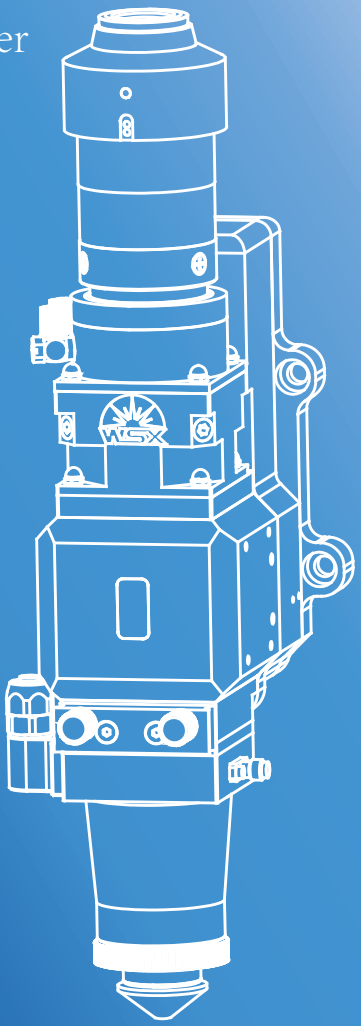
Automatic Focusing Fiber Laser Cutting Head NC12



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.

Test Condition

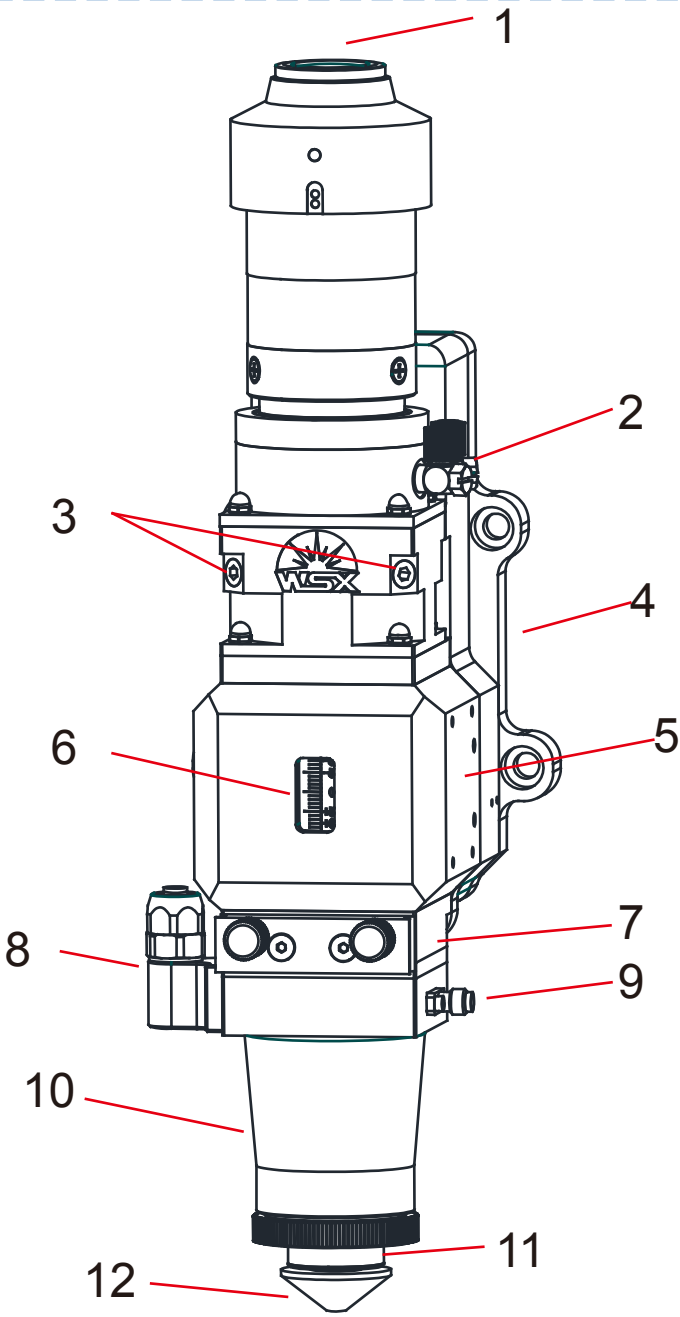
Correct wiring, normal electric, good earthing with smoothing and voltage stabilizing circuit.

