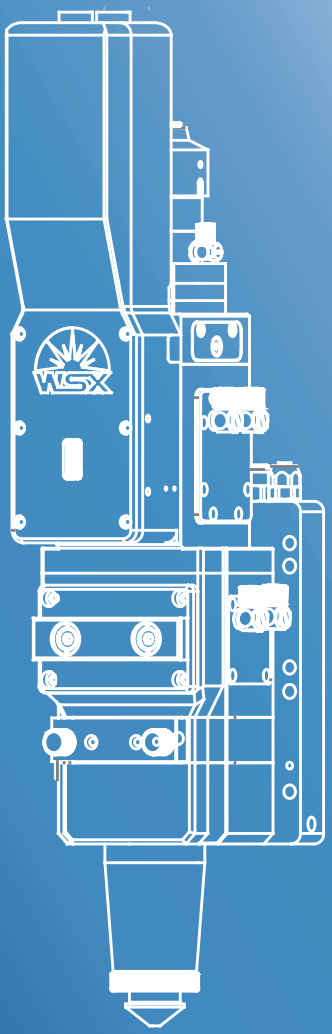
Autofocus Fiber Laser Cutting Head NC60 (Fuji Motor)



User Manual

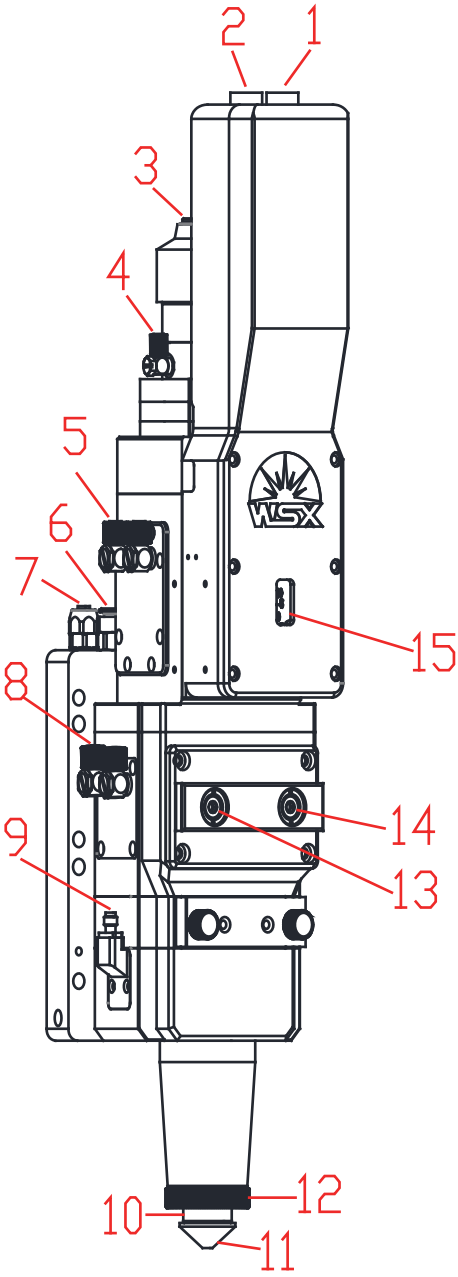
Shenzhen Worthing Technology Co., Ltd.

Attention

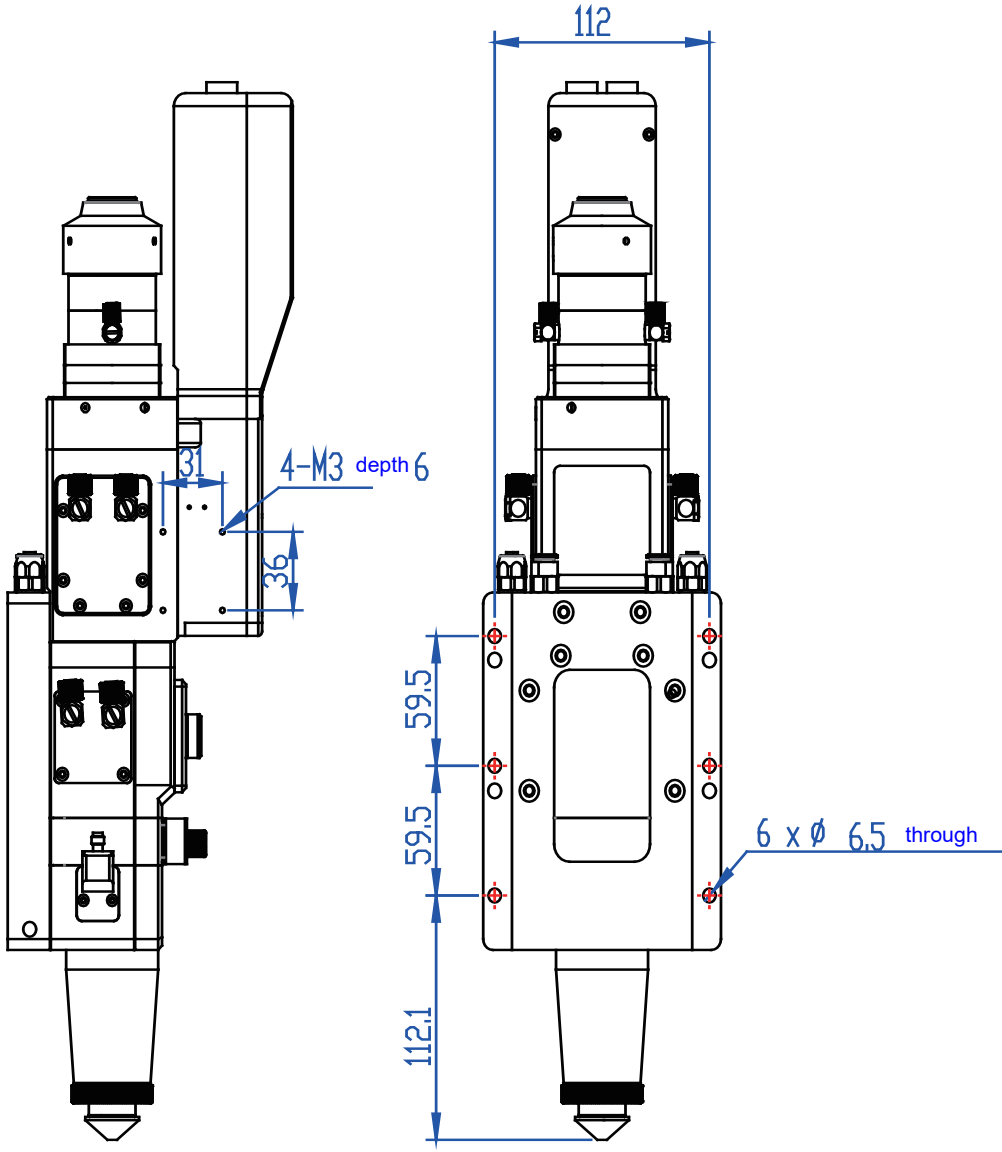
Please read this manual carefully and make sure you understand its contents before using the laser head.

