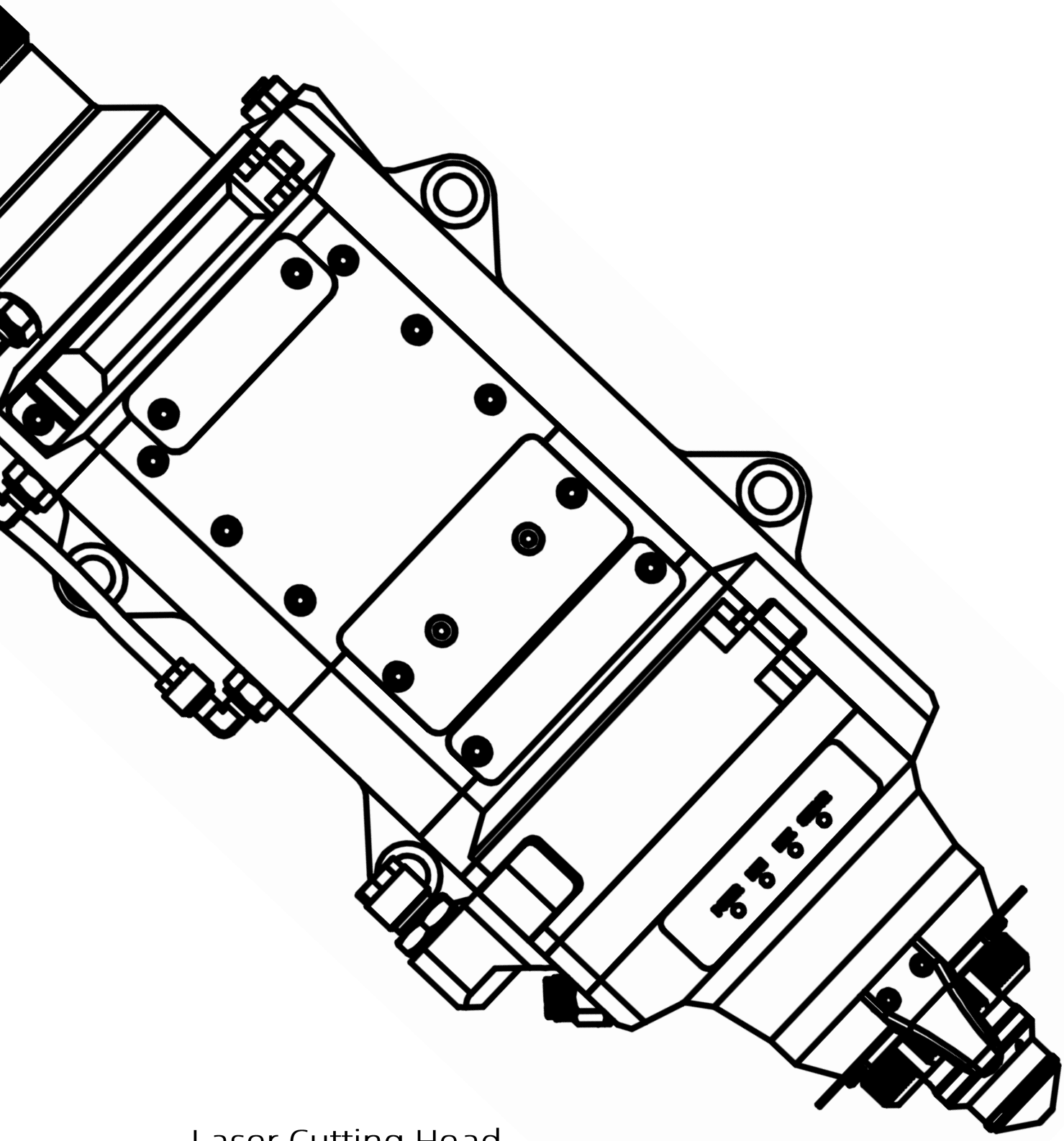
Installation Instructions



Laser Cutting Head

BLT 640-QBH/QD

BOCI

Best Optical Cutting Instrument

Revision Directory

Revision No.	Revision Date	Notes
01	04/01/2020	First Edition

Caution

To ensure the correct and safe use of the product, be sure to read the user's manual carefully prior to operation.

This document was compiled by the technical documentation department of BOCI.

Read this manual carefully to obtain a thorough knowledge of the laser cutting head operation. Be sure to follow the instruction to ensure proper procedures and prevent injuries. Do not operate the cutting head by guesswork. Keep the manual at hand and refer to it whenever you are not sure of how to perform any of the procedures.

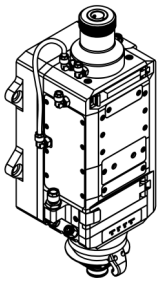
Preparations :

Before your operation, some things are needed：

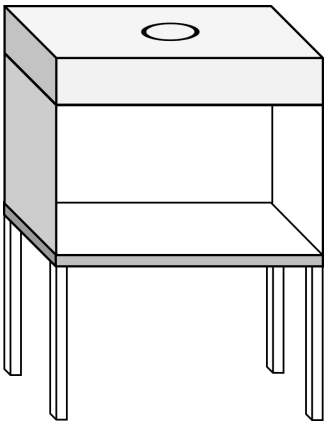
A. Laser cutting head；

B. Laminar Flow Box（Type：Vertical Laminar Flow；Cleanliness class：ISO Class 5 or Class 100； Airflow Velocity:：⩾0.4m/s）；

C. Cleaning Kit：flashlight， absolute ethyl alcohol（or IPA)，cleanroom swab，cleanroom wiper，compressed air.



Laser cutting head



Laminar Flow Box

Flashlight

Ethyl alcohol

Cleanroom swab

Cleanroom wiper

Compressed air

Cleaning Kit

Attention:

Any repair work and any work relating to troubleshooting require special knowledge and must only be carried out by trained specialist staff.

