

# **HW40-PB platform single oscillator welding head user's manual**



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### Revision History



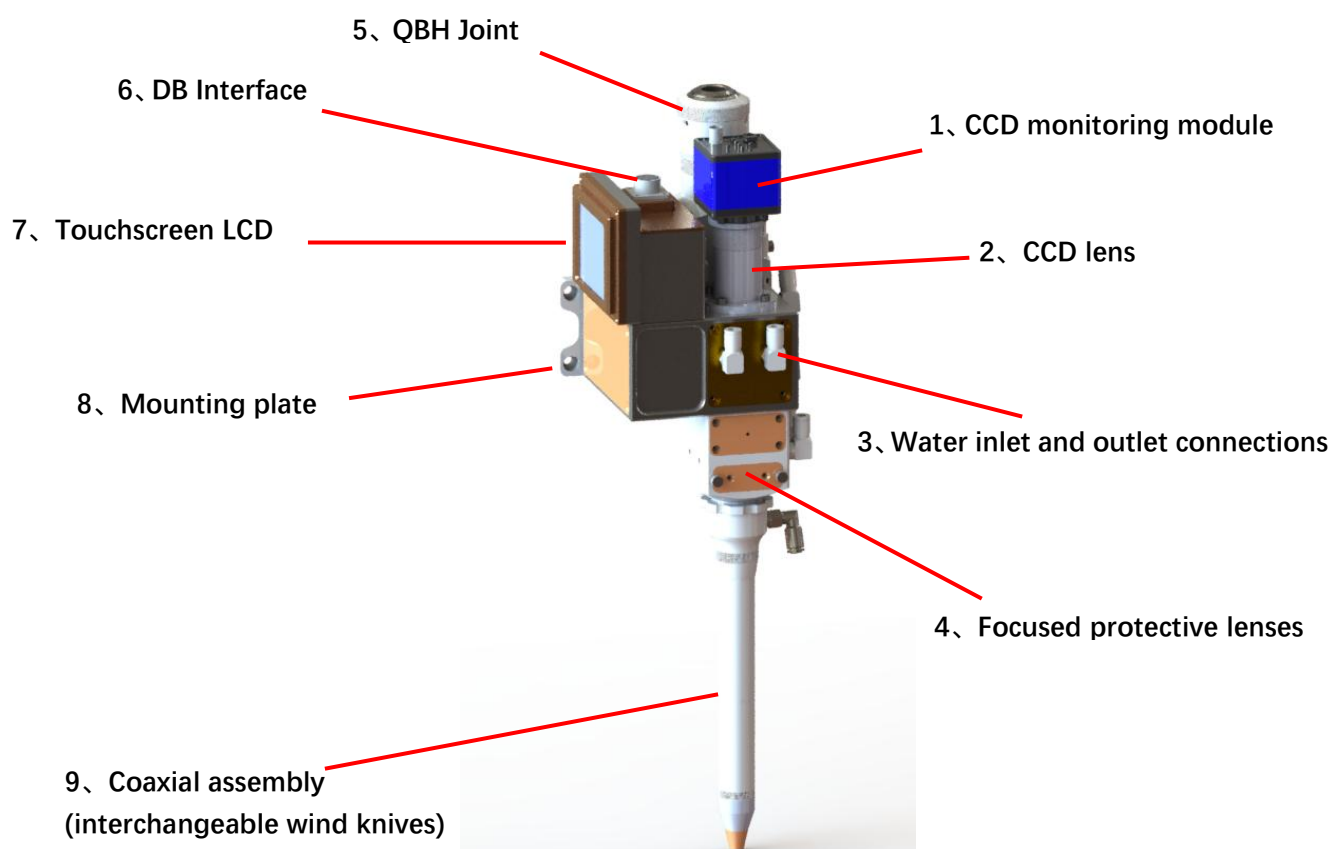
**Please read this product manual carefully after  
Then carry out the installation, debugging and use of the product**

**You must wear safety glasses** when operating the laser equipment. Safety glasses should be selected appropriately for the wavelength of the laser emitted by the laser. If the device is a laser tunable or Raman product, it emits laser light outside the normal output wavelength range of the device's laser and requires appropriate safety protection for this phenomenon. Laser safety glasses should be selected to shield the laser from the entire wavelength range emitted by the laser device.

