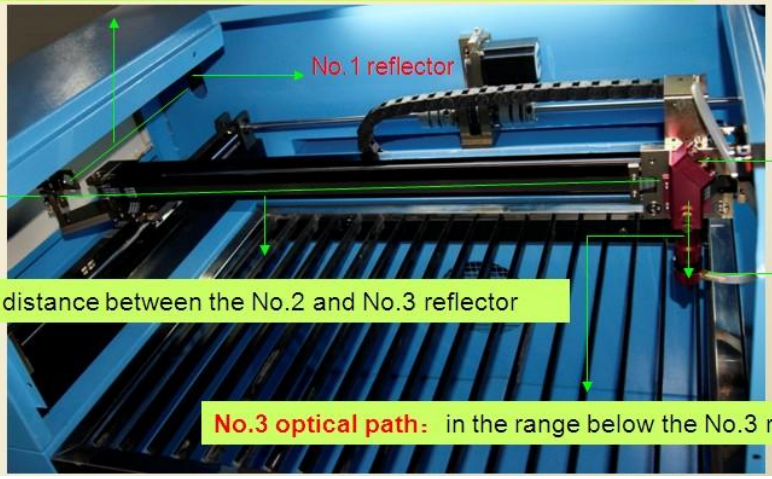
What is the optical path?

The laser emitted from the laser tube is in a certain direction. The No.1 reflector is installed at the light exit of the laser tube. The laser is reflected to the No. 2 reflector by the No.1 reflector. The No.1 optical path is formed between the No.1 and No.2 reflector. And the laser is continued to be reflected to the No.3 reflector by the No.2 reflector. Similarly, the No.2 optical path is formed between the No.2 and No.3 reflector. And finally the laser is reflected to the focusing lens by the No.3 reflector. The third optical path is in the range below the No.3 reflector.

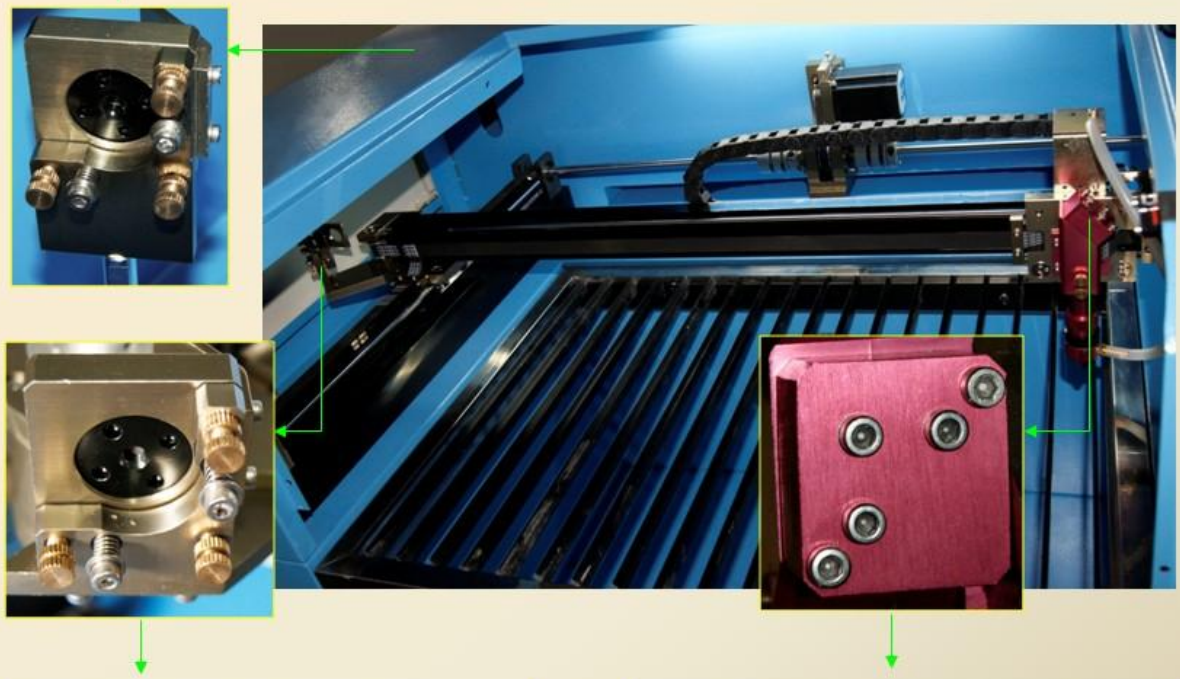
No.1 optical path：distance between the No.1 and No.2 reflector



