

Fiber Laser Marking

Machine

User Manual

Jinan Bodor CNC Machine Co., Ltd

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Preface

Thanks for your using our products. We can provide you the perfect after-sale service and comprehensive solution . For quickly and efficiently using this equipment, please keep this manual and other attachment carefully.

This manual is only applied to the standard configurations of our products. For the special custom-made products, please read the attached instructions carefully.

This manual includes the description of the working principle, installation method, operation, trouble shooting, transport, storage, maintenance and other instructions.

If it is the first time using this machine, please read this manual carefully before installation.

For quick and efficient using this equipment, the user should meet conditions as below:

I. Users should have some computer professional knowledge, can operate related editing and drawing software, such as Coreldraw, Photoshop, Auto-CAD and so on.

II. The operator should have some optical knowledge and related electromechanical device's maintenance knowledge.

III. Before starting the equipment, make sure this equipment's operation procedure is known well and do accordingly.

As a result of the product function is continuously updated, the product you receive may be different with the manual stated in some aspects. Here I express my sincere apology for it.

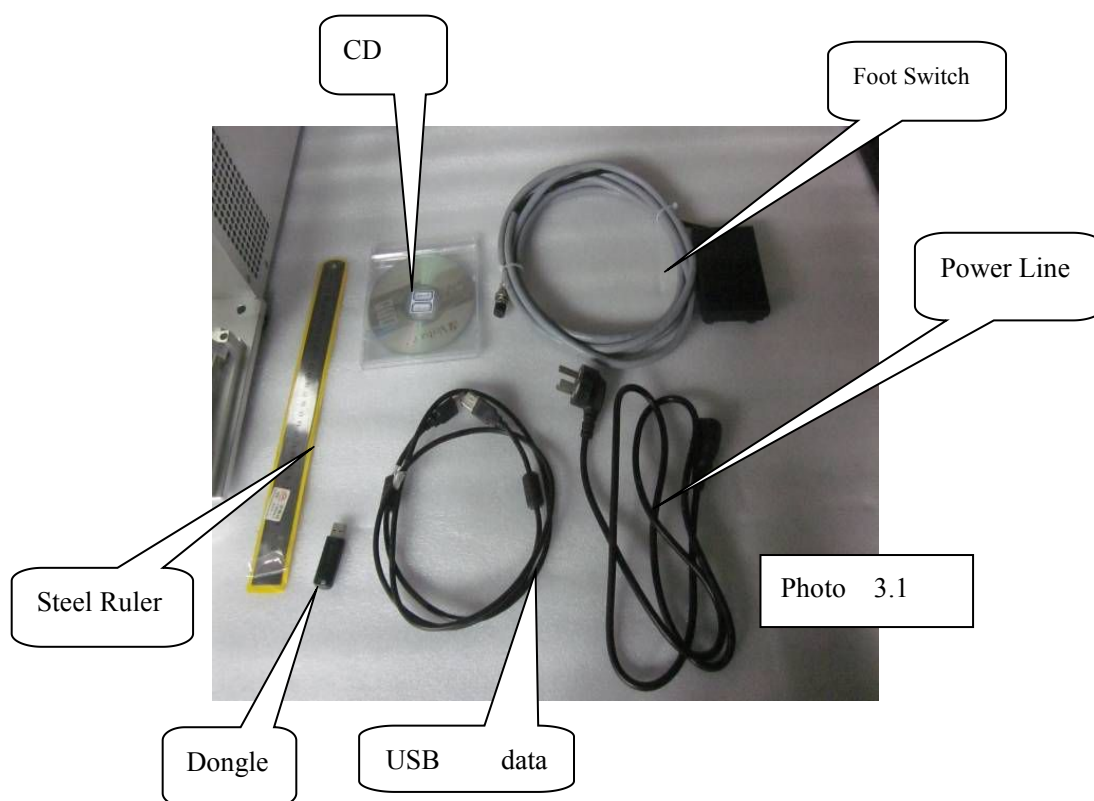
ONE. Product Introduction

- Standard Voltage 220V, AC 50HZ;
- Machine should be placed in dust-free and no radiation environment, room temperature is between 15 to 25 degrees
- Adopts fiber laser source(fiber generator) to output laser, then through high-speed scanning galvanometer system to fulfill marking function
- The electro-optical conversion rate of fiber marking machine up to more than 70%, compare with diode pumped laser marking machine, fiber marker owns the higher beam quality.
- Maintenance-free time long
- Marking Speed Faster, with high-speed scanning galvanometer
- No consumables, Low Power Consumption
- Air-cooled completely, don't need water chiller, energy consumption getting lower
- Not be affected by harsh environment and temperature change, can work with using storage battery, car cigarette lighter in the condition of blackout .
- Products depreciation cost can be got lower heavily, so can fully meet customer volume-produce and steady production

TWO . Application Industry

Sanitary Ware, Food Packaging, Tobacco Marking, Beer marking, Drinks Marking, Pharmaceutical packaging, Medical Apparatus, Watches and Glasses, Auto Parts, Plastic Material, Electronic Hardware .

THREE . Accessories Included



- 1) Steel Ruler: a tool to measure the focal length
- 2) CD: includes operation software and user manual
- 3) Foot Switch: use this switch to control machine to fulfill repeated marking
- 4) Power Line
- 5) USB Data Cable: Connect computer and machine to make control machine more easier
- 6) Software Dog(Dongle)