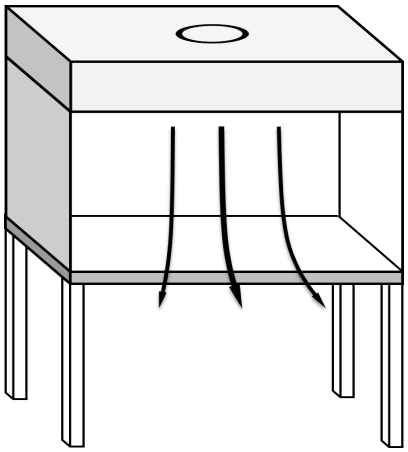
Specialist staff must be instructed in accordance with the regulations and safety notes and informed of potentially hazardous situations.

Installation

1. Laminar Flow Box Preparation

Before you beginning your work , the laminar flow box work surface should be cleaned.

Type： Vertical Laminar Flow; Cleanliness class： ISO Class 5 or Class 100； Airflow Velocity: ： ≥0.4m/s .



Calibration：

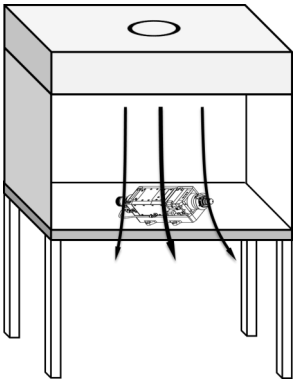
Once in 6 months , get the laminar airflow calibrated by an external agency.

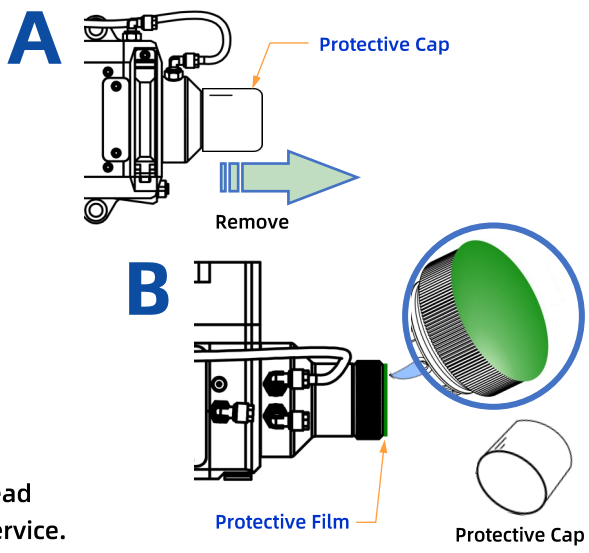
Operation procedure:

A. Press the POWER switch to turn ON the power , the press the air FLOW switch to turn ON the blower.
B. Once is blower is turn ON then wait for about 30minutes before starting the work. This practices makes sure that the particles in the operating space are swept away and maintains the working space as per the ISO 5 requirements.
C. Press the LIGHT switch to turn ON, then to start work .

2. Cutting Head Preparation

To prevent any dust or dirt getting into the fiber socket accidentally, the cutting head needs or be putted into laminar flow box in a horizontal position. Then, remove the protective cap from the cutting head.



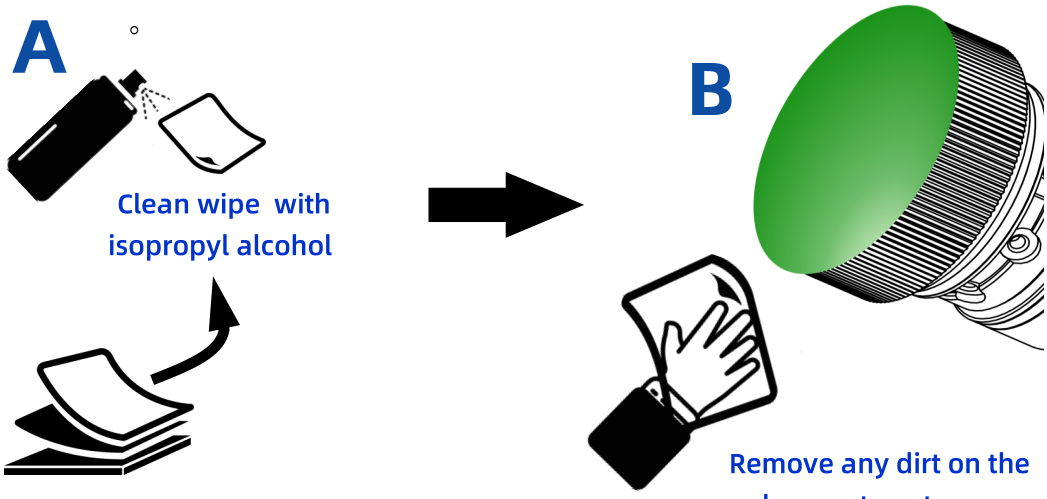


Attention:

Recommend to clean the cutting head carefully before carrying out any service.