## Chapter 1 Product Introduction and Display

### 1. product introduction

The "HW40-BP Platform Oscillator Welding Head" is a single-axis oscillating (with integrated screen) welding head developed by our company, consisting of a "Platform Oscillator Welding Head" and an "X-Z Laser Welding Control System". The welding head consists of a QBH collimation module, a single-axis oscillator assembly, a focusing module and a CCD monitoring module.



HWX20P platform single oscillator welding head  
(sample)

## 2. Product parameters

Maximum power	4000W
Fiber interface	RD/QBH
Collimation	F75
Focus	F200/F250/F300
Clear aperture	D26mm
Collimation protection mirror	D28X4mm
Focus protector	D30X4mm
Protective gas pressure	10、15、20、25par
Weight	2.9kg

### 3. Accessories display

	Fibre optic single axis oscillator welding head
	±15V power supply
	Power signal cable
	8" monitor
	BNC line
	Power shunt lines

	Side-shaft blowing
	wind knife assembly
	Coaxial blowing
	Blue Light
	Protective sheets (D28*4)
	Protective sheets (D30*4)
	12V power supply

## 4. Special attention: 5 steps for plugging and unplugging optical fibers

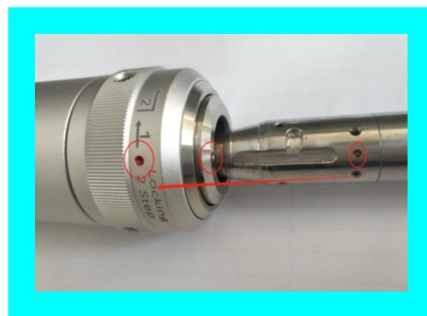
**Note: The laser head needs to be placed horizontally when inserting the fiber; ensure that the fiber is inserted horizontally**

4.1 Check whether the QBH connector and optical fiber plug are dirty, and wipe it clean with alcohol and cotton swab (tissue paper) in time



4.2 QBH homing "two points and one line"

4.3 Inserting the optical fiber plug into position



4.4 Double locking clockwise

4.5 Fiber Protection Jacket for full protection



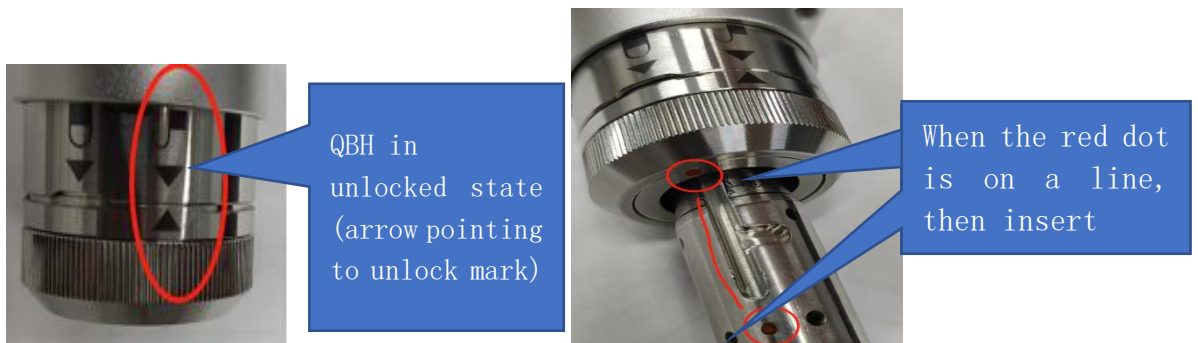
**Note: The laser head needs to be placed horizontally when inserting the fiber; ensure that the fiber is inserted horizontally**

