USER MANUAL

BENCHTOP LASER SPOT WELDER

Model No.: CY-W150

Preface

Thanks for purchasing our laser welding serial products.

Laser spot welding is an important and basic aspect of laser material processing technology. When laser radiation heats the surface of work-piece, the surface heat diffuses to the interior through thermal conduction and melts the work piece by controlling the width, energy, peak power and repeating frequency of laser pulse to form specific molten pool. Because of this unique feature, it is widely used for spot welding, perforating, repairing, retipping and resizing of gold/silver/titanium/platinum jewelry and small accessories. Also widely used in aviation, aerospace, sports products, medical instrument, titanium alloy denture, instrument, electronics, machinery, automobile, etc

We have made necessary precautions as much as possible to ensure operator's safety. Nonetheless, incorrect use/ maintenance/transformation of the machine will still cause various damages to the operator or machine.

Please pay special attention to the following points:

- ▪When you don't use this machine, please keep power off
- ▪Please don't try to change any part inside the machine with power on
- ▪Make sure this machine is well-grounded and regular checking is necessary
- ▪Use one hand only to turn on/off the switch in order to avoid any possible human body circuit
- ▪If you have to touch those parts with high voltage, please use well-insulated tools

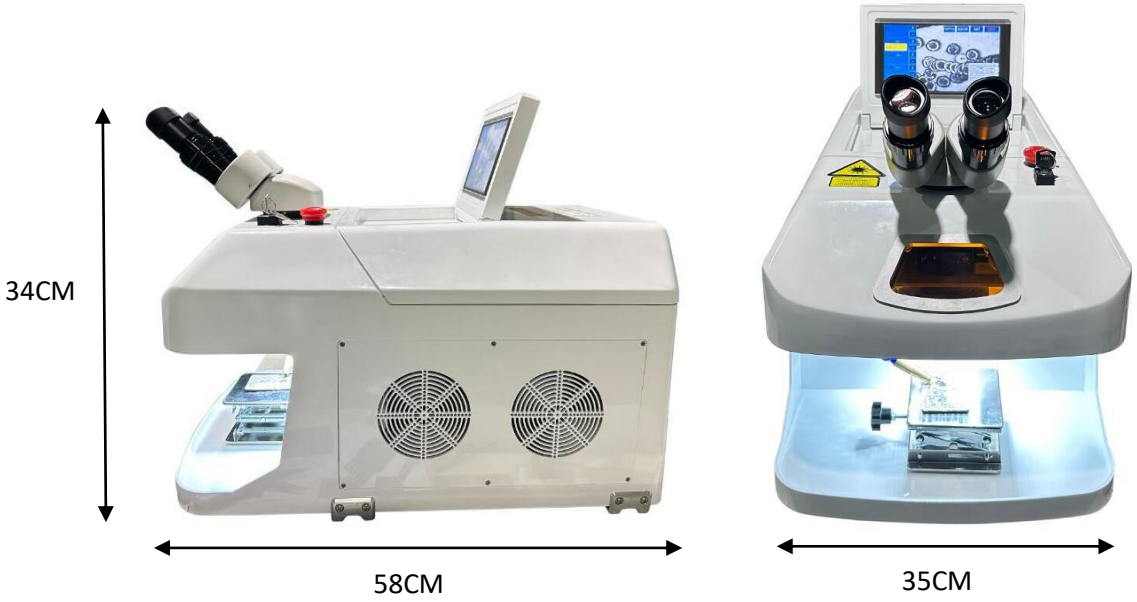
1、 This machine is a CLASS 4 LASER.
Any direct exposure to laser flash or beam can be harmful to operator's eyes and skin. When observing via microscope, please stop operation for 3 minutes every 30 minutes. When observing via CCD, don't stare at the LCD screen for more than 1 minute continuously.

2、 There might be a fire accident or even explosion if laser beam shoot on flammable materials. Therefore, please don't put any flammable materials down/nearby the laser welding head.

