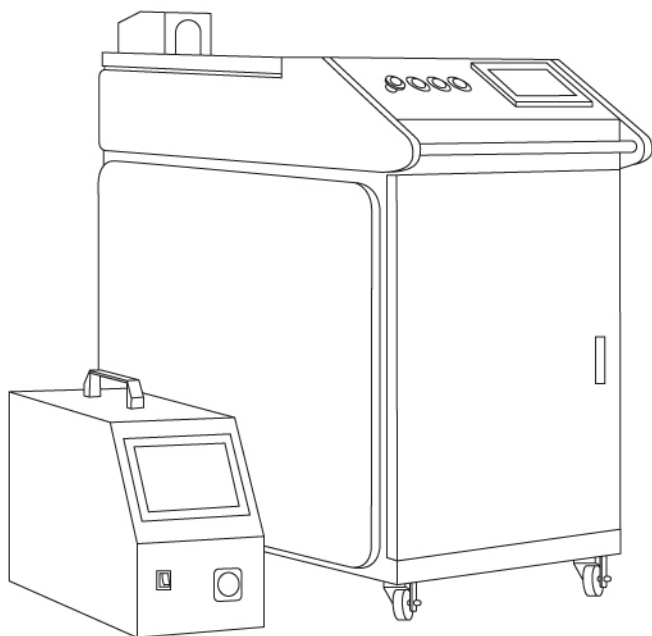




4 IN 1 LASER WELDING MACHINE

Instruction Manual



Preface

Thank you for purchasing our products. Please read the installation manual carefully before use and keep it properly.

This installation manual is not a quality guarantee. The correction of printing errors, errata of information errors, and product improvements are subject to interpretation by our company at any time without prior notice. The revised content will be included in the reprinted installation manual.

Company Profile

Jobon Laser is a high-tech enterprise integrating R&D, production and sales of laser application equipment, specializing in the production of laser welding machines, laser cleaning machines, laser marking machines, laser cutting machines and other laser equipment. Our company has been engaged in the laser field for more than 14 years, with sales services covering 120 countries around the world. We have our own factory, including neat warehouses, standardized workshops and exhibition halls. Welcome to visit us.

Our products are used in a variety of industries including cup and pot hardware, kitchen hardware, bathroom hardware, construction hardware, precision instruments, packaging materials, electronic circuits, instrumentation, computer manufacturing, mobile communications, auto parts, gold and silver jewelry, craft gifts, etc. Our advantage is not just the price, but also the reliable performance that allows us to win the market!

Perfect service network. Customer service response time is within 24 hours. We always pay attention to customer interests. Free training, free maintenance, free technical support, responsible for customers. A maintenance team with superb technology and first-class service solves customers' worries.

This manual details the installation and use of the Jobon handheld laser welding machine and related operations. Before you unpack, install and use this machine, please pay attention to the following points:

- The operator should have relevant technical training or be guided by a dedicated person ;
- This manual will help you understand this machine and please operate it according to the regulations ;
- This manual contains many important tips to help you operate safely, economically, adapt to local conditions, and common troubleshooting. If you can follow these tips, you can not only avoid dangerous accidents, reduce maintenance costs, and reduce downtime and maintenance time, but also effectively improve the working life of the machine and reduce the failure rate ;
- The manual should be kept next to the machine for reference at any time.

Security Requirements

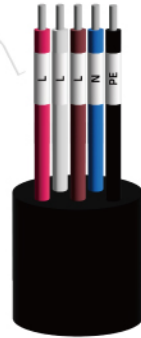
- Improper use of lasers may cause personal injury, so please carefully understand the safety knowledge of laser use before use to avoid personal injury and prevent damage to this product or any other products connected to it. In order to avoid possible dangers, this product can only be used within the specified range;
- Never point the laser towards your own or other people's eyes at any time. Even if the laser is turned off, it may be turned on by mistake;
- Lasers are not toys and should not be used by children, mentally retarded people, or people who do not understand the characteristics of lasers. In such cases, it is very easy to cause harm;
- Since this type of laser is invisible light, it is strictly forbidden to place flammable or explosive items near the equipment to prevent fire caused by the laser being misplaced;
- Product grounding. This product is grounded through the power cord grounding wire. To prevent static electricity from hurting people, the grounding wire must be connected to the ground. Before using this product, make sure that the product is properly grounded;
- Because there are laser and high-voltage parts in the machine, non-professionals are strictly prohibited from disassembling the machine without authorization;
- Do not start the machine when the voltage is unstable, otherwise a voltage stabilizer must be used ;
- The water circulation must be kept clean and purified water must be used. Mineral water and tap water cannot be used;
- If the machine malfunctions or a fire occurs, please cut off the power supply immediately;
- If there is a suspected fault, please do not operate. If you suspect that this product has a fault, please contact our after-sales staff for inspection. Do not operate it privately;
- Do not operate in explosive atmospheres;
- Keep the product surface clean and dry;
- It is recommended that every person working with this machine should read this instruction manual;
- Please strictly follow the instructions and guidance of technical engineers, otherwise the product failure caused will no longer be covered by the warranty.

