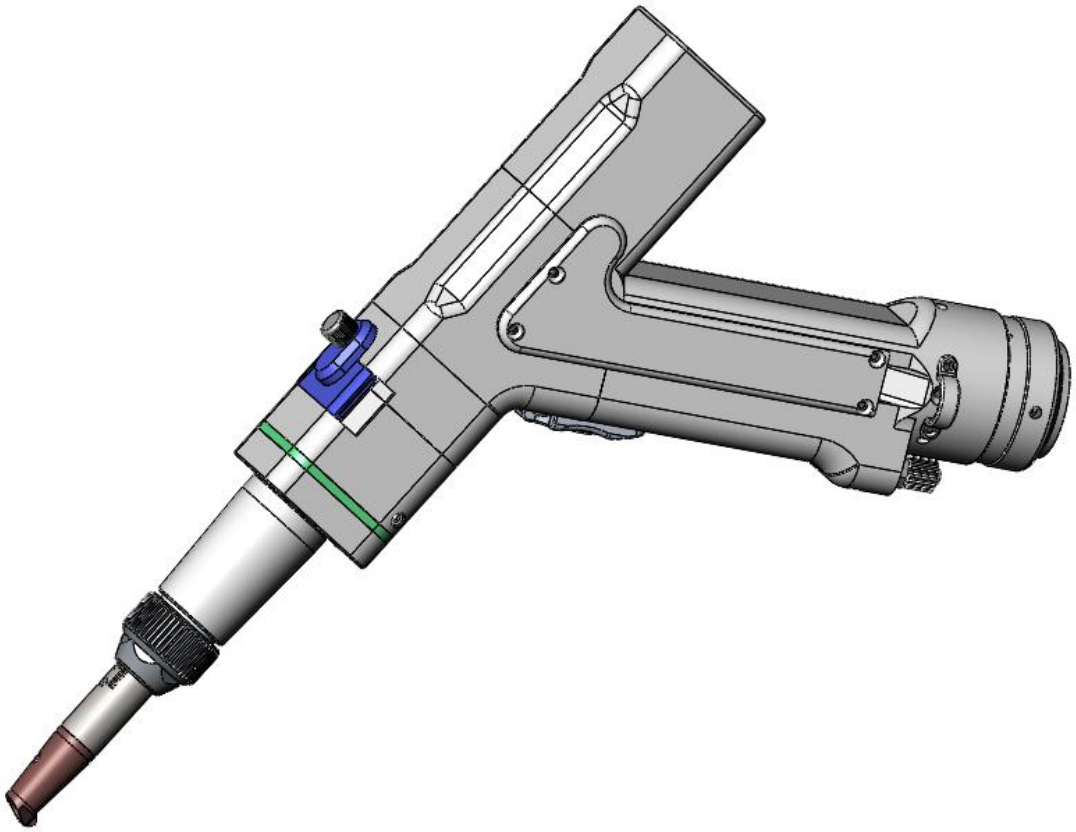
ND18A User Manual



Contents

Kindly reminder

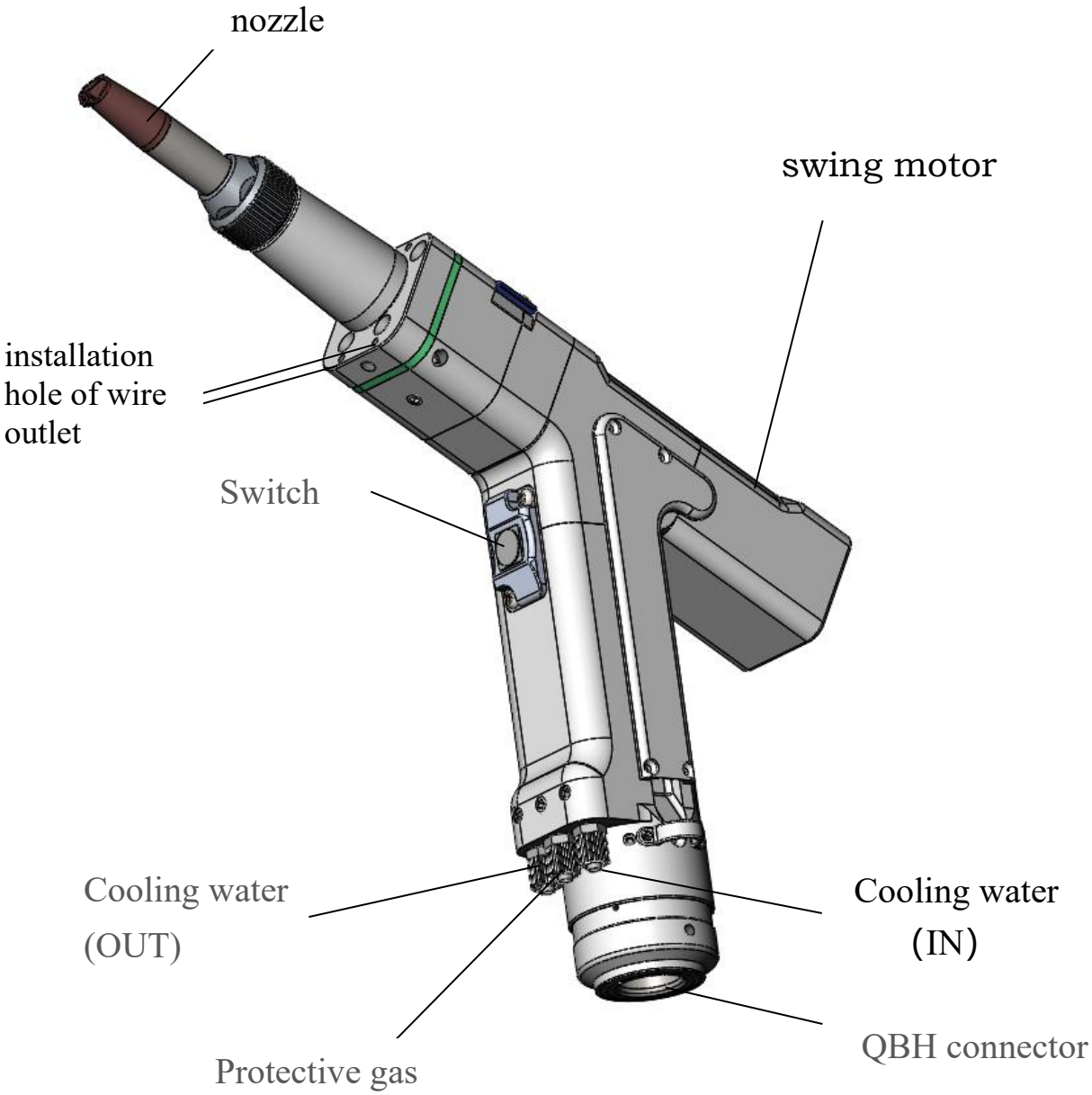
Before using this product, please read this manual carefully and confirm your understanding of it!

Please keep this manual properly for future operation and maintenance

1. Product description

1.1 Product structure diagram

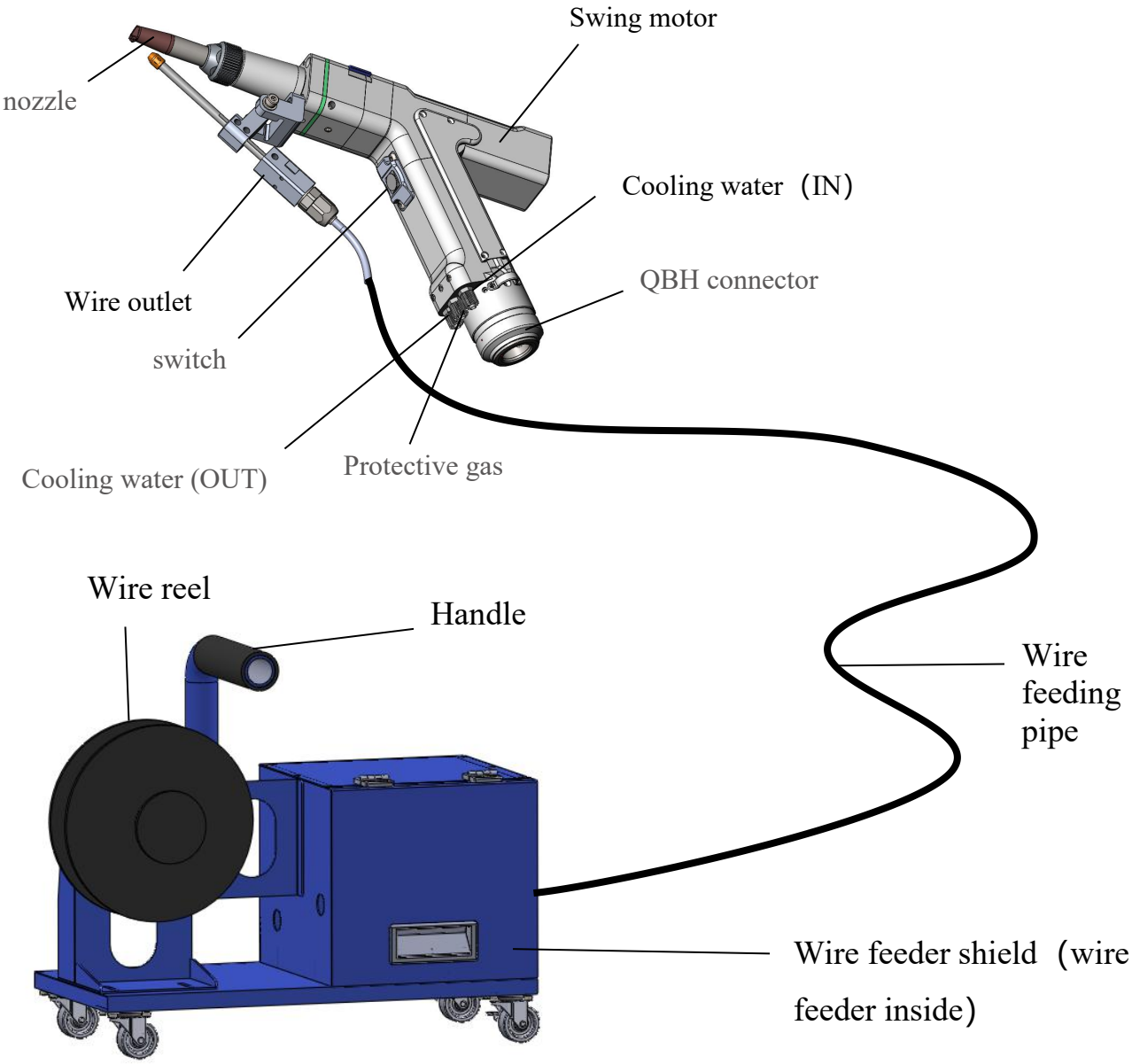
Model 1 （Handheld wobble welding head)



Note： Cooling water quantity must be sufficient, the water pressure should be above 0.4MPa；

Please keep the bending radius of the connected air pipe not less than 30mm.

Model 2（Welding head with wire feeder）



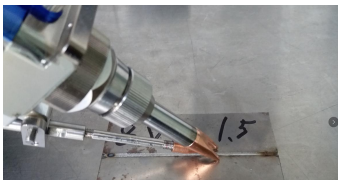
Note： Cooling water quantity must be sufficient, the water pressure should be above 0.4MPa；

Please keep the bending radius of the connected air pipe not less than 30mm.

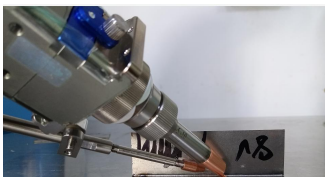
1.2 Main function

1.2.1 Design & function

1.Smart internal design and interactive control system expand the tolerance range and welding width of the processing parts, and solve the disadvantage of minor laser welding spot, and provide better welding forming.
2.Light shape, Ergonomic design, advanced structure, and reliable performance ensure comfort grip and simple operation.
3.With multiple safety alarms, the laser will be locked automatically when the workpiece is removed.
4.Nice welding seam, fast welding speed, no consumables, no welding marks, no discoloration, no later polish.
5.This head could be equipped with a variety of angular nozzles to meet the welding needs of different products.
Diagram of welding with different angular nozzles



Nozzle1 （For planar welding）



Nozzle2 （For internal corner welding）

Nozzle3 （For outer corner welding）

1.2.2 Auxiliary media

Protective gas

In order to protect the welding position from oxidation, the protective gas should not have any harmful chemical reaction with welding material.
The protective gas must meet the Standard of ISO 8573-1:2010, Class 2.4.3 without impurity particles, water and oil. High purity protective gas will prolong the lifespan of protective window.

2 Technical parameters

Connector type：QBH
Laser incident mode：Coaxial
Max working power：1500W
Laser wavelength range：1070±20
Collimating length：50mm
Focusing length：150mm
Protective gas：Nitrogen
Weight：1kg
Adjustable width：0-5mm
It can be fit with various laser sources.

3. Installation & Connection

3.1 Safety Instructions

Any maintenance or fault survey should be conducted by professional trained personnel who must have got safety training and be aware of the possible danger and safety measure. Users should learn the related safety knowledge and prepare necessary safety devices before using.

Copper nozzle part with voltage, do not touch directly!

Caution - High Pressure!
The gas pressure inside some laser head component can reach to 2.5MPa

Caution - High Voltage!
Keep the power off during the maintenance and repair.

Caution - Pinching Hand!
During maintenance and repair, do not put hands or any other body parts under the laser head or forward direction of the moving axis.

Danger - Laser!
The ground wire of the AC access interface must be connected to the AC grid and connected to the ground wire end of the power supply ;The laser ma chine will generate level 4 laser while working.

Keep the eyes or skins from being directly shot or scattered by laser.
Do not look directly into the laser beam even if wearing eye protecting equipment.
Please wear the goggles which meet the standard of DIN EN 207 & BGV B2.

3.2 Unpacking check

1.Packing cases intact

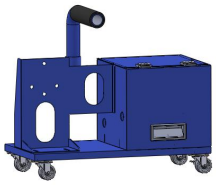
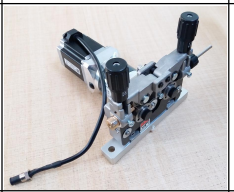
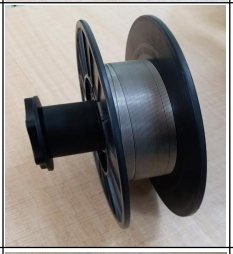
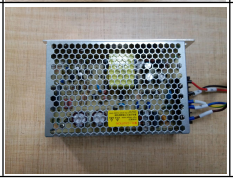
2.The signage should be clear with conformity mark and accord with the purchased models

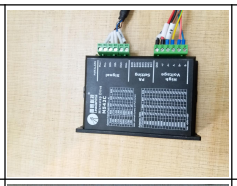
3.The upper and lower opening tear-proof seals are not broken or disassembled

4.If the above does not match, contact the seller.

