Structure and adjusting method of ray path

1. Structure of the ray path

1. Laser tube  2. The first reflecting mirror  3. The second reflecting mirror
4. The third reflecting mirror  5. Focus head
6. Object being processed  7. Working platform

2. Structure of Optical Components

Ray path is ray guide system. Laser Engraving/Cutting machine of TY series has adopted flying-optical system. The complete system is made up of laser tube, three reflecting mirrors, condensing lens and relevant adjusting devices. These are the main parts of the machine.
Ray path has close relationship with the effect of engraving and cutting. Therefore please be patient and careful when adjusting the ray path.

Figure 3: Sketch map of reflector mount

1. Left adjusting screw of the reflecting mirror
2. Right adjusting screw of the reflecting mirror
3. Lower adjusting screw of the reflecting mirror
4. Fixed mount of the reflecting mirror
5. Fixed ring of the reflecting mirror
6. Reflecting mirror  7. Spring seat  8. pressure spring
3. Ray Path Adjusting

(1) Ray, reflecting mirror adjusting

Stick a piece of paper on ray inlet hole of laser head; then move the laser head to upper left corner of the machine. Press “ray testing” button and make a dot. Then move the head to the lower left corner of the machine to make another dot. Using adjusting screw of the first reflecting mirror to make these two dots totally matched together, thus fix the ray path Y. Then turn to ray path X. Move the laser head to the left of crossbeam. Press “ray testing” button to make a dot. Then move it to the right to make another dot. Using adjusting screw of the second reflecting mirror to make these two dots totally matched together.

(2) Laser tube adjusting

Though in the above step, flying-optical path has been fixed, the laser ray may not be in the center of ray inlet hole. The next step is to adjust the position of laser tube to make the laser ray in the center of the hole. Then check up the ray position in the hole. If the ray locates in upper part, the laser tube should be moved downward. If the ray locates in lower part, the laser tube should be moved upward. The ray locates in the front; the tube should be moved backward. The ray locates in the back; the tube should be moved forward. During this process, the tube must be moved slowly and carefully. Don’t operate it in haste.

(3) Ray verticality adjusting

Put a piece of acryl on the working platform. Press “ray testing” button to see whether the pierced acryl is vertical or not. If it is not vertical, adjust the mirror cover of the third reflecting mirror to make the ray vertical. Ray verticality adjusting is to adjust the ray position on condensing lens. Only the ray is in the center of condensing lens, can the it be straight and strong.