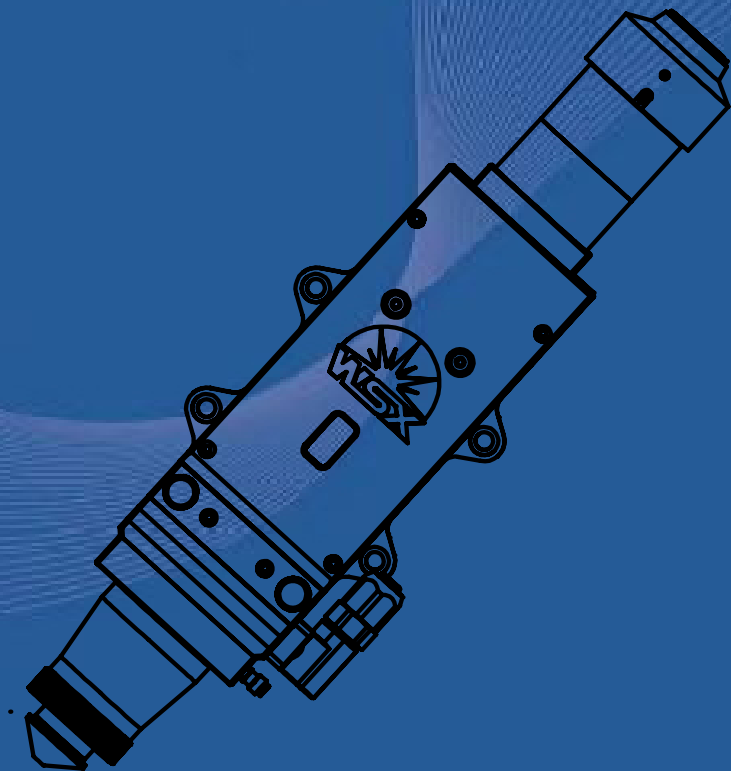


Product Instruction Manual



NC36
Fiber Automatic Focusing Cutting Head (External Drive)
V1.1



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



Instruction Change History

Serial Number	Modification Time	Version
01	2024/11/26	V1.1



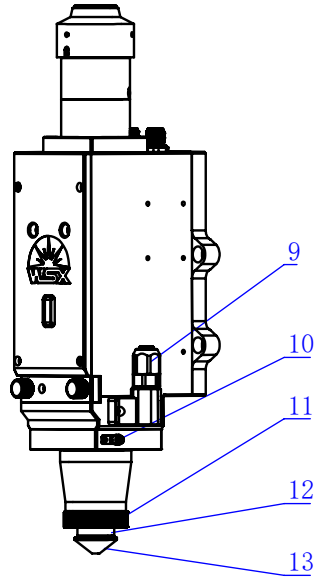
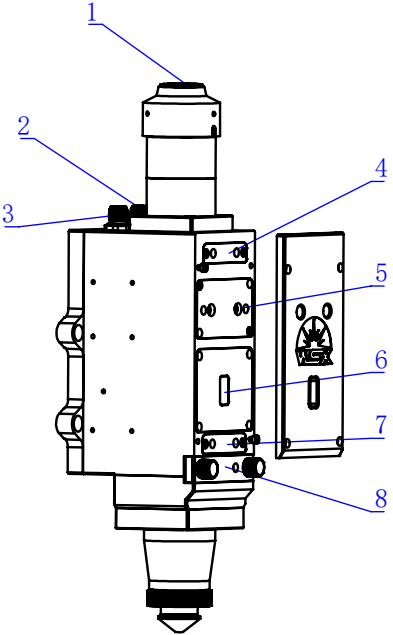
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1. Product Description

1.1 Product Views

- | | |
|---------------------------|--------------------------------|
| 1. Fiber interface | 2. 8-pin aviation socket |
| 3. 12-pin aviation socket | 4. Collimating protective lens |
| 5. Collimating lens | 6. Focusing lens |
| 7. Middle protective lens | 8. Lower protective lens |
| 9. Cutting gas interface | 10. Following signal interface |
| 11. Locking ring | 12. Ceramic ring |
| 13. Nozzle | |



Attention :



To avoid damage during storage and transportation, the following precautions should be taken:

1. The cutting head should be stored within the allowable temperature and humidity ranges.
2. The staff should adopt reasonable measures to prevent the cutting head from being vibrated or impacted.
3. Do not store the cutting head in or near a magnetic field (such as a permanent magnet or a strong alternating field).

1.2 Technical Parameters

Basic Parameters	
Cutting head model	NC36
Applicable power	4KW
Laser wavelength	1070±30nm
Fiber interface type	QBH/G5, etc.
Collimating protective lens	D25.4×4
Collimating focal length	D30×75mm/D30×100mm
Focusing focal length	D30×125mm/D30×150mm/D30×190mm
Middle protective lens	D25.4×4
Lower protective lens	D30×5
Focus adjustment range	±13mm
Centering adjustment range	±1.5mm
Cutting gas interface	10 (12 is optional), maximum 2.5 MPa
Operating temperature	3 to 55
Storage temperature	-20 to 55
Weight	Approximately 3.5 kg

2. Installation of the Cutting Head

2.1 Preparation Work

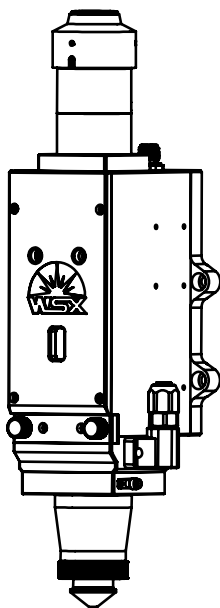
The purpose of the preparatory work is to prevent dust or dirt from entering the cutting head. You can refer to the following methods for installing the cutting head:

Before operation, the following conditions need to be met:

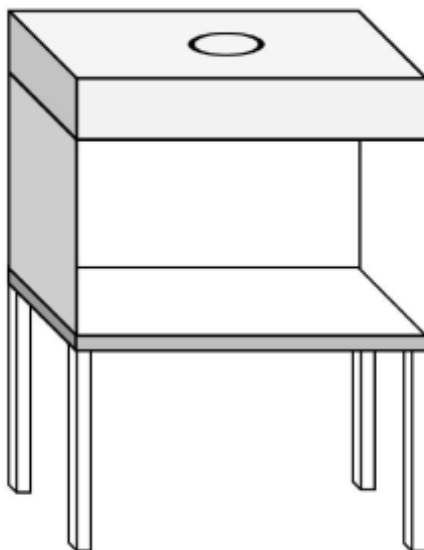
A. Cutting head

B. Clean workbench (Type of the clean workbench: vertical purification; Cleanliness class: ISO Class 5, Class 100; Average air velocity: ≥ 0.4 m/s)

C. Cleaning kit: high - intensity flashlight, absolute ethanol (or isopropyl alcohol, IPA), dust - free purification cotton swabs, dust - free cloth, compressed air dust removal canister (or air blower)



Cutting head



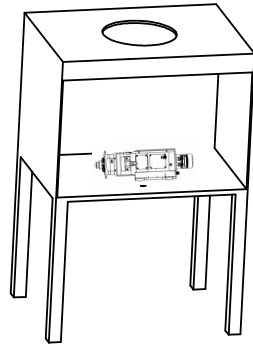
Clean workbench

2.2 Specific Operation Procedures

Prepare the clean workbench and start it to make it operational.

