

i Series Technical solutions

A compact design sheet fiber laser metal cutting machine
with complete protection



Small occupied space balances complete protection and higher safety.



LASER **SCANNING** CUTTING MACHINE CATEGORY CREATOR

Much Faster | Much Thicker | Free of Beam Reflection
Beam locus covers **30** meters for every one meter's cutting.

Bodor Laser Ranking

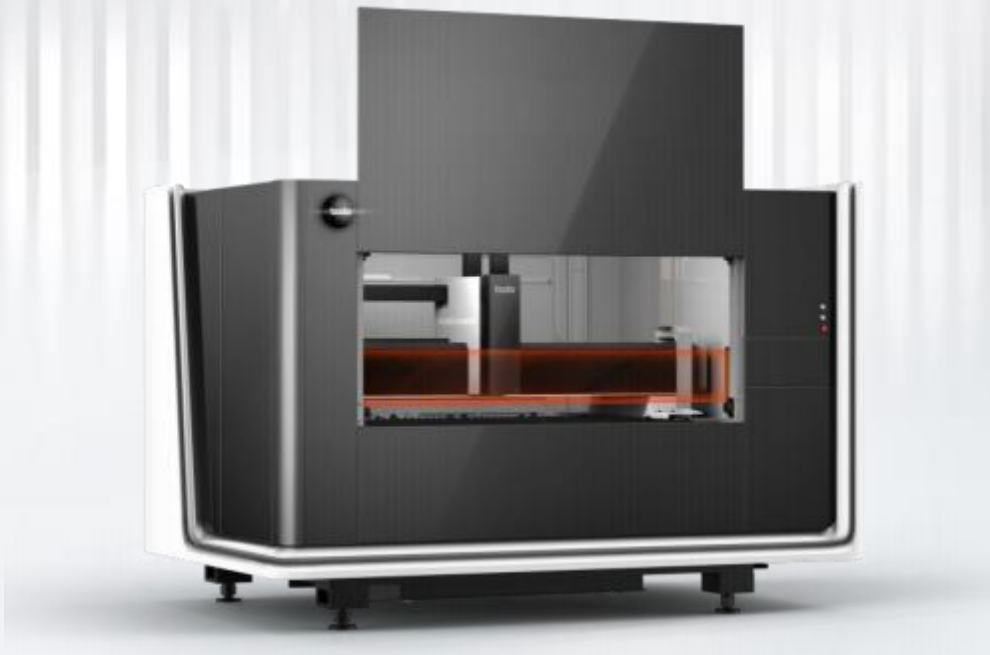
No. 1 Globally By Sales Volume



Source: The ranking serves as the result of independent research by Shenzhen FORWARD Industry Research Institute Co., Ltd., which is measured in terms of Global Sales Volume covered all sales channels of Laser Cutting Machine with Power of 1kW and above from 2019 to 2021. The research is completed on June 28th, 2022.

i series

Compact laser cutting machine Economical model



- **EtherCAT bus control:** Upscale system in the industry, more accurate control, swifter response, faster speed and higher processing efficiency.
- **Independently developed BodorThinker system:** The third generation bus control system with excellent performance and significantly reduces system failure.
- **New Bodor style design:** international IF design award winner. Classic and iconic design of Bodor products is distinguishable in the market.
- **Second generation mortise and tenon welded bed:** The newly upgraded second generation mortise and tenon welded bed designed with the optimal force point and support structure by finite element analysis. Workpiece deformation during loading is significantly reduced to ensure the long-term stable operation of the equipment.
- Fully enclosed processing designed for more eco-friendly processing. Faster dynamic response performance.
- **Electrical lift door:** vertical electrical lift door, more convenient to use.
- **Remainig material cutting:** easy graphic snap, remaining material reuse improves the plate utilization and saves the cost

Function¶meter List

Model	i5
Working area	1000*1500mm
Max. linkage speed	91m/min
Max. acceleration	1.5G
Table load bearing	250kg(20mm)
Machine overall dimensions	2956×2280×2004mm
Overall weight	1840kg
Positioning accuracy	0.05mm/m
Repositioning accuracy	0.03mm
Total power capacity/current with 12KW source	x
Total power capacity/current with 6KW source	31.8KW/60.4A
Total power capacity/current with 3KW source	18.8KW/35.7A
Total power capacity/current with 1.5KW source	single-phase: 16.7KW/118.5A three-phase: 13.1KW/24.9A

