LHDW200S Handheld Wobble Welding Head

User Manual

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Dear Users：

Welcome to use LHDW200S handheld wobble welding head manufactured by Shenzhen Ospri Intelligent Technology Co., Ltd. It is our great honor to gain your trust in our products.

In order to make you have an overall view of the product, convenient for your use, we specifically provide the user manual for you, including product characteristics, structural feature, technical feature, direction for use, maintenance, etc. It's an essential guide when you use this product.

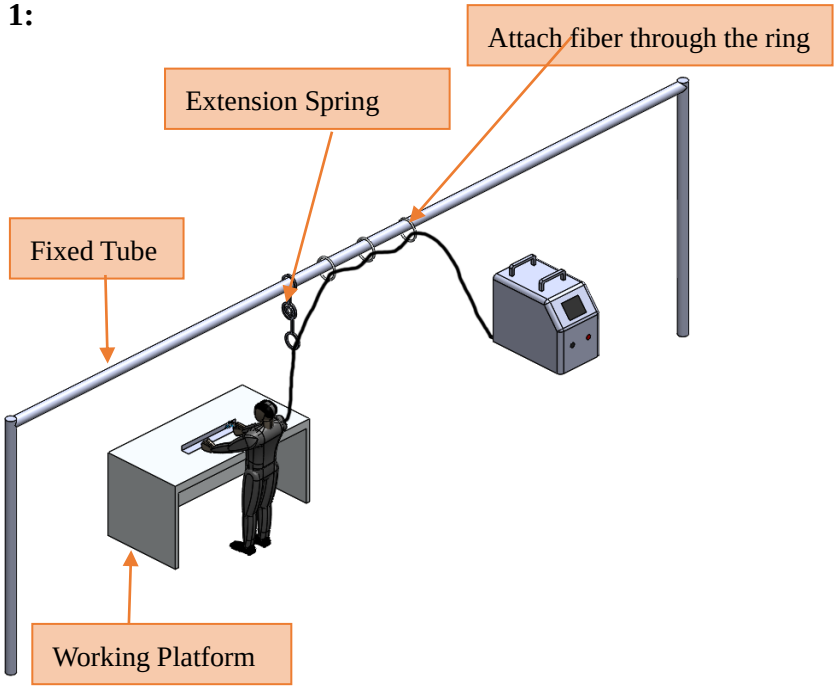
Please read the user manual carefully before use. I'm sure it will be helpful for you to use this product. In addition, if you have any questions during use, please contact us, and we will serve you wholeheartedly.

The contents of User Manual are protected by the Copyright Law. Without the approval of Shenzhen Ospri Intelligent Technology Co., Ltd, any organization or individual shall not copy or tamper it by any means and forms. In order to ensure your safety and the product works normally, please read the guide book carefully before using.

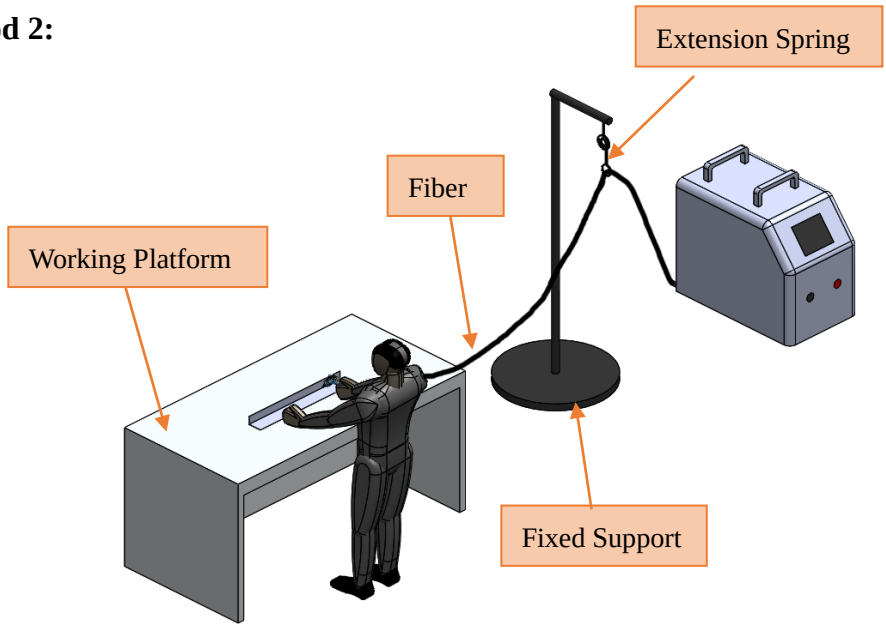
Content

Chapter 1 Application Method

Method 1:



Method 2:



Note:

1) When fiber through the rings, minimum bending radius is 150mm, otherwise the fiber would be broken possibly. In case place the fiber on the ground, it would be damaged by trampling things down. It will be uncomfortable to operate if users don't hang the optical fiber.