Items list of two models of welding heads (Corresponding √ Option)

Items list						
No.	Item	Model	Qty.	Image	Model 1	Model 2
1	Handheld wobble welding head	ND18A	1		√	√
2	Control box	ND18A-SCSS-KZX-001	1		—	√
3	Welding head switch power 1	HF55W-SE-24	1		√	√
4	Welding head switch power 2	±15V.3A	1		√	√
5	Nozzle	ND18-019T ND18-020T ND18-021T	3		√	√
6	PVC Rubber protective cover （red）	Bore diameter 10mm, Length 30mm	1		√	√
7	DC Power line harness	ND18A-DYWXS-A-2M/T	1		√	√
8	ND18A Motor extension cable	ND18A-DJYCYC-A-10M/T2	1		√	√
9	Switch & safety lock extension cable	ND18A-KGAQYC-A-10M/T1	1		√	√

10	Control box mounting bracket	YW52-240L	4		√	√
11	Nozzle connecting pipe	ND18-090L	1		√	√
12	Display & Four-core shielded wire	7.0 inch+4 core 4 pin 2.54mm 4 core 8 pin 2.0mm	1		√	√
13	Safety lock isolation panel module	ND18-GLB-001	1		√	√
14	Lock ring wrench	ND18-117T	1		√	√
15	Display mounting buckle	/	4		√	√
16	User manual	ND18	1		√	√
17	Wire outlet module	ND18-CSZ-001	1 set		—	√
18	Wire feeder shield	SS-BJHZ-002T	1		—	√
19	Step Wire Feeder	SX-005	1		—	√
20	Welding wire reel	Plate ¢ 200 mm, cylinder ¢ 100 mm, inner width 45 mm, outer width 55 mm, shaft hole 52.5 mm	1		—	√
21	Wire feeder switching power	HF150W-SE-24	1		—	√

22	Wire feeder driver	M542C	1		—	√
23	Step motor extension cable	WSX-SSJBJ-YC001	1		—	√
24	Wire feeder power connecting cable	WSX-SSJBJ-DY001	1		—	√
25	Step drive control cable	6-core cable， 7-24AWG 2 meter	1		—	√

3.3 Preparation for Installation

Tools

1.A set of metric hexagonal handle;

2.One bag of clean rod, one bottle of anhydrous ethanol(500ml), one package of clean gloves;

3. Clean and dust-free working environment.

Preparation of installation personnel

1. Read this manual carefully;

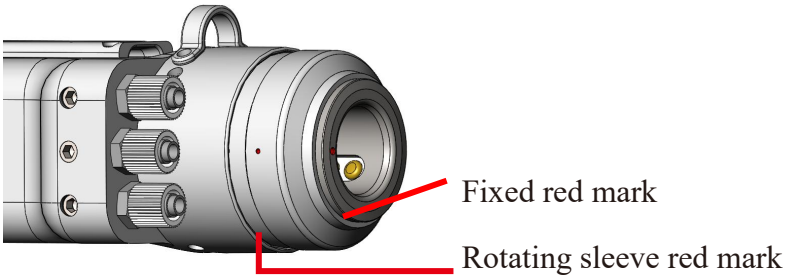
2. Wash hands with soap;

3. Wear dust-free gloves;

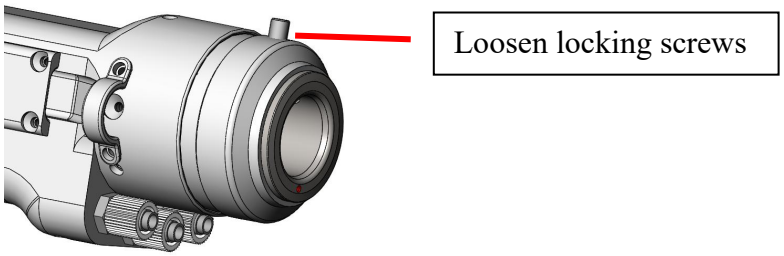
4. Wear a mask if necessary.(Note - Dust removal is of utmost importance)

3.4 QBH connected to fiber

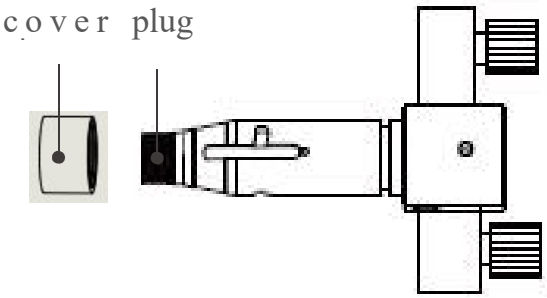
Step one：Before turning the sleeve as below, make sure the red marks are aligned.



Step two: Loosen rotating sleeve locking screw (in the 180° of the rotating sleeve), otherwise the QBH can not be rotated to lock the fiber rod.

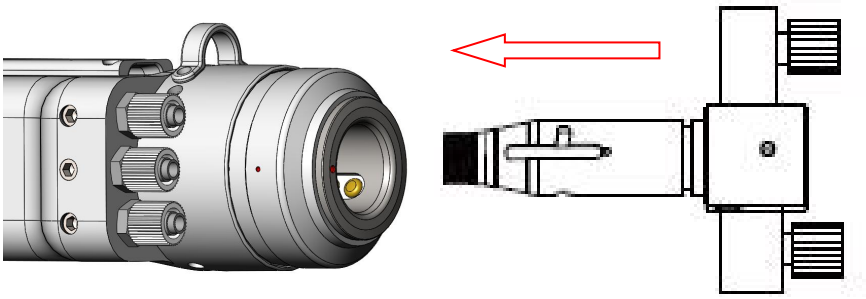


Step three: Remove the dust cover of fiber rod, clean the fiber rod with anhydrous ethanol. Before installing, check the protective cover of fiber plug to see if it is locked, avoid the cover from loosening and effecting the welding performance or burning the fiber and welding head.



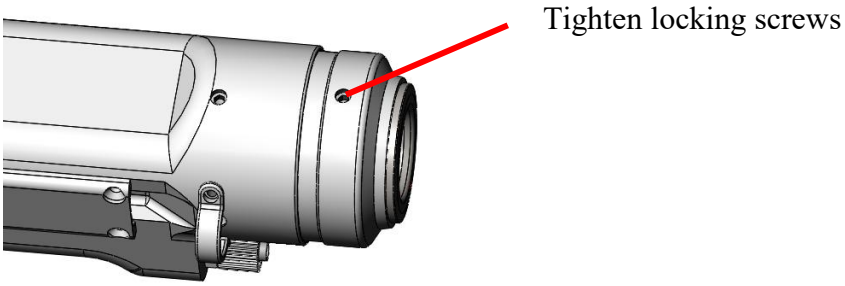
Step four: Remove the dust cover from QBH, place the clean fiber rod and the QBH co-axially, make sure the white mark on the QBH is aligned with the locating slot (long slot on fiber rod), insert the fiber rod into QBH gently, until the fiber rod joints the QBH contact surface.

Step five: After inserting the fiber rod into QBH, press the sleeve gently and turn it about 15 degree along the arrow on the sleeve. Then pull the sleeve until its underside is parallel with the top of QBH, turn the sleeve at the same direction till the limit.

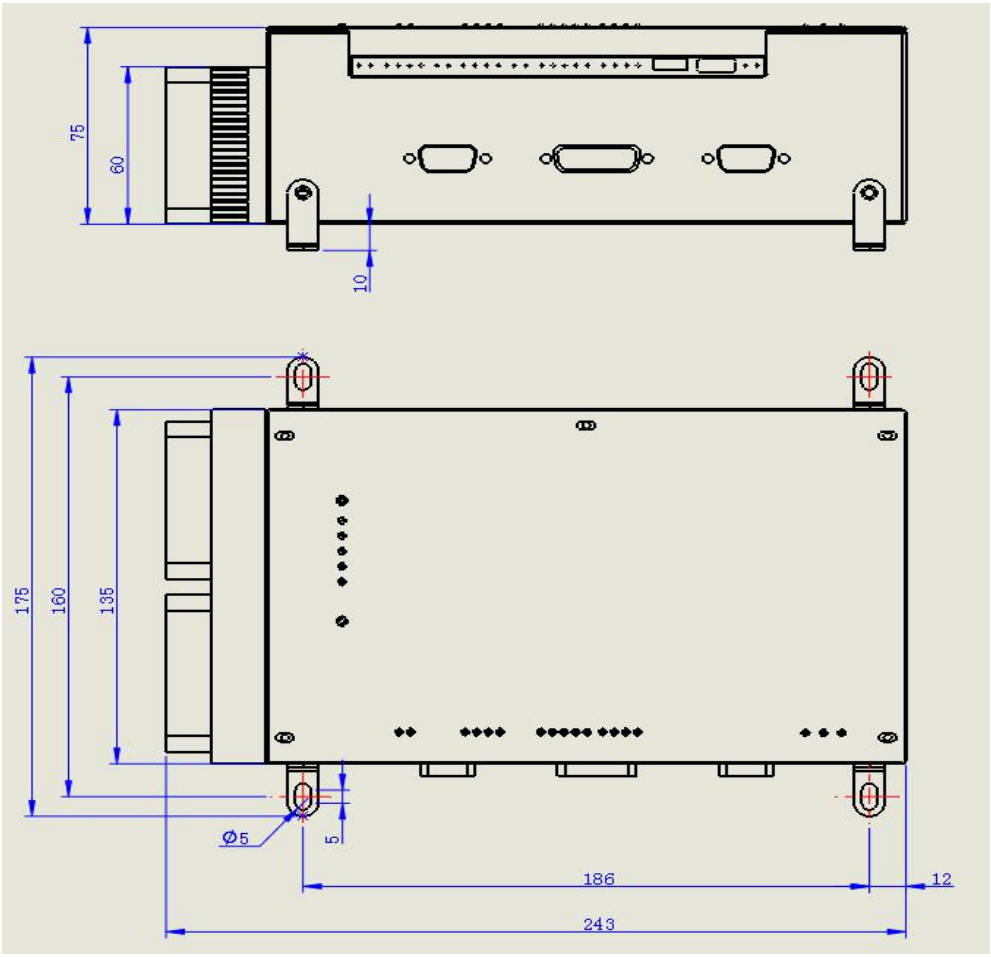


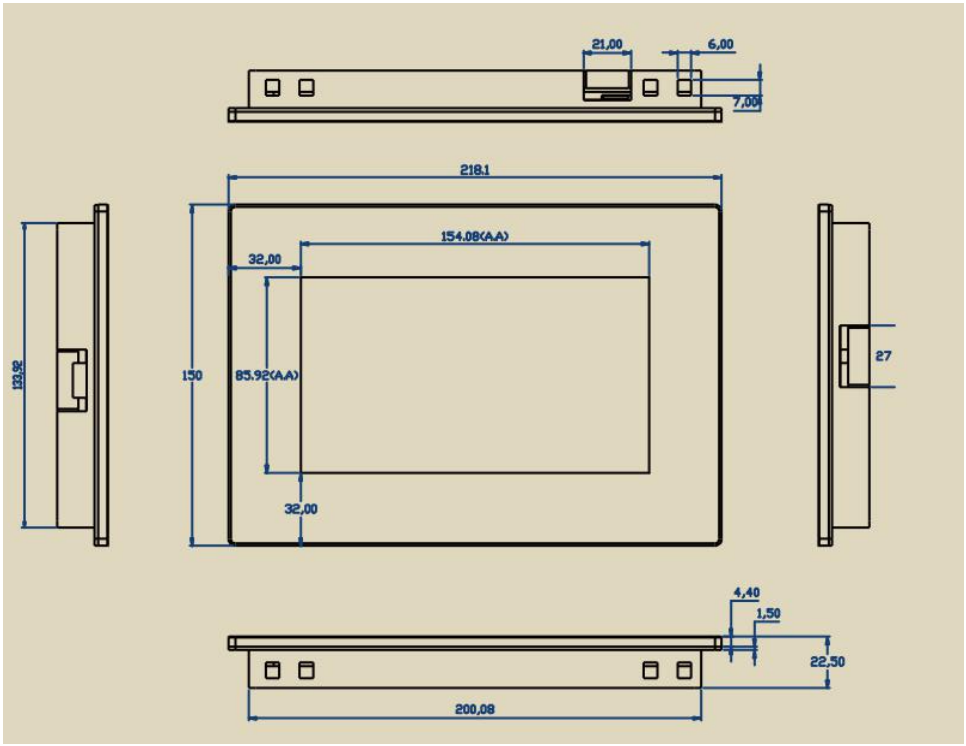
Note: 1. Insert or pull out the fiber rod gently; 2. When inserting or pulling out, QBH and fiber rod should be co-axially; 3. The operation should be kept as dust-free as possible.

Step six: after the fiber rod is inserted into the QBH, turn the sleeve to lock, and then tighten the locking screw.



3.5Structure and dimensions





Display mounting dimensions

4 Maintenance

Clean and dust-free working environment is required.

Any laser circuit equipment fitted with a laser head must be carefully dedusted.

Assembly or replacement of lens or other components must be conducted in clean working environment.

Prepare new lens component before removing the old one.

Users could purchase spare lens components from us.

In case that user could not meet the above requirements, it is advised to use nonstick protective film to seal the opening after the removing of the lens immediately.

Minimize the time of laser path being exposed to the air to prevent the dust and dirt entering into the laser head.

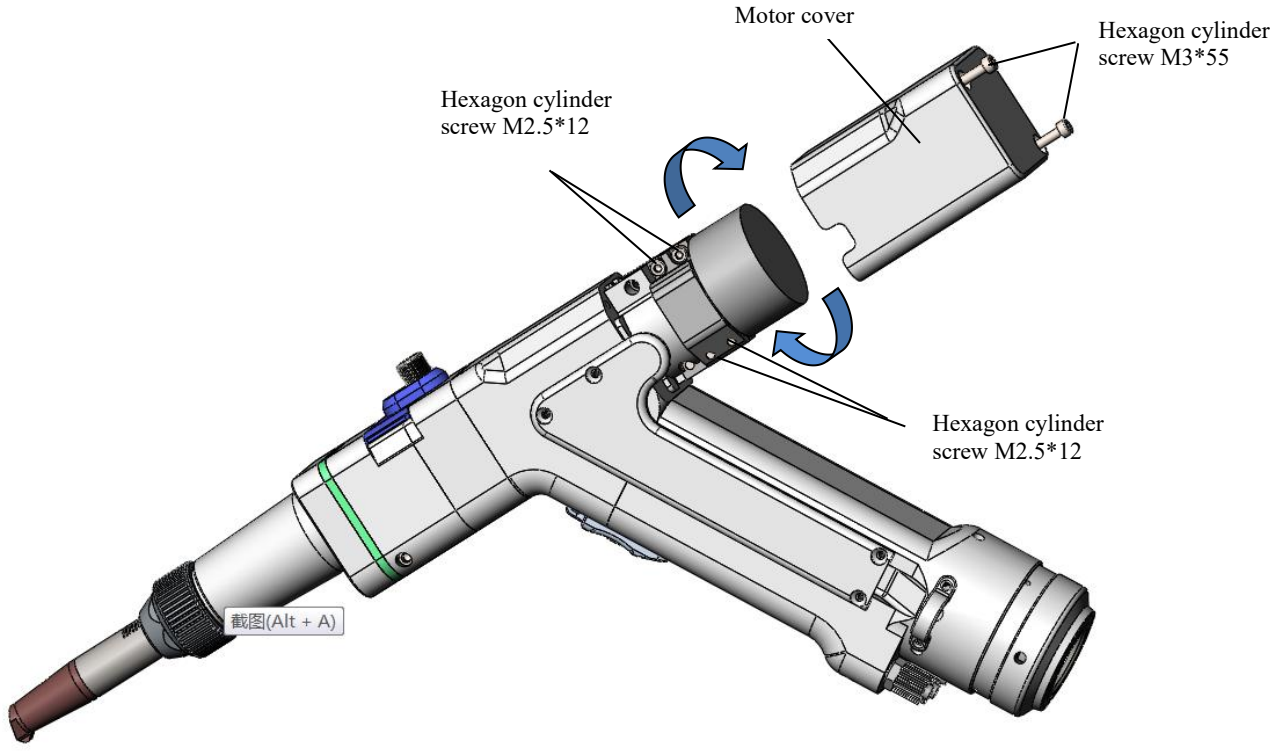
If any safety or protection device has been removed, it must be reinstalled before the equipment being operated or debugged and checked whether the device could run well.

4.1 Maintenance of QBH and Fiber Connector

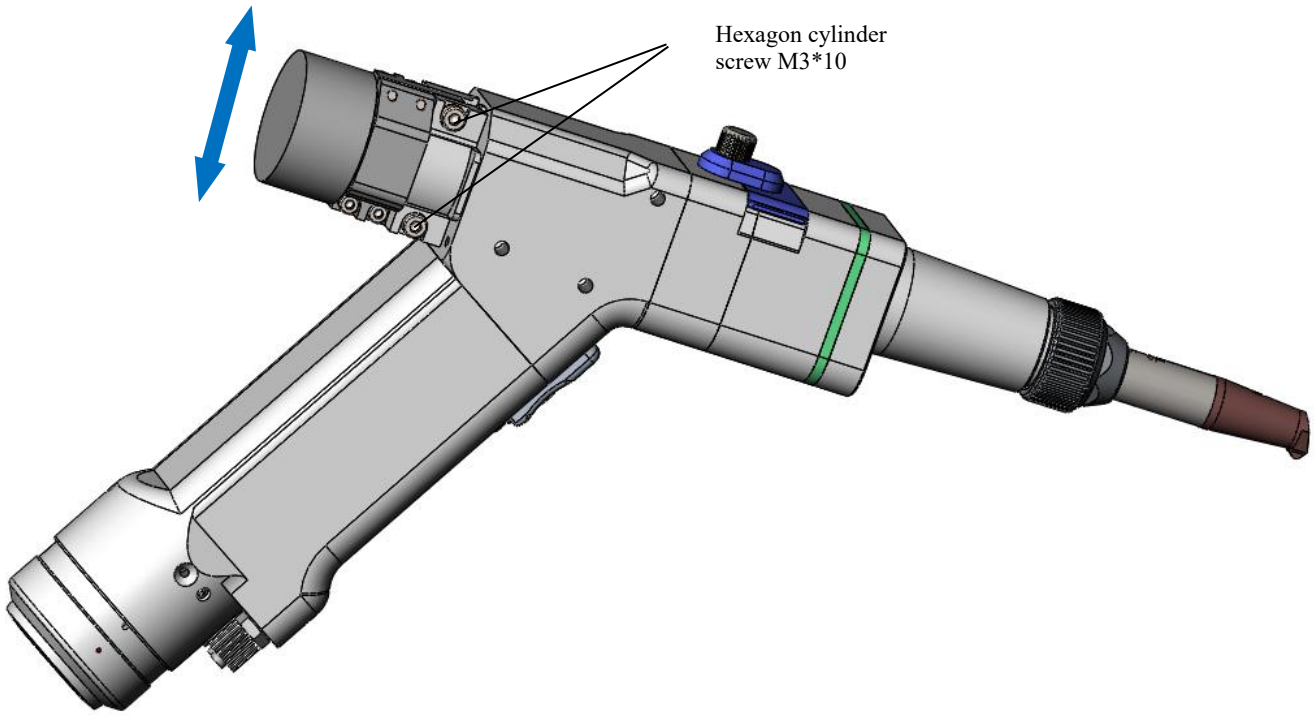
1、Use self-adhesive paper to cover the junction of QBH and fiber connector to prevent dust from entering the gap；

2、Fiber connector water cooling pipe must be connected well to prevent leaking. If QBH has water inside accidentally, please stop using immediately and send it to the factory to handle with.