CONTENTS

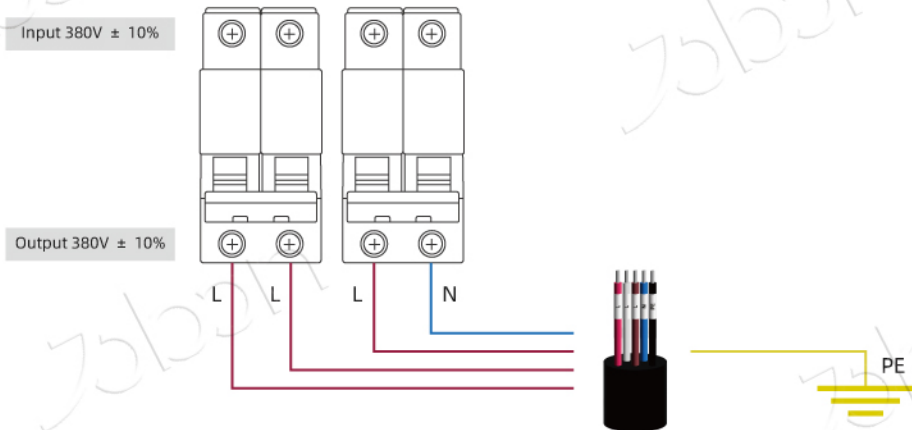
Electronic control system	01
Water Cooling System	02
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Electronic control system

Power	Voltage
1000-2000W	220V 1PH
3000-6000W	380V 3PH



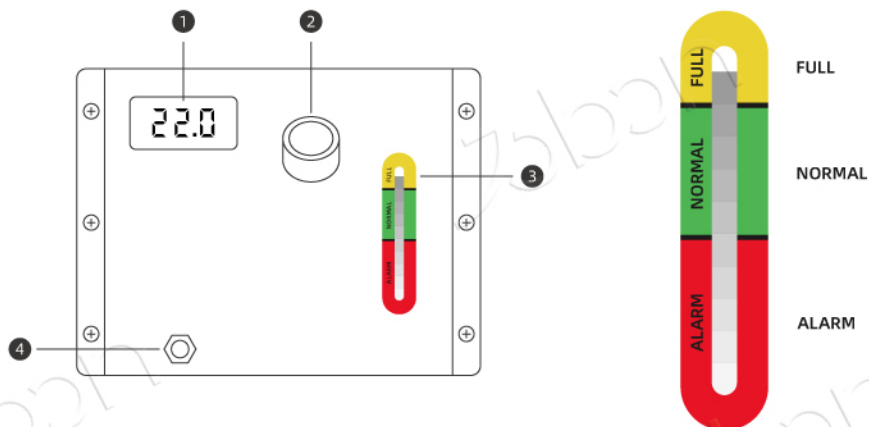
L: Live line
N: Neutral line
PE: Protective earth wire



Note: Please wear rubber gloves when turning the air switch upward after connecting the power to prevent electric shock.

- ⚠ The machine voltage is not within $(220/380) \pm 10$, or the fluctuation is large and a voltage stabilizer needs to be installed
- ⚠ The ground wire must be effectively grounded separately, and cannot be virtually or ineffectively grounded (industrial grounding requires burying a metal conductor copper block 5m deep in the ground, and then leading the wire out of the ground to complete the loop so that the equipment can meet the required grounding wire)

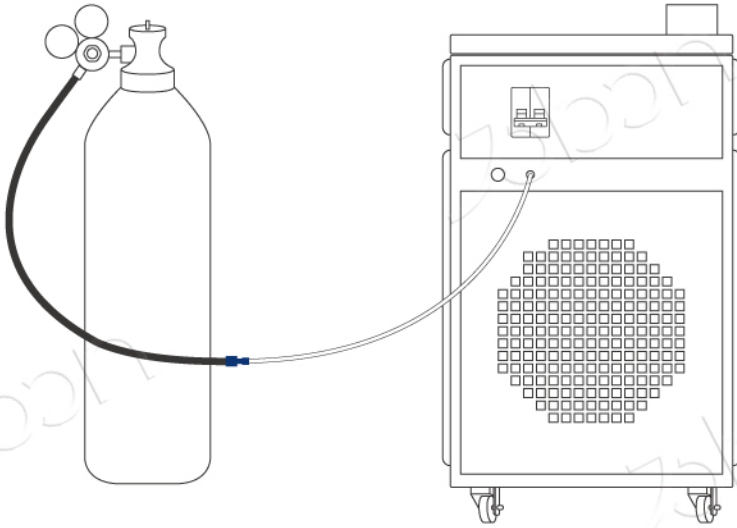
Water Cooling System



- ① Temperature control display: Temperature $\geq 22^{\circ}$ (need to wait for the water tank to heat up);
 - ② Water inlet: Only pure water or distilled water can be added (no mineral water can be added);
 - ③ Water level: Water needs to reach the overflow area and cannot be lower than the standard area;
 - ④ Drainage outlet: It is recommended to drain the water once every two months.
- ⚠ **Warning:** When the water temperature is $\leq 0^{\circ}$, you need to add laser professional antifreeze, not car antifreeze (adding car antifreeze will cause water pipe corrosion)
- ⚠ **Warning:** When the outdoor temperature is $>10^{\circ}$, the antifreeze needs to be replaced with purified water or distilled water.

