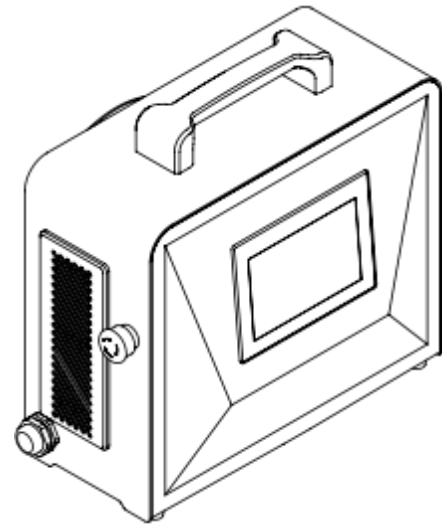




User Manual

Portable Spot Welder-Briefcase Series

V1.1



Thank you for choosing Portable Spot Welder — Briefcase Series. This product is manufactured by Shenzhen NengSheng Optoelectronic Technology Co., Ltd. We are deeply honored to have earned your trust.

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

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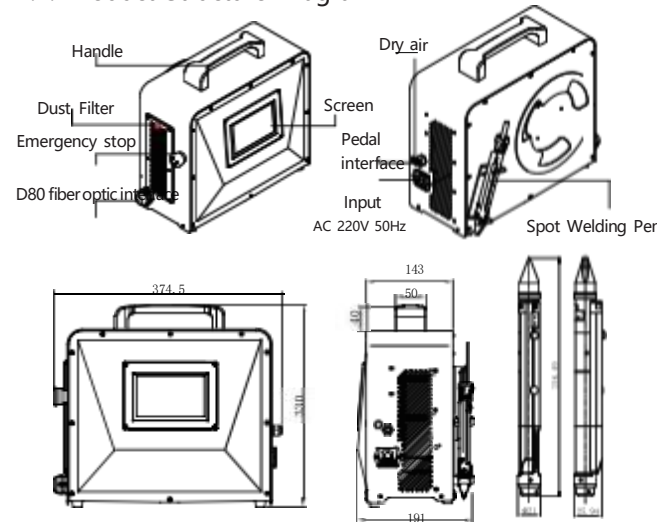
WARNING Laser safety goggles must be worn during operation.

I. Product Overview

1.1. Product Features:

The portable laser welding 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 /Protective Lens x5 / Laser Safety Goggles ×1 /Holder ×1 /Pedal x1 /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 into the laser head or operate in dark environments.
- Do not disassemble or attempt any user repair.
- Failure to comply voids the warranty.

II. Technical Parameters

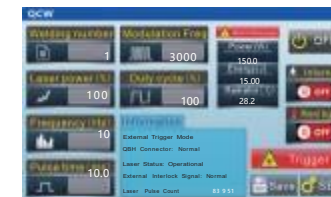
Product Parameters	Unit	Technical Specifications
Product Model	--	Briefcase Series
Average Power	W	300
Peak Power	W	600
Control Method	--	Inching and Pedal Control
Laser Wavelength (nm)	nm	1080 ±5
Pulse Frequency (Hz)	Hz	1 - 300
Modulation Frequency (Hz)	Hz	1 - 5000
Max. Single-Pulse Energy (J)	J	6J
Output Fiber Length (m)	m	2~3
Cooling Method	--	Air-Cooled
Touch Display	inch	5-inch (Laser Controller)
Dimensions (mm)	mm	374.5 × 191 × 330
Weight (kg)	kg	11.5

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.



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.

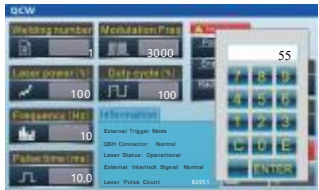
[Language] Switches interface language (Options: Simplified Chinese/English/Other).

[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



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



4.2. Protective Window Cleaning



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



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:

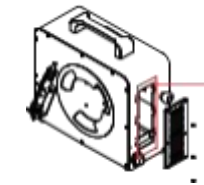
- Remove the six M2 flat-head screws, take off the cover, and extract the internal dust filter.

Filter Cleaning:

- Air Blow Method:** Use dry compressed air (pressure not too high, recommended 0.3–0.6 MPa) to blow dust and debris from the inside to the outside of the filter. If compressed air is unavailable, a hair dryer on the cool air setting can be used instead.
- Brushing Method (for heavy soiling):** If there is significant dust, first gently brush off surface dust with a soft brush, then use air blowing.
- Rinsing Method (deep cleaning):** Rinse the filter under running water from the inside out. Do not scrub hard to avoid damaging the filter material. After rinsing, the filter must be 100% dry before reinstallation. Allow the filter to air-dry naturally in a well-ventilated area—do not use hot air or expose to direct sunlight to prevent deformation.

Filter Installation:

- Before installing the filter, clean the filter compartment inside the equipment with a vacuum or soft cloth.
- Reinsert the completely dry filter, secure the cover, and tighten the screws.



The cleaning frequency should be dictated by the operational environment. Regularly cleaning the filter is a simple yet paramount practice to effectively prevent machine failures due to overheating, ensure the laser welding machine consistently operates in optimal condition, and extend its service life.

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