Scotle Raycus SUP 4 IN 1 Handheld Laser Welding Machine Manual

Shenzhen Scotle Technology Group Limited
No.14, 2F, Building Y1,Bantian Street Creative Park, Longgang District, Shenzhen, Guangdong,518129 China
www.scotle.com

catalogue

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.

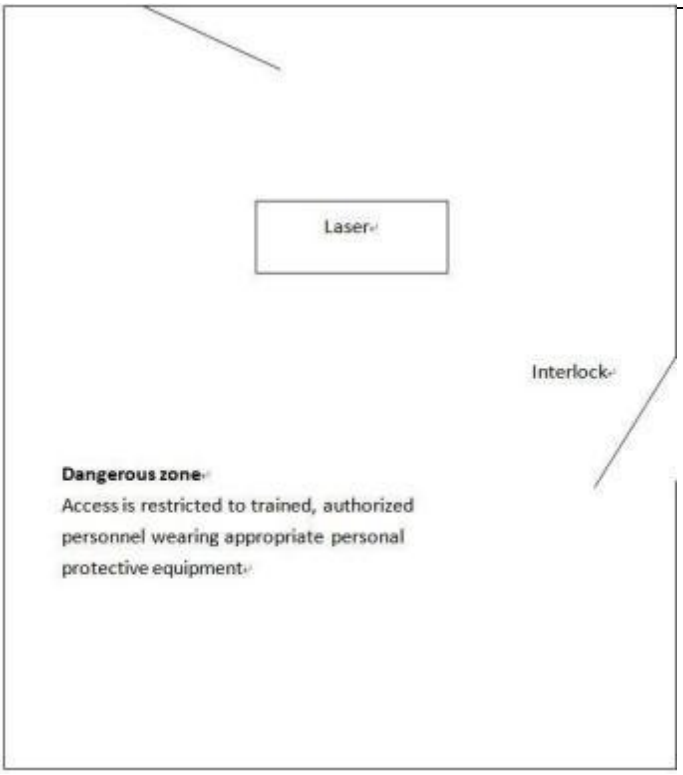
(2) For the installation of the laser room, should follow the guidance of the professional design, installation team, in accordance with the drawings.

(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.


Laser
Interlock
Dangerous zone
Access is restricted to trained, authorized personnel wearing appropriate personal protective equipment

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:

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

1.5 EU Agency Information

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: huizhoushihuiyangquqiuchangjiedaoxihucunweipangtianhaichuangxinkejiyuanAdong5lou 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
	**WARNING :** ***Refers to a potential hazard that may leads to a personal injury or death.***
	**CAUTION :** ***Refers to a potential hazard on product, or a potential physical injury on personnel***
NO SYMBOL	**IMPORTANT :** ***Refers to any information regarding the operation of the product. Please do not overlook this information.***

2.1.2 Laser Classification

This series of lasers emit invisible laser radiation around a wavelength of 1080 ± 3nm.

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.

	**WARNING :** ***The laser safety protective glasses are selected according to the wavelengths ofthe 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℃
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℃, 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	***IMPORTANT :*** ***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.***

2.1.4 Characteristic Parameters

The characteristic parameters of the single module series fiber laser which the power is ranged from 1500W and 2000W are demonstrated in the table.

Parameters of the single module series laser:

Raycus Laser Source

1500W / 2000W/3000W

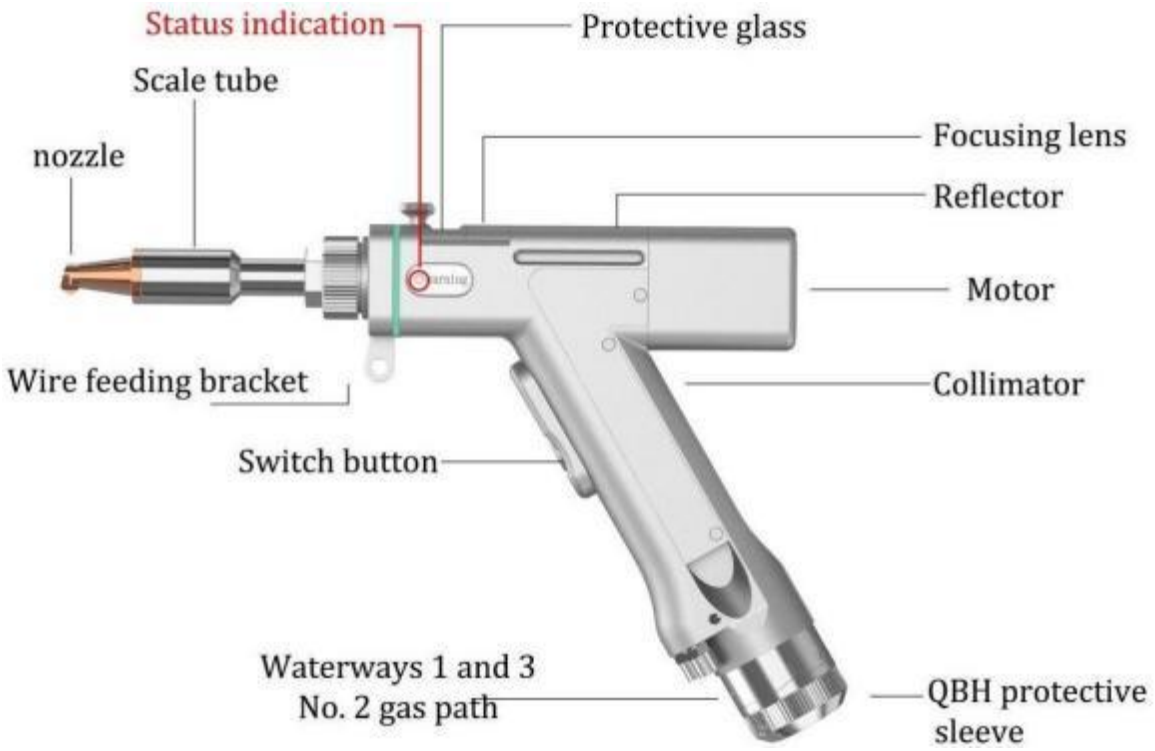
Optical Character			
Model	1500W(RFL-C020H)	2000W(RFL-C025H)	3000W(RFL-C3000S)
Optical Specifications			
Nominal Output Power (W)	1500±50	2000±50	3000±50
Power Adjust Range(%)	2-100		10-100
Emission Wavelength (nm)	1080±5		
Output Power Instability(%)	<±1		<±1.5
Modulation Frequency(Hz)	1-5000		
Duty Cycle Range	1-100		
Red Guide Laser Power	0.5-1		
Optical Output Charactistics of IQB head			
Fiber Core Diameter	25		50
Numerical Aperture	0.11		0.2

Beam Quality(M2)	< 1.8		1.5-2
Delivery Cable Length	20		
Other Characteristics			
Operating Voltage	220± 10%V AC/50/60Hz		380± 10%V AC/50/60Hz
Control Mode	Control line/Bluetooth		
Max. Power Consumption	< 5.4	< 6.5	
Photoelectric ConversionEfficiency	>33%		
Dimensions	340x390x80	340x390x80	485x172x727
Control Mode			RS-232/AD/Ethernet
Storage Temperature(℃)	-10-60		

