LWT03A0-H00 User Manual

Product Description

Shenzhen Ospri Intelligent Technology Co., LTD

Foreword

Dear Users:

Welcome to use the LWT03-H00 new lightweight swing welding joint products produced by Shenzhen Ospri Intelligent Technology Co., LTD. We are honored to have your confidence 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.

Declaration:

In order to ensure your safety and the product works normally, please read the guide book carefully before using.

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Chapter 1 Overview

1.1 Product Parameter

Parameter	Specifications
Model	LWT03A0
Interface Type	QBH
Applicable Wavelength	1080 ± 10 nm
Rated Power	≤ 3kW
Focal Length	200mm/250mm/300mm
Collimation Focal Length	100mm/125mm
Blowing Method	Coaxial/paraxial gas blowing
Nozzle	Φ8 / Φ5
Collimation Protective Lens	D30T5
Focusing Protective Lens	D30T5
Gas Pressure	≤ 1MPa
Weight	2.2KG

1.2 Precautions

① Ensure standard and reliable grounding before supplying power.

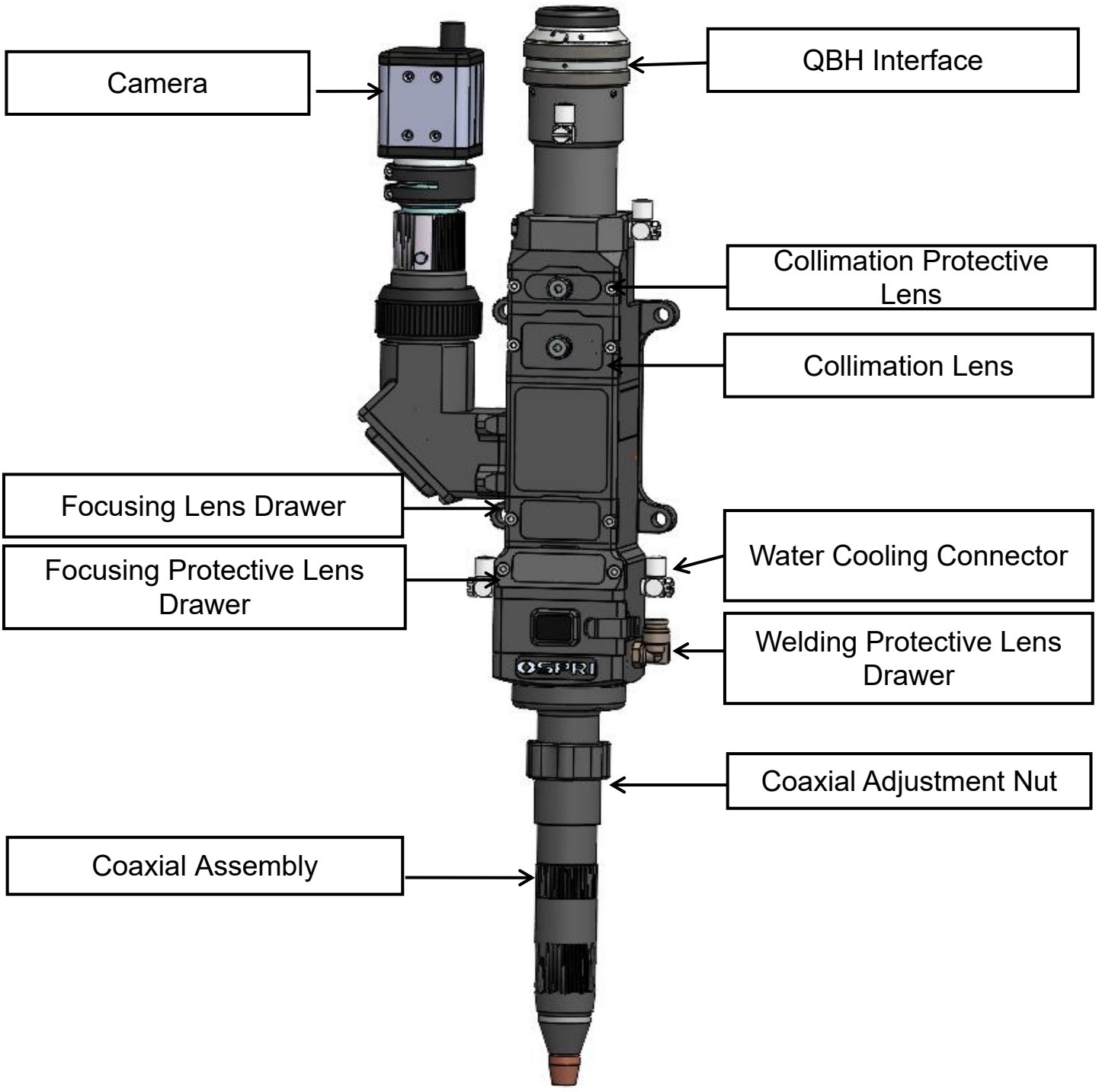
② Carefully inspect the output head to prevent the presence of dust or other contaminants, which could cause damage to the fiber and welding head.

③ Ensure proper preparation before replacement. Pay attention to the surrounding environment (such as turning off fans) to ensure readiness for replacement.

④ If you have any concerns, please contact us promptly.

Chapter 2 Structural Characteristics

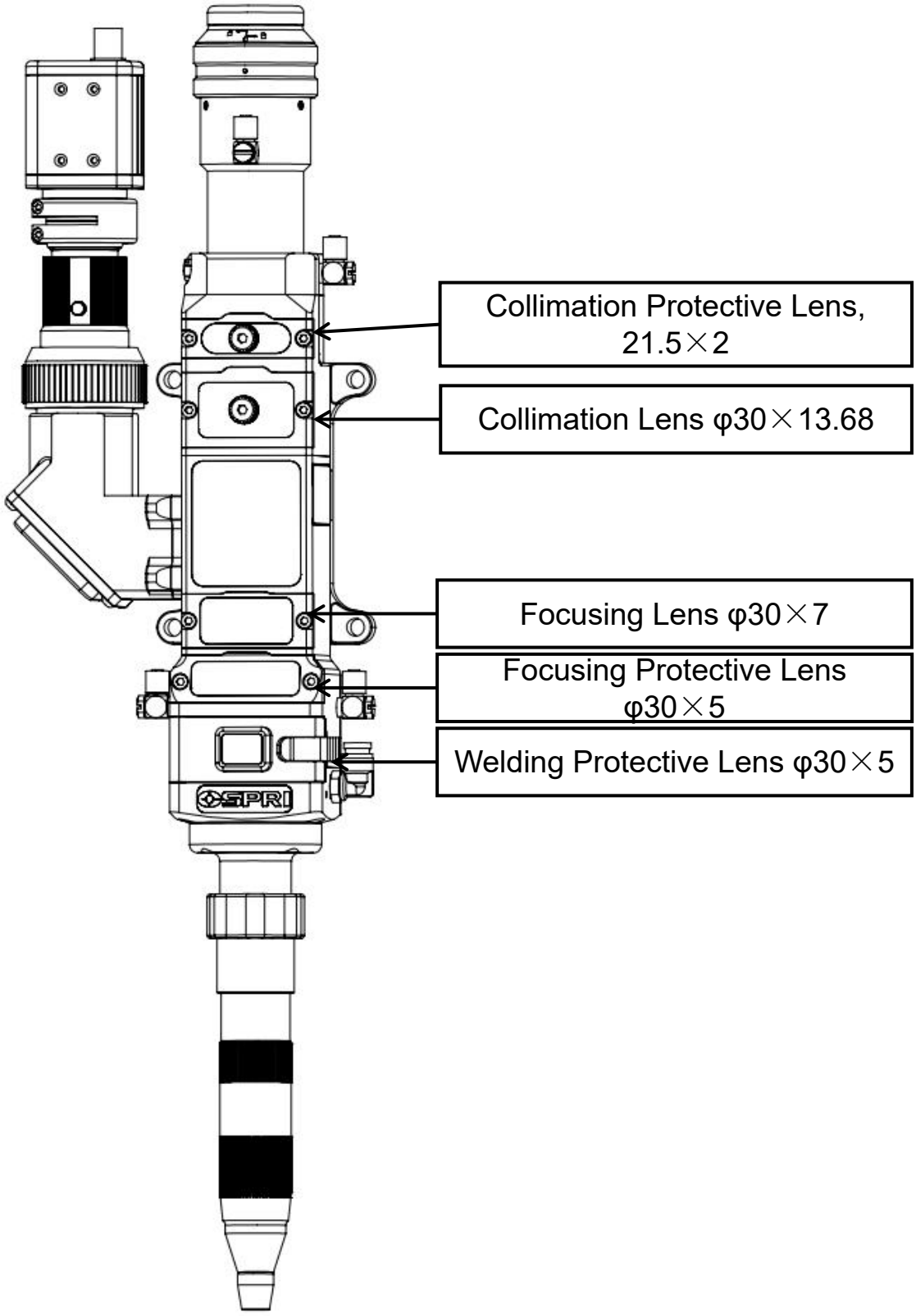
2.1 Brief Description of Product Structure



