

SENFENG



SF3015H4

High Power Fiber Laser Cutting
Machine

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Fiber Laser Cutting Machine

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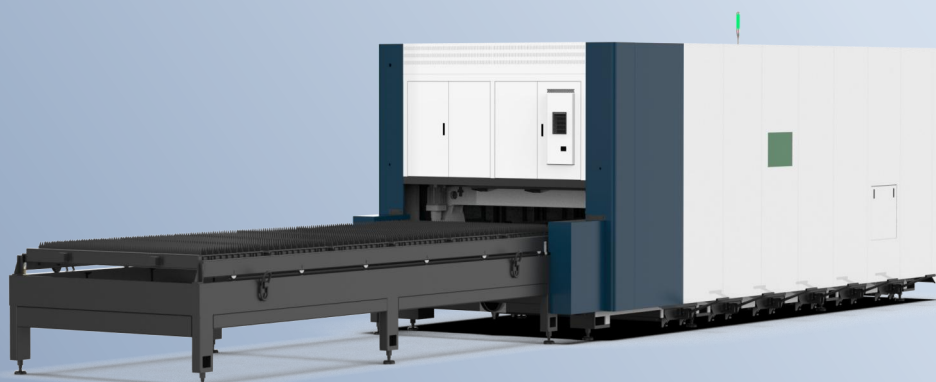


Fourth Generation

Versatile & Efficient

SF3015H4

High Power Fiber Laser Cutting Machine



1

Heavy-duty heat-insulated hollow bed

2

Intelligent spiral negative pressure dust removal

3

Laser cutting process database

4

Storm cutting system

*The image is for reference only; the appearance and dimensions are subject to the actual product from the factory.

Technical Parameters

SF3015H4

Item	Parameter			
	12kW	15kW	20kW	30kW
Work area (L*W) (mm)	3000*1500mm			
X-axis travel (mm)	1530mm			
Y-axis travel (mm)	3080mm			
Z-axis travel (mm)	360mm			
X/Y axis positioning accuracy (mm)	±0.05mm			
X/Y axis repeated positioning accuracy (mm)	±0.02mm			
Maximum speed (m/min)	200m/min			
Maximum acceleration (G)	1.5G			
Dimensions (L*W*H) mm	8440x2270x2340mm			
Maximum load (KG)	3000KG			
Weight (KG)	6103	6633	6723	7213
Phase	Three-phase			
Power supply rated voltage (V)	380V			
Frequency (HZ)	50HZ			
Overall power supply protection level	IP54			

Note:

1. Workpiece accuracy depends on factors like type, pre-treatment, sheet size, and position.
2. Technical parameters are subject to change without notice. Final parameters are based on the order agreement.

Cutting Parameters

SF3015H4

Material	Thickness (mm)	12kW	15kW	20kW	30kW	Gas
		Cutting speed (m/min)				
Stainless steel	6	13-15	15-18	18-22	22-25	N2/air
	8	8-10	10-12	13-16	18-22	N2/air
	10	6.5-7.5	8-9	11-13	14-18	N2/air
	12	5-5.5	6-7	9-11	12-14	N2/air
	14	3-3.5	4-4.5	7-9	10-12	N2/air
	16	2-2.3	2.9-3.1	6-7	8-9	N2/air
	18	1.3-1.5	2.2-2.4	3.5-4.5	6-7	N2/air
	20	1.2-1.4	1.9-2.1	3.5-4.5	5-6	N2/air
	25	0.7-0.9	1.2-1.4	1.8-2.5	2.5-3	N2/air
	30	0.25-0.3	0.8-1	1.4-1.6	1.5-2	N2/air
	35	0.2-0.25	0.5-0.65	0.8- 1.2	1.2- 1.5	N2/air
	40	0.15-0.2	0.4-0.5	0.5-0.8	0.8-1.2	N2/air
	45	0.05-0.1	0.25-0.3	0.3-0.5	0.75-0.8	N2/air
	50	0.05-0.1	0.2-0.4	0.2-0.3	0.6-0.8	N2/air
	60			0. 15-0.2	0. 15-0.2	N2/air
	70			0. 1-0. 13	0. 1-0. 13	N2/air
	80				0.08-1.1	N2/air
	90				0.05-0.06	N2/air
Carbon steel	5	15-18	20-23	23-28	24-30	N2/Air
	6	10-13	17-19	18-20	25-28	N2/Air
	8	7-10	10-12	14-16	18-22	N2/Air
	10	6-6.5	7-8	9-12	14-17	N2/Air
	14	1.6-1.8(O2)	4.5-5.5	6-8	8-10	N2/Air
	16	1.5-1.6(O2)	3-3.5(O2)	5-6	7.5-8.5	N2/Air
	18	1.35-1.5(O2)	1.35-1.6(O2)	3.2-4	5.5-6.5	N2/Air
	20	1.3-1.4(O2)	1.3-1.5(O2)	2.7-3.2(O2)	5-5.5	N2/Air
	25	0.8-1(O2)	0.95-1.2(O2)	1.4- 2.6(O2)	3-3.5	N2/Air
	30	0.4-0.5	0.6-0.95	1.2- 2.2	1.3- 2.8	O2
	35	0.3-0.4	0.5-0.6	0.9- 1.8	1.0- 2.0	O2
	40	0.25-0.3	0.3-0.35	0.8-1.2	0.9- 1.8	O2
	50	0.18	0.2-0.25	0.3-0.7	0.8-1.2	O2
	60		0.18-0.2	0.17-0.22	0.5-0.6	O2
	70				0.2-0.3	O2
	80				0.12-0.15	O2

