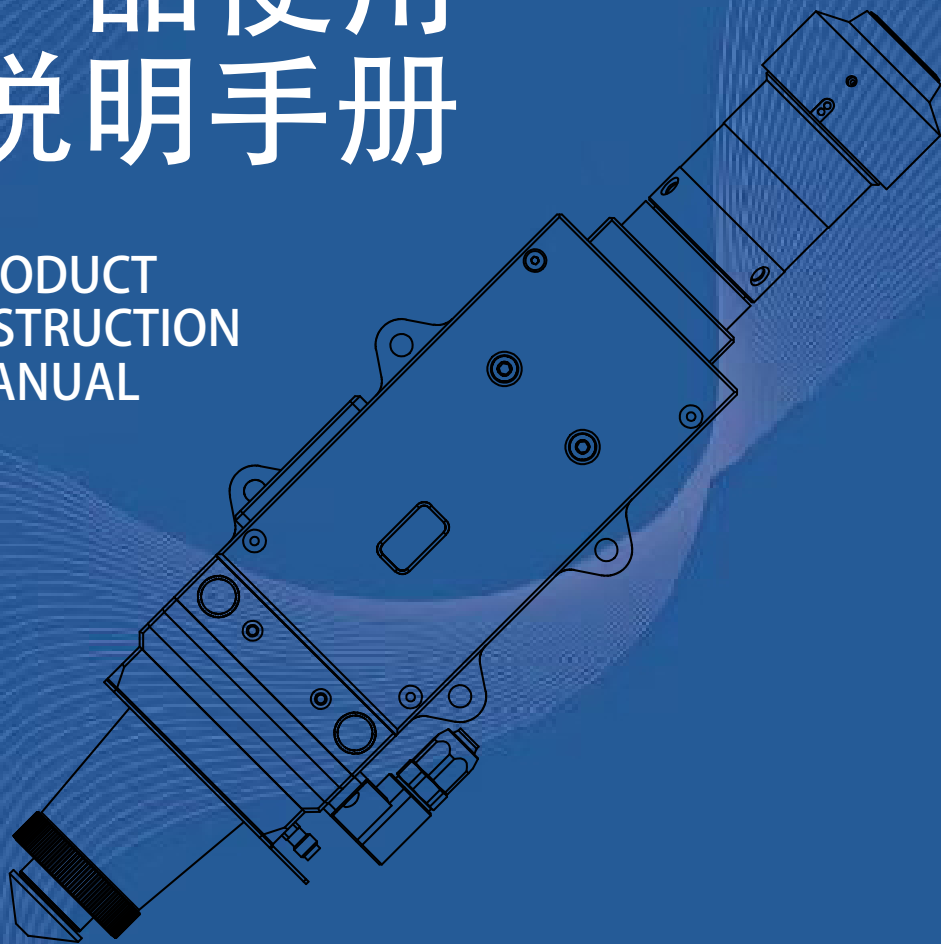


Consultation Hotline:
400-836-8816

产品使用 说明手册

PRODUCT
INSTRUCTION
MANUAL



NC36

Fiber Auto-Focus
Cutting Head V1.0



Shenzhen Worthing Technology Co., Ltd.
www.wsxlaser.com



Manual Revision History

Serial Number	Modification Time	Version



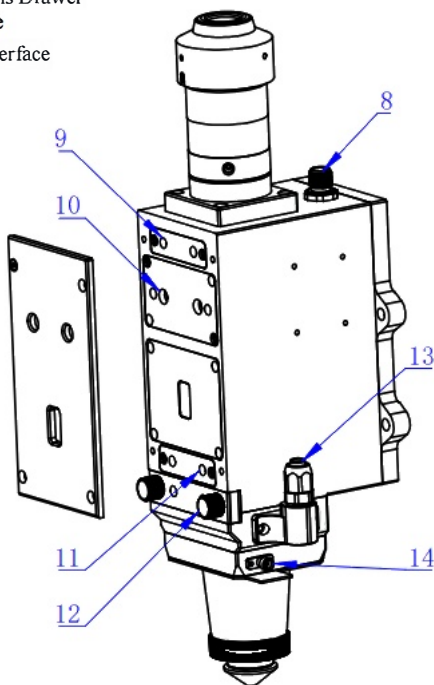
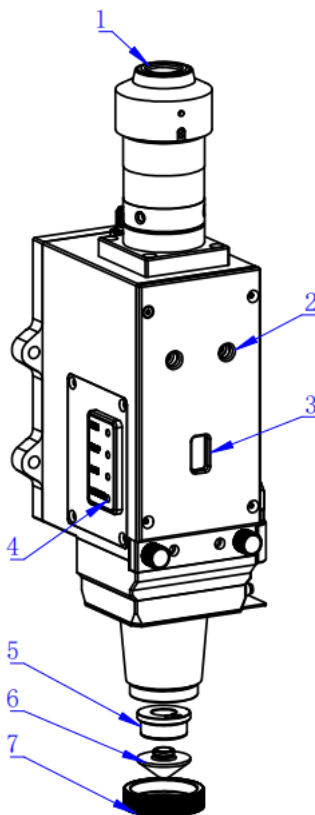
Contents