2.2 Brief Description of Product Components

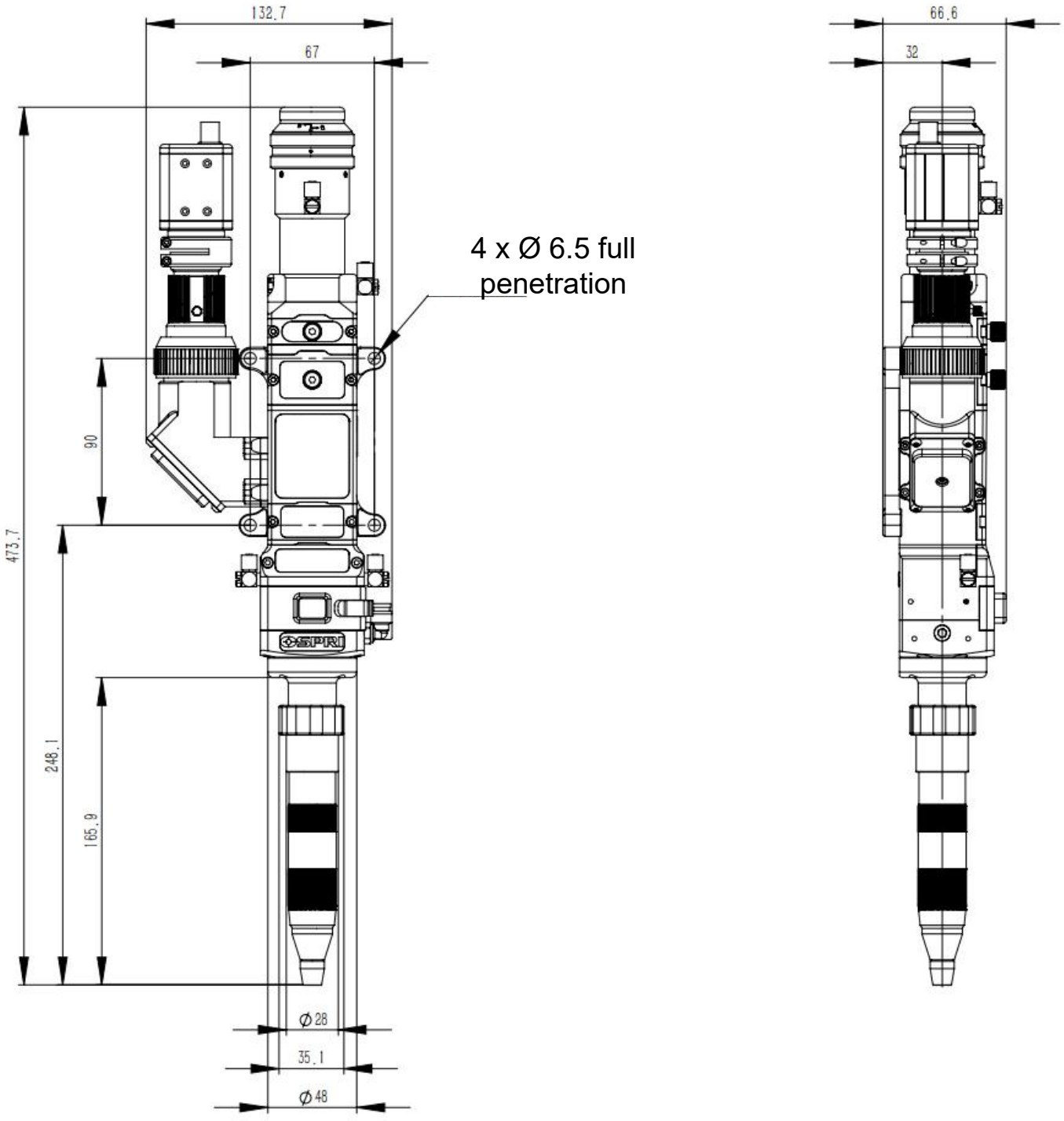
1. Water Cooling Interface: Used for cooling the welding head to ensure stability during product operation.
2. Collimation Protective Lens Module: Prevents dust from entering the cutting head when inserting or removing the fiber head, thereby protecting the collimation lens.
3. Collimation Lens Drawer Module: Designed for easy replacement of the collimation lens.
4. Focusing Lens Drawer Module: Designed for easy replacement of the focusing lens.
5. Focusing Protective Lens Drawer Module: Used to protect the focusing lens and facilitate quick replacement.
6. Welding Protective Lens Drawer Module: Designed for easy and quick replacement or cleaning of the protective lens, it prevents welding spatter, dust, and other contaminants from directly damaging the focusing lens and other valuable optical components inside the welding head, thereby extending their service life.
7. Coaxial Gas Blowing Component for Protection: During laser welding, it disrupts the ionized layer formed on the workpiece surface by the laser, isolating the workpiece from air contact to prevent oxidation.
8. Camera Module: Displays the working status of laser welding on a screen, allowing operators to observe the real-time status during welding.

