ND18Q | User Manual

WSX Laser Drives the Future

Contents

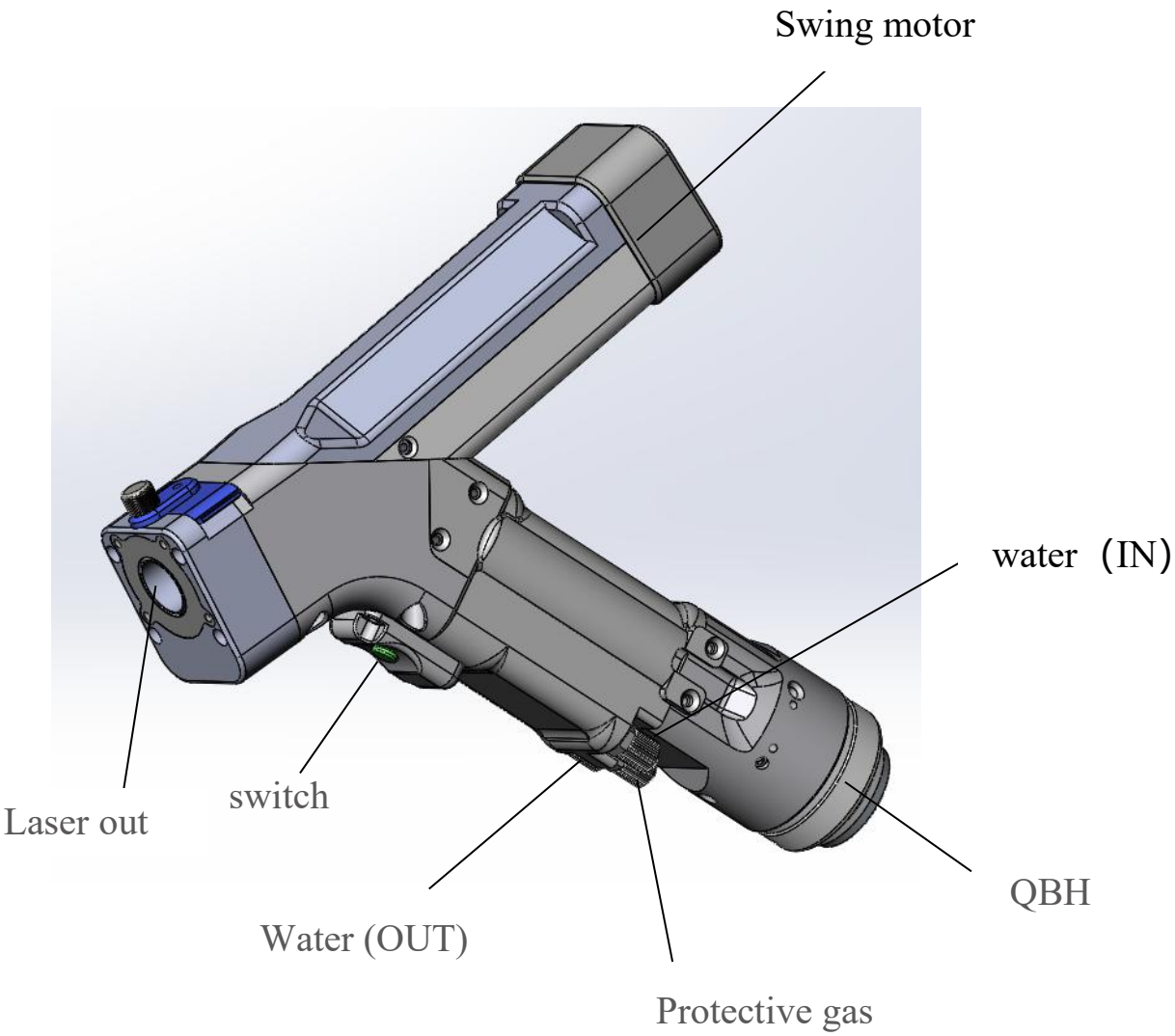
Kindly reminder

Before using this product, please read this manual carefully and confirm your understanding of it!

Please keep this manual properly for future operation and maintenance

1. Product description

1.1 Product structure



Note： Cooling water quantity must be sufficient, the water pressure should be above 0.4MPa；

Please keep the bending radius of the connected air pipe not less than 30mm.

1.2Main function

1.2.1 Design & function

In order to protect the welding position from oxidation, the protective gas should not have any harmful chemical reaction with welding material.
The protective gas must meet the Standard of ISO 8573-1:2010, Class 2.4.3 without impurity particles, water and oil. High purity protective gas will prolong the lifespan of protective window.

2 Technical parameter

Connector type：QBH

Max power：1500W

Laser wavelength range：1070±20

Collimating length：50mm

Focusing length：400mm

Swing frequency：0-200Hz

Gas：Compressed air

Weight：1.12kg

Adjustable width：0-55mm

It can be fit with various laser sources.

3. Installation & Connection

3.1 Safety Instructions

Any maintenance or fault survey should be conducted by professional trained personnel who must have got safety training and be aware of the possible danger and safety measure. Users should learn the related safety knowledge and prepare necessary safety devices before using.

Caution - High Pressure!

The gas pressure inside some laser head component can reach to 2.5MPa

Caution - High Voltage!

Keep the power off during the maintenance and repair.

Caution - Laser!

The ground wire of the AC access interface must be connected to the AC grid and connected to the ground wire end of the power supply ;The laser ma chine will generate level 4 laser while working.

Keep the eyes or skins from being directly shot or scattered by laser.
Do not look directly into the laser beam even if wearing eye protecting equipment.
Please wear the goggles which meet the standard of DIN EN 207 & BGV B2.

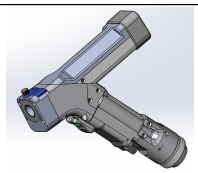
3.2 Unpacking check

1.Packing cases intact;

2.The signage should be clear with conformity mark and accord with the purchased models;

3.The upper and lower opening tear-proof seals are not broken or disassembled;

4.If the above does not match, contact the seller.

