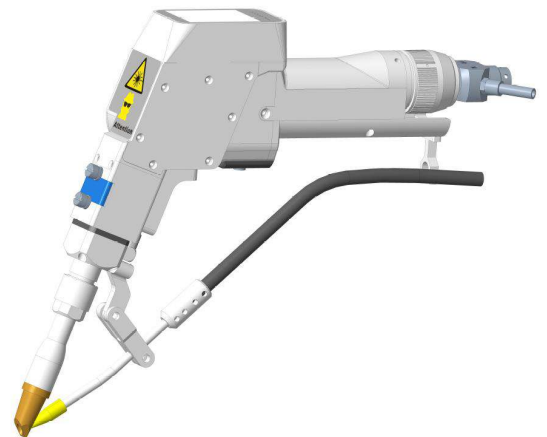


Riselaser Technology Co.,Ltd,



Handheld Laser Welding System V2.1



**Note: Pls Don't turn on the chiller
without adding refrigerant and adding
pure water**

Address: Building 5, COFCO (Fuan) Robot Intelligent Manufacturing Industrial Park, No. 90
Dayang Road, Fuhai Street, Bao'an District, Shenzhen, China, 518103

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Foreword

Respected user:

Welcome to Handheld Welding Heads and Handheld Welding Systems from Riselas. We are honored that our company's products can get your trust. In order to give you a general understanding of the company's products and facilitate your use, we have specially prepared this instruction manual for you, which is an essential guide for you to use this product. The content contained in the user manual is protected by copyright laws. No organization or individual may copy or tamper with it in any way without the approval of Riselas.

1. Add water (Fill the water tank with water, about 14 liters)



Technical parameters:

- (1) Working voltage: AC, DC/12V (standard with 220V/12V transformer)
- (2) Control temperature range: low temperature water 16.0°C~30.0 °C, high temperature water 21.0°C~35.0°C
- (3) Working ambient temperature: -20C~+50C
- (4) Storage temperature: -30C~+80C
- (5) Display resolution: 0. 1°C
- (6) Temperature measurement unit: °C
- (7) Temperature measurement error $\leq 2\%$
- (8) 4-channel relay output, 2-channel NTC temperature input, 3-channel switch signal input.



Panel Description

Digital tube

Real time temperature (PV)

Set temperature (SV)

Purpose

Displays actual measured low temperature, alarm code, setting code

Display of actual high temperature measured, setting parameters

Indicator light

Purpose

Heat

On: electric heating on Off: electric heating off

Run

On: unit working Off: unit in standby Flashing: unit running against freezing

Alarm

On:Fault

Off:No fault

Key

Purpose

key Switch(On/off)

on or off

Set Press the "set" key to set the temperature and temperature difference in working or standby state

Up

Up key (press once to increase upwards once, long press to increase continuously)

Down

Down key (Press once to decrease down once, long press to decrease continuously)

1. After the main board is powered on, SV shows the last set temperature; PV shows the current tank water temperature.
2. press the "on key" to turn on the machine, the two digital tube display value basically unchanged, at this time the system "running" indicator light.
3. After power on, the display interface is high and low temperature water display temperature interface (PV window shows low temperature water temperature, SV window shows high temperature water)

Press ▲ to switch to the high and low temperature water setting temperature interface (PV window shows low temperature water setting temperature, SV window shows high temperature water), then press ▲ to switch to the high and low temperature water setting temperature interface (PV window shows low temperature water setting temperature, SV window shows high temperature water).

Press the ▲ key again or 20 seconds without operation to return to the low temperature water interface.

Square freeze operation

(II): power on (any time power on without pressing the "on key" to boot directly into the running state.) Two digital tube display, the value is basically unchanged, at this time the system "running" indicator light.

Replacement water: water quality requirements are relatively high

The filling water is: pure water in summer, antifreeze in winter (it is recommended to use colorless and odorless antifreeze under the Clariant brand)

If there is no antifreeze, you can also use ethanol (industrial alcohol), the ratio of water to alcohol is 4:1

Do not turn off the machine at night in winter to avoid damage to the machine or freezing of components due to freezing of the waterway. When the temperature rises, the water must be drained and pure water is used.

Regular water changes (must be changed every 62 days)

Address: Building A5, COFCO(Fuan) Robot Intelligent Manufacturing Industrial Park, No. 90 Dayang Road, Fuhai Street, Bao'an District, Shenzhen, China, 518103

Web: www.riselas.com

Email: lay@riselas.com

Phone number: +8618124247470

2. Connect the ground wire, live wire and neutral wire.



3. Connect the argon cylinder

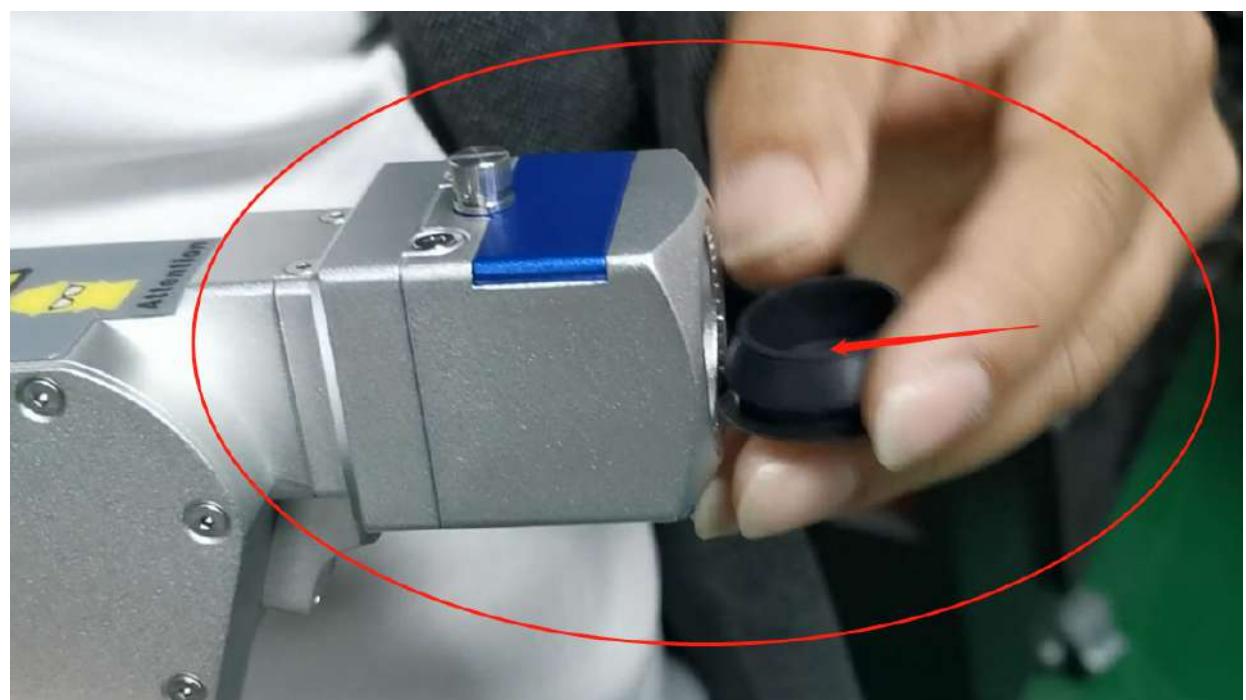
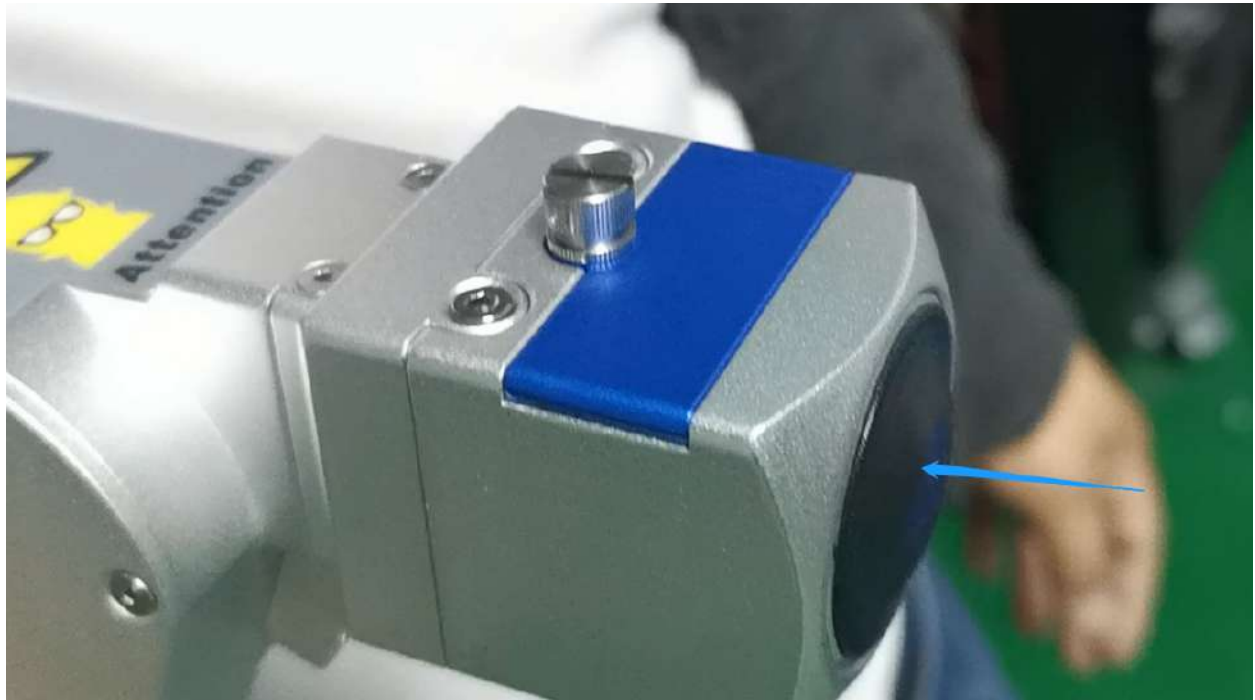


4. Turn on the machine



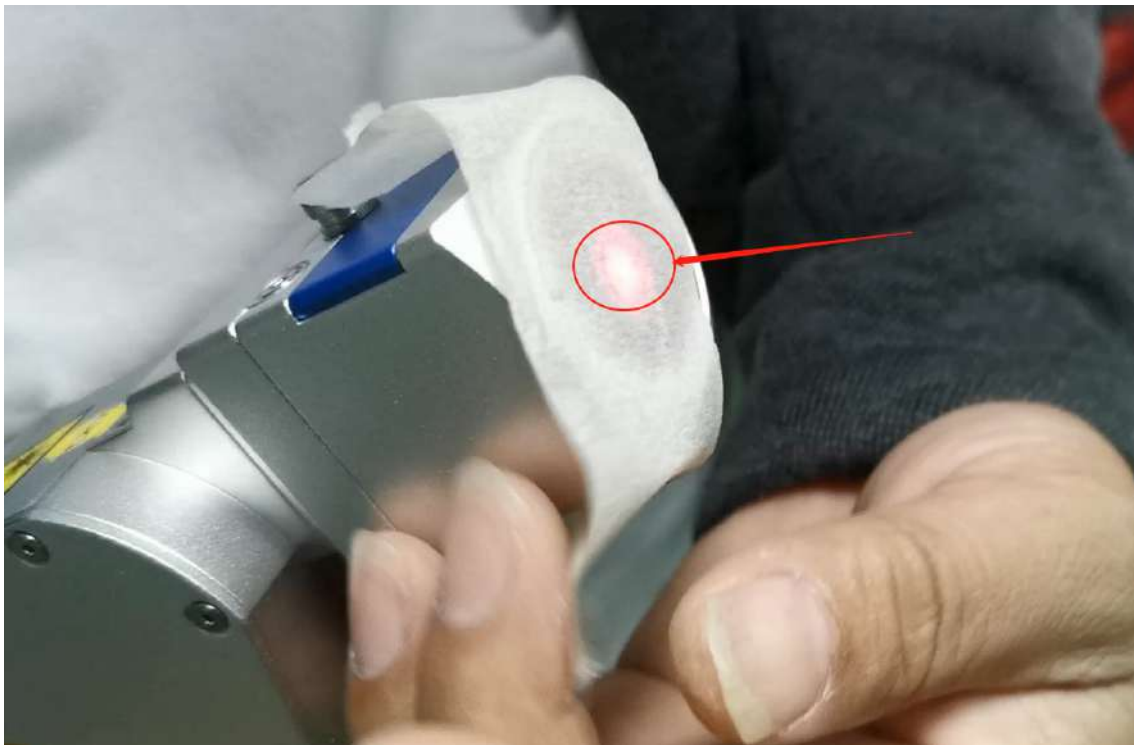
5. Precautions before use:

- ① When using the cleaning function, you need to remove the protective cover of the cleaning head.
- ② After use, please cover the protective cover.



5. Precautions before use:

- ③ When using the welding or cleaning function, please check whether the red light is centered.