2.3 Brief Description of Product Components (Lens Size)



Chapter 3 Product Installation

3.1 LWT03A0 Dimensions Diagram

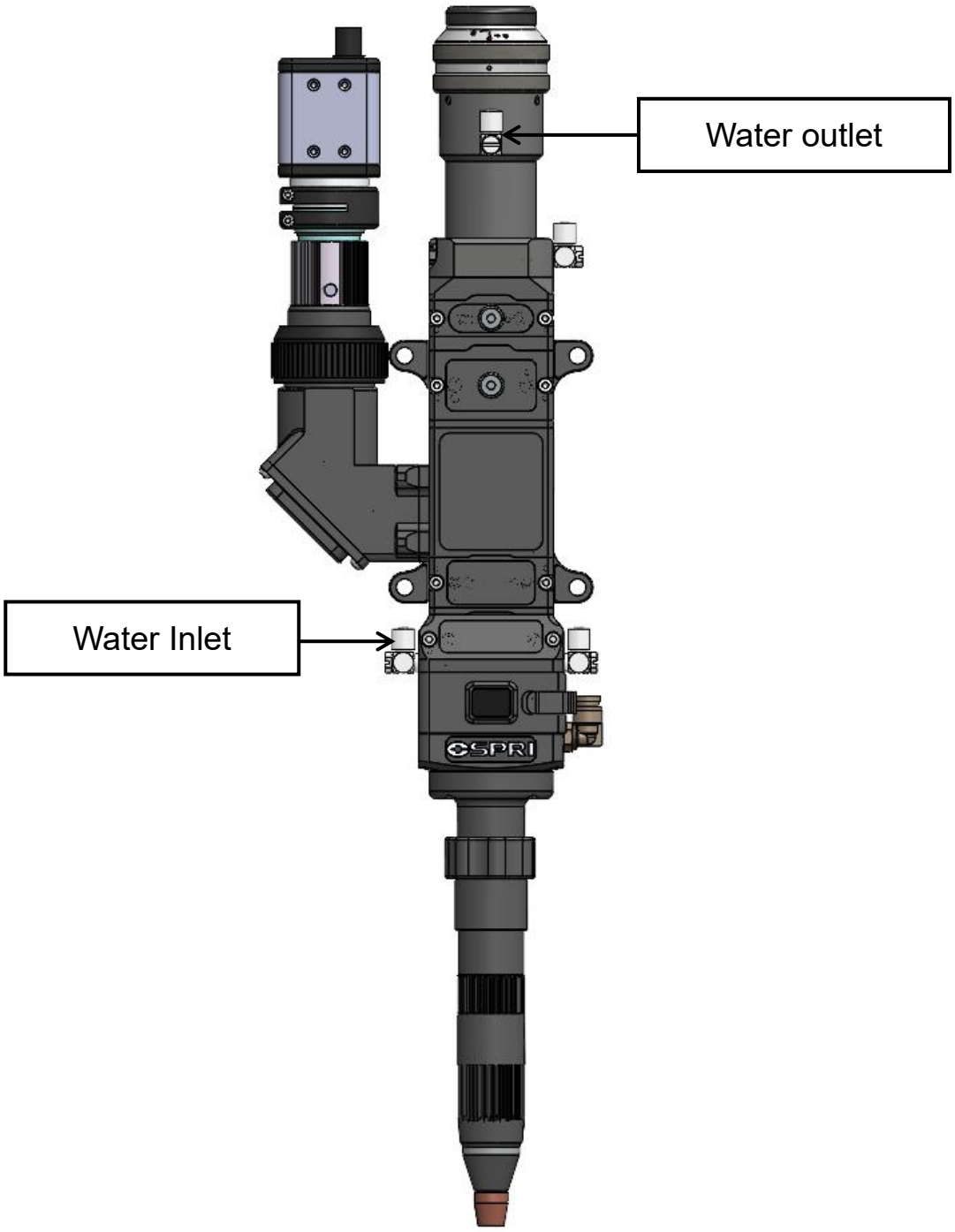


Main dimensions diagram of the welding head (collimation F100/focusing F250)

3.2 Water and Gas Pipelines

3.2.1 Cooling Pipeline

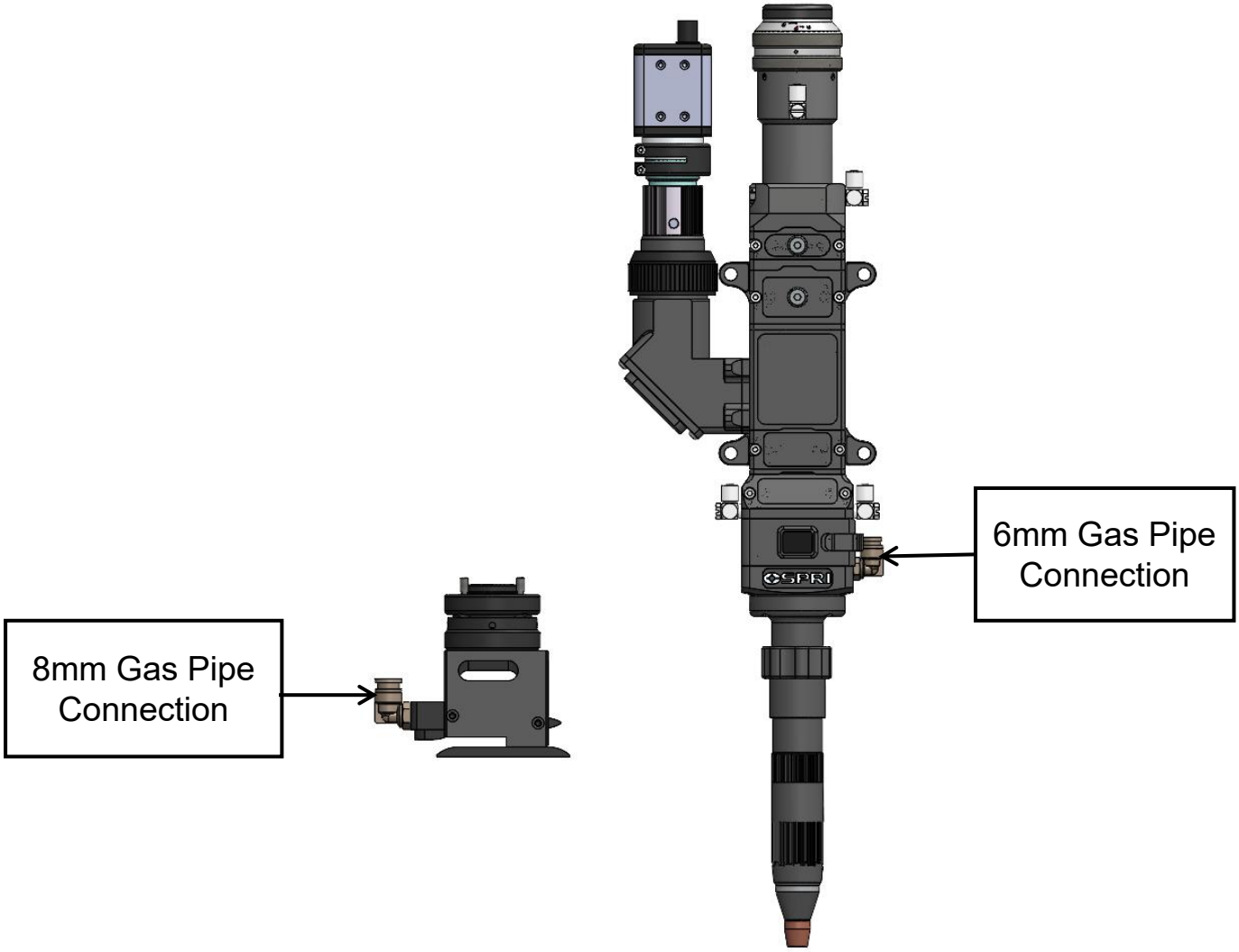
1. Connect using φ6 water pipes, with one inlet and one outlet, as shown in the diagram below:



For cooling the welding head, with 1 inlet and 1 outlet cooling pipeline.

3.2.2 Auxiliary Gas Pipeline

1. Connect the 6mm air duct to the input port for cooling gas docking, input pressure <1.0Mpa.

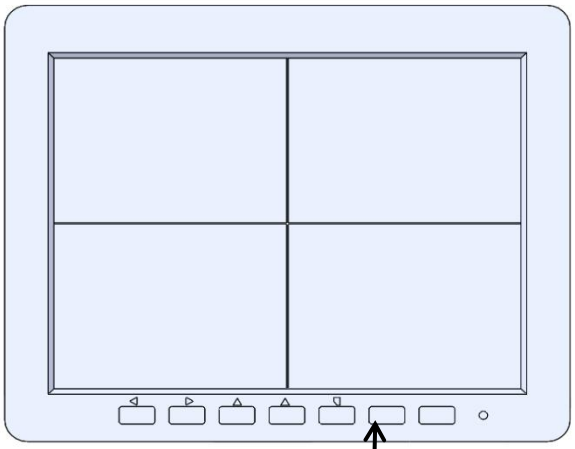


Recommendation: Connect a 6mm gas pipe to the inlet for protective gas output to shield the base material during welding and extend the service life of the protective lens. The input flow rate should be less than 30 L/min.

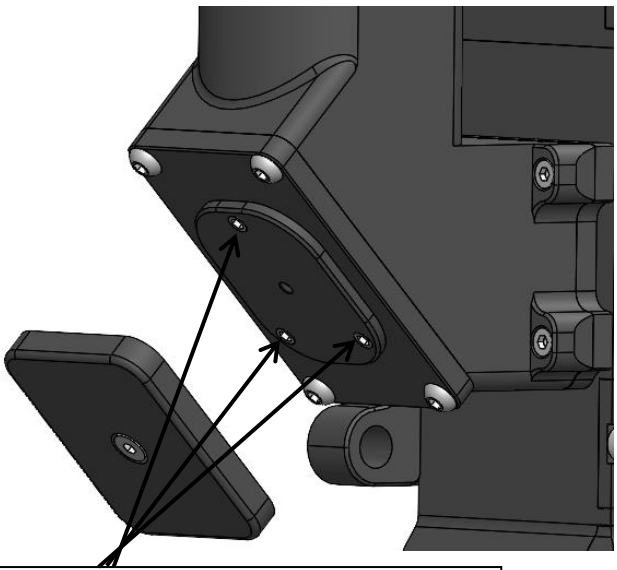
Commonly Used Gases: Argon, nitrogen, and other inert gases.