Avoid abnormalities of laser source working at low temperature for a long time: the ratio of antifreeze	6:4 (60% antifreeze: 40% water) $-36^{\circ}\sim-45^{\circ}$
	5:5 (50% antifreeze: 50% water) $-26^{\circ}\sim-35^{\circ}$
	4:6 (40% antifreeze: 60% water) $-16^{\circ}\sim-25^{\circ}$
	3:7 (30% antifreeze: 70% water) $-6^{\circ}\sim-15^{\circ}$
	2:8 (20% antifreeze: 80% water) $0^{\circ}\sim-5^{\circ}$

Gas system



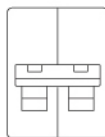
- The gas needs to be nitrogen or argon (high purity 99.99%);
- When using air, you need to install a three-stage filter and a cold dryer (to ensure that the gas is dust-free, oil-free, and water-free) and it can only be used in cleaning mode.

Function/Material		Air pressure
Welding	Stainless steel	0.2-0.5Mpa
	Carbon steel, Galvanized sheet, Aluminum sheet	0.3-0.5Mpa
Cutting		0.5-1.5Mpa
Remote cleaning		0.5-1.5Mpa

- ⚠ **Warning:** The air pressure valve must use a nitrogen pressure reducing valve, and cannot use an argon pressure reducing valve or an oxygen pressure reducing valve.
- ⚠ **Warning:** Be sure to use the specified gas strictly. Using other gases instead will cause damage to the lens inside the gun body and even burn the optical fiber.

Power on

- 1 Turn on the air switch to power the machine;
- 2 Rotating emergency stop switch;
- 3 Turn on the system;
- 4 Turn on water cooling (wait for the water tank to heat up to $\geq 22^{\circ}\text{C}$);
- 5 Turn on the laser.



⚠ Warning: After turning on the water cooling, you must wait until the water temperature rises above 22°C before turning on the laser



Adjust the focus

- 1 First click on Technology;
- 2 Adjust Scan speed to 400 mm/s;
- 3 Adjust Scan width to 3.00 mm;
- 4 Adjust Peak power to 300 W;
- 5 Click Import;
- 6 Click Save;
- 7 Click Return.

Laser welding system

Scan speed	0	mm/s	Laser enable	<input checked="" type="checkbox"/>		Home
Scan width	0	mm	Indication of red light	<input type="checkbox"/>		Technology
Peak power	0	W	Welding mode	<input type="checkbox"/>		Setting
Duty cycle	0	%	Secure lock	<input checked="" type="checkbox"/>		Monitor
Frequency	0	Hz				



Laser welding system



Technology

Help

Scan speed mm/s

Scan width mm

Peak power W

Duty cycle %

Frequency Hz

wirefeeder

Feeding speed cm/min

Weld wire diameter mm *1

Common technology process library

Material thickness mm

carbon steel

stainless steel

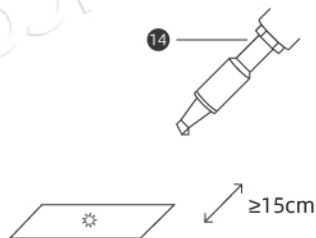
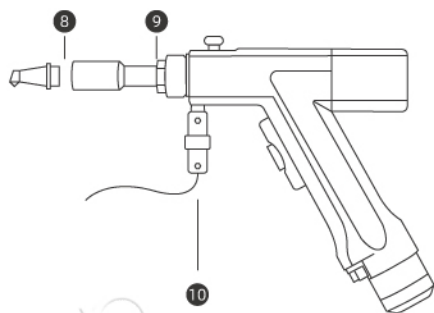
aluminium

other

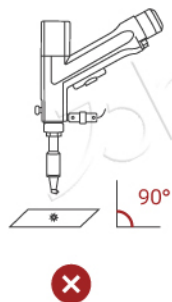
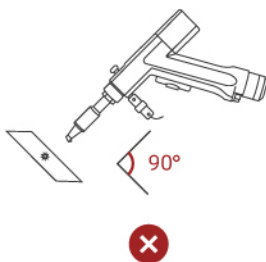
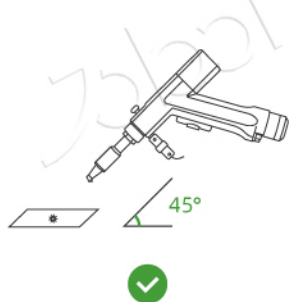
Import

Return

- 8 Install the copper nozzle on the welding gun;
- 9 Loosen the bolt and adjust the scale tube to -10 ;
- 10 Attach the safety clamp to the welding gun.



