



BATTERY SPOT WELDER

USS-BSW00007

USER MANUAL



Thank you for choosing U.S. Solid battery spot welder.

Please check the product to make sure it is not damaged in transit before use. For questions, please contact us at service@ussolid.com or 1-800-243-5428(Monday - Friday: 9am - 5pm EST) for help.

For optimal user experience, please read the user manual carefully and keep it for future reference.

Product Introduction

The newly designed U.S. Solid USS-BSW00007 battery spot welder is equipped with two super capacitors for energy storage and power supply for pulse welding. Compared to a traditional AC transformer spot welder, it does not interfere with the electric circuit, which means no more tripping problems. The machine's super energy-gathered millisecond pulse technology combines with a max welding power of 21 KW to provide a reliable welding effect.

The new-added 'AL-NI' super power mode function provides a max welding current of 3.5 KA, 0.2mm pure nickel can be directly welded to the aluminum terminals of LiFePO4 battery, saving you the expensive cost of using aluminum-nickel composite strips.

The welder's small size and light weight make it more portable compared to the bulky traditional spot welder. The well-designed machine craft and aluminum alloy housing also provide a more powerful and reliable machine.

Equipped with the 73B/75A professional welding pen, 73S handle-push welding arm, 'AT/MT' two welding modes and 100-500ms time-delay welding function, this machine enables you to work more easily and efficiently. The low power-consumption technology enables you to use the machine efficiently for 12 hours with no heating problems.

Usage Scenario

Widely used in battery pack building&maintenance and common metal welding.

Fast welding&maintenance of lithium iron phosphate battery packs or ternary lithium battery packs for electric bicycle, hoverboard, swing car, electric tool, home appliance, etc.

Fast welding&maintenance of Ni-MH battery(nickel metal hydride battery).

Fast welding&maintenance of small battery packs for mobile power supply, flashlight, etc.

Fast welding of polymer batteries for model airplane, bluetooth earphone, cellphone, laptop, automobile data recorder, bluetooth tire pressure monitor, etc.

Fast welding of circuit board, battery connect strip(nickel/nickel plated), electronic components, hardware parts, lead wires, etc.

Suitable for common metal welding like stainless steel, iron, nickel, brass, titanium, molybdenum, etc.

Product Parameters

- Model: USS-BSW00007
- Power Adapter Input: AC 100-240 V 50/60 Hz
- Power Adapter Output: 15 V 2-3 A
- Machine Input: DC 15 V 2-3 A
- Machine Charging Time: 5-15 minutes
- Output Welding Voltage: 5.6-6 V

- Output Welding Current: 500-3500A(pulse)
- Maximum Welding Power: 21 KW
- Maximum Welding Energy: 420 J
- Pulse Time: 0.2-20 ms
- Pulse Time(Welding Power) Adjustment Range: 0-99t
- Welding Mode: AT/MT
- Pulse Delayed Time: 20ms/100-500ms(settable)
- Welding Thickness of Nickel Plated: 0.05-0.5 mm
- Welding Thickness of Pure Nickel: 0.05-0.45 mm
- Product Size: 6.5x16.2x12.85 cm/2.6x6.4x5.1 inches
- Product Weight: 2.1 kg/4.6 lbs
- Package Size: 22.5x20.5x19.5 cm/8.9x8.1x7.7 inches
- Package Weight: 3.5 kg/7.6 lbs

Packing List

- Main Machine x 1
- Power Adapter x 1
- Foot Pedal Switch x 1
- 73B Intelligent Welding Pen x 1
- 75A Separated-style Welding Pen(LFP battery) x 1
- 73S Handle-push Welding Arm x 1
- Replacing Welding Pins for 73B x 1 pair
- Replacing Welding Electrodes for 75A x 1 pair
- Replacing Welding Pins for 73S x 2 pairs
- Aluminum-nickel Composite Strips x 20 pcs
- Pure Nickel Strips x 20 pcs

