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# Service Manual

**- For Laser Marking Machine  
- For EzCad2 Software**



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## WARNING

This is **Class 4** laser product, only 4-level safety engineers or anyone who got strict training can be allowed to do the maintenance/service for the laser machine.

It is necessary to wear the Protective Glasses / Goggle during the whole operation.

## 1. Tip “Can not find a valid lmc device”



This means that the **DRIVER** of the control card might have problem or be lost, we need to check it and re-install it if necessary.

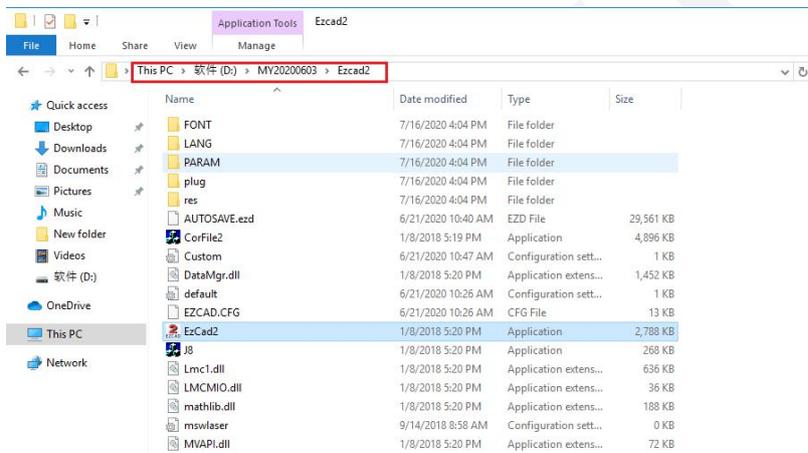
**Solution: You need to check the DRIVER / re-install the software or driver.**

### \*How to check the driver?

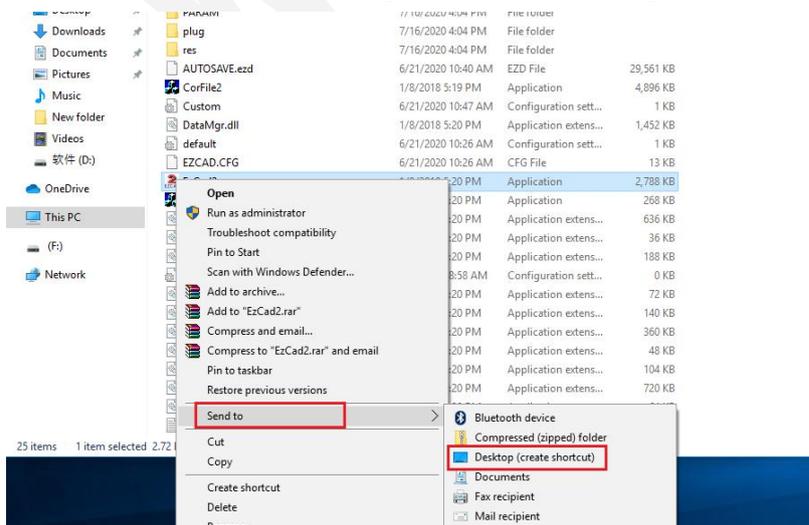
You will know how to do after you read the instruction how to re-install the software.

### \*How to re-install the software & driver?

(1) Please copy the software backup from the USB Stick to your computer, find the software named “**EzCad2**”, as shown in the figure



(2) Send “EzCad2” to desktop, as shown in the figure



(3) You can see the “EzCad2” icon is on the desktop of your computer

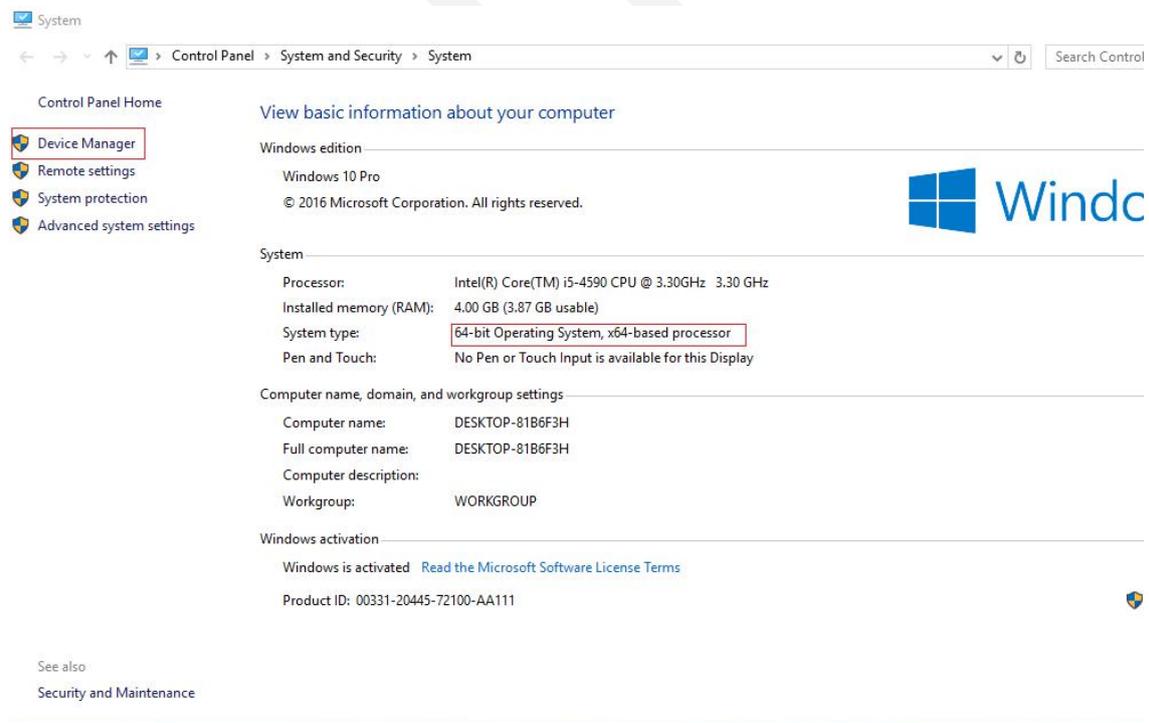


(4) Power on the machine, connect the computer with control card via USB cable, then the



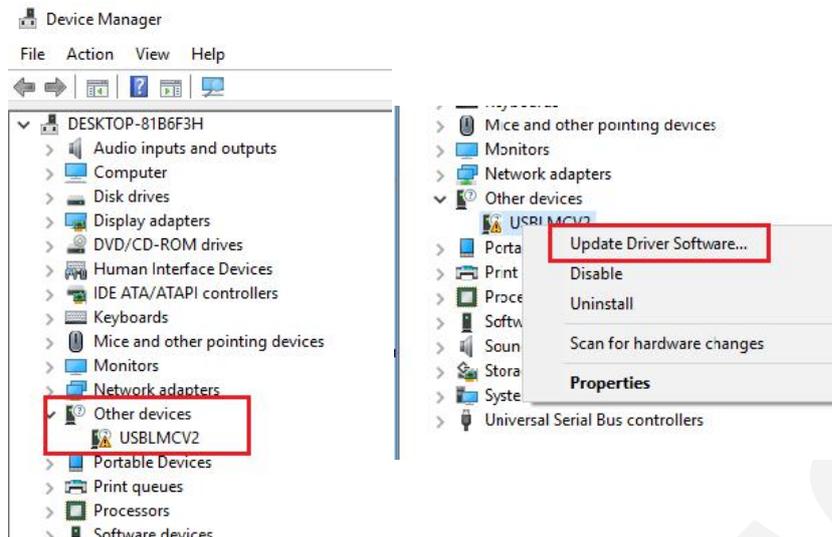
computer will show “ ”. Usually, you need to install the driver manually at the first time (If the driver can not be installed well automatically).

(5) Find “My Computer”, right-click to choose “Properties” and “Device Manager”, as shown in the figure

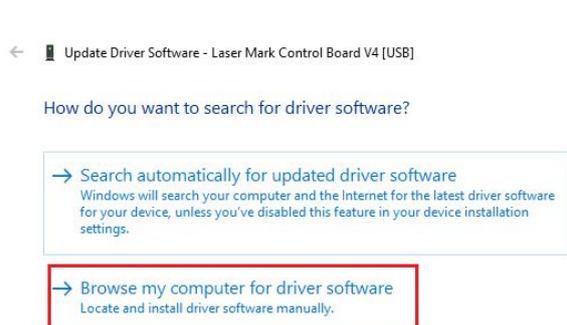


**Note: The computer is with 64-bit Operating System, you need to choose the correct driver to install, the 32-bit driver is not suitable for this computer.**

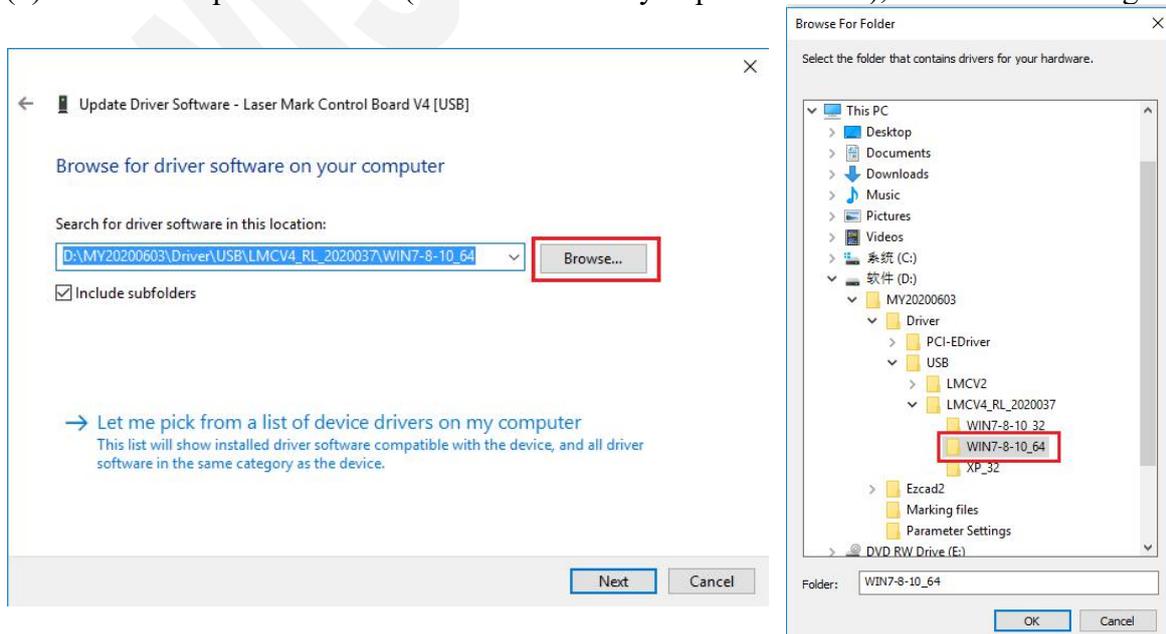
(6) Click “Device Manager”, then right-click to choose “Scan for hardware changes”, you will see “**Other Device / USBLMCV2**”, right-click to choose “Update Driver Software **USBLMCV2**”, as shown in the figure



(7) Choose **Browse my computer for driver software**, as shown in the figure.



(8) Choose the path of Driver (remember where you put the driver), as shown in the figure

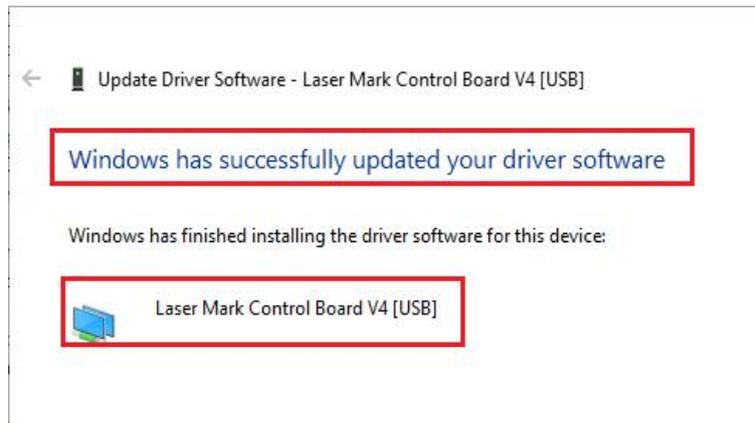
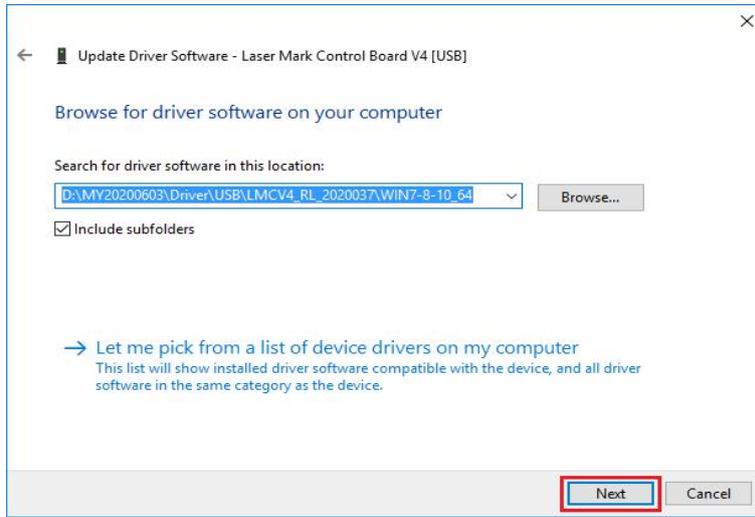




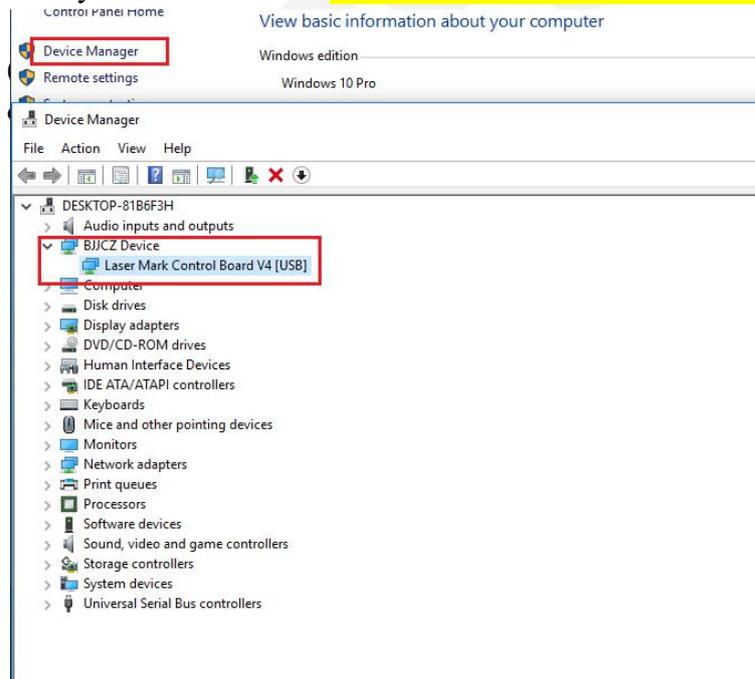
We put the driver “**Wind7-8-10\_64**” in

**D:\MY20200603\Driver\USB\LMCV4 RL 2030037\Wind7-8-10\_64**

**YOU NEED TO FIND THE DRIVER FROM YOUR SOFTWARE BACKUP.**



Now you see the driver “**Laser Mark Control Board V4 [USB]**” was installed successfully.

