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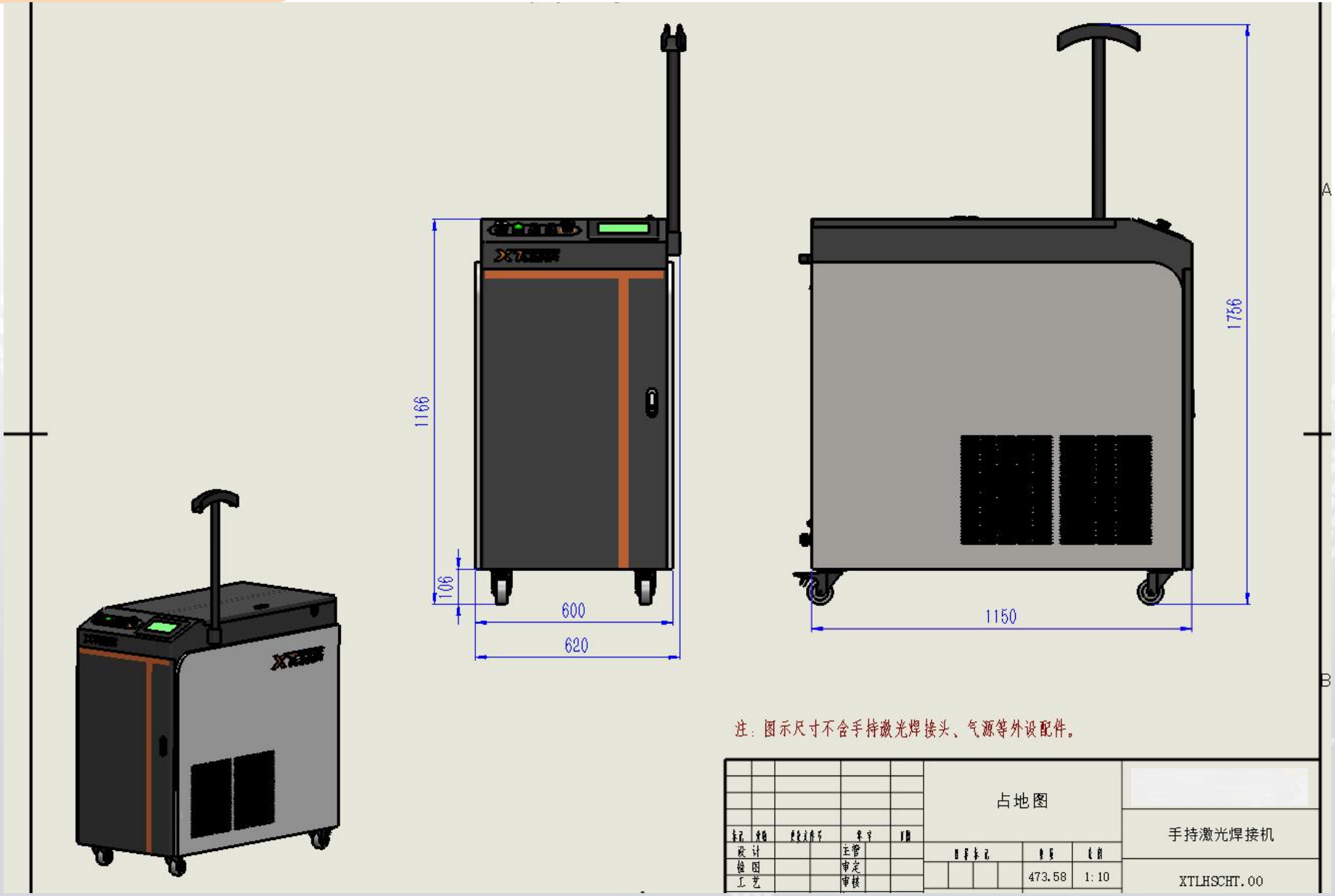
Handheld Fiber Laser Welding Machine

