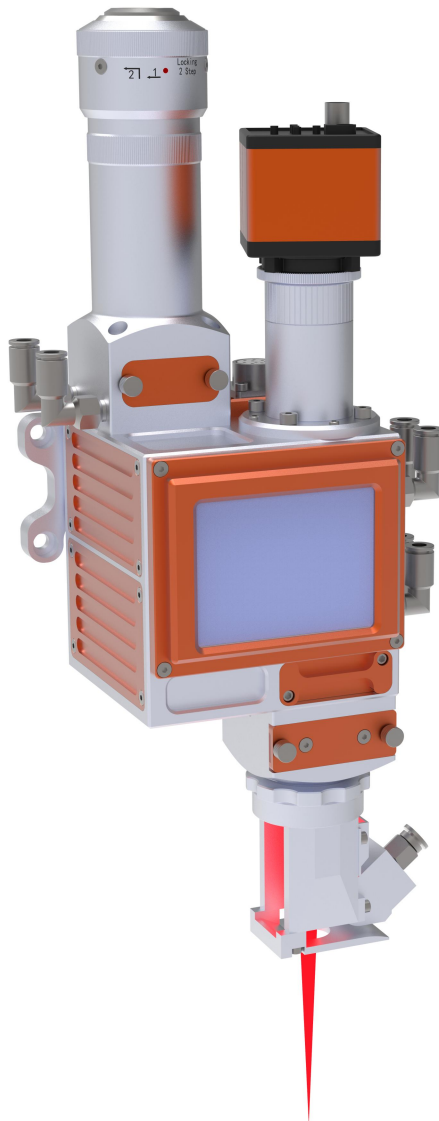


# HW series

**HW20 double pendulum mirror welding head (with screen)**

**An instruction manual**



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# Catalogue

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**Please read this product manual carefully after  
Then carry out the installation, debugging and use of the product**

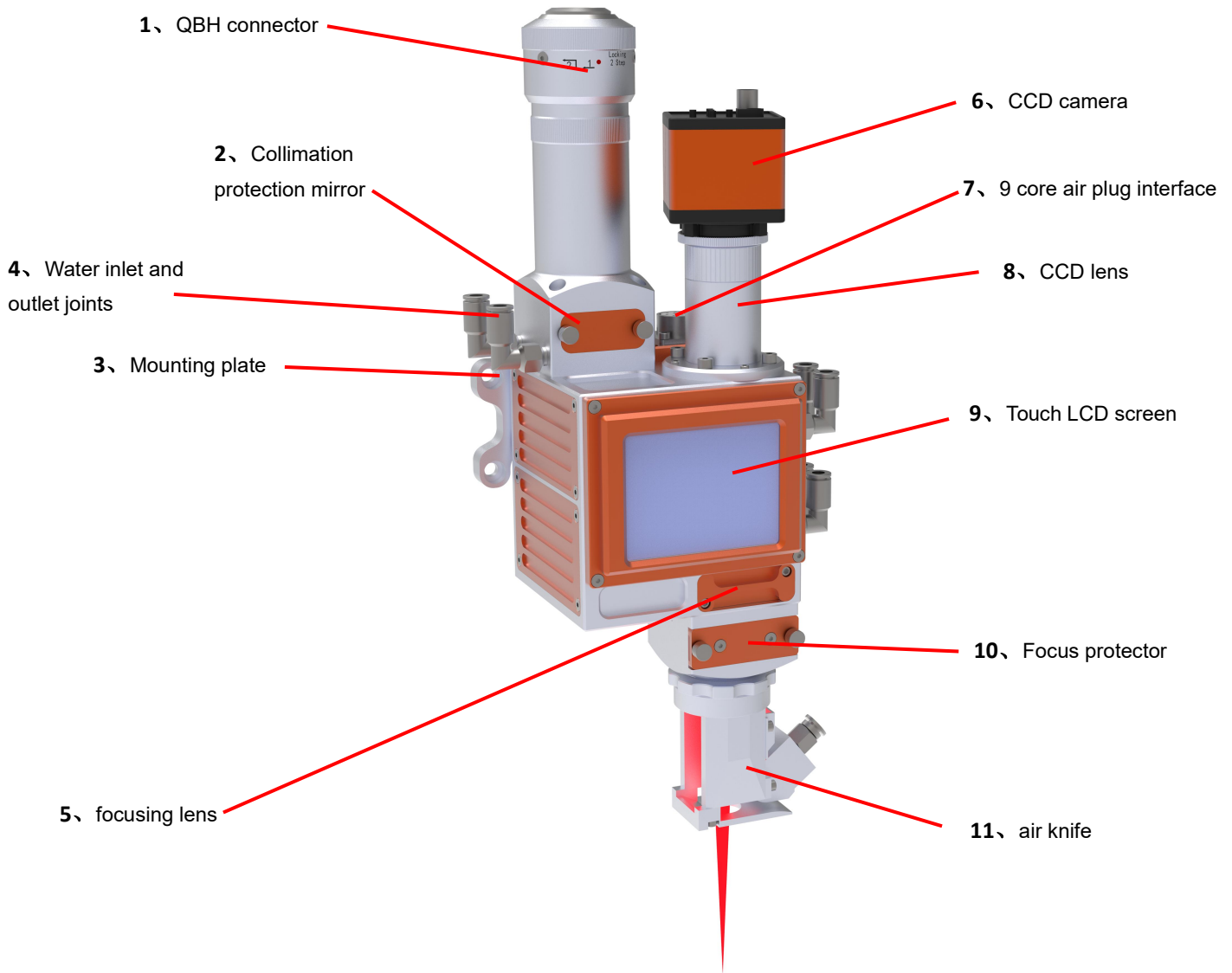
You must wear safety goggles when operating laser equipment. Safety glasses should be reasonably selected according to the wavelength of the laser emitted by the laser equipment. If the device is a laser tunable or Raman product, it will emit laser light beyond the normal output wavelength range of the device's laser, and corresponding safety protection should be taken against this phenomenon during protection. Laser safety goggles should be selected based on the ability to shield the entire wavelength range of laser light emitted by laser equipment.

