



EPILOG LASER

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Procedure Title: **Replacing the Optics in your FiberMark Laser Engraver**

Tools Needed:

- #1 Phillips Screwdriver (For Side Panel)
- #2 Phillips Screwdriver (for Mirror Mounts)
- 3/32 Allen Wrench
- 1 ea. 5/64 Allen Wrench (for mirror mount over lens)
- 1 ea Magic Marker

Supplies provided:

- 1 ea. Alignment Target, provided with replacement optics
- 3 ea. mounted replacement mirrors
- 1 ea. un-mounted replacement mirror

Note:

- Due to the construction of the Fiber Laser, this alignment will be performed using the Red Dot Pointer. There is no need to align the red dot to the laser, as they are aligned internally in the laser.
- The laser will be aligned after each replacement optic is installed. This will simplify the alignment process.

Some conventions:

- The front of the machine is where the control panel is located. When facing the front of the machine, left is your left, and right is your right.
- After a mirror is replaced, the engraver will be re-aligned. When making alignment adjustments for this procedure, only make adjustments to the last mirror replaced. This will simplify the alignment process. Once all of the mirrors have been replaced, we will double check the entire machine for alignment.

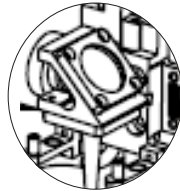
Procedure:

1. Turn off the power to the engraver
2. Unplug the engraver from its power source

3. Remove the power cord from the engraver.
4. Remove the 6 #2 Phillips screws which secure the left hand side access panel. There are 4 on the side and 2 on the rear.
5. Move the lens carriage to the center of the engraving table.

Note: We have included spare mounting mirror mounting screws for the mirror over the lens, but because the screws are very small, it is a good idea to place a piece of paper or plastic on the table surface to prevent the screws from falling through the holes in the table.

6. With the provided 5/64 Allen wrench, remove the 4 mounting screws which attach the mirror retainer to the mirror holder. As the screws are removed, place them on the table surface. Do not leave them in the mirror retainer.



7. Carefully remove the mirror retainer from the mirror mount.
8. Remove the o-ring from the rear of the mirror
9. Remove the mirror from the mirror mount
10. Remove the un-mounted replacement mirror from the package.
11. Install the replacement un-mounted mirror in the mirror mount, shiny side down. When looking at the lens carriage assembly from the top, you should see the dull or frosted side of the optic.
12. Place the o-ring in the mirror retainer.
13. Gently place the mirror retainer over the mirror, ensuring that the o-ring is in place.
14. Install the 4 mounting screws, but do not tighten at this time.
15. Once all of the mirror mounting screws have been installed, gently and evenly tighten the mirror mounting Allen screws. **DO NOT OVER TIGHTEN.**

NOTE: Because the position and alignment of this mirror is fixed, there is no need to perform an alignment at this step in the process.

16. On the far left hand side of the X-Axis assembly, is a mirror mount. This mirror mount is made of 2 components. The Mirror support and the Mirror mount.
 - a. The Mirror support is Brass in color and has knurled ridges around the outside, similar to a quarter.
 - b. The Mirror mount is aluminum in color and has NO knurled edge.

17. While standing in front of the engraver, grasp the Mirror mount, No knurled edge, with your index finger and your thumb. Turn the knurled portion of the mirror support toward you. Note, because you are standing essentially behind the mirror, the removal of the mirror on the threads may appear reversed.
18. The threads on the mirror support are about ¼ inch long. Turn the mirror support until the mirror comes off in your hand.
19. Remove one of the mounted replacement mirrors from the package and install on the mirror mount.
20. Locate the alignment target that was provided in your replacement optics kit, and place it in the lens carriage.
21. Invoke the Red Dot pointer by depressing the “Pointer” button on the display panel.
22. On the control panel, depress the “X-Y Off” button.
23. Depress Go to disable the Axis. The carriage should now move freely around the table.

NOTE: The Red Dot pointer on the Fiber Laser is quiet large, roughly 3/8 of an inch when it is projected on to the surface of the target.

