Fiber Laser Cutting Machine

User Manual

Version: TA20.01

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Foreword

The manual is English Version TA20.01, which is used for TA-FLS series single table fiber laser metal sheet cutting machines manufactured by Wuhan TA Laser Machinery Co.,Ltd!

This document is only applicable to the standard configuration of the corresponding product model. For special customized products, please read extra explanatory materials carefully.

This manual details the installation, use and related maintenance steps of the cutting machine. Before you use the machine, please note the following:

• It is recommended that every staff (maintenance, operation, daily maintenance, fixed-point inspection) related to this machine read this manual.

• The operator should have relevant technical training or be instructed by a special person.

• If you can follow the instructions in the manual, you can not only avoid dangerous accidents, reduce maintenance costs, reduce downtime, but also improve the working efficiency and service life of the machine.

• The instructions should be kept for reference at any time.

Attention:
Please read this instruction carefully before using the laser cutting machine. Misoperation by the user may cause the equipment to run poorly, damage the equipment, or even cause personal injury.

Warning:
The laser used by this cutting machine is invisible light and should not be viewed directly, otherwise it may cause eye injury. Please wear protective goggles when using.

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I Preface

1.1 Welcome

Thank you for purchasing a fiber laser cutting machine from TA Laser Machinery Co.,Ltd. If you are using this product for the first time, please read this instruction manual carefully before installation and use.

1.2 Company Introduction

Wuhan TA Laser is an ambitious fiber laser metal cutting machine manufacturer and exporter in China. We are also a service provider, including machine isntallation, debugging, upgrading, maintenance and trouble- shooting.

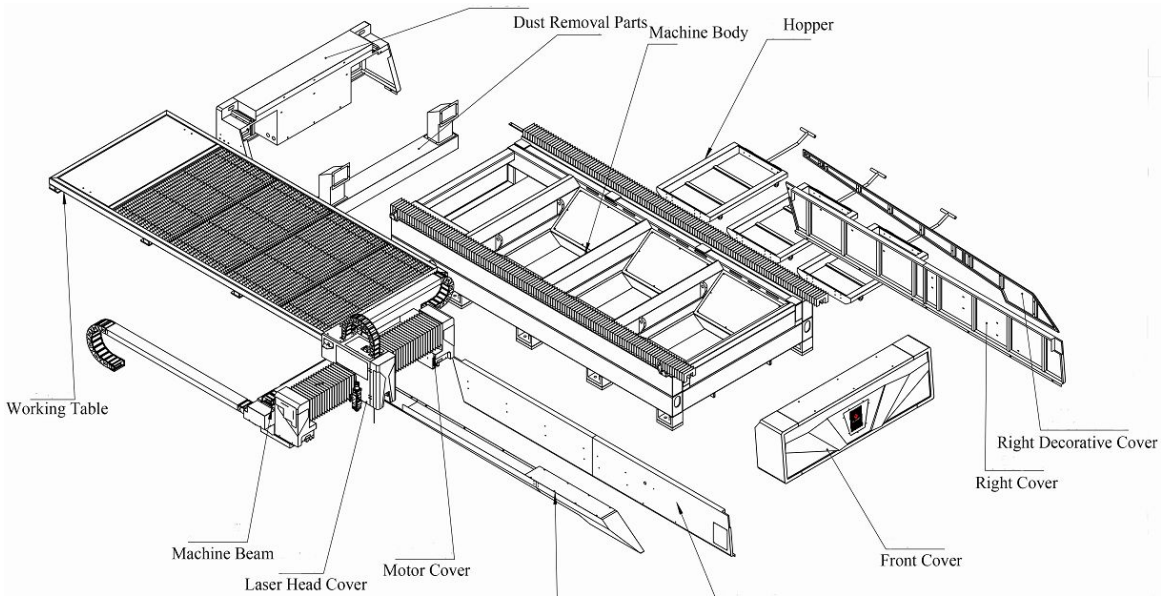
Our main products include laser cutting machine, laser marking machine, laser welding machine and laser washing machine. They can widely used for the industries include sheet metal, hardware, kitchenware, electronic, automotive parts, spectacles, advertising, craft, lighting, decoration, jewelry, etc. Focus on quality and service, we dedicated to provide customers with perfect sheet metal processing solutions and high quality after-sales service.



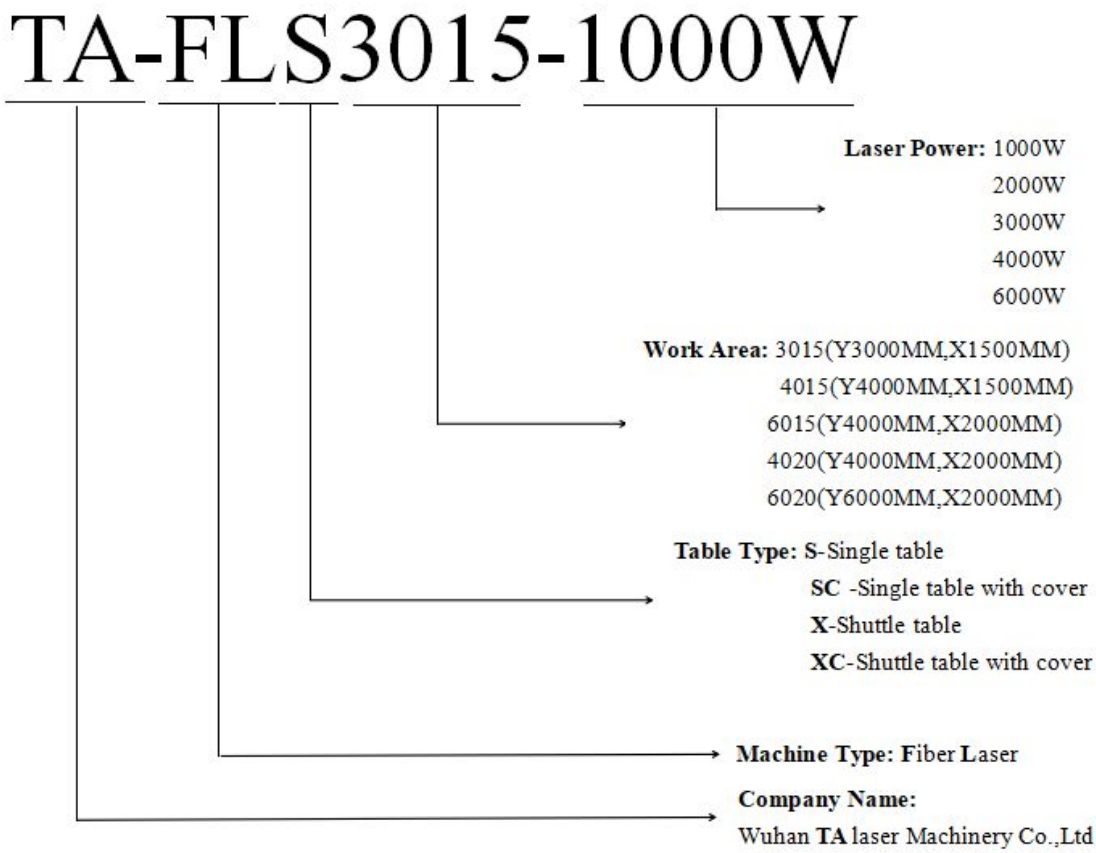
II Machine Instructions

2.1 Machine Image and Working Bed Exploded View





2.2 Instructions For Machine Model

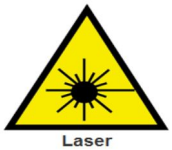


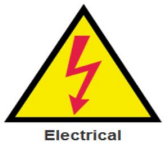
III Safety Instructions

To ensure the safe operation and performance of the product, follow all warnings in this guide, safety precautions must be observed during all phased of operation, maintenance and service.

Operators must adhere to these recommendations and to apply sound laser safety practices all times. Never open the chassis. All internal service and maintenance should only be performed by qualified personnel.

3.1 Table of Safety Symbols

	Text marked with an Electrical Warning symbol refers to a potential personal hazard. It requires a procedure that, if not correctly followed, can result in bodily harm to you or others. Do not proceed beyond the Electrical Warning until you completely understand and meet the required conditions.

	Text marked with an Laser Warning symbol refers to a potential personal hazard. It requires a procedure that, if not correctly followed, can result in bodily harm to you or others. Do not proceed beyond the Electrical Warning or Laser Warning symbols until you completely understand and meet the required conditions.
	Text marked with a Caution symbol refers to a potential personal hazard. It requires a procedure that, if not correctly followed, can result in mechanical injury.
	Text marked with a Caution symbol refers to a potential persona hazard. Do not running the machine before effective dust removal equipment installation completed.
	Text marked with a Caution symbol refers to a potential persona hazard. Do not touch the laser head and the parts just finished cutting.

3.2 Operation Cautions



WARNING: Specular Reflections

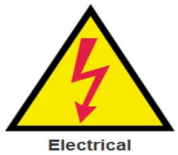
Often there can be numerous secondary laser beams produced at various angles near the laser aperture. These beams are called “Specular Reflections” and are produced when the laser light reflects off a surface where the primary beam is incident. This laser Beam reflection will damage the eyes.

Safety Recommendations

You must wear protective goggle used protects against light emitted by the device over its entire range of wavelengths.







WARNING: The input voltage to the laser is potentially lethal. All electrical cables and connections should be treated as if it were a harmful level. All parts of the electrical cable, connector, or device housing should be considered dangerous.

Safety Recommendations

1. Make sure the device is properly **grounded** through the protective conductor of the AC power cable. Any interruption of the protective grounding conductor from the protective earth terminal can result in personal injury.
2. Before supplying the power to the instrument, ensure that the correct voltage of the AC power source is used. Failure to use the correct voltage can cause damage to the instrument.
3. Before switching the power on, ensure that line voltage corresponds to the specified level.
4. Do not open the electrical cabinet without TA engineer remote support.



WARNING: Machine fast movement, if not correctly followed the operate instruction, can result in mechanical injury.

Safety Recommendations

1. Make sure do not approach the machine frame when machine running.
2. Any maintenance need turn off the machine, make sure the main electricity cut off.
3. Any time operator must nearby the machine.



WARNING: Metal dust is produced during the cutting process of the equipment, will be harm the human body.

Safety Recommendations

1. Make sure the dust collect device is properly installed before machine running.
2. Must wear mask to avoid the metal dust harm.









WARNING: The laser light is strong enough to cut or weld metal, burn skin,
clothing, and paint. In addition, this light can ignite volatile substances such as
alcohol, gasoline, ether, and other solvents. Exposure to solvents or other flammable materials and gases must be avoided and must be relocated away

from this device.

Safety Recommendations

TA recommends that you follow these procedures to operate the laser machine safely:

• Never look directly into the laser output port when power is supplied to the laser.

• Avoid positioning the laser and all optical components at eye level.

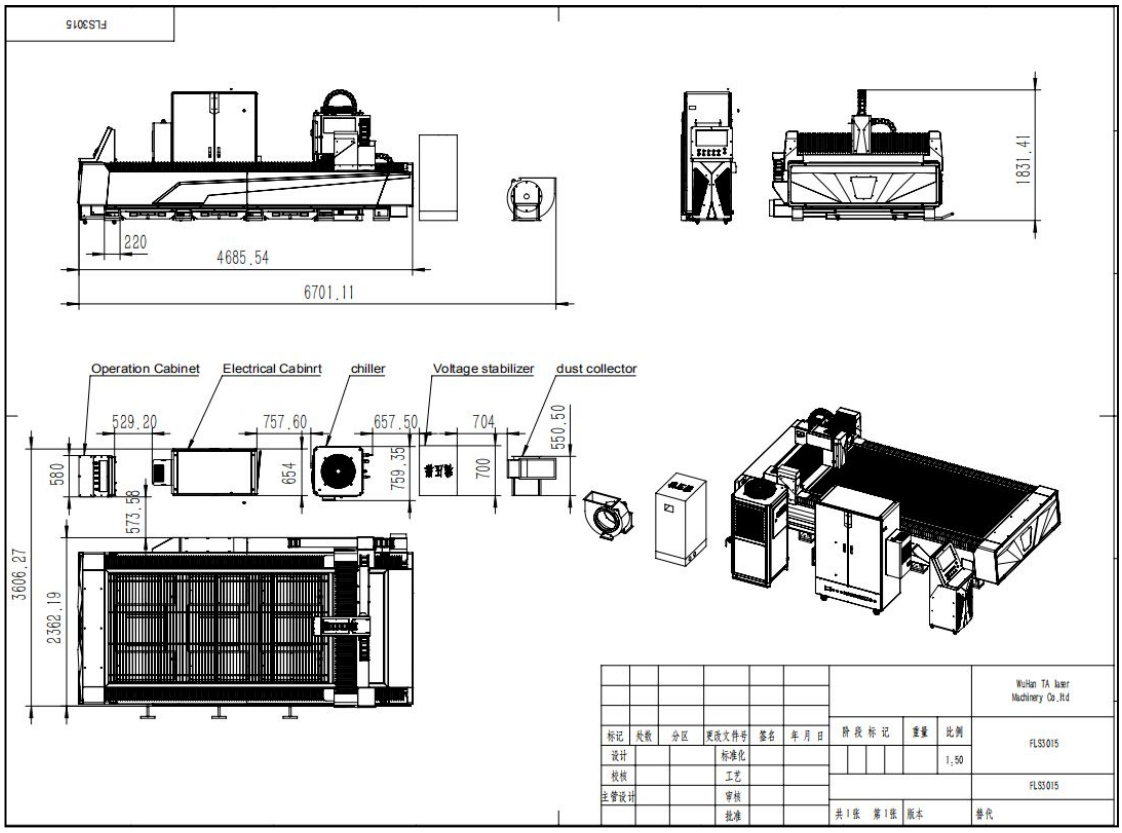
• Must wear protective Gloves. Avoid high temperature hurt finger when taking the finish parts.



IV Self-preparation Before Installation

4.1 Machine Layout

TA-FLS3015:



4.2 Electricity

TA-FLS Power Consumption and Air Switch Model:

S.N.	Laser Power	Power Consumption	Air switch model
1	1000W	16KW	63A/4P（L1 L2 L3 N)
2	1500W	18KW	63A/4P（L1 L2 L3 N)
3	2000W	23KW	80A/4P（L1 L2 L3 N)
4	3000W	26KW	80A/4P（L1 L2 L3 N)
5	4000W	31KW	100A/4P（L1 L2 L3 N)

Electrical Devices Preparation:

S.N.	Item	Model/Spec	Unit	QTY	Remarks
1	Circuit Breaker	63A-250A/4P (L1 L2 L3 N)	piece	1	Refer to table
2	Circuit Breaker	32A/3P (L1 L2 L3)	piece	1	For Dust Blower
3	Electrical Socket	For the two breakers	piece	2	
4	Power Cable	RV 10mm^2 (Cu 5 core every core 10mm^2)	meter	Several	L1 L2 L3 N Ground

4.3 Water

S.N.	Item	Model/Spec	Unit	QTY	Remarks
1	Deionized Water/ Distilled Water	1000W-3000W:80L 4000W-6000W:150L	barrel	1	Dedicated for chillers

4.4 Gas

S.N.	Item	Model/Spec	Unit	QTY	Remarks
1	Ordinary Nitrogen(N2)	Purity 99.95%	bottle	4	
2	Normal Oxygen(O2)	Purity 99.95%	bottle	4	
3	Oxygen Gauge	25MPa/1MPa	piece	1	
4	Nitrogen Gauge	25MPa/3MPa	piece	1	
5	Compressor Air	1.6MPa	set	1	Optional

4.5 Power Supply

The user should be equipped with a workshop of three-phase Five wire (L1 L2 L3 N) 380V, 50HZ/60HZ, the load power capacity please refer the table and grounding reliably.

4.6 Ground line

Good and stable ground line for this laser machine is very important, if the factory electricity do not have the good ground line, please go to electricity market buy the Cu Stick (Length more than 1.5M), and install in the ground for the machine use, normally we install more than 2PCS.

4.7 The working environment and working conditions

a) Less dust;
b) No vibration; (No big machines near the laser machine, like big press break machine, punching machine.....)
c) The environment temperature: 5°C-40°C
d) The relative humidity of environment: 5%-75%
e) Power supply: three-phase, Null line, Ground line, 380V;50HZ/60HZ
f) Cooling water: deionized water or distilled water

V On-site Installation and Debugging

5.1 Laser Generator Installation

Please take out the generator from the professional wooden case. If there's any damage on the package, please check the product immediately and inform the shipping agent. Please contact our service staff at the first time, don't try to install or operate the product once you found the product damaged.

Under the safety condition, please install and fasten the generator in electrical cabinet. In the process of installation, the output fiber can be put at the safety place Pay attention that the minimum bending radius is 150mm.

Please keep all the package material for transportation or storage use.

Primary Box	
Removing the Tie Wraps	
Lifting the Unit	

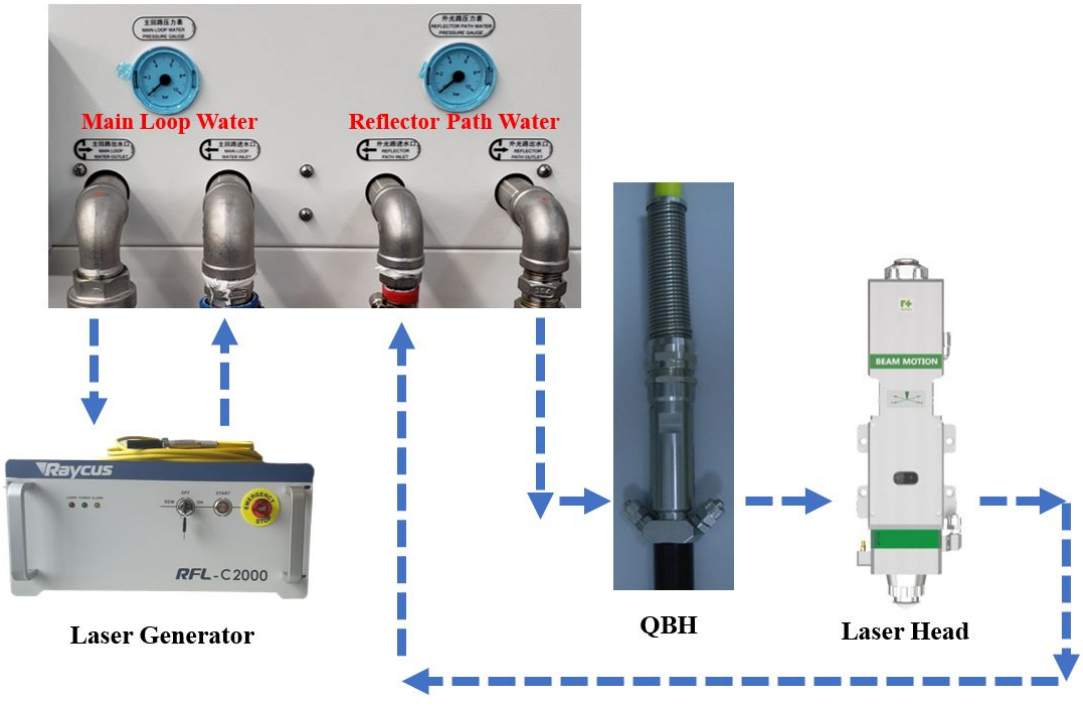




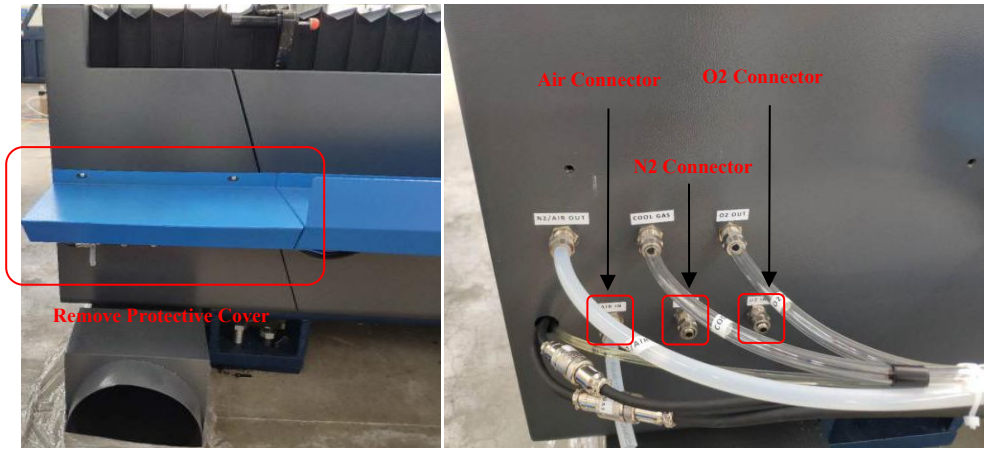
Install and fasten the laser generator in the electricity cabinet

5.2 Water Chiller Installation

The slope cannot more than 45 degree when you carry the refrigerator. Please make sure the package without any damage, obvious signs of impact and refrigerant leakage. Please check below chat to get more information about waterway installation, the joint direction must comply with the chart. Because of the water pressure is very high when the refrigerator is working, so please fasten the water pipe joint to make sure no water leak.



5.3 Air Circuit Installation



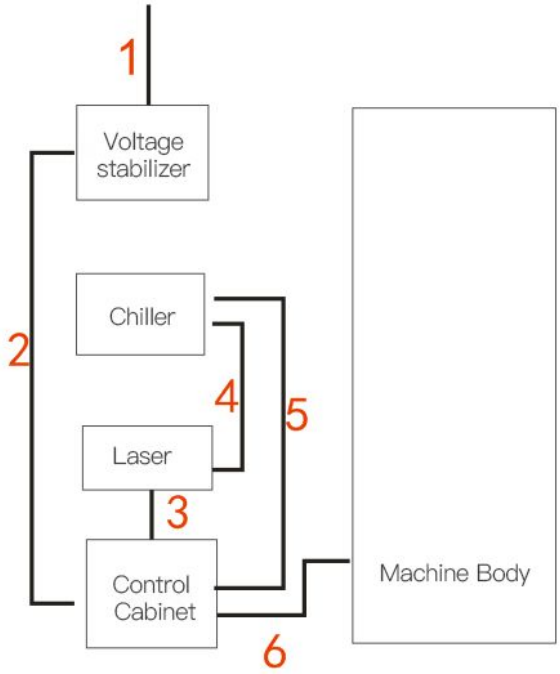
Air Circuit connection schematic diagram

This is air Circuit connection schematic diagram. We use quick fitting so user only need insert the air pipe. The air compressor parts are not highlighted here, and all air circuit were connected by high pressure air pipe (as shown chart), please make sure the air pipe joints were fastened and without gas leak when you change it.