No.	Item	Model	Qty.	Picture		
1	Hand-held cleaning head	ND18Q	1		√	
2	Control box	ND18-QXKZX-001	1		√	
3	Switching Power Supply 1	HF55W-SE-24	1		√	
4	Switching Power Supply 2	±15V.3A	1		√	
5	DC Power external harness	ND18A-DYWXS-A-2M/T	1		√	√
6	ND18A Motor extension cord	ND18A-DJYCYC-A-10M/T3	1		√	√
7	Switch & safety lock extension cord	ND18A-KGAQYC-A-10M/T1	1		√	√
8	Control box mounting bracket	YW52-240L	4		√	
9	Display & Four-core shielded wire	7.0 inch+4 core 4 pin 2.54mm 4 core 8 pin 2.0mm	1		√	

10	Display mounting buckle	/	4		√	

3.3 Preparation for Installation

Tools

1.A set of metric hexagonal handle;

2.One bag of clean rod, one bottle of anhydrous ethanol(500ml), one package of clean gloves;

3. Clean and dust-free working environment.

Preparation of installation personnel

1. Read this manual carefully;

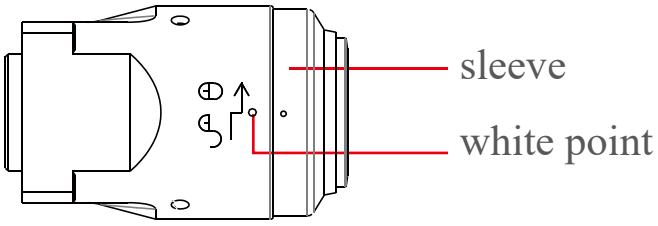
2. Wash hands with soap;

3. Wear dust-free gloves;

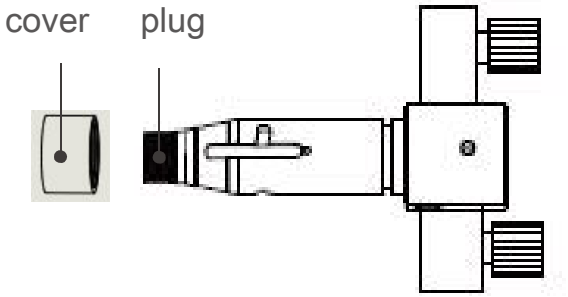
4. Wear a mask if necessary.(Note - Dust removal is of utmost importance)

3.4 QBH connected to fiber

Step 1: Before rotating the sleeve as shown in the figure below, confirm that the red point on the side of the sleeve is on one line with the white point.

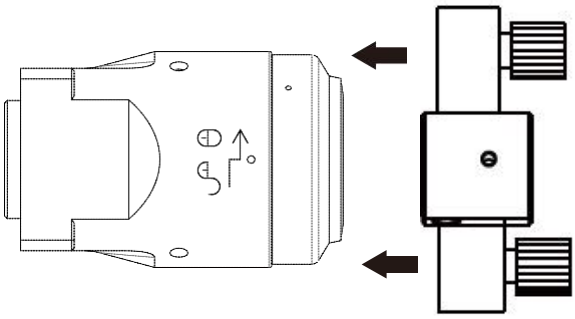


Step 2: Remove the dust cover of fiber rod, clean the fiber rod with anhydrous ethanol. Before installing, check the protective cover of fiber plug to see if it is locked, avoid the cover from loosening and effecting the welding performance or burning the fiber and welding head.



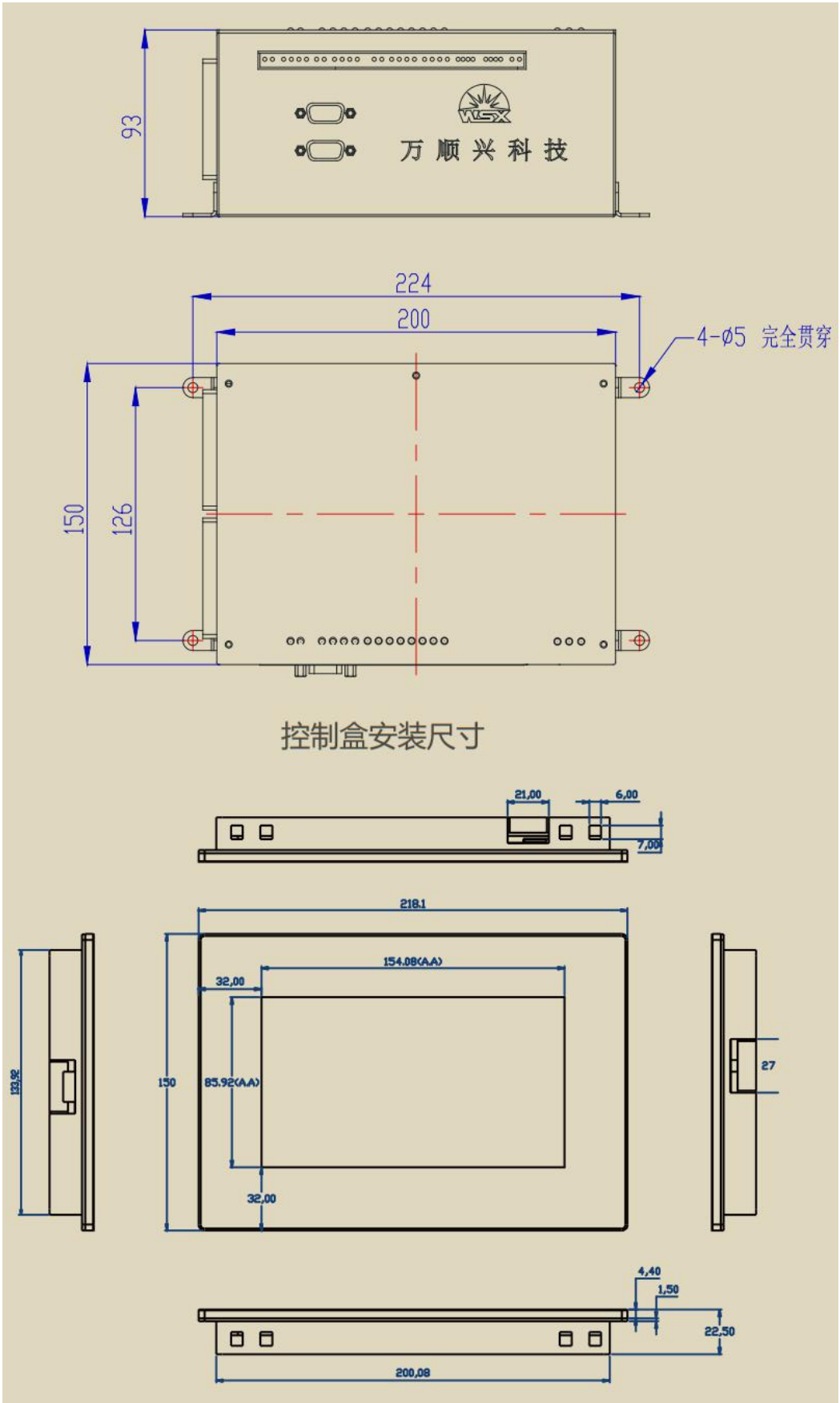
Step 3. Remove the dust cover from QBH, place the clean fiber rod and the QBH co-axially, make sure the white mark on the QBH is aligned with the locating slot (long slot on fiber rod), insert the fiber rod into QBH gently, until the fiber rod joints the QBH contact surface.