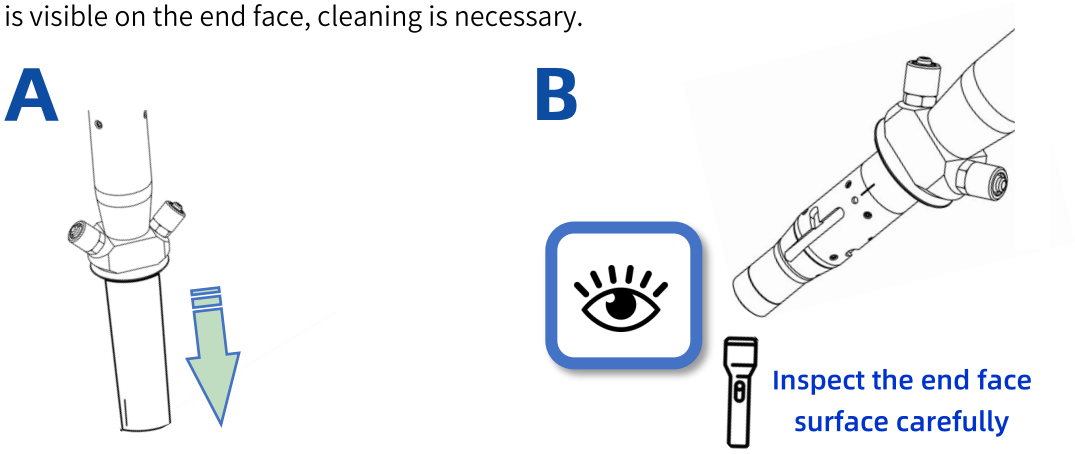
3. Clean Fiber Connector

Use the clean wipe to remove any dirt on the bayonet contours.



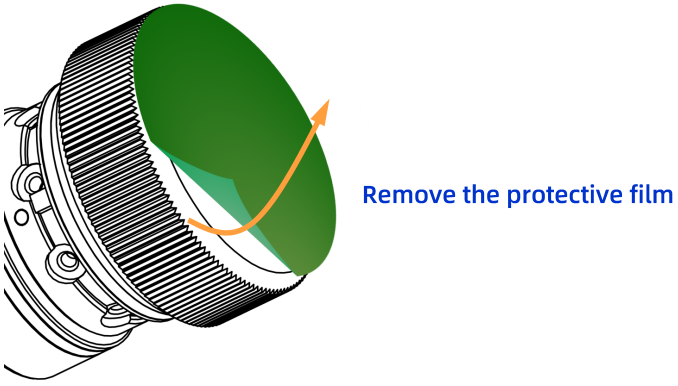
4. Inspect the End Face Surface

Remove protective cap from the fiber socket . Use a light source to illuminate the face of the fiber connector. Inspect the end face surface carefully. If contamination is visible on the end face, cleaning is necessary.



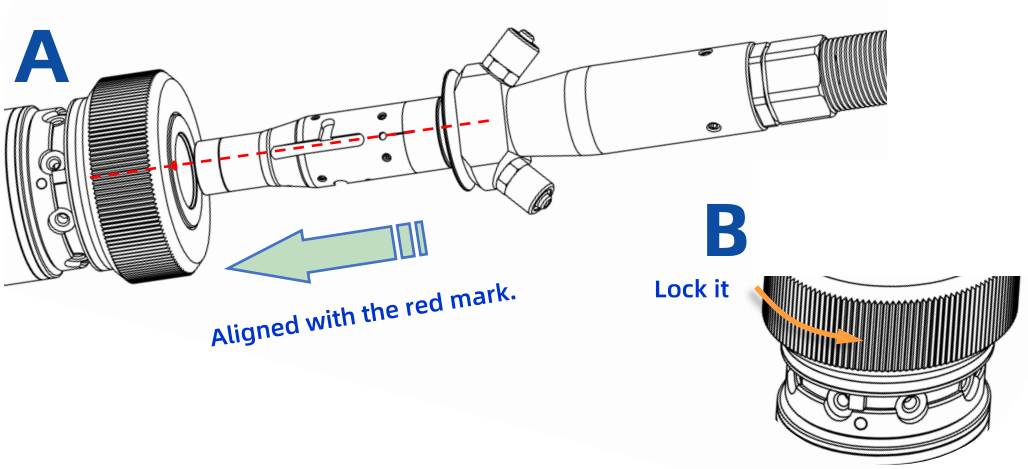
5. Remove the Protective Film

Remove the protective from the fiber socket.



6. Connecting the Laser Fiber to the Laser Cutting Head

Insert the fiber plug into the unlocked fiber socket up to the stop, then lock it until you cannot turn any farther.

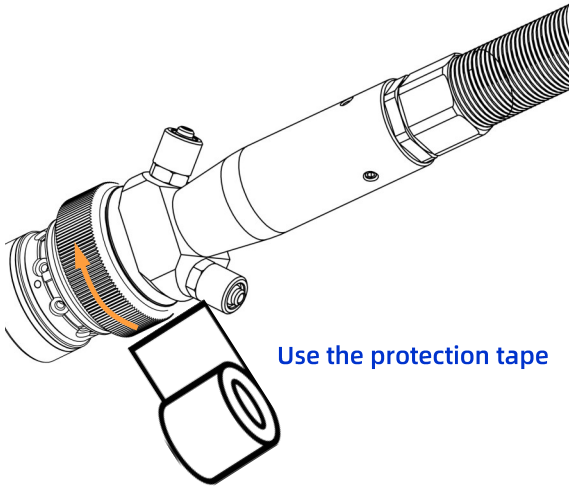


Attention :

To prevent any dust or dirt getting into the fiber socket accidentally, we recommend that you connect the laser fiber when the optics are in a horizontal position.