Note:

1. Due to variations in material carbon content, the cutting parameters table is for reference only and should be based on actual conditions.
2. Dark-colored areas in the table indicate that full-sheet processing is not possible and only sample cutting is allowed.

Cutting Parameters

SF3015H4

Material	Thicknes s (mm)	12kW	15kW	20kW	30kW	Gas
		Cutting speed (m/min)				
Brass	5	13- 16	13- 17	18-20	18-20	N2/air
	8	6.0-8.0	6-8.5	9.0-11	10-15	N2/air
	10	4.5-5.5	5-6.5	6.0- 8.5	7.0- 10	N2/air
	12	1.8-2	2-2.2	4.0-6.0	4.0-7.0	N2/air
	14	1.2-1.4	1.4-1.6	2.5-3.5	3.0-4.5	N2/air
	16	0.8-1.0	1.2-1.3	2.0-3.0	1.5-2.5	N2/air
	20	0.3-0.5	0.6-0.75	0.8-1.0	0.7-1.0	N2/air
	30			0.5- 0.6	0.4- 0.6	N2/air
Aluminum	5	15- 17	15-20	21-24	20-24	N2/air
	8	6.5- 9.0	9.0- 11	16-20	15-20	N2/air
	10	5.0-6.0	6.0-8.0	14- 16	8.0-13	N2/air
	16	1.3- 1.8	1.8-2.5	2.0-3.0	5.0-7.0	N2/air
	20	0.8- 1.2	0.8- 1.5	1.5-2.2	2.0-3.5	N2/air
	30	0.3-0.5	0.4-0.6	0.5-0.8	0.8-1.0	N2/air
	35	0.25-0.3	0.3-0.4	0.4- 0.6	0.6- 0.7	N2/air
	40	0.2-0.25	0.2-0.3	0.3- 0.5	0.4-0.6	N2/air
	50	0.1-0.15	0.2-0.25	0.15-0.2	0.3-0.4	N2/air
	60			0.1-0.15	0.2-0.3	N2/air

Note:
1. Due to variations in material carbon content, the cutting parameters table is for reference only and should be based on actual conditions.
2. Dark-colored areas in the table indicate that full-sheet processing is not possible and only sample cutting is allowed.

04

Cost-Benefit Analysis

SF3015H4

Item		12kW			15kW			20kW			30kW		
		Air	O2	N2	Air	O2	N2	Air	O2	N2	Air	O2	N2
Peak power consumption	Laser source (kW)	32	32	32	46	46	46	57	57	57	90	90	90
	Chiller (kW)	11	11	11	21	21	21	21	21	21	29	29	29
	Air compressor (kW)	22			22			37			37		
	Machine tool host (kW)	15	15	15	15	15	15	15	15	15	15	15	15
	Dust removal (kW)	3	3	3	3	3	3	3	3	3	3	3	3
Consumables and gas consumption (CNY/H)		0.5	4.5	60.5	0.5	4.5	60.5	0.5	4.5	60.5	0.5	4.5	60.5
Total power (kW)		83	61	61	107	85	85	133	96	96	174	137	137
Total power consumption (kW/H)		49.8	36.6	36.6	64.2	51	51	79.8	57.6	57.6	104.4	82.2	82.2
Total operating cost (1RMB/kWH)		50.3	41.1	97.1	64.7	55.5	111.5	80.3	62.1	118.1	104.9	86.7	142.7

If the cutting auxiliary gas is dried compressed air, the cost includes air compressor electricity, machine power consumption, and consumables (protective lenses, cutting nozzles).

