

SENFENG

Cutting | Cladding | Cleaning | Welding | Bending | Automation

Robot Laser Cutting Workstation

Technical Solutions

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I. Product introduction

Robot Laser Cutting Workstation



II. Robot Technical Parameters

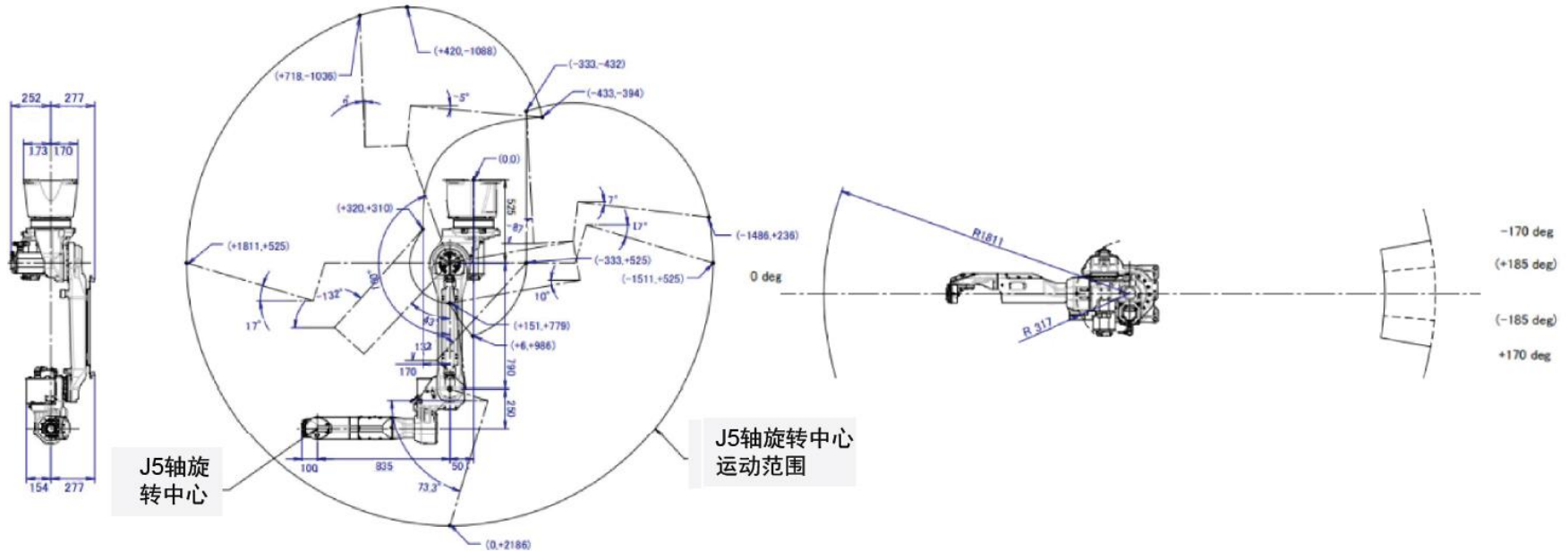
Model		FANUC-M-20iB					
机构 Structure	多关节型机器人 Multi joint robot						
控制轴数 Number of control axes	6轴 (J1、J2、J3、J4、J5、J6)						
可达半径 Reach radius	1853mm						
安装方式 (注释1) Installation method (Note 1)	地面安装、吊挂安装、倾斜安装 Ground installation, hanging installation and inclined installation						
动作范围 (注释2) (最高速度) Action range (Note 2) (maximum speed)	J1	340°/370° (195°/S)	J2	260° (175°/S)	J3	480° (180°/S)	
	J4	400° (360°/S)	J5	360° (360°/S)	J6	900° (500°/S)	
手腕部最高运动速度 Maximum wrist speed	2000mm/s						
最大负载 Maximum wrist load	25Kg						
手腕允许负载转矩 Allowable load torque of wrist	J4	44Nm	J5	44Nm	J6	22Nm	
手腕允许负载惯量 Allowable load inertia of wrist	J4	1.04Kg ^m	J5	1.04Kg ^m	J6	0.28Kg ^m	
驱动方式 Driving mode	交流伺服电机驱动 AC servo motor drive						
重复定位精度 Repeated positioning accuracy	±0.02mm						
机器人质量 (注释3) Robot mass (Note 3)	250Kg						
输入电源功率 (平均功率) Input power (average power)	3KVA(1KW)						