# Chapter 1 Product Introduction and Presentation

## 1. Product introduction

"HW20 Double Pendulum Galvo" It is a dual-axis swing welding head independently developed by our company. The welding head consists of a QBH collimation module, a dual-axis galvanometer assembly, a focusing module and a CCD monitoring module. Equipped with dual galvanometer modules, it can realize "O, 8, ∞, —, | and other" various irregular light spots have met customer needs

The internal integrated galvanometer controller and driver, the galvanometer frequency is 200Hz, and the spot width is 0-5mm.



HD20 double pendulum lens (sample picture)

**Note:** The driver is built-in, and the double axis can be positive.

## 2. Accessories display



WD fiber dual-axis galvanometer welding head (sample picture)



Touch screen (sample image)



Blue light (sample image)



Protective lens (sample image)

**3. Special attention: 5 steps for inserting and unplugging optical fiber**

**Note: when inserting optical fiber, the laser head shall be placed horizontally; Ensure that the optical fiber is inserted horizontally**

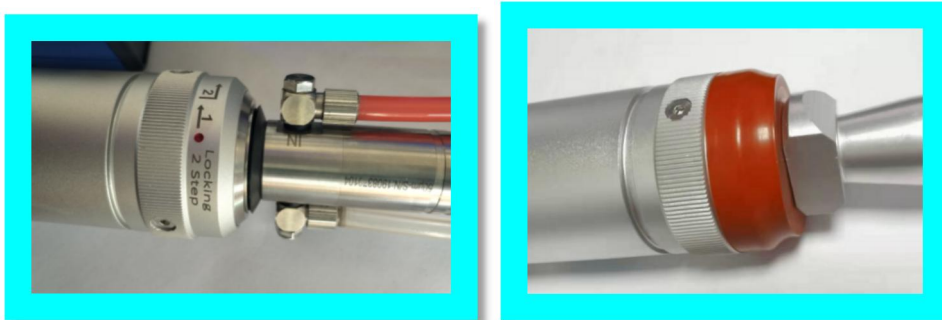
3.1 Check whether QBH connector and optical fiber plug are dirty, and wipe them with alcohol and cotton swab (cotton paper) in time



