

Scotle Raycus Relfar 4-in-1 Dual-Wobble Handheld Laser Welding Machine Manual



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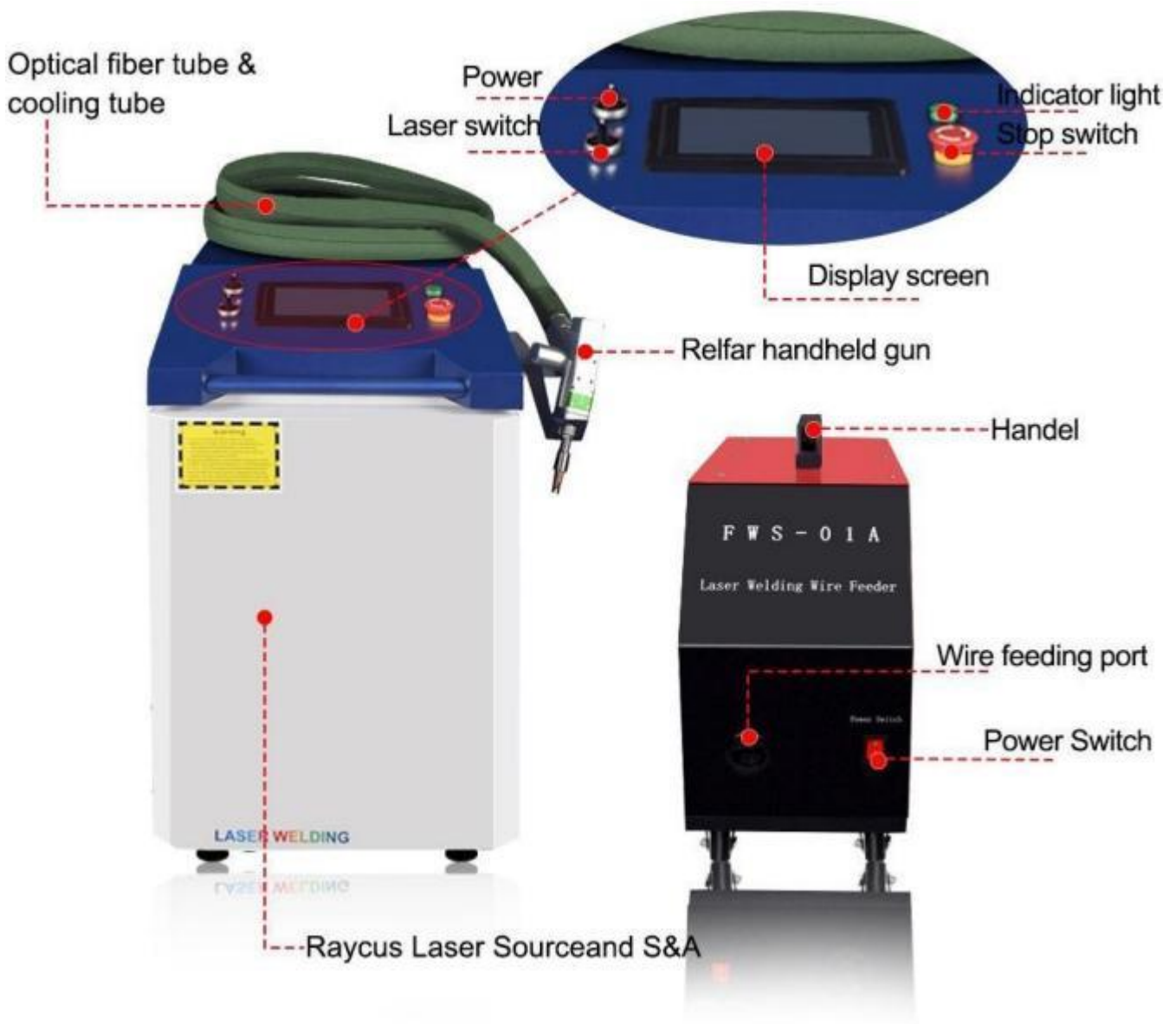
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1. Machine display

1.1 Overall display



1.2 Safety specification

1.2.1 Safety Instructions for Optical Operation

We strongly recommend that you read the following procedures before operating the fiber laser:

Never look directly into the optical output when Electrical switch is on.

Make sure that a pair of appropriate and approved laser safety protective glasses is worn all the time while the laser is operating.

No eyes are on the path of the laser beam (direct or reflected light, scatter light from high reflective material, etc.), at the same time, the direction of laser output must be Shelter by reliable objects.

Caution: Failure TO USE control or adjustment DEVICES or perform STEPS as described herein may result in HARMFUL radiation exposure

1.2.2 Safety Instructions for Electrical Operation

We strongly recommend that you read the following procedures before operating the fiber laser:

Make sure the power source connected to the equipment is properly grounded with PE wire. At the same time the shell of this equipment must be properly grounded. Any interruption of the ground loop may result in personal injury.

Make sure that the input AC voltage and capacity meet the requirements of the very series of lasers.

If the air switch shut down frequently, please contact as soon manufacturer

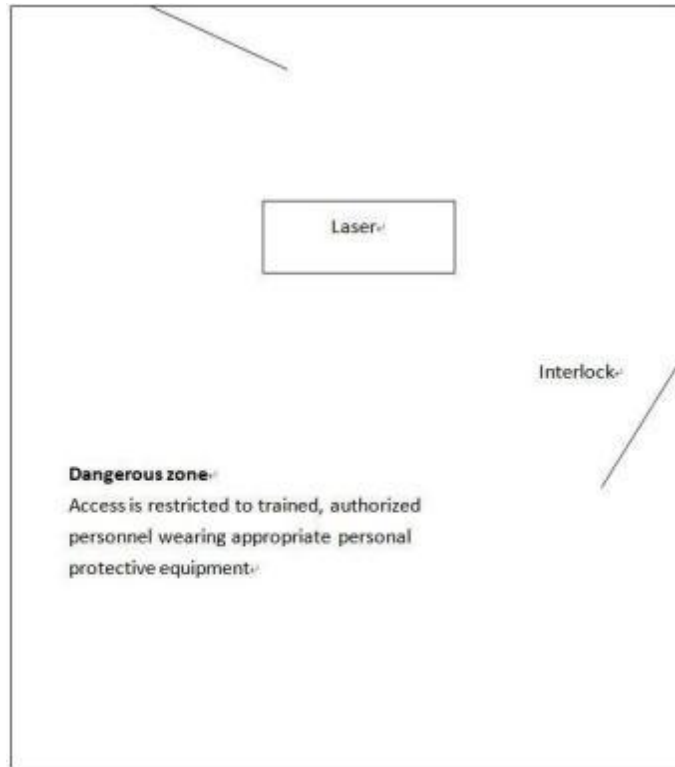
1.2.3 Other Safety Instructions

- (1) There are often numerous secondary laser beams produced at various angles in the output port of the laser. These divergent beams are produced when the primary beam of laser reflects off a smooth surface, and they are called secular reflections. Although these secondary beams may be less powerful than the total power emitted from the primary beam, the intensity may be great enough to cause damage to the eyes and skin as well as surface of materials.
- (2) Optical accessories relevant to the laser, such as light-sensitive elements that may be damaged from exposure to the laser light, video cameras, photo multipliers and photo diodes, need related protections.
- (3) Please do not operate laser in darkened environments.
- (4) Do not turn on the laser without an optical coupling fiber or the optical output connector.

1.3 Protective housing and interlocking system

- (1) The structure and layout of the shield should be designed to ensure that the human body cannot directly enter the dangerous area. Shields should be closed mechanisms, meeting specific safety distance and opening size requirements when a mesh structure is required.
- (2) For the installation of the laser room, should follow the guidance of the professional design, installation team, in accordance with the drawings.
- (3) The installation of the laser room also includes components such as the house body, internal frame, maintenance door, observation window, safety door, lighting, optical fiber hanging device, monitoring, dust removal, light source room, air conditioning, anti-collision fence.
- (4) The safety door of the laser room should be connected with the product remote control chain connector. When an external person intervenes and opens the door, the terminal of the connector opens and the laser machine stops launching. Prevent external personnel or unauthorized personnel from exposure to dangerous radiation.
- (5) Use of interlocking system:

In the laser control zone, walls and doors can limit the hazard of laser radiation. The interlocking system connected to the door can actually operate to restrict access when a hazard occurs, allowing only trained, authorized and appropriately protective equipment to enter.



1.4 Safety labels

As shown in the following table, all safety warning signs during the operation of the handheld laser cleaning machine (not limited to the signs on the laser body) include:

		
<p>Warning label – Hazard symbol</p>	<p>Explanatory label (Take 1000W as example)</p>	<p>Alternative label for laser aperture</p>
		
<p>Alternative label for Class 4</p>	<p>Must be grounded</p>	<p>Electrical Hazard</p>

1.5 EU Agency Information

E-CrossStu GmbH
Felix-Dahn-Str 4
Stuttgart 70597



E-CrossStu@web.de +49 71191222069



THIS WAY UP

Product name : 4 IN 1 Laser Welding Machine

Model : LWM-YHY

Rated voltage :220V

Rated current : 15A

Manufacturer : Shenzhen Yuhaiyuan Technology Co., Ltd


Address: Longgang District Yayuan Road Chuangyiyuan

Y1-2-14 Shenzhen China

Made in China

1.6 Nameplate information

Taking 3000W as an example

huizhoushiyunshengshukongshebeiyouxiangongsi	
Raycus 4 IN 1 Welder	
Product name: Raycus 3000W 4 in 1 Welder	Model NO: RFL-C300S
Rating Voltage : 380V	Rating Frequency: 50Hz
Laser Power:3000W	Rating Power:11400W
Phase:3L+N+PE	Class 4 Laser
Origin:China	Mfg year : 2024 . 9
Address: huizhoushihuiyangquqiuchangjiedaoxihucunweipangtianhaichuangxinke jiyuanAdong5lou 512200 China	
	

1.7 Compliance to Standards for CE Marking

This product complies with the European Union Harmonized legislation, only complies with the above directives and standards when installed in accordance with the manufacturer's specifications.