## 5、Special note: Steps for plugging and unplugging optical fibres (new QBH connectors)

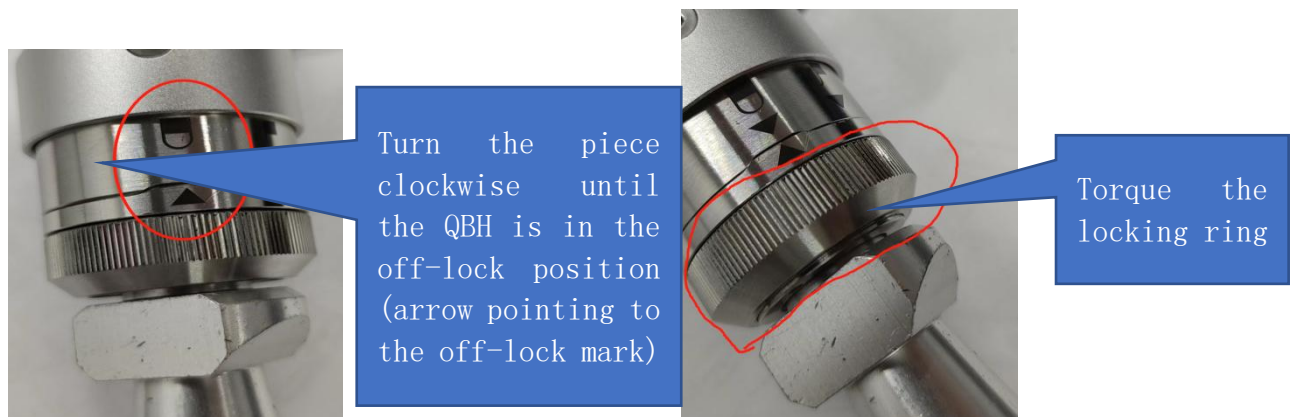
5.1 Inspect QBH connectors and fibre plugs for dirt and wipe them clean promptly with alcohol and cotton swabs (cotton paper).



5.2 The QBH is in the unlocked position (arrow pointing to the unlocked logo) and the red dot of the fibre optic plug is inserted into place against the red dot on the end of the QBH.



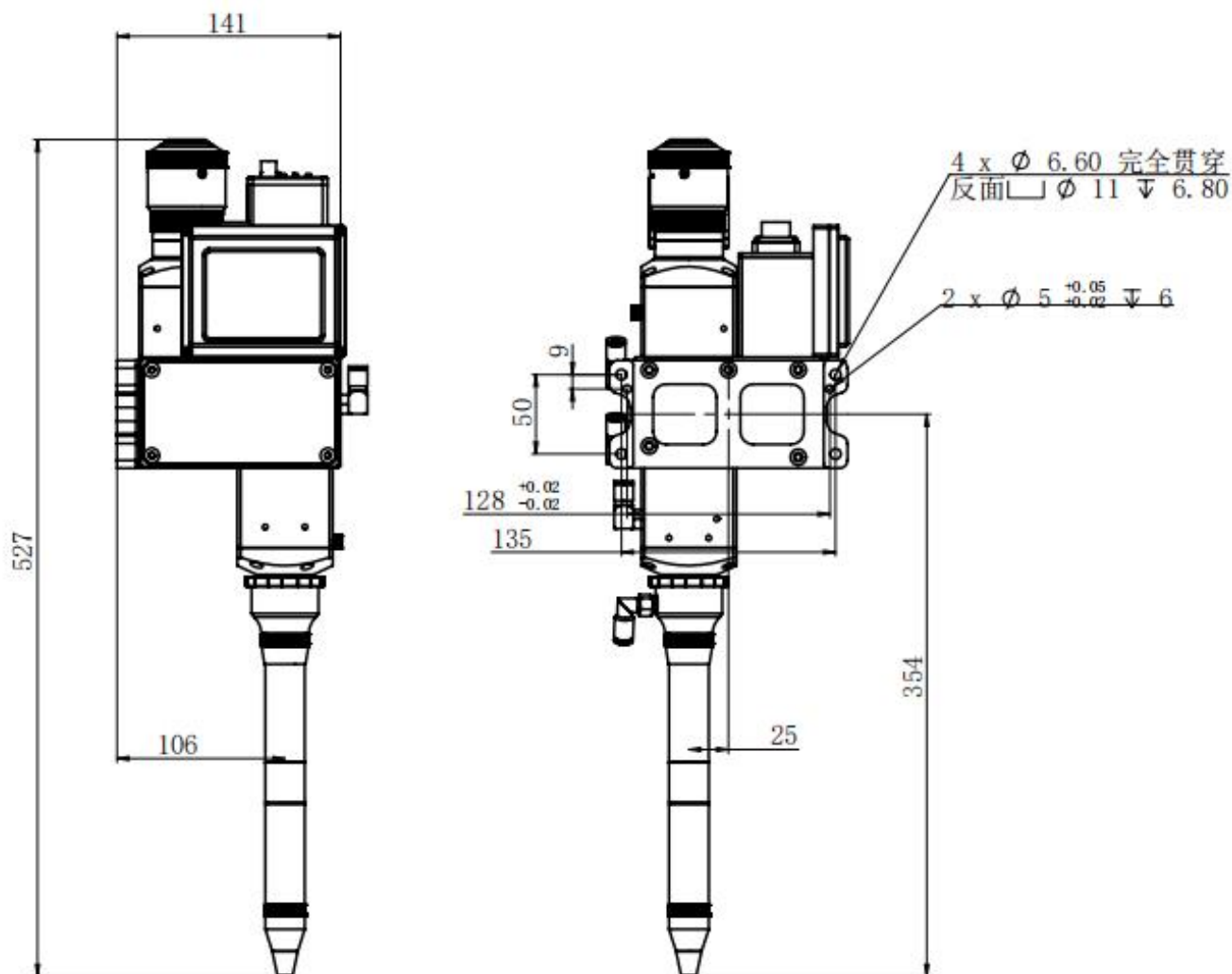
5.3 Turn the ring with the lock mark on the QBH connector clockwise until the QBH is in the off-lock position (arrow pointing to the off-lock mark) and finally twist the locking ring to tighten it.





