

FCM Series

Fiber Laser Cutting Machine

The high advanced solution.

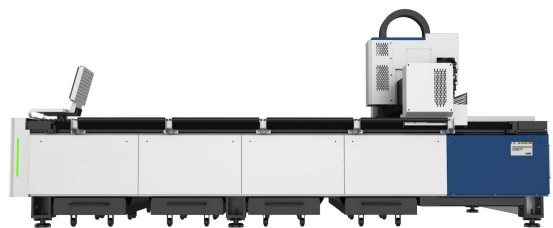
- Model: FCM (Fix Table)
- Cutting Area: 3000*1500mm
- Power: 1000W&1500W
- Control System: Cypcut
- Laser source: IPG



01 General Features

Focus on carbon steel within 20mm, high-efficiency cutting of stainless steel, galvanized sheet, electrolytic board, silicon steel and other metal materials within 10mm.

- It is widely used in kitchen appliances, lighting hardware, cabinet, advertising signs, display equipment and sheet metal processing industries etc.
- Adopting floorstanding gantry dual-drives structure, which is compact and covers small area. It is easy for operation, maintenance and metal sheet handling
- Machine body is processed through plug welding and annealing, with aluminum beams to meet long-term high acceleration requirement.
- Equipping with imported servo unit from Japan and Germany reducer to ensure the accuracy of lasting stability
- Adopt high-performance fiber laser generator and features high photoelectric conversion efficiency, fast cutting speed, maintenance-free, low cost, and high stability



02 Features & Advantages

Main Features:

- The welded bed and machine beam is rough-processed after heat treatment, then vibrated and aged, and formed by high-precision processing. Good overall rigidity, high precision and stable performance
- Advanced high-precision dual-drive transmission system and advanced motion system ensure smooth operation, high precision and fast operation speed
- The dust removal system is an intermediate dust removal method. The dust removal ability is strong, and the pollution of the bed and the surrounding air and environment is avoided as much as possible
- The control system adopts a special system for laser cutting. The control system is powerful and has professional functions for laser cutting. The operation is simple and easy to master.
- Powerful control system and superior software combination, users can integrate their own PC software to maximize the effectiveness of machine tools
- Can realize interactive nesting, co-edge cutting, continuous cutting, and nesting of remaining steel plates
- Breakpoint memory cutting, users can easily control and operate

Advantages:

- high speed 1mm stainless steel cutting speed can reach 40m / min;
- High-performance optical fiber transmission and flexible processing, can achieve equal quality cutting at any point;
- high efficiency, fast cutting speed, high processing efficiency, low operating cost, and double return on your investment;
- high reliability The core components are original in Europe and America, with high reliability;
- no gas consumption No gas is generated when laser is generated, no protective gas N2 consumption of optical components;
- low energy consumption, energy saving and environmental protection, very low power consumption, 20% -30% of traditional CO2 laser cutting machine;
- Low maintenance No reflection lens, no need to adjust the optical path, basically maintenance-free.

03 Technical Specification-1

Model	FCM3015	
Processing area and working range		
Cutting area	3000*1500mm	
Laser power	1000W	1500W
X axis stroke	1550mm	1550mm
Y axis stroke	3100mm	3100mm
Z axis stroke	120mm	120mm
Cutting capacity		
Maximum cutting thickness of carbon steel	10mm	14mm
Carbon steel cutting speed	0.7-0.9m/min	0.6-0.7m/min
Maximum cutting thickness of stainless steel	5mm	6mm
Stainless steel cutting speed	0.6-0.8m/min	0.6-0.8m/min
Maximum cutting thickness of Aluminum	2mm	4mm
Aluminum cutting speed	2.8-3.5m/min	1.4-1.6m/min
Max loading capacity	900kg	
Machine Weight	3500kg	
Machine overall dimensions	4420*2213*1800mm	