- 11 Find a piece of 1.5~2mm stainless steel or iron plate;
- 12 Aim at the position $\geq 15\text{cm}$ of the plate and long press the trigger button to light up;
- 13 From far to near, find the point with the strongest energy and the most sparks. This distance is the positive focus of the welding gun;
- 14 Adjust the scale of the graduated tube so that the copper nozzle contacts the material surface with the strongest energy.

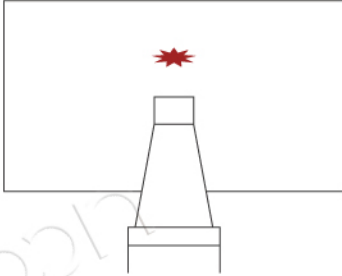


the gun must be keeping 45 degrees no mater when looking for focus or doing daily work during using welding function

⚠ Warning: The ground wire clip is clamped on the welding gun and is in a conductive state. Please do not stand directly in front





Adjust the red light


- 1 Find a piece of white paper and point the gun muzzle at the white paper to check whether the red light is in the center. If it is not in the center, adjust it to the center



- 2 Click Setting;
- 3 Password: 123456;
- 4 Find Laser center offset and change it.

Laser welding system

Scan speed	0	mm/s	Laser enable	<input checked="" type="checkbox"/>	 Home
Scan width	0	mm	Indication of red light	<input type="checkbox"/>	 Technology
Peak power	0	W	Welding mode	<input type="checkbox"/>	 Setting
Duty cycle	0	%	Secure lock	<input type="checkbox"/>	 Monitor
Frequency	0	Hz			

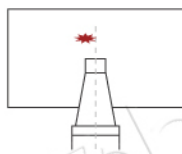


Laser welding system

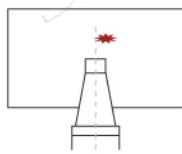
Setting

Help

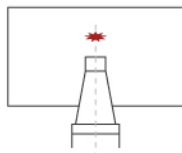
Laser power	<input type="text" value="0"/>	W	Scan correction	<input type="text" value="0"/>	Spot welding type	<input type="button" value="Interval"/>	
Open gas delay	<input type="text" value="0"/>	ms	Laser center offset	<input type="text" value="0"/>	mm	<input type="button" value="Low"/>	
Off gas delay	<input type="text" value="0"/>	ms	Spot welding duration	<input type="text" value="0"/>	ms	<input type="button" value="Low"/>	
Laser starting power	<input type="text" value="0"/>	%	Spot welding interval	<input type="text" value="0"/>	ms	<input type="button" value="Low"/>	
Laser on progressive time	<input type="text" value="0"/>	ms	Motor drive temperature threshold	<input type="text" value="0"/>	°C	<input type="button" value="Low"/>	
Laser off power	<input type="text" value="0"/>	%	Protective mirror temperature threshold	<input type="text" value="0"/>	°C	<input type="button" value="Low"/>	
Laser off progressive time	<input type="text" value="0"/>	ms					
Welding wire delay	<input type="text" value="0"/>	ms					
Language	<input type="button" value="中文"/>					<input type="button" value="Save"/>	<input type="button" value="Return"/>



When the red light is biased to the left, the default red light offset parameter is 0, and the red light offset parameter should be adjusted to > 0 .



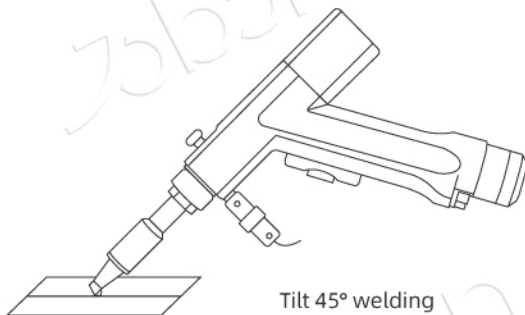
When the red light is biased to the right, the default red light offset parameter is 0, and the red light offset parameter should be adjusted to < 0 .



After adjustment, the red light is in the middle of the copper nozzle

Without wire welding

No wire welding, the two materials need to fit tightly without gaps;
Applicable to thin plates of 2mm and below.