The European Community requirements for product safety in the 2006/42/EC Machinery (MD)

This Directive requires that lasers comply with the standard:

EN ISO 12100:2010

EN 60204-1:2018

EN ISO 11553-1:2020/A11:2020

EN ISO 11553-2:2008

EN 60825-1:2014/A11:2021


2. Main configuration introduction


2.1 Laser Source introduction

In order to guarantee the fiber laser is operated safely (including personnel safety, equipment safety, production safety), ensure the product remain its best condition for a long time.

We compile this document with important safety, operating, maintaining and other information. Please take time to read and understand this User's Guide and familiarize yourself with the operating and maintenance instructions before using the product.

2.1.1 Safety Conventions used in the User Guide:

SYMBOLS	DESCRIPTION
	<p>WARNING :</p> <p><i>Refers to a potential hazard that may leads to a personal injury or death.</i></p>

	<p>CAUTION :</p> <p><i>Refers to a potential hazard on product, or a potential physical injury on personnel</i></p>
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<p>NO SYMBOL</p>	<p>IMPORTANT :</p> <p><i>Refers to any information regarding the operation of the product. Please do not overlook this information.</i></p>
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2.1.2 Laser Classification

This series of lasers emit invisible laser radiation around a wavelength of $1080 \pm 3\text{nm}$.

The average power of the products is ranged from 10% to 100% at a maximum power range from 1000W to 4000W, which classifies the series of lasers Class 4 laser instrument.

Direct or indirect exposure of this level of light intensity may cause very serious damage to the eyes or skin.

In view of this, appropriate and approved laser safety protective glasses must be worn all the time while the laser is operating.

At the same time, no directly or reflectively emit on your skin.

	<p>WARNING :</p> <p><i>The laser safety protective glasses are selected according to the</i></p>
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wavelengths of the output laser. The users must ensure that the laser safety protective glasses covered the entire range of wavelengths of the laser emission.

2.1.3 Operation Conditions

The basic operation conditions are listed in the table followed:

Item	Value
	BFL-CW1500 / BFL-CW2000
Supply Voltage(V)	220±10% VAC 50/60Hz
Placement	Flat, upright, no vibration and impact
Environment Temperature	5~40°C
Relative Humidity	30%RH~70%RH
Electromagnetic Environment	Avoid too strong electromagnetic interference, which may lead to false alarm of laser
Cooling water quality	QBH and even the whole machine need deionized water to prevent scaling. At the absence of deionized water, pure water for Drinking can be used. When the ambient temperature is lower than 0°C, antifreeze (30% volume ratio for alcohol) needs to be added to the cooling water.

Note:

- (1) Never use the tap water or other cooling water with high ion concentration.
- (2) The cooling water shall be replaced timely to prevent microorganism and ions growth.
- (3) It is very easy to be damaged when the QBH getting scaling, and there is no warranty in this case.
- (4) The output of the laser is connected with the cable. Please check the end surface of the quartz head carefully to prevent dust or other pollution. Lens-cleansing paper must be used when cleaning is necessary.
- (5) Never installing the laser output with the processing system when the equipment is power on.
- (6) The protective glasses should be worn all the time.



CAUTION:

- (1) Never make this product work in high humidity (> 95%) ,though the product shave an excellent adaptability to the high humidity environment*
- (2) Never let this product work below the ambient dew point temperature(like the table 2.2)*

Maximum Relative humidity (%)	20	30	40	50	60	70	80	90	95
Room Temperature(°C)	Ambient Dew Point (Td-°C)								
10	-11.9	-7	-0.3	0	2.5	4.8	6.7	8.4	9.2
15	-7.9	-2.3	1.5	4.6	7.3	9.6	11.6	13.4	14.2
20	-3.5	2	6	9	12	14.5	16.5	18	19
25	0.5	6	10.5	14	16.5	19	21	23	24
30	4.6	10.5	15	18.5	21.5	24	26	28	29
35	8.5	15	19.5	23	26	28.5	31	33	34
40	13	20	24	27.5	31	33.5	36	38	39
Temperature range for laser operating									

NO SYMBOL	<p><i>IMPORTANT :</i></p> <p><i>The lifetime of the laser will be shortened and the output power will degrade while the cooling system working at a higher temperature for too long time. Please ensure the cooling system is enough and the temperature is suitable.</i></p>
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2.1.4 Characteristic Parameters

The characteristic parameters of the single module series fiber laser which the power is ranged from 1500W and 3000W are demonstrated in the table.

Parameters of the single module series laser:

Raycus

Laser Source

1500W / 2000W/3000W



Optical Character

Model	1500W(RFL-C020H)	2000W(RFL-C025H)	3000W(RFL-C3000H)
Optical Specifications			
Nominal Output Power (W)	1500±50	2000±50	3000±50
Power Adjust Range(%)	2-100		10-100
Emission Wavelength (nm)	1080±5		
Output Power Instability(%)	<±1		<±1.5
Modulation Frequency(Hz)	1-5000		
Duty Cycle Range	1-100		
Red Guide Laser Power	0.5-1		
Optical Output Characteristics of IQB head			
Fiber Core Diameter	25	50 (with100,200options)	
Numerical Aperture	0.11	0.2	
Beam Quality(M2)	< 1.8	1.5-2	
Delivery Cable Length	10		
Other Characteristics			
Operating Voltage	220	380± 10%V AC/50/60Hz	
Control Mode	Control line/Bluetooth		

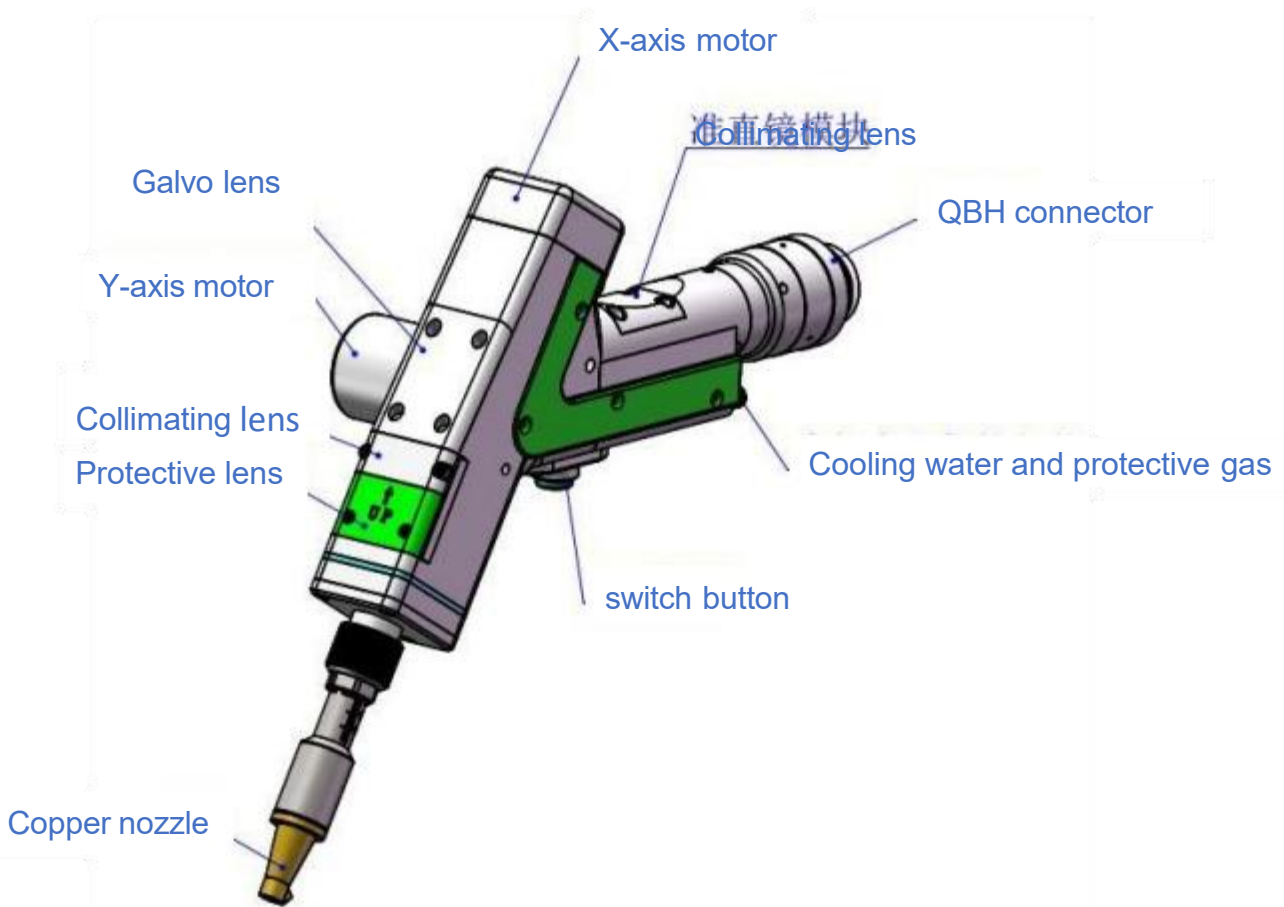


Max. Power Consumption	< 5.4	< 6.5	
Photoelectric Conversion Efficiency	> 33%		
Dimensions	340x390x80	340x390x80	485x172x727
Control Mode			RS-232/AD/Ethernet
Storage Temperature(°C)	-10-60		

2.2 Handheld gun introduction

For more information, please check the "manual for Relfar welding gun".

