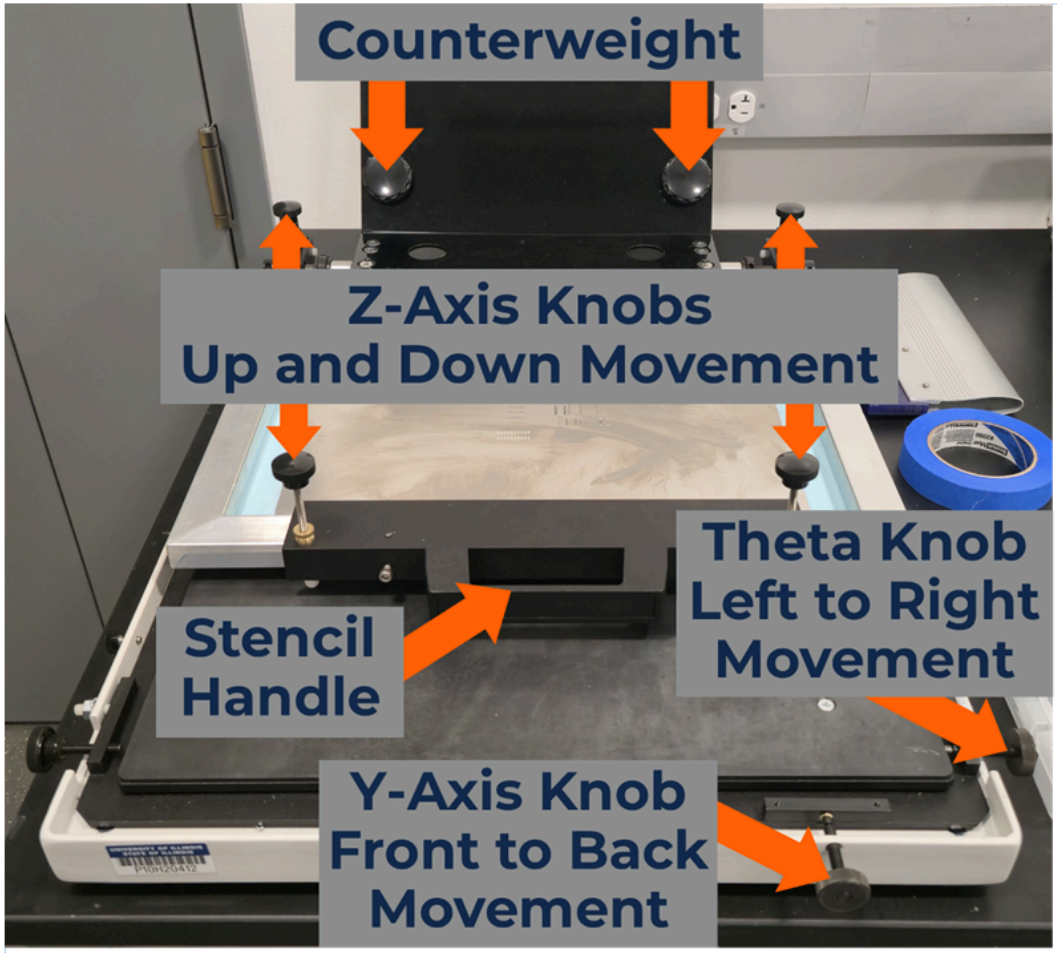
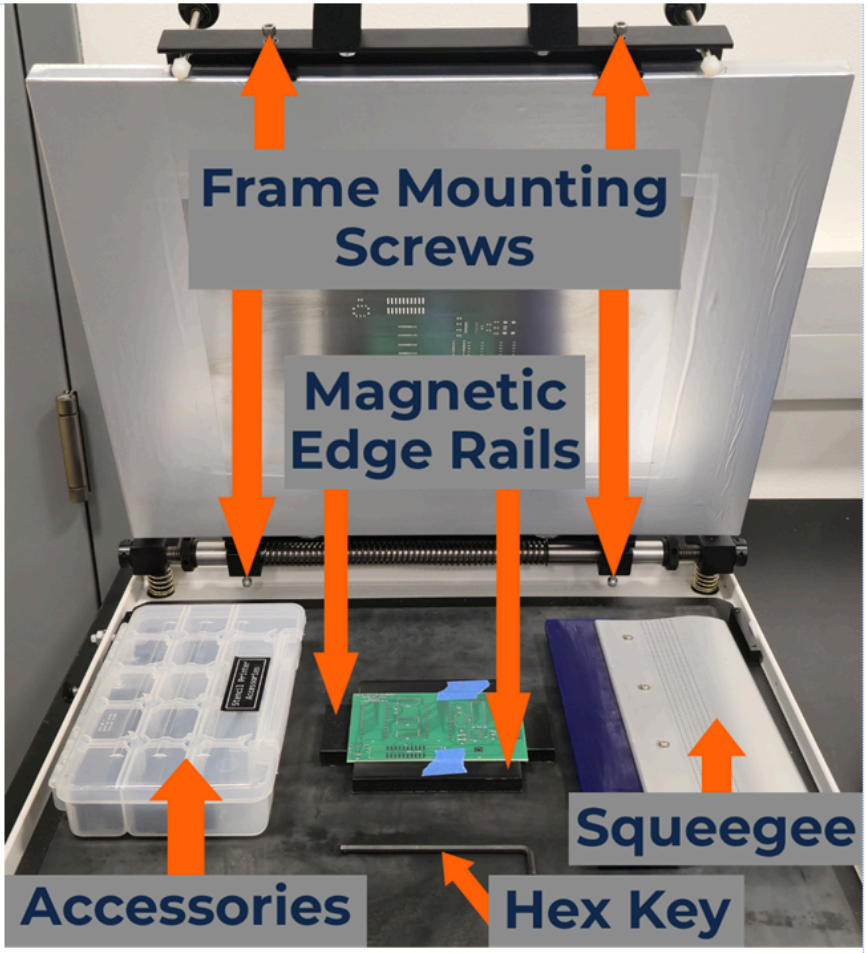
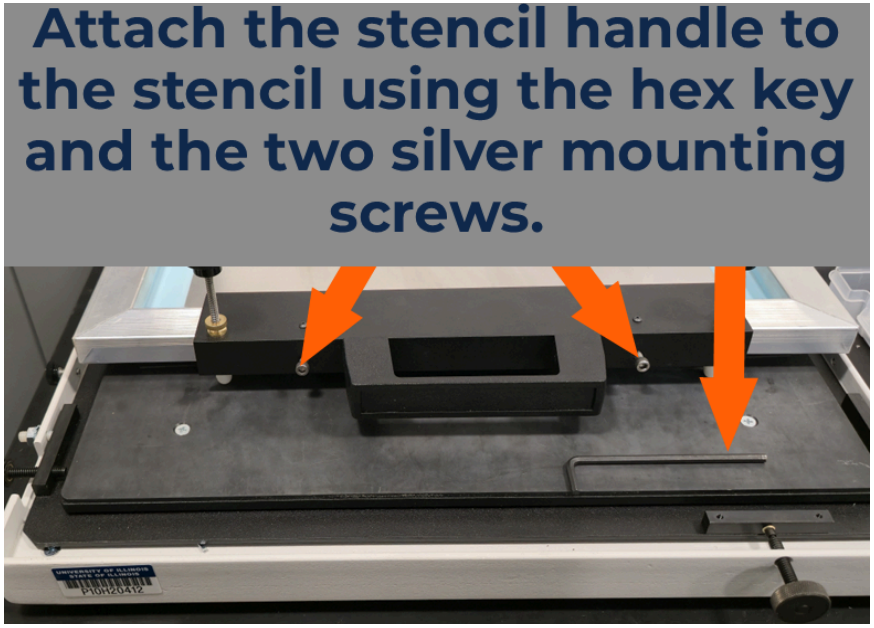
SPR-20 Stencil Printer Instructions

