

**SHENZHEN JASIC TECHNOLOGY CO., LTD.**

Address: No. 3, Qinglan 1<sup>st</sup> Road, Pingshan District, Shenzhen, Guangdong, China  
Postcode: 518118

Tel: +86 (0755) 8670 6250  
Website: [www.jasitech.com](http://www.jasitech.com)

Fax: +86 (0755) 2736 4108  
E-mail: [sales@jasitech.com](mailto:sales@jasitech.com)

 @JASICTechOfficial    JASIC Technology Co., Ltd.    @jasitech\_official



## JASIC 3-in-1 Handheld Fiber Laser Welding System

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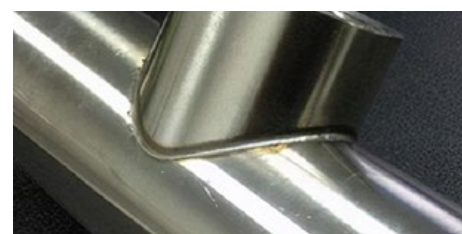
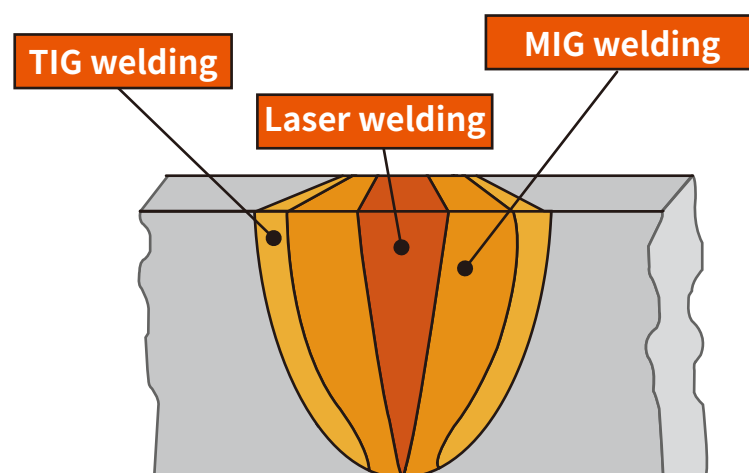
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# A brief introduction to handheld fiber laser welding

Using laser beam to melt and join metals, this is an emerging manual welding technology that is much more efficient and precise than MIG/TIG with minimal distortion, undercut or burn-through thanks to very limited heat affected zone (HAZ).

It delivers excellent welding results with much less costs compared to manual MIG/TIG welding. As the challenges of metal fabrication industry grow, this new technology can significantly improve fabricators' efficiency and profitability in a competitive landscape where fast project delivery and effective cost control are vital.

## Comparison of HAZ



## In comparison to other types of welding technologies...

Welding Technology		Arc Welding	Solid YAG Laser	CW Handheld Fiber Laser
Welding experience	Heat input	High	Low	Low
	Distortion	High	Low	Low
	Weld seam formation	Fillet	Fillet	Variable
	Post weld processing	Yes	Yes	No
	Welding speed	Low	Medium	High
	Ease of use	Low	High	High
Sustainability	Hazard to people	High	Low	Low
	Pollution to environment	High	High	Low
Cost	Consumables	Electrode/welding wire/shielding gas	Crystal, Xenon gas	Shielding gas
	Energy efficiency	High	Low	High
	Skill requirement	High	Moderate	Low
	Footprint	Small	Large	Small

## Why JASIC handheld fiber laser welding?



### High Welding Efficiency

- Up to 10x faster than manual TIG welding
- Very limited spatter thus little post-weld cleaning needed
- Little need for rework thanks to minimal porosity, undercut, or distortion



### High Energy Efficiency

- CW(continuous wave) laser with 40+% electro-optical conversion efficiency, 10x that of a solid YAG laser



### Cost Efficient

- Low welding skill requirement, save on labor cost for experienced arc welder
- Almost 0 maintenance needed for key component, pump source has over 100k hours life span



