OY STEPPER

Zoneray®



HL-WD DENTAL SPOT WELDER
INSTRUCTION

HL-WD Ⅰ



HL-WD Ⅱ



HL-WD Ⅲ



Dear customers,

Thanks for purchasing HL-WD dental spot welder produced by Hangzhou ZhongRun Medical Instrument Co., LTD. You must read the instruction carefully before using the device on the safe and right side and make sure to keep it near the device so as to be read at any time.

When run the device, you must observe the rules strictly and preserve correctly and regularly.

On the other hand, our company has the right to reserve an extra notice of the improvement of the device.

The product agrees to EN ISO13485：2003+AC 2009 standard，which is approved by the system authentication of TÜV Rheinland LTD, and also gained the CE certificate.

I. Notes of the Medical appliances

1. The device must be used by specific persons instead of nonprofessional ones.

2. Notes on placing the device:

1）It must be put in the place which is not connected with water or any other liquid.

2) It must be kept and used in the place where there is no adverse air caused by air pressure, temperature, humidity, ventilation, insolation, dust, and salt, ion etc.

3) It must be placed steadily and stably without any tilt, quake or the possibility of impact.

4) It must be far away from chemicals and chemical gas.

5) Power socket must apply with the required voltage and current of the device. Make sure to set the socket and lines correctly and the device requires separate socket with safety grounding.

3.Notes before using

1).Check is a must before using. Make sure there is no abnormal phenomenon on the appearance, esp. no water, the electrical lines of the socket is integrated without any crack or breakage, the switch and indicator are normal.

2).Make sure the safety grounding correctly and stably.

3).Make sure the supplying voltage and frequency agrees with the requirement.

4. Notes while using it

1）Specified use:

HL-WD I: used for welding stainless steel wire, stainless steel sheet in dental orthodontics and treatment.

HL-WD II/ HL-WD III: multi-functional spot welding used for welding stainless steel wire, stainless steel sheet, also be used for heat treatment of arch wire materials forming in dental orthodontics and treatment.

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2) Monitor whether there is any abnormal phenomena strictly. Once something is abnormal, turn off the switch and pull out the socket.
3) The patient mustn't contact the device.

5.Notes after using

1).Checks must be made according to the requirement strictly and turn off the switch.
2).After turning off the switch, the socket must be held down instead of pulling down.
3).Keep requirement about discontinued devices:
(1).It must be put in the place which is not connected with water or any other liquid.
(2).It must be kept and used in the place where there is no adverse air caused by air pressure, temperature, humidity, ventilation, insolation, dust, and salt, ion etc.
(3).It must be placed steadily and stably without any tilt, quake or the possibility of impact.
(4).After using, please keep it clean and placed in dry and ventilated room without corrosive gas. It must be far away from chemicals and chemical gas.
4).To guarantee the normal use of the device, the device and its accessories must be kept properly after cleaning.

6. You mustn't dismantle, or repair the device by yourself when met problem, must contact distributors, and repair by specific persons.

7. You mustn't remake the device, or you have to be responsible for the consequences and lose the warranty at last.

8.Regular check and maintenance

1.Under normal circumstances, it is suggested that check once before using and make maintenance weekly.
2.If it is in idle for a while, the check on the safety and function is needed before resetting. You can use it when you make sure it is normal.

9. Other important notes

If you don't use the device according to the instruction, there will be something wrong with it or some danger and accident, so be on the alert. Be sure carefully read this instruction, and in strict accordance with the requirements and specifications to use the device.

II . To guarantee the safety of using the device, the rules must be observed.