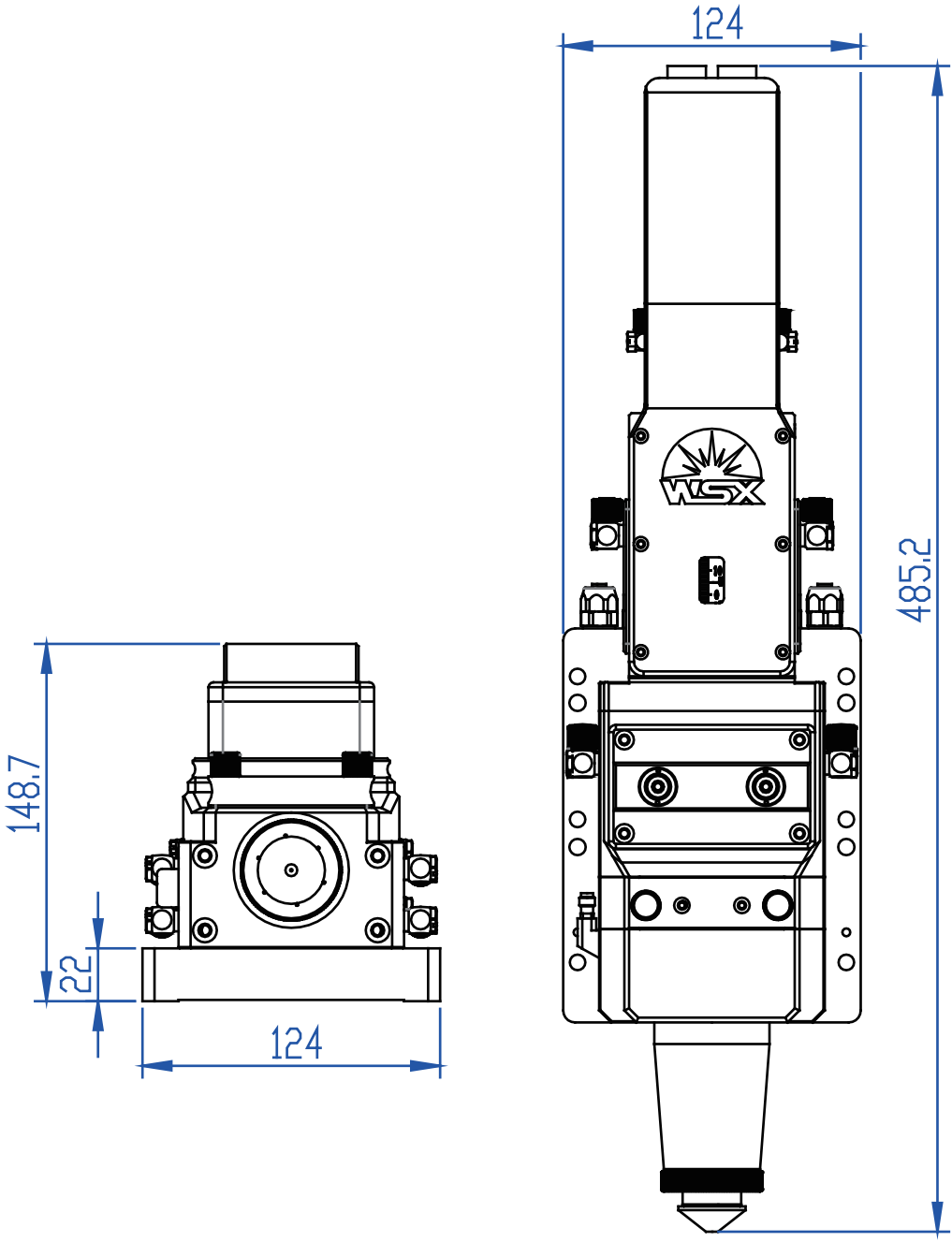
Please keep this manual for future operation and maintenance.