2.2.1 Handheld gun display



QBH connector	Complete the access and lock of the optical fiber connector
Collimating lens	Collimating lens: Complete the fiber collimation function and collimate the incident laser into a parallel beam.

Galvo-lens module	A component composed of a reflector and a motor is used to vibrate and reflect the collimated parallel laser at a certain angle, changing the direction of the original beam and the shape of the spot.
Focus lens	Focus the reflected beam into a convergent beam with high power density.
Protective lens	The protective glass can protect the focusing lens from the damage of returning slag and prolong the service life of the focus lens.
Copper nozzle/ Scale tube	Guide the focused beam to the work piece, and generate high-speed airflow to protect the molten pool from oxidation to achieve high-quality welding results. You can also adjust the focus distance by adjusting the Scale tube

2.2.2 Configuration parameter

Parameter name	Technical index
Maximum applicable laser power	3000W
Input voltage	220V±10% AC 50/60Hz
Installation environment	Flat, no vibration and impact
Working environment temperature	10~40°C
Working environment humidity	< 70%
Cooling-down method	Hydro cooling

Applicable wavelength	1064nm (± 10 nm)
Welding gas	Nitrogen. Argon. Helium
Alignment lens	D16*4.5/F60
Focus lens	D20*4.5/F150
Reflex	30x14xT2
Protection lens specifications	D18*T2
Maximum air pressure support	15Bar
Focus of vertical adjustment range	± 10 mm
Scan width--welding	0~8mm
Scan Width--cleaning	F150-0~30mm
	F800-0~120mm
The net weight of the welding gun	0.75kg

2.3 Wire feeder introduction



Model	FWS-01A (single wire)	FWS-02A (dual wire)
Rated input	220±5% 50/60hz	
Rated wire feed speed	80mm/s	
Applicable welding wire	2mm max	
Suitable for welding wire disc	Weight :<25kg	
Net weight	16.2kg	22.6kg
size	560mm*240mm*472mm	605mm*398mm*472mm

3. Laser installation guide

3.1 Remove the wood box :

Machines are packaged in wooden boxes, while wire feeders are packaged in cardboard boxes. If there are any signs of external damage to the packaging, please check if the unit is

damaged and immediately notify the shipping agent Reason. When you remove the unit from the packaging box, please be particularly careful to ensure that the optical fiber is not broken or damaged. The system documentation includes a comprehensive packing list. After receiving the product, please check all items against this list.

If any items are lost or the unit is significantly damaged, please contact us immediately. If there is obvious damage or suspicion to the crew Seemingly damaged, do not attempt to install or operate the laser device under any circumstances.

Laser is a precision and valuable item. please follow the following steps to disassemble and assemble the packaging box:

- (1) Place the equipment of this product on a flat surface according to the packaging box label.
- (2) The top cover packing box shall be removed step by step according to the identification of the top cover packing box. After removal, the top foam baffle shall be removed.
- (3) The laser is connected to the fiber optic cable of the gun head, please be careful to remove it and ensure the bending radius of the fiber optic cable armor $>175\text{mm}$.
- (4) Remove the foam shield and take out the supporting items.
- (5) Please check the accessories against the packing list.
- (6) Please keep all items unpacked properly to prevent future transportation or storage needs.



Machine wooden box



Wire feeder carton box

3.1.1 Package list :

Packing List for 4 IN 1 Welding Machine			
 <p>1XCWFL - 1500ANW02 Water Chiller (1000W/2000W /3000W Can be selected)</p>	 <p>LCD Display Screen</p>	 <p>Raycus RFL-1500W Laser Source (1000W/2000W/3000W Can be Selected)</p>	 <p>4in1 Laser Welding Gun</p>
 <p>8Pcs Welding Nozzle</p>	 <p>1Pcs D20 Cleaning lens</p>	 <p>5Pcs Protective lenses</p>	 <p>1X Glasses</p>
 <p>Safe Clip</p>	 <p>1X Power Cable</p>	 <p>1X Cable for Laser Source</p>	 <p>4X Wheels</p>

Packing List for wire feeder			
 <p>Wire feeder</p>	 <p>1.2mm ER304 Steel Welding Wire</p>	 <p>Wire Feed Wheel</p>	 <p>4 Pcs Wire Nozzle</p>
 <p>wrench</p>			

3.1.2 Preparation work before startup

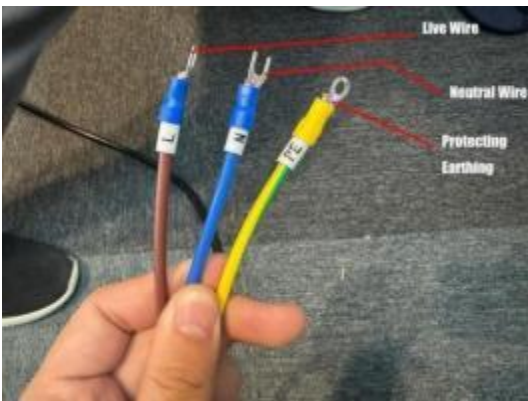
- (1) Fill the water tank with pure water until the water level gauge on the back of the machine reaches the green mark.



- (2) Machine is 220V 50Hz Connect the power cord to the electrical box.

Connect the power cord to the specified voltage and phase, L=220VAC, N=0VAC, PE=ground.

Ensure proper wiring



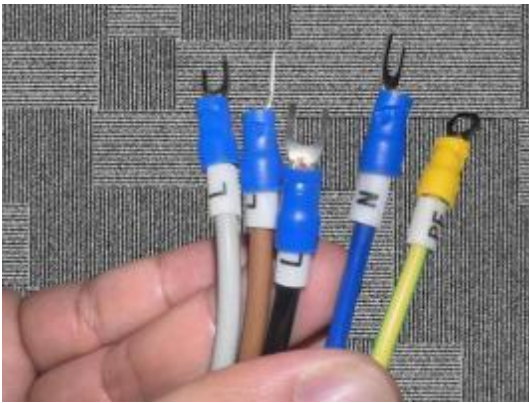
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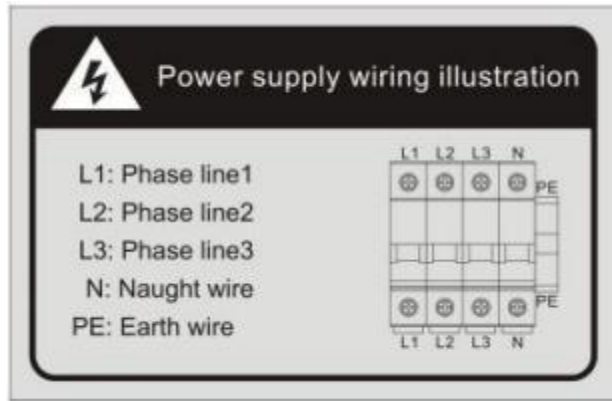
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- (3) Machine is 380V 50Hz Connect the power cord to the electrical box.

Connect the power cord to the electrical box (see ③, ④, ⑤)



③



④



⑤

(4) Connecting the Argon gas / Nitrogen gas, The flow rate of the gas needs to reach 15L/min)

(Noticed: When using welding and cutting function, need to use with air pump. The air pump contains argon which can not be shipped with machine, so customer need to prepare themselves. **Recommend use above 99.9% pure Argon 4.6, it will influence welding effect.**)



(5) Turn the knob on the air pressure gauge on the back of the machine so that the pressure index of the pressure reducing valve reaches 0.2Mpa.



3.1.3 Wire feeder connection :

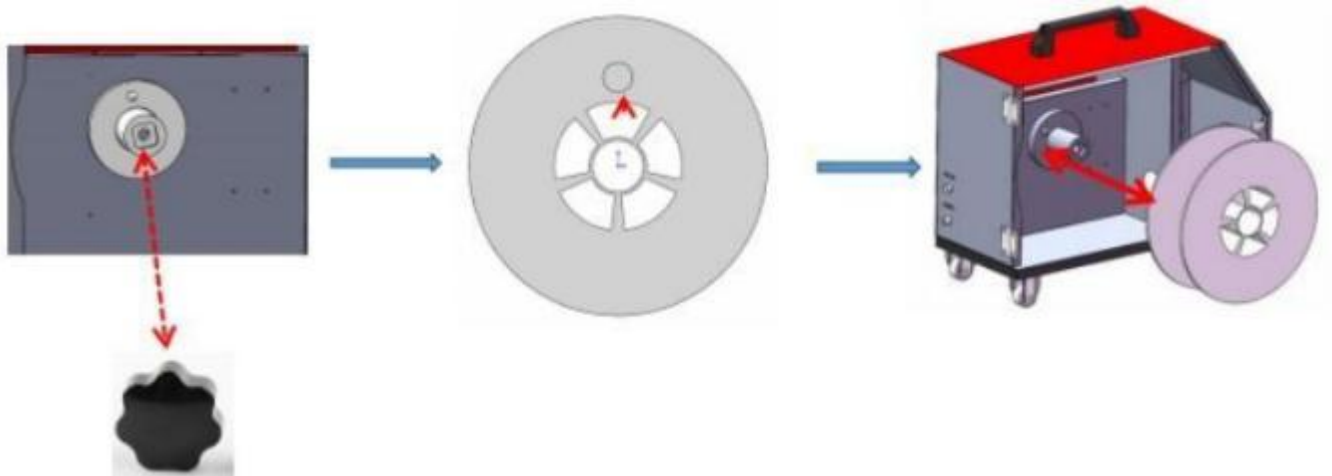
(1) Installation of the welding wire disc

- It is forbidden to use flux-cored wire, and the selection of welding wire shall be consistent with the material to be welded.