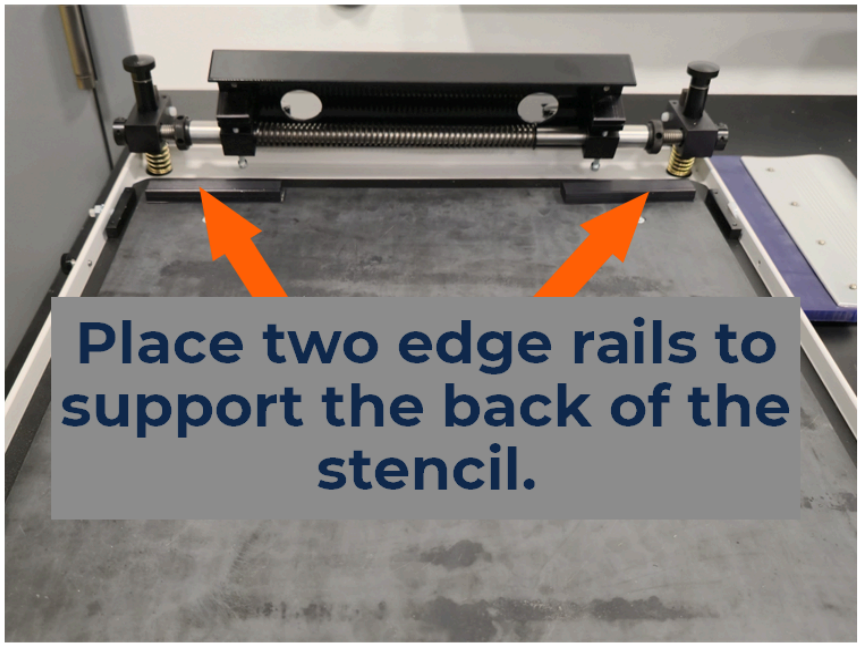




Mounting your stencil to the stencil printer.