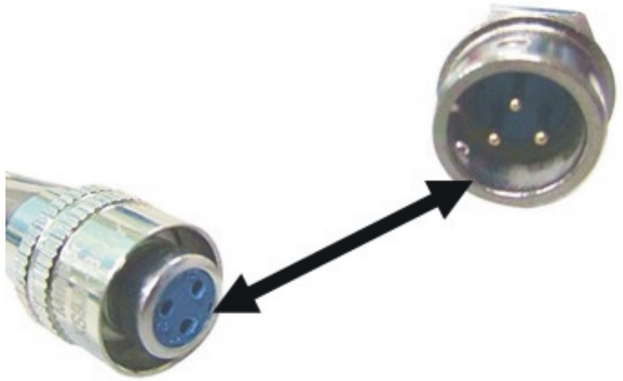
1. It must be used with the single-phase three-pin power supply, guarantee the cover connect to the ground to ensure safety.
2. The device should be cleaned and placed in on a dependable work platform for operating.
3. Use AC stabilized supply if possible, since it can not only guarantee the welding power stability, but also reduce affection to other electric appliance.
4. The electrode must be rotated in a clockwise direction.
5. When the welding energy is larger, or the weldment get in bad connect, operators must wear protective glasses and protective insulation gloves to prevent spatters which produced during the welding from burning human body.
6.When operate under the welding and heating conditions, according to the operation method, operators should put the state block in the correct position and adjust the “mode” button correctly, besides, whenever operating in which mode, electrodes and heat treatment poles will output energy at the same time, so during welding, please don’t touch the heat treatment poles, vice versa.
7. Because there may occur induction electric or leakage, the device must be far away from pond or moist places.
8. After using, the device should be placed in dry and ventilated room without corrosive gas in case of safety.
9. To prevent the metal parts from rusting, the device mustn't be kept in the high heat and moist places.
10. The instruction explains the safe use of the device specifically, please be sure to put it near the device and read it carefully and frequently.

*Our company is not responsible for the following problems:

1).Mechanical damage and personal accident caused because the staff out of company reform, detach and repair the device.
2).Mechanical damage and personal accident caused due to using the parts out of our recognition.
3).Mechanical damage and personal accident caused because of not obeying the above rules properly.
4).Mechanical damage and personal accident caused due to violating the required voltage, grounding and placed environment.
5).Mechanical damage and personal accident caused by natural disasters such as earthquake, fire, and flood.

Revised pages

HL-WDⅢ spot welding "function clamps" install operation



Marks on the instruction:

⚠ Caution

Mechanical damage and personal accident will be caused if you violate it.

⚠ Attention

Mechanical damage and personal accident will be caused if you violate it

III.Type and Specifications

1.Product Name: dental spot welder

2.Specifications: HL-WD Ⅰ
HL-WD Ⅱ
HL-WD Ⅲ

3. Main characteristics:

HL-WD Ⅰ, HL-WD Ⅱ, HL-WDⅢ Common characteristics:

(1).Adopt microprocessor control system, reliable quality, and high control precision.

(2).Adopt LCD displays functional mode and power parameter, through membrane button to adjust the parameter, it's convenient and concise.

(3).Good in safety feature, it has overheating protection system, there's indicator and alarm function in improper operation.

(4).With the welding parameters memory function, when switch on, it will automatically show the same parameters as the last set, so there's no need to adjust parameter again at the same condition.

(5).Welding electrodes can be chosen with different combination, it's suitable for the different weldments.

(6).The machine has spot welding function.

HL-WD Ⅱ, HL-WDⅢ Common characteristics: It has various functions as spot welding, braze welding and heat treatment.