2.2 Handheld gun introduction

For more information, please check the ”manual for SUP 23T 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 glass	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℃
Working environment humidity	＜70%
Cooling-down method	Hydro cooling
Applicable wavelength	1064nm（±10nm）
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	±10mm
Scan width--welding	0~8mm
Scan Width--cleaning	F150-0~30mm
	F800-0~120mm
The net weight of the welding gun	0.75kg

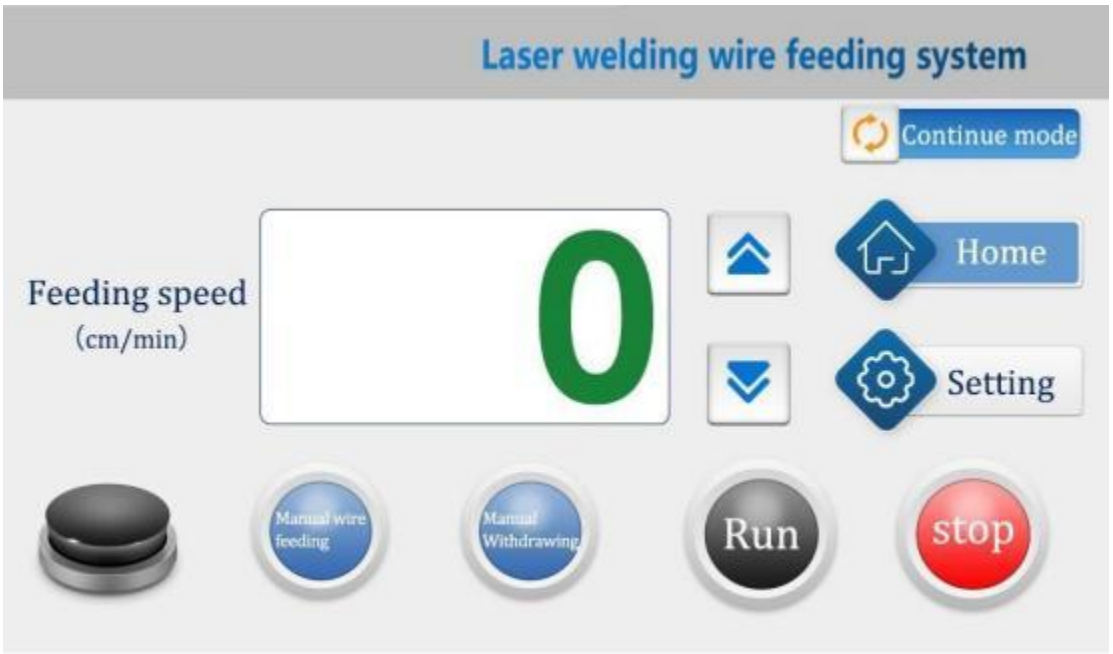
2.3 Wire feeder introduction

2.3.1 Technical Parameters：

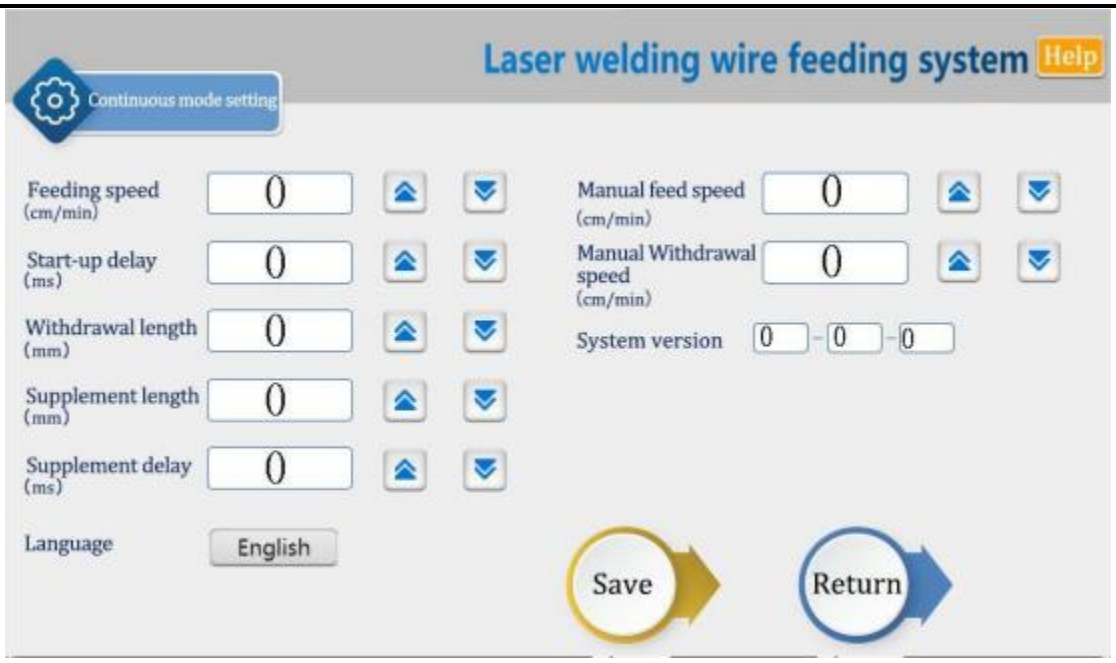
Model	SUP-AMF-A	SUP-AMF-D
Rated input	220±5% 50/60hz	220±5% 50/60hz
Rated wire feed speed	15~600cm/min	

Applicable welding wire	0.8/1.0/1.2/1.6mm	0.8/1.0/1.2/1.6/2.0mm
Suitable for welding wire disc	Shaft diameter: MIN50mm	
	Outside diameter: MAX300mm	
	Width:MAX105mm	
	Weight :<20kg	
Net weight	13.2kg	20kg
size	560mm*250mm*350mm	670mm*250mm*575mm

2.3.2 Software operation on wire feeder



Click ”Setting“ switch to the "Continuous Mode Settings Page".



- "Continuous mode setting" indicates that the setting page of the continuous mode of the wire feeder system is displayed on the current screen, and it is invalid to click.
- "Wire Feed Speed" is the same as the "Wire Feed Speed" on the first page. Control the speed of wire feeding during welding. The range is 15 ~ 600 cm/min, which can be directly input by the keyboard by clicking the "number", or can be quickly adjusted by the "arrow". Note: All parameters on this page can be adjusted by directly clicking the value or clicking the "arrow", the same below.
- "Start Delay" controls the amount of time the wire feeder delays starting after the gun trigger is pressed. Range 0 ~ 2000 ms, usually set to 0. For example, if the start delay is set to 1000ms, press the trigger of the welding gun and wait for 1s to start wire feeding.
- "Withdrawal Length" controls the length of broken wire that the wire feeder withdraws when the wire is broken, and is used to help break the wire. The range is 0 ~ 100mm, usually set to 10, which can be increased appropriately according to the thickness of the field welding wire and the length of the wire feeding pipe.
- 'wire supplement length' controls the length of the compensate wire fed after the wire feeder is drawn back when the wire is broken, and is used for compensate the influence of the 'drawn back length' so as to keep the consistency of joints during next welding.
- The range is 0 ~ 100mm, which is consistent with the "pullback length" in principle. If the resistance of the wire feeding pipe on site is large, it can also be larger than the "pullback length" appropriately.
- "wire supplement delay" controls the interval time length between the wire feeder compensating the wire feeding and drawing back the broken wire when the wire is broken, which is used to prevent the welding wire from adhering to the welding seam for the second time due to too early compensation of wire feeding, so as to improve the effect of broken wire. Range 0 ~ 2000 ms. Usually set to 0.
- "Language" to display the language text of the current system. Click it to switch to other

languages in the "Language Bar" Note: The standard language is simplified Chinese, traditional Chinese, English, Korean, Japanese, Russian, German, French and Latin. If you have other language requirements, please contact our company.

