

Aligning the CO2 Laser

Zing 24



Tools Required

3/32" allen wrench
Phillips head screwdriver
Safety glasses

Laser alignment target (PN: TT0198)
Super glue or similar adhesive
Masking tape

Overview

This document illustrates the procedures required to align the laser inside of the Zing 24 engraver. Please read the entire document before proceeding with the alignment.

Safety glasses or eyeglasses are required to be worn throughout the entirety of the following procedures.

The laser alignment procedure can be performed if any of the following apply to you.

- You are experiencing a general loss of power.
- You are experiencing 'fading' in one of the corners of the table.
- You are losing power in certain positions on the table.
- You have replaced the x-axis rail.
- You have replaced a laser tube.
- You have replaced a mirror.
- The engraver has been moved or transported.

Safety

Throughout this document, certain items are labeled LASER RADIATION HAZARD, SAFETY GLASSES, and NOTE. These terms alert you to precautions that may result in damage to your engraving system or a risk to your personal safety. Read and follow them carefully.



LASER RADIATION HAZARD: This symbol indicates a possible laser radiation hazard, which if not avoided or proper safety precautions are not taken may result in minor injury, permanent eye damage or damage to the engraving system.



SAFETY GLASSES: This symbol indicates a direct hazardous situation which if safety glasses are not worn may result in eye injury or permanent loss of vision.

NOTE: A 'Note' is not necessarily safety related but indicates a recommendation or special point of information that could assist in understanding the use or care of a feature item.

Operating the Zing 24 engraver without side panels on is potentially hazardous. Always ensure personal safety by wearing protective eyewear and avoiding the open side of the machine.

Before Starting

Direction

Many of the instructions provided in this procedure will have a direction given, such as left-hand side or right-hand side. Unless otherwise stated, these are all provided as though you were facing the machine from the front.

Table Positions

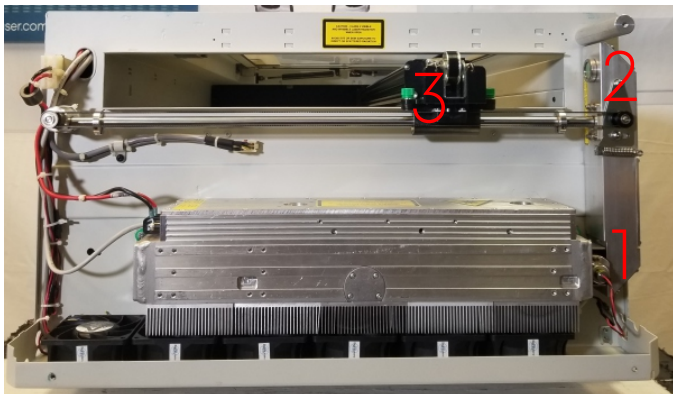
For the following procedures, the table will be broken into the three (3) positions seen below. Each position is identified by its relative distance to the laser source.



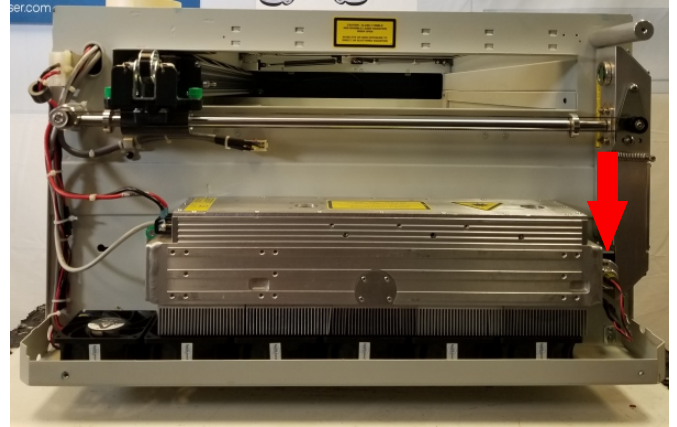
Mirrors and Red Dot Pointer

The three (3) mirrors and the red dot pointer that are used to align the laser are located under the left side panel of the machine. Throughout this procedure, the mirrors will be referenced by number, as seen below.

Mirror Locations:



Red Dot Diode Location:



Compared to Other Models

The Zing 24 alignment procedure is unique to this specific model as the optics within the laser tube are much different than other Epilog Laser engraver models. Attempting to utilize other alignment instructions not intended for the Zing 24, including those designed for the Zing 16, will result in unsuccessful alignment and "loss" of the red dot diode and laser fire.

