



EPILOG LASER

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Alignment Instructions for the 36EXT

Before you start this procedure make sure you have leveled the machine properly by following the leveling the 36 EXT instructions. Also make sure that the machine is where you plan on keeping it, DO NOT move the machine after it has been aligned as this can throw off the alignment, so it is important to place the machine some where where you can get good access to the sides and some access to the back of the machine (enough to remove panels and replace them).

You will need:

Philips head screw driver
3/32 Allen Wrench

Be sure to that the Large door is closed while making any adjustments to the alignment, as adjustments made while the door is open will move off when the door is shut.

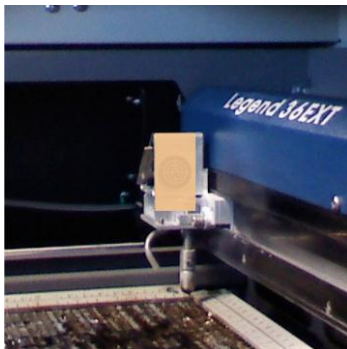
The first thing we need to do is test the laser to ensure proper Red Dot and Laser alignment **(this part of the procedure will insure that the red laser and cutting laser are following the same path).**

1. Install the target that came with your engraver in to the lens carriage assembly. (fits into the hole on the upper left part of the lens carriage so the target faces to the right side of the machine, **reference picture below.**)



2. Press MAINT then, using the arrow keys, scroll down until "Align laser" shows on the display , then press GO to accept. (note that the display will say "press up key to fire laser")

3. Place a piece of tape over the target, (**reference picture below**).



4. Move the lens assembly to position Four. (**This is the front left hand corner of the machine.**)

5. Close the access doors, (**the laser will not fire in alignment mode with the doors open**).

6. Press the up arrow a couple of times. This will fire the laser. (**note: you are trying to create just a small burn mark in the tape. Also if the burn mark is deformed and looks like a half moon skip to the removing the periscope tube section of the alignment. Also if you can not get a burn in this position call**

tech support for further assistance, the phone is on the last page of these instructions.)

7. Once a burn mark has been made on the target press POINTER to turn on the red diode pointer. **(If the pointer is Deformed and looks excessively elongated skip to the removing the periscope tube section of the instructions)**

8. Check to ensure that the red dot and the laser fire (burn-spot) are on the same place.

9. If the laser and red dot do not line up, or are not on top of each other, then we will need to adjust them so they are on top of each other, **(If they are on top of each other then skip to the next section)**.

10. To adjust the red laser pointer we first need to find it.

A. On the back of the engraver there are three panels. The middle panel is the Laser cover (the panel that is directly beneath the air ducts). Remove the Laser Cover by removing the 11 #1 Phillips screws.

B. Behind the laser cover is the laser assembly. Attached to the left hand side (as you are facing the back of the machine) of the laser assembly is the Red Dot Pointer mount (The pointer it self is a small cylindrical object that has a red and black wires coming out of it, and is mounted into a mount that has three allen head screws and is flat on one side and round on the other).

11. To adjust the red dot laser to the center of the burn mark we want to use the three allen head screws that surround the red laser pointer and form a triangle. Try to use the two screws closest to you to adjust the pointer. If you feel you have to use the screw on the back side of the mount then be careful to not touch both the adjustment screw and the diode with the allen wrench as this can cause a short that will restart the machine. If this happens then you will need to redo steps 2-7. When adjusting the screws you can use the following guide below.

If your Red dot is on the top of the laser assembly

The far left screw on the mount as you looking at it from the back.

Clockwise: will move the red dot right

Counter Clockwise: will move the red dot left

The front right screw on the mount as you looking at it from the back.

Clockwise: will move the red dot to the upper left

Counter Clockwise: will move the red dot to the lower right

The back right screw on the mount as you looking at it from the back.

Clockwise: will move the red dot to the lower left

Counter Clockwise: will move the red dot to the upper right

If your Red dot is on the bottom of the laser assembly

The far left screw on the mount as you looking at it from the back.

Clockwise: will move the red dot left

Counter Clockwise: will move the red dot right

The front right screw on the mount as you looking at it from the back.

Clockwise: will move the red dot to the upper right

Counter Clockwise: will move the red dot to the lower left

The back right screw on the mount as you looking at it from the back.