Machine footprint



1.0/1.5/2KW parameters

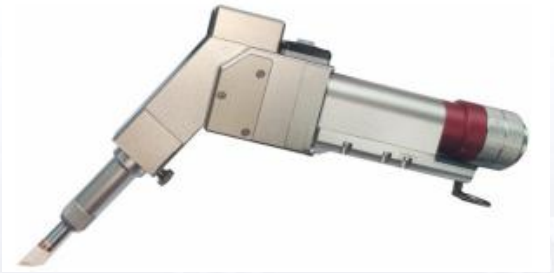
power	1kw/1.5kw/2KW
Laser Type	Fiber laser
Center wavelength	1080nm ±5
Max Output Energy	1kw/1.5kw/2KW
Modulation frequency	1-20,000HZ
Red light indicates output power	0.5~1
Fiber Cable length	8m
Fiber Core Diameter	50μm
Total Power Consumption	7.5kw(1kw laser source) 8.5kw(1.5kw laser source) 10KW (2KW laser source)
Rated Power	220±20% V AC、50/60Hz(1KW/1.5KW) 380±20% V AC、50/60Hz(2KW)
Cooling Method	Water Cooling
Gross Weight	324kg(GW)
Machine Dimension (L*W*H)	625*1090*1746mm

Welding thickness and melt depth

Items Thickness Material Power		Welding Penetration Maximum Material	Welding Maximum Material
Stainless steel	1000w	3mm	4mm
	1500w	4mm	5mm
	2000w	5mm	6mm
Galvanized sheet	1000w	2mm	3mm
	1500w	3mm	5mm
	2000w	3mm	6mm
Iron	1000w	3mm	5mm
	1500w	4mm	6mm
	2000w	4mm	6mm
Mild steel	1000w	3mm	5mm
	1500w	4mm	6mm
	2000w	4mm	6mm
Aluminum	1000w	1mm	2mm
	1500w	2mm	3mm
	2000w	3mm	4mm
Brass	1000w	1mm	2mm
	1500w	2mm	2mm
	2000w	2mm	3mm

Laser welding head:

Hanwei brand : 0.8KG

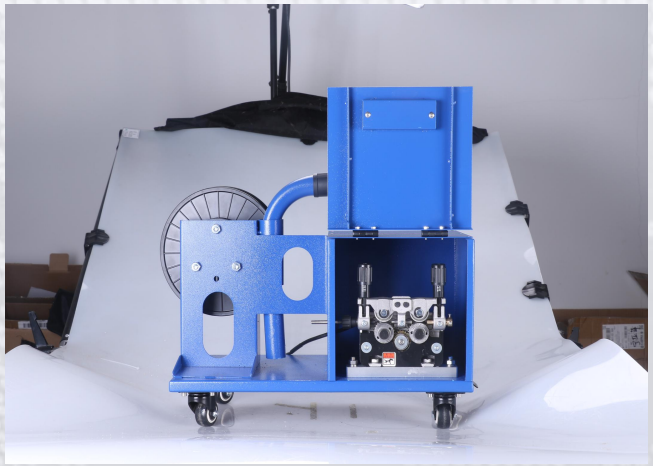


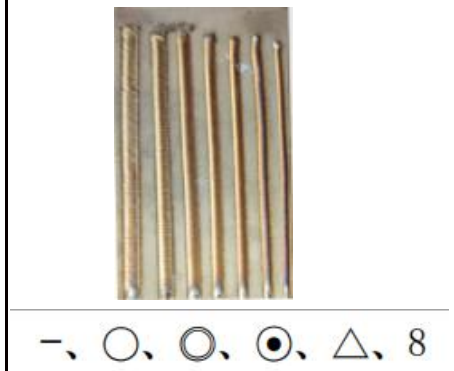
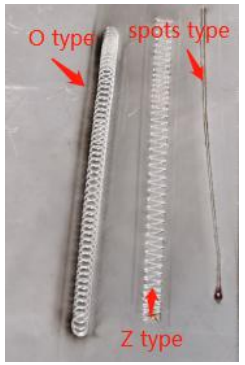
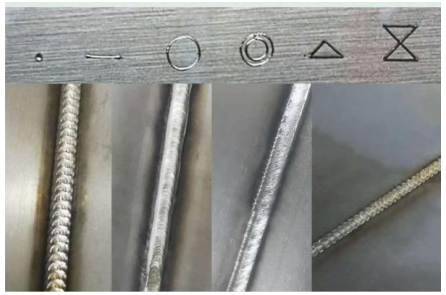
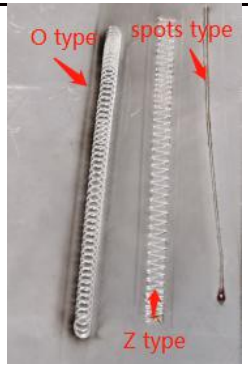
WSX brand: 1KG

Qilin brand:1.26KG

XH 0.9KG

equipped wire feeding



	HanWei	WSX brand	Qilin brand	XH brand
Pictures				
Weight （KG）	0.8	1.37	1.26	0.9
weld method				
spot size	adjustable: 0-5MM	adjustable: 0.2-4 mm	adjustable: 0.2-5mm	optional: 1.5/1.8/2MM
wire size （mm)	0.8 1.0 1.2 1.6 (optional)	0.8-1.2	0.8-1.6	0.5-1.6
power	1000-2000 (Raycus, IPG, Max)	1000-1500	1000-2000	1000-2000
weld material	Normal material: Carbon steel, Stainless steel,Galvanized sheet High anti-material: aluminum, copper (not suggest)			

Welding wires type: auto feeding wires and manual feeding wires

The auto feeding wire is a device as shown in the following pictures, which can automatically fill the welding wire while welding;

The manual type is held by hands without additional device.

Wire selection: solid wire, no need core needed, diameter 0.8-1.2MM (customer matching according to the thickness of the plate welded by himself)

The inner diameter of the reel is 6.6CM, and the outer diameter is ≤30CM (there is a reel in the wire feeder, and the customer can move it to the reel in the wire feeder after buying the wire)

The relationship among laser spot, welding wires and welding line(gap)

Laser spot ＞ welding wire ＞ welding line

Eg.: 0.5mm welding line should use 0.8mm welding wire, but can not use 0.3mm welding wire. Which kind of welding wires should we choose which is depends on which kind of material you want to weld.

1kw, aluminum welding wire max. up to 1.0mm, stainless steel 0.8mm, carbon steel 1.0mm.

When we use auto feeding wire system, the welding wire must be in the middle of the laser spot. This divide the laser spot into two halves automatically and stick to the seam of the welding head.

Feeding device user manual

This feeding systm have stable feeding function, with strong anti-jamming. Can feeding 0.8mm, 1.0mm, 1.2mm wire. 1mm wire and 1.0mm, 1.2mm scroll wheel feeding as standard, Read the following for details.

Configuration list

NO	Name	Qty	Remark
1	Feeding device(Without feeding tray)	1	
2	The handheld nozzle trave (With screw).	1	Handheld parts
3	Wire feeding mouth	1	Handheld parts
4	Fixed attachment of wire feeding mouth (With screw)	1	Handheld parts
5	Power line (With plug)	1	
6	Feeding ON/OFF switch (With plug)	1	
7	Umodel and internal corner feeding nozzle	1	
8	Schematic diagram	1	

A:The feeding main device – a. Installation parts: Nozzle trave, feeding mouth, fixed attachment of wire – b

1.Laser safety, operating safety announcement

Please consider the following when operation setup

1) Please correct install system by picture. Do not damage power supply and tread, twist, pull the electric cable. Cable damage can cause electric shock, short circuit, on fire.