1.Product Description	
1.1 Product View.....	1
1.2 Technical Parameters.....	2
2.Cutting Head Installation	
2.1 Preparation.....	3
2.2 Specific Operation Procedure.....	4
2.3 Cleaning the Fiber Connector of the Cutting Head.....	5
2.4 Checking the Laser Fiber End Face.....	5
2.5 Removing Protective Film/Cap.....	5
2.6 Fiber Interface Connection.....	6
2.7 Installing the Cutting Head on the Z-axis of the Cutting Machine...8	
2.8 Installing the Ceramic Ring and Nozzle.....	8
3.Usage and Maintenance of the Cutting Head	
3.1 Coaxial Adjustment.....	9
3.2 Replacement of Ceramic Ring and Nozzle.....	10
3.3 Replacement of Lower Protective Lens.....	11
3.4 Replacement of Collimating Protective Lens.....	12
3.5 Replacement of Middle Protective Lens.....	13
4.Cutting Head Installation Dimensions.....	14
5.Electrical Wiring Diagram.....	15
6.Parameter Configuration Instructions.....	16
7.Monitoring Instructions	
7.1 Connecting Devices.....	17
7.2 Modifying Thresholds.....	17
7.3 Logs.....	18
7.4 Indicator Light Instructions.....	18

1.Product Description

1.1 Product View

- | | |
|--------------------------------------|--|
| 1. Fiber Interface | 2. Collimation and Centering Window |
| 3. Focusing Scale Observation Window | |
| 4. Monitoring Indicator Lights | |
| 5. Ceramic Ring | 6.Nozzle |
| 7. Locking Ring | 8. Drive Control Cable Aviation Plug Interface |
| 9.Collimating Protective Lens Drawer | |
| 10.Collimating Lens Drawer | |
| 11.Middle Protective Lens Drawer | |
| 12.Lower Protective Lens Drawer | |
| 13.Cutting Gas Interface | |
| 14.Follow-up Signal Interface | |



Notes:

To prevent damage during storage and transportation, please observe the following conditions:

1. The cutting head should be stored within the permissible temperature and humidity ranges.
2. Proper measures should be taken to prevent vibration or impact on the cutting head.
3. The cutting head should not be stored in or near magnetic fields (e.g., permanent magnets or strong alternating fields).

1.2 Technical parameters

Basic Parameters	
Model	NC36
Applicable Power	$\leq 4\text{kw}$
Laser Wavelength	$1070 \pm 30\text{nm}$
Fiber Interface Type	QBH/G5, et
Collimated Focal Length	D30x75mm/D30x100mm
Focusing Focal Length	D30x125mm/D30x150mm/D30x190mm
Focus Adjustment Range	$\pm 13\text{mm}$
Alignment Adjustment Range	$\pm 1.5\text{mm}$
Cutting Gas Interface	$\Phi 10$ (optional $\Phi 12$), maximum 2.5 MPa
Operating Temperature	$3^{\circ}\text{C} \sim +55^{\circ}\text{C}$
Storage Temperature	$-20^{\circ}\text{C} \sim +55^{\circ}\text{C}$
Weight	约3.5kg

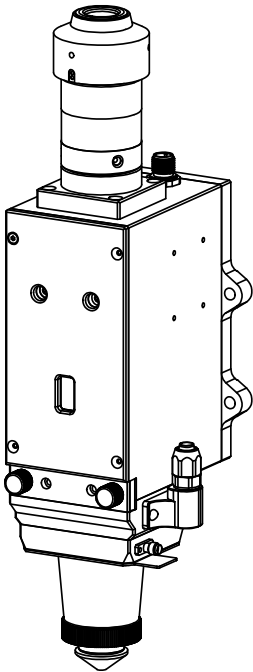
2. Cutting Head Installation

2.1 Preparation

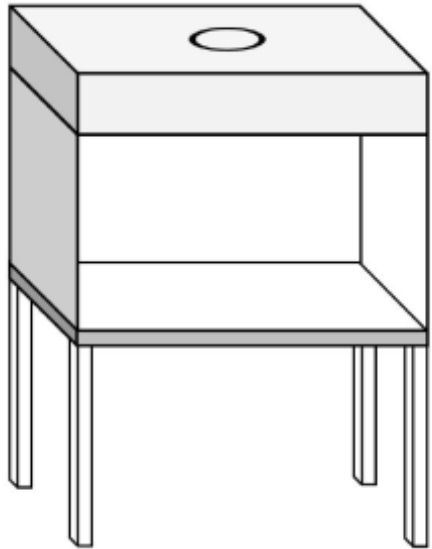
To prevent dust or dirt from entering the cutting head, the following methods can be used for installation:

Preparation before operation requires the following conditions:

- A. Cutting Head
- B. Clean Workbench (Type: Vertical Laminar Flow; Cleanliness Level: ISO 5, Class 100; Average Air Speed: $\geq 0.4\text{m/s}$);
- C. Cleaning Kit: Bright flashlight, anhydrous ethanol (or IPA), lint-free swabs, lint-free cloth, compressed air duster (or air blower).