Step 4: After inserting the fiber rod into QBH, press the sleeve gently and turn it about 15 degree along the arrow on the sleeve. Then pull the sleeve until its underside is parallel with the top of QBH, turn the sleeve at the same direction till the limit.



Note: 1. Insert or pull out the fiber rod gently; 2. When inserting or pulling out, QBH and fiber rod should be co-axially; 3. The operation should be kept as dust-free as possible.

3.5 Structure and dimensions



Display mounting dimensions

4 Maintenance

Clean and dust-free working environment is required.

Any laser circuit equipment fitted with a laser head must be carefully dedusted.

Assembly or replacement of lens or other components must be conducted in clean working environment.

Prepare new lens component before removing the old one.

Users could purchase spare lens components from us.

In case that user could not meet the above requirements, it is advised to use nonstick protective film to seal the opening after the removing of the lens immediately.

Minimize the time of laser path being exposed to the air to prevent the dust and dirt entering into the laser head.

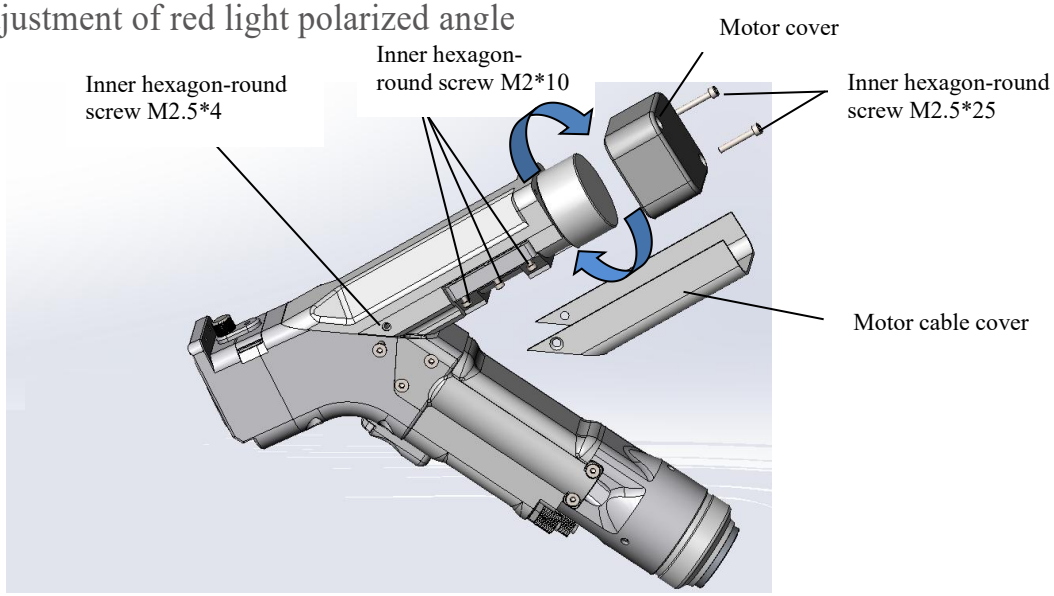
If any safety or protection device has been removed, it must be reinstalled before the equipment being operated or debugged and checked whether the device could run well.

4.1 Maintenance of QBH and Fiber Connector

1、Use self-adhesive paper to cover the junction of QBH and fiber connector to prevent dust from entering the gap；

2、Fiber connector water cooling pipe must be connected well to prevent leaking. If QBH has water inside accidentally, please stop using immediately and send it to the factory to handle with.