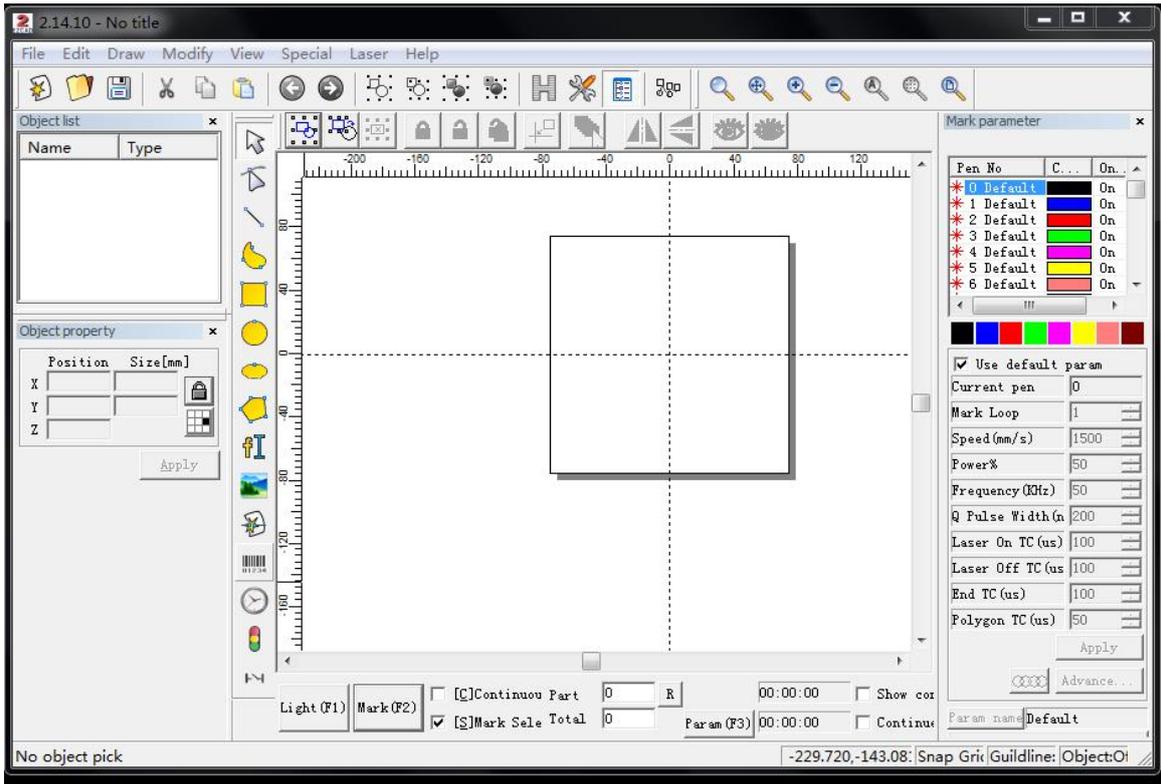


**aser Mark Control Board V4 [USB]**”

(10) Okay, you can run the software “**EzCad2**” by clicking the icon on the desktop, as shown in the figure



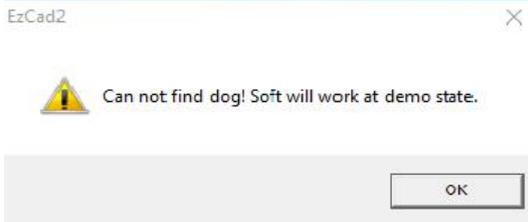
You will see the software interface like this:



#### Remarks:

- **The user needs to re-install the driver and software after changing a brand new computer!**
- **You need to keep your computer from being infected with virus, especially you insert different USB Sticks into the computer very often.**

## 2. Tip “Can not find dongle! Software will work at demo state”

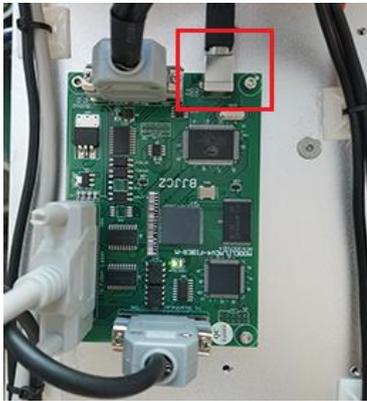


This means the connection from the software to the hardware (It is the control card) failed, the reasons might be:

(1) No **AC110V/220V** power input to the machine before operating the machine, the control card is not ready.

**Solution:** Just power on the machine, then open the software.

(2) USB Connection problem between the control card and computer.



**Solution:** Just check your **USB Port** and **USB Cable** if they are loose or damaged, you can replace a new USB cable to try.

(3) There are some problem with control card itself.



**Solution:** Restart your machine before you run the software and check the status of the light . When the machine **stands by** (including the situation that you press F1 to let the machine simulate the laser marking via red light), the light on control card shows **GREEN**; when the laser is **firing**, the light is **RED**.

(4) The 5V switching power supply for the control card is damaged.



**Solution:**

- Check the working status of the light on the control card.
- Check the working status of the light of the 5V switching power supply. If the light is green, then the power supply is good in condition; if not, the power supply should be damaged, just replace a new 5V switching power supply to try. The configuration for the 5V switching power supply is “5V/3A”, you can get it from your local market or Amazon.com directly.

(5) The software gets some problems due to some other reasons:

- The Computer got virus.
- Anti-virus software deleted some EzCAD software system file, such as \*.dll file.
- Operator deletes the necessary EzCAD software system file, such as driver.
- Operator does not run or close the software as per order of precedence.

**Solution:**

- Uninstall or shut down any anti-virus software in your computer directly, uninstall the driver, then re-install the driver.
- Shut down the anti-virus software before software installation.
- Don't replace the computer very often, try to use one computer for the machine especially.
- Try to keep your USB stick healthy before inserting to the computer for laser marker, or the virus in the USB stick will damage the computer and break the software.

**IN A FEW WORDS, THE REASONS MIGHT BE:**

1. AC 110/220V Power Input
2. USB Connection
3. USB Cable
4. Control Card
5. 5V Switching Power Supply
6. Virus

### 3. Tip “Failed to open lmc driver”

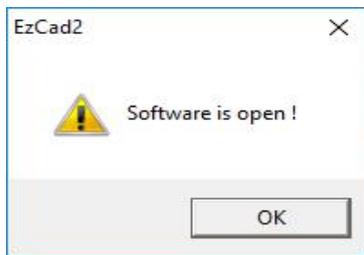


The reasons might be:

- (1) The **signal cable (It should be DB25)** from the fiber laser source to the control card is loose or broken, check or replace a new cable to try. The cable should be **GRAY!**
- (2) The **control card** got problem, you need to check if the working status of the light flashing on the control card while the machine is running, and try to replace a good control card to do the test.

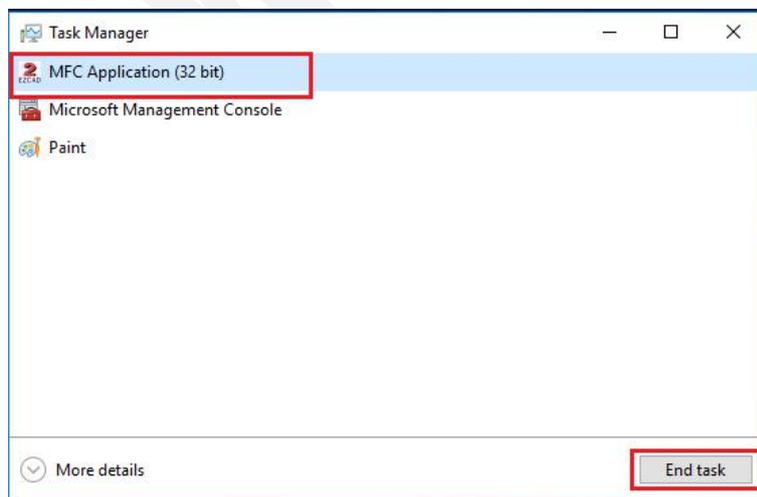
### 4. Tip “soft is running”

The tip information means that you are running one software already, as shown in the figure

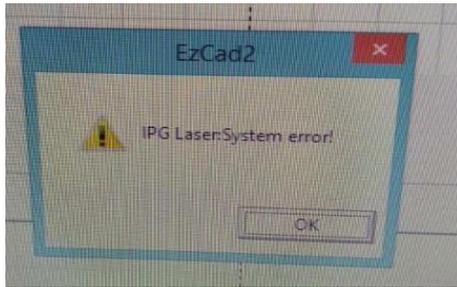


#### Solution:

- Click “OK”, and check the “task bar” in your computer to find the running EzCad.
- If the operation is invalid, please open “**Task Manager**” (you can use “Ctrl + Alt + Delete” to open it), then right click the mouse to stop the process named “ **MFC Application (32 bit)**”.



## 5. Tip “IPG Laser: System error”



The reasons might be:

- (1) The 24V switching power supply does not output **DC24V** to the fiber laser source.



### Solution:

- Check the **AC110/220V input** to the 24V switching power supply with a multi-meter.
- Check the working status of light on the **24V switching power supply**. It should be green; if not, the 24V switching power supply got damaged, replace a new power supply to try.
- the **fiber laser source** might be damaged if the machine still can not work after you replaced a new 24V switching power supply.

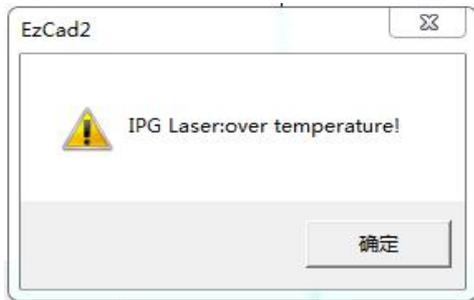
- (2) After checking **all cables and power supply**, we confirm they are good in condition, even we replace new cables and power supply, and still get the same result, we are sure the **fiber laser source** is damaged, you need to send it back to us for repairing or replacement.

(See Page 32 to 36 “How to remove and package the fiber laser source”)

### IN A FEW WORDS, THE REASONS MIGHT BE:

1. 24V Switching Power Supply
2. Fiber Laser Source

## 6. Tip “IPG Laser: over temperature!”



The reasons might be:

- (1) The **fan** of the laser source may be damaged, and the room temperature is over 35 degrees, replace a new fan to try.
- (2) The **signal cable** from the fiber laser source to the control card is loose or damaged, check and replace a new cable and try.



- (3) Check the **working status of light** on the control card light. If it is green, that means the control card is good; if not, the control card may be damaged, then report to our support team or the salesman, we will confirm the replacement.



- (4) After checking the above parts, we confirm they are good in condition, even we replace the new parts, the machine still have the same problem, the **fiber laser source** is damaged, you need to send it back us for repairing or replacement.

## 7. No laser or weak laser

If your laser machine has no any laser or weak laser, and there is no any notification in the software, the reasons might be:

(1) The output power of fiber laser source will be getting weaker and weaker as time goes by.

**Solution:** You can measure the output laser power by a power meter, or send your file to us for test, then we will confirm if the power attenuation is regular.

(2) The 24V switching power supply does not output **DC24V** to the fiber laser source.



### **Solution:**

- Check the working status of light on the **24V switching power supply**. Under the ordinary circumstance, the light should be green;
- Measure the output power with multi-meter. If output power is 24V, the 24V switching power supply is okay; if not, the 24V switching power supply got damaged, replace a new one to try.