Steps

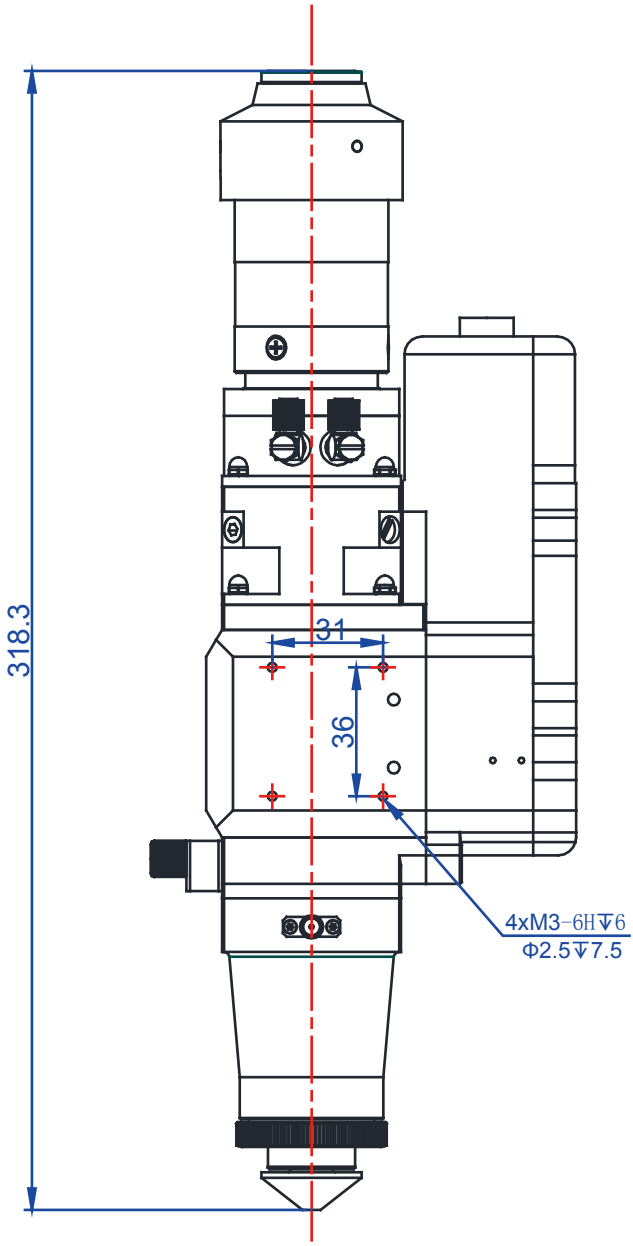
1. Adjust soft limitation to -100~100
2. Set inching speed to 1mm/s
3. Inching at positive direction until reach positive limitation
4. Inching at negative direction until reach negative limitation
5. After confirming effectiveness of positive & negative limitation, set back to origin
6. Restore soft limitation & inching speed to origin

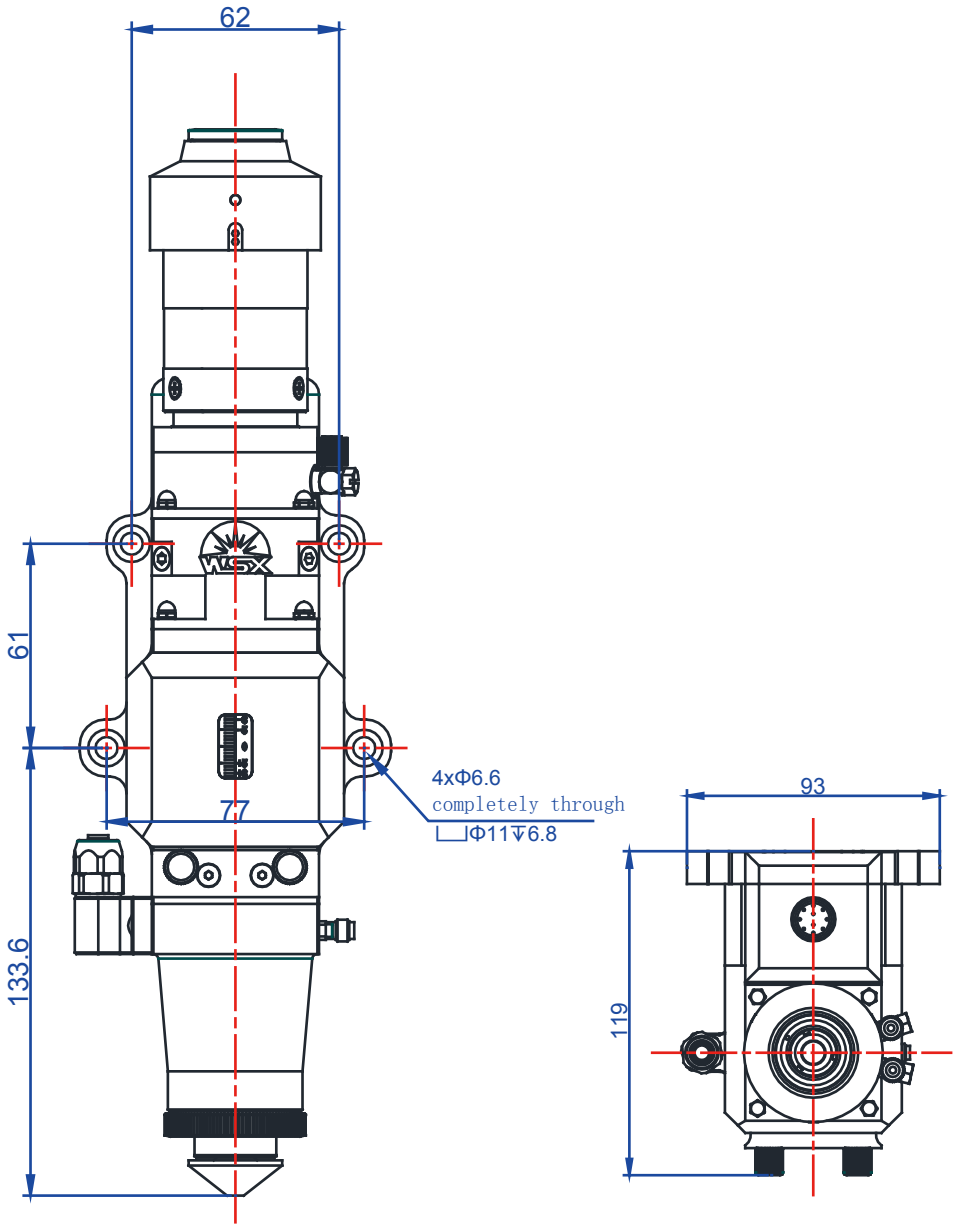
Instruction

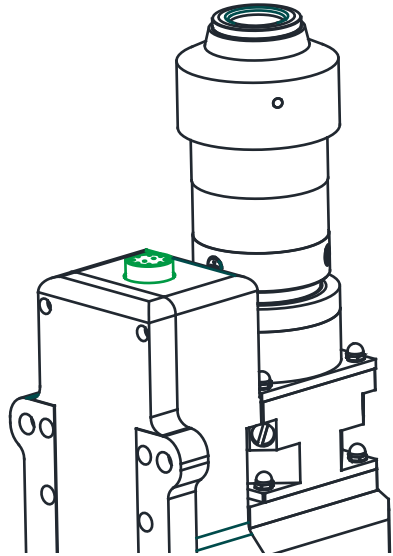
1. Make sure manual inching can find limit swicth
2. Reduce manual speed to ensure that invalid limitation will not cause structural damage.
3. Make sure wire connection of negative limitation swicth is correct and signal is normal
4. It's allowed to restore to origin automaticly only after confirming positive & negative limitation
5. Restore parameters to ensure system running correctly