Step 1: Rotate counterclockwise to loosen the nut.

Step 2: Install the wire feeding disc. There is a small hole in the middle that aligns with the blocking wheel during installation. Pay attention to the orientation of the wire during installation. The wire rotates counterclockwise and is connected to the wire feeding wheel in a horizontal straight line.

Step 3: Tighten the screw feeding disc with the nut.



(2) Select wire feeding wheel specifications

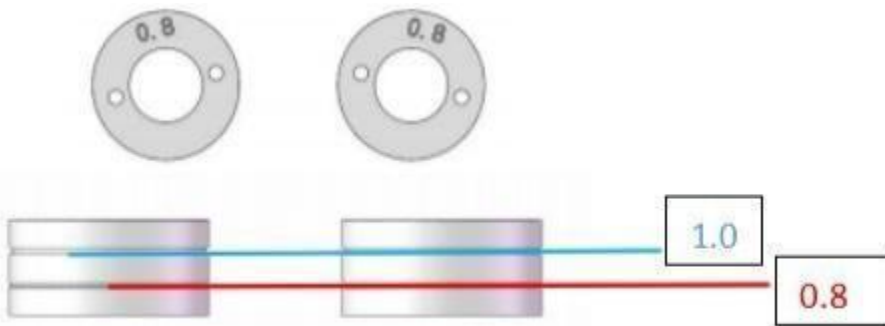
2 wire feeding wheels for 1 set.

There are two small grooves on the wire feeding wheel, which need to be matched one by one during installation.

Users can adjust the groove width of the wire feeding wheel to 1:1 according to the diameter of the wire core used.

Usually, the wire feeding wheel has two small grooves of different specifications, which can be used for both purposes as shown in the figure below.

During installation, the two small grooves should correspond to the same horizontal line.

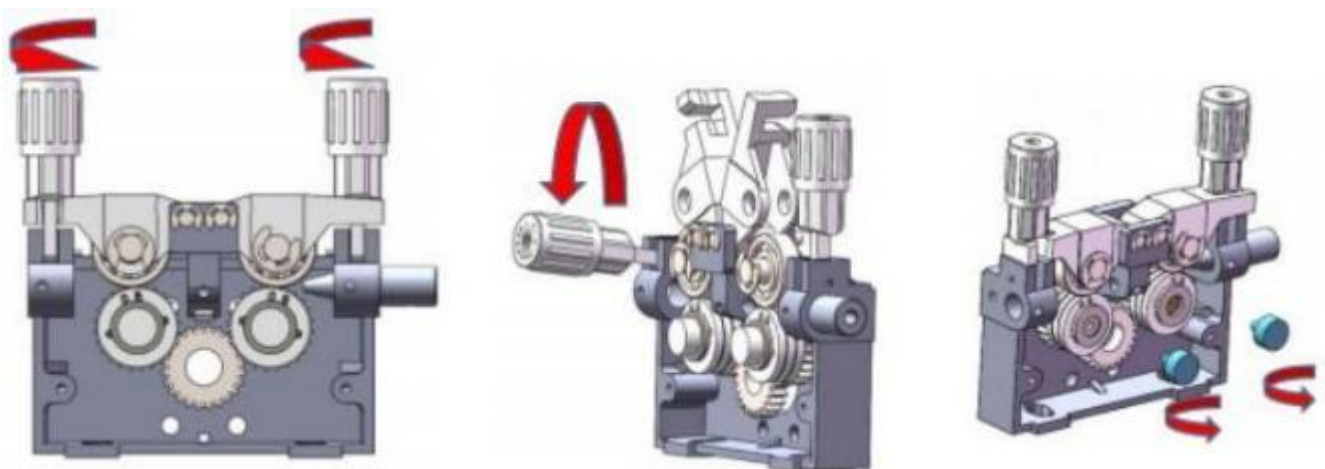


(3) Replace the wire feeding wheel

Step 1: Rotate and release the left and right locking screw handles,

Step 2: Swing forward 90 degrees and release downwards.

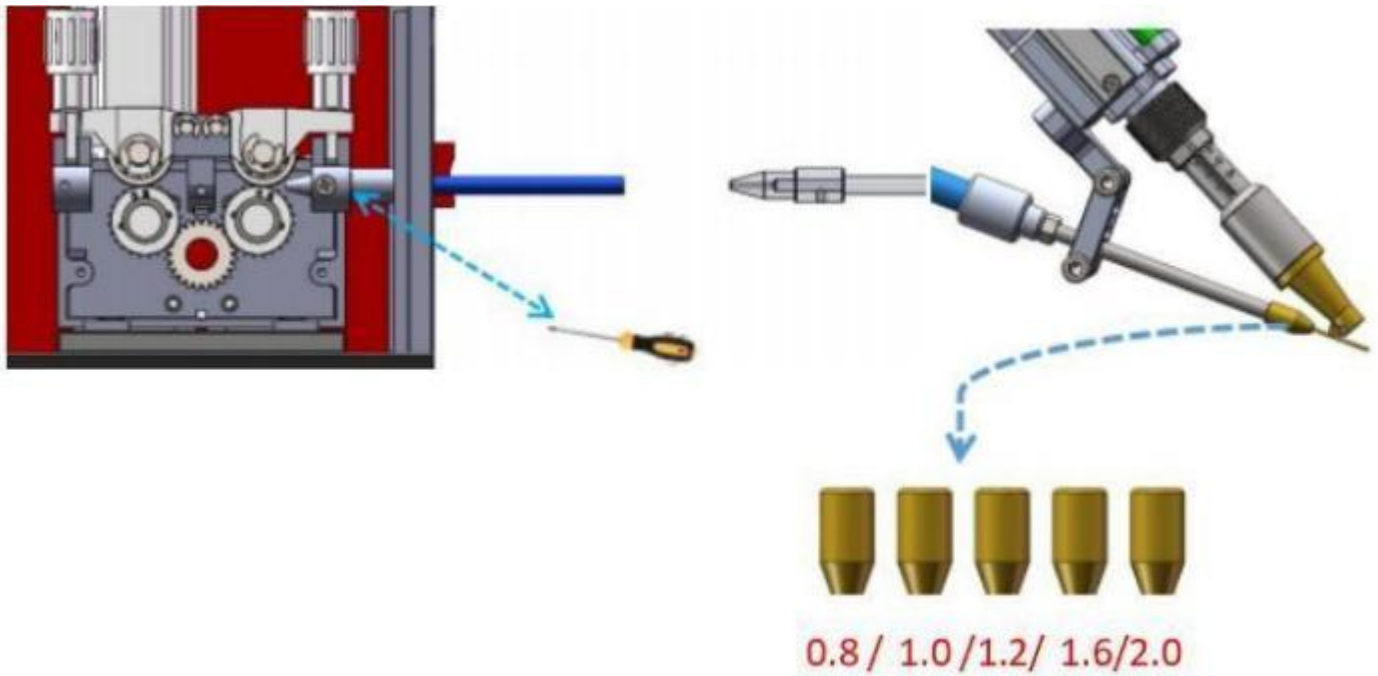
Step 3: Rotate and loosen the fastening screw nut of the wire feeding wheel, then remove and replace it



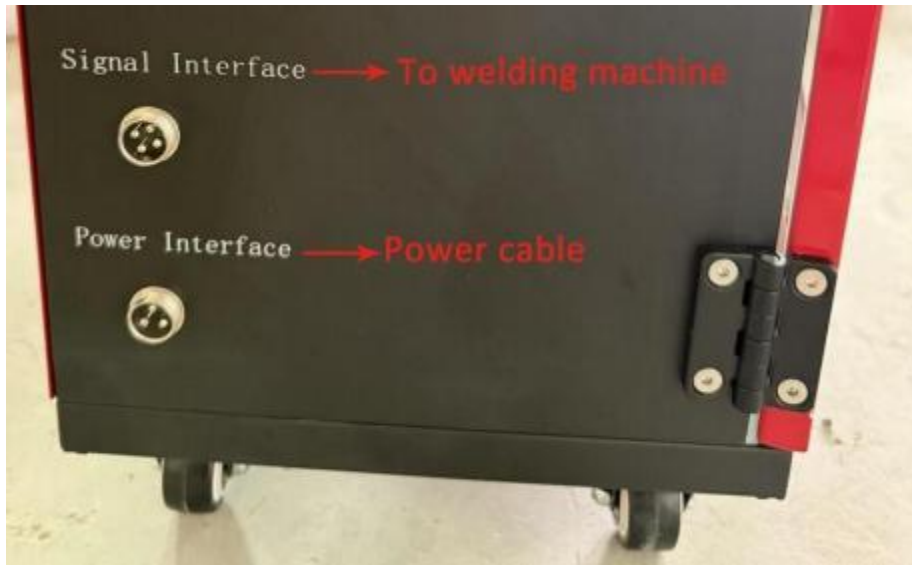
(4) Installation of wire feed pipe

Align the wire tube directly with the wire outlet for installation, and tighten the screws to fix it.