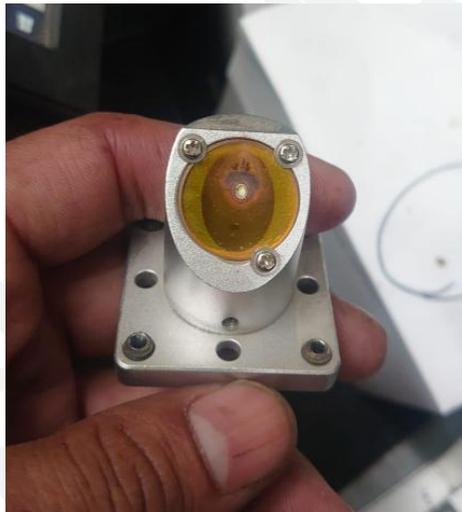
(3) Check if the **signal cable** from the laser source to the control card is loose or damaged, replace a new signal cable to try. Click "Mark", check the color of light. If the light is red, the signal cable is good; if not, the signal cable is loose or damaged, replace a new one to try.



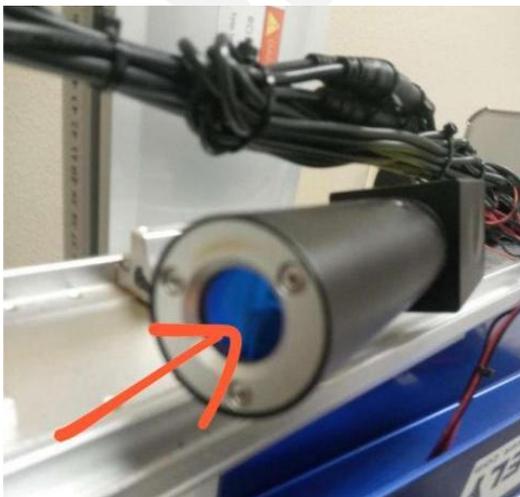
- (4) Check the working status of the **fan** on the fiber laser source. If it is running, the fiber laser source might be okay; if not, the fiber laser source might have problem, please contact our team or the salesman for replacement or repairing jobs.



- (5) Check if the **combiner** (it is the optical mirror) is good or damaged. If the combiner is damaged, there will be no laser or have weak laser on the marking object, because the laser needs to go through the combiner first, then reach at the scanner, then go through the focal lens, finally reach at the marking object. Just contact our support team or the salesman, we will send you a new one to replace.



- (6) Check if the **protecting glass** of the laser isolator is damaged. If yes, you need to send the fiber laser source back to us directly.



- (7) Check if the **focal lens** is dirty or damaged. If it is dirty, just clean it with alcohol cleaner and dust-free cloth; if the lens is damaged, just contact our support team or salesman, we will help you with replacement or repairing job.



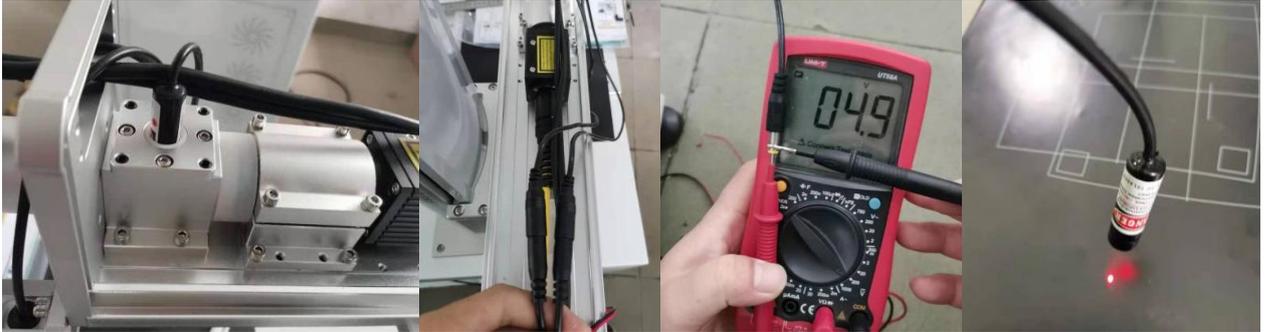
- (8) Check if the **mirror** of scanner is good or damaged?



**After checking the above items, we confirm the parts are good in condition, then we can confirm that the fiber laser source is damaged, you need to send it back to us for repairing or replacement.**

## 8. No/Weak/Unstable Red Light Pointer

- (1) Open the machine cavity, check the **voltage input** of the red dot pointer with multi-meter, it should be around 5V; If not, the 5V Switching Power Supply might be damaged, you can ask for the replacement or repairing service.



- (2) Check if the **combiner (mirror)** is good or damaged, if the combiner is damaged, then report to our support team or the sales, we will send a new one to replace.



**Warning: The red light pointer is Class 3R product, you have to power off the machine before changing the Red Light Pointer.**

## 9. What should we do if we change a new computer for the machine?

Each laser machine made by WISELY LASER has software, and the driver is the bridge to communicate the software and hardware (it is the control card), the new computer has no driver and software.

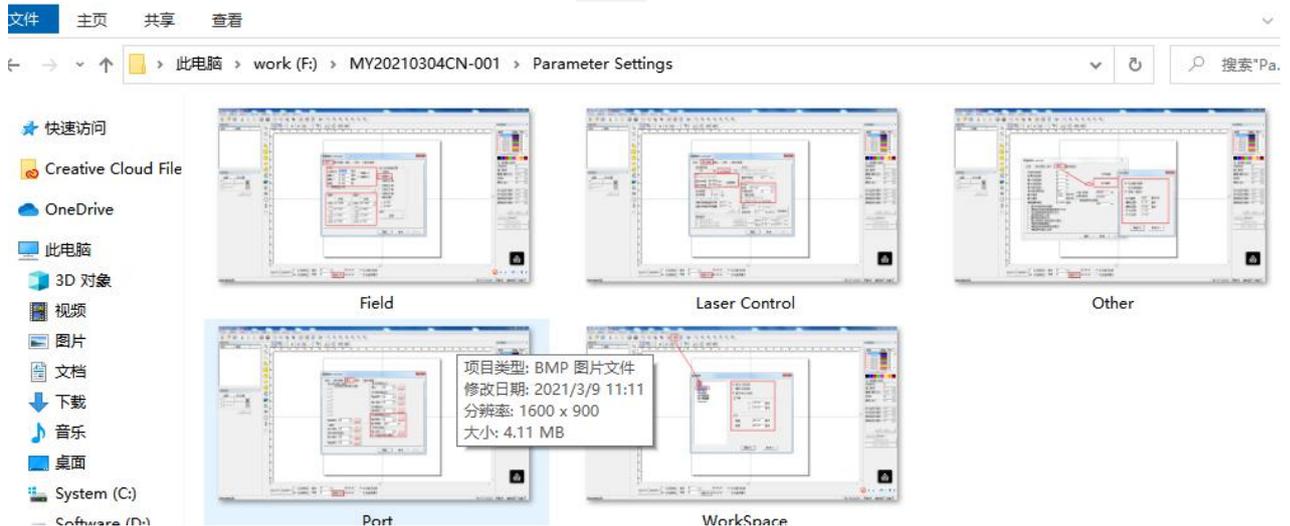
**Solution:** You need to install the ① “**SOFTWARE**” AND ② “**DRIVER**”, please read the manual from Page 1 to 7.

## 10. What should we do if the software can not work properly?

You need to check the driver and parameter settings in the software.

**Solution 1:** Re-install the software and Driver, please read the manual from Page 1 to 7.

**Solution 2:** Just compare the parameter settings of the running software with the ones in the software backup we sent to you. The software backup should be in local disk (D) or USB Stick, you can check the original parameters in the software backup.

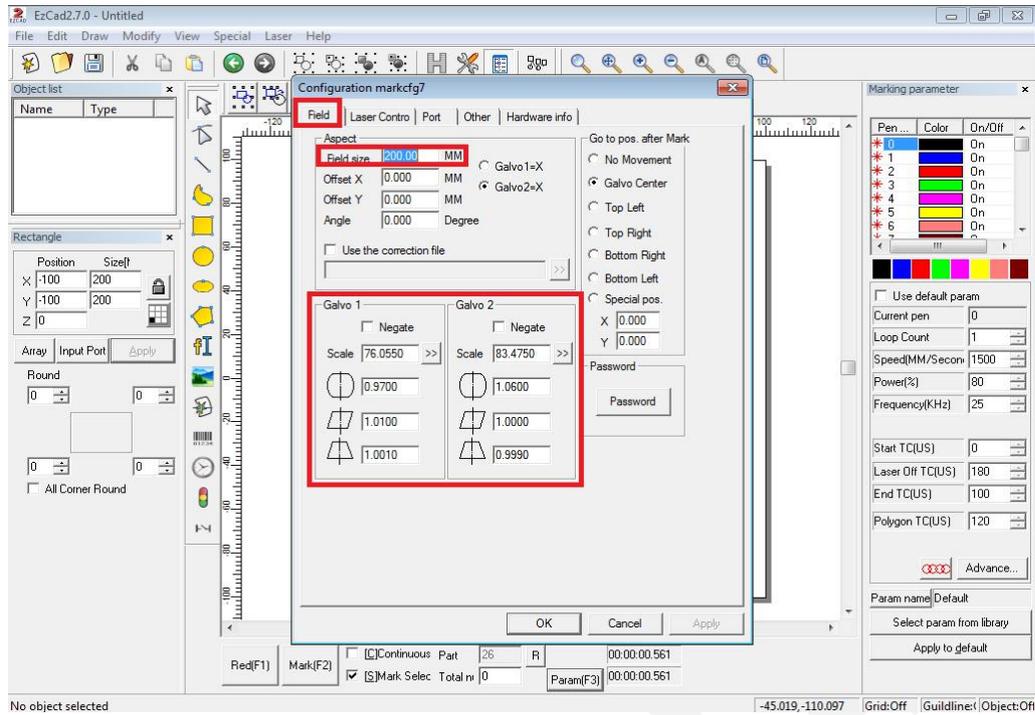


You need to check the items: **Field, Laser Control, Port, Other.**

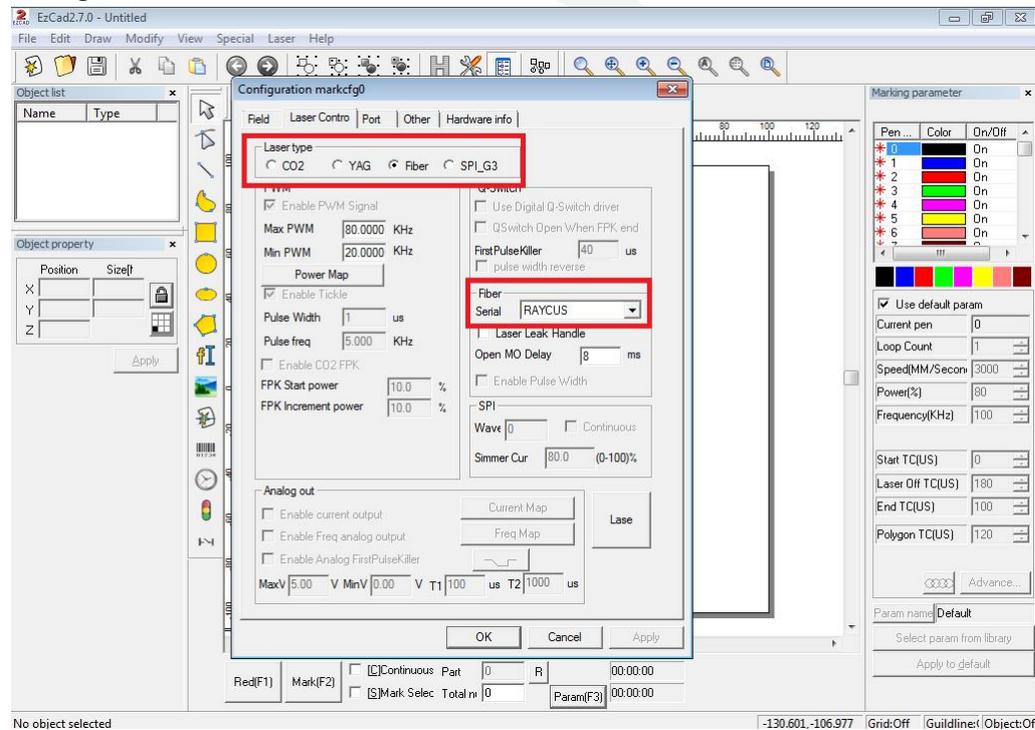
The windows of parameter settings will be opened once you press “**F3**” on the computer keyboard or click the option “**Param(F3)**” in the software.