4. Main technique parameter:

HL-WD Ⅰ, HL-WD Ⅱ, HL-WDⅢ common technique parameter:

① Power supply: AC 110V, 60 Hz □
AC 120V, 60 Hz □
AC 220V, 50 Hz □
AC 230V, 50 Hz □
AC 240V, 50 Hz □

② Power: maximum instantaneous current 20A

③ Transformer output power: 2000W, output voltage: 5V
④ Incorrect operation alarm: when operation condition don't accord with SET mode, the display shows Error beep.
⑤ Security type: belong to class Ⅰ, type B
⑥ Transformer overheating protection: 85℃
⑦ Energy regulation: Spot welding 1~30
⑧ Dimensions of weldment: Φ0.2mm~1.8mm stainless steel wire
⑨ Fuse: Φ5×20mm, 20A
⑩ Environment conditions: temperature 5℃~40℃, Relative humidity ≤80%
⑪ Storage condition: temperature -10℃~55℃, Relative humidity ≤80%

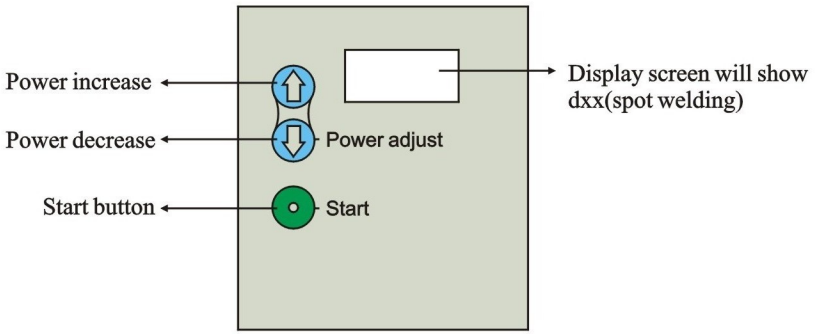
HL-WDII ,HL-WDⅢ common features:

Energy adjust:	Spot welding (dxx)	1~30
	Braze welding (q_x)	1~9
	Heat treatment (h_x)	1~9

Ⅳ. Operation description:

1.Operation panel:

（1）HL-WD Ⅰ spot welding operation panel:

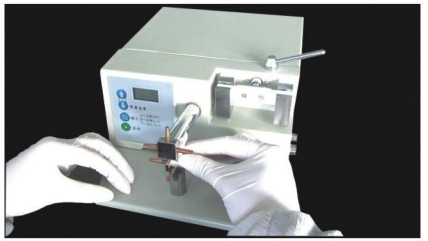


The control panel is in the left side of front panel, there is above electrode arm in the middle of the front-panel, below electrode arm links with welding press platen.

Back of the machine has power switch, fuse tube and foot switch. Foot switch and control panel are parallel connected, it is used to start and stop welding.

Control panel has mode select button for spot welding. It has state instruction: dxx means spot welding. For the working power, it has increasing button and decreasing button to choose.

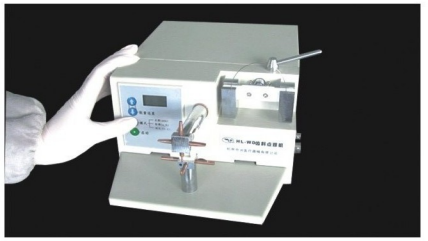
Heat treatment operation



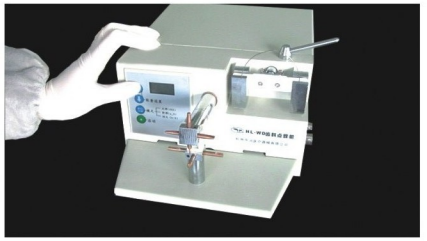
(1) Separate above and below electrode arm



