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I. Overview

The MSK-320 Microcomputer High-performance Spot Welder is our latest high-performance spot welder designed in compliance with the principles of the most advanced spot welders in the international market. Adopting microcomputer singlechip control and AC contravariant technology, this spot welder comes up to the top standard of resistance welders. Key characteristics include:

1. Compact and attractive dimension.
2. Attractive and homogeneous welding spot, small spark, no black spots and stable welding current.
3. Fully eliminates the phenomenon of low voltage or condensation occurred to lithium batteries after welding and serves as ideal equipment for you to produce assembled batteries.
4. Adopting microcomputer singlechip control, the welder may achieve single-pulse, double-pulse or multi-pulse welding.
5. All parameters are set via microcomputer. Adopts LCD display and keypad adjustment, resulting in accuracy, visualization and easy of operation.
6. SWD spot welders (pedal type and pneumatic type) feature accurate positioning and high yield. They are especially suitable for welding small-cap mobile phone cells.
7. The pressure of the two welding probes can be adjusted independently and easily, ensuring stable and reliable welding pressure.
8. Our welding switch is the only optoelectronic switch recommended in the country, which can eliminate the need of changing switches for similar welding machines.

II. Key Technical Specifications

MSK-320B Pedal Type

1. Power supply: AC 220V±10%　50Hz±2Hz
2. Max output power: 10KVA
4. Welding current: 00-99
5. Overall weight: 48KG
6. Dimension: 800L×580W×1100H (mm)
7. Scope of application: Suitable for 0.03mm~0.5mm soldering lugs.

MSK-320A Pneumatic Type

1. Power supply: AC 220V±10%　50Hz±2Hz
2. Max output power: 10KVA
3. Input air pressure: 0.1-0.8Mpa
4. Welding current: 00-99
5. Overall weight: 45KG
6. Dimensions: 800L×580W×1200H (mm)
7. Scope of application: Suitable for 0.03mm~0.5mm welding lugs.

III. Operation Instructions:

MSK-320B Pedal Type (Fig.1)

1、Power switch: Reset switch. Press inside to switch on and press again to switch off.

2、Working indicator: When switching power on, LCD displays on the left upper corner. It is normal when flickering continuously.

3、Output wave: Indicates the pulse status of the welder in operation.

4、 Prewelding current (BI): Refers to the height of the first pulse, whose size should be adjusted depending on welding current. Generally, when welding current gets higher, prewelding current gets higher correspondingly. Its setting range is 0-99.

5、 Welding time (WT): Refers to the width of the second pulse. Its total time duration is 1-3mS.

6、 Welding current (WI): Refers to the width of the second pulse. Its setting range is 10-99.

7、 State: Visually displays the "On" and "Off" status of the optoelectronic switch and touch switch in operation.

8、 Switch: Refers to the shift of display status between Pneumatic and Pedal Type.

9、 Clear: Clear original setting to readjust.

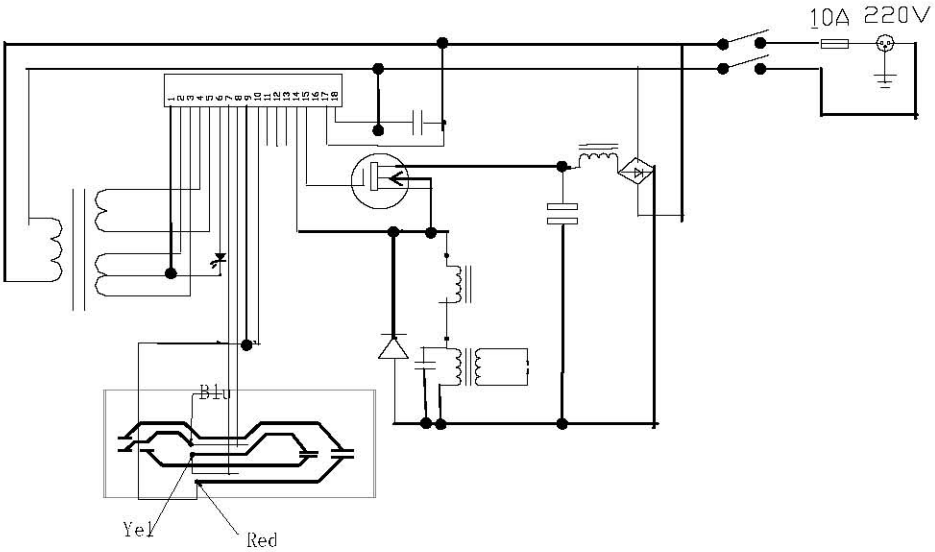

Fig.2: Wiring diagram for MSK-320B Pedal Type Welder Switch

10、 Fuse holder: 10A fuse at lower left corner of the electrical cabinet.