- "Manual Wire Feeding Speed" controls the speed of "Manual Wire Feeding" on the homepage, which is used for daily equipment debugging. Range 15 ~ 600 cm/min. Usually set to 300 cm/min.
- "Manual Withdrawal Speed" controls the speed of "Manual Withdrawal" on the homepage, which is used for daily equipment debugging. Range 15 ~ 600 cm/min. Usually set to 300 cm/min.
- "System Version" displays the version number of the control system of the wire feeder. Where, "220" indicates the system hardware partial version, "601" indicates the system software partial version, and "410" indicates system screen partial version. Note: The combination of each part of the version corresponds to each other, and the versions before and after the version shall be consistent in the process of after-sales maintenance, otherwise the display may be abnormal or some functions may be invalid.
- "Save" controls the storage action of the parameters of the wire feeder system, including all parameters on the "Home" and "Setup" pages except for "Language". Click "Hold" to turn from yellow to green, indicating that the hold is successful.
- Note ①: The "language" of the system is automatically saved;
- Note ②: After power failure and restart, the system displays the latest saved data, so please make good use of the save function to avoid the loss of process data.
- "Back" controls the wire feeder system to switch back to "Home".
- Help controls the display of the Parameter Description. Click to view "Parameter Description".

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 >175mm.

(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：

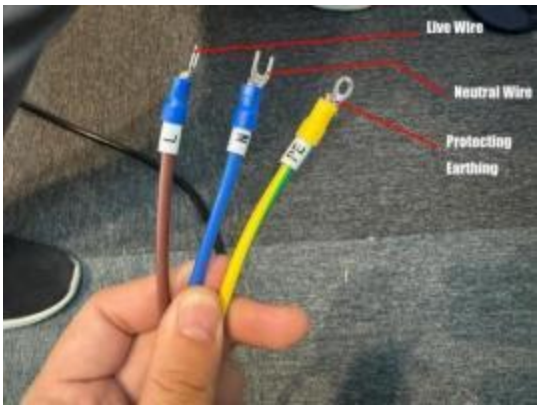
3.1.2 Preparation work before startup

(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.

If you need to run it at 110V , please prepare a transformer.

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

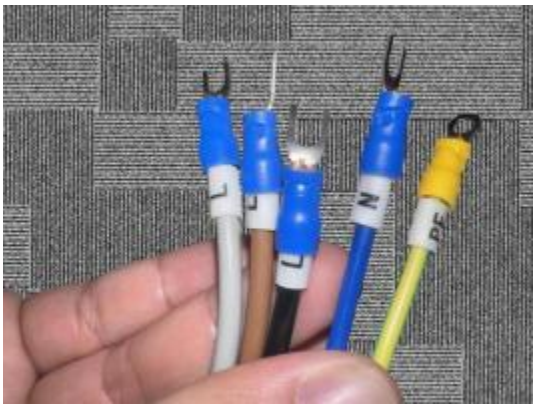


①

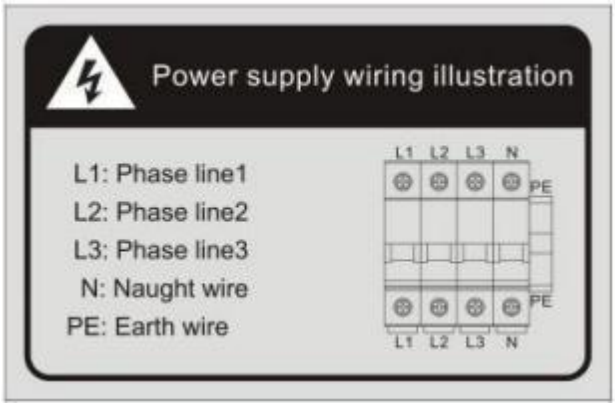
②

(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/wire feeding wheel**

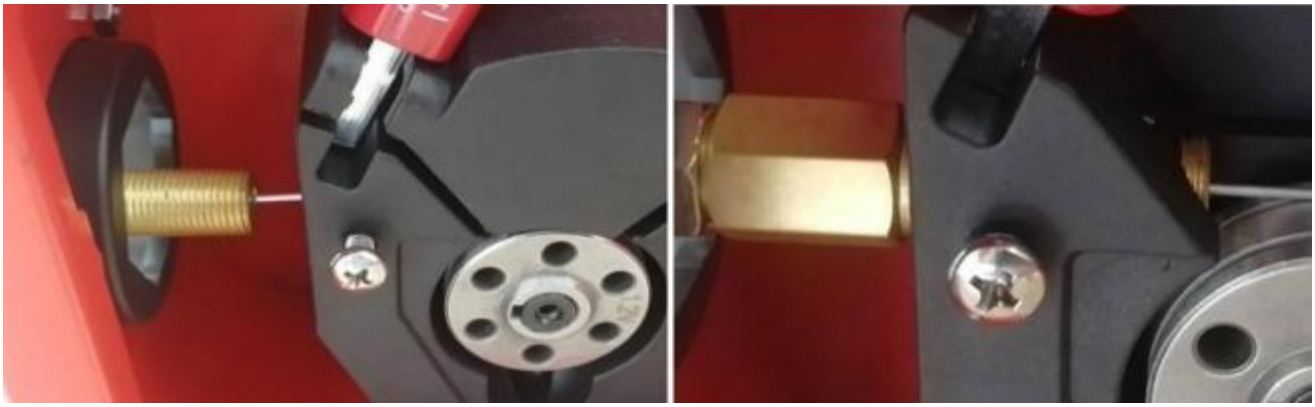
- It is forbidden to use flux-cored wire, and the selection of welding wire shall be consistent with the material to be welded.
- There are two wire feeding wheels in total. The two sides are of different models, corresponding to different core diameters. Please be sure to install them accordingly. If 1.2 welding wire is installed, the side of the wire feeding wheel marked with 1.2 is

outside

During installation, be sure to clamp the welding wire in the slot and then clamp it.

(2) **Installation of wire feed pipe**

Loosen the locking screw of the wire feeding tube, insert it into the appropriate position and then lock it.



(3) **Gun head end**

- After the above operations are linked, prepare the fittings at the nose end and assemble them
- Please note that [connection block] distinguishes models, that is, different models use different connection blocks, and other accessories are the same.