Note: Return to zero when using a pressure reducing&boost gauge, then turn on the gas and set the pressure to the required pressure.

5.4 Electrical Circuit installation

Item	Function
1	The main power supply cable of the whole machine enters the voltage stabilizer
2	Voltage regulator provides integral main cable
3	Electric cabinet supply laser power cable and laser signal
4	Water chiller provide water for cooling the laser generator
5	The electric cabinet provide power to water chiller, the signal of water chiller give feedback to generator.
6	Servo motor power supple cables, encoder cables, origin and limit switch cables, gas control cables, height controller cables, oil pump cables etc



Circuit And Cables Schematic

1. To connect generator，please check as the 7.5.3 and 7.5.4

2. Connect the electrical cables Corresponding to the connection with Plug-in connector.



TA-01 Main Power Supply
TA-02 Servo Motor Cable, Height Control RF Cable
TA-03 Water input for laser
TA-04 Water output for laser
TA-05 31 cores plug-in connector
TA-06 5 cores plug-in connector for Chiller’s Power Signal
TA-07 7 cores plug-in connector for X/Z servo motors
TA-08 7 cores plug-in connector for Y1/Y2 servo motors

5.5 Optical Path Installation

Taking out the output fiber from electrical cabinet, and then from the output port along with towline to the generator head, please don't let the flammable, corrosive, sharp and other objects to damage the fiber. The particular connection method of fiber and fiber terminal please check below:

First step, using optical cleaning paper dip with absolute ethyl alcohol to clean the outside of fiber terminal and then dry it with compressed air.

The second step, taking out protection cap and aluminum protection drive pipe of fiber terminal, as chart 1. Please check the surface carefully, if there are any contamination, it will cause black spot and lead to fiber damage, we can carry on if it's clean otherwise we should clean the surface first, this need guide by manufacturer(The protection cap should be placed in a clean flat surface upside down and if you can put an optical cleaning paper under it will be better) .



Chart 1 Fiber Terminal Cap

The third step, as shown in chart 1, remove the protection cover of the cutting head, place the cutting head horizontally, check whether the cutting head is contaminated from this side of the cover and the copper mouth, if there is no problem go to next step, if there is any problem please contact the manufacturer.

The fourth step, the installation of fiber terminal. As shown in chart 2,

1. Take out the plastic protection cap of external connector;
2. Lease align the both red pot of QBH terminal and external connector before insert the fiber terminal;
3. Push the QBH terminal into connector lightly;
4. Revolve knurling parts of external connector to lock it. You can only use the hands to lock the connector, because the tool may damage the parts.

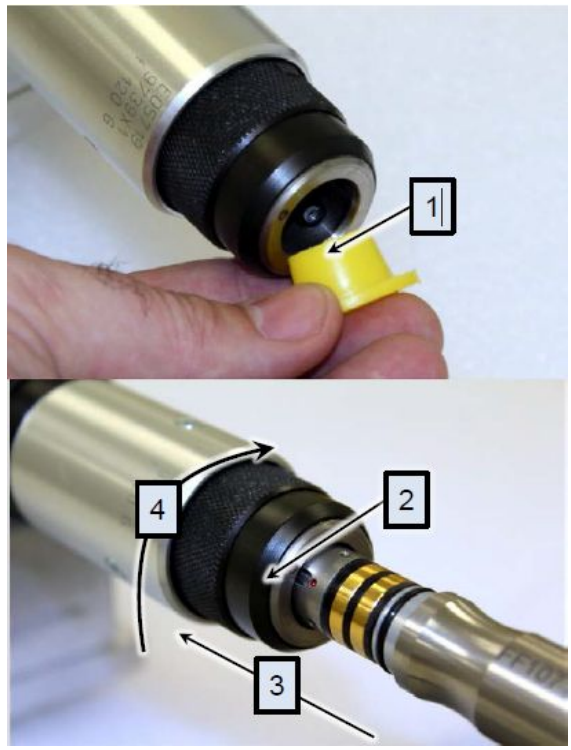


Chart 2 Fiber Terminal Installation

Note: QBH Checking, cutting head checking and the connection of QBH and cutting head should do The fiber QBH head must be placed horizontally with the external connector of the cutting head to continue to plugged. The connector's locking device only allows hands to operate, and the use of the tool may cause damage.

VI Equipment Operation

6.1 Equipment On/Off

6.1.1 Turn On Sequence:

Step 1: Turn on **main air switch** in the factory.
Step 2: Turn on voltage stabilizer.
Step 3: Turn on **main switch** on the electrical cabinet.
Step 4: Turn on **key switch.**
Step 5: Check **E-STOP** button Non-pressed.
Step 6: Press **PC**.
Step 7: Press **Servo On**.
Step 8: Press **Chiller On**. (In winter must waiting for main loop water temperature up to 18℃. In summer must waiting for main loop water temperature down to 26℃ then go to step 9)
If your laser source brand is IPG
Step 9: Press **Laser On**. (Must waiting for 1 minutes then go to step 10)
Step 10: Press **Laser Start**.

Step 11: Turn on software **Cypcut**
Step 12: Press **Aiming**
Step 13: Press **Shuttle**
Step 14: **Go origin**
Step 15: Confirm **Soft limit protectio**n was selected
Step 16: Do Z-axis calibration
Step 17: Turn on gas

If your laser source brand is Raycus

Step 9: Press **Laser On**
Step 10: Turn on Raycus key switch to REM location.
Step 11: Turn on software **cypcut**
Step 12: **Go origin**
Step 13: Confirm **Soft limit protection** was selected
Step 14: Do Z-axis calibration
Step 15: Turn on gas

6.1.2 Turn off sequence:

Step 1: Turn off gas
Step 2: Press **blow** select O2/N2, make all gas pipes empty

If your laser source is IPG brand

Step 3: Press **Aiming**
Step 4: Press **Shuttle**
Step 5: Press **Laser Off** (Must waiting for chiller fans stop working, then go to step 6)
Step 6: Press **Chiller Off**
Step 7: Press **Servo Off**.
Step 8: Save cutting files and tun off cypcut
Step 9: Turn off PC.
Step 10: Turn off key switch.
Step 11: Turn off the **main switch** on the electrical cabinet.
Step 12: Turn off voltage stabilizer
Step 13: Turn off **main air switch i**n the factory.

If your laser source is Raycus brand

Step 3: Turn off Raycus key switch to off location.
Step 4: Press **Laser Off** (Must waiting for chiller fans stop working, then go to step 5)
Step 5: Press **Chiller Off**
Step 6: Press **Servo Off**.
Step 7: Save cutting files and tun off cypcut
Step 8: Turn off PC.
Step 9: Turn off key switch.
Step 10: Turn off the **main switch** on the electrical cabinet.
Step 11: Turn off voltage stabilizer

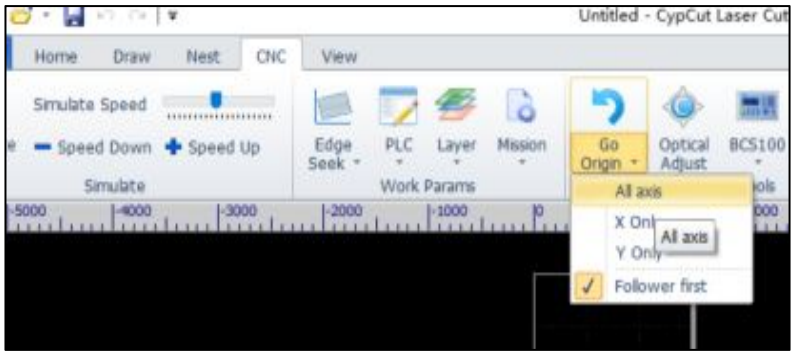
Step 12: Turn off **main air switch i**n the factory.

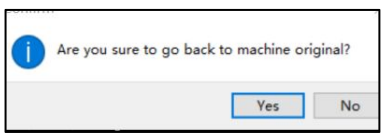
6.2 Cypcut Instructions

CypCut provides fifteen layers and every layer can set separately the technical parameters such as move speed, laser power, pressure, cut height and so on.
You can open the dialog box—Layer Parameter Setting by clicking the button—Layer on the tool bar. This dialog box includes almost all the technical parameters required for processing. The first page of the dialog box is—Global parameters and they are used to control the parameters outside the layers such as vacant move speed, burst power and so on; besides, you can also choose the speed and acceleration units. The other pages of the dialog box list all the currently used layers, and you can set the parameters of this layer separately by clicking every layer. You can change the order among the layers by pressing the button—Layer with the mouse and dragging it, and the layer arrayed in the front will be processed firstly.

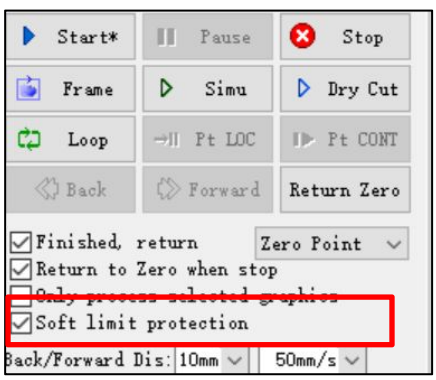
6.2.1 How to import DXF and Cut

Every morning before you cut, please make sure two things was done.
1. Make sure the machine go the origin, the short way is press the K1 button on the remote.

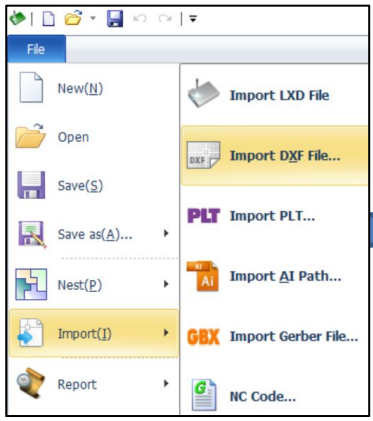




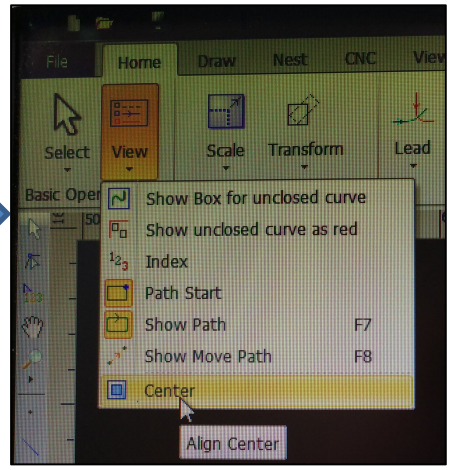
Press CNC---Go Origin---All axis---YES



2. Make sure the Soft limit protection was selected.

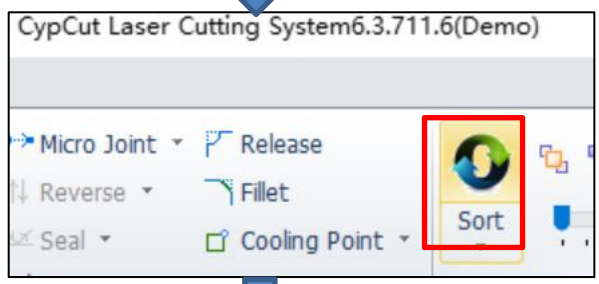


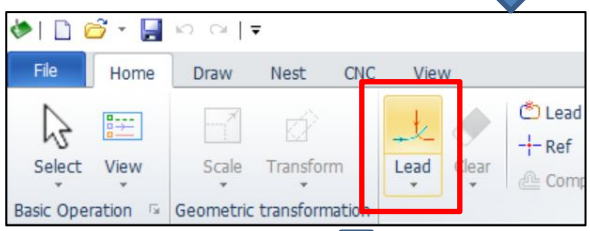
File--Import--Import DXF



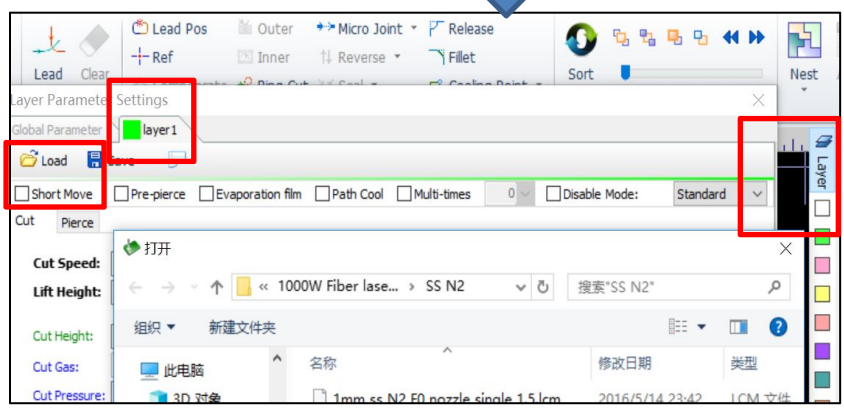
Select all your drawing, and then **View---Center to check your drawing is out of machine range or not**

Press **sort**, to make the cutting Sequence, which one cut first, which one cut last.





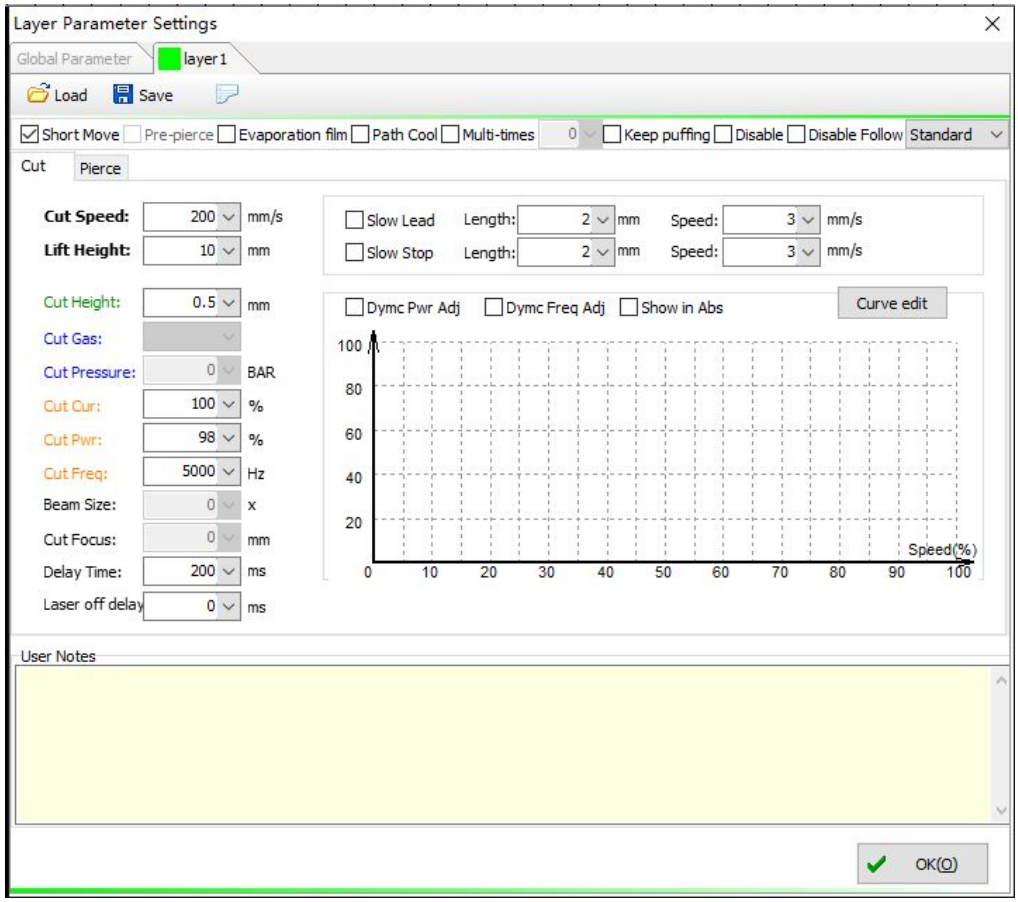
Press **Lead**, to add the lead in line for cutting



Layer--layer1--load

Check Focus Nozzle

6.2.2 Layer Parameter Settings



Cut Speed：Set the actual target speed of cutting. There are acceleration and deceleration at the first and last sections as well as the corners of cutting track, so the actual cutting speed is often less than the speed.

Lift Height：Set the lift height of laser head after cutting a segment of curve. Z-axis will lift to a certain height after suspending the cutting, and the height is lift height. This setting just worked when Frog Style Lift was cancelled.

Cut Height：Set the height from the laser head to the board during cutting.

Cut Gas：Set the type of auxiliary gas used in cutting.

Cut Pressure：Set the pressure of auxiliary gas during cutting, and use it with proportional valves or multiple valves.

Cut Current：Set the peak current of fiber laser, i.e., diode power. Peak power determines the maximum cutting power that machines can reach. As for a cutting machine with a power of 2000W, if its diode current is set to be 80%, the diode power it can reach during cutting is 2000W * 80% = 1600W.

Cut PWM：Set the laser power used in cutting, i.e., the duty ratio of PWM modulation signal.

Cut Frequency：Set the carrier frequency of PWM modulation signal during cutting, i.e., the laser number within one second. The larger the value is, the

more continuous the laser.

Cut Focus：Set cutting focus. Only works when use Autofocus laser cutting head.

Delay Time：After pierce stay this time and then begin cutting.

Laser Off Delay：A delay before turning off the laser.

Multi-times：Set circular cutting mode.

Standard：Select standard cutting mode

Disable：This layer is not processed

Disable Follow：Not use follower for following movement during cutting.

Keep Puffing：Do not turn off the gas during processing.

Short Move：After enabling this function, if the distance between two graphics is less than the setting value of "Maximum distance for short distance without lifting" in the global parameter, the Z axis will not be lifted after the previous graphics processing is completed, and will be empty directly. Move to the starting point of the next figure and start machining.

Pre-pierce：Before the actual cutting, make all pierces in advance. For example, when use O2 cut thickness mild steel this function is useful.

Evaporation Film：Follow the cutting trajectory to perform film removal and cutting with the film parameters, and then perform normal processing according to the layer parameters. After selecting this item, the film removal parameter setting page will appear.

Path Cool：After a single figure is processed normally, turn off the light and open the gas along the original trajectory to process it again to assist the rapid cooling of the workpiece and reduce the effect of thermal expansion and contraction on the accuracy of the workpiece. After selecting this item, the cooling parameter setting page will appear.

Slow Lead：Set a slow start distance to prevent inability to cut through the thick plate at the beginning.

Slow Stop：Set a slow stop distance to finish cutting.

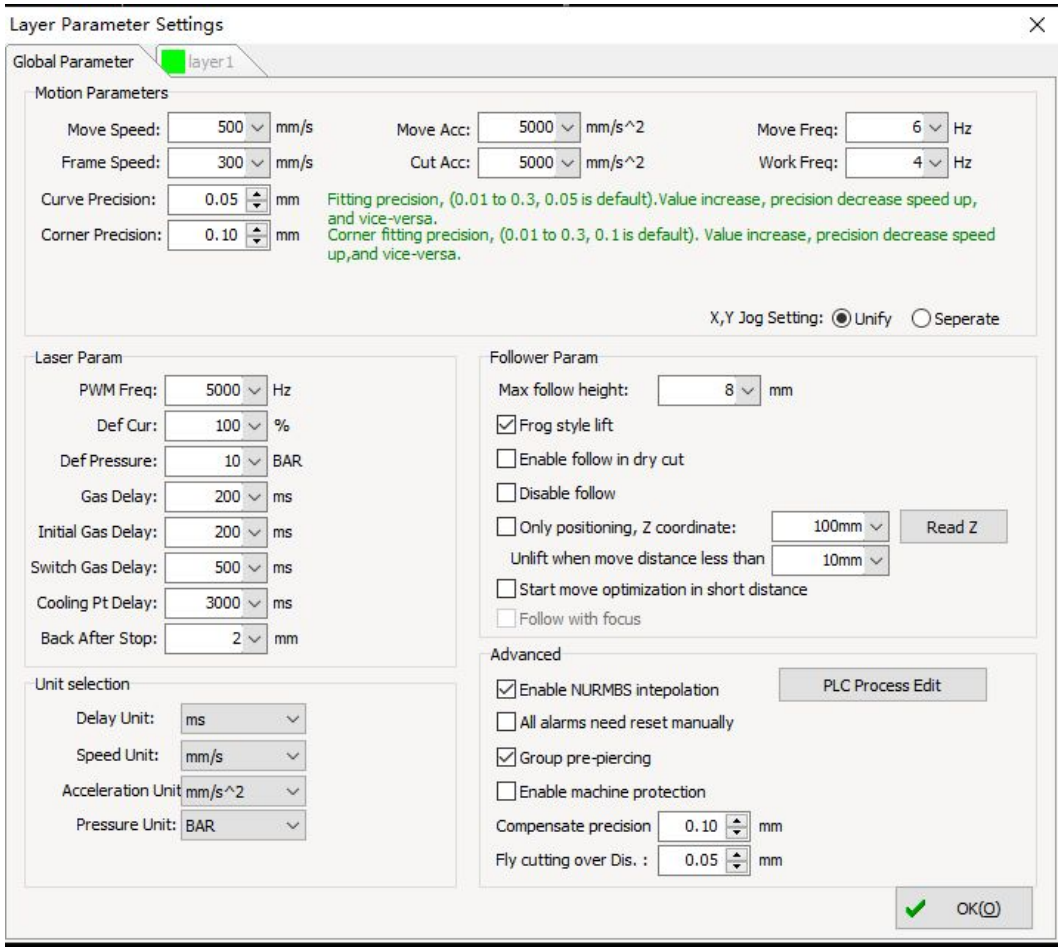
Dymc Power Adjust：After enabling this function, you can customize the power curve. During processing, the software will adjust the laser power (duty cycle of the PWM signal) in real time according to the curve, which will greatly help optimize the cutting quality of the corner.

Dymc Frequency Adjust：

After enabling this function, you can customize the frequency curve. During processing, the software will adjust the (duty cycle of the PWM signal) frequency in real time according to the curve, which will greatly help optimize the cutting quality of the corner.

Note: When selecting the real-time adjustment frequency, you must select the real-time adjustment power.

