

Fusion M2/32/40 focus, home and table calibration

The purpose of this document is to provide step by step instructions for calibrating the focus gauge, auto-focus, table home, x-y home, squaring of vector grid and vector grid home for the Fusion model Epilog laser all in a single procedure. It's important to follow the flow of this procedure and not jump around. Starting half way doesn't do any good because it all starts with a properly calibrated focus gauge.

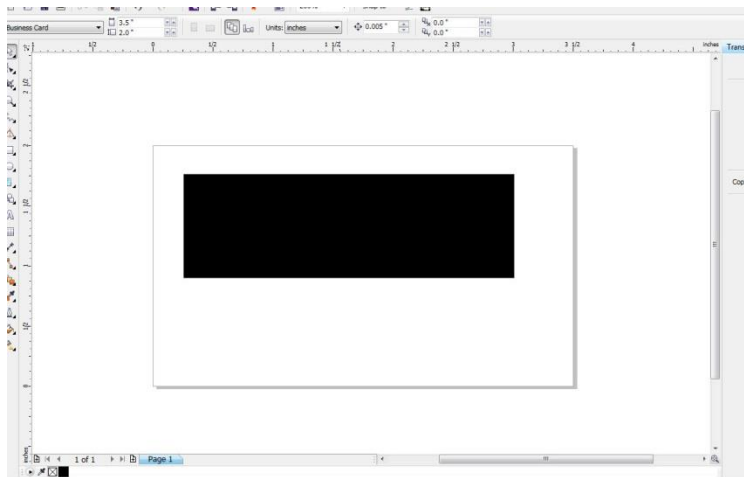
All too often we operate our lasers not properly calibrated and accept the quality as-is or compensate for poor quality by bypassing features / functions that are built into the Fusion for use. Poor quality / subpar engraving is not acceptable on an Epilog Laser!

This process should take 10-20 minutes but will save you a ton of time when you're trying to figure out why the quality of your Aztec calendar looks like it was ran over by a forklift.

Calibrating the manual focus gauge:

Tools needed: Anodized aluminum plates, small Philips head screwdriver.

- Start with a new page in Corel; create a black filled box roughly 2" x 1" in the top left hand corner.



- Manually focus and engrave at anodized aluminum settings for your particular wattage.
- Turn off the LED cabinet lighting and start the job. While the job is running, jog the joystick to focus and slowly raise or drop the table until the reflection of engraving of anodized is at its brightest. Stop the job and reset.
- Once reset, place the manual gauge in place and check the focal point in reference to the anodized aluminum plate.

- Adjust the lower part of focus gauge so that it's barely touching the top of anodized plate.

Setting table home:

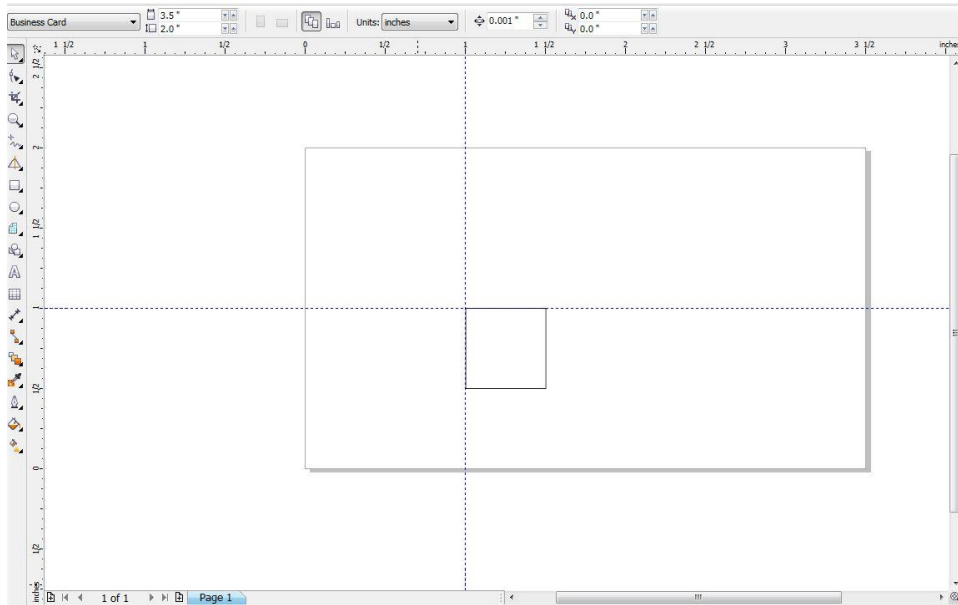
Tools needed: a sheet of paper.