How to Use

- I. Plug the power adapter into the 'power supply' on the side of the machine.
- II. Plug the power adapter into a 100-240V AC power supply to charge the welder.
- III. Press the 'PWR/SET' button to turn on the machine. The top half of the LED screen will display the 'CH' signal and the actual capacitor voltage alternately and intermittently. When the capacitor voltage is up to 5.6V, charging is completed and welding work can be started, the charging time is about 10 minutes.
- IV. Install the 73B/75A welding pen or 73S welding arm according to specific welding requirements, ensuring the connection is tight and secure.
- V. Press the 'PWR/SET' button first time to select the 'tens place' of the power grade number(the 'place' will blink once selected), you can adjust it between '0-9' via 'UP/DOWN' two buttons. Press the 'PWR/SET' button second time to select the 'ones place' of the power grade number, in the same way, you can adjust it between '0-9' via 'UP/DOWN' buttons. Press the 'PWR/SET' button third time to select the 'AT/MT' two welding modes, you can switch the mode via 'UP/DOWN' buttons. Press the 'PWR/SET' button finally to save all settings and quit the adjustment. *(Tips: Try from low power grade to test the welding effect and set an appropriate power grade according to specific welding material and thickness)*
- VI. Press the 'PWR/SET' button for 2 seconds to turn off the machine.
- VII. When not using the machine for a long time, unplug the machine and place it at an upside-down position, red light will be on at 'power interface' position, the machine will discharge automatically.

New Functions - Super Power 'AL-NI' Mode & Time-delay Welding

'AL-NI'

Press the 'LFP/NCR' button to turn on the 'AL-NI' super power mode, the capacitor voltage will be charged up to 6V in this mode, 0.2mm pure nickel can be directly welded to the aluminum terminals of LiFePO₄, LiPo, etc.

(Tips: 75A separated-style welding pen is especially designed for LFP battery welding)

Time-delay

Press the 'DISCH DELAY' button to switch the time-delay setting(set the 'AL-NI' super power mode and 'AT' welding mode firstly)

When 'LO MI SS' Signal is flashing, the pulse delay time is 100ms;

When 'SS' signal is normally on, the pulse delay time is 200ms;

When 'MI' signal is normally on, the pulse delay time is 300ms;

When 'LO' signal is normally on, the pulse time is 400ms;

Press the 'DISCH DELAY' button for 2 seconds when 'LO MI SS' signal is flashing. The 'LO MI SS' signal will be normally on and the pulse delay time is 500ms, you can press the 'DISCH DELAY' button again for 2 seconds to cancel this setting.

Tips:

- 1. Time-delay function only works under 'AL-NI' super-power mode & 'AT' welding mode, other modes have a preset fixed time-delay setting.*
- 2. Dual pulses are released when time-delay setting is 500ms(only).*

Usage Diagram



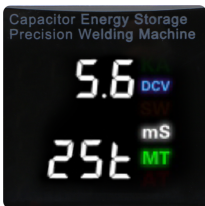
Plug the power adapter into the 'power interface' on the side of the machine and connect to a 100-240V AC power supply to charge the welder.



Press the 'PWR/SET' button to turn on the machine. The top half of the LED screen will display the 'CH' signal and the actual capacitor voltage alternately and intermittently. Machine is in charging state.



Install the 73B/75A or 73S according to specific welding requirements.



When 'CH' signal disappears and actual capacitor voltage is up to 5.6V, welding work can be started.



Press the 'PER/SET' button first time to select the 'tens place' of the power grade number(the 'place' will blink once selected), you can adjust it between '0-9' via 'UP/DOWN' two buttons.



Press the 'PWR/SET' button second time to select the 'ones place' of the power grade number, in the same way, you can adjust it between '0-9' via 'UP/DOWN' buttons.