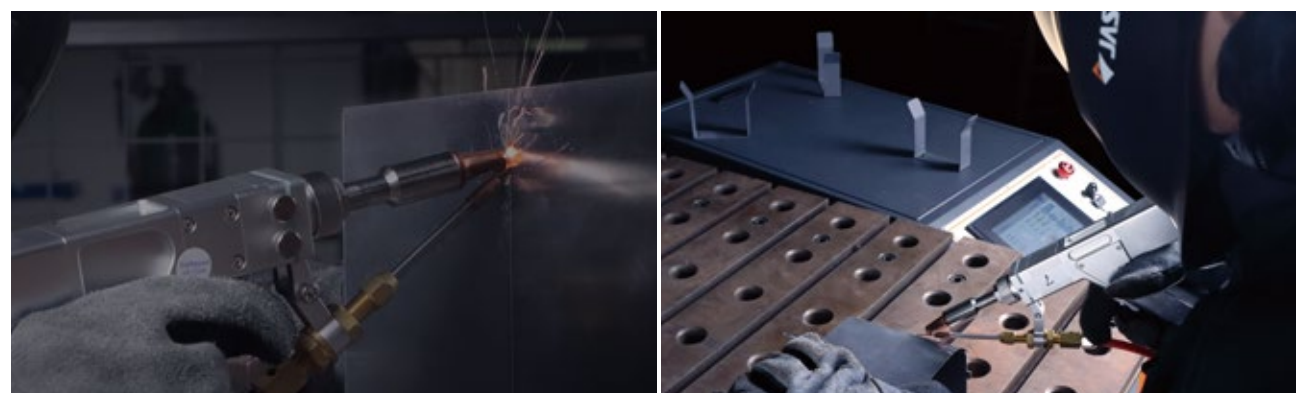
### High Usability

- New industrial design featuring better ergonomics, flexibility and reliability
- Color touch screen control panel with intuitive user interface
- Comprehensive job parameter settings
- Small foot print, great mobility and flexibility



### 3-Year Warranty

- Comprehensive quality assurance



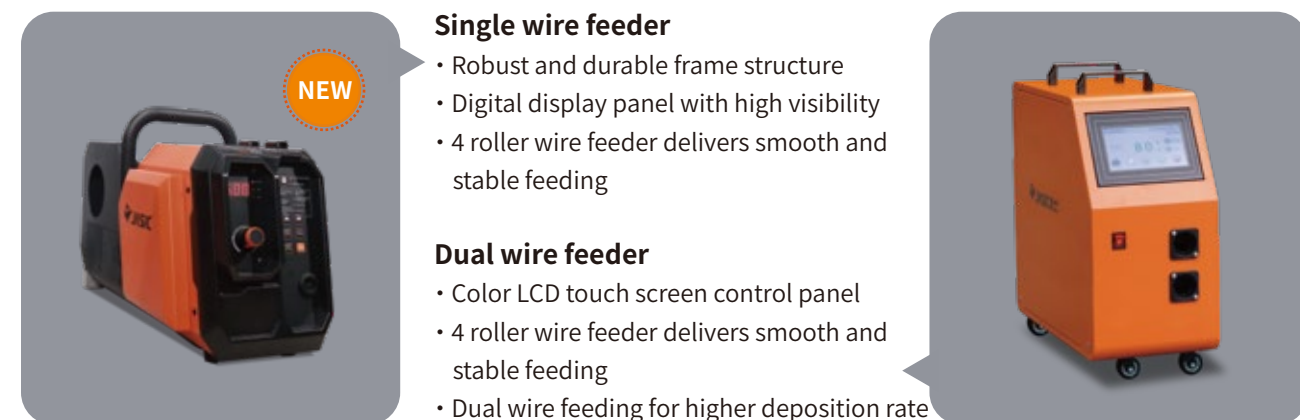


## New industrial design featuring better ergonomics, flexibility and reliability

Improved overall reliability thanks to reinforced housing and redefined internal wiring. Easy to use with smaller size, lighter weight, larger casters and thoughtful handle design.



## 4 roller wire feeders



## 3-in-1 handheld fiber laser machine

Being a turnkey solution for fast sheet metal fabrication, this system combines laser welding, cutting and cleaning into one system. On top of its versatility, this 3-in-1 system also possesses the same characteristics in efficiency and in ease-of-use as the other 2 types of machines.