3.2 QBH homing "two points and one line" 3.3 alignment insertion of optical fiber plug



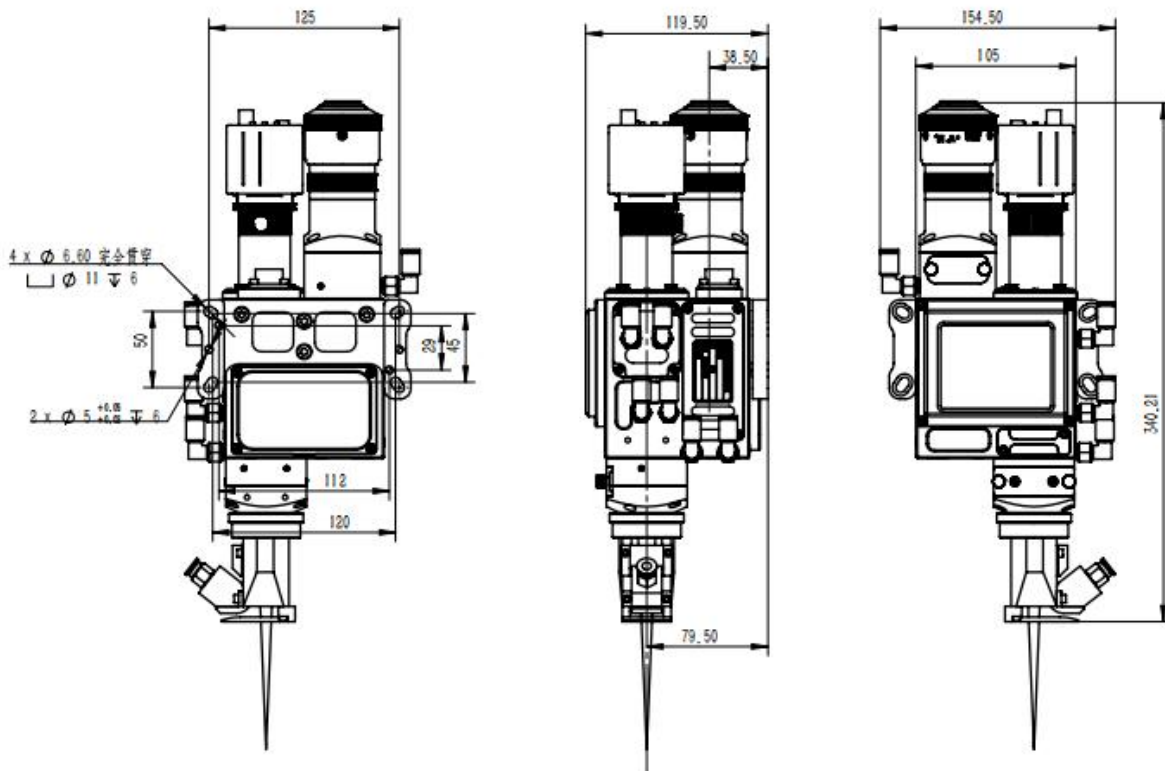
3.4 secondary locking clockwise 3.5 optical fiber protective jacket for complete protection



**Note: when inserting optical fiber, the laser head shall be placed horizontally; Ensure that the optical fiber is inserted horizontally**

## Chapter 2: Introduction to product functions and general operation

### 1. Welding head installation dimension drawing



### 2. Defocus adjustment

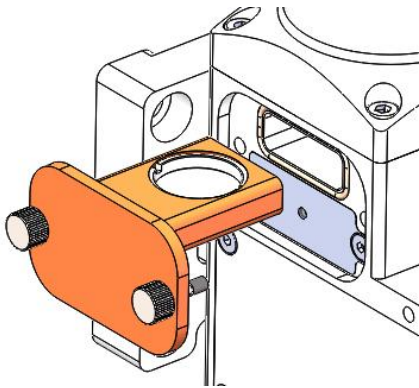
Adjust the laser power to about 150W, the brightness of the laser beam is the strongest, and the sound of "chichi" is the loudest. When you hear only a sound, that is, the focus is just on the surface of the workpiece, which is zero defocus.

When the defocus is negative, a larger penetration depth can be obtained, and the internal power density of the material is higher than that of the surface, which is easy to form stronger melting and vaporization, so that the light energy can be transmitted to the material deeper. Therefore, in practical applications, when the penetration depth is required to be large, negative defocusing is used; when welding thin materials, positive defocusing should be used.

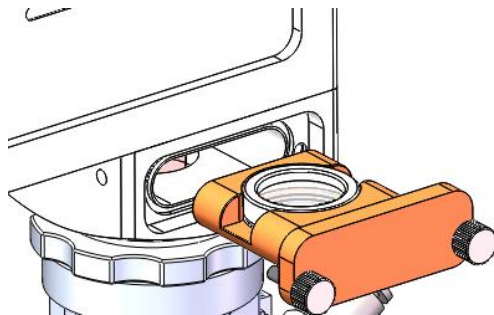
### 3. Replacing the cleaning protection sheet

Important: When cleaning and replacing the protective sheet, you will need the following:

1. Powder-free rubber gloves or finger cots, lint-free cleaning wipes and cotton swabs
3. Isopropyl alcohol (optical grade, anhydrous), acetone (optical grade, anhydrous), ethanol
5. Compressed air (no oil, no water)
6. Light source



Collimation Mirror Drawer (Threaded Press Ring)



Focus protection mirror drawer (pan plug seal)

#### ★Notice:

★ Do not go back and forth, use a lint-free cotton cloth or cotton swab to wipe the protective lens.