4.2Adjustment of red light polarized angle



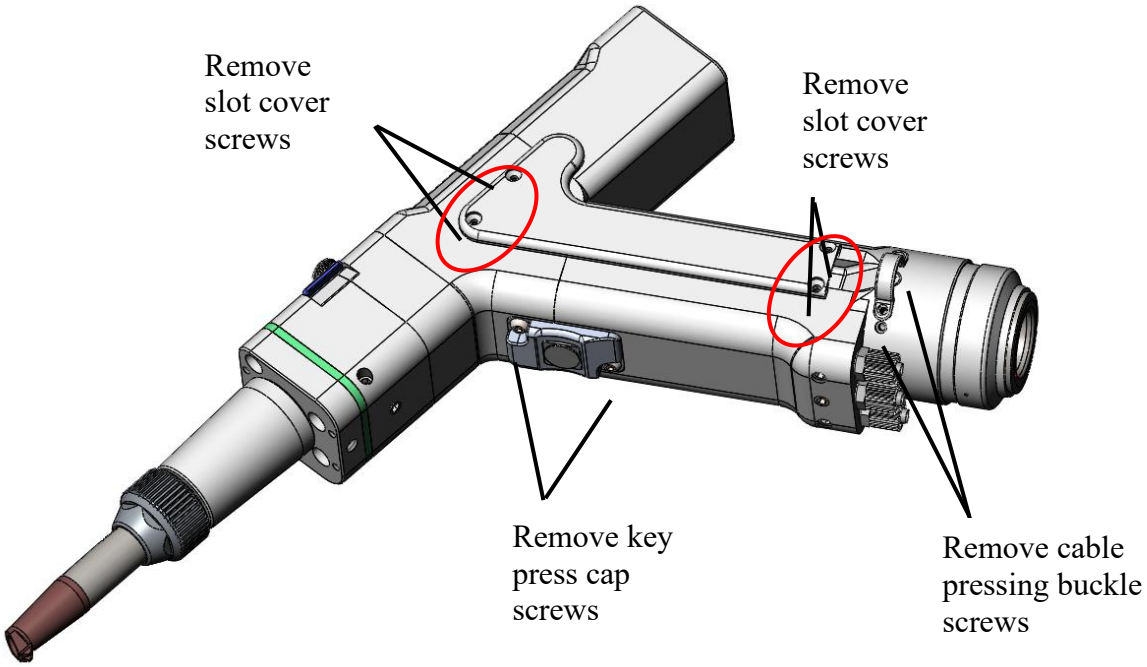
1.Remove the two M3*55 hex screws from the motor cover and remove the cover;
2.Twist 4 M2.5*12 inner hexagonal cylinder screws, then twist the motor left and right slightly to adjust the red light to the center of the copper nozzle.

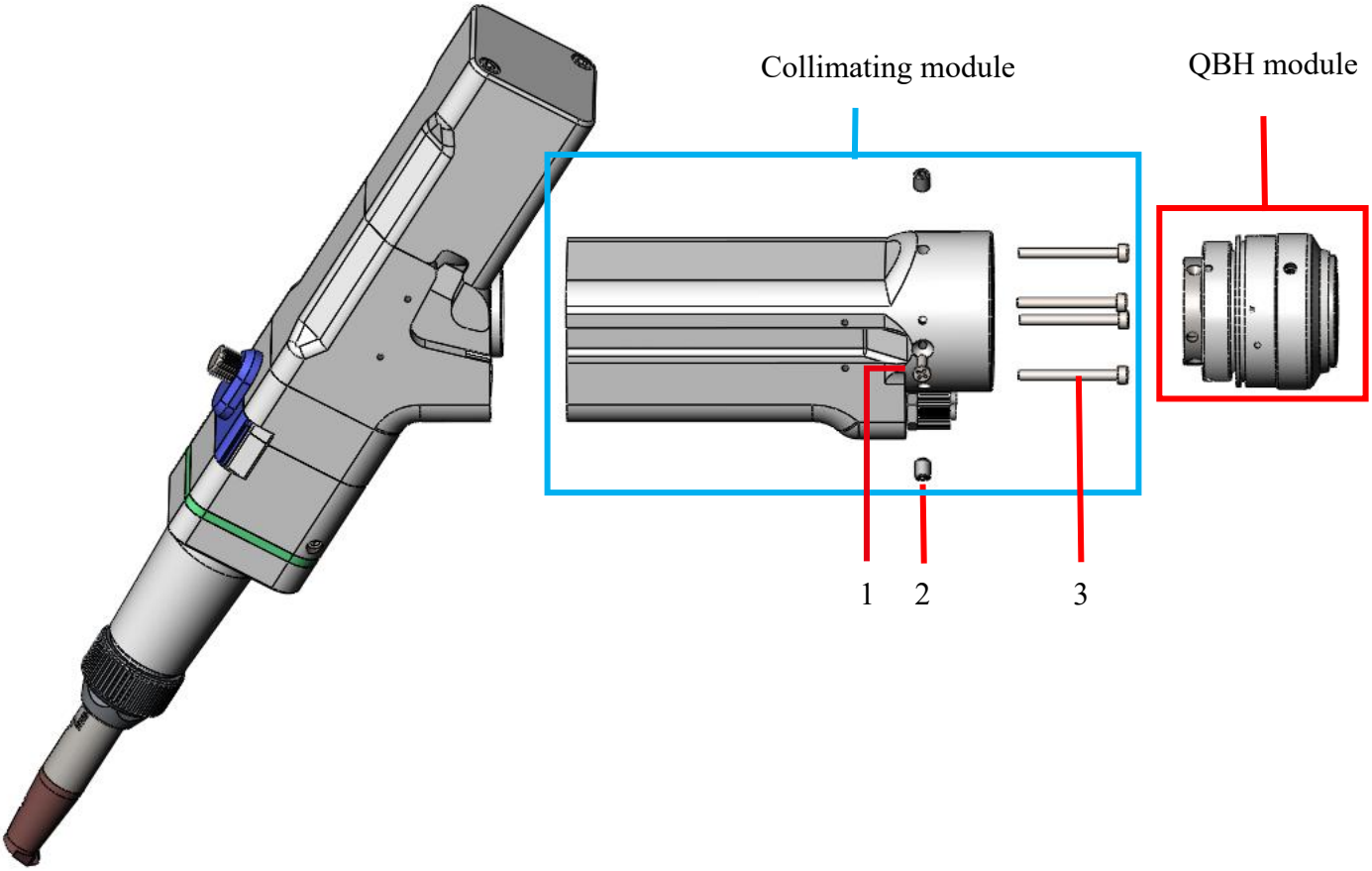


3.By twisting the two M3*10 hexagon screws on the reflecting seat, the red light can be adjusted up and down

4.3Collimating lens replacement

Step 1: remove these screws as shown below

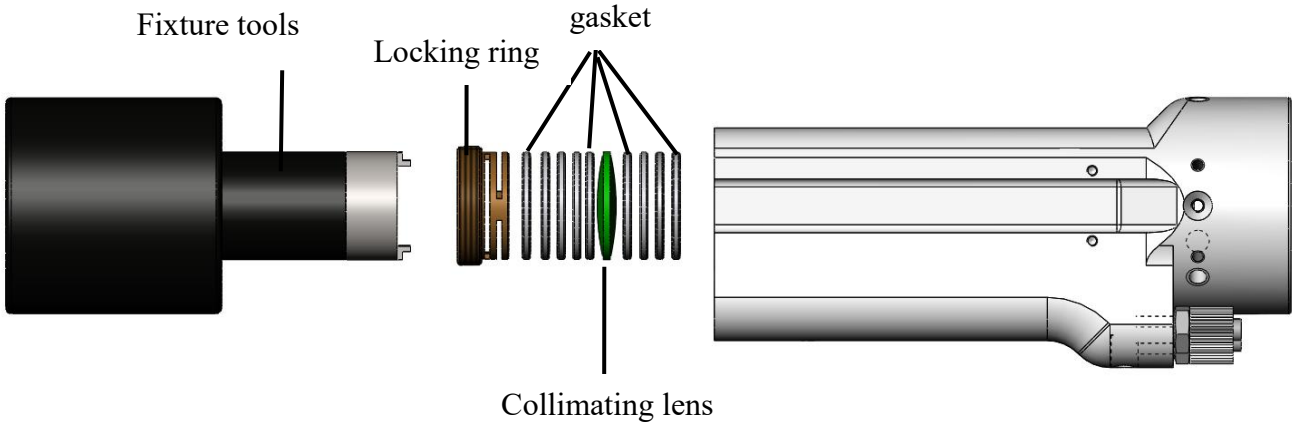




Step 2：

1. Remove two M2.5*8 inner hexagonal flat head screws (No .1) and three screws (No .2) from the collimating assembly and remove the QBH module；

2. Remove the four M2.5*35 inner hexagonal cylinder screws (No .3) from the QBH transfer seat and remove the whole the collimating assembly from the head, and quickly seal with adhesive film to avoid dust entry.



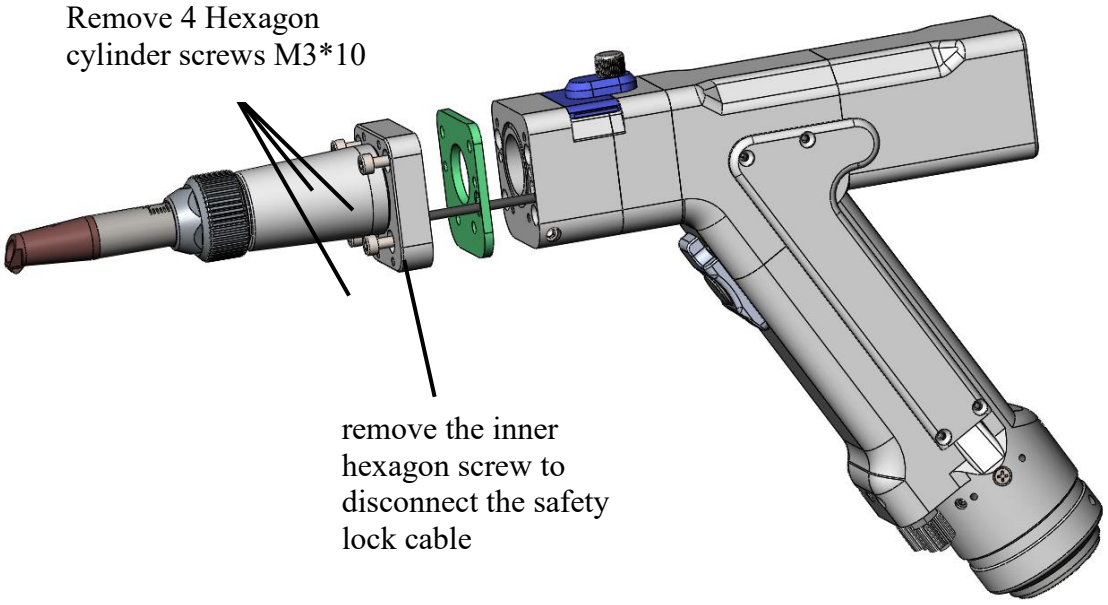
Step 3:

①、In the dust-free environment, remove the locking ring with a fixture tool;

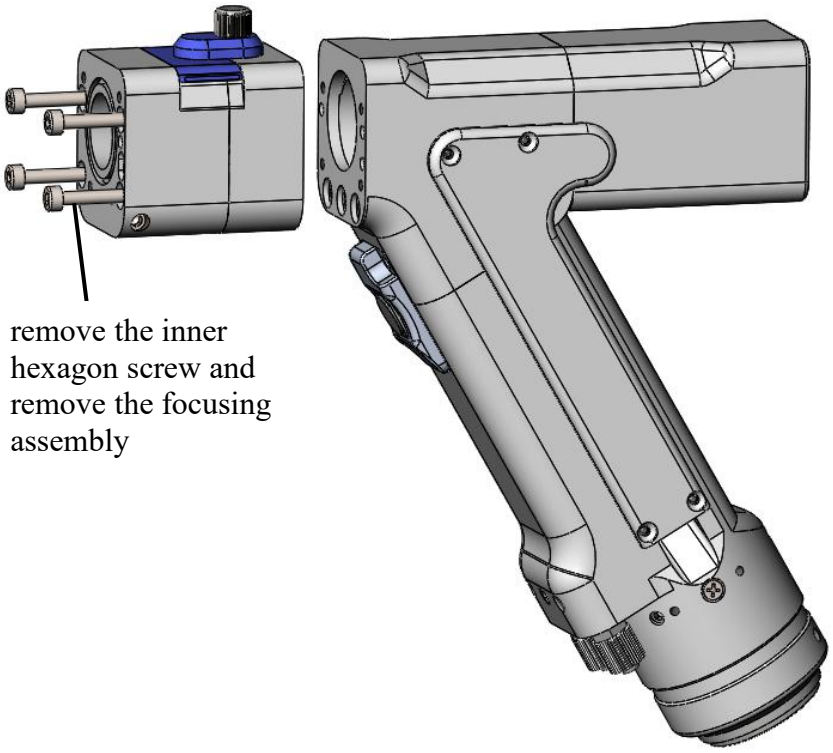
②、Remove the gasket from the collimating seat (record the thickness of the gaskets), then take out the lens, replace it with a new, clean collimating lens (collimating lens regardless of orientation), then put in the gasket and locking ring;

③、Then install it on the welding head at opposite steps.

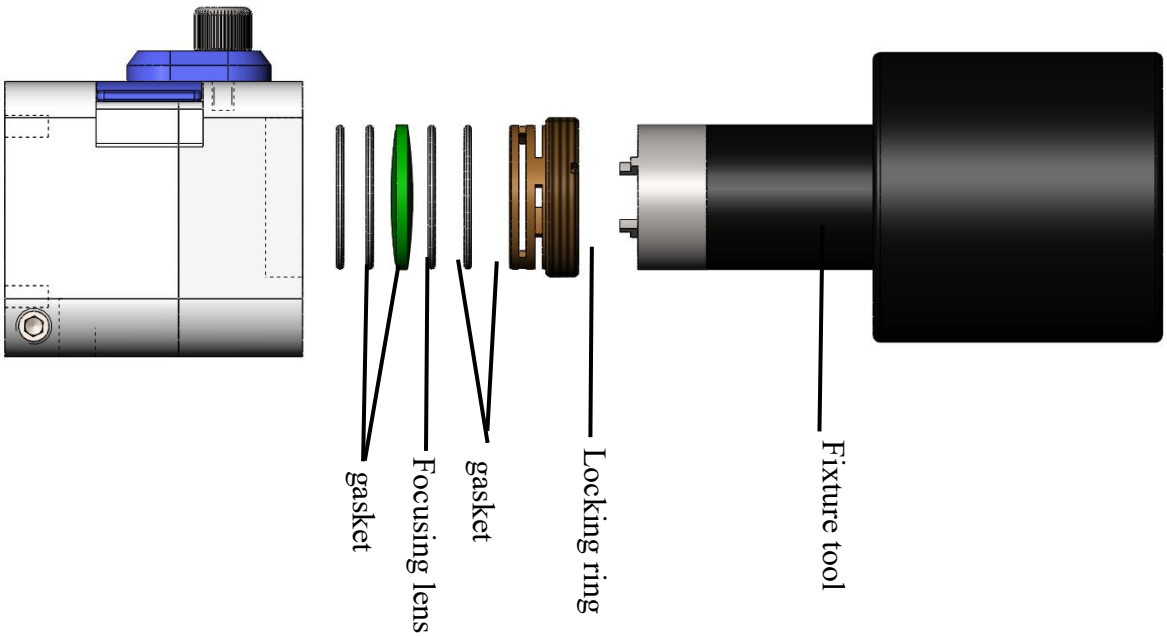
4.4Replacement of focusing lens



Step1:
1, Remove 4 inner hexagonal cylinder screw M3*10;
2, Remove the seat assembly, and remove the safety lock screw to disconnect it from the seat assembly, and quickly seal the lens position with adhesive film.