FOUR . Main Parts

4.1 Marking head



A Model

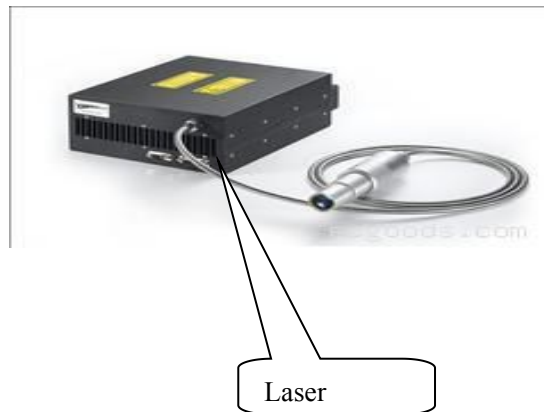


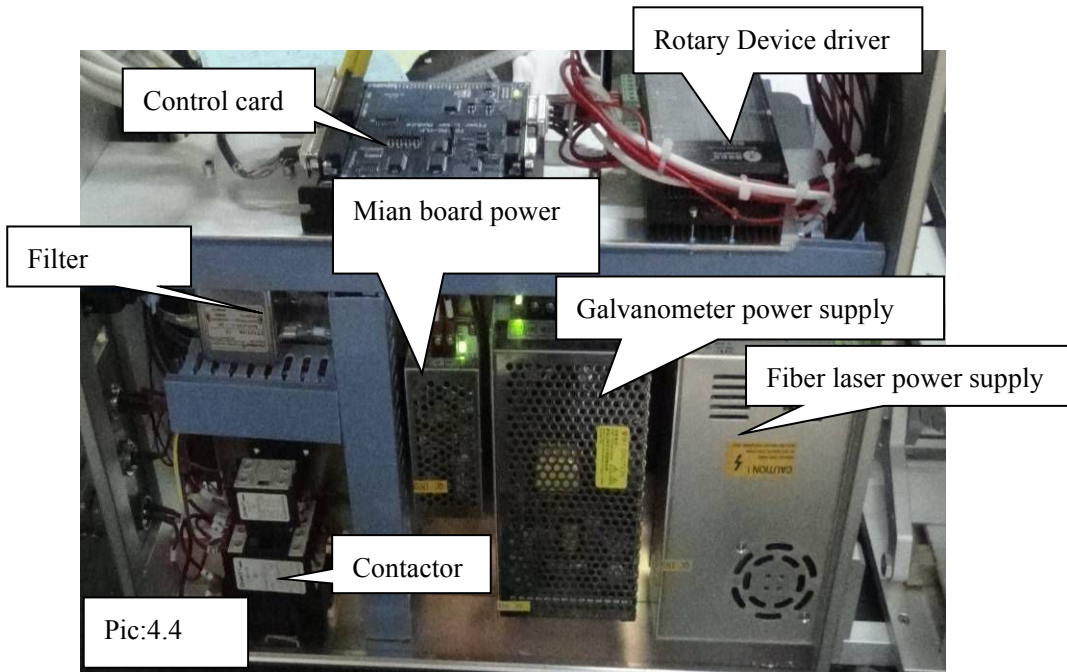
B Model

4.2 Control cabinet

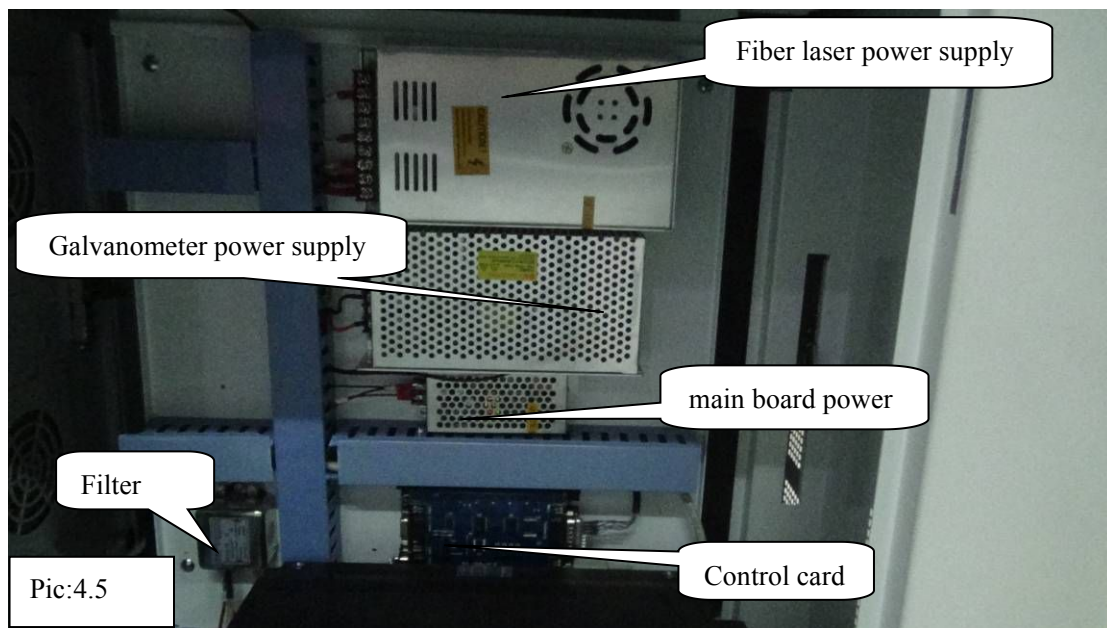
Control cabinet mainly consists of fiber module power supply, main board power, galvanometer power supply, control card, Electrical relay , filter, terminal line, fiber laser

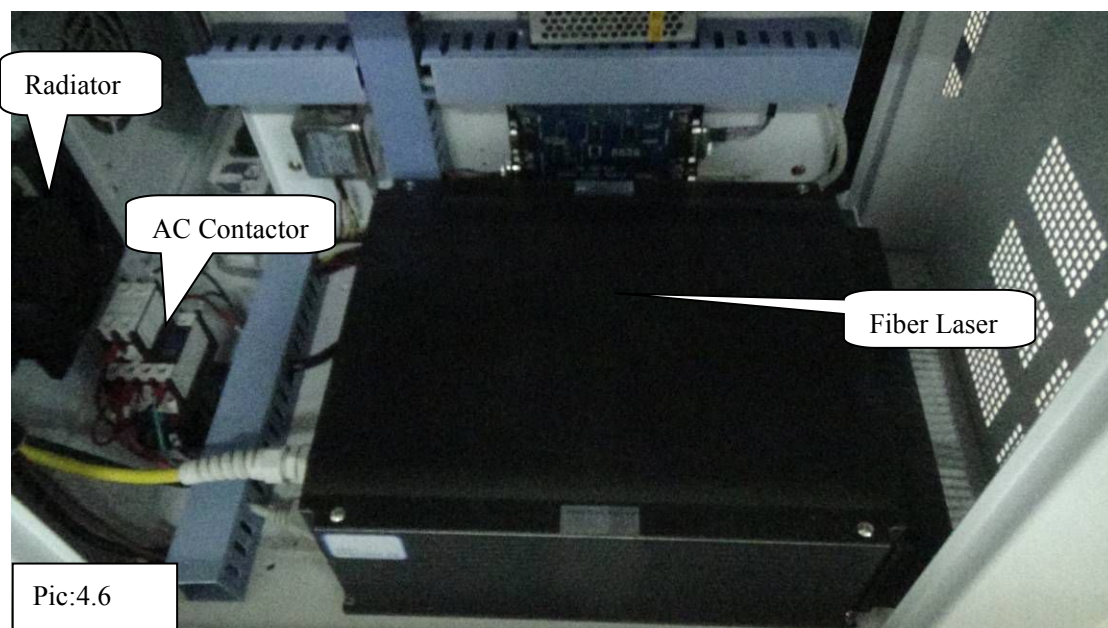
A Model





B Model





FIVE. Operation Introduction

5.1 Host Operation

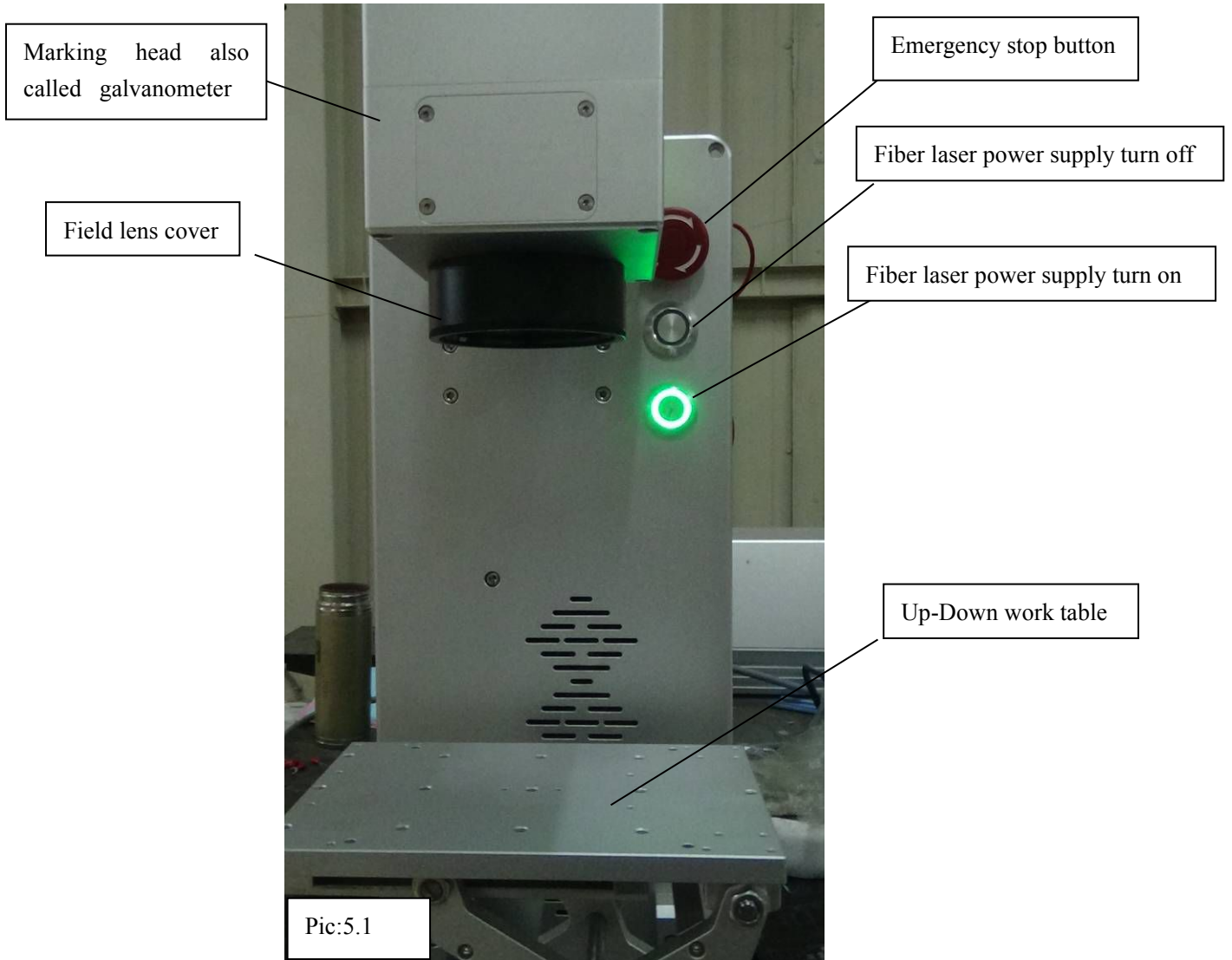
Mainly divided into front and back operation interface

Front operation interface mainly consists of Emergency stop button, fiber laser power supply and button.