(1) **Field**—Field Area, Galvo 1 and Galvo 2 are 3 important elements to check, as shown in the figure:

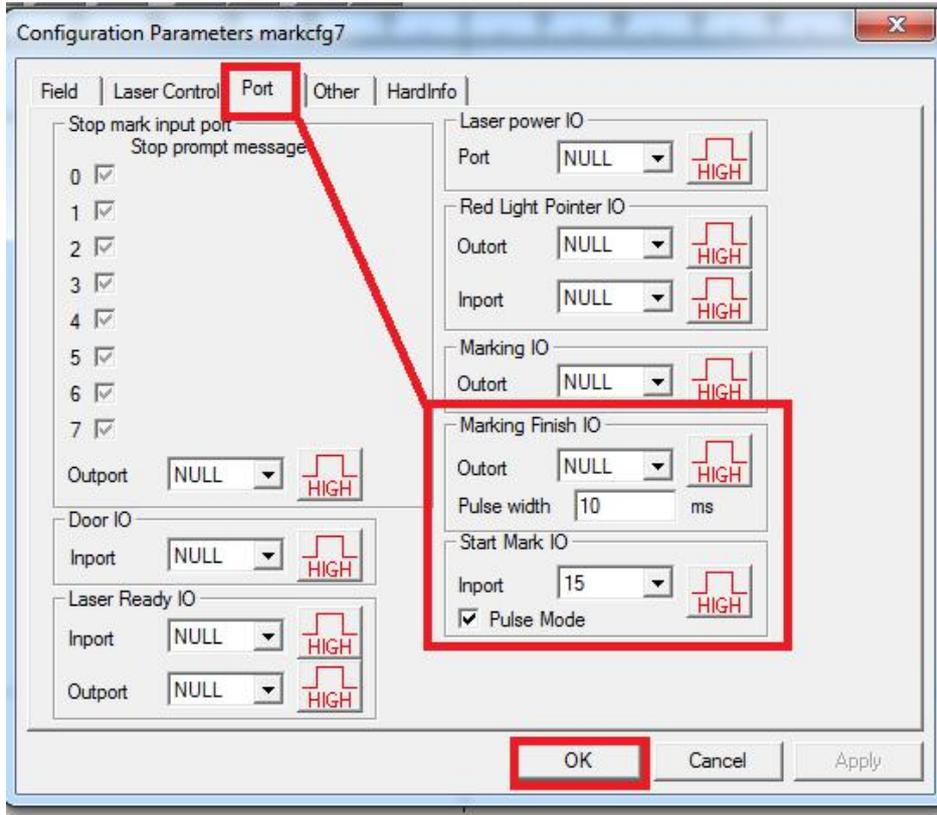


(2) **Laser Control** -You need to choose the correct “Laser Type” and Fiber Serial, as shown in the figure

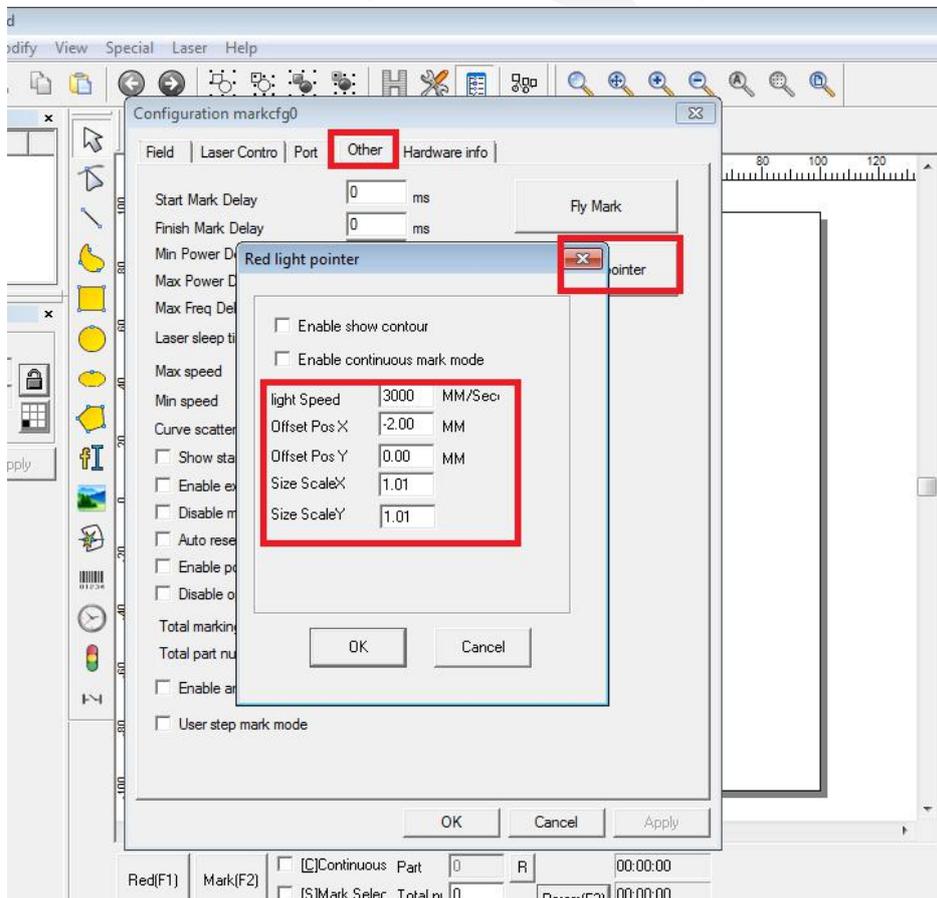


**NOTIFICATION: If your machine adopts the Raycus fiber laser source, then you need to choose “Raycus”; If your machine adopts the JPT fiber laser source, then you need to choose “JPT or IPG YLPM”.**

(3) **Port** - You can choose “Start Marking IO” - “Input Port” 15, this for your Foot Switch, as shown below:



(4) **Other**—You can set the parameters for the Red Light Pointer, as shown in the figure.



## 11. What should we do if we can NOT find the correct focal length?

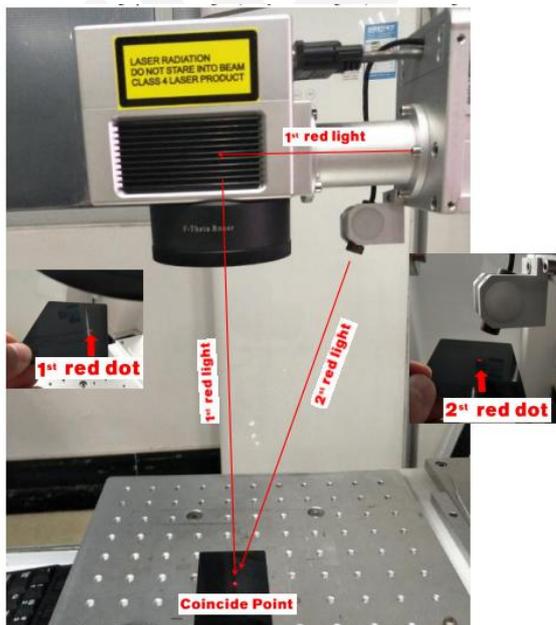
**Solution 1:** Open the software and Draw a  $\Phi 8\text{mm}$  circle, then hatch (line distance 0.05). Raise or Lower the Z Column until it shows the strongest and loudest laser shooting, as shown below:



**Solution 2:** Measure the distance from the surface of objects to the middle of the scanner, then record the distance, a sticker will be of help.

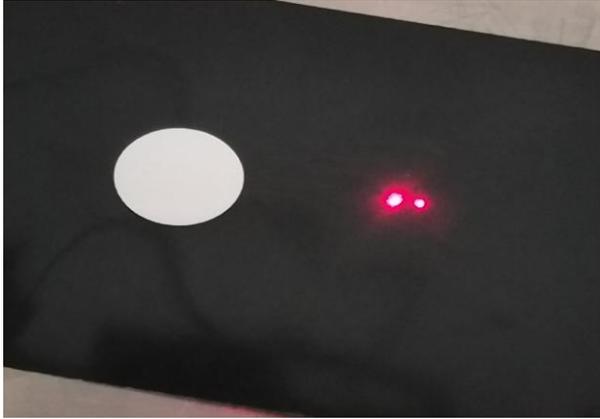


**Solution 3:** Raise or lower the Z Column until the two Red Dot Pointers are overlapping, you will see one dot only, as show in the figure.



## 12. How to do the adjustment if the outer red light is offset?

**Tip:** If you find the two pointer can not get together (The focal length is correct, the laser has the strongest power), the outer red pointer may be offset a little. As shown in the figure.

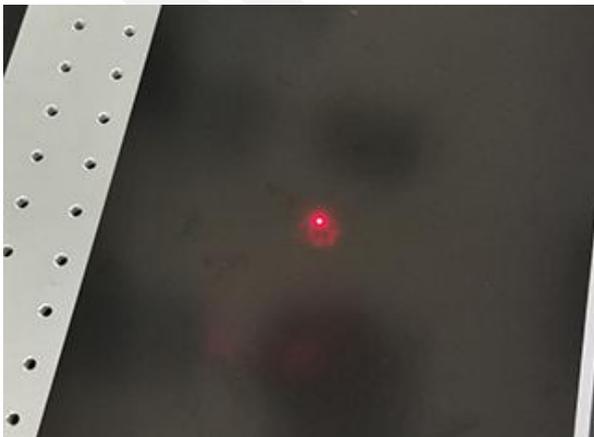


### Solution:

- Use **solutions 1 or 2 of chapter 11** to find the correct focus, then use wrench to adjust this holder to make the two Red Dots be overlapping. As shown in the figure.



- You can find the focal length easily next time with solution 11.3. As shown in the figure.

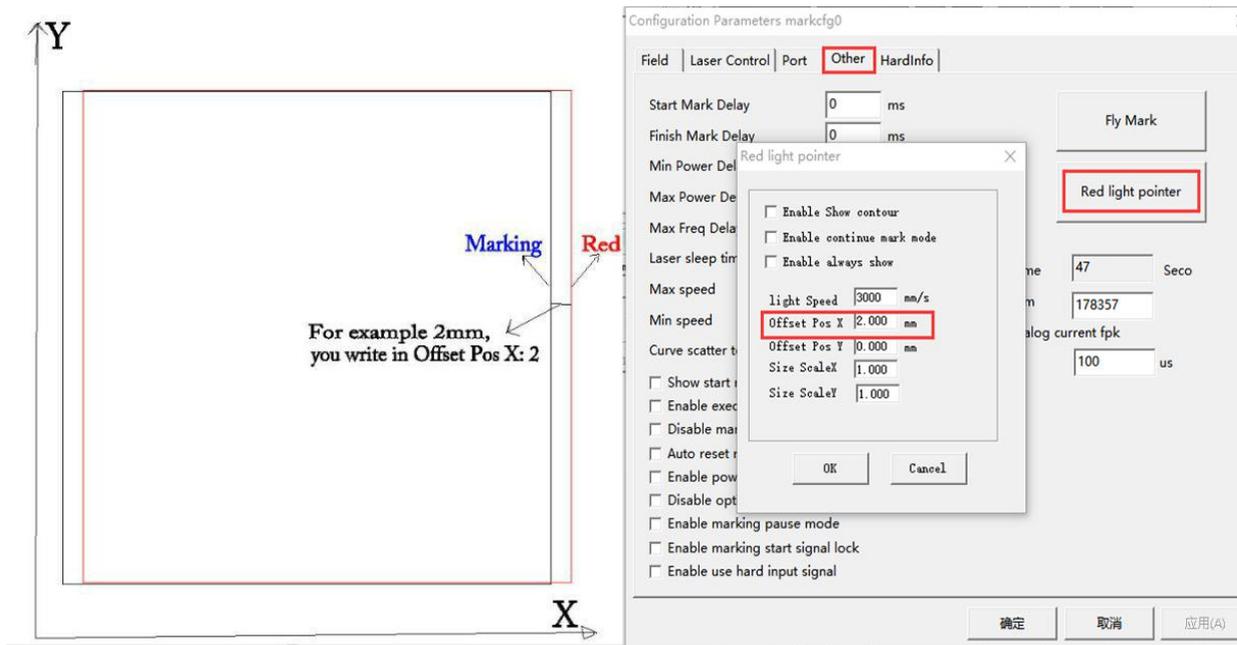


### 13. How to calibrate the inner red light if it is offset?

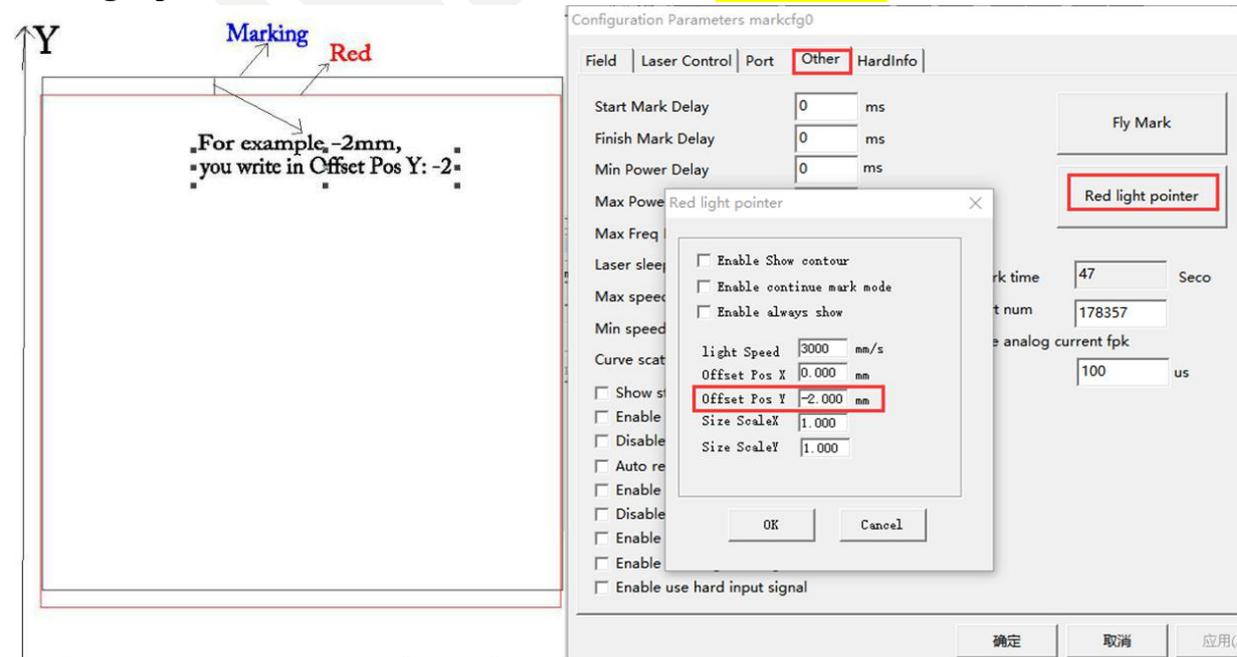
Try to draw a 100\*100mm square box, then mark, check the size of the square box. If you find that the red light can NOT meet the square box, the X axis or Y axis is offset.

