

**bodor**

Dare to dream

# Bodor Welder1500

## Installation & Debug Manual

**Version: V1.0**

**Release date: 3<sup>rd</sup> Dec 2023**



Translated by Christopher

# I Safety Notification

## 1.1 Preparation

- (1) For safety, it is prohibited to aim the welding head at anybody.
- (2) Before using the welder machine, it is necessary to wear suitable certified 1080nm near-infrared band laser protective goggles and high-temperature resistant gloves.
- (3) The welding operation shall be carried out in an independent space with laser protection.

During operation, non-operator combustible and flammable materials should be more than 10 meters from the welding platform. Must place a fire extinguisher near the welding area.

- (4) Wear a protective mask when welding highly-reflective materials
- (5) Ensure that the welding machine is properly grounded. Otherwise, the metal casing could become electrically charged and cause personal injury

## 1.2 Prevent security risks

- (1) For safety, before laser welding, the crocodile clip must be clamped on the welding workpiece. It is prohibited to clamp in other places to avoid accidental laser beams.
- (2) To avoid high temperature and humidity alarms or short-circuit problem. It is prohibited to work in an environment of rain or direct sunlight.

## II Equipment assembly

### 2.1 Precautions before assembly

- (1) After the welding machine arrives, it is necessary to stand the machine horizontally for 2-4 hours. During transportation, the welding machine may be affected by turbulence and vibration, causing the compressor oil to disperse into other parts of the system, which affects the efficiency and service life of the welding machine.
- (2) During operation, it is forbidden to operate at a tilt. If the welder is operated at a tilt of more than 15°, it must be standing horizontally for 2-4 hours before the next use.
- (3) Ensure reliable grounding before power-on.
- (4) Before an operation, check whether the refrigerant is sufficient, if not, ask professionals to fill the refrigerant.

## 2.2 Wire feeder assembly



1. There are two cartons for the welder machine. The large one contains a welding machine. A wire feeder is in the small one.



2. Open the small carton. Keep the carton and do not damage or discard it.



3. Take the wire feeder out.



4. Open the side panel of the wire feeder and take the kit out.



5. The kit contains a wire feeding tube, a 12-14 spanner, a 14-17 spanner, two wire feeding wheels, four wire-guide nozzles, two wire-guide tubes (60mm,100mm), two inner hexagonal wrenches (2mm,4mm)

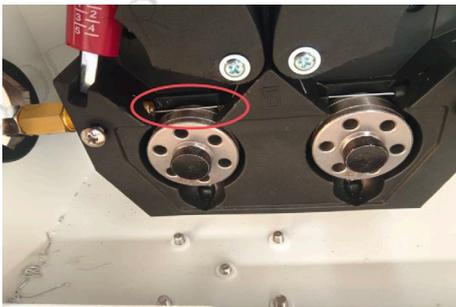


6. The wire-guide nozzle is to be installed on the wire-guide tube. They have four specifications: 0.8, 1.0, 1.2, and 1.6.

Select the corresponding guide nozzle according to the different diameters of the welding wire.

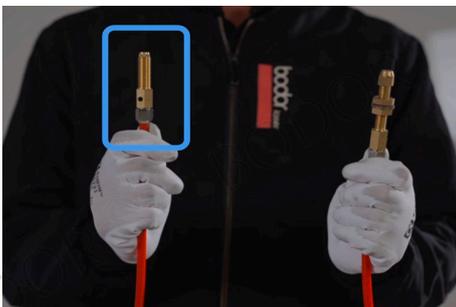


7. Select the appropriate wire-feed wheel. The value on the wire-feed wheel means the matching wire diameter and the top wire groove.

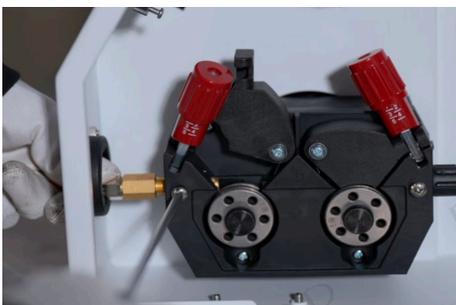


8. After the wire-feed wheel is installed, the welding wire passes through the wire groove inside the wire-feed wheel.

After installation, the inner wire groove is the current wire groove to be used, corresponding to the current visible diameter value.