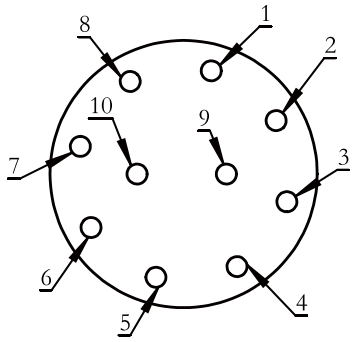


1. QBH Fiber Access
2. Cooling Water Connector
3. X/Y Horizontally Adjusting Screw
4. Installation Plate
5. Height Adjustment Installation Position
6. Focusing Scale Window
7. Protective Window Component
8. Gas Pipe Connector
9. Height Adjustment Singal Interface
10. Sensor
11. Ceramic Ring
12. Nozzle


318.3
31
36
4xM3-6H↧6
Φ2.5↧7.5


62
61
77
133.6
4xΦ6.6
completely through
⌴Φ11↧6.8
93
119

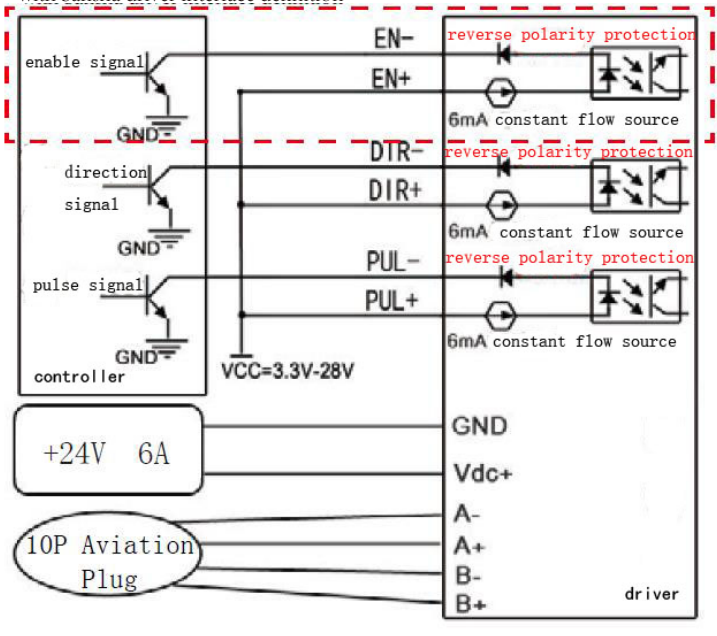


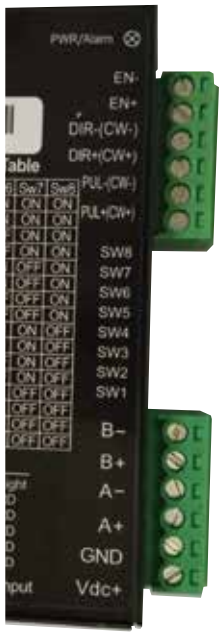


10P Aviation Plug	
Pin	Signal
1	Null
2	A+(Stepper Motor A Phase Power Line)
3	A-(Stepper Motor A Phase Power Line)
4	B+(Stepper Motor B Phase Power Line)
5	B-(Stepper Motor B Phase Power Line)
6	+24V(Approach Switch Power Line)
7	0V(Approach Switch Power Line)
8	W+(Approach Switch Signal Line)
9	W-(Approach Switch Signal Line)
10	Null

Motor Power Supply & Approach Switch Interface (Green)

Friendess FSCUT2000A laser cutting control system BCL3764 terminal W axis DB15 servo control interface connect with Sansha driver interface definition





Note:

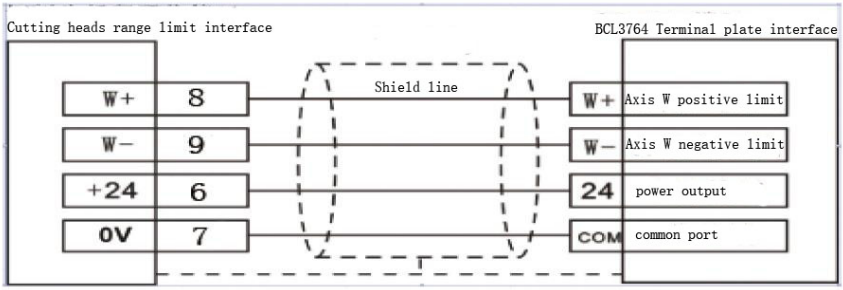
1.Definitions of servo driver and servo motor connector shown in Sansha MD-2422 driver instruction;

2.Please use independent DC power: DC24V 6A, Vdc+ connects to+24V , GND connects to 0V。