2) The fixed support, rings, extension springs and bellows are not included in our product package. In case of any demands, please discuss with our sales person.

Chapter 2 General Introduction

2.1 Product Principle

The laser beam is generated by the laser, transmitted by the external optical path, focused by the focusing lens in the welding head, and then acted on the welded gap between the materials being processed. With the assist of protective gas (preventing material from being oxidized), the material is liquefied to form a specific molten pool, so as to achieve the purpose of welding.

2.2 Product Parameter

Item	Specification
Laser Power	≤2000W
Collimation Length	50mm
Focus Length	100mm
Wobble Oval Spot Size:	1.5mm
Nozzle Aperture	5 mm
Auxiliary Gas Pressure	<1.0Mpa
Connector Type	QBH
Applicable Laser Brand	Raycus, IPG, etc.

Table 2.2.1

2.3 Attention

Warning: When the laser is used for the product process, please use a protective device to prevent the damage of the laser beam to the human body.

Chapter 3 Structure Features

3.1 Product Structure

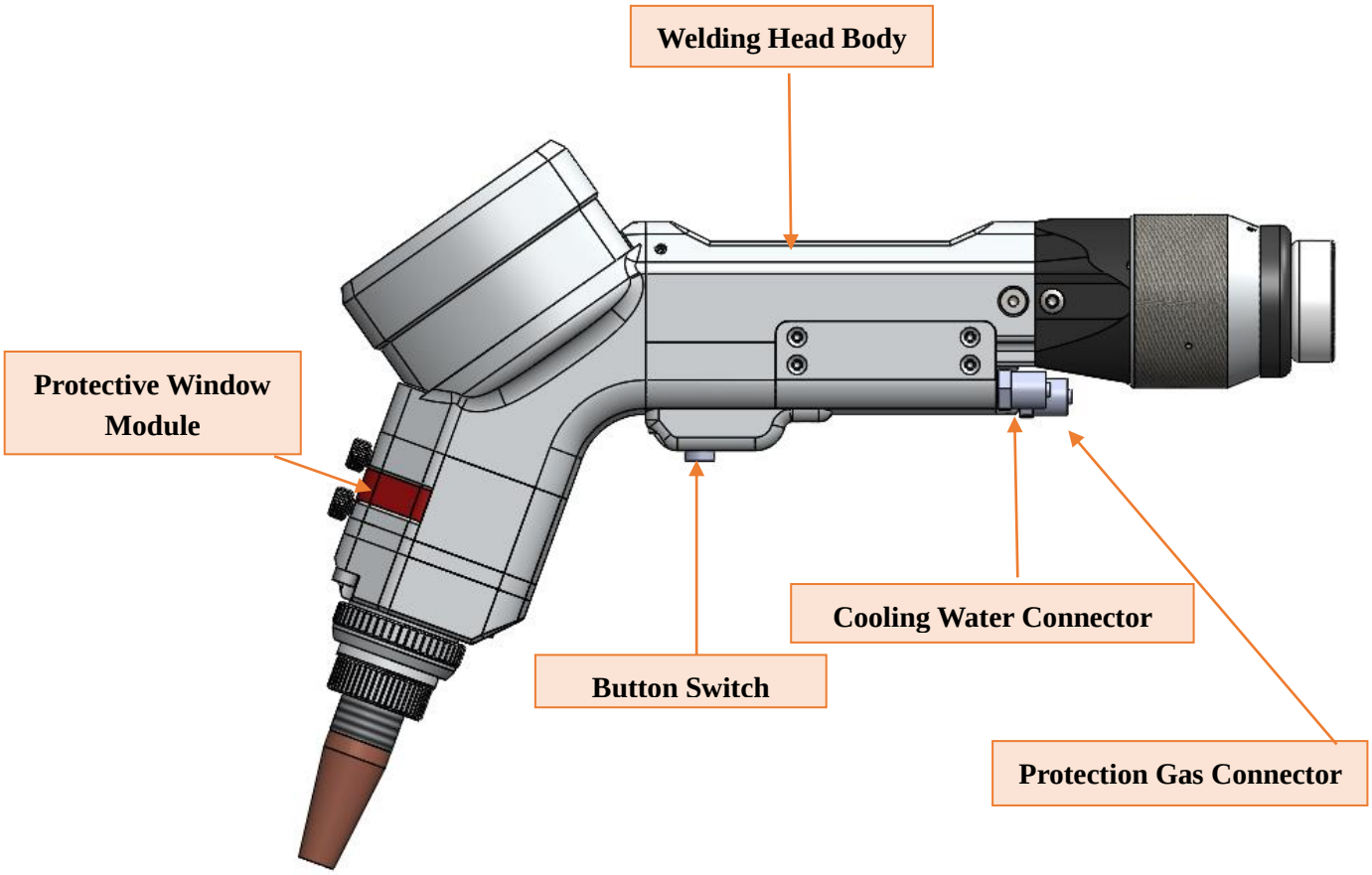


Diagram 3.1.1

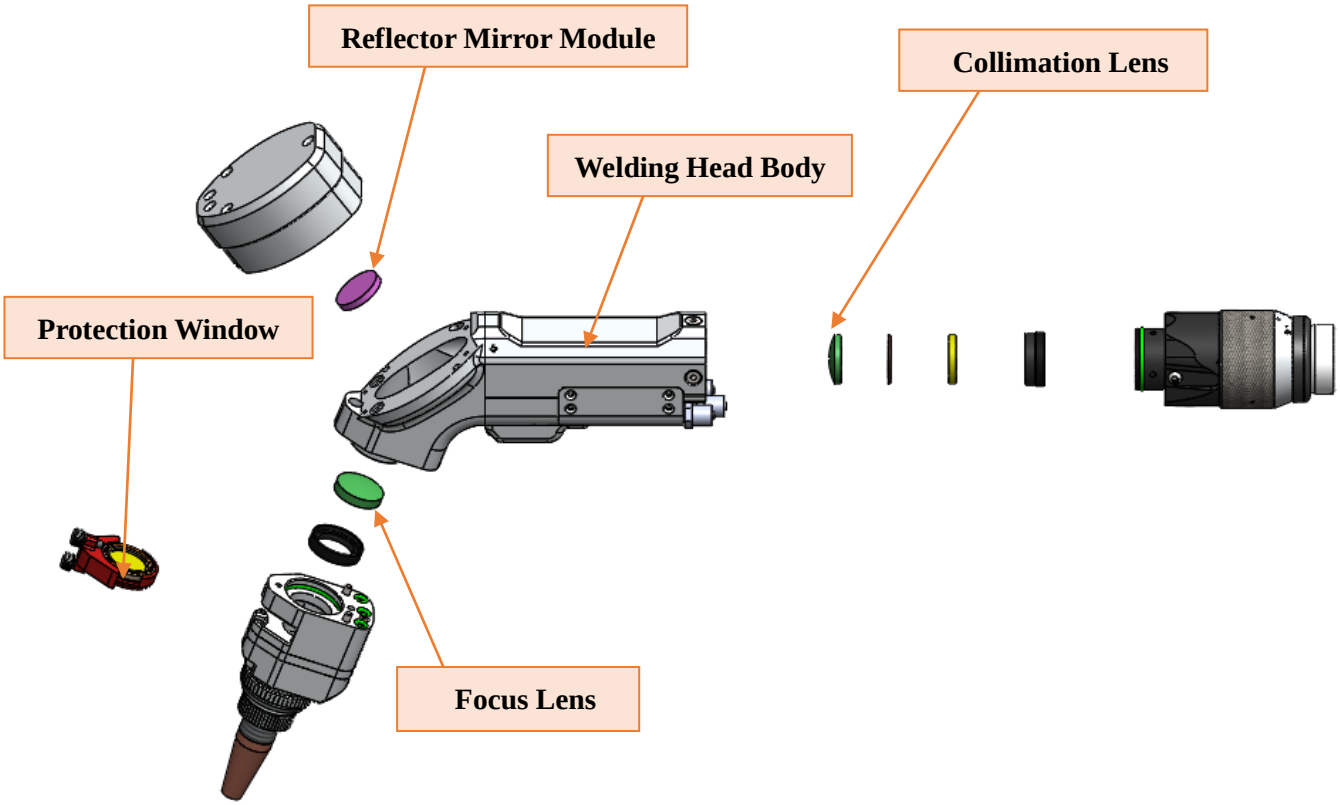


Diagram 3.1.2

Attention：To avoid the dust from falling onto the collimation lens, please make sure the fiber optic is clean before inserting the fiber.

3.2 Brief Introduction of Components

Welding Head Body: realize QBH locking.

Collimation Lens: to merge divergent beams into a parallel light;

Reflector Mirror: change the direction of beam path.