#### Solution:

(1) If the the red light for X axis is offset, you should open the **F3 parameter**, select “Other”, click “Red light pointer”, and enter the measured value in “**Offset Pos X**”, as shown below:



(2) If the red light for Y axis is offset, you should open the **F3 parameter**, select “Other”, click “Red light pointer”, and enter the measured value in “**Offset Pos Y**”, as shown below:



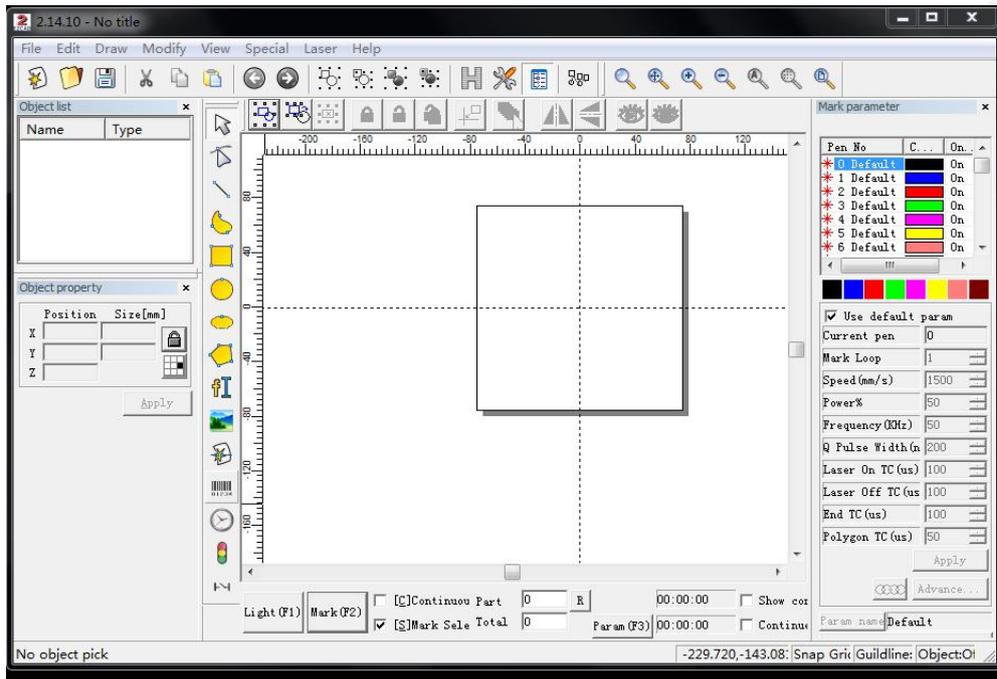
## 14. How to calibrate the scanner?

You need to calibrate the scanner if:

- 1) You changed a new scanner
- 2) The machine can not mark any file with correct size, for example, the machine can not mark a square box any more if you mark a 100\*100mm square box.

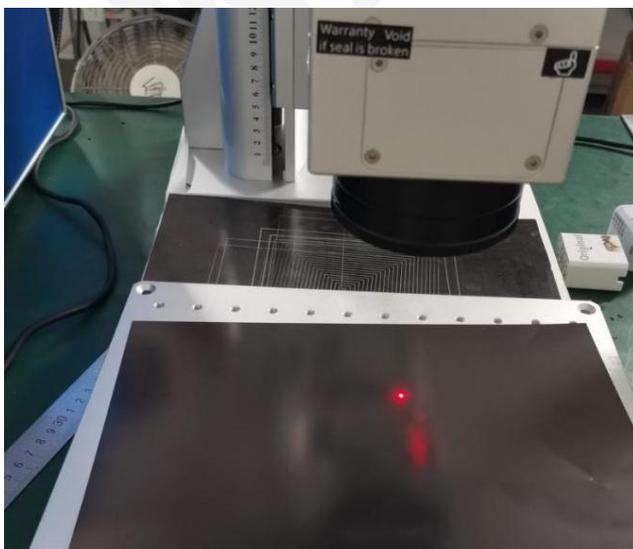
### Solution:

- (1) Open the software

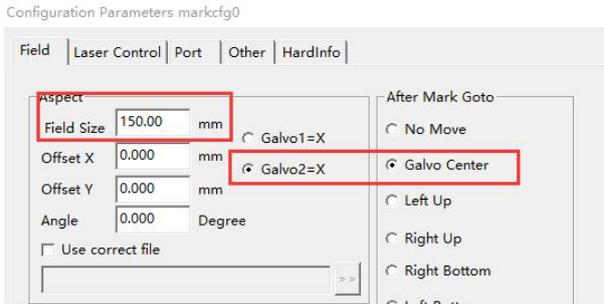


- (2) Focus

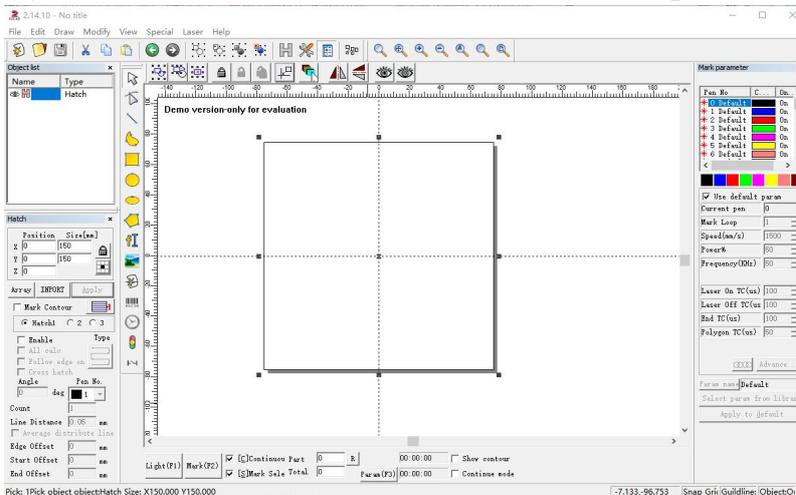
Raise or lower the Z Column until the two Red Dot Pointers are overlapping on the products, then you will see one dot only, as shown in the figure.



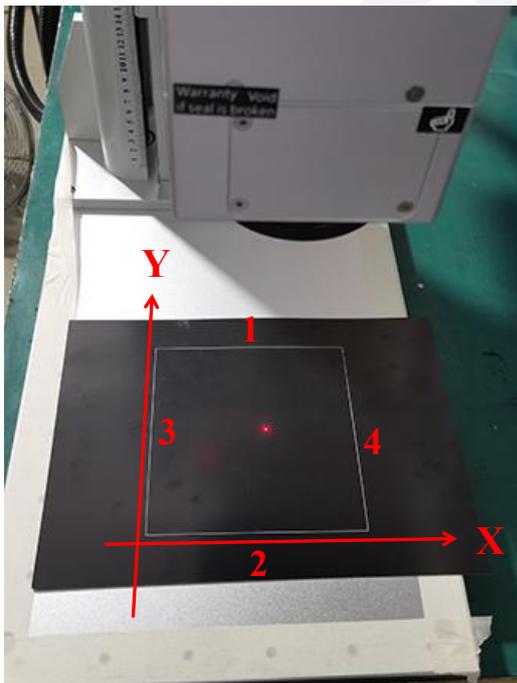
(3) In the **F3** parameter, change the “**Field Size**” according to the field of focal lens. For example, if you uses the **150\*150mm** focal lens.



(4) In the software work area, draw **150\*150mm square box** and mark it, as shown in the figure.

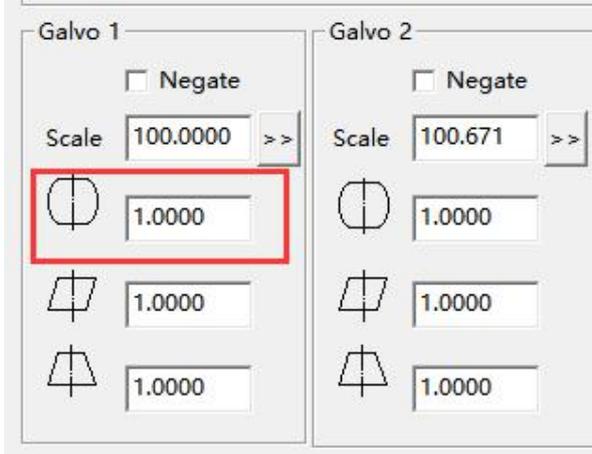


No. 1 and 2 lines are for X axis, No. 3 and 4 lines are for Y axis



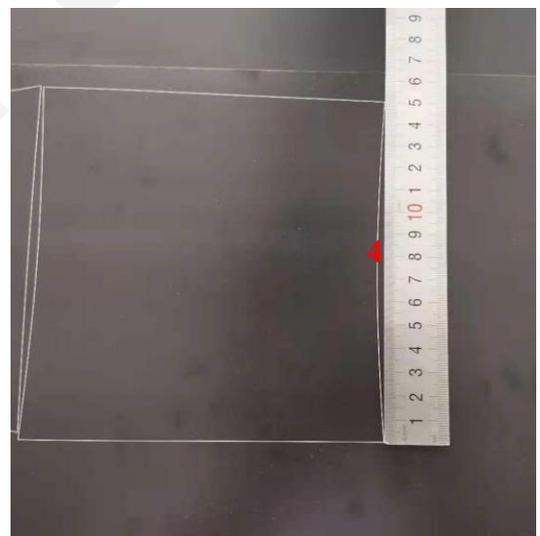
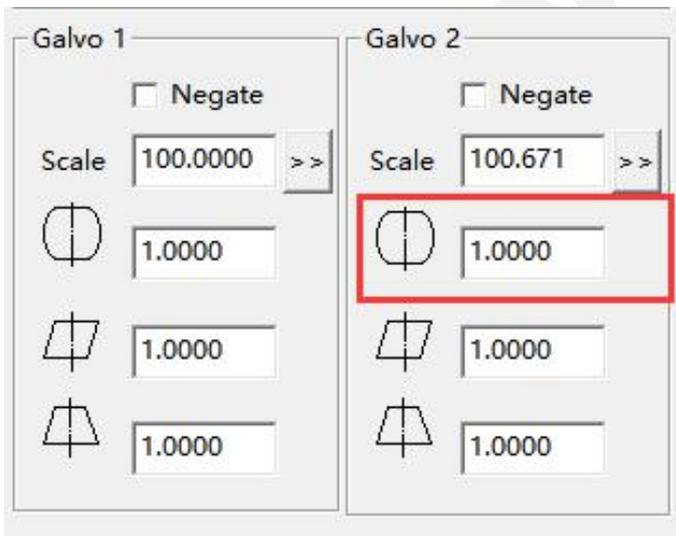
(5) Measure the line length of the square box (it might be not a square box, it might be a rectangle), and open the **F3** parameter.

a. Confirm if the line of X axis is straight or not, check line no. 2. If not, you can adjust the parameter, as shows in the figure.



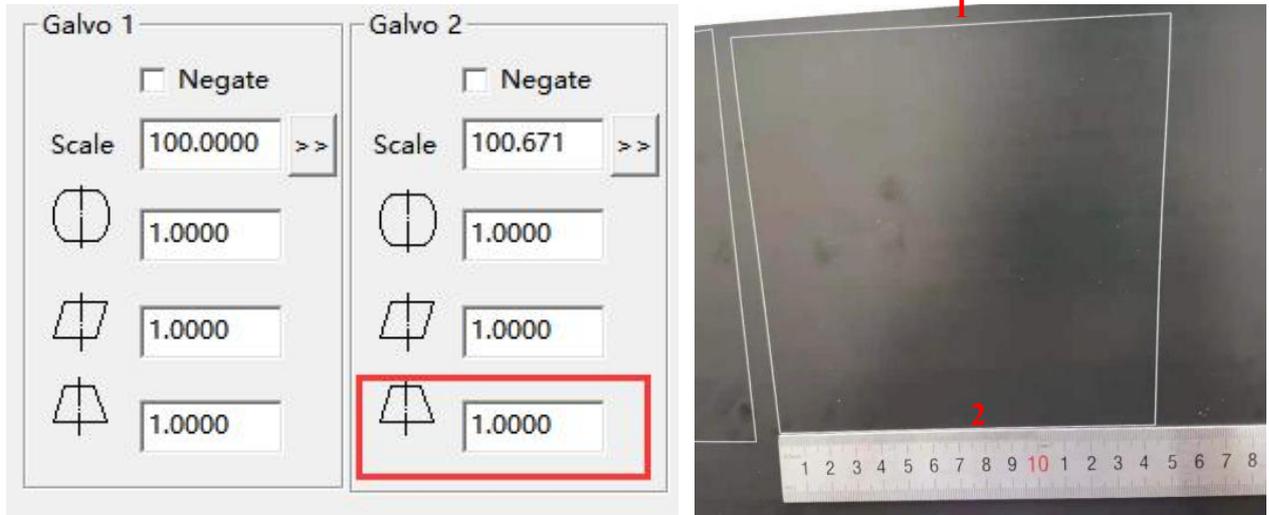
**Tip: If the line for X axis is curved toward the center, this value should in the red box be decreased; If the line for X axis is curved toward the outside, this value in the box should be increased.**

b. Confirm if the lines of Y axis are straight or not. If not, the parameter needs to be adjusted, as shown below:



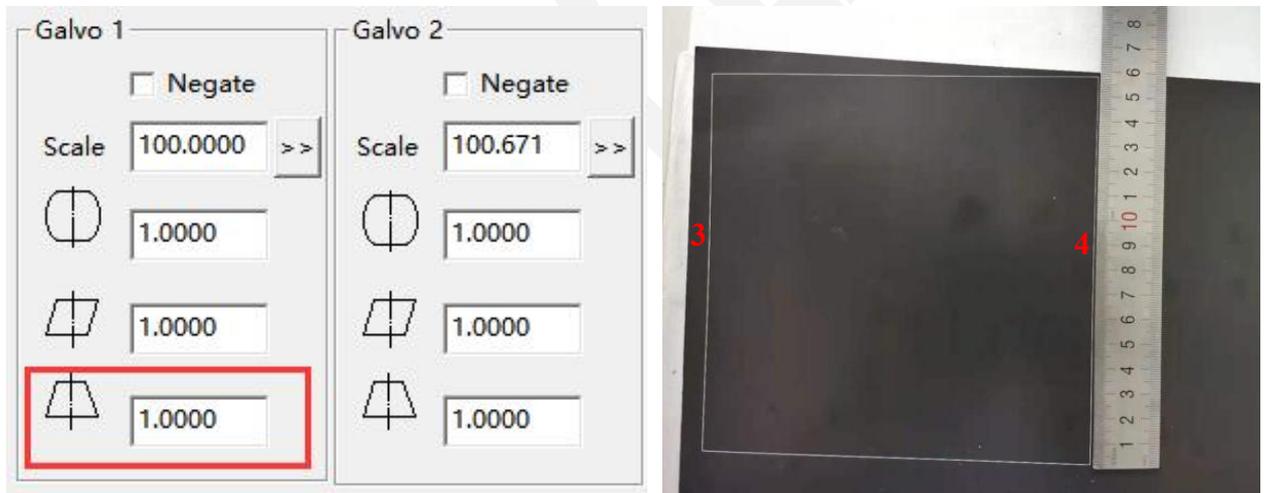
**Tip: If the line for Y axis is curved toward the center, this value should in the red box be decreased; If the line for Y axis is curved toward the outside, this value in the box should be increased.**

c. Check if the length of **No. 1** and **No. 2** are equal or not. If not, you can adjust the value, as shown below:



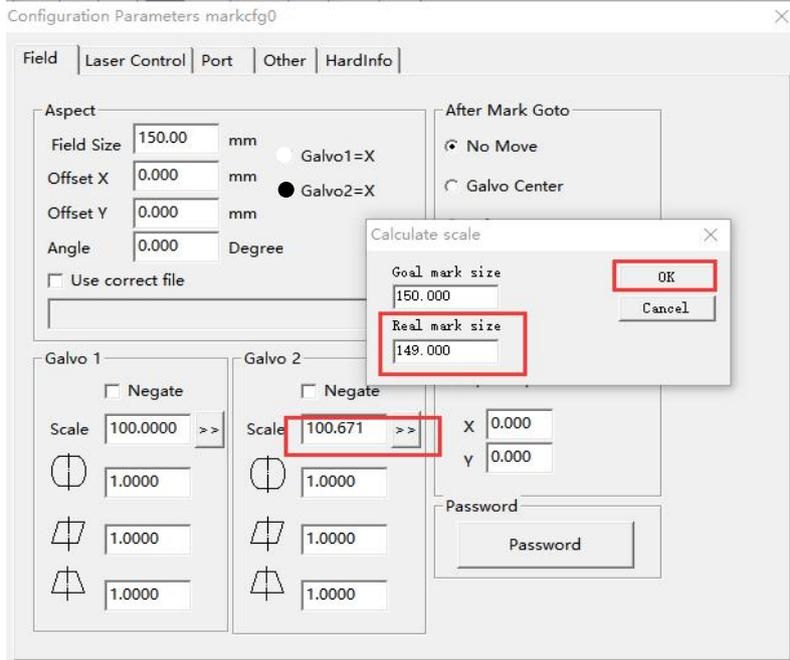
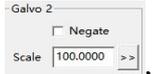
**Tip: If the No. 1 line is longer than No. 2 line, the value needs to be increased; If the No. 1 line is shorter than No. 2 line, the value needs to be decreased.**

d. Check if the length of **No. 3** and **No. 4** are equal or not. If not, you can adjust the value, as shown below:

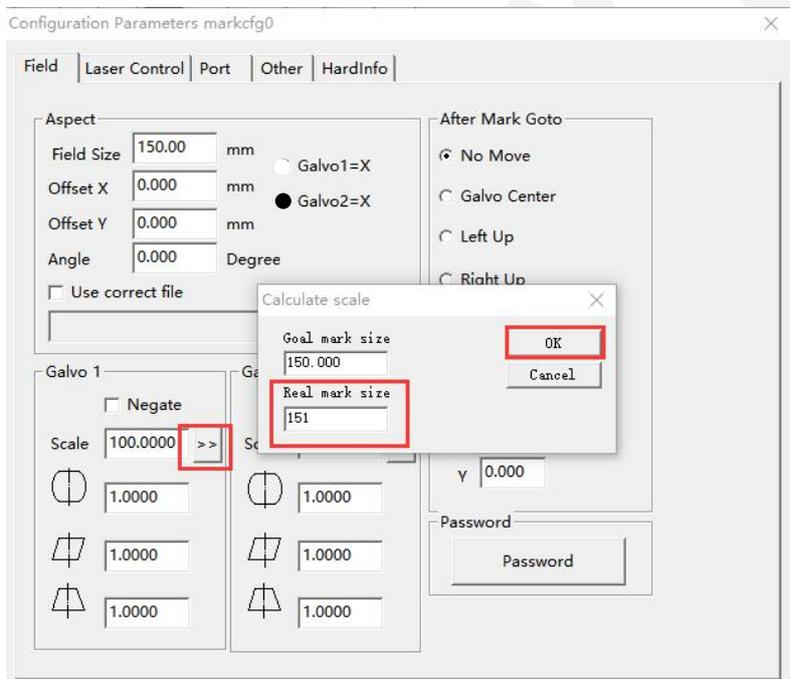


**Tip: If the No. 4 line is longer than No. 3 line, the value needs to be increased; If the No. 4 line is shorter than No. 3 line, the value needs to be decreased.**

e. If the length of X axis that you marked on the product is **149mm**, you need to click fill in “149” to the “Real Mark Size”, as shown in the figure.



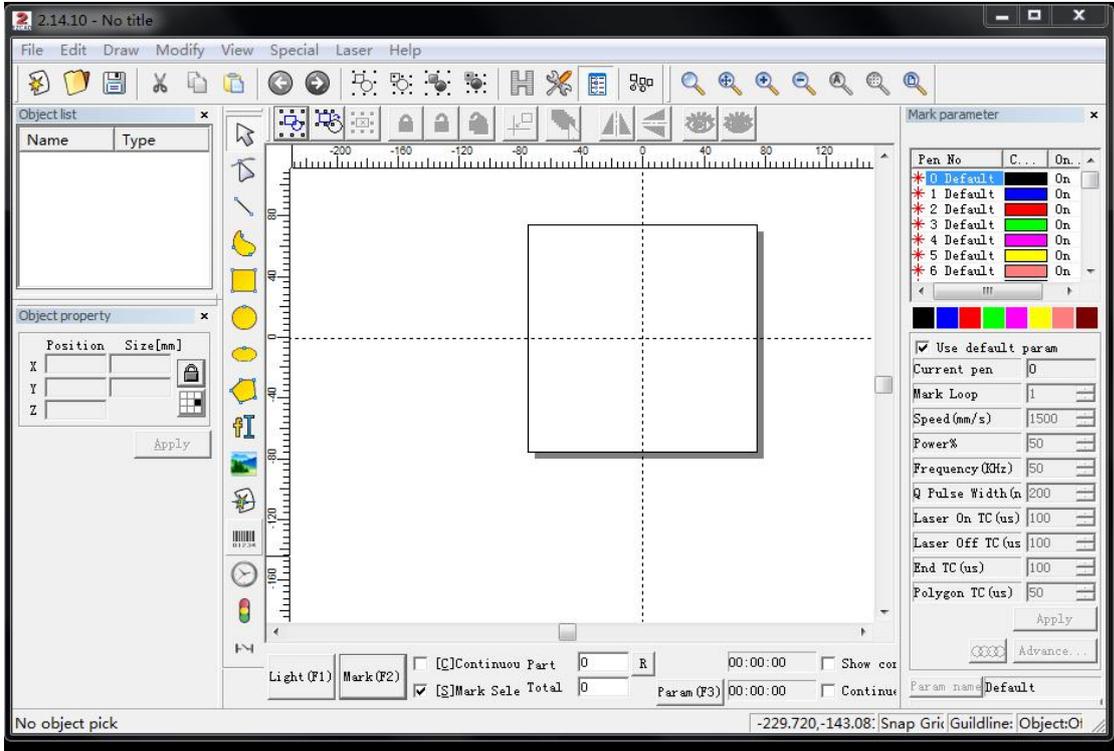
f. If the length of Y axis that you marked is **151mm**, you should click to the “Real mark size”, as show in the figure.



**Notice: The steps can be repeated 3 or 4 times until you get very accurate size after you mark a square box.**

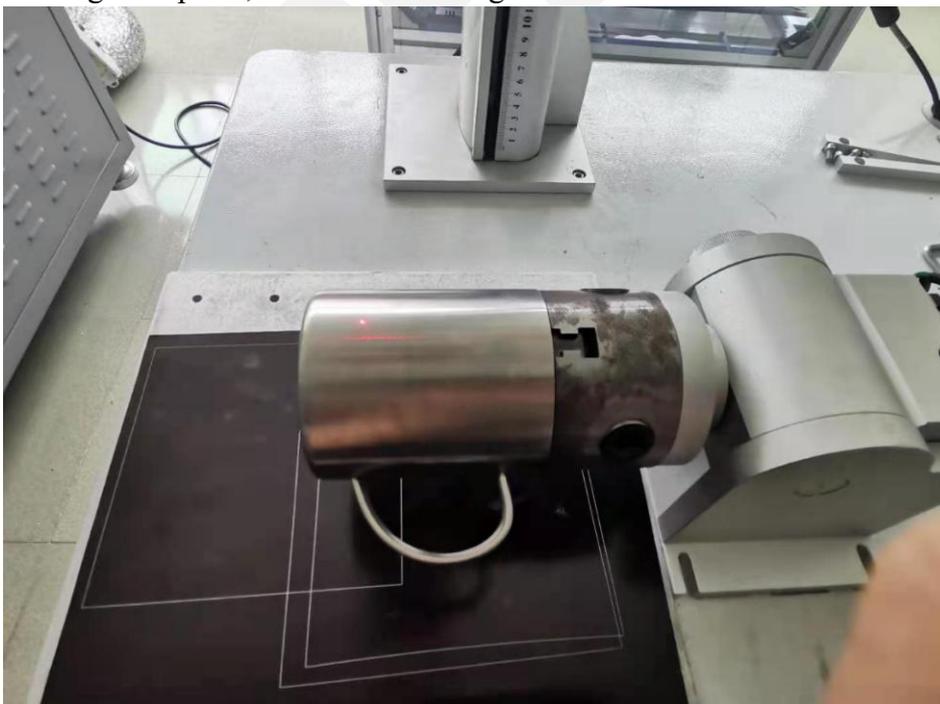
## 15. How to use the rotary device?

(1) Open the software “EzCad2”.

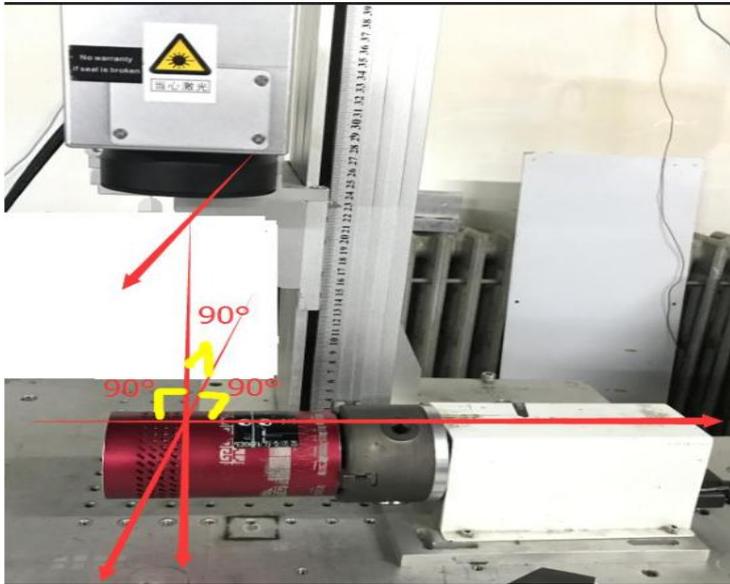


(2) Focus

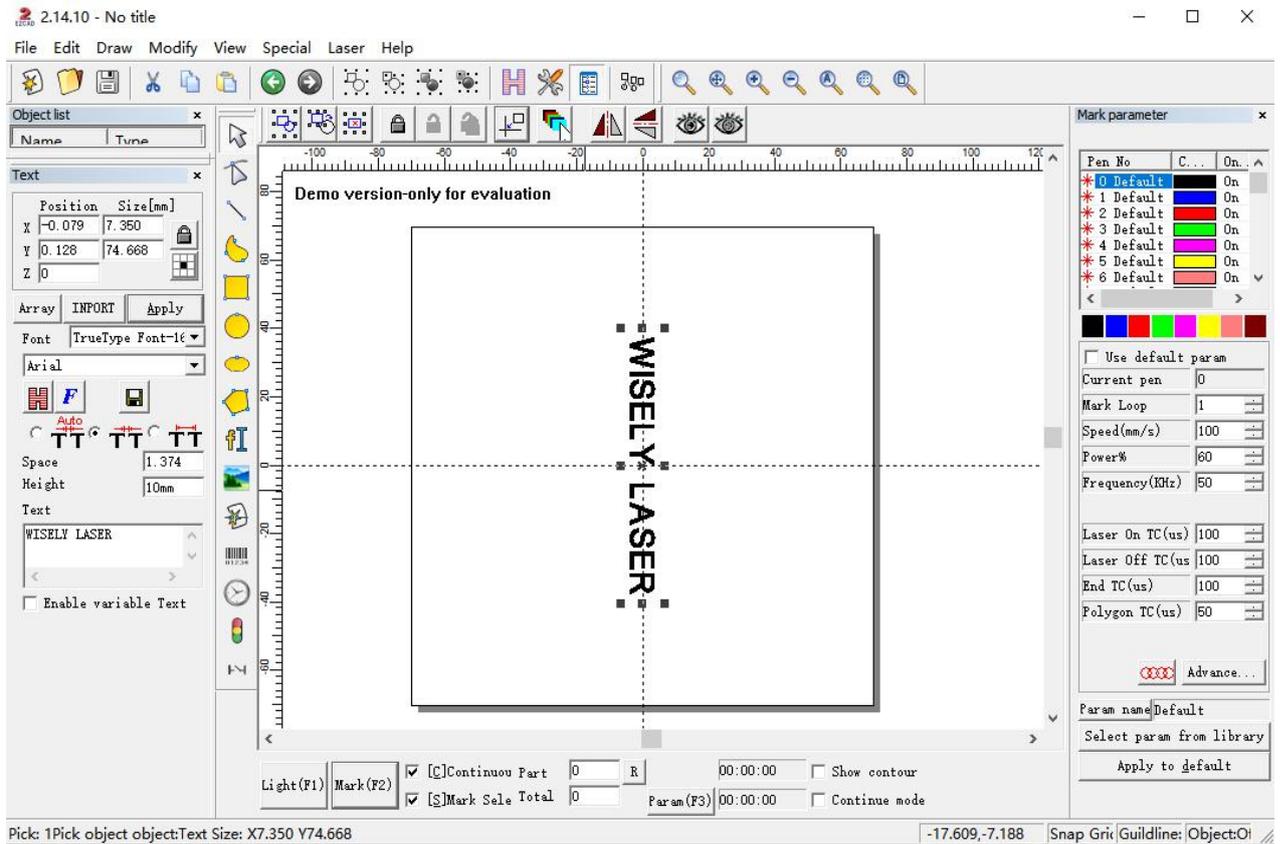
Fix the rotary device first, be sure that the red dot pointer can focus on the top and center of the rotating workpiece, as shown in the figure.