3.Lines inside red dotted box can be not connected, default dangling is enabling

Friendess D15 servo control interface			Sansha stepping driver
Signal	Pin		Signal
PUL+	1		PUL+(CW+)
PUL-	9		PUL-(CW-)
DIR+	2		DIR+(CW+)
DIR-	10		DIR-(CW-)
A+	3		Null
A-	11		Null
B+	4		Null
B-	12		Null
Z+	5		Null
Z-	13		Null
24V	8		Null
SON	6		Null
CLK	7		Null
ALM	14		Null
0V	15		GND

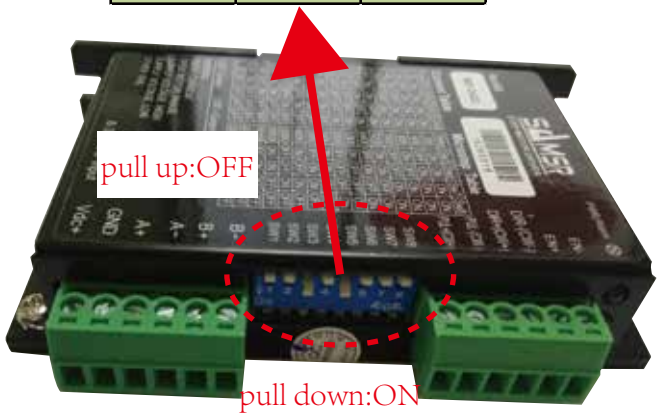
Definition of laser focusing djustment range limitation switch connector



Stepping subdivision and current setting

Stepping Driving Setting		
SW1	OFF	1.4A
SW2	OFF	
SW3	ON	
SW4	OFF	
SW5	OFF	10000
SW6	ON	
SW7	OFF	
SW8	OFF	

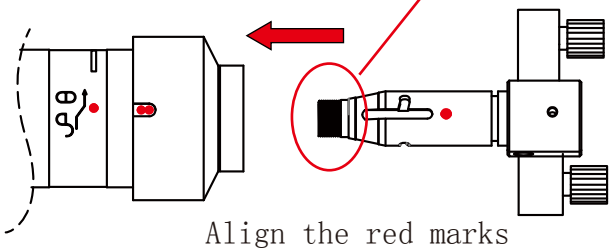
parameters are subject to the table, the picture is for examle only



Note:
1.Current can not be higher than 1.4A， otherwise will cause burned damage to equipment;
2.Parameters are subject to the table, the picture is for examle only

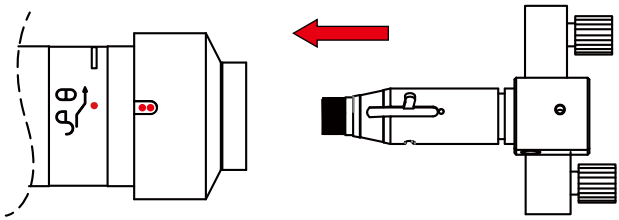
1. Place the laser head and optical fiber connector in a horizontal state;
2. Clean the QBH and fiber connector with clean rod and ethyl alcohol.

Inside the red circle is the plug of fiber rod; it is equipped with a protective cover. Before installation, tighten the cover to avoide it being loose duiring the processing which may cause offset light path and bad cutting quality or even cause burn damage to the fiber rod and cutting head.

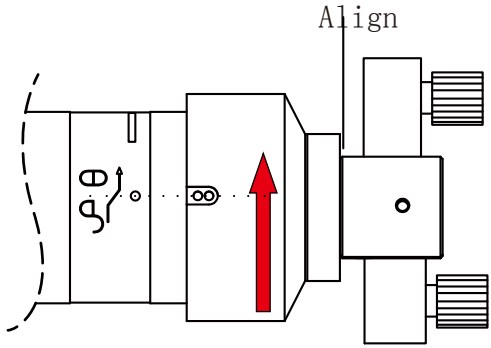


Align the red marks

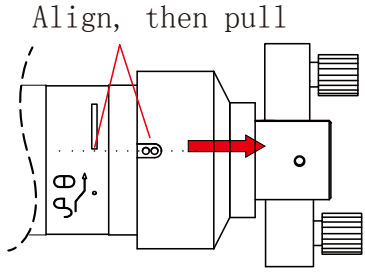
3. Insert the fiber connector into QBH gently;



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

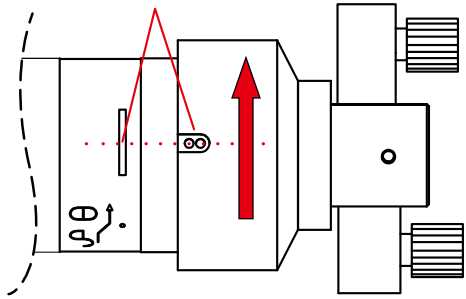


5. Then pull the turning rim as the picture below;



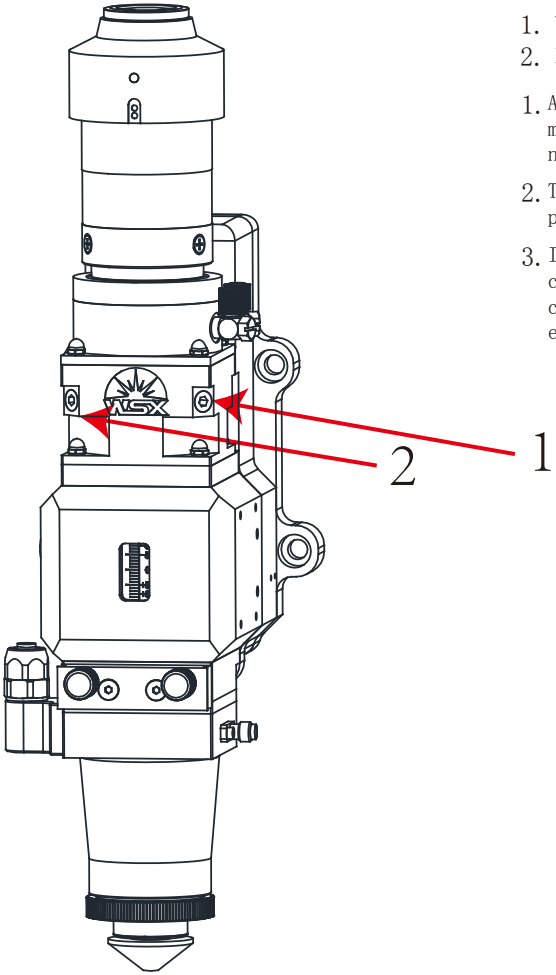
6. Turn the rim in the direction as picture below at moderate intensity to make it tight (Use thumb and index finger).