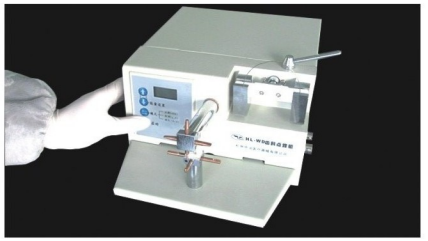
(2)Tightly the arch wire



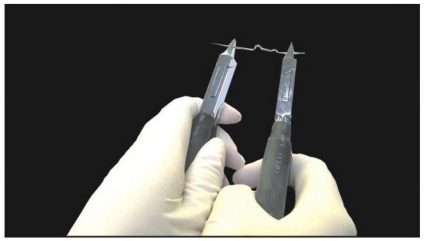
(3)Choose mode h-x



(4)Choose suitable power



(5)Long press START

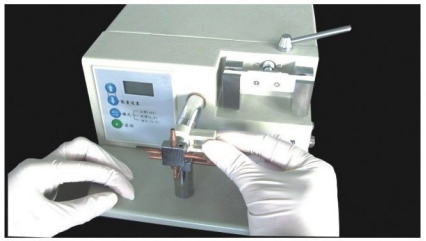


(6)Function clamps operation

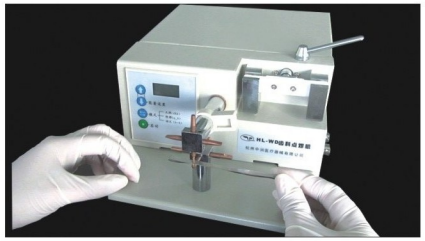
Spot welding operation



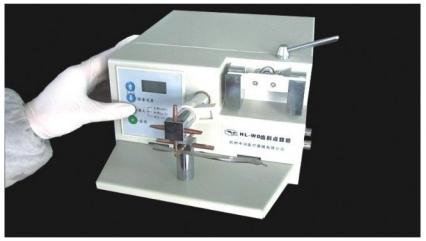
（1）Choose mode dxx



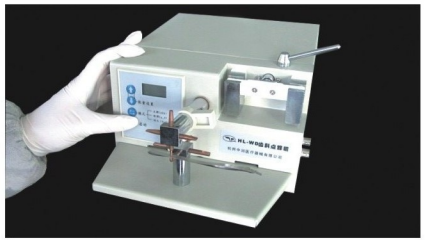
（2）Remove state block



（3）Tightly the workpiece



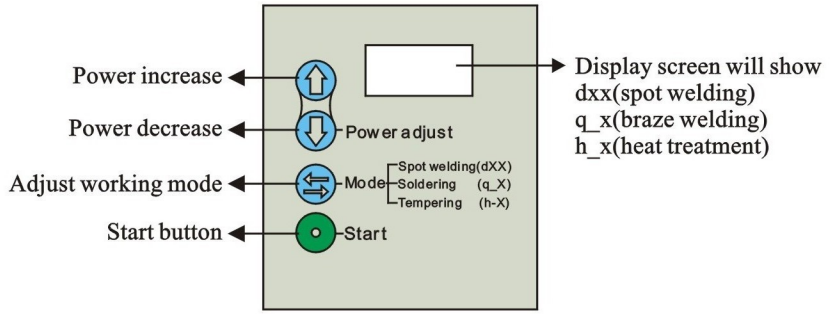
（4）Choose suitable power



（5）Press START

The above electrode arm has four electrodes, vertical rotate to choose the suitable electrode combination, the below electrode arm also has four electrodes; rotated to choose the suitable electrode combination, so that make up of different sets of electrode combination to adapt various different welding. Furthermore, the electrode revolves 90° can position automatically at each time.

（2）HL-WDⅡ and HL-WDⅢ spot welding operation panel：



The control panel is in the left side of front panel, it has above electrode arm in the middle of the front-panel, below electrode arm links with welding press platen, and the heat treatment clamp-holder device is at right side of front-panel.