Cutting Head



Clean Workbench

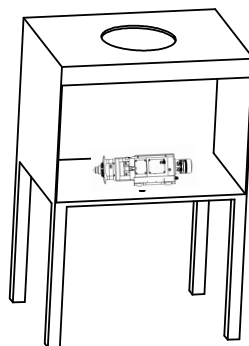
2.2 Specific Operation Procedure

3.2.1 Installing the Fiber Interface

1.Preparation of the Clean Workbench

Prepare and start the clean workbench.

Clean Workbench Type: Vertical Laminar Flow;
Cleanliness Level: ISO 5, Class 100;
Average Air Speed: $\geq 0.4\text{m/s}$



Preparation:

- A. Check that the equipment is clean and qualified (use a particle counter to check cleanliness) and ensure that the FFU purification unit is within its validity period (measure the average air speed in the work area. If the air speed cannot reach 0.3m/s , the FFU purification unit must be replaced).
- B. Check that all switches are operating normally and that the fan is running properly.
- C. Do not place unnecessary items in the clean work area to ensure that the clean air flow is not disturbed.
- D. For newly installed or long-unused clean workbenches, use a lint-free cloth and anhydrous ethanol to clean before use.

Starting Up:

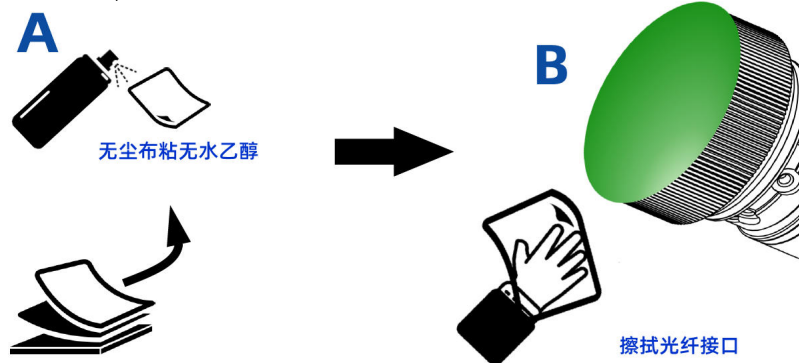
- A. Connect the power supply and pull the glass sliding door of the clean workbench to the lowest position (leaving a gap of about 10cm);
- B. Start the fan and purify for about 20 minutes before normal operation.
- C. After normal operation, turn on the lighting power supply of the clean workbench.

Special Instructions:

- A. Only trained professionals are allowed to operate.
- B. If operators do not follow safety work regulations, it may pose a danger to personnel or property.
- C. To ensure the normal operation of the laser device in the working environment and the safety of operators, relevant operating specifications and instructions must be followed and implemented.

2.3 Clean the Fiber Optic Connector of the Cutting Head

Wipe the fiber optic connector of the cutting head with a lint-free cloth dampened with anhydrous ethanol.



2.4 Check the Laser Fiber End Face

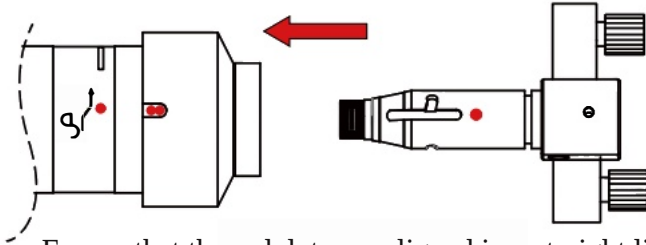
Remove the protective cap from the laser fiber and use a bright flashlight to inspect the end face of the fiber for contamination. If it is clean, the fiber can be inserted directly. If it is dirty, clean it with a cotton swab dipped in anhydrous ethanol or IPA.

2.5 Remove Protective Film/Cap

Remove the special protective cap/plug from the fiber optic connector on the cutting head.

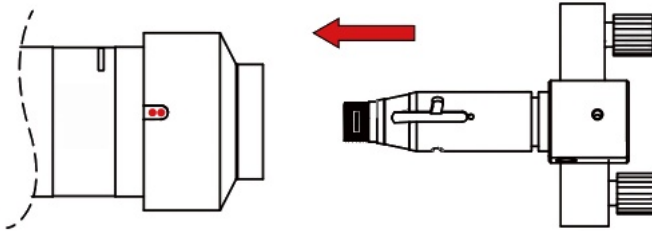
2.6 Fiber Optic Connector Connection

- (1) Place the fiber rod and fiber connector in a horizontal position.
- (2) Clean the fiber rod and fiber connector with a lint-free cloth and anhydrous ethanol.