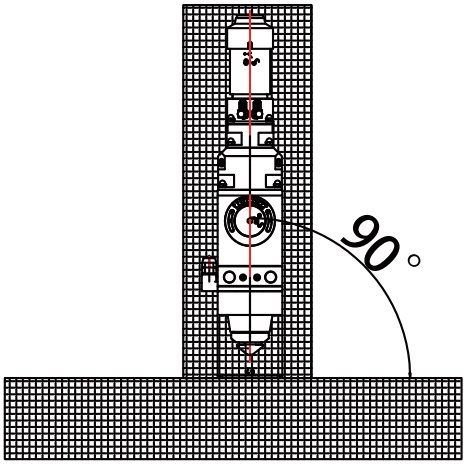
Contents

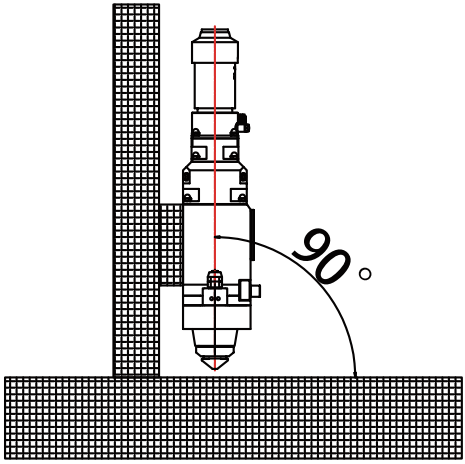


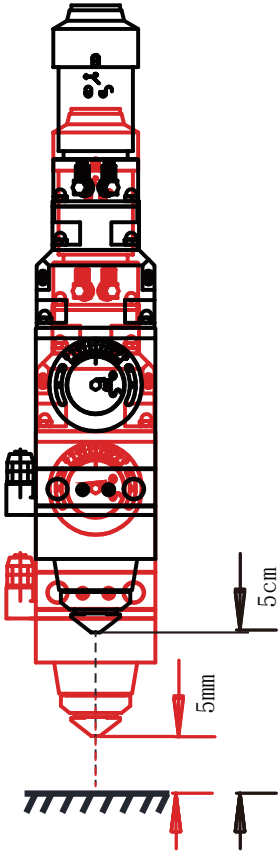
1. Encoder & Limit Signal
2. Triphase power wire
3. Fiber Access
4. Cooling Water Connector1
5. Cooling Water Connector2
6. Cooling Gas Connector
7. Cutting Gas Connector
8. Cooling Water Connector3
9. Moving Signal Interface
10. Ceramic Ring
11. Nozzle
12. Locking Rim
13. Center Adjusting(X/Y)
14. Center Adjusting(X/Y)
15. Observation Window


112
31
4-M3 depth 6
36
59.5
59.5
112.1
6 x Ø 6.5 through

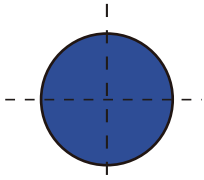

124
485.2
148.7
22
124



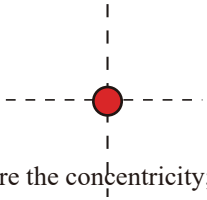




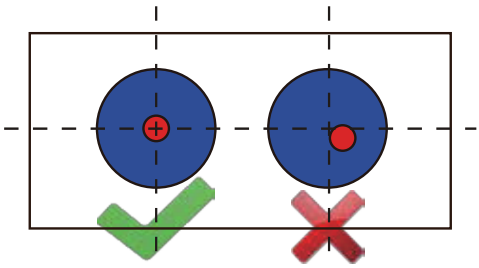
Step 1: set the laser power to 500W, make a short burst at the height of 5cm from the plate, burn a round scorch on the plate;

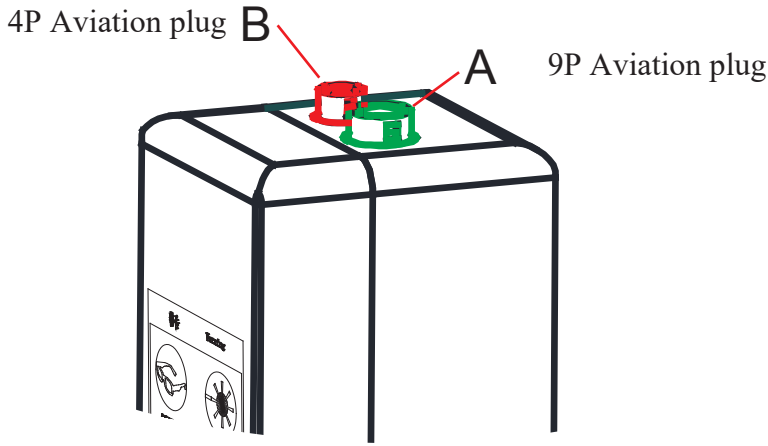


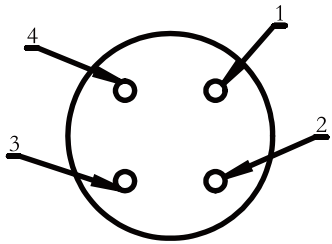
Step 2: set the laser power to 100W, make a short burst at the height of 1~5 cm from the plate, burn a round scorched spot on the plate;



Step 3: compare the concentricity;