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.

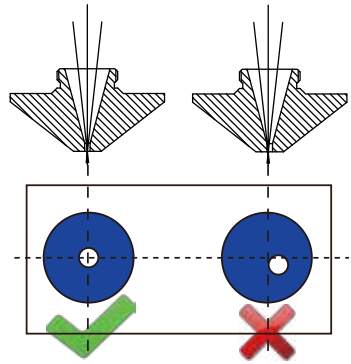
To avoid dust or dirt entering into the fiber optic connector by accident, please clean the fiber rod first. Insert the fiber plug with the laser head in a horizontal position.



1. Y-Direction Horizontally Adjusting Screw
2. X-Direction Horizontally Adjusting Screw

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.

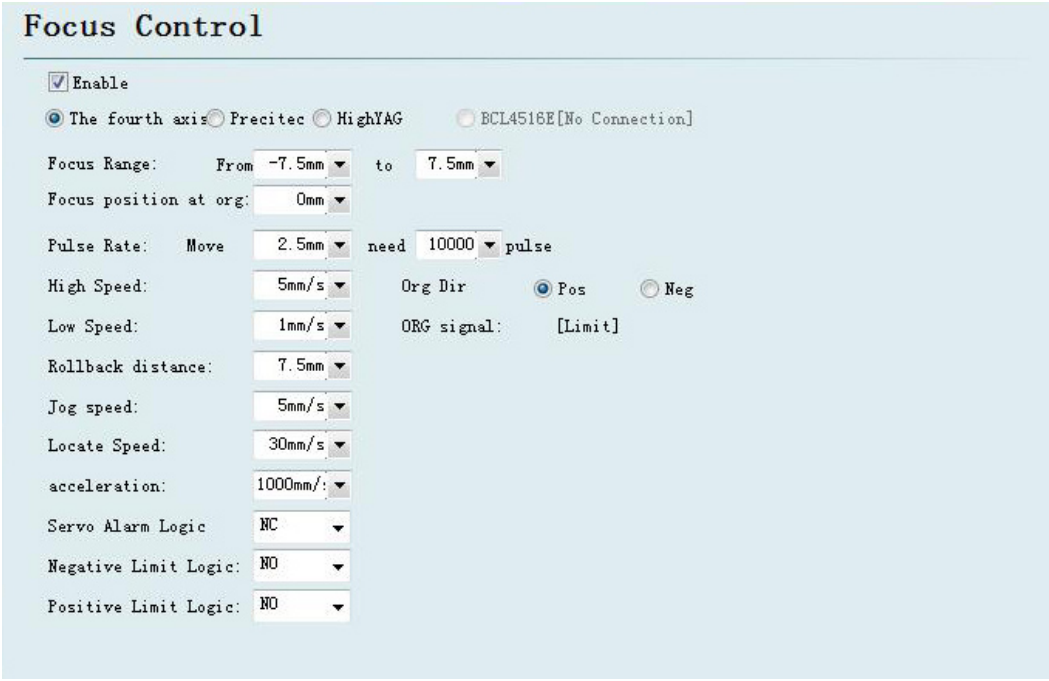
Methods of testing whether the beam pass through the center of nozzle:



beam passes through the center (correct)

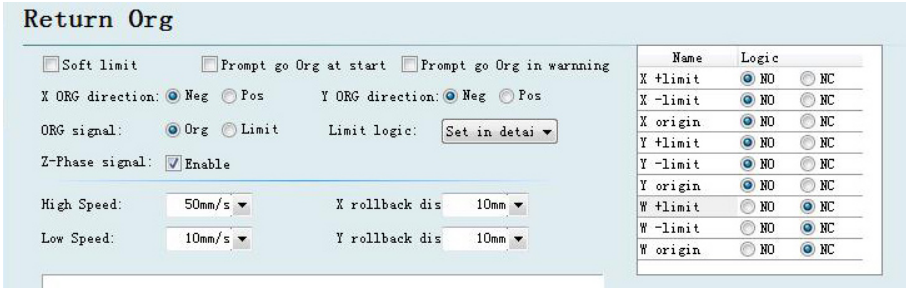
beam does not pass through the center(incorrect)

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 burning 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.