6.2.3 Global Parameter Settings



Move Speed: Machine dry move speed.
Move ACC: The acceleration of dry move. Match using with Move Speed.
Move Freq: The jerk of dry move.
Frame Speed: Run frame speed (the speed of check the cutting drawing range)
Cut ACC: The acceleration of cutting.
Work Freq: The jerk of cutting.
PWM Freq: PWM frequency used by laser in manual mode.
Def Cur: Peak power in manual mode
Def Pressure: Gas pressure used in manual mode (not for cutting).
Gas Delay: Delay used in time gas delay of PLC during punching.
Initial Gas Delay: After new processing is started, the first blowing time is an additional delay time based on the blowing delay time.
Switch Gas Delay: When switch the gas, the delay time for switch.
Cooling Pt Delay: Blow cooling delay time at the cooling point.
Back After Stop: After pausing, click Continue to automatically retreat the distance on the processing track.
Max Follow Height: Each type of cutting head has an upper limit that can be followed. When it is necessary to follow a height higher than this due to the need for perforation, the Z-axis movement will be divided into 2 steps, first follow the

position near the board surface, and then lift up. This parameter is used to set the upper limit of the altitude that can be followed.

Frog Style Lift: After Z-coordinate lifts to the mid height, X-coordinate and Y-coordinate begin lost motion, so as to shorten the time of lost motion.

Enable Follow in Dry Cut: If you choose this function, the laser head will follow during the dry cut.

Disable Follow: If you select this option, the laser head will not follow during cutting.

Only Positioning, Z Coordinate: It is used for non-metal cutting. After selected, follow-up does not take effect and only for positioning.

Start move optimization in short distance Unlift when move distance less than: If select this function, when the length of dry move is less than this setting, the laser cutting head will not be lifted during the dry move and will keep following.

Unit Selection: Select the unit of the parameter according to the usage habits.

Enable NURMBS Intepolation: After selected, adaptively perform nurbs fitting on the processing curve, which can improve the processing speed and the smoothness of the graphics.

All Alarms Need Reset Manually: After an alarm, a manual reset is required to clear the alarm.

Group Pre-piercing: After selected, the group will be pre-punched and cut automatically; if no, all the figures will be pre-punched before cutting.

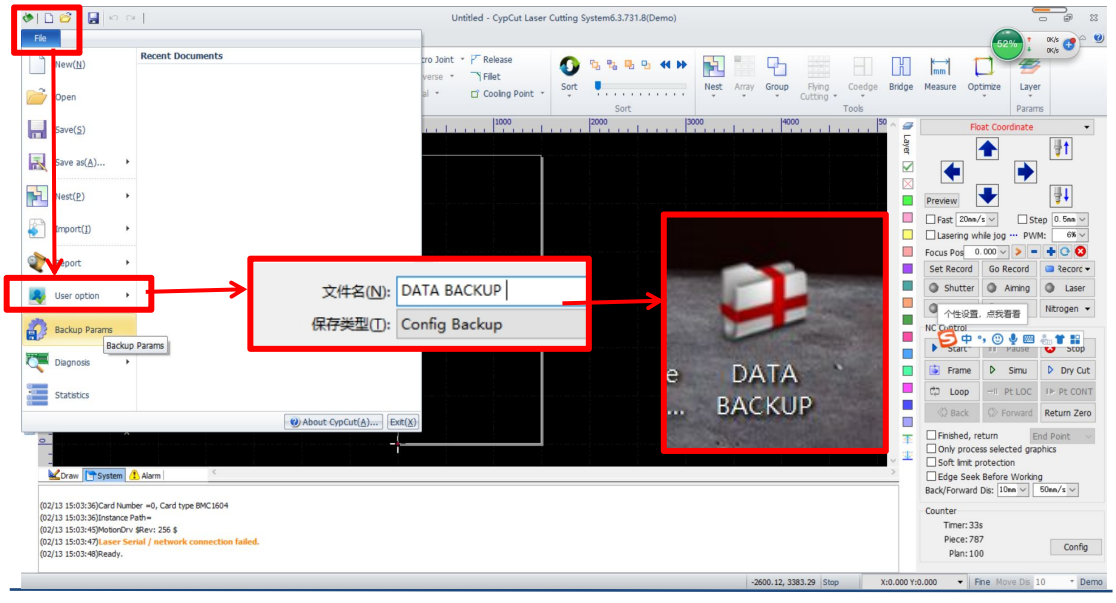
Enable Machine Protection: The parameters that affect the service life of the machine are hidden.

Compensate Precision: When cutting compensation is performed, the selection accuracy of the compensation curve.

Fly Cutting Over Dis: Make sure that the flying cutting graphics can be cut smoothly.

6.2.4 How to reinstall the laser cutting software?

(1) Backup the machine data

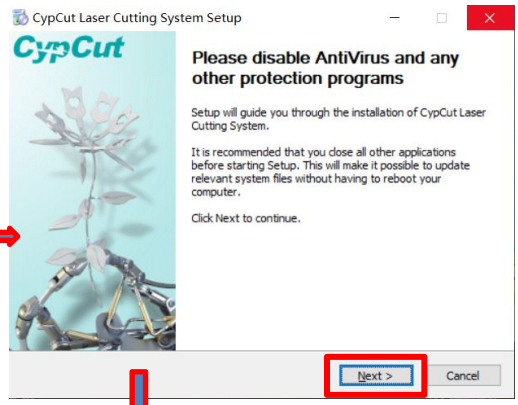


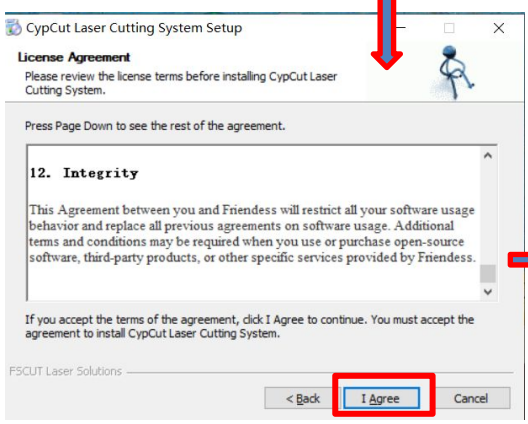
(2) Uninstall the current software

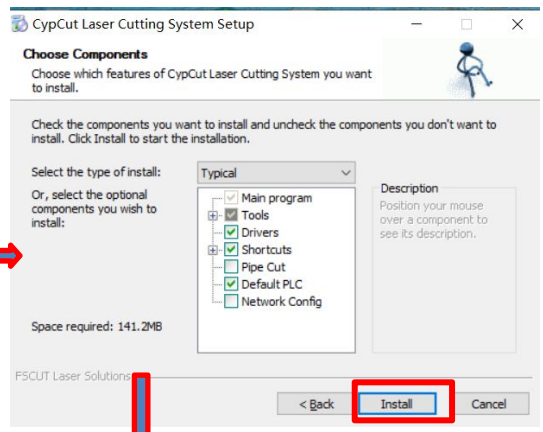
midas.dll	2009/11/3 6:02	应用程序扩展	432 KB
model.bpl	2019/2/20 13:38	BPL 文件	108 KB
motndrv.bpl	2019/2/20 13:38	BPL 文件	434 KB
mscriptr.bpl	2019/2/20 13:38	BPL 文件	85 KB
NativeXml401.bpl	2015/4/22 20:19	BPL 文件	288 KB
nestbase.bpl	2019/2/20 13:38	BPL 文件	1,750 KB
nestpack.bpl	2019/2/20 13:38	BPL 文件	2,230 KB
pipecut	2013/5/2 9:59	图标	6 KB
RaizeComponentsVcl140.bpl	2013/10/2 21:00	BPL 文件	2,026 KB
revisions	2019/2/20 13:37	文本文档	50 KB
rtl140.bpl	2009/11/3 6:02	BPL 文件	1,744 KB
setup	2015/8/17 8:29	图标	5 KB
terminals.bpl	2019/2/20 13:38	BPL 文件	98 KB
uninstall	2020/2/3 10:00	应用程序	60 KB
vcl140.bpl	2009/11/3 6:02	BPL 文件	2,390 KB
vclimg140.bpl	2009/11/3 6:02	BPL 文件	313 KB
vclx140.bpl	2009/11/3 6:02	BPL 文件	232 KB
xls2csv.dll	2017/3/8 18:37	应用程序扩展	6,747 KB

(3)Install the new software



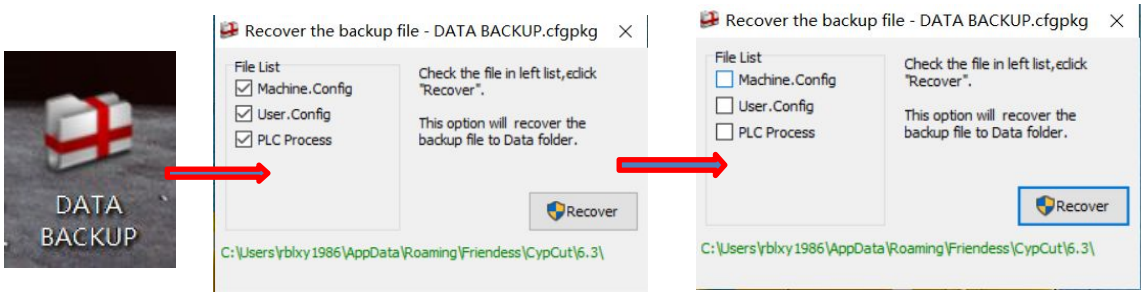




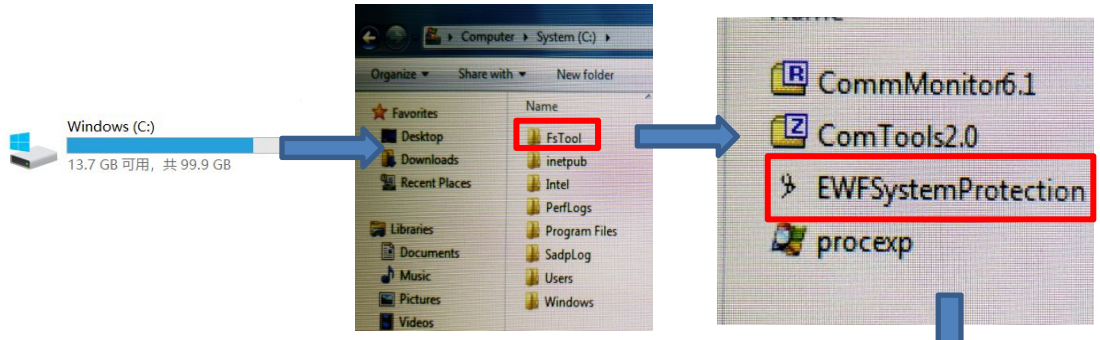




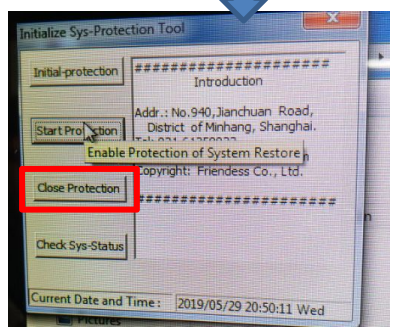
(4)Reset the machine data

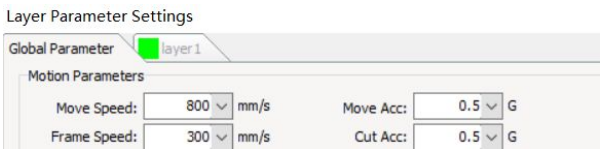


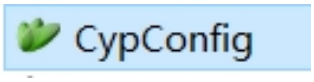
6.2.5 How to close the C disk protection function?



After you close the protection, you can change the setting for the Cypcut Global Parameter and CypConfig.





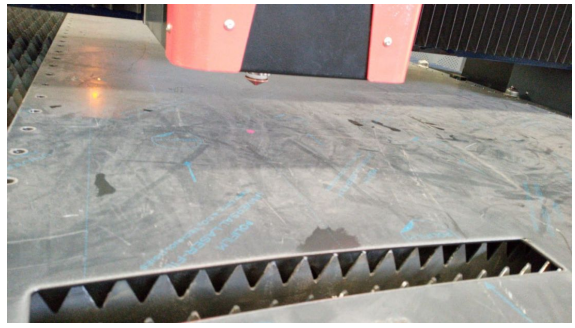


6.3 Laser Cutting Head Instructions

6.3.1 Laser cutting head calibration

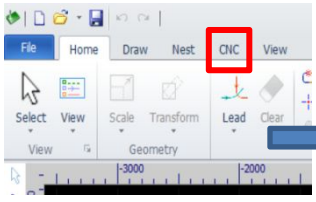
1. Turn on the machine and then put a metal sheet under the laser cutting head.

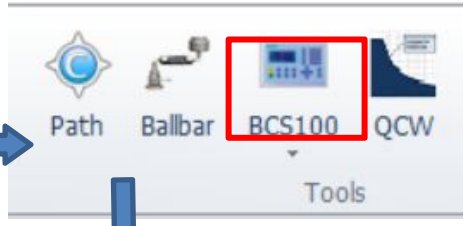
Note: The metal sheet must be stable on the machine table, any a little shaking is not allowed, because if any little shaking will effect the calibration.



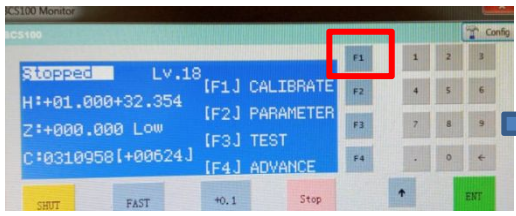
Put a metal sheet and no any shock

2. Open Cypcut and then go to do calibration.(Normal Way)

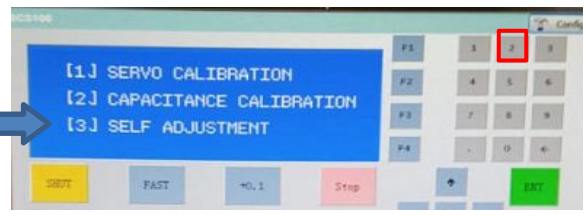




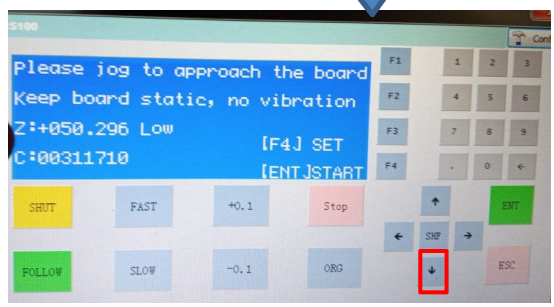
Note: Here do not press the small triangle, press  area.



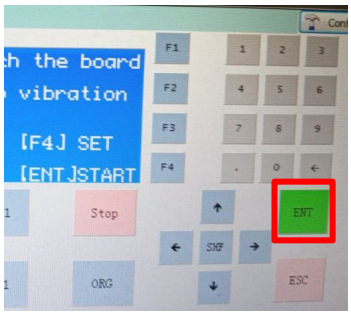
Press F1



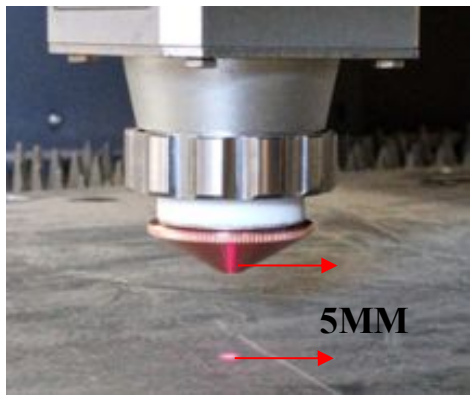
Press 2

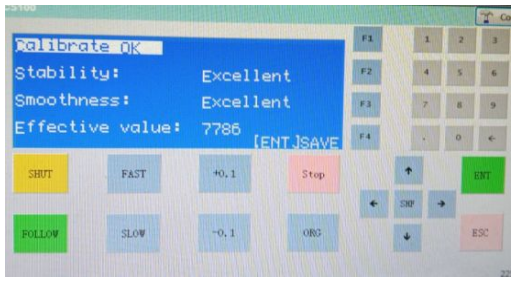


Press ENT



Press down arrow, make the laser head down till 5MM distance to the metal sheet.

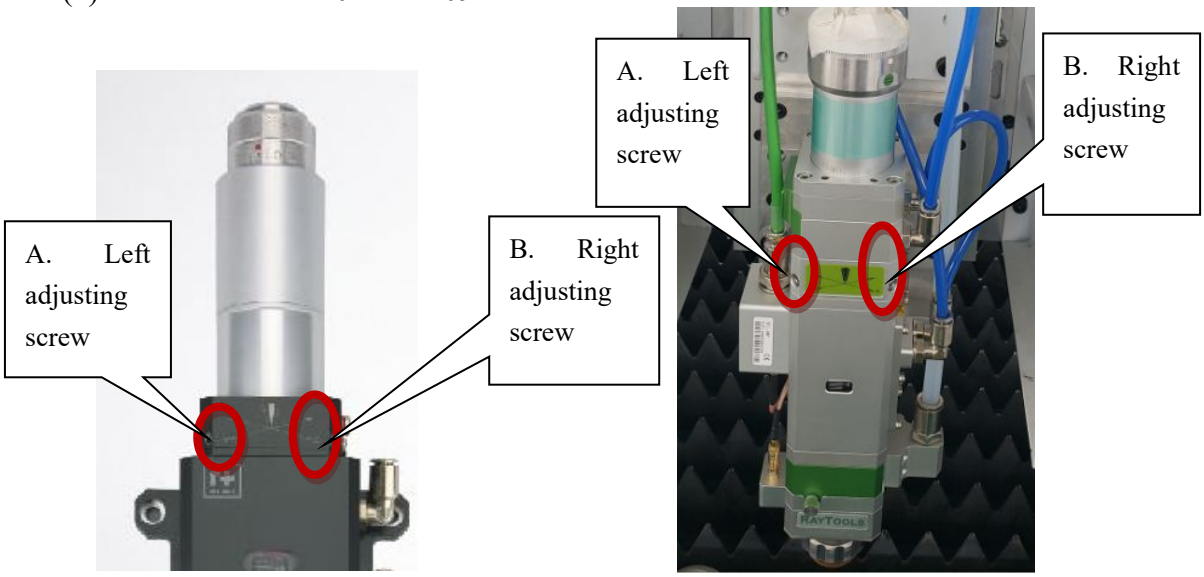


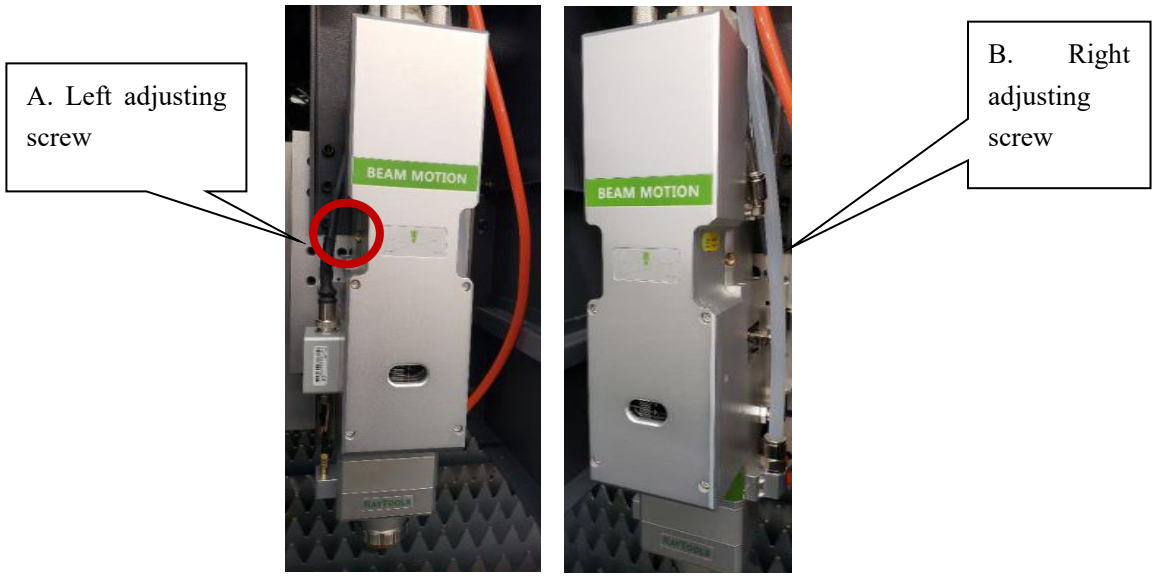


Wait serval seconds Press ENT

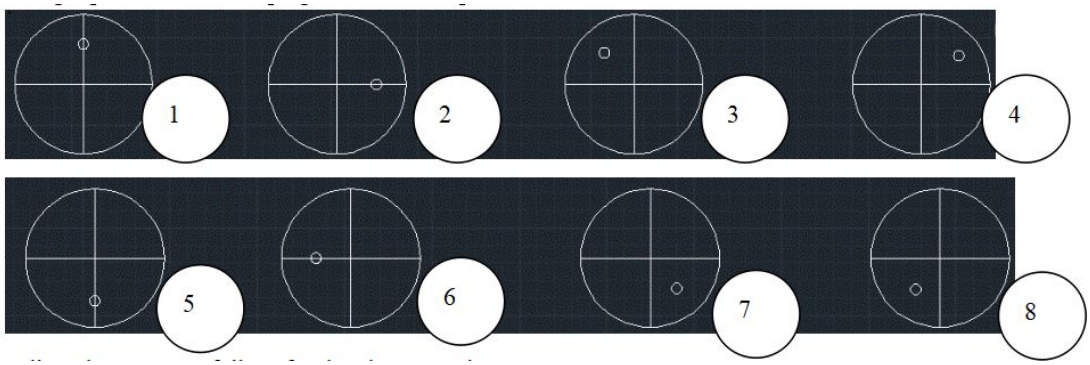
6.3.2 How to adjust the central of laser?