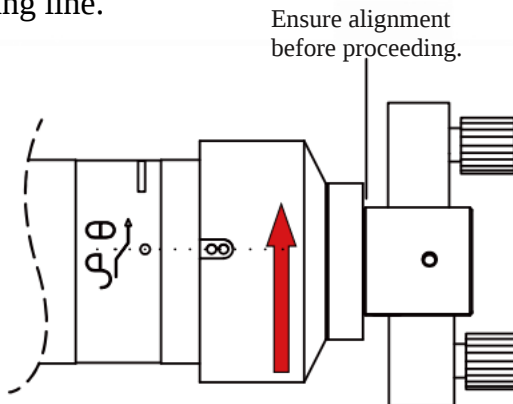


Ensure that the red dots are aligned in a straight line.

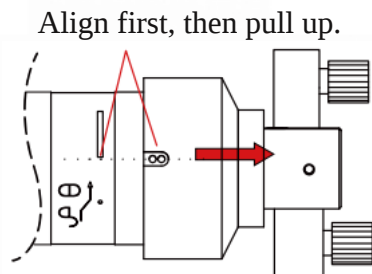
- (3) Gently insert the fiber rod into the fiber connector.



- (4) Once the fiber rod is fully inserted, rotate the red mark on the rotating sleeve in the direction of the arrow until it aligns within the white marking line.

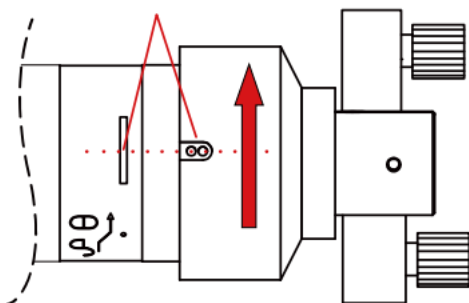


(5) Pull up the Rotating Sleeve as Shown



Rotate gently in the direction shown, applying moderate force. Typically, you will feel a locking sensation (using thumb and forefinger).

It is acceptable to align or go slightly past the center, but once in position, avoid further twisting.



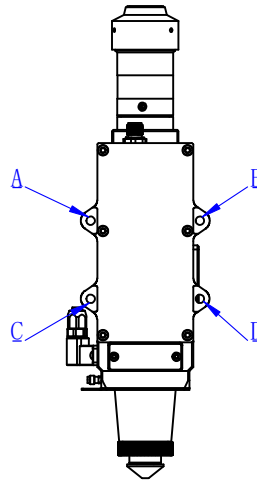
Caution! Do not apply excessive force as it may damage the precision mechanism!



To prevent dust or contaminants from entering the fiber optic connector, clean the fiber rod first. Ensure the laser head is in a horizontal position before inserting the fiber connector.

2.7 Mounting the Cutting Head on the Z-Axis of the Cutting Machine

Attach the cutting head to the machine's Z-axis rear panel using the four screws (A, B, C, D). Ensure the cutting head is securely locked and does not wobble after installation.

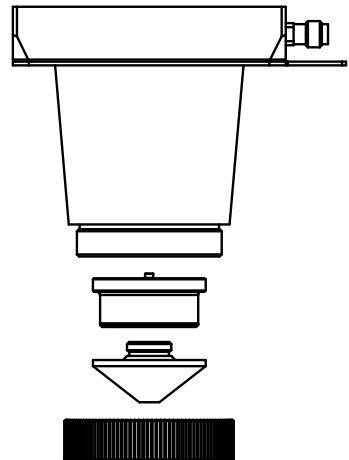


2.8 Install the Ceramic Ring and Nozzle

Install the ceramic ring and secure it, then install the nozzle.



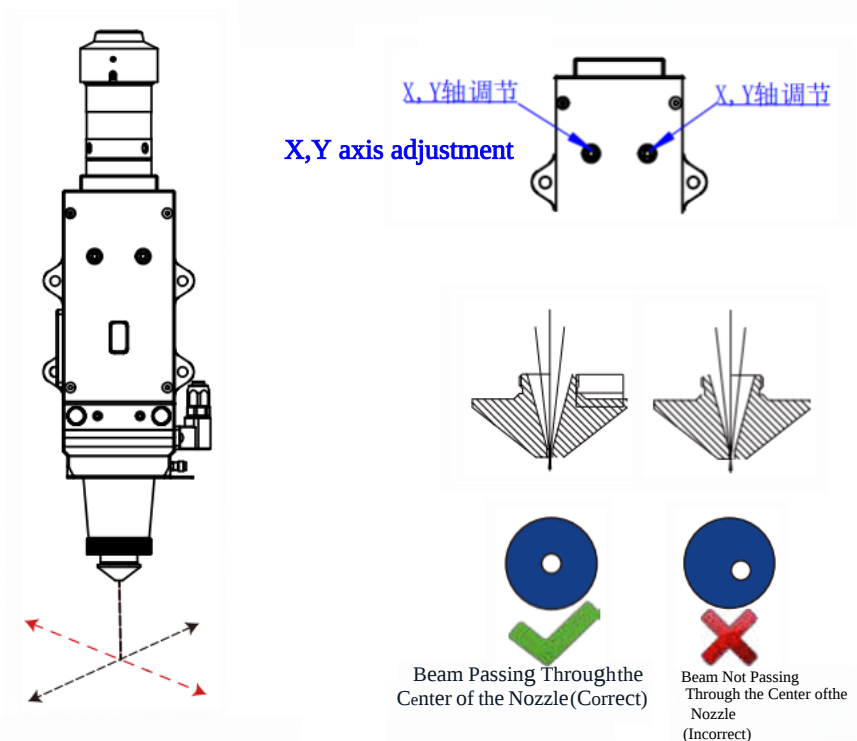
Tighten the nozzle onto the ceramic ring by hand, and use a wrench to tighten the ceramic locking ring.