(4) 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;

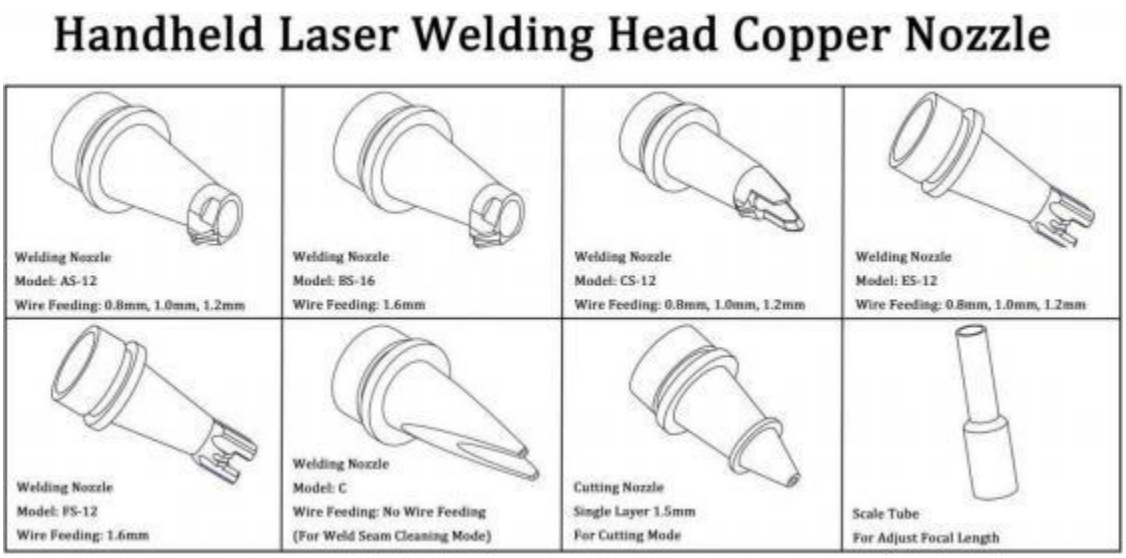
BS-16: The filaments below 1.6mm are generally used for flat Angle, inner Angle and outer Angle welding;

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.



4.1.2 : Wire selection

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

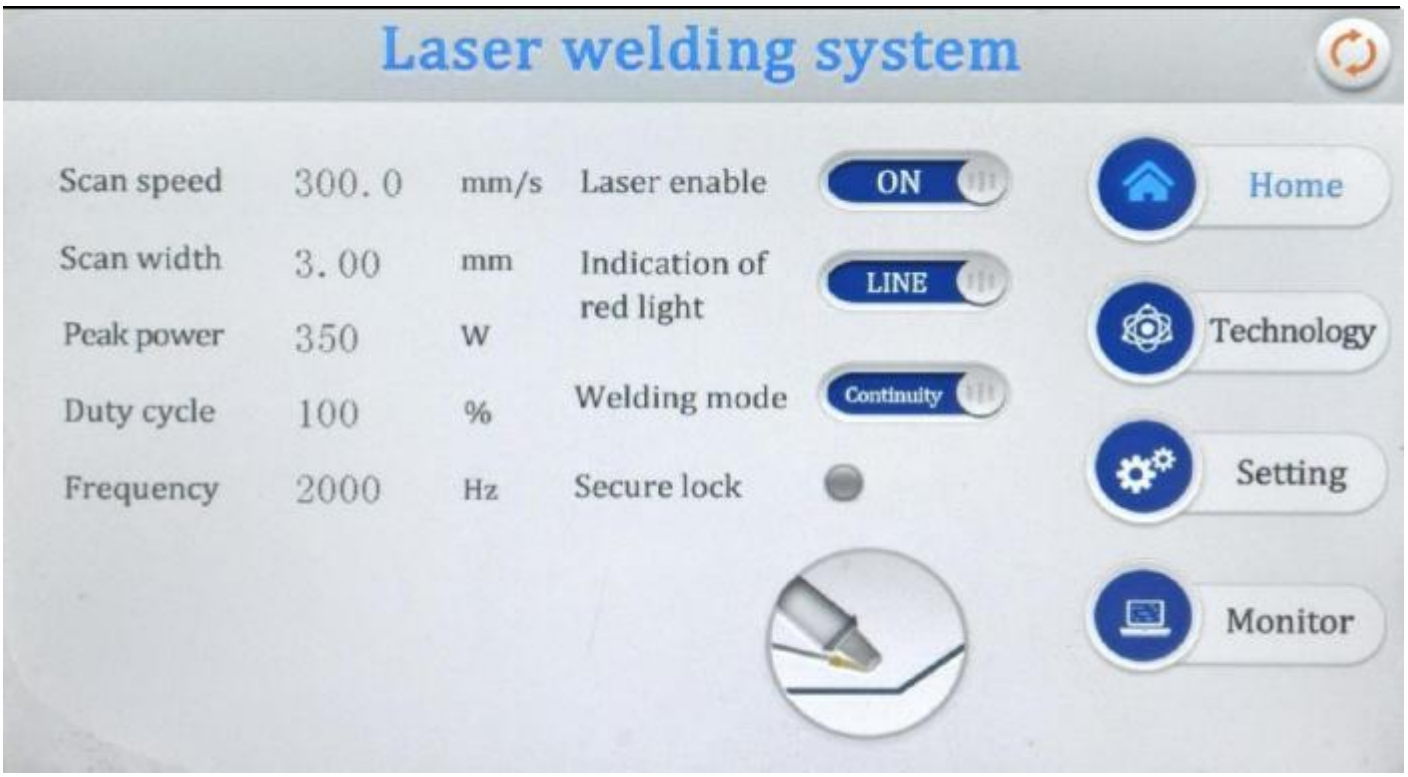
- Width of weld seam ＜1.2mm, Recommend 0.8mm welding wire
- Width of weld seam ＜1.5mm, Recommend 1.0mm welding wire
- Width of weld seam ＜2.0mm, Recommend 1.2mm welding wire
- Width of weld seam ＜3.0mm, Recommend 1.6mm welding wire

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

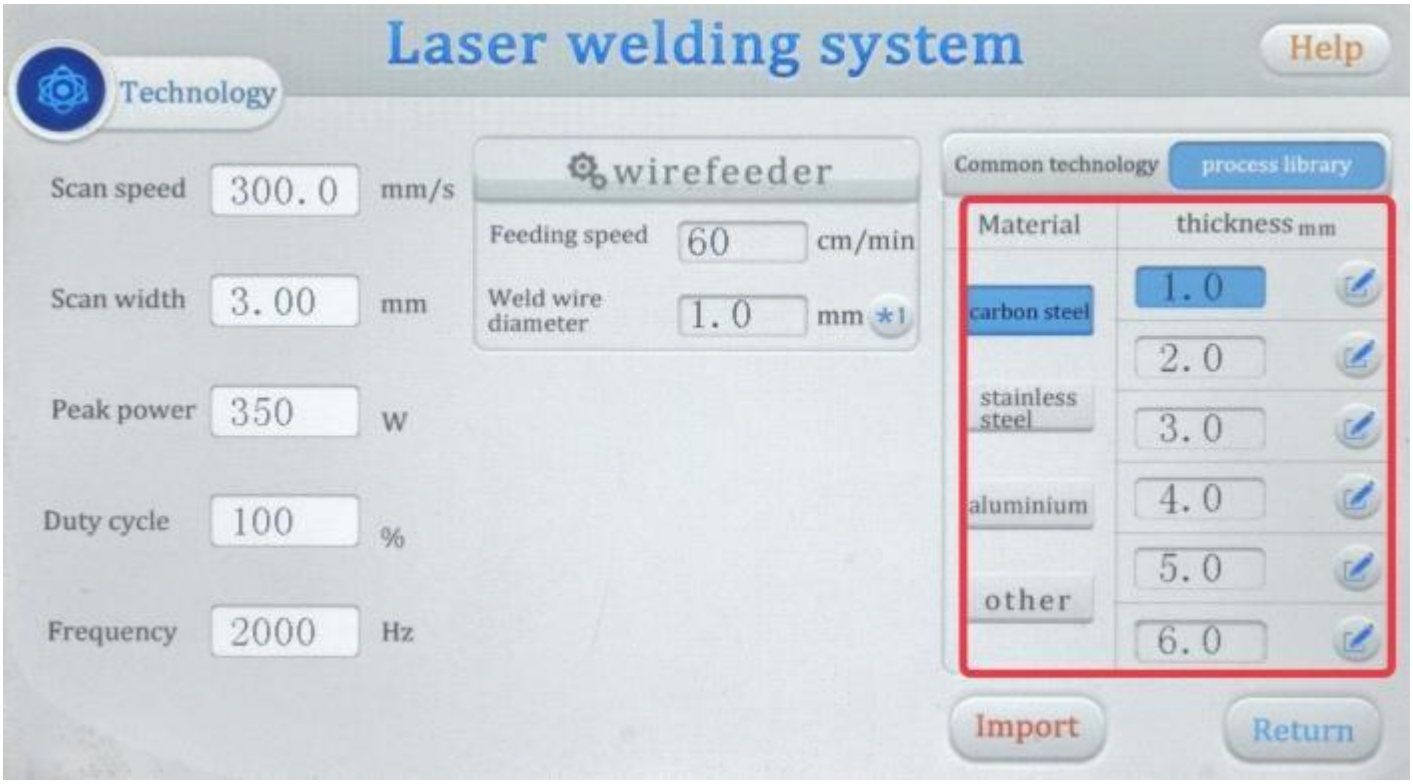
- Stainless steel = ER304 Stainless steel welding wire
- Carbon steel / Galvanized sheet = Iron wire
- Aluminum = Aluminum wire (Aluminum welding wire is recommended to use alloy aluminum of 5 series or above, which has high hardness and is not easy to get stuck)