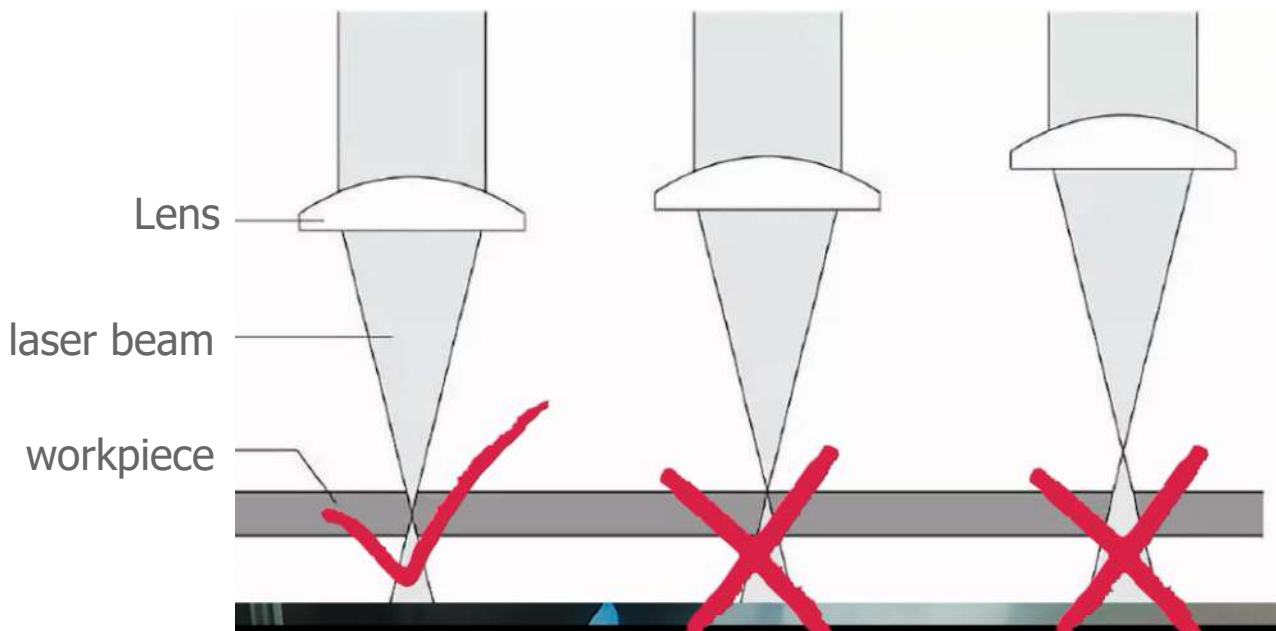


5. Precautions before use:

④ Debug focus:

When you use the machine, you need to debug the focus first.

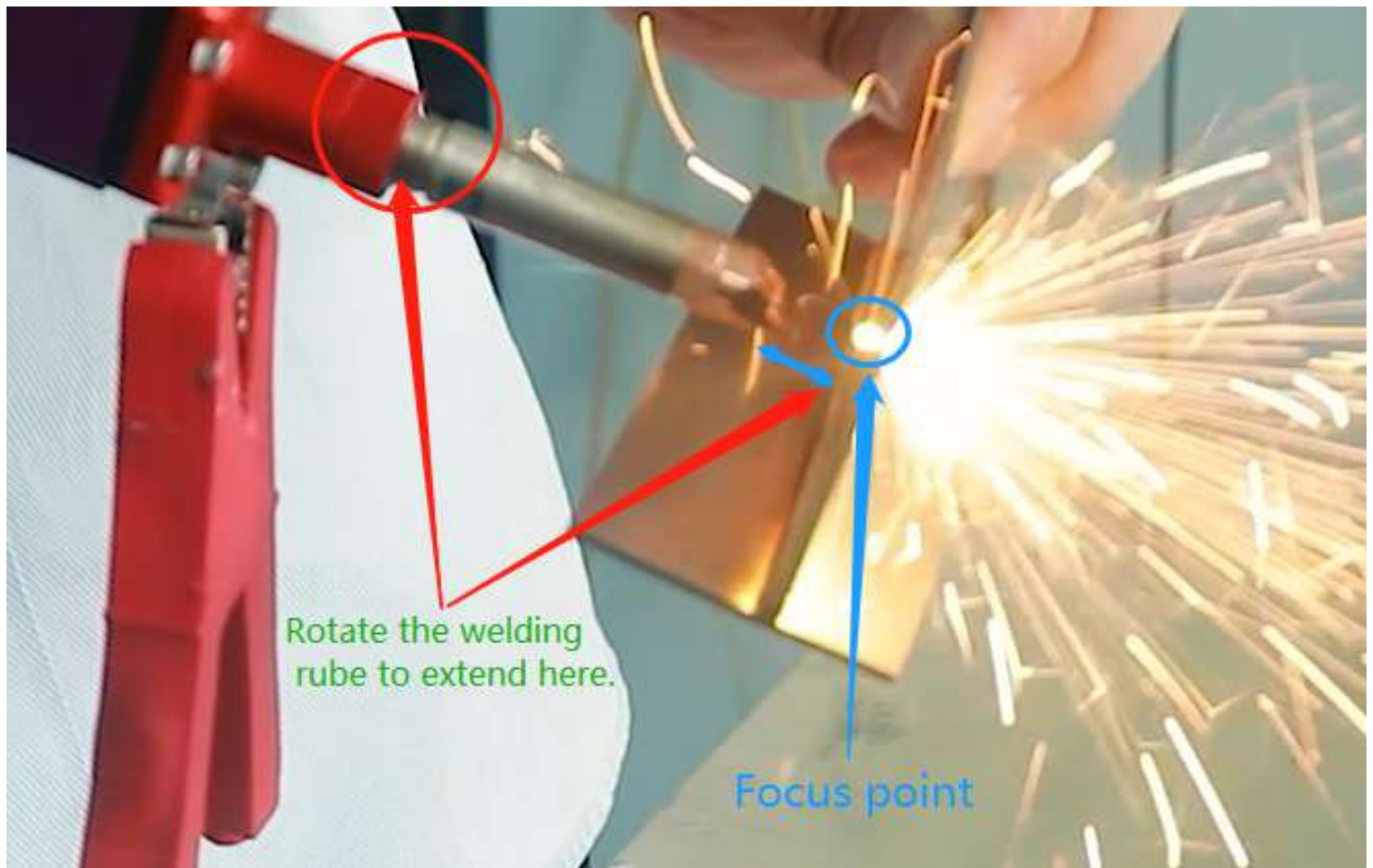
Focus: The location where the laser energy is strongest, which can penetrate the material instantly.



Step

1) Reduce the welding tube to the shortest and then fix it slightly. (Clamp the protective clip on the welding head)

2) To test, look for the spot where the sparks are greatest when welding. Adjust the length of the welding head until the maximum energy is reached when the welding head touch the object being welded.



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1 Product Overview

1.0 Product Name and Features

Product name: Double pendulum handheld welding head

Item model number: NS15C

Product Features:

A. This welding head has strong advantages in stainless steel, aluminum alloy welding, and small and medium power welding applications. It is a cost-effective welding head.

B. The welding head adopts motor-driven X, Y-axis vibrating lens, with multiple swing modes, and swing welding allows the workpiece to have irregular welding, larger gaps and other processing parameters, which can significantly improve the welding quality.

C. The internal structure of the welding head is completely sealed, which can prevent the optical part from being polluted by dust.

D. Optional welding/cutting kits and cleaning kits can truly achieve three functions of welding, cutting and cleaning.

E. The protective lens adopts a drawer structure, which is easy to replace.

F. Can be equipped with various lasers with QBH connectors.

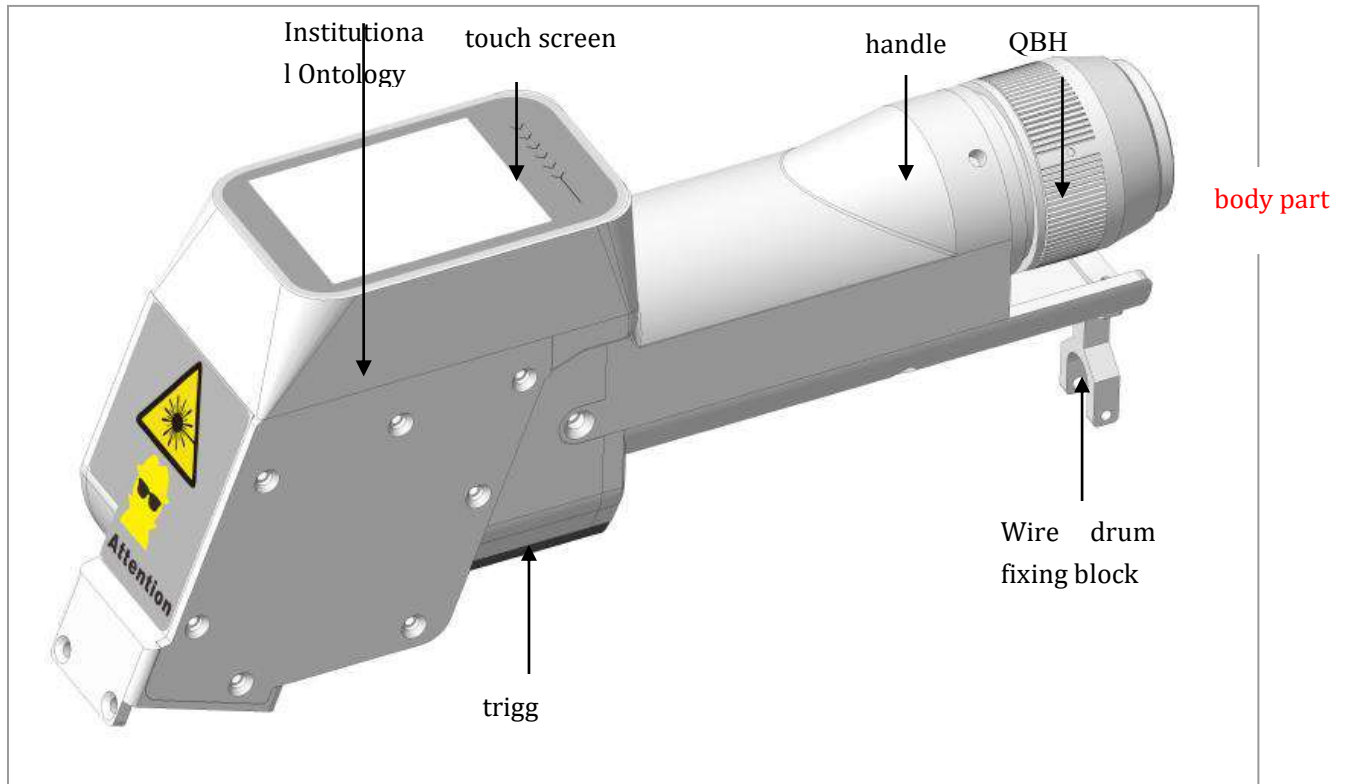
G. Small size, good appearance and feel.

H. A touch screen is optional on the welding head, which can be linked with the platform screen for better man-machine control experience.

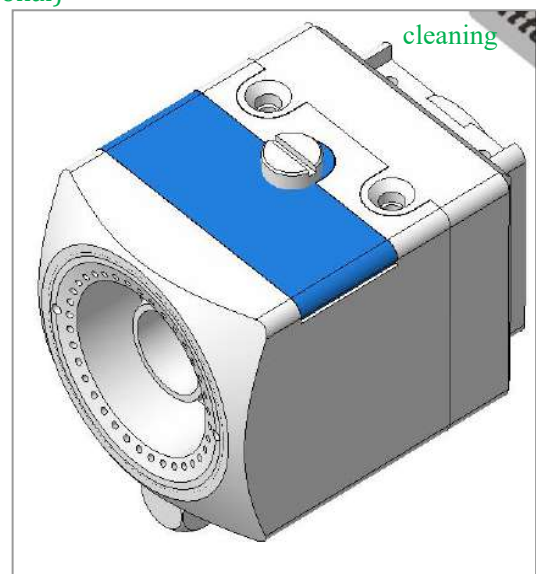
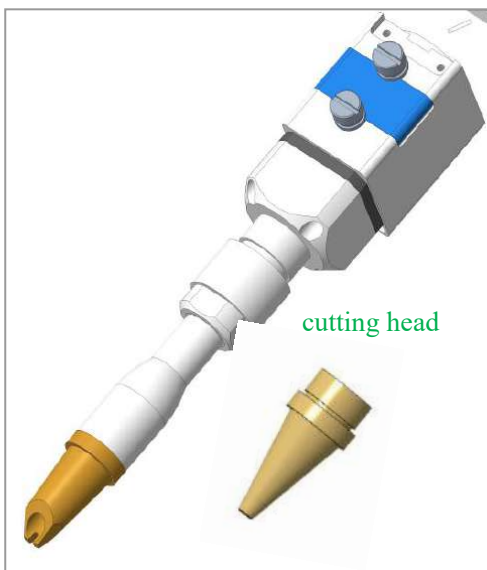
1.1 Schematic diagram of product structure

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Double pendulum hand-held welding head: including body part + optional:
cleaning kit, welding, cutting kit part, which can be selected according to
customer needs.