Press the 'PWR/SET' button third time to select the 'AT/MT' two welding modes, you can switch the mode via 'UP/DOWN' buttons. Press the 'PWR/SET' button finally to save all settings and quit the adjustment.



Press the 'PWR/SET' button for 2 seconds to turn off the machine when welding work finished.



When not using the machine for a long time, unplug the machine and place it at an upside-down position, red light will be on at 'power interface' position, the machine will discharge automatically.

New Functions - Super Power 'AL-NI' Mode & Time-delay Welding



'AL-NI'

Press the 'LFP/NCR' button to turn on the 'AL-NI' super power mode, the capacitor voltage will be charged up to 6V in this mode, 0.2mm pure nickel can be directly welded to the aluminum terminals of LiFePO4, LiPo, etc.



Time-delay

Press the 'DISCH DELAY' button to switch the time-delay setting(set the 'AL-NI' super power mode and 'AT' welding mode firstly)

When 'LO MI SS' Signal is flashing, the pulse delay time is 100ms;

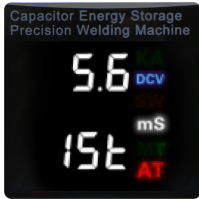
When 'SS' signal is normally on, the pulse delay time is 200ms;

When 'MI' signal is normally on, the pulse delay time is 300ms;

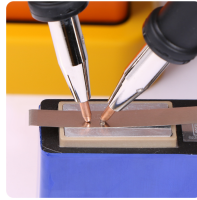
When 'LO' signal is normally on, the pulse time is 400ms;

Press the 'DISCH DELAY' button for 2 seconds when 'LO MI SS' signal is flashing. The 'LO MI SS' signal will be normally on and the pulse delay time is 500ms, you can press the 'DISCH DELAY' button again for 2 seconds to cancel this setting.

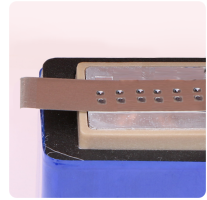
'AT' Mode - Automatic Welding Mode



Set the 'AT' welding mode

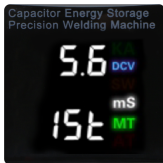


Press two welding electrodes on welding pieces with an enough and uniform pressure, welding pulse will be released automatically after a short delay.



Check the welding effect

'MT' Mode - Foot Pedal Switch Controlling Mode



Set the 'MT' welding mode



Plug in the foot pedal switch



Press two welding electrodes on welding pieces with an enough and uniform pressure, step on the foot pedal switch, welding pulse is released after a short delay.



Check the welding effect

Tips:

1. The 73B/75A welding pen and 73S welding arm are all compatible with 'AT/MT' two welding modes.
2. Put enough pressure on two welding electrodes to get the welding pieces and welding surface fully contacted, otherwise the welding pieces will be penetrated and cause a bad welding effect.
3. 'MT' welding mode is recommended for new user, after getting familiar with the welding operation(such as welding power setting and welding pressure adjustment), you can switch to the 'AT' automatic welding mode to finish welding work quickly and efficiently.
4. In 'AT' quick welding mode, please often check the welding effect to avoid bad welding.

'AL-NI' Super Power Mode

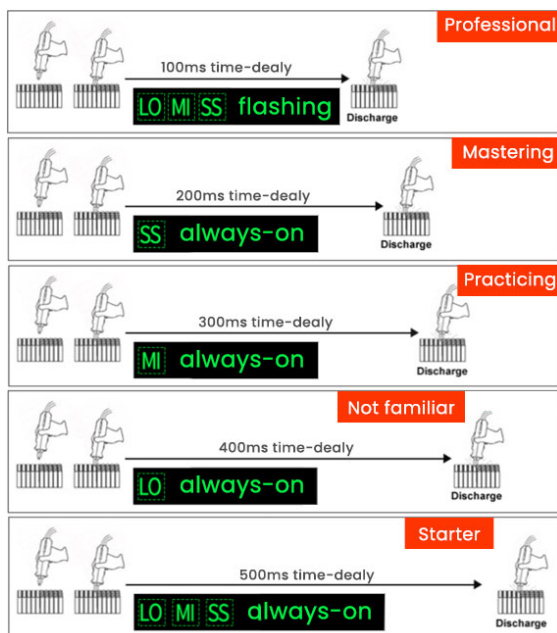
The new-added 'AL-NI' super power mode is especially designed for the direct welding of pure nickel to the aluminum terminals of LiFePo4, LiPo, etc. 0.2mm pure nickel is supported with a max welding current of 3.5 KA, saving you the expensive cost of using aluminum-nickel composite strips.