3、 Please don't operate this machine with the shield cover open, unless you're permitted to do this by our technician for repair purpose.

4、 There's a danger of getting electrical shot when you try to fix any part inside the power unit or try to change the xenon lamp inside the laser chamber. Please turn off the power before any operation and try your best to operate with one hand only.

1. Machine Dimensions



2. Technical Parameters

Laser Wavelength	1064nm
Maximum Laser Power	150W
Maximum Pulse Energy	80J
Pump Source	Single Xenon lamp
Pulse Width	0.1-15ms
Pulse frequency	1-10Hz Adjustable
Aiming Tool	Microscope 10X
Location Assistance	CCD camera and LED monitor
Operation Interface	7” color touch screen
Language	English
Aplicable Material	All kinds of jewelries or accessories that made from inox, brass, titanium,platinum,k gold, silver alloy
Power Consumption	≤3KW
Power Supply	AC220V/50HZ (AC110V/60Hz optional)
Cooling Type	Air cooling
Dimensions	L58×W35×H34 CM
Net Weight	27.5KG

3. Boot Preparation

1. Ensure that the voltage of the input power supply meets the power supply requirements of the manufactur (refer to machine namaplate), and the grounding is strictly in accordance with the national electrical standards.
2. Insert the power cable correctly into the POWER SUPPLY jack and connect it to the mains (see Figure 4-1).
3. Connect the foot switch correctly (see Figure 4-1). Internal schematic diagram of the control signal (Figure 4-2)
4. Insert the dispensed hose into “WATER INLET” socket of the machine and place the other end in the spare purified water to prepare for water injection (see Figure 4-1).
5. Install the microscope correctly on the machine. Refer to the position and orientation (Figure 2-1).
6. Turn on the “Emergency Stop Switch” and turn the “Key Switch” clockwise. The display will light up.
7. The touch display illuminates and displays the laser power system logo related interface (Fig. 4-3), and the display time automatically enters the next interface in 3 seconds
8. Water injection operation, click “Setting” on the standby interface, pop up the input box, enter the password 999999 and press the PUMP button to start the water injection work. When the water injection is completed, machine will stop pumping automatically and show “pumping completed”. (Figure 4-5 and Figure 4-6)