9. There is a difference between the two ends of the wire feeder tube, install the end that is circled in blue in the picture at the wire-feeder outlet position.



10. Thread the back end of the wire feeding tube into the wire feeding machine outlet and into the wire feeding mechanism.

Keep a distance of about 3mm between the copper tube head and the wire feed wheel, and then tighten the copper tube head using a screwdriver.



11. Install the wire reel, loosen the cap on the support then remove it.



12. Note that the positioning hole on the wire reel corresponds to the positioning column on the rotating shaft.



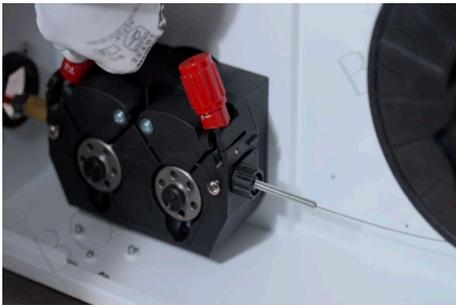
13. Install the wire reel on the rotating shaft and lock the cap after adjustment.



14. Open the red pressing handle to the horizontal position, open the feed wheel gland, and then insert the welding wire along the spring tube into the feed tube. Note that the welding wire should be straight into the spring tube, and the welding wire must not be bent.



15. The welding wire enters the wire feed wheel through the wire tube, and then goes into the rear interface of the wire feed tube, and inserts the welding wire about 0.5 meters in length.



16. Press the cover of the wire-feed wheel, and then lift the red pressing handle, and stop the rotating handle if there is resistance. It does not have to be too tight. Keep the screw wheel gland in a locked state.



17. As shown in the figure, the wire-feed unit is installed.

## 2.3 Welder assembly



1. Open the large carton. Keep the carton and do not damage or discard it.



2. Take out the plastic bags.

Packing list

ITEM NO	Specifications and location	U
<b>Fiber lasers</b>		
Welder #	BW1500	
Welder #	GNW1.5	
Wire feeder (including packaging)	BF600 (including power cord, wire tube, wire feed wheel)	
220VAC power cord (onboard)	5m	
Signal trace	10m	
Grounding wire	10m	
Copper nozzle box	Contains 7 copper nozzles and 1 scale tube	
Protective lens	D18x2-PW-3KW-15	
Laser protective glasses	ADE-D4T35	
Cotton swabs	BB-002-25	
Clean cloth	9" x 9" - 10 pieces	
Quick operating manual	SK-ECT 8-core 1M	

Inspectors

3. Take out the welder machine accessories and check them according to the parts list.



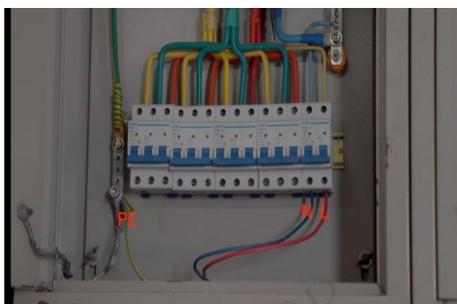
4. The accessories of the welder machine: welding machine power cord, wire feeder machine power cord and signal wire, safety lock wire, ethernet cable, goggles, copper nozzle box, protective lens, cotton swabs, clean cloth, quick operating manual, etc.



5. Take out the main power cord of the welder machine, one end is a three-core air plug, and the other end is a three-core terminal (live, neutral, ground wire).



6. Plug the power cord into the socket on the welding machine

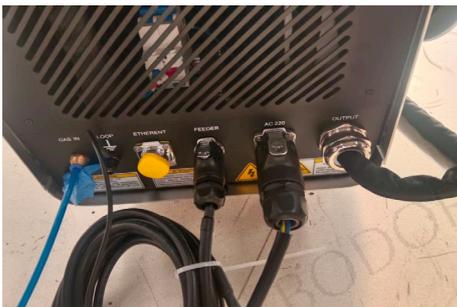


7. Connect the other end of the power cable of the welding machine to the terminal of the distribution box. The power supply is 220V, 50Hz/60Hz, and it MUST be grounded.

If a transformer is installed, connect the power cord of the welder to the output port of the transformer.