Notes:

1. The obtainable workpiece accuracy depends to some extent on factors such as workpiece type, preprocessing, workpiece size as well as the workpiece position within the work area.

2. The above parameters are subject to change without notice. The ultimate technical parameters are subject to the actual order agreement. **3**

Motion range and external size



环境温度Ambient temperature: 0-45°C

安装条件Installation conditions

环境湿度：通产在75%RH以下（无结露现象），短期在95%RH以下(1个月以内)Ambient humidity: General production below 75% RH (no condensation), short term below 95% RH (within 1 month)

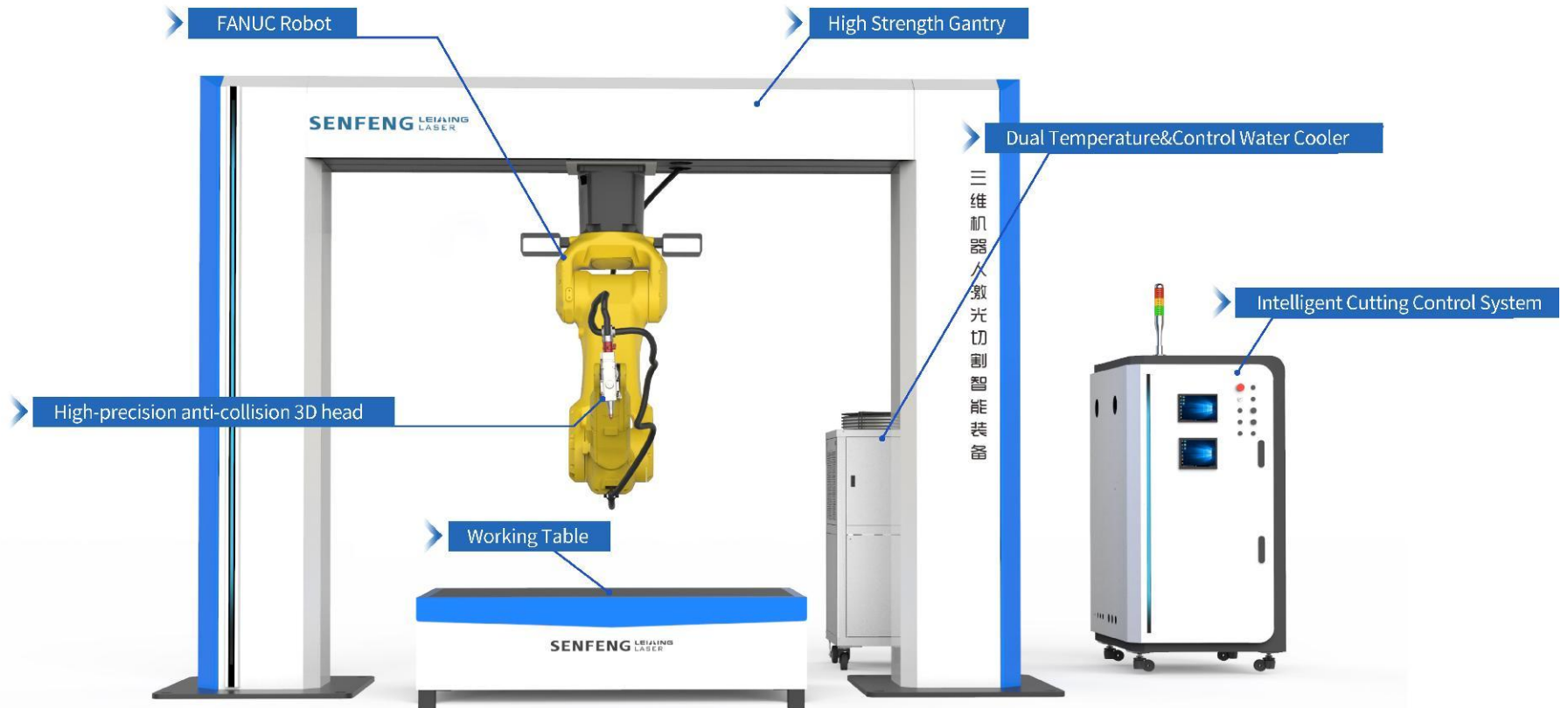
振动加速度 Vibration acceleration: 4.9m/S²

注释Notes

注释1)如果采用倾斜安装方式，机器人的J1和J2轴的运动范围将受到限制。Note 1) if tilt mounting is used, the range of motion of the robot's j 1 and j 2 axes will be limited.

注释2) 短距离运动时，可能达不到各轴的最高标称速度。Note 2) the maximum nominal speed of each axis may not be achieved for short distances.

注释3) 不含机器人控制器的质量。Note 3) the mass of the robot controller is not included.



III. Configuration

Name	Quantity	Brand
2000W fiber laser	1 unit	Raycus
Laser cutting head and accessories	1 set	EC/RayTools/WXS
Robot body and control cabinet	1set	Fanuc
Gantry accessories	1 set	Senfeng Laser
Electric control cabinet	1 set	Senfeng Laser
Electrical and pneumatic systems	1 set	France SCHNEIDER, Japan SMC/Taiwan AIRTAC
Water cooling unit	1 set	HANLI

Notes:

1. This configuration is the optimal one verified by our company. If the brand and configuration are changed, irreversible effects may occur, please be aware of this.