3.3 Camera Centering

To achieve optimal welding and display results, the laser beam must coincide with the crosshair on the screen. If the laser beam deviates from the center of the crosshair, it should first be adjusted through the CCD module. If the laser center is still misaligned, use the left-right and up-down adjustment buttons on the screen to make the laser beam and the crosshair coincide.



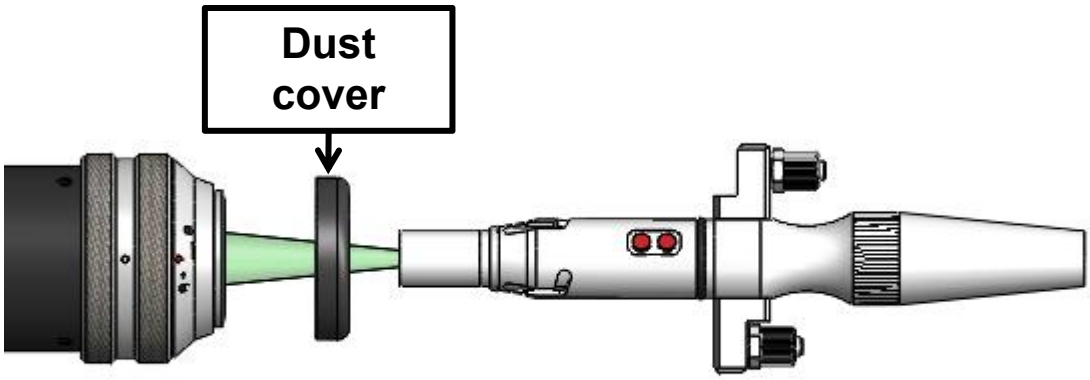
Press this button to show the crosshair



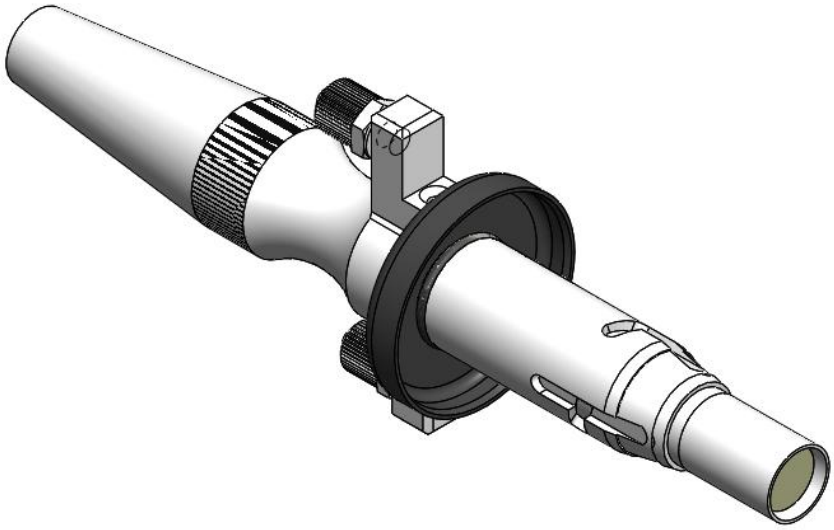
Adjust three jack screws to make them coincide with the laser center at the crosshair

3.4 QBH Fiber Laser Head Installation

① Fix the welding head in the appropriate position and remove the dust-proof sealing plug and dust cover.

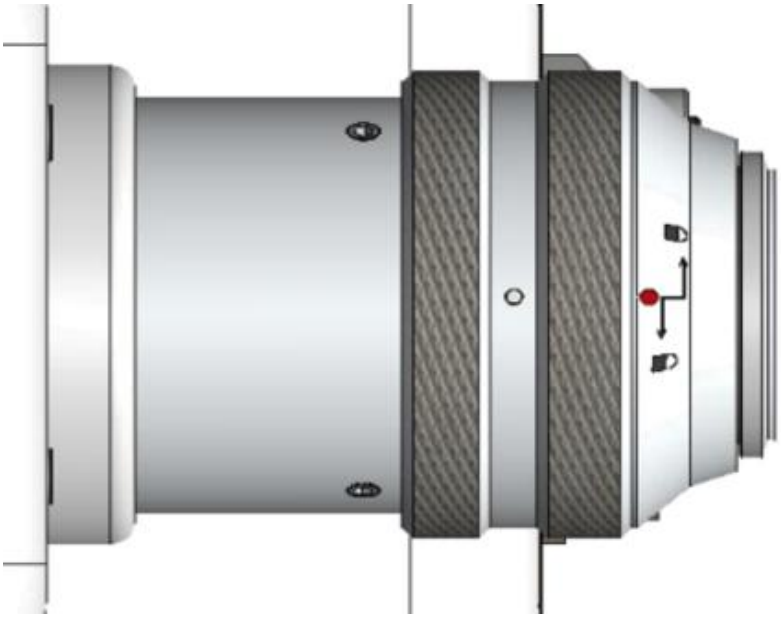


② Slide the dust cover from the accessories onto the fiber head, as shown below.

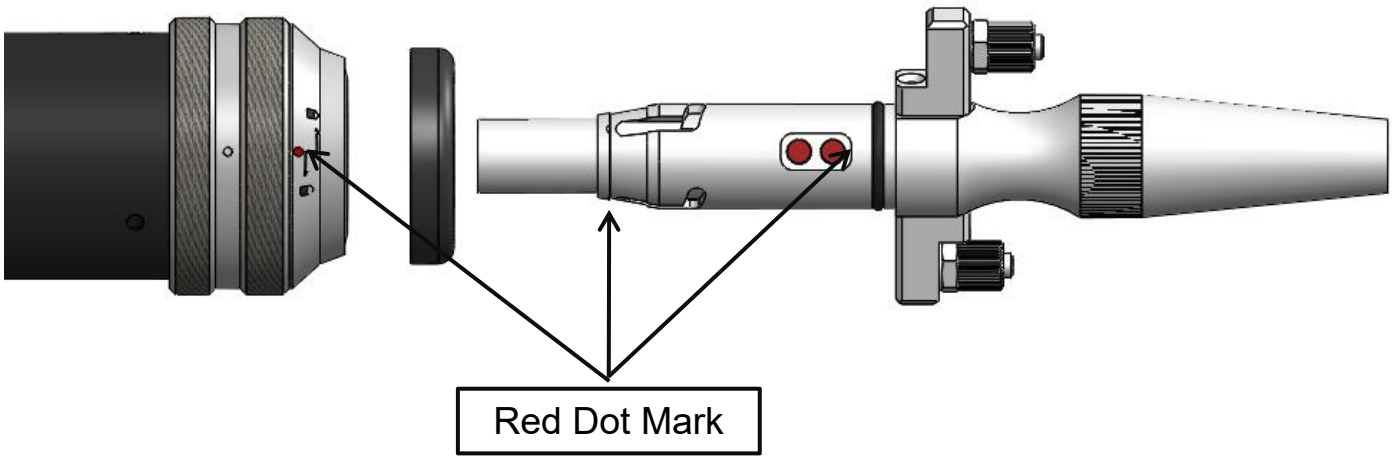


Note: If the laser head comes with a dust-proof pad, you can choose whether to install the dust cover based on the actual situation.