★ Do not touch the translucent surface of the protective lens with your fingers.

★ Do not blow directly with your mouth to protect the dirt on the surface of the lens, because it may bring new dirt.

★ Do not touch the tip of the cleaning swab with your fingers.

★ Don't forget to clean when replacing the mirror drawer.



★ When using compressed air, please do not blow the dirt directly from the front, and use the method of blowing from the side to prevent the dirt from sneaking into the surface.

★ Special instructions, powder-free gloves or finger cots must be worn when cleaning the product. It is now clear that if the damage is caused by, improper handling or the use of incorrect cleaning procedures or chemical use, damage due to such a cause is not covered by the warranty.

## Chapter 3 Control System Instructions

### 1.Introduction to the main operation interface

After the power is turned on, the touch screen will enter the main operation interface (as shown in Figure A).



(Figure A)

Sequential display on the interface status bar: graph, width, frequency, trigger, galvanometer switch, parameter setting

**1.1 Graphics:** The light output pattern of the galvanometer can be adjusted, the selected light is yellow, as shown in Figure A, the current light output pattern is a circle;

**1.2 Width:** set the galvanometer width to 0-5mm;

**1.3 Frequency:** Set the galvanometer swing frequency, 0-200HZ adjustable;

**1.4 Trigger:** Display the conduction state of the hand-held switch signal, green is the conduction state;

**1.5 Galvanometer:** Display the galvanometer swing signal, green is the swing state, and it can be manually oscillated by the switch button above;

**1.6 Parameter setting:** Click to enter the parameter setting interface, you can set the relevant parameters of the galvanometer.

## 2. Introduction of parameter setting interface

Click the "Parameter Setting" button at the bottom right of the main interface to enter the parameter setting interface as shown in Figure B below.



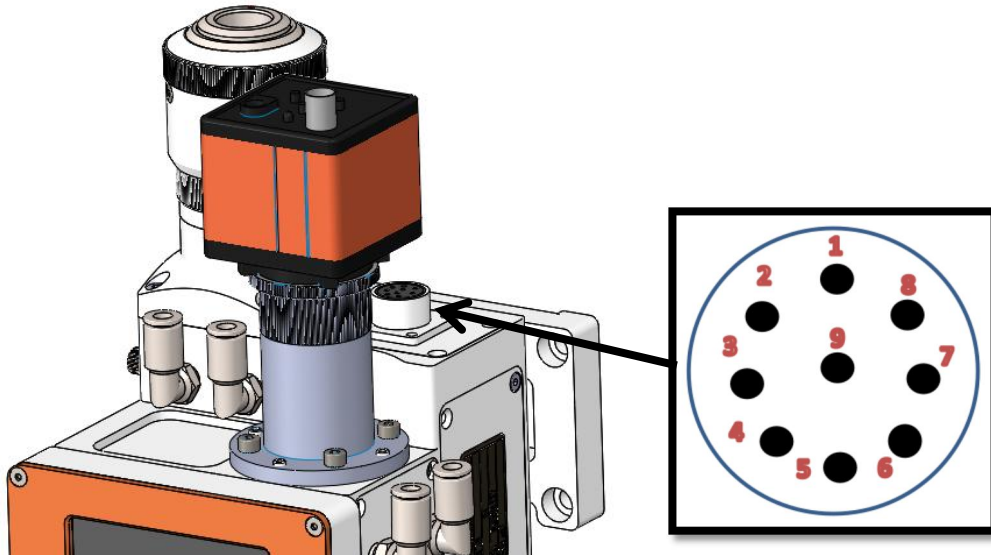
(Figure B)

**2.1 Galvanometer Offset:** Galvo Offset can control the offset of the origin of the galvanometer light output, galvanometer offset (x/y) respectively controls the offset of the horizontal axis and the vertical axis of the origin, the range is -5-5mm;

**2.2 Scale factor:** the magnification of the offset of the modulation galvanometer, the range is 0-5;

**2.2 Home page:** Return to the main interface.

### 3.Pin definition and wiring theory



serial number	Line number	Wiring	Remark
1	Power +15V	Connect to $\pm 15V$ switching power supply V1, V2, COM respectively	<b>The power cord needs to be connected one by one, and it cannot be wrongly connected</b>
2	Power -15V		
3	Power GND		
4	trigger negative	Connect to laser control card / motion control card / relay normally open port on PLC	
5	empty line		<b>Reserve IO empty line</b>
6	empty line		
7	trigger positive		
8	empty line		<b>reserved space</b>

9	empty line		
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