7. Wind the Tape

The protection tape is used to seal the connector plugs .



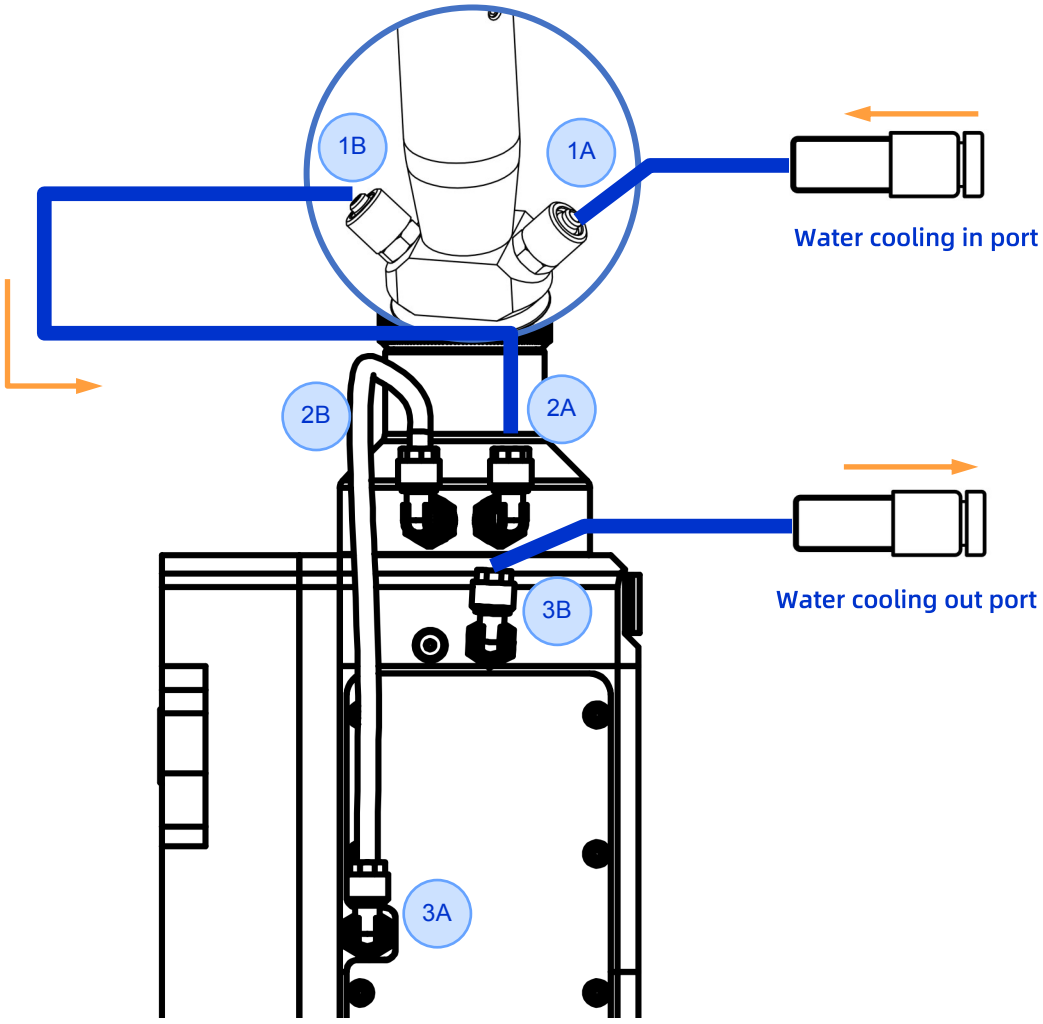
Attention :

Wind the tape around at least three times to keep the sealing effect.

8. Connecting the cooling water system

Connect the cooling water hoses to the relevant connections (1, 2 and 3).

The supply hose is connected to connection (A) and the return hose to connection (B).



Attention :

Only deionized water with a conductivity value prescribed by the laser manufacturer must be used, conductivity < 20 to 50 µS/cm .

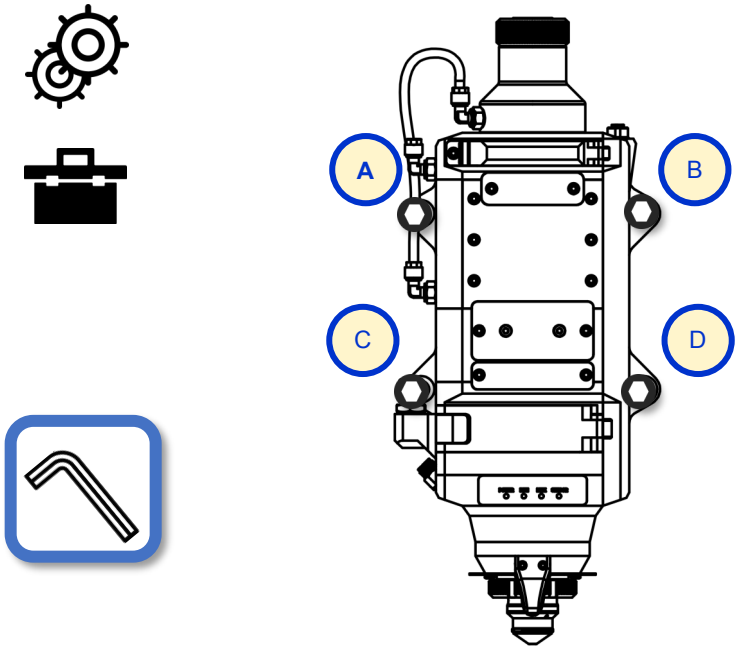
The maximum pressure for the cooling water is 5 bar. A minimum cooling water flow rate of 2.0 l/min must be guaranteed.