The clean workbench has the following specifications:

- Type: Vertical purification;
- Cleanliness level: ISO Class 5, Class 100;
- Average wind speed ≥ 0.4 m/s



Preparation:

- A. Check that the equipment meets the cleanliness requirements (use a dust particle counter to check the cleanliness), and ensure that the FFU purification unit is within its valid period (measure the average wind speed in the working area. When the wind speed cannot reach 0.3 m/s, the FFU purification unit must be replaced).
- B. Check whether all switches are functioning properly and whether the fan is operating normally.
- C. Do not place unnecessary items in the clean working area to ensure that the flow of the clean air is not disturbed.
- D. For a newly installed or long - unused clean workbench, clean it thoroughly with a dust - free cloth soaked in absolute ethanol before use.

Startup and Use:

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

Special Instructions:

- A. Only trained professional personnel are allowed to operate the equipment.
- B. If operators do not follow the safety work regulations, it may pose risks 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 Cleaning and Wiping the Fiber Optic Connector of the Cutting Head

Use a dust-free cloth dipped in absolute ethanol to wipe the fiber optic interface of the cutting head.

2.4 Inspecting the Fiber Optic End Face of the Laser

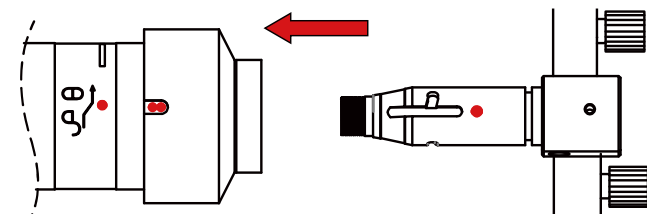
Remove the protective cap of the laser fiber. Shine a high-intensity flashlight on the fiber optic end face to check for contamination. If it is clean, the fiber can be directly inserted. If it is dirty, clean it with a cotton swab dipped in absolute ethanol or IPA.

2.5 Removing the Protective Film/Cap

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

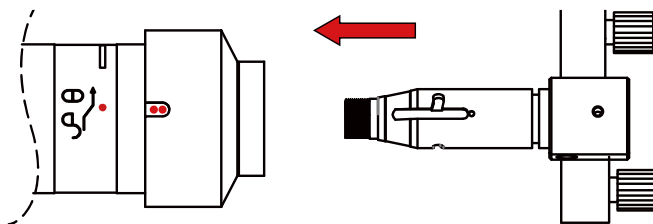
2.6 Connecting the Fiber Optic Interface

- (1) First, place the fiber rod and the fiber connector in a horizontal position.
- (2) Clean the fiber rod and the fiber connector with a dust-free cloth and absolute ethanol.



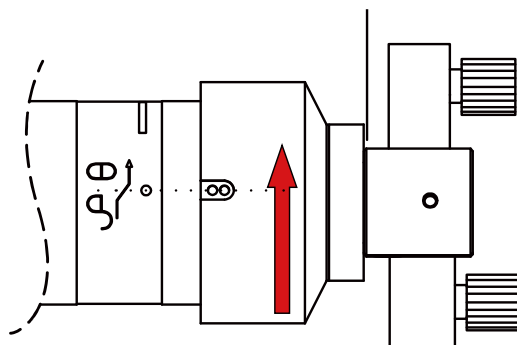
Ensure that the red dots are in the same straight line.

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



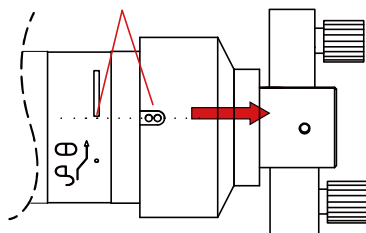
- (4) After inserting the fiber rod all the way in, rotate the red mark on the rotating sleeve in the direction of the arrow until it reaches within the white marking.

First, align them.



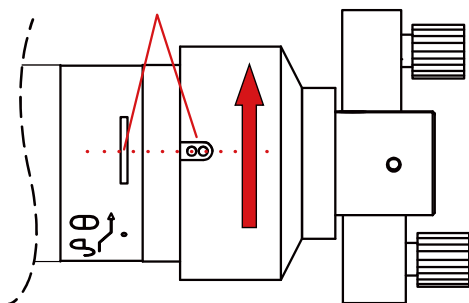
(5) Then pull up the rotating sleeve in the direction shown in the illustration.

First, align it, and then pull it up.



(6) Gently rotate the rotating sleeve again in the direction shown in the illustration with moderate force. Usually, you can feel it locking (you can twist it with your thumb and index finger).

It's okay if it's aligned or exceeds the middle position, but make sure not to twist it further once it's in place.



Note! Do not twist it forcefully, as it may damage the precision mechanism!

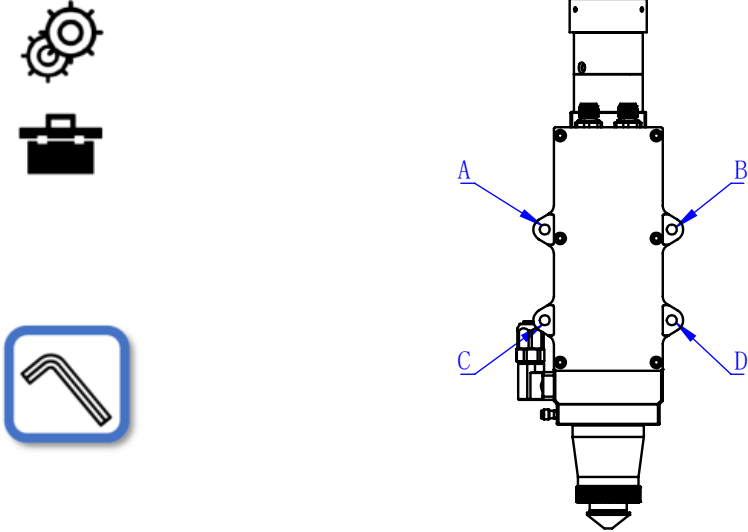


To prevent dust or dirt from accidentally entering the fiber connector, clean the fiber rod part first!

Place the laser head in a horizontal position before inserting the fiber plug.

2.7 Install the cutting head on the Z - axis of the cutting machine

Install the cutting head onto the backplate of the machine tool's Z - axis using four screws labeled A, B, C, and D. When fixing the cutting head to the machine tool, it is essential to ensure that the cutting head is tightly locked and does not shake.

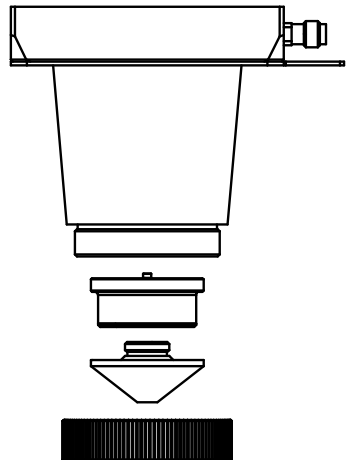


2.8 Install the ceramic ring and the nozzle

Install the ceramic ring and lock it firmly. Then, install the nozzle.