11、 Welding switch: Inside the handpiece. Switches on both sides feature serial connection. The spot welder will not discharge or weld until the welding probe presses against the weldment and two switches make contact. These switches are quick-wear parts.

12、 Wiring diagram for welding switch (2)

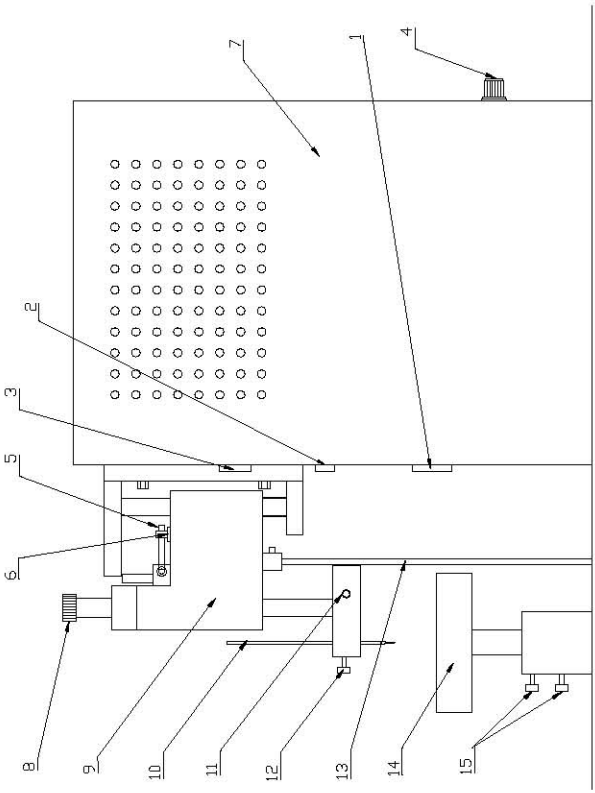

Fig.1: Side view of MSK-320B Pedal Type Handpiece

MSK-320A Pneumatic Type (Fig.3)

1、 Power switch: Push upward to switch on and downward to switch off.

2、 Working indicator: It is normal if indicator flickers continuously when switching power on.

3、 Welding current: Used to set current. Its setting range is 00-99.

4、 Fuse holder: 10A fuse at lower left corner of the electric cabinet.

5、 Welding switch: Inside the handpiece. Switches on both sides feature serial connection. The spot welder will not discharge or weld until the welding probe presses against the weldment and two switches make contact. These switches are quick-wear parts.

6、 Wiring diagram for welding switch (Fig.4)

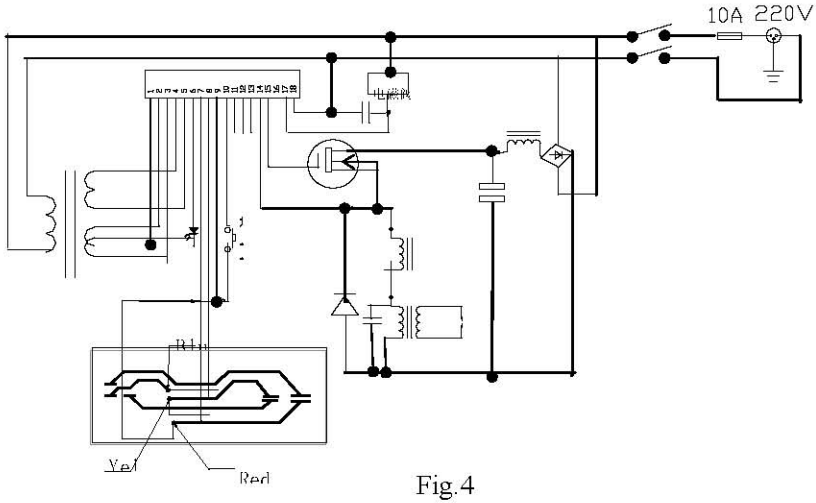

Fig.4

7、 Electric cabinet.

