

B9 Creator™
Manufactured in the U.S.A.

Projector Calibration

Once we have verified the printers core functionality using the “Functional Printer Test”, we can begin the projector calibration routine.

1. To start the routine, click on the “Calibrate Projector” item under the Settings->Calibrations. The following dialog box will appear:

Calibration - Projector

Calibrate the Projector for 30 micron XY Pixel Resolution

The purpose of Projector Calibration is to ensure the projected image is focused and the projected pixels match the selected XY pixel size. This is accomplished by projecting a grid pattern onto a printed grid template and adjusting the position, zoom and focus of the projector until the projected grid image matches the paper grid template.

Go to www.b9creator.com to download and print the reference grid patterns.

You must select the XY Pixel Resolution that best suits your needs. Higher resolution produces a better surface finish but the maximum build volume is lower.

Ensure the Projector is connected via VGA or HDMI cable and display is set to 'Extended' Mode.

☐ Step 1 - Ensure the VAT is in place and the Build Table and Sweeper are removed.

☐ Step 2 - Loosen the 4 screws on the back of the printer that hold projector in place.

Note: The next step may take a few minutes as the projector warms up.
(If using a single video output and splitter setup then see the web site for additional documentation.)

Step 3 - Click here to close the shutter, power on the projector and open then open the shutter.

☐ Step 4 - Adjust the Zoom, Focus and Position of the projector until the projector grid matches the paper template grid.

☐ Step 5 - Tighten the 4 projector screws and double check the projected image and focus.

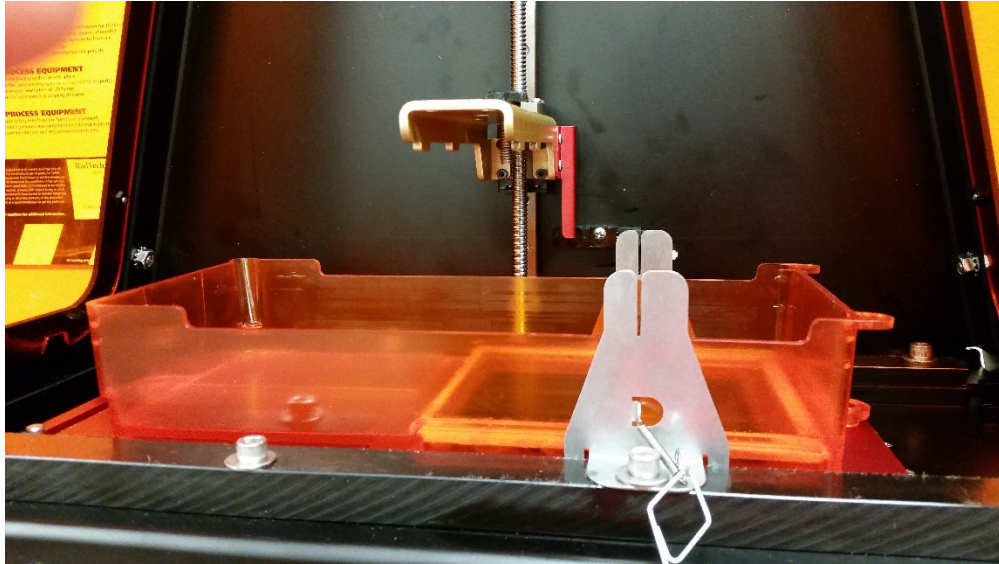
Step 6 - Click here to turn off the projector.