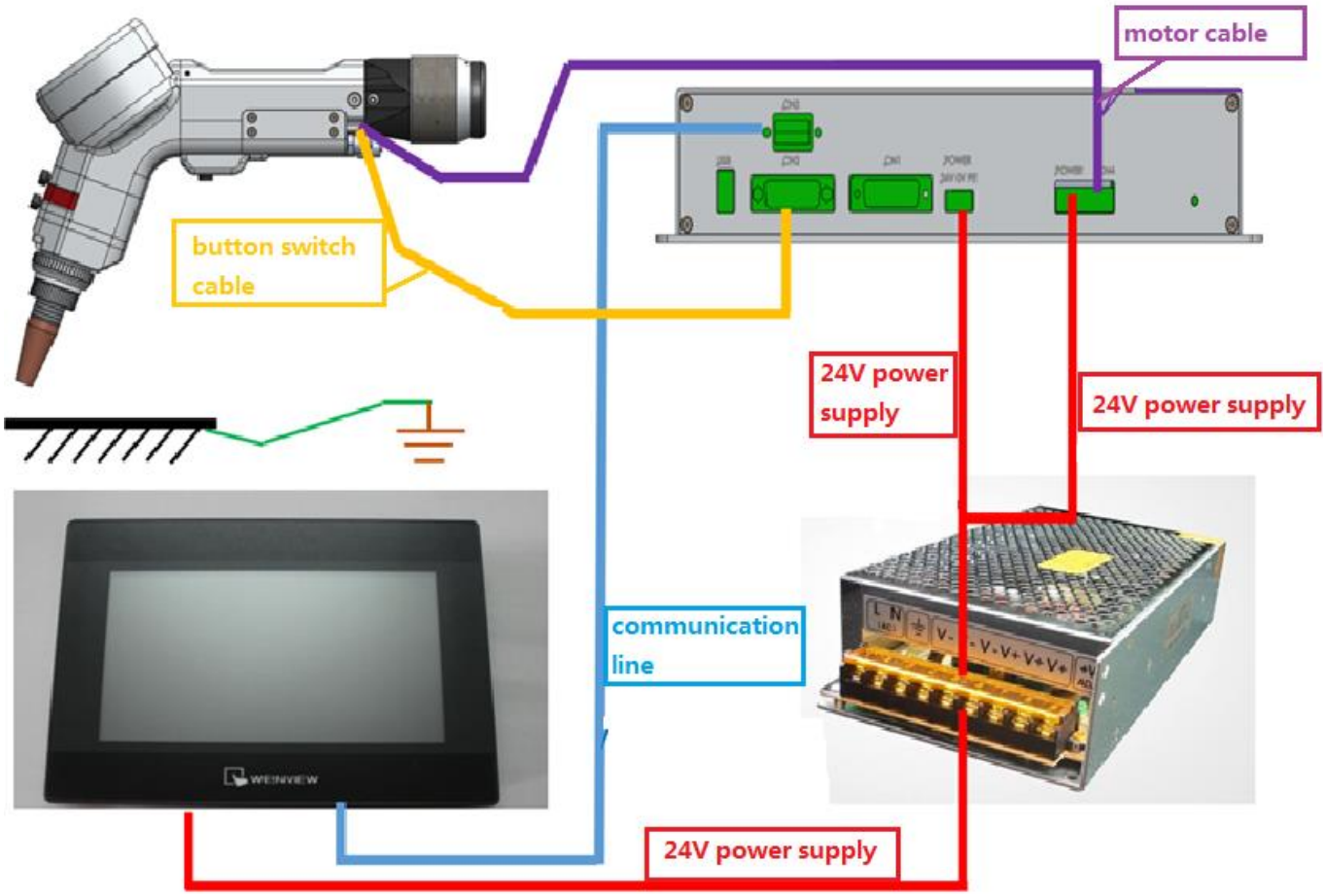
Focus Lens: Align the parallel beams to form a focused laser.

Protection Window: prevent dust from entering the focus lens and extend the service life of lens.

3.3 Wiring Diagram of Electric Connection

LHDW200S Controller Instruction

1. Controller Box Wiring Diagram



2. Controller Box Wiring Definition:

A. CN1(DB15 Female)

PIN	DEFINITION
1.	DA+
9.	DA-
4.	PWM+
13.	PWM-
3.	Laser Enable
11.	Red Laser

15.	24V
8.	24V
12.	0V

PIN 1, 9: given DA signal, to control the peak power of laser source;

PIN 4, 13: PWM signal, to control the duty cycle of laser output;

PIN 3, 11: control the laser enable and red laser, signal is PNP output;

PIN 15, 8: 24V power output of the controller;

PIN12: 0V power output of the controller.

B. **CN2(DB15 Male):**

PIN	DEFINITION
1.	switch signal (of the welding head)
9.	foot pedal signal
2.	nozzle touched signal (of the welding head)
3.	protective gas solenoid valve
14 .	0V
7.	0V
15.	24V
8.	24V

- PIN 1: switch (button) signal of the handheld welding head, directly connect to the yellow wire of the head;
- PIN 2: nozzle touched signal, directly connect to the green wire;
- PIN 9: foot pedal signal, directly connect to the pedal switch or 0V;
- PIN 3: protective gas solenoid valve output signal, PNP type;

- PIN 14, 7: 0V output of the controller;
- PIN 15, 8: 24V output of the controller;