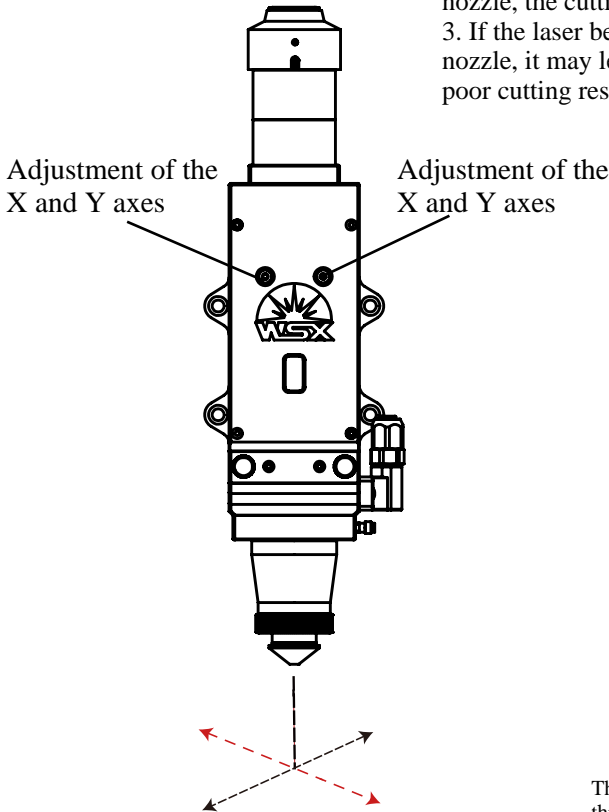
Tighten the nozzle on the ceramic ring by hand, and use a wrench to tighten the ceramic locking ring.a



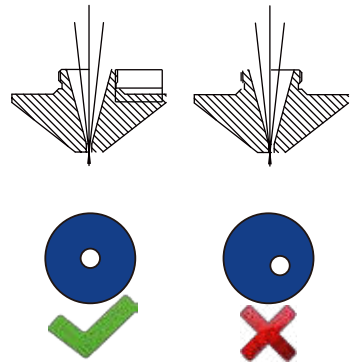
3. Use and maintenance of the cutting head

3.1 Coaxial adjustment

1. Use an Allen wrench to adjust the X/Y horizontal adjustment screws of 1 and 2 so that the laser beam passes through the center of the nozzle.
2. When the laser beam passes through the center of the nozzle, the cutting effect is the best.
3. If the laser beam does not pass through the center of the nozzle, it may lead to issues such as no light output and poor cutting results.



Method for detecting whether the laser beam passes through the center of the nozzle :

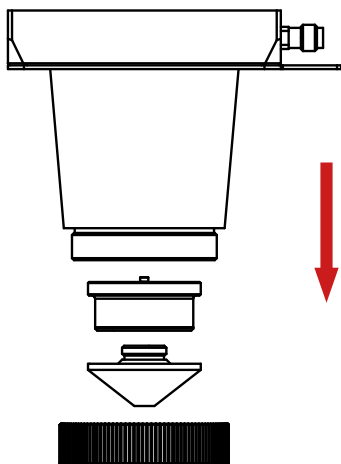


The laser beam passes through the center of the nozzle (Correct)

The laser beam does not pass through the center of the nozzle (Incorrect)

1. Stick transparent tape on the nozzle opening (it is best to use a new or non - deformed nozzle).
2. Adjust the power of the laser to about 50W (for example, for a 500W laser, adjust the single - pulse power to 10%).
3. Emit the laser for 1 - 2 seconds, then remove the transparent tape.
4. Hold the transparent tape facing a lighting source and observe whether the circular mark of the nozzle on the tape is concentric with the burning point where the laser penetrates the tape.
5. If they are concentric, the adjustment result is qualified. If not, continue the adjustment until it is qualified.

3.2 Replacement of the ceramic ring and nozzle



Power Supply



Cooling Gas

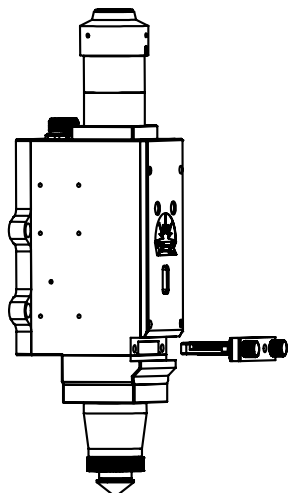


Cutting Gas



Center Alignment

3.3 Replacement of the lower protective lens



Disassembly method: Loosen the locking stud and then take out the drawer.



Power Supply

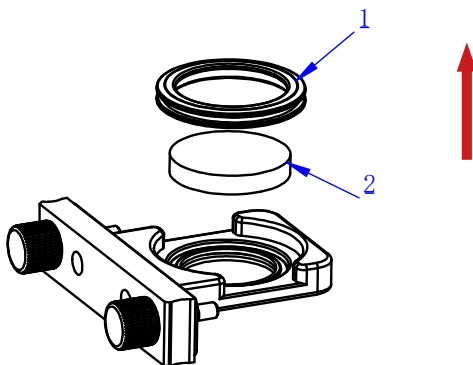


Cooling Gas



Cutting Gas

Dust - prevention note: Wear dust - proof gloves and finger cots when disassembling and assembling the lens, and the operation should be carried out in a clean place. (When replacing the lens on - site, you can use masking tape to seal the window to prevent dust from entering the interior and causing contamination.)

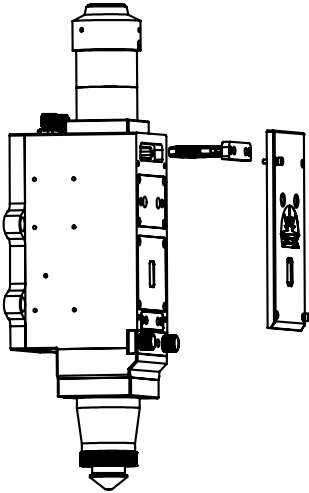


1. Pressure Cap 2. Protective Lens (D30x5)



Disassembly method: Pull the pressure cap upward as indicated by the arrow. Do not use tools such as wrenches or pliers, otherwise the parts will be damaged.

3.4 Replacement of the collimating protective lens



Caution against dropping



Power Supply



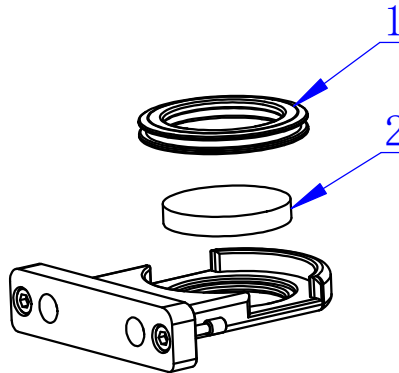
Cooling Gas



Cutting gas

Disassembly method: Remove the cover plate, pull out the drawer horizontally, and take out the pressure cap.

Dust - prevention note: Wear dust - proof gloves and finger cots when disassembling and assembling the lens, and the operation should be carried out in a clean place. (When replacing the lens on - site, you can use masking tape to seal the window to prevent dust from entering the interior and causing contamination.)

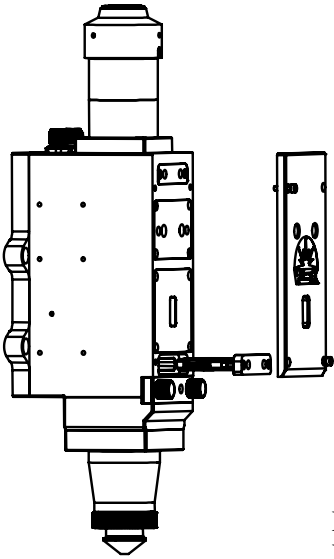


1. Pressure Cap 2. Protective Lens (D25.4x4)

Disassembly method: Pull out the pressure cap 1 and take out the protective lens 2. Do not use tools such as wrenches or pliers, otherwise the parts will be damaged.



3.5 Replacement of the middle protective lens



The operation should be carried out on a dust-free workbench.



Power Supply



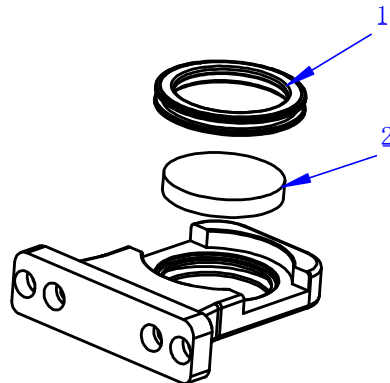
Cooling Gas



Cutting Gas

Disassembly method:

Remove the cover plate, then loosen the anti-drop screws on the dust cover, and horizontally pull out the drawer with the protective lens.