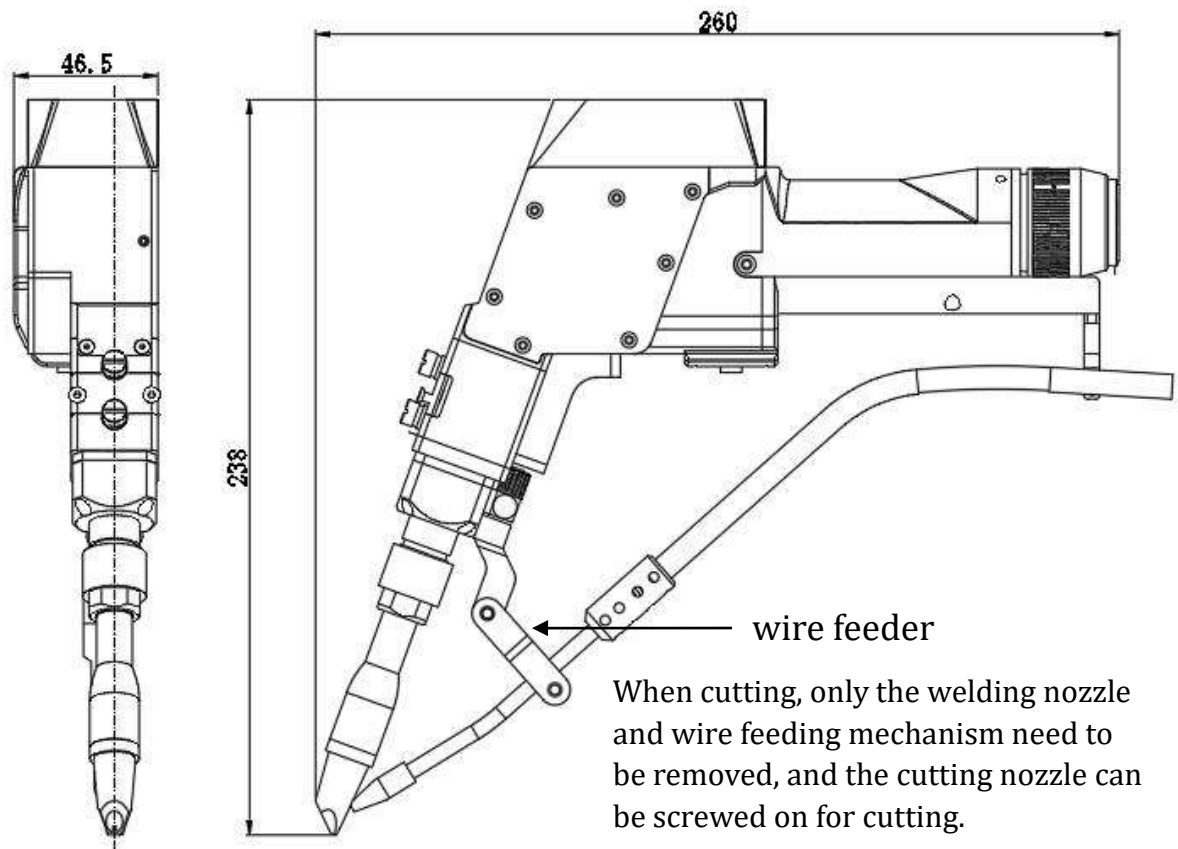


Welding head - cutting (optional)