03 Technical Specification-2

Machine tool accuracy

X, Y axis positioning accuracy $\leq \pm 0.03\text{mm}$

X, Y axis repeated positioning accuracy $\pm 0.02\text{mm}$

Machine tool speed

X, Y axis maximum positioning speed 100m/min

X, Y axis maximum linkage positioning speed 100m/min

X, Y axis Max Acceleration Speed 1G

Laser power supply parameters

Laser center wavelength 1070P

Total power protection level IP54

Working Voltage 380V/50HZ/3PH

Ground resistance of power connection $\leq 3\Omega$

Cooling Water
(Use pure water, deionized water or distilled water)

Working environment $-5^{\circ}\text{C}-40^{\circ}\text{C}$

Relative humidity $\leq 80\%$

Surroundings Ventilation, no large vibration, no strong electromagnetic interference

Continue working time 24 hours

Operating System - Cypcut

Drawing Nesting Automatic

Cutting Abnormal Alarm Automatic

Maintenance Reminder Yes

Support Format DXF \ DWG etc.

03 Technical Specification-3

Other configuration

Exchange platform	No
Closed protection enclosure	No
Automatic Lubrication System	Yes
Automatic Nozzle Changer	No
Nozzle Cleaning & Calibration	Manual

Packing list

Dust Exhaust Fan	1 set
Laser Protective Glasses	1 set
Remote Control	1 set
Tool Box	1 set
Power	≤2kw 3kw 4kw 6kw 8kw
Upper protective Lens	2Nos 2Nos 2Nos 2Nos 2Nos
Protective Lens	5Nos 10Nos 10Nos 10Nos 10Nos
Nozzles (Depending on Power)	20Nos 26Nos 26Nos 50Nos 50Nos
Ceramic Ring	1Nos
RF line	1Nos

Cost analysis of fiber laser machine

Laser power	Auxiliary gas consumption	Option one: Air cutting (Cutting stainless steel plate with air compressor)	Option two: O2 cutting (Cutting stainless steel plate with O2)	Option three: N2 cutting (Cutting stainless steel plate with N2)
1000w	Laser source(Raycus/IPG/Nlight)	3.6KW/3.0KW/3.1KW	3.6KW/3.0KW/3.1KW	3.6KW/3.0KW/3.1KW
	Chiller	1.3kw	1.3kw	1.3kw
	Machine host	4.5kw	4.5kw	4.5 kw
	Dust removal equipment	3 kw	3 kw	3 kw
	Wearing parts	0.38 USD /h	0.38 USD /h	0.38 USD /h
	Gas consumption	15KW/H	approx 1.03 USD /h	approx 9.85 USD /h
	Total power	21 kw	15.5 kw	15.5 kw
	Average power	21x60%=12.6 kw	15.5x60%=9.3 kw	15.5x60%=9.3 kw
	Total operating cost (According to 0.15 USD/Kwh)	2.23 USD/ h	2.85 USD/ h	11.66 USD/ h

