

User Manual

Portable QCW Spot Welder-Model:S1

V1.0



Thank you for choosing NGEN portable QCW spot welder — S1. This product is manufactured by NGEN. We are deeply honored to have earned your trust.

Before using the spot welder, please read the user manual carefully.

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I. Product Overview

1.1. Product Features:

The portable QCW spot welder machine is a high-precision welding system integrating quasi-continuous wave (QCW) fiber laser technology. Featuring an integrated handheld design with compact size and lightweight construction, it combines process flexibility with industrial-grade performance. Optimized for precision welding in complex scenarios, this equipment is ideally suited for applications such as thin-sheet metal welding, advertising sign fabrication, lighting product assembly, and manual DIY manufacturing.

1.2. Product Structure Diagram



1.3. Packing List

Spot Welding Machine ×1 /Power Cable ×1 /Laser Safety Goggles ×1 / Holder ×1 /User Manual ×1

1.4. Unpacking and Inspection

After unpacking, please check if the packing list matches the actual items. Contact your supplier promptly if there are any discrepancies.



The laser output cable and output head are precision optical components. Twisting or sharply bending the cable, or subjecting the output head to vibration/impact will cause irreversible damage to the spot welder's laser system.

1.5. Important Precautions

- Never look directly into the laser output head while the laser is operating.
- Do not use the laser spot welder in dimly lit or dark environments.
- Strictly follow the instructions in this user manual. Any damage resulting from non-compliance will void the warranty.
- This product contains no user-serviceable parts. All maintenance must be performed by qualified supplier technicians.
- Do not remove labels or open covers. Any damage caused by such actions will void the warranty.

II. Technical Parameters

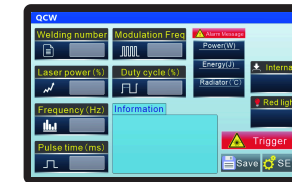
Product Parameters	Technical Specifications	Unit
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III. Software Guide



Power on the device, release the emergency stop switch, and the system will boot up to the startup screen.

3.1. Main Interface Overview



Press the power button to activate the laser.

[Welding number] Indicates the currently selected program number. Users can configure and store parameters for different welding processes. The system supports up to 19 custom program libraries.

[Laser power] Sets the laser output power for the current program, adjustable from 10% to 100%.

[Frequency] Configures the pulse frequency of the current program, i.e., the number of laser pulses emitted per second.

[Pulse time] Defines the pulse duration of the current program, controlling the laser emission time under single-point energy output.

[Modulation Frequency] Adjustable from 1 to 20,000 Hz, used to set the base frequency of the PWM modulation signal.

[Duty Cycle] Provides stepless adjustment from 1% to 100%, enabling precise control of the modulation duty cycle for laser power.

Optimize laser parameters based on the specific characteristics of the welding material to achieve optimal welding results.



Laser safety goggles must be worn during operation.

3.2. Parameter Interface



Press the Settings button, enter the code **6688**, and access the parameter configuration interface.

[Front shutter] Configures pre-lasing safety shielding (requires interlock with laser shutter). This function is inactive in this series and requires no user configuration.

[Rear shutter] Configures post-lasing safety shielding (requires interlock with laser shutter). This function is inactive in this series and requires no user configuration.

[Open air] Sets the delay time (ms) between the trigger signal and actual laser output, with protective gas pre-flow to ensure adequate weld zone coverage.

[Off gas] Sets the duration (ms) for protective gas to remain activated after laser cessation, ensuring sufficient protection of the solidified weld.

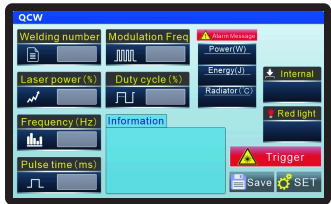
[Language] Switches interface language (Options: Simplified Chinese/English/Other).

[Shutter] Enables or disables the optical safety shutter interlock function.

[Air Valve] Manually activates or deactivates the protective gas supply.

Press ENTER to return to the main interface, then click Save to store the current parameters.

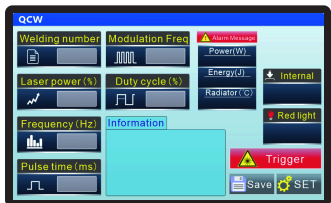
3.3. Internal Control Switch



Press the Settings button, enter the code **55**, and access the Internal Control Switch Settings interface.

Press ENTER to return to the main interface, then click Save to store the current parameters.