2. The warranty period of the whole machine is one year (except for wearing parts and consumables/force majeure natural disasters/damage of war and illegal operations/man-made sabotage).

IV. Main Features

Laser Device: Raycus Laser Device



- *Minimum fiber core is 50nm*
- *New generation of intelligent control system*
- *Multi-level security and a protection against high-reflective damage;*
- *Electro-optical efficiency up to 35%*

Cutting Head



- *Multiple protective lenses, efficient protection of collimating and focusing lenses*
- *Automatic focusing, reducing human intervention*
- *Highly dustproof, IP65 dustproof, patented protection lens holder cover, dustproof and no dead ends*
- *High-speed cutting*

V. Cutting Capability and Application

Cutting Materials

Carbon steel,
 stainless steel,
 aluminum alloy,
 brass,
 copper,
 galvanized sheet,
 silicon steel
 sheet,
 electrolytic sheet,
 titanium alloy,
 manganese alloy,
 etc.



Application Industry



Sheet Metal Fabrication



Manufacturing industry



Refrigeration equipment



Mechanical processing

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Cutting | Cladding | Cleaning | Welding | Bending | Automation



Elevator production



Advertising industry



Metal Cabinet Industry

VI. Cutting Parameter

Materials	厚度Thickness (MM)	切割速度Speed (m/min)	气体Gas
Stainless steel	1	15-25	N2
	2	9-11	N2
	3	4.8-6	N2
	4	1.8-2.1	N2
	5	1.2-1.5	N2
Carbon steel	1	10-12	N2
	2	7-9	N2
	3	3.3-3.6	O2
	4	2.7-3	O2
	5	2.4-2.7	O2
	6	1.8-2.1	O2
	8	1-1.2	O2
Aluminum	10	0.8-1	O2
	1	18-24	N2
	2	6-9	N2
	3	4.2-4.8	N2
	4	1.8-2.4	N2
	5	1.2-1.5	N2