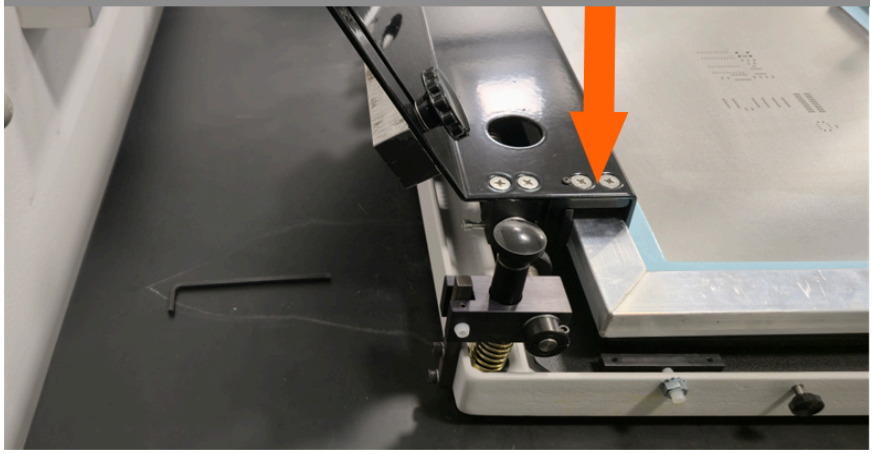


Make sure the silver screws are loosened then place your stencil into the handle. Use the silver screws to tighten the handle until the stencil is secure.



Place two edge rails near the back of the printer to help support the stencil while you attach it to the counterweight.

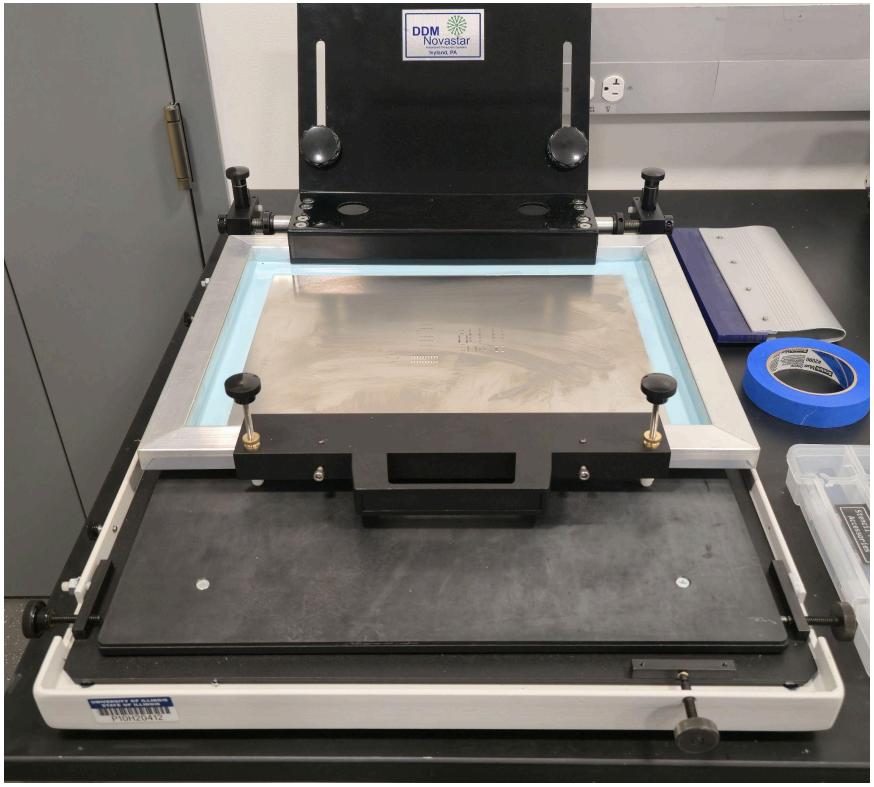
Lift the counterweight making sure that it is lined up with your stencil.



Make sure that the silver screws, located on the back of the printer on the counterweight, are loosened up and then lift the counterweight up. Make sure that the frame of the stencil is lined up and seated correctly in the counterweight assembly.

Attach the counterweight to the stencil using the hex key and the two silver mounting screws.