2) When smells of burning, abnormal noise, abnormal heating, up in smoke and other abnormal phenomena, please turn off the power supply and stop operating, otherwise cause the electric shock, on fire and other risk.

3) In the feeding device should not foreign materials, especially the metal and conductive objects, in order to prevent short circuit and other faults. Do not use in a wet environment, Electric part contact with water may cause an electric shock or short circuit. When not working, please do not turn on power.

2.Installation and operation

1)Feeding structure setup, the first step is setting the handheld nozzle trave as 2a picture : The second step is setting feeding mouth on the trave as 2b picture : The third step is setting wire tray (Feeding – wire feeding – feeding mouth fix the connect– feeding mouth).The fourth step is fix all of parts by 2c picture.

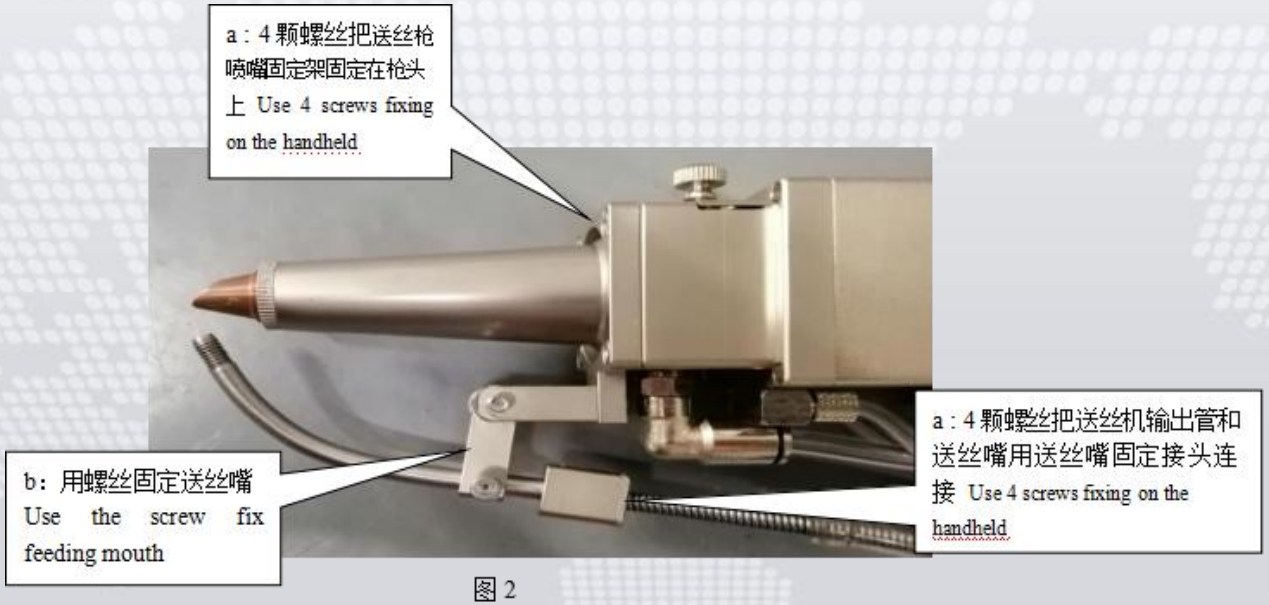


图 2

2 The back-panel wiring installation diagram 3.　　AC220IN input
as picture 3a : Feeding swith as 3b picture.

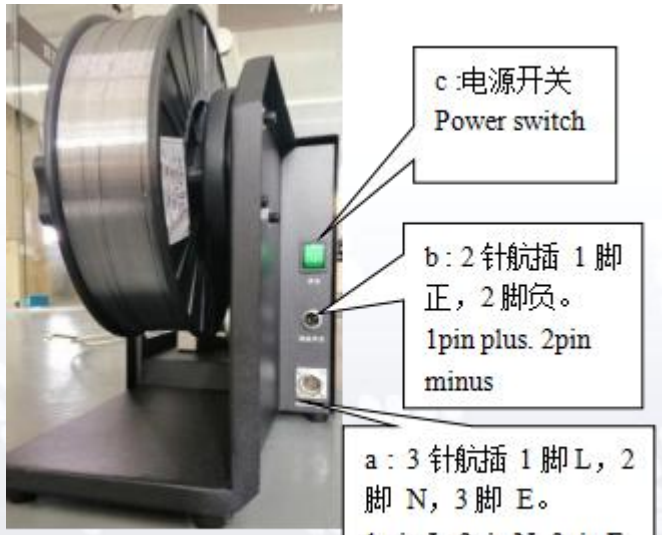
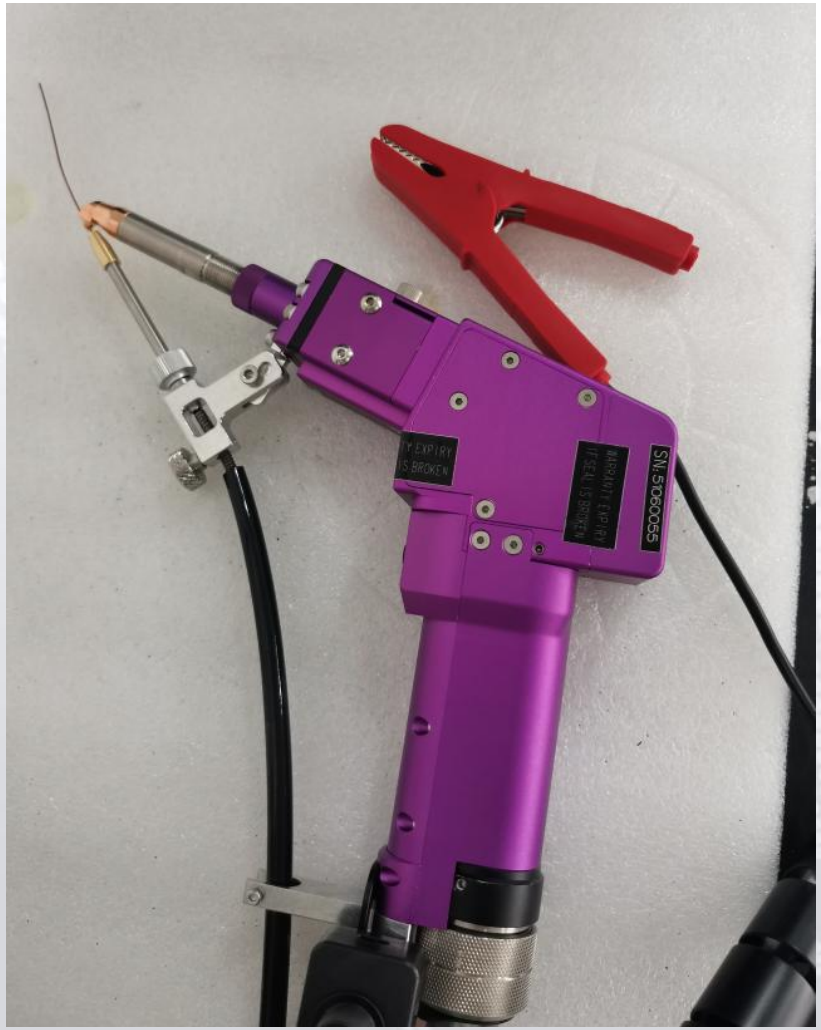


图 3

In the standby mode, 1 pin plus, 2 pin minus, when input DC15-24v driving the feeding. Here contact with gas signal of laser board.
Power switch as picture 3.