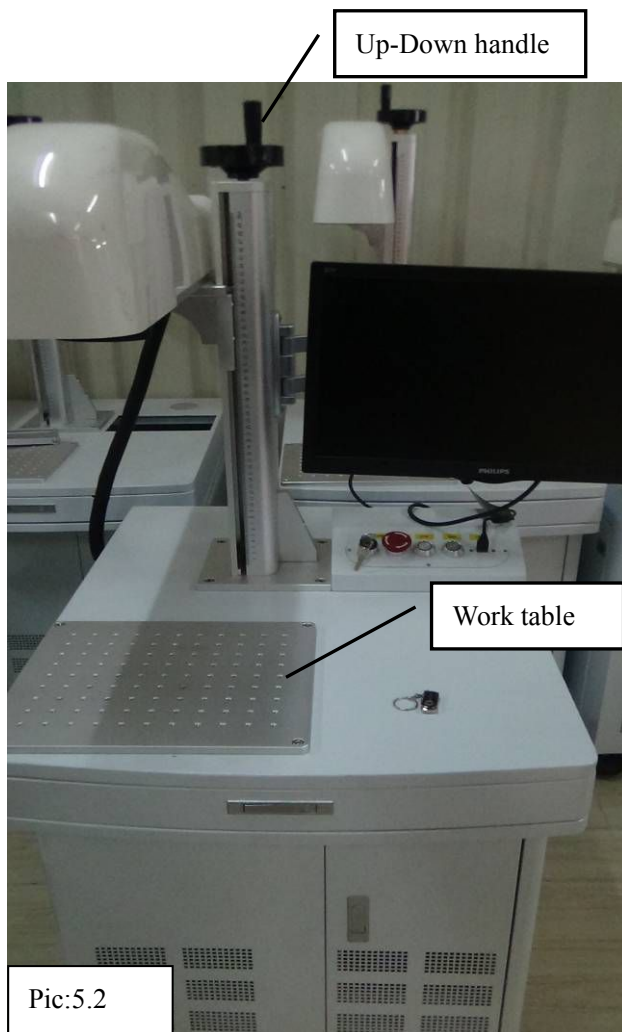
Emergency stop button: Keep open. There is an emergency or failure occurs by pressing, to cut off the main circuit

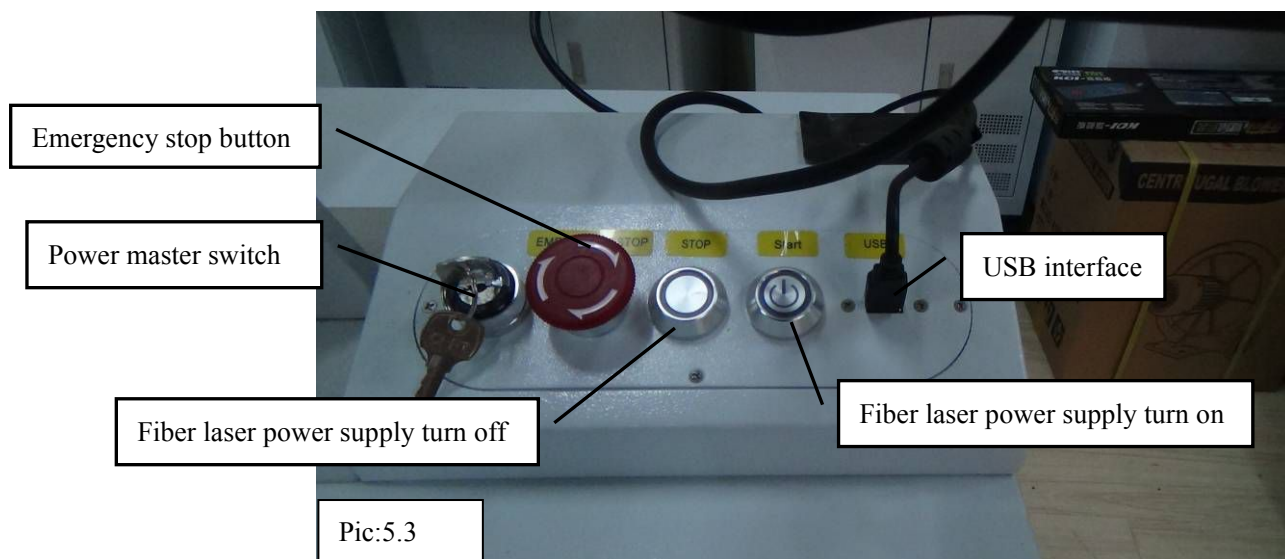
Emergency stop button: Control the laser power supply circuit. Shows at (Picture: 5.1) and (Picture: 5.3)

A Model



B Model





(2) Back operation interface consists of double mouth plug, three socket interface, 15 needle port , USB interface, power master switch, Master power input port, the radiator.such as (Picture5.4) and (Picture 5.5)

Doubleheads interface: connect the pedal switch;

USB interface: Connect the signal wire, receiving the computer output signal

Power master switch: Connect the whole machine circuit and directly control the galvanometer system circuit;

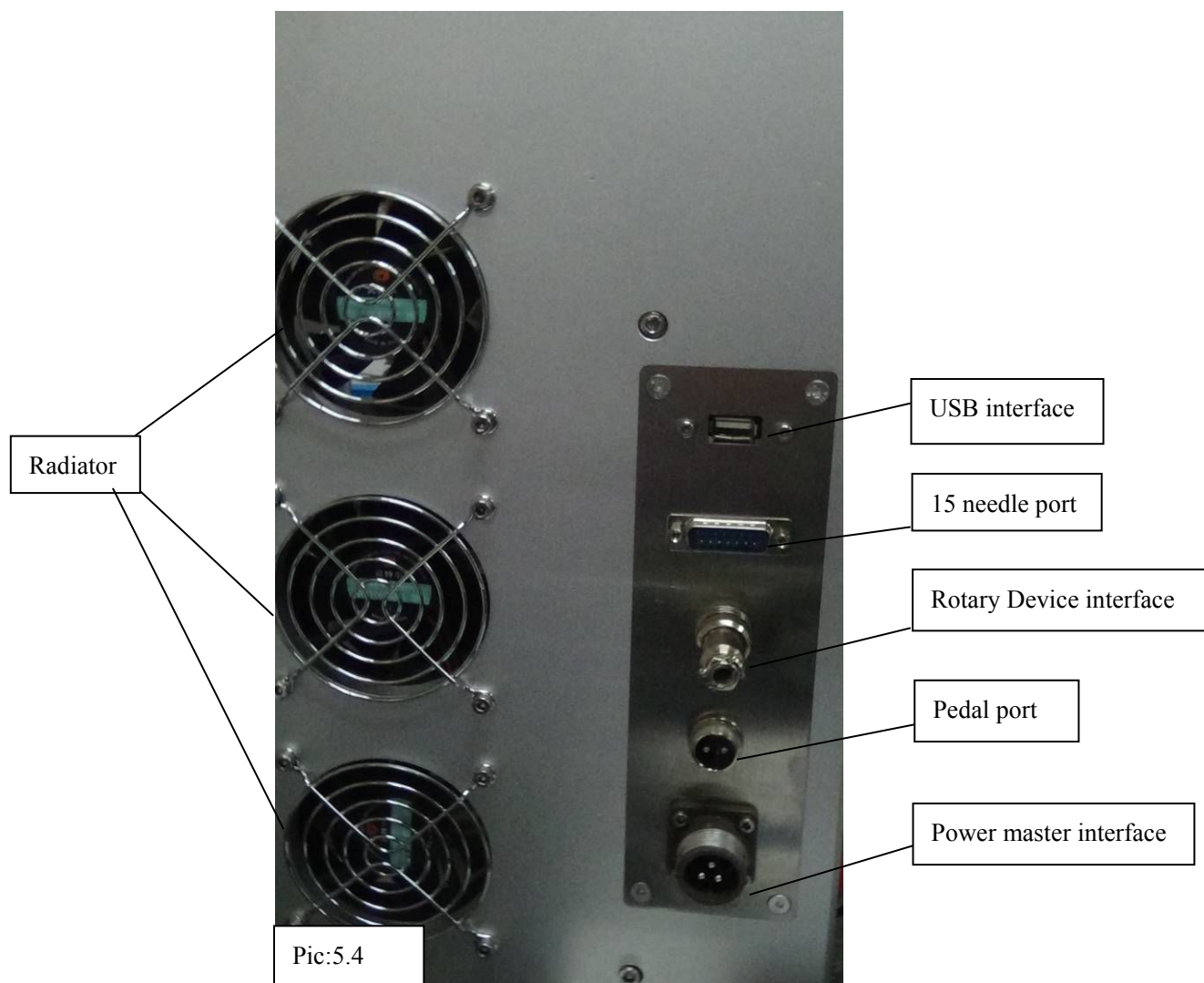
Master power input port: Connect the power cord to provide power supply for the host