No.2 optical path：distance between the No.2 and No.3 reflector

No.3 optical path：in the range below the No.3 reflector

No.1 reflector：No.1 optical path is adjusted by the No.1 reflector



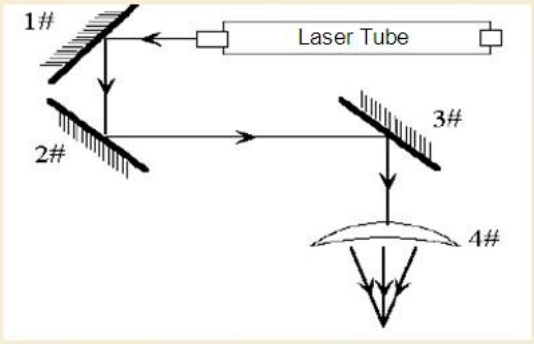
No.2 reflector：No. 2 optical path is adjusted by the No.2 reflector

No.3 reflector：No.3 optical path is adjusted by the No.3 reflector

Calibration of the Optical Path

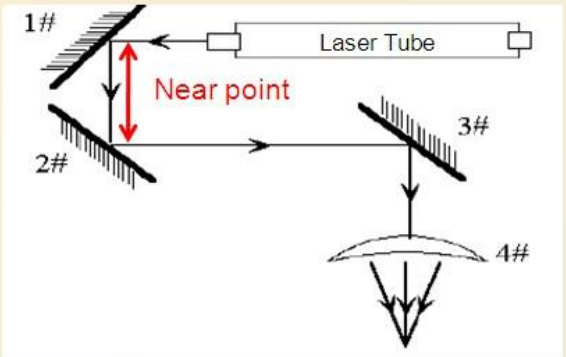
During the operation of the cutting machine, the optical path may be deflected sometimes and cause the phenomenon of no laser or oblique optical path. In this case, please calibrate the optical path in accordance with the following method.

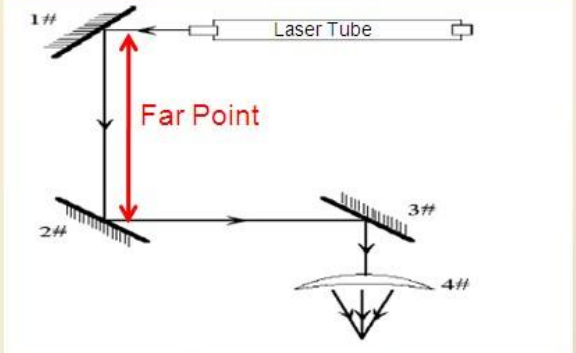
Step 1: adjust the laser beam emitted from the laser tube to shoot at the center of the No.1 reflector.

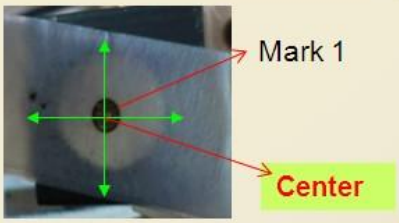


Step 2：Paste a piece of crepe paper, (or other objects) that can be marked, on the No.2 reflector. Move the crossbeam to the nearest position to the laser tube. Then press 'Laser' with (proper light intensity) to make a mark 1. (Attention: to prevent the laser from radiating and injuring people, please firstly use a paper board to determine the approximate location of the light spot and then make adjustment）.

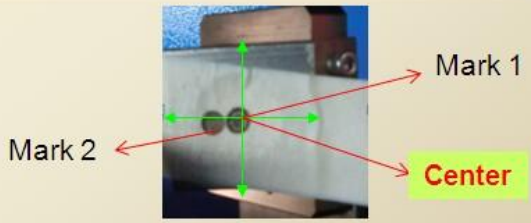
Step 3：Slowly move the crossbeam to the farthest location from the laser tube. Press 'Laser' and make mark 2.







Near point mark on the No.2 reflector



Far point mark on the No.2 reflector

Example：It can be seen from the above picture that the near point mark and the far point mark of the No.2 reflector do not coincide. Tighten the screw 3 on the No.1 reflector to make these two points coincide.

Regulating Screws on No.1 Reflector

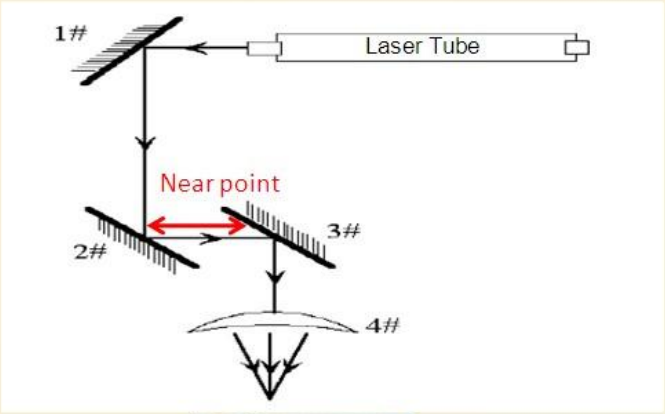
Screw 1
- Tighten： Move the light downward
- Loosen： Move the light upward