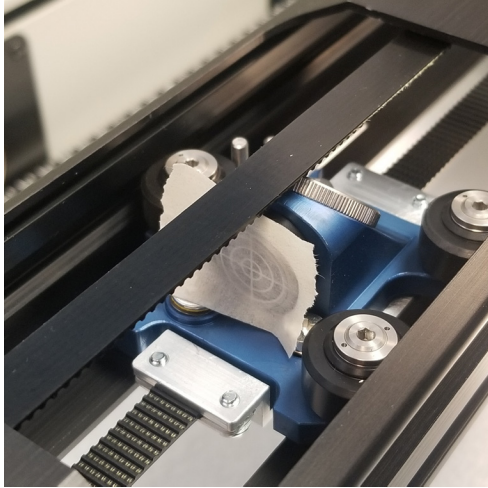
If at any point during the alignment procedure you lose sight of the red dot diode or unable to get a burn mark on the alignment target, contact Epilog Tech Support.

Epilog Tech Support Contact Information:

tech@epiloglaser.com
www.epiloglaser.com
303-215-9171

Pre-Alignment Procedure

1. Press the X/Y OFF button on the Zing keypad to disable the gantry and bring it to an area where you can access the lens carriage.
2. Place a piece of masking tape over the front side of the alignment target and insert into the lens assembly:



3. Press the RESET button on the Zing keypad to return the gantry and lens carriage to the park position.
4. Open an illustrating program and create a new file with the same dimensions of the Zing 24 bed- 24" x 12".
 - Create a 1/2" x 1/2" vector square and place it 1" - 2" from the left side of the page and 1" - 2" from the bottom of the page.
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 - Change the job settings to 10% speed and 10% power and ensure that the piece size in the driver matches the page size of your file.

NOTE: If using the Epilog Software Suite, the file will import with the correct dimensions and there is no need to verify the piece size.

5. Send the job to the engraver

6. While keeping one hand on the lid, press the GO button on the Zing keypad to begin the job. Pay attention to the piece of tape on the alignment target and as soon as a burn mark appears lift the engraver lid to disable the laser.

NOTE: The laser will only fire if the engraver lid is closed.

7. Press the STOP button on the Zing keypad once so the job pauses but the carriage remains in the lower lefthand corner (position #1). Depending on where the carriage is when pressing STOP, it may continue moving for a short distance.

8. Observe the burn mark. If the burn is in the center of bullseye on the alignment target, proceed to **Adjusting Position/Mirror #2**. If the burn is off-center, proceed to **Adjusting Position/Mirror #1**.

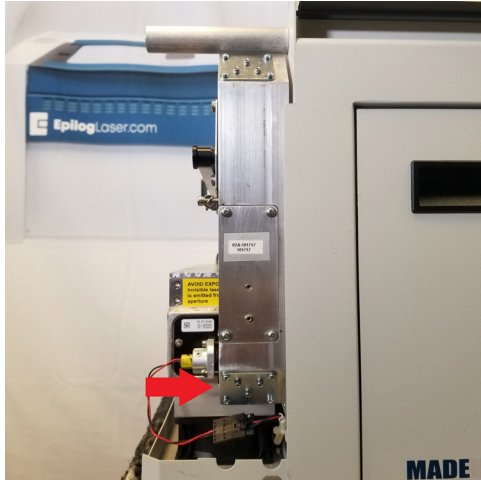
NOTE: It is important that the lens carriage remains in the same location where the burn mark was produced. If hitting the STOP button on the Zing keypad causes the carriage to return to the park position, replace the tape on the alignment target and repeat steps 5-8.

Adjusting Position/Mirror #1

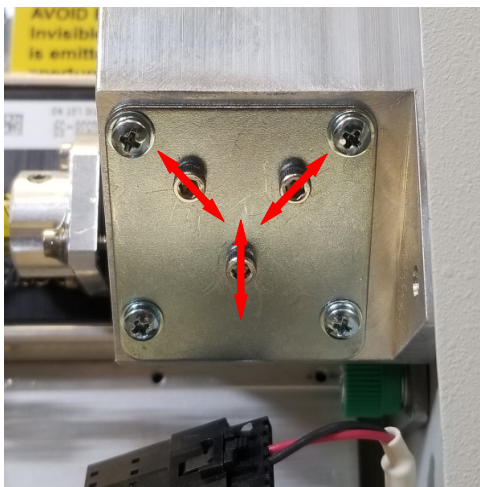
The goal of this step is to adjust the mirror to get a burn mark at the center of the alignment target.

1. Start removing the left side panel of the Zing engraver by removing the four (4) phillips screws which hold it. Three (3) screws are located on the left side of the machine and one (1) screw is located at the rear of the machine. Once the screws have been removed, using both hands, pull the bottom of the panel away from the machine and lift up to remove the panel.