Note:

- The electricity and gas prices are for reference only and may vary by region.
- Auxiliary gas consumption varies with plate thickness; values are based on 16mm carbon steel for oxygen and 1mm stainless steel for nitrogen, for reference.

05

Configuration List

SF3015H4

No.	Item	Qty	Brand
	Laser source		
1	Laser source	1	Max/Raycus
	Laser cutting head		
1	Laser cutting head	1	BOCI/Precitec/SENFENG
	Machine Tool & Host		
1	Transmission system	4	SENFENG
2	Machine tool and accessory	1	SENFENG
3	Bed anti-burn components	1	Graphite plate
4	Reducer	3	SHIMPO, Japan
5	Electrical and pneumatic systems	1	SCHNEIDER, France AVENTICS, Germany
6	AC servo motor and driver	4	Yasakwa/Fuji/INOVANCE
7	Water cooler	1	Tongfei
	CNC cutting system		
1	CNC laser cutting system	1	HypCut

Note:

1. This is SENFENG's optimized configuration. Changes in brand or configuration may cause irreversible effects.

2. The warranty period for the entire machine (excluding consumables, non-force majeure natural disasters, war, improper operation, and human damage) is 2 years.

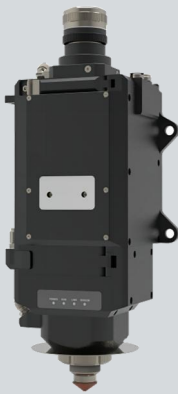
SF3015H4-Laser Source



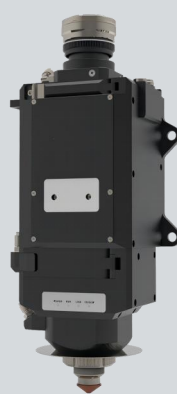
12kW~30kW optional power

1. High power, high-quality laser output
2. Compact structure, smaller size
3. Excellent performance, low processing cost
4. High reflection resistance
5. Modular design, easy maintenance
6. Wide range of applications

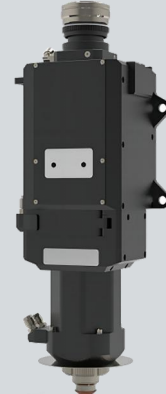
SF3015H4-Laser Cutting Head



12kW-15kW



20kW



30kW

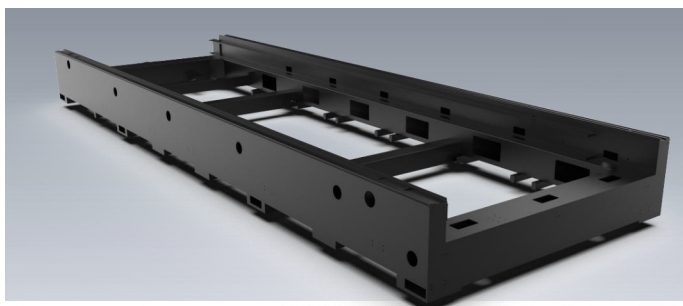
1. Collision Protection for Cutting Head: Users can replace the collision component directly without needing to replace the cutting head, reducing the likelihood of returns.
2. Protective Lens Temperature Monitoring: If contamination is detected during operation, the system immediately triggers an alarm and stops the machine to prevent potential damage to the head or lenses.
3. Cutting Pressure Monitoring: Continuously monitors gas pressure during operation; if the pressure is insufficient, too low, or unstable, an immediate alarm is triggered.
4. Protective Lens Explosion Detection: Continuously monitors stray light values on the protective lens, with alarms triggered if they exceed the threshold.
5. Pan Seal Failure Detection: Continuously monitors the gas pressure in the Lower 1 and Lower 2 protective lens chambers to ensure stable production.
6. Process Monitoring: Automatically re-cuts if the sheet isn't fully cut through.
7. Smart Piercing: Begins cutting immediately after piercing is complete, improving efficiency and protecting the machine.
8. Intelligent Knife Retraction: Sensors automatically adjust the retraction process to prevent burrs and damage to the workpiece.
9. Edge-Piercing Monitoring: Automatically adjusts the piercing process when thermal deformation or misalignment of the sheet is detected, extending the lifespan of the lens.

SF3015H4-Machine Bed System

1

Heavy-duty heat-insulated hollow bed

1. The bed is welded from high-quality steel and undergoes stress-relief annealing, secondary aging, and precision machining, ensuring stability and shock resistance to handle high accelerations.
2. Its seamless internal structure prevents heat transfer, maintaining processing accuracy and preventing deformation over time, which extends the equipment's lifespan.