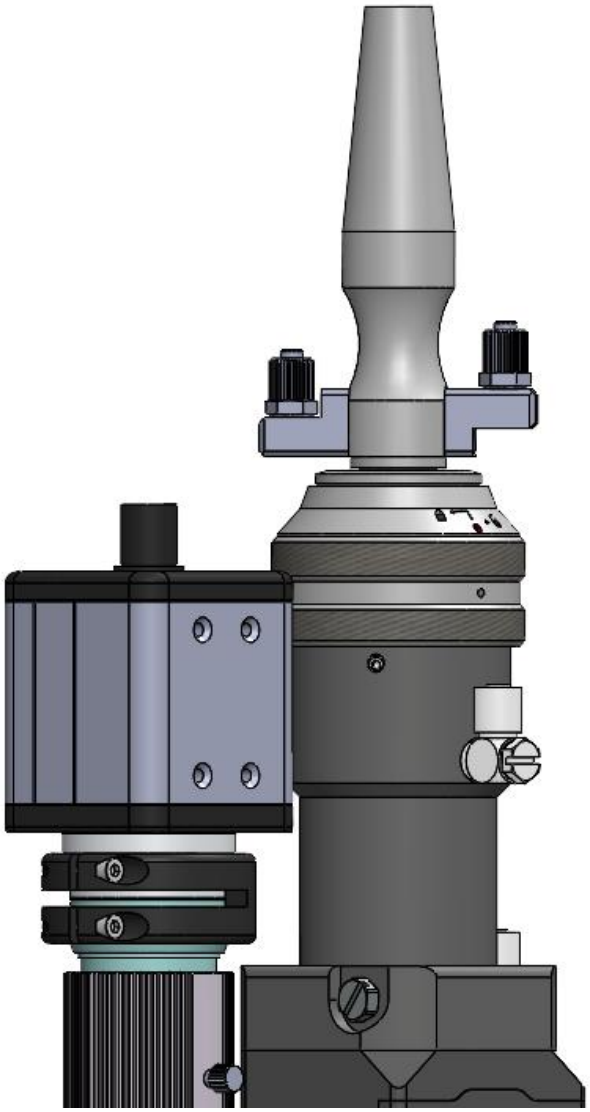
③ Turn the QBH connector to the open state, rotate counterclockwise to the limit position (you can hear a "click" sound), ensure it is rotated to the correct position, and do not use excessive force to avoid damaging the internal structure of the QBH.



④ Align the red dot on the fiber head with the red dot on the QBH connector, and slowly insert the fiber head into the QBH connector, as shown in the figure.



⑤ Turn the QBH connector clockwise to the locked state until you hear a "click" sound. Then lift the rotating nut and continue to rotate clockwise until the fiber head is firmly secured. Note: Only turn to the appropriate position and do not apply excessive force to avoid damaging the internal structure of the QBH. After inserting the fiber, you can wrap it with masking tape for a few turns to ensure the fiber is secure.

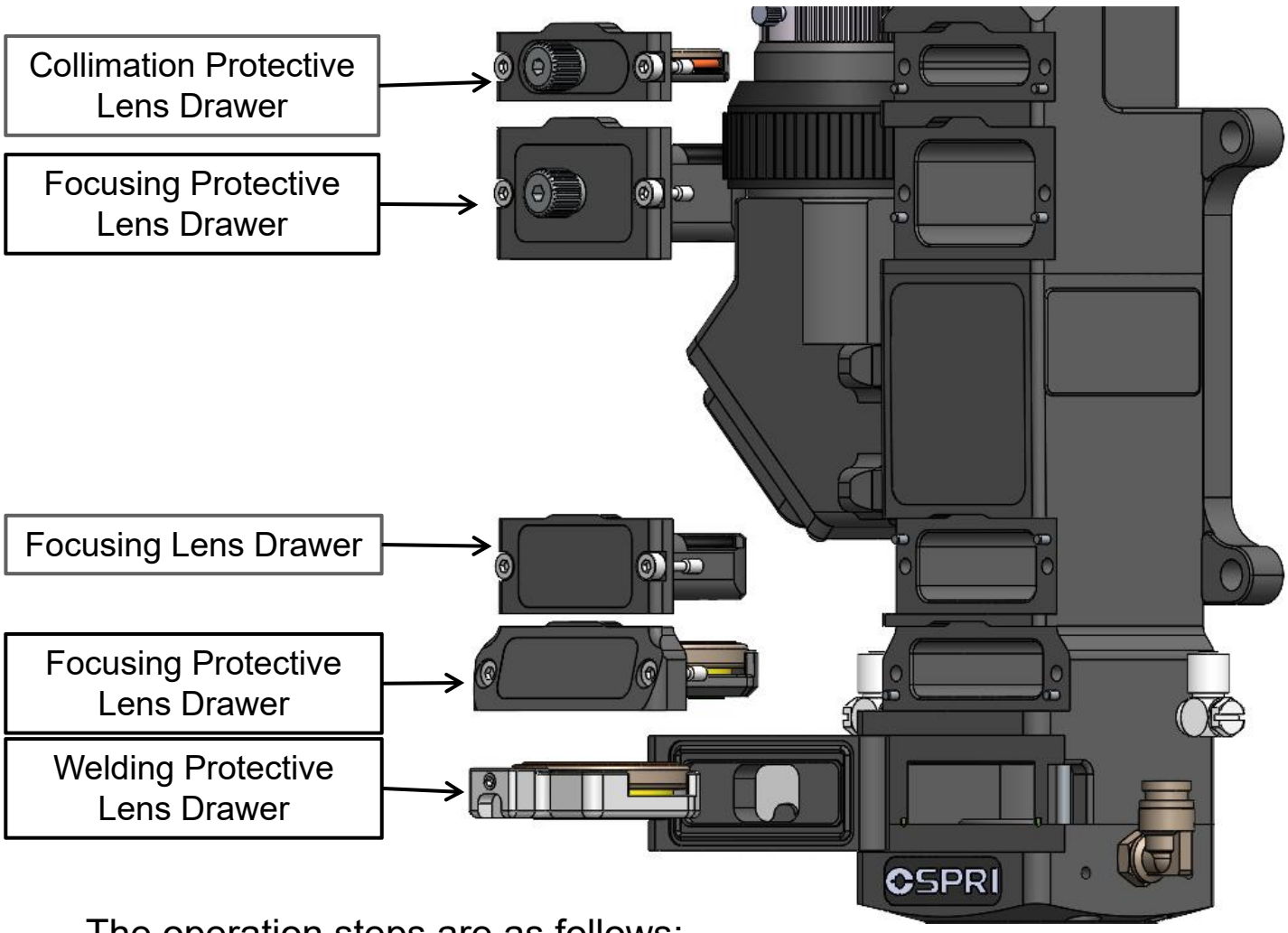


Attention: Wrap with masking tape after plugging fiber.

Chapter 4 Maintenance and Servicing

4.1 Maintenance and Servicing for Different Lenses

As shown in the figure, the collimation protective lens, collimation lens, focusing lens, focusing protective lens, and welding protective lens are all located in the lens drawer. It is recommended to clean them once every 1 to 2 months. When cleaning and replacing the lenses, ensure that the operating environment is clean and free of dust to avoid lens contamination.



The operation steps are as follows:

1. First, remove the drawer.
2. Then, remove the hand screws.
3. Replace or maintain the lens.

Note: Be sure to perform in a dust-free environment when removing the drawers and focusing lenses.

Cleaning of Collimation and Focusing Lenses:

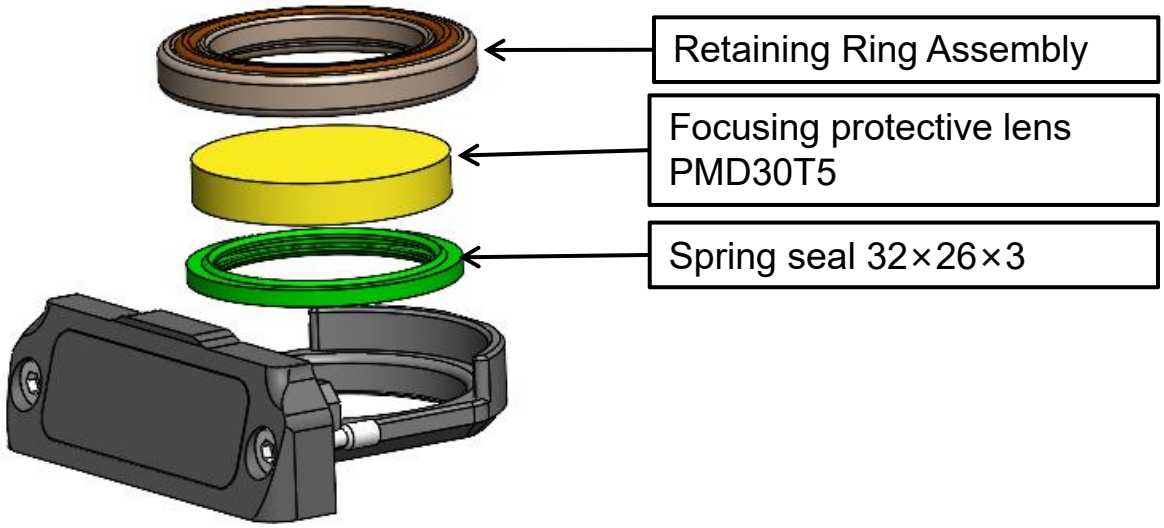
1. Tools: Dust-free swabs, isopropanol, rubber air blower.
2. Drop isopropanol onto the dust-free swab.
3. Gently pinch the side edges of the collimation lens with your left thumb and index finger.
4. Hold the dust-free swab with your right hand and, using a single direction, gently wipe both sides of the lens from bottom to top or from left to right. Then, use the rubber air blower to blow on the lens surface to ensure that the lens is completely clean and free from foreign objects.
5. The cleaned collimation lens should be installed in the collimation lens drawer module and inserted into the welding head body as soon as possible, or stored in another clean, sealed container.