Status:



2. Follow the steps from top to bottom, checking each item once the step is finished:

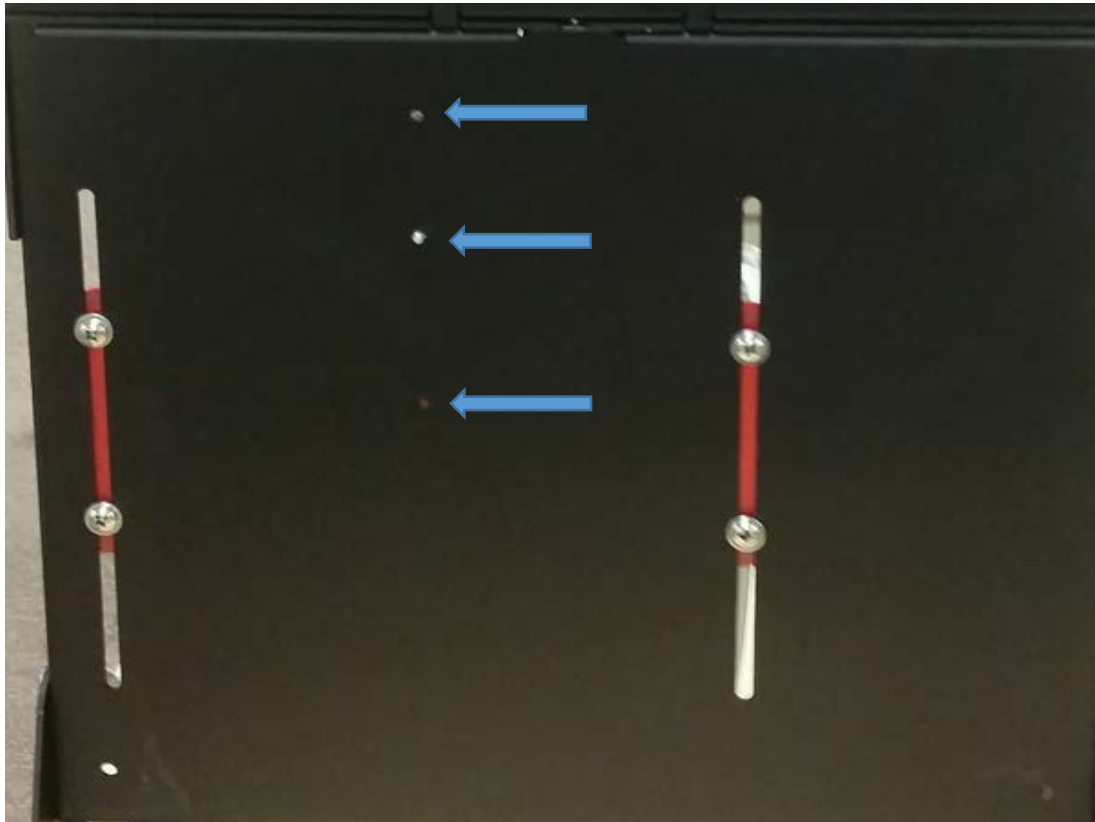
Step 1: Ensure the VAT is in place and the Build Plate and Sweeper are removed:



Step 2: Loosen the 4 screws on the back of the printer that hold projector in place.



After loosening the 4 screws ensure that the projector is positioned in the correct vertical position corresponding to your desired configuration by pulling out the small pin in the yellow metal piece near the base of the projector and lifting or lowering the projector until the pin line up with the correct configuration hole:



Re-insert the pin and allow it to stick through the slot, this will keep the projector approximately the right distance from the VAT.

Step 3: [Click here to close the shutter, power on the projector and open the shutter:](#)

The projector should begin to turn on as the green light begins to blink.