24. Move the lens carriage to the far right hand side of the engraver. If the Red Dot image is on the target, using the adjustment screws on the back of the mirror mount, move the red dot in to the center of the target.

Carriage Mirror (Mirror 2) Adjustment Diagram:

The diagram below illustrates the direction the Red Dot can be expected to move when the indicated mirror adjustment screw is turned.

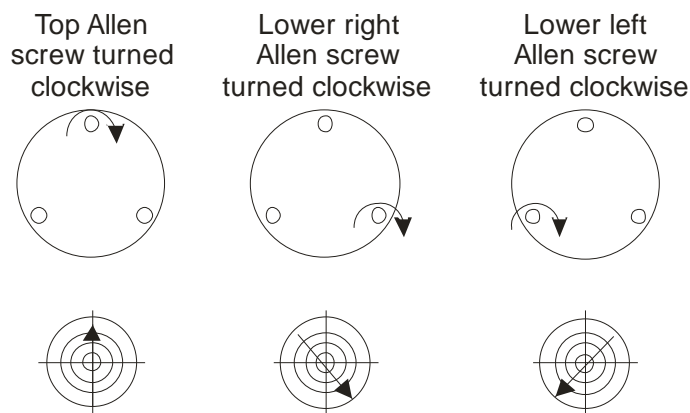
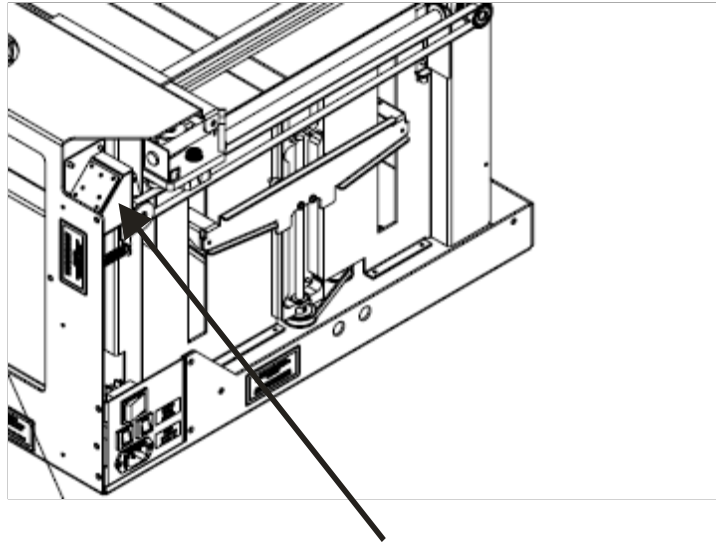


Diagram 1

25. Locate the ORANGE periscope. This is located in the upper left rear corner of the engraver, behind the side panel that was removed earlier.



Left side of engraver
Arrow denotes the "Periscope"
Diagram 2

26. With your magic marker, draw an up facing arrow on both of the mirror mounting plates, as shown in the picture. This will make realigning the engraver much easier.

27. Remove the 4 #1 Phillips screws from TOP mirror mounting plate.

28. Gently lift the Mirror mounting plate up from the "periscope"

29. Remove the mirror from the Mirror mounting plate by turning the mirror and the mirror support counterclockwise.

30. Install the replacement mirror and mirror support on the mirror mounting bracket.

31. Place the Mirror mounting bracket back in the "periscope" ensuring that the arrow that was drawn earlier points up. Install the mounting screws

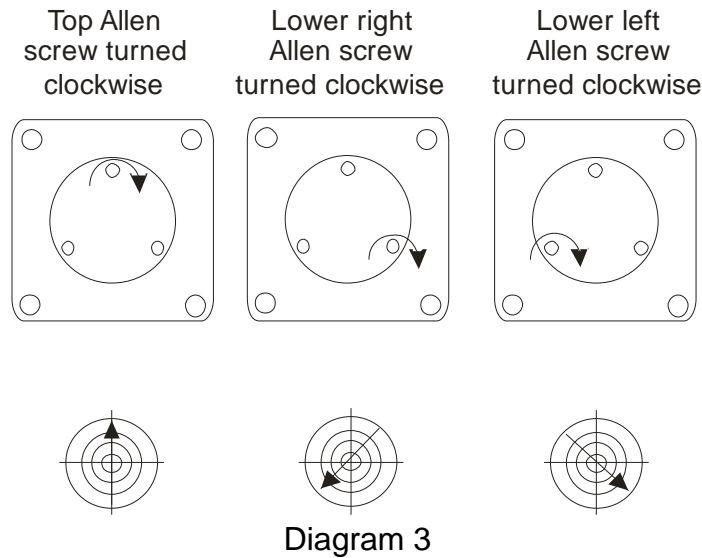
32. Turn on the Red Dot pointer.