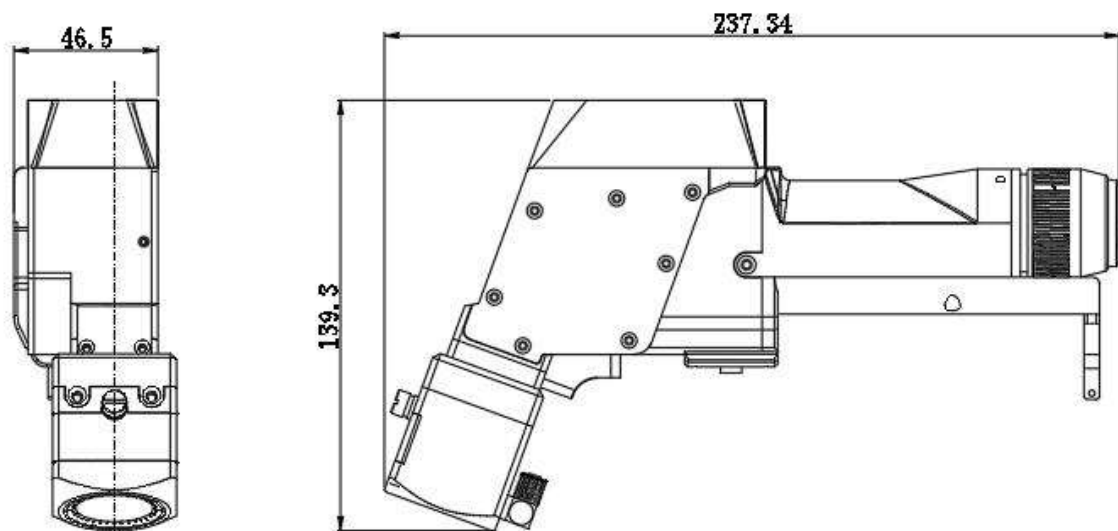


1.3 Outline drawing of welding head, control box and 7-inch screen

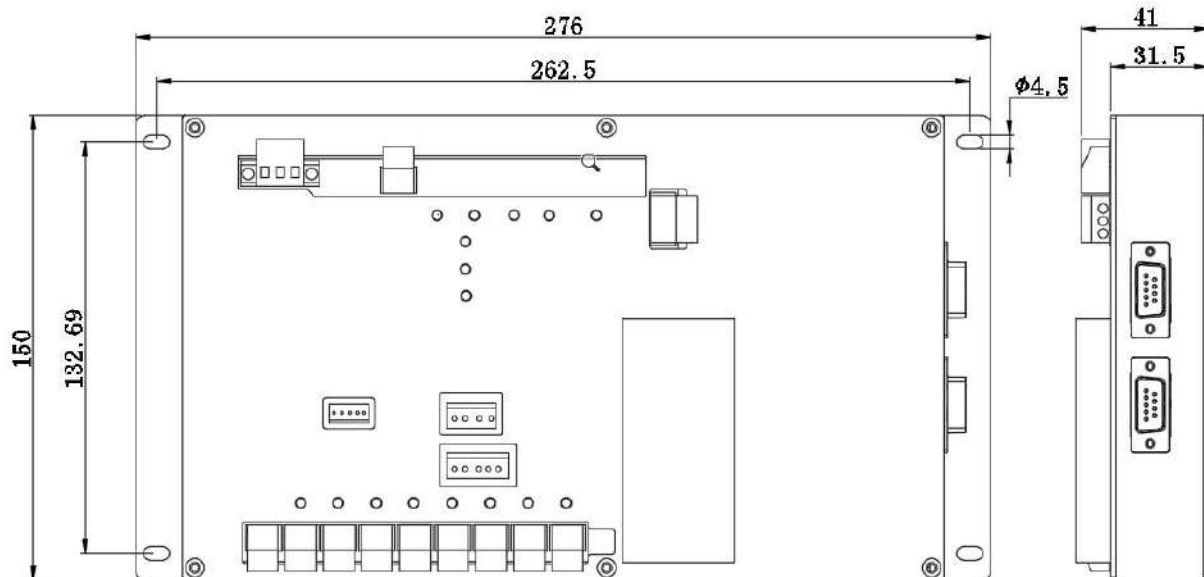
焊接



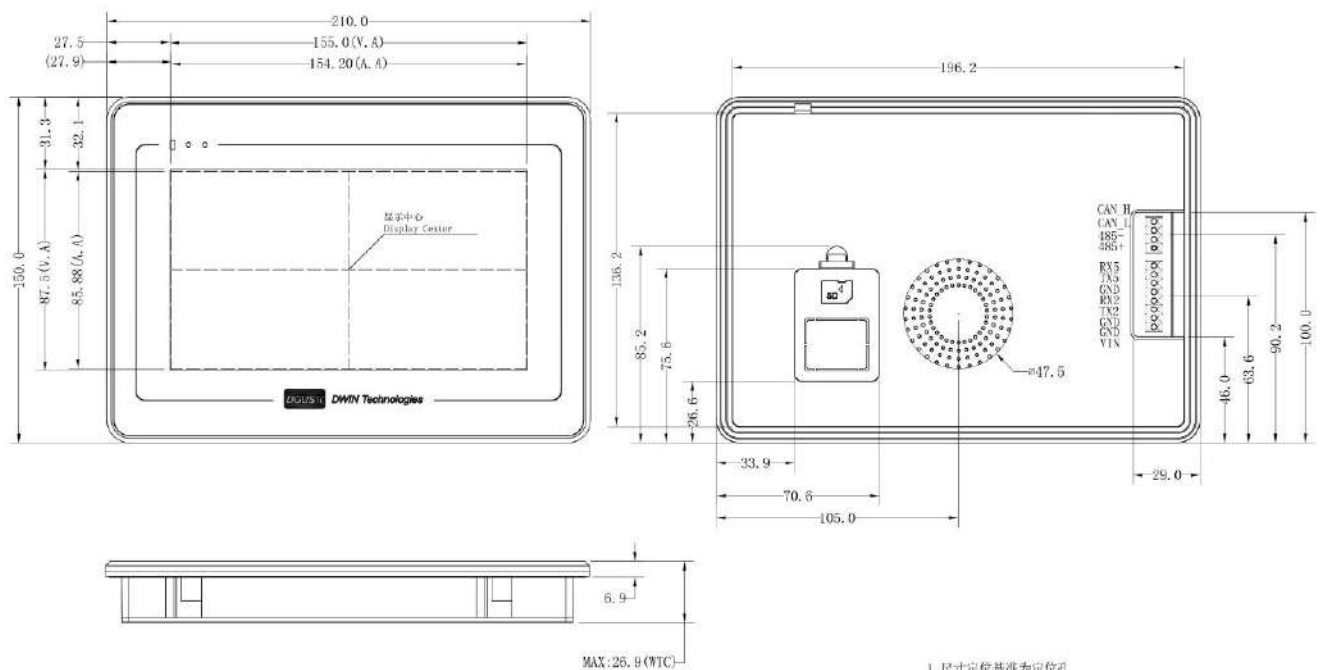
清洗



Control box mounting holes

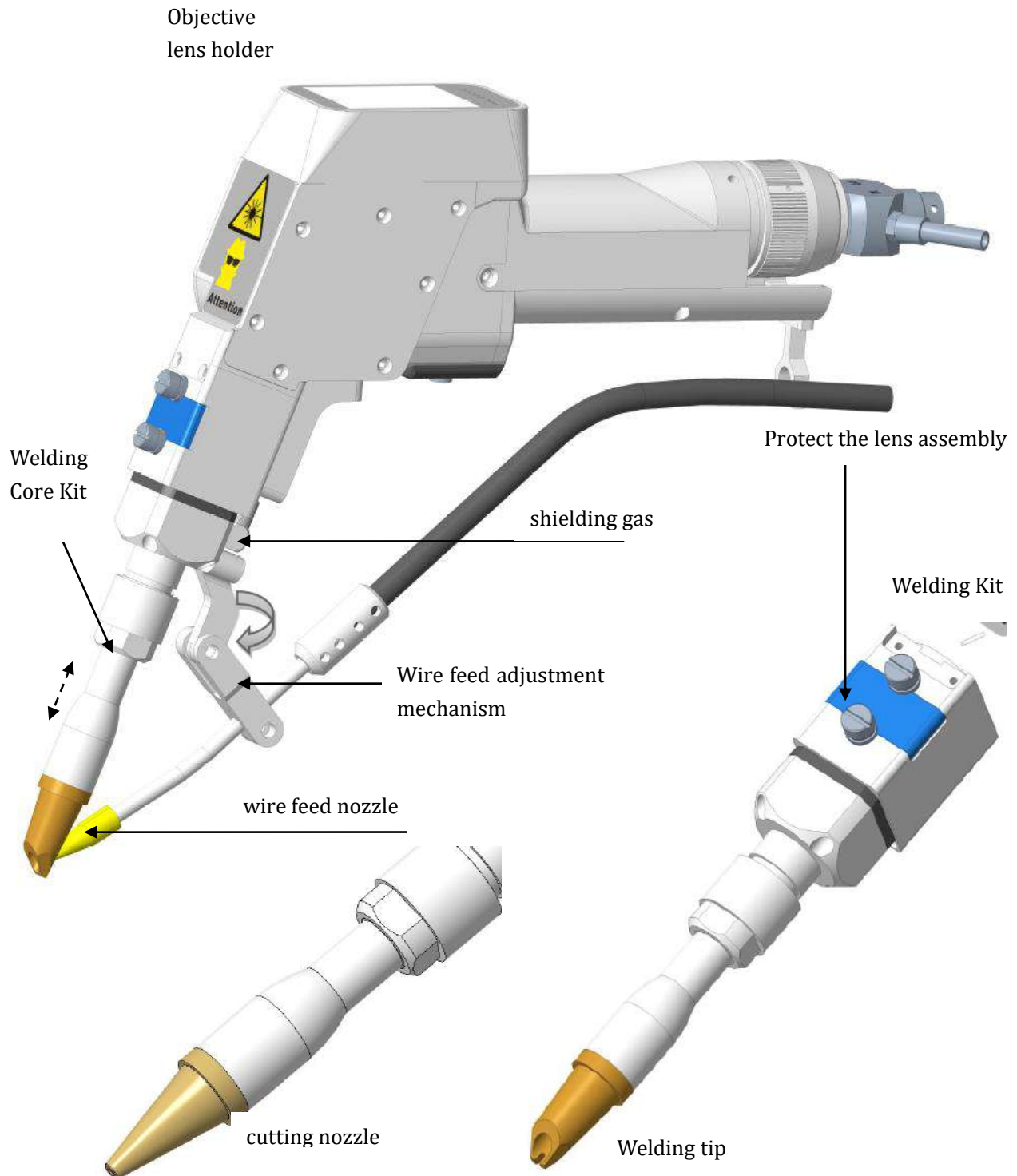


7-inch screen size 210*150*26.9 sheet metal opening size 199.5*139



1. 尺寸定位基准为定位孔

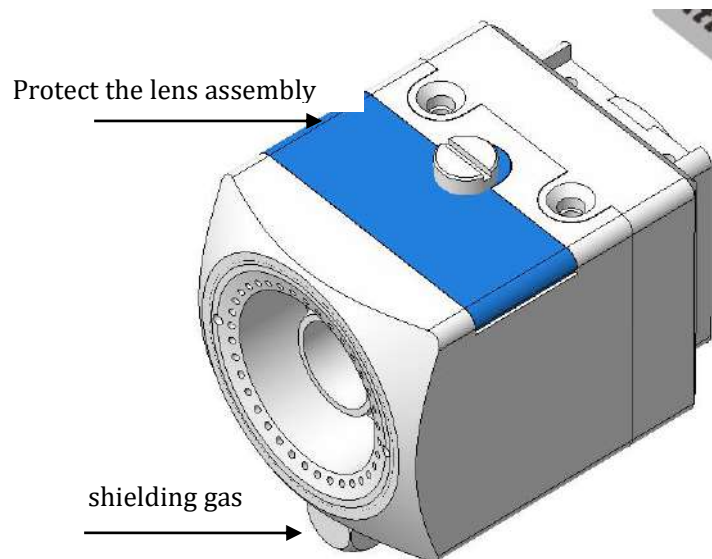
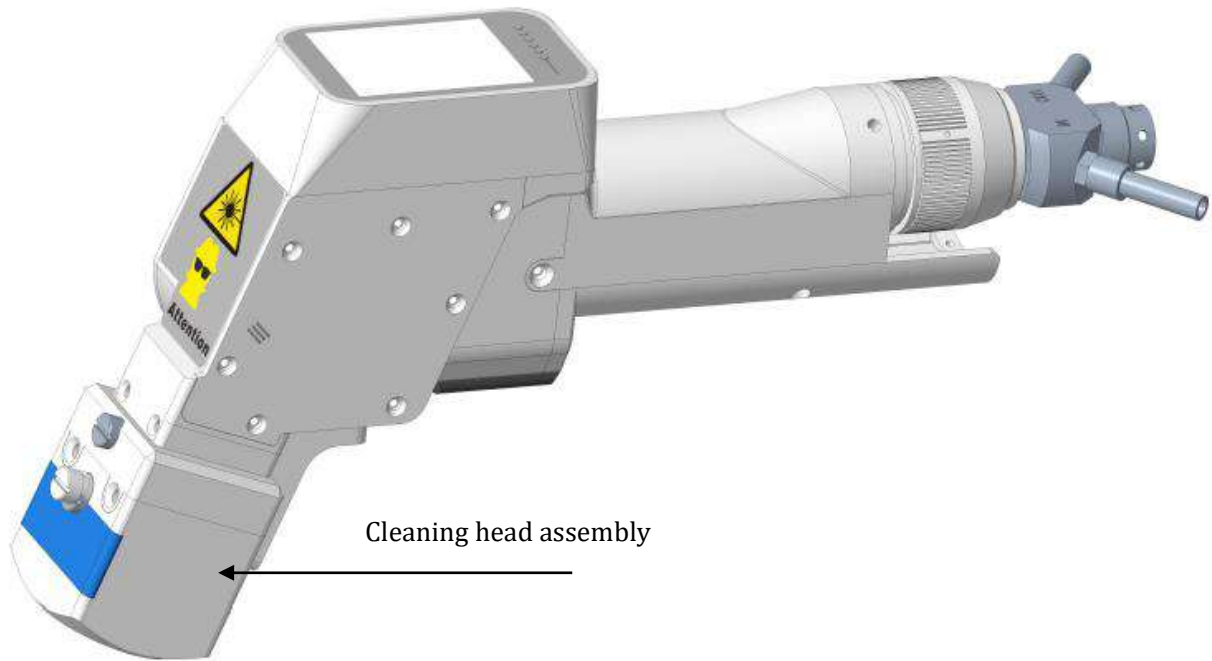
Welded head (welded or cut)



When you need to cut, you only need to unscrew the welding nozzle, screw the cutting nozzle on, and adjust the focal length to cut.

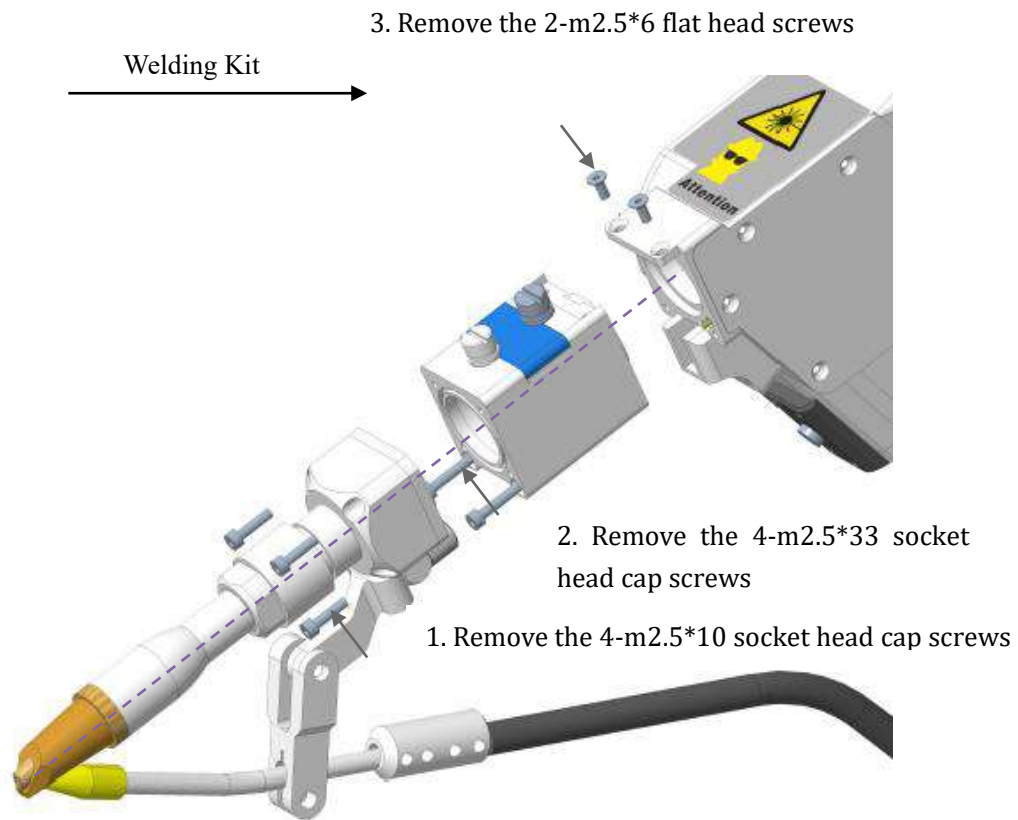
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cleaning head



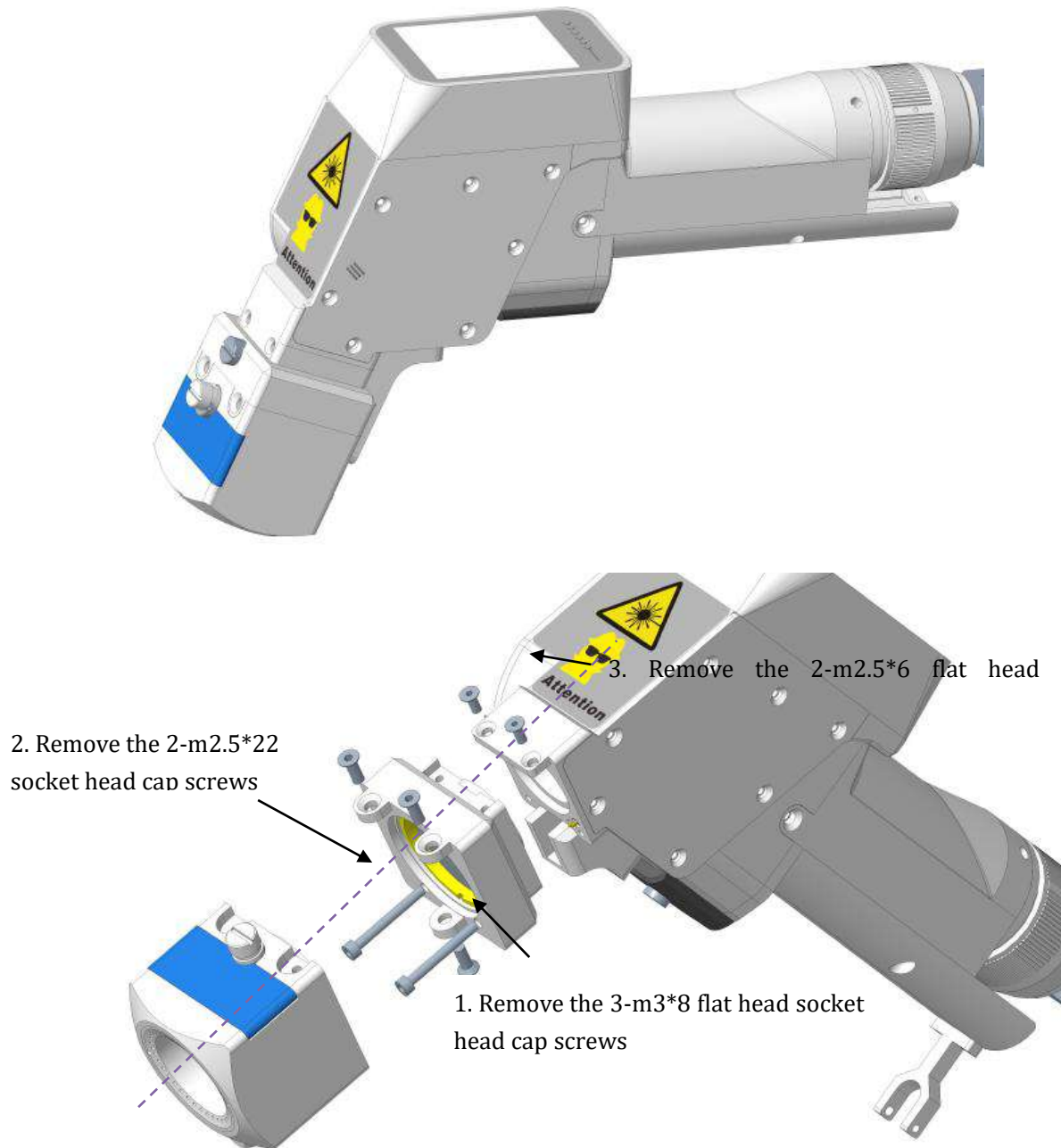
When cleaning is required, remove the welding core kit, screw on the cleaning head, and clean and remove rust within the focal length range.

1.4 Assembly and disassembly of welding kit



The sequence when removing the welding kit: Remove the corresponding screws in the order of 1, 2, and 3, and then tighten the corresponding screws in the order of 3, 2, and 1 during assembly.

1.5 Assembly and disassembly of cleaning kit



1.6 Design and Function

This double pendulum welding head uses a fiber laser as the light source, and operates in a hand-held and flexible manner to the parts that need to be welded, cut, cleaned and destructed.

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This laser head welds accurately, durable, easy to maintain and easy to adjust.

All media connections are built into the laser head!

1.7 Auxiliary media

Protective gas

1. In order to protect the welding area from oxidation and make the welding area well protected, the shielding gas used should have chemical properties that do not cause harmful chemical reactions with the welded body. Argon is recommended.

2. The quality of the shielding gas must meet the ISO 8573-1:2010, Class 2.4.3 standard, and there must be no impurity particles, water or oil. The higher the purity of the protective gas, the longer the life of the protective lens.

3. 2technical parameters

Product parameters	technical parameter
rated power	1500w
Collocated focal length	75mm
Focus/Clean Focal Length	F150mm/F500mm
Swing range	0.1—5mm
cooling method	Water chiller
Swing frequency	0—300Hz
weight	1.0KG
Optional	Cleaning Head / Wire Feeder / Cutting Tip / Welding Kit
screen size	Standard large screen + optional 2-inch small screen

3 Installation and connection

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3.1 Safety Instructions

3.2 Note - High Cleanliness Optical Lenses

3.3 Do not touch the high cleanliness area of the lens in the laser head with bare hands

,the dust and dirt on the lens may cause burnt damage to the laser lens. Contact the non-sensitive area of the lens while wearing protective gloves only.