Radiator: To disperse the heat generated by the host work, to cool the host

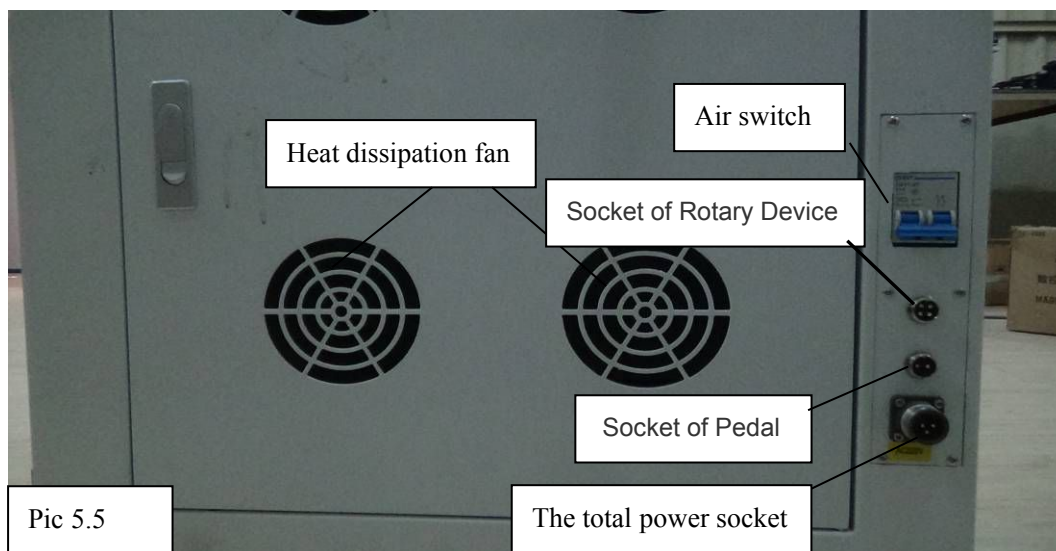
Three socket interface: Reservation

15 needle port: Reservation

A Model



B Model

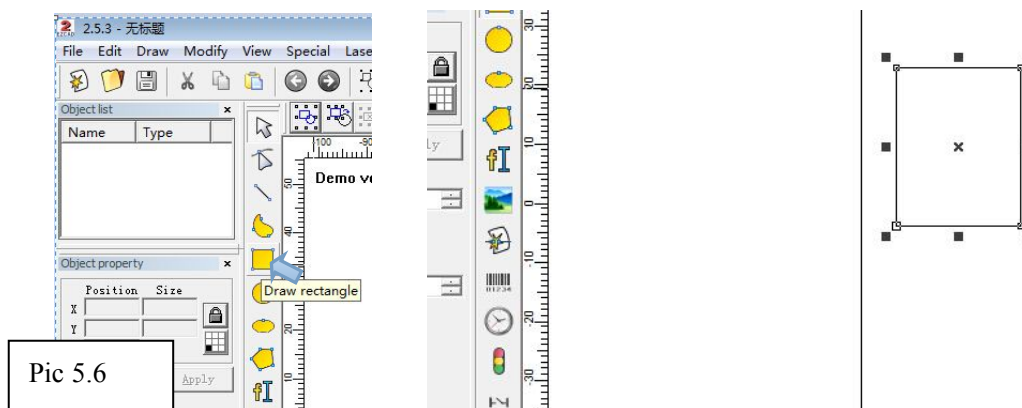


5.2 Operation step

Before operating preparations, open computer, plug in power line , Connect the foot switch.

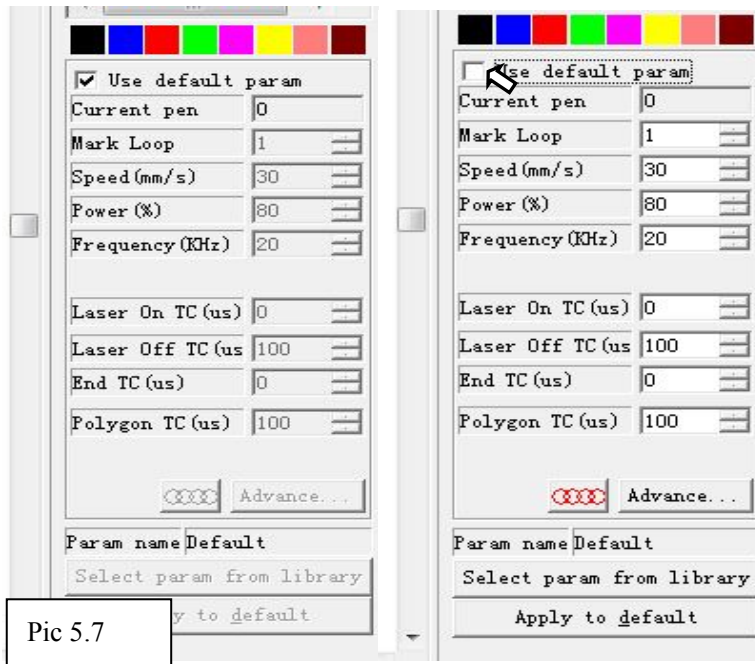
Note: The user's that do not use our computer, Software installation, please refer to the next section.

- 1) Open the total power of rear end of the operation panel on the control box, as shown on Pic 5.5.
- 2) Dextral emergency stop switch , then switch will pop up; Press the laser power switch, make the laser is energized. As shown on Pic 5.1 and Pic 5.3
- 3) Open software, Import a graphic or drawing graphics. As shown on Pic 5.6.



- 4) Adjust the corresponding parameters (eg, speed, frequency, power);The "use default parameters" checked out. According to the material, the effect of using different marking speed, power.

(Specific reference fiber marking machine power reference table)



Pic 5.7

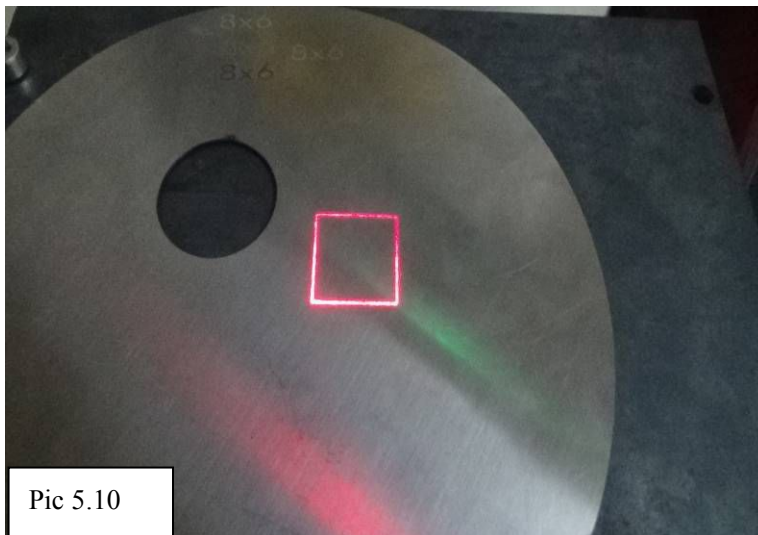
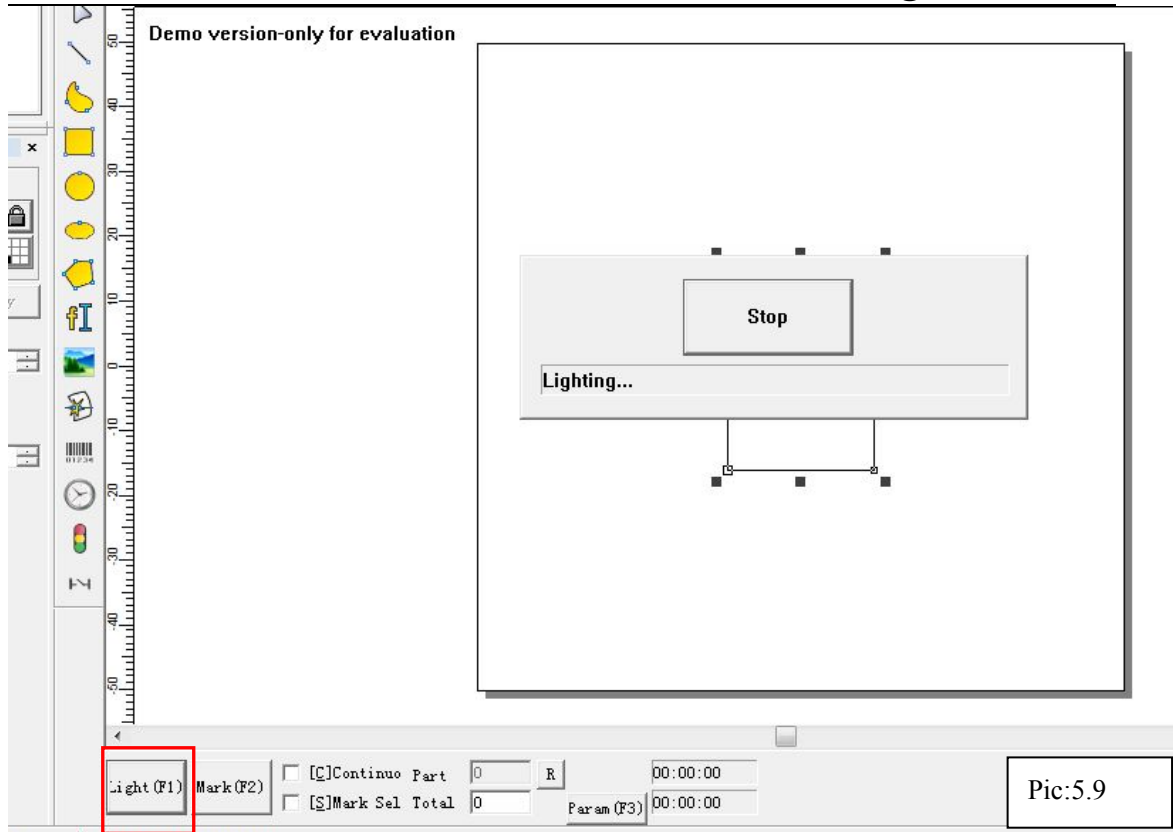
5) Focus adjustment based on good marking distance is between the object and the field lens。 As shown on Pic 5.6.