2. Locate mirror #1 located at the bottom of the laser periscope, shown below.



3. Adjustments of this mirror are made using the three (3) 3/32" allen head screws, each of which move the laser/red dot in a different direction on the target. The movement each screw controls are shown below:



NOTE: Small adjustments can make a big difference in laser location. To avoid "loss" of the laser and red dot fire, use very small adjustments when attempting to center the burn mark. If at any point you are unable to get a burn mark or see the red dot diode, call Epilog Tech Support.

4. Press the POINTER button on the Zing keypad to turn on the red dot diode. In this step we will be using the red dot diode location on the alignment target to help gauge how far we need to adjust the CO2 laser location to get a burn mark directly center on the alignment target.

- For this step, assume that the red dot-diode location will move twice as far as the CO2 laser location.
- For example: if the burn mark generated during the **Pre-Alignment Procedure** is 1/8" away from the center of the alignment target, use the adjustment screws on mirror #1 to move the location of the red dot diode by 1/16" in the appropriate direction.



LASER RADIATION HAZARD



SAFETY GLASSES

5. After making any necessary adjustments using the adjustment screws on mirror #1 and the red dot diode as a reference point, replace the piece of tape on the alignment target and follow steps 5-8 of the **Pre-Alignment Procedure** to create another burn mark.

6. Repeat this process until the burn mark is at the center of the alignment target and once complete, apply a dab or super glue or another similar adhesive to each adjustment screw on mirror #1, letting it also drip down to the adjustment screw plate, thereby helping to "lock in" the alignment.

Adjusting Position/Mirror #2 & Red Dot

The goal of this step is to align the red dot diode to a new burn mark using the adjustment screws on the red dot diode and to then adjust both the red dot di-

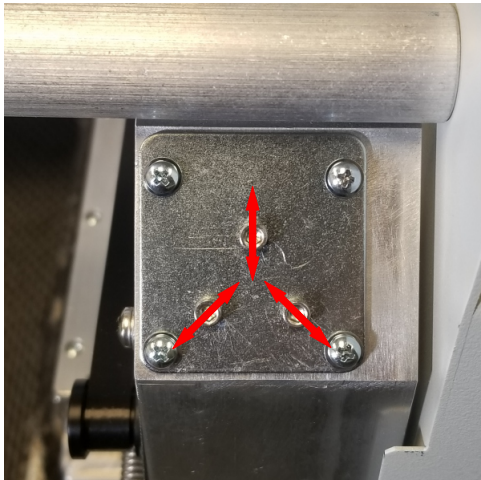
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ode and CO2 laser to the center of the alignment target using the adjustment screws on mirror #2.

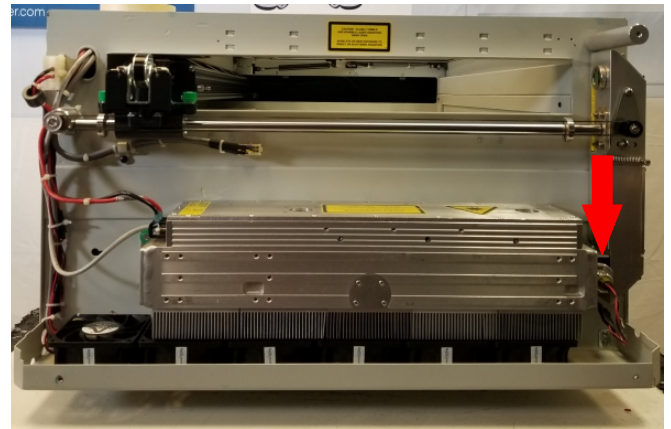
1. Locate mirror #2 located at the top of the laser periscope, shown below.



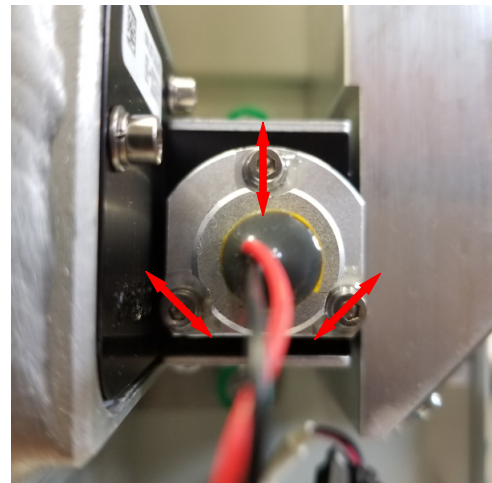
2. Adjustments of this mirror are made using the three (3) 3/32" allen head screws, each of which move the laser/red dot in a different direction on the target. The movement each screw controls are shown below:



3. Locate the red dot diode at the front of the laser tube, shown below:



4. Adjustments of the red dot diode are made using the three (3) 3/32" allen head screws, each of which move the red dot in a different direction on the target. The movement each screw controls are shown below:



NOTE: Small adjustments can make a big difference in laser location. To avoid "loss" of the laser and red dot fire, use very small adjustments when attempting to center the burn mark. If at any point you are unable to get a burn mark or see the red dot diode, call Epilog Tech Support.