3. Usage and Maintenance of the Cutting Head

3.1 Coaxial Adjustment

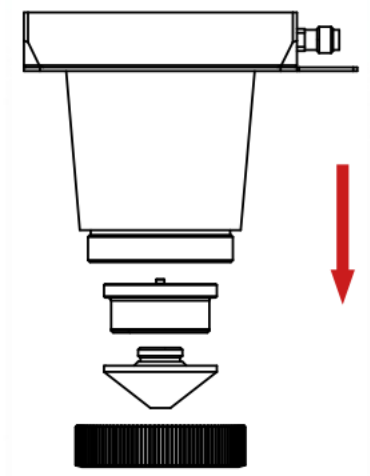
1. Use an Allen key to adjust the X/Y leveling screws 1 and 2, aligning the beam so that it passes through the center of the nozzle.
2. The beam passing through the center of the nozzle ensures the best cutting performance.
3. If the beam does not pass through the center of the nozzle, it may result in no emission or poor cutting performance.



Method to Check if the Beam Passes Through the Center of the Nozzle:

1. Stick a piece of transparent tape across the nozzle opening (use a new or undeformed nozzle);
2. Adjust the laser power to approximately 50W (eg, for a 500W laser, set the spot power to 10%);
3. Emit light for 1-2 seconds, then remove the tape.
4. Place the tape under a bright light to inspect if the circular print from the nozzle and the laser penetration point on the tape are concentric.
5. If they are concentric, the adjustment is satisfactory; if not, continue to adjust until satisfactory.

3.2 Replace the ceramic rings and nozzles



Power supply



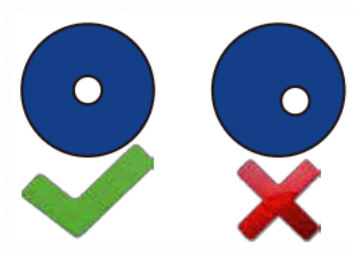
Cooling gas



Cutting gas

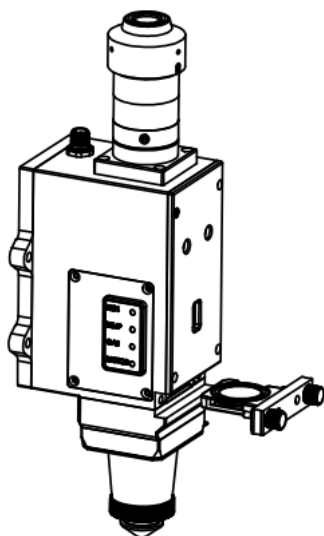


Please identify the brand of WSX



Alignment center

3.3 Replacement of the Lower Protective Lens



Method of Disassembly: Loosen the locking screw, then remove the drawer.



Power supply

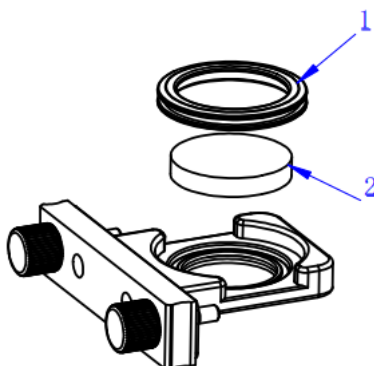


Cooling gas



Cutting gas

Caution Against Dust: Wear anti-dust gloves and finger cots when replacing the lens, and perform the operation in a clean environment. (When changing the lens on site, you can use masking tape to seal the window to prevent dust from entering inside and causing contamination.)

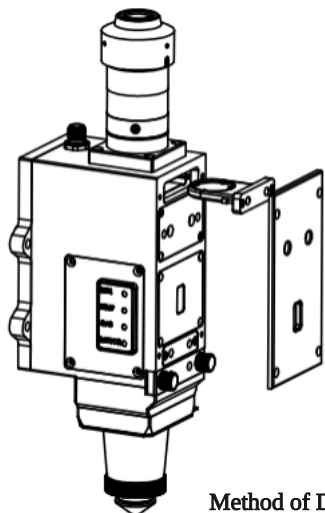


1. Pressing Cover 2. Protective Lens (D30x5)



Method of Disassembly: Pull the pressing cover upwards following the arrow. Do not use wrenches or pliers, as they may damage the parts.