2

Aerospace-grade high-strength aluminum beam

1. The beam is made of aerospace-grade high-strength aluminum alloy, extruded, heat-treated, and precision-machined for excellent rigidity and surface quality. Its corrosion resistance, light weight, high rigidity, and toughness are ideal for high-speed laser cutting.
2. The optimized internal structure ensures excellent dynamic performance, enabling high-speed cutting with accuracy.



3

Intelligent spiral negative pressure dust removal

1. The dust extraction system can intelligently control the exhaust vents based on the current cutting position, enabling timed, zoned, and sectional exhaust.
2. Combined with the base's bottom return-seal design, it ensures smoke-free cutting.



4

Visual monitoring for safety protection

1. The all-around monitoring system minimizes blind spots, ensuring safe and stable cutting operations.



SF3015H4-Machine Bed System

5

Temperature-controlled electrical cabinet

1. The H series features a newly added temperature-controlled electrical cabinet, eliminating the need for an additional air-conditioned room.
2. The internal environment is temperature and humidity controlled, offering excellent environmental adaptability.
3. Significantly extends the lifespan of electronic components in the control system, ensuring more stable laser cutting performance.

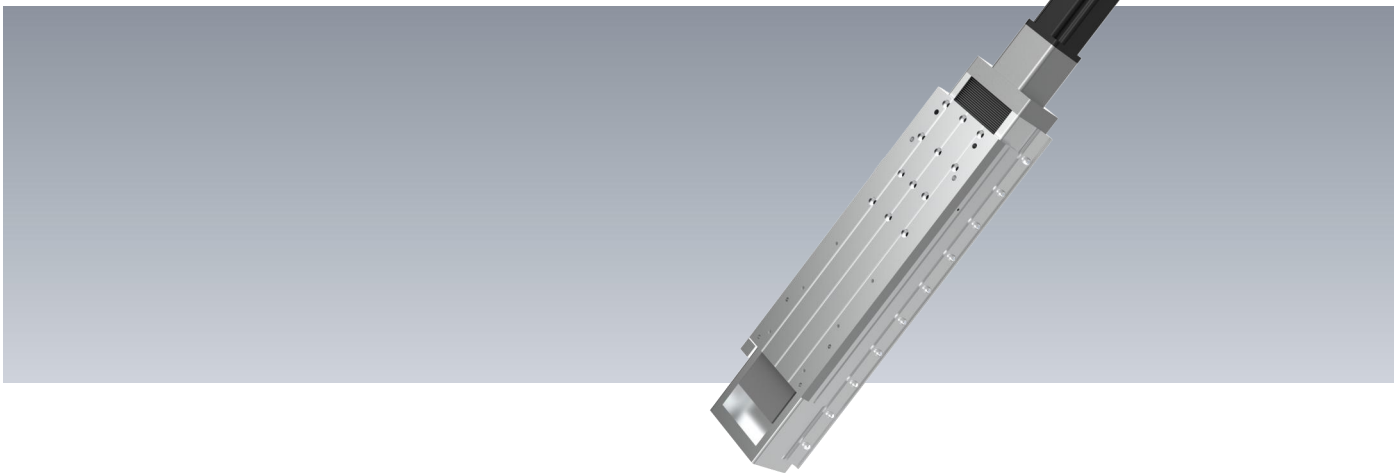


6

Modular Z-axis

Safety protection, easy maintenance

1. The modular Z-axis has good sealing performance, reducing contamination and lowering the failure rate.
2. Modular installation and replacement greatly reduce maintenance time and difficulty.



Auto Gas Distribution System



Precise Control of Each Gas Flow

The CNC laser cutting machine has two separate gas lines: nitrogen (air) and oxygen. Each gas line can be independently controlled for flow rate and pressure.

- The equipment software terminal is equipped with an automatic auxiliary gas selection feature.
- The type and pressure of auxiliary gases can be automatically set and selected through the CNC program, eliminating the need for manual operation.
- The actual gas pressure at the cutting head outlet can be easily read and displayed on the panel in real-time.

SF3015H4-CNC System



Bus Cutting System

Quick operation & efficient cutting

This intelligent bus system is specifically designed for fiber laser cutting. It integrates motion control, laser source control, and cutting gas control, offering stability, reliability, easy deployment, simple debugging, production safety, and a rich set of features with excellent performance. It offers modular, customizable, automated, and informational solutions. The system features memory buffering and a comprehensive cutting process database, offering optimized parameters for various materials and thicknesses. This ensures fast operation and efficient cutting, making it ideal for industries such as sheet metal, kitchenware, and lighting.