5. Open an illustrating program and create a new file with the same dimensions of the Zing 24 bed- 24" x 12".

- Create a 1/2" x 1/2" vector square and place it 1" - 2" from the left side of the page and 1" - 2" from the top of the page.
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- Change the job settings to 10% speed and 10% power and ensure that the piece size in the driver matches the page size of your file.

NOTE: If using the Epilog Software Suite, the file will import with the correct dimensions and there is no need to verify the piece size.

6. Send the job to the engraver



LASER RADIATION HAZARD



SAFETY GLASSES

7. While keeping one hand on the lid, press the GO button on the Zing keypad to begin the job. Pay attention to the piece of tape on the alignment target and as soon as a burn mark appears lift the engraver lid to disable the laser.

NOTE: The laser will only fire if the engraver lid is closed.

8. Press the STOP button on the Zing keypad once so that the job pauses but the carriage remains in the upper lefthand corner (position #2). Depending on where the carriage is when pressing STOP, it may continue moving for a short distance.

9. Press the POINTER button on the Zing

keypad to turn on the red dot diode.

10. Inspect the location where the red dot diode shows on the alignment target relative to the burn mark. If they are not located at the same point on the alignment target, use the adjustment screws on the red dot diode to align the red dot diode to the center of the burn mark.

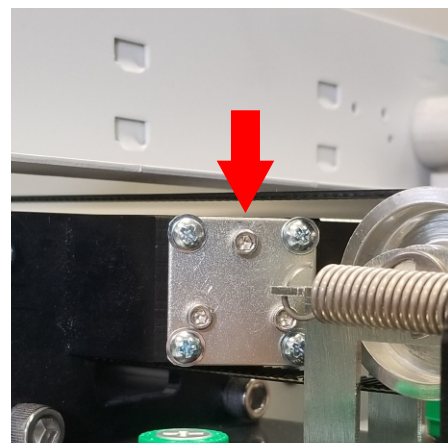
NOTE: At this point in position #2, the burn mark may appear off center of the alignment target- this is expected. This step is intended to join the red dot diode and CO2 laser so that they may take the same path to impact the alignment target at a similar location.

12. Use the adjustment screws on mirror #2 to move the red dot diode to the center of the alignment target. Since the red dot diode and CO2 laser paths are now joined, adjusting mirror #2 will adjust them both.

13. Once the red dot diode is aligned over the center of the alignment target, apply a dab of super glue or another similar adhesive to each adjustment screw head on mirror #2, letting it also drip down to the adjustment screw plate, thereby helping to "lock in" the alignment.

Adjusting Position/Mirror #3

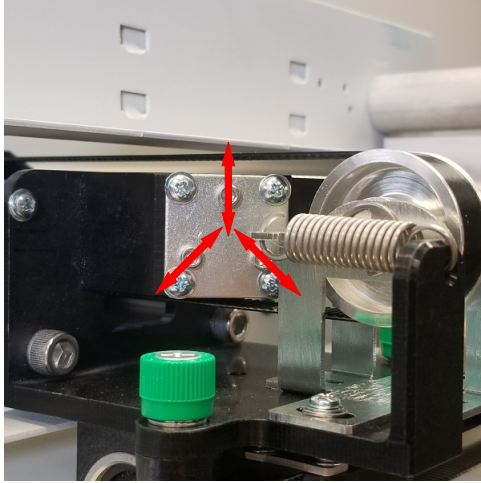
1. Locate mirror #3 located on the left side of the gantry:



Conclusion

This concludes the CO2 laser alignment for the Zing 24 engraver. If further assistance is needed, please reach out to Epilog Technical Support.

2. Adjustments of this mirror are made using the three (3) 3/32" allen head screws, each of which move the laser/red dot in a different direction on the target. The movement each screw controls are shown below:



3. On the Zing keypad, press the X/Y OFF button and move the carriage to position 3, shown at the beginning of this procedure,

4. Use the adjustment screws on mirror #3 to move the red dot diode to the center of the alignment target. Since the red dot diode and CO2 laser paths are now joined, adjusting mirror #3 will adjust them both.

4. Once the red dot diode is aligned over the center of the alignment target, apply a dab of super glue or another similar adhesive to each adjustment screw head, letting it also drip down to the adjustment screw plate, thereby helping to "lock in" the alignment.

5. Press the POINTER button on the Zing keypad to turn off the red dot diode.

6. Replace the left side panel of the Zing engraver.