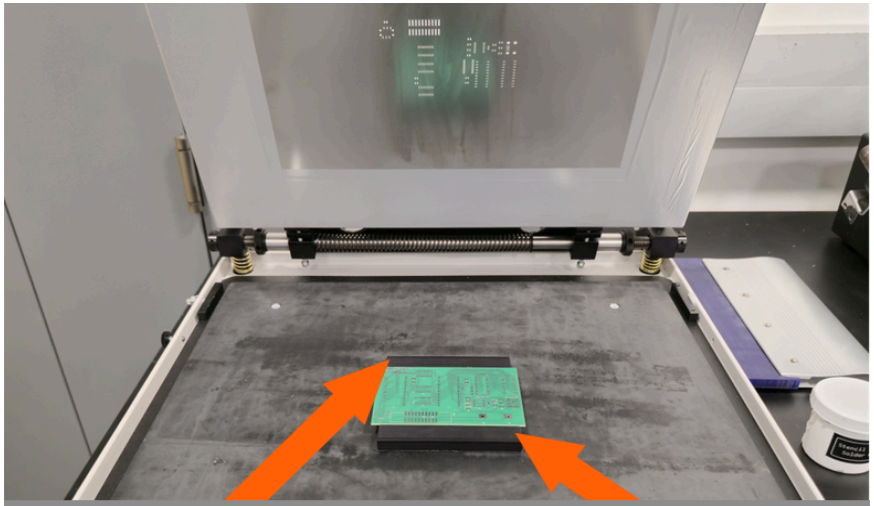
While holding the counterweight with one hand, use your other hand to tighten the silver screws to ensure that your stencil is securely attached.



Once you have finished mounting the stencil, the printer should look like this image. Your stencil should lay down without being held. When you lift it all the way up, the stencil should remain raised without being held. If the stencil does not stay down on its own, adjust the counterweight down by loosening the black knobs and moving the counterweight. If the stencil will not stay down on its own after adjusting the counterweight, remove the counterweight from the printer and set it aside.

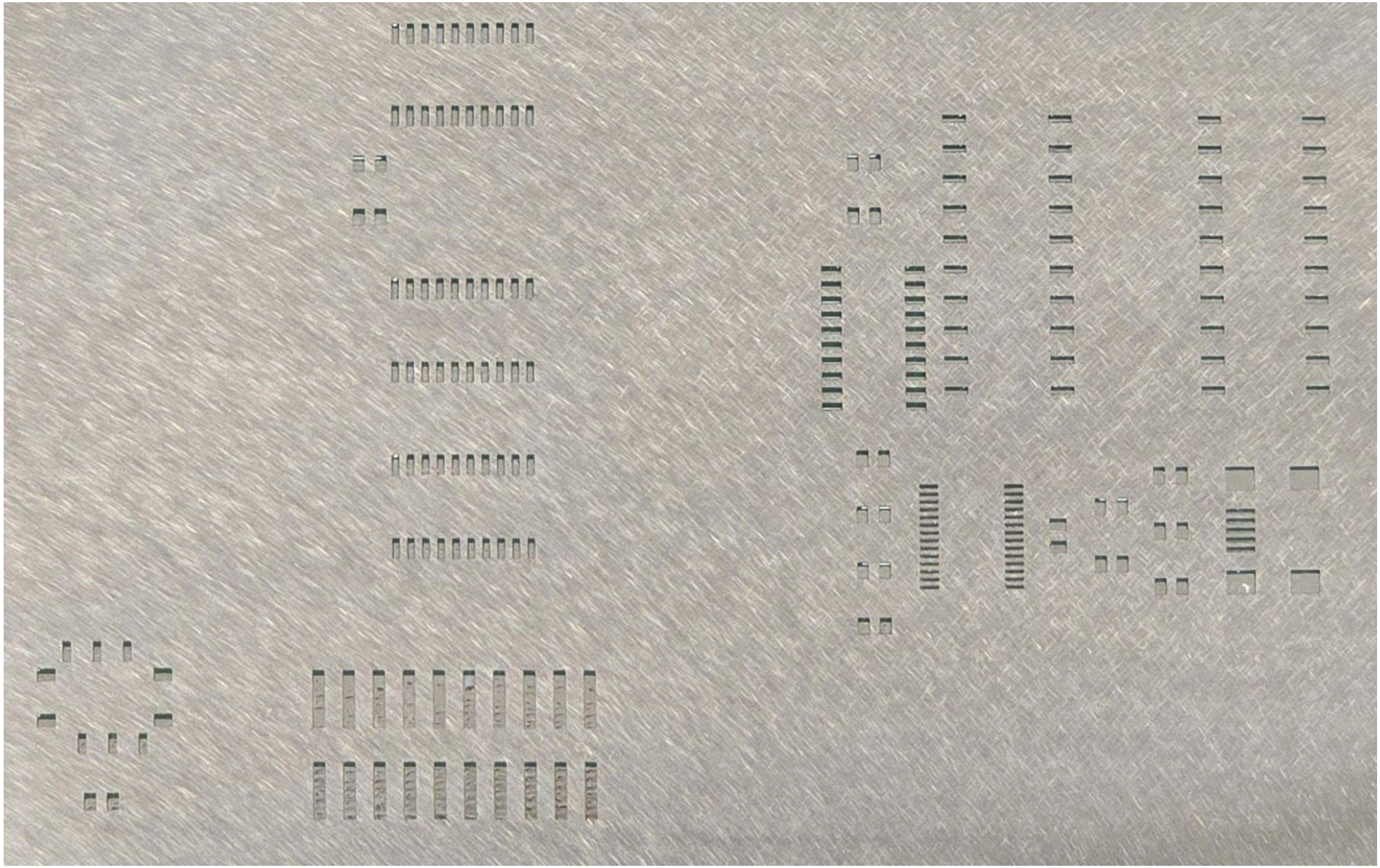
(Make sure to reattach it when you are done!)