(Tips: Do not set the 'AL-NI' mode when welding battery such as 18650, too large current may cause large welding sparks and penetrate the battery.)

Mode	Normal Mode	'AL-NI' Super Power Mode
Capacitor Voltage	5.8V	6 V
Max Welding Current	2 KA	3.5 KA
Time-delay Welding	20ms	100-500ms
Dual Welding Pulses	N/A	Triggered when 500ms time-delay

Time-delay Welding Function

Appropriate delay time setting allows the welding pressure adjustment and ensure a good welding effect.



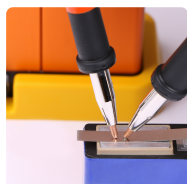
Installation of Machine Base



The machine should be inserted into the base vertically.



Machine with 75A positioned in the base.



The machine base helps to prevent movement during welding work

73B Intelligent Welding Pen





Welding pressure can be adjusted by rotating the knob. The adjustment range is 600-1200g.



Distance of two welding pins can be easily adjusted by turning the screws. The adjustment range is 3-7mm.



The level of two welding pins can also be adjusted easily by turning the screws.



Spot welding indicator light



Push-down welding function - plug the wire to the 'foot control' of machine, set the welding mode to 'MT' welding mode. Push down the welding pen to trigger the output pulse.



16/25 square two types copper wires can be selected. The default type is 16 square copper wire.

Replacement of 73B Welding Pins



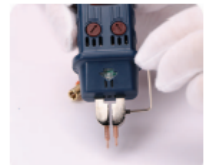
1. Unscrew the head



2. Take down used pins

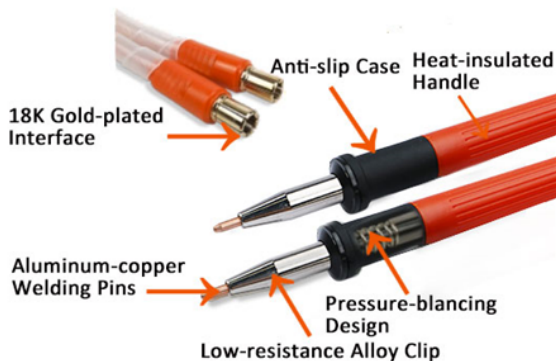


3. Replace new pins

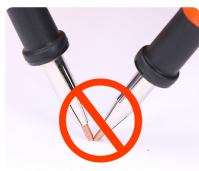


4. Screw the head

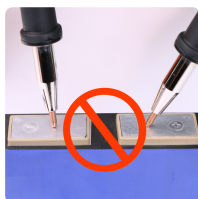
75A Separated-style Welding Pen



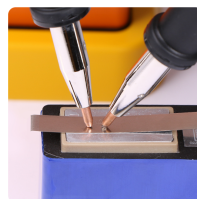
75A Usage Notice



Never contact the two welding electrodes

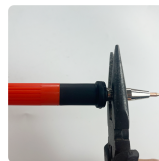
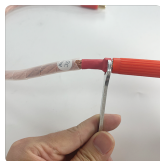


Never contact the battery positive and negative terminals at the same time



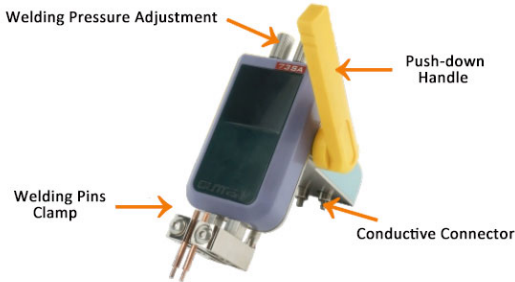
Correct Operation

Replacement of 75A'S Welding Electrodes



Tips: regular replacement of welding electrodes are needed for optimal welding effects.

