

Portable, Handheld Laser
Welding Machine



I. Product introduction

SF1500HWM-A

Hand-held laser welding machine (1500W)



- Laser welding refers to welding with the heat generated by focused laser beam hitting weldments.
- As the laser has optical features of refraction and focusing, laser welding is suitable for micro parts and parts with poor weldability.
- Laser welding has the features of low heat input and small welding deformation, and is not affected by electromagnetic fields.

- The welding process is a thermal conduction/penetration type, that is, the workpiece surface is heated by laser radiation, and the surface heat is diffused to the interior through thermal conduction.
- The workpiece is melted to form a specific molten pool by controlling parameters such as laser power, swing width, frequency, etc.

II. Technical parameters

No	Name	Quantity
Optical features	Working mode	Continuous
	Polarization direction	Random
	Adjustment range of output power	10~100
	Central wavelength (nm)	1080±3
	Instability of output power	<3%
	Power of indicating red light (mW)	>0.5
	Output interface	QBH
	Diameter of output fiber core (μm)	30
	Length of output optical fiber	5m
Electrical features	Working voltage	220V±10%、50/60Hz
	Maximum power consumption (W)	<6000
	Control mode	Display screen
Other features	Size (W×H×D) Notes: handle included	352mm×692mm×666mm
	Weight (kg)	<75
	Range of working temperature (°C)	5~40
	Working relative humidity (%)	<70
	Cooling mode	Air-cooled
	Storage temperature (°C)	-10~60
	Input gas pressure (Mpa)	Not more than 0.7MPa



IV. Core advantages

Independent R&D

From high-efficiency semiconductor packaging pump source, high-brightness single-module fiber laser technology to laser welding control and craft software, Senfeng boasts its independent R&D of core components and key control systems.

High integration

The machine adopts the air-cooled heat dissipation, and no need for additional water-cooling equipment, nor other refrigerants or compressors. Pipes, components, control and maintenance of the water chilling unit are unnecessary, which increases portability and improves the system reliability.

Portable design

The machine weight is less than 75KG and the machine volume is less than 0.2m³, enabling the carry by one single person. The welding machine can be placed in the trunk of a car, which is convenient for transportation and carry. The welding machine can work in different application fields, which becomes more flexible.

Stable performance

The welding machine is highly stable and has a long service life; The handheld welding system is highly integrated, compact in structure and maintenance-free.



- The machine can minimize the heat input, lower the metallographic range of heat affecting zone, and minimize the deformation caused by heat conduction.
- The laser beam can be focused on a small area to weld small, closely spaced parts.
- A wide range of weldable materials, and various heterogeneous materials can also be joined to each other.
- The machine is suitable for high-speed welding by automation, and can also be digitally or computer controlled.
- When welding thick plate or fine diameter wire, there is no problem of meltback, which arc welding has.
- Unaffected by magnetic fields (arc welding and electron beam welding are easily affected), which can precisely target weldments.

Comparison between laser welding and traditional welding

Comparison items	Traditional welding	Laser welding	New generation of laser welding
Heat input	Extremely High	Low	Low
Workpiece deformation/undercut	Large	Little	Tiny
Welding strength	High	High	Extremely High (fracture at non-welding joint)
Follow-up processing	Sanding is necessary	Sanding is unnecessary or slight sanding is required	Sanding is unnecessary or slight sanding is required
Welding speed	Slow	3 to 10 times the speed of the traditional welding	3 to 10 times the speed of the traditional welding
Applicable materials	Few	Welding between various materials or between different materials	Welding between various materials or between different materials
Wastage	Much	Less	Less
Operation difficulty	Complex	Simple	Simple
Safety	Unsafe	Safe	Safe
Environmental performance	Not environmental friendly	Environmental friendly	Environmental friendly
Is the facula adjustable?	No	Yes	Yes, and with a large adjustment width
Welding appearance	Bad	Good	Excellent

Welding parameter

Material	Thickness/mm	Swing range/mm	Swing frequency/HZ	Power /w	Welding wire (ER)/mm	Form
Carbon steel	0.5	1	200	300		Welding penetration
	1	2	200	550	1	
	1.5	2	200	750	1	
	2	2.5	200	850	1.2	
	2.5	2.5	200	1000	1.2	
	3	2.5	200	1200	1.2	
	4	2.5	200	1500	1.2	Firm Welding
Material	Thickness/mm	Swing range/mm	Swing frequency/HZ	Power/w	Welding wire(ER304)/mm	Form
Stainless steel	0.5	1	200	300		Welding penetration
	1	2	200	550	1	
	1.5	2	200	700	1	
	2	2.5	200	850	1.2	
	2.5	2.5	200	1000	1.2	
	3	2.5	200	1200	1.2	
	4	2.5	200	1500	1.2	Firm Welding
Material	Thickness/mm	Swing range/mm	Swing frequency/HZ	Power/w	Welding wire(ER5356)/mm	Form
Aluminum	1	2	200	750	1	Welding penetration
	2	2.5	200	1100	1.2	
	3	2.5	200	1500	1.2	

V. Welding materials

The laser welding machine can be used to weld stainless steel, carbon steel, aluminum, chromium, nickel, titanium and other metals; (the following picture show the welding performance of various materials)



Welding of blue light composite aluminum



Welding of carbon steel



Welding of stainless steel



Welding of galvanized plate



Welding of brass



Welding of blue light composite red copper with stainless steel



Welding blue light composite red copper

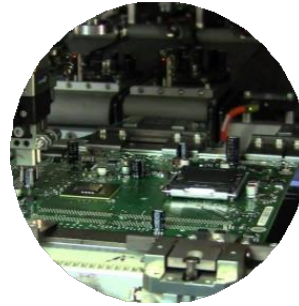


Welding of brass with stainless steel

VI. Application industries



Auto industry



Electronics industry



Food machinery



Household appliances



Metallurgical industry



Logos and marks