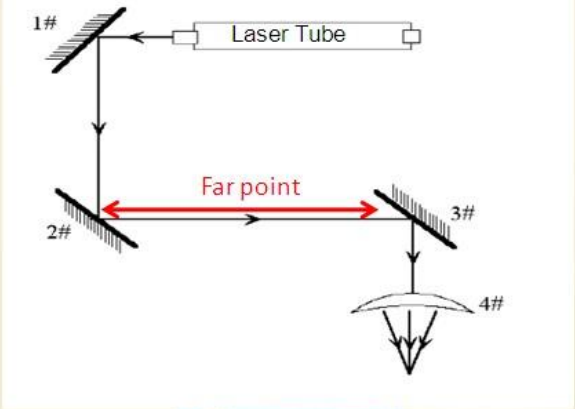
Screw 2
- Tighten： Move the light up left
- Loosen： Move the light down right

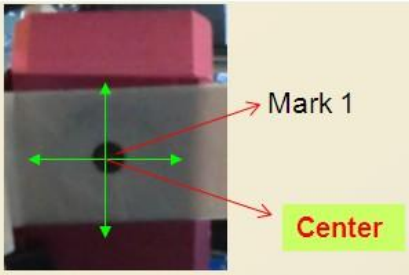
Screw 3
- Tighten： Move the light to the left
- Loosen： Move the light to the right

Step 4: If the two marks do not coincide, adjust the No.1 reflector by using the above method to make these two marks coincide.
Step 5: Repeat the procedure from the step 2 to step 4 until the two marks completely coincide and both of them are located at the center of the circle.

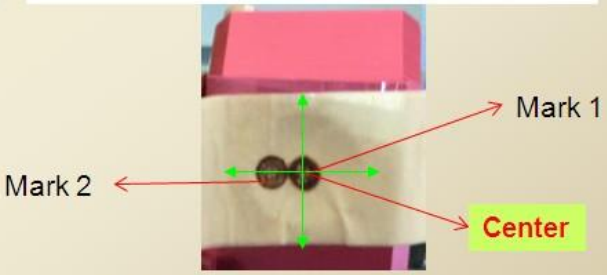
Step 6: Paste a piece of crepe paper on the No.3 reflector, move the laser head to the nearest position to the No.2 reflector, and then press 'Laser' with （proper light intensity） to make a mark 1.
Step 7: Slowly move the laser head to the farthest position from the No.2 reflector and then press 'Laser'. It is better to use a paper board to determine the approximate location of the light spot so as to avoid danger. And then make mark 2.





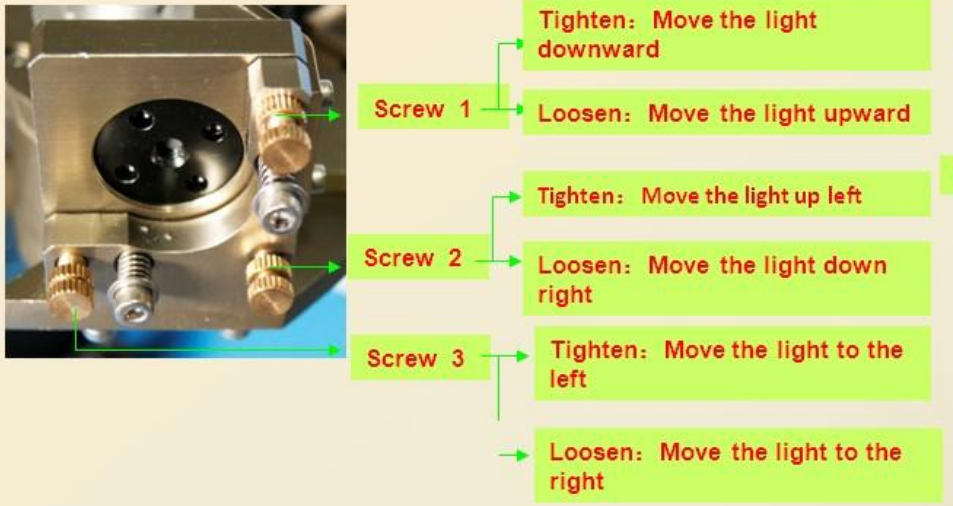


Near point mark on the No.3 reflector

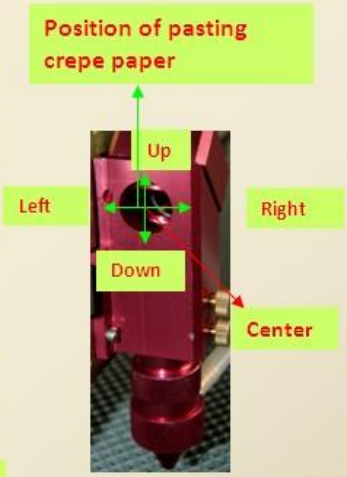


Far point mark on the No.3 reflector

For example： It can be seen from the above picture that the near point and far point on the No.3 reflector do not coincide. It has to tighten the screw 3 on the No.2 reflector to make these two points coincide.