## Chapter 2 Introduction to Product Functions and General Operations

### 1. Welding head installation dimension drawing



### 2. Defocus adjustment

Adjust the laser power to about 150W, the laser beam brightness is the strongest, "snort" sound maximum, hear the snap only when the focal point is located exactly on the surface of the workpiece, which is zero defocusing.

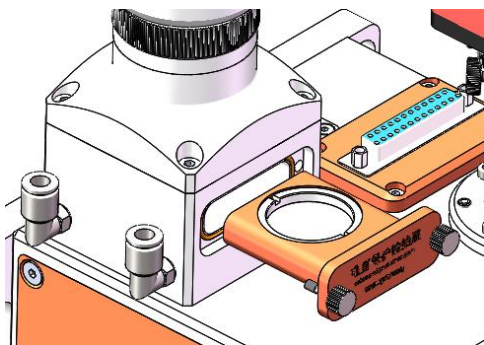
Negative defocusing, you can get a greater depth of melting, the internal power density of the material is higher than the surface, easy to form a stronger melting, vaporization, so that the light energy to the material deeper

transfer. Therefore, in practice, when a greater depth of fusion is required, negative defocusing is used; when welding thin materials, positive defocusing is appropriate.

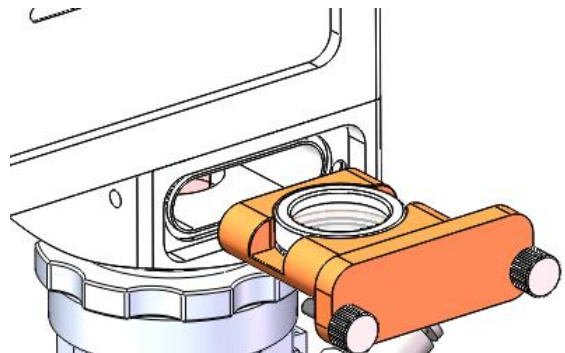
### 3. Replacing the cleaning protection sheet

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

1. Powder-free rubber gloves or finger gloves, lint-free cleaning wipes and cotton swabs
2. Isopropyl alcohol (optical grade, anhydrous), acetone (optical grade, anhydrous), ethanol
3. Compressed air (oil-free, water-free)
4. 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 causes is not covered by the warranty.

## 4. Introduction to the main operating interface

Once powered up, the touch screen enters the main operating interface (Figure A below).



(Figure A )

Interface status bar on the order of display: graphics, width, frequency, trigger, oscillator switch, parameter settings

4.1 graphics: you can adjust the oscillator out of the graphics, selected for yellow, as shown in Figure A for the current light out of the graphics for the circle.