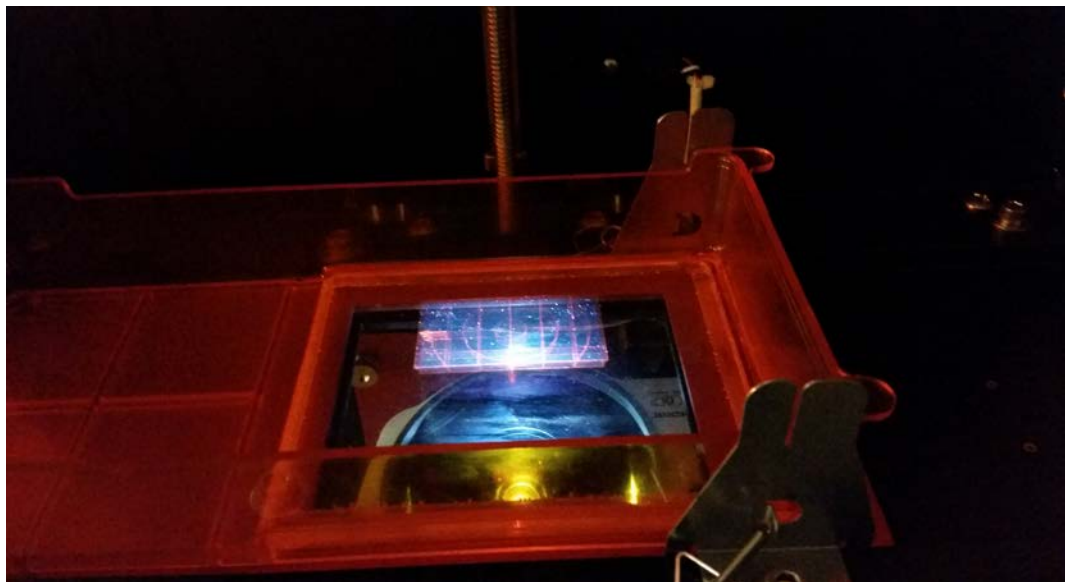
NOTE: Under Rare Circumstances the Projector May Fail To Turn on.

If this happens - simply repeat the Projector Calibration and return to Step 1.



Step 4: Adjust the zoom, focus and position of the projector until the projection grid matches the calibration grid:

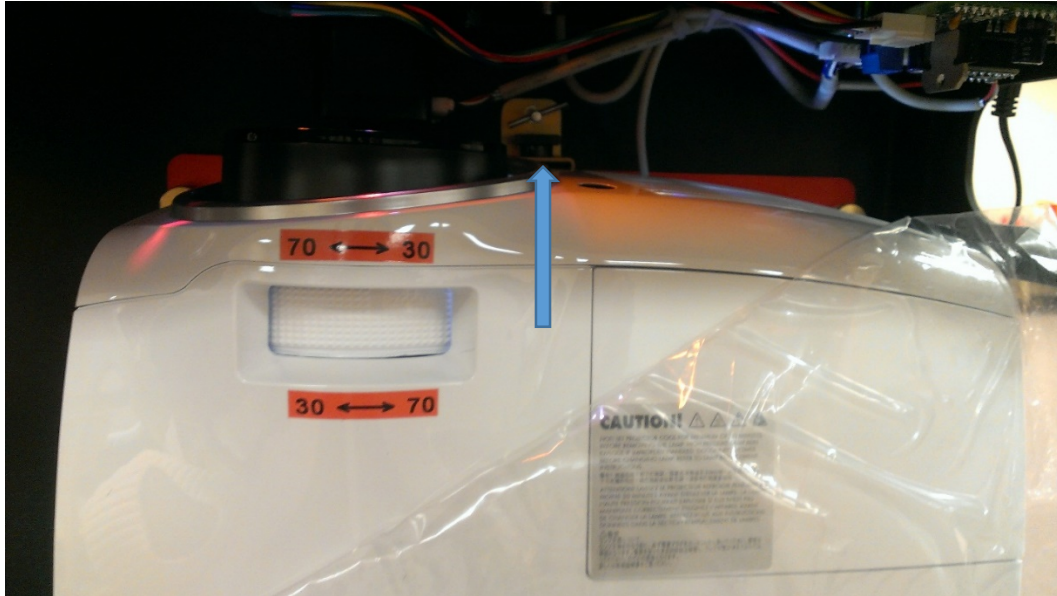
- a) First you will need to print off and cut out the calibration grid matching your printer and printer configuration. The calibration grids can be found in Documents/B9Creator or can be downloaded here: www.b9c.com/support/documentation
Or you can use the recommended B9 Calibration Guide.
- b) You will then need to position the printout or Calibration guide so it lays on top of the grid as it is projected:



- c) To adjust the image focus, the white zoom wheel and black focus knob need to be adjusted based off of the current configuration.
- d) First adjust the white zoom knob:
 - For 30 μ m XY size:
The white zoom wheel should be all the way to the left towards the orange “30” mark.
 - For 50 μ m & 70 μ m sizes:
The white zoom wheel should be all the way to the right towards the orange “70” mark.