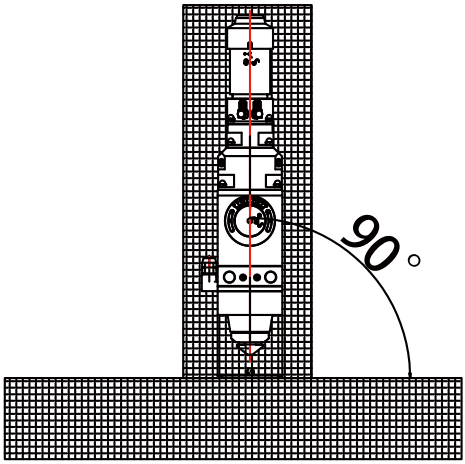


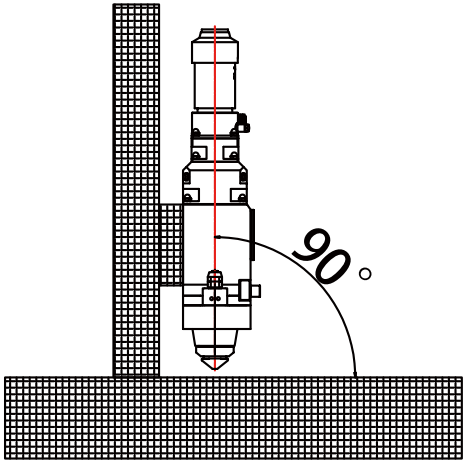
Note: 1.This parameter is default value; when user changes it, please avoid hard ware damage;

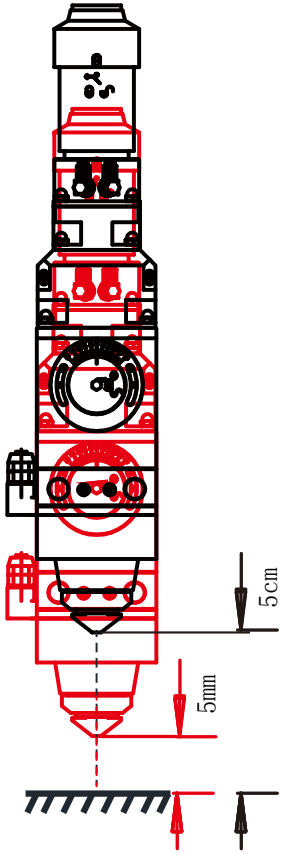
2. Please contact technicist to get specific parameters of different lens combinations.



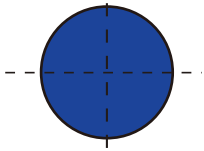
Note: 1.Please choose normally closed mode for normally closed limitation switch.





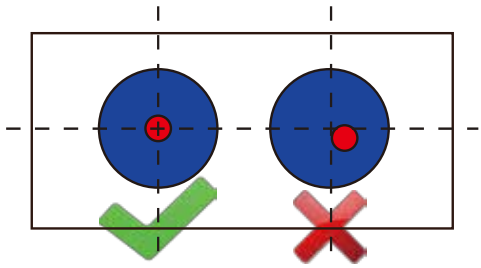


Step 1: set the laser power to 500W, make a short burst at the height of 5cm from the plate, burn a round scorch on the plate;



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;



Check

Distance

Replace

Adjust the lens

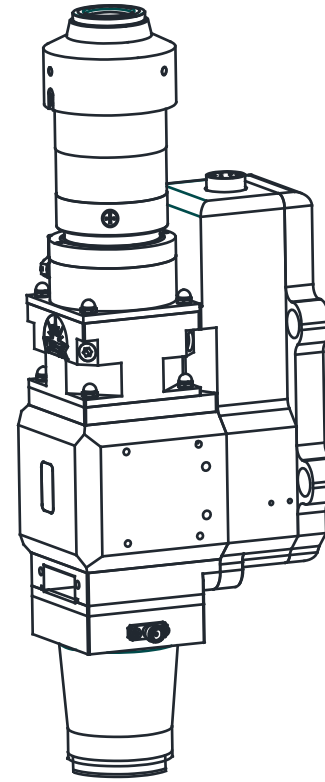
Maintenance

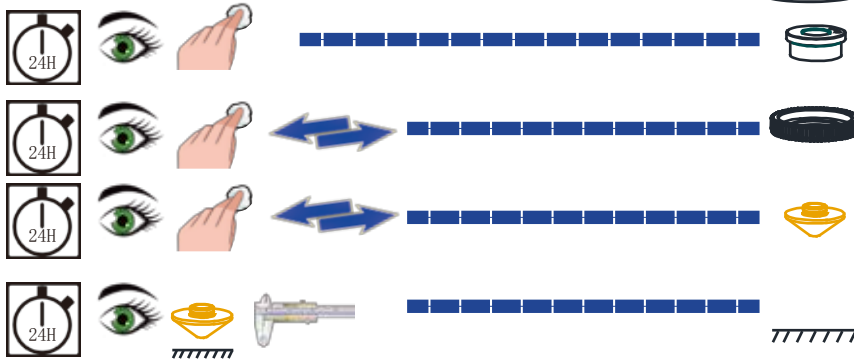
Maintenance Period

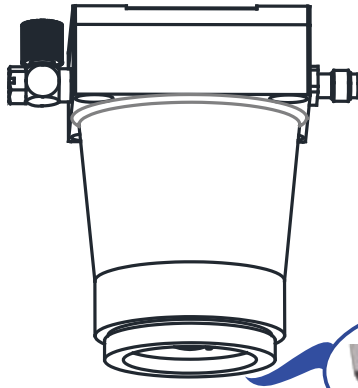
Calibration

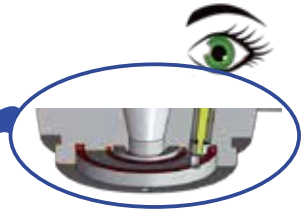
Note:
Before maintenance, clean away the dust on the surface of the head with compressed air; then use clean cloth and ethyl alcohol to clean the related parts.

Note:
When the maintenance of ceramic ring & nozzle is finished, it is necessary to calibrate every time.