Figure 4-1

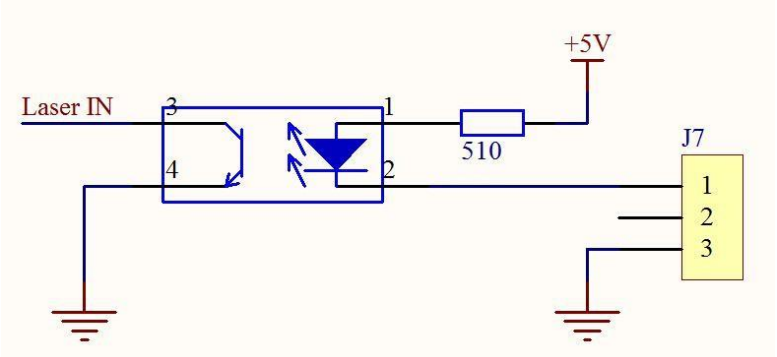


Figure 4-2

Figure 4-3

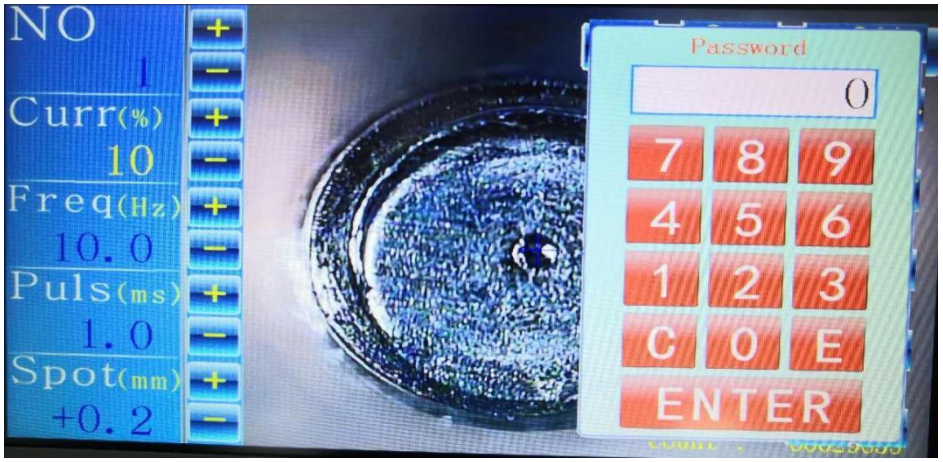


Figure 4-4

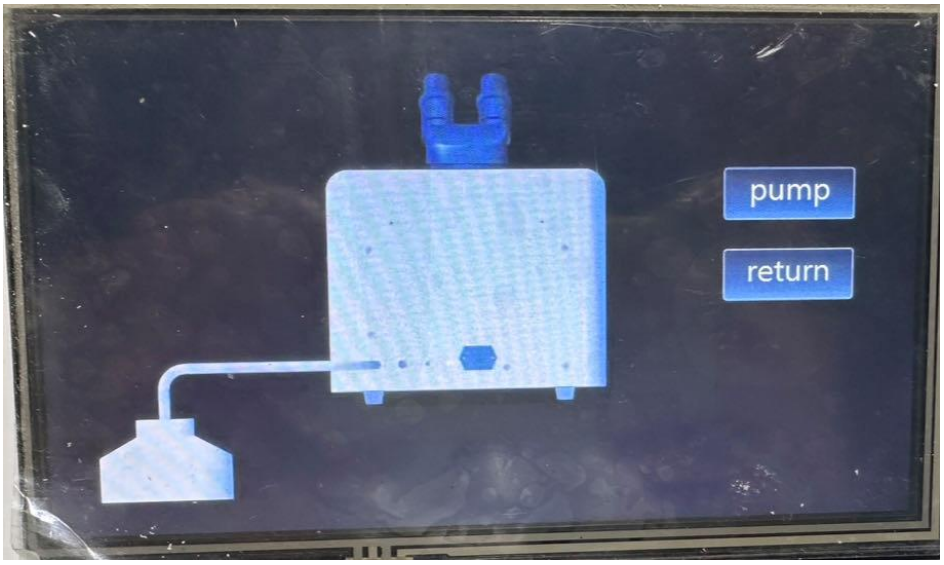


Figure 4-5

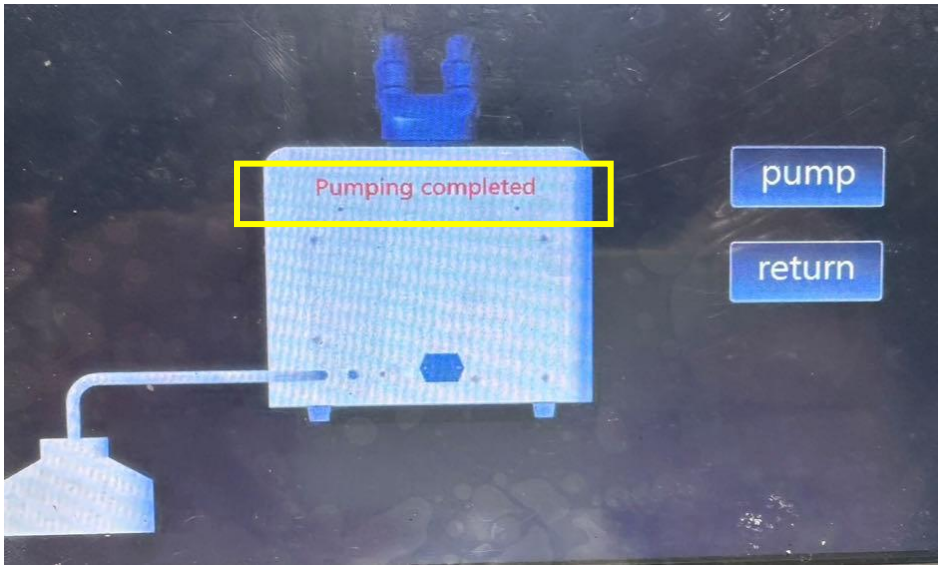


Figure 4-6

4. Software Operation

1. To enter boot interface , you can enter any interface, parameter settings (see Fig. 3) , the upper right corner shows the power button , indicating the device state , ready for the power command.