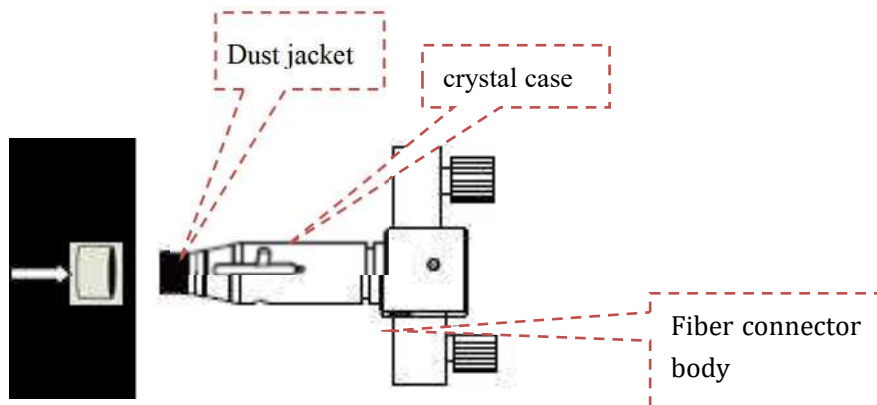
3.3 Connection between QBH and laser



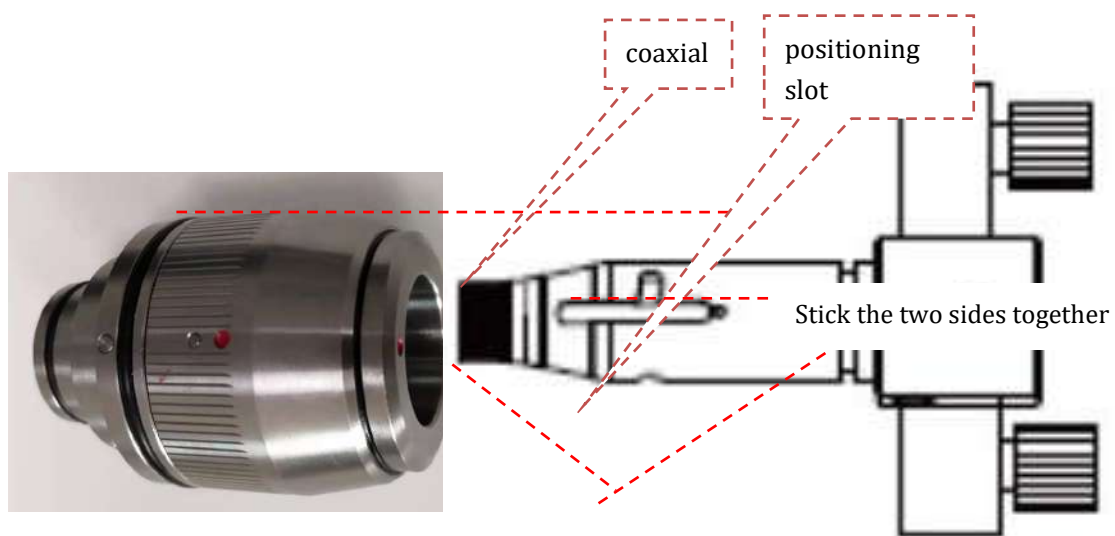
3.4 The first step: Rotate the rotating sleeve as shown in the figure below, and confirm that the red dot on the side of the rotating sleeve and the red dot on the right inner sleeve are on the same line.



Step 2: Remove the dust cover of the fiber rod, and clean the head of the fiber rod with a dust-free cleaning rod and absolute ethanol. Before



installation, it is necessary to check whether the protective cap of the optical fiber rod crystal head is locked, so as to prevent the protective cap from being loose when the machine is working, which will affect the welding effect, burn the optical fiber head or the welding head.

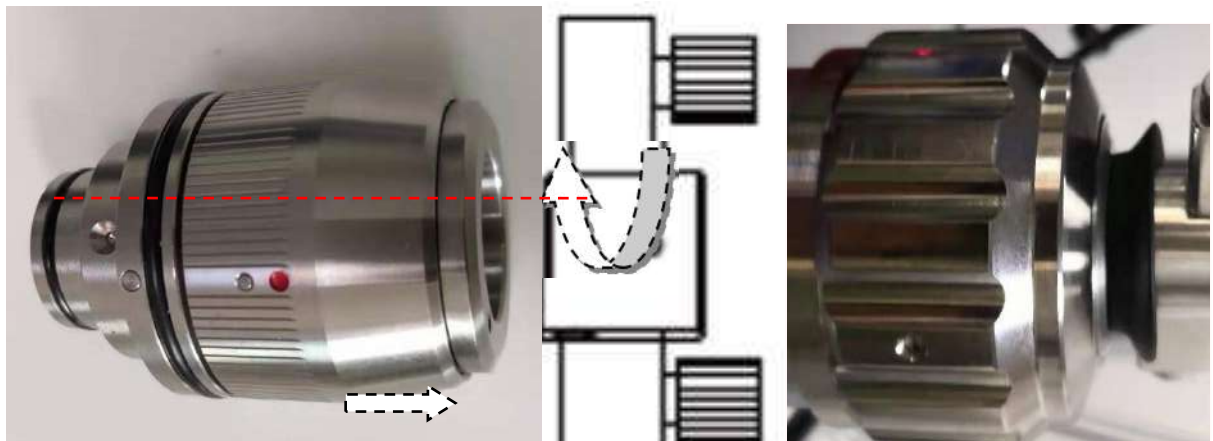


Step 3: Remove the dust cover of the QBH, make the cleaned fiber head coaxial

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with the QBH, and ensure that the white spot on the QBH and the positioning groove of the fiber head (the long groove on the fiber head) are on the same line, and then Gently insert the fiber tip into the QBH until the two contact surfaces of the fiber tip and QBH are in contact.

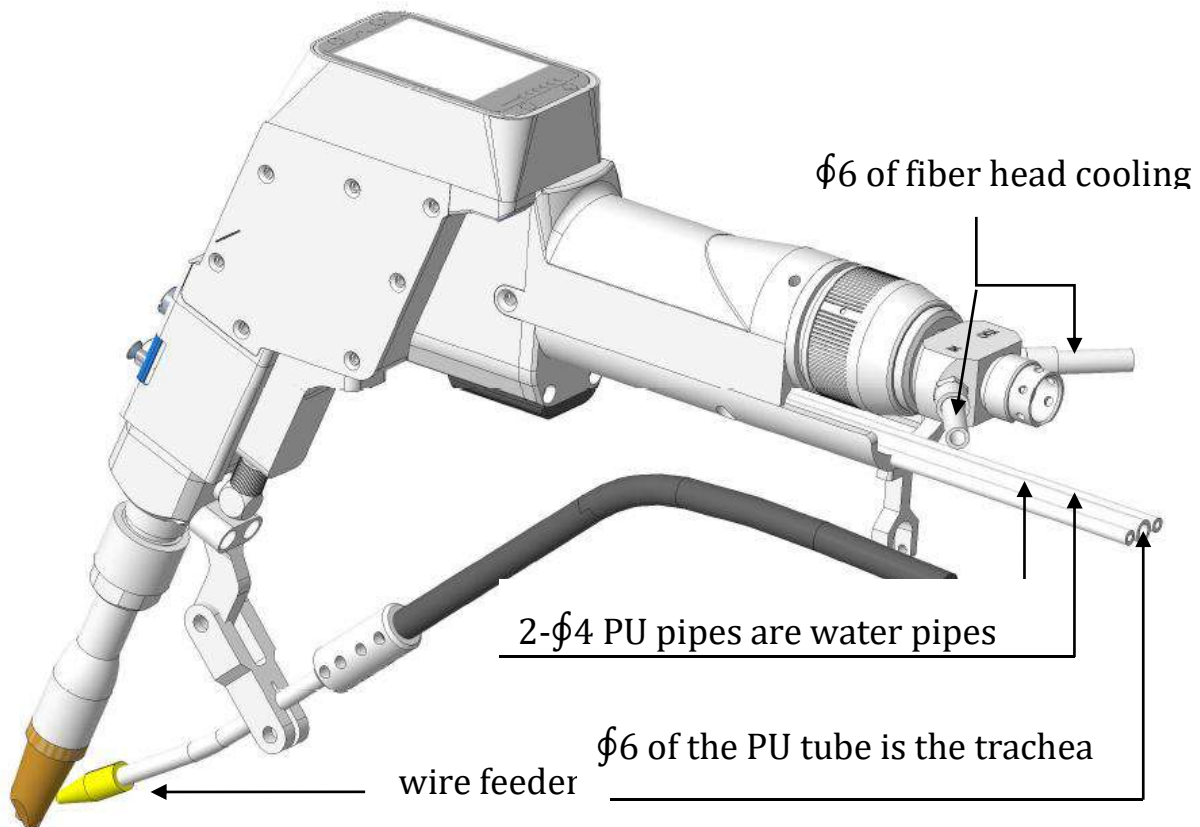
Step 4: After the optical fiber head is inserted into the QBH, lightly press the rotating sleeve by hand, and rotate the rotating sleeve about 15 degrees in the direction of the arrow on the rotating sleeve. After it is in place, lift the rotating sleeve by hand until the bottom surface of the rotating sleeve is basically flush with the top of the QBH, and then rotate the rotating sleeve in the same direction to the limit. The turning force should be moderate.



01 02 03

Precautions:When plugging and unplugging, make sure that the QBH and the fiber optic connector are coaxial in and out, so as not to damage the fiber optic connector.

3.3 Water and Air Connections

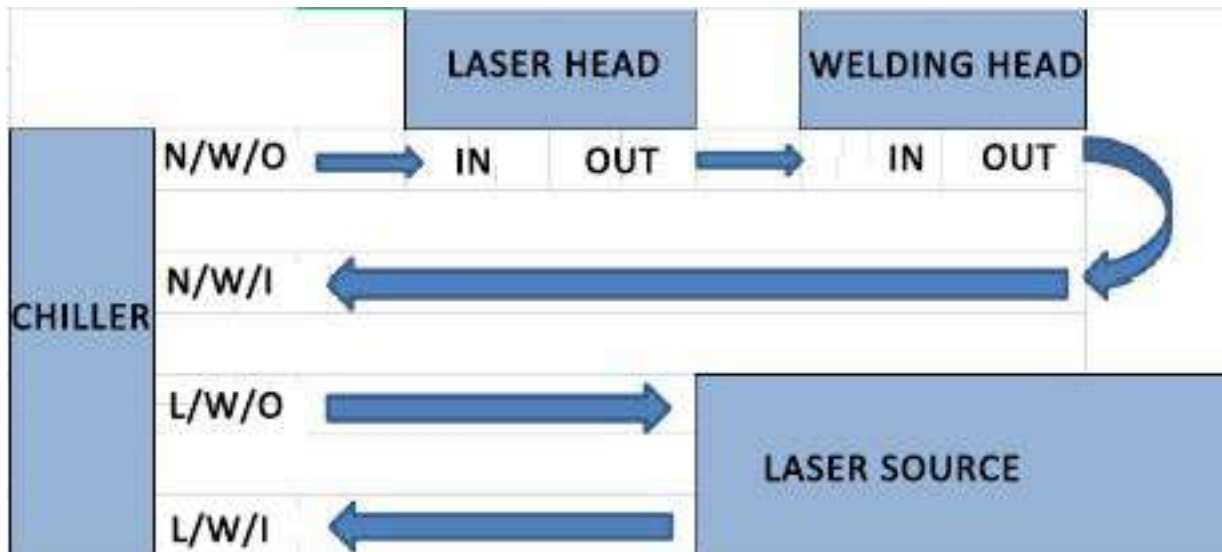


When cutting, only the welding nozzle and wire feeding mechanism need to be removed, and the cutting nozzle can be screwed on for cutting.

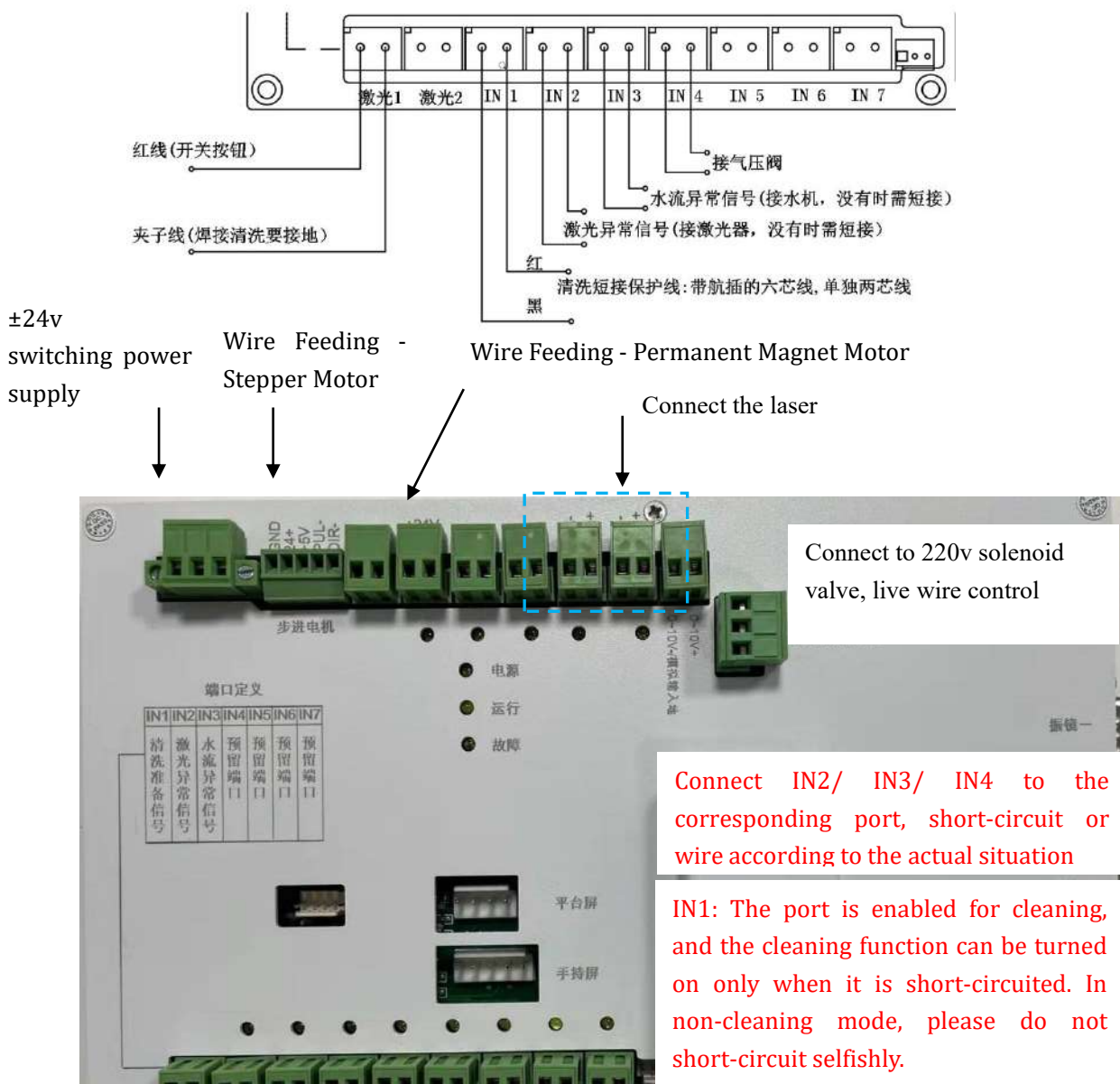
The cooling system is divided into the water part of the welding head and the water part of the optical fiber head, and the two are connected in series, as shown in the following

