



## Industrial Handheld Laser Welding Machine



■ RAYWELD Handheld Laser Welding Technology

The RAYWELD Handheld Laser Welding Machine offers numerous advantages over traditional welding methods. It is easy to operate and learn, produces minimal heat-affected zones. The system is compatible with a wide range of materials, including stainless steel, carbon steel, aluminum, galvanized steel, and copper.

Welding speeds are up to four times faster than conventional methods, delivering stronger welds with lower porosity and ensuring high-quality, stable results. The integrated pre-weld and post-weld laser cleaning functions not only enhance weld quality but also significantly improve overall production efficiency.



| Product Model  |                     | DW04 SE               | DW04                  |
|--|---------------------|-----------------------|-----------------------|
| Power (w)  |                     | 1500                  | 2000                  |
| Input Voltage (v)  |                     | 220                   | 220                   |
| Max. Welding Thickness (in / mm)   | Aluminum            | 0.16 / 4              | 0.22 / 5.5            |
|  | Stainless Steel     | 0.18 / 4.5            | 1/4 / 6.5             |
|  | Carbon Steel / Iron | 0.18 / 4.5            | 1/4 / 6.5             |
|  | Galvanized Sheet    | 0.18 / 4.5            | 1/4 / 6.5             |
| Swing Amplitude (in / mm)  |                     | 0 - 0.31 / 0 - 8      | 0 - 0.31 / 0 - 8      |
| Operating Temperature (°F)   |                     | 14 ~ 104              | 14 ~ 104              |
| Weight (lbs)   |                     | 357                   | 357                   |
| Dimensions (in x in x in)  |                     | 40.75 * 23.94 * 48.03 | 40.75 * 23.94 * 48.03 |
| Volume (ft³)   |                     | 27.09                 | 27.09                 |
| Note: Data reflects maximum penetration in lab tests. Actual performance may vary based on settings and application. |                     |                       |                       |

■ Challenges of Traditional Welding Methods

- TIG Welding

✖

Technically demanding with high skill requirements. It offers shallow penetration, low deposition rate, and tungsten electrodes are easily worn or contaminated. Welding thick plates requires multiple passes, making the process complex and prone to deformation.
- MIG Welding

✖

Thin sheets are prone to burn-through, and wire adaptability is limited. It has high wire consumption, restricted travel and work angles, and vertical welding is particularly challenging.

RAYWELD DW04 Handheld Laser Welding System

✔

The new RAYWELD DW04 handheld laser welder is easier to use and faster-up to 4× quicker than TIG welding. With low heat input and wide material compatibility, it boosts productivity, consistency, and weld quality, even for less experienced users.


It features a user-friendly control system with 144 pre-set modes, allowing stable 1-6 mm penetration after just 10 minutes of training. The DW04 also supports pre- and post-weld laser cleaning-removing oil, paint, and other contaminants before welding, and leaving a clean, finished look with no extra processing needed.


| Item                                | Traditional Welding  | RAYWELD Handheld Laser Welding  |
|-------------------------------------|--|---|
| Welding Speed                       | General  | Four times faster than TIG welding  |
| Welding Quality                     | Highly dependent on user experience                                      | Consistently high-quality results. The weld seams are neat and clean, with deep fusion pools and high strength. |
| Training & Learning Curve           | The learning curve typically lasts from several months to several years. | Get started in 10 minutes, training completed within a few hours, and proficient within 1-2 weeks.              |
| Heat Affected Zone                  | Large  | Small   |
| Material Deformation and Distortion | High   | Extremely low   |
| Weld Damage                         | Porosity may occur, resulting in poor consistency.                       | The weld pool is uniform with good consistency.   |
| Power Consumption                   | High   | Low — Electricity costs can be reduced by up to 80%.  |
| Consumables                         | High welding wire consumption  | The wire feeding system supports precise welding wire consumption.  |
| Oscillating Welding                 | None   | Available — Width up to 4 millimeters   |
| Pre-weld Cleaning                   | None   | Available — Effectively removes rust, oxides, oil, and grease   |
| Post-weld Cleaning                  | None   | Available — Effectively removes smoke residues, oxidation, and discoloration                                    |





■ **Eight robust safety measures provide unparalleled protection**


The DW series handheld welders are Class IV laser products. To ensure safe operation, proper personal protective equipment (PPE) must be worn