3.4 Replacement of the Collimation Protective Lens



Beware of drops



Power supply



Cooling gas 冷却气体



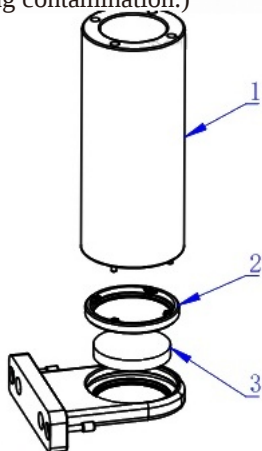
Cutting gas

Method of Disassembly:

Open the cover, withdraw the drawer horizontally, and remove the pressing cover.

Caution Against Dust: Wear anti-dust gloves and finger cots when replacing the lens, and perform the operation in a clean environment.

(When changing the lens on site, you can use masking tape to seal the window to prevent dust from entering inside and causing contamination.)



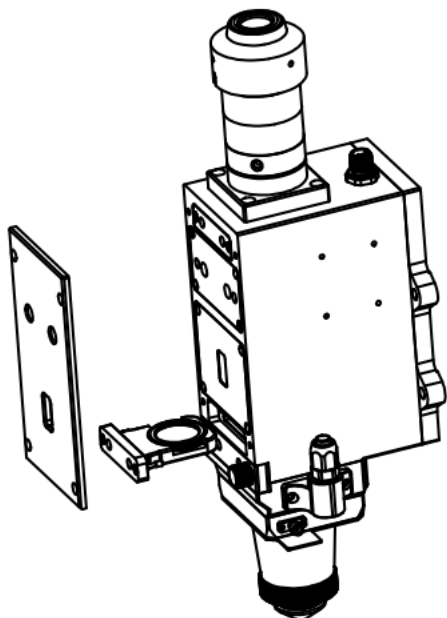
1. Fixture Disassembly and Assembly 2. Pressing Cover

3. Protective Lens (D25.4x4)

Disassembly Method: Remove the pressing cover (1) and then take out the protective lens (2). Avoid using wrenches, pliers, or other tools to prevent damaging the parts.



3.5 Replacement of the Middle Protective Lens



Operation to be Performed on a Dust-Free Workbench



Power supply

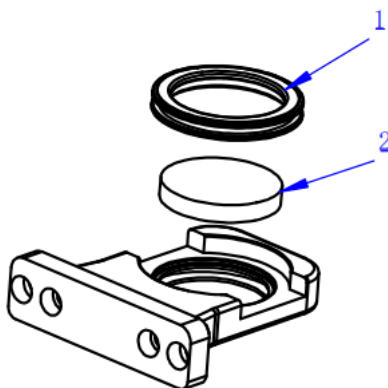


Cooling gas



Cutting gas

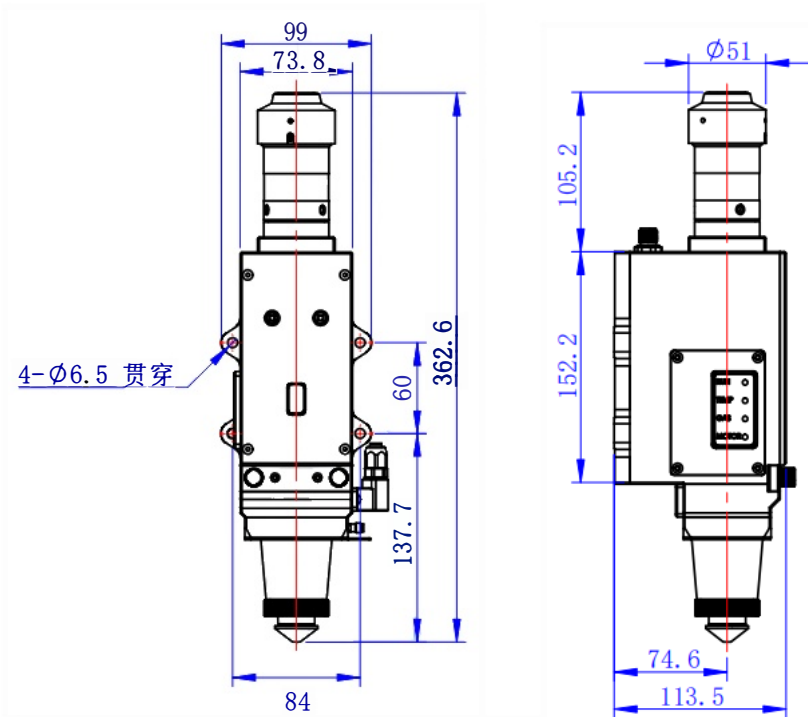
Disassembly Method: Remove the cover plate, loosen the anti-loosening screw on the dust cover, and withdraw the protective lens drawer horizontally.