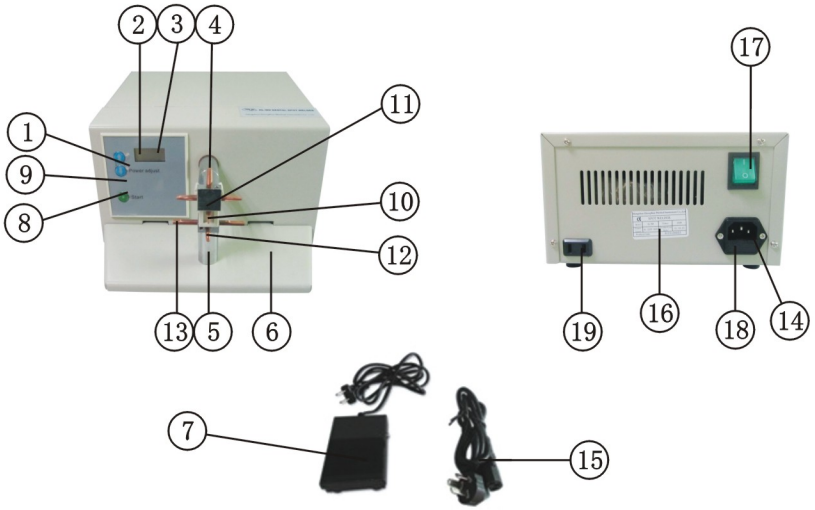
Back of the machine has power switch, fuse tube and foot switch. Foot switch and control panel are parallel connection, it used for start and stop spot welding, braze welding and heat treatment.

Control panel has mode select button to exchange among spot welding, braze welding, heat treatment, and it has state instruction: **dxx** means spot welding, **q_x** means braze welding, **h_x** means heat treatment. For the working power, it has increasing button and decreasing button for choose.

The above electrode arm has four electrodes, vertical rotate to choose the suitable electrode combination, the below electrode arm also has four electrodes; rotated to choose the suitable electrode combination, so that make up of different sets of electrode combination to adapt various different welding. Furthermore, the electrode revolves 90° can position automatically at each time.

2. Names of parts

（1）HL-WD Ⅰ spot welding parts：



(1) Power (+) button (2) State LCD screen (3) Power LCD screen

(4) Above electrode arm (5)Below electrode arm (6) Welding pressure plate

(7) Foot switch (8) Start button (9) Power (-) button (10)State block

(11)Above electrode holder (12)Below electrode holder (13)Electrode

(14)Power socket (15)Power cord (16)Nameplate (17)Power switch

(18)Spare fuse box (19)Foot switch socket

Appendix: HL-WD dental spot welder test report

Test objective: analyze the welding efficiency of HL-WD spot welder

Test content: use 0.2mm~1.8mm stainless steel to start welding test, welding (parallel welding) according to the condition of normal voltage, higher voltage, lower voltage and regulated voltage, when there's perfect welding results, then record the power parameter.

condition / spec.	210V	220V	230V	Stabilized voltage supply
0.2mm	3	2	1	3
0.3mm	5	4	3	5
0.4mm	7	6	5	7
0.5mm	9	8	7	9
0.6mm	11	10	9	11
0.7mm	13	12	11	13
0.8mm	15	14	13	15
0.9mm	17	16	15	17
1.0mm	19	18	17	19
1.2mm	21	20	19	21
1.4mm	24	22	21	24
1.6mm	27	25	24	27
1.8mm	30	28	27	30

Test result:

1. Because the voltage variation of the environment, the power parameter will have little change.
2. When steel wire little thicker, the surface of the welding has stronger oxidation.
3. When use regulated voltage, there's no much influence for the welding, because of low energy.

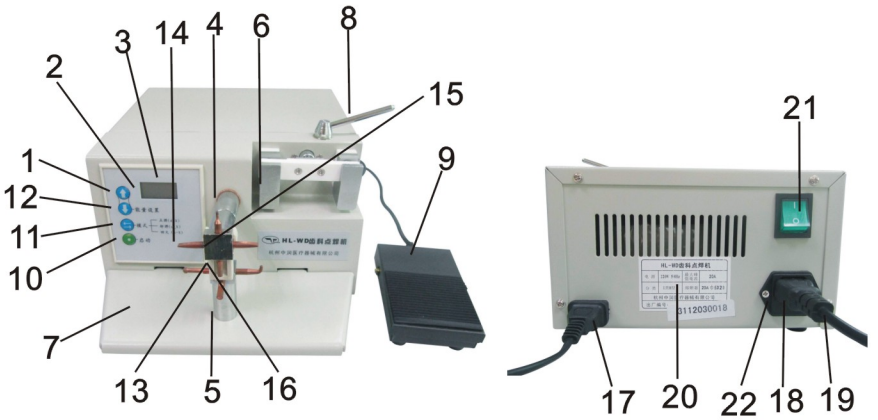
2.HL-WD Ⅱ spot welding packing list:

No.	Name	Quantity
1	Main machine	1
2	Power cord	1
3	Foot switch	1
4	Fuse 20A	1
5	State block	1
6	Certificate	1
7	Heat treatment clamp holder	1
8	Warranty card	1
9	Manual	1

3.HL-WDⅢ spot welding packing list:

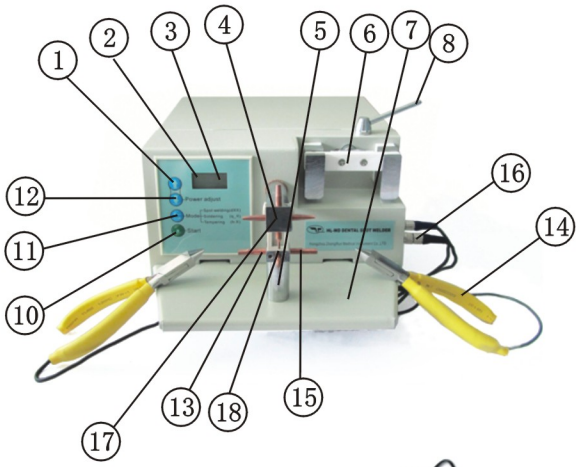
No.	Name	Quantity
1	Main machine	1
2	Power cord	1
3	Foot switch	1
4	Fuse 20A	1
5	Function clamps	2
6	State block	1
7	Heat treatment clamp holder	1
8	Certificate	1
9	Warranty card	1
10	Manual	1

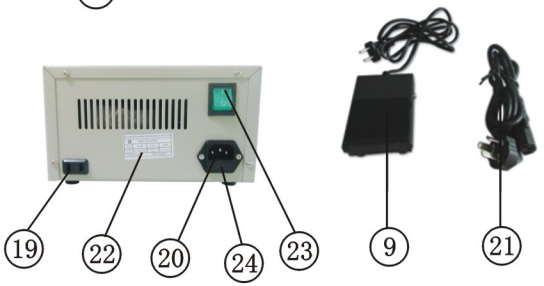
（2）HL-WD Ⅱ spot welding parts:



(1) Power (+) button (2) State LCD screen (3) Power LCD screen
(4) Above electrode arm (5)Below electrode arm (6) Heat treatment system
(7) Welding pressure plate (8) Heat treatment clamp holder (9) Foot switch
(10) Start button (11)Mode selection button (12) Power (-) button (13)State block
(14) Electrode (15)Above electrode holder (16)Below electrode holder
(17)Foot switch socket (18)Power socket (19) Power cord (20) Nameplate
(21)Power switch (22)Spare fuse box

（3）HL-WD Ⅲ spot welding parts：





(1) Power (+) button (2) State LCD screen (3) Power LCD screen

(4) Above electrode arm (5)Below electrode arm (6) Heat treatment system

(7) Welding pressure plate (8) Heat treatment clamp holder (9)Foot switch

(10)Start button (11) Mode selection button (12) Power (-) button

(13) State block (14)Function clamp (15)Electrode (16)Function clamp socket

(17)Above electrode holder (18)Below electrode holder

(19)Foot switch socket (20)Power socket (21)Power cord

(22)Nameplate (23)Power switch (24)Spare fuse box

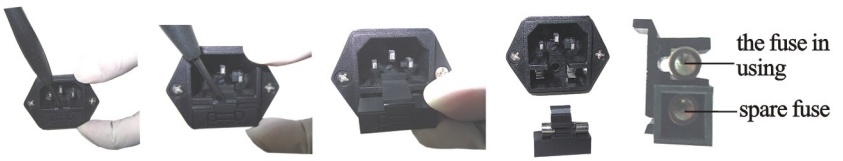
Question 3： The machine can't work.