Air temp. °C	Dew point temperature [°C] (relative humidity)																		
	100	95	90	85	80	75	70	65	60	55	50	45	40	35	30	25	20	15	10
43	43	42	41	40	39	38	37	35	34	32	31	29	27	24	22	18	16	11	5
41	41	39	38	37	36	35	34	33	32	29	28	27	24	22	19	17	13	8	3
38	38	37	36	35	34	33	32	30	29	27	26	24	22	19	17	14	11	7	0
35	35	34	33	32	31	30	29	27	26	24	23	21	19	17	15	12	9	4	0
32	32	31	31	29	28	27	26	24	23	22	20	18	17	15	12	9	6	2	0
29	29	28	27	27	26	24	23	22	21	19	18	16	14	12	10	7	3	0	
27	27	26	25	24	23	22	21	19	18	17	15	13	12	10	7	4	2	0	
24	24	23	22	21	20	19	18	17	16	14	13	11	9	7	5	2	0		
21	21	20	19	18	17	16	15	14	13	12	10	8	7	4	3	0			
18	18	17	17	16	15	14	13	12	10	9	7	6	4	2	0				
16	16	14	14	13	12	11	10	9	7	6	5	3	2	0					
13	13	12	11	10	9	8	7	6	4	3	2	1	0						
10	10	9	8	7	7	6	4	3	2	1	0								
7	7	6	6	4	4	3	2	1	0										
4	4	4	3	2	1	0													
2	2	1	0																
0	0																		

Cooling water - Dew point temperature

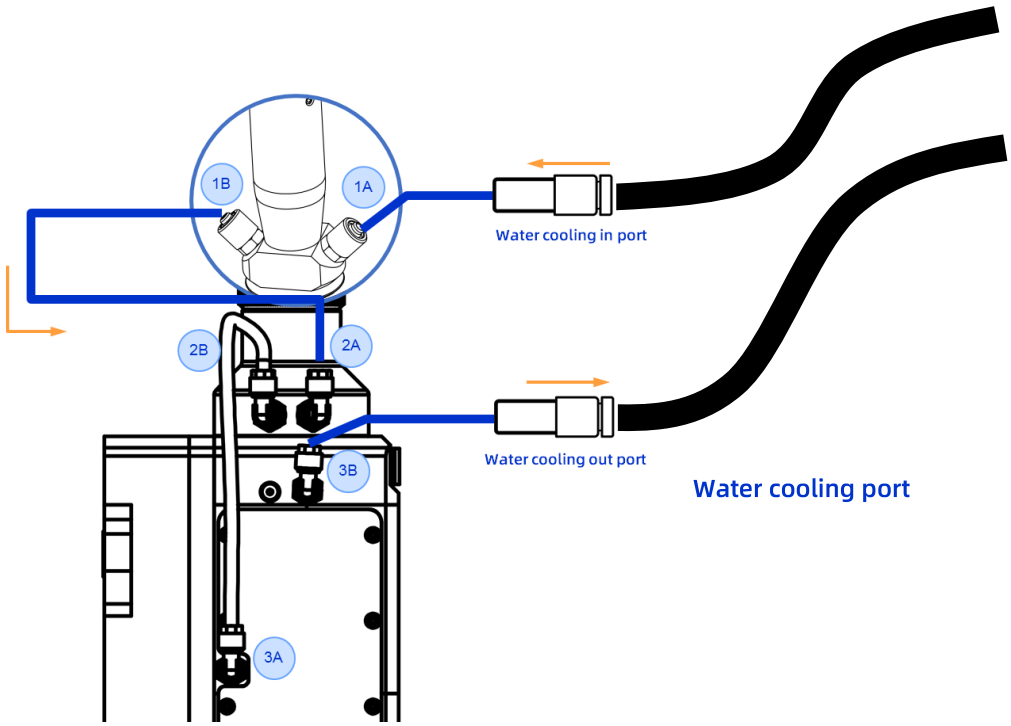
9. Fixing the cutting head to the machine

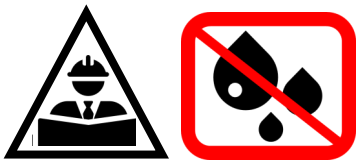
The laser head is fixed using four bore holes. When fitting the laser head to the machine, the machine manufacturer must take appropriate measures to prevent the laser head from vibrating.



10. Water Cooling Leak Test

Fill the loop with cooling water to make sure there are no leaks.