3）Face panel operation : As picture 4,
Manual Feeding, when press the button wire is feeding.
Manual Wire-back, when press the button, the wire feeding back direction.
Wire-back Speed Adjust, rotate by clockwise direction to add pullback time of stop feeding. The back-feeding length and speed is directly proportional. When speed is slow, the back-feeding length is short. Opposite, when speed is quickly, the back-feeding length is long.
Feeding Speed, adjust wire feeding speed.
Power indicator, The light went on when turn on the power switch.
Notes : Setting Ramp down time when over feeding. Lift handheld touch when release the button. If the welding is not continue, should resize well the feeding mouth.
Wire feeding need compress tightly the nozzle and pull.

GAS:Argon and nitrogen.
For the materials that are easily oxidized, it is better to use argon.



Safety protection:

We can choose safety protection from this system.
The clip and the welding head have to touch
the same material at the same time,
then laser will come out. This can protect operator.

Hand-held Welding VS Traditional Electric Welding?

PROGRAM	TRADITIONAL WELDING	LASER WELDING	HAND-HELD WELDING
Heat Input	High	Low	Low
Deformation, Undercut	Series	Slight	Slight
Bond Strength	Normal	Good	Excellent
Follow-up Program	Polishing	Hardly Ever	Hardly Ever
Speed	Ordinary	More than 2times argonarc welding	More than 2times argonarc welding
Applicable Material	Stainless Steel, Carbon Steel, Galvanized Sheet	Stainless Steel, Carbon Steel, Galvanized Sheet	Stainless Steel, Carbon Steel, Galvanized Sheet
Consumables	More	Less	Less
Operation Difficulty	Difficult	Normal	Easy
Operator Safety	Unsafe	Safe	Safe
Environmental Protection	Un-environment	Environment	Environment
Welding Fault Tolerance	High	Low	High
Swing Welding	Can't	Can't	Can
Spot Width	Unable	Unable	Adjustable
Welding Quality	Less	Normal	Excellent

Item Welding process		CO2 arc welding	Argon arc welding	Laser welding
Welding heat input		High	Higher	Low
Undercut of the product		Large	Large	Small
Bond strength to base metal		Good	Better	Better
Depth of welding (mm)		< 1.5	> 1	> 0.3
The difficulty of welding depth control		Difficult	Harder	Easy
Pinhole filling		Easy	Easy	Easier
The speed of the welding		Fast	Fast	Faster
Finishing	Method	Manually	Manually	Manually
	Time required	Long	Long	Shorter
Size of weld		Small to Large	Medium, Large	Small
Welder dimensions		Small, Medium	Small, Medium	Medium
Applicable material		Steel, aluminum	Steel, aluminum	Steel, aluminum, copper, etc.
Consumables		Welding wire	None	None
Protective gas		CO2	Argon	Argon, nitrogen
Can manual finishing		No	No	No
Welding cost		High	Medium	Low
Welding machine price		Low	Low	Medium
Operator safety		Arc, harmful gases, dust	Intense ultraviolet light	Laser radiation and glare

Spare parts: Nozzle and Protective lens:

In general, it can use 4-7 days, but it depends on operator and environment.

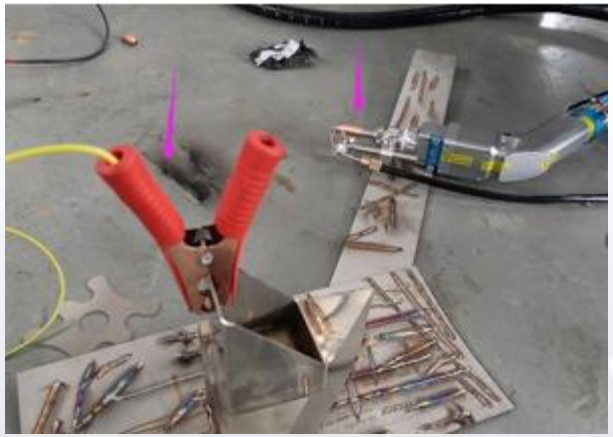
If use auto feeding function, in general we need change lens by one week. If we use manual type, the using time will less 7 days.

wire feeding maunal

How to ensure the safety of handheld welder?