4.1.3 : Setting welding parameter in control board

- Click “technology”, set up welding parameters

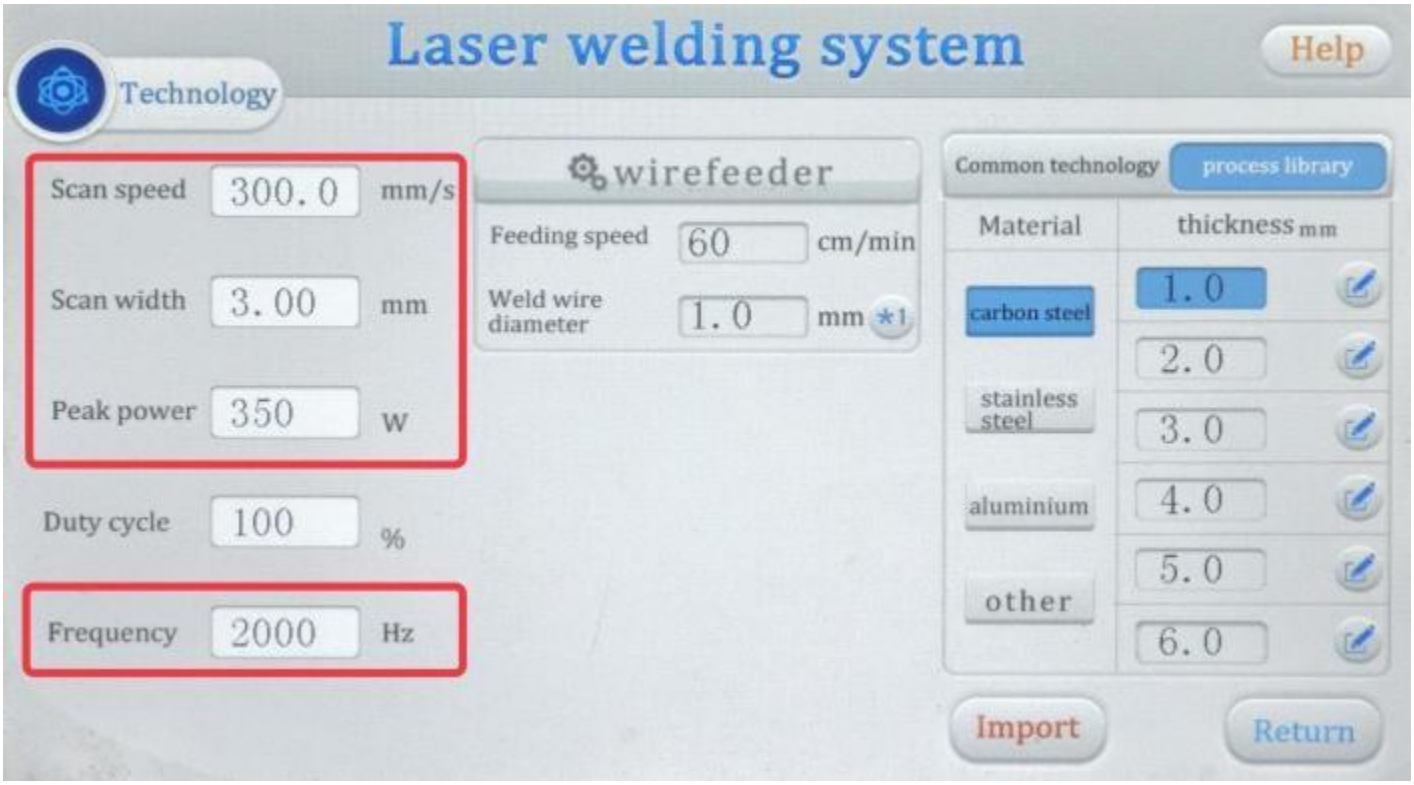


- According to your requirement to choose the parameters in process library



- If your needs are not met, you can adjust the “Scan speed” “Scan width” “Peak power”

"Frequency" as your requirement.



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（MAX4.5mm）

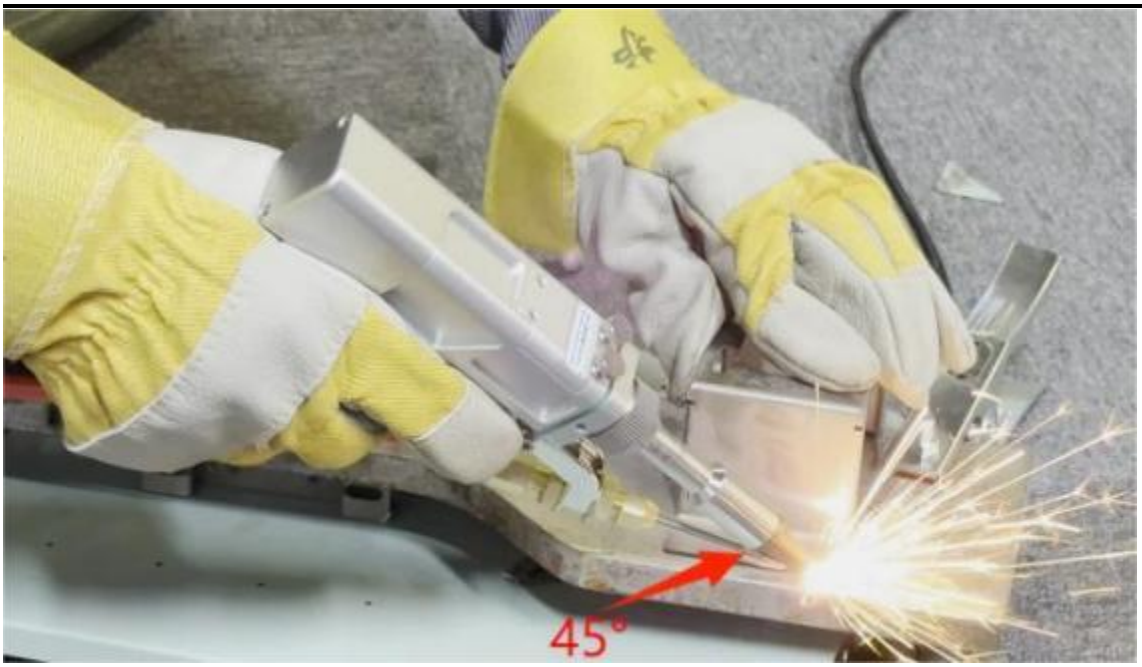
4.1.5 : Start Welding

(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.