(1) Laser Head BT240S/BM109/BM111





Using a piece of scotch tape get the laser output results as follow:

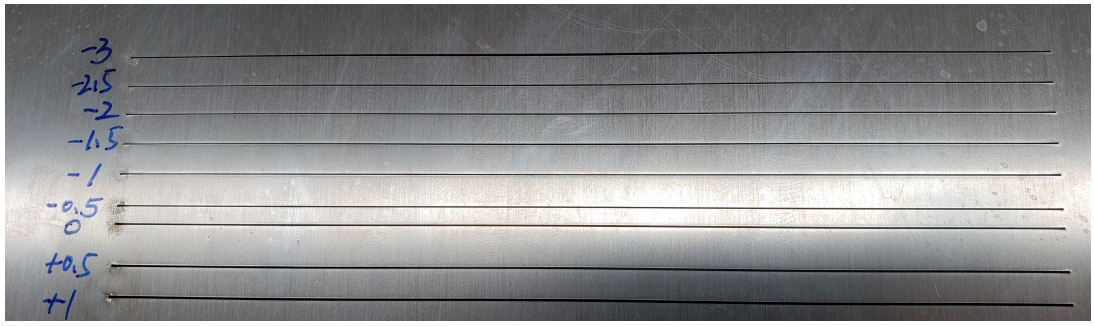


Adjust the screw as follow for the above results:

Result 1: Anticlockwise adjust A&B.
Result 5: Clockwise adjust A&B.
Result 2: Anticlockwise adjust A and Clockwise adjust B.
Result 6: Clockwise adjust A and Anticlockwise adjust B.
Result 3: Anticlockwise adjust B.(Mainly adjust B)
Result 7: Clockwise adjust B. (Mainly adjust B)
Result 4: Anticlockwise adjust A. (Mainly adjust A)
Result 8: Clockwise adjust A. (Mainly adjust A)

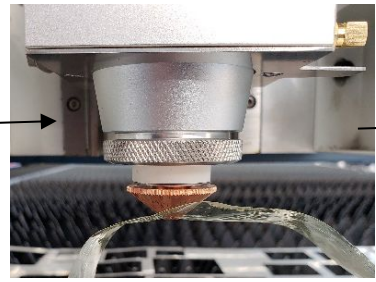
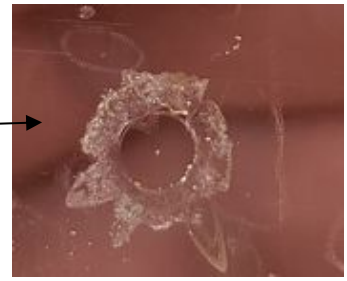
6.3.3 How to find the focus?

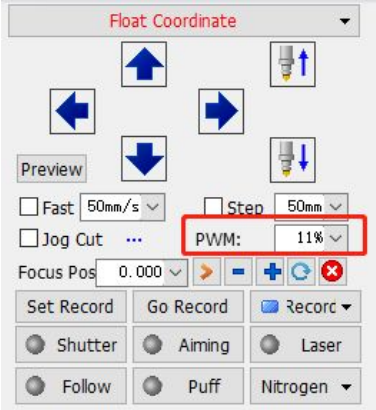
1. Use N2 cut 0.5MM/1MM Stainless steel with 150MM straight line.
Use focus -2,-1.5,-0.5,0,0.5,1,2……



Find the finest line, for example ,the photo machine the focus is -1.5.

2. Use transparent tape stick on the nozzle and make laser out twice shot the tape.

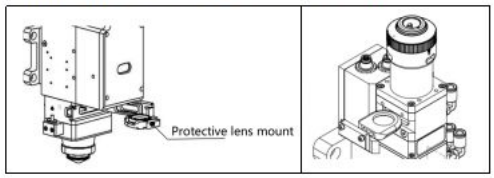


Please set the PWM 11%. Then press the laser button twice.

6.3.4 Removal and Installation of Protective Lenses

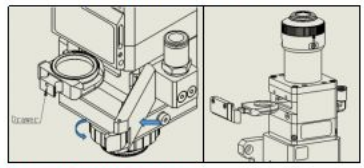
The whole process needs to be completed in a clean environment. Wear dust-proof gloves or fingertips when removing or installing the lenses.

Raytool BM111(Auto-focus 500W-3000W)



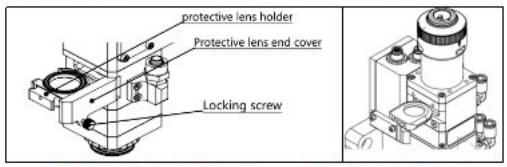
Focusing Protective Lenses Collimating Protective Lenses

Raytool BT240S(Manual-focus500W-1500W)



Focusing Protective Lenses Collimating Protective Lenses

Raytool BM109(Auto-focus 500W-1500W)



Focusing Protective Lenses Collimating Protective Lenses

Removal and Installation of Focusing Protective Lenses of Laser Head

Protective lens are wearing parts and need to be replaced after damage. Refer to Figure 7 and 8.

• Slightly touch the edge of the dust-proof cover to raise and the dust cover will pop open.

• Pinch the two sides of the drawer-type lens holder and pull out the base of protective lens.

• Lock the pressure ring of stainless steel with hands and lift it upwards.

• Remove the protective lens and clean or replace the lens.

• Install the lens (regardless of the positive or negative sides) into the drawer type lens holder.

• Put the pressing ring of the protective lens back into the slot.

• Keep the stainless steel ring pressed upwards and slowly insert it the lens holder.

• Buckle the dust cover.

Actual operation picture reference (BT240S)



Press button Open window Change lens
Any surface toward laser is ok

Removal and Installation of Collimating Protective Lenses of Laser Head

Protective lens are wearing parts and need to be replaced after damage. Refer to Figure 9 and 10.

• Loosen the lock screw

• Pull out the protective lens holder by holding both sides of the drawer lens holder

• Press the edge of the lens with fingers, push one side of the lens of the spring seal ring from the lens holder so that both the seal ring and the protective lens can be pulled out(please place the spring seal ring)

• Clean or replace the lenses

• Install the lens (regardless of the positive or negative sides) into the drawer type lens holder.

• Gently put the spring seal ring back into the slot, if it has been damaged, please change it into a new spring seal ring

• Pinch the two sides of the protective lens holder and reinsert the lens holder into the laser processing head.

• Tighten the screw

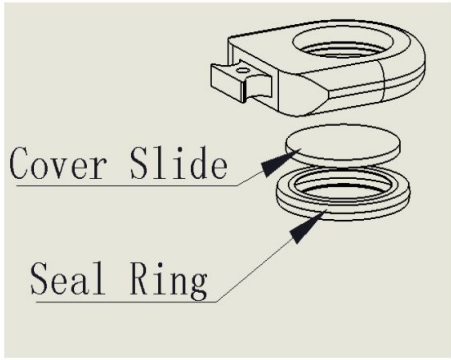


Figure 9 Structure of the protective lens holder

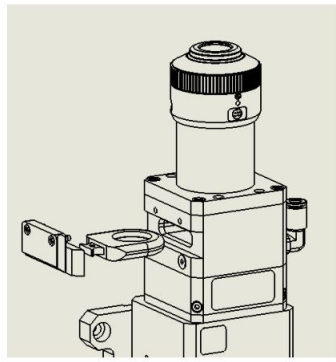
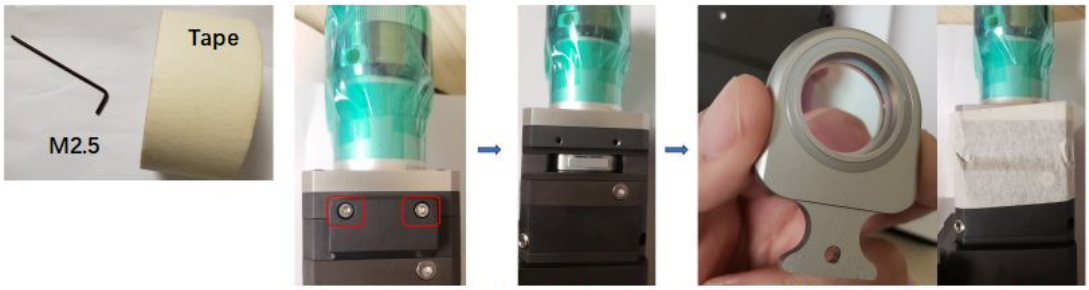


Figure 10 Structure of the protective lens



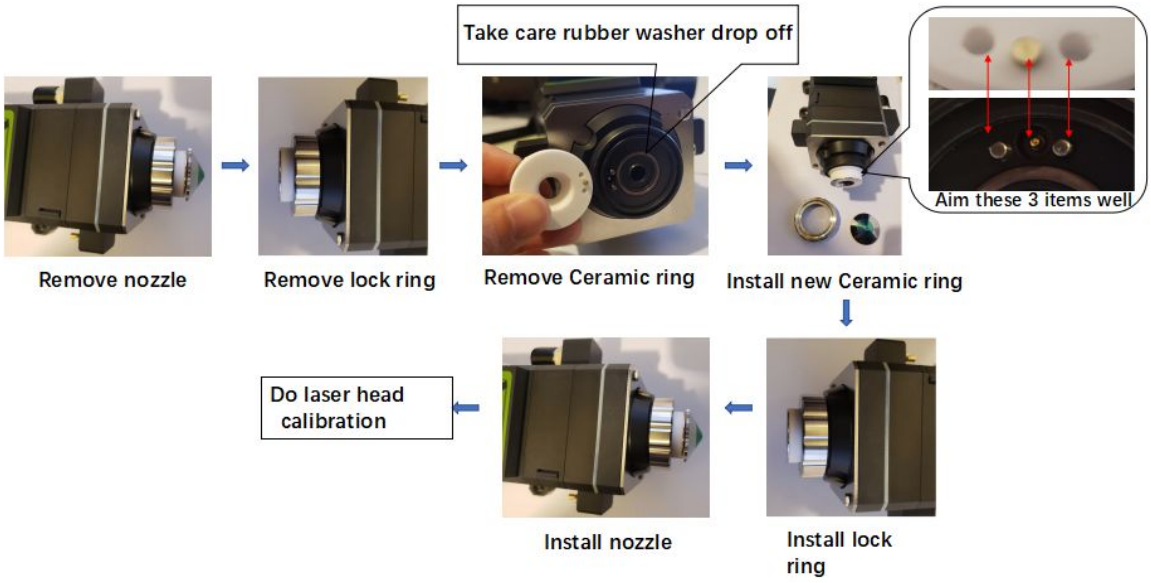
Note: do not pull out the edge of the spring seal ring directly, which is very easy to damage the spring seal ring.

Actual operation picture reference (BT240S)



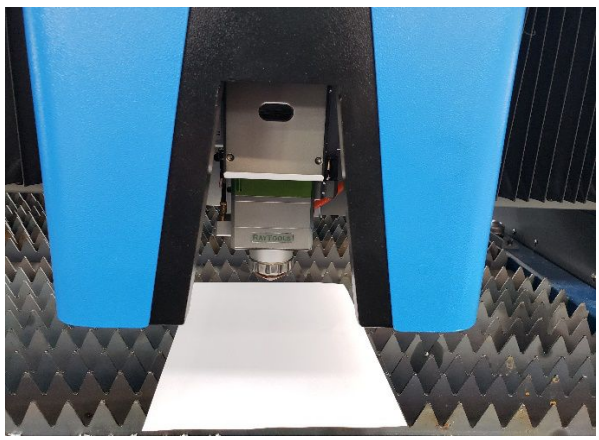
Remove screws | Take out lens frame | Seal window and change lens
Any surface toward laser is ok

6.3.5 How to change the ceramic ring?



6.3.6 How to check the optical system?

Use a piece of A4 white paper to check whether the red indicator light spot has obvious black spots. If there are black spots, that means there is a lens damage inside the laser head, please contact TA engineers in time.





VII Equipment Maintenance

7.1 Machine Mechanical Part

In order to ensure the normal operation of the laser cutting machine, the daily maintenance of the mechanical parts of the equipment must be carried out. The whole machine is composed of high-precision mechanical components. In the maintenance process must strictly follow the operating procedures, avoiding damage to the parts.

Maintenance preparation tools:

(1) WD-40

(2)Rags

(3)Machine tool

Maintenance period: 30 days

1. Use WD40 to clean the impurities on the guide rails, gears and racks.

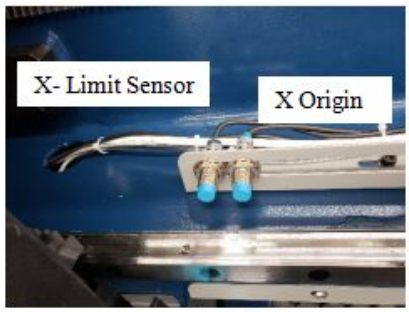


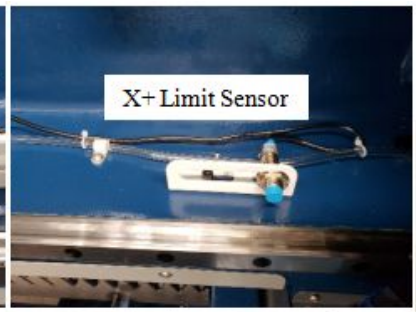


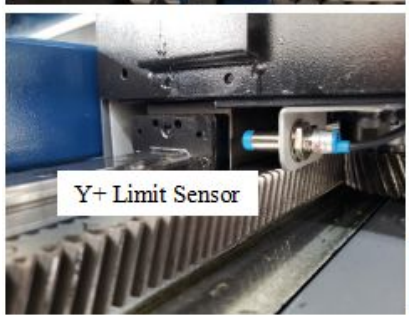
2. Check oil pump system is working properly, whether there is leakage in the oil circuit and add lubricating oil in time.

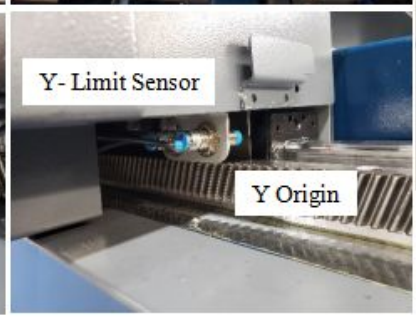


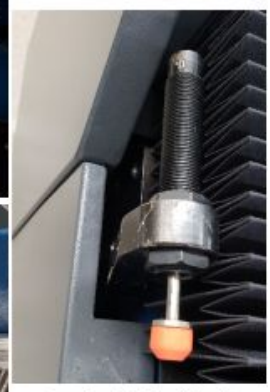
3. Check the X-axis, Y-axis limit switches and Anti-collision block.











Anti-collision block

4. Clean the gas cabinet, and check whether there is any loose air leakage in each gas circuit connector.





5. Clean the dust inside the laser head mechanical components, pay special attention to the handling of dust near the limit sensor, and add lubricating oil to the Z-axis guide rail and ball screw.



Remove the left metal cover



1.Use air gun clean the dust, specially the dust on the Z axis limit sensor, the dust will effect the alarm.
2.Add lubricating oil to the guide rails and the ball screw.

7.2 Optical Part

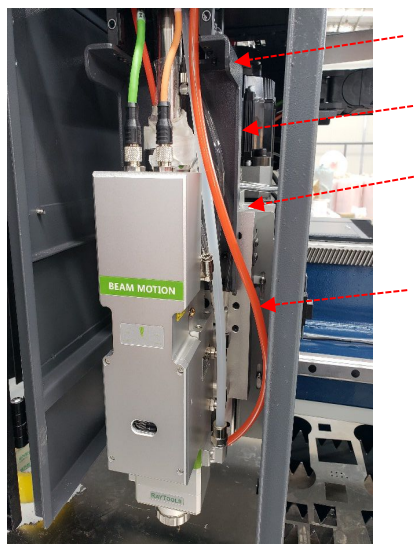
In order to ensure the normal operation of the laser cutting machine, the daily maintenance of the optical parts of the equipment must be carried out. The whole machine is composed of high-precision optical components. In the maintenance process must strictly follow the operating procedures, avoiding damage to the parts.

Maintenance preparation tools:

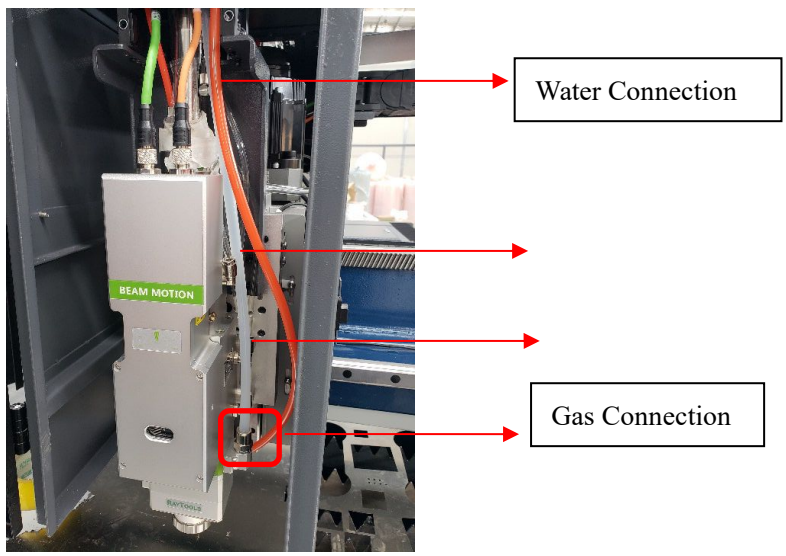
（1）IPA
（2）cotton swab
（3）Lens clean paper
（4）Allen key
（5）A4 white paper
（6）Commonly used spare parts like protection lens, ceramic ring etc.
（7）Compressor Air

Every 30 days

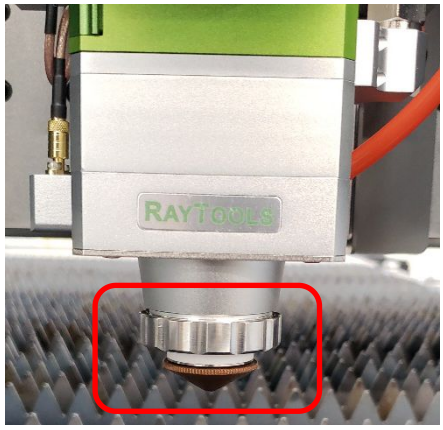
1. Clean the laser head dust, pay attention to the dust cleaning with low-pressure clean air.



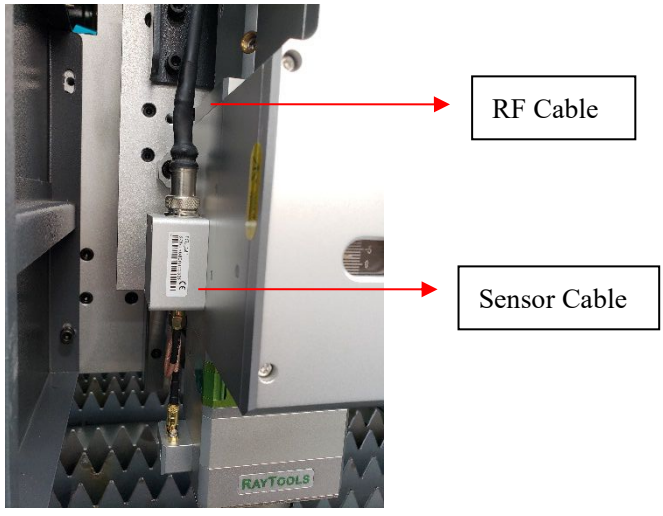
2. Check whether the laser head water circuit and gas circuit is normal and check for leaks.



3. Check laser nozzle, ceramic ring installation good and damaged or not.

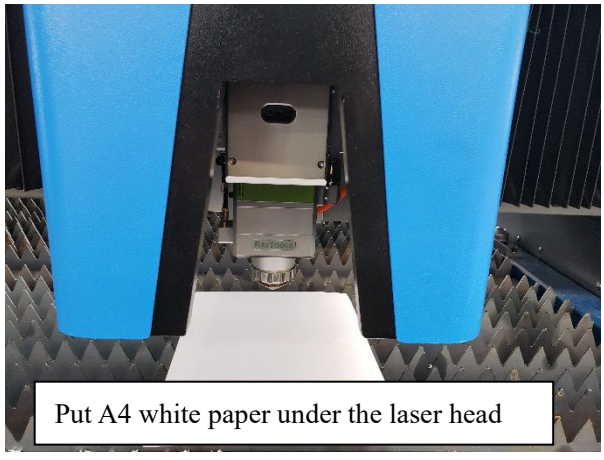


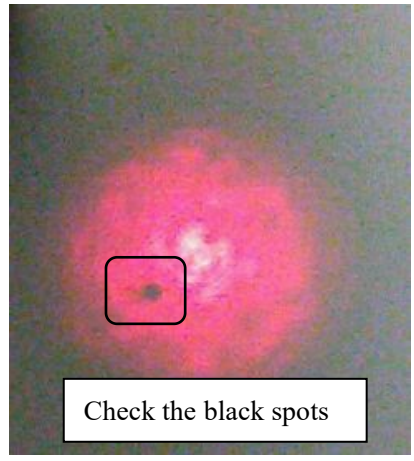
4. Check Sensor cable, RF cable loosen installation or not.



5. Check focusing protective lens.
6. Check focus lens and calibration lens.

Use a piece of A4 white paper to check whether the red indicator light spot has obvious black spots. If there are black spots, that means there is a lens damage inside the laser head, please contact TA engineers in time.





7.3 Electrical Part

In order to ensure the normal operation of the laser cutting machine, the maintenance of the electrical part must be carried out. The whole machine is composed of high-precision components ,In the maintenance process must strictly follow the operating procedures, avoiding damage to the parts.

Maintenance preparation tools:

（1）Compressor Air

（2）Electrical multimeter

（3）Machine tool

Note: Before the Machine Maintenance (Electrical Part), please cut off the main electricity.

7.3.1 Electrical Cabinet

1. Use low pressure clean air to clean the dust inside the electrical cabinet.



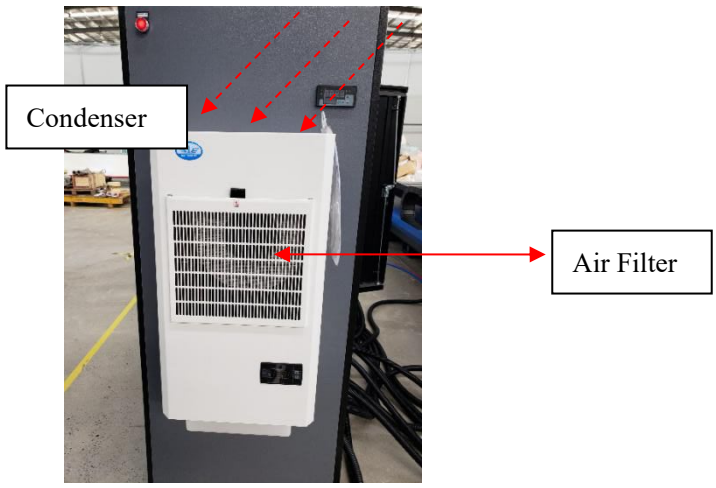

2. Check the ground cable connections, make sure the machine ground cable connected well.

3. Check each cable terminal connections. If have cable connection lose please tighten it.

7.3.2 Air Conditioner

1. Take the air filter out and clean it.

2. Use air gun clean dust on the condenser.



7.3.3 Voltage Stabilizer

Voltage stabilizer is a power supply device that automatically adjusts the output voltage; its main function is to stabilize the power supply voltage with large fluctuations or unsuitable electrical equipment within its set value range, to make the Electrical equipment can work normally under the rated working voltage.