- Lower the Fusion table midway and remove the vector cutting grid.
- Under the configuration menu on display, change vector grid installed to NO, save settings.
- Under same config menu, scroll to restore table home. Table will come up, install focus gauge and use the sheet of paper as a feeler gauge. If there's too big of a gap or not a gap at all, adjust the table home value and save setting.
- Lower table to any point below table home position. Go under configuration menu again, restore table home and confirm the new settings took place and that the paper is dragging as you slide it under the focus gauge.
- Rinse and repeat until table home is properly calibrated.

Setting x-y home:

Tools needed: Calipers or tape measure, anodized aluminum sheets.

- Vector grid should still be removed from table. In Corel, open a new page and create a .5" X .5" vector outline of box. Place this box exactly 1" from the left of page and 1" down from the top of page.



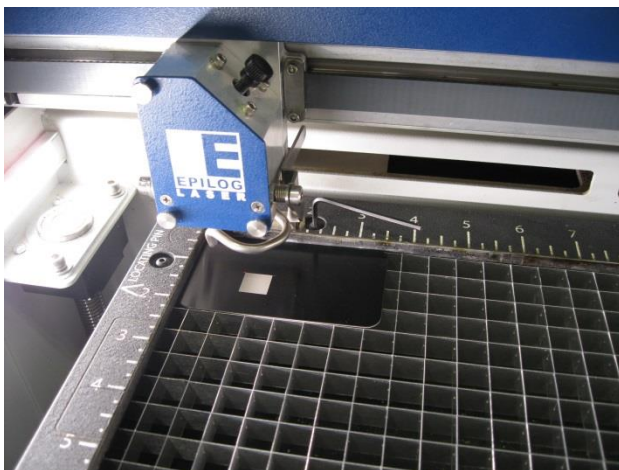
- Manually focus and vector trace using lower speed, lower power and lower frequency setting.

- Using the calipers, tape measure or ruler measure the distance from left edge and top edge of anodized plate to outline of box. The measurements should be 1" or very close to it. If off, note how much it's off by in both x and y.
- You can adjust one or both parameters at a time but it is easier if you calibrate one at a time.
- The parameters to adjust on the config menu of display are x-home and y-home. Save settings after any changes.
- For the new settings to take place, you do not need to resend the job over. Instead, restore the x-y home feature on display and the new settings will take place.
- Rinse and repeat for both x and y axis until you're within .005" of 1".
- **Important step:** Once you've dialed in the x and y-axis home position. Run one last vector score job on a new piece of anodized aluminum. Save this sample as it'll be used later in this procedure.

Setting x-y home for vector grid:

Tools needed: vector scored anodized aluminum plate from previous step, setting x-y home. 3/32 Allen wrench.

- Install vector grid into Fusion. Lower table midway.
- Loosen the Allen screws securing the ruler bars on vector grid, left and top. Screws should be loose enough to be able to slide the ruler bars.
- Under configuration of display, change vector grid installed to yes. Save settings.
- Place the vector scored anodized aluminum plate in the top left corner of vector grid. Raise table to manual focus point.
- Turn on red dot pointer. Using the display, jog the x and y-axis to 1", 1" and set a temporary home.

