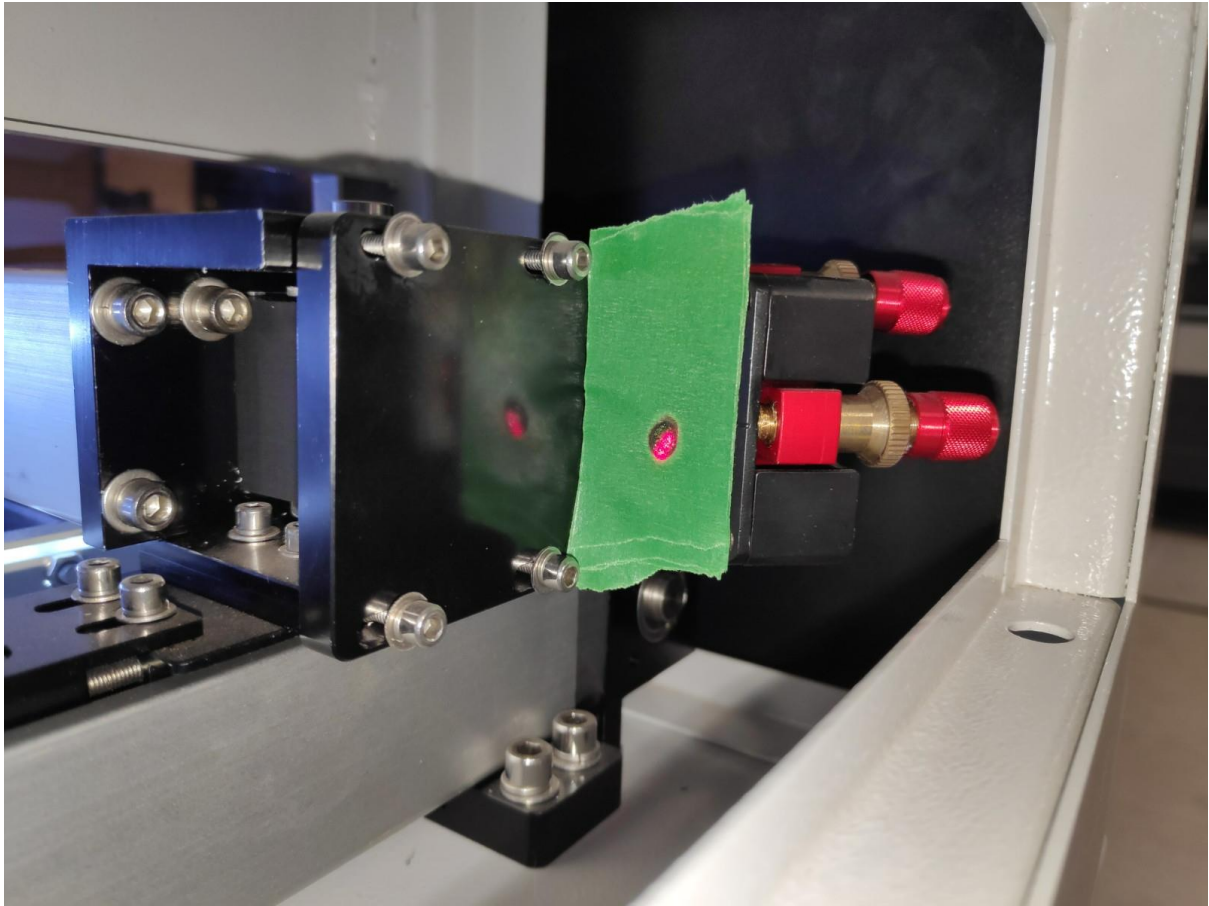
Note where the first pulse hole is located on the painters tape:



Jog the gantry all the way to the front and then pulse again through the first pulsed hole:



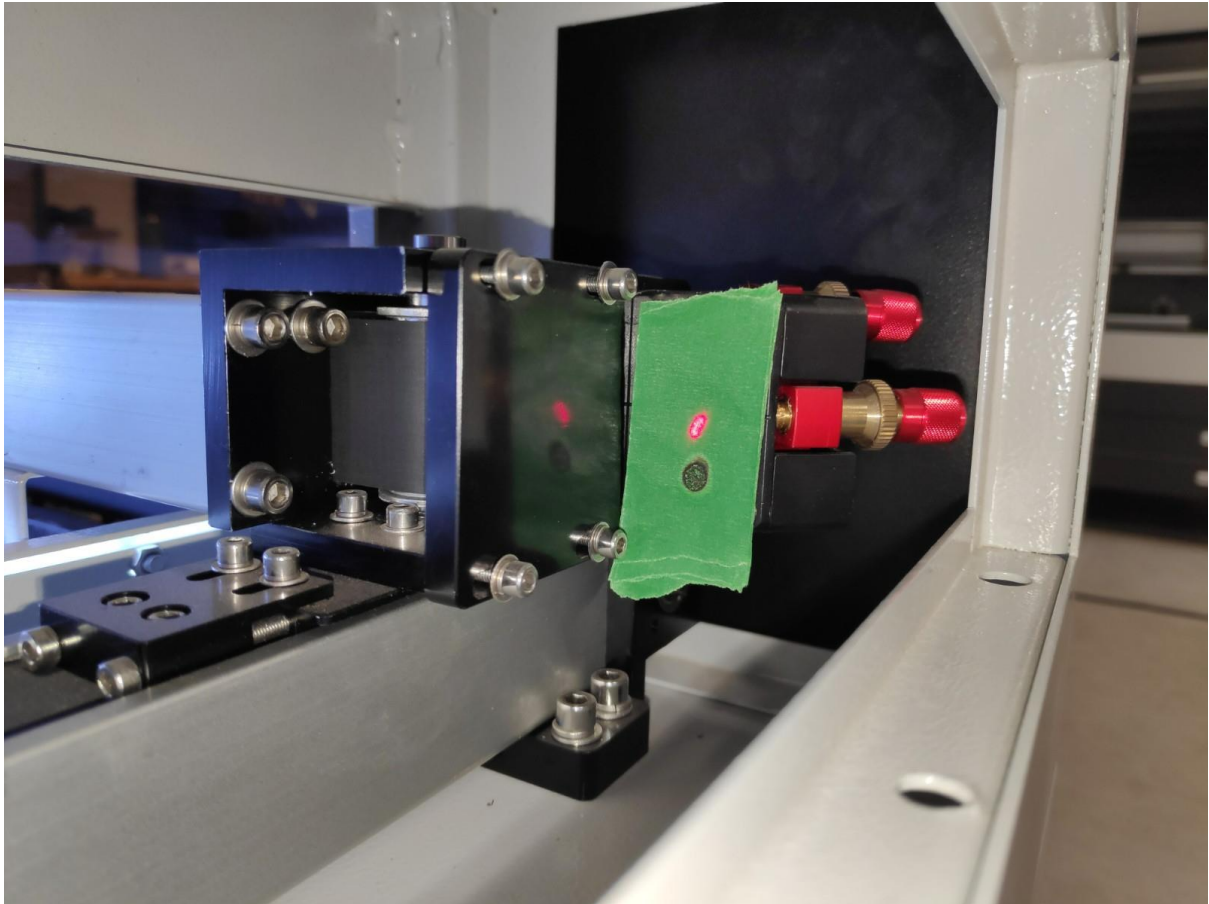
Compare the 1st and 2nd pulse holes to see if the 2nd pulse hole goes through the 1st perfectly.