Clockwise: will move the red dot to the lower right

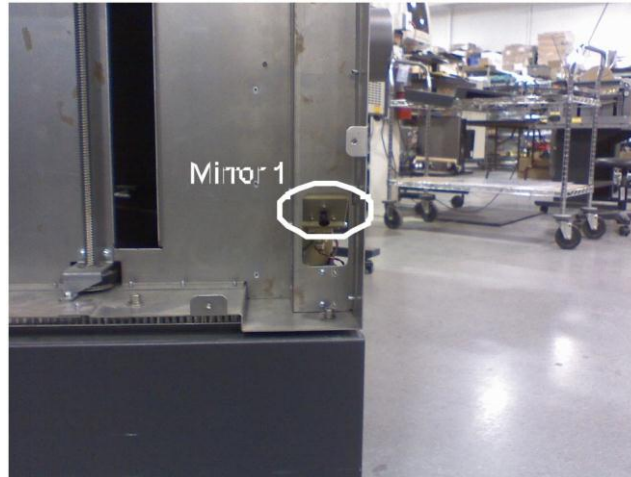
Counter Clockwise: will move the red dot to the upper left

12. Once you have the red laser moved to the center of the burn mark we have created we can now use the red laser as a guide for the rest of the installation.

Aligning the Laser through the Periscope Tube

Before this procedure can be started we to remove a few panels off of the machine. You will need to remove the panel above and below the exhaust ducts on the back, the right hand side panel, and the small panel that is on the top right back of the machine (this panel has either a black or red thumb screw with three allen head screws that become visible once the panel is removed).

1. Now that the panels are removed we can now continue with removing the periscope tube, to help locate the periscope tube look for the following two reference points.



A. Stand on the right hand side of the machine looking at the side of the machine. If you look at the lower right hand corner of that side of the machine you will see a rectangular cut out in the frame of the machine. If you look through that cut out and you will see a thumb screw with three allen head screws in the form of a triangle around the thumb screw. Those are the adjustment screws for mirror one **(Picture Above)**.



B. The second point is mirror two, the adjustment screws for mirror two are the ones that are behind the small panel you took off that was in the top right back of the machine **(Picture Above)** .

2. The periscope tube is what is between mirror one and mirror two. To remove it we need to remove the housing for mirror two. This is done by removing the three shiny Phillips head screws that are accessed from the right hand side of the machine.

3. Once the screws for the mirror housing are removed you can pull back and lift out the mirror housing.

4. After the Mirror housing has been removed you can now take out the periscope tube from the system.

5. Look at the bottom of the mirror housing you removed in step 3 and you will be able to see where the periscope tube fitted into the housing. Put a piece of masking tape over the hole where the periscope tube fits into the mirror housing.

6. Then re-install the mirror housing by holding it in place with one hand or getting a second person to hold the mirror housing and replace the three silver screws that hold in the mirror housing.

7. Once re-installed you will need to create a slight burn mark in the tape, to do this you will need to:

- A. Hit the MAINT key
- B. Press the DOWN arrow

C. It should now say align laser

D. Press GO and it should now say PRESS UP KEY TO FIRE LASER.

E. Be sure no one is standing behind the machine and press the up key quickly then open the window to ensure the laser has no power and check to see if the tape has a burn mark.

8. If the tape now has a burn mark in it, check to see if the burn mark is in the center of the hole on the bottom of the mirror mount. If it is then continue on to the alignment section of the instructions. If it is not in the center then use the mirror 1 adjustment screws to adjust the burn mark in to the center by using the red laser as a guide. (note: If the red laser is not on top of the burn mark that was created then please use the adjustment screws on the red laser bracket to adjust the red laser so it is on top of the burn mark. Refer to the red dot adjustment instructions Step: 11).

9. Once the red dot and the burn mark are in the center of the hole in the bottom of the mirror housing then you can reinstall the periscope tube by completing the following steps.

A. Remove the mirror housing by taking out the three Phillips screws that are on the right hand side of the housing and the machine. (Note: this should be done with newer machines that have the collar for the periscope tube so the mirror can be inspected for possible smoke blackening caused by creating the burn mark.)

B. Once the housing is out remove the tape from the bottom and check the mirror inside and make sure it is clean if it is not then clean the mirror per the instructions in you manual.

C. Slide the periscope tube back in and make sure it is fitted into the hole above mirror one. (Note: newer machines may have a collar the tube fits into with a allen head screw that will need to be tighten once the tube is fitted into mirror 2 or the upper mirror housing).

D. Reinstall the mirror housing by placing it on top of the periscope tube then aligning the screw holes in the housing to the holes in the frame of the machine.

E. Use either a magnetic tip screw driver or your finger to get each of the screw threaded, then lift up on the housing and then tighten down the screws for that housing until housing is secured.