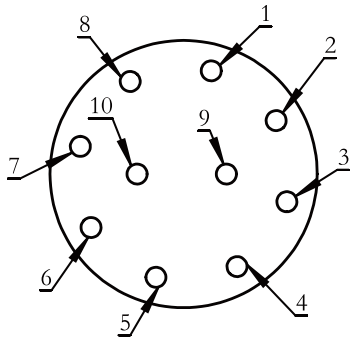






1	W
2	U
3	V
4	FG(Ground)

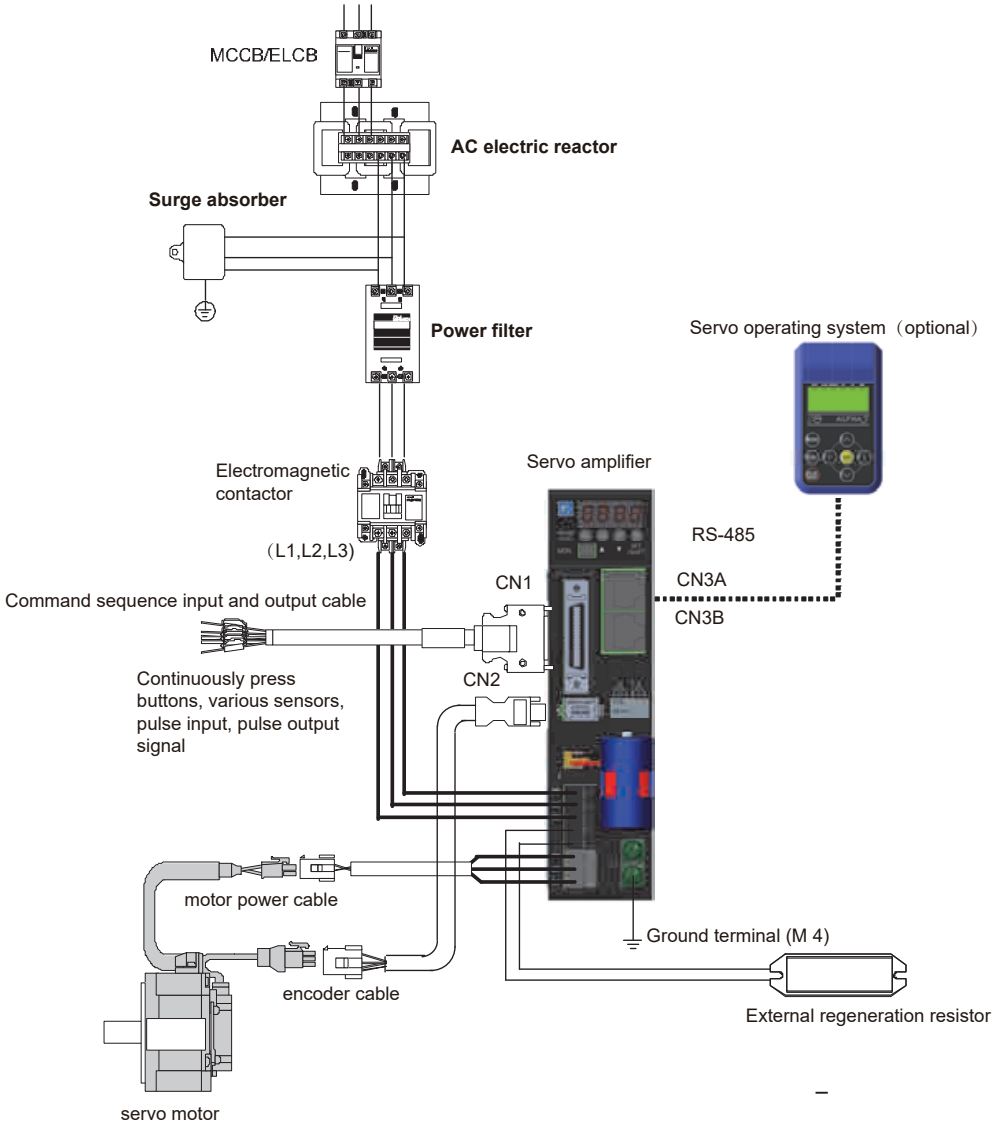
Servo Motor Power Supply Interface (Red)



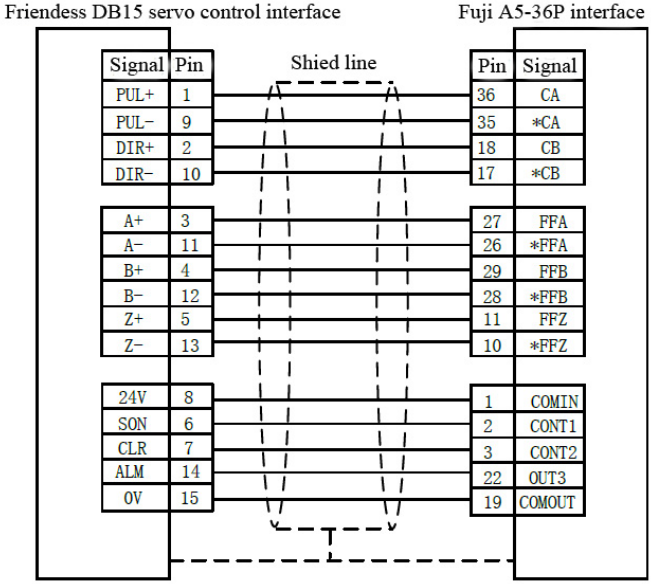
1	FG (Shield wire)
2	-D (Encoder Signal Data-)
3	+D (Encoder Signal Data+)
4	SG (Signal Ground)
5	VCC (Encoder Power +5V)
6	+24V (Approach Switch Power)
7	0V (Approach Switch Power)
8	W+ (Approach Switch Signal)
9	W- (Approach Switch Signal)

Servo Motor Encoder & Approach Switch Interface（Green）

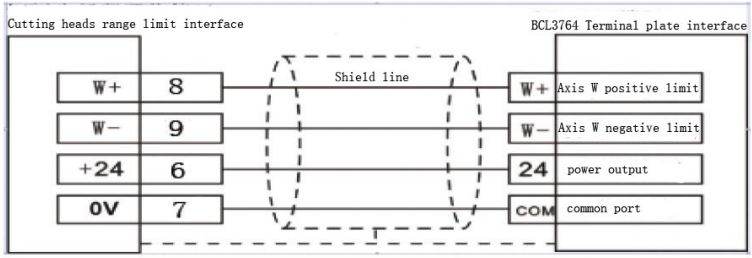
Fuji servo electrical connection diagram



Friendess FSCUT2000A laser cutting control system BCL3764 terminal plate W axis DB15 servo control interface connect with Fuji servo driver 36P interface definition



Definition of laser focusing djustment range limitation switch connector

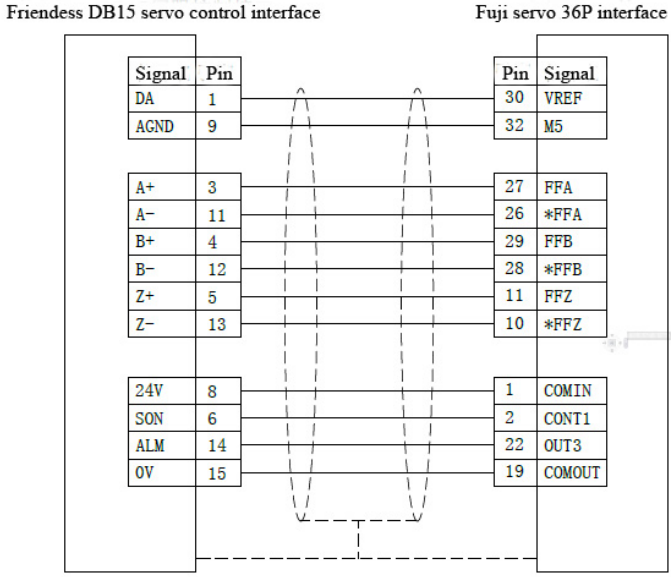


Parts of parameter list, subject to actual using and Fuji servo instruction.