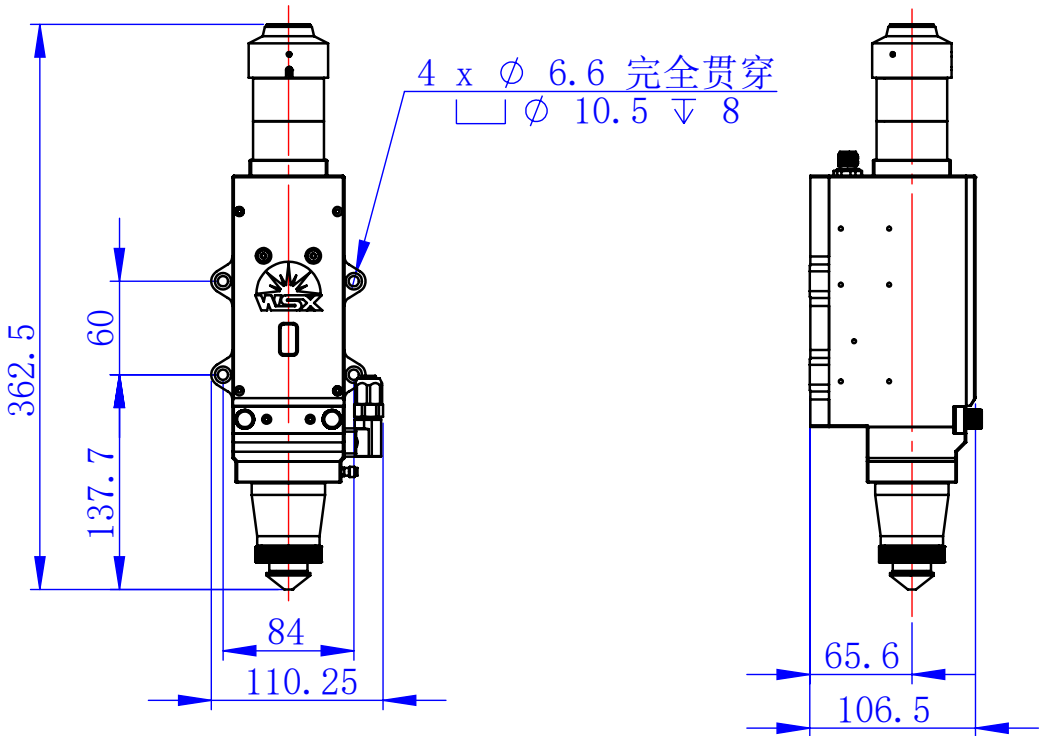


1. Pressure Cap 2. Protective Lens (D25.4x4)



Disassembly method: Vertically pull out the pressure cap 1 upwards, and then pull out the lens upwards as indicated by the arrow. Do not use tools such as wrenches or pliers, otherwise the parts will be damaged.

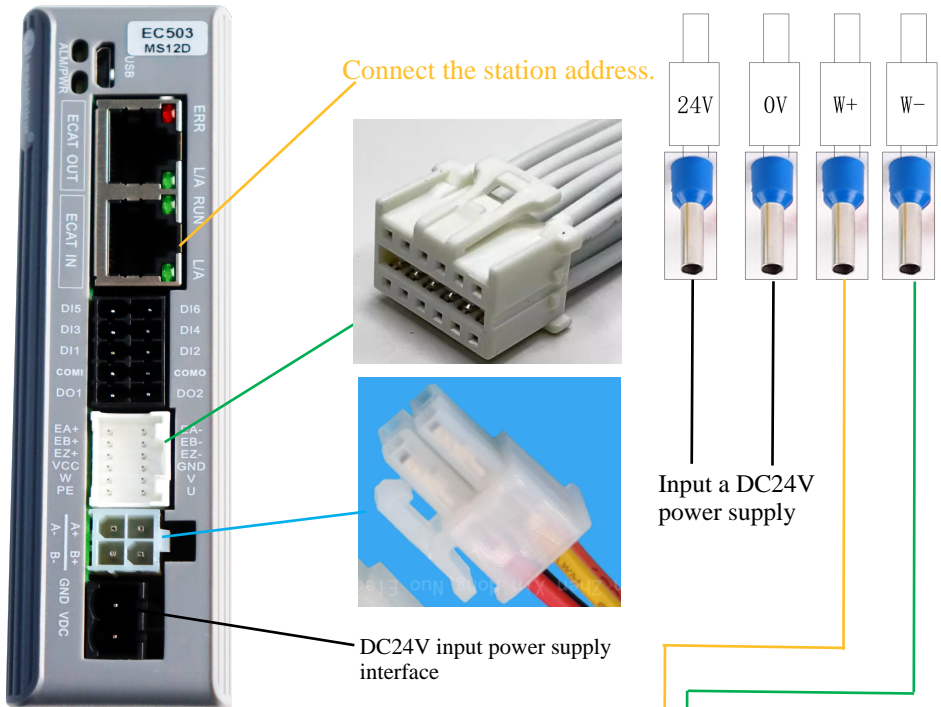
4. Installation dimensions of the cutting head



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

5. Electrical wiring instructions

5.1 Wiring diagram for the BOCHU bus system

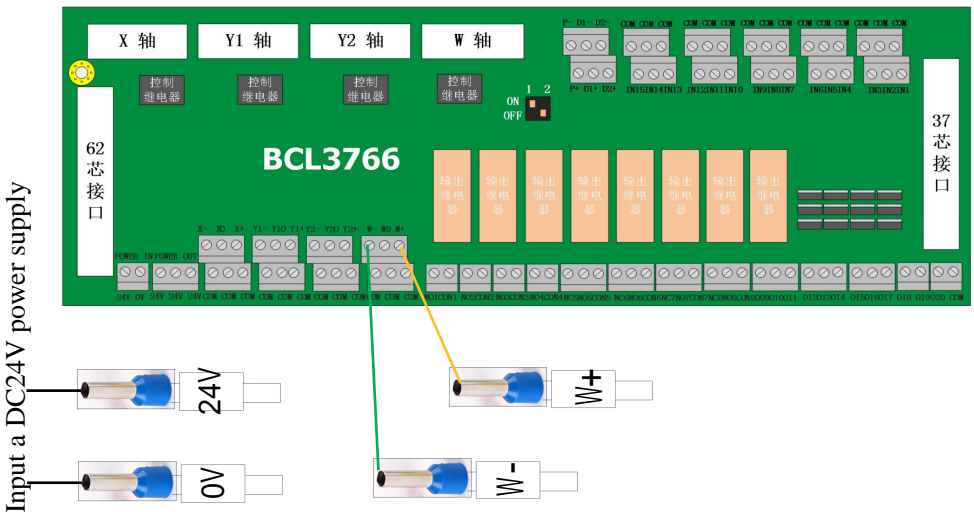
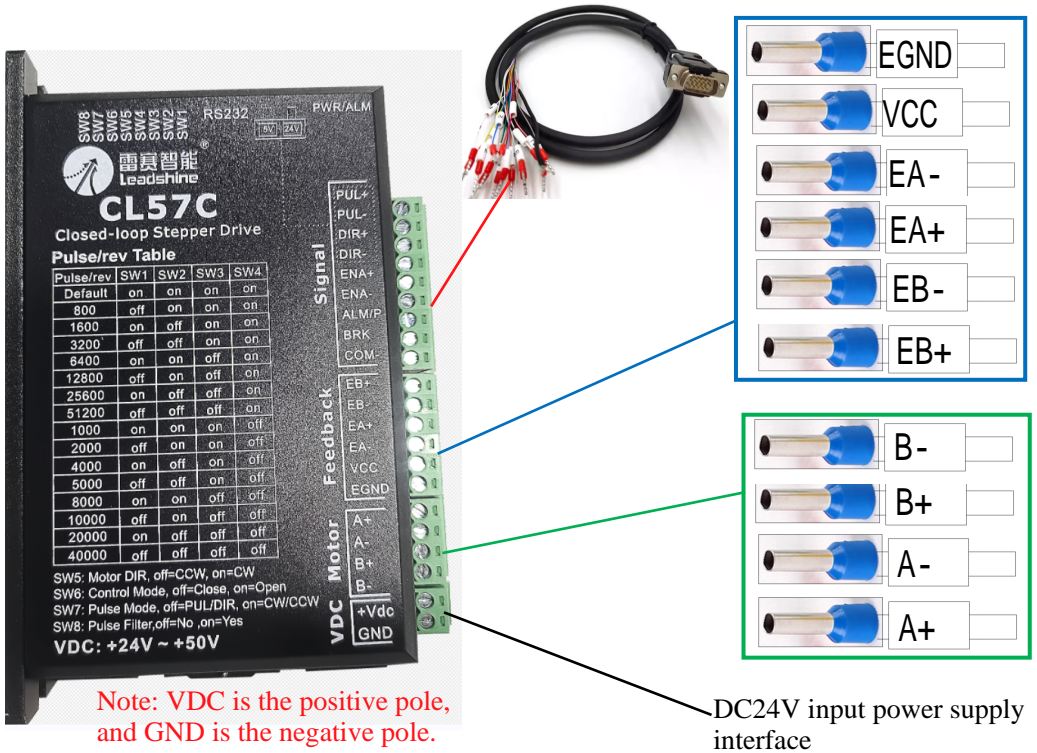