8. The five-core plug is to connect between the welder machine and the wire feeder.



9. Plug the wire feeder power cord into the feeder socket on the welder machine.



10. Plug the other side of the wire feeder power cord into the wire feeder.



11. Install the safety lock wire on the Loop terminal on the welding machine



12. Open the cooper nozzle box, take out the focusing tube and the nozzle you need. Specifications and instructions for the nozzles can be found on the quick operating manual



13. Remove the welding torch, open the dust cover of the welding torch, loosen the nut of the dust port, insert the fixed focus tube into the welding torch port, and slightly tighten the nut.



14. Install the nozzle you need to the focusing tube.



15. As shown in the picture, the focusing tube is installed.

## 2.4 Air-circuit assembly



1. Prepare Nitrogen or Argon



2. Prepare the gas flowmeter



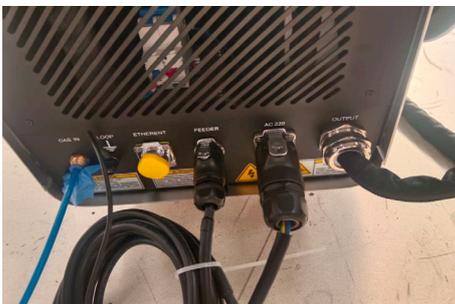
3. Install the gas flowmeter on the gas cylinder, and the air outlet is connected to the PU gas pipe with a diameter of 10mm.



4. Connect the 6mm air pipe using a reducer.



5. Open the outlet gas and adjust the gas flow rate to 15L/min.  
Or use a pressure-reducing valve with no flow indication, and keep the outlet air pressure above 0.3 bar.



6. Connect the other end of the 6mm gas pipe to the gas in port on the welding machine.

## III Knob Screen

### 3.1 Knob Screen manual



1. Power on the welder machine, the bodor logo will blink. Short-press it, the logo will stop blinking.



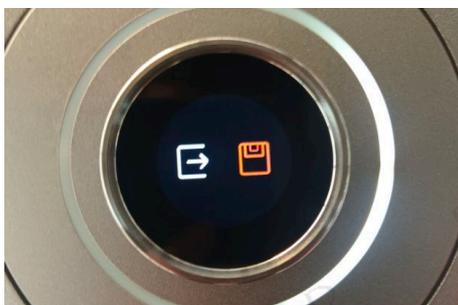
2. Short-press it again, it will show the user configuration 01. Rotating the button clockwise will switch to another configuration. There are 15 user configurations available.



3. Short-press it on the user configuration 1, it will show the main parameters.



4. Hold the knob will enter the laser power adjustment interface. Short-press the knob, the number will turn yellow, rotate it to adjust the power. Short-press it will save the power. Rotating clockwise will adjust the next parameter.



5. The final interface of the settings is the quit interface, short-press it to turn the quit icon yellow, if you want to save the configuration, switch to the save icon and short-press it. There will be a drip from the knob, if the configuration saves successfully.



6. After saving parameters, it will show the main parameters of this configuration again. Check whether the parameters are what you want.

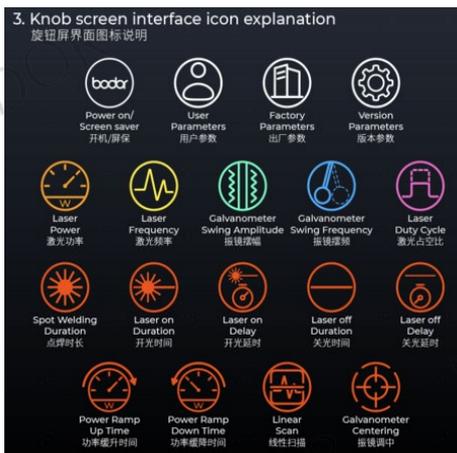


7. If rotate the knob counterclockwise on the User Configuration 1, it will show the Info interface. Short-press it will show the SN code of the machine.



8. If rotate the knob counterclockwise on the Info interface, it will show the Default Configuration. There are 5 of them, and none of them could be adjusted.

### 3.2 Parameter Icons



You can find the explanation of each icon in the Quick Operating Manual part 3.