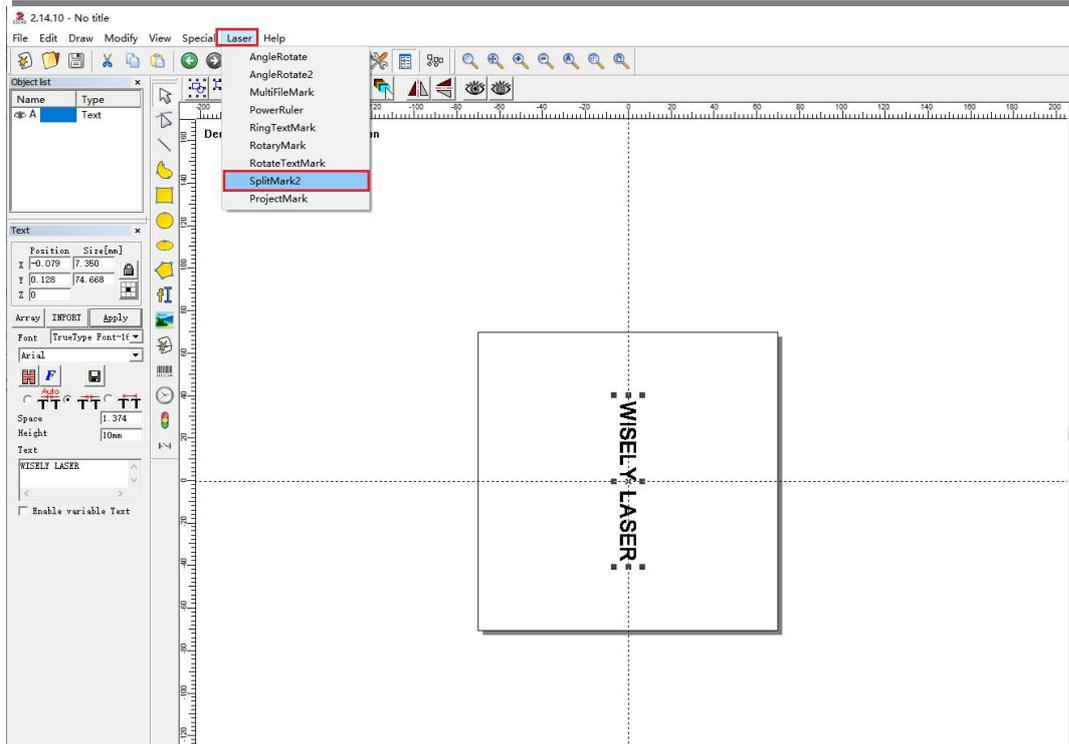
(3) Make sure the rotary attachment and scanner are vertical to each other, as shown in the figure.



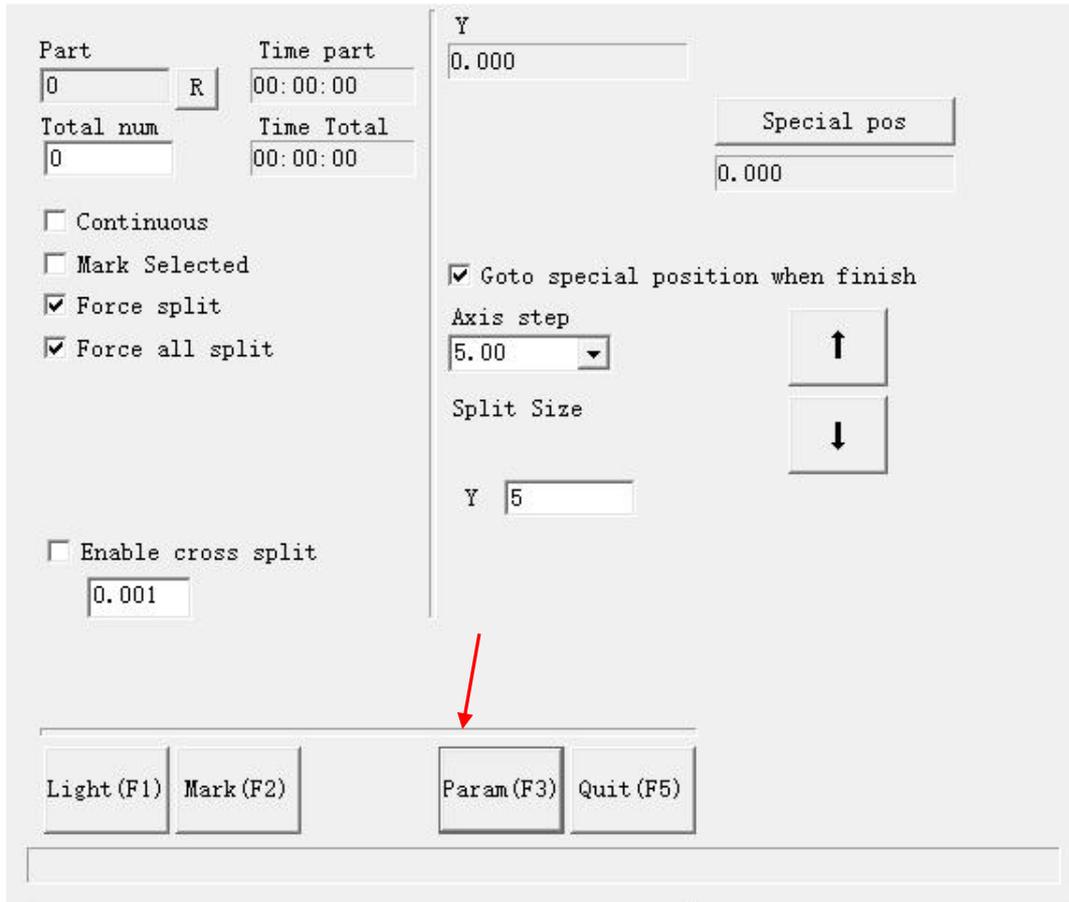
(4) Set a text file in the software, set the marking speed and frequency parameters.



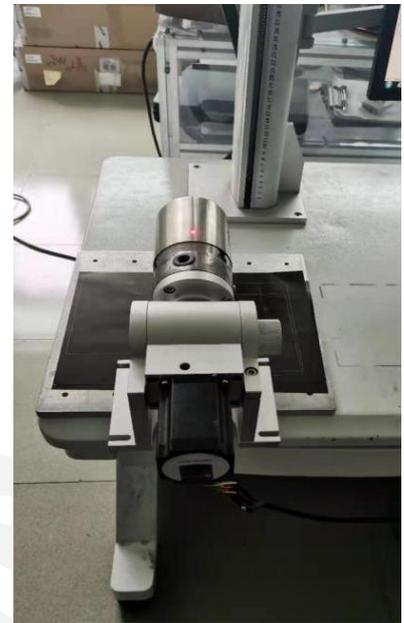
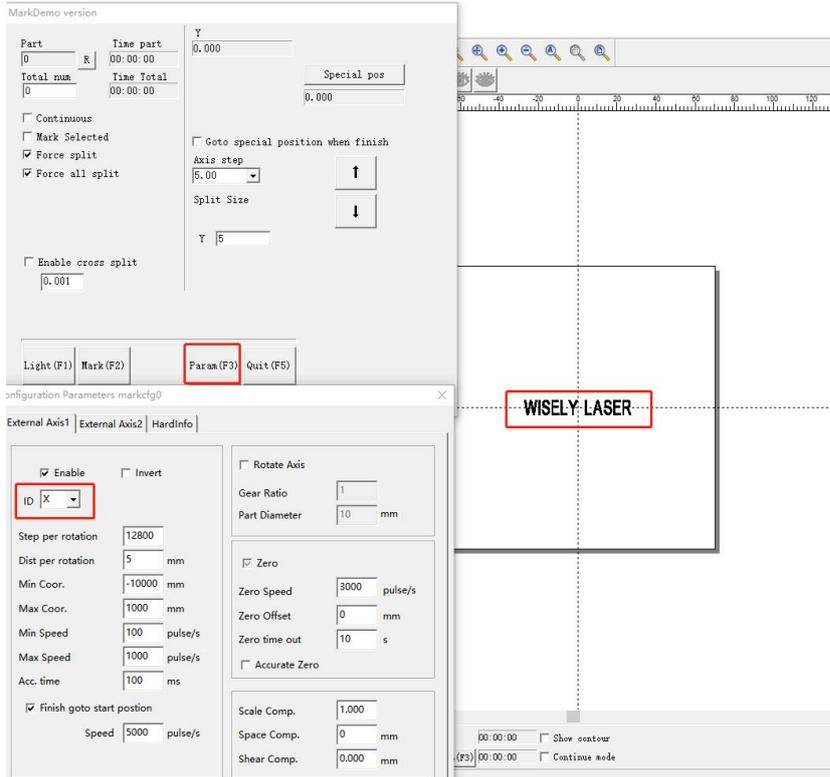
(5) Click “Laser”, select “SplitMark2”, click “param(F3)”.



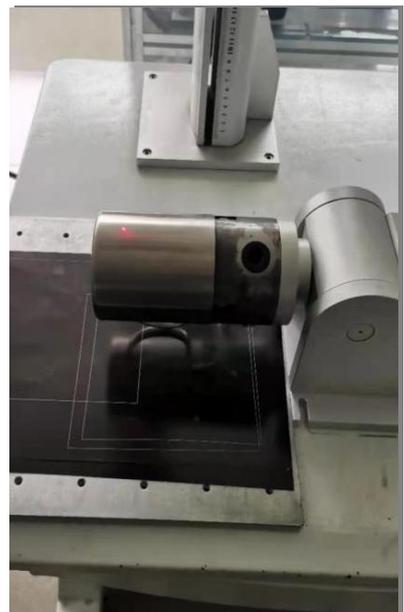
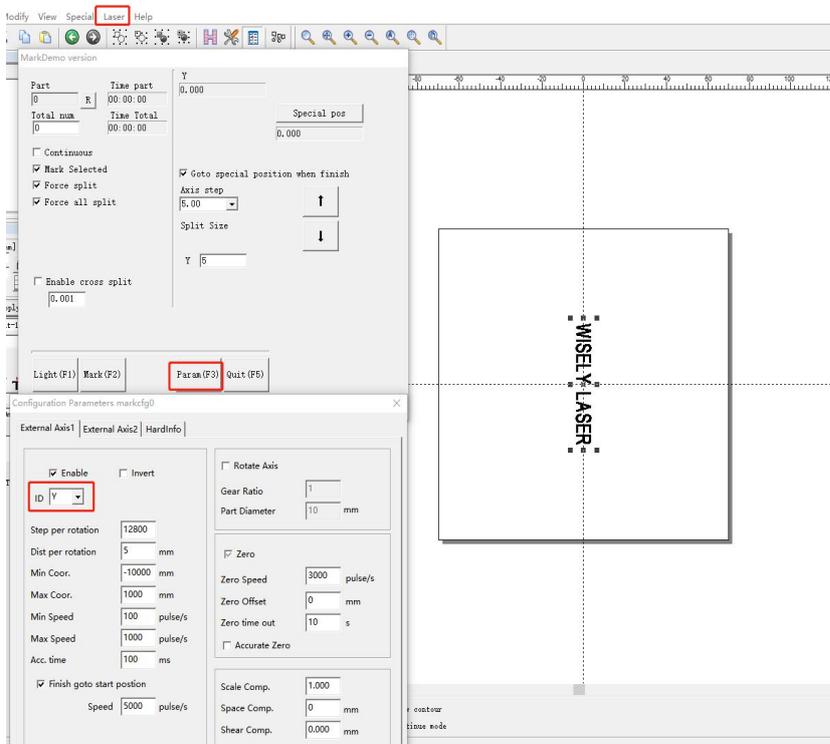
MarkDemo version