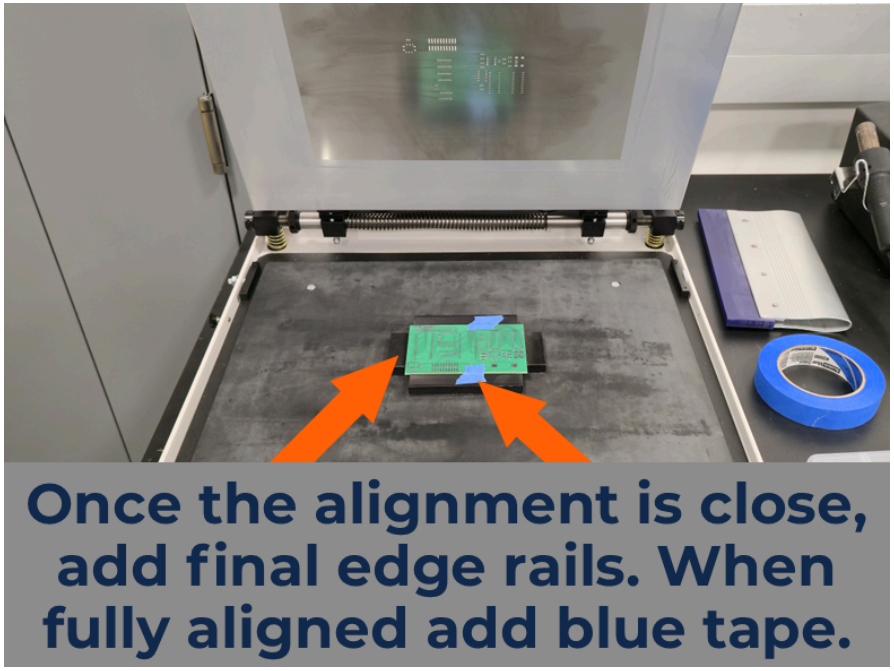
Aligning your PCB



Place two edge rails to hold your PCB as you begin to align your board. Before you begin your alignment, lower the stencil and make sure that the stencil lays flat on your PCB. If it does not, use the Z-Axis knobs to make sure that it does. Once that is done, you can begin lowering the stencil and seeing where the board is in relation to the holes in the stencil. Lift the stencil up and adjust the placement of your board until the board closely aligns with the holes of the stencil. These do not have to be perfectly aligned during this step. The next steps will cover fine adjustments.

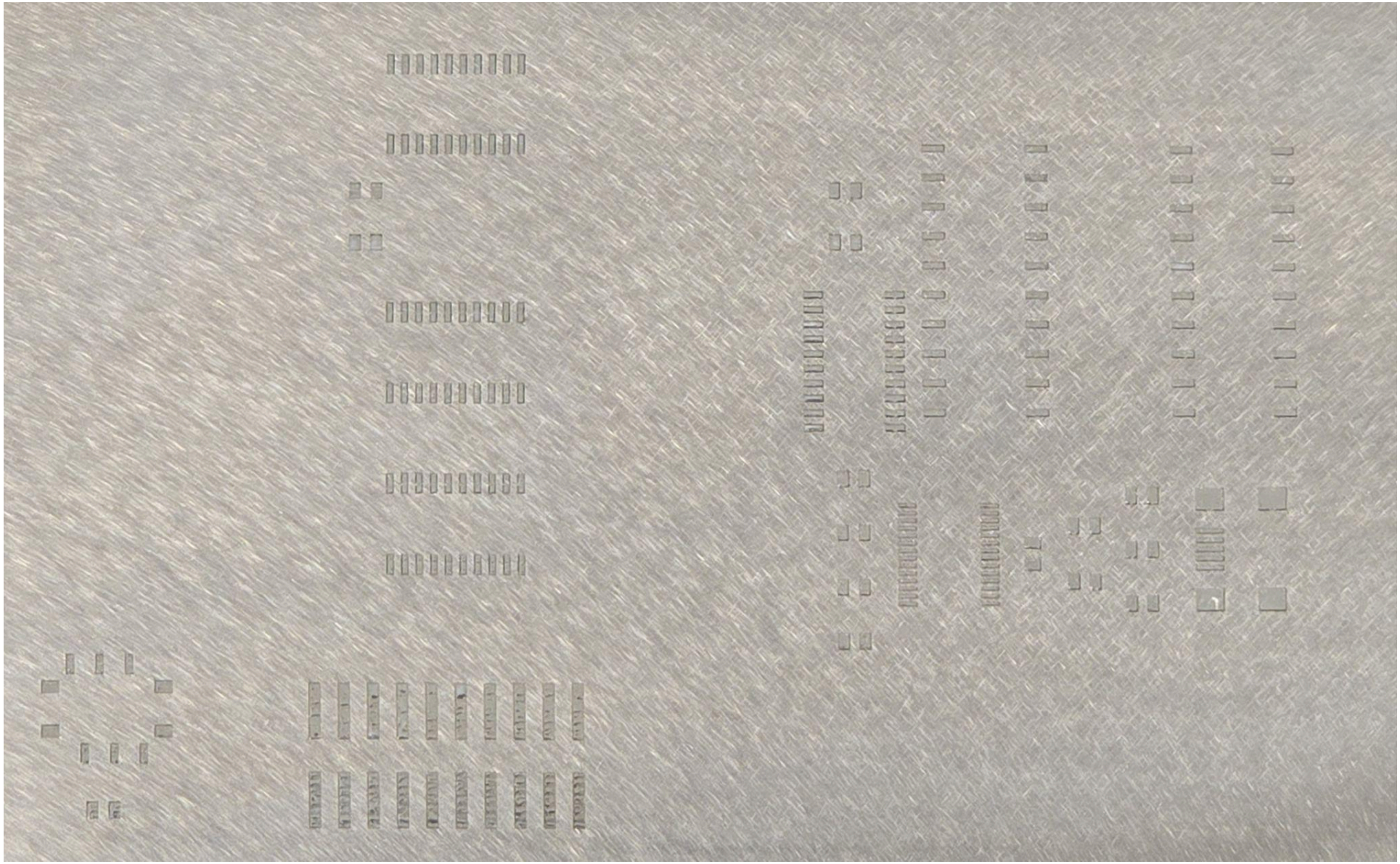
This is an example of closely aligned, where you can see a sliver of green on many of the pads. This is what you are looking for before you use the adjustment knobs.