If not, please make adjustments to the Mirror 1 housing. Loosen the brass jam nuts and then turn the red thumb screws to adjust the mirror alignment on the Mirror 1 housing. Look at the red dot light (beam combiner) on the Mirror 2 housing painters tape while adjusting the thumb screws on the Mirror 1 housing.



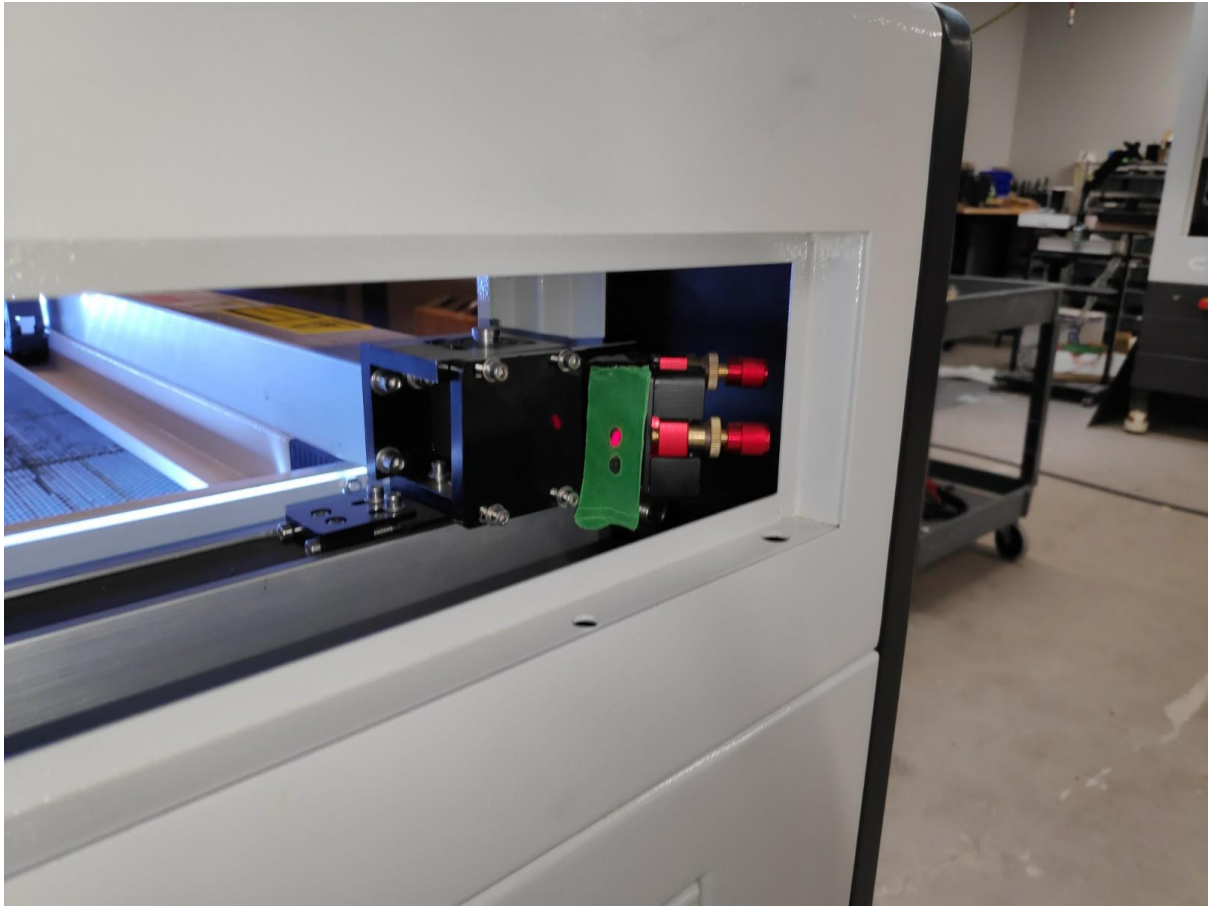
Once you have made your necessary adjustments, move the painters tape to a new spot so that you can pulse again:



Jog the gantry all the way to the back and pulse the laser:



Jog the gantry to the front and pulse the laser:

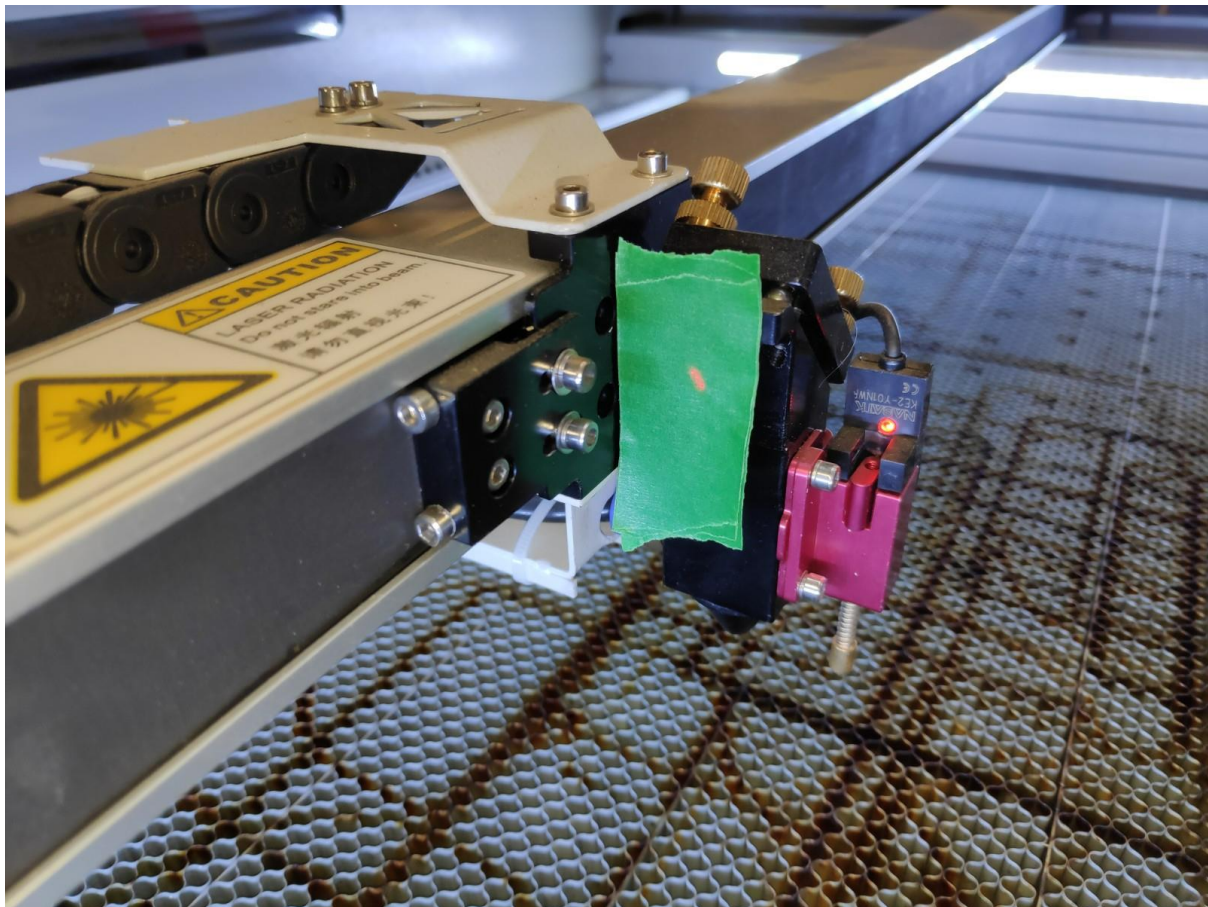


Check the 2nd round of pulses to compare if your adjustments are now spot on. Here we can see our 2nd pulse session is great compared to our 1st. The Mirror 1 housing is