Function&configuration List

Function¶meter List		i5		
Item	Subitem			
Basic parameter	Working area	1000*1500mm		
	Max. linkage speed	91m/min		
Time savings	Bodor lightning perforation			
	Remnant Typesetting			
	Touchscreen Display	optional		
	Automatic adjustment of cutting gas pressure	6kW and below: O2 above 6kW: O2、N2、air		
	Auto-focus of laser head			
	Laser cutting technology expert database			
	Quality cutting	Active anti-collision function		
		Intelligent anti-shake		
		Mineral casting anti burning	1.5KW and above	
		Ergonomic Remote Control (Bodor Mango®)		
	Cost savings	Gas-saving steady flow nozzle		
		Intelligent maintenance reminder		
	Service	WIFI internet connection		
		Bodor Cloud sevice		
	Configuration	Optical system	Laser source	BodorPower
			laser head	BodorGenius
mechanical system		Bed functions	Stationary bed (optional pneumatic sheet-clamping)	
		X-axis、Y-axis、Z-axis Servo motor and driver	Bodor	
		Machine bed	Tenon and mortise structure bed	
		Linear Rails	Bodor	
		Rack	Bodor	
		Protective Enclosure		
Electrical system		Control system	BodorThinker	
		Display size	21.5 inches	
		Door-open Protection		
		Intelligent alarm		
Peripheral system		Water Chiller		
		Dust removal	Centrifugal fan	

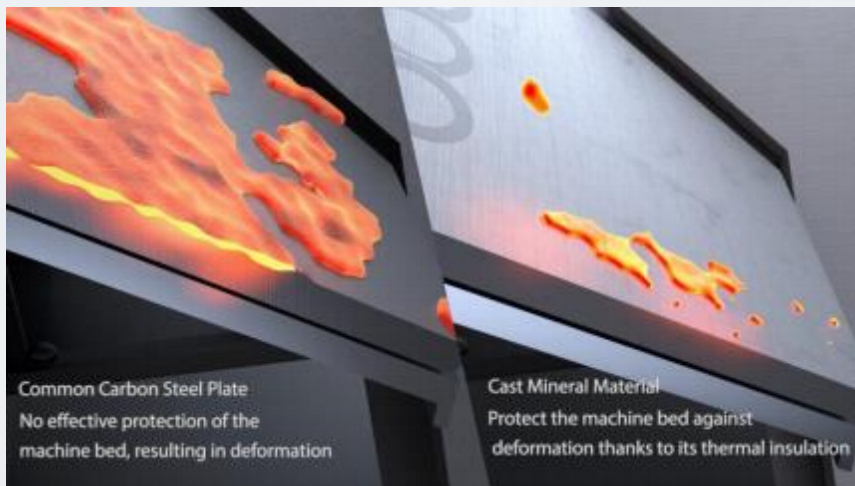
Laser head active anti-collision function

- With optimized auto-following algorithm, the laser head is able to anticipate obstacles and achieve the best performance of motor, which both ensure a stable cutting process and speedy, sensitive air movement.
- Z-axis responds at high speed to avoid the detected obstacle, which effectively prevent the potential interference and laser head collision that caused by the distorted cutting parts during batch cutting of thin plates.