Fig.03

2. Touch the power button (see Fig. 03) to enter the boot waiting interface (see Fig.04) Reminder " Is starting up , please wait ! " If you touch the power button appeared the interface of the Fig.05,please check the relevant line according to the interface reminding, remove the fault, start again.

Fig.04

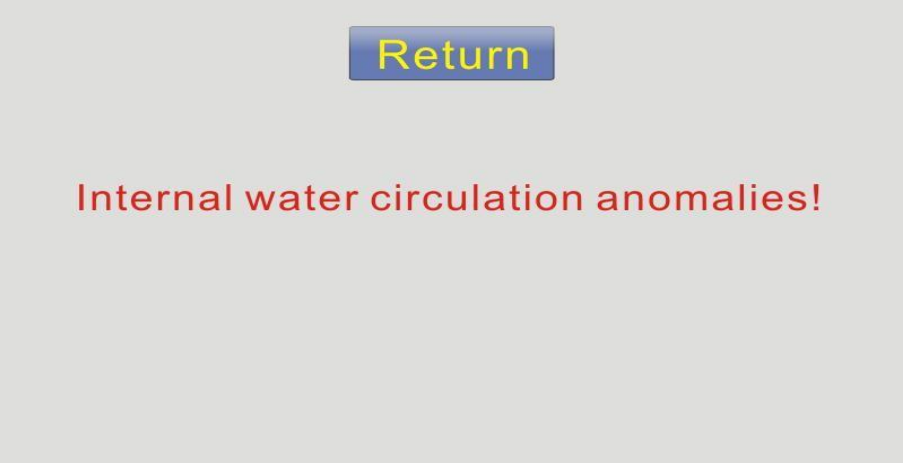


Fig.05

3. After starting 18s, Power system will enter the standby interface (see Fig. 06) , if there is interface(Figure 07). check the discharge box drive and testing wire or xenon lamp is connected reliably or not. The upper right corner shows power off button , reminds the device state , start finished , and enter the using state. While preparing for the turning off .