C. CN3(DB9 Female)：

Connect to the 7-inch touched control screen

D. CN4(3 pins plug)：

Connect to the U, V, and W of wobbler motor

E. CN5(2 pins plug)：

24V：Connect to switch power 24V;

0V：Connect to switch power 0V;

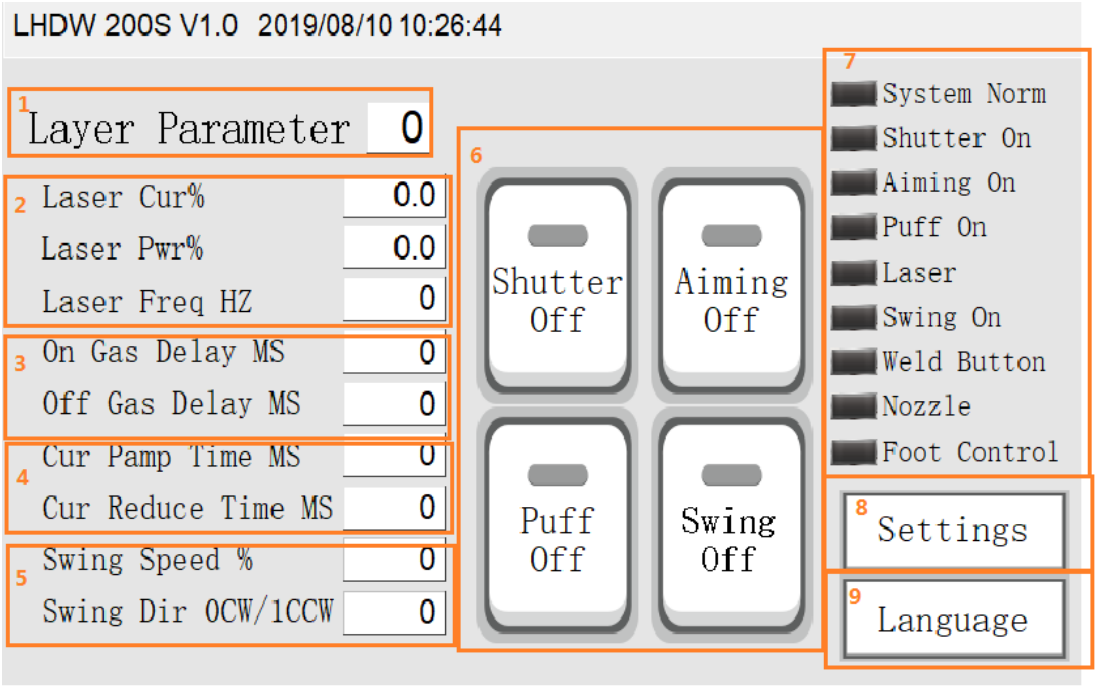
F. POWER（3 pins plug）：

24V：Connect to switch power 24V;

0V：Connect to switch power 0V;

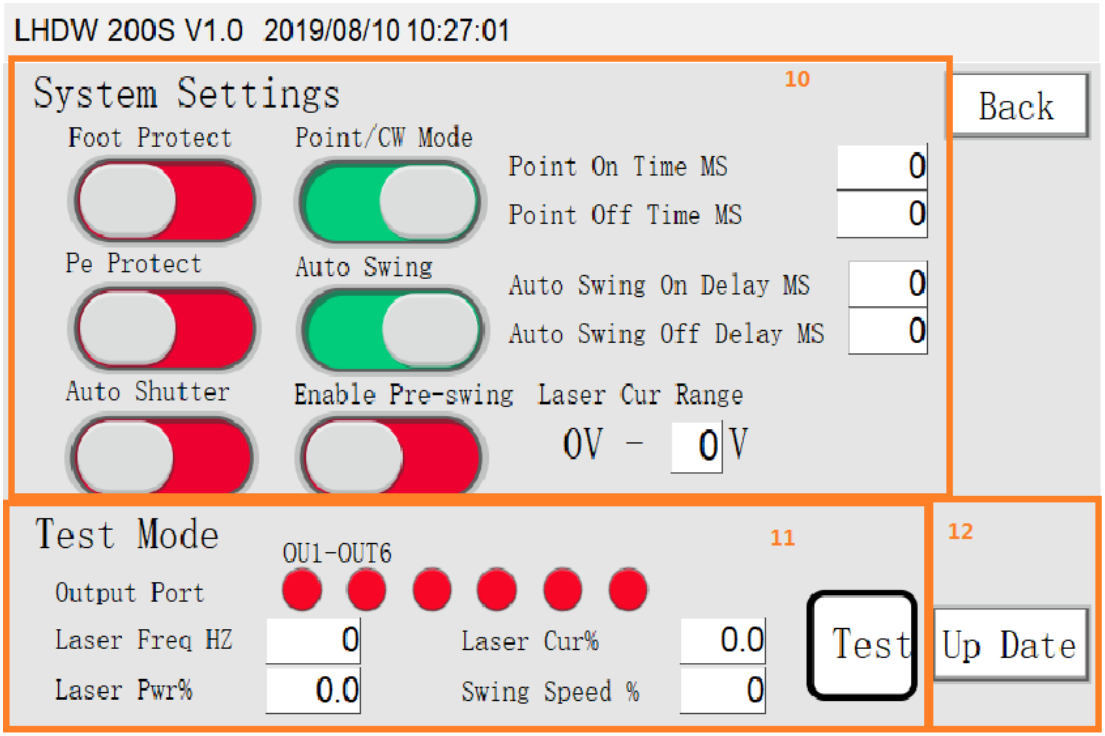
PE: grounded connect;