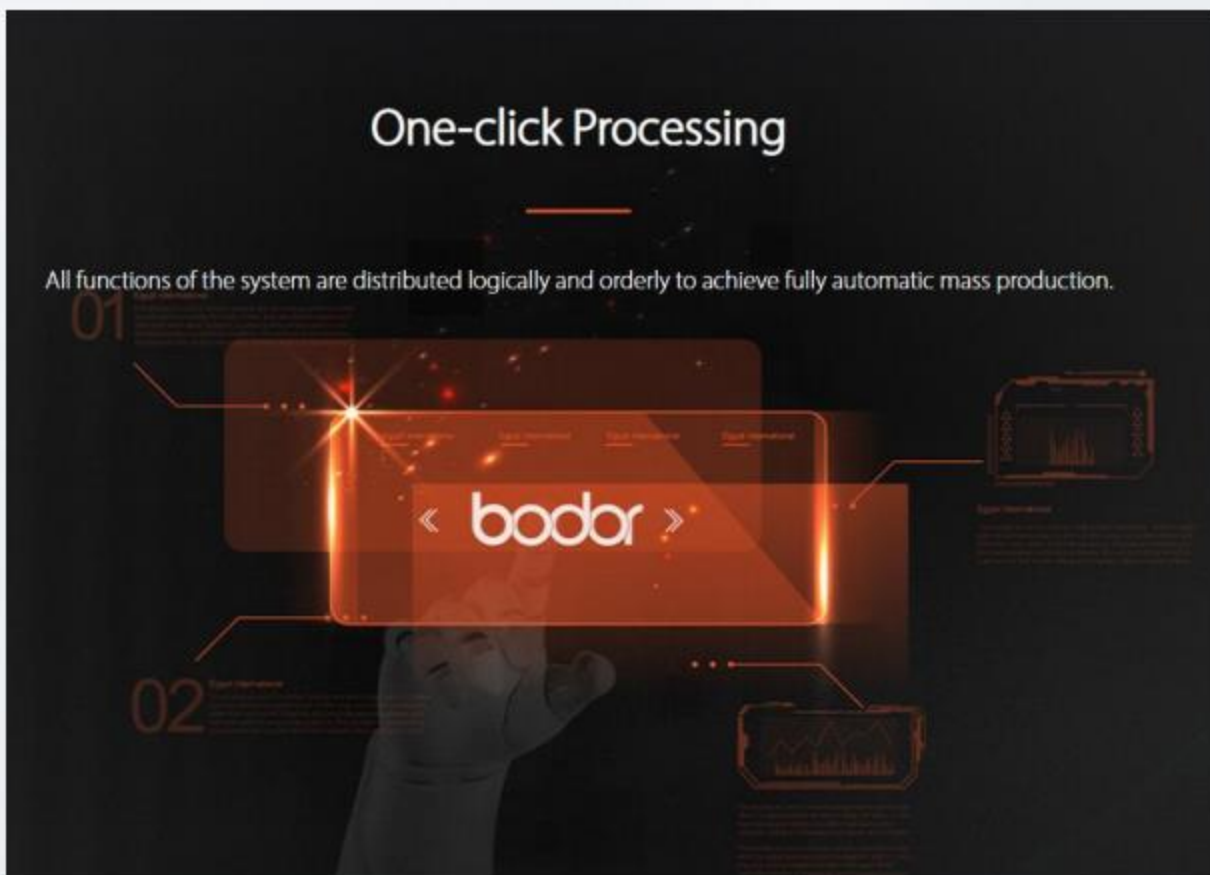
Mineral casting anti-burning

- **Easy to clean slag:** automatic separation of metal residue and anti-burning plate, reducing maintenance cost.
- **Stability:** longer service life and less deformation compared to anti-burnout cast iron and anti-burnout steel plates.
- **Modular design:** light weight, easy to replace, more convenient maintenance.



One-click automatic processing

- One-click automatic processing function reduces the repeated manual labor workload when cutting sheets in bulk and improves the processing efficiency of the machine.
- Cutting automation. With one click, automatic cutting reaches on single machine is enabled for batch processing.
- One-click processing , optimal distribution of system functions , greater human-machine cooperation and improved labor productivity.



High-speed cutting process package

High-speed cutting process package is the application of fiber cutting technology, designed to optimize the cutting surface, with a wider range of cuttable materials, Faster, better quality and lower cost, Applicable to the full coverage of quasi from low to high power lasers.

Carbon Steel Oxygen Fast Cutting

(COF)

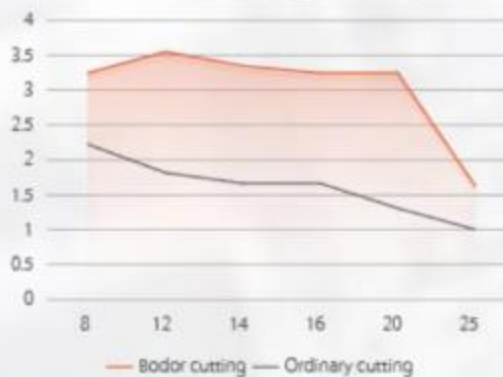
Carbon Steel Economic Fast Cutting

(CEF)

Low Nitrogen Pressure Fast Cutting

(LNF)

15kw Carbon steel oxygen cutting speed



Thick plate cutting realizes to double the speed while ensuring the cutting quality.