**Notice: If you want to mark the object with X axis, you should change the angle of the file and rotary device. Make sure the fill direction is consistent with the marking direction.**

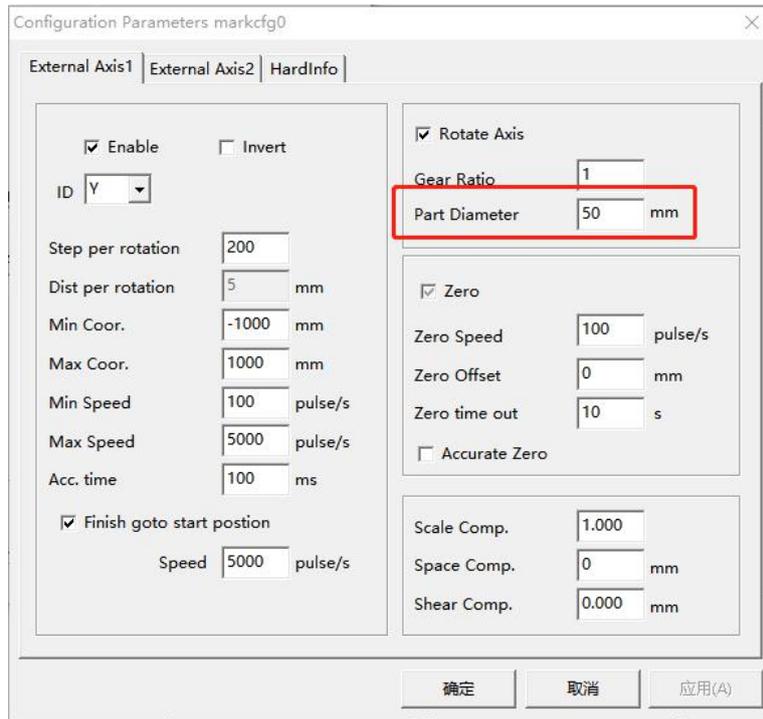


X



Y

## (6) Parameter setting for the marking object



**Notice:** The “ID” is your marking direction, “Part Diameter” is the diameter of your marking object. You can directly set the other parameters according to your requirement.

## (7) Mark

You can press “F1” to do the previewing by red light, then press “F2” to mark.



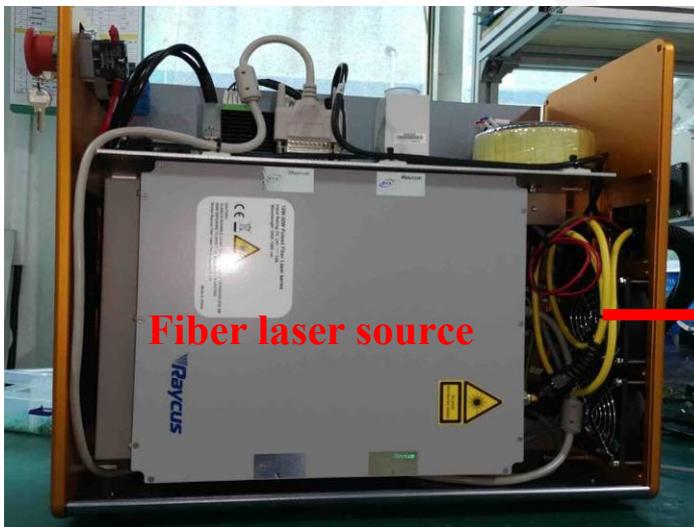
## 16. How to remove and package the damaged fiber laser source?

### 1. How to remove the fiber laser source

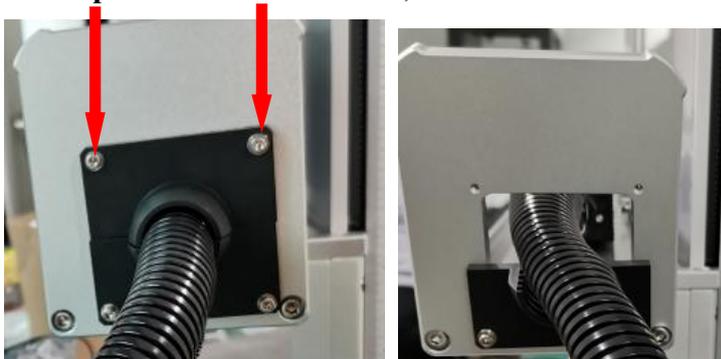
1<sup>st</sup> Step: Remove 3 + 3 screws at the back/front of machine, as shown in the figure.



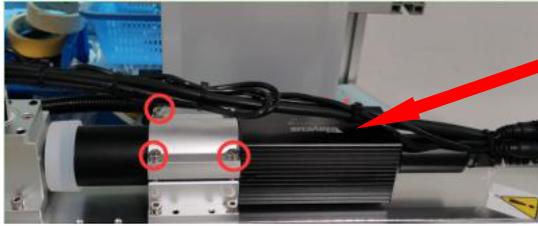
2<sup>nd</sup> Step: Disassemble the shell of the machine, as shown in the figure.



3<sup>rd</sup> Step: Remove the 2 screws, disassemble the laser machine cavity, as show in the figure.



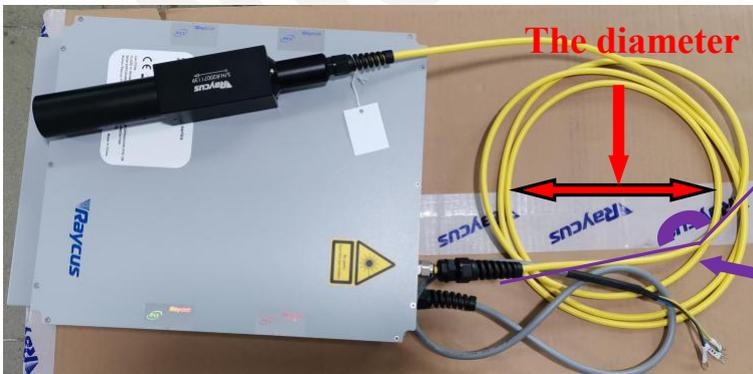
**4<sup>th</sup> Step:** Remove the screws, then take off the laser Laser isolator, as shown in the figure.



**isolator**



**5<sup>th</sup> Step:** Remove the cables (24V+ / 24V- / PE) on the DC24V switching power supply, then take out the laser source, as shown in the figure.



**The diameter**

**The angle**

**Remarks:**

- (1) Please protect the optical cable (the yellow cable) and bend it at any angle more than **90°**.
- (2) The diameter of circle must be more than **100mm** (there will be a circle when you bent the yellow cable).

## 2. How to package the laser source

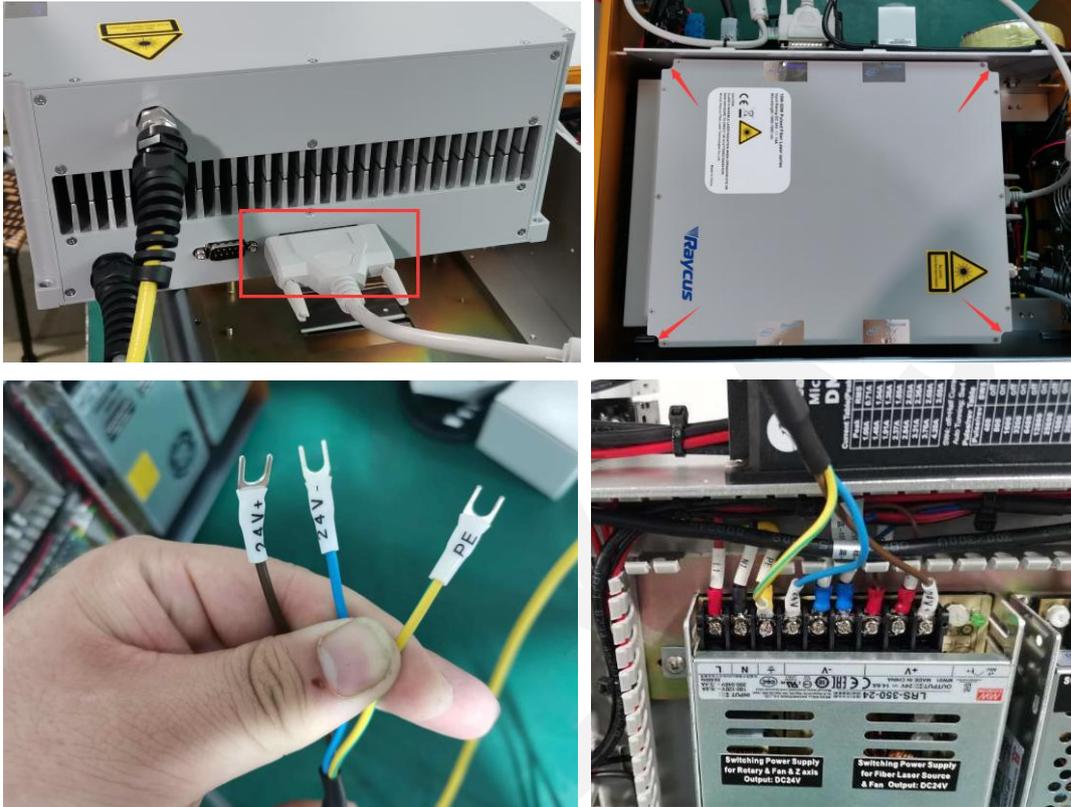
- (1) Prepare a big carton and some foam
- (2) Put the laser source into the carton

- (3) bent the optical fiber (Remind: more than **90° / 100mm**), as shown in the figure.



## 17. How to install the fiber laser source

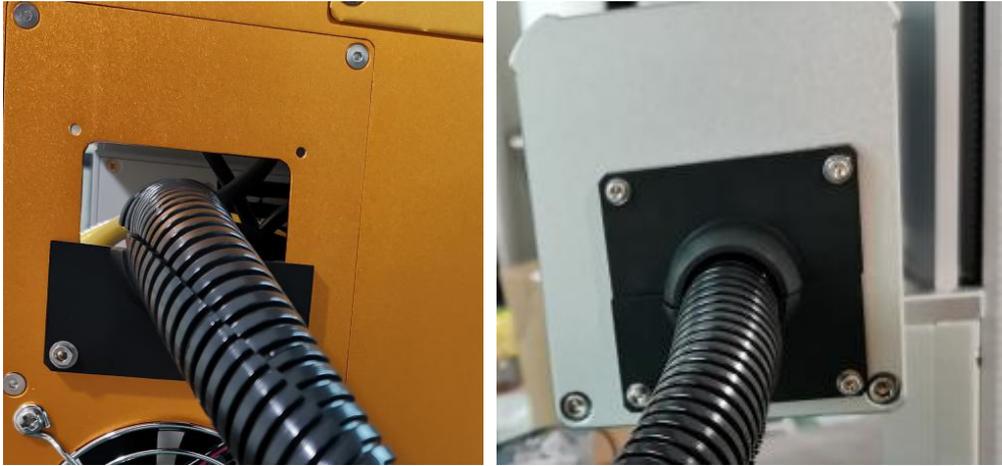
**1<sup>st</sup> Step:** Connect the signal cable (It is white **DB25** connector) from the control card to the the fiber laser source, fix the laser source in the machine frame (4 screws at 4 corners), and do the wiring connection from from DC24V on the switching power supply to the laser source (**24V+** / **24V-** / **PE**), as shown in the figure.



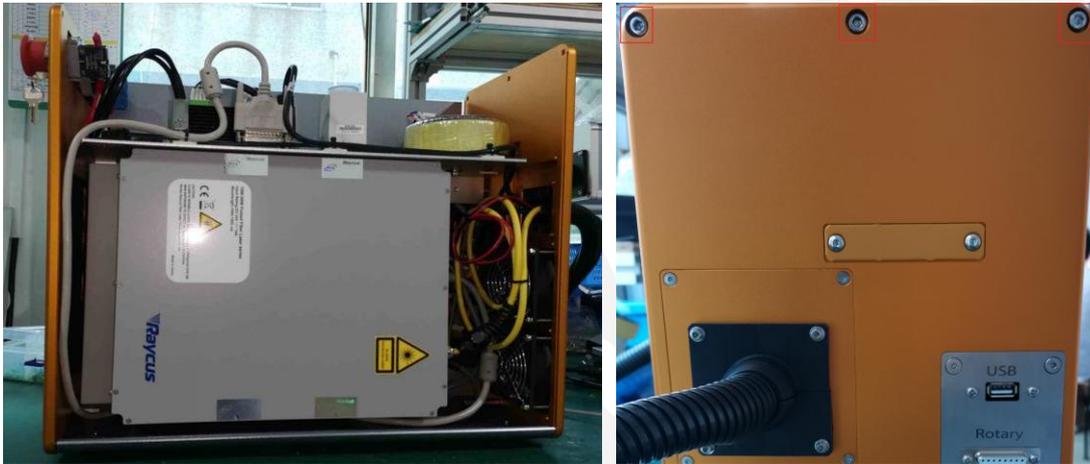
**Second Step:** Install the laser isolator, fix the screws, as shown in the figure.



**Third Step:** Install the laser machine cavity, as show in the figure.



**Forth Step:** Install the shell of laser marking machine, and fix screw, as shown in the figure.



WISELY

## 18. Maintenance

After a few time, you should do some maintenance as follows:

- (1) Electrical control system works well - connection checking.
- (2) Computer system works well - virus checking.
- (3) Marking software works well - parameter settings checking.
- (4) Elevating platform does not loose, screw does not loose and drop.
- (5) Air cooling system for fiber laser source works well - cooling checking.
- (6) Do not squeeze fiber, be sure the protecting cover is good.
- (7) Keep lens clean.
- (8) Keep equipment clean.

To get the online and quick service, you can try to find me on WhatsApp and WeChat, just scan the QR Code and add me as your contact!



# Thank you very much!