33. Move the X-Axis rail to the rear and the lens carriage to the far left hand side of the engraver.

34. Visually inspect the position of the red dot. Adjust the Top mirror in the "periscope" until the red dot is centered in the alignment target.

“Periscope” Upper Mirror (Mirror 3) Adjustment Diagram:

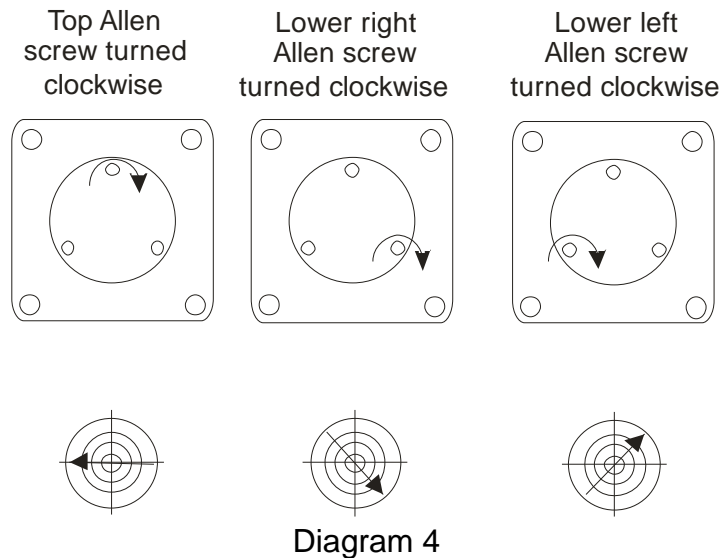
The diagram below illustrates the direction the Red Dot can be expected to move when the indicated mirror adjustment screw is turned.



35. With your magic marker, draw an arrow on the mirror mounting plate to indicate up.
36. Remove the 4 mounting screws from the Mirror mounting plate.
37. Gently remove the mirror mounting plate from the ‘periscope’
38. Remove the mirror and the mirror support from the mirror mounting bracket by turning the mirror and the mirror support counterclockwise.
39. Install the replacement mirror and mirror support on the mirror mounting bracket.
40. Reinstall the mirror mounting bracket in the “periscope”. Ensure that the arrow points up.
41. Secure the mirror mounting plate with the 4 Phillips screws.
42. Turn on the Red Dot pointer.
43. Move the lens carriage to the left rear of the engraver and adjust the red dot until it is centered on the target.

“Periscope” Lower Mirror (Mirror 4) Adjustment Diagram:

The diagram below illustrates the direction the Red Dot can be expected to move when the indicated mirror adjustment screw is turned.



44. Depress “Reset” to re-enable the axis, and to send the lens carriage back to the home position

This completes the replacing the optics portion of this technical note.