At a specific power, cutting cost is **only 10%** of nitrogen cutting and creates more economic value for clients.

The nitrogen pressure reduces to **4Bar** during cutting the 10mm stainless steel, its speed improves at least **10%** than common cutting.



Lightening Piercing

- Monitered piercing process for shorter piercing time. Once piercing is stopped, the remaining piercing time will not be applied.
- Automatic focus adjustment: Perforation focus can be automatically adjusted, primary-stage perforation processing is able to penetrate the plate within 20mm, seamless perforation cutting process with zero pause.
- The perfect combination of the lightning-fast piercing process and Bodor Genius makes it possible to complete the entire piercing process while the cutting head is falling with the movement. The piercing of medium thick plates does not require additional movements and time.



BodorGenius **-independently developed laser cutting head**



- External drive motor is completely separated from the barrel cavity to avoid the machine wear and lens damage due to the mechanical transmission.
- The circuit mounting board and the mirror barrel make a sealed chamber design to prevent dust from entering the mirror barrel.
- Double-sided symmetrical airflow channel design, smoother air output.
- Full circumference water cooling is able to perform colling to fiber optic interface, collimating mirror group, and focusing mirror group to increase the lens durability.
- Adhering to IP65 sealing standard, waterproof and dustproof.

High-quality cutting package

- Compared with the traditional cutting process, the overall processing efficiency of "ultra-delicate cutting technology" can be improved by more than 30%
- More delicate and smooth cutting surface;
- Wider range of gas selection with cost savings of over 35%