45°

4.2 Cutting Mode

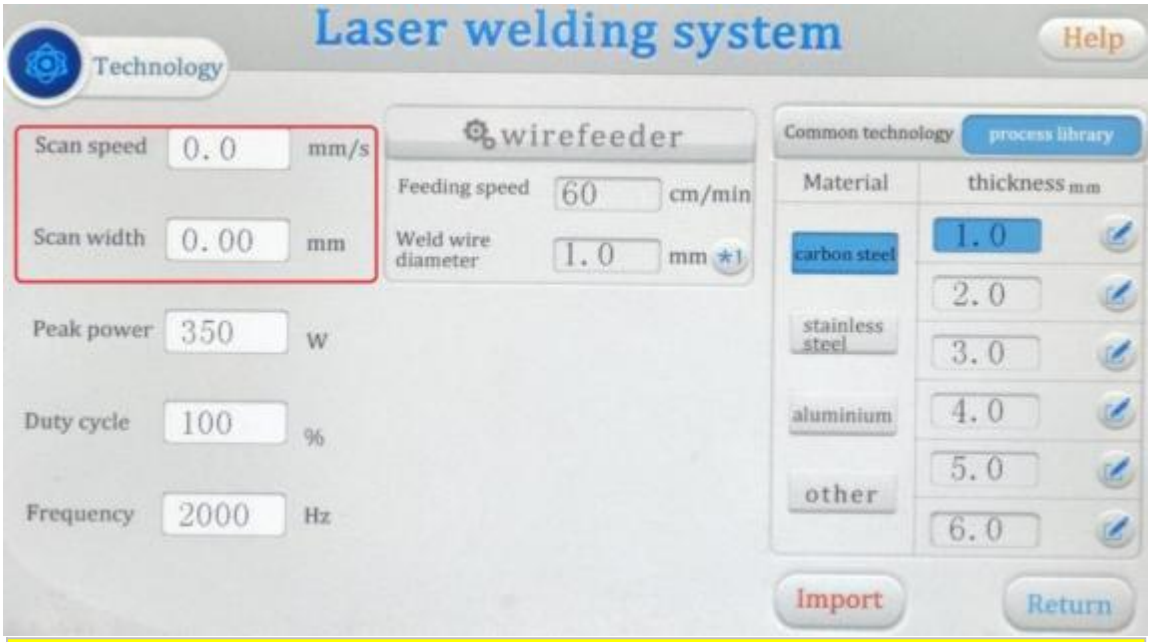
4.2.1 Change the cutting nozzle

- Please replace the cutting copper nozzle

4.2.2 Parameter setting

- Set “Scan speed” and “Scan width” as 0mm, “Peak power”as your need, the max is the machine power.

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



The following is laboratory data on welding and cutting, for reference only. Please refer to the actual situation for details		
Continuous Laser	1500W	2000W
Cutting thickness of carbon steel and stainless steel	0-5mm(MAX 8mm)	0-6.5mm(MAX 10mm)
Cutting thickness of Aluminum	0-2mm(MAX 2.5mm)	0-2.5mm(MAX 3mm)

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

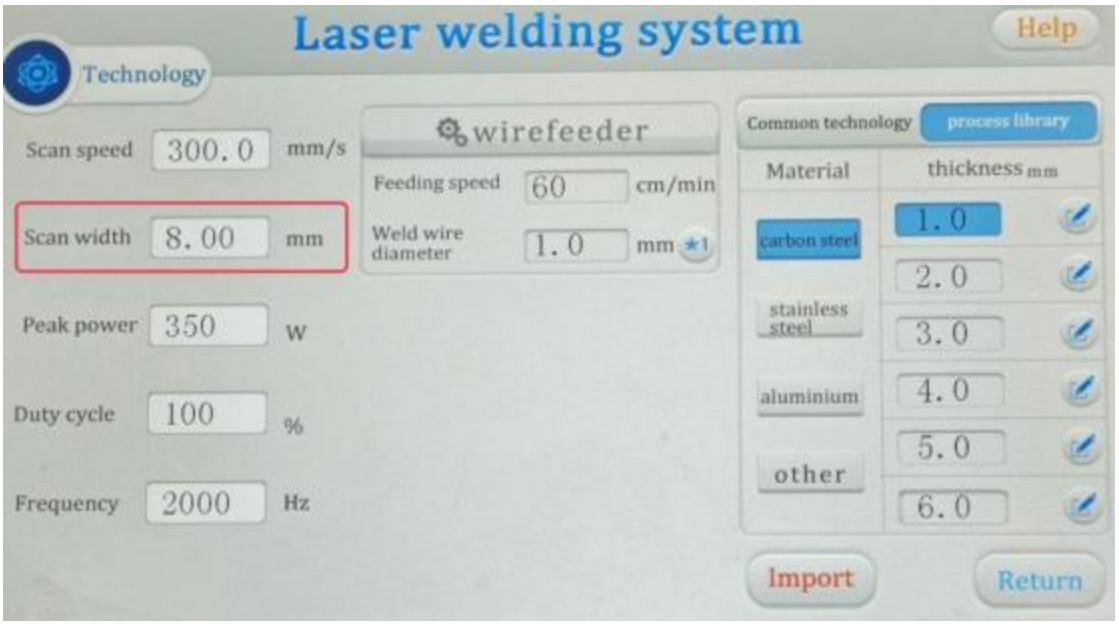
4.3.1 Change the welding seam cleaning nozzle

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

4.3.2 Parameter setting

- Set “Scan width” according to the width of the weld seam that is oxidized or burnt during welding

  Max “Scan width” should be 8mm.

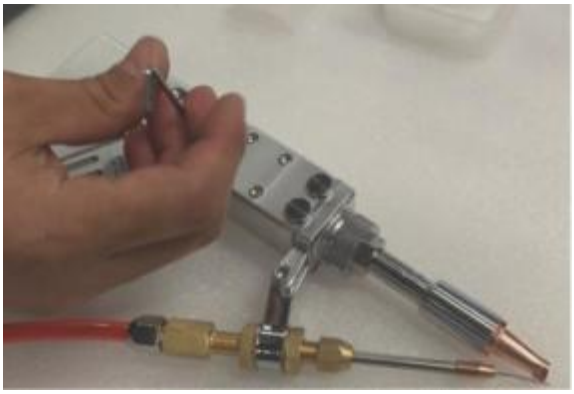


4.4 Cleaning mode

4.4.1 Remove the copper nozzle

4.4.2 Replace the cleaning lens

- If the range of rust/Paint/Oil removal is relatively narrow, and there is no need to replace the lens. Use F150 focus lens directly.
- If the cleaning range is relatively large and more efficient cleaning is needed, please replace F800 focus lens(cleaning lens).
- Atthe focusing lens F800,the maximum cleaning width is130mm.
- Atthe focusing lens F150,the maximum cleaning width is 30mm.