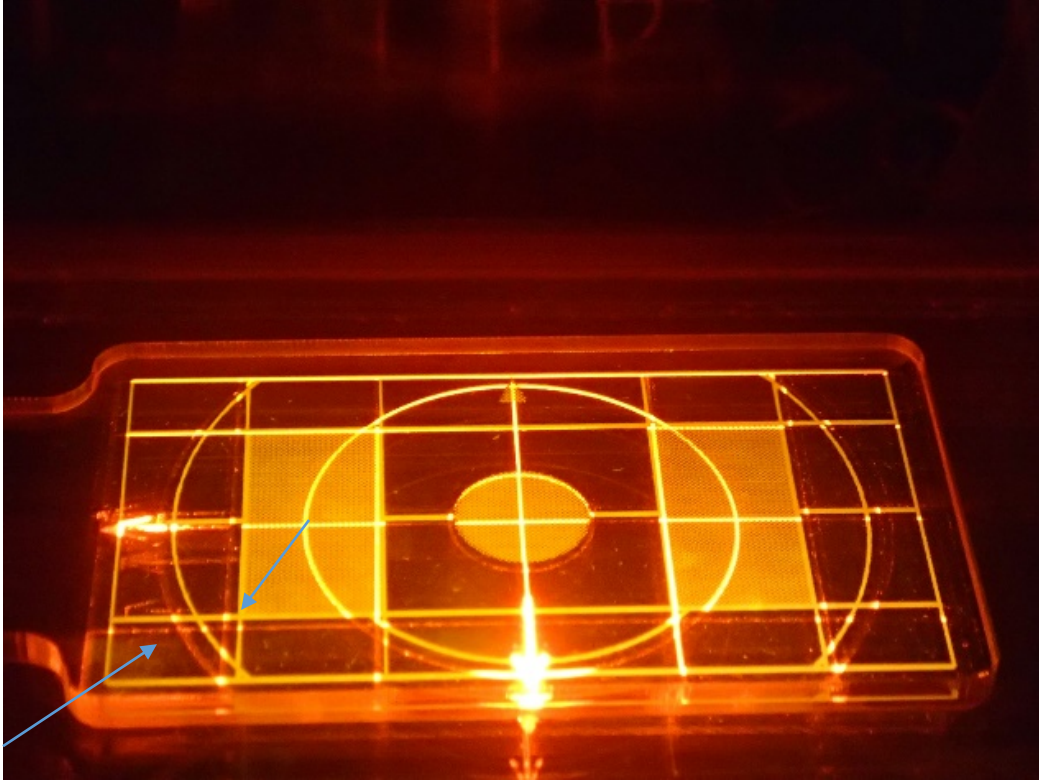


- e) Next use the black focus knob to focus the image in on the calibration grid. If you find that the image is consistently too small (left image) or too large (right image) you may need to adjust the thumb screw again to adjust the image size. Near the pin, there is a thumb screw which can move the projector up and down by about $\frac{1}{4}$ ".