Fiber Laser Cost Analysis

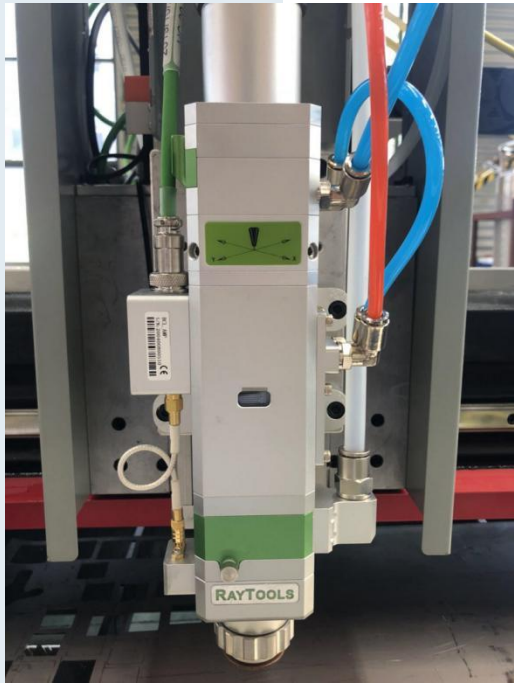
Model	Assisted Gas Consumption	Option I: Using Air Compressor Cutting Stainless Steel	Option II: Using O ₂ Cutting Stainless Steel	Option III: Using N ₂ Cutting Stainless Steel	
ULF3015-1500W	Power Consumption	Main Machine (kW)	5	5	5
		Laser Power (kW)	5.5	5.5	5.5
		Water Chiller Group (kW)	3.5	3.5	3.5
		Dust Exhausting Equipment (kW)	7.5	7.5	7.5
		Air compressor (kW)	15	/	/
	Consumable Part(USD/h)	0.33	0.33	0.33	
	Air consumption (USD/h) calculated at 1dollar per kwh	10.5	0	/	
	Oxygen consumption(USD/h)	/	6.5	/	
	Nitrogen consumption(USD/h)	/	/	62.8	
	Total power(kw)	36.5	21.5	21.5	
	Actual energy consumption(Kwh/h)	25.55	15.05	15.05	
	Electricity cost(1 USD/Kwh)	25.55	15.05	15.05	
	All cost (USD)	36.38	21.88	78.18	

04 Standard Components - 1

Machine body	Steel plate welding, annealing to eliminate internal stress, Vibration aging after rough machining and then precision machining, thereby greatly improving the rigidity and stability of the machine tool, In the case of good stability and seismic resistance, the accuracy of the machine tool is ensured	ADH from China
Machine beam	Annealing stress relief treatment, precision machining after roughing and vibration aging, light weight and good dynamics	ADH from China
Work table	Annealing to eliminate internal stress, good rigidity	ADH from China
CNC system	<ul style="list-style-type: none"> · A set of industrial control host, integrated communication interface, Ethernet, USB, etc. · Integrated CNC control software PLC program · The most advanced Windows operating system · 19 inch LCD panel 	Cypcut from China
Transmission system	Liner guider	HIWIN from Taiwan
	Gear rack	Smagic from Japan
	Reducer	Delta from Taiwan
	AC servo motor and drive	Yaskawa from Japan
Z axis servo system	Z axis servo system	Cypcut from China
Cutting head	Integrated capacitive sensor, built-in amplifier	Raytools from Switzerland
Pneumatic component	Electronically controlled proportional valve, pressure reducing valve, throttle valve, check valve, non-returning valve, triple valve, cylinder	SMC from Japan
Electrical parts	Contactors, air switch, photoelectric switch and other low-voltage control components	Schneider from France
Sealing protection system	Guide rail, rack dust shield	From China
Dust Exhaust Fan	Built-in pipes and fans	ADH from China
Circulation chiller	Dual temperature and dual control 2HP	Hanli from China
Slag removal system	Chip removal trolley	ADH from China