## IV Focus Control

### 4.1 Focus adjustment



1. Find a metal plate (carbon steel or stainless steel) and clip the safety lock to the metal plate.



2. On the knob screen, set the laser power to 20%, laser frequency to 0, duty cycle to 0, galvanometer swing frequency to 50Hz, galvanometer swing to 2000um, switch delay to 200ms, light off delay to 100ms, spot welding time to 9s, power reduction time to 150ms, power ramp-up time 150ms, light-off time 100ms, light-on time 50ms.



3. Turn on the welding gas, then place the welding gun against the metal plate. The welding gun and the plate are at a 45° angle. Do not move the nozzle. Trigger the welding gun switch and telescope the focusing tube up and down. The position where the spark splashes the most is focus 0, stop the light, remember the number on the focus tube, raise the torch to adjust the focus tube to the focus 0 position, lock the nut.

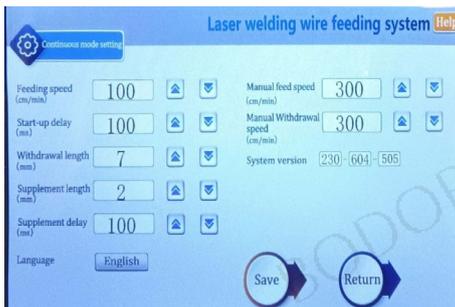
### 4.2 Wire feeder Adjustment



1. Power on the wire feeder.



2. The display of the device is a touch screen. It will enter the main control interface automatically.



3. Click Setting to enter the main parameter settings.



4. There are a variety of languages in the system. Click language to change the display language.



5. Make the wire feed tube straight and the bending radius of the wire feed tube is greater than 300mm.



6. Please click Run on the main control interface, then click manual withdrawing.



7. After about one minute, the welding wire is sent out through the wire feed tube. Stop the manual withdrawing when the welding wire is 30mm out.



8. Install the wire guide and pre-tighten the nut.



9. Install the wire guide nozzle through the welding wire on the wire guide tube and lock it.



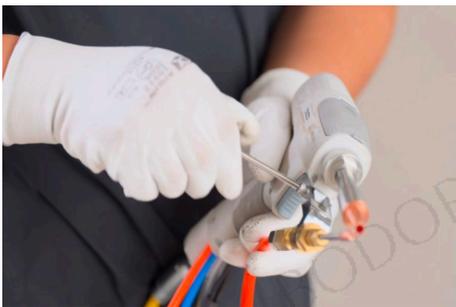
10. Connect the nozzle bracket to the nut at the front end of the torch and pre-tighten the nut.



11. Connect the wire feed tube to the welding torch, do not lock the nut.



12. Adjust the position of the wire guide tube, the wire guide nozzle is under the welding nozzle, and ensure that the gap between the two is between 1-2mm. Make sure the welding wire is stuck in the slot of the welding nozzle and adjust to tighten the nut.



13. Fasten the support screw of the wire feed tube to the welding torch.

# V Welding

## 5.1 Welding Method

4. Nozzle Options(For various processing scenarios)  
适配焊接头说明

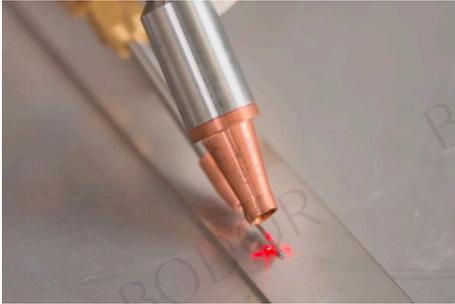
No. 编号	AS-12	BS-16	BS-20	C
Welding Wire Dia. 送丝(mm)	0.8/1.0/1.2	1.6	2.0	0.8
Welding Technology 工艺	Flat weld Inside corner Outside corner 平角/内角/外角	Flat weld Inside corner Outside corner 平角/内角/外角	Flat weld Inside corner Outside corner 平角/内角/外角	Outside corner