73S Handle-push Welding Arm



The distance between the welding needle and battery pack is 4-9mm.

Installation of 73S welding arm



1. Install the handle
2. Unscrew the lid
3. Take down the lid
4. Tighten the retaining screws
5. Recover the lid

Replacement of 73S' welding pins



1. Unscrew the welding head
2. Take down the used pins
3. Replace with new welding pins
4. Screw the welding head

Tips: regular replacement of welding pins are needed for optimal welding effects.

Product Diagram



Panel Diagram





The actual capacitor voltage is 5.5 V.



The actual welding current is 2.8 KA. The 'SW' signal will light up instantly when welding pulse is released.



The welding power is set at 25t (0-99t range), the pulse time is 5ms (20ms max). The welding mode is 'AT' automatic welding mode.



'LO MI SS' signal flashing - 100ms time-delay setting.



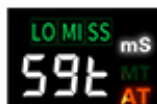
'SS' signal normally on - 200ms time-delay setting.



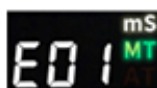
'MI' signal normally on - 300ms time-dealy setting.



'LO' signal normally on - 400ms time-delay setting.



'LO MI SS' signal normally on - 500ms time-delay setting.



'E01' - spot welding error. Keep welding pins/copper wires separated. Clean the oxides on welding pins or replace new welding pins.



'E02' - foot switch error. Check if the foot pedal switch is stuck or is always in closed state. Release the switch or replace a new one.

Troubleshooting Table

Error Type	Possible Causes	Solutions
Weak Welding	<ol style="list-style-type: none"> 1. Welding pins/welding pieces are not clean 2. Welding electrodes abrasion 3. Welding material is not supported or too thick 4. Capacitor voltage lower than 5.6 V 5. Low pressure applied on welding pieces 6. Different pressure applied on two electrodes 7. Poor conductivity of electrodes 	<ol style="list-style-type: none"> 1. Clean oxides /stains on welding pins/welding pieces 2. Replace new welding electrodes 3. Ensure the welding material and thickness is supported 4. Wait the machine charged fully 5. Increase the welding pressure 6. Apply uniform welding pressure on two electrodes 7. Plug in electrodes firmly
'MT' mode not working	Foot pedal switch is broken	Replace new foot pedal switch
'AT' mode not working	Welding material is not supported	Confirm the welding material is supported
'E01' Error Notice	<ol style="list-style-type: none"> 1. Electrodes touch together 2. Welding pins/welding pieces are not clean 	<ol style="list-style-type: none"> 1. Keep welding pins/copper wires separated 2. Clean oxides /stains on welding pins/welding pieces
'E02' Error Notice	<ol style="list-style-type: none"> 1. Step the foot pedal too fast 2. The foot pedal is stuck or broken 	<ol style="list-style-type: none"> 1. Do not step the foot pedal too frequently 2. Repair or replace the foot pedal switch
Large Welding Spark	<ol style="list-style-type: none"> 1. Welding pins/welding pieces are not clean 2. Low pressure applied on welding pieces 3. Different pressure applied on two electrodes 4. Set the power grade too high 	<ol style="list-style-type: none"> 1. Clean oxides/stains on welding pins/welding pieces 2. Increase the welding pressure 3. Apply uniform welding pressure on two electrodes 4. Set down the power grade

For questions cannot be solved by this table, please contact us at service@ussolid.com for help