VII. Cost

Mode		Air Compress	O2	N2
Electricity Consumption(Peak Power Consumption)	Laser Device		6KW	
	Chiller Power		3.3KW	
	Air Compressor Power	11KW	/	/
Consumable Parts	Main Body		10.5KW	
	RMB/H		0.5	
	USD/H		0.0777(1USD ≈ 6.4388RMB)	
Total Power(KW)		30.8	19.8	19.8
Total Power Consumption(KW/H)		18.5	11.9	11.9
Total Operation Cost1RMB/KWH	RMB	19	27.4	72.4
	USD	2.95	4.26	11.24

If the auxiliary cutting gas is compressed air that has been dried, the cost is the combination of electricity expenditure of air compressor operation, machine tool electricity expenditure and the expenditure of consumables (protective lens, cutting nozzle).

Notes: 1. The electricity and gas prices above are for reference only, and the actual price will be different in each region.

2. The auxiliary gas consumption will be different for cutting plates of other thickness. The above parameters of oxygen consumption is based on carbon steel of 20mm, nitrogen consumption is based on stainless steel of 1mm.

VIII. Bed body processing process



01 Metal Cutting

The raw materials for machine bed welding are all cut by laser.



02 Machine Bed Welding

Machine bed welding adapts mixed gas (80% argon 20% carbon dioxide) which can better ensure the formation, firmness and smoothness of the welding, to improve the overall quality of the bed.



03 Natural Aging Treatment

The bed will be placed outdoors for 1 to 6 months after welding, under the overload caused by thermal stress, the residual stress is relaxed and the dimensional accuracy is stabilized.



04 Heat Treatment

It takes about 24 hours for the overall heat treatment of a bed, achieving the purpose of eliminating residual stress, stabilizing size, reducing deformation and cracks, making our bed more durable and longer in service life.





05 *Shot Blasting*

It can clear the excess rust layer, oxide skin and oil stains on the bed, which can greatly improve the cleaning efficiency and strengthen the surface quality of the bed.



06 *Spray*

We adopt automatic process, which is safe and stable, and efficient; the high temperature paint baking room can heat up quickly, dry quickly, and make the surface of the bed smooth and without impurities.



07 *Machining*

The final finishing of the bed and beam can completely eliminate the stress caused by welding and processing, ensuring the stability and high precision of the bed, which will run for a long time without deformation.



08 *Accuracy Detection*

We use CMM and other instruments to test the accuracy of the bed.

IX. Product Certification

Senfeng fiber laser machines have passed CE from TÜV, ROHS, FDA, ETL certificates, which is in line with European and American standards.



X.5 Star Service



High efficiency

*24 hours a day (mainly for international), 7 days a week, 365 days a year at any time to receive repair calls;
Within 10 minutes, technical engineers will consult, fix maintenance plan in one hour, and send engineers in one working day.*



After-sale service

*The seller provides one time free installation and training in buyer' s factory. Seller pays for the airplane tickets and salary for engineers, buyer should provide accommodation and food to engineers.
The seller will provide technical guide' s e-mail, telephone, WeChat, WhatsApp and so on.
The seller should pay for the travel expense if local service needed within warranty time.*



Warranty

*The warranty of laser source is 1 years.
The warranty of the machine is 1 years (main spare parts) ,except for the consumable parts such as ceramic ring, focus lens, nozzle etc. Warranty counts from the date marked on the label of the laser source and machine.
Except the damage artificially, seller is responsible for offering the fittings free of charge during the warranty period.
Exceeding the warranty period, parts need to be repaired or changed, shall be paid.*



Worry-free

Pre-sale service: theoretical + practical operation training, self-diagnosis training for common faults, guidance for quick repair of difficult faults, and warning of matters needing attention in use;

Regular service: regular maintenance reminder, regular door-to-door service, regular promotional activities;

Value-added services: equipment software and hardware upgrading services, financial leasing services, delayed warranty service.



Field Service

Our branches in United States, Germany, India, Pakistan, Serbia provide localized services and technical support for global customers.