The wire nozzle is matched with a copper nozzle at a ratio of 1:1 based on the diameter of the wire core selected by the customer.



(5) Connect the wire feeder to welding machine



3.1.4 Power on

- (1) Toggle the air switch on the back of the machine up, then flip the switch on the machine's control panel, the screen lights up, and the machine starts to run.



- (2) **Safe clip** : Before turning on the laser, the safety clip must be clamped in the correct

position to ensure that it forms a circuit with the welding head.

In welding mode, the safety clip is clamped on the welded work piece.



In cleaning and cutting mode, the safety clip is clamped on the welding gun.

4. User Guide

Overview of 4 in 1 Laser Welding Machine:

1. **Laser welding:** Supports the welding of various materials such as metal, carbon steel, stainless steel, aluminum alloy, etc. It adopts laser beam fusion technology, with high precision and small heat affected zone, and the weld seam is firm and beautiful.
2. **Laser cleaning:** Quickly removes rust, oil stains, oxides and other pollutants from metal surfaces without touching the work piece, making it environmentally friendly and efficient.
3. **Laser cutting:** Suitable for cutting metal sheets, with flexible operation and widely used in fields such as hardware and sheet metal manufacturing.
4. **Weld cleaning:** After welding, rust removal and oxidation layer removal should be carried out on the weld to improve welding quality.

4.1. Welding Mode

4.1.1 :Select the cooper nozzle

Different copper nozzle applies to different materials welding.

For example, AS-12 copper nozzle mainly used for welding wire 1.0mm at **inner Angle** feed (**AS-12 basic universal**);

AS-12: The filaments below 1.2mm are generally used for **flat Angle, inner Angle and outer Angle welding**;

BS-16: The filaments below 1.6mm are generally used for **flat Angle, inner Angle and outer Angle welding**;

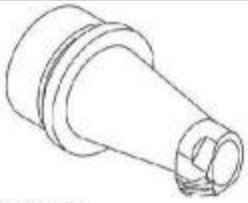
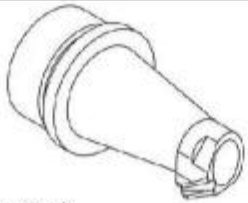
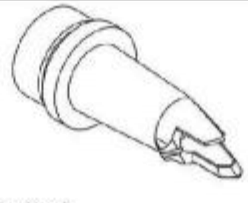


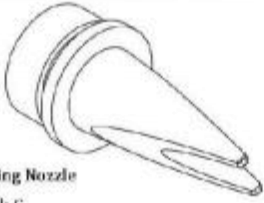
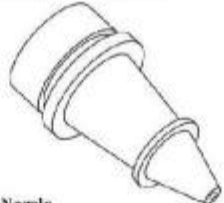

CS-12: The filaments below 1.2mm are generally used for **outer Angle welding**;

FS-16: The filaments below 1.6mm are generally used for **outer Angle welding**;

C: For non-wire feeding, used for **outer corner welding**;

ES-12: Filaments below 1.2mm are commonly used for **outer corner sheet welding**.

Handheld Laser Welding Head Copper Nozzle

 <p>Welding Nozzle Model: AS-12 Wire Feeding: 0.8mm, 1.0mm, 1.2mm</p>	 <p>Welding Nozzle Model: BS-16 Wire Feeding: 1.6mm</p>	 <p>Welding Nozzle Model: CS-12 Wire Feeding: 0.8mm, 1.0mm, 1.2mm</p>	 <p>Welding Nozzle Model: ES-12 Wire Feeding: 0.8mm, 1.0mm, 1.2mm</p>
 <p>Welding Nozzle Model: FS-12 Wire Feeding: 1.6mm</p>	 <p>Welding Nozzle Model: C Wire Feeding: No Wire Feeding (For Weld Seam Cleaning Mode)</p>	 <p>Cutting Nozzle Single Layer 1.5mm For Cutting Mode</p>	 <p>Scale Tube For Adjust Focal Length</p>

4.1.2 : Wire selection

(1) According to the width of the weld seam choose the diameter of the welding wire.

- Width of weld seam < 1.2mm, Recommend 0.8mm welding wire
- Width of weld seam < 1.5mm, Recommend 1.0mm welding wire
- Width of weld seam < 2.0mm, Recommend 1.2mm welding wire
- Width of weld seam < 3.0mm, Recommend 1.6mm welding wire

When weld seam is over 4mm , recommend to use Dual wire feeder

(2) According to the different welding plates, we need to use different welding wires (gas protected solid core wire).

- Stainless steel = ER304 Stainless steel welding wire

- Carbon steel / Galvanized sheet = Iron wire
- Aluminum = Aluminum wire (Aluminum welding wire is recommended to use alloy aluminum of 5 series or above, which has high hardness and is not easy to get stuck)

4.1.3 : Setting welding parameter in control board



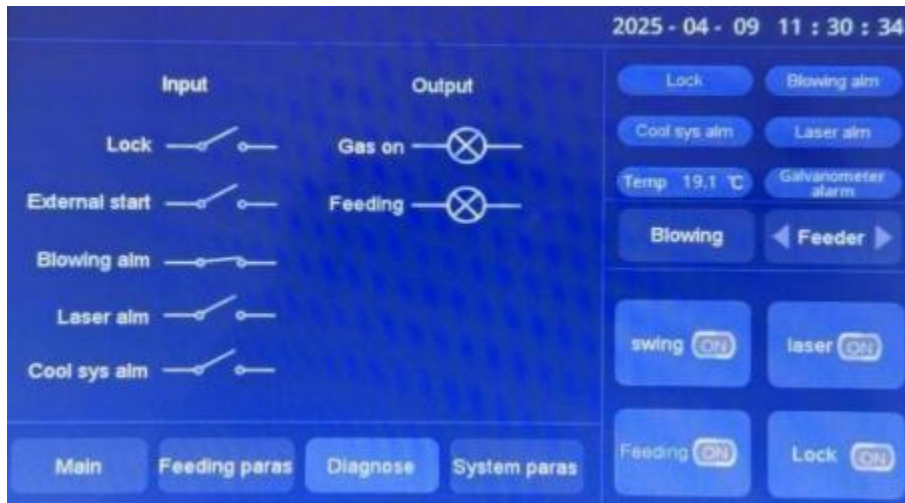
1. [Swing OFF]: This button allows the lens motor to swing on or off.
2. [Lock OFF]: This button can activate or deactivate the safety lock. When the safety lock is enabled, if the welding head does not come into contact with the welding material during welding, the laser will stop emitting.
3. [Feeding OFF]: This button can be used to control whether automatic wire feeding is performed during welding. Automatic wire feeding will only occur when light emission is allowed
4. [Laser OFF]: This button allows or prohibits the emission of laser light.
5. [Alarm Area]: After the alarm signal is enabled, the real-time display of the protection gas under pressure alarm, cold water flow alarm, laser alarm, and temperature alarm status will be

displayed. If the safety lock is enabled, the safety lock status will be displayed in real time; When the alarm signal is not triggered, the corresponding alarm state is blue before it; When an alarm is generated, the corresponding alarm icon will flash alternately in red and blue.

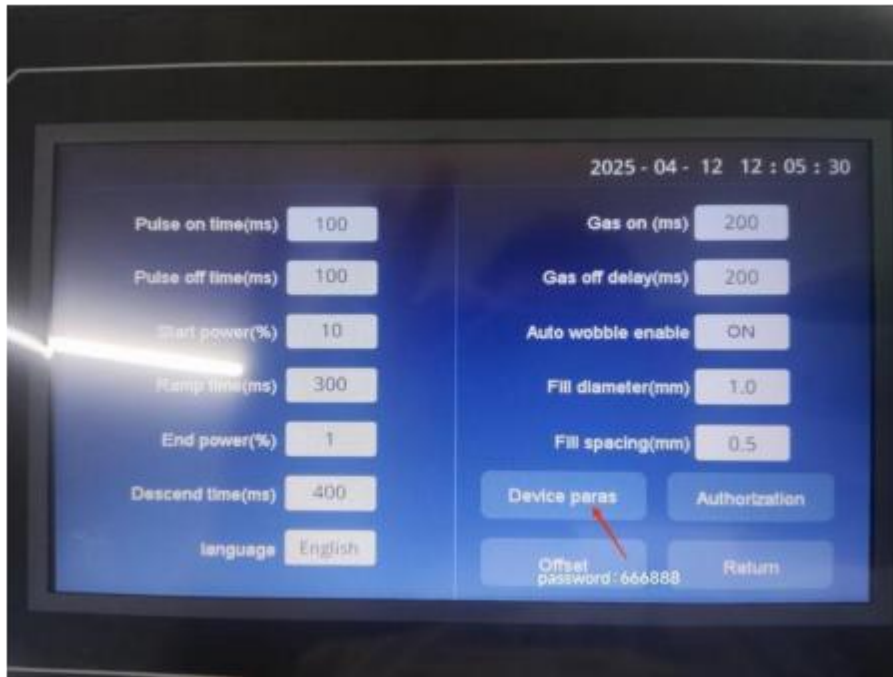
6. [Feeding Paras]:You can control the wire feeder on this interface



7. [Diagnose]:This is used to monitor the alarm situation of the machine. When an alarm occurs here, please contact us for after-sales service



8. [System paras]We do not recommend adjusting the paras here, except for language. Similarly, we do not recommend entering device paragraphs as modifying their parameters can easily lead to errors and cause machine damage.