As shown on Pic. Adjust the focal length.

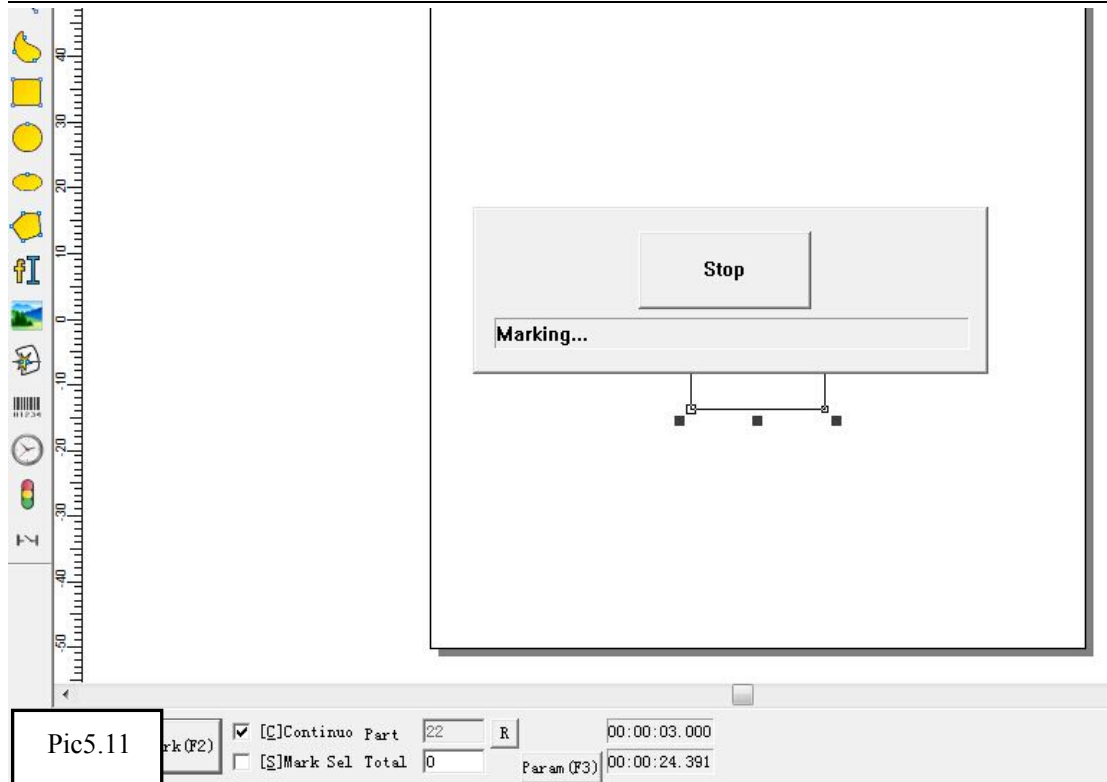


Pic 5.8

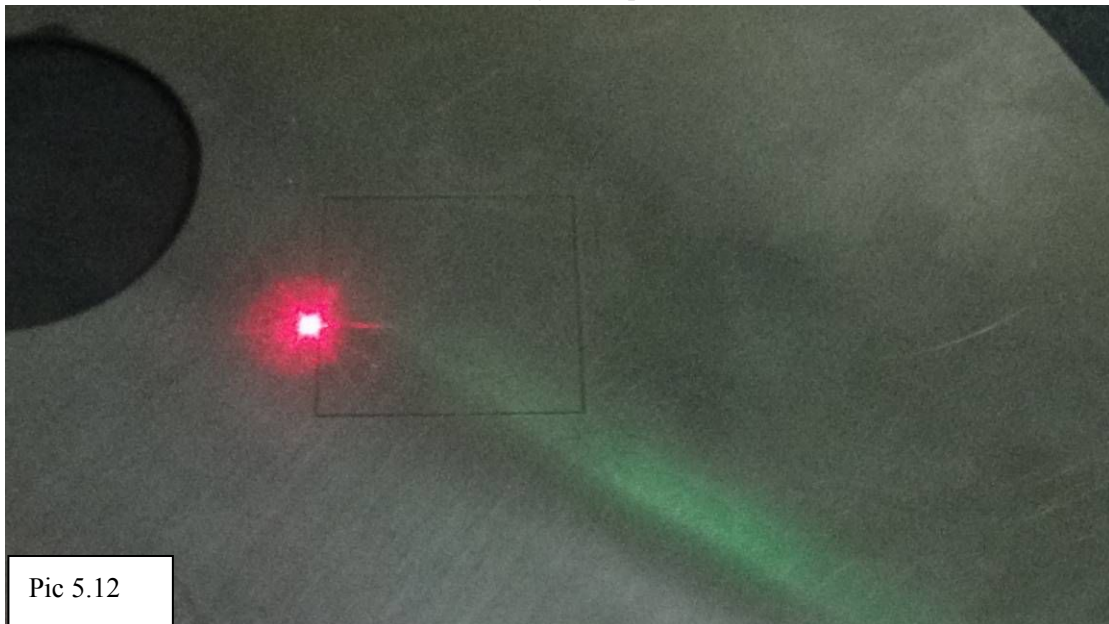
6) Click “Red light” or “F1”, machining table appear Indicating contour. As shown on Pic 5.9 and Pic 5.10



7) Click "Marking" or "F2" Screen will display "Marking". As shown on Pic 5.11.



That shot mark on the material surface. Marking is complete.

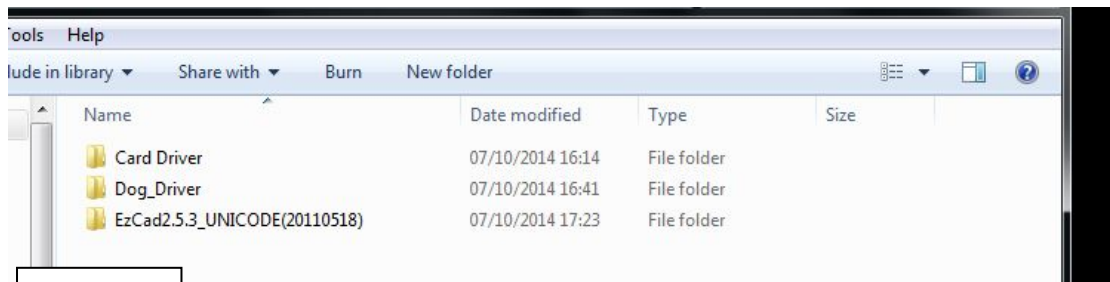


Pic 5.12

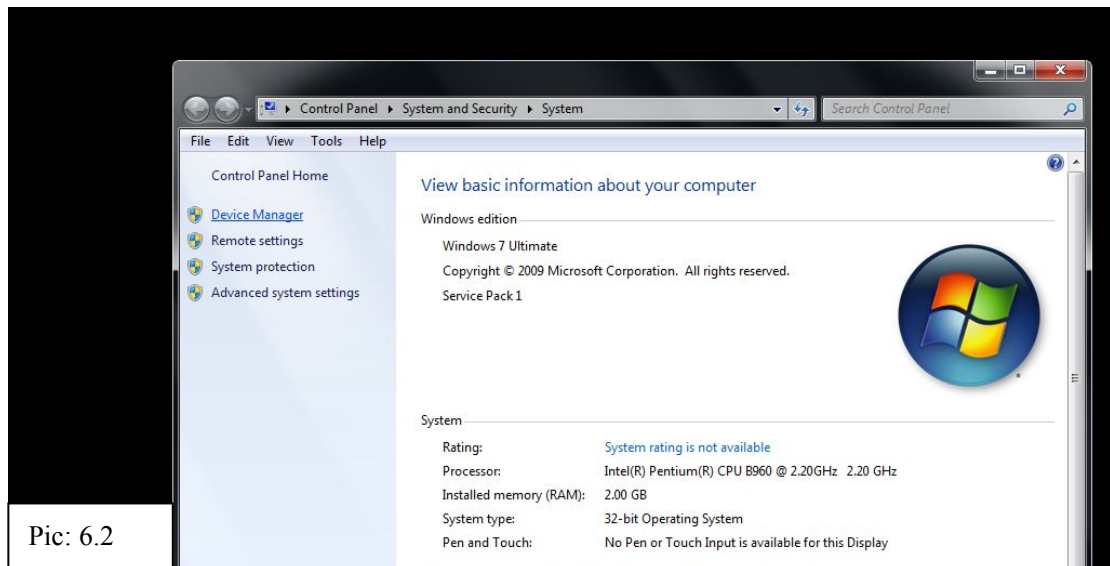
SIX . Fiber laser marking machine software installation instructions

Before the software installation

- 1) Open computer.
- 2) Use USB contact with computer.
- 3) Plug in the soft dog, the first use of the computer will prompt "Found New Hardware", do not close this dialog box. As shown on Pic 6.2
- 4) Put the CD-ROM software Ez Cad software copied to the computer hard disk drive.
- 5) Do not open the marking machine now.