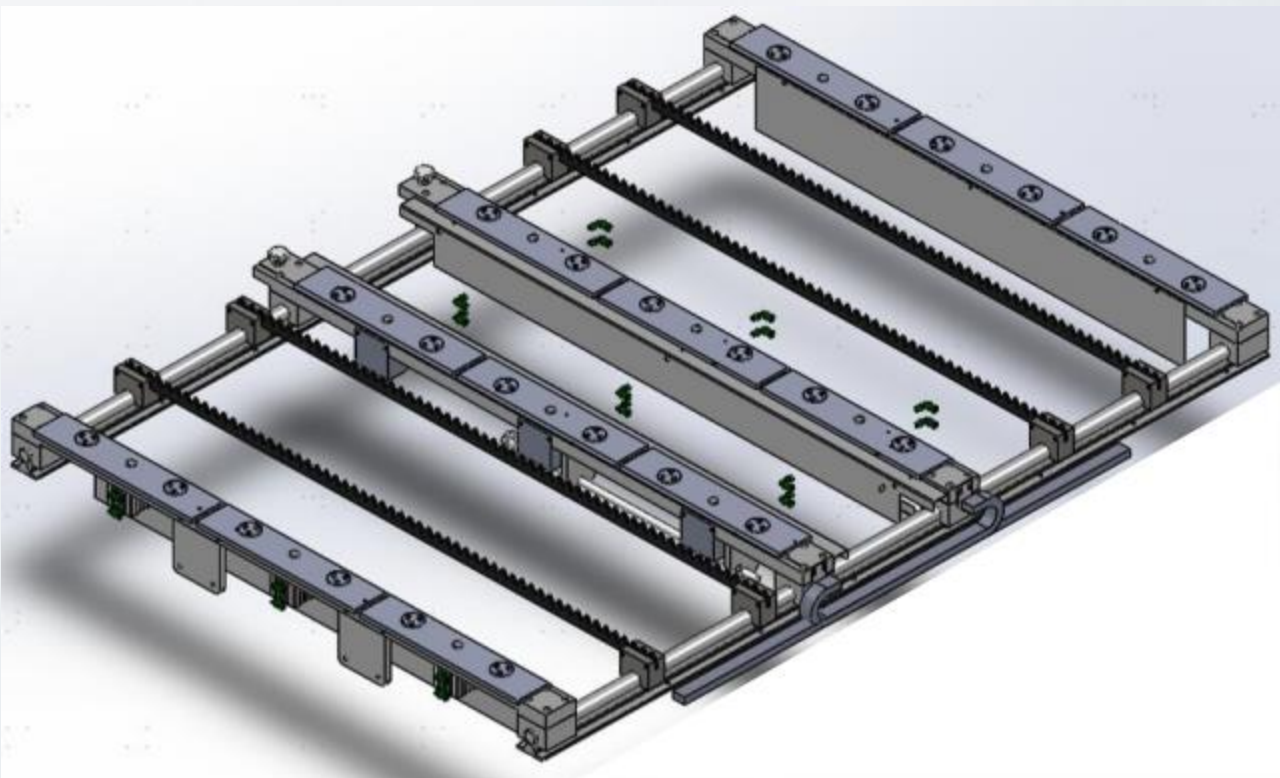
Self-developed optic fibre laser



- Bodor's laser has a conversion rate of up to 35%, which is significantly higher than its domestic general counterparts' 25% and far higher than CO2 lasers' 5 – 10% electro-optical conversion rate. As a result, power consumption and operating costs can be significantly reduced, and the productivity will be improved.
- Unlike CO2 laser, fiber laser does not consume laser-generating CO2 gas and other auxiliary gases (such as helium, nitrogen, etc.) Adopting semiconductor modular and redundant design, fibre laser has compact structure with no optical lens in the resonant cavity. Simpler repair and maintenance, lower failure rate and lower operating cost
- The central wavelength of an optical fiber laser is 1080 nm, or one-tenth the wavelength of a CO2 laser. The processing costs are lowered to a minimum since the output beam has superior quality, a larger power density, and is easier to absorb by metal materials.
- Optical fibre laser transmitted through the whole machine with simple optical path, stable structure. external optical path is maintenance-free.

Pneumatic clamping for precise positioning (i5 is optional)

Pneumatic clamping panels are used during cutting to hold the cutting material in place and improve positioning accuracy. The knife strip allocation is automatically adjusted according to the clamping plate on both sides to prevent the material from dropping. Especially suitable for cutting thin plates, pneumatic clamping to improve processing accuracy.

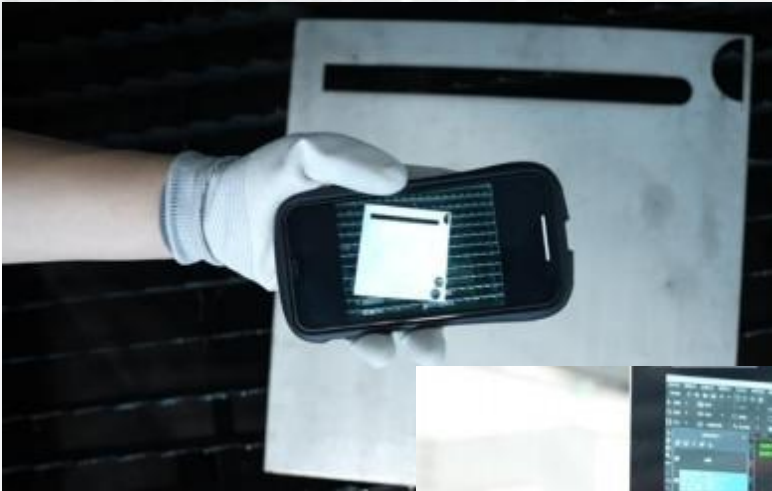


BodorThinker Bus system

- Integration of CAD and CAM allows direct recognition of drawings and nesting; making multiple graphic layouts easier.
- Adapted to multiple file formats such as G code (NC), DXF, PLT, ENG, etc..
- Pre-processing of imported drawings. Easy conversion of bevel graphics by importing drawings.
- Adjustable cutting speed to adjust duty cycle and improve the quality of perforating.



Remaining material typesetting



- Easy snapshot graphics output can be completed through the phone open. More convenient
-
- Integrated system, program support running on cutting software. Software Automatic nesting is on once the processing is completed.
- Easy to operate, no hassles of repeated measurement. auto-identification and auto-correction can be achieved through brief reference.
- Greater adaptability to cope customers' more complex production scenarios.