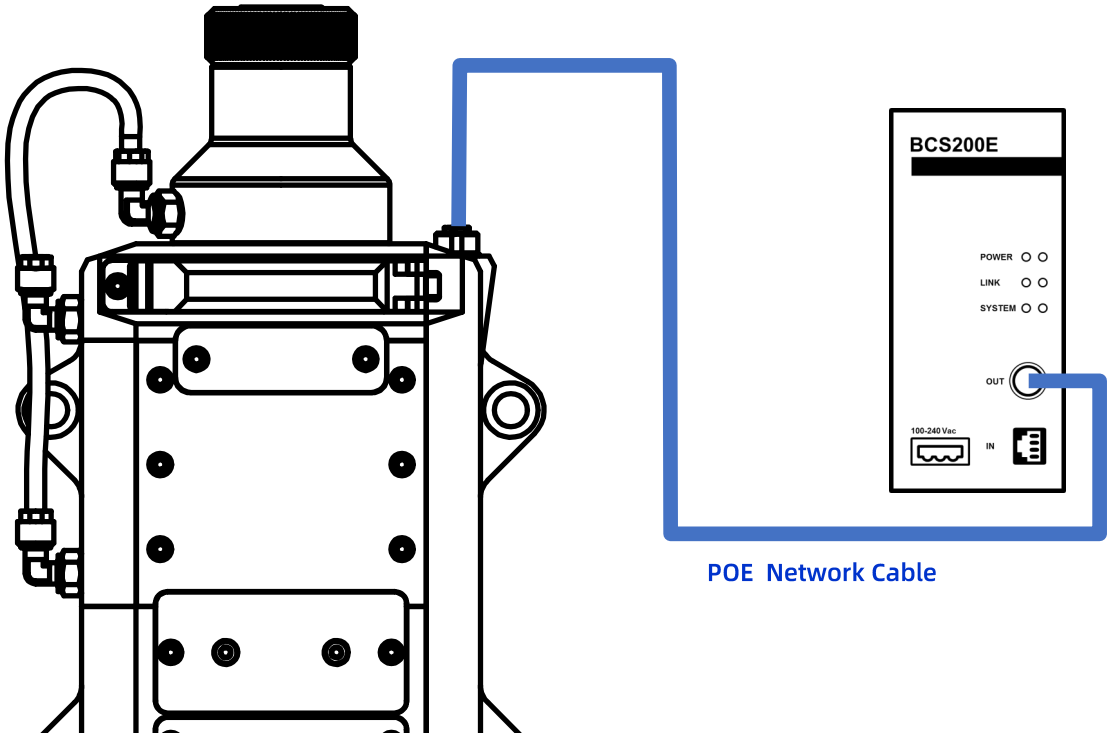




No water leak

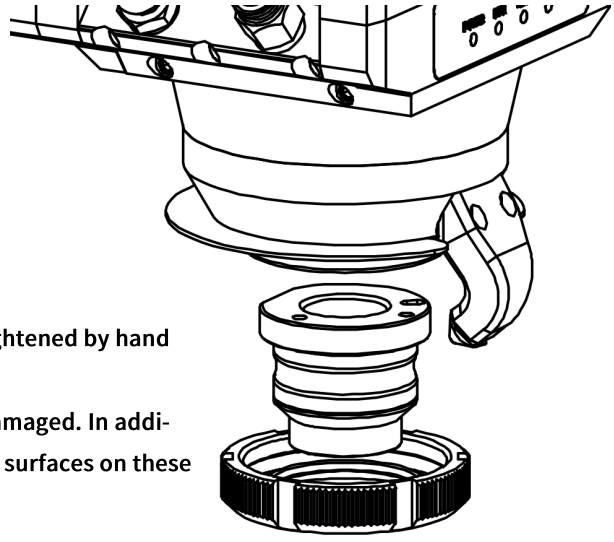
11. Connecting POE Network Cable

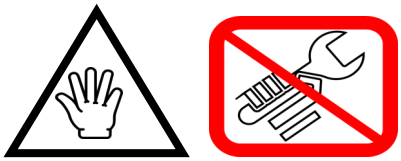
Connect the laser cutting head and the BCS200E intelligent cutting heat controller using the POE network cable.



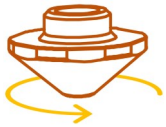
12. Fitting the Ceramic Part and Nozzle

Insert the ceramic part into the sensor insert. Screw the ceramic part to the sensor insert hand-tight using the union nut. Screw the nozzle into the ceramic part hand -tight .