### Welding

Rapid and consistent weld seam formation, limited training and little post-weld cleaning needed



### Cutting

Switch to cutting mode by simply changing nozzle tip; fast and clean cutting of sheet metal, straight or curvise

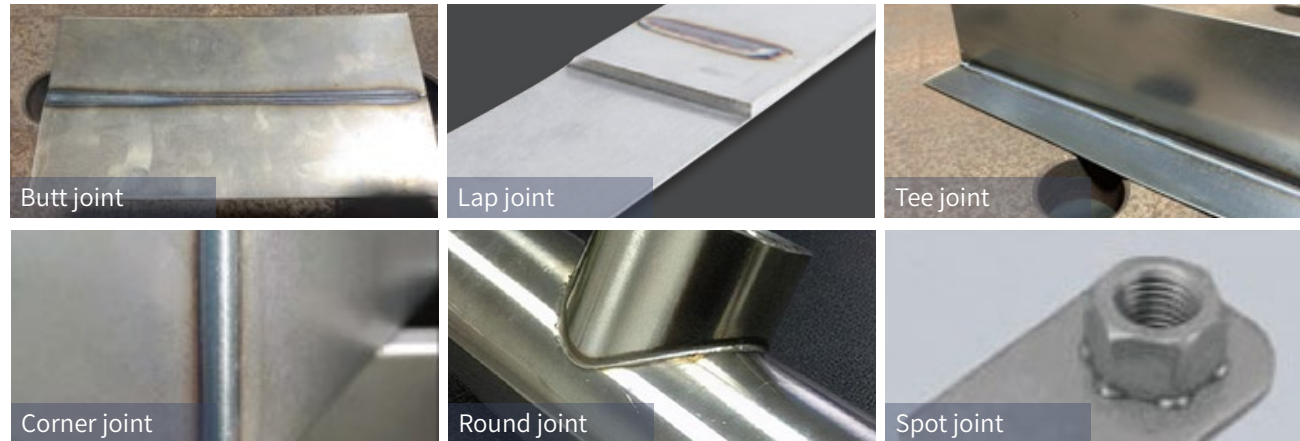


### Cleaning

Switch to cleaning mode by changing lens and operation mode; rapid and thorough removal of rust/paint/grease, etc., easily cleans hard-to-reach spots

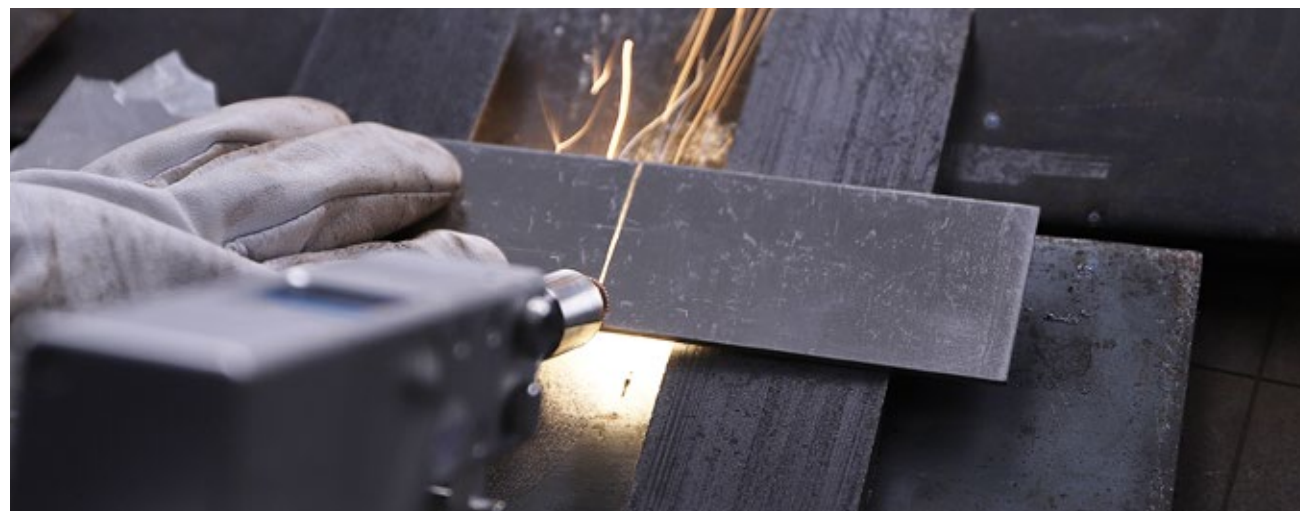
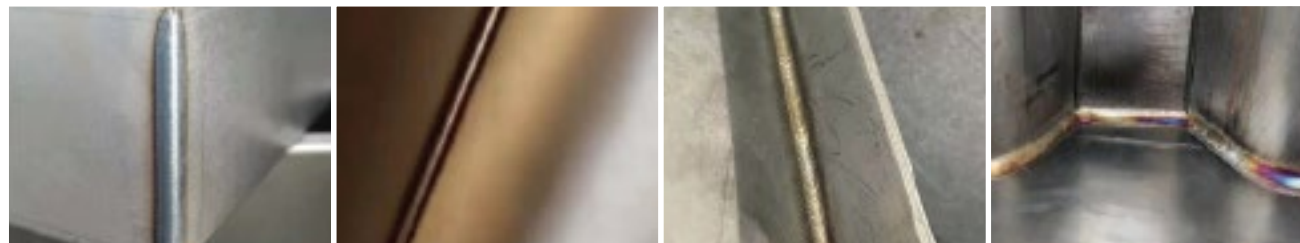