Fig.06

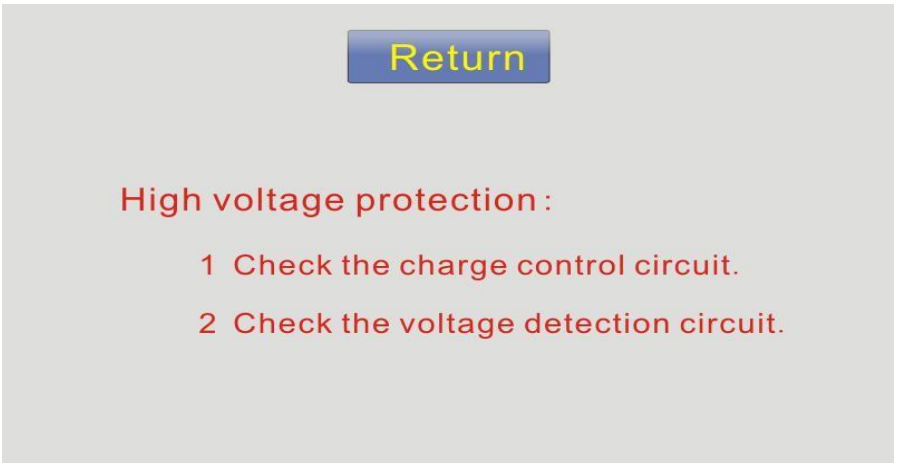


Fig.07

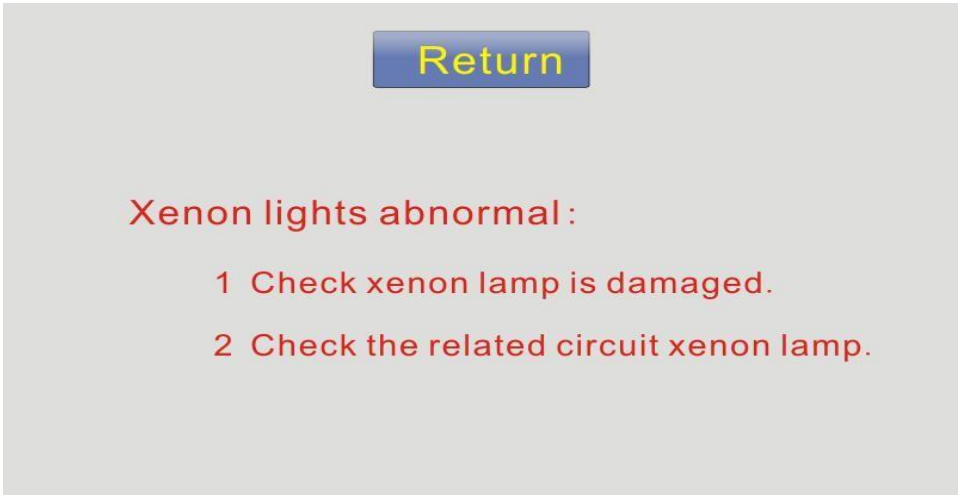


Fig.08

4. After normally standby, power is ready for normally conveying electricity to the xenon lamp. According to the needs ,the interface can be switched: Version View (see Fig. 08) ; parameter adjustment (switch to the programming interface see Fig. 09) ; related equipment company (switch to another interface see Fig. 10) .

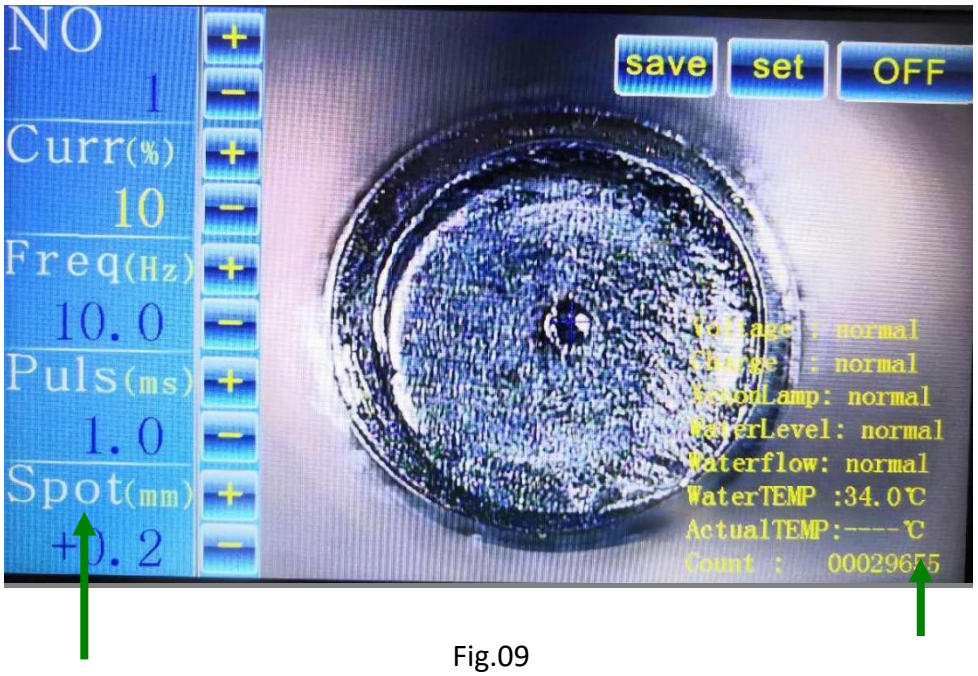


Fig.09

5. Interface Introduction

Click the programming button to enter the programming interface. Programming is used to set and modify the parameters of the laser power , set up the parameter values of the laser energy (see Fig. 09).