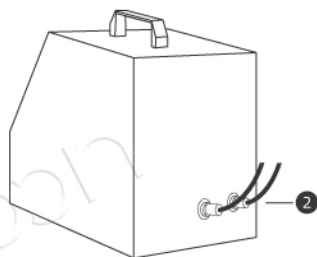
	Function/Material	Air pressure
Welding	Stainless steel	0.2-0.5Mpa
	Carbon steel, Galvanized sheet, Aluminum sheet	0.3-0.5Mpa



With wire welding

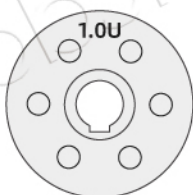
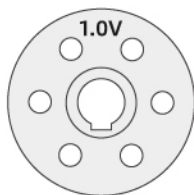
Material	Thickness (mm)	Scanning speed	Scanning width	Peak power	Duty cycle	Pulse frequency	Wire feeding speed	Welding wire
Carbon steel	1	300	3	350	100	2000	60	1
	2	300	3	700	100	2000	60	1.2
	3	300	3	1100	100	2000	60	1.2
	4	300	3	1500	100	2000	60	1.6
	5	220	3	1800	100	2000	50	1.6
	6	220	3	2200	100	2000	50	1.6
	8	220	3	3000	100	2000	40	2
Aluminum	1	300	3	500	100	2000	60	ER5356 1.0
	2	300	3	800	100	2000	60	ER5356 1.2
	3	300	3	1400	100	2000	60	ER5356 1.2
	4	300	3	1800	100	2000	60	ER5356 1.6
	5	220	3	2000	100	2000	50	ER5356 1.6
	6	-	-	-	-	-	-	-
	8	-	-	-	-	-	-	-
Stainless steel	0.5	300	2	260	100	2000	80	ER304 0.8
	0.8	300	2	300	100	2000	80	ER304 0.8
	1	300	2	350	100	2000	60	ER304 1.0
	2	300	3	700	100	2000	60	ER304 1.0
	3	300	3	1100	100	2000	60	ER304 1.2
	4	300	3	1500	100	2000	60	ER304 1.2
	5	220	3	1800	100	2000	50	ER304 1.6
	6	220	3	2200	100	2000	50	ER304 1.6
	8	220	3	3000	100	2000	40	ER304 2.0

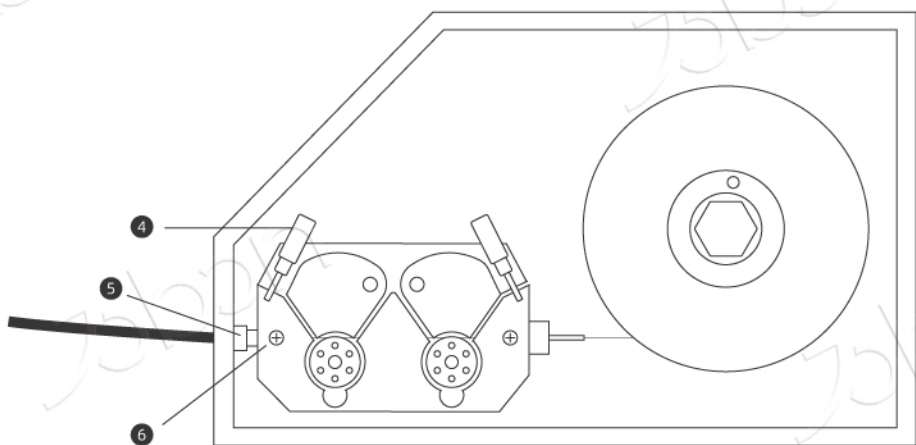
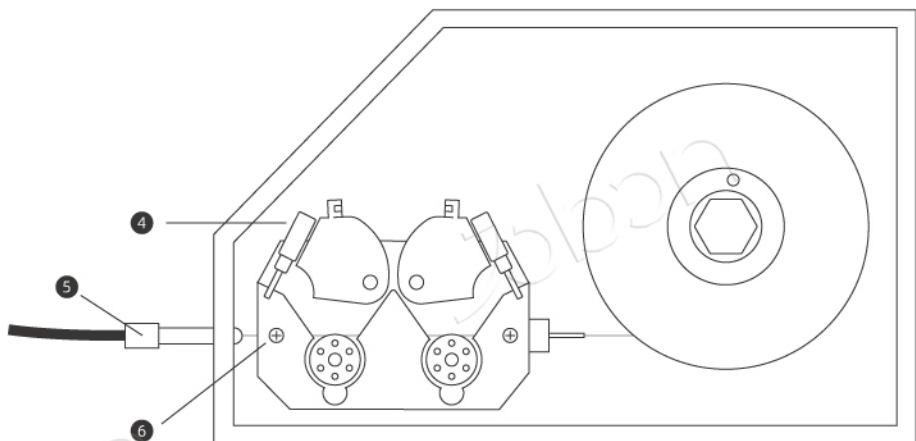
- ① Find the power cord and signal cord of the wire feeder on the machine;
- ② Plug into the interface behind the wire feeder;
- ③ Select the material and diameter of the welding wire, and then select the corresponding wire feed slot.