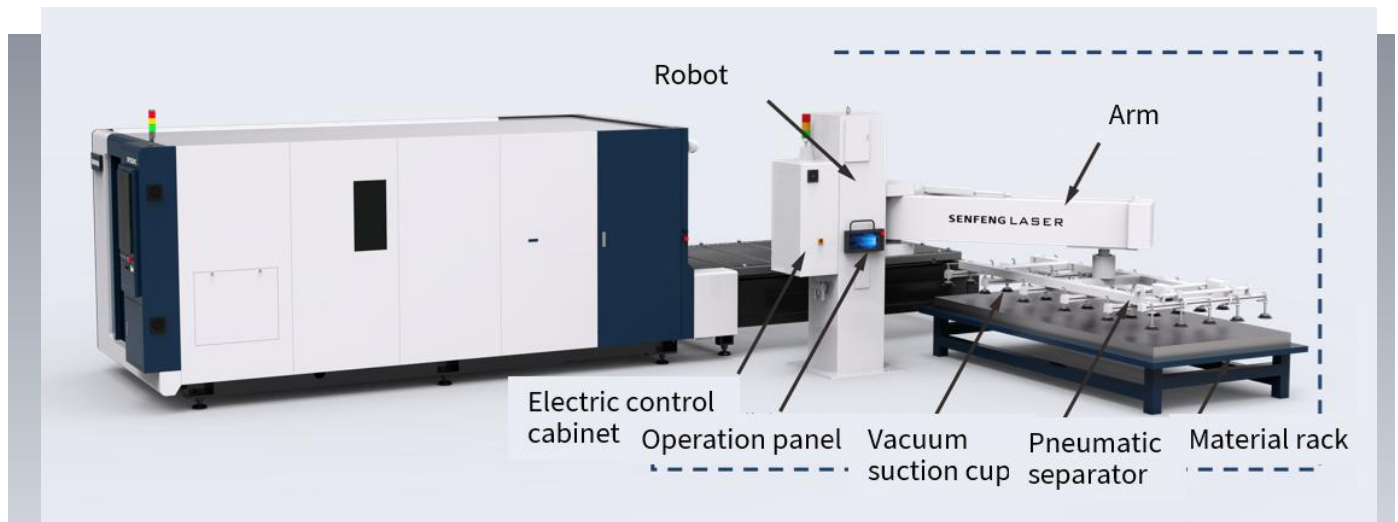
- Supported file formats: Direct processing of DXF files and high-speed reading and writing of LXDS and NRP files generated by CypNest.
- Equipped with a cutting database, allowing real-time adjustments during cutting to achieve optimal processing quality.
- Features: Multi-stage piercing, sharp corner entry, and centering significantly enhance high-power cutting efficiency and stability.
- Optimized for various rapid travel modes, including the "LeapFrog" function.

SERVO SWING ARM LOADING SYSTEM (OPTIONAL)

1

Composition

The system consists of a 500kg swing arm manipulator, a 500kg loading vacuum suction cup, a 3000kg fixed raw material rack, a vacuum system, a safety protection system, a CNC control system, etc.



2

Core Technical Parameters

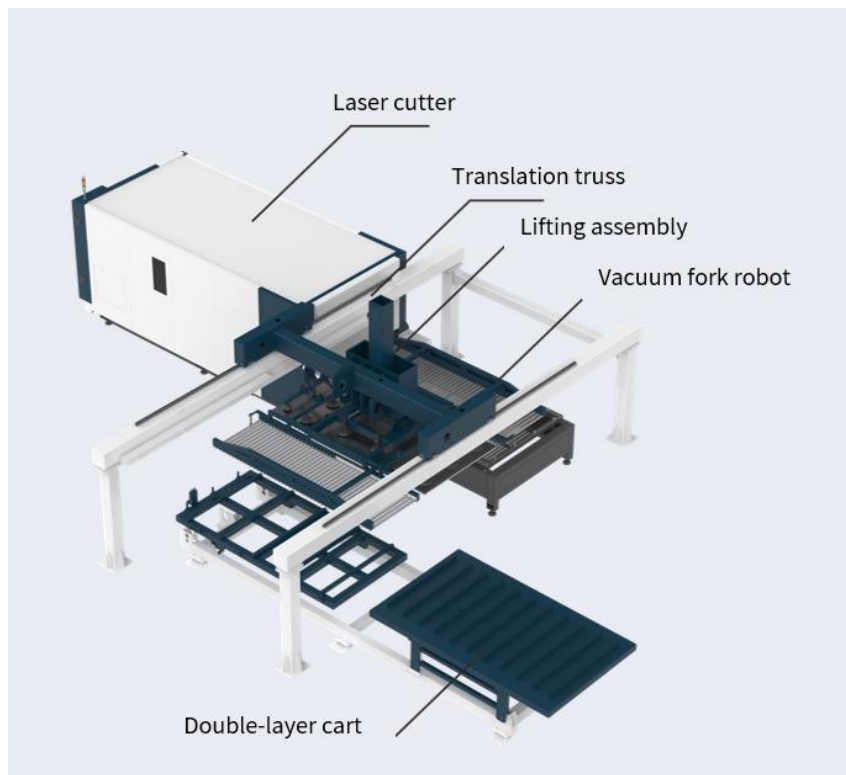
No.	Item	Parameter	Unit
1	Maximum sheet size	3000×1500	mm
2	Minimum sheet size	800x800	mm
3	Sheet thickness	1~14	mm
4	Maximum sheet weight	500	kg
5	Arm swing angle	120	°
6	Repeated positioning accuracy	±1	mm
7	Single load cycle	<45	s
8	Gas supply pressure	0.5-0.6	Mpa
9	Gas consumption	0.2	m³/min
10	Material rack load	3000	kg
11	Power supply voltage	220/380	V
12	Operating current	12	A