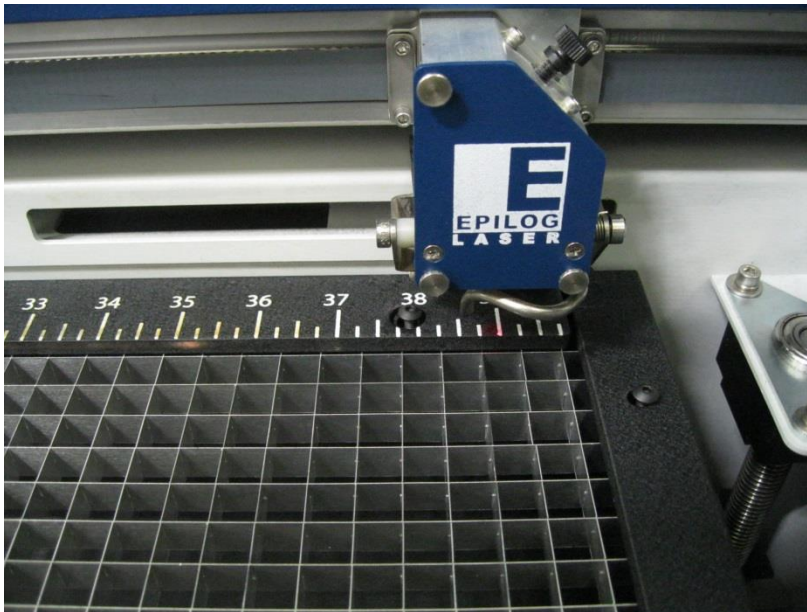


- Slide the anodized plate so that the red-dot pointer lines up with the top left corner of vector scored box. Tighten the top Allen screw of left ruler bar. Tighten the left Allen screw of top ruler bar.
- Confirm red dot pointer is still aligned to top left corner of vector scored box.

Squaring vector grid ruler bars:

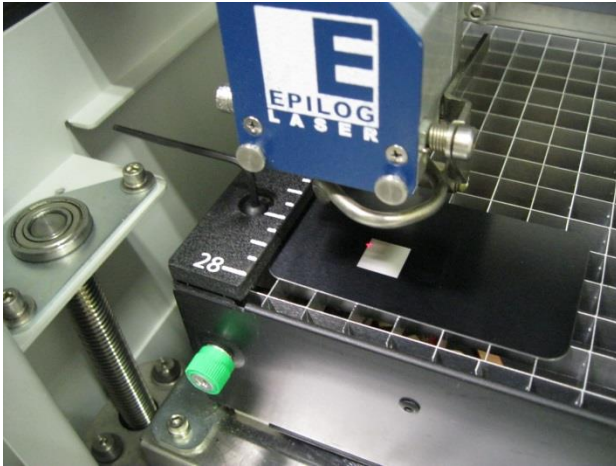
Tools needed: vector scored anodized aluminum plate from previous step. 3/32 Allen wrench.

- Continuing from previous step, leave table position near the top. Leave red dot pointer on.
- Using jog feature on display, jog the y-axis so that it aligns up with front edge of top ruler bar. Jog the carriage (x-axis) to the far right (31" on F32-M2, 39" on F40-M2).



- Adjust right side of top ruler bar so that red dot pointer aligns to front edge, tighten Allen screw.
- Jog engraving head back to the left and assure red-dot pointer remains on front edge of top ruler bar from far left to far right. Tighten remaining top ruler bar Allen head screws.
- Place vector scored anodized plate in top left corner of bed. Jog engraving head to 1" where red dot lines up with left vertical line of vector scored box.
- Using jog feature on display, jog the y-axis to front of the machine (19" on F32-M2, 27" on F40-M2).
- Using same vector scored anodized plate, align the red dot pointer to left vertical

line of vector scored box. Adjust left ruler bar for alignment and tighten Allen head screw.



- Using the vector scored box as a reference, jog the engraving head back towards home position assuring the red-dot stays aligned with left vertical line of vector scored box. Tighten remaining Allen head screws.
- Right side ruler bar of vector grid can be left alone.

Calibrating vector grid home:

Tools needed: a sheet of paper.

- Vector grid should be installed, vector grid installed on display of machine should be set to yes. Lower the table midway.
- Under config menu, scroll to restore table home. Table will come up, install focus gauge and use the sheet of paper as a feeler gauge. If there's too big of a gap or not a gap at all, adjust the vector grid home value and save setting.
- Lower table to any point below table home position. Go under configuration menu again, restore table home and confirm the new settings took place and that the paper is dragging as you slide it under the focus gauge.
- Rinse and repeat until vector grid home is properly calibrated.