F. (For newer machines with the collar for the periscope tube you will need to now lift the tube up until it fits into the bottom of the upper mirror housing then tighten the allen head set screw that holds it in place.)

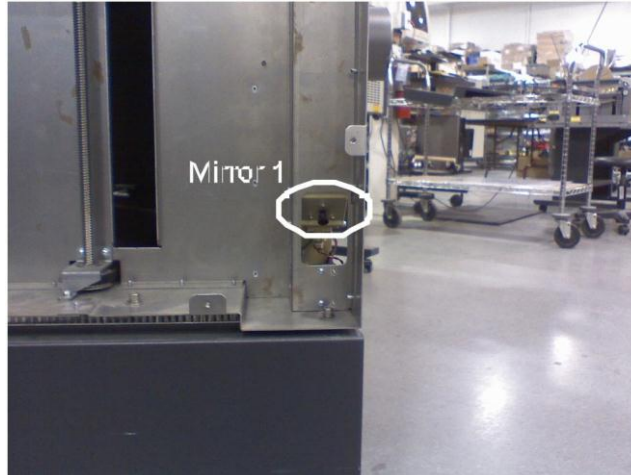
10. This part of the alignment process is now complete and you can continue on to the main alignment process of aligning the three mirrors.

Aligning the Mirrors

Below are the instructions for aligning the mirrors on your 36 EXT machine for optimal performance of you laser system. Before starting this procedure make sure you have completed the instructions above (aligning the red dot and aligning the laser through the periscope tube if needed).

Position 1/Mirror 1 Adjustments

1. The machine should still be in alignment mode, if it is not complete the sub steps below
 - a. Turn the machine on.
 - b. Once the machine has booted and says job on the display Press the MAINT button
 - c. Then press the DOWN arrow once to move to the ALIGN LASER option.
 - d. Press go so the display says PRESS UP KEY TO FIRE LASER. You are now ready for step 2.
2. Move the lens carriage to the back right hand corner of the table, this is position 1.
3. To adjust the red dot in to the center of the target we want to use Mirror 1, this is the mirror closest to the laser tube and the adjustment screws for it are accessed through the right side of the machine through a small rectangular cut out that is in the bottom right hand corner of the right side of the machine, you will see a thumb screw surrounded by three allen head screws that are in a triangular shape. The three allen head screws are the adjustment screws you do not need to touch the thumb screw at all during the alignment process.
4. Use the three allen head screws to adjust the red dot into the center of the target. Use only small movements as it does not take much screw movement to adjust the red dot. A screw guide and some adjustment tips are provided below.



Adjusting the screws for mirror 1

The top screw on mirror 1

Clockwise: moves the red dot to the right

Counter Clockwise: moves the red dot to the left

The bottom left screw on mirror 1

Clockwise: moves the red dot to the upper left

Counter Clockwise: moves the red dot to the lower right

The bottom right screw on mirror 1

Clockwise: moves the red dot to the to the lower left

Counter Clockwise: moves the red dot to the upper right

Adjustment tips

The easiest way to adjust the red dot into the center of the target is to pick one of the two bottom screws and use it to bring the red dot directly left or right of center then use the screw at the point of the triangle to bring the red dot into center, then when you come back to this position and mirror again use the other bottom screw and the screw at the point of the triangle to bring into center and alternate the bottom screws of the mirror while doing the alignment between position/mirror 1 and position/mirror 2.

5. Once the red dot is in the center of the target move on to the position/mirror 2 adjustments.

Position 2/Mirror 2 Adjustments

1. Move the lens carriage to the front right corner of the table, this is position 2 and when adjusting position 2 the only mirror you want to use is mirror 2

2. Use mirror 2 to adjust the red laser pointer into the center of the target

3. The adjustment screws for this mirror are located behind the small 3 inch by 4 inch panel that it is on the top back right hand corner of the machine. The screws look exactly like the ones for mirror 1. The screw adjustment guide is below.



Adjusting the screws for mirror 2

Top center screw on mirror 2

Clockwise: moves the red dot to the upper part of the target

Counter Clockwise: Moves the red dot to the lower part of the target

Lower left screw on mirror 2

Clockwise: moves the red dot to the lower right hand corner of the target

Counter Clockwise: moves the red dot to the upper left hand corner of the target

Lower Right screw on mirror 2

Clockwise: moves the red dot to the lower left hand side of the target

Counter Clockwise: moves the red dot to the upper right hand side of the target.