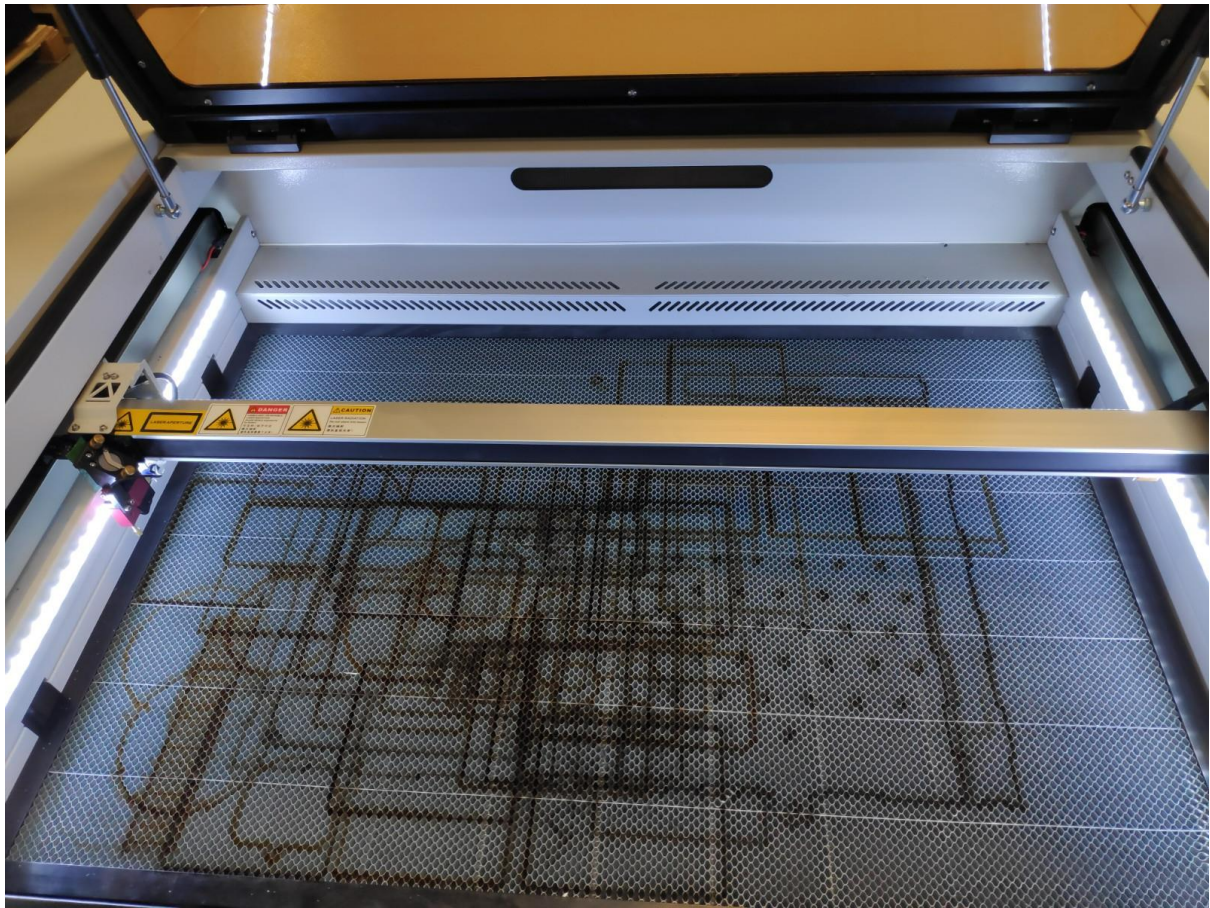
now aligned. Re-tighten the brass jam nuts on Mirror 1 housing.



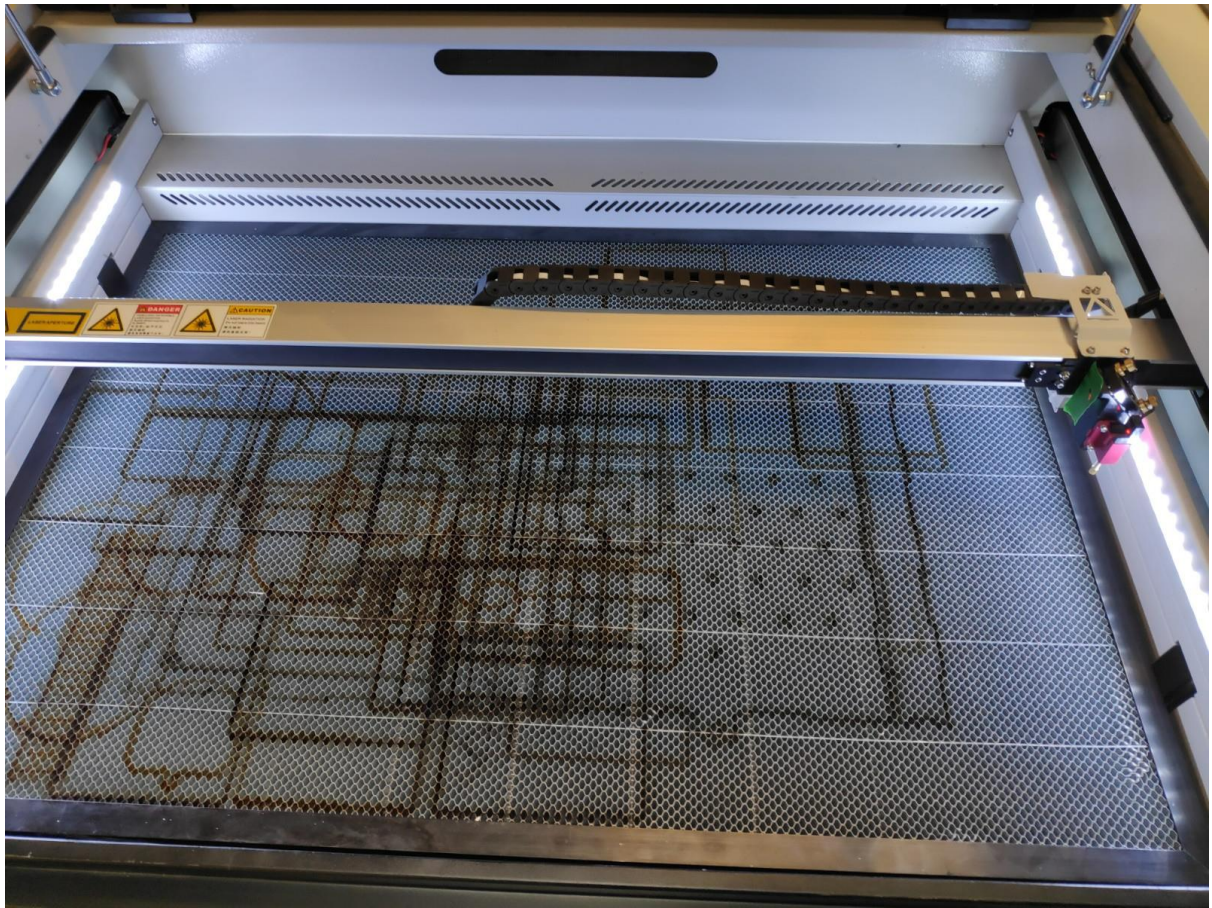
Put painter tape on the Mirror 3 housing.