9. [Blowing] [Feeder]: Manually perform blowing tests and wire feeding and withdrawal tests on the wire feeder. For example, if the manual blowing area is frequently pressed, the blowing will continue continuously. If the manual blowing area is released, the blowing will be turned off. If the manual wire feeding and drawing are performed, the corresponding small triangular arrows will be pressed frequently.

4.1.4 Welding Parameters

Laser Welding Parameter (reference)								
Materials	Thickness /mm	Scan Speed mm/s	Scan width/mm	Peak power/W	Duty cycle	Frequency/ Hz	Wire feed speed cm/s	Welding wire
Carbon steel	1	300	3	350	100	2000	60	1
	2	300	3	700	100	2000	60	1.2
	3	300	3	1100	100	2000	60	1.2
	4	300	3	1500	100	2000	60	1.6
	5	220	3	1800	100	2000	50	1.6
	6	220	3	2200	100	2000	50	1.6
	8	220	3	3000	100	2000	40	2

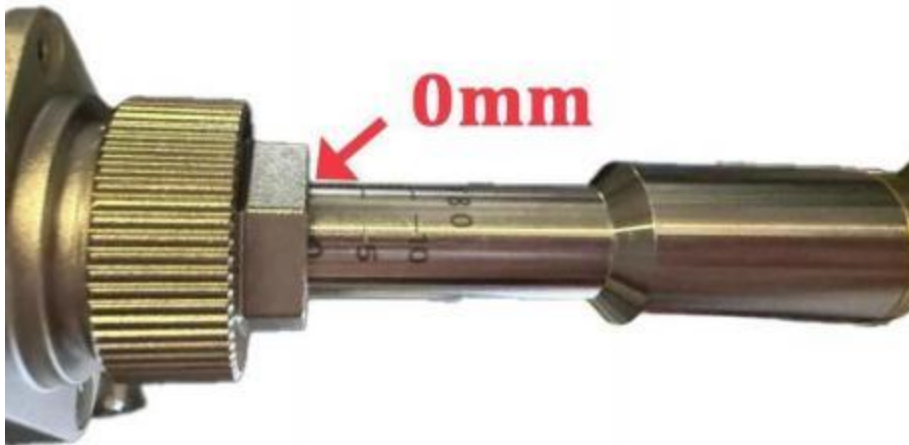
Aluminum	1	300	3	500	100	2000	60	ER5356 1.0
	2	300	3	800	100	2000	60	ER5356 1.2
	3	300	3	1400	100	2000	60	ER5356 1.2
	4	300	3	1800	100	2000	60	ER5356 1.6
	5	220	3	2000	100	2000	50	ER5356 1.6
Stainless steel	0.5	300	3	260	100	2000	80	ER304 0.8
	0.8	300	3	300	100	2000	80	ER304 0.8
	1	300	3	350	100	2000	60	ER304 1.0
	2	300	3	700	100	2000	60	ER304 1.0
	3	300	3	1100	100	2000	60	ER304 1.2
	4	300	3	1500	100	2000	60	ER304 1.2
	5	220	3	1800	100	2000	50	ER304 1.6
	6	220	3	2200	100	2000	50	ER304 1.6
	8	220	3	3000	100	2000	40	ER304 2.0

The following is laboratory data on welding and cutting, for reference only. Please refer to the actual situation for details

Continuous Laser	1500W	2000W
Welding thickness of carbon steel and stainless steel	0.35-4mm (MAX 4.5mm)	0.35-5.5mm(MAX 6mm)
Welding thickness of Aluminum	3mm (MAX 3.5mm)	4mm (MAX 4.5mm)

4.1.5 : Start Welding

(1) Adjust the scale tube with 0mm, which is the best focal length

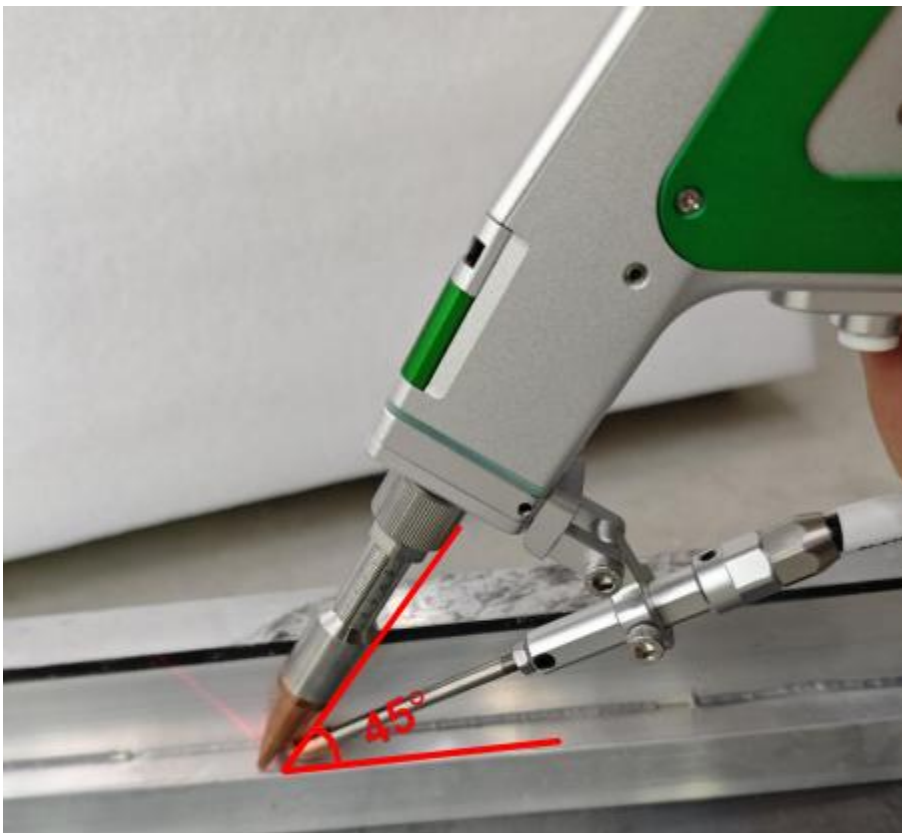


(2) Turn on the “Laser Switch--Emergency switch (Keep the switch in a pop-up state)”.

When you turn off the machine, “Emergency switch--Laser Switch”

(3) Double click laser switch on welding gun and keep click the button, start welding, and safety clip is clamp on the work piece.

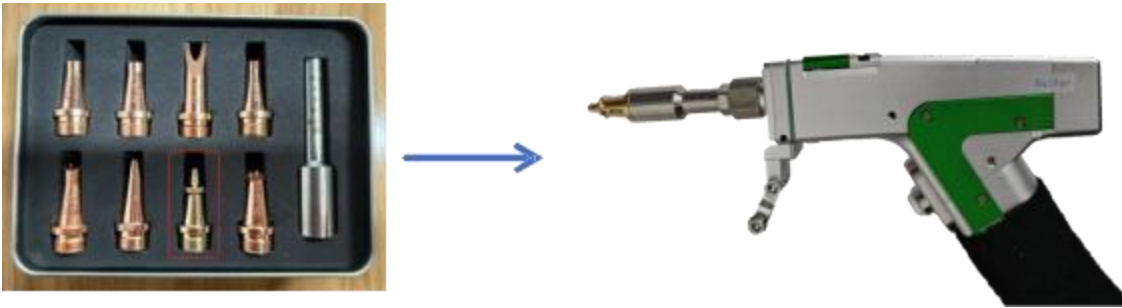
(4) When welding, keep the welding head at a 45 ° with work piece you welding.



4.2 Cutting Mode

4.2.1 Change the cutting nozzle

- Please replace the cutting copper nozzle



4.2.2 Parameter setting

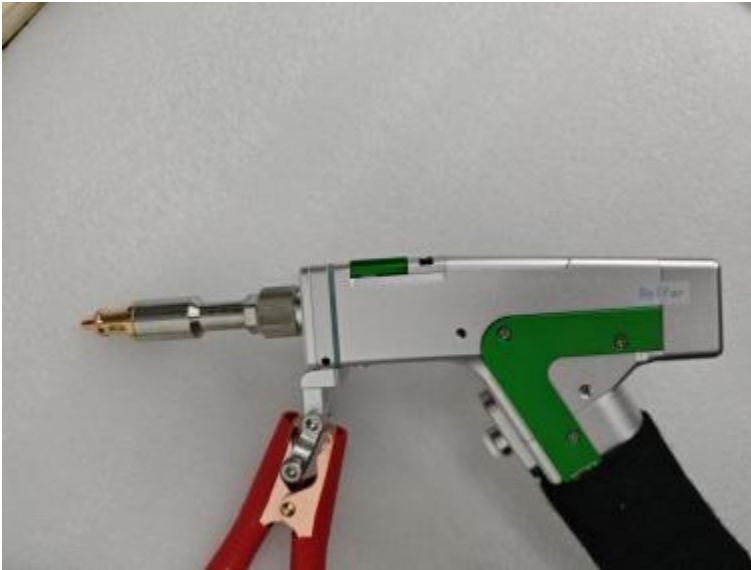


- Set “Wobble length” as 0mm, “Peak” laser power” as your need, the max is the machine power.