Step 2:
①、Remove 4 inner hexagonal cylinder screws and remove focus assembly



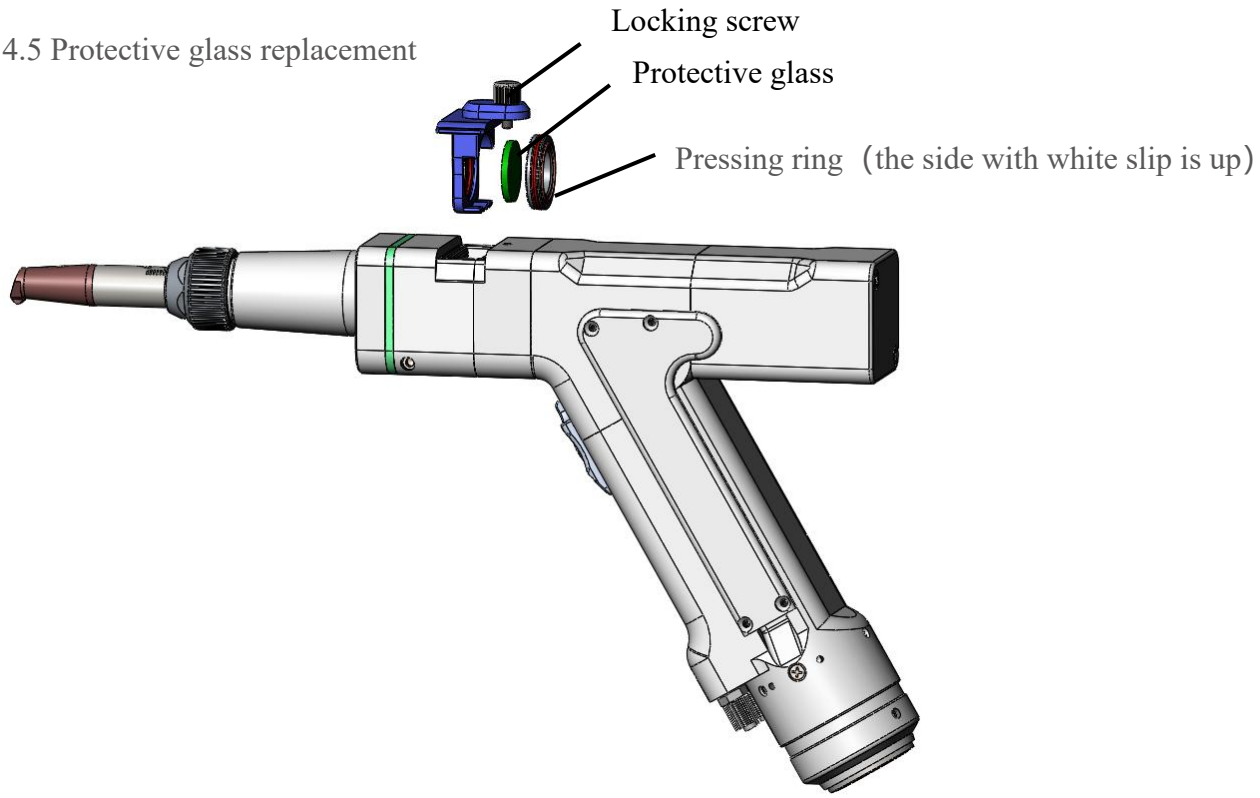
Step 3:

④、Remove the locking ring with fixture tool, then take out the lens and replace a new clean one, put the gasket and locking ring back;

(Note: the convex side of the lens in the orientation of the motor.)

⑤、Then install it on the welding head at opposite steps.

4.5 Protective glass replacement



1.Loosen the protective window screw, remove the protective window module;

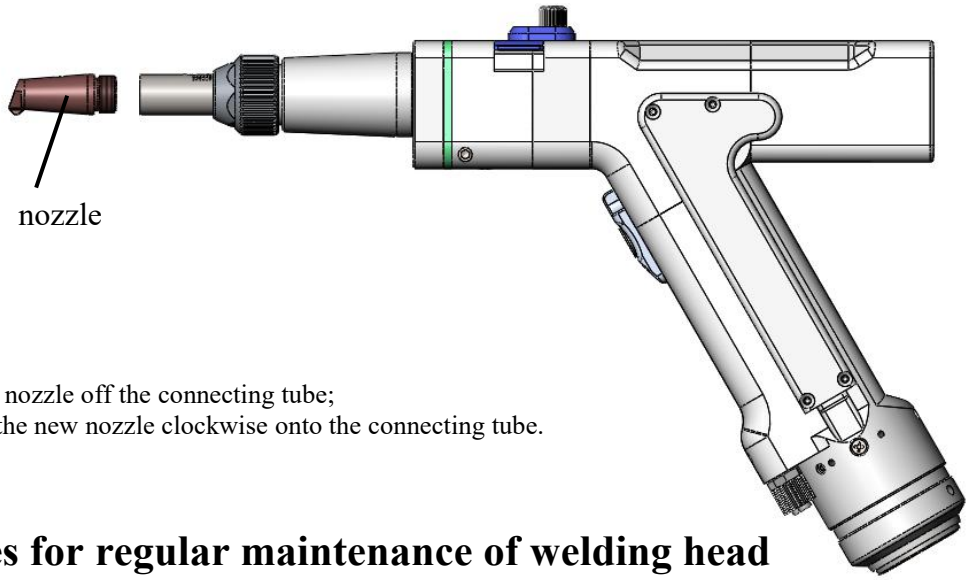
2.Remove the pressure ring;

3.Remove the protective glass (D18*2) and replace a new one;

4.After the protective glass is placed in the protective window seat, press the pressure ring on the glass, the protective glass should be pressed into the groove of the ring;

5.Install the protective window module back into the hand-held welding head and tighten the screw.

4.6 Replacement of nozzle



1. Take the nozzle off the connecting tube;
2. Tighten the new nozzle clockwise onto the connecting tube.

4.7Notes for regular maintenance of welding head

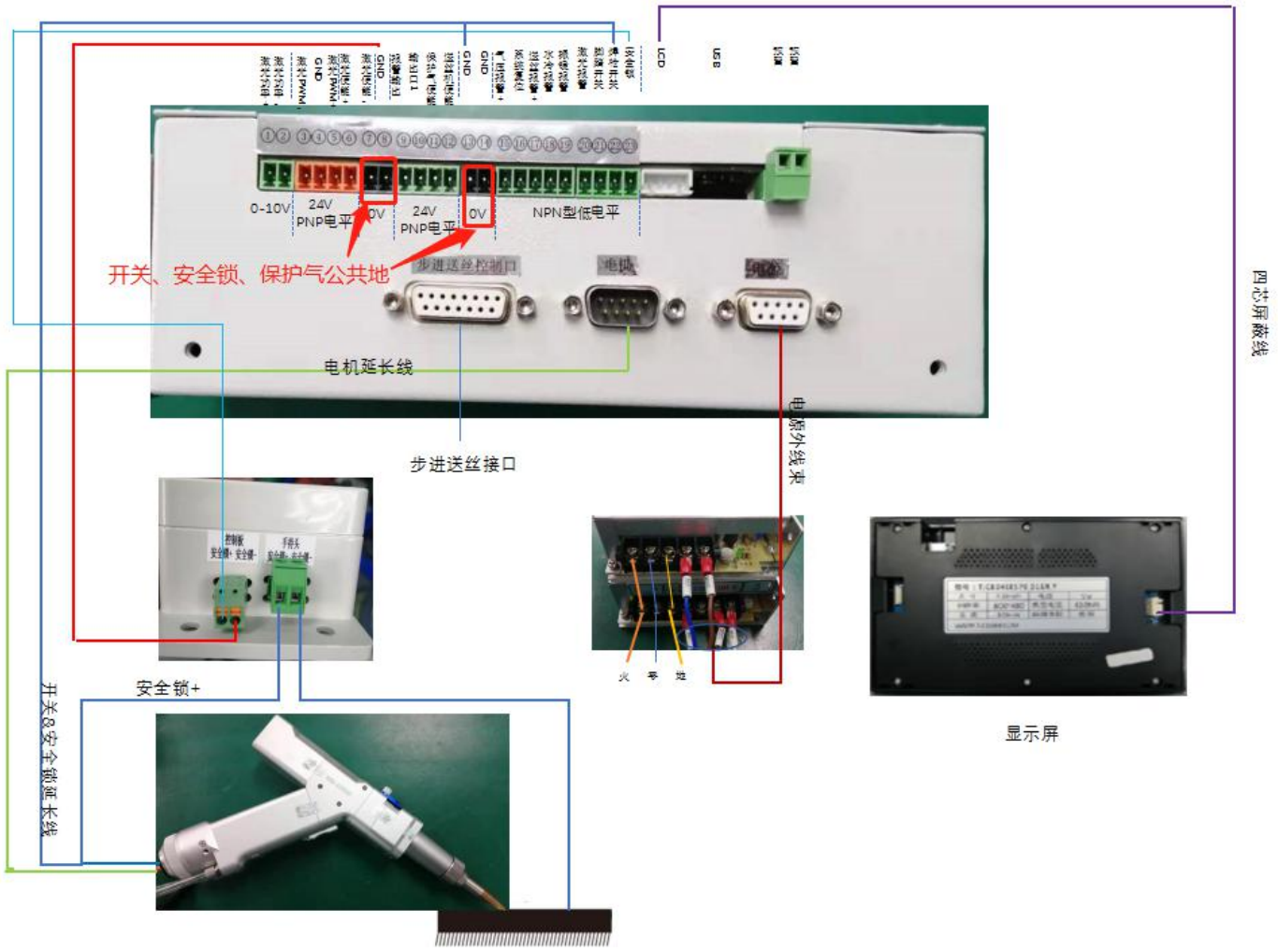
1.Regular inspection of the protective glass for contamination and timely replacement if contaminated (daily inspection) ;
2.Regular inspection of ceramic ring for damage (daily inspection) ;
3.Regular inspection of QBH connector for looseness (every 3 days);
4.The connection line must not have water to enter, pay attention to protect the interface section; check the interface (e.g. aviation plug) for water droplets when the lens is abnormal.

5. Electric chapter

5.1 Connection diagram as below

Power installation： this hand-held welding machine power cord has two types, one is AC three-phase five-wire, with R/S/T three fire lines; N zero line; PE ground wire. One is AC two-phase three-core wire, one fire line, one zero line, one ground wire.

Note: The ground wire of the AC socket must be connected to the ground of the AC grid and connected to the ground wire end of the power supply.



5.2 Port definition

5.2.1 Laser control port：

The position of the indicator starting from this end of the power supply is:	
Power Indicator	This light is on when 24V power supply is normal.
Operation light	The light flashes when the input and output enable, otherwise the power on
Alarm light	This light will be on when the control card system detects an abnormal and stop output. The abnormal conditions: 1 receiving alarm signal; 2 control card system abnormal
Safety and Effective Lock Signal Indicator	The indicator light will be on when the input signal connect to low level
Welding Switch Valid Signal Indicator	
Foot Switch Valid Signal Indicator	
Laser Alarm Valid Signal Indicator	
Galvanometer Alarm Valid Signal Indicator	
Water Alarm Valid Signal Indicator	
SSJ Alarm Valid Signal Indicator	
Reset Valid Signal Indicator	
Laser Enable Valid Signal Indicator	The indicator light will be on when the output signal connect to high level.
Protective Gas Enable Valid Signal Indicator	
Reserved output valid signal indicator	
Reserved output valid signal indicator	
NC	
NC	

5.2.2 Input control port ：

When all input ports are connected to low level (0~0.7V), it is a valid signal input. The high level is 24V or left floating, and the access signal is invalid.	
Safety lock input+	This signal is valid when the welding head is in contact with the welding piece. It is necessary to ensure that the welding piece is connected to the "safe lock input-" signal pin of the controller;
Head switch input +	This signal is valid when the welding torch head switch is closed;
Foot switch input +	This signal is valid when the foot switch is closed;
Laser alarm input +	Laser alarm signal input from this interface, low level as an effective signal;
Galvanometer alarm signal input +	The galvanometer drive card alarm signal input from this interface, and the low level is regarded as a valid signal.
Water alarm input +	The cooling water control alarm signal input from this interface, and the low level is regarded as a valid signal.
SSJ alarm input +	The SSJ alarm signal input from this interface, and the low level is regarded as a valid signal.
System reset input +	When the system needs to be reset, the interface will input low level, the operation light will flash 3 times, and the system parameters will be set to the factory default.
Input signal - 1	These two interfaces are common to all input ports, and the "-" of all input signals can be connected here, and is connected to the "output signal-".
Input signal - 2	

5.2.3 Output control port：

All output ports output high level (≥19V) as valid signals	
Laser enable output +	When the safety lock and the welding torch switch input signal are valid at the same time, this port outputs high level (≥19 V);
Protective gas enables output +	When protective gas enable, the safety lock and the welding torch switch input signal are valid at the same time, this port outputs high level (≥20 V);
Output reserved +	No functional definition
Output reserved +	No functional definition
Output signal - 1	These two interfaces are common to all output ports, and the "-" of all output signals can be connected here. At the same time, it is connected to the input signal-.
Output signal - 2	

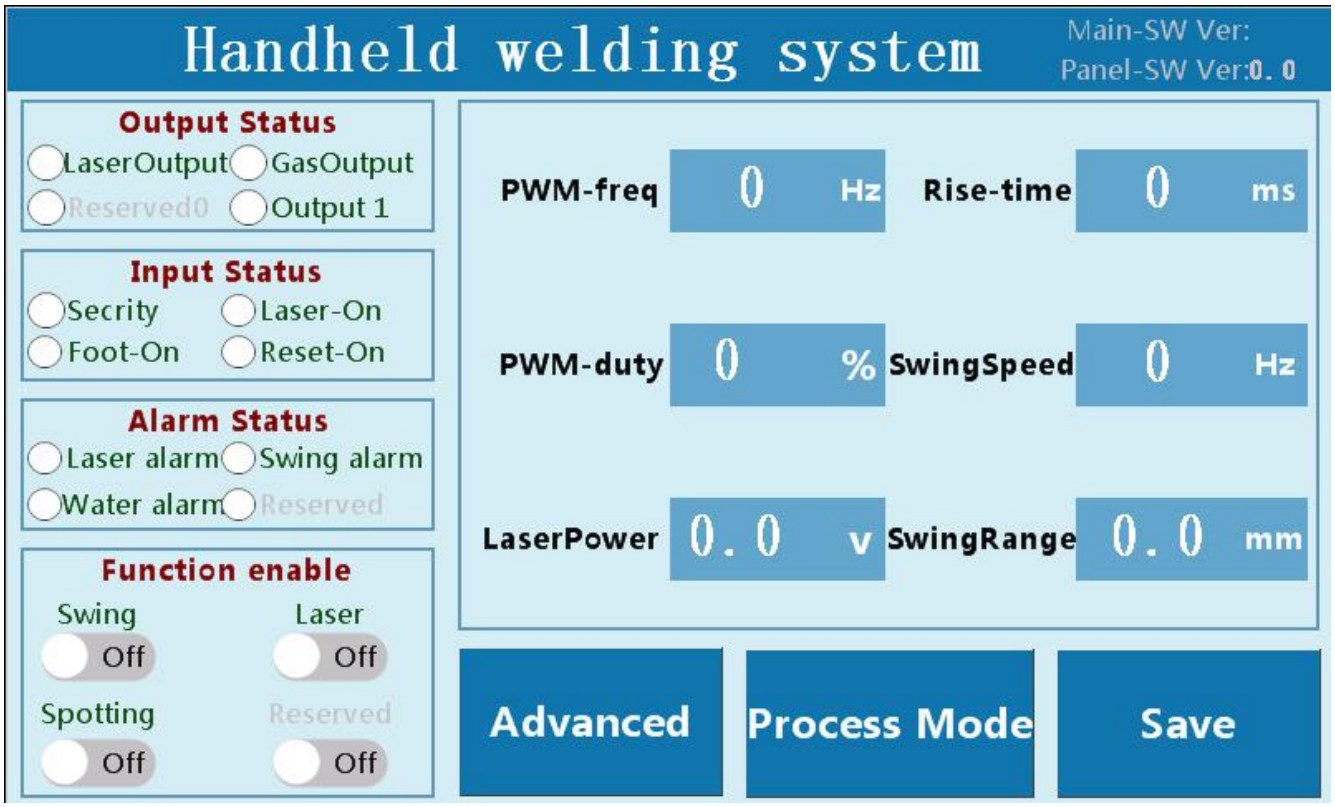
5.2.4 Laser control port：

laser enable+	Same with "laser enable output"+
Laser PWM+	Output range 0~100000Hz, adjust the output value by adjusting the laser frequency parameter
NC	
Laser PWM-	Equivalent to output signal -/ input signal-
Laser DA+	The output range of 0~10 V, corresponds to 0% of 100% of the laser power, and the corresponding output value can be adjusted by adjusting the laser power parameters;
Laser DA-	Ground wire of DA signal, can not connect with ground wire of input and output port;

6. User Interface

6.1 Main interface

Corresponding English menu：



6.1.1 Function Description

Output port status

Laser output： The IO indicator lights up when the laser is emitting light;
Gas output: The IO indicator lights up when the gas is working;
Wire output： The IO indicator lights up when the wire feeder is working;
Output port 1： The IO indicator lights up when the output port 1 is valid;

Input port status

Safety lock: The IO indicator lights up when the safety lock is locked
Laser-on: This IO indicator lights up when the laser switch is on
Foot-on: This IO indicator lights up when the foot switch is turned on.
Reset-on: program reset at 3S later after reset

Alarm status

Gas pressure alarm: gas pressure alarm input low power, the light on;
Galvanometer alarm: galvanometer alarm input low power, the light on;
Laser alarm: laser alarm input low power, the light on;
Water cooling alarm: water cooling alarm input low-power peacetime, the light on;
Wire feeding alarm: wire feeding alarm input low power peacetime, the light on;
Stop working as long as one alarm is valid.