Pic:6.1



Pic: 6.2

SEVEN . Equipment maintenance and common maintenance

7.1 Equipment maintenance

1.before marking please check , whether soft-dog have connect with computer, signal line , power supply line whether connect stable.

2 Before mark, please check whether laser head cover take down.(is easy broken cover, when finish need put the cover on the head)

3 maintenance:

Galvanometer lens clean : Use lens paper or swab touch medical alcohol to clean. After alcohol evaporated completely, then can open light. Laser tube exit (cathode) lens need swab touch medical alcohol to clean (common no need to clean).

the water of chiller need pure water and change it per 15days.

7.2 Common software fault handing

Fault phenomenon	Analysis method	Handing method
appear no soft-dog	1.soft-dog driver issue	anew install driver
	2 not plug soft-dog	Plug soft-dog
Show LMC hardware issue	1.not turn on the machine	Turn on the machine
	2.board card driver fault	anew install board card driver
	3.USB line issue	Change USB line
no process date, no files loaded.	Choose “choose process” , when red light and mark, no choose the files.	Choose the files need process
Can't open software	show operate system fault	Right hand button EZcad icon in compatibility choose Windows XP

7.3 Common hardware breakdown maintenance

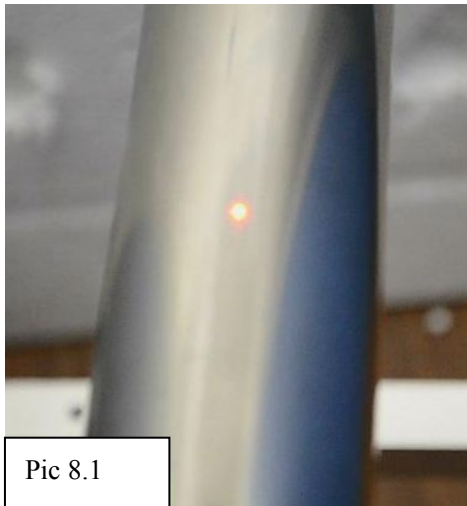
Fault phenomenon	Analysis method	Handing method
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No red light , no laser	1.whether take down laser head cover	Put cover down
	2.red light broken.	5Vpower supply have 5V, red light broken, no 5V power supply broken, change.
Working no red light	1.have red light , indicates normal.	Laser tube or laser power supply broken, need back test.
Work no red light	1.no red light, but can mark.	Red light broken or 5V broken
	2.no red light, can't mark, but have laser.	Board card broken.

EIGHT . Marking Machine Rotary Device using instruction

8.1 Rotary Device Installation

Firstly, put rotary device on worktable, clamp the workpiece good, And take a good motor interface of rotary device. (Pic 5.5) (Pic 5.6) (Pic8.1)

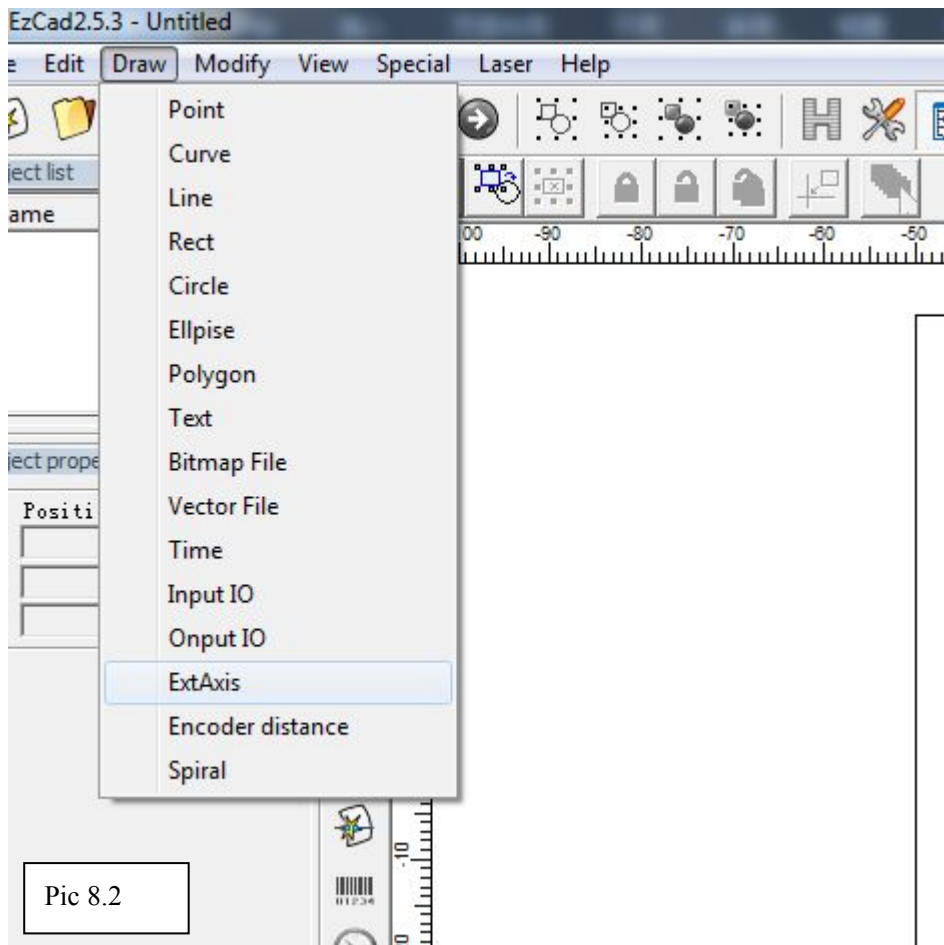


Pic 8.1

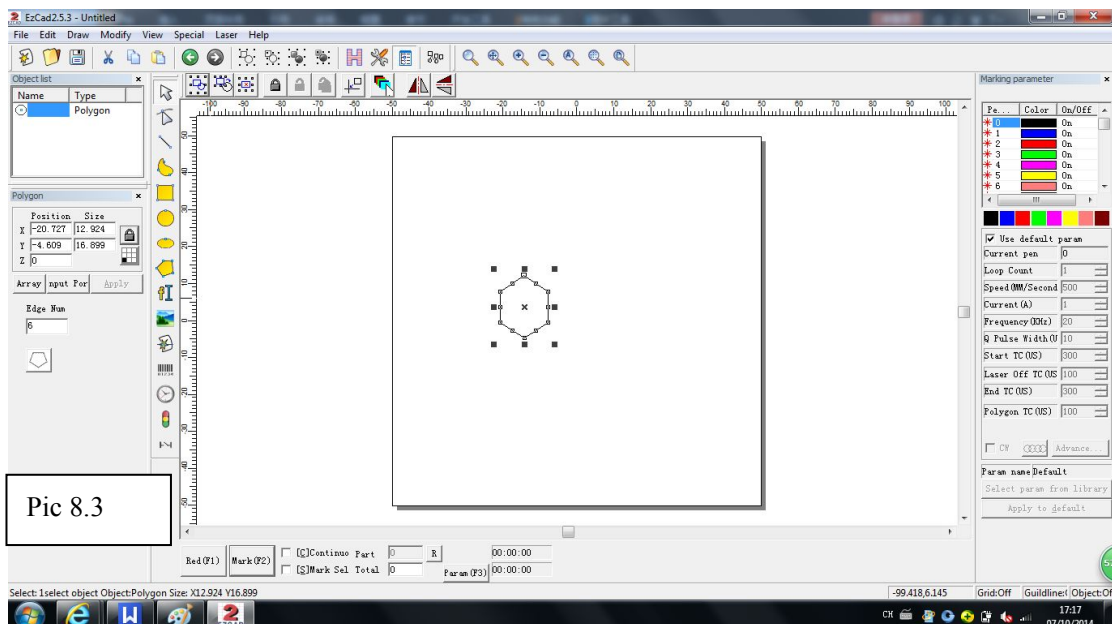
Note: This maximum corresponds to the plane of the marking surface, so this distance between it and the lens is focal length.