4.2 Adjustment of red light polarized angle

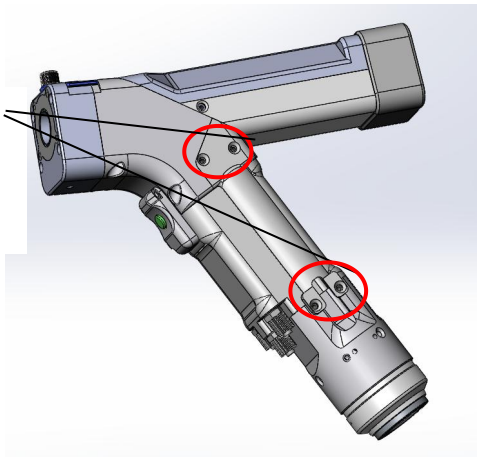


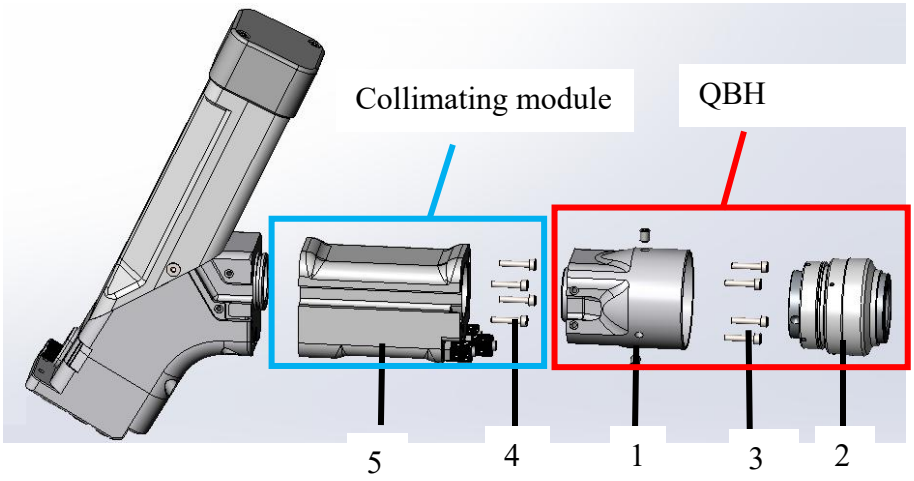
1.Remove the two M2.5*25 inner hexagon screws on the motor cover and remove the motor cover;
2.Remove the left and right two M2.5*4 inner hexagon screws locking the motor cable cover and remove the motor cable cover;
3.Remove the six M2*10 hexagonal cylindrical screws, twist the motor slightly, and adjust the red light to the center

4.3Collimating lens replacement

Step 1:

Remove the screws here and remove the slot cover





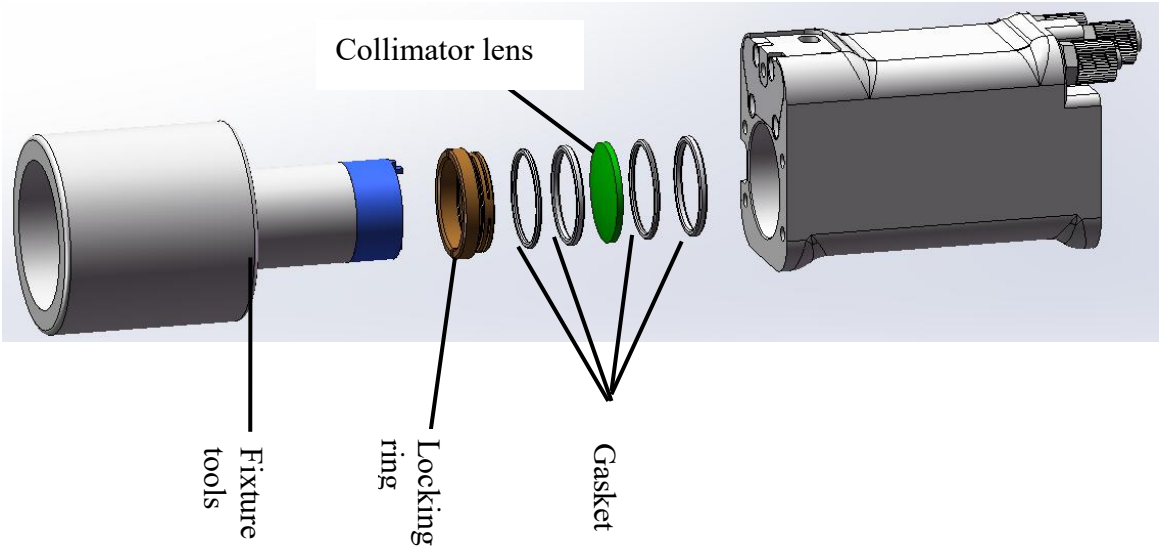
Step 2：

1、Remove 3 screws (No .1) from the QBH and remove the QBH module (No.2)；

2、Remove the four M2.5*12 hexagon screws (No.3) in the QBH conversion seat then the whole QBH component is separated from the head

3、Remove the four M2.5*12 inner hexagon screws (No.4) in the collimator lens holder (No.5) and the whole

assembly is separated from the head and quickly seals the reflective assembly with dry adhesive paper to avoid dust entry.



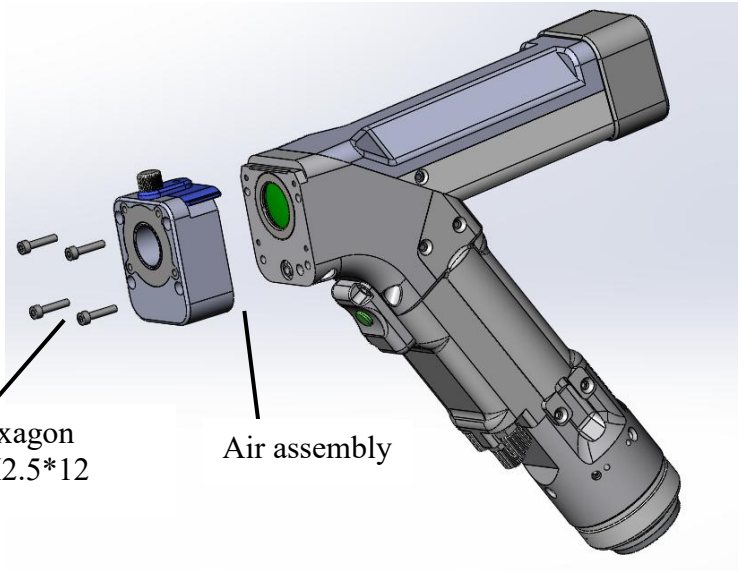
Step 3：

①、In the dust-free environment, remove the locking ring with a fixture tool;

②、Remove the gasket from the collimating seat (record the thickness of the gaskets), then take out the lens, replace it with a new, clean collimating lens (collimating lens regardless of orientation), then put in the gasket and locking ring;