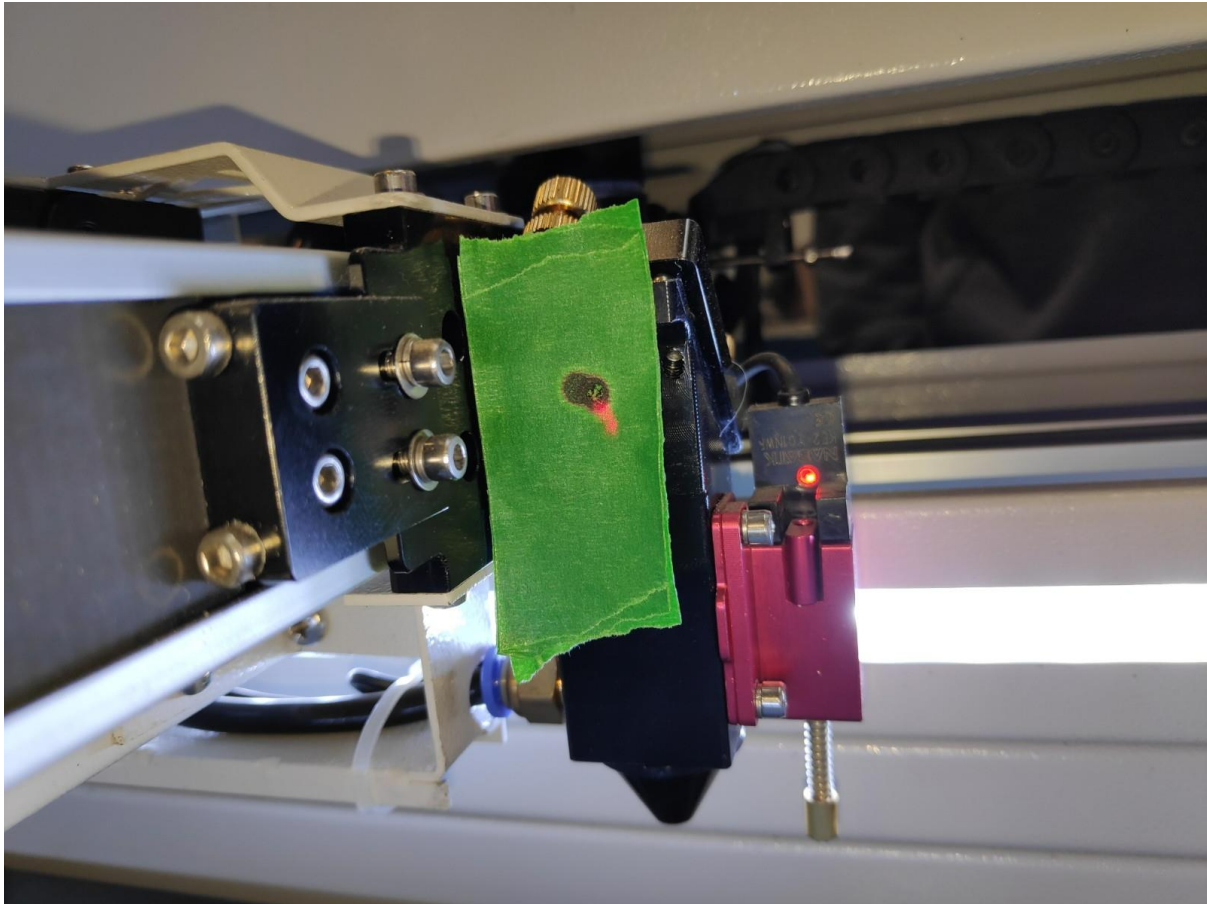
Jog the gantry to the middle of the table and to the far left. Pulse the laser:



Jog the gantry to the far right. Pulse the laser:



Look at the 2 pulses and see if they line up (in this picture, they do not):

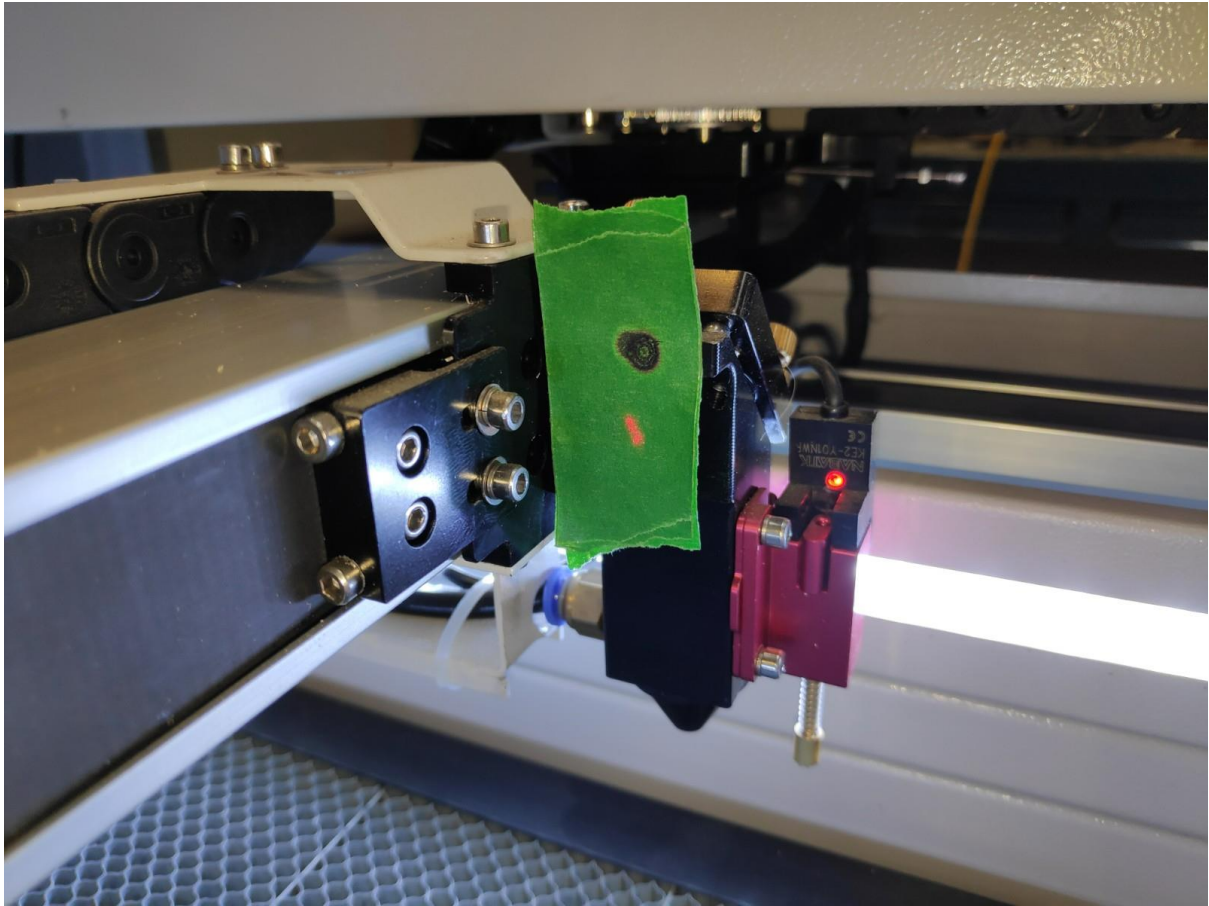


Make note of where the red dot light (beam combiner) needs to be move to align the pulses, loosen the brass jam nuts and adjust the red adjustment thumb screws on the