**Laser control switch**


**Welding torch trigger switch, welding torch button**


**Air pressure detection, control switch, and safety alarm**

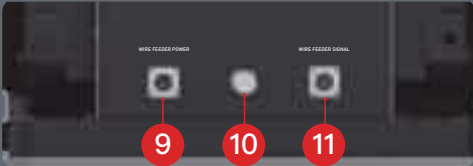
**Emergency stop button, laser power switch**

**Warning light**

**Circuit safety interlock**

**Safety key switch**

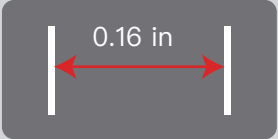
**Door switch interlock circuits**



- 9. Aviation Plug Interface for Wire Feeder
- 10. Power Interface for Wire Feeder
- 11. Wire Feeder Lock



- 1. Laser Output Fiber Cable
- 2. M8 Shank for Work Sense Clamp Cable
- 3. Gas input from Tank
- 4. Door Switch Interlock
- 5. Power Interface for Wire Feeder
- 6. Aviation Plug interface for Wire Feeder
- 7. AC Line input
- 8. Main Power Switch



The laser control system ensures consistent oscillation frequency control, allowing a weld width of up to (approximately 0.16 inches) without further processing.

The DW series includes a wire – feeding module for applications requiring deeper weld penetration, such as filling gaps or achieving smooth, flush weld profiles.



This module supports wire diameters of

- Ø 1.0 mm (approximately 1 / 25 inch)
- Ø 1.2 mm (approximately 3 / 64 inch)
- Ø 1.6 mm (approximately 1 / 16 inch)
- Ø 2.0 mm (approximately 1 / 13 inch)

It is compatible with a variety of materials, including carbon steel, stainless steel, aluminum, non – ferrous metals, and other alloys.



- 1. E-Stop Button
- 2. Power Keyswitch
- 3. Laser Start Button
- 4. Laser Power Control Knob
- 5. Control Panel Of Operating System

# ■ RAYWELD Features and Functions

## Preset and Laser Power Control:

The handheld laser welder has a 10-inch touchscreen with a multilingual interface, easy to operate and learn. Built-in parameters ensure weld quality and allow custom settings. Operators can quickly switch presets for different materials and thicknesses. Laser power is easily adjusted with a knob for fast optimal settings. The system stores 144 presets, letting beginners start welding in hours.



## Lightweight Handheld Welding Torch

The handheld welding torch features a compact, ergonomic design for comfortable use. Its specially designed nozzle heads for welding applications enable operators to consistently achieve high-quality welds. By allowing quick and easy replacement to accommodate both fusion welding and wire feeding operations, this system further optimizes and enhances production efficiency.

## Built-in Oscillating Welding Function to Improve Productivity

Produces highly aesthetic welds and can weld poorly fitted parts. Adjustable frequency and welding width up to 4 millimeters optimize welding quality. Oscillation parameters are pre-programmed and can be adjusted, saved, and recalled instantly during operation.



## Wire Feeding Kit

Standard dual wire feeding kit that extends the laser welding capability to weld poorly fitted parts. Suitable for mild steel, stainless steel, aluminum, non-ferrous metals, and alloys.

## Easy Installation and Operation

Clear rear panel labels make system startup quick and easy. Just connect power, gas, and workpiece fixture to get started. Laser power, gas, and torch control transmit through a single cable. Connect to a computer via Ethernet to adjust and save process settings.



The rear panel has clear labels for easy installation, ideal for beginners. User guide videos make integration simpler. Just connect a standard 220Vac power supply, industrial shielding gas (argon or nitrogen), and the workpiece interlock to start welding. The 10 – inch touchscreen supports multilingual operation, making it easy to choose preset parameters or customize settings.

# ■ Quick Start

- 1 Connect the AC power supply and gas supply, then release the E-Stop button.
- 2 Rotate the system host clockwise to the "ON" position.
- 3 Select the required program and corresponding nozzle.
- 4 Press the LASER POWER button.



- 5 Ensure the workpiece clamp is connected to either the parts, or the electrically conductive welding table on which the parts are placed.

- 6 Align the red guide laser beam with the target welding area. (Note: The beam must fully cover the intended weld seam path.)
- 7 Position the nozzle tip against the workpiece, then engage the trigger to initiate welding



**WARNING:** Verify all personnel are clear of the welding zone. Engage the trigger to initiate welding.



Contact us  
8005850443



[sales@rayweld.com](mailto:sales@rayweld.com)



<https://rayweld.com/>