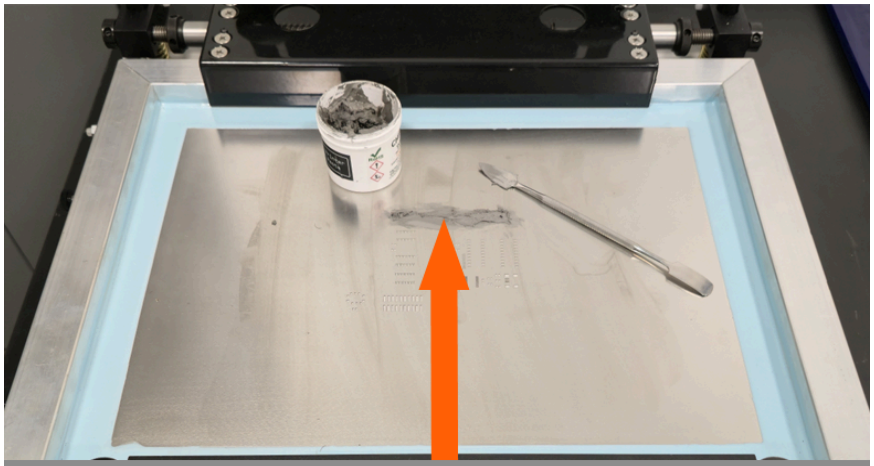


Once your board is closely aligned, add in additional edge rails to secure your board. Lower the stencil and use the Y-Axis and Theta knobs to dial the alignment till it is fully aligned. Both the Y-Axis and Theta knobs can be maxed out. If they are maxed out but the PCB is still not aligned with the stencil, you may need to back the knobs out and repeat the rough alignment. You may try to very carefully nudge your board at this stage but aligning the stencil with the knobs will produce better results. When fully aligned, add some blue tape to two of the rails and the board, careful not to interfere with any pads. This helps to secure the PCB to the edge rails and will prevent the pcb from lifting off of the printer when you raise the stencil. If the PCB sticks to the stencil, your paste may smear and the process will need to be repeated in order to get adequate solder coverage on all of the pads.

This is fully aligned. Only the silver pads should be visible through the stencil holes. If you still see the green solder mask, you will need to continue to align the stencil.

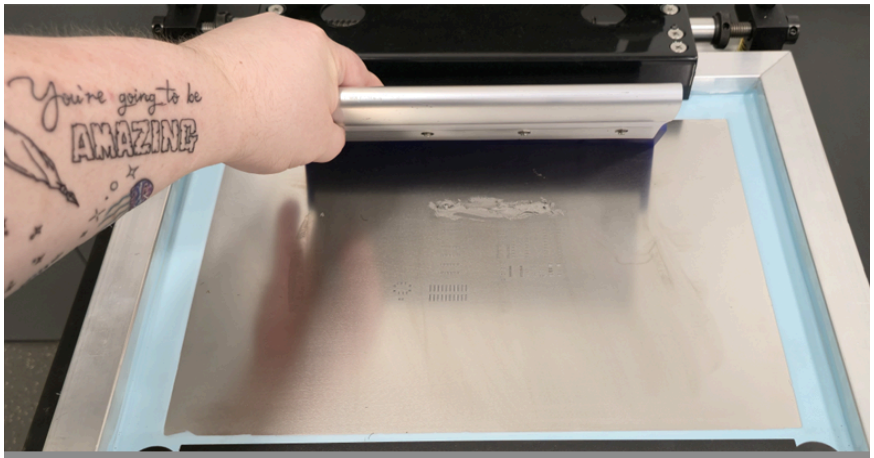


Solder Paste Application.