Welding materials	Welding wire	Welding wire diameter(mm)	Wire feed wheel	Wire feed tube
Stainless steel	Stainless steel wire	0.8	0.8V	Ordinary wire feed tube
		1.0	1.0V	
		1.2	1.2V	
		1.6	1.6V	
Carbon steel	iron wire	0.8	0.8V	Ordinary wire feed tube
		1.0	1.0V	
		1.2	1.2V	
		1.6	1.6V	
Aluminum	Aluminum-magnesium alloy wire	0.8	0.8U	Graphene wire feed tub
		1.0	1.0U	
		1.2	1.2U	
		1.6	1.6U	

⚠ Warning: When welding aluminum, you should choose a welding wire with higher hardness, such as 5356 aluminum-magnesium alloy wire



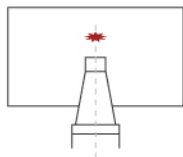
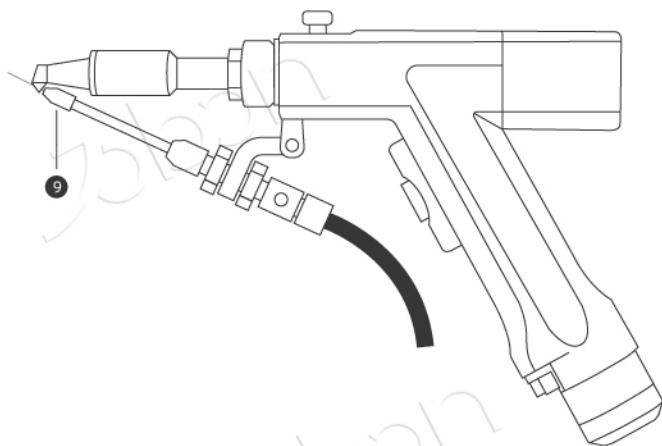


- ④ Remove the pressure rod and lock the welding wire through the pressure wheel;
- ⑤ Tighten and put on the wire guide tube;
- ⑥ Loosen the screw here and insert the wire guide tube and tighten the screw.

Laser welding wire feeding system

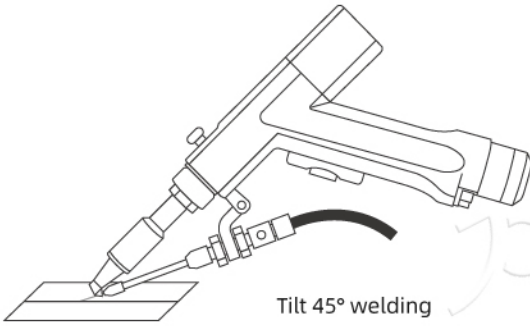


- 7 Click the wire feed button on the screen (keep pressing) to feed the welding wire out;
- 8 After the welding wire comes out, install the wire guide tube and wire guide nozzle;
- 9 The wire guide nozzle is selected according to the wire diameter.



When the red light is biased to the left, the default red light offset parameter is 0, and the red light offset parameter should be adjusted to > 0 ;

When the red light is biased to the right, the default red light offset parameter is 0, and the red light offset parameter should be adjusted to < 0 .

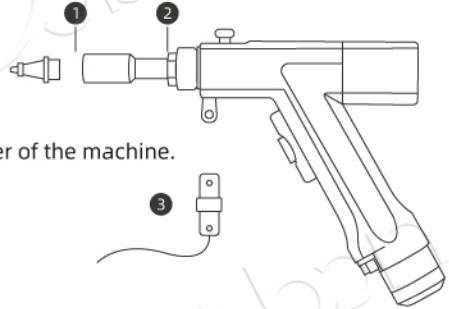


	Function/Material	Air pressure
Welding	Stainless steel	0.2-0.5Mpa
	Carbon steel, Galvanized sheet, Aluminum sheet	0.3-0.5Mpa



Cutting

- 1 Replace the cutting nozzle;
- 2 The focal length is the same as the welding focal length and does not need to be changed;
- 3 Cutting requires clamping the ground wire onto the workbench for easy cutting;
- 4 Adjusting parameters;
- 5 Click Technology;
- 6 Adjust Scan speed to 0mm/s;
- 7 Adjust Scan width to 0mm;
- 8 Adjust Peak power to the maximum power of the machine.



Laser welding system

Technology Help

Scan speed mm/s

Scan width mm

Peak power W

Duty cycle %

Frequency Hz

wirefeeder

Feeding speed cm/min

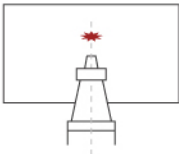
Weld wire diameter mm *1

Common technology process library

Material	thickness mm
carbon steel	<input type="text" value="1.2"/>
	<input type="text" value="2.0"/>
stainless steel	<input type="text" value="3.0"/>
aluminium	<input type="text" value="4.0"/>
other	<input type="text" value="5.0"/>
	<input type="text" value="6.0"/>