3015 AUTOMATIC LOADING AND UNLOADING ROBOT (OPTIONAL)

1

Composition

This system consists of composite truss manipulators for loading and unloading, a double-layer electric material cart, a CNC control system, and a vacuum control system, working with the laser cutter to form an automated sheet metal production unit. The system automates the loading and unloading of plates, improving efficiency and reducing costs.



2

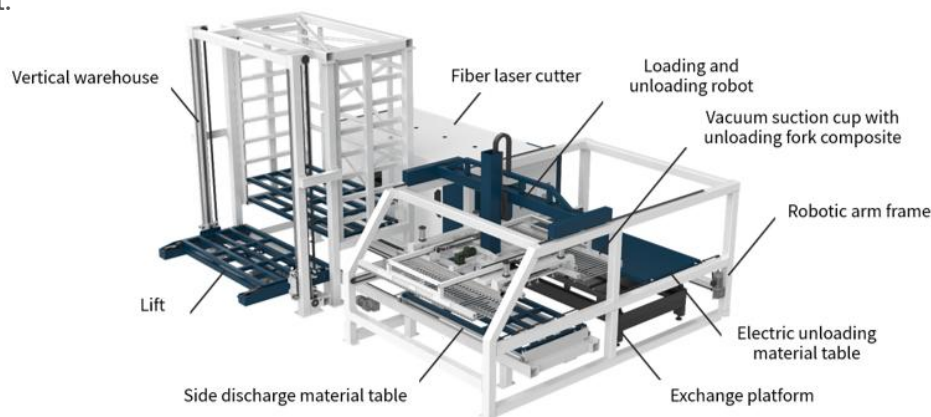
Core Technical Parameters

Maximum sheet size	3000*1500	mm
Minimum sheet size	800*800	mm
Maximum sheet thickness	14	mm
Minimum sheet thickness	0.8	mm
Maximum sheet weight	500	kg
Single-layer loading weight of exchange material cart	3	T
Single-layer loading height of exchange material cart	240(Including material tray)	mm
Manipulator translation speed	10-30	m/min
Manipulator lifting speed	5-10	m/min
Cart exchange speed	10	m/min
Intake pipe	12	mm
Gas source	0.6-0.7	Mpa
Power supply	3-phase 5-wire 380V	

3015 WAREHOUSE + AUTOMATIC LOADING AND UNLOADING ROBOT (OPTIONAL)

1 Composition

This system consists of a set of 3015 vertical warehouse, vacuum suction cup composite fork loading and unloading truss robot, loading and unloading robot track frame, CNC control system, vacuum control system, etc., which together with the laser cutting machine form a sheet metal automated production unit.



2 Core Technical Parameters

No.	Item	Parameters	Unit
1	Layers of warehouse	10	
2	Sheet size	3000×1500	mm
3	Warehouse layer load capacity	3000	kg
4	Lifting speed	10	m/min
5	Warehouse in-and-out speed	10	m/min
6	Maximum sheet size	3000×1500	mm
7	Minimum sheet size	800x800	mm
8	Sheet thickness	1-14	mm
9	Maximum sheet weight	500	kg
10	Translation speed	10-30	m/min
11	Lifting speed of loading and unloading manipulator	5-12	m/min
12	Single loading and unloading cycle	<180	s
13	Air supply pressure	0.6-0.7	Mpa
14	Load of electric material cart	3000	kg
15	Operation speed of electric material cart	10	m/min
16	Power supply voltage	380	V
17	Working current	80	A

Providing Global Users with Automated Metal Fabrication Solutions

SENFENG provides automated metal fabrication solutions globally, integrating cutting, bending, welding, cladding, automation, and new energy. With core technologies in laser cutting, welding, and cladding, the company also offers intelligent manufacturing systems like flexible laser processing lines and sheet metal bending centers. These solutions serve industries including automotive, construction, energy, and petrochemicals, and are used in over 100 countries.