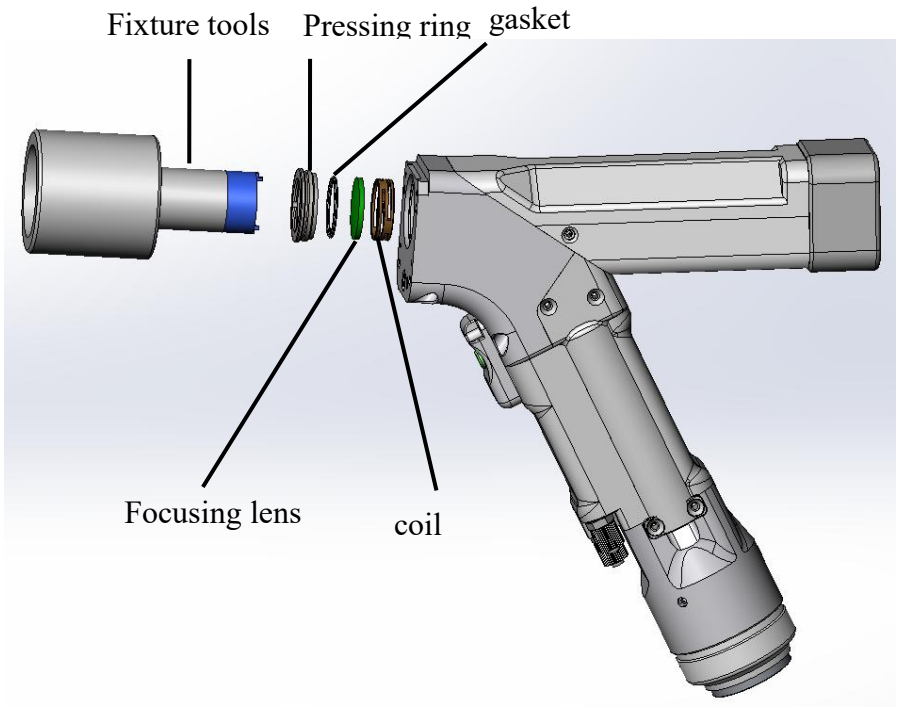
③、Then install it on the welding head at opposite steps.

4.4Replacement of focusing lens



Step 1：

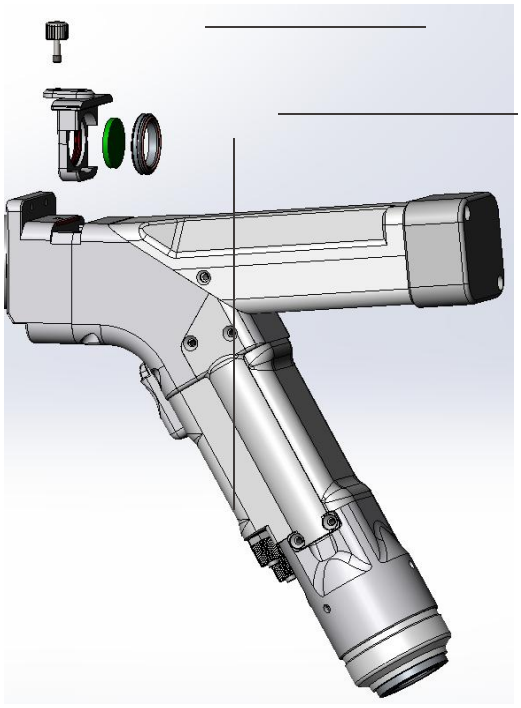
①、Remove the four M2.5*12 inner hexagon screws from the air assembly and quickly seal the lens position with adhesive adhesive



Step 2：

Remove the locking ring with fixture tool, then take out the lens and replace a new clean one, put the gasket and locking ring back; Then install it at opposite steps.

4.5 Protective glass replacement



1.Loosen the protective window screw, remove the protective window module;

2.Remove the pressure ring;

3.Remove the protective glass (D18*2) and replace a new one;

4.After the protective glass is placed in the protective window seat, press the pressure ring on the glass, the protective glass should be pressed into the groove of the ring;

5.Install the protective window module back into the hand-held welding head and tighten the screw.

4.6 Routine maintenance

1.Regularly check the protective glasses for no pollution, and replace them in time (daily inspection)

2.Regularly check the QBH connector for loosening (check every 3 days)

3.The connecting line can not have water access, pay attention to the protection interface part; check the water beads in the interface (such as aviation plug).

5. Electrical chapter

5.1 Connection diagram as below，

Power installation： this hand-held welding machine power cord has two types, one is AC three-phase five-wire, with R/S/T three fire lines; N zero line; PE ground wire. One is AC two-phase three-core wire, one fire line, one zero line, one ground wire.

Note: The ground wire of the AC socket must be connected to the ground of the AC grid and connected to the ground wire end of the power supply.

5.2 Port definition

5.2.1 Laser control port：

The position of the indicator starting from this end of the power supply is:	
Power Indicator	This light is on when 24V power supply is normal.
Operation light	The light flashes when the input and output enable, otherwise the power on
Alarm light	This light will be on when the control card system detects an abnormal and stop output. The abnormal conditions: 1 receiving alarm signal; 2 control card system abnormal
Safety and Effective Lock Signal Indicator	The indicator light will be on when the input signal connect to low level
Welding Switch Valid Signal Indicator	
Foot Switch Valid Signal Indicator	
Laser Alarm Valid Signal Indicator	
Galvanometer Alarm Valid Signal Indicator	
Water Alarm Valid Signal Indicator	
SSJ Alarm Valid Signal Indicator	
Reset Valid Signal Indicator	
Laser Enable Valid Signal Indicator	The indicator light will be on when the output signal connect to high level.
Protective Gas Enable Valid Signal Indicator	
Reserved output valid signal indicator	
Reserved output valid signal indicator	
NC	
NC	

5.2.2Input control port ：

When all input ports are connected to low level (0~0.7V), it is a valid signal input. The high level is 24V or left floating, and the access signal is invalid.	
Safety lock input+	This signal is valid when the welding head is in contact with the welding piece. It is necessary to ensure that the welding piece is connected to the "safe lock input-" signal pin of the controller;
Head switch input +	This signal is valid when the welding torch head switch is closed;
Foot switch input +	This signal is valid when the foot switch is closed;
Laser alarm input +	Laser alarm signal input from this interface, low level as an effective signal;
Galvanometer alarm signal input +	The galvanometer drive card alarm signal input from this interface, and the low level is regarded as a valid signal.
Water alarm input +	The cooling water control alarm signal input from this interface, and the low level is regarded as a valid signal.
SSJ alarm input +	The SSJ alarm signal input from this interface, and the low level is regarded as a valid signal.
System reset input +	When the system needs to be reset, the interface will input low level, the operation light will flash 3 times, and the system parameters will be set to the factory default.
Input signal - 1	These two interfaces are common to all input ports, and the "-" of all input signals can be connected here, and is connected to the "output signal-".
Input signal - 2	