8、 Welding pressure regulator: Clockwise to increase pressure and counterclockwise to decrease pressure.
9、 Sliding part.
10、 Welding electrode.
11、 Setscrew to adjust width of welding electrode.
12、 Setscrew to adjust height of welding electrode.
13、 Touch switch: Used to start welding.
14、 Welding device table.
15、 Setscrew to adjust the height of the table.
16、 Air pressure inlet: Air pressure input.
17、 Air pressure regulating valve: Clockwise to increase air pressure and counterclockwise to decrease air pressure.
18、 Pressure gauge: Displays pressure reading.

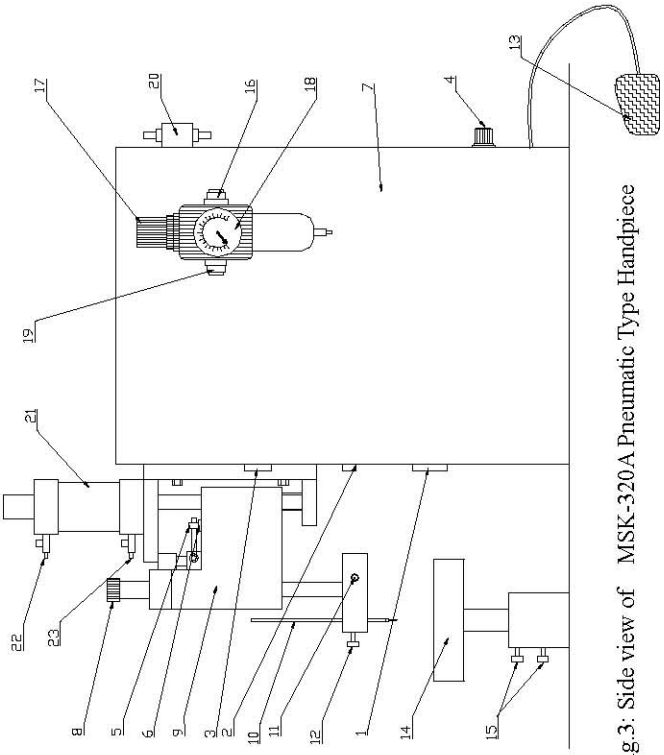

Fig.3: Side view of MSK-320A Pneumatic Type Handpiece

19、 Air pressure outlet: Air pressure output.

20、 Solenoid valve: Converts air pressure input and output.

21、 Cylinder: Drives the handpiece up and down.

22、 Cylinder input speed regulating valve: Controls downward speed.

23、 Cylinder output speed regulating valve: Controls upward speed.

IV. Operation Procedures:

MSK-320B Pedal Type

1、 Adjust the angle and height of pedal lever (See Fig.5):
Unscrew the locks-crew of the pedal lever with a wrench and adjust its angle and height (90° in static state).

2、 Adjust the height of welding electrode (See Fig.6):
Use a wrench to unscrew Screw 12 for adjusting the height of welding electrode. Adjust (or replace) the length protruding under the electrode (usually 20mm, excessive length may cause welding electrode to distort) and retighten the screw.

3、 Adjust the width of welding electrodes (See Figure 7):
Use a wrench to unscrew Screw 11 for adjusting the width of the welding electrodes. Adjust the two welding electrodes to optimal distance depending on the width of weldment and then retighten the screw.

4、 Adjust the height of the device table (Fig.8):
Use a wrench to unscrew Screw 15. Adjust the batteries and welding electrodes to optimal distance (normally

4mm) and retighten the screw.

5、 Adjust welding pressure (Fig.9):

Manually turn welding pressure regulating setscrew 8, clockwise to increase pressure and counterclockwise to decrease pressure. Adjust it to proper pressure depending on welding requirements.

6、 Inspection:

Check and remove carbon buildup on the welding electrodes with a file or sand paper. Step on the pedal with left foot to lower the handpiece and visually check if the welding electrode is well aligned with the weldment. If not, repeat steps 3 and 4 until the welding electrode is well aligned with the weldment.

7、 Connect power:

Insert the plug into 220V power outlet and switch on power. It is normal if working indicator keeps flickering. If the working indicator does not light up or flicker, it is required to switch off power and restart.

8、 Trial welding:

Step on pedal to lower the handpiece. Keep stepping when welding electrode presses against weldment. When the two welding switches make contact, it begins discharging and welding. Adjust welding current and welding electrode pressure depending welding status to achieve optimal welding effect.

9、 To ensure excellent welding quality, frequent

maintenance should be conducted on the welding electrodes. Use small files to file the tips of welding electrodes even and smooth.