In the laser cutting machine, the voltage stabilizer mainly provides a stable working voltage for the laser to avoid damage to the laser or other electrical equipment due to unstable voltage or non-compliant voltage. The use of voltage stabilizer in laser cutting machines is particularly important, and the maintenance of voltage regulators is also essential; for specific maintenance operations, please refer to maintenance instructions.

Maintenance Instructions

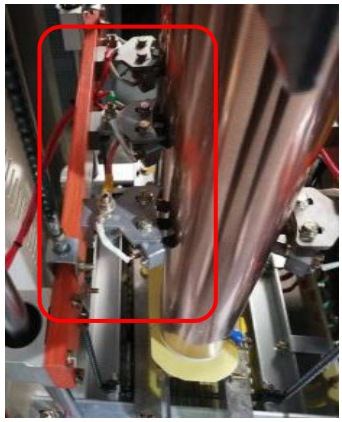
Voltage Stabilizer	Model：SBW-	
Cycle	**Maintenance content**	**Maintenance Target**
Daily	1. Check if the load current is within the allowable rang	Ensure the normal operation of the machine
	2. Remove stains and dirt on the surface of the machine	Keep the machine clean
	3. Check three-phase voltage stability	Ensure the normal power supply to the machine.
Monthly	1. Clean the parts of the voltage regulator, especially when the brush, the exposed part of the voltage regulator, the sliding guide of the brush, and the variable speed transmission parts must be washed with gasoline and cotton cloth;	Ensure good heat dissipation of accessories and extend the service life of accessories
	2. Replace worn or broken brushes；	Ensure the stability of the three-phase voltage
	3. Adjust the tightness of the chain or the clearance of the screw, just a little space for movement	Ensure the normal operation of the machine

★★★NOTES：

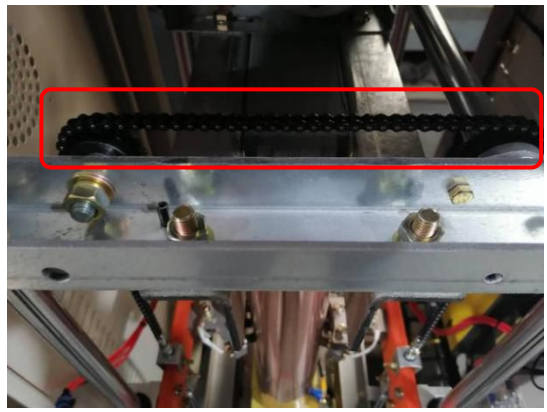
A. The input voltage is within the allowable range, and the output voltage should be checked immediately when it is unstable.

B. The voltage stabilizer should be installed in a clean, dry, ventilated and cool place to avoid overheating during use. The using temperature suggest below 35℃

C. During maintenance, it must be carried out with the power off.



Brush



Chains

7.4 Water Chiller

The main function of the chiller is to cool the laser generator and laser cutting head and keep it in a constant temperature working condition. So the strict regular maintenance of the chiller is a very important factor for the normal operation of the machine.

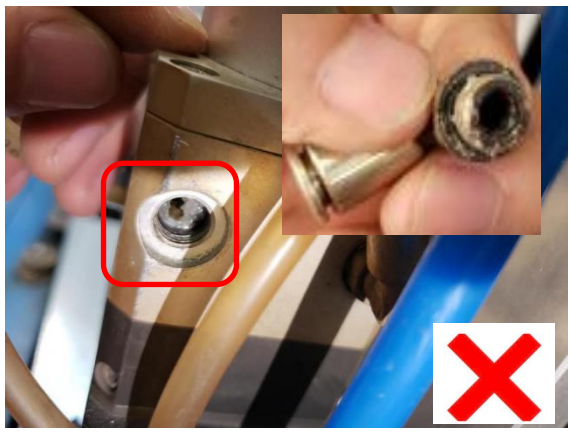
Chiller circulating water must be used **Distilled or Deionized Water.** In production, some impurities such as minerals and dust still exist in the circulating water, If regular maintenance is ignored. The deposition of these impurities can cause dirty plugging of the water circulation system and the cutting machine optical components (such as metal filters, heat exchanger heads in the cutting machine). Seriously affect the cutting effect and even burn out the optical components.

Dust in the environment will be adsorbed on the condenser, water pump, and air filter.

If regular maintenance is ignored. It will cause poor cooling of the chiller and directly affect the cutting effect, even caused a chiller alarm.

Therefore, the maintenance of the chiller is particularly important, and it must be Strictly follow the chiller maintenance manual.(refer the attached table for details)

Warning case：



Do not change cooling water for long time or deionized water&distilled water is not used as required, which will contaminate the laser head, laser generator causing irreparable damage.

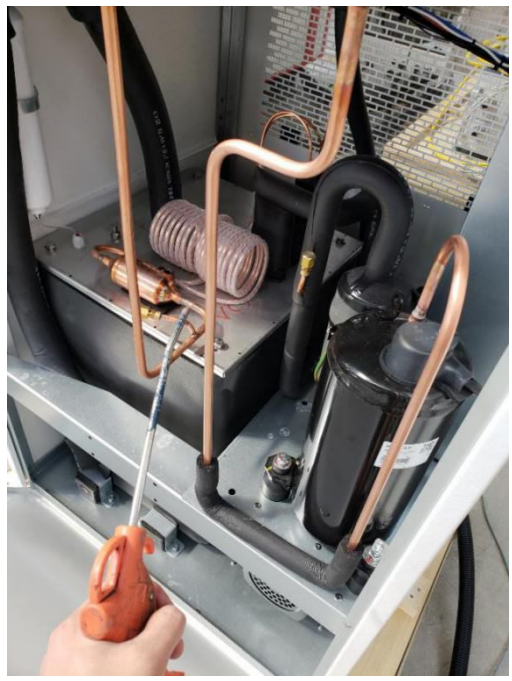
7.4.1 Maintenance Table:

Chiller Brand：TongFei		Model：TFLW-
Maintenance Cycle	Maintenance content	Maintenance results
Daily	1. Check chiller temperature setting	
	2. Check chiller seal-ability, water pressure, temperature	Ensure the equipment is running properly and no water leakage
	3. Keep working environment dry, clean and ventilated	
Monthly	1. Use a detergent or high-quality soap to remove dirt on the surface of the chiller. Do not use benzene, acids, abrasives, steel brushes, hot water, etc.	Keep chiller surface clean
	2. Check the condenser, please use compressed air or a brush to remove the dust from the condenser	Efficient heat dissipation
	3. Clean air filter. A. Open the panel of the air filter of the machine, pull up the air filter of the unit and pull it out; b. Use a vacuum cleaner, air spray gun, and brush to remove the dust on the filter. After cleaning, if the filter is wet, shake it to dry	Prevent chiller alarms due to poor heat dissipation
	4. Change water, clean the water tank and metal filter	Ensure the water always clean
Half Year	Inspect electrical components (such as switches, terminals, etc.) and clean dust with small pressure dry air.	Ensure that the electrical parts of the chiller are clean and have a longer using life
One year	Change Ion cylinder	
★★★ Long-term decommissioning of equipment: A. Drain the water from the chiller. B. Packed chiller avoid dust.		

7.4.2 How to clean chiller?



Remove the 6 screws, and take out the cover



Use air gun clean dust



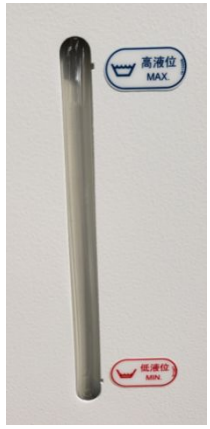
Use air gun clean dust in the water pump

7.4.3 How to change water?



Connect a water pipe and drain all the water



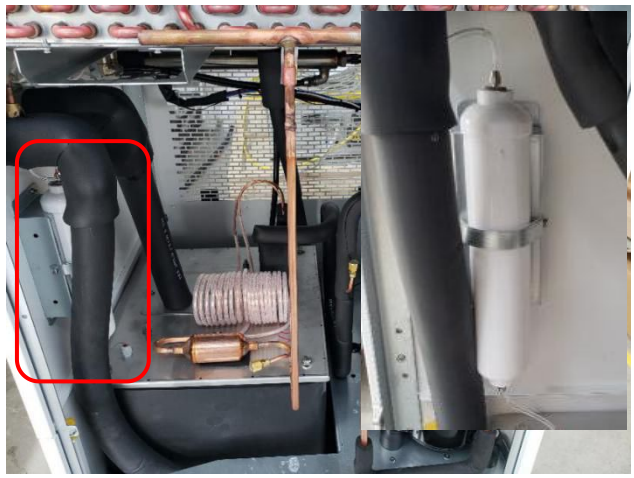


Check the water level

Add Distilled or deionized water

7.4.4 How to change the ions cylinder?





Remove the 6 screws, and take out the cover

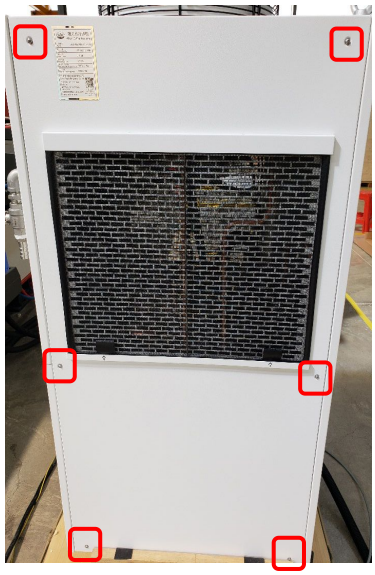
Change the new ions cylinder

7.4.5 How to clean air filter?

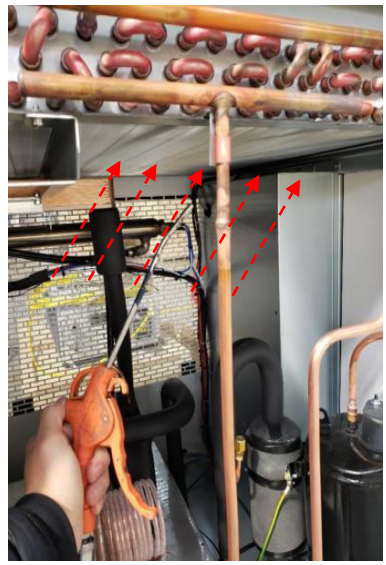


Take out the air filter and clean the dust.

7.4.6 How to clean the chiller condenser?



Remove the 6 screws, and take out the cover



Use air gun to clean the dust on condenser

7.5 Laser Generator

Laser generator is the core part of laser cutting machine, it provides cutting power. In order to ensure this core part high quality and long life work, Please do the maintenance as below:

7.5.1 Laser Generator Maintenance

Every day：
1. After turn on machine, please check the chiller working condition, included the water temperature and water pressure.
2. Check the cabinet air-condition work condition, and any alarm from the infrared monitoring detector.
3. Check the factory electricity condition.

Every Month：
1. Maintenance chiller as our manual book.(Very important)
2. Maintenance Air-condition as our manual book.(Very important)
3. Clean the dust around the laser generator.
4. Check the cables connections of laser generator.

7.5.2 Laser Generator Dew Formation

DEW-POINT TABLE:

AMBIENT DEWPOINT[1]										
Room Temperature	Maximum Relative Humidity									
	10%	20%	30%	40%	50%	60%	70%	80%	90%	95%
10 °C	-20	-11.9	-6.8	-3.0	0.6	2.6	4.8	7.6	8.4	9.2
15 °C	-16.4	-7.9	-2.4	1.5	4.7	7.3	9.6	11.6	13.4	14.2
20 °C	-12.5	-3.7	1.9	6.0	9.25	12.0	14.4	16.4	18.3	19.2
25 °C	-8.7	0.5	6.2	10.5	13.8	16.7	19.1	21.3	23.2	24.1
30 °C	-5.0	4.6	10.5	15.0	18.4	21.4	23.9	26.2	28.2	29.1
40 °C	2.6	12.7	19.1	23.8	27.6	30.7	33.5	35.9	38.0	39.0
50 °C	10.0	20.8	27.6	32.6	36.7	40.0	43.0	45.6	47.9	49.0

This table temperature is the minimum chiller setting temperature,
For the machine, the setting temperature for laser generator is 25℃-26℃, for QBH and laser cutting head is 29℃-30℃.
For example:
Room temperature is 30℃, Room Humidity is 80%, the dew point is 26.2℃.
29℃≥26.2℃≥26℃, So this situation the laser generator 100% will dew and damaged. The QBH and the laser cutting will not have dew formation.
So that means the dew-point must be lower the chiller setting temperature.
If dew-point pass the chiller setting temperature, the dew formation will come. This is why we need maintenance the air condition and the chiller as the schedule.

Warning Case:



Laser generator outside

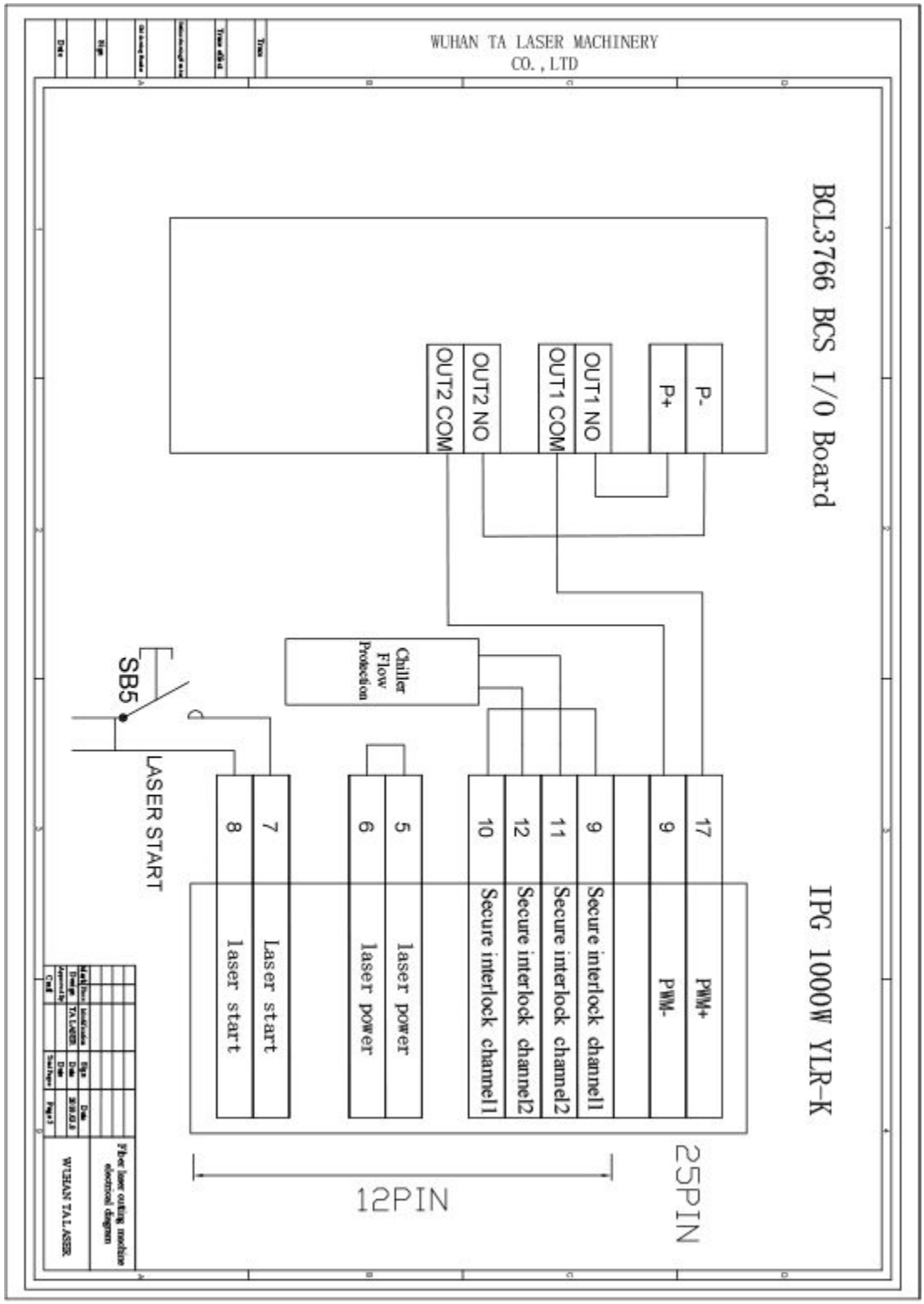


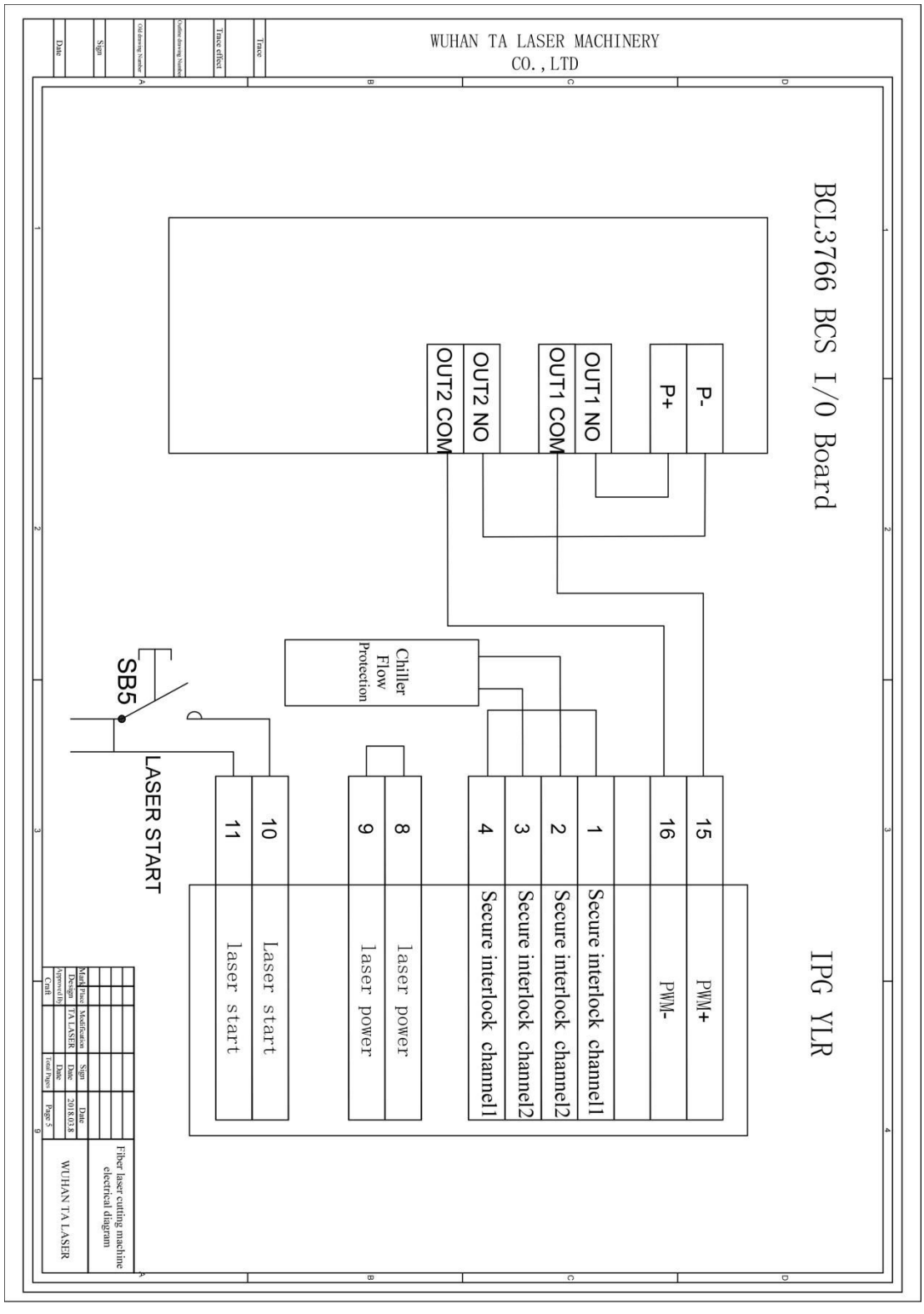
Laser generator inside

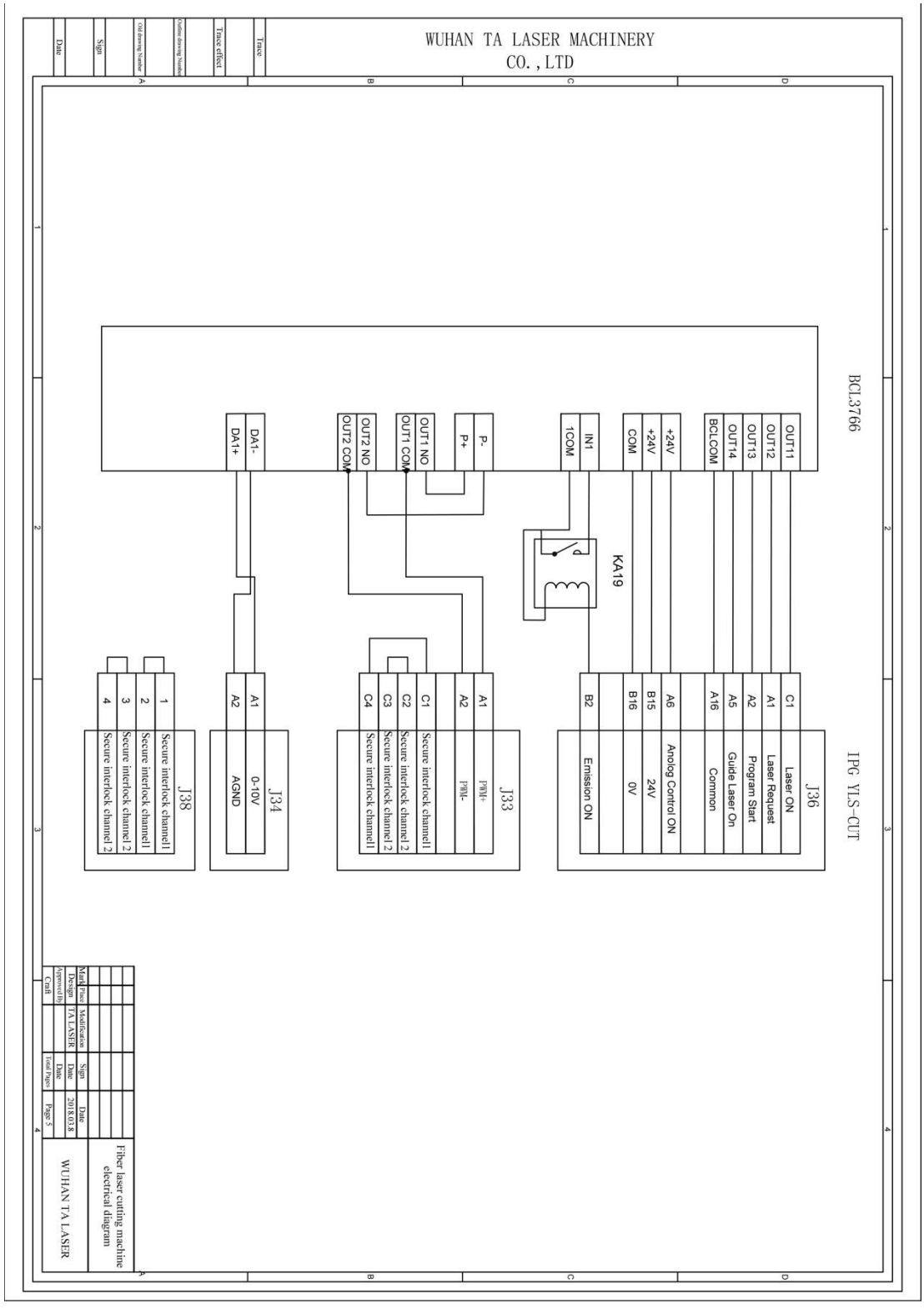


Fiber optical

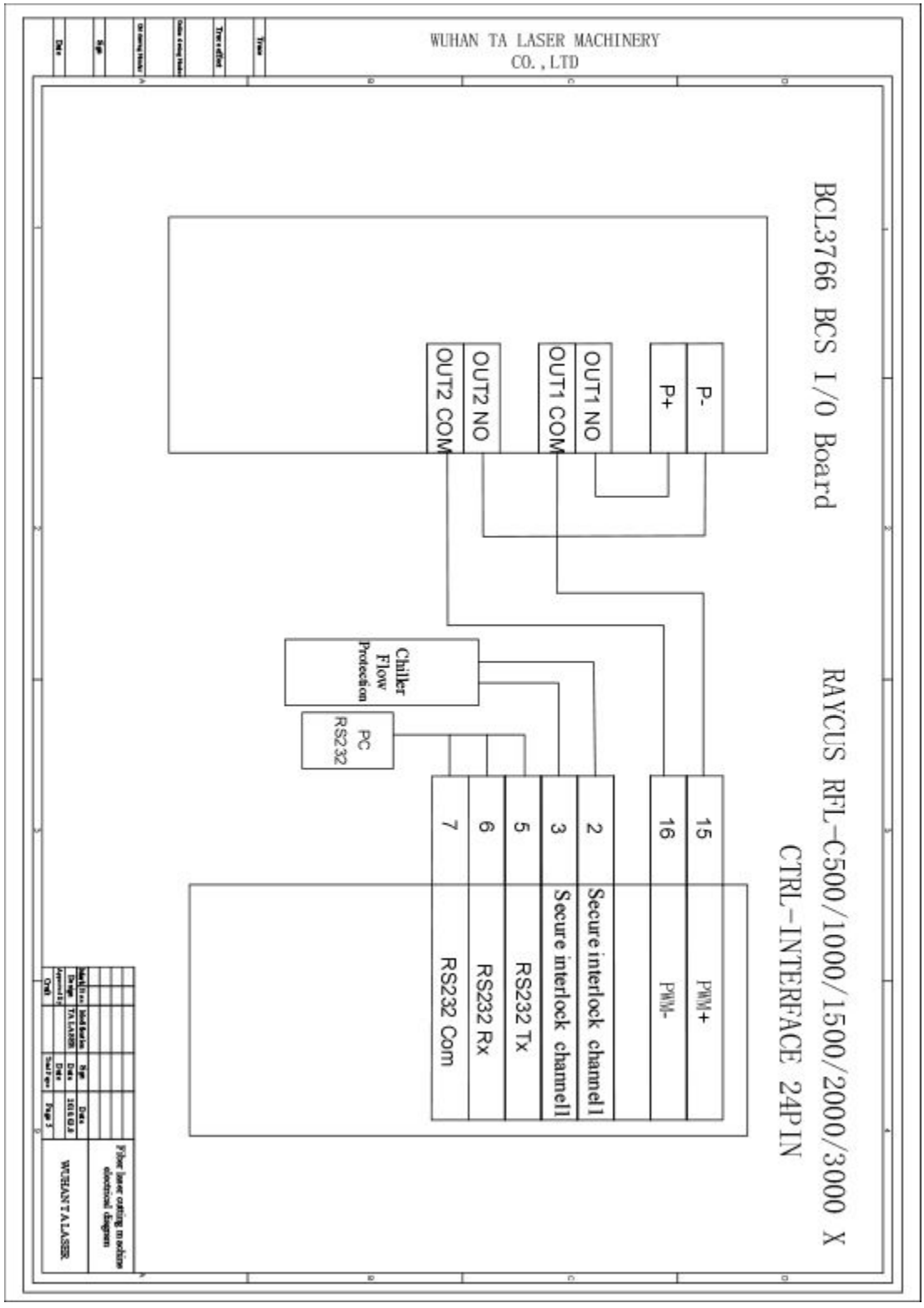
7.5.3 IPG Circuit Diagram (YLR-K/YLR/YLS-CUT)



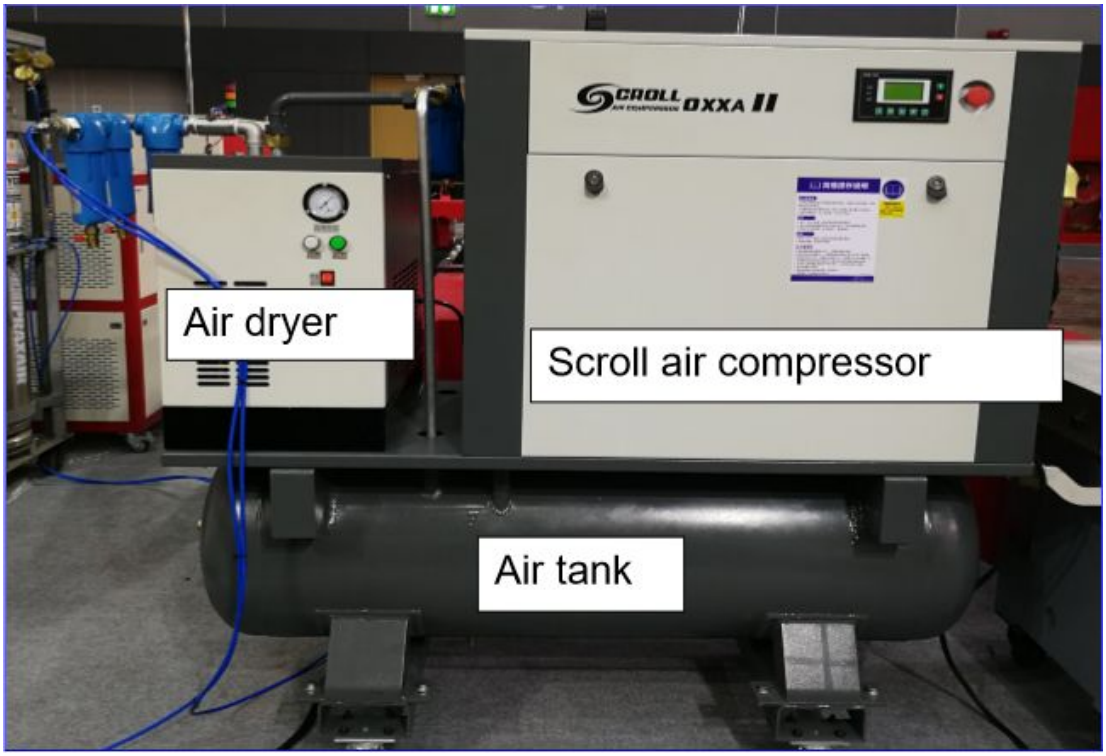

WUHAN TA LASER MACHINERY
CO., LTD
BCL3766 BCS I/O Board
IPG YLR
P-
P+
OUT1 NO
OUT1 COM
OUT2 NO
OUT2 COM
Chiller
Flow
Protection
SB5
LASER START
15
16
1
2
3
4
8
9
10
11
PWM+
PWM-
Secure interlock channel1
Secure interlock channel2
Secure interlock channel2
Secure interlock channel1
laser power
laser power
Laser start
laser start
Fiber laser cutting machine electrical diagram
WUHAN TA LASER


WUHAN TA LASER MACHINERY
CO.,LTD
BCL3766
OUT11
OUT12
OUT13
OUT14
BCLCOM
+24V
+24V
COM
IN1
1COM
P-
P+
OUT1 NO
OUT1 COM
OUT2 NO
OUT2 COM
DA1-
DA1+
KA19
IPG YLS-CUT
J36
C1 Laser ON
A1 Laser Request
A2 Program Start
A5 Guide Laser On
A16 Common
A6 Anolog Control ON
B15 24V
B16 0V
B2 Emission ON
J33
A1 PWM+
A2 PWM-
C1 Secure interlock channel1
C2 Secure interlock channel 2
C3 Secure interlock channel 2
C4 Secure interlock channel1
J34
A1 0-10V
A2 AGND
J38
1 Secure interlock channel1
2 Secure interlock channel1
3 Secure interlock channel 2
4 Secure interlock channel 2
Fiber laser cutting machine electrical diagram
WUHAN TA LASER
Page 5

7.5.4 Raycus Circuit Diagram



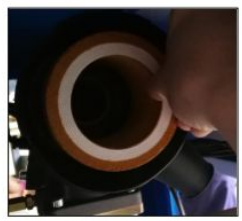
7.6 Air Compressor



Oil and Oil Filter new machine use 500hours need change, Then each 2000H change!
Others every 2000H change!

How to change the Air filter?
Every 2000 hours change. And every 2 month use Air gun to clean the dust. If really very dirty even did not reach 2000 hours, pls also change it!


Turn off machine, and remove the black cover,if dirty clean,if very dirty can not clean pls change it !


remove the air filter


clean or change it

Note: If you change the new one please reset parameters as the below PPT. Becasue every 2000 hours using finish the air compressor will alarm to remind you change! after change we need to clean the max run time to cancel the alarm.


Press down
down up play
Press down
Choose USER PARA
Now we need reduce this time to 0000H
Press play
Here the time is show you how many hours youhave already used
Press play
Press down
Choose CLR LIFE TIME
Press play
Password: 2003
Press S
Press down
Press play button to change the digit position,and press up and down to adjust the value.
Reset the using time to 000H.
Press play button to change the digit position,and press up and down to adjust the value.to change it to 0000H,and press S to save.
Press down
down up play
Press down
Choose USER PARA
Now we need reduce this time to 0000H
Press play
Here the time is show you how many hours youhave already used
Press play
Press down
Choose CLR LIFE TIME
Press play
Password: 2003
Press S
change 0500H to 2000H
Press play button to change the digit position,and press up and down to adjust the value.
Reset the next alarm time to 2000H.
Password: 2003 or 5818 or 1120

How to change the Oil?

We can go to market find the screw compressor oil.

1. Turn off the air compressor.
2. Open the ball valve make the oil out.
3. Open the add oil copper screw, and use the screw air to blow the oil tank, make all oil out.
4. Rotate the coupling clockwise to make all the oil in the pipe out.
5. Close the ball valve and add new oil full of the tank.
6. Run the scroll air compressor, and check the oil indicator, if not enough pls turn off and add again till the oil indicator reach the high level line.







coupling

After change the Oil, pls reset the LUBE time to 0000H (the method pls refer to the air filter reset way)



Reset the using time to 000H.



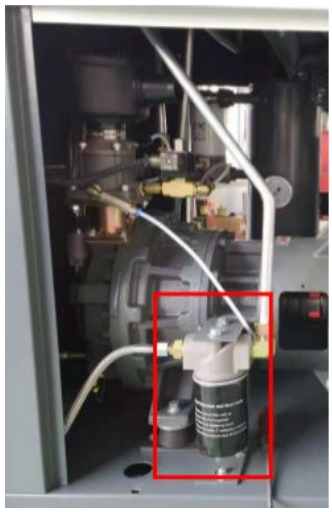
Reset the next alarm time to 2000H.

How to change the Oil filter?

1.Turn off the air compressor.

2. change the oil filter.

Please use the chain wrench to do this job.





Reset the using time to 000H.



Reset the next alarm time to 2000H.

How to change the O-A filter?

1.Turn off the air compressor.

2. change the O-A filter.

Please use the chain wrench to do this job.





Reset the using time to 000H.



Reset the next alarm time to 2000H.

Everyday need to do:

Open all switch under the filter to make the water out.



Open this ball valve everyday to make the water out.



VIII Common Problems Troubleshooting

8.1 Z+/Z- limit enable

When system checked Z+/Z- limit input is enabled, the alarm happens. The reason includes:
Z+/Z- sensor detect something.
Z+/Z- sensor is broken. Or it is used for long time, there is oil contamination and powder on the surface.
The parameter of "Limit logic" can be set to normal open or normal close
The wiring is not correct.

8.2 Capacity is 0

When system can not check the capacity of the nozzle, the capacity value is shown as 0 on the screen. The following situation may cause the alarm:
1.The nozzle touched the metal sheet.
2.There is water in cutting head.
3.The local capacity of the cutting head is large, which is out of the check range of the preamplifier.
4.The preamplifier is broken.
5.Connection is not fixed. Check ceramic ring, green RF cable, sensor cable.
6. In the internal of cutting head, the positive of capacity (nozzle) is short circle with the negative of capacity (the shell of machine).

8.3 Local capacity small

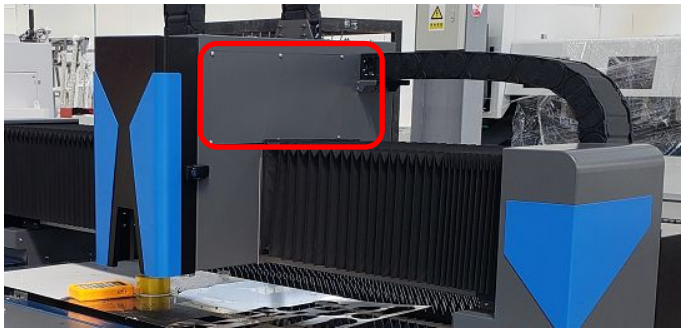
When local capacity changes less, the alarm happens. The reason includes:
1. Connection or some part is changed or moved. You can do calibration again.
2. Laser shoots on the nozzle, the temperature gets very high is short time. Hands can not stay on the nozzle.
3. Connection is not fixed.
4. The parameter of calibration range is low can also lead the alarm. In 2D mode 15mm is recommended. And 10mm is recommended in 3D mode.
5.One of the reason is the cutting fire and electronic affects the capacity sensor when the board material is stainless steel.
If there is plastic film on the surface of steel, remove the film first. Check if the machine is connect to the ground well. The following height should be large than 0.5 mm. Improve the blowing pressure.

8.4 Machine can not cut well

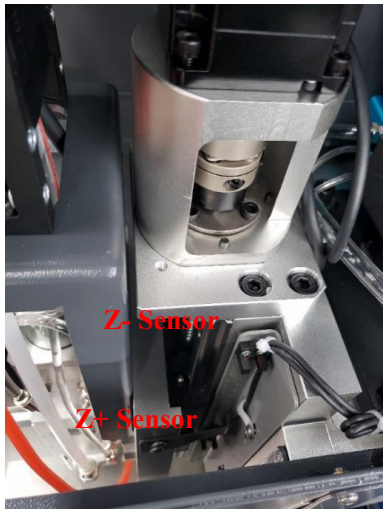
1.Check the cutting parameters and pierce parameters.
2.Check the cutting focus, if the cutting head is auto-focus head please go origin.
3.Check the protection lens. Including calibration protection lens and focus protection lens.
4.Do laser cutting head calibration.

5.Check the gas pipe connection of the laser head, if gas leakage or not.
6.Check the cutting material.

8.5 Z-/Z+ Limit signal is valid



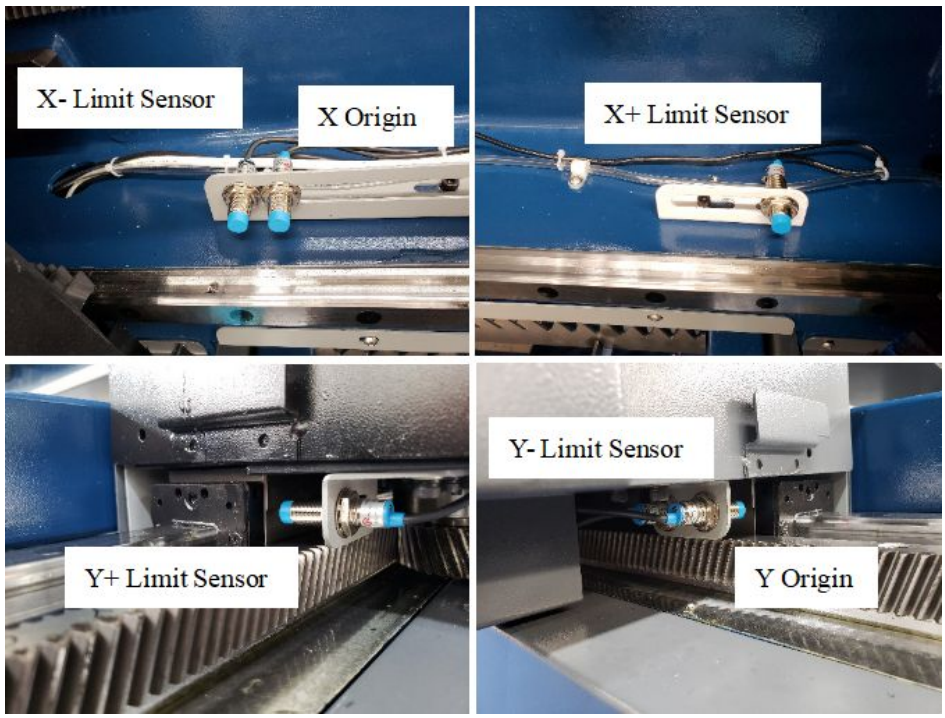
Remove the metal cover



Check this limit sensor

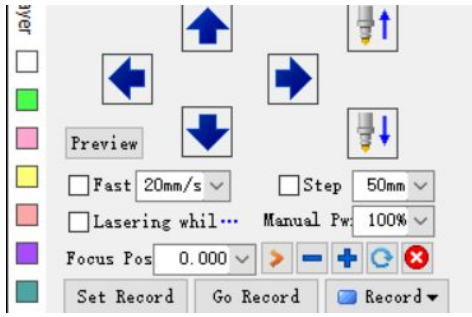
8.6 X-/X+ Y-/Y+ Limit signal is valid

Check the limit sensor work properly.



8.7 Axis 4 Limit 4 alarm

1. Turn on software see the alarm Axis 4Limit-, if still appear, please press + serval times see if the alarm will disappear. if still have alarm, please press - serval times, till the alarm disappear, and then autofocus go origin.



2. If the first solution no work. Turn off the machine, and then use Allen key to adjust the screw, make the auto focus axis move to 0 direction. You can check as the scale window and then turn on the machine and then autofocus go origin.