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figure:



3.4 Definition of controller wiring



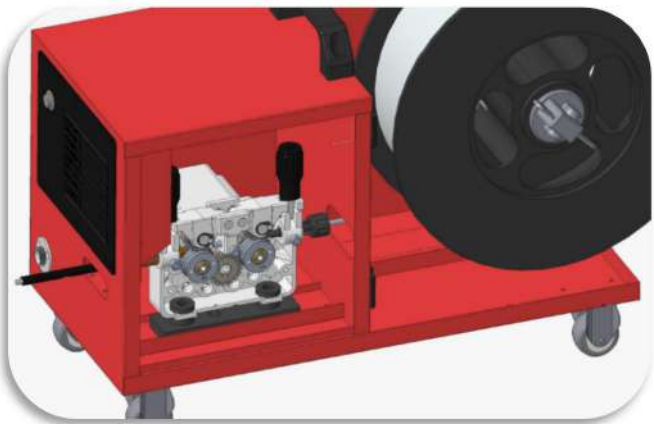
4 whole machine

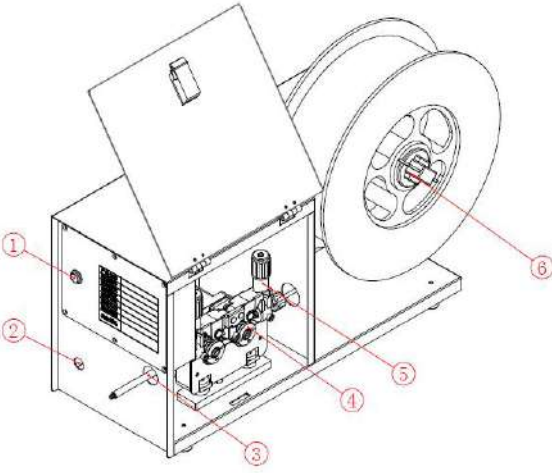
4.1 The whole machine assembly





4.2 Wire feeder structure and replacement wire diameter



	serial number	Part Name
	1	power switch
	2	Power signal line
	3	wire feeder
	4	wire feed roller
	5	Wire Feed Roller Tension Adjustment Nut
explanation	6	Damping shaft
	5 to 15kg wire feed reel (recommended), the maximum support 20kg wire feed reel; the maximum outer diameter of the wire reel is 300mm; if the wire reel is too large, it may cause unstable wire feeding, please try to use this equipment according to the recommended settings	

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1.1.1 Power switch: control the wire feeder to turn on and off. When the wire feeder function is not needed, the wire feeder can be turned off without changing the settings in the system.

1.1.2 Power signal: It is divided into power line and signal line. The power line supplies power to the wire feeder; the signal line is used to control the speed of the wire feeder and the wire feeding and withdrawing signal, and the signal line is a 4-core cable with a shielding layer; For specific definitions, please refer to the line label at the end of the power cord.

1.1.3 Wire feeding tube: It is used to transmit the wire to the working end and protect the wire and guide wire. If different wire feeding diameters match the corresponding wire feeding tube, a better physical examination will be obtained when the wire is withdrawn. Recommended The length is 3 meters, too long will affect the wire feeding experience

1.1.4 Wire feed wheel: used to pull the wire forward and backward. Different welding wires need to correspond to the corresponding wire feed slot to get the best use effect; if the wire feed slot is used incorrectly, it may slip or cause the wire feeding to be smooths.

1.1.5 Wire feed wheel adjustment nut: used to adjust the pare-pressure of the wire feed wheel on the welding wire. The pare-pressure will affect the wire feeding effect. If the pare-pressure is too high, the wire will not be sent, and if the pare-pressure is small, it will slip.

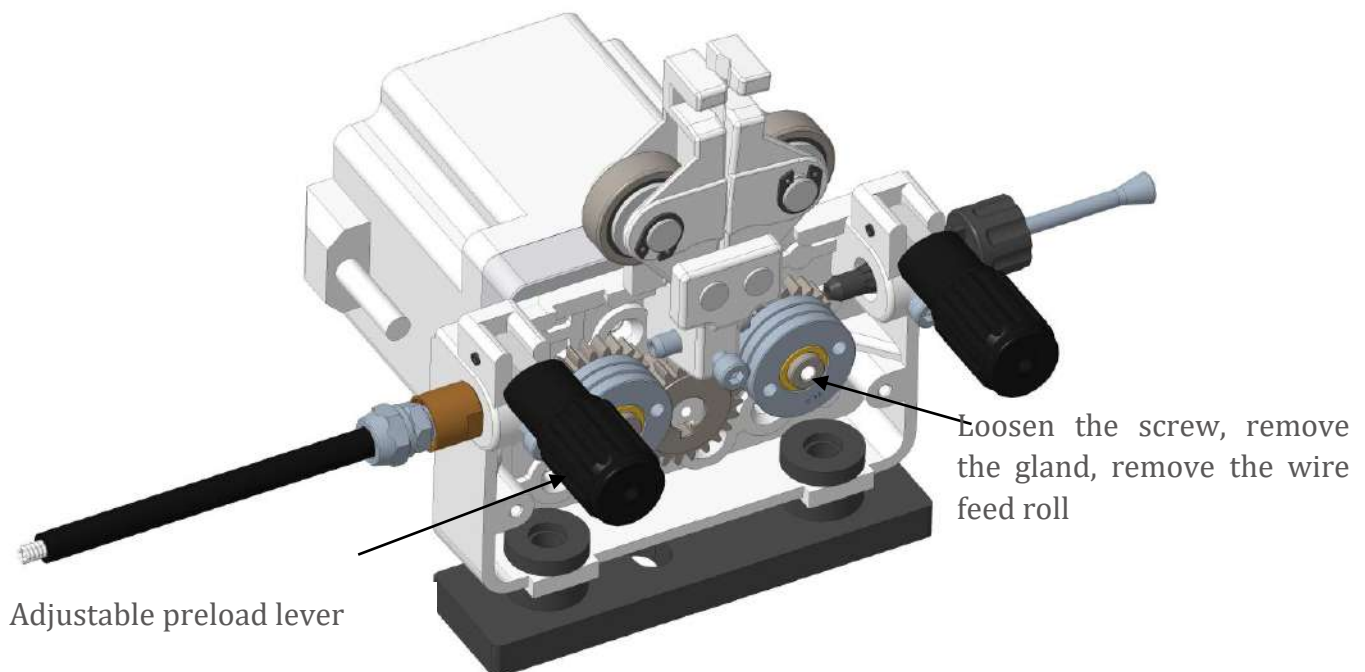
1.1.6 Damping shaft: Install the shaft for the wire feeding reel, and at the same

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time have a certain damping effect, so that the wire will not have inertial forward rush due to the stop of the wire feeding during the rapid pulling process

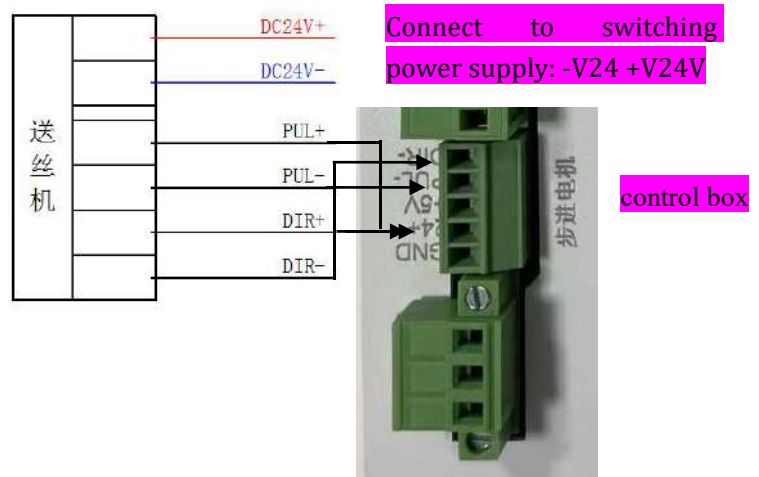
4.21 The operation steps for installing the wire feed roller:

1. First loosen the two adjustable preload pressure rods, as shown above
2. Then loosen the two screws and remove the wire feed roller;
3. Replace the appropriate wire feed roller, turn the side of the wire feed slot of the corresponding specification and model inward, and then tighten the screw.
4. Thread the wire and connect the wire reel.
5. Follow the reverse order of step 1/2 to assemble.





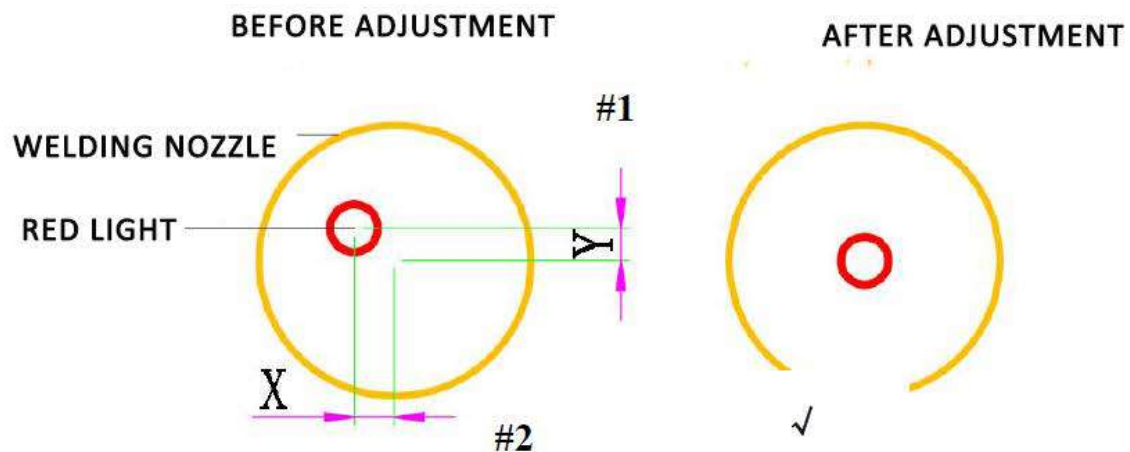
4.22 Definition of wire feeder wiring



Line	Wiring Definition
DC24V+	Wire feeder power supply, connect to 24V+ of 24V switching power supply
GND	Wire feeder power supply, connect to COM of 24V switching power supply
PUL+/PUL-	Wire feeder pulse control signal
DIR+/DIR-	Wire feeder direction control signal

5Preparations before starting

1. Before turning on the light, please check whether the red light is in the center of the welding nozzle, cutting nozzle or cleaning head. If it is in the center, welding, cutting or cleaning can be performed.
- 2.2. If it is not close to the center, it is necessary to compensate the center point through the software, and finally achieve the same effect as the center of the red light and the welding nozzle, cutting nozzle or cleaning head. #1
3. If you see that the red light is very weak, the position is very different, and you can't see the complete red light coming out, you should check whether the motor swings normally and whether the line is connected normally, and the processing can be carried out after troubleshooting. #2



MOST OF THE RED LIGHT IS BLOCKED, ONLY PART OF THE SHIMMER



6 Maintenance

Notice! Laser head disassembly requires a clean and dust-free working environment! When the conditions are difficult to meet the requirements, it is recommended to immediately seal the opening of the lens with a non-adhesive protective film!