MSK-320A Pneumatic Type

1、 Adjust the height of welding electrodes (See Fig.6):
Use a wrench to unscrew Screw 12 for adjusting the height of welding electrode. Adjust (or replace) the length protruding under the electrode (usually 20mm, excessive length may cause welding electrode to distort) and retighten the screw.

2、 Adjust the width of welding electrodes (See Figure 7):
Use a wrench to unscrew Screw 11 for adjusting the width of the welding electrodes. Adjust the two welding electrodes to optimal distance depending on the width of weldment and then retighten the screw.

3、 Adjust the height of the device table (Fig.8):
Use a wrench to unscrew Screw 15. Adjust the batteries and welding electrodes to optimal distance (normally 4mm) and retighten the screw.

4、 Adjust welding pressure (Fig.9):
Manually turn welding pressure regulating setscrew 8, clockwise to increase pressure and counterclockwise to decrease pressure. Adjust it to proper pressure depending on welding requirements.

5、 Adjust input pressure (Fig.10):
Hold and pull upward air pressure regulating valve 17. Turn clockwise to increase pressure and counterclockwise to decrease pressure. Pressure gauge

displays pressure readings. Now press the valve to set the value.

6、 Adjust cylinder input speed (Fig.11):

Hold cylinder input speed regulating valve 23. Turn clockwise to increase pressure and the handpiece will go down faster; turn counterclockwise to decrease pressure and the handpiece will go down slower.

7、 Adjust cylinder output speed (Fig.11):

Hold cylinder output speed regulating valve 22. Turn clockwise to increase pressure and the handpiece will go up faster; turn counterclockwise to decrease pressure and the handpiece will go up slower.

8、 Connect power:

Insert the plug into 220V power outlet and switch on power. It is normal if working indicator keeps flickering. If the working indicator does not light up or flicker, it is required to switch off power and restart.

9、 Trial welding:

Step on touch switch to lower the handpiece. When welding electrode presses against weldment and the two welding switches make contact, it begins discharging and welding. Adjust welding current, welding electrode pressure and air pressure depending welding status to achieve optimal welding effect.

10、 To ensure excellent welding quality, frequent maintenance should be conducted on the welding electrodes. Use small files to file the tips of welding electrodes even and smooth.