①remove the four screws

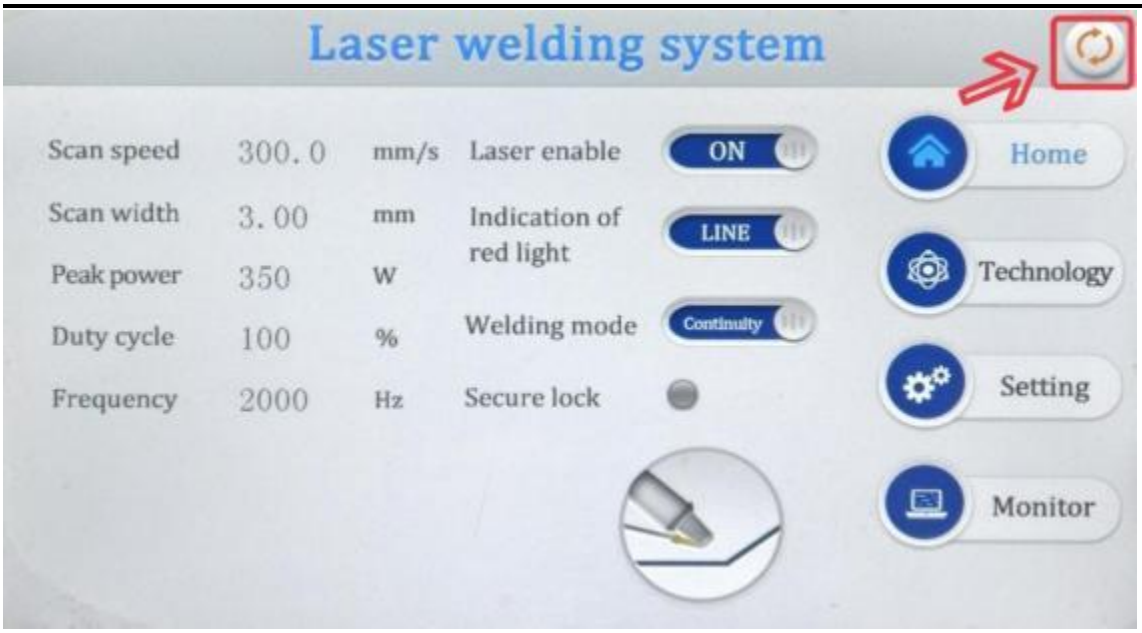
② take out the lid

③take out the F150 lens

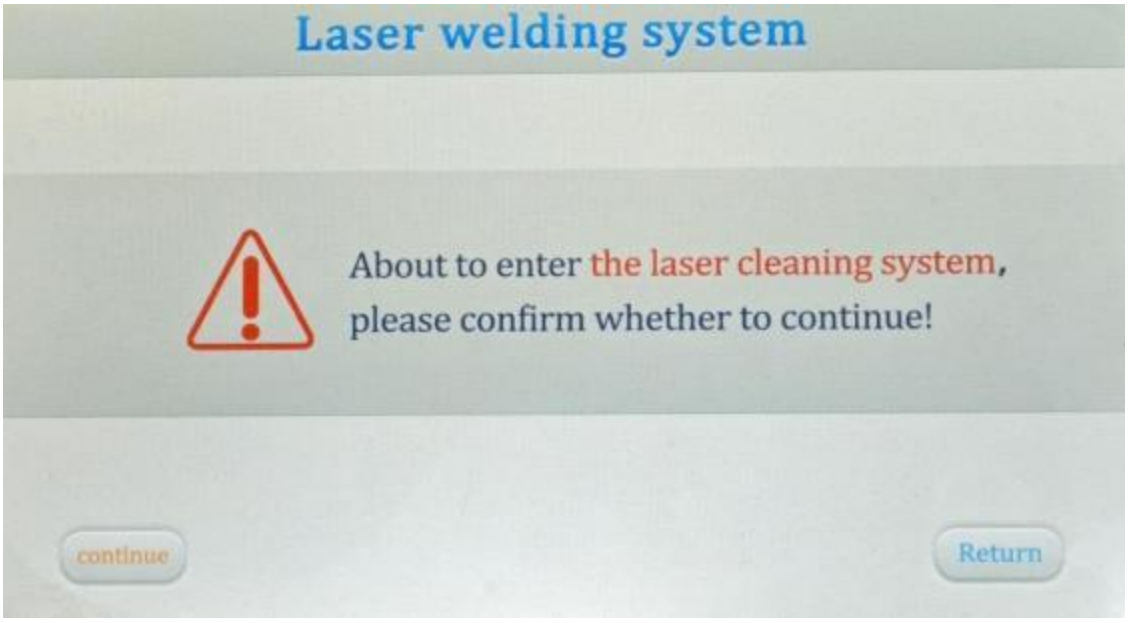
④change the F800 lens

4.4.3 Mode switch in software and parameters setting

(1) Click switch button  in welding homepage

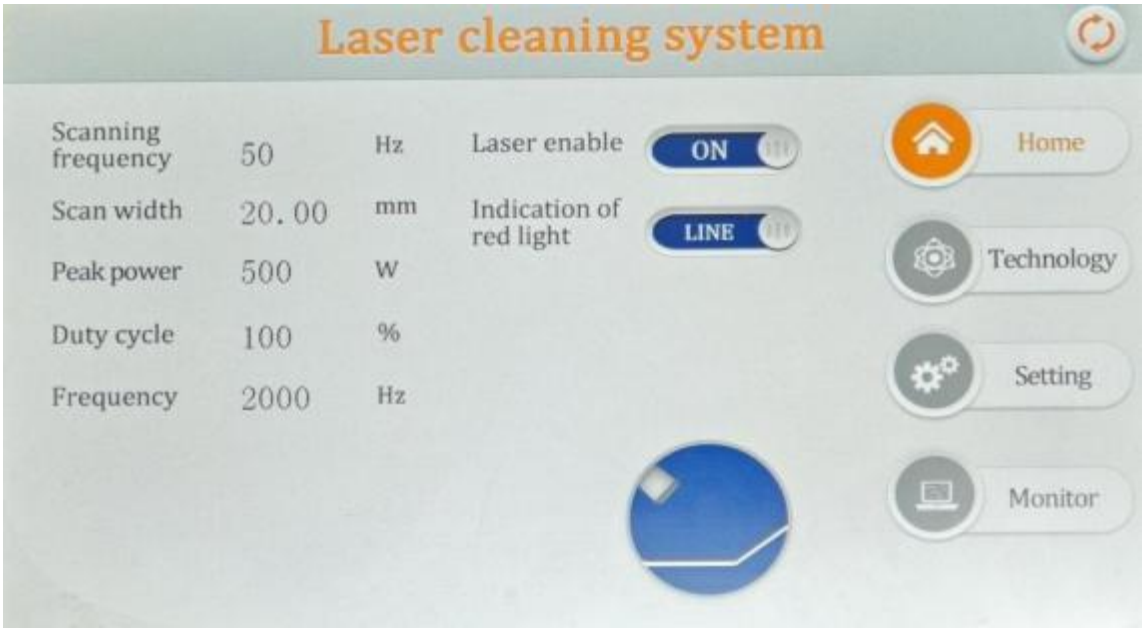


(2) Click "Continue"