5.2.3 Output control port：

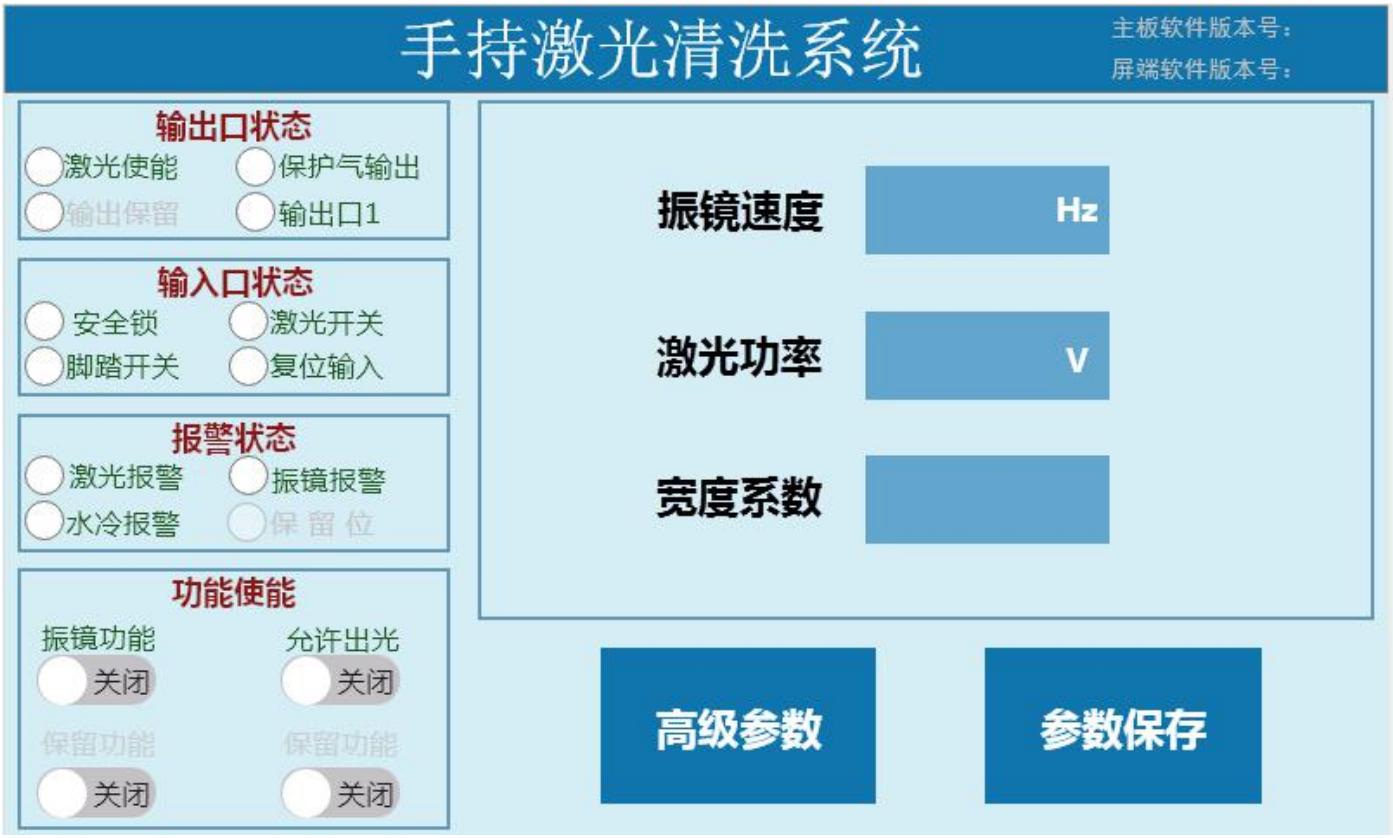
All output ports output high level (≥19V) as valid signals	
Laser enable output +	When the safety lock and the welding torch switch input signal are valid at the same time, this port outputs high level (≥19 V);
Protective gas enables output +	When protective gas enable, the safety lock and the welding torch switch input signal are valid at the same time, this port outputs high level (≥20 V);
Output reserved +	No functional definition
Output reserved +	No functional definition
Output signal - 1	These two interfaces are common to all output ports, and the "-" of all output signals can be connected here. At the same time, it is connected to the input signal-.
Output signal - 2	