Function enable

Swing: Turn galvanometer on or off, when the galvanometer function is turned on, and the laser is not triggered, the galvanometer will stop after 30s, and the galvanometer will start automatically again when the laser is on.
Laser： enable laser welding;
Spot： enable laser spotting mode;
Wire feeding： enable wire feeding.

6.1.2 Parameter setting description：

PWM-Freq(Hz)： Set the laser frequency;
PWM-Duty(%)： Set the laser duty cycle;
Rise time(ms)： Time required to start soldering to achieve predetermined laser power;
Swing Speed(mm/s)： the speed at which the lens oscillates;
※ The above parameters can only be set in the Advanced Parameters menu;

Laser power(V)： Set Laser Power
Swing range(mm)： Set the amplitude of the oscillation of the galvanometer;
Feeding speed(mm/s)： Set the wire feeding speed
Manual feeding《： Manual wire feeding when triggered
Manual feeding》： Manual dewire when triggered

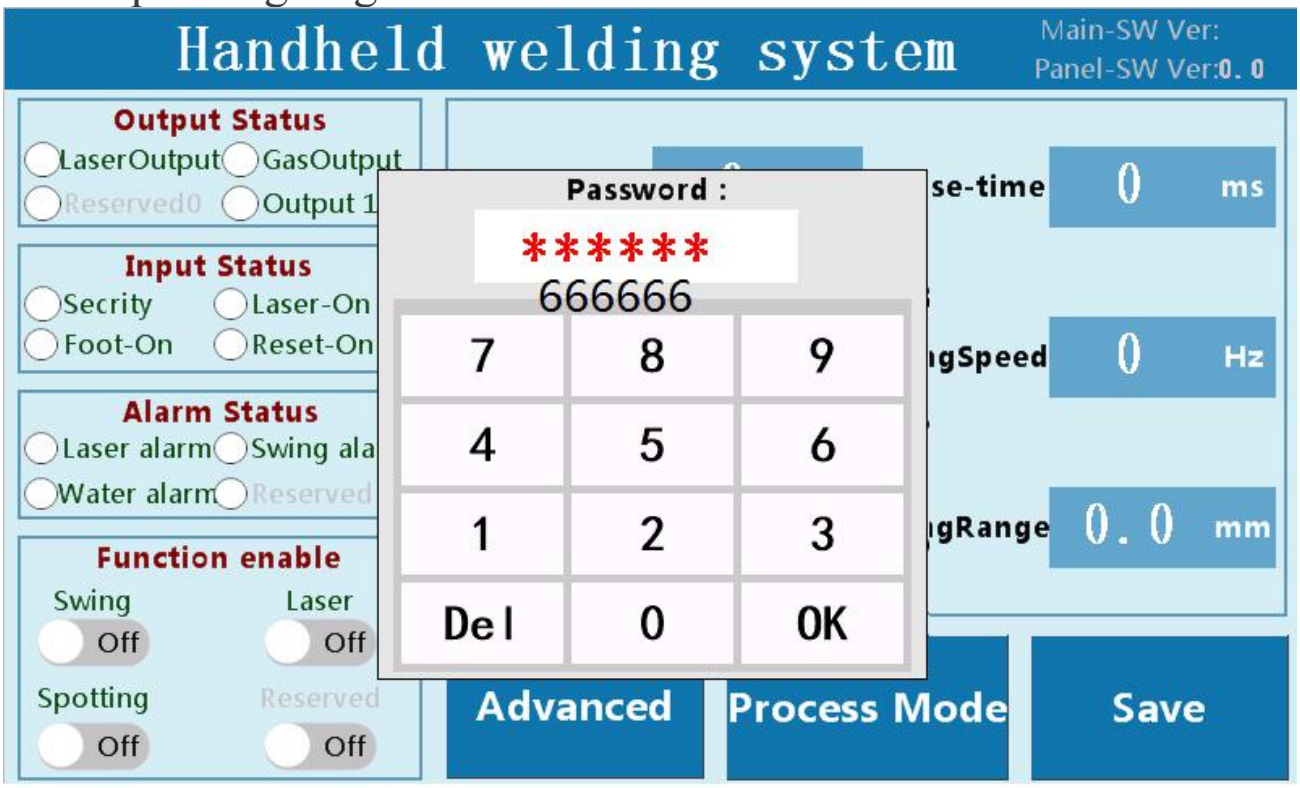
Advanced parameters: Click to enter password interface. Enter correct password to enter advanced parameter settings interface;

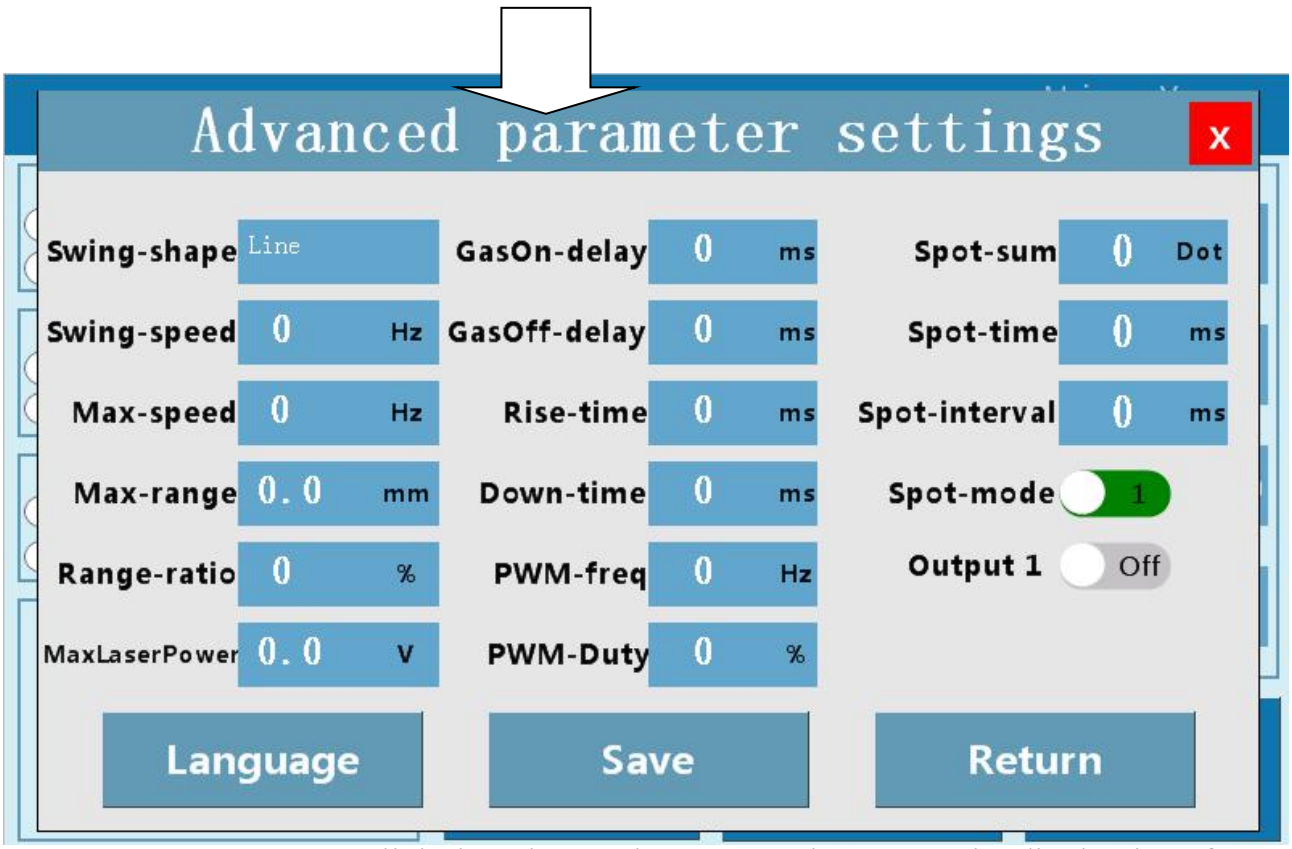
Processing mode： Click to enter processing mode parameter setting interface;

Parameter save： save current settings.

6.2 Password and advanced parameter interface:

Corresponding English menu:





Advanced parameters: Click the advanced parameter button on the display interface to enter the password input interface, set the corresponding parameters click the save parameter to exit the interface.

Swing shape: the shape of the oscillating lens, Hand-held welding has only one shape: straight line;
Swing speed: Set the speed of the lens swing, which does not exceed the maximum swing speed;
Max swing speed： Set the maximum speed of the oscillating lens, up to 300Hz;
Max swing range: Set the maximum amplitude of the oscillating motion, up to 6 mm;

Swing range expansion ratio： Set to fine-tune the swing amplitude:-100~0 is the compression amplitude and 0~100 is the stretching amplitude;
Max power： Set the required max voltage when the laser power reaches maximum, up to 10v;

Gas On Delay： setting the delay time for turning on the gas, up to 6000ms;
Gas Off Delay： setting the delay time for turning off the gas, up to 6000ms;
Rise time： Set the delay time between the opening laser (the laser power is 0) and the laser reaching the preset power, up to 6000ms;
Down time： Set the delay time to turn off the laser until the laser power is 0, up to 6000ms;

PWM-Freq： Set the laser frequency, up to 10000Hz;
PWM-Duty： Set the laser duty cycle, Range: 0~100%;

Spot-sum： Set the number of laser spot， up to 1000;
Spot-time： Set the length of time the light is emitted, up to 6000ms;
Spot-interval： Set point to spotting light interval, up to 6000ms;
Spot mode： Set spot mode 1 or 2, the parameters of two modes can be different, and the parameters are independent of each other;
Note：The spot parameter is shown as gray invalid when the point-shot function is not enabled ;

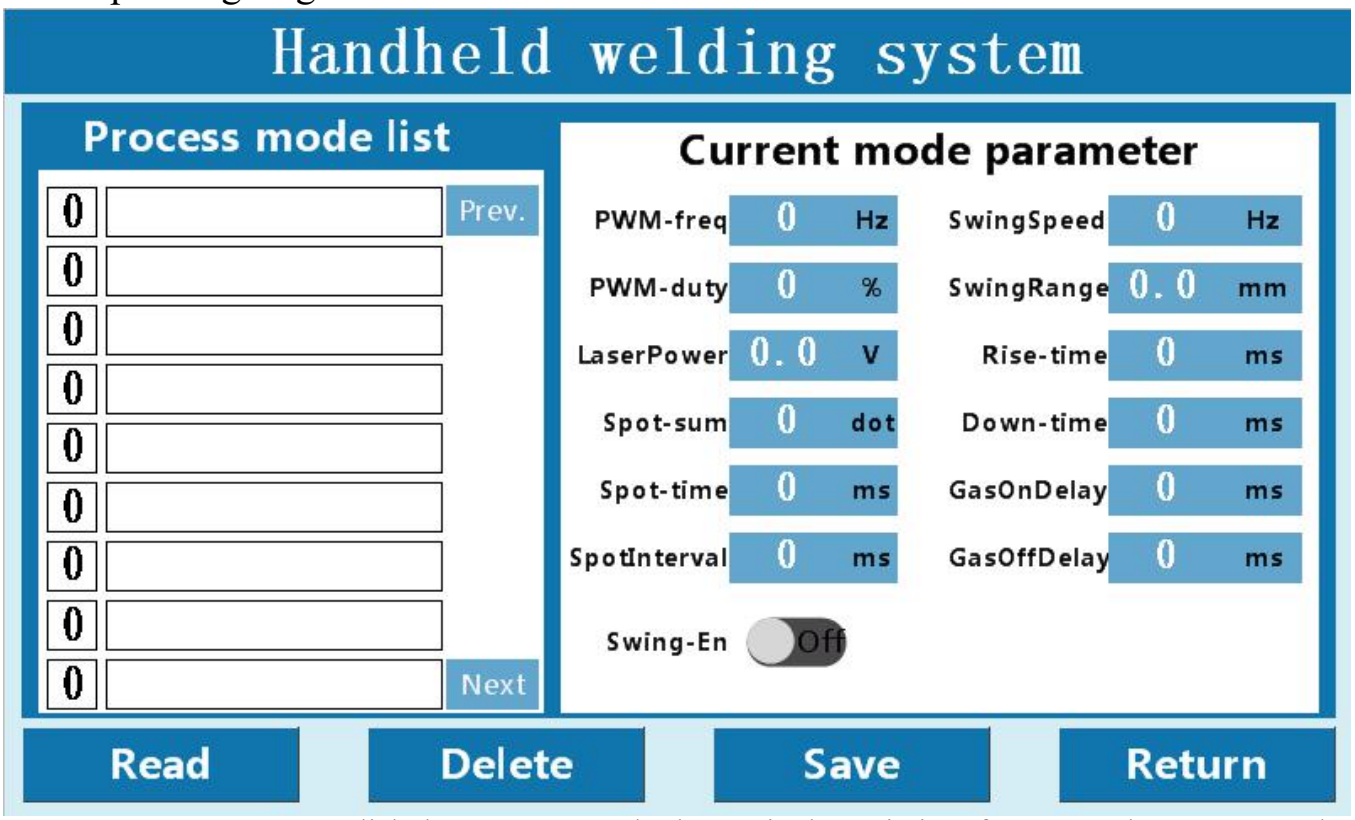
Output port 1： Set the level of output port 1, output port 1 output high when open, low when closed ;

语言/Language： for switching interface languages; interfaces as follows：

Corresponding English menu：

6.3 Process mode interface:

Corresponding English menu：



Process mode interface： Click the "Process Mode" button in the main interface, enter the process mode interface, set the corresponding parameters, and click "Save Parameters" to take effect, press "Return" to exit the interface.