Note: VDC is the positive pole, and GND is the negative pole.



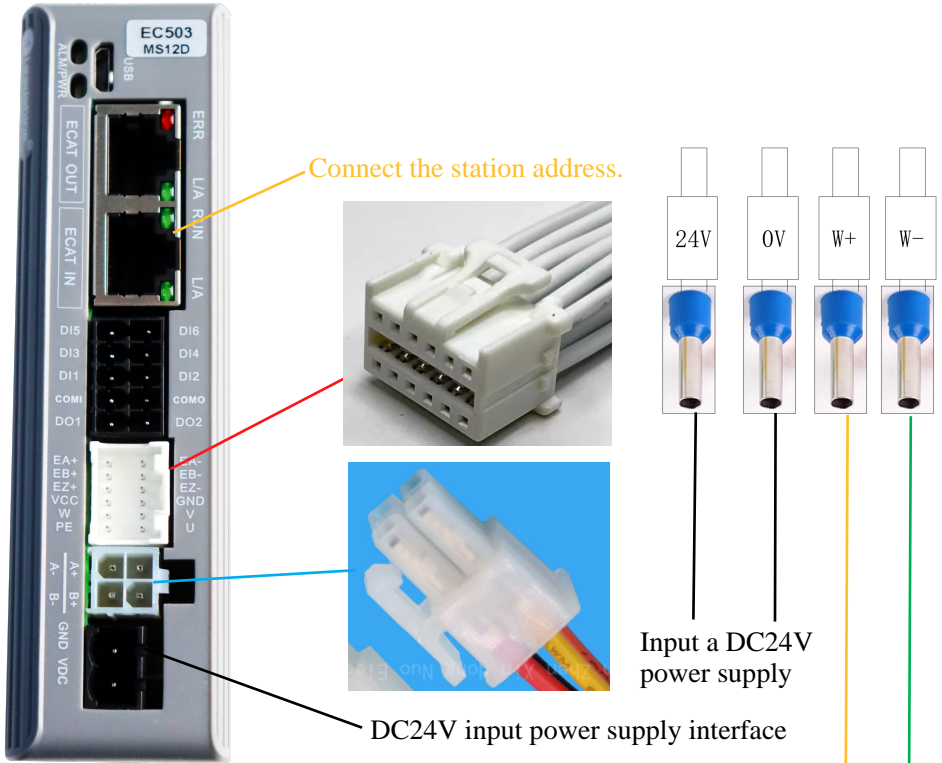
When arranging the electrical cabinet, separate the strong and weak electrical circuits, keep away from high - power and strongly interfering devices, and ensure good grounding of the equipment.

5.2 Wiring diagram for the BOCHU pulse system

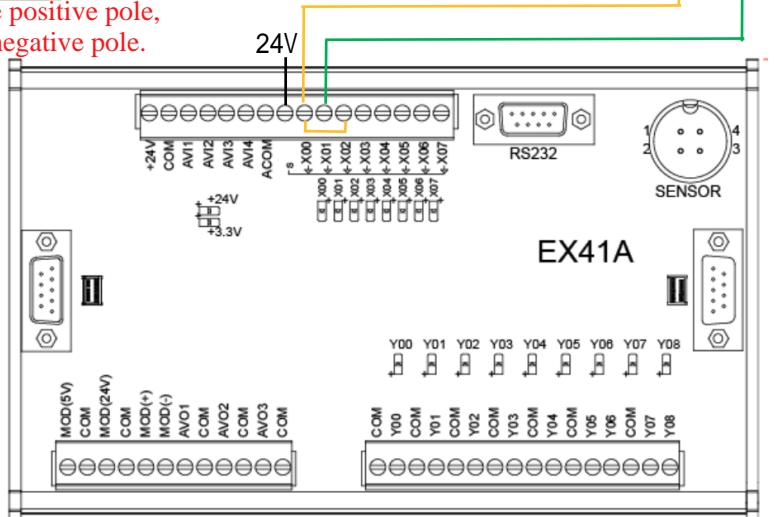


When arranging the electrical cabinet, separate the strong and weak electrical circuits, keep away from high-power and strongly interfering devices, and ensure good grounding of the equipment.