5. Once the red laser has been centered into the center of the target move the lens carriage back to position one and check to see if the red laser pointer is still in the center of the target if it is not in the center anymore then go back to Position 1/Mirror 1 adjustments and complete those instructions again, once done come back and redo the

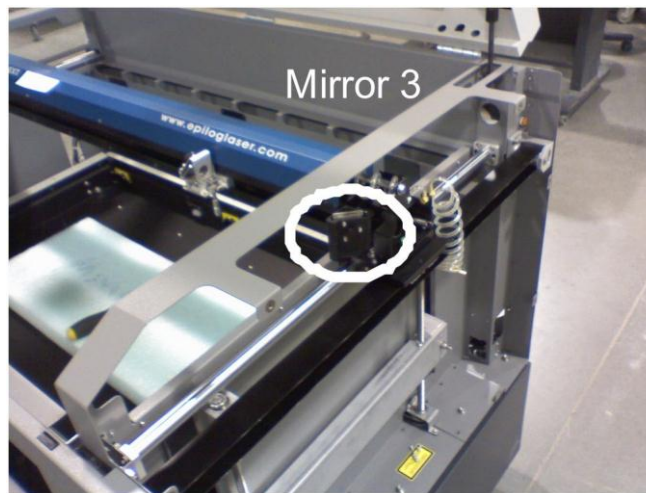
instructions for the position 2/mirror 2 adjustments. If it is centered in both position 1 and position 2 then skip on to position 3/mirror 3 adjustments.

Position 3/Mirror 3 Adjustments

1. Move the lens carriage to the back left hand corner of the table. This is position 3. For position 3 you will want to only use mirror 3.

2. Mirror 3 is located on the right hand side of the rail and the adjustment screws are accessed from the right hand side of the machine.

3. Use the adjustment screws to bring the red dot into the center of the lens carriage, the adjustment guide for the screws is below.



Adjusting the screws for mirror 3

Top screw on mirror 3

Clockwise: moves the red dot up the target

Counter Clockwise: moves the red dot down the target

Lower left screw on mirror 3

Clockwise: moves the red dot to the lower left hand corner of the target

Counter Clockwise: moves the red dot to the upper right hand corner of the target

Lower right screw on mirror 3

Clockwise: moves the red dot to the lower right hand corner of the target

Counter Clockwise: moves the red dot to the upper left hand corner of the target

4. Once the red dot has been moved to the center of the target continue on to the position 4/mirror 3 adjustments section

Position 4/Mirror 3 Adjustments

1. Moves the lens carriage to the lower left hand corner of the table. This is position 4.

2. Check to see where the red dot is on the target, if the red dot is not within the first circle then you will need to check to make sure the machine is level by following the machine leveling instructions.

3. If the red dot is well within the first circle then what you will need to do is move the red dot half way from where it is currently and the center of the target. The reason for this is that this will effectively allow you to share the distance that position 3 and 4 are off, so instead of having position 3 dead on and then having position 4 an $1/8^{\text{th}}$ of an inch off you will now have position 3 and 4 $1/16^{\text{th}}$ of an inch off. Having both positions off a small amount is better than having one position off a large amount.

4. Once you have moved the red dot to where it needs to be then you will need to go and double check to make sure that all four corners are in center or in the case of positions 3 and 4 very close to center. If any of the corners now looks like it is off center then start over at position 1/mirror adjustments and go through the alignment instructions over again. If all four corners are in center of the target then continue on to the closing steps mentioned below

Closing steps before putting the machine back together.

1. Do a quick burn mark in all four corners to make sure the burn marks are in the same spots on the target as the red dot laser. If they are not then redo the red dot laser alignment and go through the alignment procedure again.

2. If all four burns are where they should be (on top of the red dot laser and in the center of the target) then use some glue (two part epoxy works best but you can use any glue that will stick to metal) to glue down all the screws that you have adjusted in the alignment process and the red dot alignment process to help insure they will not move at

all on their own during the operation of the machine. Be sure to not put too much glue on the screws as you may need to break these screws free in the future.

3. Remove the target and turn the red laser on and look to see if it looks like the red laser is going through the center of the lens, if it is not then it might be necessary to go through the perpendicular alignment instructions which can be obtained through tech support at 303.215.9171 you can call this number if you have any other questions about this alignment procedure or anything else involving your laser engraver.

4. Lastly replace all the panels on your machine and do a test run and see if your machine is working properly and if your art work is coming out correctly and with an even consistent burn across the table. If not call the tech support at the 303.215.9171 as there may be more calibration that may need to be done with your machine.

Thank you for purchasing a 36EXT laser engraver. If you have any further questions about anything stated above or any other general or technical questions about your engraver call technical support at 303.215.9171. Thanks again and have a great day.