Put a line of solder paste above the PCB holes

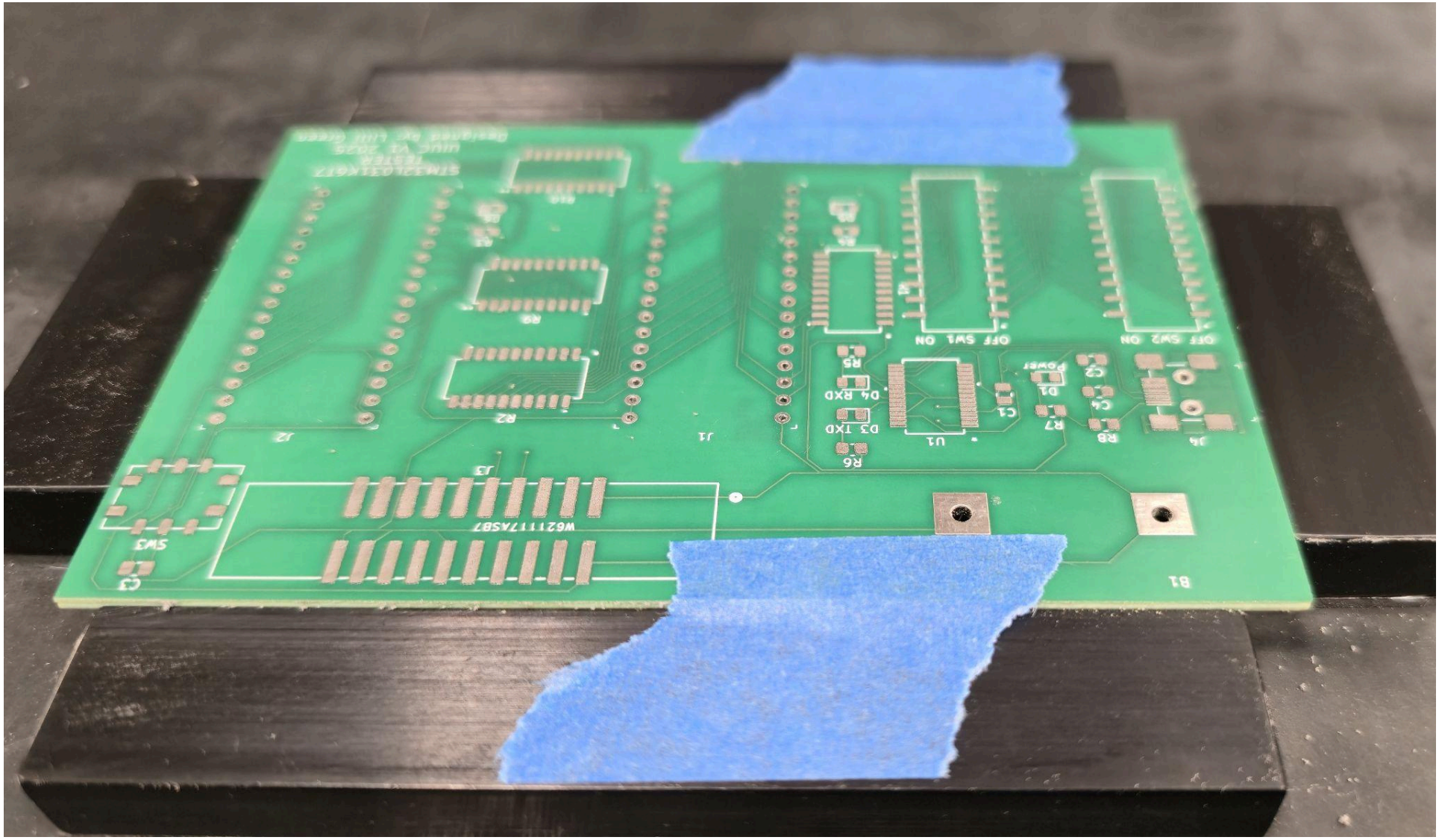
Using the tub of solder that is supplied, place a line of paste above the PCB, ensure the line is long enough to cover the width of all the pads of your PCB. Scrape any excess solder on your spatula back into the tub.