Germany IPG laser source



Switzerland RAYTOOLS laser cutting head



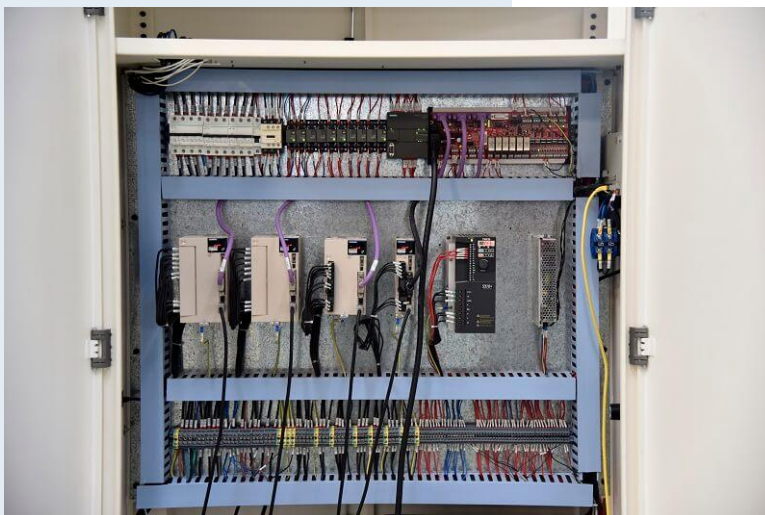
SMAGIC gear rack and liner guider



China Hanli water chiller



China dust exhaust fan



**France Schneider
Electrical**

CONFIGURATION



Yaskawa Delta servo motor from Japan



China Cypcut system



China Automatic lubrication



China Air Conditioner



Regulator Transformer
OPTIONAL



Air Compressor
OPTIONAL



Dust Remove Device

OPTIONAL



05 Installation requirements

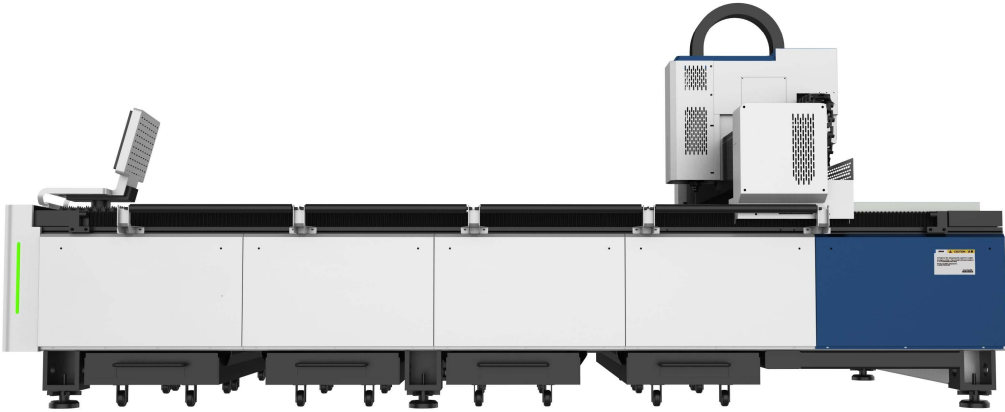
No.	Content
1	Power supply capacity: not less than 50KVA
2	Power supply requirements: (1) Three-phase voltage stability is less than $\pm 5\%$ (2) Unbalance degree of three-phase power supply is less than 2.5% (3) It is recommended to use a regulated power supply if the above power requirements are not met.
3	Auxiliary gas for cutting Auxiliary gas: oxygen (O2) / nitrogen (N2): purity above 99.9%
4	Cutting plate: black skin, smooth, smooth, no rust, even rolling, reaching ISO standard.
5	Ground and environment requirements for laser installation: (1) Temperature requirement: $-5\text{ }^{\circ}\text{C} \sim 40\text{ }^{\circ}\text{C}$ (2) Humidity requirement: $<80\%$ (non-condensing and non-condensing) (3) The site should fully meet the equipment placement
6	Equipment operators should have experience in operating computers and general CNC machine tools, should be equipped with a programming computer

After-sales services

The warranty period is 12 months after the machine arrive at the customer 's side. For laser source, we give the warranty time is 24 months. Due to excessive power cutting, improper cutting process settings and because of the coolant is dirty, the damage caused by user use or improper maintenance is not covered by the warranty. Focusing lens, collimating lens, protective lens, optical fiber, cutting nozzle, ceramic ring and other components are not guaranteed.

During the warranty period, under normal conditions of use, our company will repair and replace the components free of charge. If the user causes damage to the equipment, we will charge the cost price for it.

06 Machine in Production



07 Machine Testing



Dependability: heat treatment for machine body



Flatness: heavy duty 4+1 axis machining center



Straightness: using auto collimator to check frame



Straightness: using clock gauge to recheck guide line



Flatness: using plug gauge to check the rack and gear



Straightness: using auto collimator to check beam



Straightness: using clock gauge to recheck guide line on beam



Flatness: using plug gauge to check the rack and gear on beam



Precision: using interferometer to check X/Y stroke