Technical Parameters

Machine Model	i5-6kW		
Basic parameter(Metal Plate Cutting)	Working area	1000*1500mm	
	Table load bearing	250kg	
	Normal cutting Capacity(Maximum Thickness)	Material	Laser-3kW
		Carbon Steel	25mm
	Scanning cutting Capacity(Maximum Thickness)	Stainless Steel	20mm
		Carbon Steel	30mm
		Stainless Steel	30mm
Operation parameter	Machine overall dimensions	2956×2280×2004mm...	
	Machine weight	1840kg	
	Max. Linkage speed	91m/min	
	Max. Acceleration	1.5G	
	Positioning accuracy	0.05mm	
	Repositioning accuracy	0.03mm	

Cutting Parameters

	Thickness	3000W	6000W	12kW	22kW	24kW	30kW	50kW
		speed m/min	speed m/min	speed m/min	speed m/min	speed m/min	speed m/min	speed m/min
Carbon steel (Q235A) O2	1	8.0-10	8-10	9-11	9-11	9-11	9-11	9-11
	2	5.5-7.5	5-7.5	5-7.5	5-7.5	5-7.5	5-7.5	5-7.5
	3	3.0-4.0	3.5-5	3.5-5.5	3.5-5.5	3.5-5.5	3.5-5.5	3.5-5.5
	4	2.8-3.5	3.0-4.5	3.5-5	3.5-5	3.5-5	3.5-5	3.5-5
	5	2.6-3.2	3.0-4.2	3.3-4.8	3.3-4.8	3.3-4.8	3.3-4.8	3.3-4.8
	6	2.5-2.6	2.5-3.5	3.0-4.2	3.0-4.2	3.0-4.3	3-4.5	3-4.5
	8	1.6-1.8	2.2-3.2	2.5-3.5	2.5-3.5	2.5-3.5	2.5-3.6	2.5-3.6
	10	1.4-1.6	1.8-2.5	2.2-2.7	2.0-2.7	2.0-2.7	2.2-2.8	2.2-2.8
	12	1.0-1.4	1.2-2.1	1.2-2.1	1.6-2.1	1.6-2.1	1.6-2.1	1.6-2.1
	14	0.8-0.9	1.2-1.8	1.7-1.9	1.5-2.0	1.5-2.0	1.6-2.0	1.6-2.0
	16	0.7-0.8	0.8-1.5	1.2-1.7	1.4-2.0	1.4-2.0	1.5-2.0	1.5-2.0
	18	0.6-0.7	0.6-1.2	1.0-1.8	1.4-2.0	1.4-2.0	1.4-2.0	1.4-2.0
	20	0.5-0.6	0.5-0.8	0.6-1.5	1.5-1.9	1.5-1.9	1.5-1.9	1.5-1.9
	25		0.3-0.55	0.5-1.2	1.0-1.6	1.0-1.6	1.0-1.6	1.0-1.6
	30			0.3-1.0	0.8-1.4	0.8-1.4	1.1-1.4	1.1-1.4
	35			0.3-0.7	0.6-1	0.6-1	0.9-1.1	0.9-1.1
	40			0.2-0.4	0.5-0.9	0.5-0.9	0.8-1.0	1.0-1.2
45				0.3-0.5	0.3-0.6	0.5-0.9	0.9-1.1	
50						0.4-0.8	0.6-1.0	
60						0.2-0.6	0.4-0.8	
Stainless steel (201) N2	1	30-55	42-52	70-85	72-100	72-100	72-100	72-100
	2	12-30	20-33	40-66	50-75	50-75	50-75	60-75
	3	6.0-10.0	15-22	35-45	38-55	38-55	38-55	45-65
	4	4.0-6.0	10-15	20-32	25-35	25-35	30-40	35-45
	5	3.0-5.0	7.0-12	18-25	24-32	24-32	25-32	30-35
	6	2.0-3.2	4.8-9.0	12-15	20-25	20-26	20-29	25-30
	8	1.0-1.8	3.0-4.0	8-12	15-19	15-19.5	15-20	25-30