For example,if your machine is 1500W, the max peak power is 1500W.

4.2.3 Start Cutting

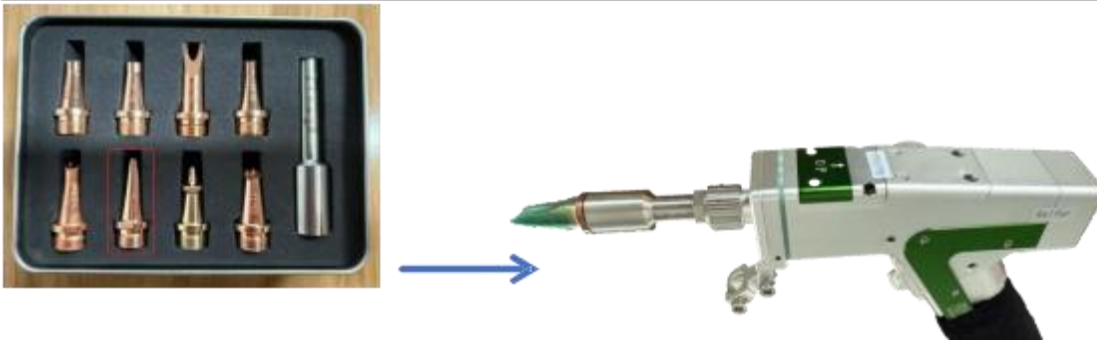
- Clamp the safety clip onto the welding gun
- Double click laser switch on welding gun and keep click the button, start welding



4.3 Welding seam cleaning mode

4.3.1 Change the welding seam cleaning nozzle

Please replace the welding seam cleaning nozzle, Nozzle model:C



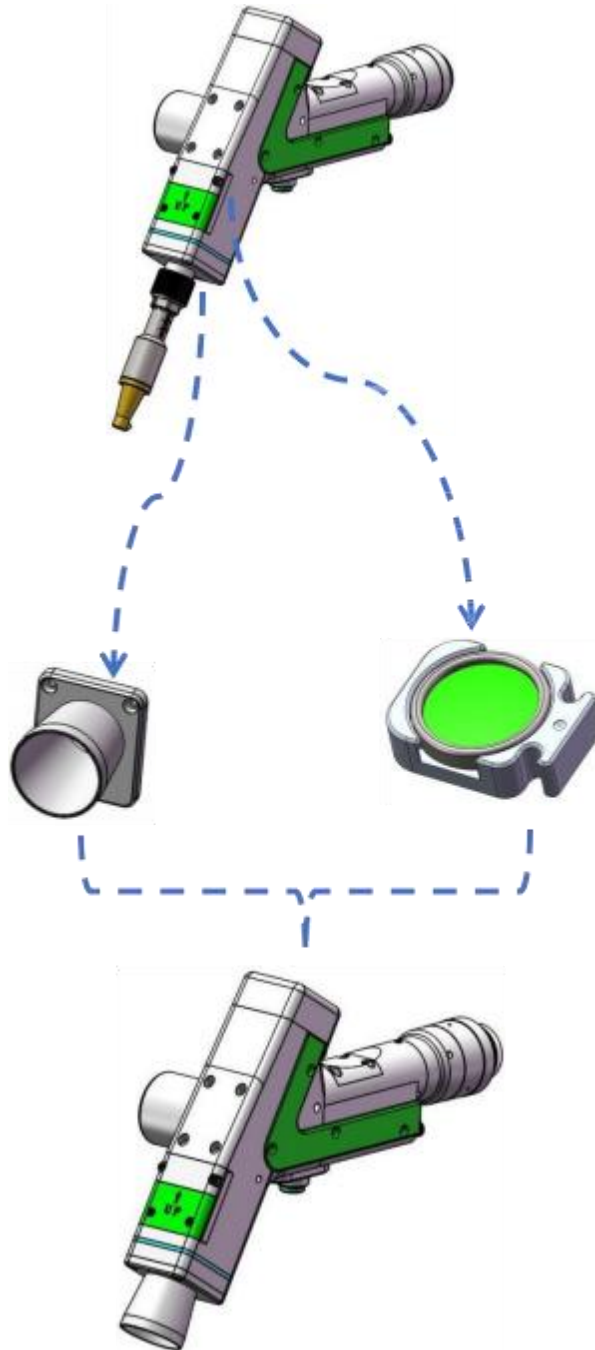
4.3.2 Parameter setting



Click the weld beam cleaning, the max Wobble length would be 12mm

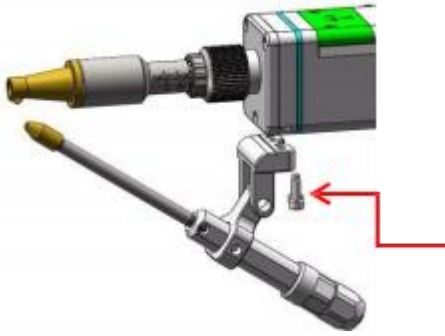
4.4 Cleaning mode

4.4.1 replace to cleaning gun head



【 Wire feeding bracket module 】 : Loosen the 2-M3 screw and remove the module as shown in Page1

【 Copper nozzle connector 】 : Loosen the 3-M2.5 screws and remove the module as shown in



Page 1

Installation and replacement

【 Sheath Installation 】 : Install in the order of 1 and 2.

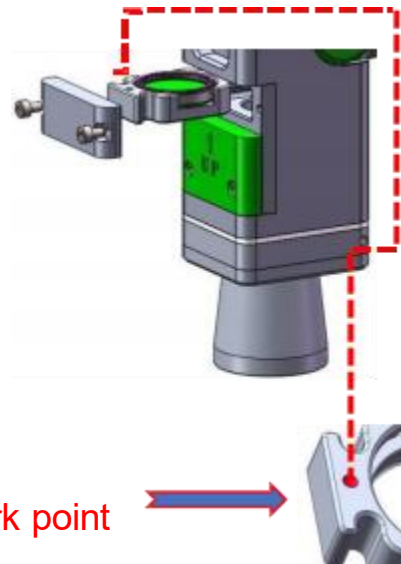
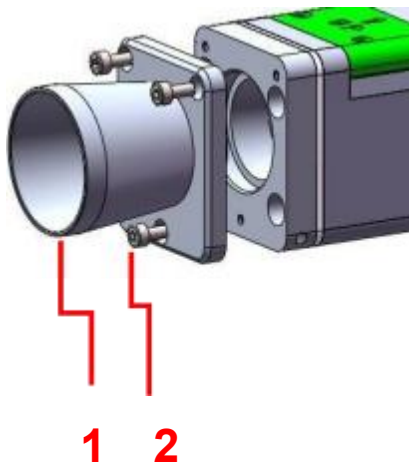
【 Installation of Focusing Drawer 】 : Loosen the 2-M2.5 screw and directly extract the focusing module.

When replacing and cleaning the focusing module, pay attention to the small point in the middle being above.

Replace the welding focusing module with dust-proof protection, making it easy to use and replace.



Page 2



Mark point

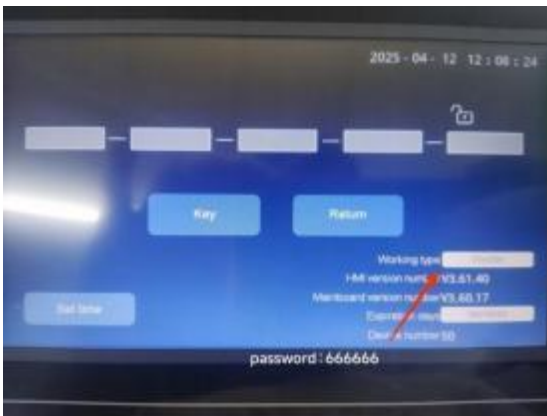
4.4.2 Mode switch in software and parameters setting



①



②



③



④



⑤



⑥

① This is the system you enter upon startup, which is use for welding.

When you click on System Paras, you can enter ② interface.

②Here is parameters which not recommend to adjust, the only function is choose working type.

③This interface is used for switch working modes, the password is 666666

④Next, you can switch the working mode.

⑤The system will remind you to replace the corresponding accessories.

Please note that a reboot is required after switching modes to prevent accidental operation.

⑥This is our cleaning interface. When you click stop cleaning, it will switch to ready for cleaning status and display a red laser icon, indicating that you can start working.

4.4.3 Start Cleaning

- Clamp the safety clip onto the welding gun
- Double click laser switch on welding gun and keep click the button, start cleaning
- **Focus adjustment:** Move the welding gun up and down, and when the laser is strongest, it is the optimal focal length.