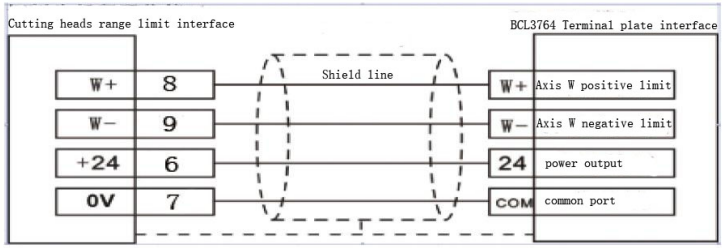
Parameter	Value	Parameter	Value	Parameter	Value
PA1-01	0	PA1-05	10000	PA1-27	50
PA1-03	30	PA1-08	2500	PA1-28	50
PA1-04	0	PA1-15	30		

Note: 1.Definitions of servo driver and servo motor connector shown in Fuji servo driver instruction;
2.Please use uniphase power, L connects to L1; N connects to L2.

Friendess FSCUT4000A laser cutting control system BCL3724 terminal plate W axis DB15 servo control interface connect with Fuji smartplus servo driver 36P interface definition



Definition of laser focusing djustment range limitation switch connector



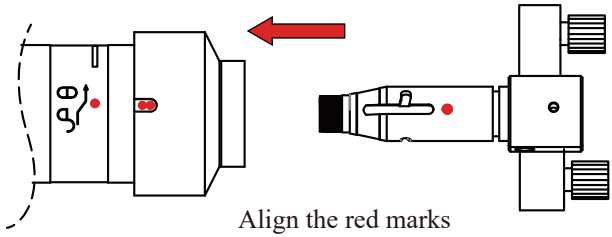
Parts of parameter list, subject to actual using and Fuji servo instruction.

Parameter	Value	Parameter	Value	Parameter	Value
PA1_01	1	PA3_26	2	PA1_56	39
PA1-04	0	PA3_31	6.0	PA1_57	17
PA1_08	2500	PA1_15	30	PA1_59	0.53

Note: 1.Definitions of servo driver and servo motor connector shown in Fuji servo driver instruction;
2.Please use uniphase power, L connects to L1; N connects to L2.

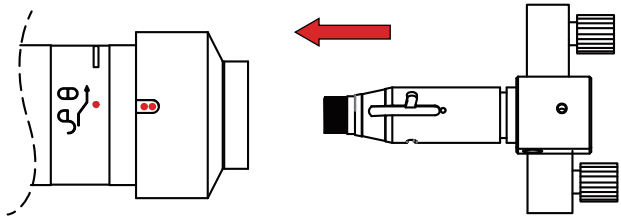
1.Place the laser head and optical fiber connector in a horizontal state;

2.Clean the QBH and fiber connector with clean rod and ethyl alcohol.

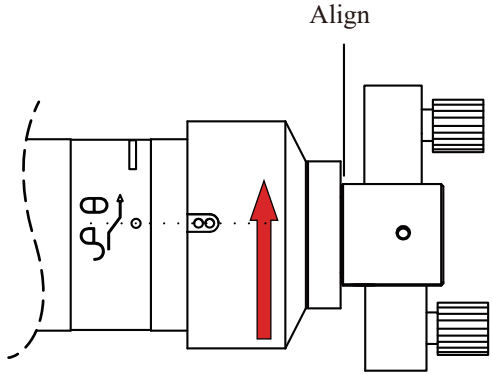


Align the red marks

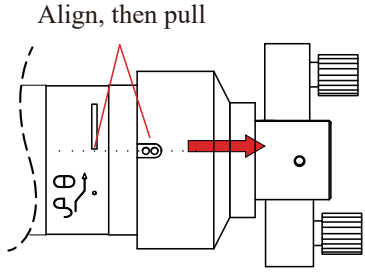
3.Insert the fiber connector into QBH gently;



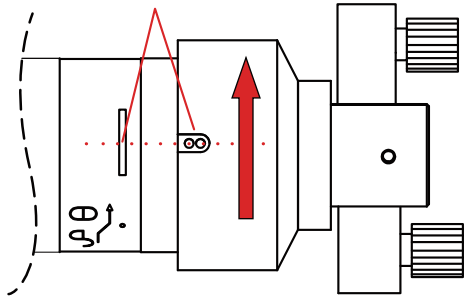
4.After inserting, turn the turning rim in the arrow direction until the two red marks are aligned to the white mark;



5.Then pull the turning rim as the picture below;

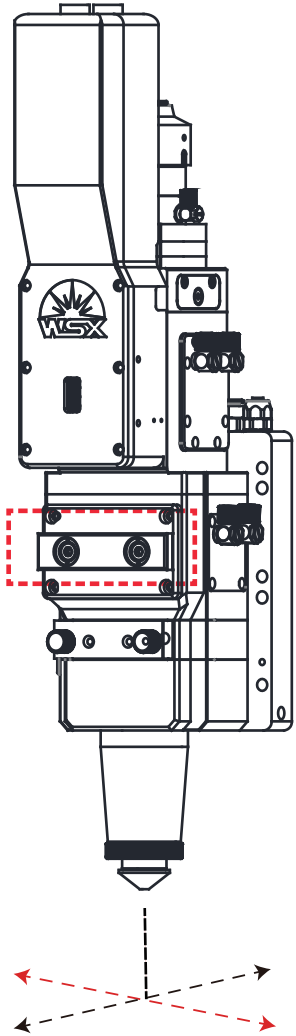


6.Turn the rim in the direction as picture below at moderate intensity to make it tight (Use thumb and index finger).
The red marks can be aligned to or over the middle of the white bar, but do not twist any more when it is in the right position.



Note: Do not twist vigorously , it may cause damage to precision machinery.

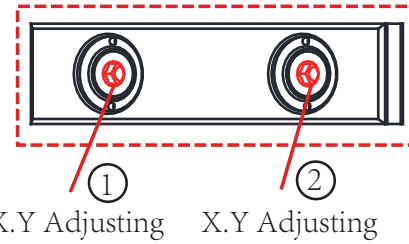
To avoid dust or dirt entering into the fiber optic connector by accident, please clean the fiber rod first. Insert the fiber plug with the laser head in a horizontal position.