5.2.4 Laser control port：

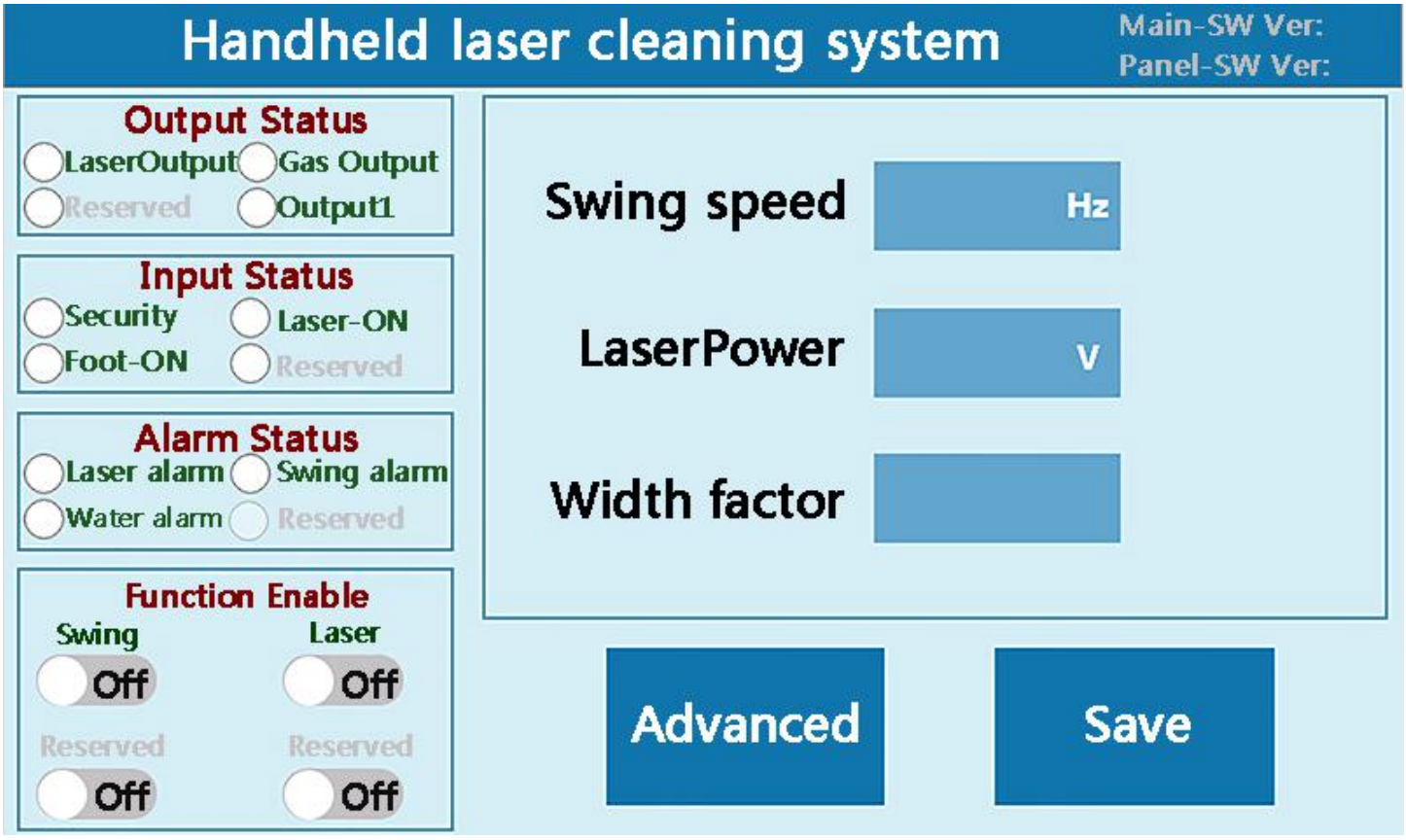
laser enable+	Same with "laser enable output"+
Laser PWM+	Output range 0~100000Hz, adjust the output value by adjusting the laser frequency parameter
NC	
Laser PWM-	Equivalent to output signal -/ input signal-
Laser DA+	The output range of 0~10 V, corresponds to 0% of 100% of the laser power, and the corresponding output value can be adjusted by adjusting the laser power parameters;
Laser DA-	Ground wire of DA signal, can not connect with ground wire of input and output port;

6. User Interface

6.1 Main interface



Corresponding English menu：



6.1.1 Function Description:

Output port status

Laser output： The IO indicator lights up when the laser is emitting light;
Gas output: The IO indicator lights up when the gas is working;

Alarm status

Galvanometer alarm: galvanometer alarm input low power, the light on;
Laser alarm: laser alarm input low power, the light on;
Water cooling alarm: water cooling alarm input low-power peacetime, the light on;
Stop working as long as one alarm is valid.

Swing speed (Hz): the speed of the lens swing;

Input port status

Safety lock: The IO indicator lights up when the safety lock is locked
Laser-on: This IO indicator lights up when the laser switch is on
Reset-on: program reset at 3S later after reset

Function enable

Swing: Turn galvanometer on or off, when the galvanometer function is turned on, and the laser is not triggered, the galvanometer will stop after 30s, and the galvanometer will start automatically again when the laser is on.
Laser： enable laser welding;

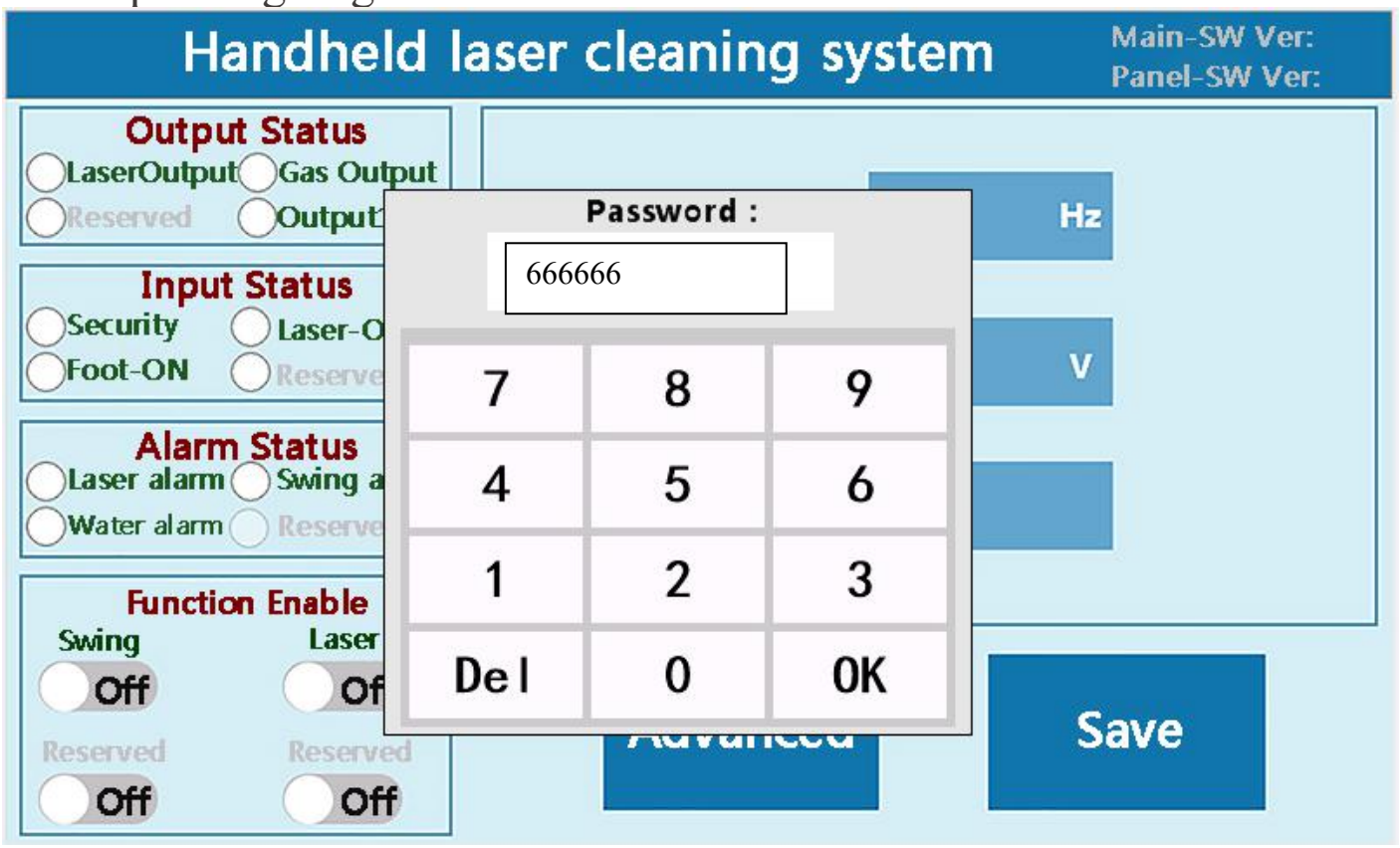
Laser power(V)： Set Laser Power；
Width factor: Set the size of the swing amplitude