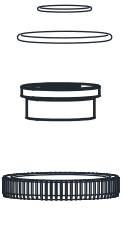




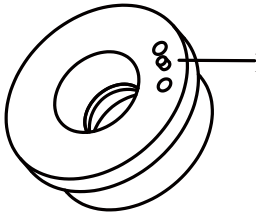
POWER

COOLING GAS

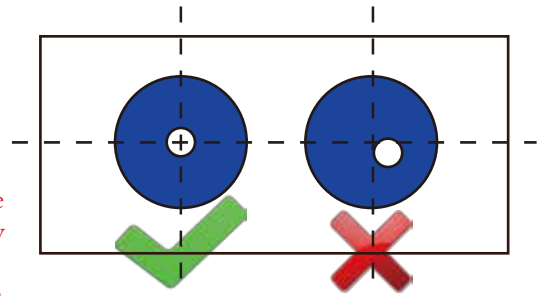
CUTTING GAS



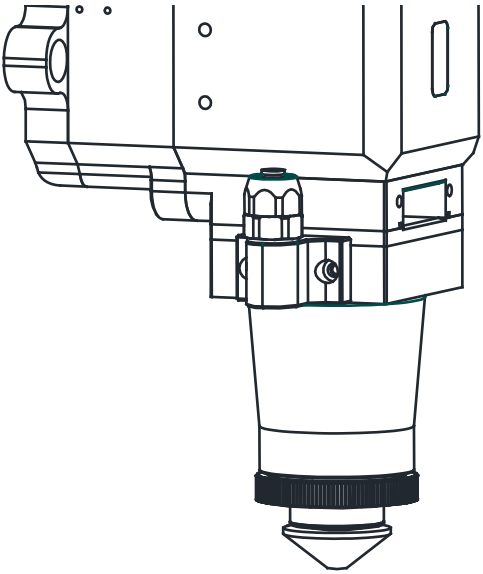
Note:
Before maintenance, clean away the dust on the surface of the head with compressed air; then use clean cloth and ethyl alcohol to clean the related parts.



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



center checking



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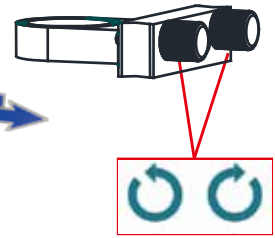
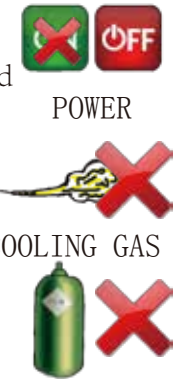
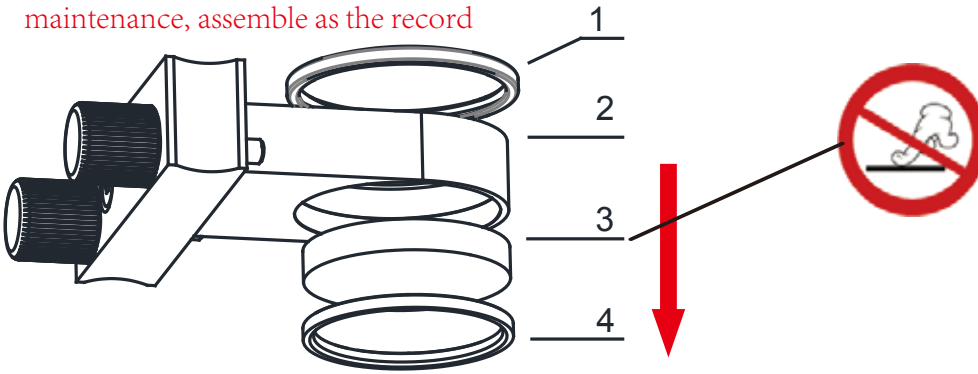




Pay attention to dustproof

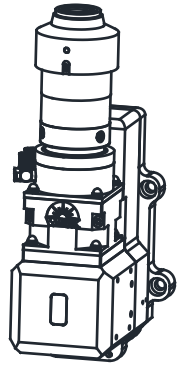
Before maintenance, record the position and orientation of the lens; After maintenance, assemble as the record



1 Slide Gasket 2 Pedestal 3 Protective Window 4 Seal Ring

Note: Parts 3~4 must be removed in the direction of the arrow, otherwise it may cause damages.

It's not necessary to take out Slide Gasket every time, but remember to check it. DO NOT operate with wrench or iron plier.

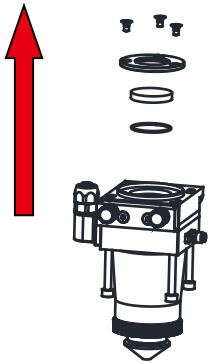


Note:
Before maintenance, clean away the dust on the surface of the head with compressed air; then use clean cloth and ethyl alcohol to clean the related parts.

POWER

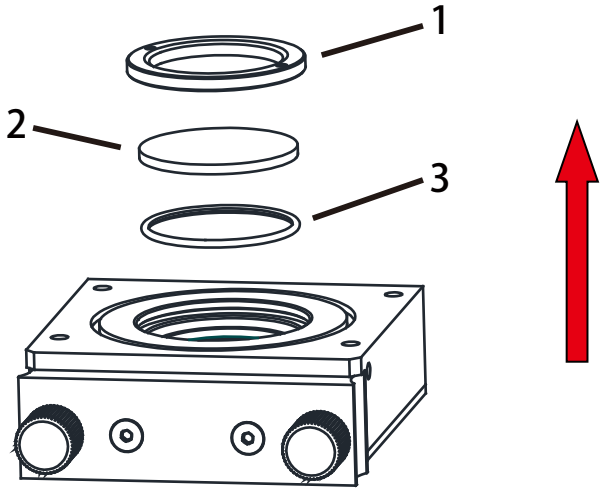
COOLING GAS

CUTTING GAS

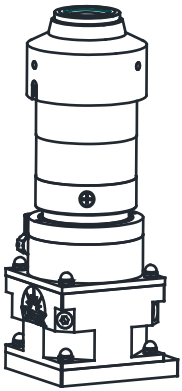


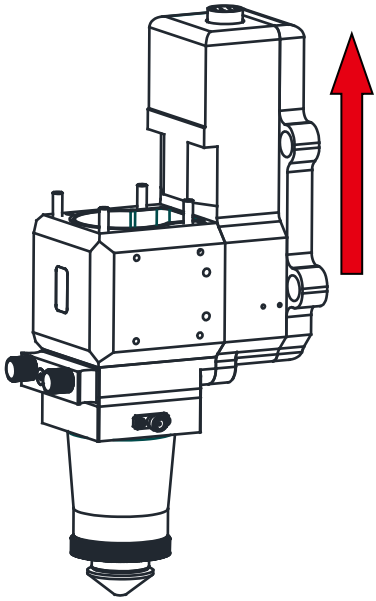
Before maintenance, record the position and orientation of the lens; After maintenance, assemble as the record