5. Machine maintenance and upkeep

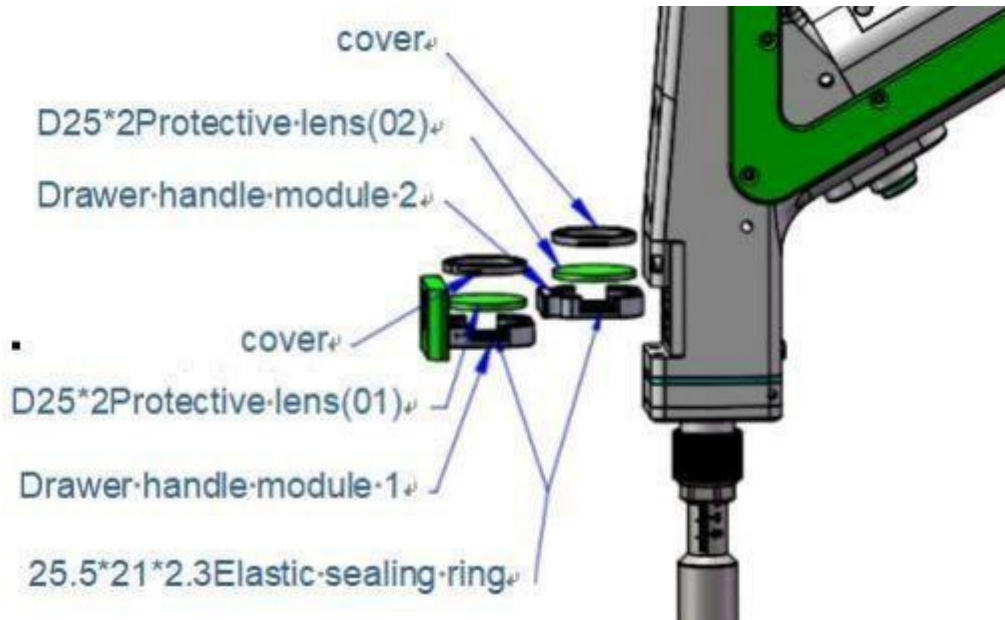
5.1 Maintenance for protective lens

5.1.1 When need replace protective lenses:

- Check the protective lens. If there is obvious burning on the surface of the protective lens, replace it directly.
- Check the white accumulating sealing ring under the protective lens. (If there is any

scratch or deformation of the accumulating seal ring, it cannot be used and must be replaced immediately.

5.1.2 How to replace protective lenses:



Disassembly and assembly of protective lenses

The disassembly process needs to be completed in a clean place, and dust-free gloves or finger cots must be worn when disassembling lenses.

Replace protective lens 01

1. hold both sides of the handle of the green drawer module 1 with your hands and pull out the protective lens horizontally.
Pay attention to dust prevention, seal the exposed window on the cavity with masking paper to prevent dust from entering and contaminating the cavity, and then replace the protective lens.
2. :Gently press down and rotate the cover by 90 degrees.
When the two ear ends and two slots are aligned, release it. Remove the cover and replace the protective lens. Replace protective lens 02
3. Take out the green drawer handle module 1, and horizontally pull out the handle module 2.
Pay attention to dust prevention, seal the exposed window on the cavity with masking paper to prevent dust from entering and contaminating the cavity, and then replace the protective lens. Gently press down and rotate the cover by 90 degrees.

When the two ear ends and two slots are aligned, release it. Remove the cover and replace the protective lens.

5.2 When need add antifreeze

Cooling system water temperature setting:

Water cooler 25 ± 1 °C (no need to change in summer)

Coolant requirements:

- Purified water is used as cooling water, and it is recommended to use purified drinking water and replaced every month.
- To prevent mold growth in the water in the chiller from causing pipe blockage, it is recommended to add ethanol with a volume ratio of 10% when adding purified water.
- When the ambient temperature of the equipment is between - 10 °C and 0 °C, the ethanol solution with a volume ratio of 30% must be used and replaced every two months.
- When the ambient temperature of the equipment is lower than - 10 °C, the dual-system (with heating function at the same time) water chiller must be used, and the uninterrupted operation of the cooling system must be guaranteed.

Other requirements for the cooling system:

- When starting the cooling system for the first time, check the entire water system and connections for water leaks. The external water pipes must be installed and connected according to the water inlet (IN) and water outlet (OUT) marked by the laser. Otherwise, the laser may not work properly.
- If the laser is not used for a long time, the cooling water inside the cooling system and the laser should be drained, otherwise the laser will be irrecoverable damaged.

Warning

- Set the water temperature of the cooling system correctly according to the ambient temperature.
- If the water temperature is set too high, the laser will not work properly.
- If the water temperature is set too low, condensed water will be generated inside the laser or in the laser output optical cable, which will cause irreparable damage to the laser.
- Before turning on the laser, it is necessary to ensure that the cooling system operates normally and that the water temperature reaches a suitable temperature.

6. Q&A

6.1 No laser come out

(1) Check if gas supply is connected, and set pressure reducing valve reaches 0.2Mpa.

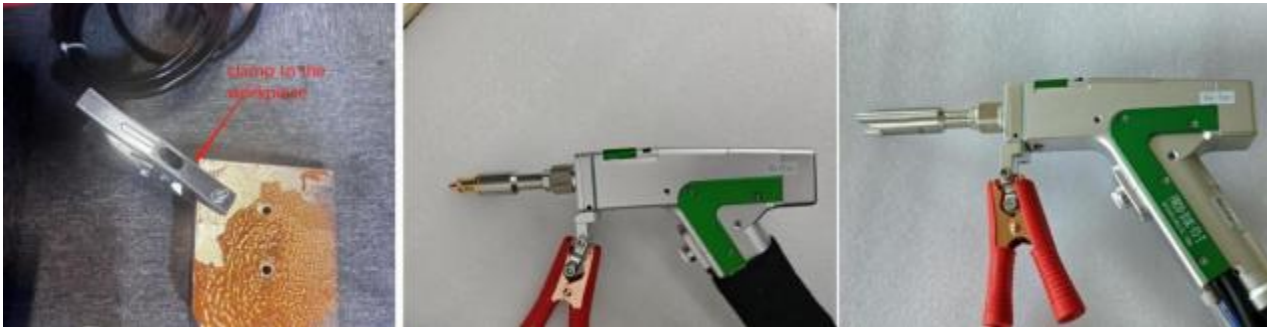


(2) Check if water temperature reaches 20°C via the temperature display



(3) Check if Laser enable is not turned on.

- (4) Check if grounding clamp properly attached (During welding, clamp to the work piece, during cleaning and cutting, clamp to the metal part of the gun.)



- (5) Laser malfunction (Green light = normal; Red/Yellow light = fault) – contact us to get the app to check the error code



6.2 The welding machine can not continuously welding

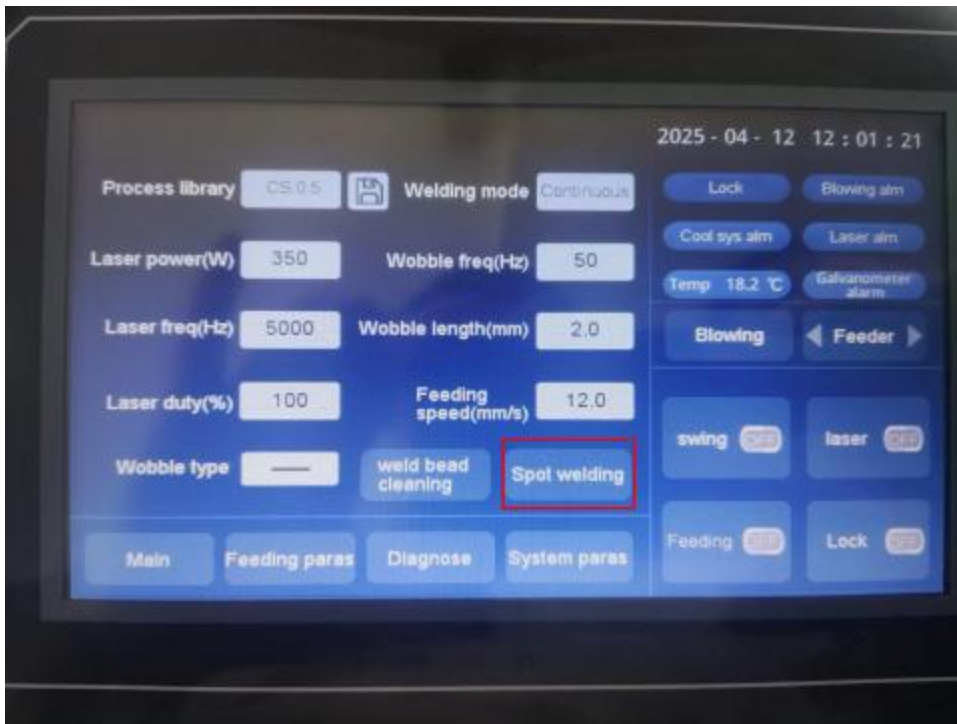
- (1) The welding material does not conduct electricity well

Solution: Clamp the safety clip to the metal position of the gun head to test whether the light can be emitted normally



(2) See if the system set to “spot welding” mode.

Solution: Change the welding mode to :Continuity



6.3 The welding is not firm or with ugly result.

(1) Check whether the gas is connected.

(2) Check whether the parameter settings are incorrect. If the welding is weak, then

increase the power or slow down the speed.

(3) Check whether the welding material is selected correctly, such as welding object is steel 304, then choose the steel 304 welding wire.

(4) Check whether the focal length is incorrect.

(5) Check whether the protective lens is damaged.