1.Pressing Cover 2 Protective Lens (D25.4x4)

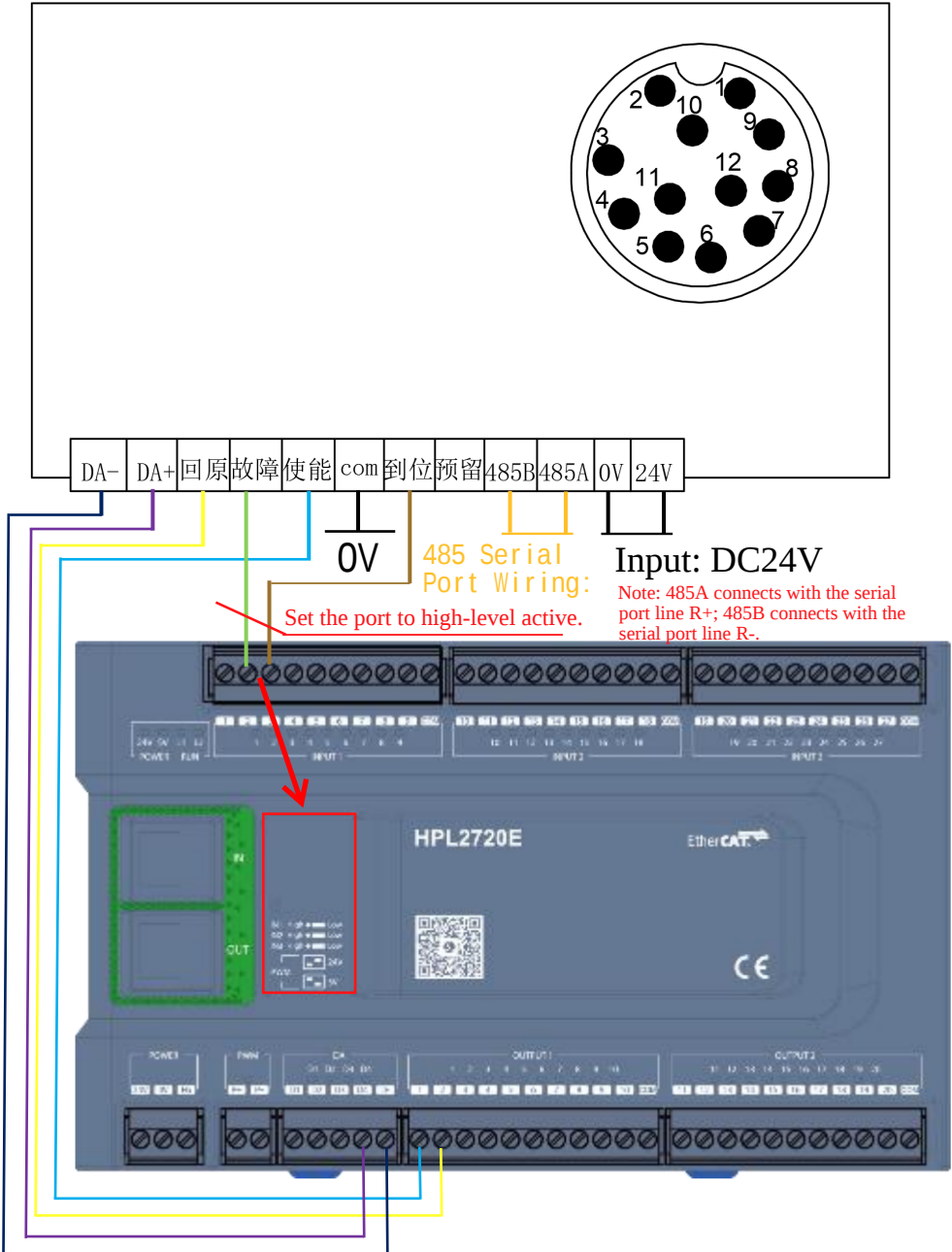
Method of Disassembly: Pull the pressing cover 1 vertically upwards, then pull the mirror upwards following the arrow. Do not use wrenches or pliers, as they may damage the parts.