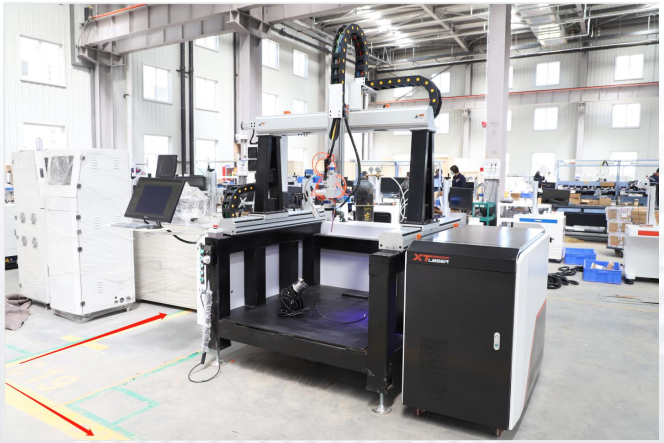
You may know the TIG and MIG, we have many customers now use fiber to replace the TIG or MIG because of the effectiveness. And the safety almost the same as them but less spark.

*** Working methods**The system includes safety protection, and the laser will work only when the clip and the welding gun contact with metal at the same time, which can protect the safety of the operator.



Welding needs to adjust the light to the focus.
The welding effect is the best and safety is the highest.
It can avoid the sparks caused by strong light and can also extend the life of the protective lens.

The focal length of the welding head is about 150MM,
so the range beyond 30CM of the welding head is safe,
so please set a safety warning
line for the 30CM near the operating table.