Usage Notices

- Gold, silver, copper and jewelry cannot be welded.
- Do not set the welding power grade too high, extreme welding current will cause large sparks and penetrate the battery.
- Never contact the two welding pins/electrodes, otherwise the machine will be damaged.
- Never contact the battery positive and negative terminals at the same time.
- The machine needs to be kept plugged in for work.
- For safe transport, machine has been discharged to the lowest voltage before leaving the factory. Prior to the first use, charge the machine for 5-15 minutes, when capacitor voltage is up to 5.6 V, welding work can be started.
- It is normal for some sparks to occur during welding work, please wear goggles and keep a safe distance.
- When not using the machine for a long time, disconnect the power and foot-control lines, place the machine at an upside-down position. Red light will be on at the 'power supply' position, which means the machine is discharging automatically. The discharge process will take 20-24 hours and red light will be off when discharge is finished.

Tips:

1. *The internal auto-triggering discharge switch will make normal light sounds when moving the machine, which is not the abnormal sound of machine breakdown.*
2. *0.2 A constant discharging current ensures the safe discharge process and the machine will not get heated.*

- Only charge the machine with the original power adapter, otherwise the machine may not be charged or may break.
- 'MT' mode is recommended for new user and the 'AT' welding mode is suitable for high-efficient welding work when getting familiar with welding process.
- Apply appropriate pressure on welding pieces according to different material and thickness.
- Put enough pressure on two welding electrodes to get the welding pieces and welding surface fully contacted, otherwise the welding pieces will be penetrated and cause a bad welding effect.
- Apply enough and uniform pressure on two welding electrodes to avoid bad welding effect and large sparks.
- keep welding pieces clean enough(no oxides, stain) to avoid bad welding.
- Clean oxides on the welding pins/electrodes regularly and replace them when necessary. This ensures good electric conductivity to get optimal welding effect.
- Lubricating oil can be smeared on welding pins/electrodes to prevent oxidizing.
- Keep welding pins long enough for pulling out later.
- Plug in firmly when replacing new welding pins/electrodes for good electric conductivity.
- Only use the original welding pins/electrodes from U.S. Solid.
- Do not take part and modify the machine. Doing so may cause a short circuit and fire danger.
- Do not use the machine if lacking of related experience and knowledge.
- Do not use the machine in inflammable, explosive or wet environments.
- Keep the product out of reach of children.

One Year Limited Warranty

U.S. Solid warrants your battery spot welder to be free from defects in materials or workmanship under normal use and service for one year from the date of original purchase. All defective devices under normal use will be repaired or replaced for free. All parts, except for consumable welding pins, will be covered under this warranty. This warranty shall not apply to any U.S. Solid battery spot welder that:

- is defective due to misuse, neglect or accident.
- is used for a purpose that the device is not designed for.
- has been repaired or altered in a way that adversely affect its performance and reliability.
- is serviced by unauthorized parties.
- Is intended for commercial or professional use.

This warranty is only applicable to the original purchaser. U.S. Solid would not assume or authorize any person to assume any other liability in connection with its product. No responsibility is assumed for any consequential damages that may result from the use of a U.S. Solid product, nor for damages due to accident, abuse, lack of care, affixing of unauthorized attachment, loss of parts or subjecting this unit to any but the specified voltage.

If your product is broken and meets the warranty requirements, please email us to service@ussolid.com with the original receipt showing the purchase date and the description of the problem for customer service.

Please note should any return or replacement be incurred, transportation and packing costs are the responsibility of the customer.

This warranty gives you specific legal rights, you may have other rights that may vary from state to state.

For More High Quality Products From U.S. Solid, Please Visit
www.ussolid.com

Contact Information

Phone: 1-800-243-5428 (M-F: 9:00am-5:00pm EST)

Address: 1200 E 55th St. Cleveland, OH 44103, USA

Website: www.ussolid.com

Email: service@ussolid.com