	10	0.5-0.85	1.6-2.5	6.0-8.0	10-13.5	10.5-14	12-17	18-22
	12	0.4-0.5	0.8-1.5	4.0-5.5	8.0-10	8.2-10.5	9-14	16-18
	14		0.6-1.2	3.0-5.0	6.0-8.5	6.2-9	7-11	11-15
	16		0.5-1.0	2.2-2.8	4.0-6.0	4.2-6.5	5-9	11-13
	18		0.4-0.8	1.2-2.0	3.0-3.5	3.1-4.5	3-8	9-11
	20		0.3-0.6	1.0-1.6	2.0-3.0	2.2-3.5	3-7	8-10
	25			0.5-0.8	1.5-2.2	1.6-2.5	2-4.5	6-7
	30			0.3-0.6	1.2-1.5	1.3-1.8	1.5-3.2	4-5
	35			0.3-0.5	0.4-0.8	0.5-1	1.0-1.5	2.8-3.5
	40			0.3-0.5	0.3-0.6	0.4-0.8	0.8-1.7	2-2.5
45				0.2-0.6	0.3-0.7	0.6-1.0	1-1.5	
50						0.25-0.5	0.6-1	
60						0.2-0.3	0.4-0.6	
70							0.35-0.5	
80								
Aluminum N2	1	25-30	42-55	60-85	70-100	70-100	70-100	70-100
	2	13-20	20-40	38-50	40-70	40-70	40-70	40-70
	3	6.5-7.5	15-25	30-40	35-60	35-60	35-60	35-60
	4	3.5-5.0	9.5-12	20-30	30-43	30-43	30-45	30-45
	5	2.5-3.5	5.0-8.0	15-25	22-35	22-35	22-35	22-35
	6	1.5-2.5	3.8-5.0	10-15	18-28	18-28.5	18-32	18-32
	8	0.7-1.0	2.0-2.5	7.0-12	12-20	12-20.5	12-23	12-23
	10		1.0-1.5	4.5-8.0	7.0-12.0	7-12.5	7-16	7-16
	12		0.8-1.3	4.0-5.0	4.5-6.5	4.5-7	4.5-12	4.5-12
	14		0.9-1.2	1.8-2.7	1.0-4.0	3-4.5	3-8	3-8
	16		0.5-0.8	1.5-2.5	2.5-3.5	2.5-4	2.5-6	2.5-6
	18		0.5-0.7	1.0-1.8	1.8-2.2	1.8-2.2	1.8-2.2	1.8-2.2
	20		0.5-0.7	0.9-1.5	1.5-2.0	1.5-2	1.5-2	1.5-2
	25			0.6-0.9	0.8-1.5	0.8-1.5	0.8-1.5	0.8-1.5
	30			0.3-0.8	0.6-1.2	0.6-1.2	0.6-1.2	0.6-1.2
	35				0.4-0.9	0.4-0.9	0.4-0.9	0.4-0.9
	40				0.3-0.5	0.3-0.6	0.4-0.6	0.4-0.6
45						0.4-0.5	0.4-0.5	
Brass N2	1	20-30	35-45	55-65	65-75	65-75	65-75	65-75
	2	6.0-10	20-30	38-42	40-60	40-60	40-60	40-60
	3	3.0-8.0	12-18	18-30	25-40	25-40	30-45	30-45
	4	2.5-4.0	8.0-12.0	15-20	20-35	22-35.5	25-38	25-38
	5	1.5-2.0	6.0-8.0	10-15	20-28	21-28.5	22-31	22-31
	6	1.0-1.8	3.0-6.5	6.0-8.0	12-20	13-21	15-25	15-25
	8		1.6-2.2	5.0-7.0	9.0-12	10-13	12-18	12-18
	10		0.8-1.2	4.5-6.0	6.0-10	6.5-11	8-14	8-14
	12		0.3-0.5	2.4-4.0	1.0-4.5	3.5-6.0	5-10	5-10
	14			0.8-1.5	1.8-4.0	2-4.5	4.5-8.5	4.5-8.5
	16			0.6-1.2	1.5-3.0	1.8-3.5	4-6.5	4-6.5
	18			0.4-0.6	1.0-2.5	1.2-2.8	3-5.5	3-5.5
	20				0.4-2.0	0.5-2.3	2-4	2-4
	25				0.3-0.5	0.3-0.8	1.5-3	1.5-3
	30					0.3-0.5	1-1.5	1-1.5
	35						0.5-1	0.5-1