4. Cutting Head Installation Dimensions:



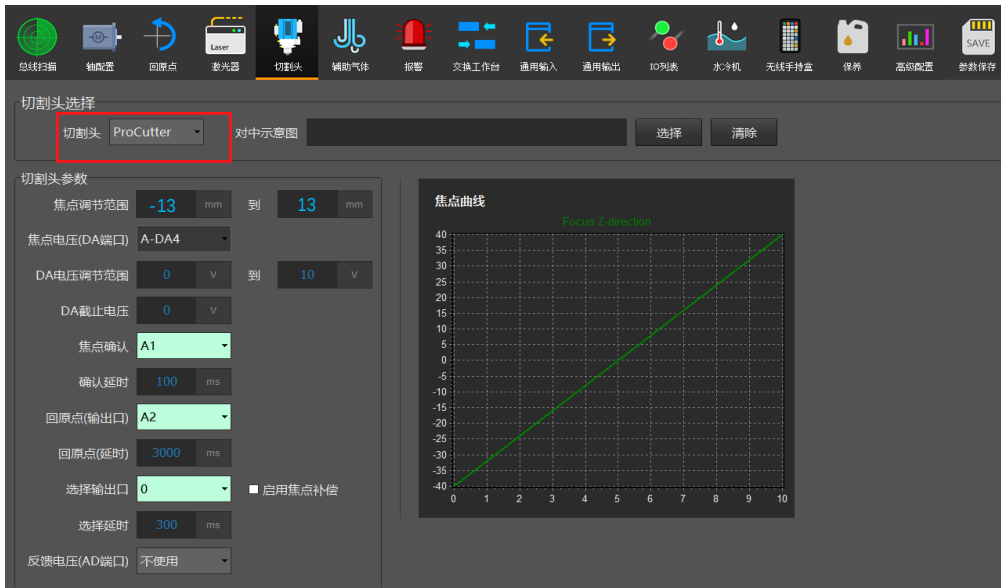
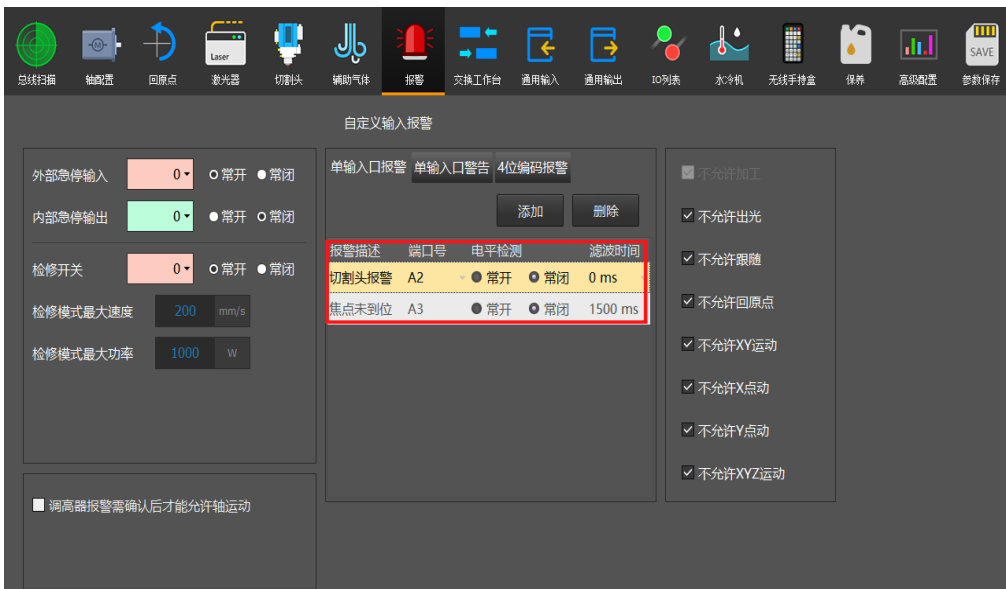
The provided dimensions are for the NC36 (F100xF150) installation.

5. Electrical Wiring Diagram



In the electrical cabinet layout, ensure the separation of high and low voltage wiring, keep away from high-power interference devices, and ensure proper grounding of the equipment.

6. Parameter Configuration Description

7. Monitoring Description:

7.1 Device Connection:

- (1) Open the host computer software and select the corresponding serial port number.
- (2) Click the “ Connect ” button. The button will change to “ Disconnect ” if the connection is successful. If the connection fails, a prompt window will appear.



7.2 Threshold Modification: Click the “ Threshold Setting ” button next to the corresponding sensor. Enter the password “ 666666 ” to access the modification window. The warning threshold must be higher than the alarm threshold.



7.3 Logs: When an alarm occurs, you can view it in the log window.



7.4 Indicator Light Description:

- (1)When the RUN indicator light is green, the operation is normal; when it is red, there is an anomaly (try restarting the device).
- (2)When the TEMP indicator light is green, the temperature is normal; when it is red, it indicates a temperature alarm (check the real-time temperature values and reset the threshold).
- (3)When the GAS indicator light is green, the gas pressure is normal; when it is red, the gas pressure is too low (increase the gas pressure).
- (4)When the MOTOR indicator light is green, the motor is starting normally; when it is red, the motor has not completed calibration (wait for calibration to complete).





Shenzhen Worthing Technology Co., Ltd.

Phone: 400-836-8816 Website: www.wsxlaser.com Email: info@wsxlaser.com
Address:

Shenzhen Headquarters: Building 3, Youth Dream Factory, Langkou Industrial Park, Longhua New District, Shenzhen, Guangdong Province, China.

Suzhou Branch: Room 301, Building 2, No. 432 Fengyang Road, Qiangtang Village, Yangcheng Lake Town, Xiangcheng District, Suzhou, Jiangsu Province, China

Wuhan Branch: Room 401, Jiuyang Technology Park, No. 108 Guanggu Avenue, Hongshan District, Wuhan, Hubei Province, China