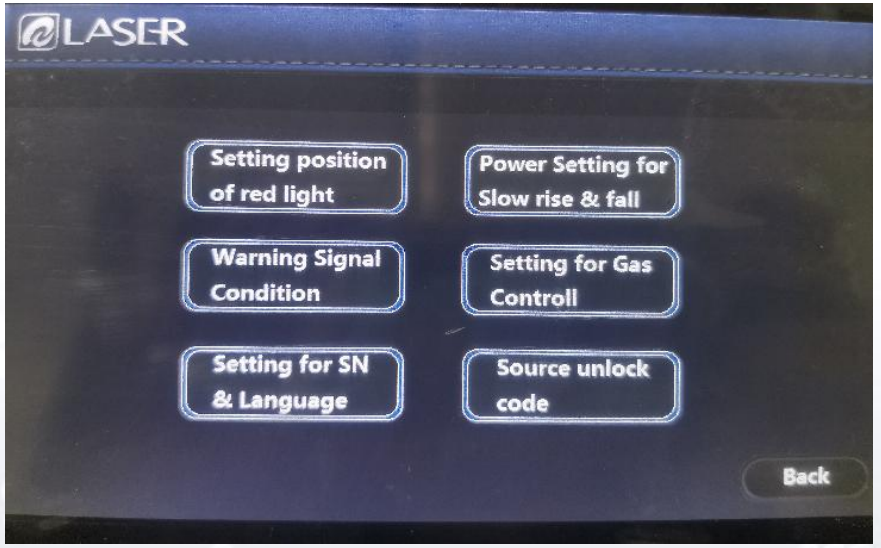


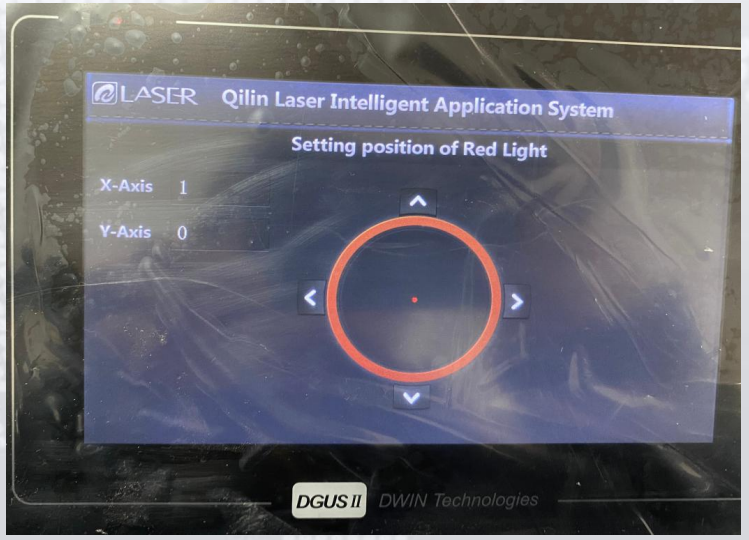
*** Goggles**
Machine come with Goggles for eye protection,
we consider every details for customers :)

*** High temperature resistant gloves**
When you use the machine,please wear gloves for double safe.

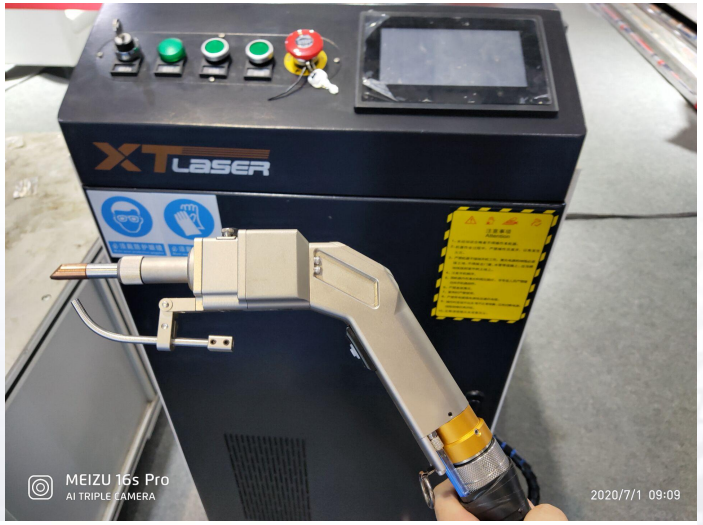
And the operator will be like this in the video:
https://www.youtube.com/watch?v=LZXE_Dce-78

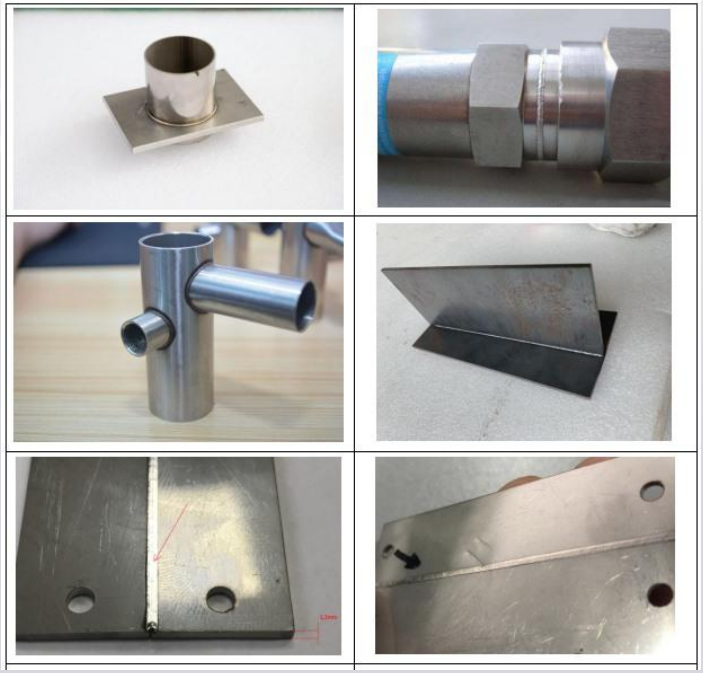
Control panel:





Machine Pictures:





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