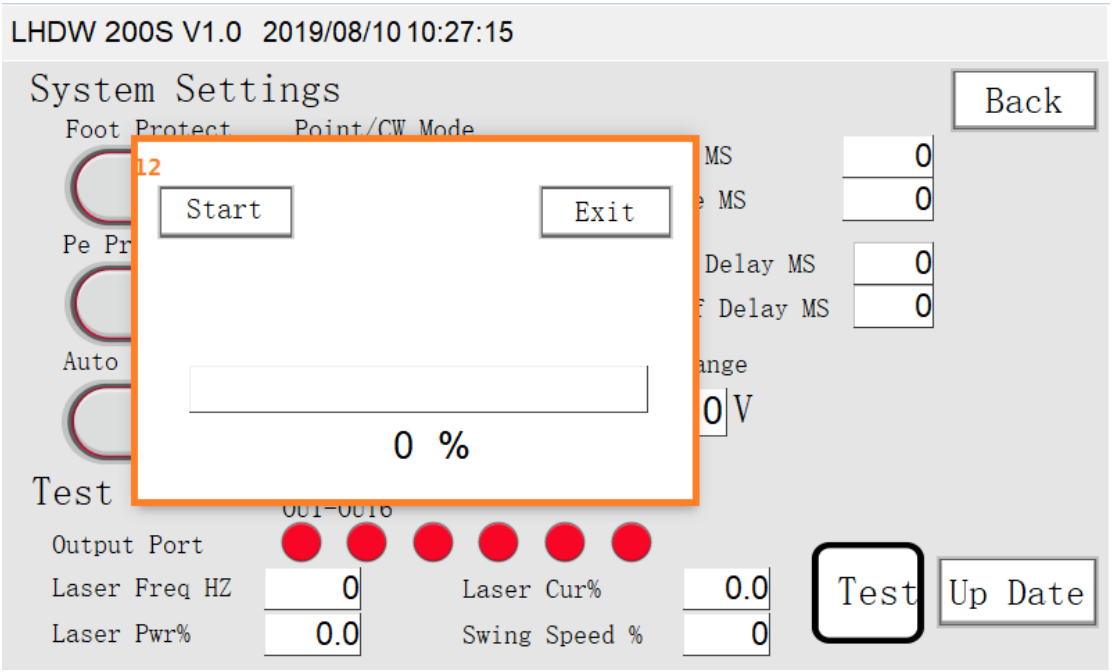
3. Screen Operation Instruction



A. Main Interface

1. Process Layer: There are 20 groups of process parameters to choose, from No.1~No.20. Each group of parameters can be saved separately.
2. Laser Source Power Parameter:
   Peak power ---to limit the peak power of laser output, set from 0~100%;
   Laser Freq.Hz ---set the frequency of laser output;
   Laser Pwr%---set ratio of laser output per unit time, from 0~100%.
3. On gas delay---blow the protective gas for setting time before the laser output;
   Off gas delay---after laser stops, continue to blow protective gas for setting time.
4. Pwr Ramp and Pwr Reduce---the time when peak laser power rises or falls from 0 to the setting peak power.
5. It is wobbling speed and direction of motor
6. It can be operated on the panel to open the laser shutter, red laser, gas blowing and wobble;
7. System parameters display;
8. Enter advanced parameter settings;
9. Language select;





B. Parameter Setting Interface：

1. Set protective function
   - If foot pedal protection and grounded protection are cancelled, CN1 Pin 1, 9 and Pin 4, 13 will output signal when press switch button;
   - Auto laser shutter enable. When press the welding head switch button, laser shutter will open by default;
   - Auto wobble enable. When press the welding head switch button, system will auto control the wobbling of motor. When the button

released, the system will auto stop the wobbling.

- Start re-wobble. The motor will go on wobbling at a low speed;
- Point/CW Mode---control whether laser output at intervals during the laser output.

2. The test mode is to check whether the IO port is normal or not. It should not be used unless in special occasion. When new function is developed, the controller box can be upgrade by updated program.