03

International PCT Patents

577

Chinese technology patents

SENFENG has developed key components like laser generators, processing heads, Feng Cloud systems, and CNC systems, used in cutting, welding, cladding, and automation. The company offers a complete industry chain, including laser cutting, welding, cladding, cleaning machines, bending centers, and flexible production lines. These solutions are used in sectors like power towers, construction machinery, shipbuilding, bridges, and aerospace, helping businesses accelerate production and reduce costs for greater economic benefits.

After-sales Service

Technical Training to enhance customer production efficiency

1 Before equipment delivery

The buyer can arrange for 1-2 operators to attend a one-week training at the SENFENG factory. The specific dates should be confirmed with our customer service department.

3 Training

The training includes laser principles, equipment structure, process explanation, equipment maintenance, laser safety protection, operating procedures, and basic troubleshooting.

2 During the warranty period

The buyer can apply for one more session of free training for 1-2 operators at SENFENG.

4 Requirement

Trainees must be mechanical, electrical, or optical engineers and pass assessments on equipment operation, laser principles, safety, and maintenance before starting work.

Packaging & Transportation to ensure equipment quality

1 Packaging

Standard packaging, suitable for long-distance transportation, moisture-proof, rust-proof, and shock-resistant. Designed for full lifting with marked lifting points and



2 Transportation

Domestic transportation within China is fully handled by our company, including freight and insurance.



3 Packing List & Certificate

Each package includes a packing list and certificate of conformity. The user manual and other documents are inside the box, while the packing list is on the outside.



Installation professional and high-quality

1 Installation

SENFENG engineers will install the equipment at the client's site.

3 Door-to-door training

On-site training will be provided on equipment maintenance, safety, operation procedures, and basic troubleshooting, with 7 days of guaranteed usage.

2 Equipment Debugging

After installation, the equipment will be debugged for client use.

4 On-site acceptance

After completing the above steps, the engineer may leave the site only after the customer's acceptance (the customer can veto).

After-sales Service

Premium Customization

In the digital era, intelligent transformation in metal processing is essential. Building unmanned factories is key to upgrading, with customized automation solutions being a top priority.

1

SENFENG understands the client's industry status and specific production processes, identifies issues, and assesses their needs.



2

Through in-depth on-site communication, customize metal fabrication automation solutions based on the client's pain points and needs.



3

A tailored solution, different from competitors' standardized models.



4

Provide a one-stop R&D and production service from design to final machine, with thorough quality checks until customer satisfaction and acceptance.



SENFENG

5-star Fast Service

Efficient

- Our repair hotline is available 24/7.
- A professional engineer will respond to customer inquiries within 10 minutes and provide a repair plan within 1 hour.



Professional

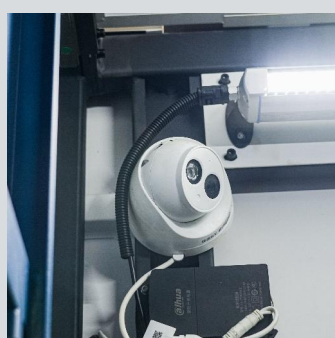
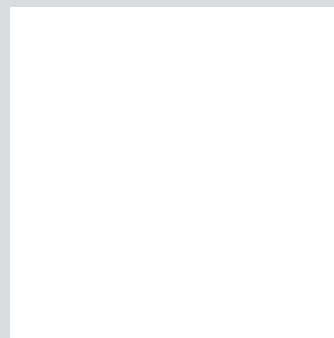
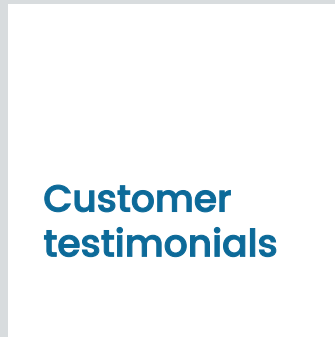
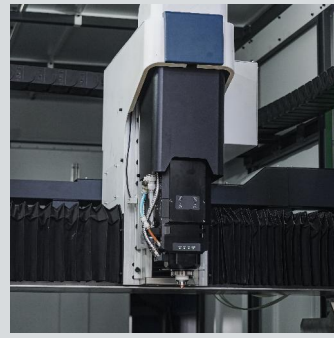
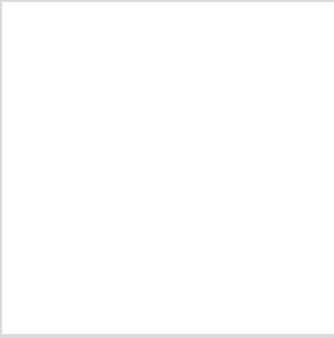
- **Custom Service:** Tailored service plans based on the specific needs of the customer.
- **Service Engineer Certification System:** Each service engineer undergoes rigorous training and assessment before being certified to work.
- **Common Issues Training:** Create a manual for common issues based on equipment models, with certified engineers providing customer training.
- **Online Guidance:** Experienced senior engineers offer support through phone or video calls to help customers resolve issues.
- **Professional Technical Support:** The equipment is properly calibrated during the first installation, and similar issues are resolved in one go.