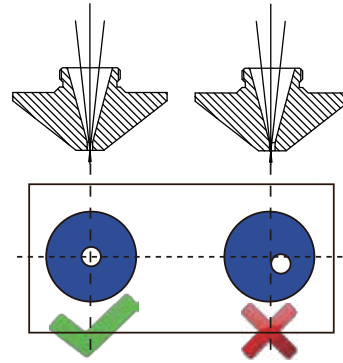


1.Adjust the X/Y screw by Allen wrench and make the beam pass through the center of nozzle;

2.The cutting effect is best when the beam pass through the center of nozzle;

3.If the beam does not pass through the center of nozzle, it may cause the beam could not be emitted out or bad cutting effect and so on.





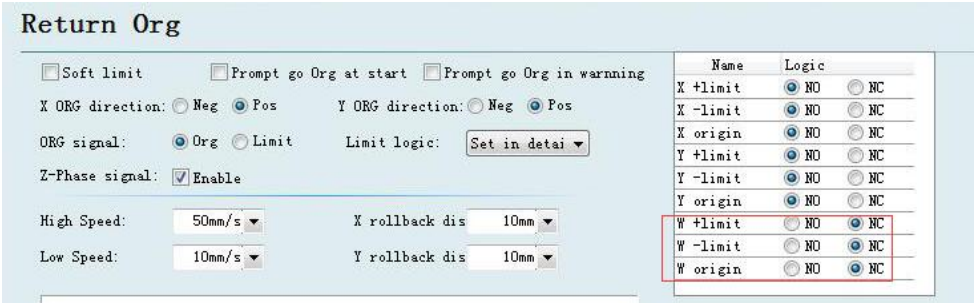
beam passes through the center (correct)

beam does not pass through the center(incorrect)

Methods of testing whether the beam pass through the center of nozzle：

1. Paste the transparent tape on the outlet of the nozzle (prefer to a new or undeformed nozzle);
2. Set the power of laser machine to 50W(take 500W for example,adjust the short burst power for 10%);
3. Take off the transparent tape after the beam has been emited for 1 – 2 seconds;
4. Face the tape to light source and observe the round mark of nozzle on the tape and burned spot of laser passing through the tape.
5. If they are concentric, the testing result is good, but if not, please keep adjusting.
6. When adjustment is finished, tighten the center locking ring (red part) immediately.

Note: 1.This parameter is default value; when user changes it, please avoid hard ware damage;
2.Please contact technician to get specific parameters of different lens combinations.



Note: 1.Please choose normally closed mode for normally closed limitation switch.

Check

Distance

Replace

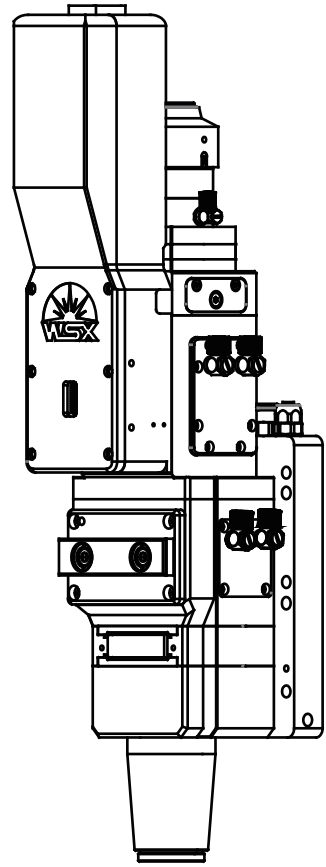
Adjust the lens

Maintenance

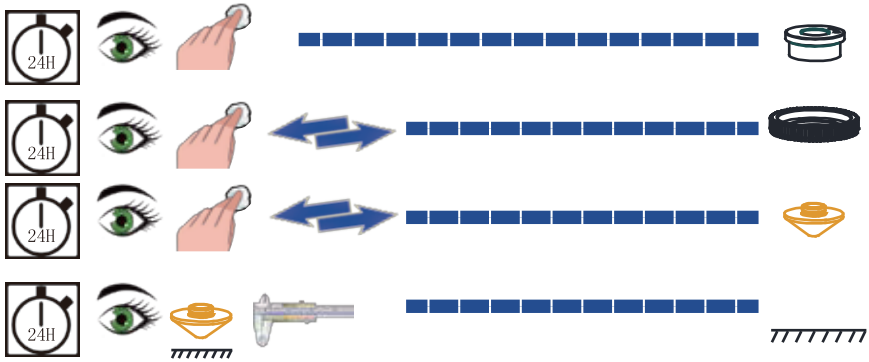
10H

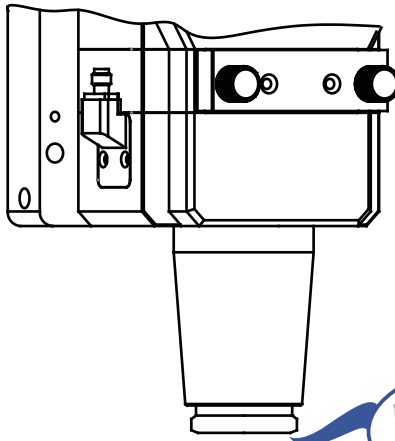
Maintenance Period

Calibration



Note:
Before maintenance, clean away the dust on the surface of the head with compressed air; then use clean cloth and ethyl alcohol to clean the related parts.
Note:
When the maintenance of ceramic ring & nozzle is finished, it is necessary to calibrate every time.



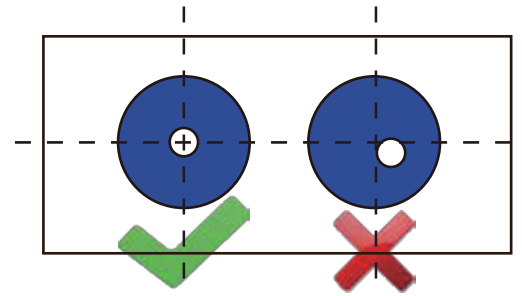


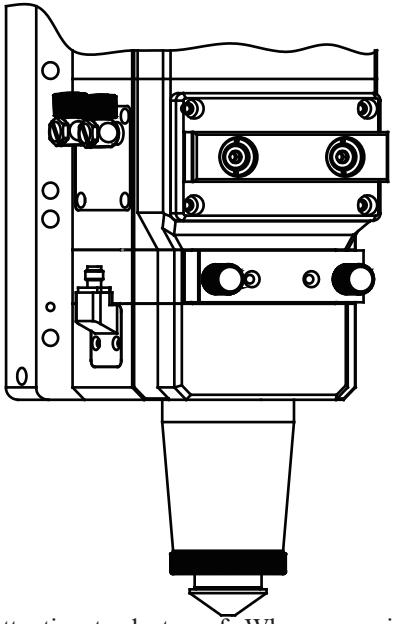
POWER

COOLING GAS

CUTTING GAS

Note:
When the maintenance of ceramic ring & nozzle is finished, it is necessary to calibrate and test the beam to see whether it is in the center.