Current mode parameter: Display and modify the current process parameter; Maximum process mode number is 18; Parameters are saved independently;

Process mode list: Display and modify the number and name of process modes; process mode supports Chinese input, but note that Chinese may not be shown in English mode;

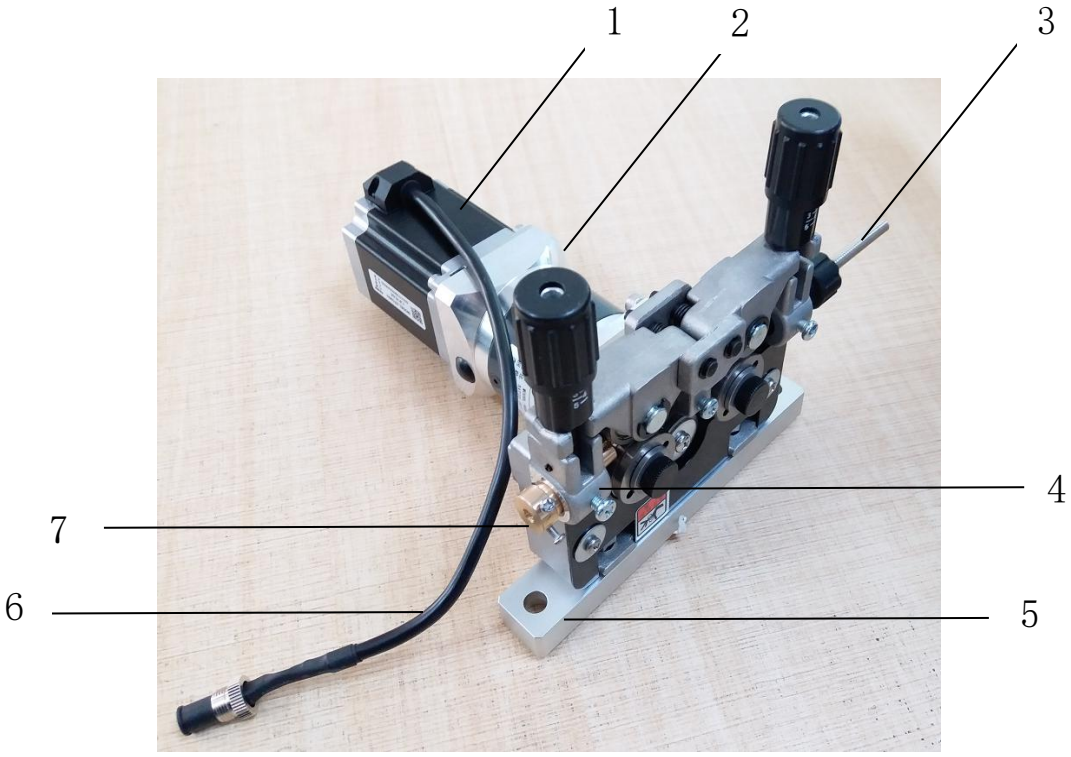
Prev.: Process mode cursor moves to previous box, the parameter in the parameter bar on the right is updated to the parameter of the current mode;
Next: Process mode cursor moves to next box, the parameter in the parameter bar on the right is updated to the parameter of the current mode;

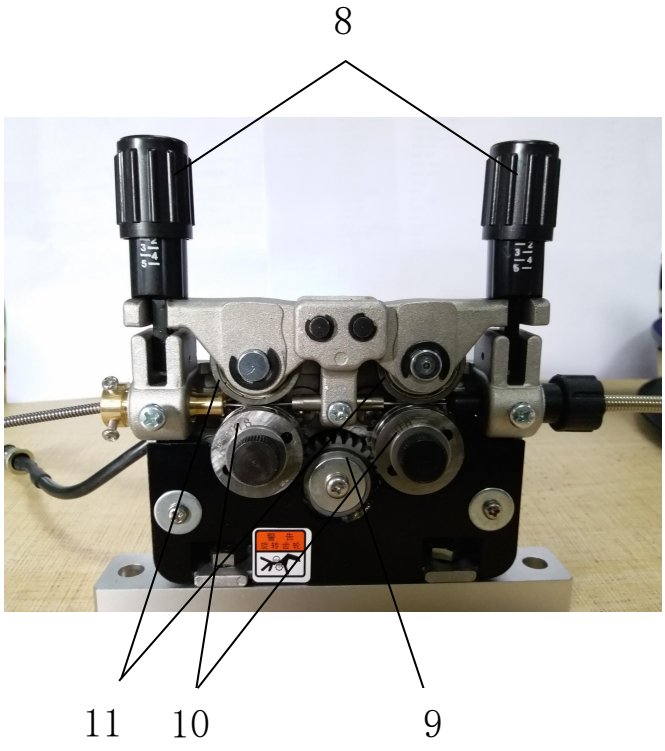
Read： Read the current mode parameter, and update to display screen;
Delete： Delete the current mode, the mode next to the deleted mode becomes the current process mode;
Save： Save the parameter of current mode;

Mode name input keyboard interface as follows：

7.Wire Feeder

7.1Schematic diagram





No.	Item
1	Stepper Motor
2	Reducer
3	Wire Feeding Tube
4	Bracket
5	Mounting Plate
6	Motor Cable
7	Connector for Wire Out
8	Adjustable Preload Pressure Bar
9	Driving Gear
10	Wire feeding Wheel
11	Wire Pressing wheel

7.2 Main Function Introduction

7.2.1 Design and Function

1. This wire feeder is an automatic drive mechanized wire feeder.
2. Light in shape and easy to operate.
3. Mainly used for automatic wire feeding of laser handheld welding.
4. The system is controlled by microcomputer and driven by stepping reduction motor, with high wire feeding accuracy and good repeatability.
5. It can transfer steel wire and copper wire with specifications of 0.8mm and 1.0mm.

7.2.2 Working Principle

The wire feeding machine generally has a control section to provide parameter settings. The driving section performs wire feeding drive under the control of the control section, and the wire outlet nozzle sends the welding wire to the welding gun position.

7.2.3 Technical Parameters

Motor type: stepper motor
Wire feeding length: 5 meters
Wire diameter: 200mm
Wire feeding speed: 0-80mm / min
Wire feeding diameter: 0.8mm, 1.0mm

7.3 Installation and Connection

7.3.1 Safety Instructions

Any repairs or accident investigations that require specialized knowledge must be performed by trained personnel! Trained professionals must be trained in safety, understand the dangers that can occur, and be familiar with safety measures to deal with them. In addition to the safety regulations required by laws and regulations, the safety regulations specified by the manufacturer must also be complied with. You need to know the relevant safety equipment and have the necessary safety equipment before use.

Caution-Ultra High Voltage

During equipment maintenance and repairs, the power must be turned off and prevented from being turned on during this time.

Caution – Prevent injuries to rotating moving parts!

1. Do not place fingers, hair, clothes, etc. near rotating parts such as wire feed wheels.
2. When feeding the welding wire, do not place the end of the welding gun close to the eyes, face and body, otherwise the welding wire may hurt people.

Caution - high temperatures!

1. The motor generates heat during operation. Do not touch it with your hands.
2. Welding wire produces high temperature, please do not touch it with your hands directly.

Knocking is strictly prohibited!

7.3.2 Preparation before installation

Preparation tools

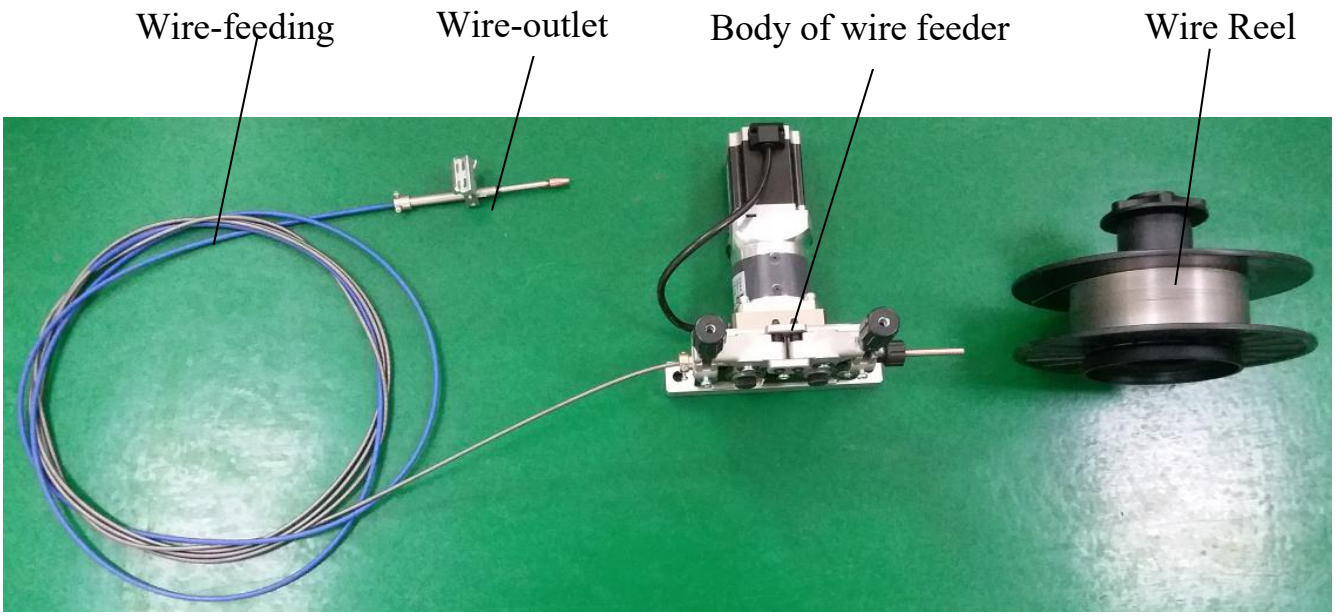
1. A set of metric hexagon socket handles;
2. A large Phillips screwdriver;
3. A pair of protective gloves.

Installation personnel preparation

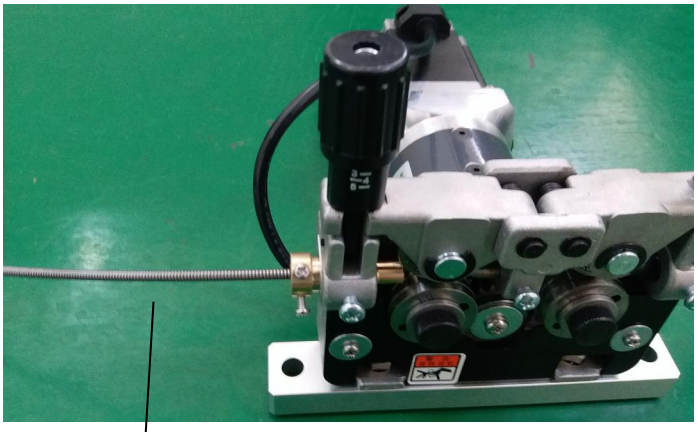
1. Read this manual carefully;
2. Put on protective gloves.

7.3.3 Wire Feeder Connection

Step 1: Connect the main body of the wire feeder and the wire outlet with a wire feeding tube, and install a suitable wire reel, as shown in the figure below.



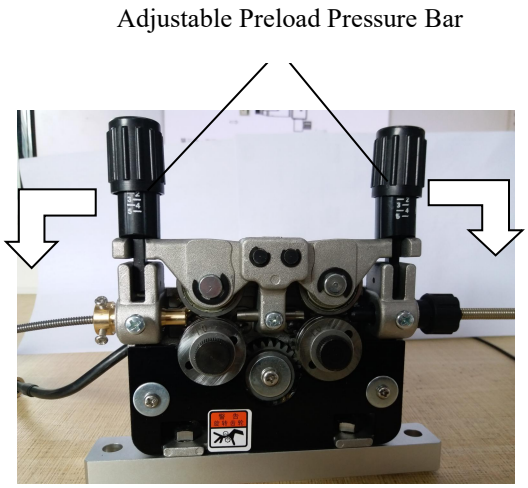
With Protective Film



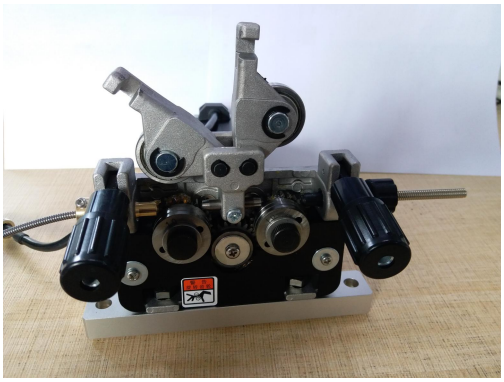
Without Protective Film

Note:
1. Connect one end of the wire feeding tube with the protective film to the wire outlet, and the other end without the protective film to the wire feeder.
2. The welding wire must be used smoothly and without knotting.
3. Please keeps the bending radius of the wire feeding tube not less than 30cm.

Step 2: Install the appropriate wire feeding wheel according to the wire diameter.



Before the bar release



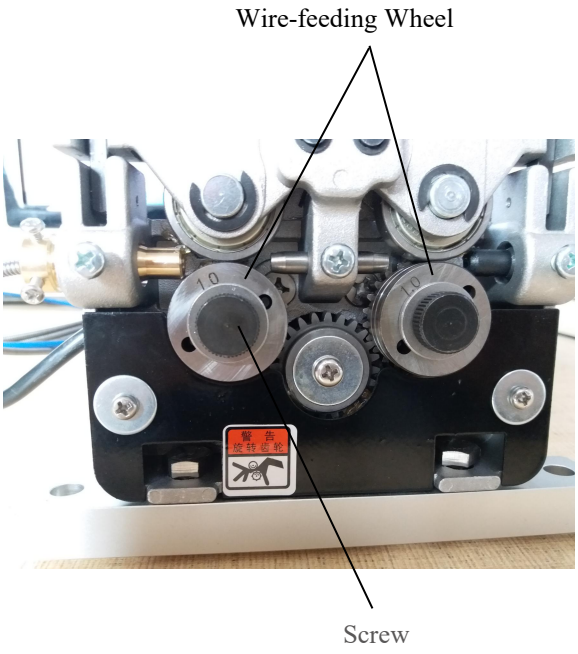
After the bar release

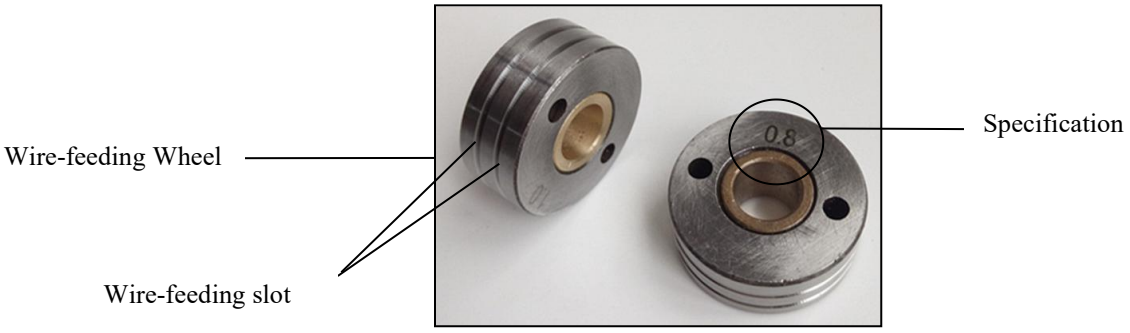
Steps for installing the wire feed wheel:

1. First loosen the two adjustable Preload Pressure Bar, as shown above

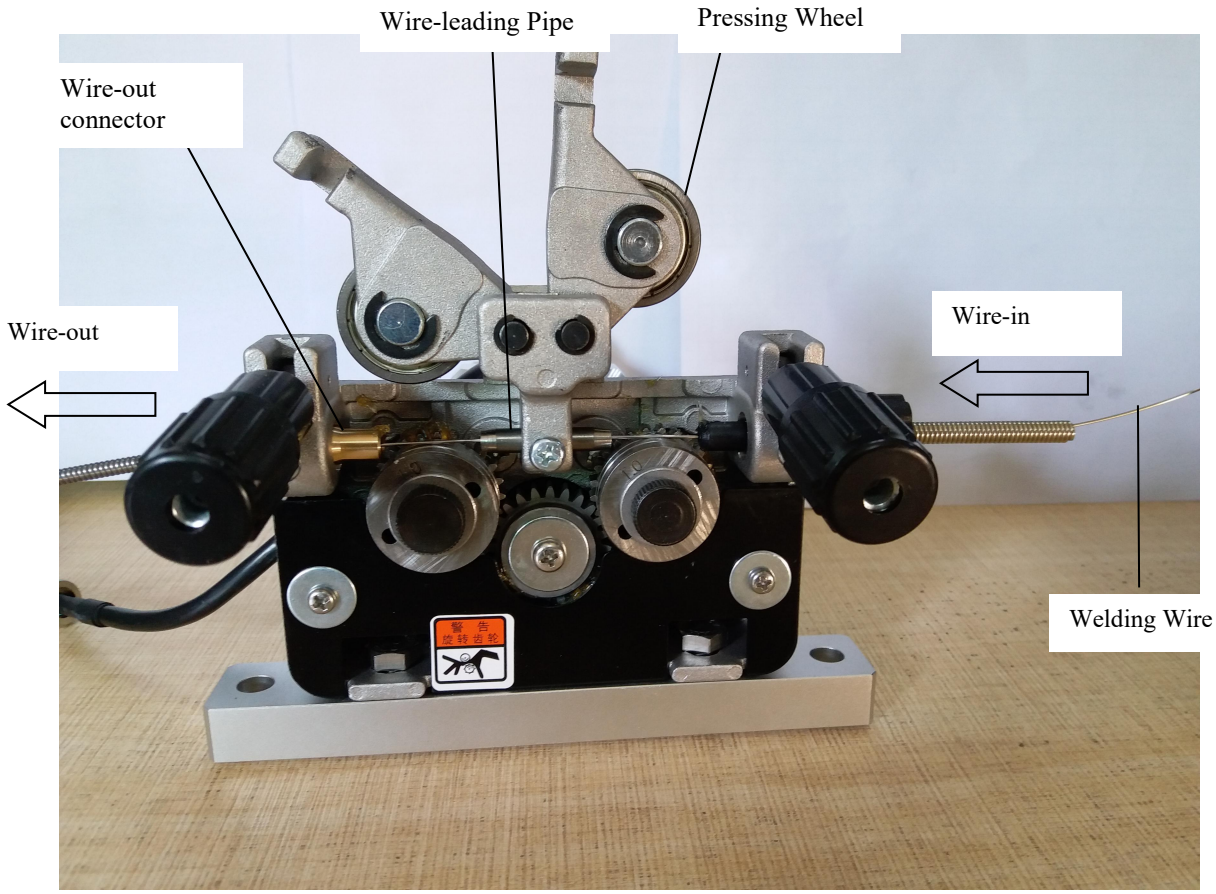
2. Then loosen the two screws and remove the wire feed wheel;

3. Replace the appropriate wire feeding wheel, place the side of the wire feeding slot corresponding to the



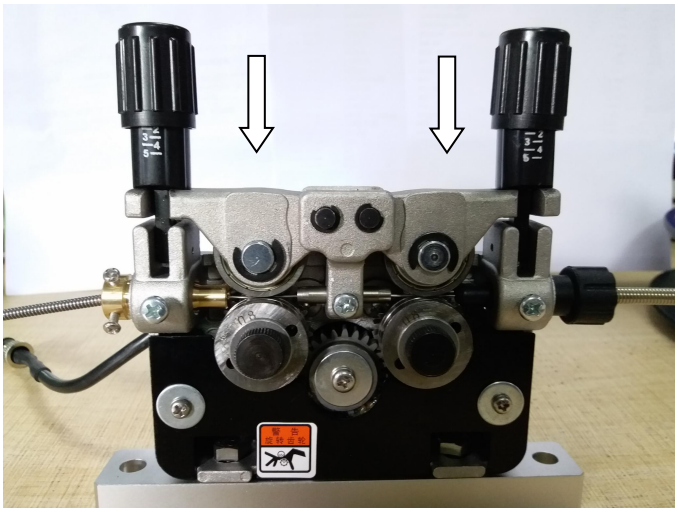


Step 3: Thread the wire and connect the wire reel.



Threading operation steps:

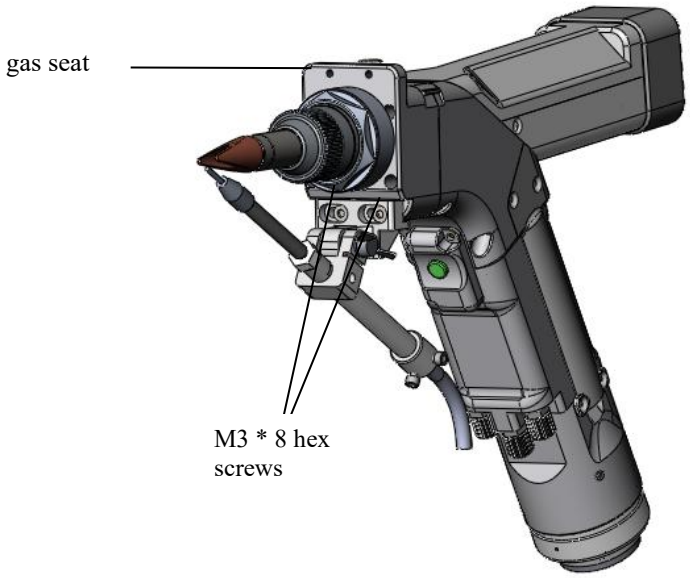
1. First loosen the two adjustable pre-load pressure bars, and then pop open the wire roller, as shown above.
2. Withdraw the welding wire from the wire reel, insert the welding wire from the wire tube according to the direction shown in the figure, pass through the middle guide wire tube, and exit from the wire tube joint direction.
3. Press the welding wire into the wire feeding slot of the wire feeding wheel, press the wire pressing wheel, lock the pre-load pressure bars, and press the welding wire tightly, as shown on the right.
4. Connect the power plug and turn on the power switch to adjust the wire feed speed to the fastest. Click the wire feed switch on the control panel to make the welding wire reach the wire outlet as soon as possible. Stop the wire feeding when the welding wire passes through the nozzle.



7.3.4Connect wire outlet to handheld welding head

1，First use two M3*8 inside hexagon screw to connect the wire nozzle assembly on the hand-held welding gas seat, do not lock;

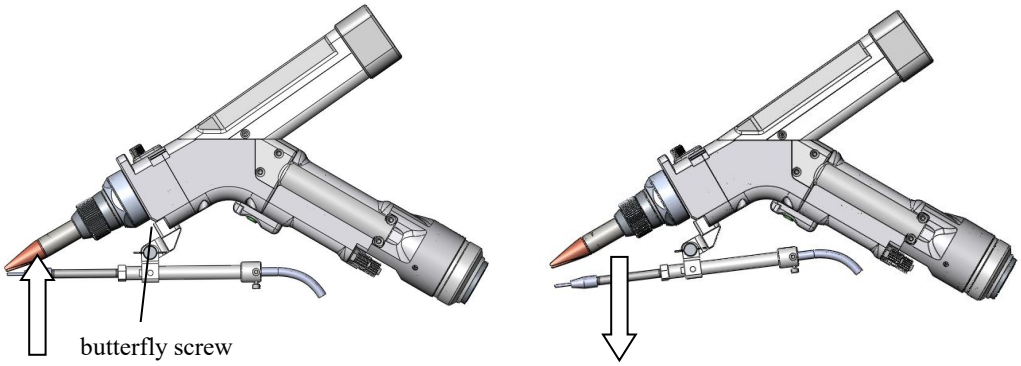
2，Adjust the wire nozzle assembly left and right so that the wire is in the center of red light and then lock the screw.



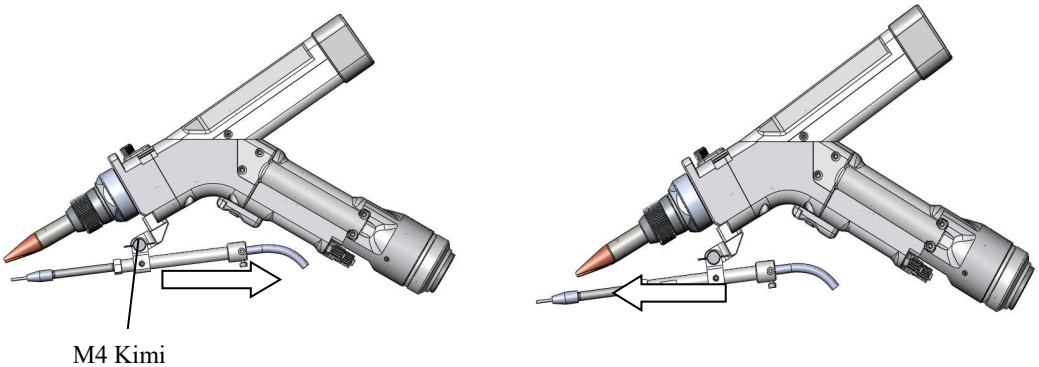
7.4Adjustment

7.4.1Adjusting the angle and length of the wire outlet

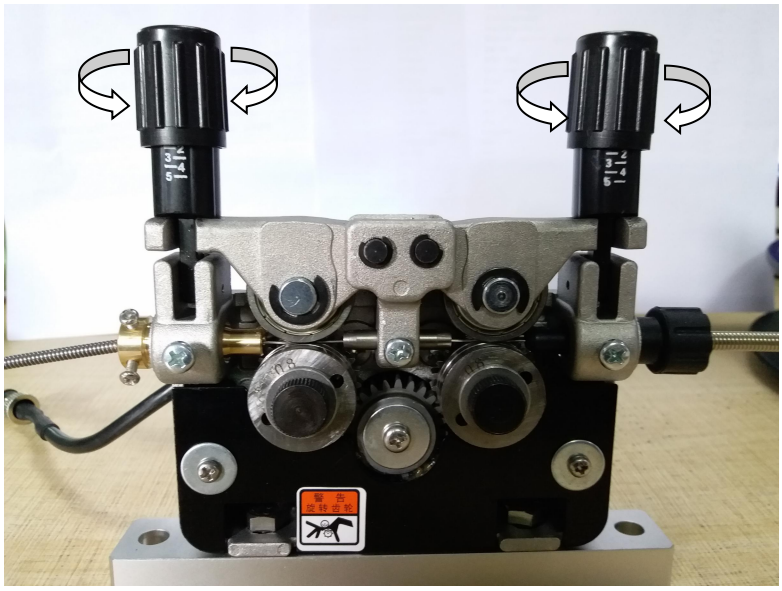
Angle adjustment:
Loosen the butterfly screw, you can adjust the angle of the wire mouth up and down, as shown on the right.



Length adjustment:
Release M4 Kimi, you can Adjust the length of the wire outlet back and forth, as shown on the right.

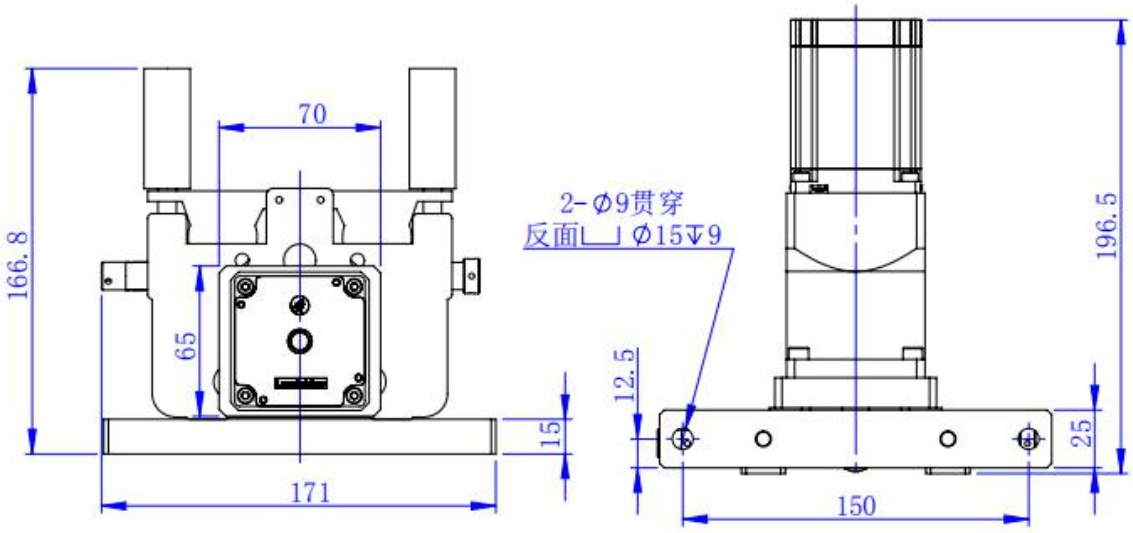


7.4.2Pressing force adjustment

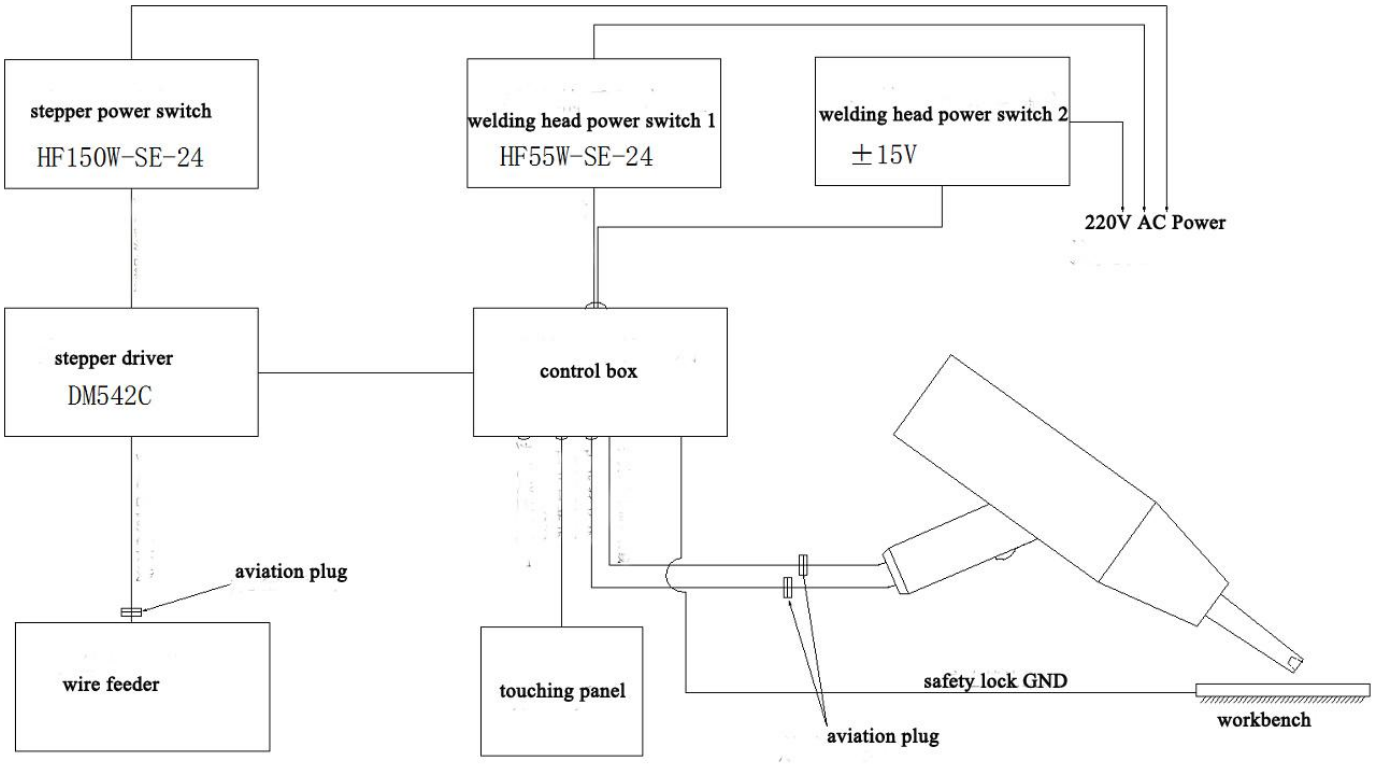


Adjustment method:
According to the tightness of the wire feeding, turn the two adjustable pre-tightening pressure lever rotation sleeves left and right until the clamping force is appropriate.