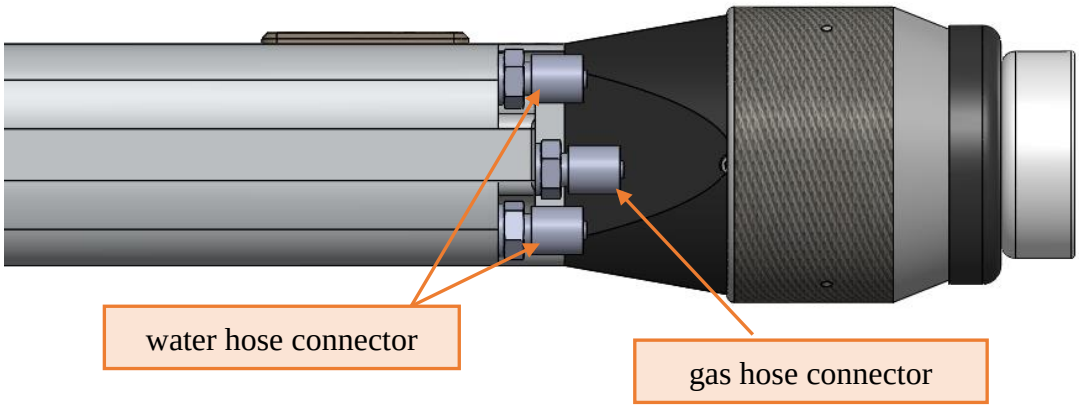
3.4 Hose Connection

3.1.1 Cooling Hose

One interface is connected to the water inlet hose and the other connected to the outlet hose because a water cooling system is integrated into a system inside the welding head body.

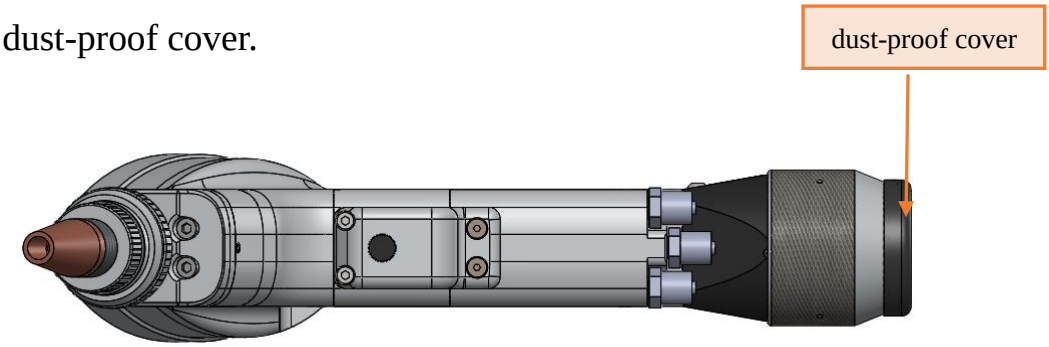
4.1.2 Auxiliary Gas Hose

Protective gas hose, input pressure ＜1.0Mpa.

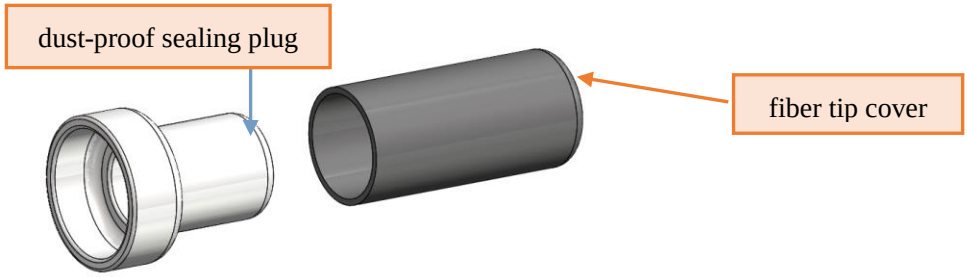


3.5 QBH Installation

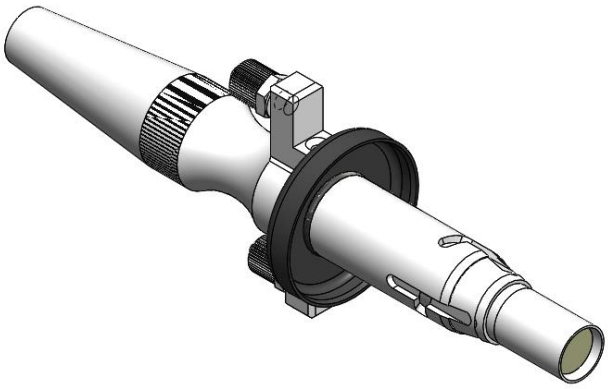
①Place the welding head horizontally, remove the dust-proof sealing plug and dust-proof cover.