## Fast and quality welding of different weld joint types



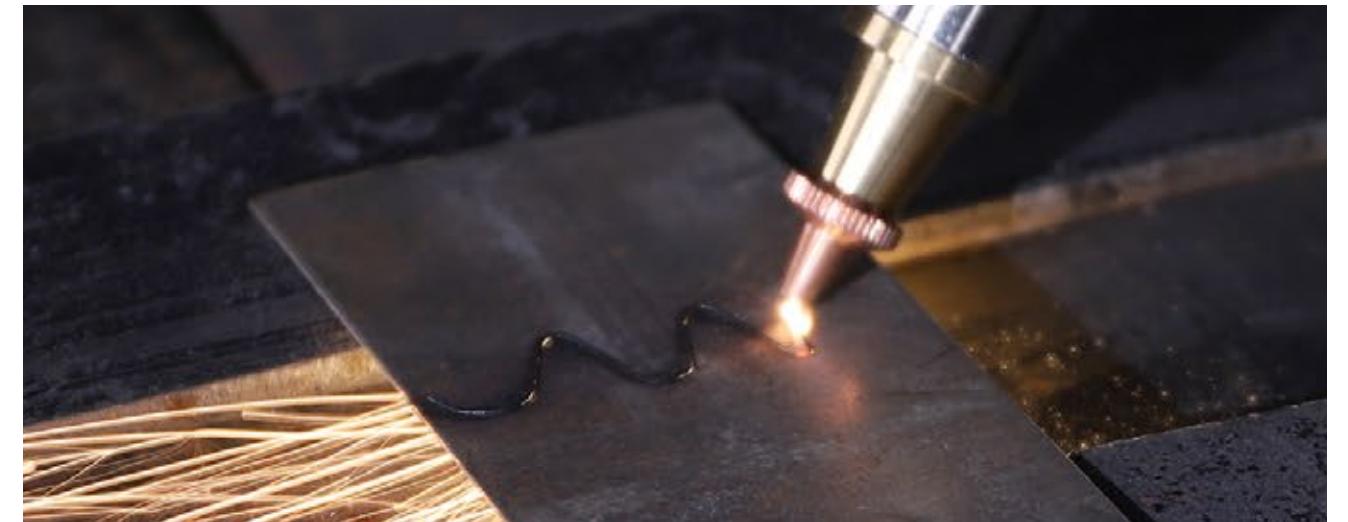
## Exceptional welding results

Continuous wave laser beam delivers high quality weld seams with minimal distortion, undercut or burn-through thanks to very limited heat affected zone (HAZ). As a result, very little post weld processing is needed - less labor, shorter delivery time.