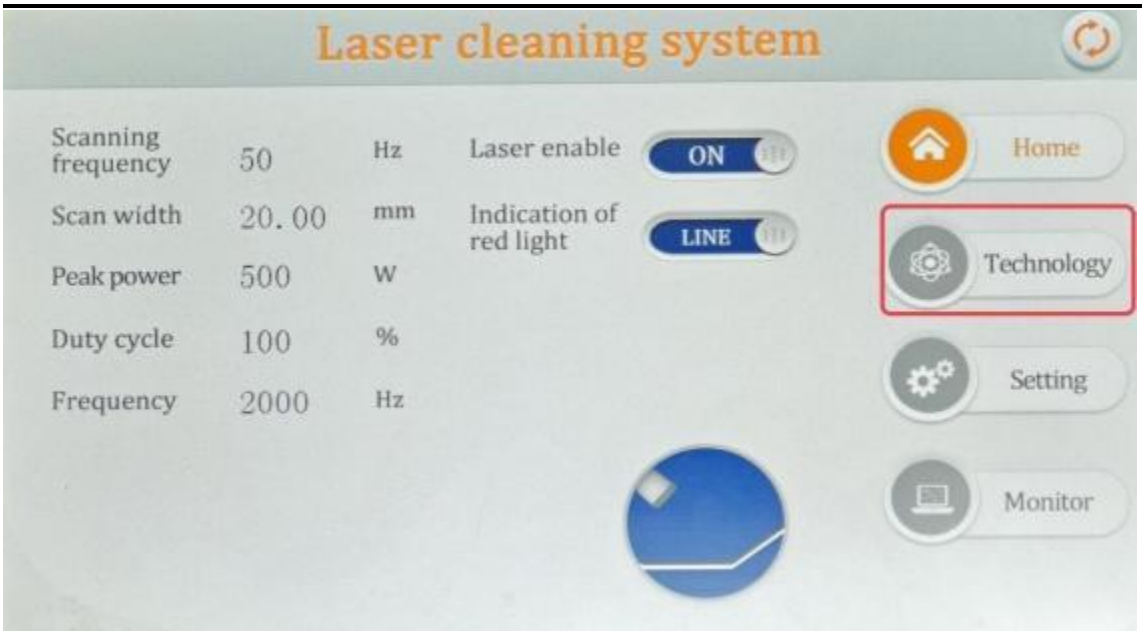
(3) Restart the machine

(4) Go to he cleaning mode homepage



When back to welding mode, it is the same operation as above.

(5) Click technology



(6) Test with parameters from the database

(7) If your needs are not met, you can adjust the “Scanning frequency” “Scan width” “Peak power” as your requirement.

When use F800 lens, must keepScan width no higher than 20mm.

When use F150 lens, must keep Scan width no higher than 26mm.(It is important！ ！ ！)

If the parameters are not set according to this, it will burn the welding head.

When use cleaning function, peak power no more than 1200W.

4.4.4 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:

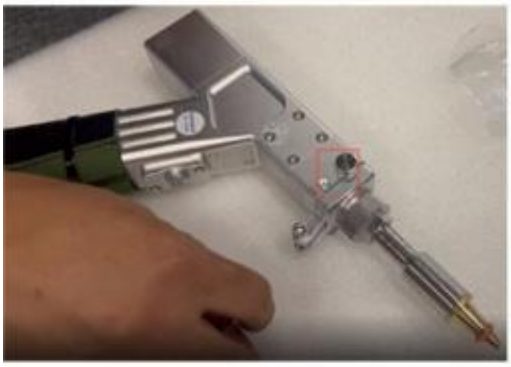
- Check the protective lens. If there is obvious burning on the surface of the protective lens, replace it directly.
- Check the white accumulating sealing ring under the protective lens. (If there is any scratch or deformation of the accumulating seal ring, it cannot be used and must be replaced immediately.

5.1.2 How to replace protective lenses:

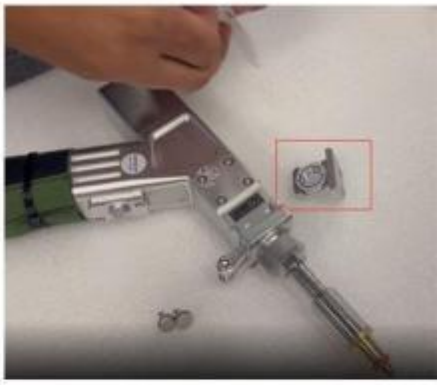
- Before operation, please clean your hands and wipe them dry, and then wipe your hands again with cotton dipped in alcohol.
- Remove the screws of the protective lens compartment cover in a relatively dust-free place, pull out the protective lens bracket, and protect it (covered by masking paper).

- Wipe the compartment opening and the inside of the compartment cover with a cotton ball dipped in alcohol, quickly insert the protective lens holder into the protective lens compartment, and tighten the screws.

How to replace protective lenses



1.Unscrew two screws



2.Take out lenses

3.Replace protective lenses

4.Screw on the screws

5.2 When need add antifreeze

Cooling system water temperature setting:

Water cooler 25 ± 1 ℃ (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 ℃ and 0 ℃, 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 ℃, 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.

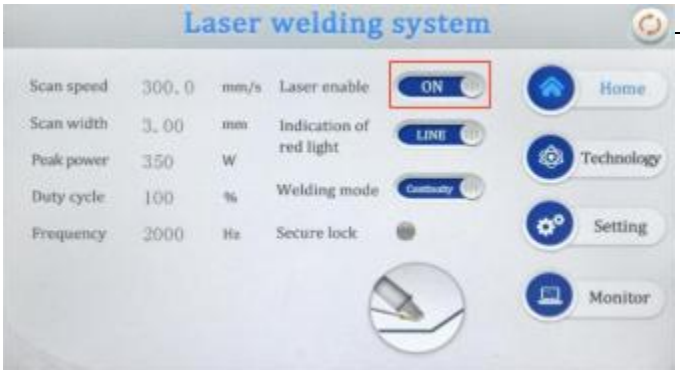
6. Q&A

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

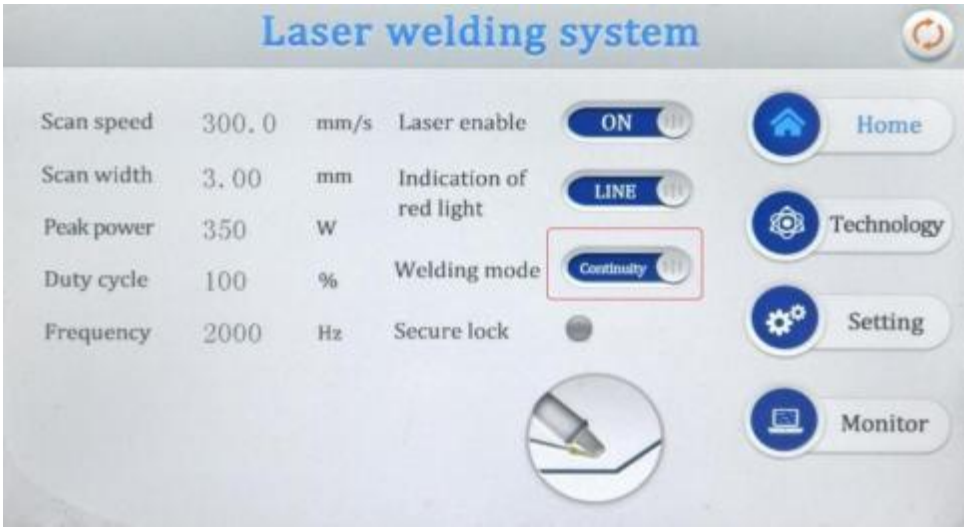
6.2 The welding machine can not continuously welding

(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.