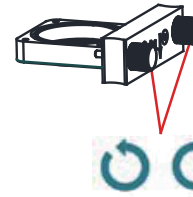




POWER

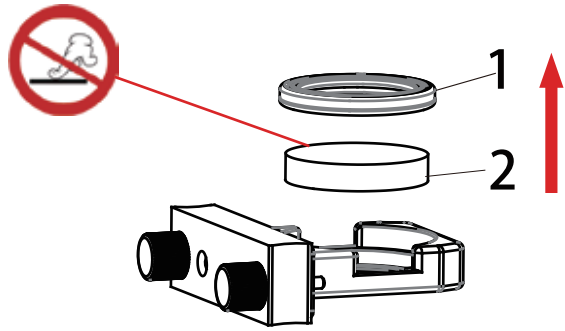
COOLING GAS

CUTTING GAS



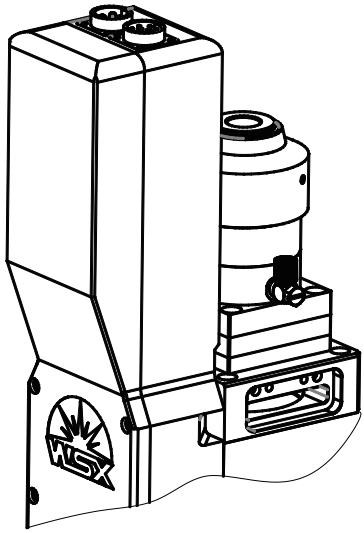
Disassembly method: loosen the screw and pull out horizontally

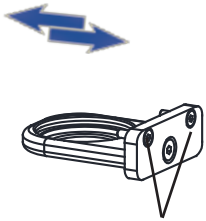
Pay attention to dustproof: When removing and installing the lens, wear dustproof gloves and finger cots, which need to be done in a clean place. (When changing lenses on site, you can use masking tape to seal the window to prevent dust from entering the interior and causing pollution.)



1、Fixed gland 2、Protective glass

Note: Disassembly method: remove upward according to the arrow number. Do not use wrenches, iron pliers and other tools to operate, otherwise it will damage the parts.





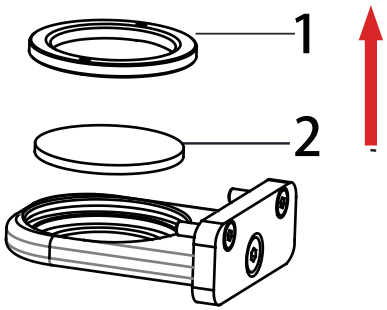
POWER

COOLING GAS

CUTING GAS

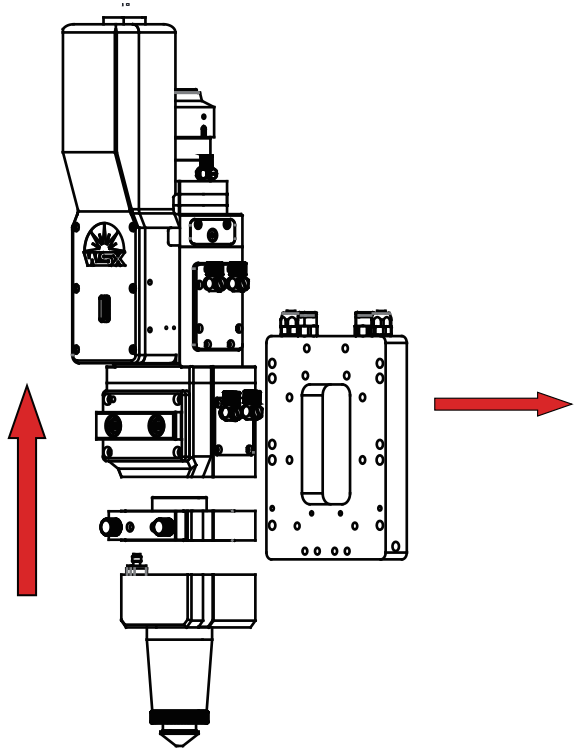
Disassembly method: loosen the screw and pull out horizontally

Pay attention to dustproof: When removing and installing the lens, wear dustproof gloves and finger cots, which need to be done in a clean place. (When changing lenses on site, you can use masking tape to seal the window to prevent dust from entering the interior and causing pollution.)



1.Fixed gland 2.Protective glass 3.Special tooling fixture

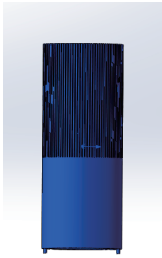
Note: For dismantling, use a special tooling fixture, rotate and loosen the fixed gland, and remove it by turning it over. Do not use wrenches, iron pliers and other tools to operate, otherwise it will damage the parts.