7.5 Appearance and installation dimensions

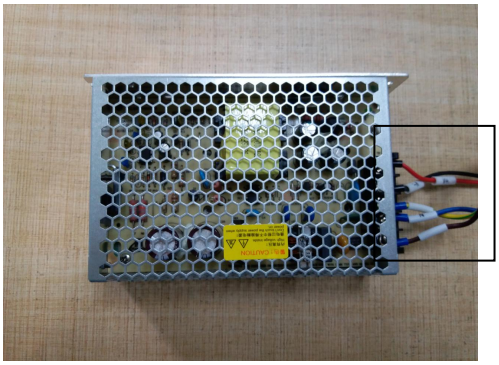


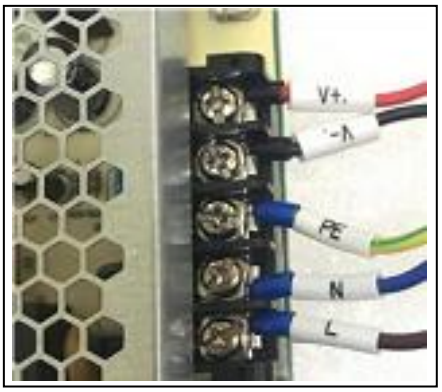
7.6 Wire feeder electrical wiring diagram



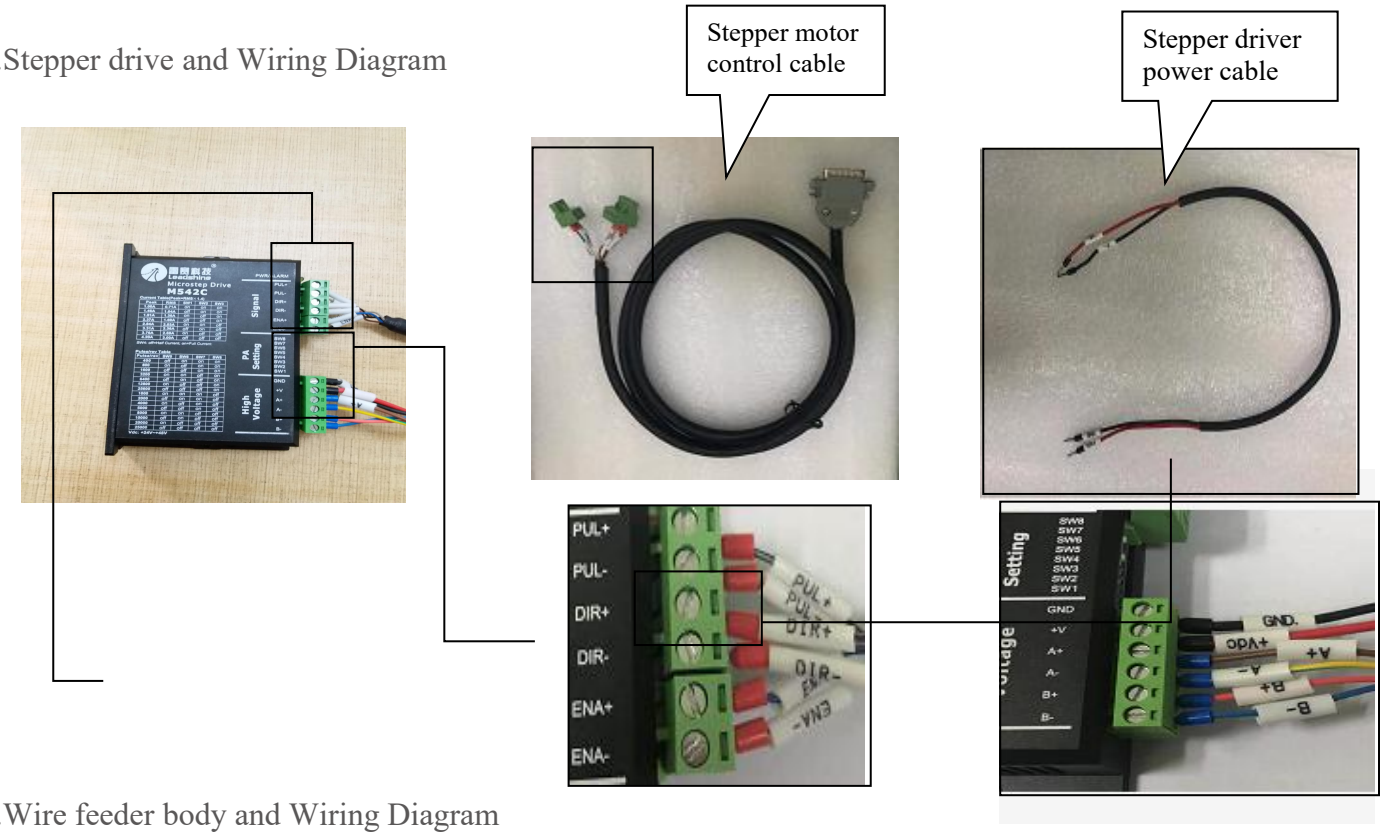
Wiring pictures show:

1. Stepper Switching Power Supply and Wiring Diagram

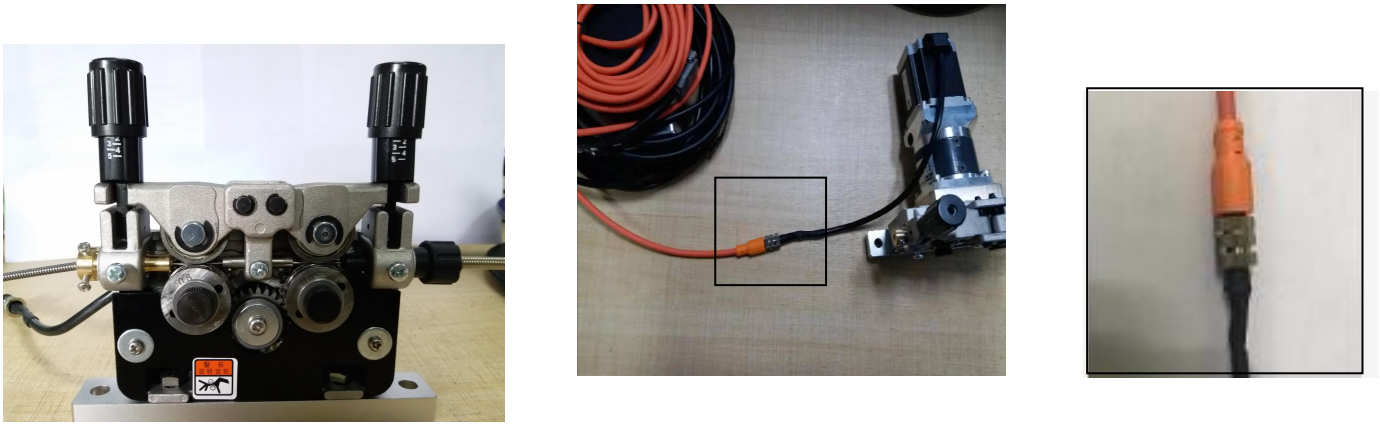




2.Stepper drive and Wiring Diagram

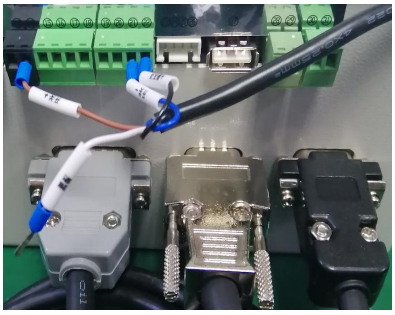


3.Wire feeder body and Wiring Diagram

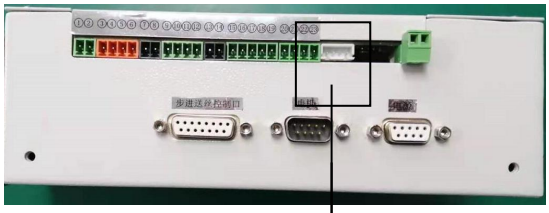


4.Switching power supply Integrated box, external wiring harness and wiring diagram

5.Wire feeder integrated control box and plug wiring diagram

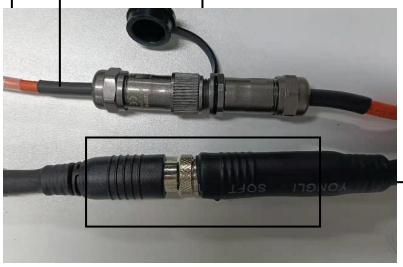




6.Touch screen, communication cable and control box plug wiring diagram


7.Handheld gun and switch & safety lock extension cord, motor extension cord, docking plug, etc.

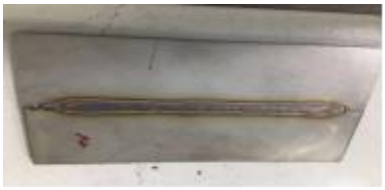


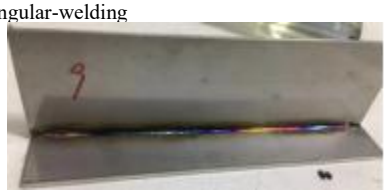



safety lock cable

motor cord

8.Reference table for welding process of handheld welding head

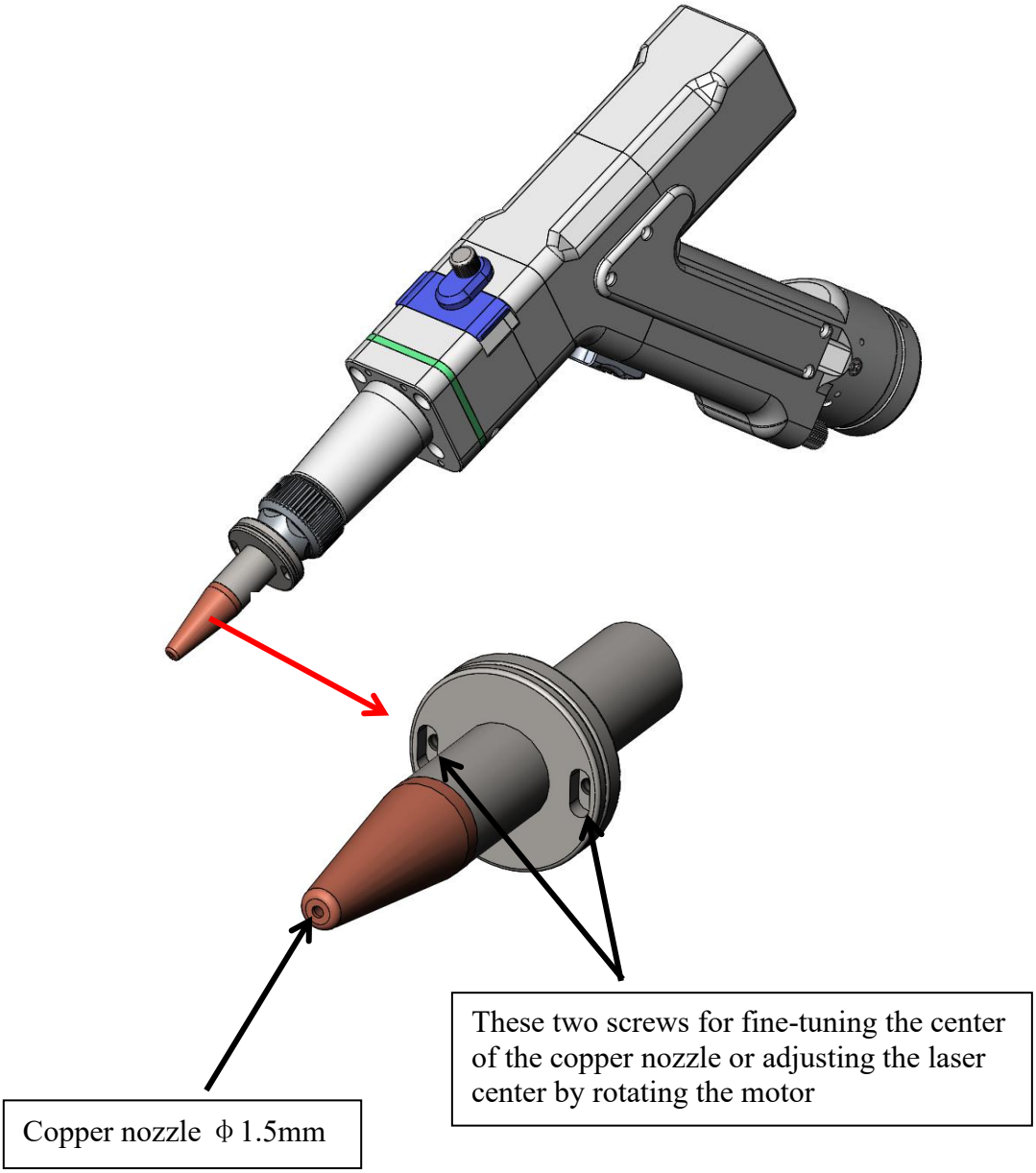
WSX ND18 handheld laser welding head Process testing									
Test environment: room temperature 30 ℃, ND18 handheld laser welding head, and IPG-700 laser; Test conditions: the laser comes with air cooling, the cooling water flow of the welding head is 1.2L / min, and the water temperature is 28 ° C;									
Material	Laser mode CW/QCW	Thickness（mm）	Welding Process					Picture	Welding Performance
			Power（0-10V）	Swing speed（mm/s）	Swing diameter（mm）	Welding Process（mm/s）	Protective gas pressure（bar）		
Stainless steel	CW	0.5	5	300	1	20	0.3	Tailor-welding 	0.5 mm stainless steel welding, welding power at 350 w, plate will produce heat, because the plate is thin resulting in deformation, but the welding effect is good.
		1	9	300	1.5	20	0.3	Tailor-welding 	1 mm stainless steel welding, welding power at 600 w, plate will still produce heat, because the laser penetration is strong ,the plate has been welded through without deformation, welding effect is good.
		1.2	9	300	1.5	18	0.3	Tailor-welding 	1.2 mm Stainless steel and 1.0 mm stainless steel thickness is close, the effect is the same.
		1.5	10	300	1.5	15	0.3	Tailor-welding 	1.5 mm Stainless steel welding, it can still be welded through, but at 700 watts power welding temperature is too high, the material surface is a bit black, but the welding effect is very good.
		2	10	300	1.5	10	0.3	Tailor-welding 	2 mm Stainless steel welding, at 700 w power the penetration is 2mm. Because the speed of handheld welding is slow and not stable, the welding effect is not so good as fast welding.
		0.5	5	300	1	20	0.3	Angular-welding 	0.5 mm Stainless steel angle welding, at power of 350 w, penetration is good, surface is clean, no deformation.
		0.9	8	300	1	20		Angular-welding	0.9 mm Stainless steel angle welding, at 500 w welding power, temperature is high, surface is a little

							0.3		black, but the effect is good.
		1.2	8	300	1.5	15	0.3	Angular-welding 	1.2 mm stainless steel has the same effect as 0.9 mm stainless steel.
		1.5	10	300	1.5	10	0.3	Angular-welding 	1.5 mm Stainless steel angle welding, at power of 700 w, the penetration is good, no deformation.
		2	10	300	1.5	10	0.3	Angular-welding 	2 mm Stainless steel angle welding, power of 700 w, due to insufficient heat input failed to weld through the material, but surface welding effect is very good.
		0.5	7	300	1	20	0.3	Penetration welding 	0.5mm/0.5mm stainless steel penetration welding, power of 400-w, welding materials has been welded through, due to thin material resulting in deformation.
		1	10	300	1.5	8	0.3	Penetration welding 	1mm/1mm stainless steel penetration welding, failed to through two piece of steel, the effect is good.
碳钢	CW	1	7	300	1.5	20	0.3	Tailor-welding 	1mmcarbon steel welding, at power of 400-w, the effect is good, the surface is white and shine.
		1.5	9	300	1.5	20	0.3	Tailor-welding 	1.5mm carbon steel welding, at power of 630 w, welding depth is good, but the surface is black
		2	10	300	1.5	10	0.3	Tailor-welding 	2 mm carbon steel welding at full power, failed to welding through, no deformation, effect is good.
		0.8	8	300	1	20	0.3	Angular-welding 	0.8mm carbon steel angle welding, at power 640 w, no deformation, no blackening, penetration welding.
		1.5	10	300	1	15		Angular-welding	1.5mm carbon steel angle welding at full power,the effect is good, but the

							0.3		surface is black, no penetration
		2	10	300	1.5	10	38 0.3	Angular-welding 	2mm carbon steel angle welding, because the plate is too thick to weld through.
		0.5	10	300	1.5	10	0.3	Penetration welding 	0.5mm/0.5mm welding at full power,materials can be fully welded through.
		1.5	10	300	1.5	10	0.3	Penetration welding 	1.5mm/1.5mm, the effect is good, but can not weld through, surface is black.

Note: this trial is 700 W CW laser, continuous mode 700 W laser power, continuous mode welding channel bright smooth, strong penetration, low solder joint overlap rate, less spatter during welding, However, IPG laser is more accurate than other lasers, and the power distribution of spot is more uniform. Welding process is more stable, and IPG laser welding penetration is greater, welding effect is better. And the laser is air-cooled structure, for hand-held welding more convenient, labor-saving, easy to install.

8.1.ND18A cutting nozzles



Notes for use :1. When using ND18A for cutting, it is necessary to stop the swing function of the motor;
2. Before use, adjust the red light to the center of the cutting nozzle before use.

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