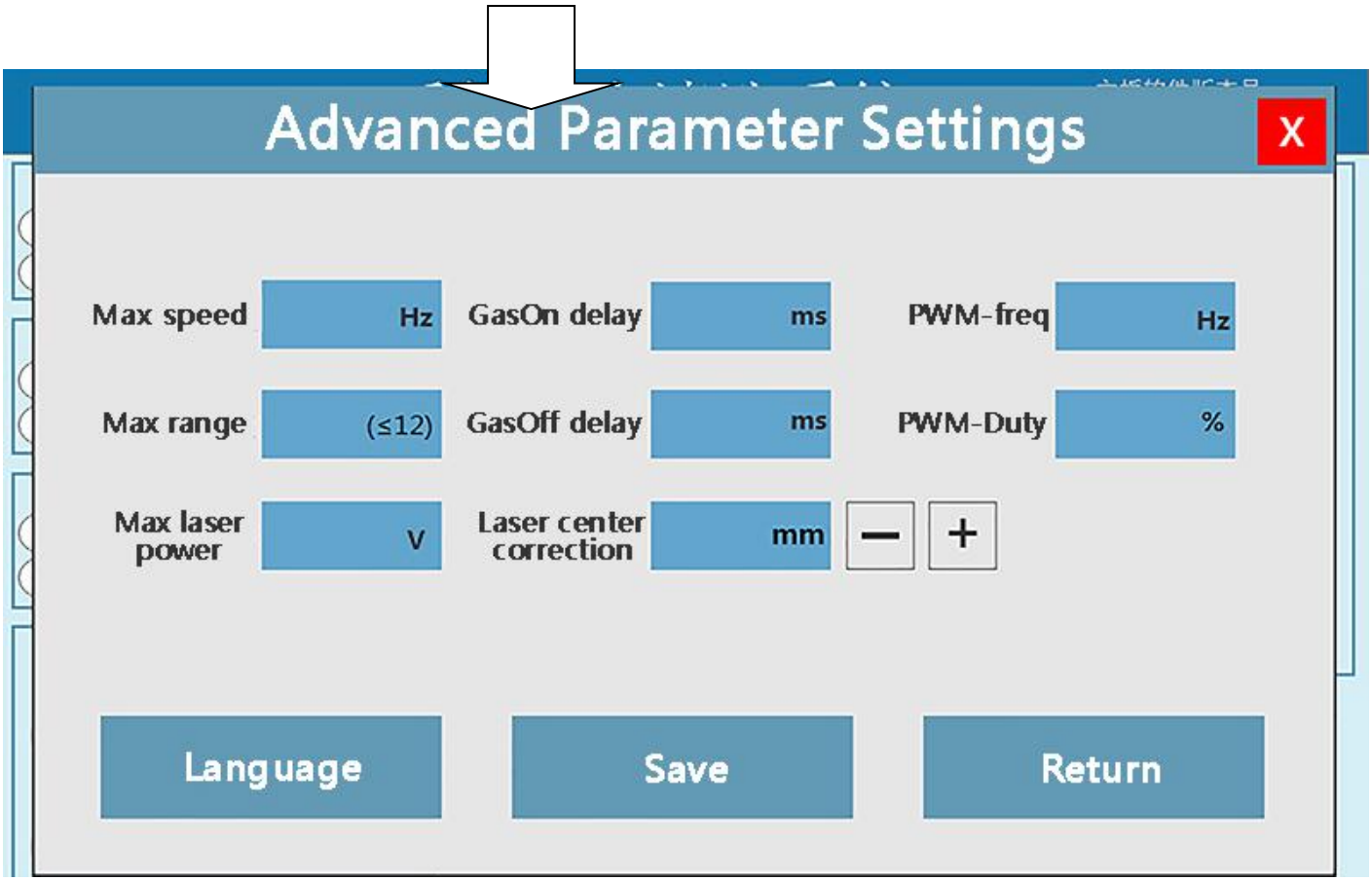
Advanced parameters: Click to enter password interface. Enter correct password to enter advanced parameter settings interface;

Parameter save： save current settings.

6.2 Password and advanced parameter interface:

Corresponding English menu:





Advanced Parameters menu: Click the "Advanced Parameters" button in the main interface, enter the password input interface, set the corresponding parameters, and click "Save Parameters". Press "Back" to exit the interface.

Maximum swing speed: set the maximum swing speed, up to 250Hz;
Maximum swing coefficient: set the maximum amplitude of the oscillator swing, up to 12;
Laser maximum power: to set the maximum voltage required for the maximum laser power, up to 10v;

Gas on delay: set the delay time to laser output after protective gas output, up to 6000ms;
Gas Off Delay： setting the delay time for turning off the gas, up to 6000ms;
Laser center correction: set the red light center position offset;
PWM-Freq： Set the laser frequency, up to 10000Hz;
PWM-Duty： Set the laser duty cycle, Range: 0~100%;

语言/Language： for switching interface languages; interfaces as follows：

Corresponding English menu：

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