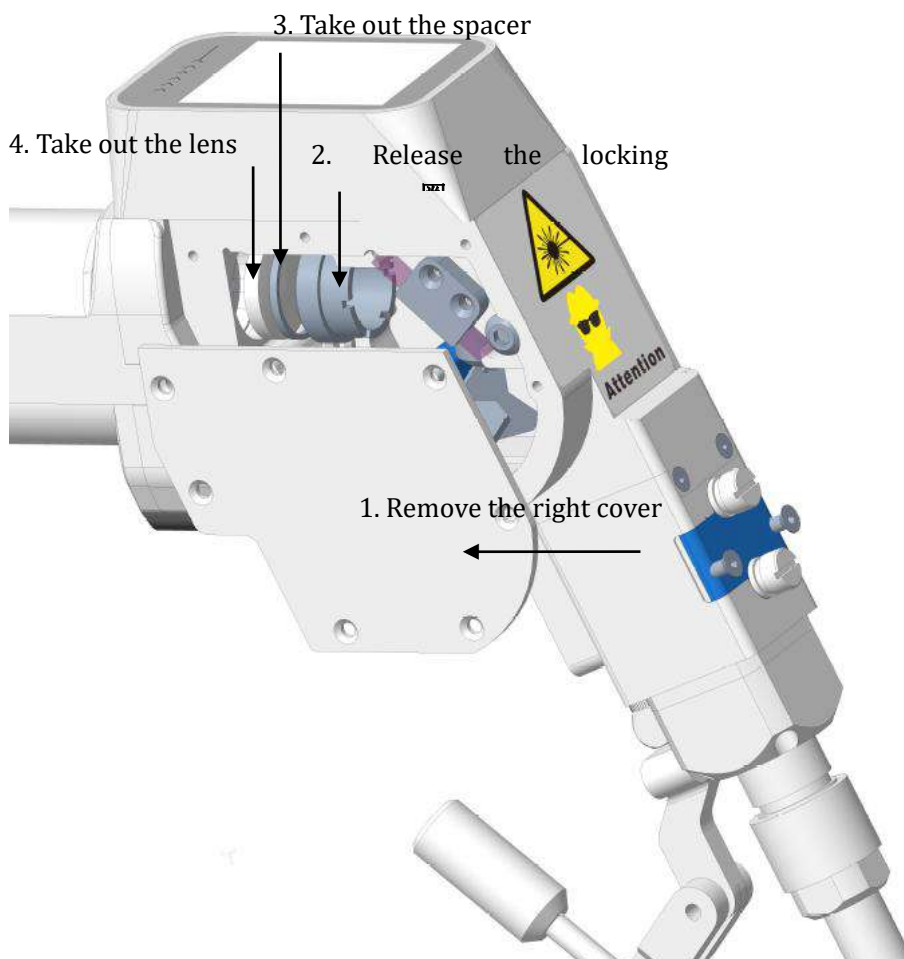
5.1 Care and Maintenance of the Collocation Assembly

In the order from 1 to 4, disassemble the right cover in turn, lock the pressure



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ring, block the hole with clean lens tissue, tilt out the spacer, take out the collocating lens, after maintaining or replacing the lens, please press The order of disassembly, reverse installation, and even force when locking the pressure ring, so as not to damage the lens.

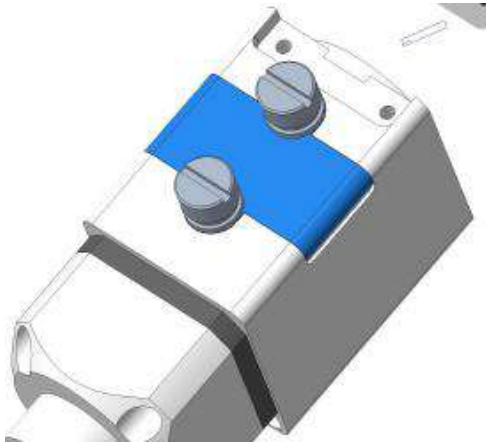


5.2 Care and maintenance of the focus assembly

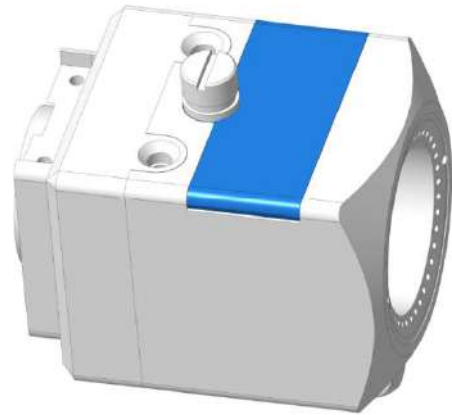
In the order from 1 to 3, disassemble the locking pressure ring and spacer in turn, take out the focusing lens, after maintenance or replacement of the lens, please install it in the reverse order in the order of disassembly. Damage the lens.

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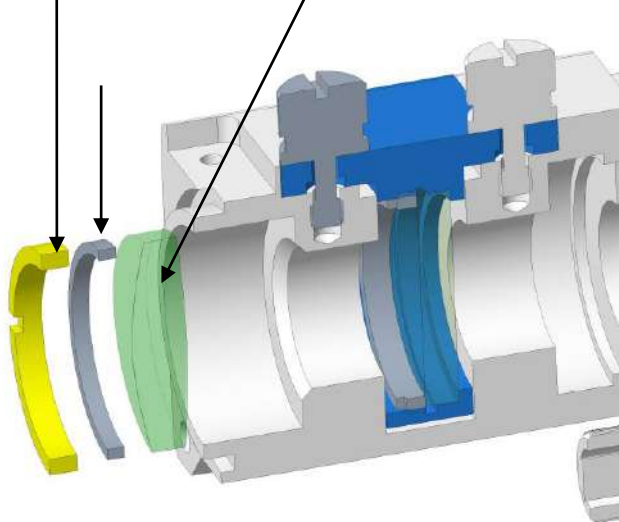
Welding kit focusing lens D20 F150



Cleaning Kit Focusing Lens D30 F500

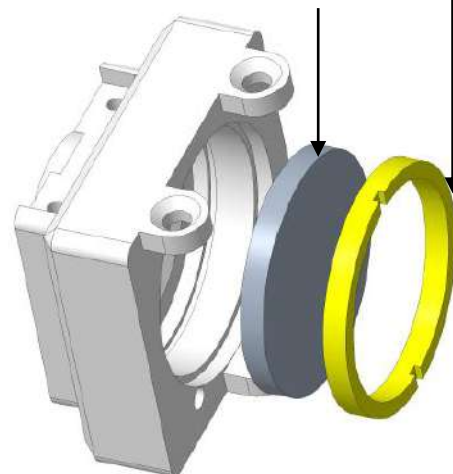


1. Take out the pressure ring
2. Take out the spacer
3. Focusing lens



1. Take out the pressure ring

2. Focusing lens



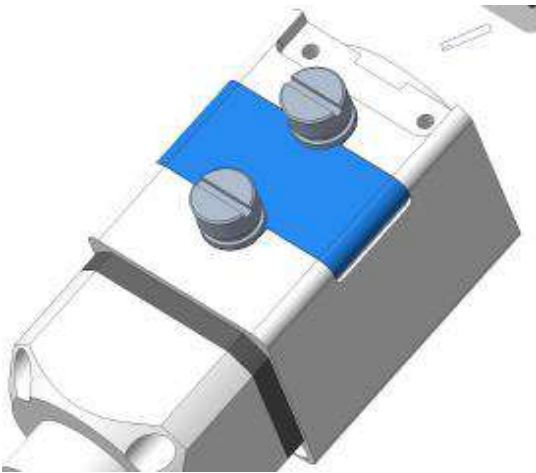
5.3 Care and maintenance of protective lenses

In the order from 1 to 3, disassemble and loosen the locking screws in turn, take out the lens according to the seat, lock the pressure ring, take out the

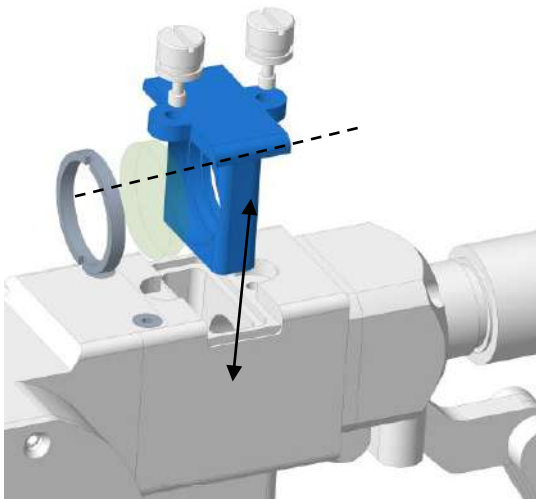
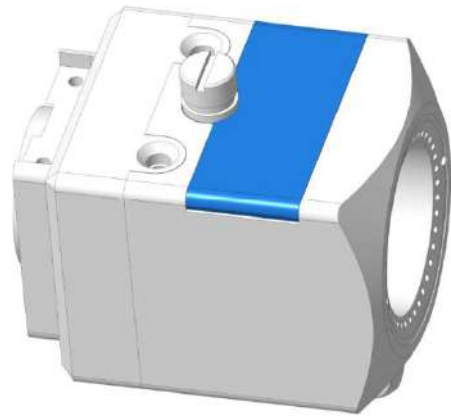
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protective lens, after maintenance or replacement of the lens, please install it in the reverse order and lock it in the order of disassembly. When pressing the ring, the force should be even, so as not to damage the lens.

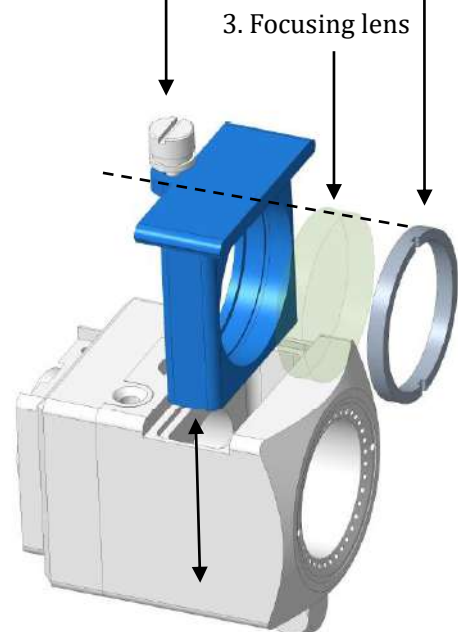
Welding kit protection lens D20*3



Cleaning Kit Protective Lens D30*5



1. Loosen the screw and pull out the lens holder
2. Take out the pressure ring



3. Focusing lens

7 Operation instruction

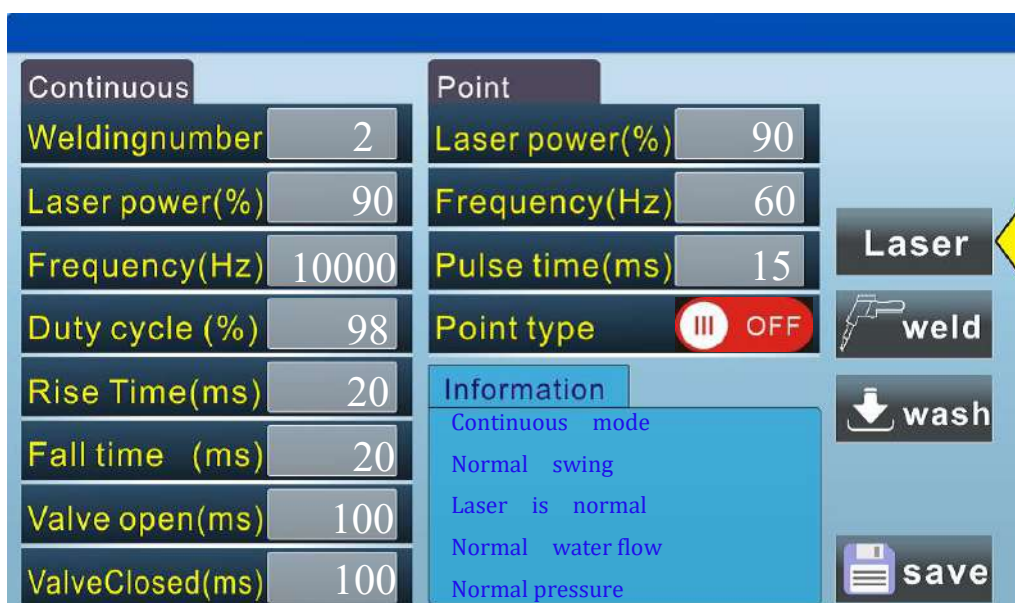
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1.0Startup interface



The initial interface after the machine is turned on can be customized according to customer needs

2.0Laser



The selection corresponding to the arrow is the current function option, and the current function can be set



Function selection: The specific function parameters of the laser, welding gun and cleaning can be individually set

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2.01 Laser parameter adjustment

Continuous	Point
Weldingnumber 2	Laser power(%) 90
Laser power(%) 90	Frequency(Hz) 60
Frequency(Hz) 10000	Pulse time(ms) 15
Duty cycle (%) 98	Point type OFF
Rise Time(ms) 20	Information Continuous mode Normal swing Laser is normal Normal water flow Normal pressure
Fall time (ms) 20	
Valve open(ms) 100	
ValveClosed(ms) 100	

Continuous

continuous mode

: Continuously emit light after pressing the light-emitting button until the light-emitting button is released.

Program number: display the current program number, different program numbers can set different parameters, which is convenient for quick switching.

PWM frequency HZ: 1-20000Hz adjustable, adjust the frequency of PWM.

PWM duty cycle %: 1-100% adjustable, adjust the adjustment duty cycle of the laser.

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Ramp-up time ms: Set the ramp-up time of the laser power from 0 to reaching the set value.

Ramp down time ms: Set the cut-off time for the laser power from the set value to 0.

Light output delay ms: the time from pressing the light output signal to the actual light output to blow air in advance.

Air off delay ms: the time to continue blowing after the light is stopped.

Point

single point mode

: Press the light-emitting button once, the laser is not continuous.

Laser power %: Set the current laser power for single point welding to be adjustable from 10-100%.Light output frequency: set the light output frequency 1-100Hz adjustable, the higher the frequency, the higher the overlap rate

Lighting time: Set the light-emitting time, the larger the solder joint strength, the stronger

Prompt the current working mode, galvanometer status, laser status, water flow status, etc.