Answer：

→1.Voltage instable, affect the normal operation of machine, please wait voltage become stable, then operate again.

→2.The fuse is bad, you can replace the fuse directly, then continue to use again.

Replace the fuse icon:



→3.Continuously use too long caused the transformer become high temperature, heated, and the internal thermal protection work, only need to suspend a moment, when the temperature drop to normal, then can be used again.

Packing list：

1.HL-WD Ⅰ spot welding packing list：

No.	Name	Quantity
1	Main machine	1
2	Power cord	1
3	Foot switch	1
4	Fuse 20A	1
5	State block	1
6	Certificate	1
7	Warranty card	1
8	Manual	1

⚠ Attention

(1).When finish using the machine, please turn off the power switch, and make sure the indicator goes out.
(2).If it is in idle for a long time, the plug must be pulled down.
(3).If buzzer beeps endless, means it can't work at present.

⚠ Caution

1. Please wear insulating gloves during operation!
2. Please keep the machine carefully, in order to avoid any injure, please remove from children.
3. When use the function clamps to heat treating, please do not put the head of two function clamps together while turn on the switch.

Ⅶ.Daily inspection and maintenance

⚠ Caution

1) The inspection and maintenance must be done after complete cooling.
2) The plug must be pulled down.
2. Wipe away the dust on surface.

Ⅷ.Answers to common problems:

Question 1： Can't welding, or welding is not firm
Answer:
→1.Check the electrode and weldment themselves are clean or not, if any oil or other impurities, please wipe them with a clean cloth.
→2.If it is idle for a long time, check if the electrode was oxidized, the interface of weldment should be polished smoothly with sandpaper or polishing file before welding.
→3.Lack of power, please view the digital power display, increase power, and operate again.
Question 2： Welding abnormally ,such as welding scar, channeling through, and so on, maybe the power is too high, advice you to view digital power display, reduce power, then operate again.

Ⅴ.Operation method

1.HL-WD Ⅰ, HL-WD Ⅱ， HL-WD Ⅲ common function of spot welding operation

(1).Choose suitable electrode combination according to weldments, check if the electrode was oxidized, and the interface of weldment should be polished smoothly with sandpaper or polishing file before welding.
(2).The weldment needs to clean, no oxidization, without greasy dirt.
(3).Connect to power supply, turn on the power switch, press the mode selection button to adjust the welding mode as **dXX** (X=numeral value, same as follows) and choose suitable welding power according to the size of the welding material (following test parameters for reference), press (1) power increase↑button to increase the power, press (12) power decrease↓button to decrease the power.
(4).Press down the welding pressure plate, put the demanded weldment between the above and below electrodes, then relaxes the welding pressure plate slowly, and makes sure the above and below electrodes compressed the weldment tightly. Press (10) Start button or foot switch after confirm the correct welding point. Then it will output energy between the above and below electrodes to welding. After finished output, relax the electrode arms, take out the weldment, and then continue the next welding.

⚠ Attention

(5). Mustn't press Start button / foot switch for long time, just press once then loosen.