5.3 Wiring diagram for the WEIHONG bus system

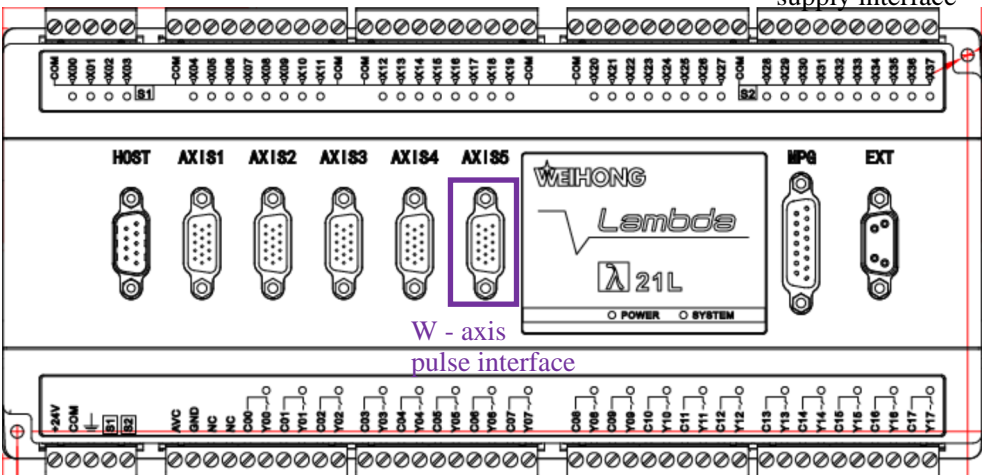
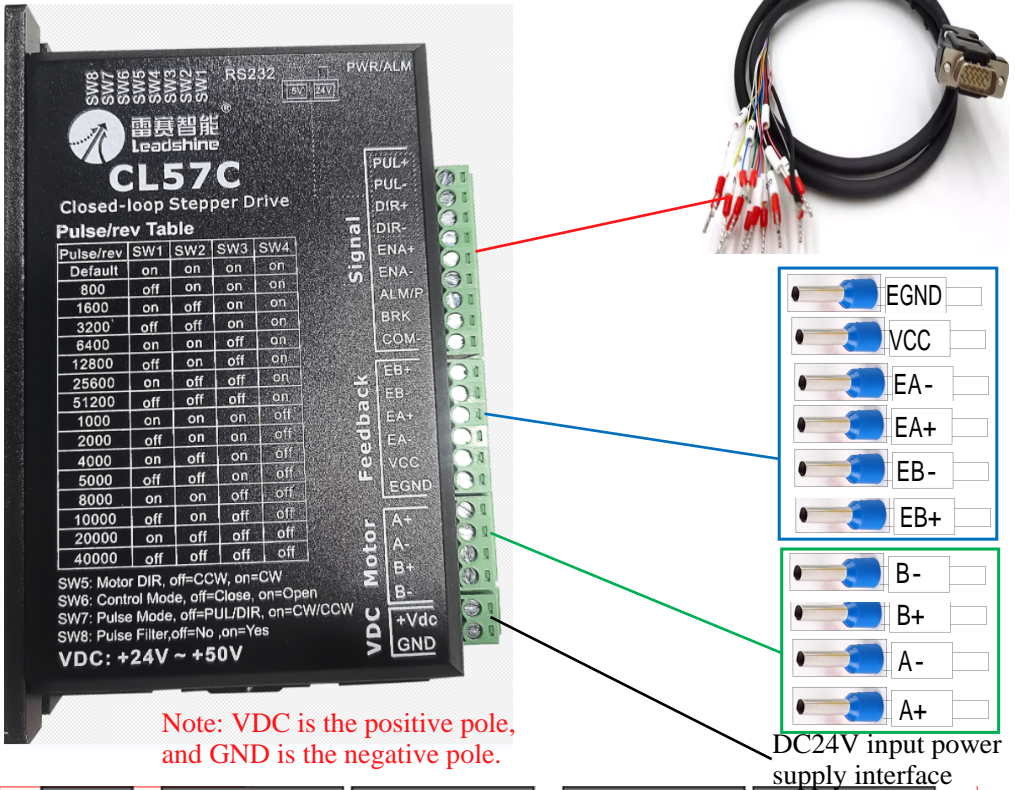


Note: VDC is the positive pole, and GND is the negative pole.



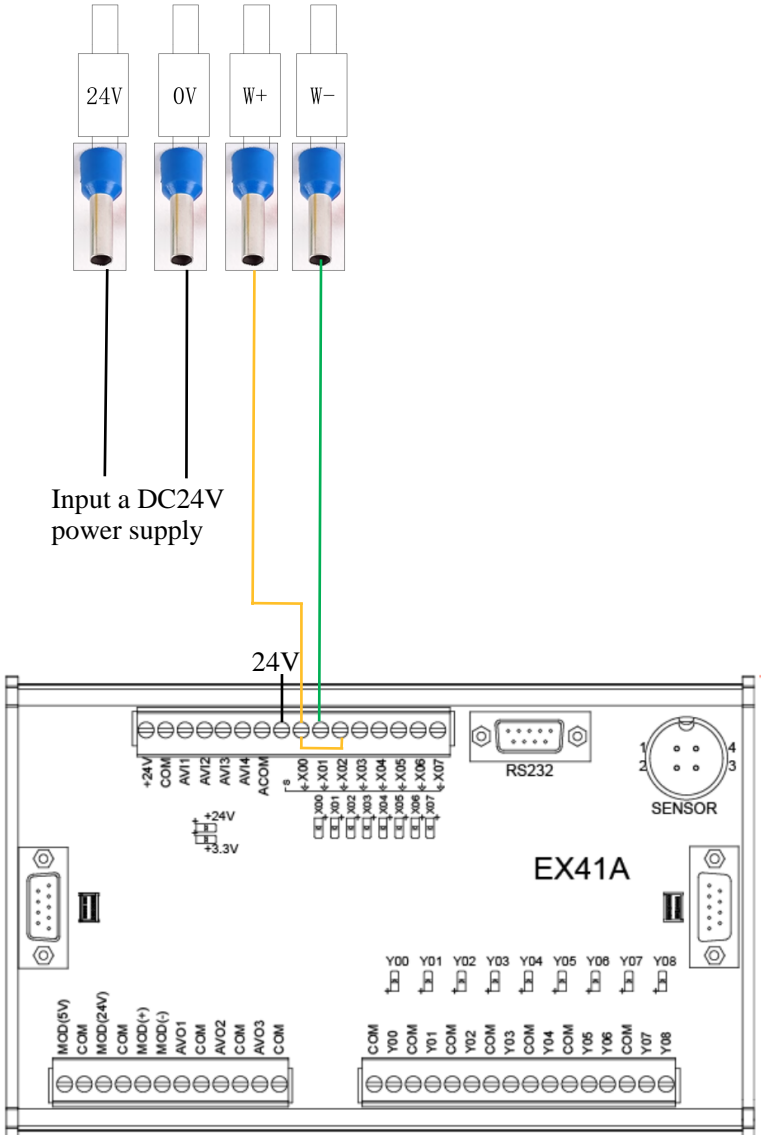
When arranging the electrical cabinet, separate the strong and weak electrical circuits, keep away from high - power and strongly interfering devices, and ensure good grounding of the equipment.

5.4 Wiring diagram 1 for the WEIHONG pulse system



When arranging the electrical cabinet, separate the strong and weak electrical circuits, keep away from high-power and strongly interfering devices, and ensure good grounding of the equipment.

5.5 Wiring diagram 2 for the WEIHONG pulse system



When arranging the electrical cabinet, separate the strong and weak electrical circuits, keep away from high - power and strongly interfering devices, and ensure good grounding of the equipment.



6. System parameter configuration instructions

6.1 Parameter configuration for the BOCHU pulse system

Machine Config Tool(BMC1604)

Focus Control

Enable

The fourth axis Precitec HighTAG ECLA516E [No Connection]

Focus Range: From to

Focus position at org:

Pulse Rate: Move need pulse

High Speed: Org Dir: Pos Neg

Low Speed: ORG signal: [Limit]

Rollback distance:

Jog speed:

Locate Speed:

acceleration:

Servo Alarm Logic:

Negative Limit Logic:

Positive Limit Logic:

Note:
The focal positions of lasers from different brands may vary. Therefore, the retraction distance should be adjusted according to the actual zero - focal point on - site.

6.2 Parameter configuration for the BOCHU bus system

Cutting head selection

Cutting head: Center Alignment...

Basic parameters

Focus range: mm to mm

Focus position at origin: mm

Jog speed: mm/s

Positioning speed: mm/s

Acceleration: mm/s²

Return origin setting

Return direction:

Sampling signal:

High speed: mm/s

Low speed: mm/s

Backward: mm

Use Z phase signal

Motor setting

Axis number: Control mode:

Screw lead: mm Reduction ratio:

Pulses per revolution: Motor direction:

Limits-: Limit- logic:

Limit+: Limit+ logic:

Servo parameters

Write in servo parameter

Inertia: kg/cm² Inertia ratio: % Rated torque: N*m

Position loop parameters

P proportional gain: 1/s

Position loop integral Ti: ms

Position loop differential Td: ms

Velocity feed forward Vff: %

Velocity feed forward...: %

Velocity loop parameter

Velocity loop gain Kv: 1/s

Velocity loop differential Ti: ms

Velocity loop differential Td: ms

Acceleration feed forward Vff: %

Acceleration feed forward offset: %

Do not modify the parameters in the yellow area.