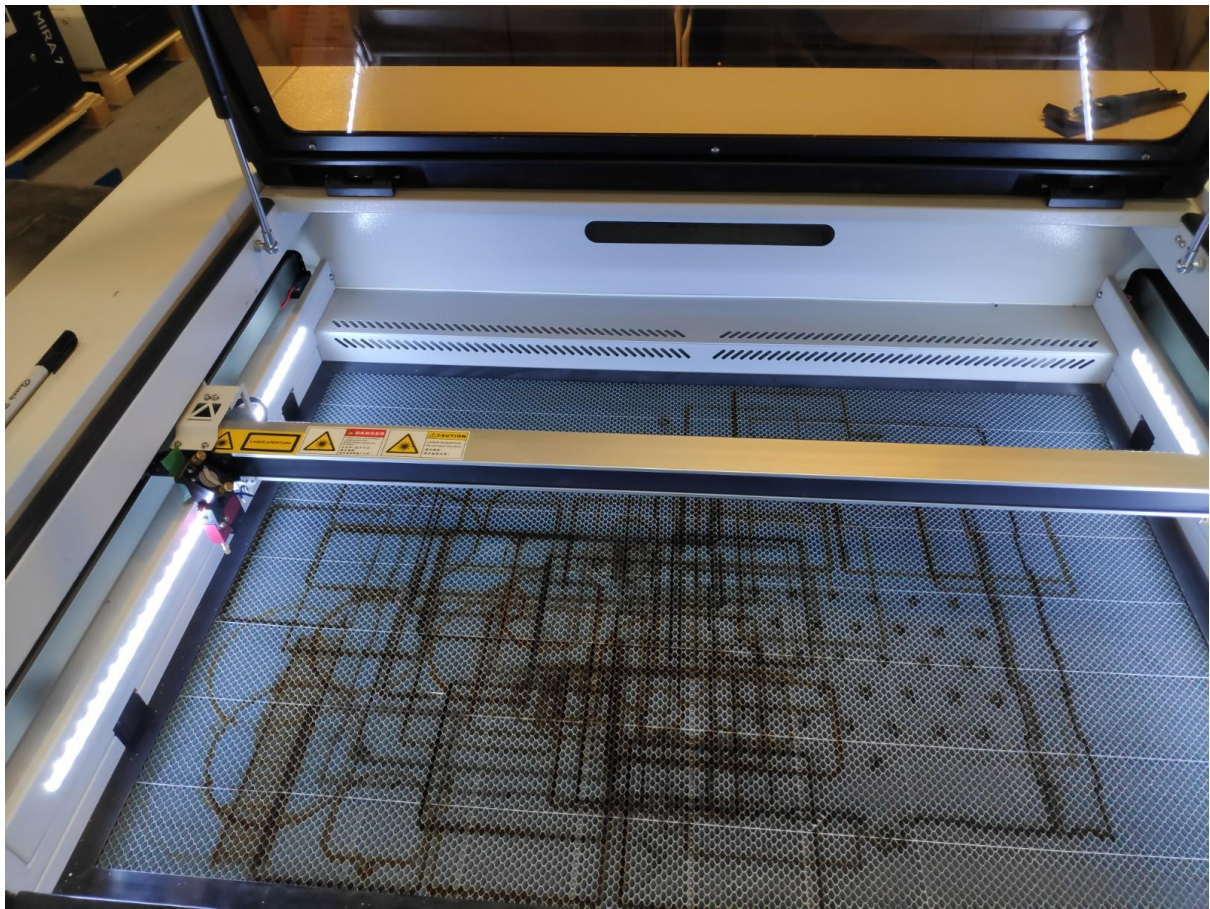
Mirror 2 housing:

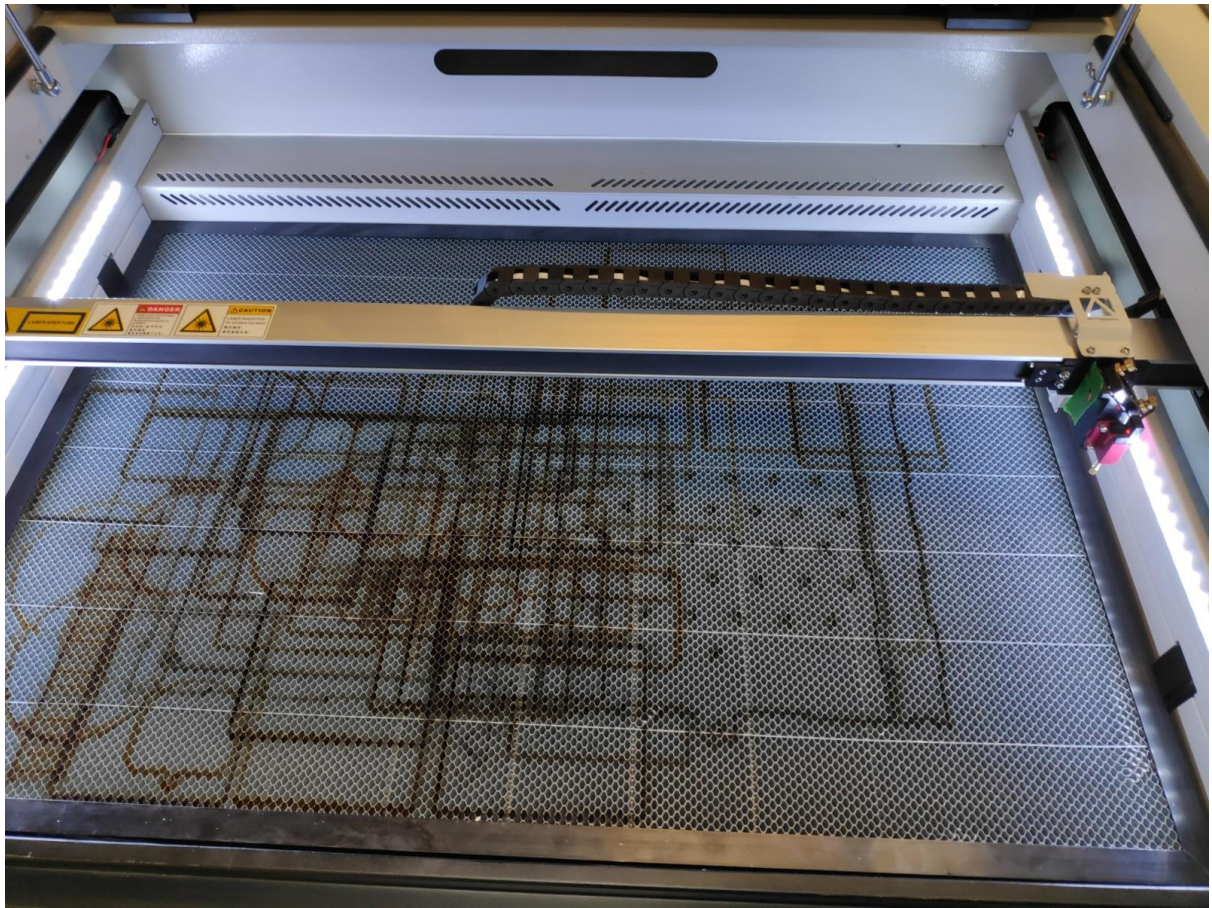


Move the tape on the Mirror 3 housing to a new location so that we can pulse again:

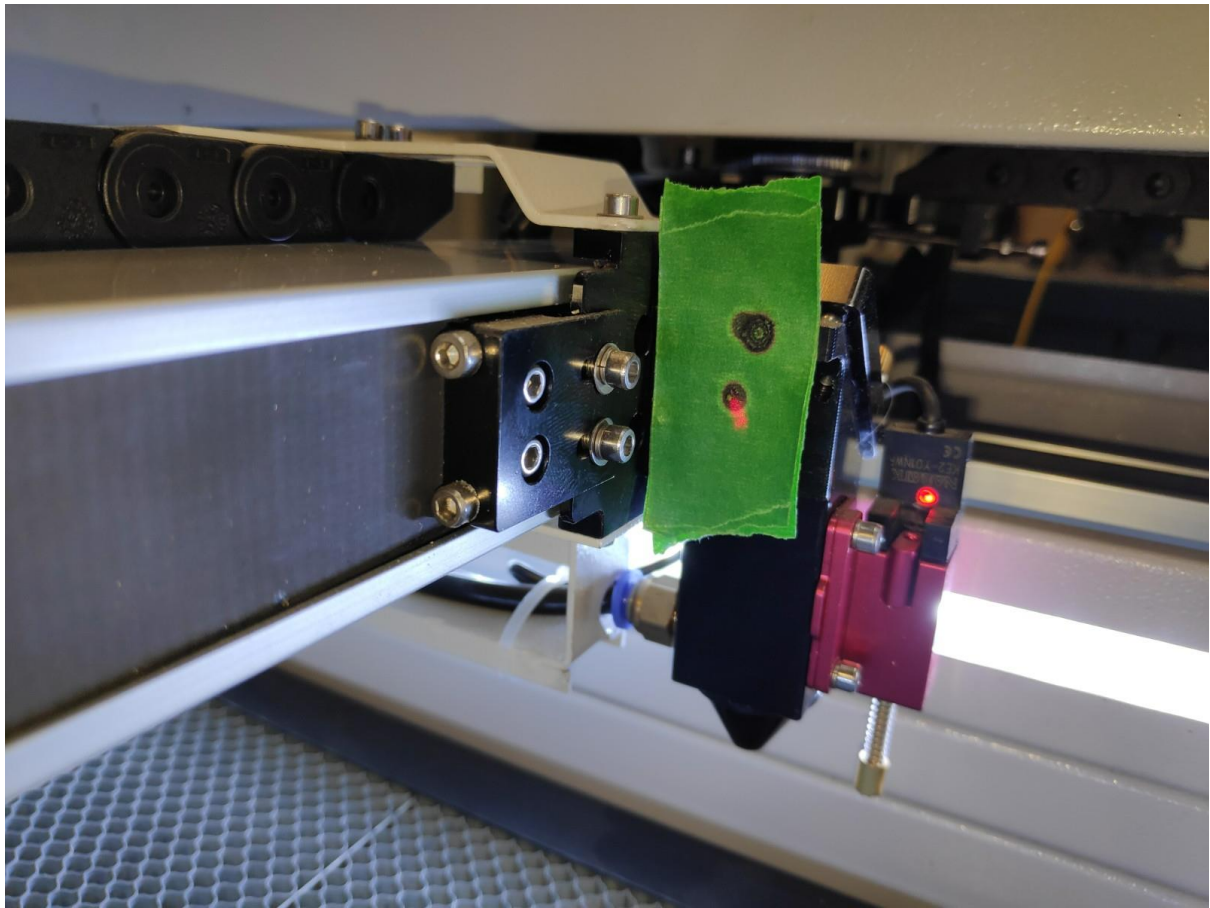


Redo the 1st and 2nd pulse:

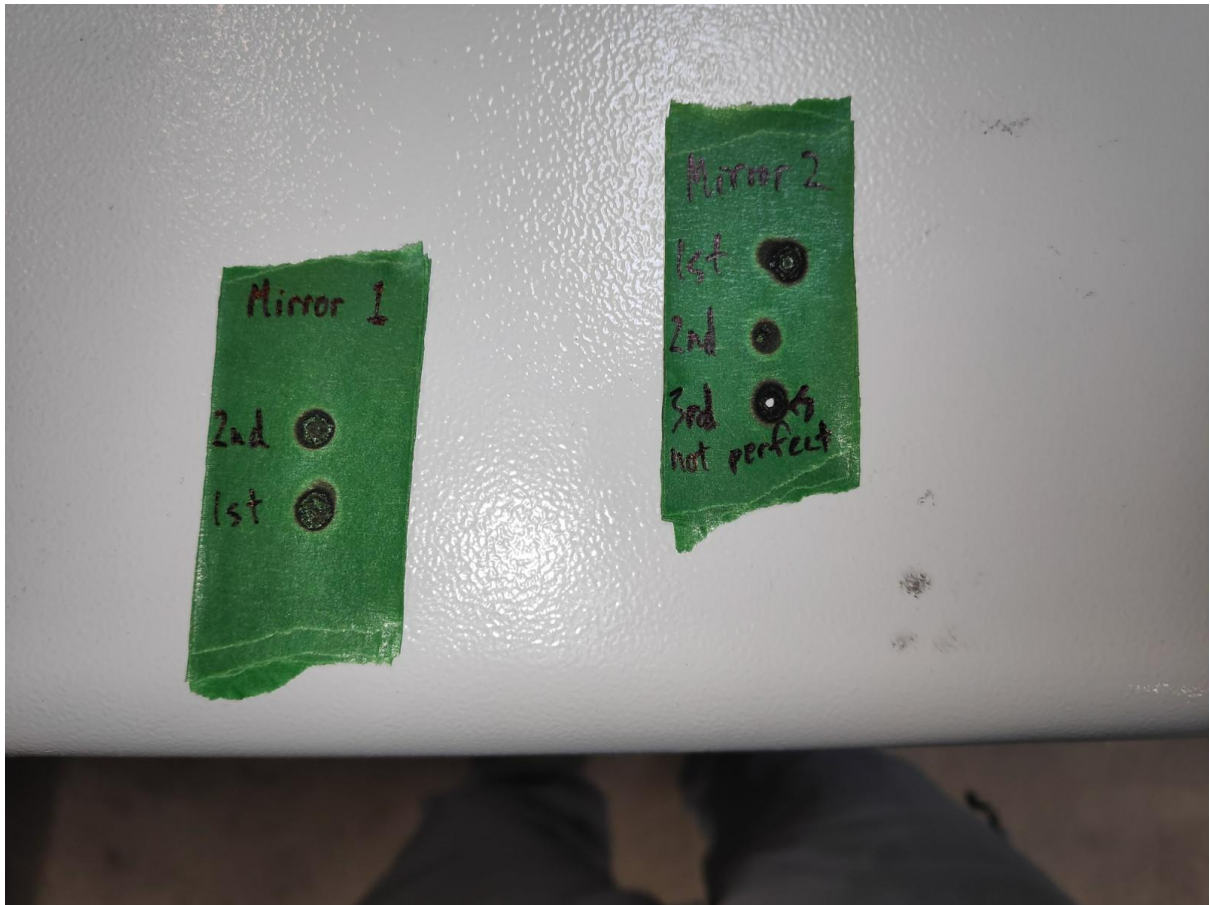




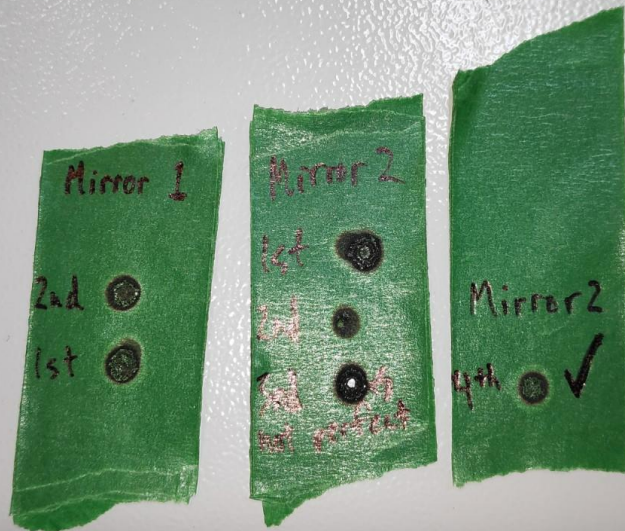
Compare the 2nd round of pulses:



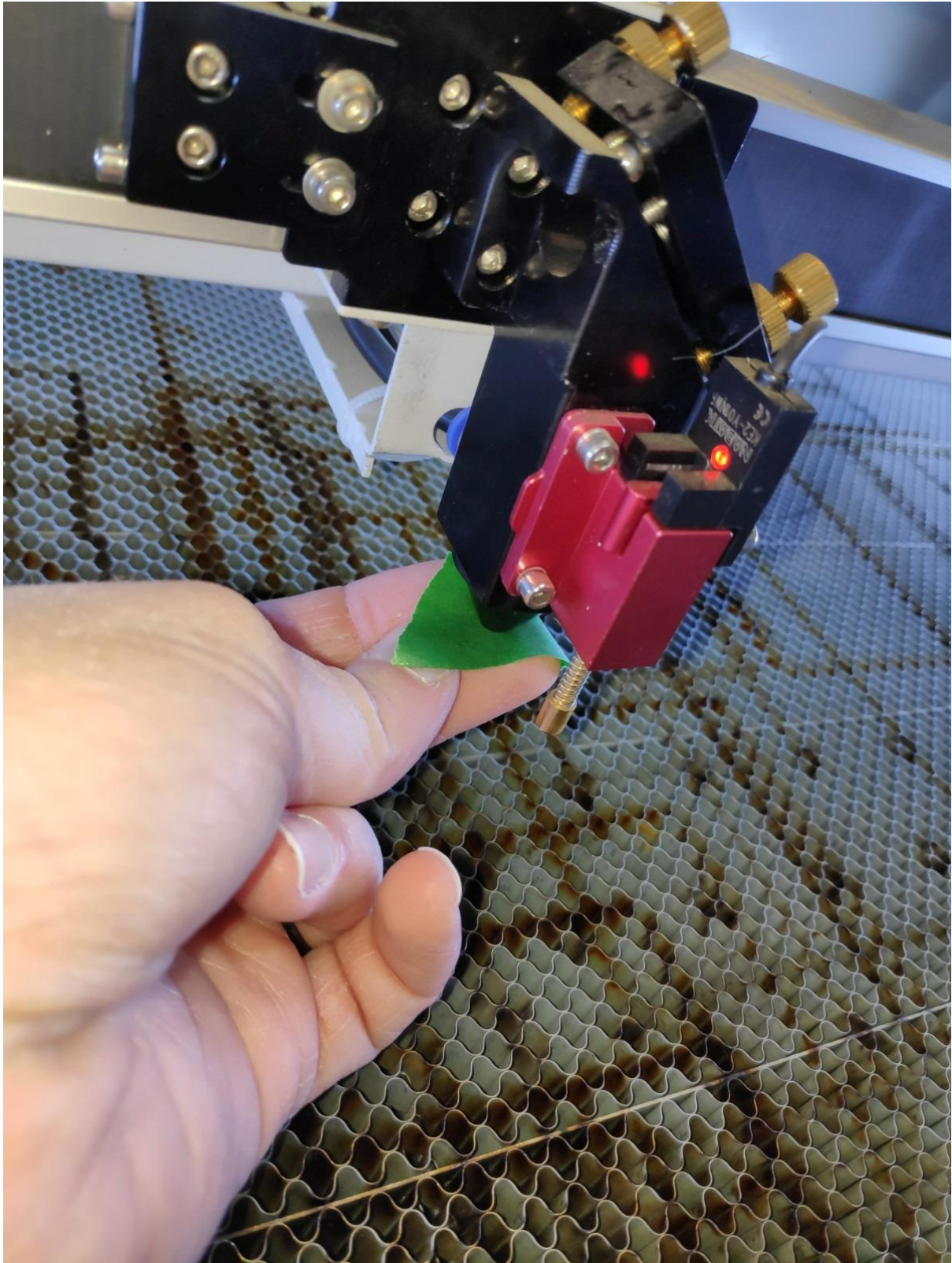
Do this over and over until you get perfectly aligned pulses for Mirror 2.