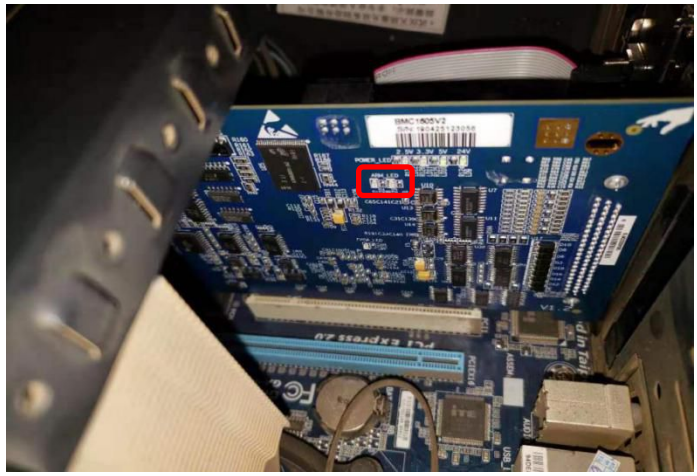




Adjust Screw

8.8 Not detect the motion card, the system will run in demo mode

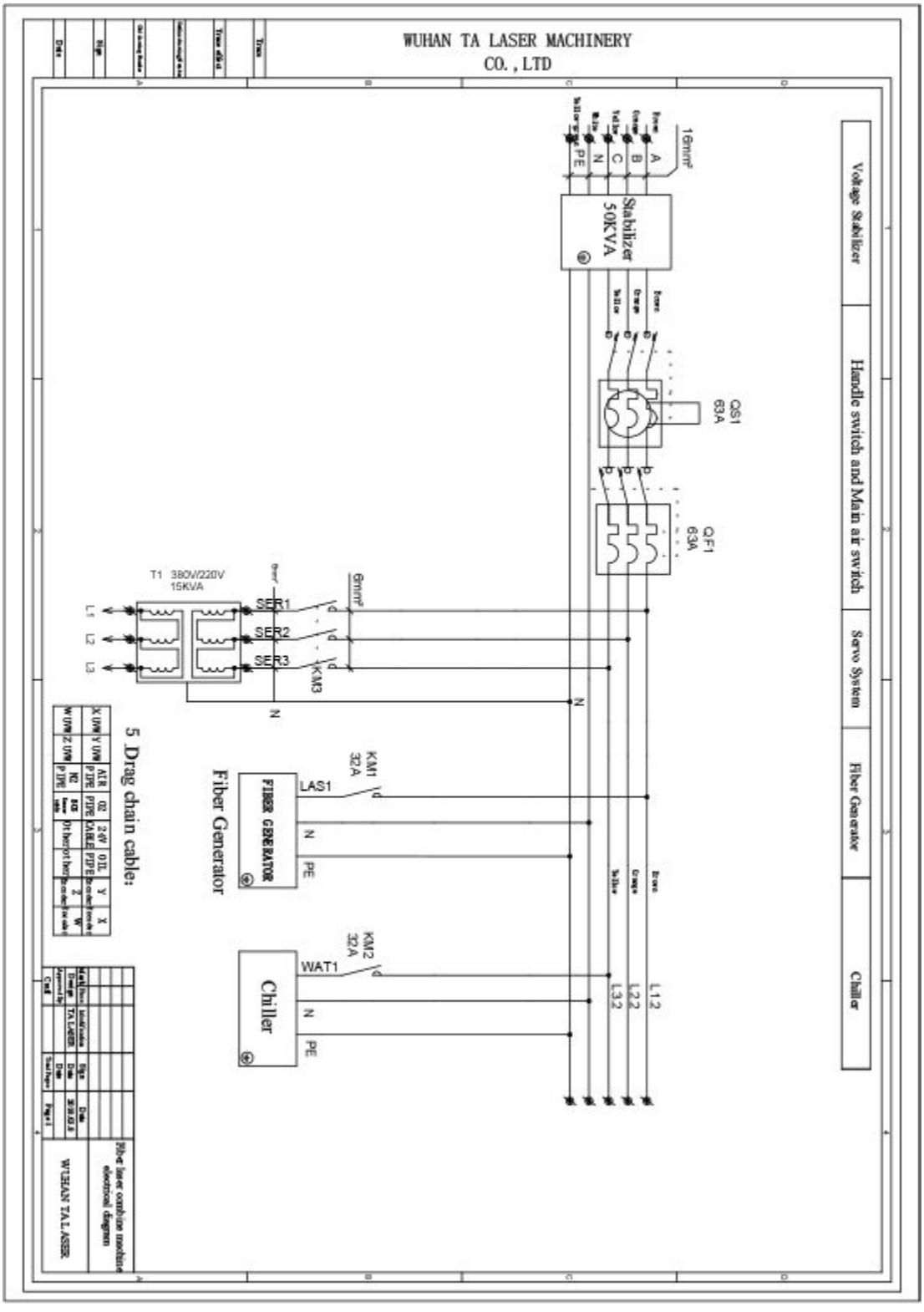
1. Check whether the computer device manager found the BMC motion card. If it is not found, you can re-plug the control card or replace the industrial computer. If it has been found, check whether the control card corresponding to the device manager has a yellow exclamation mark. Install the driver on the control card. If the driver cannot be installed, check whether the driver is blocked by the computer firewall. If necessary, turn off the firewall and antivirus software.
2. If you haven't found the BMC motion card in the device manager, check the blinking status of the two small lights (LED7, LED8) on the top of the control card in the computer. Flashing alternately, the control card may have failed, and you can upgrade or send it back for repair.

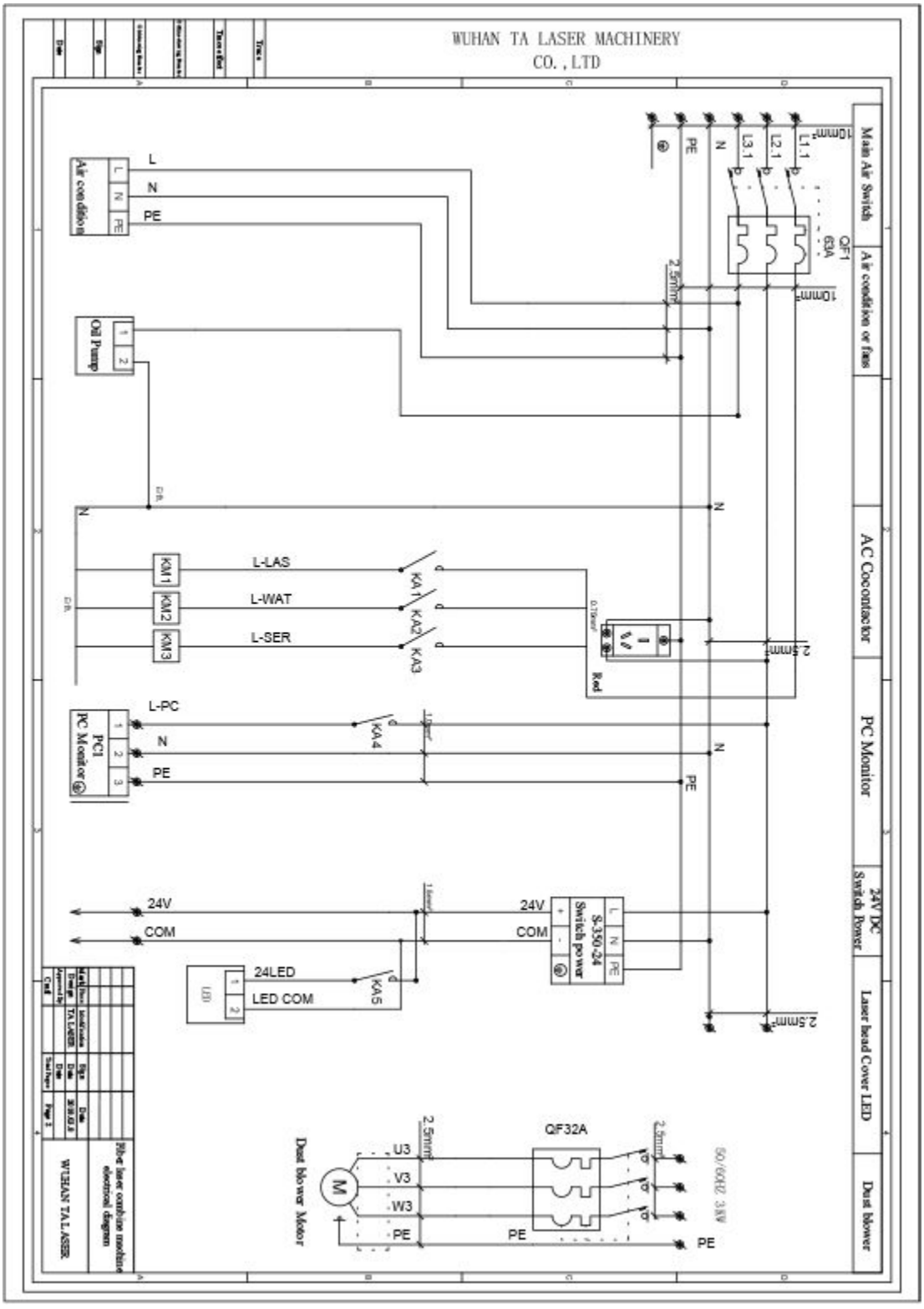


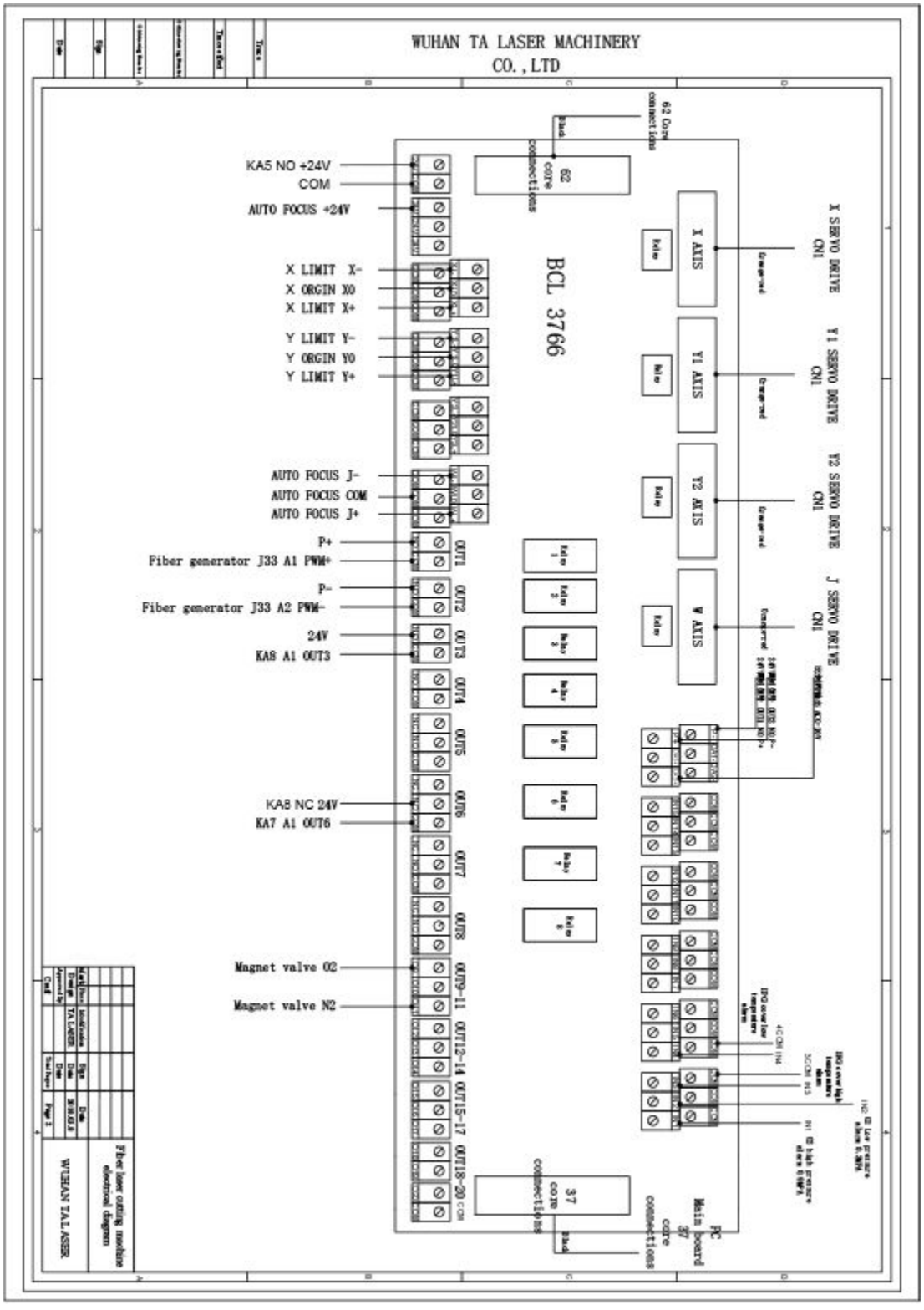
3. Check the interface to see if the system Licence has expired.

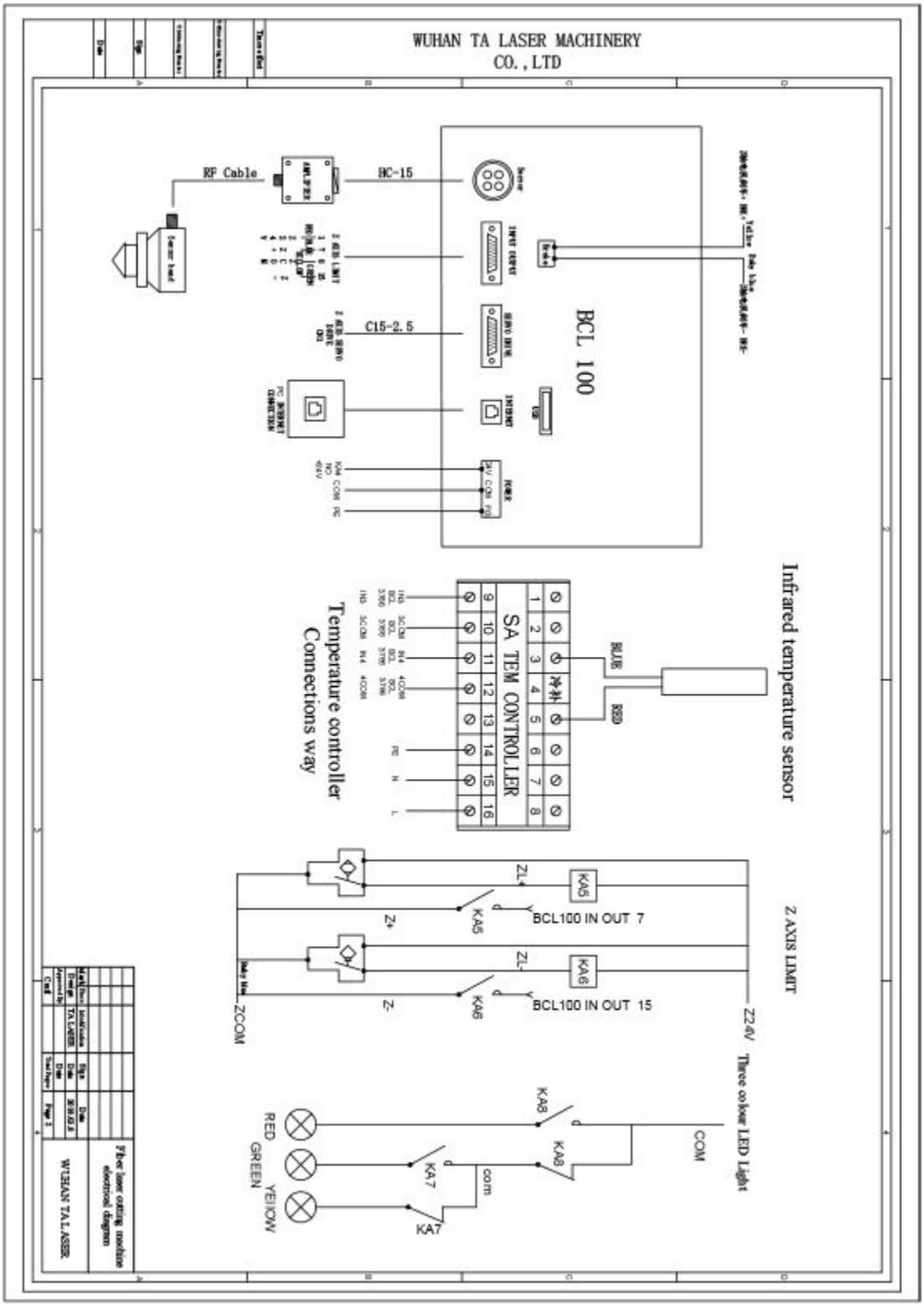


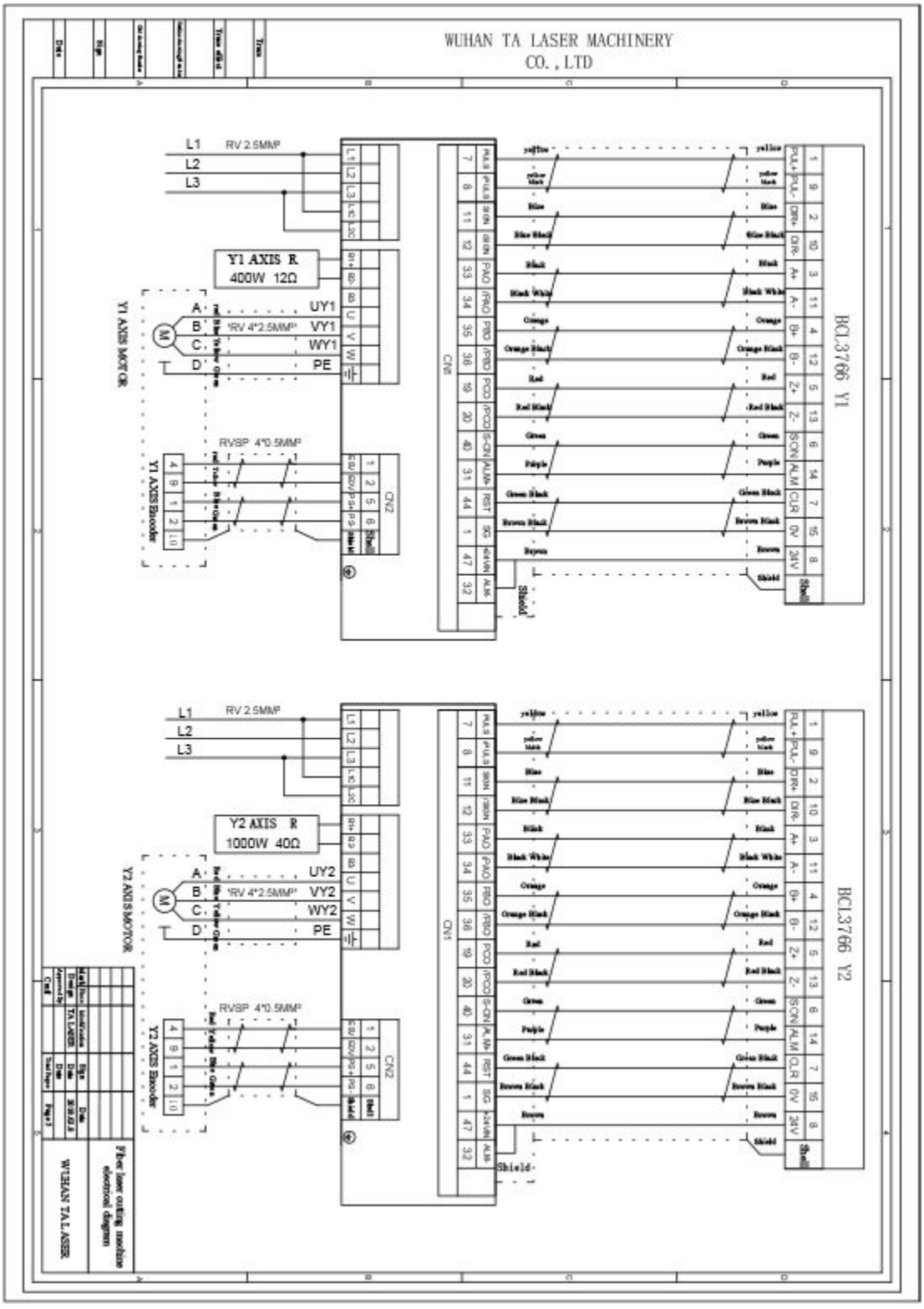
IX Diagram

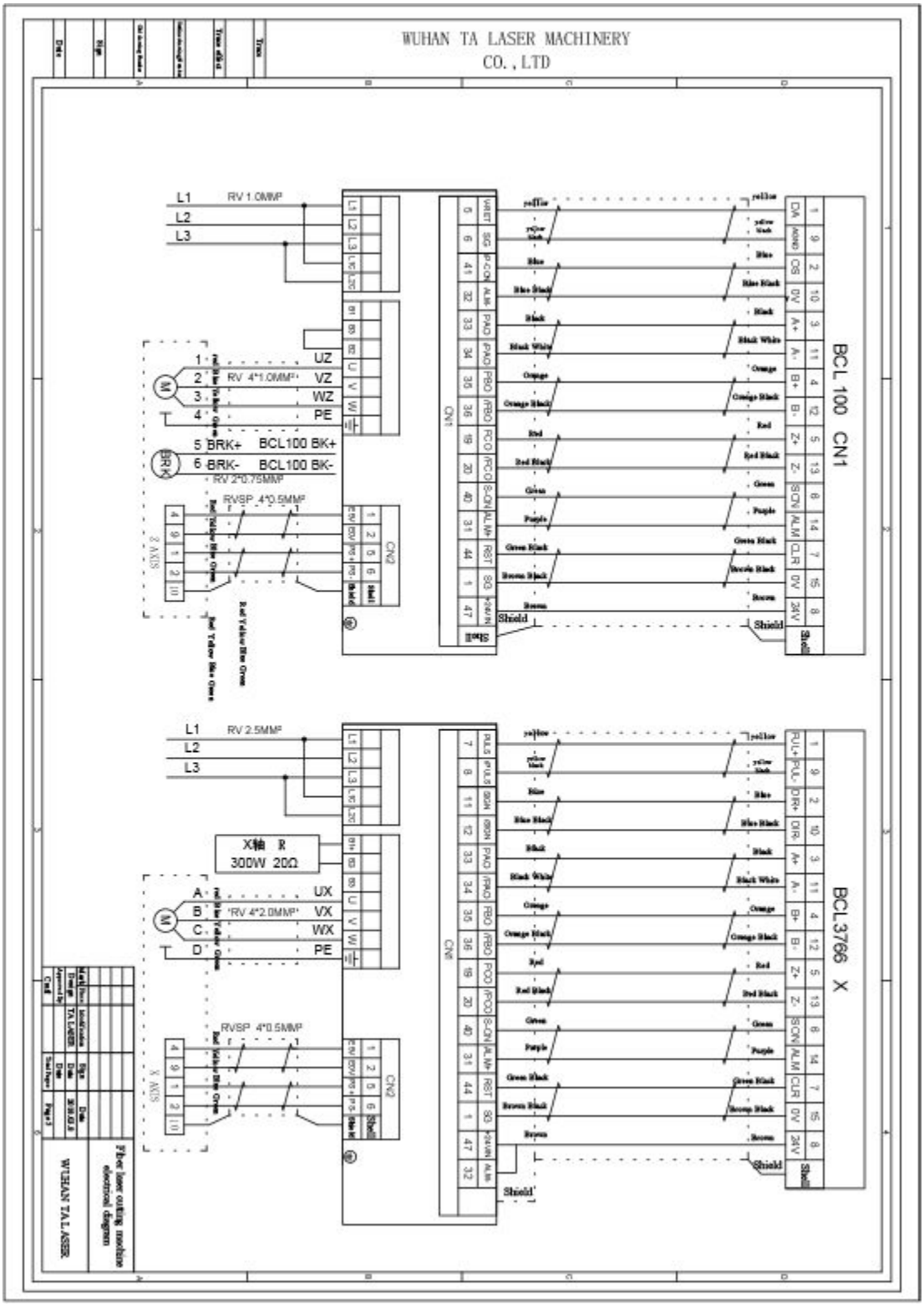

WUHAN TA LASER MACHINERY
CO., LTD
Voltage Stabilizer
Handle switch and Main air switch
Servo System
Fiber Generator
Chiller
16mm²
PE
N
C
B
A
Stabilizer
50KVA
QS1
63A
QF1
63A
T1 380V/220V
15KVA
L1
L2
L3
SER1
SER2
SER3
KM3
6mm²
N
KM1
32A
LAS1
FIBER GENERATOR
Fiber Generator
N
PE
KM2
32A
WAT1
Chiller
N
PE
L12
L22
L32
5 Drag chain cable:
WUHAN TA LASER