Confirming the Alignment

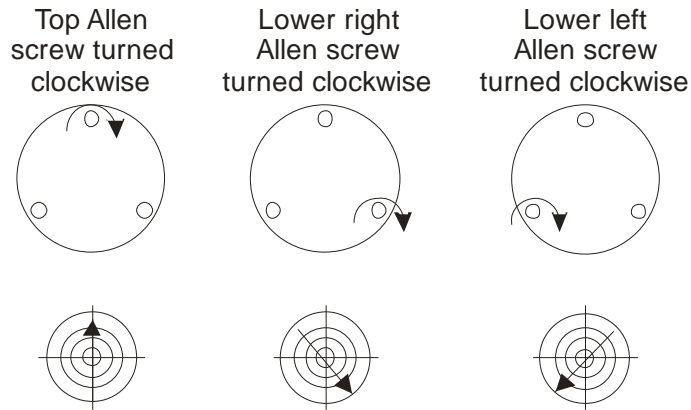
45. Install the Alignment target in the lens carriage
46. Turn on the Red Dot pointer.
47. Depress the “X-Y Off” button on the control panel.
48. Depress the Go button, the carriage can now be moved around the table.
49. Move the lens carriage to the left rear corner (position 1) of the engraver.
50. Check to see if the Red Dot is centered on the target.
51. If the Red Dot is not centered on the target, using the Lower “periscope” mirror and the “Periscope Lower Mirror (Diagram 4) Adjustment Diagram” above, adjust the Red Dot so that it is centered on the target.
52. Move the lens carriage to the left front of the engraver.
53. Using the Upper “periscope” mirror and Diagram 3 so that the Red Dot pointer is centered on the alignment target.

54. Move the lens carriage back to position 1 to verify that the alignment has not changed. If it has moved, complete steps 49 through 53 again, until there is little change in the red dot position when you move from the front to the back.
55. Move the X-axis rail to the rear of the engraver.
56. Check to see if the Red Dot pointer is on the target. Adjust as necessary to move the Red Dot image to the center of the target.
57. Move the lens carriage to the right, watching the position of the Red Dot, if it moves off of the target, stop; move the lens carriage back and adjust so the red dot is in the center of the target. Otherwise move the lens carriage to the far right hand side of the engraver, and adjust so that the Red dot is in the center of the alignment target.
58. One last time, with the Target in place and the Red Dot pointer on, move the lens carriage to the outer limits of the table, making sure that the Red Dot image stays in the center of the target.
59. You have now completed the Updating your FiberMark Optics.

If you have any questions please call Epilog's Technical Support
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Fax 303.531.7594
E-Mail: tech@epiloglaser.com

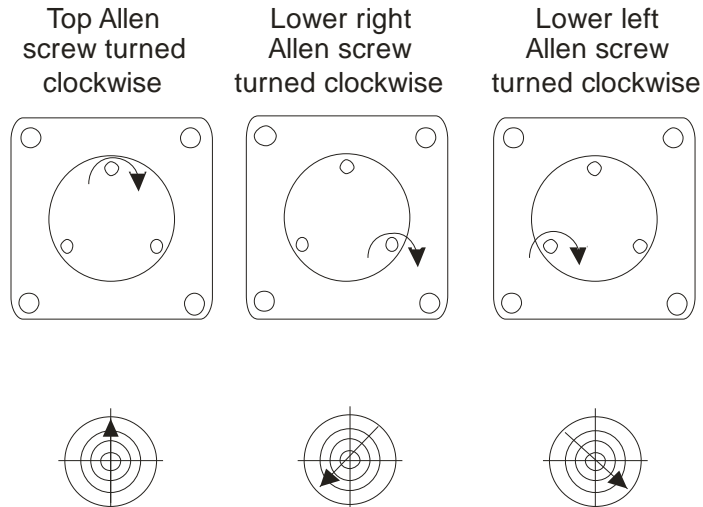
Carriage Mirror (Mirror 2) Adjustment Diagram:

The diagram below illustrates the direction the Red Dot can be expected to move when the indicated mirror adjustment screw is turned.



“Periscope” Upper Mirror (Mirror 3) Adjustment Diagram:

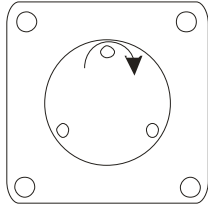
The diagram below illustrates the direction the Red Dot can be expected to move when the indicated mirror adjustment screw is turned.



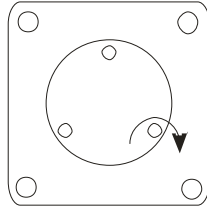
“Periscope” Lower Mirror (Mirror 4) Adjustment Diagram:

The diagram below illustrates the direction the Red Dot can be expected to move when the indicated mirror adjustment screw is turned.

Top Allen
screw turned
clockwise



Lower right
Allen screw
turned clockwise



Lower left
Allen screw
turned clockwise