Fig.5: Adjust Width and Height of Pedal Lever

Fig.6: Adjust Height of Welding Electrode

Fig.7: Adjust Width of Welding Electrode

Fig.8: Adjust Height of Device Table

Fig.9: Adjust Welding Pressure

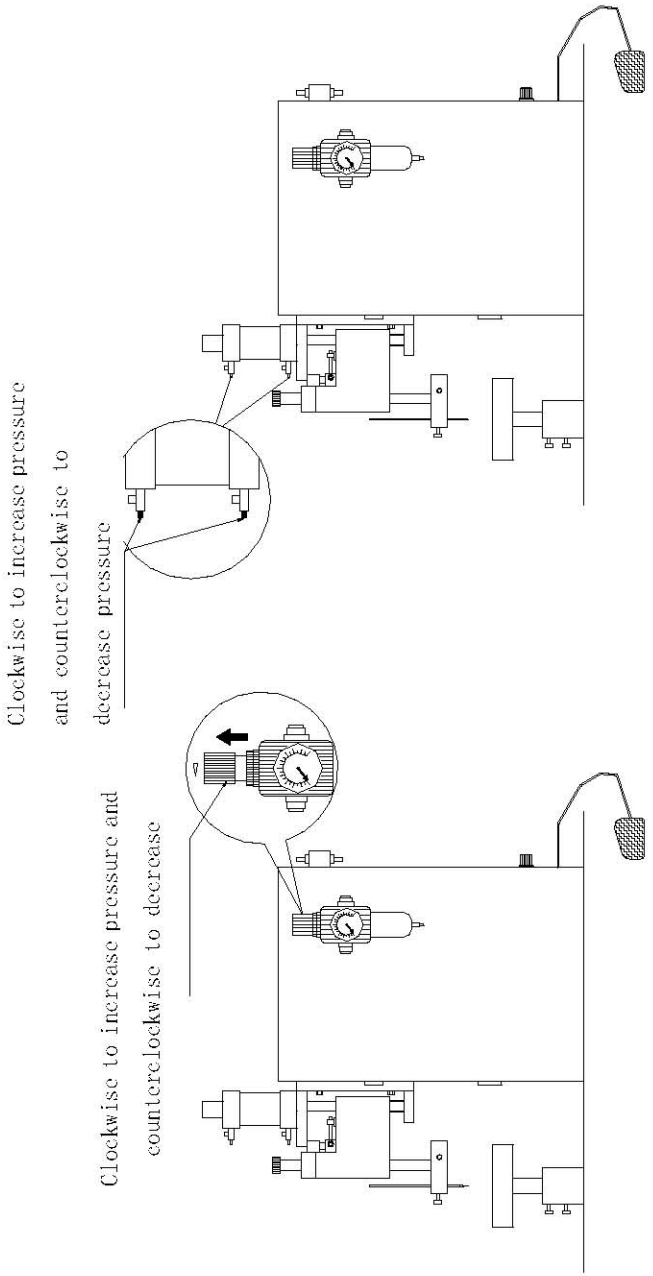

Fig.11: Adjust Cylinder I/O Speed

Fig.10: Adjust Input Air Pressure

V. General Troubleshooting:

As shown below:

No	Symptom	Possible cause	Solution
1	LCD displays at startup.	1. Fuse blown out. Failure in input power.	1. Replace with fuses of same specifications. 2. Check power lines.
2	LCD displays but no response in welding.	1.10A fuse blown out.	1. Replace with fuses of same specifications.
3	Power indicator lights up but no welding spark.	1. Air pressure too low. 2. Parameters for welding current set too low. 3. Excessive gap between lower surface of welding electrode and batteries. 4. Wires connecting welding switch broken. 5. Optoelectronic switch damaged. 6. If working indicator does not light up or flicker, it may be caused by power interference.	1. Increase air pressure. 2. Increase welding current. 3. Adjust the gap between batteries and the surface of welding electrode to about 3-4mm. 4. Connect wires in compliance with Fig.2 and Fig.4. 5. Replace optoelectronic switch. 6. Switch power off and switch it on again.
4	In welding, it is easy to ignite and even burn battery casing.	1. Pressure for welding electrode too low. 2. Foreign matter on the lower side of welding electrode. 3. Incorrect welding material.	1. Increase welding pressure. 2. File the surface of welding electrode even and smooth with a small file. 3. Use proper welding material.

Notes: In case failure remains unsolved, please contact manufacturer for maintenance.

Warranty Card

Customer Name:_____ **Tel:**_____

Address: _____

Product Name:_____ **Model & Specifications:**_____

Date of Delivery:_____ **Product No:**_____

Failure descriptions:

Please stamp your purchase invoice on this page and send a copy to our After-sale Dept to establish information file. Keep the original for yourself. We promise a one-year warranty period for our product commencing on the date of delivery. In case any mechanical failure occurs during this period, please complete the copy with such detailed information as your company name, address and failure symptoms and fax a copy to our company or call us to describe detailed situations, and we will provide onsite services immediately. In case of mechanical failure, it is recommended to first refer to the User Manual as well as the Instructions and Tips on the following pages.

Stamp Invoice Here

VII. Instructions for Warranty:

1. Please refer to this User Manual before using this product and/or when encountering any failure (See "General Troubleshooting").
2. In case of enquiry or normal maintenance, please present the Warranty Card and invoice, and contact our corresponding technicians for inquiry and maintenance.
3. For warranted maintenance, please fax your Warranty Card to our company and call us describing your company name, address, phone number, product model, number and date of delivery as well as failure symptom.

VIII. Tips for Warranty:

1. We provide free maintenance for our equipment for one year commencing on the date of delivery. Our warranty covers failure arising from normal use within such period.
2. We shall not be held responsible for failure arising from improper operation or intentional damage. However, we may provide paid services in this case.
3. In case of maintenance for equipment after our one-year warranty period (or for equipment provided by other companies), we will charge normally for such maintenance. In this case, we will provide three-month warranty for such replaced parts.
4. Welding electrodes are quick-wear parts and their service life is associated with welding material, its shape and size, operating methods and some other factors. Our warranty does not cover any damage to the welding electrodes.
5. Our warranty does not cover any of the following circumstances:
   a) No Warranty Card and/or invoice are available.
   b) The Warranty Card and/or invoice are obliterated and are not in line with the product code.
   c) Damage arising from improper use, erroneous operation or unauthorized retrofitting.
   d) Damage caused due to use of components made by other

manufacturers.

e) Damage caused by unexpected factors.

f) Expiration of the Warranty Period.

g) Failure to make full payment as scheduled by the contract.