## Cutting performance Precise laser cutting with smooth cut surface

Refined heat input results in cut surface with limited striation, great cutting results in both straight and curvilinear cutting



- Easy operation with high cutting efficiency
- Precise cutting, tiny kerf width
- Wide range of applicable sheet metal

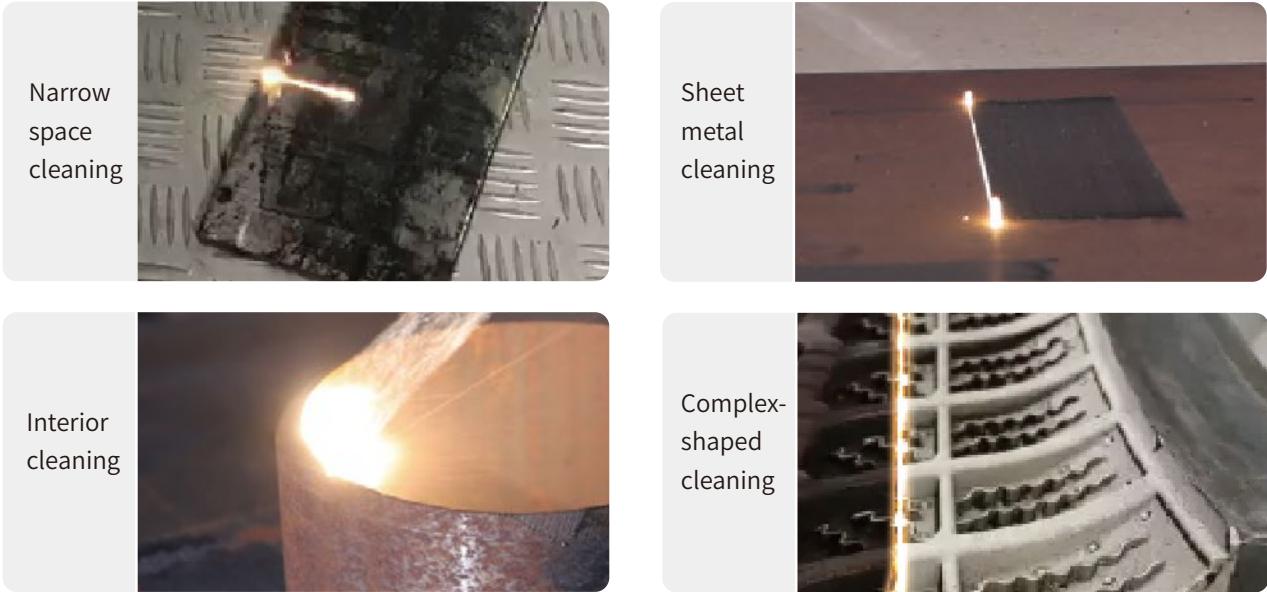
## Cleaning - different models for different job situation



- Focal length 800mm, max cleaning width 120mm
- Ideal for precise cleaning, e.g. pre-cleaning of weld bead & small parts cleaning
- Good for operating in sitting or squatting position



Unrestricted by work piece type, efficient cleaning with high precision and uniformity



Commonly used in...