8.2 Rotary Device Test

1) Make a mark in the material surface, follow below picture(Pic8.2) Operate"Draw"-- "extended axis" after clicking appears like Pic8.3



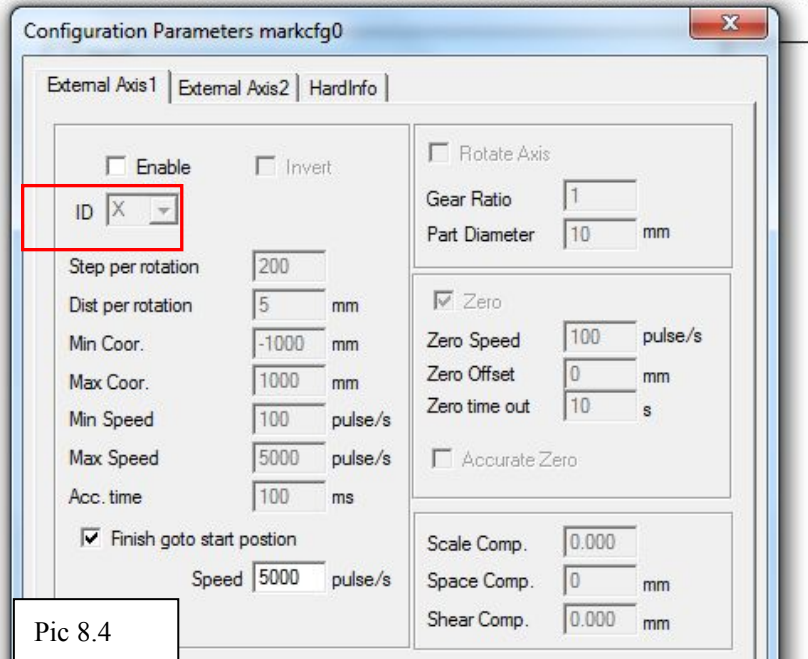
Pic 8.2



Pic 8.3

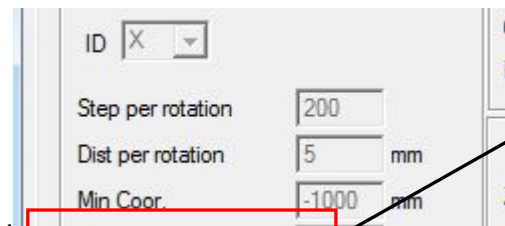
2) Click “extended” appears Pic8.4

Note: Too fast speed, May get stuck when the rotation.



Pic 8.4

3) Adjust the pulse value, like (Pic 8.5)

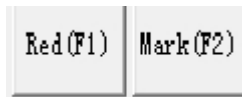


$$5000 * D = 20000$$

is "20000"

"D" is Reduction ratio, for examples "4" Suppose now

Pic 8.5



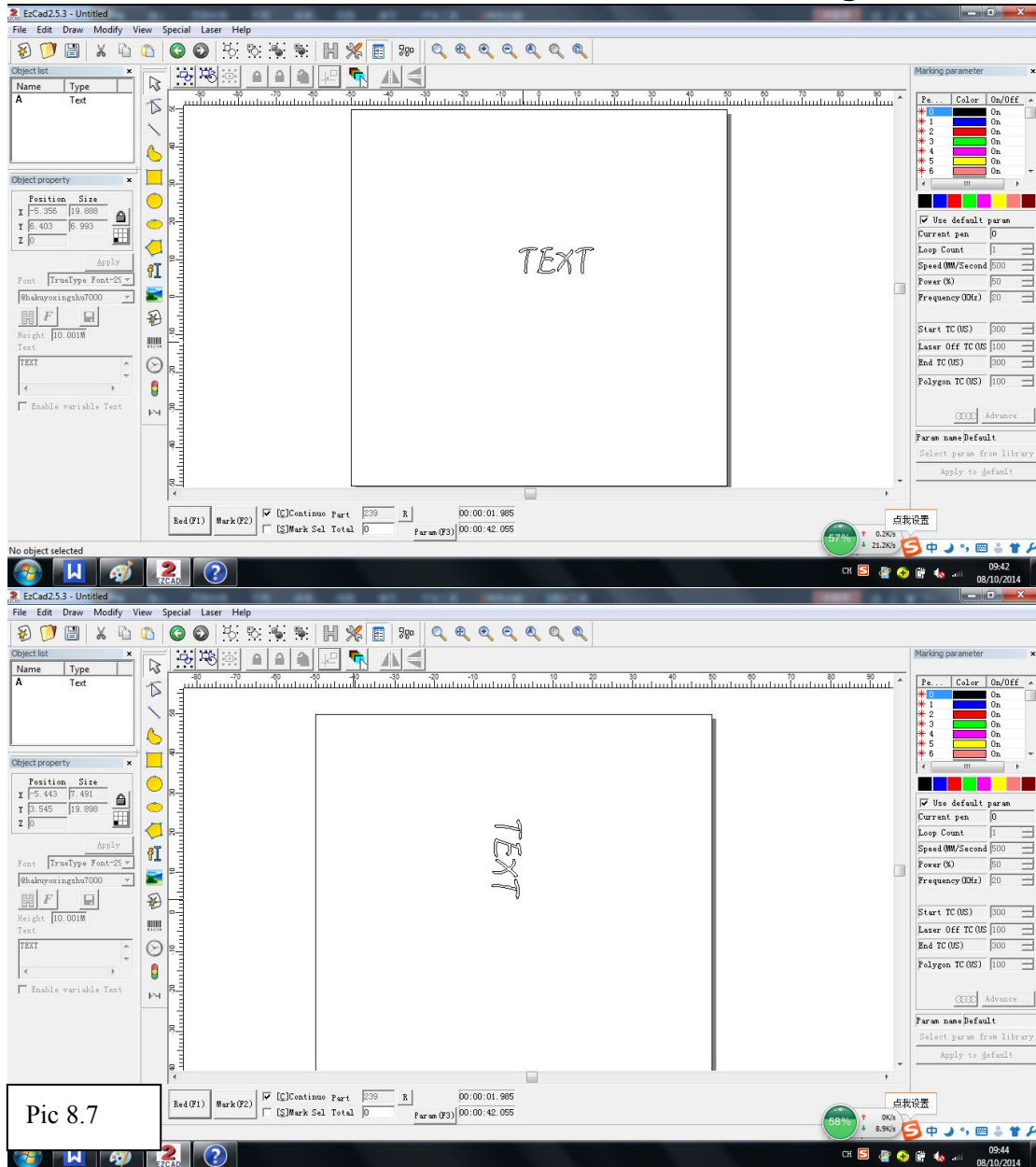
Click "Mark", Then you will see the rotary device rotate , Then pay

attention to see if the above material marker rotate a week, If not, This is the need to modify the value "20000", adjust large or small, Marking again. until the circular tube rotate a week. If adjust "20000" to "20035", Part 8.3 will use this value.

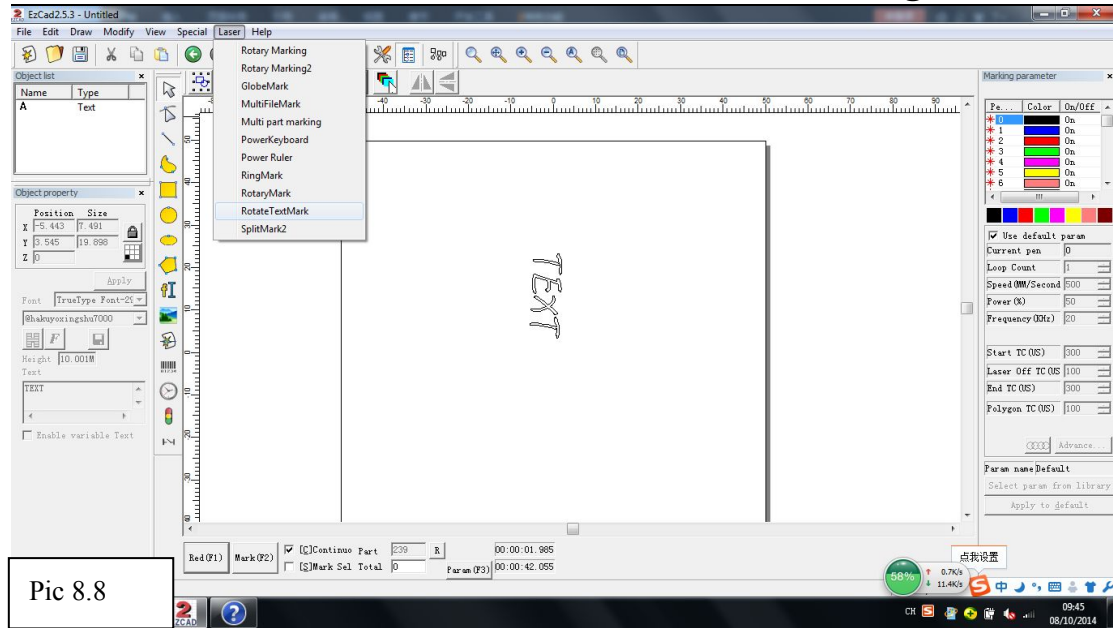
Note: This step is to measure the "20035".