2.HL-WD Ⅱ， HL-WD Ⅲ common function of braze welding operation：

(1).Choose suitable electrode combination according to the weldment demand, check if the electrode was oxidized, and the interface of weldment should be polished smoothly with sandpaper or polishing file before welding.
(2).The weldment needs to clean, no oxidization, without greasy dirt.
(3).Connect to power supply, turn on the power switch, press mode selection button adjust to braze welding condition **q_X**, and choose the suitable power of braze welding according to the specifications of the welding material.
(4).Press down the (7)welding pressure plate, spread on soldering fluid between the two welding material, put two welding materials into the above and below electrode, make sure the two welding material was compressed tightly, then relax the welding pressure plate slowly. Press start button or foot switch after confirm the correct position of the welding point. Then it will output energy between the above and below electrodes to welding. Complete braze welding after release start button (or foot switch). Relax electrode arms when finish welding, take out the welding material, and then continue the next welding.

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(5).Start button / foot switch, trigger until the workpiece weld tightly as the best time, set the welding time according to the thickness of workpiece.

3.HL-WDⅡ， HL-WDⅢ common function of heat treatment operation：

(1).Firstly place state block between above and below electrode arms to separate above and below electrode arms, adjust the machine on heat treatment state through the mode selection button, the display will show **h-X**.

(2).According to the diameter and length of stainless wire, and distance of the heat treatment pole, press power increase"↑" and power decrease "↓" to adjust suitable heat power.

(3).During Heat treatment condition, the state block should be placed between above and below electrode arms to separate them, or the machine will have Beep sound and display show "Err" to remind user.

(4).Operate the heated clamp holder to clip the stainless wire between heat treatment poles, press start button or foot switch, then the heat treatment poles will output energy to heat the stainless wire, release start button (or foot switch) to stop heating. After heated, relax the holder, take out the stainless wire then continue the next heating.

4.HL-WDⅢ unique function clmaps operation in heat treatment：

Use function clamps to clip both ends of the arch wire, step on the foot switch， then can operate heat treating.

⚠ Attention

(1). Press the mode selection button can adjust among spot welding, braze welding and heat treatment. But during heat treatment, must use state block to separate the above and below electrode arms.

(2).When using the function clamps to do heat treatment, you should prohibit two function clamps contact in case of danger.

Ⅵ.Control panel operation

1.HL-WDⅠControl panel operation：

(1).In standby state, each time press (1) power increase button (↑), the power will increase 1, the display shows numeral value increase 1, and automatically jump to lower limit value until reach the upper limit.

(2).In standby state, each time press (9) power decrease button (↓), the power will decrease 1, the display shows numeral value decrease 1, and automatically jump to upper limit value until reach to lower limit.

(3).In standby state, when display screen show dXX means spot welding condition(XX=01-30), make sure no state block between electrodes, press (8) START button to start welding, long time press start button only working one time.

(4).Press each button above mentioned; the buzzer will have beep sound.

2.HL-WDⅡ， HL-WDⅢ Control panel operation:

(1).In standby state, each time press power increase button (↑), the power will increase 1, the display shows numeral value increase 1, and automatically jump to lower limit value until reach the upper limit.

(2).In standby state, each time press power decrease button (↓), the power will decrease 1, the display shows numeral value decrease 1, and automatically jump to upper limit value until reach to lower limit.

(3).In standby state, each time press mode selection button, the display will change once among dXX, q_X, h-X. dxx=spot welding, q_X=braze welding, h-X=heat treatment (X= numeral value, same as follows).

(4).In standby state, when LCD screen show dXX means spot welding condition(XX=01-30), make sure no state block between electrodes, press START button to start welding, long time press start button only working one time.

(5).In standby state, when LCD screen shows q_X means braze welding condition(X=1-9), no state block between electrodes, press START button to start braze welding, relax the button will stop braze welding immediately.

(6).In standby state, when display screen show h_X means heat treatment condition(X=1-9), place state block between electrodes to separate above and below electrode arms, press long time START button to start heat treatment, relax the button will stop heating immediately.

(7).In standby state, ensure current operation mode same as the system mode totally when press START. It means the mode that display shows should the same as operation mode you selected. Or it will show Error with beep sound.

(8).Press each button above mentioned; the buzzer will have beep sound.

(9).If buzzer beeps endless, means it can't work at present.

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