Product Specifications

Model		LS-15000F (G4J801)		LS-20000F single wire (G4J901)/ LS-20000F double wire		
Input power supply		AC220V (±10%) 50Hz		AC220V (±10%) 50Hz		
Input power		5.8 kW		7.8 kW		
Center wave length		1080±10 nm		1080±10 nm		
Electro-optical conversion efficiency		≥ 40%		≥ 40%		
Laser power		1500 W		2000 W		
Fiber cable length		12 m		12 m		
Cooling method		Water cool		Water cool		
Single wire welding and self fusion welding	Material	Stainless steel/ carbon steel	Aluminum alloy	Stainless steel/ carbon steel	Aluminum alloy	
	Scan width	0~6 mm	0~6 mm	0~6 mm	0~6 mm	
	Penetration	0.5~3 mm	0.5~3 mm	0.5~4.5 mm	0.5~4.5 mm	
	Welding thickness	0.5~5 mm	0.5~5 mm	0.5~6 mm	0.5~6 mm	
	Welding wire diameter	0.8 & 1.0 & 1.2 & 1.6 mm 1.2 & 1.6 mm		0.8 & 1.0 & 1.2 & 1.6 mm 1.2 & 1.6 mm		
	Shielding gas	Argon/nitrogen( ≥ 3bar)				
	Welding gap range	≤ Welding wire diameter				
Double wire welding	Material			Stainless steel/ carbon steel	aluminum alloy	
	Scan width			5~8 mm	5~8 mm	
	Penetration	Not recommended		3~5 mm	3~5 mm	
	Welding thickness			3~6 mm	3~6 mm	
	Welding wire diameter			1.2 & 1.6 mm	1.2 & 1.6 mm	
	Shielding gas			Argon/nitrogen( ≥ 3bar)		
	Welding gap range			≤ Welding wire diameter		
Cutting	Recommended cutting thickness	≤ 3 mm		≤ 5 mm		
	Max cutting thickness	5 mm		6 mm		
	Shielding gas	Argon/nitrogen (4 bar ≤ gas pressure ≤ 7 bar)				
	Cleaning speed	50 mm/s		50 mm/s		
Cleaning*	Standoff distance	15 cm (F150 focusing lens for BW101-GS) 60 cm (F600 focusing lens for BW101-GS) 15 cm (F150 focusing lens for SUP23T) 40 cm (F400 focusing lens for SUP23T) 80 cm (F800 focusing lens for SUP23T)				
		Max. cleaning width	0~10 mm(F150 focusing lens for BW101-GS) 0~80 mm(F600 focusing lens for BW101-GS) 0~30 mm(F150 focusing lens for SUP23T) 0~60 mm(F400 focusing lens for SUP23T) 0~120 mm(F800 focusing lens for SUP23T)			
Shielding gas		Use oil-free and moisture-free gas; gas pressure ≥ 3 bar; other inert gases				
Water tank capacity		8 L		8 L		
Operating temperature		-10°C ~40°C ; ≤ 7°C, need to use antifreeze		-10°C ~40°C ; ≤ 7°C, need to use antifreeze		
Operating humidity		≤ 70% at 40°C ; ≤ 90% at 20°C		≤ 70% at 40°C ; ≤ 90% at 20°C		
Power source weight		85 kg		92 kg		
Package weight		103 kg		110 kg		
Power source dimensions		773*410*737 mm		773*410*737 mm		
Package dimensions		865*475*1035 mm		865*475*1035 mm		
Wire feeder weight		11.5 kg		11.5 kg(single wire) 30 kg(double wire)		
Wire feeder package weight		17.3 kg		17.3 kg(single wire) 33 kg(double wire)		
Wire feeder dimensions		628*240*340 mm		628*240*340 mm(single wire) 575*296*832.5 mm(double wire)		
Wire feeder package dimensions		890*320*430 mm		890*320*430 mm(single wire) 665*335*980 mm(double wire)		

\*: The cleaning parameters of the two guns, BW101-GS and SUP23T, are different.

## Product Specifications

Model		LS-20001C (G4J11B001)
Input power supply		AC220V (±10%) 50Hz
Input power		7.8 kW
Center wave length		1080±10nm
Electro-optical conversion efficiency		≥40%
Laser power		2000 W
Fiber cable length		12 m
Cooling method		Water cool
Cleaning	Cleaning speed	50 mm/s
	Standoff distance	15 cm (F400 focusing lens) 40 cm (F600 focusing lens) 80 cm (F800 focusing lens)
	Max. cleaning width	0~150 mm (F400 focusing lens) 0~225 mm (F600 focusing lens) 0~300 mm (F800 focusing lens)
	Shielding gas	Use oil-free and moisture free gas; gas pressure≥3 bar; other inert gases
Water tank capacity		8 L
Operating temperature		-10°C~40°C; ≤7°C, need to use antifreeze
Operating humidity		≤70% at 40°C; ≤90% at 20°C
Power source weight		92 kg
Package weight		100 kg
Power source dimensions		773*410*737 mm
Package dimensions		865*475*1035 mm