8.3 Rotate Text Marking

1) Rotate text marking is mainly used for marking text file types, enter marking content, the contents were then rotated 90 degrees, good tune marking power, speed.

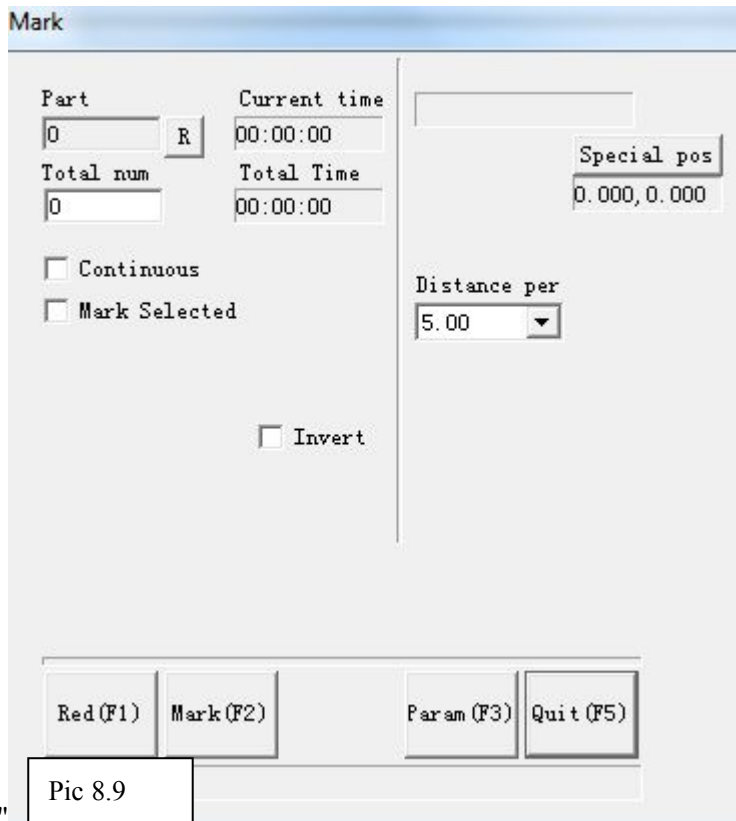


2) Then click the "Laser" - "Rotate text marking"



Pic 8.8

Appear following Dialog box "Rotate text marking"



Pic 8.9

marking"

Param (F3)

3) Click "Param (F3)" appear below Dialog box

Appendix 1:

Laser marking machine after-sales maintenance manual

First, thank you very much to buy the products of our company, in order to ensure the product after-sales service work, especially as follows:

General rules

1. During the guarantee period, we will provide you with the fittings for free, if the fittings are conformed to the warranty conditions.

2. Users must use our equipment to ensure the integrity, independence and the original of the device. For the following situations will not warranty the company, while its equipment or reputation damage caused economic losses caused to the Division I, we remain the right to pursue its legal responsibilities:

(1) The environment is not suitable for using machine yet insist on using.

(2) Without permission for equipment modification including adding reduction, remove the replacement parts, or the use of our company outside of components and peripheral equipment;

(3) Failure to specification requirements operation, maintenance, or vandalism

(4) Due to the equipment move transportation cause damage

3. On the condition of not affect product performance, we have the rights to change product specifications and naming ways without prior notice to.

4. Our only legal obligation on the sale of the product itself such as the quality and performance, do not assume other indirect obligations and responsibilities.

Detailed rules

1. The whole machine warranty period is 24 months which counted from the date shown in the equipment sign.

2. The warranty of laser module

(1). RF laser tube and fiber laser module for 1 year

(2). Standard CO2 laser tube for 4 months

(3). Reci laser tube for 10 months

3. Consumable parts warranty

Such consumable parts are not in the period of warranty. Such as glass lens, belt, switch, gas mouth, anchor/wheel, buttons, press plate, etc.

Laser power supply, driver, motor have 1 year warranty.

4. Machine peripheral equipment :

peripheral equipment warranty for one year, in the product labels to factory date, by the equipment manufacturer according to its standard warranty, we assist maintenance;

Such as cold water chiller, Exhaust fan, air pump, water pump, etc.

Accessories maintenance freight regulations

1. We will provide you with the fittings for free repairment or change during the guarantee period if test for the quality of the product itself reason (Not man-made reason, environmental reason). But please kindly noted that all users are kindly required to return us the damaged fittings by courier with your charge before we send back the alternative fitting parts. And we charge your freight. If because some reasons, we can not receive the broken fittings in time, it will cancell the warranty qualification.

2. During warranty, if the fittings broken not because of machine quality, buyers need charge the freight and repairment cost.

3. After warranty period, the fittings which need repaired or changed should be in charge by you and charge the freight and repairment cost.

Door-to-door service policy

When you meet some problems with installing, using or adjusting, but our online-support can not solve it, we can offer Door to Door service. If you need our engineer(s) to assemble or maintain or adjust the machine in your area, you would like to be required to assist us to deal with the visa formality, traveling expenses prepaid and accommodation arrangement during the business trip and the service period before they dispatched.

And please kindly arrange the translating person for the service engineer during their service period. Otherwise, you also can arrange your engineer to come to visit our factory to get a long-term free technical training.

Appendix 2 marking machine parameter

Fiber Marking Machine 10W Parameters

Materials	Marking effect	Filling	speed mm/s	power	frequency
Aluminum business card(yellow)	From light to dark	0.01-0.03	500	20-80	20
Aluminum nameplate	From white to black When the speed is 1500 some times is white 1500	0.01-0.03	1000	20-80	20
Plastics	clear	0.03	1000	20	20
Iron	From light to dark	0.01-0.03	0-1000	20-80	20
Stainless steel	Sometimes is black, Close to the material color	0.01-0.06	0-1500	20-80	20
leather	Best effect	0.01-0.06	300	60	25

Fiber Marking Machine 20W Parameters

Fiber Laser Marking Machine

Materials	Marking effect	Filling	speed mm/s	power	frequency
Aluminum oxide block	Marking dark	0.01	300	50	250
Stainless steel block	Marking white	0.01	100	40	80
Stainless steel block	Marking white	Cross 0.05	1000	65	35
Foreign white copper sheet	Marking white	Cross 0.03	1000	100	50
Stainless steel block	Marking deep, marking dark	0.05	500	80	20
		0.01	200	40	80
		0.01	200	40	80
Stainless steel block	Marking dark	0.01	200	40	80
		0.01	220	40	80
White lampshade	Marking dark	0.03	1200	90	25
Red button	Marking white	Cross 0.01	1300	65	35
White black lacquer buttons	Marking white	Cross 0.04	1000	65	35
Silver material	Marking white	Cross 0.05	1200	100	35
Stainless steel block	wire drawing	0.09	1000	70	35
		0.12	1000	70	35
		0.25	1000	70	35
Red copper	Marking deep, marking white	0.02	100	100	20
		0.02	1000	70	80
Red copper	Marking deep, marking red	0.01	100	100	20
		0.01	100	100	80
White plastic pipes	blace	0.03	1200	65	25
white background coating Blue lacquer	Marking white	0.03	800	85	40
Circuit board	Marking white	0.01	1000	95	32

Aluminum molds	Marking white	Cross 0.05	100	95	45
Brass	Marking white	Cross 0.05	1000	80	40
Black hard plastic	Marking white	0.05	1500~2000	60~75	25~45
Iron	Marking white	Cross 0.05	1000	55	35
The new laser housing	Marking dark	0.01	100	100	20
Brass	Marking deep, marking dark	Cross 0.01	100	95	20
Aluminum Alloy	Marking deep, marking dark	Cross 0.01	200	100	30

Note: The parameter list for customer reference only, not for the actual processing parameters.

Postscript

The specification of the final interpretation belongs to Bodor. we will do our utmost to ensure the accuracy of the contents of this manual. Because the editor is limited, there may be something wrong or omissions. We all consequences caused thereby does not assume any form of liability. We bodor does not undertake direct, indirect, special, incidental or consequential loss or liability due to the use of the manual or the product improperly caused. Urge readers and colleagues criticized the correction.

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