Note: The focal positions of lasers from different brands may vary. Therefore, the retraction distance should be adjusted according to the actual zero - focal point on - site.

6.3 Parameter configuration for the WEIHONG Axis pulse system

Name	Value	Unit	Effective
Encoder Direction(W)	1		Immediately
Axis Direction(W)	1		Immediately
Pulse Equivalent(W)	0.0002	mm/p	Immediately
Command Pulse Count Per Rev	10000		Immediately
Feedback Pulse Count Per Rev	10000		Immediately
Upper Limit of Soft Limit (W)	13	mm	Immediately
Lower Limit of Soft Limit (W)	-13	mm	Immediately
Enable Soft Limit Protection (W)	Yes		Immediately
Max Speed of Axis (W)	9000	mm/min	Immediately

Name: Encoder Direction(W)
Value: 1
Desc.: W-axis relations between the directions of handwheel turning and axis motion. -1: Opposite direction, 1: Same direction.

Operation process: Click on “Manufacturer” > Enter the password: NcStudio > Enter and modify the parameters of the W - axis.

Name	Value	Unit	Effective
Use Z Phase Signal(W)	No		Immediately
Coarse Positioning Direction(W)	1		Immediately
Coarse Positioning Speed(W)	600	mm/min	Immediately
Fine Positioning Speed(W)	60	mm/min	Immediately
Retract Distance(W)	13	mm	Immediately
Retract Speed(W)	200	mm/min	Immediately
Min Distance between Coarse a	0.5	mm	Immediately

Name: Use Z Phase Signal(W)
Value: No
Desc.: Whether to use the Z-phase signal. Yes: Z phase signal is used in the homing fine positioning stage; No: Machine origin signal is used in the homing fine positioning stage.

Note: The focus positions of lasers from different brands may vary. Therefore, the retraction distance should be adjusted according to the actual zero - focus on site.

Operation process: Modify the origin parameters of the W - axis.



6.4 Parameter configuration for the WEIHONG bus system

CommonParam System Parameters Drive Setting Follow Laser Device Setting Machine Maintenance Regular Reminder

Search

Name	Value	Unit	Effective
1.0.3 W-axis			
Drive station address 1(W)	5		After Restart
Drive station address 2(W)	15		After Restart
Offset address within drive station	0		After Restart
Axis Direction(W)	1		Immediately
Screw Pitch(W)	2	mm	Immediately
Encoder Digits(W)	13		Immediately
Encoder Type(W)	0		After Restart
Numerator of Electronic Gear Rati	1		Immediately
Denominator of Electronic Gear R	1		Immediately
Upper Limit of Soft Limit (W)	13	mm	Immediately
Lower Limit of Soft Limit (W)	-13	mm	Immediately
Enable Soft Limit Protection (W)	Yes		Immediately
Max Speed of Axis (W)	20000	mm/min	Immediately
Check Axis Encoder Error(W)	No		Immediately
Encoder Static Tolerance(W)	0.1	mm	Immediately
Encoder Dynamic Tolerance(W)	40	mm	Immediately

Manufacturer

Name: Drive station address 1(W)
Value: 5
Desc.: Slave Station Address(W)

**Note: Click on "Manufacturer"
Password: NcStudio > Enter**

Machine Technic Monitor Report **Set** Maintain Advanced

Operation process: Settings > System Parameters > 1.0 Axis Param > 1.03 W - axis

CommonParam System Parameters Drive Setting Follow Laser Device Setting Machine Maintenance Regular Reminder

Search

Name	Value	Unit	Effective
1.1.4 Origin Setting(W)			
Use Z Phase Signal(W)	No		Immediately
Coarse Positioning Direction(W)	1		Immediately
Coarse Positioning Speed(W)	600	mm/min	Immediately
Fine Positioning Speed(W)	60	mm/min	Immediately
Retract Distance(W)	13	mm	Immediately
Retract Speed(W)	200	mm/min	Immediately
Min Distance between Coarse anc	0.5	mm	Immediately
Enable Latch(W)	Yes		Immediately
Absolute Encoder Back Home(W)	1		Immediately

Manufacturer

Name: Use Z Phase Signal(W)
Value: No
Desc.: Whether to use the Z phase signal. Yes: Z phase signal is used in the homing fine positioning stage; No: Machine origin signal is used in the homing fine positioning stage;

Machine Technic Monitor Report **Set** Maintain Advanced

13

Operation process: Set > System Parameters > 1.1 Origin settings > 1.14 Origin setting (W)



6.5 Focus control options for the WEIHONG bus system

Common Param	System Parameter	Drive Setting	Follow-up Control	Laser Device Setting	Machine Maintenance Regular Reminder
GOTO					
Name					
Value					
Unit					
Effective					
3.5.1 General Parameters					
Enable focus control Yes After Restart					
Focus Control Type 0 After Restart					
3.5.2 Cutters					
Cutting head type 0 After Restart					
3.5.3 General Focus Control Parameters					
Focus compensation type 1 After Restart					
3.5.4 Focus Control Parameters					
Precitec Focus Reached Check Del 1000 ms Immediately					
Focus Go Home Confirm Delay 100 ms Immediately					
Precitec Go Home Check Delay 20 s Immediately					
Precitec Focus Confirm Delay 100 ms Immediately					
Precitec focus adjustment delay 15 ms Immediately					

Manufacturer: Name: Enable focus control
Value: Yes
Description: Whether to enable focus control.

Machining Tech monitoring Report **Set** Maintain Advanced

Operation process: Set > System Parameters > 3.5 Focus Control > Make changes according to the content within the red frame.

Follow	Laser Device Setting	Machine Maintenance Regular Reminder			
CommonParam	System Parameters	Drive Setting			
No.	Param Name	Param Value	Unit	Effective	Rd
2000-00	Peak current	25	0.1A	Immediately	0
2001-00	Subdivision	8192	Pulse	After Power	200
2010-01	Filter time	100	0.1ms	Immediately	0
2012-00	Power-on axis lock current increase duration	1	100ms	Immediately	1
2013-00	Current loop power-on auto-tuning	1	-	Immediately	0
2019-01	In-place pulse compensation	1	-	Immediately	0
2019-02	Disablement in-place mode	0	-	Immediately	0
201a-01	Power-on axis lock current percentage	100	%	Immediately	0
201a-02	Open loop holding current percentage	50	%	Immediately	0
201a-03	Closed loop holding current percentage	50	%	Immediately	0
201b-00	Power-on axis lock duration	200	ms	Immediately	0
201c-00	Maximum parking duration	1000	ms	Immediately	100
201d-00	Zero-speed threshold	10	0.1r/s	Immediately	0
2024-00	Mode selection	2	0.1r/s	Immediately	0
2025-01	Open-to-closed loop switching speed thresho	18	0.1r/s	Immediately	0
2025-02	Open-to-closed loop switching delay	12	ms	Immediately	0
2025-03	Closed-to-open loop switching speed thresho	5	0.1r/s	Immediately	0
2025-04	Closed-to-open loop switching delay	250	ms	Immediately	0
2025-05	Closed-to-open loop switching feedback spee	50	0.1r/s	Immediately	0
2029-00	Encoder resolution	8000	Pulse	After Power	200
2030-00	Position out-of-tolerance value	4000	Pulse	Immediately	0
2032-00	In-place pulse number	4	Pulse	Immediately	0
2033-00	In-place position error debouncing delay	3	ms	Immediately	0
2047-00	Overvoltage threshold	90	V	Immediately	0
2051-00	Motor movement direction	0	-	Immediately	0
2056-00	Fault dectcion	65535	-	Immediately	0
2073-00	Automatic operation upon power-on	0	-	Immediately	0
2099-01	Current loop Ka	1000	-	Immediately	0

Refresh(R) **W-axis** Import(D) Export(F) Show Common Factory Reset(H)

Machine Technic Monitor Report **Set** Maintain Advanced

Operation process: Set > Driver Setting > Select the W - axis > Subdivision > Change to: 8192 > Save > Power off the driver.