Maintenance and Replacement of Protective Lens:

The protective lens is located below the focusing drawer module. When impurities or foreign objects adhere to the protective lens, they absorb the laser and generate heat, which may damage the lens. Therefore, regular cleaning of the protective lens is required. It is recommended to clean it once a week. Additionally, as the protective lens is a consumable part, it must be replaced once it is damaged.

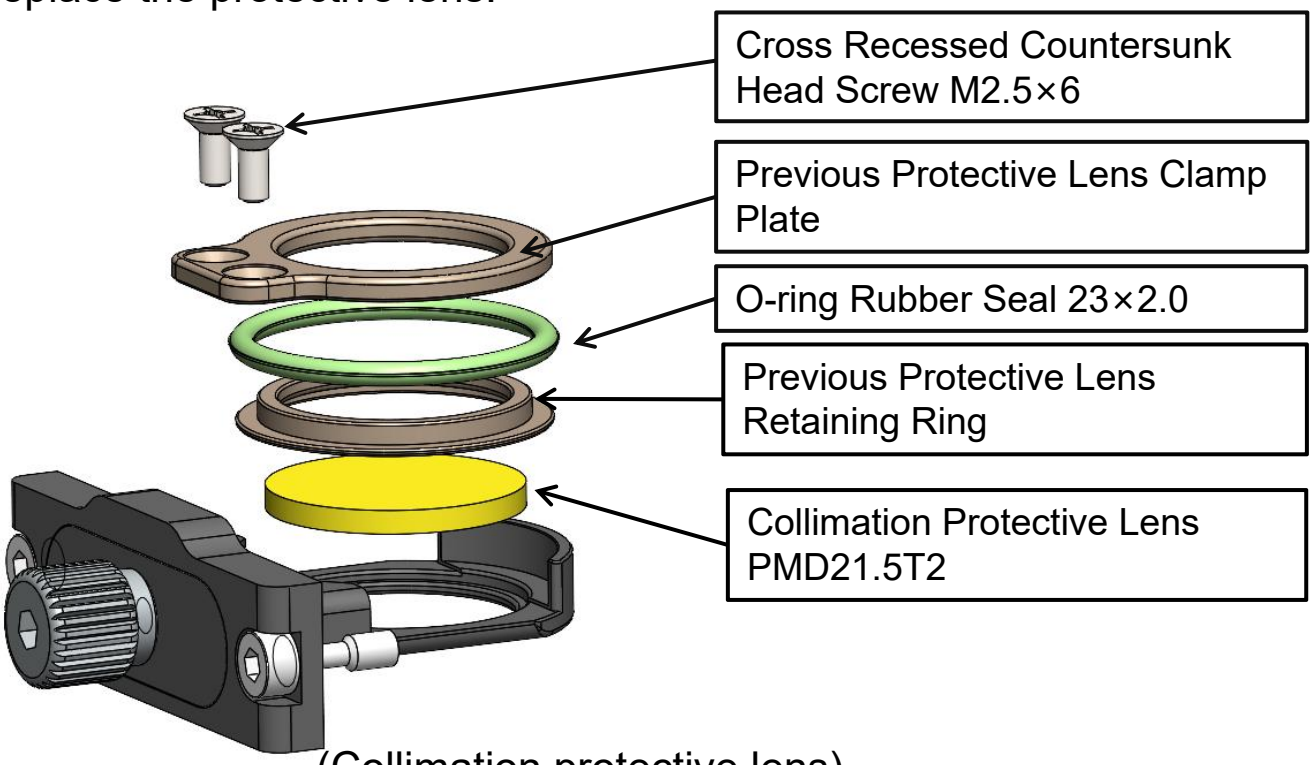
4.2 Disassembly and Maintenance of Protective Lens

1. Loosen the hand screws, pull out the focusing protective lens assembly, and then move it to a clean, dust-free environment.



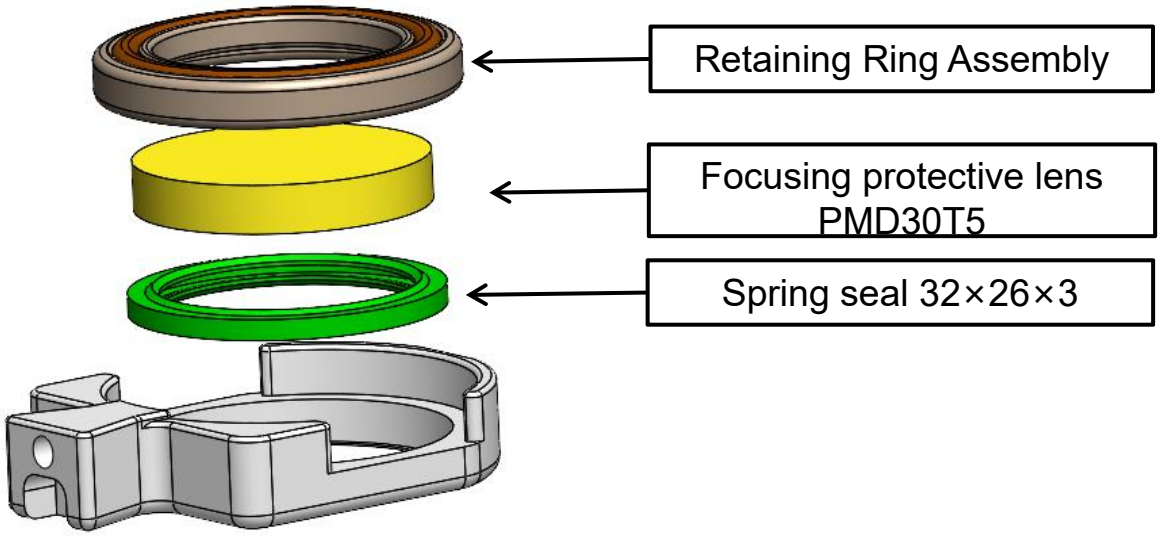
(Focus protective lens)

2. Use an Allen wrench to loosen the screws, remove the retaining ring, and replace the protective lens.



(Collimation protective lens)

3. Loosen the hand screws, pull out the welding protective lens assembly, and then move it to a clean, dust-free environment.



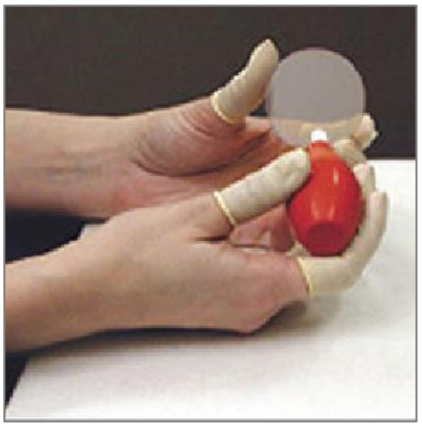
(Welding Protective Lens)

Note: When cleaning and replacing the protective lenses, avoid contaminating the lens with oil from your hands or dust from the environment.

The recommended sequence for checking the protective lenses is as follows: First, check the welding protective lens, then check the focusing protective lens, and finally check the collimation protective lens. This sequence helps effectively prevent dust from falling onto the core lenses.

5.4 Cleaning of Protective Lens

1. Release the screw by hand to remove the focus protective lens component and move it to a clean and dust-free environment.



