

# IE300 Laser Engraver Problems and Solutions Manual

## 1. The carving is too flat (there are some possible causes)

- 1) The carving speed is too fast, the spacing is too far. The normal speed is 6, scan spacing is 3.
- 2) The lenses are dirty. After long time of work, the face of the lenses might be dirty, the reflecting and focusing of the lenses may be relatively low. In this condition, the lenses can be cleaned by acetone or absolute alcohol. Note: clean directly on the lenses without dismantling it.
- 3) No water tapped into the laser tube. In this condition, the machine must be turn off immediately, and tap the water into the tube after the laser tube has cooled down. If tap the water into the tube straight away, the tube might explode because of high temperature difference. So it is important to check the water circulation before using the machine, which has been mentioned in the 'items of attention'.

4) Ray deflection. A major cause for flat carving is laser ray deflection generally caused by transportation or other reasons. How to deal with it under such circumstance? Following is the general explanation of the steps of ray adjusting:

Step 1: Turn the laser current below 5, making the power of laser not too strong;

Step 2: Put the ray testing paper before the lens 1, press the testing button lightly (press and release quickly, only can see the ray spot on the paper), to see whether the spot is on the lens 1 (on the center of the lens is the best), if it is, the step is finished; if it is not, or not on the center, it is necessary to adjust the position of laser tube or its height, until it reaches above requirement.

Step 3: Adjusting of the ray between lens 1 and lens 2. Firstly, put the testing paper before the lens 2, and push the guide rail at the position (A) as illustration, and press the testing button to see the position of ray spot; then push the guide rail at the position (B) and press the testing button again, to see whether the two spots are laying together. If they are, and also their position is inside the lens, it means that the ray between lens 1 and lens 2 is correct; if they aren't, the screws on the rack of lens 1 must be adjust until the two ray spots laying together.

Step 4: Adjusting of the ray between lens 2 and lens 3. Firstly, push the laser head onto the position of (C) as illustration, and put the testing paper in front of the hole on the laser head, press the button slightly to see the spot, then push the laser head onto the position (D), press the button again to see whether the two spots are laying together. If they are, and the spots are inside the hole of laser head, it means that the ray is correct; if they aren't, the screws on the rack of lens 2 must be adjust until the two ray spots laying together. Note: the ray adjustments between lens 1 and lens 2 and between lens 2 and lens 3 are in the same principle.

Step 5: Adjusting of the ray between lens 3 and lens 4 (the key step). Firstly remove the lenses, put the testing paper under the laser head, press the testing button, to see whether the spot are laying on the center of the paper. If it is, it means that the ray is correct; if it is on the right, it means that the laser tube is too low; if it is on the left, it means that the laser tube is too high; in these two cases, it is necessary to adjust the height of the laser tube. If the spot is close to inside or close to outside, it needs to move the laser head (there are 3 screws on the laser head, from which can adjust the laser head to inside or outside) to adjust the ray to its right position.



Step 6: Install the lenses and finish the adjustment of ray.

Note: Ray adjusting needs necessary fundamental knowledge, for example the principal of light reflection. At the first time the tester must do his operation strictly follow the steps of manual, and consult the technicians when necessary. Besides, the laser is an invisible ray and might cause burn, so keeping safety is important when testing the ray.

## **2. Caving machine is not connected, or the carving machine is not open**

During the use of carving machine, sometimes the monitor will jump out of such warnings: 'the carving machine is not connected', or 'the carving machine is not open', the following is the explanation of the possible causes of such cases:

1) Carving machine is not really open, in this case the machine needed to be re-opened and the software needed to be restarted.

2) Data line connecting the computer and carving machine is not linked or not properly linked, or might be the problem of data line itself, in this case, the data line shall be replaced and linked properly.

3) Installation of the software is not correct. Different laser carving machines have their own software, if they are not matchable, the above warnings will jump out too. Note: one carving machine has more than one set of software, so a right set of software must be selected according to the type of the machine when installing, thus the above cases can be avoided.

4) Port of printer in the computer is not right. In such case, the only way is to replace the main board of the computer. Note: for common printers, there are only about a dozen of pins in a port, but for the carving machine, there are at least 2 dozens of pins in a port, so a main board of a computer can match the printer does not mean that it can match the laser carving machine also.

## **3. Self-testing is disordered**

1) Laser head is shaking and stops moving. In this case, the problem might be that the lines of main board are not properly linked, there are 3 places for line connecting on the main board, check one by one to see whether all of them are in good condition and well linked, and re-connect them.

2) There is 'tu tu' noise when the laser head is walking, the guide rail is not moving. In this case, firstly to find out the small iron chip under the laser head (the chip is vertical, between the two wheels on the left side of the head), when the laser head is walking to the left side of the guide rail, the iron chip is insert into the tiny switch (light control plate) rightly, so the rail may continue its walking. If the chip has not inserted into the switch or missed, the above case would occur, the solution is to move the chip by hand, and adjust the position of the chip properly, let it go into the switch.

3) In self-testing, the laser head walks properly, but the guide rail gives out 'tu tu' noise when walking near the end. This case is almost the same as the above case, the only different is that--the light-control plate is moving (at in-side of the machine, moving together with the machine), but the iron chip is fixed. Using same method can solve the problem.

## **4. Misplacing (this case is not seldom seen when in working), totally might be the following causes:**

1. No earthling or the earthling is not properly linked. The laser carving machine is a precision apparatus, needs proper earthling. Both of carving machine and computer need earthling (which has been narrated in the 'items of attention').

2. Working speed is too fast. The speed of the machines better not more than 8.

3. Computer power leaking. In this case the only solution is to replace the main board of the computer or the power connector.

#### **5. Not emitting ray. See the following causes:**

1) Laser is not switch on. The switch of the laser is on the control board, pressing down the button is open, popping up is close.

2) Power current is not properly adjusted. There is a turning switch on the control board, turning clockwise is increasing, turning counterclockwise is decreasing. When the turning is at its lowest position, the ray is not emitting. So turn properly the switch when pressing the testing button. Generally the switch is on the position of 8.

3) Ray deflection. When the range of ray deflection is considerable big, the above case might occur (i.e. the ray has been deflected to the outside of the lens). The adjustment of the course of the ray has been narrated before, without repeating here.

#### **6. Emitting ray without stop.**

1) Ray “coupling lines” are connected reversely. If they are, exchange the position of two lines. (The “coupling lines” are the two lines linking the testing switch and main board power socket.)

2) Ray coupler on the laser power resource is leaking. This case is generally caused by wet weather or the dirty inside the machine. So it is necessary to keep the machine clean and dry.

#### **7. Ray is emitting in testing but not emitting in carving**

1) Ray coupling lines are not linked or not properly linked. Connect them properly.

2) The four lines connecting the main board and the main board power socket are not properly linked. Take off the lines to see whether they are good and re-link them properly.

3) If the above 2 cases are excluded, and still can not solve the problem, it might be that the coupler on the main board is damaged, the solution is to replace the coupler.