## Simple lens change method

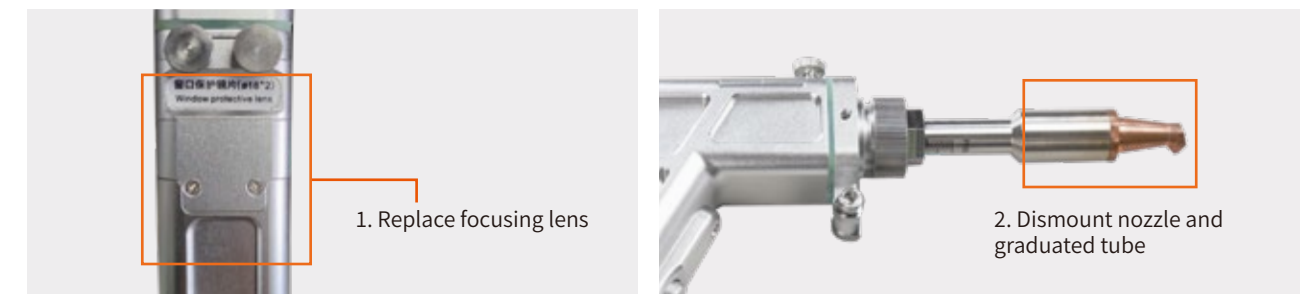
### GUN: SUP23T

The handheld laser gun is by default delivered in welding mode.

#### Switching from welding to cutting



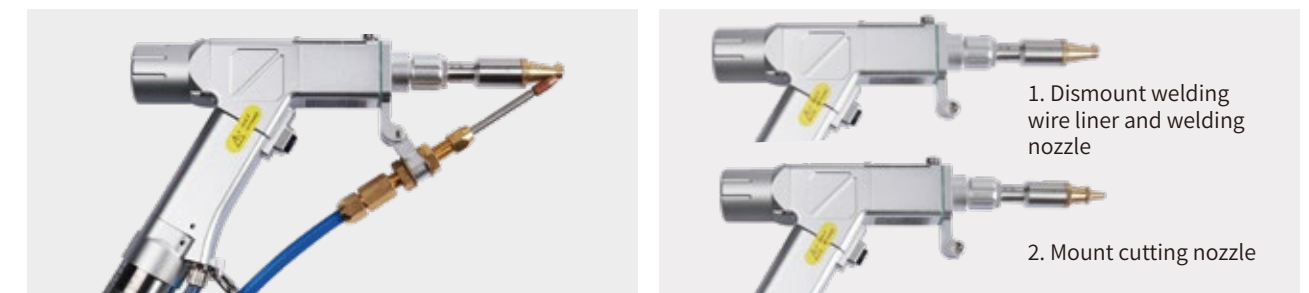
#### Switching from welding to cleaning



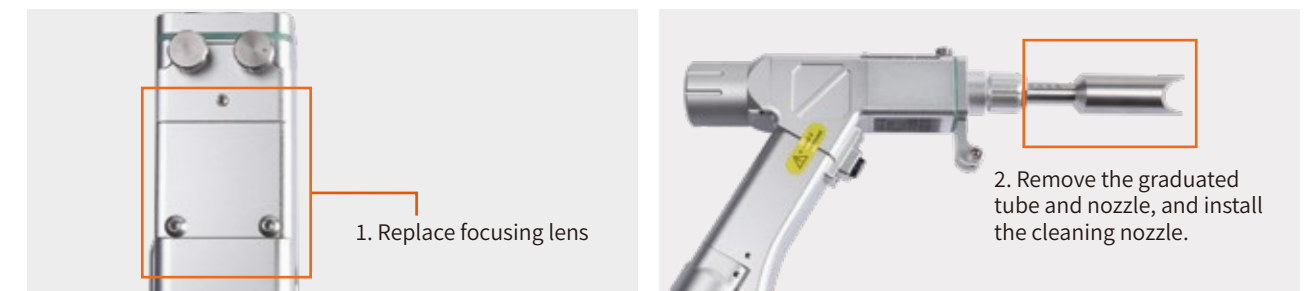
### GUN: BW101-GS

The handheld laser gun is by default delivered in welding mode.