① Tools to Use: Dust-free swab, isopropyl alcohol, and canned dry, purified compressed air.

② Spray isopropyl alcohol onto the dust-free swab.

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

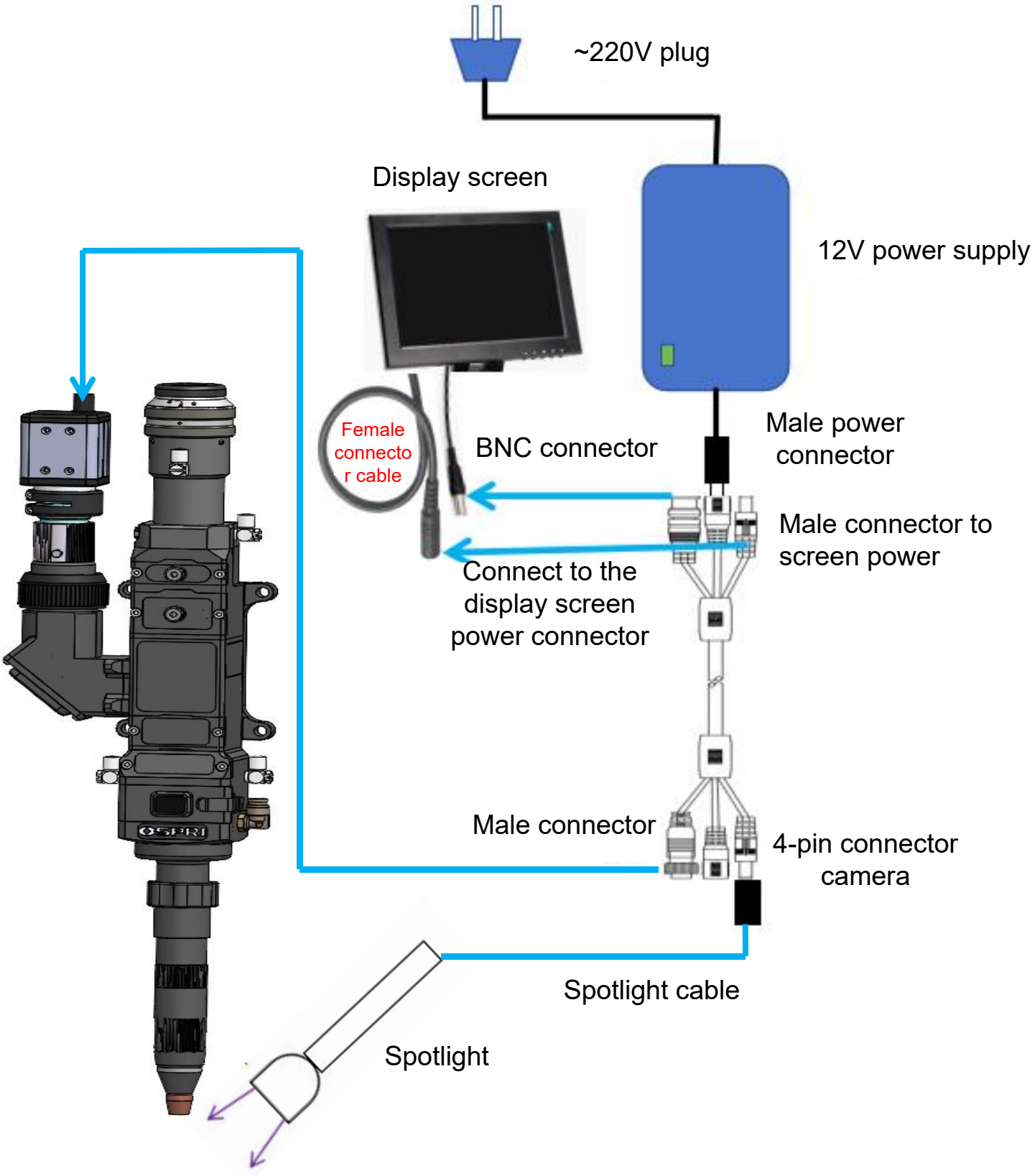
④ Hold the dust-free swab with your right hand and, using a single direction, gently wipe both sides of the lens from bottom to top or from left to right. Then, use canned dry, purified compressed air to blow on the lens surface to ensure that the lens is completely clean and free from foreign objects.

⑤ The cleaned protective lens should be installed in the protective lens holder as soon as possible and inserted into the welding joint.

When cleaning and replacing protective lenses, avoid contaminating the protective lenses with oil from your hands or dust from the environment. In principle, the focusing lens, collimation lens, and cutting lens should not be disassembled casually. If contamination is detected on the lenses, first use a laser lens detector to check. If necessary, please contact our company's technical staff.

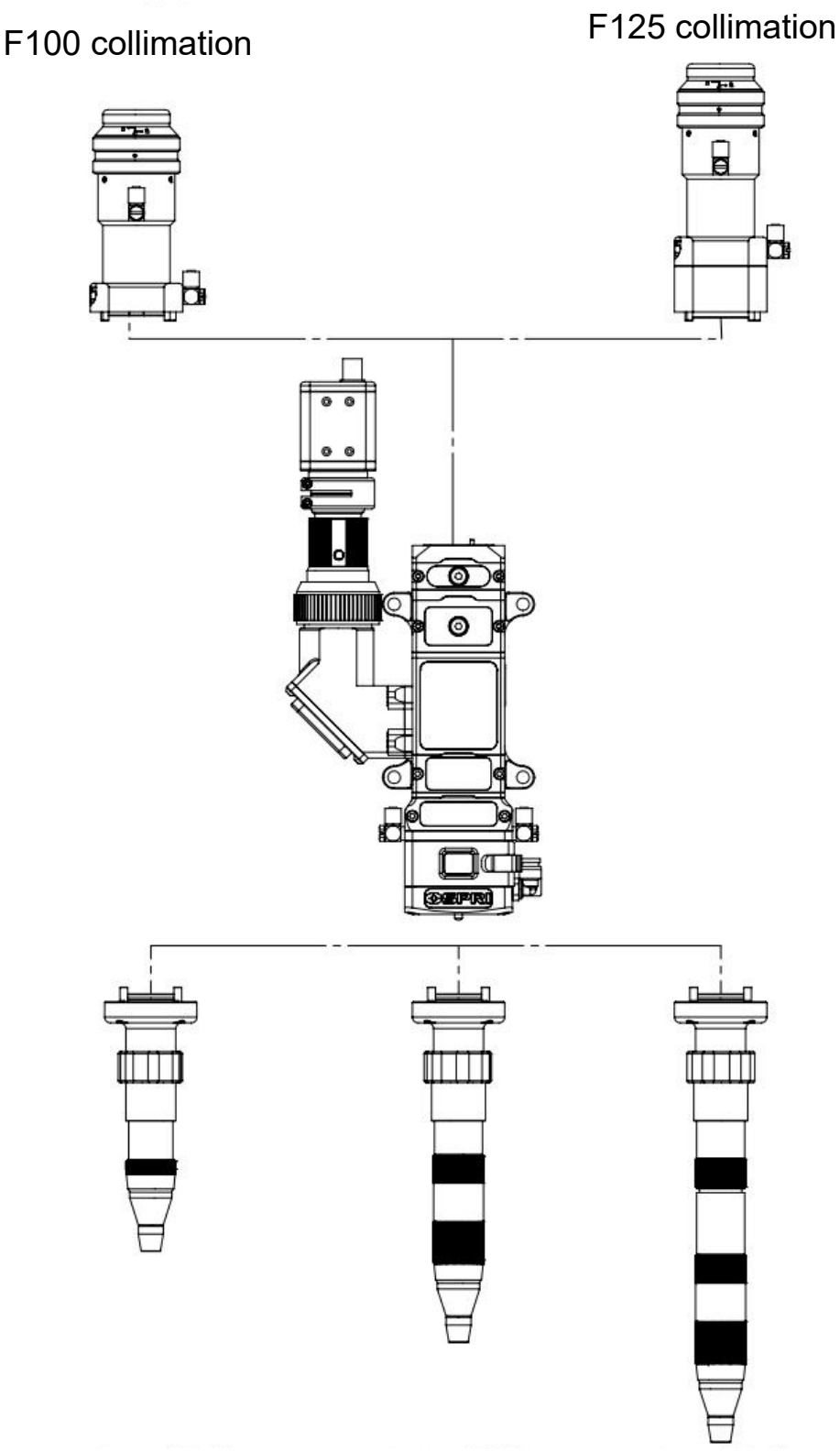
Chapter 5 Wiring Definitions and Requirements