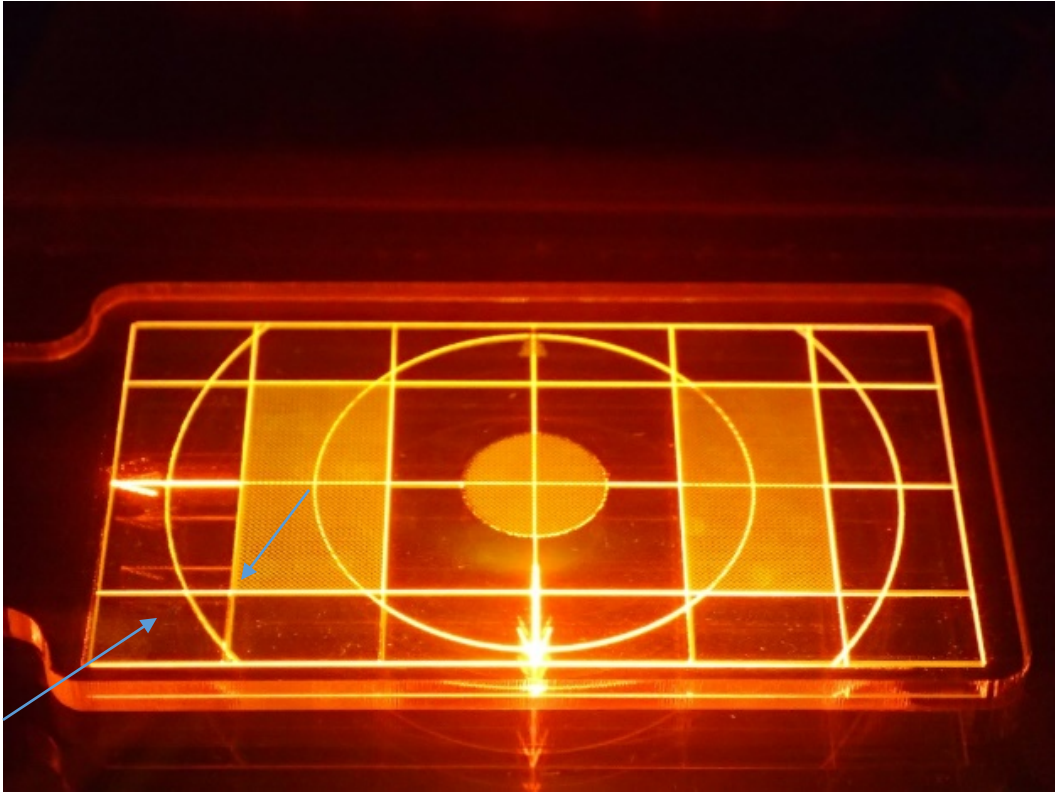


If you tighten the thumb screw, it moves the projector upwards. If you loosen the thumb screw the projector moves downwards. As the projector raises, the image gets smaller. As the projector lowers the image gets bigger. The thumb screw allows for finer adjustment of the image size to match the calibration grid:





Top image shows the image is not zoomed properly, bottom shows zoomed properly



Information updated June, 2015

NOTE: If you're using the Calibration Sheet may not be the right size! Some (2D) printers aren't very good at printing to scale. If you can't seem to get the projected grid to line up, you may need to verify your calibration sheet with some calipers and ensure that the squares are 10mm x10mm. The calibration guide is recommend for the best possible calibrations.

Step 5: Tighten the 4 projector screws and double check the projected image and focus:

If the projector is properly focused on the calibration grid you should see the grid come into focus and line up with the sheet as shown:

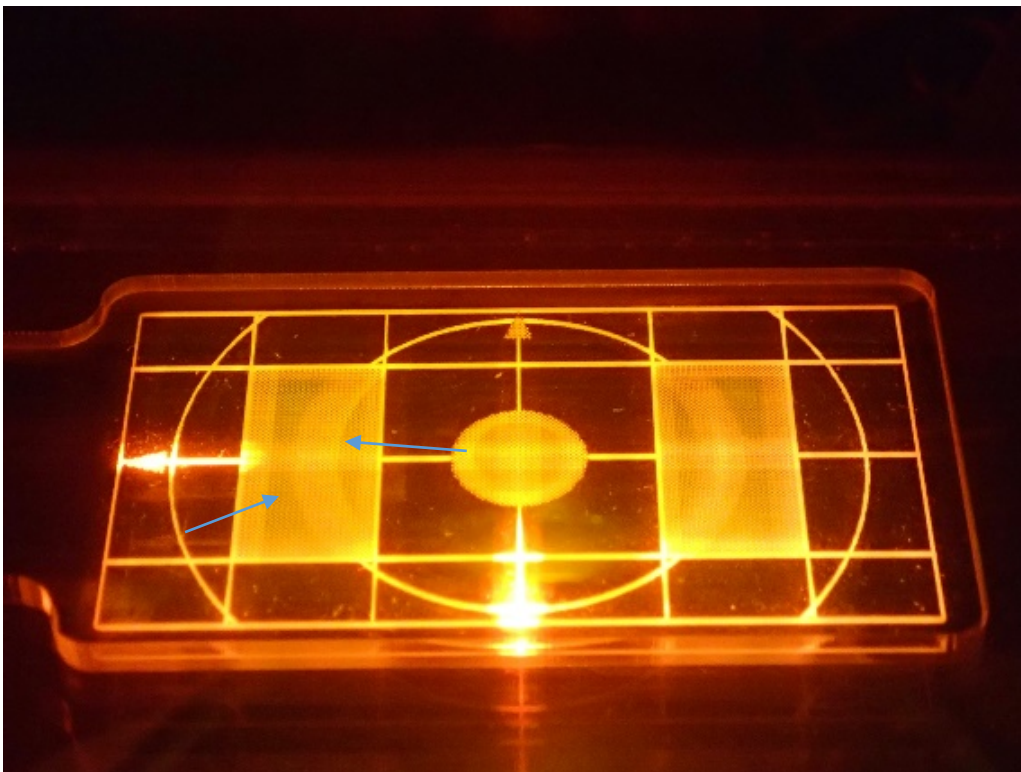
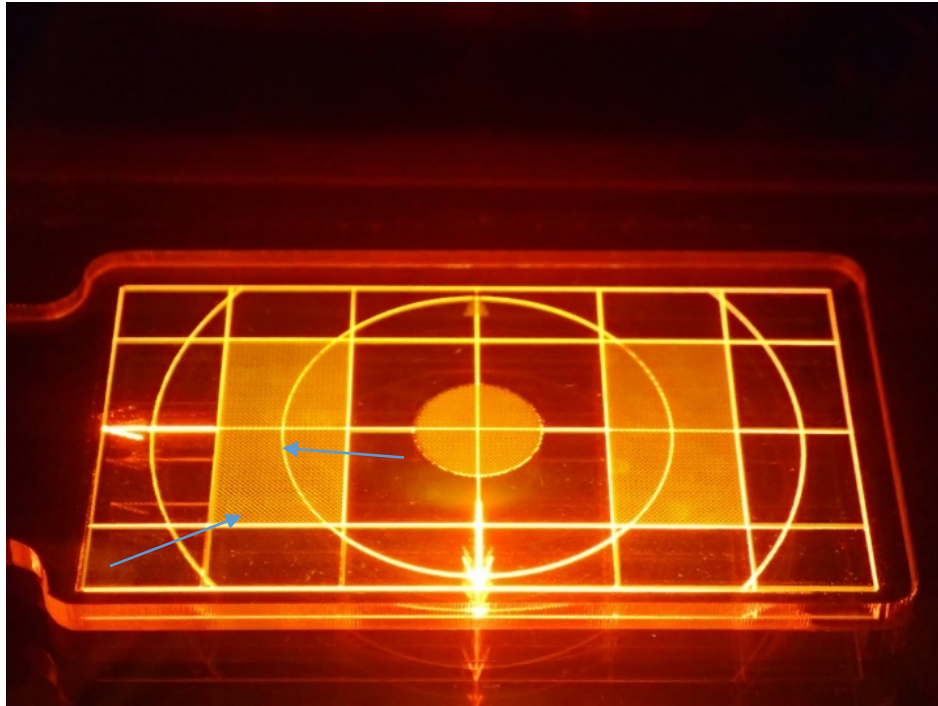


Image above is out of focus, below is in focus.



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For the calibration guide a properly focused image is shown below:

Once focused, tighten the 4 projector screws to fully secure the projector:



Step 6: Click [here](#) to turn off the projector:

The project should turn off.

Finally click the finished button to complete the projector calibration.



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