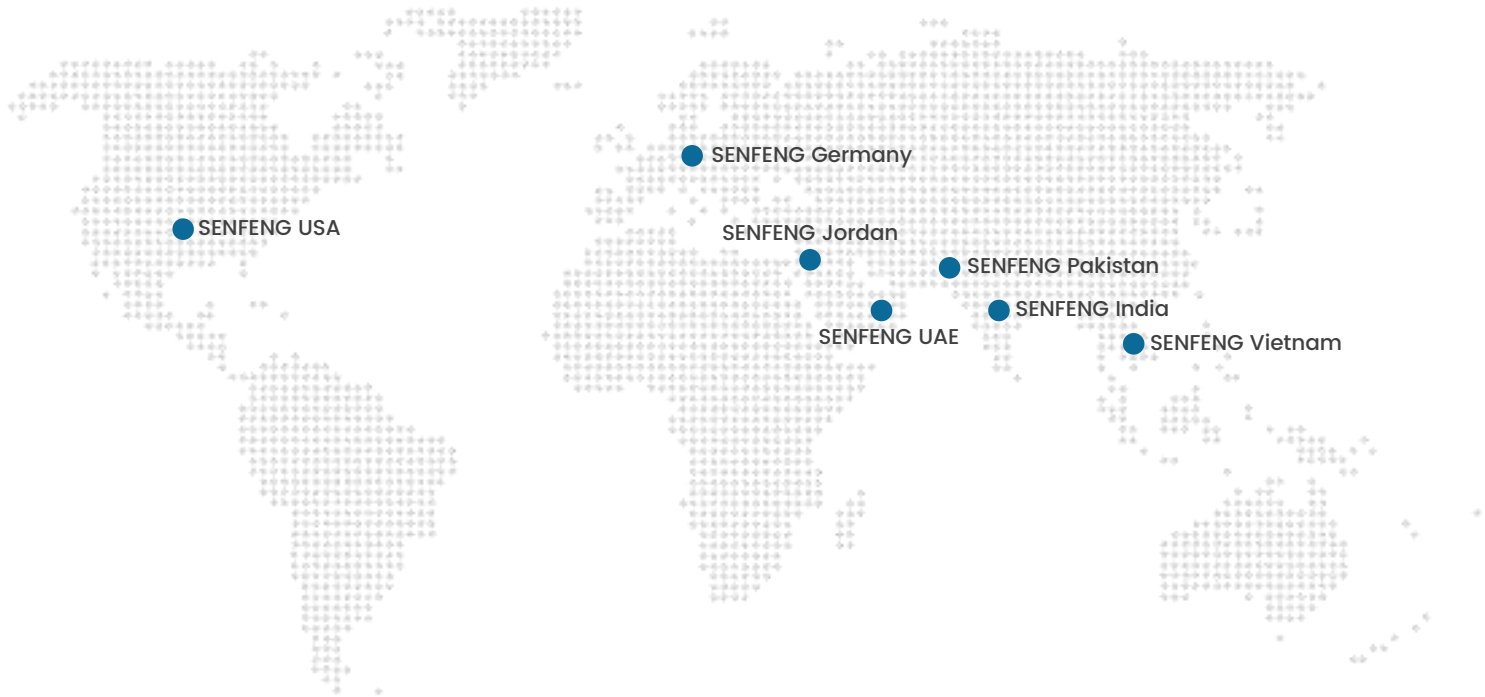


Comprehensive

- **Pre-service:** Theoretical and hands-on operation training, common fault self-diagnosis training, quick repair guidance for troubleshooting, usage reminders.
- **Regular Service:** Regular maintenance reminders, on-site services, periodic promotional activities.
- **Value-added Service:** Equipment software and hardware upgrades, financing lease services, extended warranty services.







Jinan Senfeng Laser Technology Co.,Ltd.