Fig.10

Program Number:

The current interface parameters save as a whole and set a digital ID , user-friendly storage , classification, use at any time. It can store up to 50 groups of program (Figure 09 is the 6th program) .

Frequency Hz:

Shows the pulse frequency per second of the power (the number of laser per second) , the unit is Hz. The higher frequency , the more number of pulses per second . Maximum frequency is 200Hz. In continuous welding, welding melting trace is smoother . According to the welding products and operator proficiency to set the frequency, generally angular position frequency lower of the welding products ,and flat , table moving at high speed higher when automatic welding.

Power t% :

Mean the current size of the discharge lamp (xenon lamp providing light for the laser excitation), the higher current , the greater energy of the laser output . The adjustment range of the current is 1% -100 %, correspondence voltage value is 250-420v. Depending on the specific welding situation with the corresponding percentage current.

Pulse width ms:

Show the working pulse width of each single laser point, the unit is ms. Adjustment range is 0.1ms-8ms. Maximum laser frequency in practical applications depends on the frequency, current (maximum pulse width not bigger than a frequency cycle). At the same current , the wider pulse width, the longer the laser output , the larger total output energy. Specific pulse width depends on the welding technology.

Spot ms:

before the Spot display numbers, " + , - " symbol says the Positive and negative defocus of the spot ; values will change at the frequency in 0.1 / second ; size of the displayed figures means the reference size of the spot (see the introduction of electronic gear) .

Decrease / Increase :

Modifying the parameter . First click (or joystick options) on the project box which you need to modify the parameters, when the project frame shows against blue, which means the parameter selected, and then click the button to decrease or increase, the value will change the frequency at 0.1 / times or 1.0 / times.

Save:

Save the above parameters modified , saved in the program of the current digital number(see Fig. 09 , or the program 6) .

Others (programming interface right corner) :

Set up another parameters in the machine. Click the buttons , eject the password page (see Fig. 11) . Enter the password and click R to make sure , eject the parameters interface of the electronic gear .

Fig.11

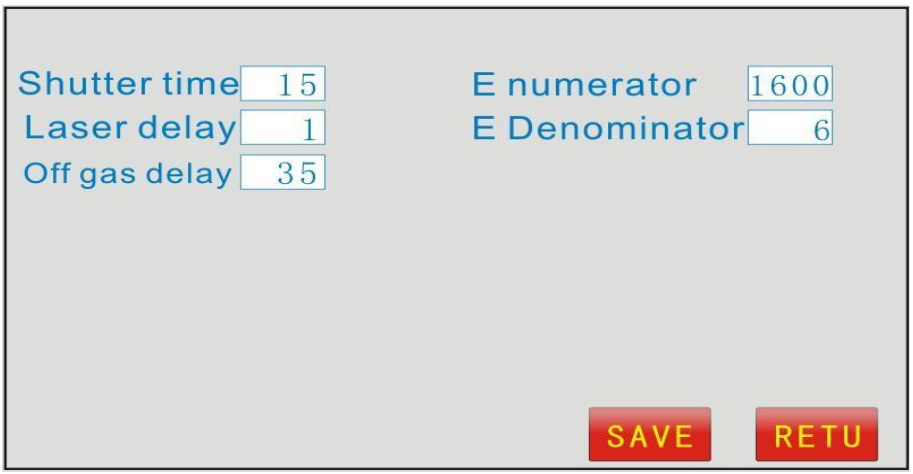


Fig.12

6. Advanced Setting

Shutter Time ms:

Set up the shutter time of the high-speed LC light valve which is synchronizing with the laser. The laser come out, the software default that laser LC light valve opening 10ms early; block light delay and single -point laser blocking time , such as : Single-point laser pulse is 8ms in the figure 06, and is 40ms in the block light figure 12; Close the light valve when no laser.