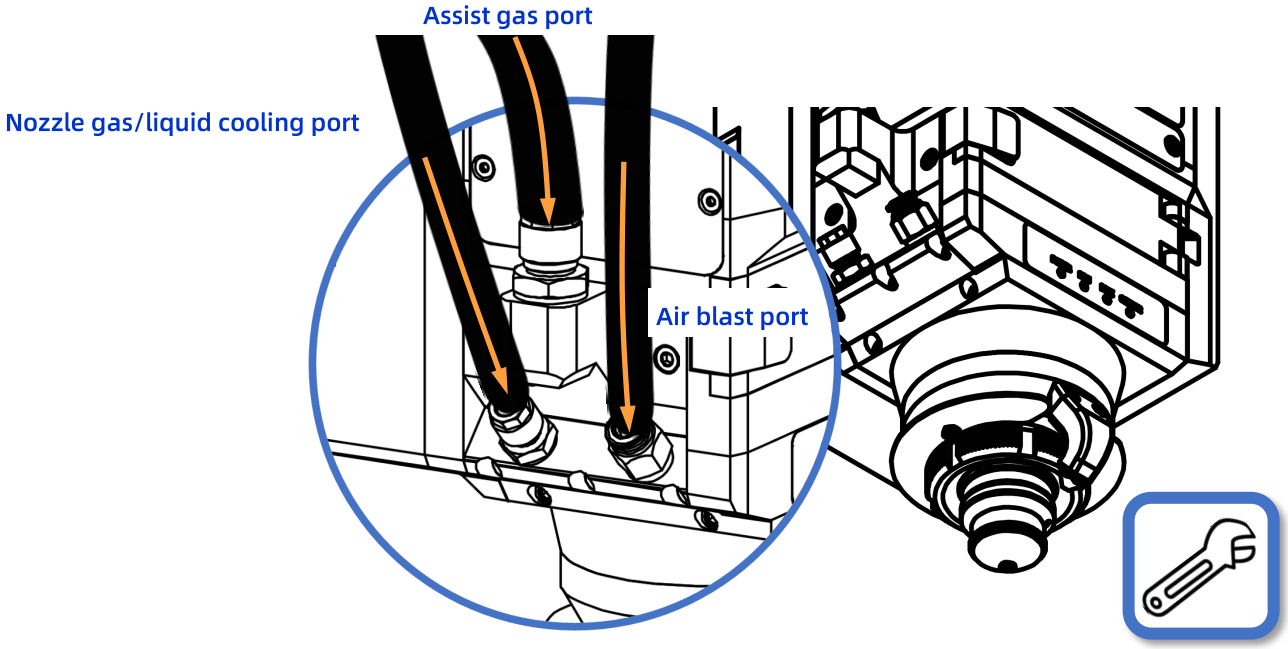


The nozzle and the nut must only be tightened by hand (do not use any tools).
Otherwise the ceramic part could be damaged. In addition to this, make sure that the contact surfaces on these parts are clean.



13.Connecting the Gas

Connect the gas hose to the connection gas port .

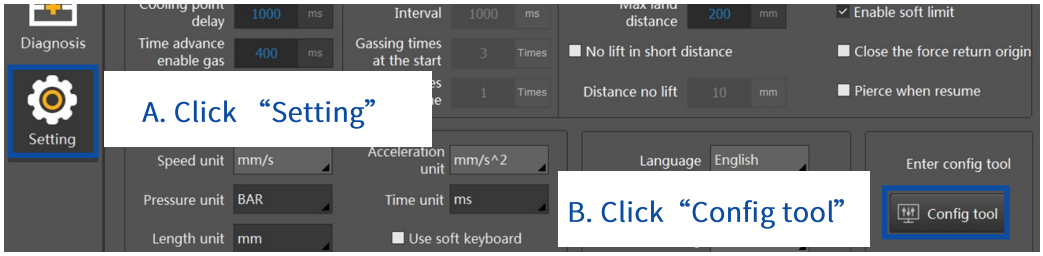


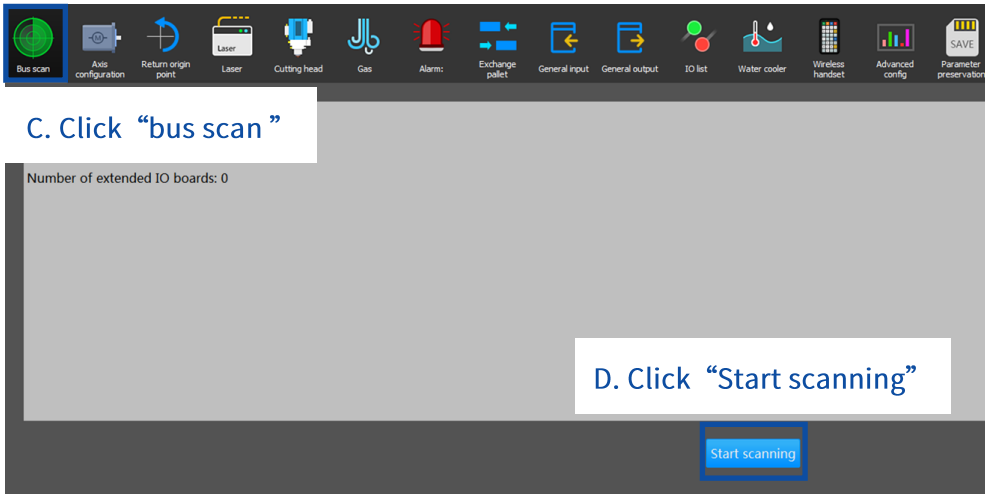
14. Function Operation

Customer control systems can monitor the laser head's operating status .

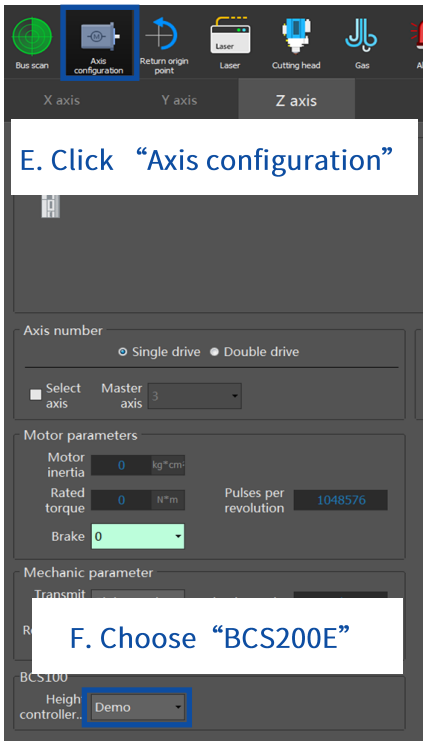
A. Check the motor operating status
B. Check the sensor operating status
C. Check the capacitive distance controller sensor system operating status
D. Check the cutting gas quality

Before checking the laser cutting head status, it must be operated the bus scan function . Please start the **HypCut Laser Cutting System** on your computer. Se-