② Put the dust-proof sealing plug into the fiber tip protective cover.

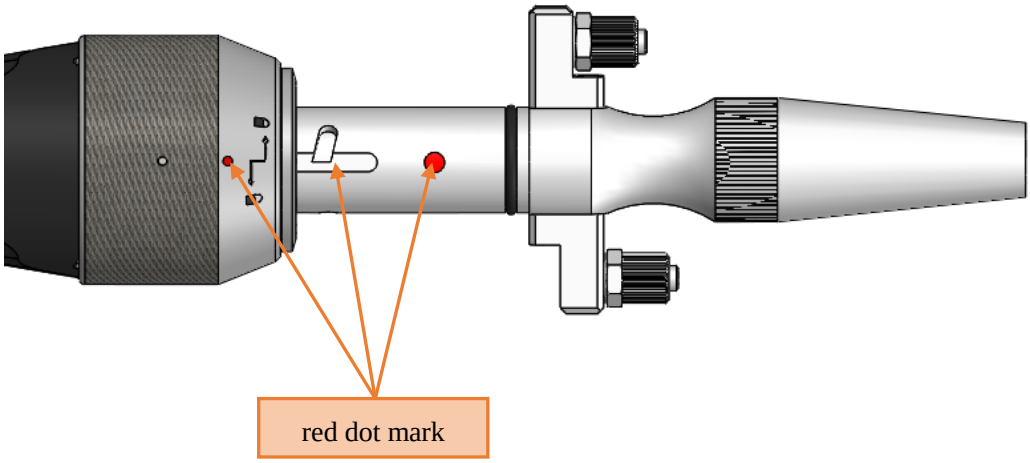


③ Put the dust-proof cover onto the fiber tip. As below shown:



Attention： In case the fiber tip is equipped with a dust-proof gasket originally, the original dust-proof gasket still shall be installed. Otherwise it will affect the sealing performance. It can also cause the parallel light to turn into the divergent light, which affects the welding effect.

⑤ Align the red dot on the fiber head with the red dot on the QBH connector, and slowly insert the fiber tip into the QBH connector.



⑥ Turn the QBH connector to the locked state, that is, screw it toward the limit position clockwise (where can hear a “thud” sound). Then lift the swivel nut up and screw the nut clockwise again until the fiber tip is compressed tightly. (Clockwise: toward the direction of the “locked” icon)

Chapter 4 Maintenance

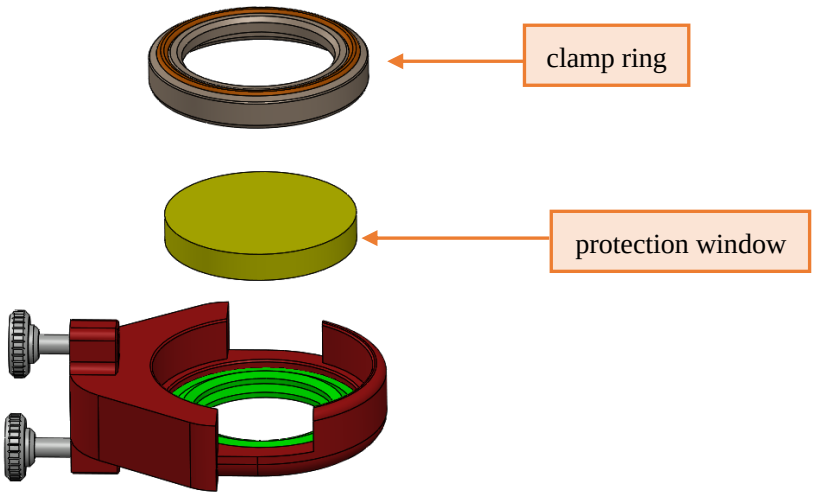
4.1 Maintenance of Protection Window

The protection window locates under the focus lens module. The protection window will be damaged when there is impurities or foreign matters on the surface of it. Therefore, it's necessary to clean the protection window regularly once a week. Meanwhile, the protection window is consumable part and needs to be replace when it is damaged.

Note: When cleaning and replacing the protection window, avoid contaminating it with the oil stain on hands or dust in the surrounding.

4.1.1 Disassembly of Protection Window

① Pull out the protection window drawer from the welding head body, remove it to clean and dust-free environment, and seal the head body at the same time.



4.1.2 Cleaning of Protection Window

① Available tools: dust-free wiping swabs, isopropyl alcohol and rubber air blow.

② Spray isopropyl alcohol onto the dust-free wiping swabs.

③ Gently pinch the both sides of the lens with the left thumb and index finger.

④ Hold the wiping swabs with right hand to gently wipe both sides of the lens in a single direction from bottom to top or from left to right, and blow the lens surface with the rubber air blow to confirm that there is no foreign matters on the cleansed lens surface.