6.6 Polarity modification for the WEIHONG system (Regardless of whether it is a bus system or a pulse system)

External Device	Port Setting	Log List	
Address	Polar	Sampling	Description
EX33.Fin0	NO	S1ms	In idle
EX33.Fin1	NO	S1ms	Command positioning
EX33.Fin2	NO	S1ms	Servo calibration
EX33.Fin3	NO	S1ms	Following
EX33.Fin4	NO	S1ms	To berth point
EX33.Fin5	NO	S1ms	Dry running
EX33.Fin6	NO	S1ms	Follow-up error
EX33.Fin7	NO	S1ms	Capacitance curve calibration
EX33.Fin8	NO	S1ms	Follow-up system not calibrated
EX33.Fin9	NO	S1ms	Leapfrog
EX33.Fin10	NO	S1ms	Leapfrog command error
EX33.Fin11	NO	S1ms	Part touching alarm
EX33.Fin12	NO	S1ms	Follow-up ready
EX33.Fin13	NO	S1ms	Follow-up lower limit
EX33.Fin14	NO	S1ms	Capacitance Jump
EX33.Fin15	NO	S1ms	Plugging is too deep
EX33.Fin16	NO	S1ms	Follow-up upper limit
EX33.Fin17	NO	S1ms	Z-axis Stop Status
EX33.Fin18	NO	S1ms	Reached plane position
EX33.X00	NC	S4ms	W-axis machine origin/W-axis positive limit
EX33.X01	NC	S4ms	W-axis negative limit
EX33.X04	NO	S4ms	Low Lubrication Pressure
EX33.X05	NO	S4ms	Precittec Alarm
EX33.X06	NO	S4ms	Precittec Focus Reached
EX33.SR_Alarm	NC	S1ms	Z-axis servo alarm
EX33.SR_Zero	NO	S1ms	Z-axis encoder origin
EX31A.X00	NO	S4ms	Exchange Workbench
EX31A.X01	NO	S4ms	Release Machine Bed
EX31A.X02	NO	S4ms	Machine Bed Released
EX31A.X05	NO	S4ms	Exchange Workbench Locked
EX31A.X06	NC	S4ms	Protection Door Up In Position
EX31A.X07	NO	S4ms	Negative Limit of Axis Z (Upper)
EX31A.X08	NO	S4ms	Down Workbench In
EX31A.X09	NO	S4ms	Up Workbench In

External Device	Port Setting	Log List	
Address	Polar	Sampling	Description
LDSE-04.Axis0_Enable			X-axis enable
LDSE-04.Axis1_Enable			Y-axis enable

Test On Test Off Cancel Test Cancel All Filter Convert

Draw
 Machine
 Technic
 Monitor
 Report
 Set
 Maintain
 Advanced

Axis554 WorkCoor Feedback Low

X 0.000 0.000 6000 r/min
 Y 0.000 0.000 6000 r/min
 Z 0.000 0.000 1200 r/min
 W 0.000 0.000

Simu Speed 100%

Operation process: Click on “ Monitor” > Port settings > Check if the simu polarities are consistent. If not, modify the polarities.

7. Query of drive fault codes

7.1 Alarm codes for pulse - type drives

ALM Flashing Times	Name	Solutions
1	Over - current protection	<ol style="list-style-type: none"> 1. Check the connection between the motor winding and the drive, then restart the drive. If there is no alarm, check whether there are any abnormalities in the motor and the motor power cable. 2. Disconnect the motor winding cable from the drive and restart the drive. If the drive still gives an alarm, the drive is damaged.
2	Over - voltage protection	<ol style="list-style-type: none"> 1. Restart the drive. 2. If the alarm still exists after restarting the drive, check if the power supply voltage is too high.
3	Operational amplifier error	<ol style="list-style-type: none"> 1. Restart the drive. 2. If the alarm still exists after restarting the drive, there is a hardware fault in the drive.
4	Axis locking error	Check if the motor power cable is broken.
5	Storage error	Connect the drive to the host computer using the RS232 debugging port and restore the drive to the factory settings. If the alarm still exists after restoring to the factory settings, there is a hardware fault in the drive.
6	Motor parameter self - tuning error	<ol style="list-style-type: none"> 1. Restart the drive. 2. If the alarm still exists after restarting the drive, switch the DIP switch SW6 to the “ on” state.
7	Excessive tracking error	<ol style="list-style-type: none"> 1. Check if the “ Motor resolution” in the parameter list is set correctly. 2. Check the wiring between the motor and the drive to see if the phase sequence is wrong (whether the corresponding pins of motor A+/A-, encoder A+/A-, B+/B- are connected correctly). 3. Check if the encoder cable is broken. 4. Appropriately increase the acceleration time. 5. Check if the motor is stalled.
Motor rotation direction error	Incorrect motor direction setting	The state of DIP switch SW5 is set incorrectly.
Motor not rotating	No pulse signal	Check if the connection of the pulse signal cable is correct.
The motor only rotates in one direction	1. Incorrect pulse mode selection	1. Check if the pulse mode of SW7 is set correctly.
	2. No direction signal	2. Check if the connection of the direction signal cable is correct.
The green light is not on	Power is not supplied	Check if the power supply of the drive is correctly connected.

7.2 Alarm Codes for Bus-type Drives

ALM Flashing Times	Name	Solutions
1	Overcurrent protection	<ol style="list-style-type: none"> 1. Ensure that the drive output lines are not short-circuited and the motor is not damaged. 2. Adjust the wiring sequence of the motor. 3. Replace the drive with a new one.
2	Overvoltage protection	<ol style="list-style-type: none"> 1. Reduce the power supply voltage at the VDC/GND terminals. 2. Decrease the acceleration and deceleration.
3	Excessive command pulse increment	Check if the parameter subdivision is correct.
4	Axis locking error	<ol style="list-style-type: none"> 1. Ensure that the wiring of the motor output terminals A+, A-, B+, and B- is correct. 2. Ensure that the motor cables are not broken. 3. Ensure that the encoder power supply voltage is normal, the encoder cables are intact, and the encoder ground connection is good.
6	Self-tuning error	Check if there is any jamming in the motor screw structure.
7	Position out-of-tolerance	<ol style="list-style-type: none"> 1. Restart the drive. 2. If the alarm still exists after restarting the drive, check if the motor power lines are short-circuited. 3. Pull out the motor power lines and restart the drive. If the alarm still exists, the drive is damaged.
8	Encoder disconnection detection	Ensure that the encoder cables are correctly connected, and there is no false soldering, misalignment, or short-circuit at the connection points.
10	Emergency stop alarm	Ensure that the input signal wiring is correct.
11	Positive and negative limit alarm	Check if the positive and negative limit signal outputs of the input terminals are normal and if the hardware is damaged.
12	Command overspeed fault	Check if the fault occurs after the homing is completed; check if the slave homing mode is used.
13	Stalling alarm	Check if there is any jamming in the motor screw structure.
14	Zero-pulling error alarm	<ol style="list-style-type: none"> 1. The encoder resolution of the motor is incorrect, causing the motor to fail to run. 2. The motor power lines are connected incorrectly. 3. The motor output is insufficient. Appropriately increase the drive current. 4. If increasing the current still doesn't work, check if there is jamming in the mechanical structure and if the motor is undersized.
15	Current overload alarm	Increase the drive output peak current value Pr4.22 or set bit 6 of 0x2056 to 0 to disable the alarm.
Constantly lit	Hardware interrupt protection	Confirm the network connection and the master station ESM conversion sequence.



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