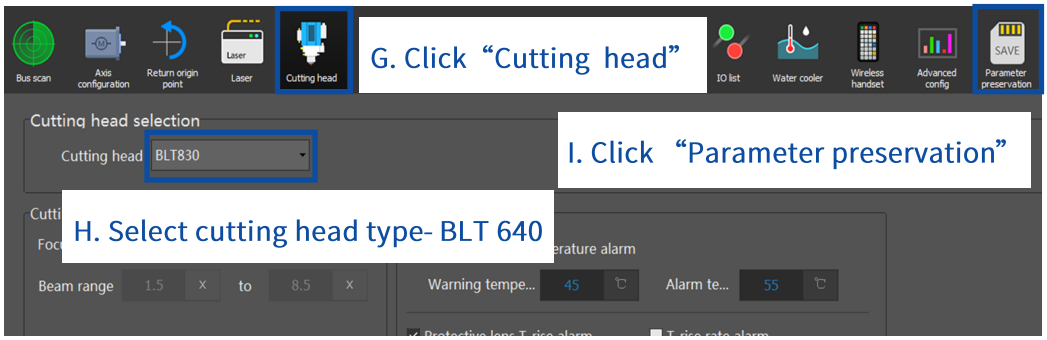




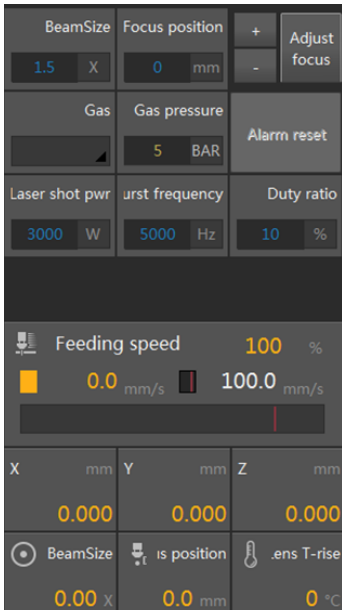
Here, select **Axis configuration**, then choose distance controller sensor type **Axis configuration >> Distance .**



Open the dialogue window **Cutting head >> Cutting head selections** and make the following setting: Cutting head –**BLT 640**. Then, click on the "**Parameter preservation**" button.

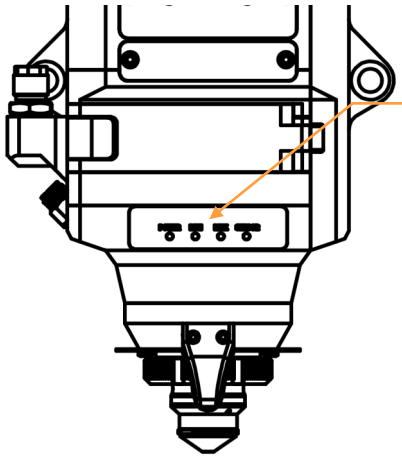


A. Check the motor operating status



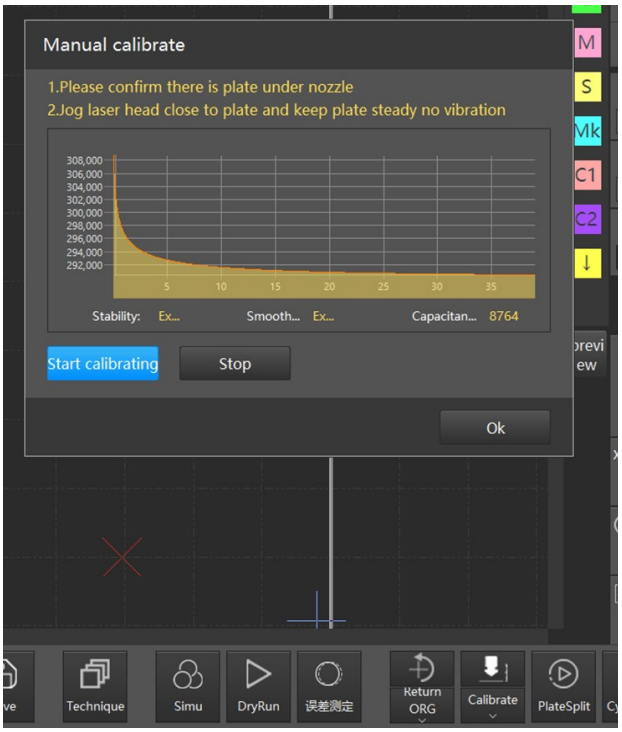
A. Set Beam Size 1.5 and Focus Position 0.0, then click "Adjust Focus" to check motor operating status .

B. Check the sensor operating status



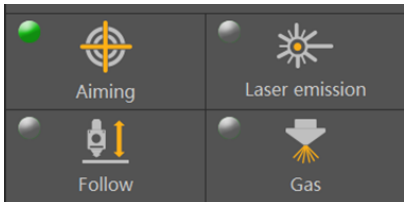
A. LED Status Indicator in normal operation

C. Check the capacitive distance controller sensor system operating status



A. Calibrate in normal operation , and calibrate result should be： Excellent , Excellent , Capacitance≥ 6000 ;

B. Click Follow button，the cutting head follow function checks should be carried out in normal operation.



D. Check the cutting gas quality

Attention :

The cutting gas quality can be checked by the following ways:

1. **Open cutting gas separately : nitrogen, oxygen or compressed air ;**
2. **The cutting gas pressure on the laser head is 2 bar for about 10 minutes ;**
3. **After turning off the air supply, check the protective window's cleanness to determine if the cutting gas quality meets the requirements.**

Specifications and designs are subject to change without any notice or obligation on the part of the manufacturer.

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