Import Return

- 9 Adjust the red light position

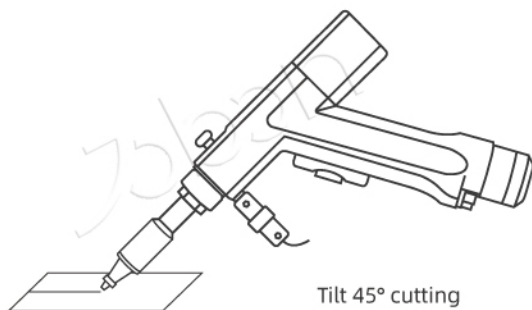


When the red light is biased to the left, the default red light offset parameter is 0, and the red light offset parameter should be adjusted to > 0 ;

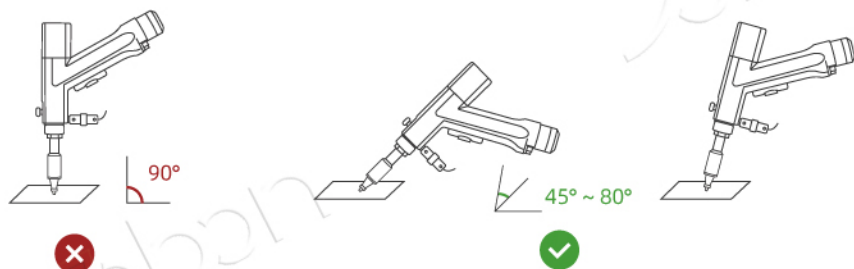
When the red light is biased to the right, the default red light offset parameter is 0, and the red light offset parameter should be adjusted to < 0 .

⚠ Warning: If the red light is not completely refracted, it cannot be used to avoid damage to the accessories

Cutting 0-6mm plate



Note: The thicker the plate, the more burrs there will be (there is no way to avoid it)

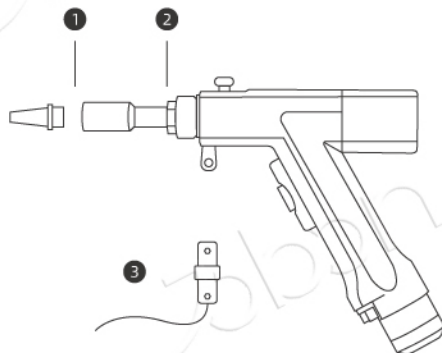


Cutting	Air pressure
	0.5-1.5Mpa



Weld bead cleaning

- 1 Replacement of weld bead cleaning special copper nozzle AS-20D;
- 2 The focus of laser welding, cutting and weld cleaning does not need to be adjusted;
- 3 To clean the weld, you need to clamp the ground wire clip to the workbench to facilitate the cleaning of the weld;
- 4 Adjusting parameters;
- 5 Click on Technology;
- 6 Adjust the Scan speed to 1000mm/s;
- 7 Adjust the Scan width to 5~8mm;
- 8 Adjust Peak power to 300w~400w.



Laser welding system Help

Technology

Scan speed mm/s

Scan width mm

Peak power W

Duty cycle %

Frequency Hz

wirefeeder

Feeding speed cm/min

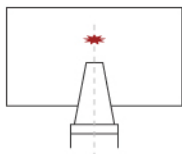
Weld wire diameter mm *1

Common technology process library

Material	thickness mm
carbon steel	<input type="text" value="1.2"/>
	<input type="text" value="2.0"/>
stainless steel	<input type="text" value="3.0"/>
	<input type="text" value="4.0"/>
aluminium	<input type="text" value="5.0"/>
	<input type="text" value="6.0"/>
other	<input type="text" value=""/>

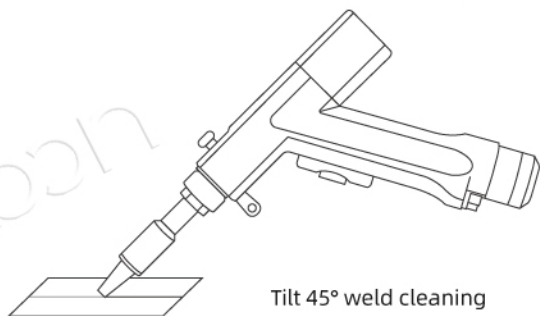
Import Return

9 Adjust the red light position



When the red light is biased to the left, the default red light offset parameter is 0, and the red light offset parameter should be adjusted to > 0 ;

When the red light is biased to the right, the default red light offset parameter is 0, and the red light offset parameter should be adjusted to < 0 .



Weld cleaning	Air pressure
	0.2-0.5Mpa



Laser welding system



Scan speed	0	mm/s	Laser enable	<input checked="" type="checkbox"/>
Scan width	0	mm	Indication of red light	<input checked="" type="checkbox"/>
Peak power	0	W	Welding mode	<input checked="" type="checkbox"/>
Duty cycle	0	%	Secure lock	<input type="checkbox"/>
Frequency	0	Hz		



Home



Technology




Setting



Monitor



Please power off and restart!

- 1 Click the toggle button; 
- 2 Turn off the laser;
- 3 Restart the system (wait 3~5 seconds to start the system).