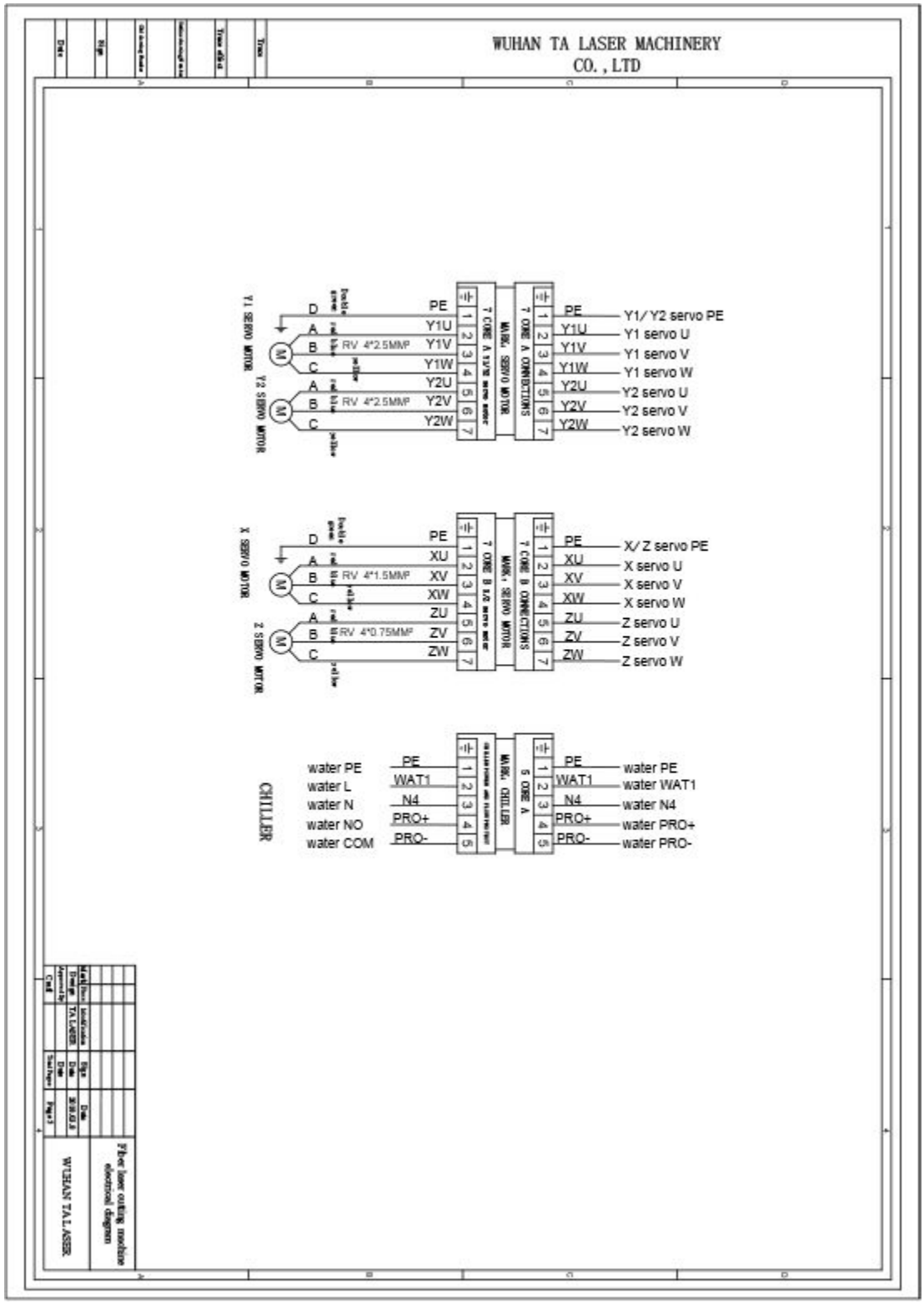

WUHAN TA LASER MACHINERY
CO., LTD
Main Air Switch
Air condition or fans
AC Cocontactor
PC Monitor
24V DC Switch Power
Laser head Cover LED
Dust blower
Air condition
Oil Pump
PC1 PC Monitor
L-LAS
L-WAT
L-SER
L-PC
24V
COM
24LED
LED COM
S-350-24 Switch power
QF1 63A
QF32A
Dust blower Motor
U3
V3
W3
PE
L
N
L1.1
L2.1
L3.1
KM1
KM2
KM3
KA1
KA2
KA3
KA4
KA5
2.5mm²
10mm²
Fiber laser combine machine electrical diagram
WUHAN TA LASER

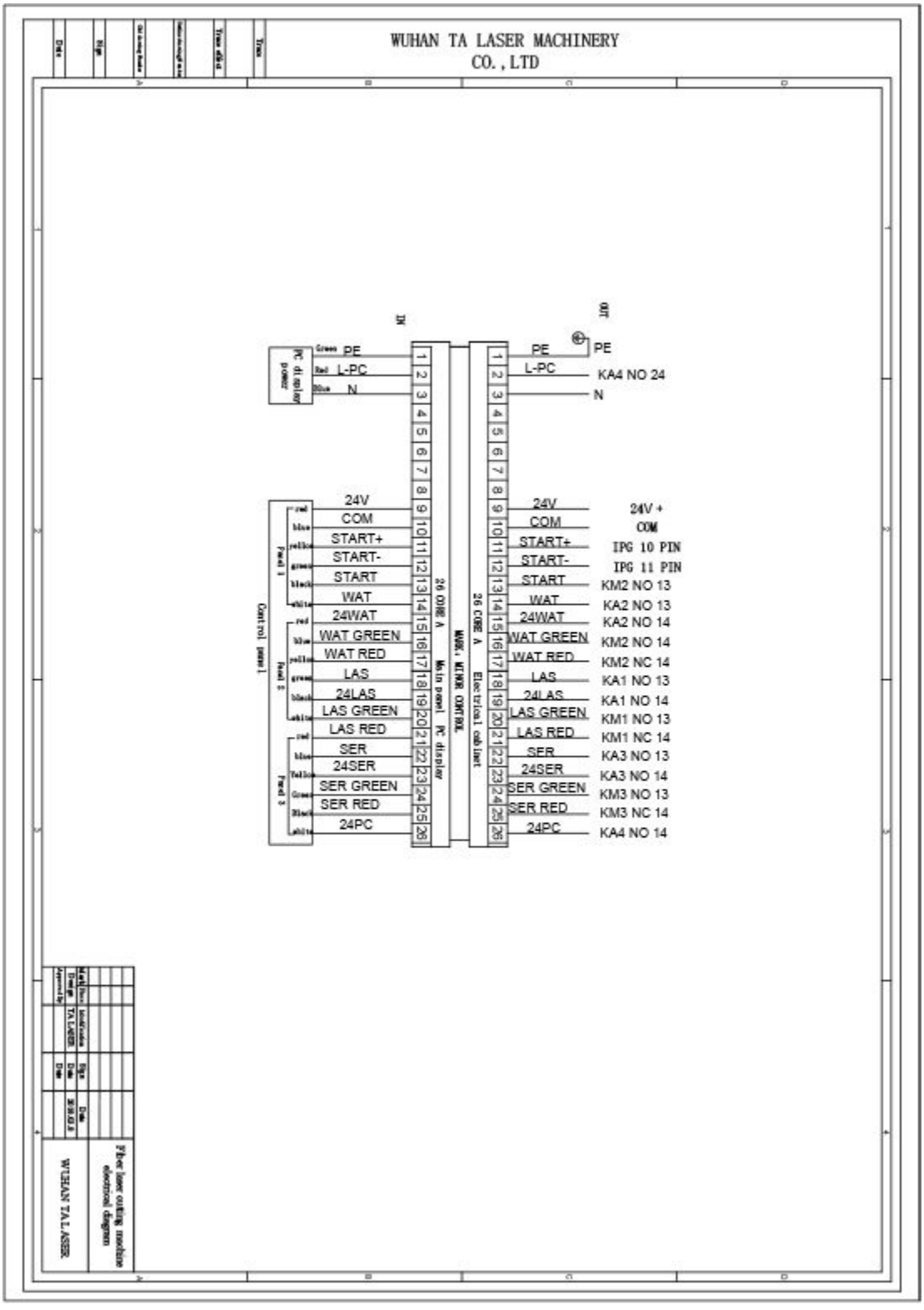

WUHAN TA LASER MACHINERY
CO., LTD
BCL 3766
KA5 NO +24V
COM
AUTO FOCUS +24V
X LIMIT X-
X ORGIN X0
X LIMIT X+
Y LIMIT Y-
Y ORGIN Y0
Y LIMIT Y+
AUTO FOCUS J-
AUTO FOCUS COM
AUTO FOCUS J+
P+
Fiber generator J33 A1 PWM+
P-
Fiber generator J33 A2 PWM-
24V
KA8 A1 OUT3
KA8 NC 24V
KA7 A1 OUT6
Magnet valve O2
Magnet valve N2
62 core connections
37 core connections
X AXIS
Y1 AXIS
Y2 AXIS
W AXIS
X SERVO DRIVE CN1
Y1 SERVO DRIVE CN1
Y2 SERVO DRIVE CN1
J SERVO DRIVE CN1
PC Main board 37 core connections
Fiber laser cutting machine electrical diagram
WUHAN TA LASER

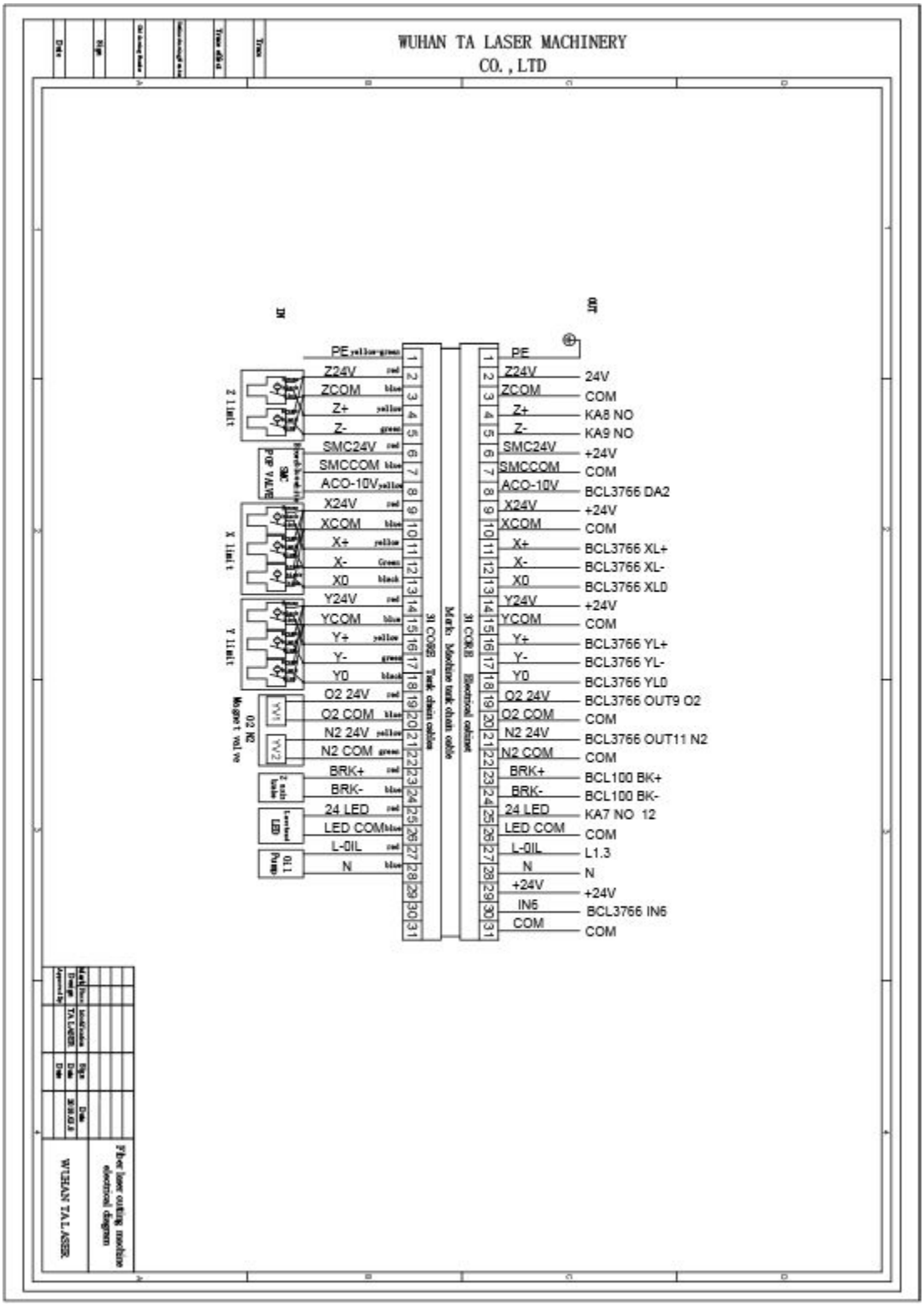

WUHAN TA LASER MACHINERY
CO., LTD
RF Cable
HC-15
C15-2.5
BCL 100
Infrared temperature sensor
Temperature controller
Connections way
SA TEM CONTROLLER
BLUE
RED
Z AXIS LIMIT
BCL100 IN OUT 7
BCL100 IN OUT 15
ZCOM
Z24V
Three colour LED Light
RED
GREEN
YEIKOW
COM
com
KA5
KA6
KA7
KA8
WUHAN TA LASER

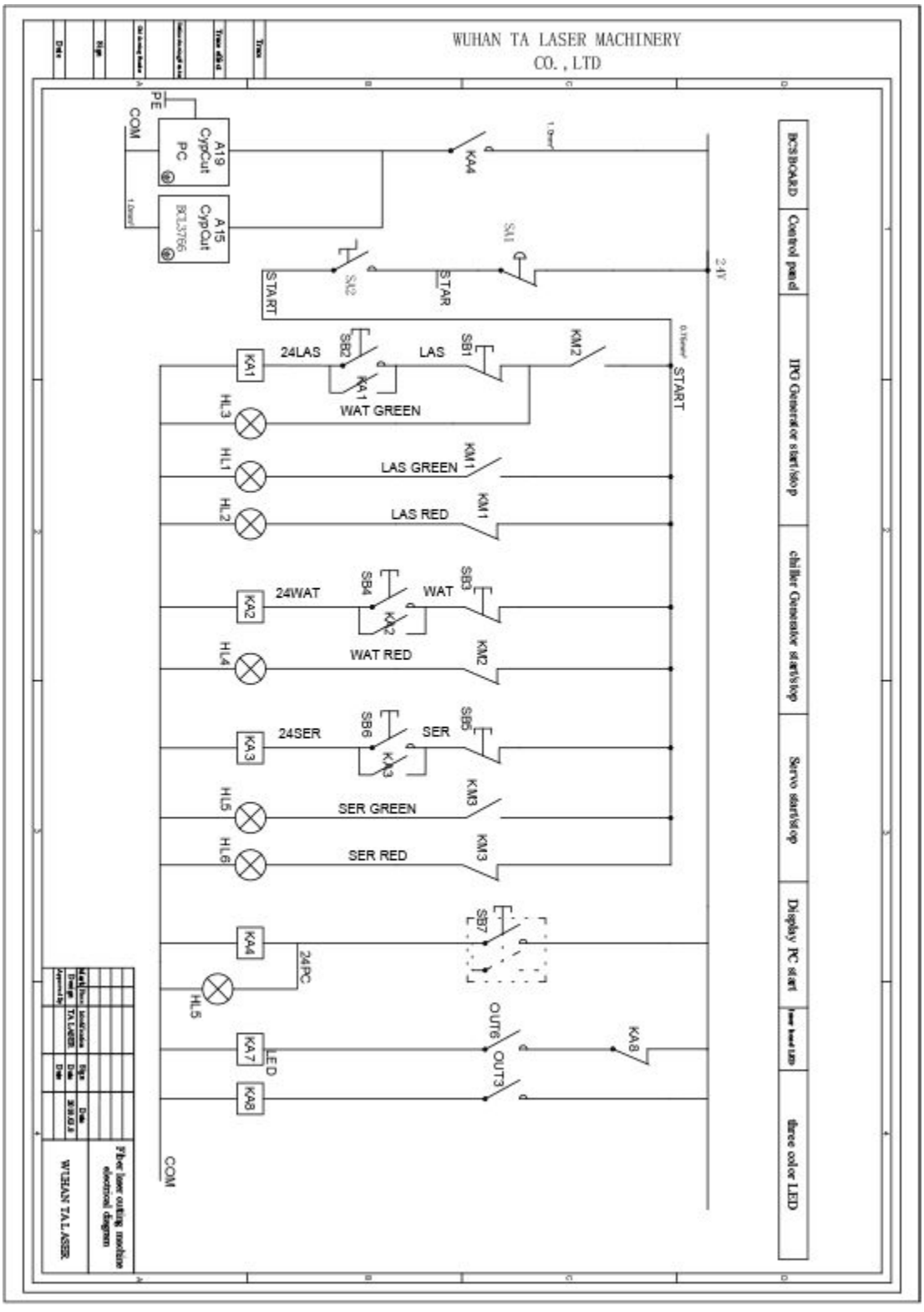

WUHAN TA LASER MACHINERY
CO., LTD
L1
L2
L3
RV 2.5MM²
Y1 AXIS R
400W 12Ω
UY1
VY1
WY1
PE
'RV 4*2.5MM²'
Y1 AXIS MOTOR
RVSP 4*0.5MM²
Y1 AXIS Encoder
CN1
CN2
BCL3766 Y1
Y2 AXIS R
1000W 40Ω
UY2
VY2
WY2
Y2 AXIS MOTOR
Y2 AXIS Encoder
BCL3766 Y2
Shield
WUHAN TA LASER
Fiber laser cutting machine electrical diagram


WUHAN TA LASER MACHINERY
CO., LTD
L1
L2
L3
RV 1.0MM²
UZ
VZ
WZ
PE
RV 4*1.0MM²
BRK+
BRK-
BCL100 BK+
BCL100 BK-
RV 2*0.75MM²
RVSP 4*0.5MM²
CN1
CN2
BCL 100 CN1
RV 2.5MM²
X轴 R
300W 20Ω
UX
VX
WX
RV 4*2.0MM²
BCL3766 X
Shield
WUHAN TA LASER
Fiber laser cutting machine electrical diagram


WUHAN TA LASER MACHINERY
CO. , LTD
Y1 SERVO MOTOR
Y2 SERVO MOTOR
RV 4*2.5MM²
PE
Y1U
Y1V
Y1W
Y2U
Y2V
Y2W
7 CORE A CONNECTIONS
Y1/ Y2 servo PE
Y1 servo U
Y1 servo V
Y1 servo W
Y2 servo U
Y2 servo V
Y2 servo W
X SERVO MOTOR
Z SERVO MOTOR
RV 4*1.5MM²
RV 4*0.75MM²
XU
XV
XW
ZU
ZV
ZW
7 CORE B CONNECTIONS
X/ Z servo PE
X servo U
X servo V
X servo W
Z servo U
Z servo V
Z servo W
CHILLER
water PE
water L
water N
water NO
water COM
WAT1
N4
PRO+
PRO-
5 CORE A
water WAT1
water N4
water PRO+
water PRO-
WUHAN TA LASER
Fiber laser cutting machine electrical diagram


WUHAN TA LASER MACHINERY
CO., LTD
PE
L-PC
N
24V
COM
START+
START-
START
WAT
24WAT
WAT GREEN
WAT RED
LAS
24LAS
LAS GREEN
LAS RED
SER
24SER
SER GREEN
SER RED
24PC
KA4 NO 24
24V +
COM
IPG 10 PIN
IPG 11 PIN
KM2 NO 13
KA2 NO 13
KA2 NO 14
KM2 NO 14
KM2 NC 14
KA1 NO 13
KA1 NO 14
KM1 NO 13
KM1 NC 14
KA3 NO 13
KA3 NO 14
KM3 NO 13
KM3 NC 14
KA4 NO 14
26 CORE A
Main panel PC display
Electrical cabinet
Control panel
WUHAN TA LASER
Fiber laser cutting machine electrical diagram


WUHAN TA LASER MACHINERY
CO., LTD
PE
Z24V
ZCOM
Z+
Z-
SMC24V
SMCCOM
ACO-10V
X24V
XCOM
X+
X-
X0
Y24V
YCOM
Y+
Y-
Y0
O2 24V
O2 COM
N2 24V
N2 COM
BRK+
BRK-
24 LED
LED COM
L-0IL
N
24V
COM
KA8 NO
KA9 NO
+24V
BCL3766 DA2
BCL3766 XL+
BCL3766 XL-
BCL3766 XL0
BCL3766 YL+
BCL3766 YL-
BCL3766 YL0
BCL3766 OUT9 O2
BCL3766 OUT11 N2
BCL100 BK+
BCL100 BK-
KA7 NO 12
L1.3
IN6
BCL3766 IN6


WUHAN TA LASER MACHINERY
CO., LTD
BCS BOARD
Control panel
IPG Generator start/stop
chiller Generator start/stop
Servo start/stop
Display PC start
three color LED
PE
COM
A19
CypCut
PC
A15
CypCut
START
STAR
24V
KA4
SA1
SA2
KA1
24LAS
SB2
LAS
SB1
KM2
START
HL3
WAT GREEN
HL1
LAS GREEN
KM1
HL2
LAS RED
KM1
KA2
24WAT
SB4
WAT
SB3
HL4
WAT RED
KM2
KA3
24SER
SB6
SER
SB5
HL5
SER GREEN
KM3
HL6
SER RED
KM3
KA4
SB7
24PC
HL5
KA7
LED
OUT6
OUT3
KA8
KA8
COM
WUHAN TA LASER
Fiber laser cutting machine electrical diagram

X Service

TA Laser is responsible to offer free fittings during the quality guarantee time (except consumable parts). So please keep the damaged fittings well, in order to send back to sellers.

After the warranty, we will also provide favorable service of long term technical supports and spare parts supply to ensure machine's stable and continuous running.

The artificial damage in the warranty period and damage after warranty period, TA Laser will offer paid service.

Hotline: 0086-15871488866

Service Card

Repair Report Date: **Under Warranty** ☐ **Out of warranty** ☐

Machine Serial NO.:	**Machine Type:**	**Machine Arrive Date:**	**Installation Date:**
User's Company Name:			
Address:			
Contact Person:		**Tel:**	
Machine Fault Description:			
Failure Analysis:			
Repair Work Content:			