Beware of Dropping



1 Gland 2 Protective Window 3 O-Type Ring Outer30*1.0





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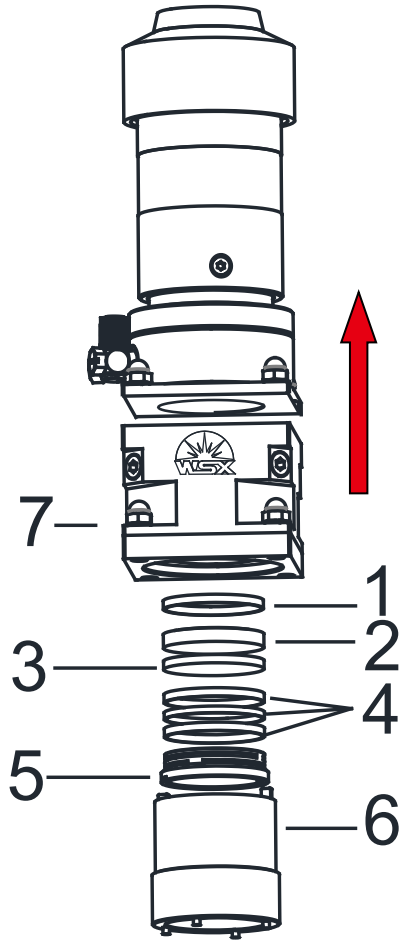


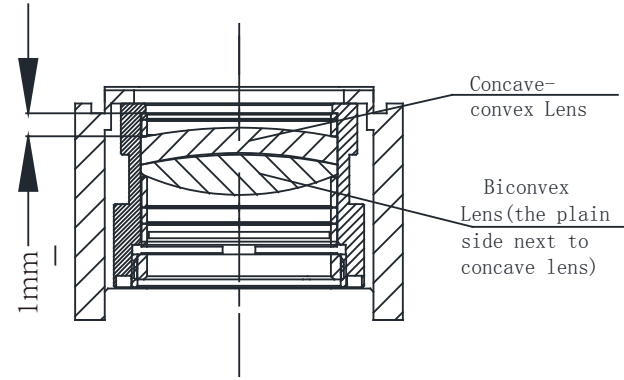
POWER

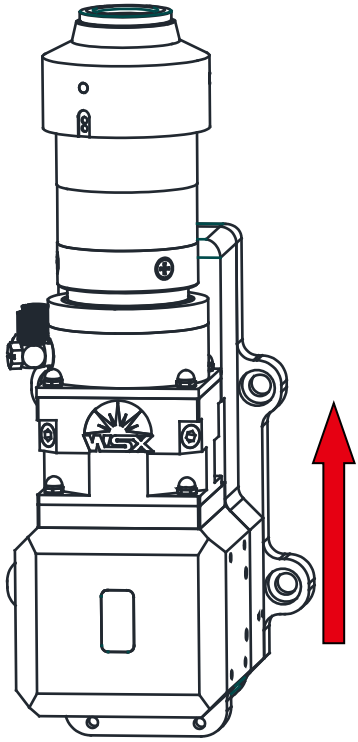
COOLING GAS

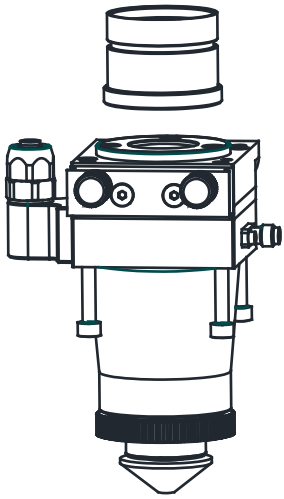
CUTTING GAS

1. Before maintenance, record the position and orientation of the lens; After maintenance, assemble as the record

2. Twist to the end and then turn backward 1/5 circle to prevent the lens being affected by temperature variation.







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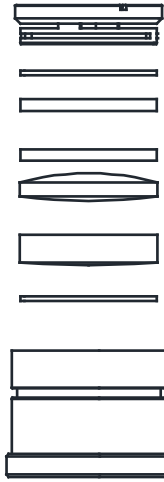
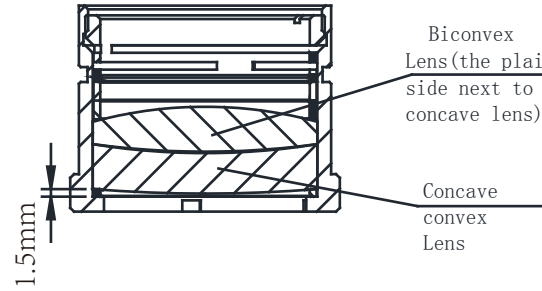


POWER

COOLING GAS

CUTTING GAS

1. Before maintenance, record the position and orientation of the lens; After maintenance, assemble as the record
2. Twist to the end and then turn backward 1/5 circle to prevent the lens being affected by temperature variation.



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