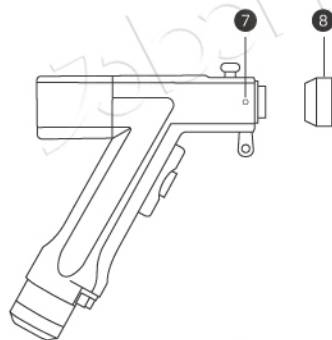


About to enter the laser cleaning system,
please confirm whether to continue!

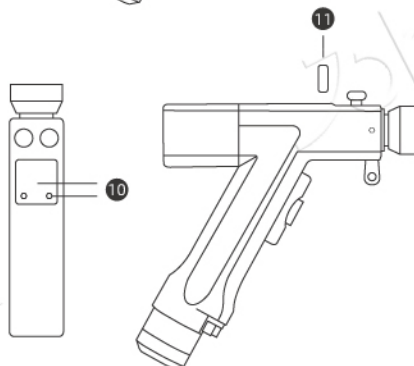
continue

Return

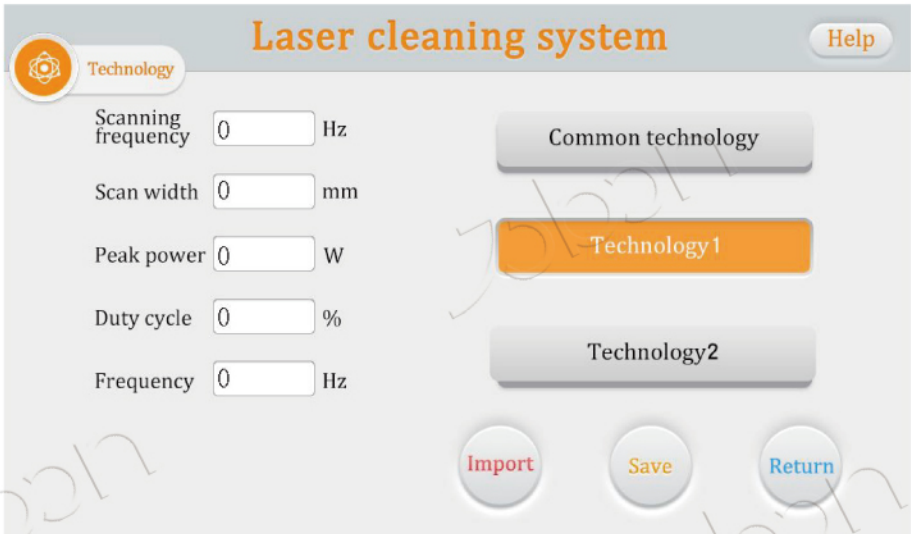
- 4 Click Continue;
- 5 Go to the home page ;
- 6 to replace the cleaning components;
- 7 Remove the top screw and take out the chuck;
- 8 Installing the dust protection assembly;
- 9 Replacing the focus assembly;



- 10 Remove the cover screws and cover;
- 11 The focusing assembly is drawer-style and can be pulled out and replaced.

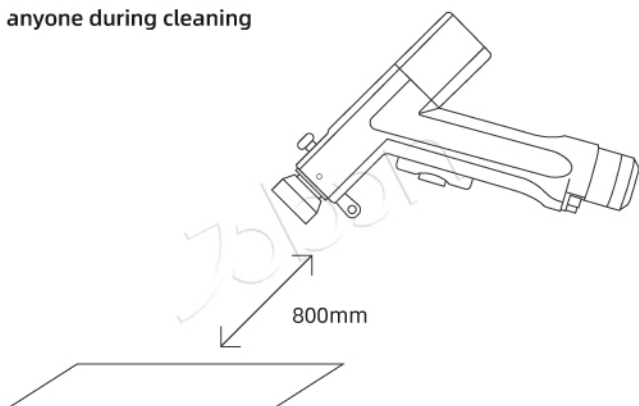


- ⚠ Warning: Do not touch the mirror surface when changing lenses or focusing.
- ⚠ Warning: When replacing the lens, you should do it in an office or a place with few people and less dust to avoid dust contaminating the lens.



- 12 Click Technology to;
- 13 change Scan width (Scan width 10-120mm) and adjust Peak;
- 14 power to 2000w;
- 15 Click Import;
- 16 Click Save;
- 17 Click Back;
- 18 Laser On Button;
- 19 Wait for the red light to appear at the muzzle;
- 20 Double-click the trigger button (long press the trigger button for the second time) to emit light normally.

⚠ Warning: Do not touch anyone during cleaning



Remote cleaning	Air pressure
	0.5-1.5Mpa



Shutdown

- 1 Turn off the laser;
- 2 Turn off water chiller;
- 3 Turn off system;
- 4 Press emergency stop.



JINAN JOBON LASER TECHNOLOGY CO., LTD.

Website: www.jobonlaser.com

Address: Chemical Fiber Factory Road, Jinan, Shandong, China