3.4. Set Laser Pulse Count to Zero



Press the Settings button, enter the code **6868**, and access the "Laser Pulse Count Reset" settings.

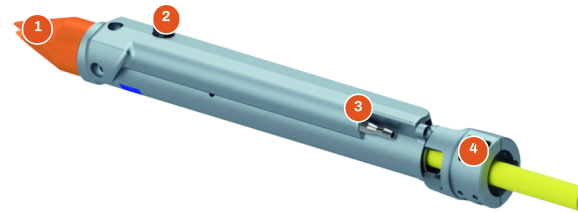
Press ENTER to return to the main interface.

IV. Maintenance and Care of the Welding Head

CAUTION!

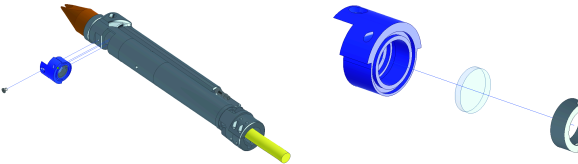
The laser head must be disassembled in a clean and dust-free environment! If such conditions cannot be met, immediately cover the opening left after lens removal with non-adhesive protective film!

4.1. Welding Head Assembly Diagram



- 1 Copper Nozzle
- 2 Laser Emission Button
- 3 Protective Window Drawer
- 4 Cable Clamp

4.2. Protective Window Cleaning



- 1. M2
- 2. Protective Window Drawer
- 1. Protective Window Locking Ring
- 2. Protective Window

4.3. Maintenance of Protective Window Assembly:

Procedure:

- Remove the M2 flat-head screws and carefully slide out the protective window drawer.
- CRITICAL:** Immediately seal the exposed cavity opening with non-adhesive protective film to prevent contamination.
- Transfer the drawer to a clean environment. Loosen the protective window locking ring and remove the window (refer to the highlighted area in the diagram). After replacing the window, tighten the locking ring counterclockwise.
- Remove the protective film, re-insert the drawer horizontally into the cavity, and secure it with the M2 flat-head screws.

Cleaning Instructions:

- Gently clean the lens using lint-free lens paper lightly moistened with anhydrous ethanol, followed by using a rubber bulb blower to remove loose particles with clean air.
- Repeat the process as necessary until the lens is perfectly clean.
- Replace the protective window immediately if cleaning cannot restore clarity, or if any damage is observed.

V. Maintenance and Care of the Spot Welding Machine Main Unit

NOTICE

Regular filter cleaning is a simple but essential practice. It prevents costly overheating repairs, ensures optimal performance, and extends the machine's service life.

Before performing any cleaning or maintenance, always ensure the equipment is completely powered off and all electrical connections are unplugged. This is critical to prevent electric shock or accidental activation.

5.1. Filter Maintenance

Remove:

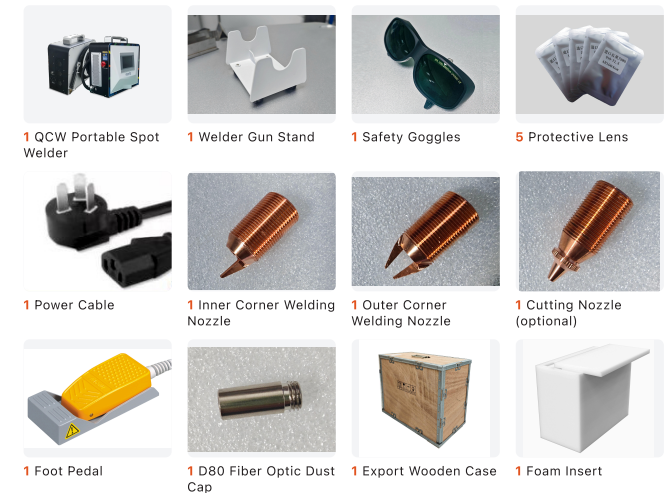
Take off 6x M2 screws → remove cover → extract filter.

Clean (choose one method):

- Air Blow:** Use dry compressed air (0.3-0.6 MPa) inside to outside.
- Brush + Air:** Soft brush → air blow (for heavy dust).
- Water Wash:** Rinse inside out with water → must be 100% dry before reuse.

Even with proper maintenance, filters will gradually age, deform, or clog. Replace them promptly based on their service cycle (typically 3-6 months) or actual condition.

VI. Shipping List



Service Website: www.ngen-global.com

Email: info@ngen-global.com

Manufacturer: NGEN

Version: V1.0