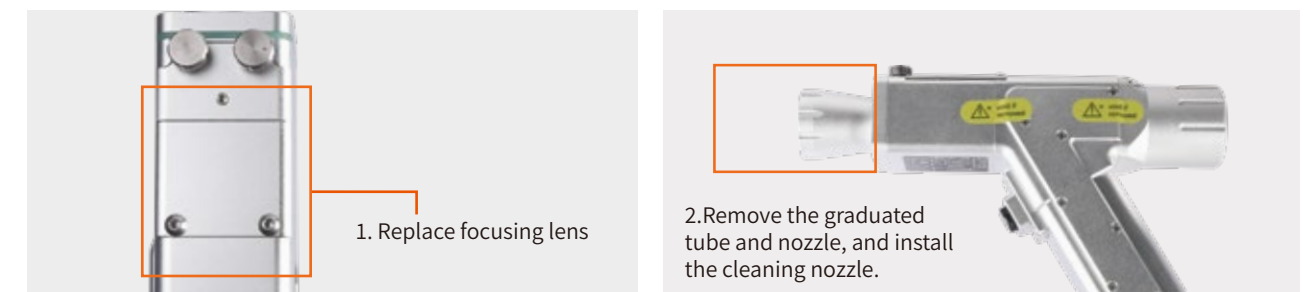
#### Switching from welding to cutting



#### Switching from welding to weld bead cleaning



#### Switching from welding to professional cleaning



# On the use of antifreeze

It is important to use antifreeze for our handheld fiber laser machines as using the machines without proper antifreeze measures under  $<7^{\circ}\text{C}$  working temperature can cause malfunction or even damage\*.  
 \*: damage of JASIC handheld fiber laser machines caused by the absence of or the improper use of antifreeze agent is not covered by JASIC's 3-year warranty

## Tips on using antifreeze

- Keep working temperature above  $7^{\circ}\text{C}$ ;
- Keep water cooler running, set the low and normal temperatures of cooling water to around  $7^{\circ}\text{C}$  to make sure the temperature of the coolant is above freezing point;
- Drain cooling water out of the machine after use and add antifreeze coolant to ensure liquid circulation;
- Use antifreeze with freezing point slightly lower than the lowest local working temperature



## Choosing the right antifreeze

It is recommended to choose antifreeze with a freezing point below the local min working temperature.

Antifreeze & distilled water proportion table	
Proportion ratio (antifreeze: distilled water)	Effective temperature range
6:4	$-42^{\circ}\text{C}\sim-45^{\circ}\text{C}$
5:5	$-32^{\circ}\text{C}\sim-35^{\circ}\text{C}$
4:6	$-22^{\circ}\text{C}\sim-25^{\circ}\text{C}$
3:7	$-12^{\circ}\text{C}\sim-15^{\circ}\text{C}$
2:8	$-2^{\circ}\text{C}\sim-5^{\circ}\text{C}$

# General Aftersales Policies

As a welding manufacturer with comprehensive quality assurance, we provide the following warranties for our handheld fiber laser welding machines:

- 36 months warranty on the whole machine
- 36 months warranty on the laser generator
- 36 months warranty on the water cooler
- 36 months warranty on the laser welding gun

Please note: the following items/situations are not covered by the warranty.

- Wearing parts and optical lenses are excluded from the warranty
- Product damage or quality issues caused by improper operation or mishandling are excluded from the warranty
- Product damage or quality issues caused by unauthorized repairs using third party parts are excluded from the warranty
- Damage caused by operation outside the scope of the product's technical requirements
- Damage to the laser caused indirectly by faults due to the customers' software or interface
- Damage caused by incorrect installation, maintenance/repair or operational use not specified in the user manual
- Damage caused by human factors during use, especially due to failure to take the necessary antifreeze measures when needed
- Damage caused by failure to comply with relevant requirements on water cooler's maintenance specified in the user manual