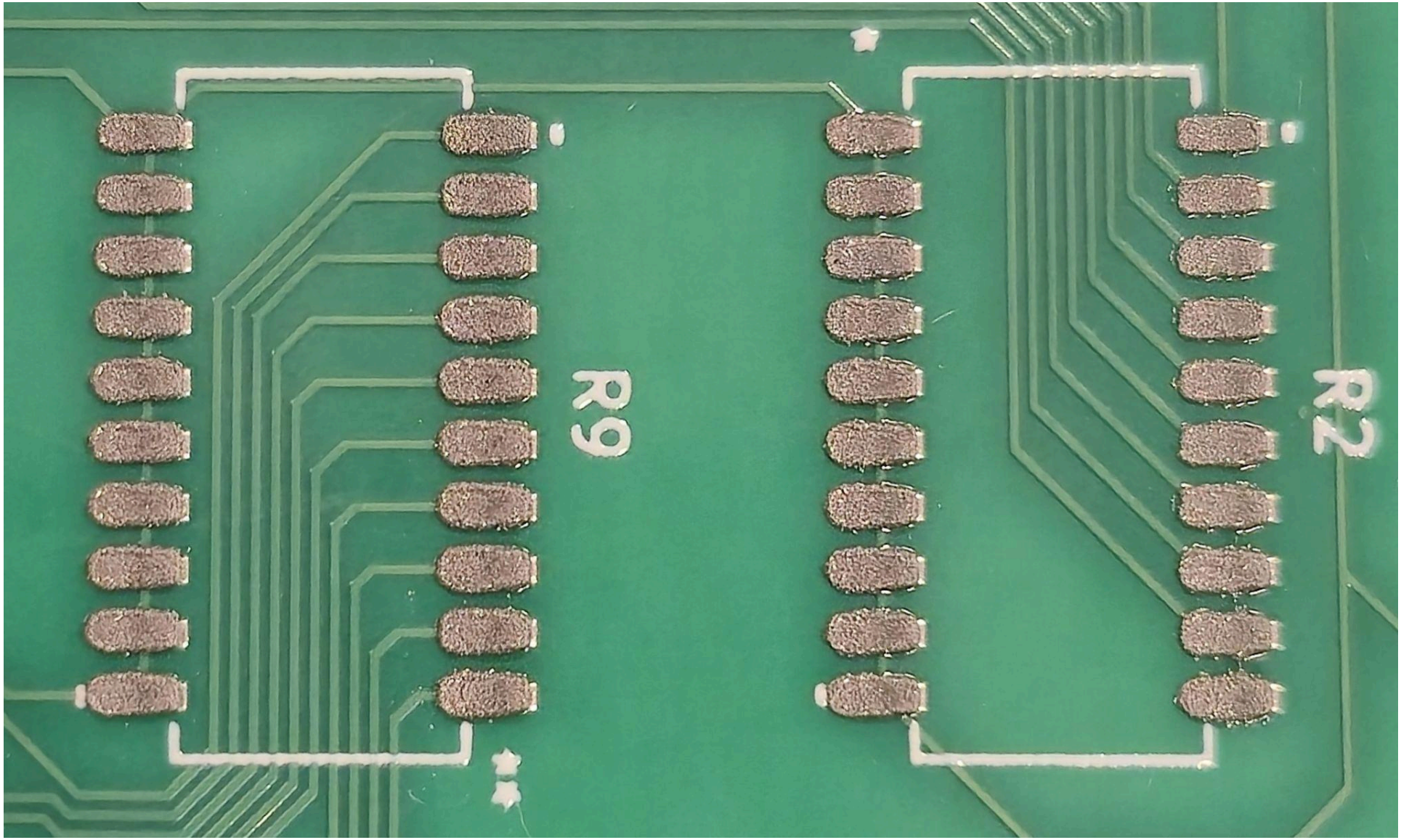
Holding the squeegee at an angle and pull it firmly and smoothly towards you.

Grab the squeegee with both hands, and pull it towards you slowly, firmly, and smoothly. After you have fully pulled it towards you look at the stencil and see if you have applied paste to all of your pads. **Do this without lifting the stencil up.** You may have to do this a few times, changing angles or applying a small amount of paste where it is needed. When you have fully applied the solder paste, lift the stencil and inspect the board. Your board should look like the following examples and if they do not, you may have to fully clean the board and try again.

Example of solder paste on PCB after use of the stencil printer.



Example of pads with solder paste on them.



Finishing up.

Once you are satisfied with your application of solder to your board, you are required to clean up the area. First, untape your board and remove it from the rails carefully. With the spatula you used to apply the solder to the stencil, take off any large excess left on the squeegee and put it back in the tub. Then, use shop towels on the fire cabinet and alcohol to clean up your stencil and the squeegee. Be sure to clean off all the solder paste from the stencil, squeegee, and any that dripped on the table while you were working. When everything is cleaned, detach your stencil from the stencil printer. Finally, put anything you took out of the accessory box back into the box. Place the solder tub back in its place on the top of the fridge.

It should look like this when you are done.