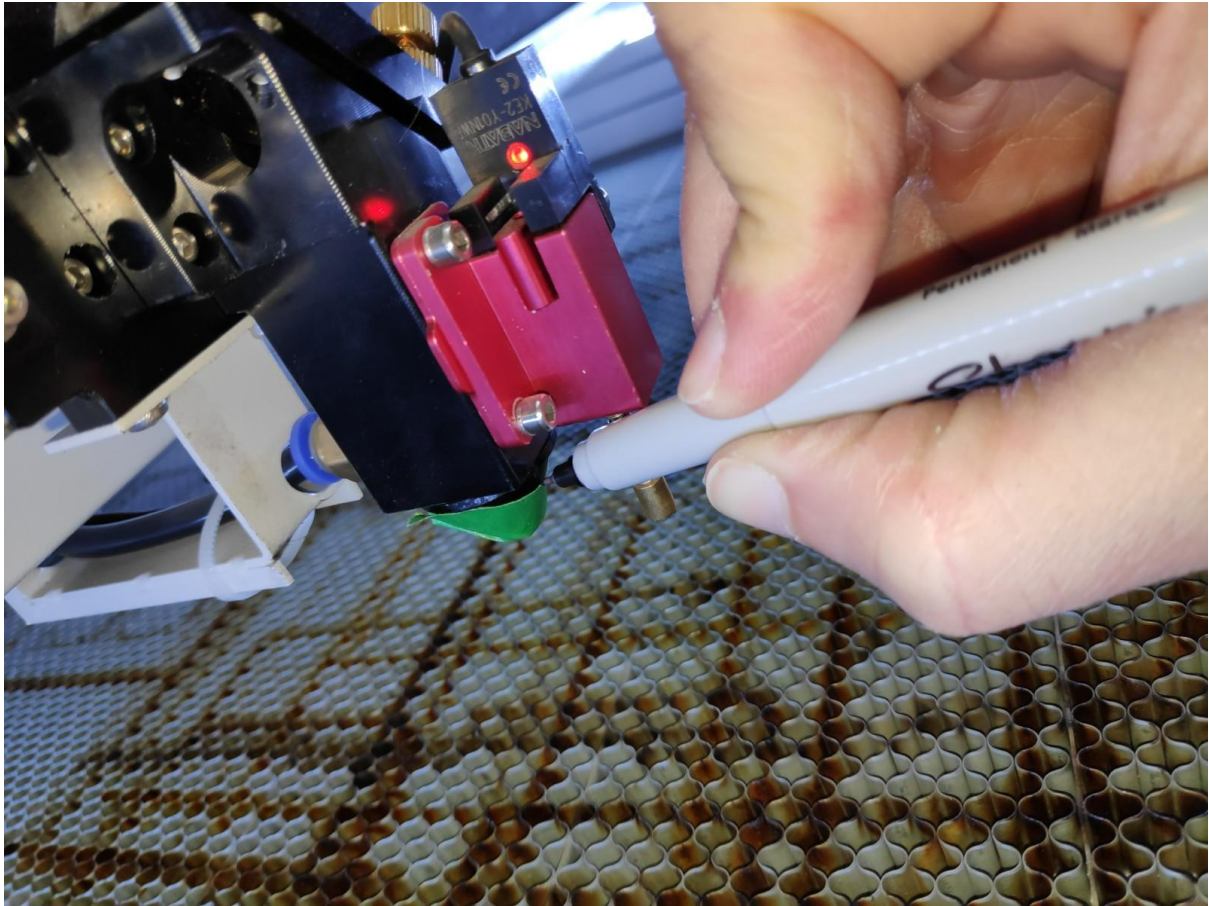
Here it took 4 rounds of pulses for Mirror 2 housing to get it perfect:



For Mirror 3 alignment, put painters tape on the laser head nozzle:



With a pen or marker, mark the front on the tape:



Pulse through the painters tape on the nozzle and note the front of the nozzle.

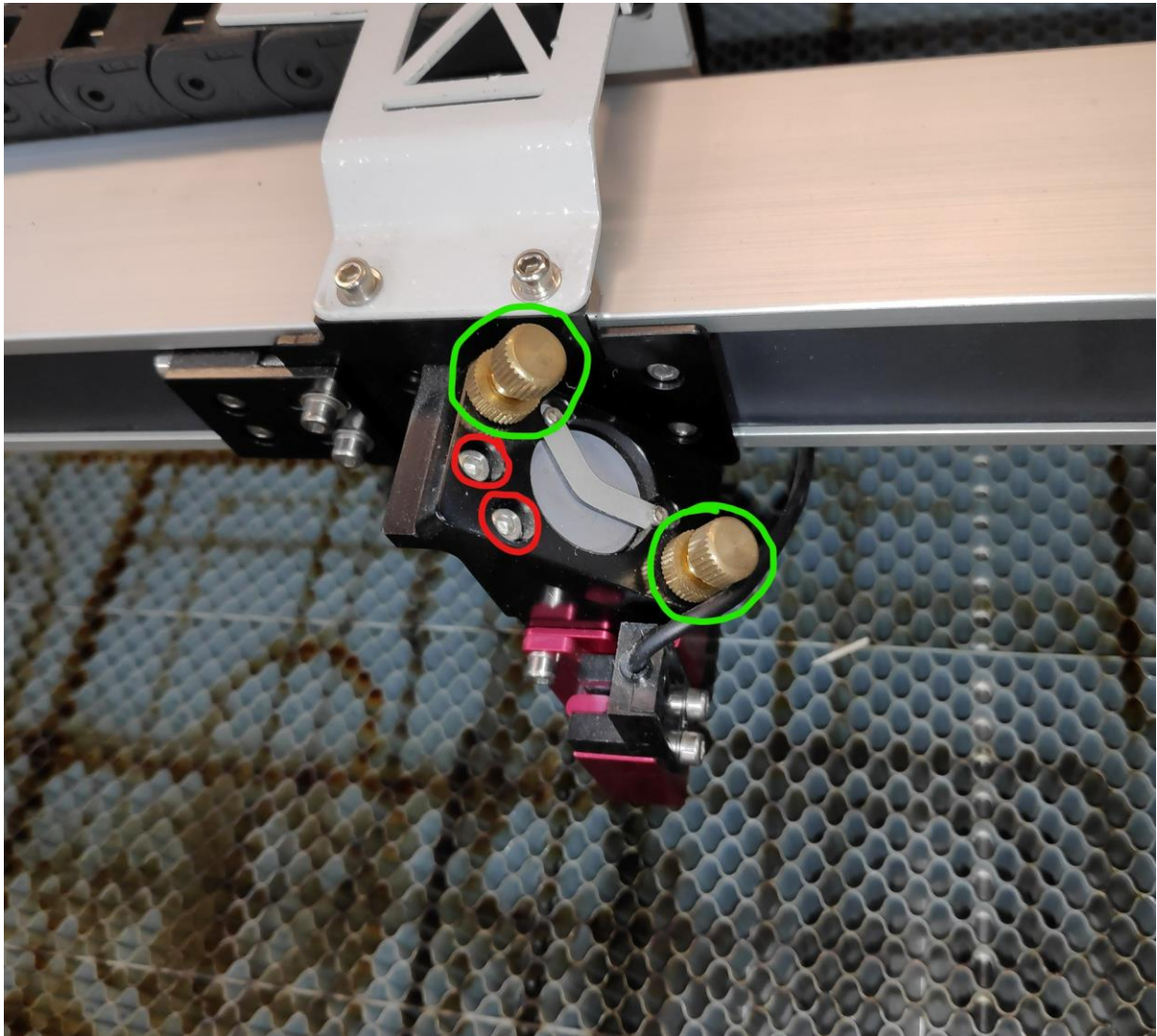


Our pulse is to the left and bottom of the hole in the nozzle. The Mirror 3 housing needs adjustment.



Loosen the brass jam nuts from the Mirror 3 housing (laser head). Adjust the adjustment thumb screws as needed (circled in green). You may need to loosen or tighten the hex

bolts to give your adjustment thumb screws more travel (circled in red). This can be one of the more finicky mirrors to align, so please take your time.



Repeat the steps of putting new painters tape on the laser head nozzle and pulsing through it. Look into the nozzle to see your new pulse hole. Here we have it pretty much

bullseye through the nozzle. Our Mirrors are now aligned:



If your pulse hole doesn't look circular, it could be that the alignment is drastically off (though still coming through the nozzle) and the alignment "up stream" needs to be

adjusted. This picture illustrates what that can look like (side view of laser head).