4.2 width: set the width of the vibrating mirror 0-5mm.

4.3 frequency: set the oscillating frequency of the vibrating mirror, 0-200HZ adjustable.

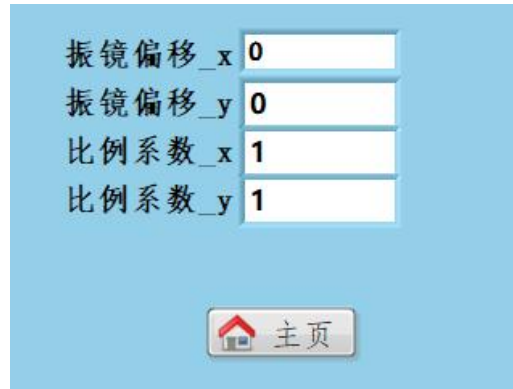
4.4 trigger: display the handheld head switch signal conduction state, green is the conduction state.

4.5 Vibrating mirror: display the oscillating signal of the vibrating mirror, green is the oscillating state, can be manually oscillated by the switch button above.

4.6 Parameter setting: click to enter the parameter setting interface, you can set the vibration mirror related parameters.

## 5. Introduction to the parameter setting interface

Click on the "Parameter Settings" button at the bottom right of the main screen to enter the parameter settings screen as shown in Figure B below.



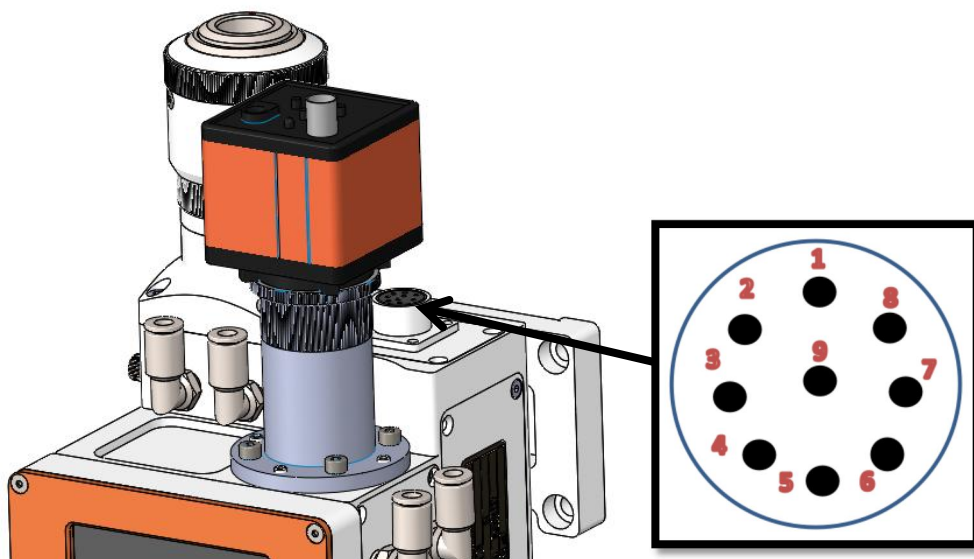
(Figure B )

5.1 Oscillator offset: the oscillator offset controls the offset of the origin of the oscillator output, the oscillator offset (x/y) controls the offset in the direction of the horizontal and vertical axes of the origin, respectively, in the range -5-5mm.

5.2 Scale factor: modulates the magnification of the oscillator offset, range 0 -

5.3 Home: returns to the main interface.

## 6. Pin definition and wiring instructions



Serial number	Wire Number	Wiring method	Remarks
1	Power supply +15V	Connected to $\pm 15V$ switching power supply V1, V2, COM respectively	The power cables need to be connected one to the other and not connected incorrectly
2	Power supply - 15V		
3	Power GND		
4	Trigger negative	Connection to relay normally open port on laser control card/motion control card/PLC	
5	Blank lines		Reserve IO blank line
6	Blank lines		
7	Trigger positive		
8	Blank lines		Reserved space
9	Blank lines		

## Revision History

Date	Revised content	Software Versions
20220530	Version 1	V1.0
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