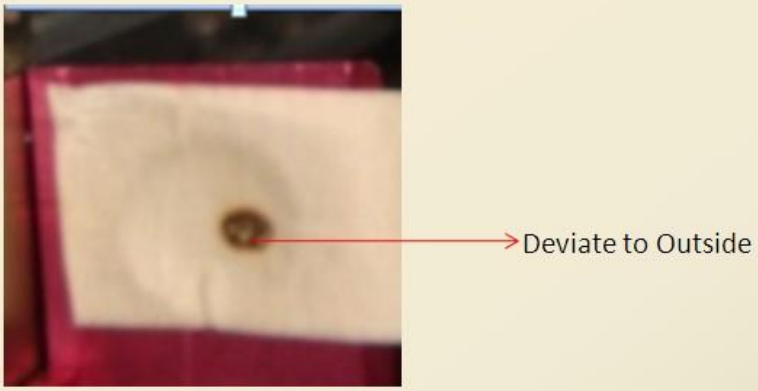


Regulating screws on the No.2 reflector



Position of the No.3 reflector

Step 8: If the two marks do not coincide, adjust the No.2 reflector by the above method to make them coincide.
Step 9: Repeat the procedure from the step 6 to the step 8 until the two marks completely coincide.
Step 10: If the two marks in the step 9 are completely coincide and at the center of the circle, then it's qualified.
Step 11: If the two marks are not at the center of the circle, as shown below.

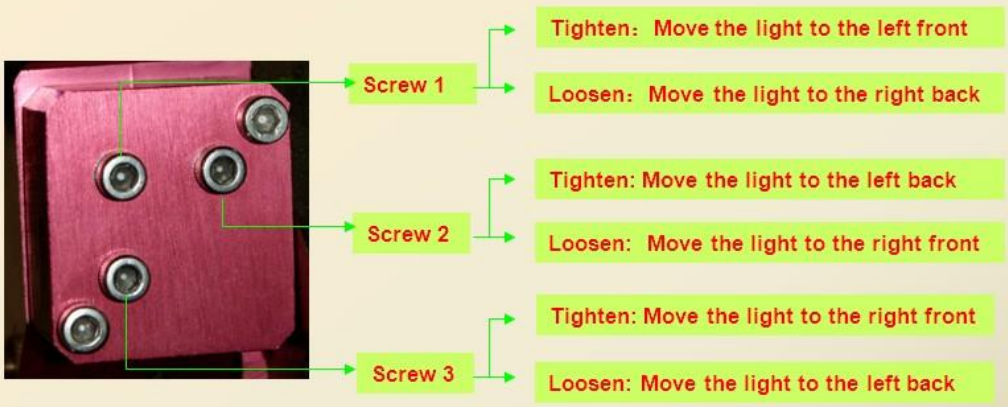


In this instance, the mark deviates to the upper side and outside.
Vertical deviation: Move the laser head to adjust.
Internal and external deviation: Adjust the laser tube internally or externally.
As for this instance, we can adjust the laser tube to the outside and repeat the procedure from the step 10 to the step 11.

It can be seen from the following picture that only if we loosen 3 fixing screws on the two round supporting seats of the laser tube, the laser tube can be lifted or lowered down.

Step 12: Paste a piece of crepe paper on the tip of the laser head. Press 'Laser' to make a mark. Check if the mark is at the center of the circle. If not, adjust the No.3 reflector to make the mark at the center.

For example, the problem of deviation to the left, as shown in the above figure, can be solved by adjusting the Screw 1 and 3, and the mark will be centered.



Regulating Screws on the No.3 Reflector

Note: The adjustment should be done by the qualified operators who have accepted professional training, or operate by asking for other person's help. During adjustment, be careful not be damaged by the laser radiation.

Safety cautions for adjusting the optical path

The following safety cautions should be paid attention during adjusting the optical path.

1. Do not put any part of your body between the optical paths.
2. Do not observe the optical path in parallel. Otherwise the laser may deviate and shoot at your eyes and thus cause the safety accidents.
3. During adjusting the No.2 optical path, move the laser head to the middle position of the working surface and then adjust the optical path. Do not move the laser head far away from the working surface. 。