Information

Continuous mode

Normal swing

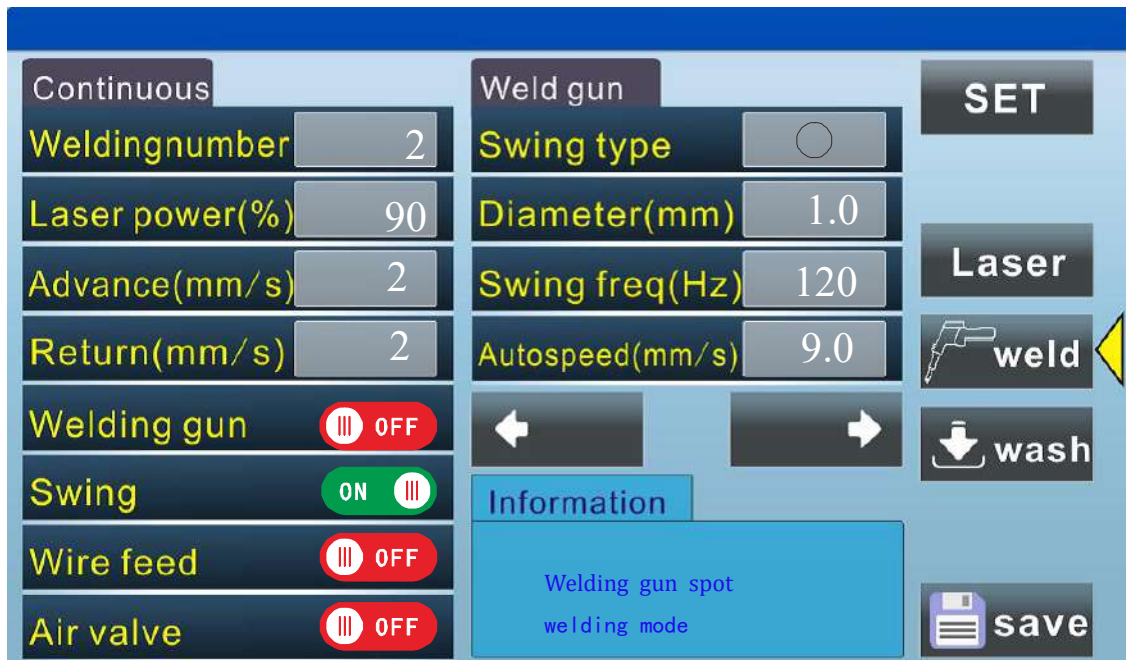
Laser is normal

Normal water flow

Normal pressure

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3.0 Torch Mod



Program number: display the current program number, different program numbers can set different parameters, which is convenient for quick switching.

Laser power %: Set the current laser power for single point welding to be adjustable from 10-100%.

Manual wire feed/s: Set the speed of manual wire feeding.

Manual thread return mm/s: Set the speed of manual thread return.

Welding gun mode:  OFF

Swing switch:  ON whether to swing, no swing is the smallest light spot, green shows the current function is on, red shows the current function

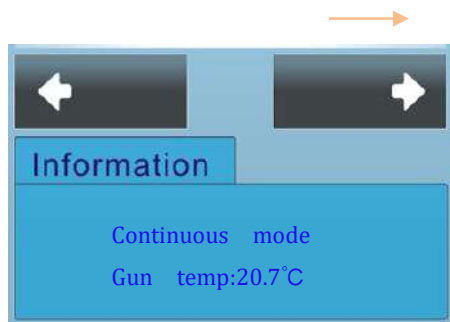
Wire feed switch:  OFF whether to feed wire

Air valve switch:  OFF control air valve switch, control whether to blow air

Welding gun control system: set the swing mode, swing diameter, frequency and wire feeding speed during welding

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feeding speed



Swing Mode

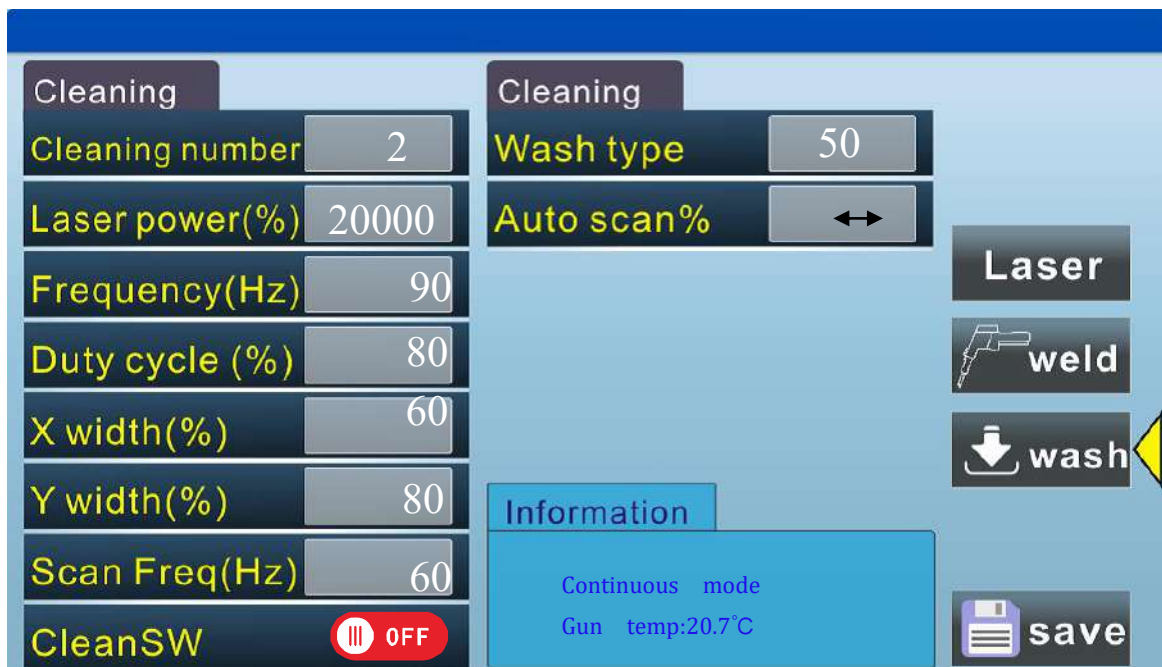


Wire return: manual wire return - manual adjustment when too much wire is fed during debugging.

Wire feeding: Manual wire feeding - too little wire feeding during debugging, adjust manually.

Information prompt: prompts the current torch mode.

4.0 Cleaning Mode



Program number: display the current program number, different program numbers can set different parameters, which is convenient for quick switching.

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Laser power %: Set the current laser power for single point welding to be adjustable from 10-100%.

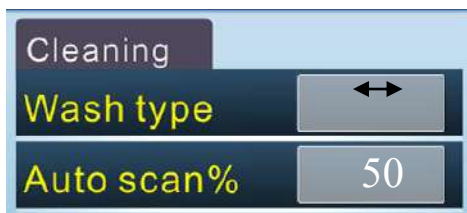
PWM frequency HZ: 1-20000Hz adjustable, adjust the frequency of PWM.

PWM duty cycle %: 1-100% adjustable, adjust the adjustment duty cycle of the laser.

X/Y cleaning width %: Set the swing size of the galvanometer motor in the X/Y direction.

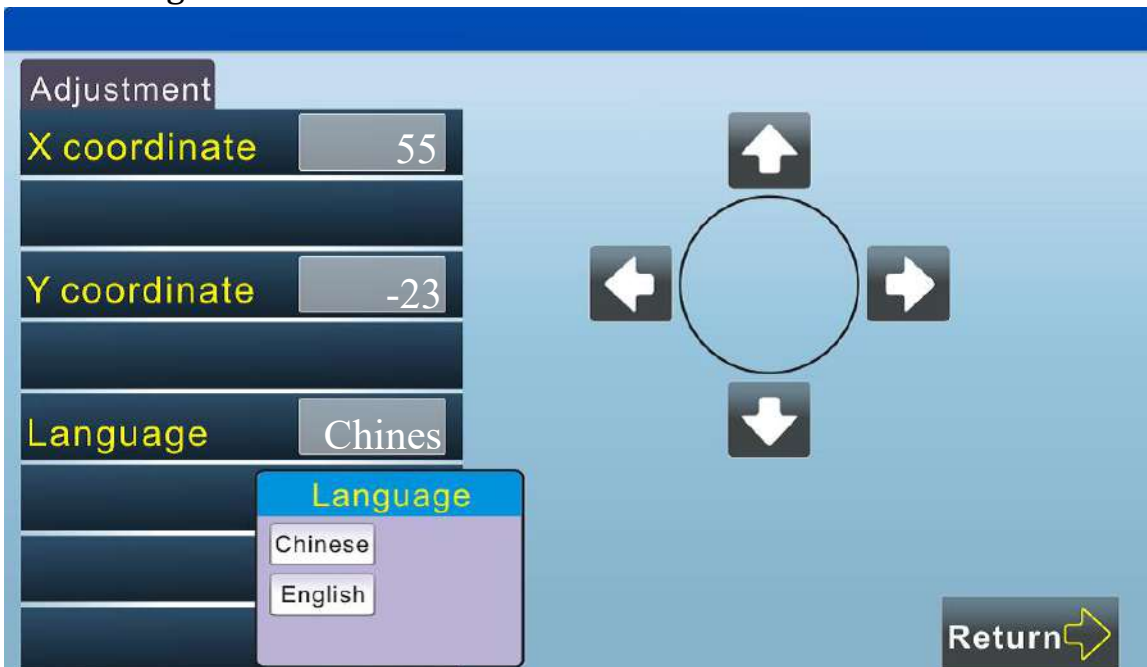
Cleaning frequency: Set the frequency of cleaning oscillation.

Cleaning switch:  OFF The cleaning mode is officially turned on only after the side switch is turned on to prevent commiseration.



Cleaning mode: Set the cleaning mode: horizontal, vertical, circle, ellipse, character, etc.

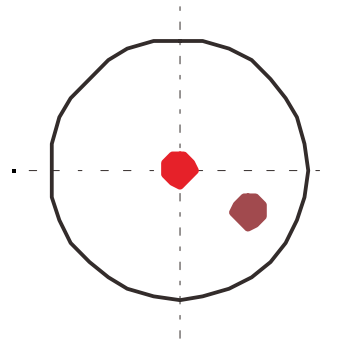
5.0 Settings



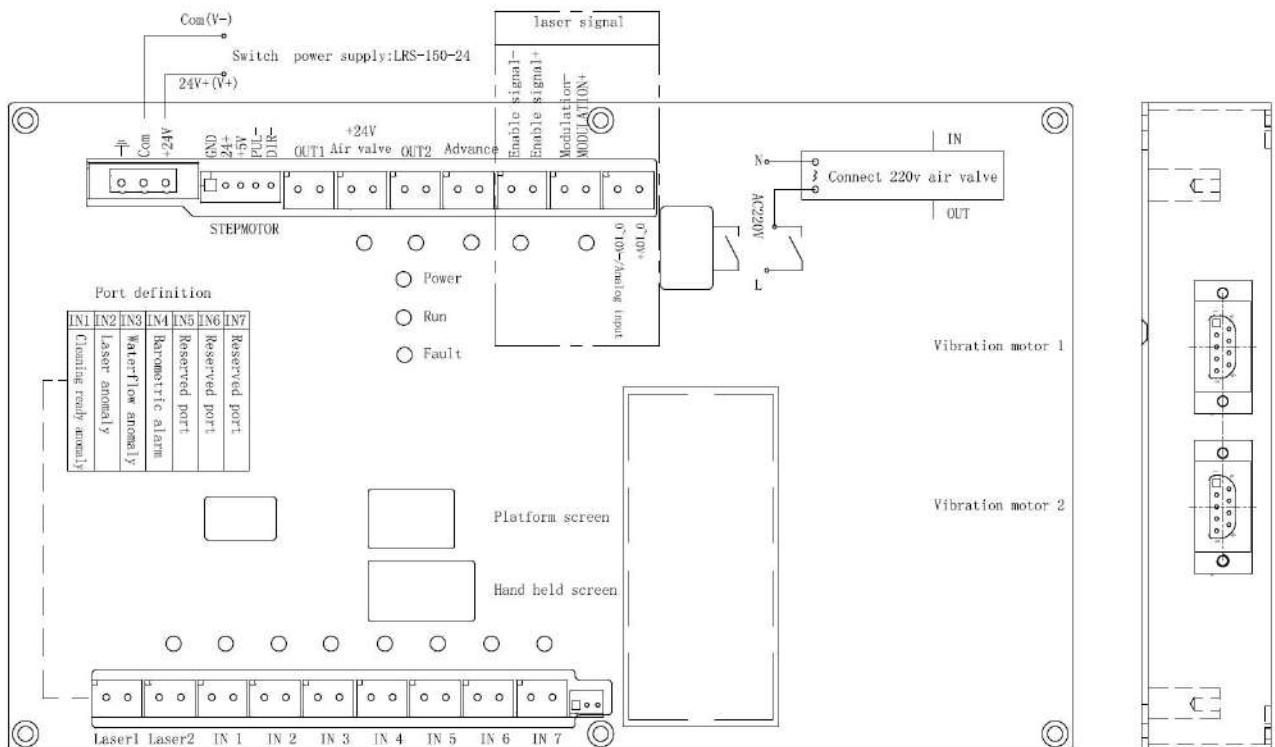
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Set the initial position of the X\Y dot and the compensation amount to the center of the light output. The brown dot is eccentric. Through the compensation in the X and Y directions, the solder joint moves to the center of the hole.

Setting language: Chinese, English



5.0 Controller Wiring Definition



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The initial interface after the machine is turned on can be customized according to customer needs.