Service Oriented and Customer First



XI. Customer Testimonials



XII. Trade show



SENFENG
LASER



XIII. Company Strength



About us



Senfeng Laser is a leading manufacturer engaged in the research, development, Production, sale and service of fiber laser cutters, fiber laser cleaning machine, laser marking machine, laser welding machine, 3D robot, press brake bending machine, metal sander, etc.



XIV.Product Line

Fully Enclosed Metal Sheet Cutter

SF3015H

Fourth Generation Metal Fiber Laser Cutter



SF1530G

Security Protective Fiber Laser Cutter



Automatic Laser Cutting Production Line



Metal Sheet Cutting Machine

SF3015G

Open Type Metal Sheet Laser Cutting Machine



SF20040R

Ultra Large Metal Laser Cutter

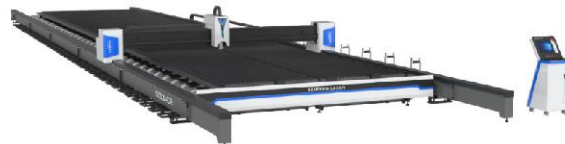


Plate And Tube Cutting Machine

SF3015HM

Full Protection Steel Sheet and Tube Laser Cutter



Tube Laser Cutting Machine

SF6020GT

Bevel Tube Laser Cutting Machine



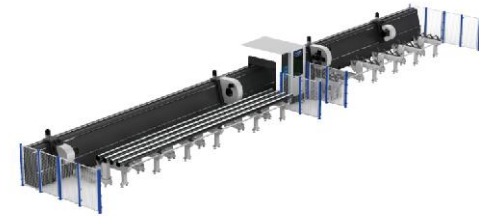
SF6020TZ

Affordable metal tube laser cutter



SF12038HT

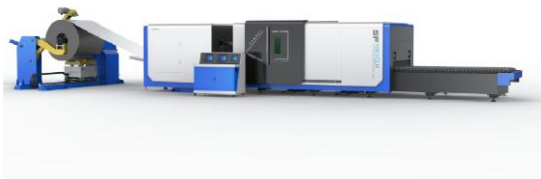
Ultra Heavy Four-chuck Tube Laser Cutting Machine



Coil Fed Laser Cutting System

SF1503CLH

Aluminum Coil-fed Laser Cutting Machine



SF2014CH

Heavy-load coil laser cutting machine



SF1503CH

Coiled Fiber Laser cutting machine



Fiber Laser Welding Machine / Fiber Laser Cleaning Machine

SF1500HWM

Handheld Fiber Laser Welding Machine



SF200HC

Fiber Laser Cleaning Machine



SF1500HC

Portable laser cleaning machine



3D Robot

3D Robot Laser System



3D Robot Fiber Laser Cutting Machine



3D robot fiber laser welding machine



Laser Cladding Equipment

SFHS3050

Metal additive machine



SFR6063

Robot Laser Cladding Machine



SFMR02

Mobile Robot Laser Cladding System



Metal sheet bending machine

BDE13032

CNC Bending Machine



BDC-1800

Servo Electric Press Brake



Wide Belt Sheet Metal Sander

SF1000SSD

Automatic Wide Belt Sheet Metal Sander



XV. Global Layout

Senfeng Laser to provide localized services and technical support for global customers.



XVI. Core Technology

Senfeng laser generators which are independently developed have been widely used in laser cutting, welding, cleaning, cladding additive and other fields



- **Auto Focus**

Operator can set consequent focus adjustment by procedure, finishing quick piercing to thick plates and cutting different thickness plates automatically.

- **Storm cut**

Storm cut technology with ultra high power laser source, with SENFENG cutting technology, realizing high speed

- **Water cooling**

Focusing parts of laser cutting head with water cooling, reducing high temperature and flog by long time cutting.

- **Bright Cut Technology**

Bright Cut Technology developed by SENFENG LASER can efficiently solve: too much burr, cutting surface not smoothly, difficult to cut high-reflect material etc.



More details about senfeng R&D, feel free to visit website:

www.sfcnc laser.com

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