5.1 Wiring Diagram

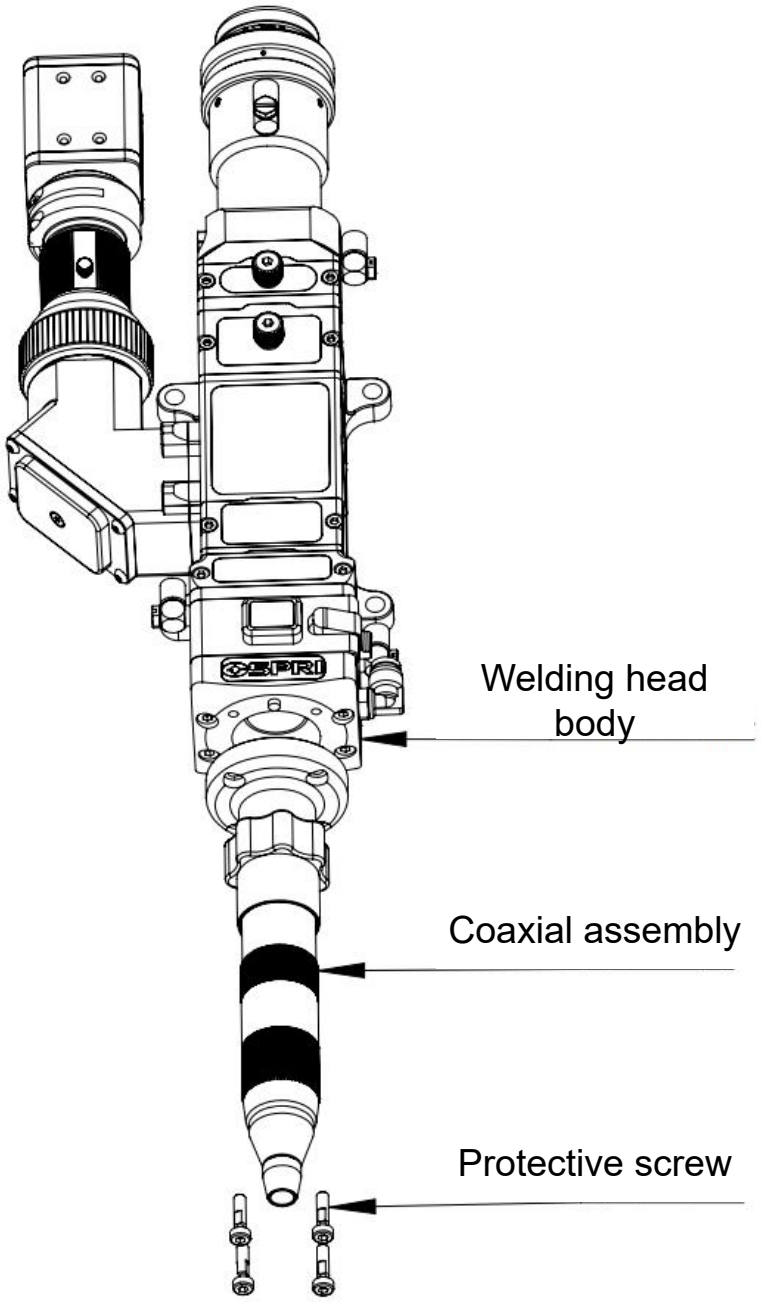


Appendix A

1. Introduction to Collimation and Coaxial Options



2. Introduction to Coaxial Replacement



Installation Method:

1. Take out the coaxial assembly and protective screws from the accessory package.

2. Align the coaxial assembly with the center of the welding body for installation. Ensure that the pins on the welding body are aligned with the pin holes on the coaxial assembly.

3. Use 4 protective screws to securely fasten the coaxial assembly onto the welding body, completing the installation of the coaxial assembly.

3. Introduction to Air Knife Installation

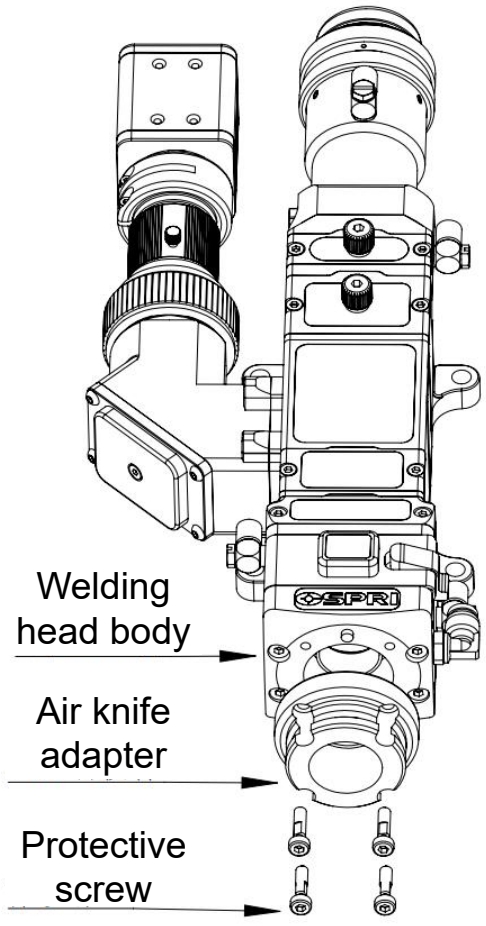
Installation Method:

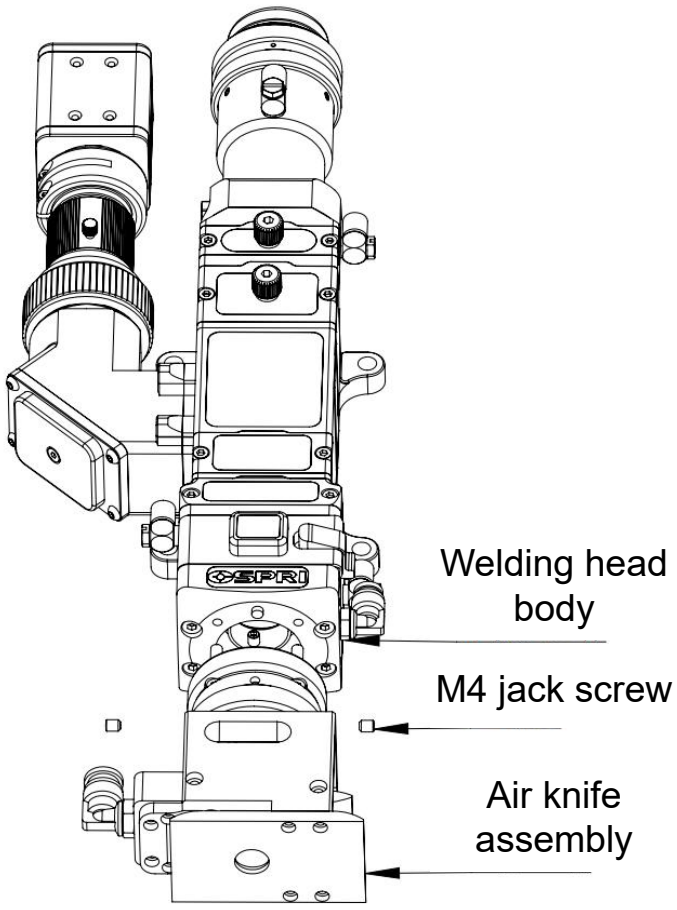
1. Take out the air knife adapter, air knife assembly, and protective screws from the accessory package.

2. Align the air knife adapter with the center of the welding body and install it on the welding body. Ensure that the pins on the welding body are aligned with the pin holes on the air knife adapter.

3. Use 4 protective screws to secure the air knife adapter onto the welding body.

4. Loosen the 4 jack screws, install the air knife assembly into the air knife adapter as shown in the diagram, and tighten the 4 jeck screws to complete the installation of the air duct.





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