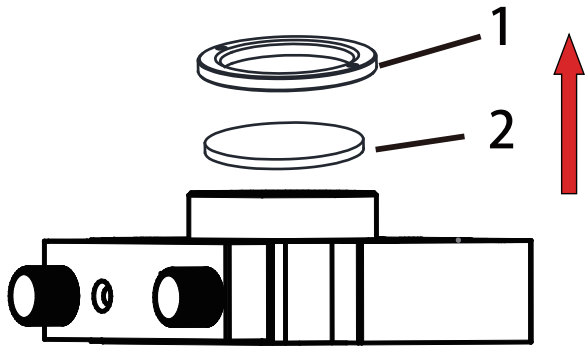
POWER

COOLING GAS

CUTTING GAS

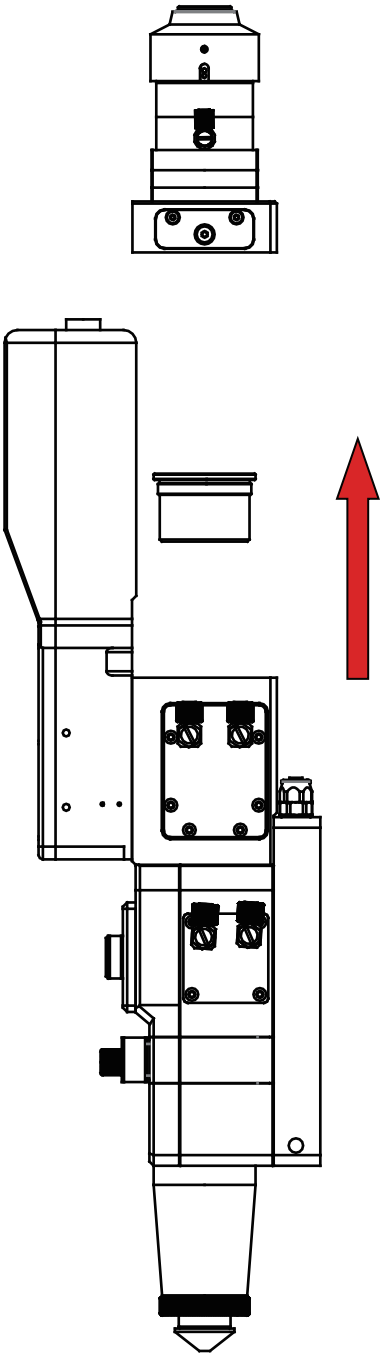


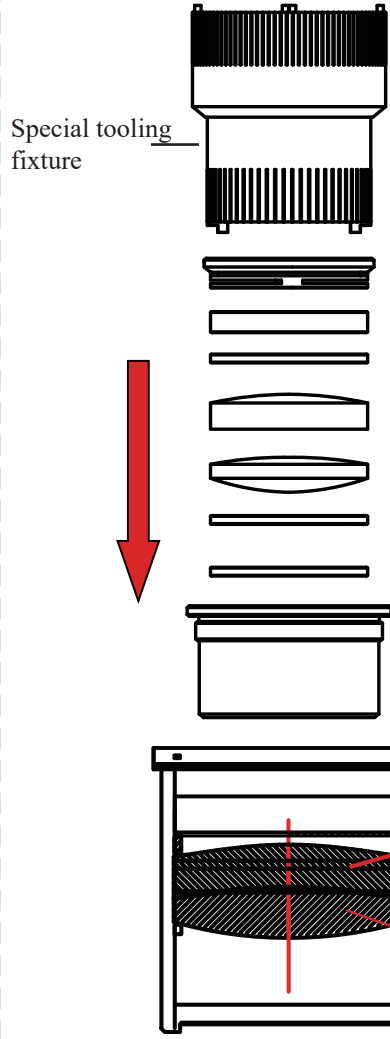
3



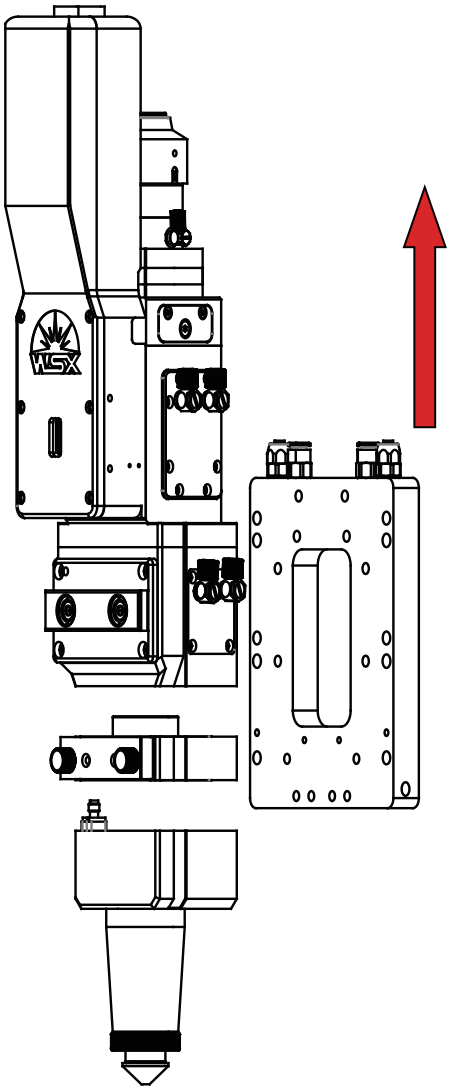
1 Fixed gland 2 Protective glass 3 Special tooling fixture

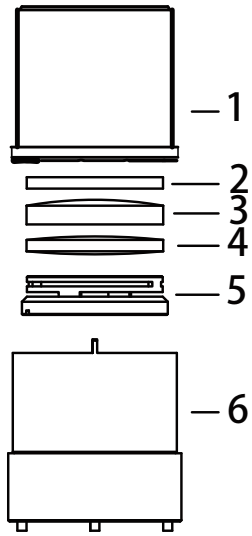
Note: For dismantling, use a special tooling fixture, rotate and loosen the fixed gland, and remove it by turning it over. Do not use wrenches, iron pliers and other tools to operate, otherwise it will damage the parts.



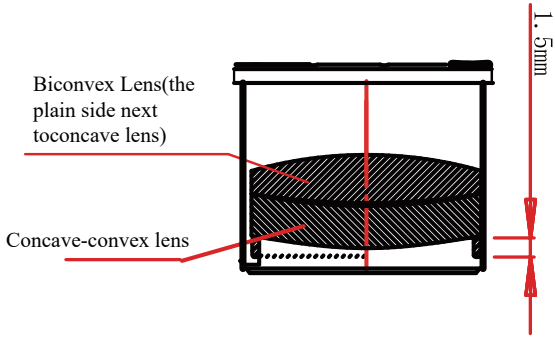


Note: To disassemble the model, use a special fixture to rotate and loosen the fixed gland. After taking out the lens, make a record of the thickness of the gasket. After replacement, press





Special tooling fixture



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