Laser delay ms:

Blowing out before the laser . Since the speed of light is faster than the blowing , blow the protective gas before the laser , ensure that first filled with protective gas in the welding space to prevent oxidation .

Off gas delay ms:

Shut off the laser after the delay gas . Main role is to prevent oxidation.

On / Off :

Open, close control the function of these three projects. Click to selecte any of the project, and then click the On / Off button , the next working condition of the selected item will switch between working and closed. Close the selected item , the item will not operate .

Electronic gear :

According to the numerator / denominator = the spot value 0.1mm, the number of single step pulses(single-step changes in the specific spot related with drive subdivision and expanded beam screw pitch) .

Decrease / increase :

Modifying the parameter . First click (or joystick options) the project frame which need to modify the parameters, when the project frame shows against blue, which means the parameter selected, and then click the button to decrease or increase, the value will change the frequency at 1 / times.

Save / Return :

After setting the parameters , click Save to save the parameters at the current interface, click Back to return to last parameter interface .

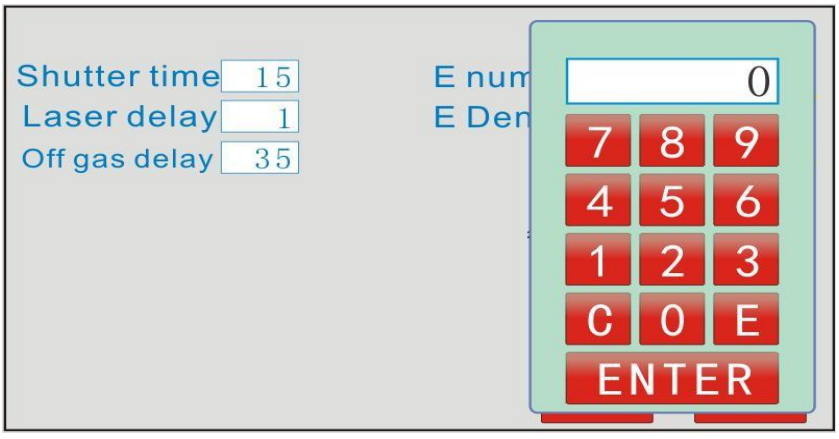


Fig.13

Shutdown :

Ready to shut down, touch to the interface status see Fig.15 (Fig.06).
Touch the off key at the interface status of top right corner, eject the confirmation interface see Fig.16 (prevent accidental design) .

Fig.14

Touch the off key at the interface status of top right corner, eject the confirmation interface see Fig.15 (prevent accidental design) , Choose whether to return to work status .