1. Choose the appropriate nozzle refer to the quick operating manual.

4. Welding technology reference table  
焊接工艺参考表

Materials 材料	Welding Technology 焊接工艺	Thickness 厚度	Laser Power 激光功率	Galvanometer Swing Frequency 扫描频率	Galvanometer Swing Amplitude 扫描幅度	Wire Feed Speed 送丝速度	Wire Diameter 焊丝直径
Stainless Steel SS 不锈钢	Flat Weld 平焊	1mm	50W	60Hz	3mm	80cm/min	1mm
		2mm	50W	60Hz	3mm	80cm/min	1mm
		3mm	50W	60Hz	3mm	80cm/min	1mm
	Corner Weld 角焊	1mm	50W	60Hz	3mm	80cm/min	1mm
		2mm	50W	60Hz	3mm	80cm/min	1mm
		3mm	50W	60Hz	3mm	80cm/min	1mm
Carbon Steel CS 碳钢	Corner Weld 角焊	1mm	50W	70Hz	2.5mm	80cm/min	1mm
		2mm	50W	70Hz	2.5mm	80cm/min	1mm
		3mm	50W	70Hz	2.5mm	80cm/min	1mm
	Flat Weld 平焊	1mm	50W	70Hz	2.5mm	80cm/min	1mm
		2mm	50W	70Hz	2.5mm	80cm/min	1mm
		3mm	50W	70Hz	2.5mm	80cm/min	1mm
Aluminum AL 铝	Flat Weld 平焊	1mm	50W	60Hz	3mm	80cm/min	1mm
		2mm	50W	60Hz	3mm	80cm/min	1mm
		3mm	50W	60Hz	3mm	80cm/min	1mm
	Corner Weld 角焊	1mm	50W	60Hz	3mm	80cm/min	1mm
		2mm	50W	60Hz	3mm	80cm/min	1mm
		3mm	50W	60Hz	3mm	80cm/min	1mm
Copper Copper CU 铜	Flat Weld 平焊	1mm	50W	35Hz	3mm	80cm/min	1mm
		2mm	50W	200Hz	2.5mm	70cm/min	1mm
		3mm	50W	200Hz	2.5mm	70cm/min	1mm

2. Refer to the quick operating manual, input the welding parameters in user configuration and save them.



3. Hold the torch to the workpiece, and check whether the red light center is on the wire. If not, you can slightly turn the focus tube to adjust the red light. If it still deviates, it is necessary to adjust the optical center (see section 6.1).



4. Open the gas, clamp the safety lock on the workpiece, and make wire feeder run. Wear protective glasses and gloves, put the welding torch on the workpiece, keep a 45° Angle with the workpiece, press the welding torch slightly downward, so that the welding wire and the workpiece are completely tight, trigger the switch on the welding torch to weld



5. The picture shows the welding method of two carbon steel plates. The welding wire is made of carbon steel. Note that the welding speed depends on the speed of the wire advance. When the welding is suspended, do not release the switch immediately, lift the torch and then release the switch



6. The picture shows stainless steel inner corner welding and the welding wire is made of stainless steel. Note that different materials of the workpiece must be used to match the welding wire and welding process.

# VI Laser-aligned Adjustment

It has been adjusted before delivery. Usually, it does not need to be adjusted

## 6.1 Adjust the laser center (← →)



1. Remove the nozzle and attach the paper tape to the focus tube port.



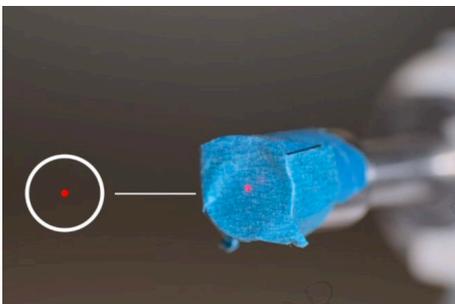
2. Power off the welder then restart it, the knob screen will blink, short-press it, it will stop blinking.



3. Hold the knob to enter the laser-center adjustment interface. Short-press it to adjust with ten digits; Short-press it again to adjust with hundreds, Short-press it another time to adjust with thousands of digits.



4. Adjustment position cannot be displayed in real-time. Every time adjust it, hold the knob to enter the Save interface.



5. Rotate the knob and choose the back icon(it will turn yellow) then short-press it, and the position of the laser center will move. Repeat steps 3-5 until the laser is in the center.

**Notice: During the adjustment, DO NOT stare at the red light or aim the red light to anyone.**



6. When the laser is in the center, rotate the knob to make the Save icon turn yellow, and short-press the knob, it will save the laser position.

## 6.2 Adjust the laser center (↑ ↓)



1. Open the rear cover of the welding torch using a Phillips screwdriver and remove the rear cover.



2. Adjust the two screws indicated in the left picture with a 2mm hex wrench and observe the red light center to reach the center position.