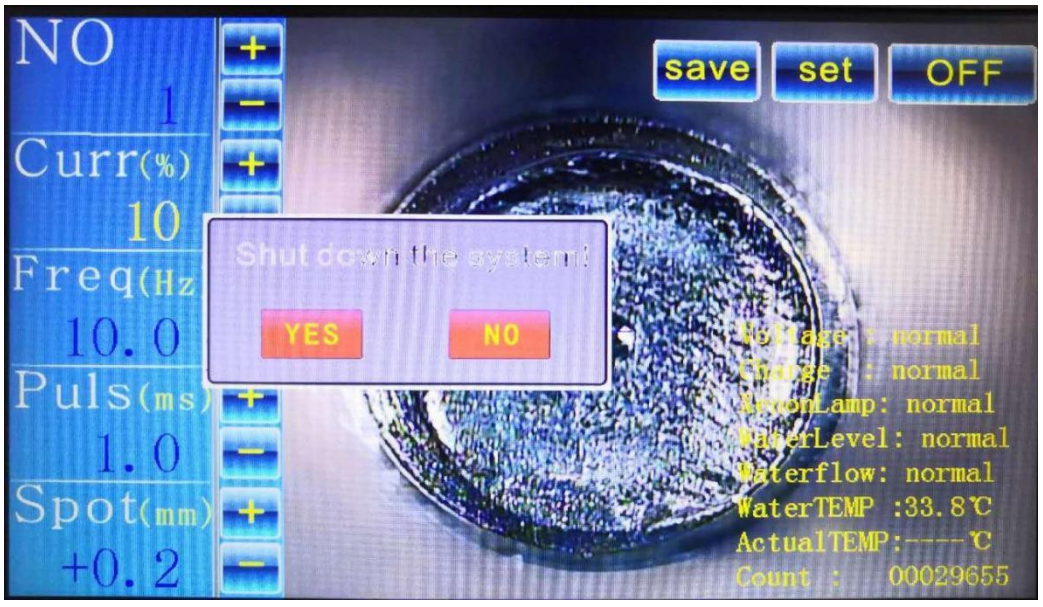


Fig.15

Touch yes key, eject a new interface see Fig.16, according to the prompts to turn off the key , emergency stop switch, the screen goes out, turn off the total power supply. Shutdown completed.

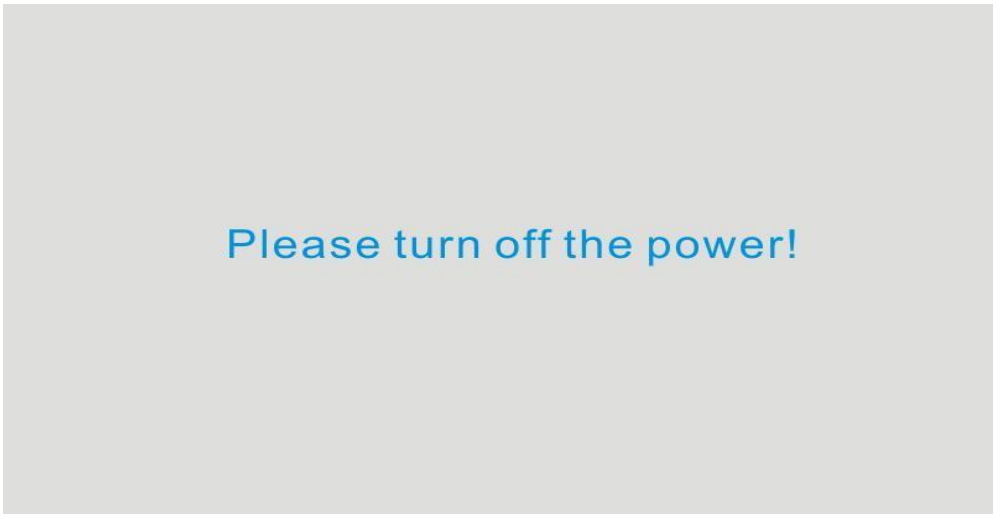


Fig.16

7. Welding Instruction

7-1 Observation system:

This jewelry spot welding machine observation system consists of a microscope and a built-in high-definition CCD camera. It can clearly observe the welding position of the workpiece and facilitate welding.

7-2 CCD cross cursor adjustment:

In the position where the CCD camera system is very clear, if the spot is not at the center of the cross cursor, you can change the position of the cross cursor by clicking the middle position on the four sides of the screen, so that the solder joint is at the center of the cursor.

7-3 Welding operation,

First make sure that the machine has been turned on normally, put the workpiece into the line of sight of the observation system, and then slowly weigh the clearest position of the observation system, the cross mark is aligned with the position to be welded, the foot switch is gently stepped on, and the machine has laser output for welding.

7-4 Parameter adjustment, focal length adjustment, after the first welding, the welding point welding effect does not meet the requirements, and the parameters, the focal length (-3.0-+3.0) need to be adjusted to make the welding effect meet the requirements, and the subsequent welding is not repeated. Need to adjust again.

8. Machine Package

▪ Please keep the original package for 3 month at least just in case return or repair.
▪ Don’t sign the shipping note if machine arrived to you up-side-down