Scanning cutting Parameters

Reference table of laser cutting process parameters

Material	Power	Thickness	1	2	3	4	5	6	8	10	12	14	16	18	20	25	30	35	40	45	50	60	70	80	90	100	110		
Carbon steel (Q235A) O ₂	12kW	speed m/min	8-11	8-7.5	3.5-5.5	3.5-5	3.3-4.8	3.0-4.2	2.9-3.8	2.2-3.4	1.2-3.5	1.7-3.3	1.2-3.1	1.0-2.7	0.6-2.4	0.5-1.6	0.5-1.2	0.3-0.7	0.2-0.6	0.2-0.4	0.1-0.25								
	6000W		8-10	8-7.5	3.8-5.0	3.0-4.8	3.0-4.2	2.5-3.5	2.3-3.2	1.5-2.5	1.2-2.1	1.0-1.8	0.7-1.5	0.6-1.2	0.5-0.8	0.3-0.55	0.2-0.3												
	3000W		8.0-10	4.8-7.5	3.3-5.0	3.0-4.2	2.0-3.5	2.3-2.2	1.8-2.8	1.3-2.0	1.0-1.6	0.9-1.2	0.7-1.0	0.6-0.8	0.3-0.7														
Stainless steel (201) N ₂	12kW	speed m/min	15-25	38-50	35-45	20-32	18-25	12-15	8-12	6.0-8.0	4.0-6.0	3.0-5.0	2.2-3.0	1.2-2.5	1-2.0	0.5-1.5	0.5-1.2	0.4-0.8	0.3-0.6	0.2-0.4	0.1-0.2								
	6000W		50-65	30-65	20-35	13-25	10-13.5	7.5-11.3	3.0-5.0	2.5-3.7	1.8-2.8	0.8-1.5	0.6-1.4	0.5-1.0	0.4-0.75	0.3-0.4	0.2-0.3	0.2-0.3	0.1-0.2										
	3000W		30-65	12-30	10-18	4.5-7.5	3.0-6.5	2.0-4.5	1.5-2.8	1.0-1.3	0.8-0.9	0.4-0.7	0.2-0.55	0.1-0.3	0.1-0.3														
Aluminum N ₂	12kW	speed m/min	68-85	13-50	35-45	20-35	15-25	12-18	7.0-14	4.5-10	4.0-6.0	2.5-4.0	1.5-3.0	0.8-2.5	0.6-1.8	0.6-1.0	0.3-0.8	0.3-0.6	0.2-0.4	0.2-0.4	0.1-0.2								
	6000W		55-68	35-60	20-38	8.8-15	6.5-11	5.0-9.0	3.0-4.8	1.8-3.5	1.3-1.8	0.8-1.5	0.5-1.0	0.4-0.8	0.3-0.6	0.3-0.5													
	3000W		35-58	16-30	10-17	3.5-6.5	3.0-5.0	1.6-3.0	1.0-1.8	0.6-1.1	0.3-0.7	0.2-0.4	0.1-0.3																
Brass N ₂	12kW	speed m/min	55-65	38-43	18-30	15-30	10-15	8.2-12	6.0-8.2	4.8-6.2	3.0-5.0	1.5-3.0	1.0-2.0	0.8-1.2	0.5-1.2	0.4-1.0	0.3-0.5												
	6000W		50-75	30-40	15-28	10-30	6.2-10	5.0-9.0	2.0-3.2	1.5-2.8	1.0-1.4	0.9-0.8	0.3-0.5	0.2-0.4	0.2-0.3														
	3000W		30-45	15-25	8.0-12	4.0-6.5	2.0-3.5	1.5-2.5	1.0-1.5	0.4-0.9	0.2-0.4	0.1-0.2																	
Copper O ₂	12kW	speed m/min	38-48	25-30	16-20	12-15	7.8-10	6.0-8.0	4.0-6.0	3.5-4.8	2.0-3.0	1.5-2.0	1.2-1.5	0.8-1.2	0.7-1.0														
	8kW		38-40	20-28	8.5-10	6.5-8.0	5.0-6.5	3.0-4.0	1.5-2.0	1.0-1.4	0.8-0.8	0.4-0.6	0.3-0.4																
	3kW		20-33	9.0-15	3.5-5.5	2.5-3.5	1.5-2.0	0.7-1.0	0.4-0.6	0.2-0.3																			

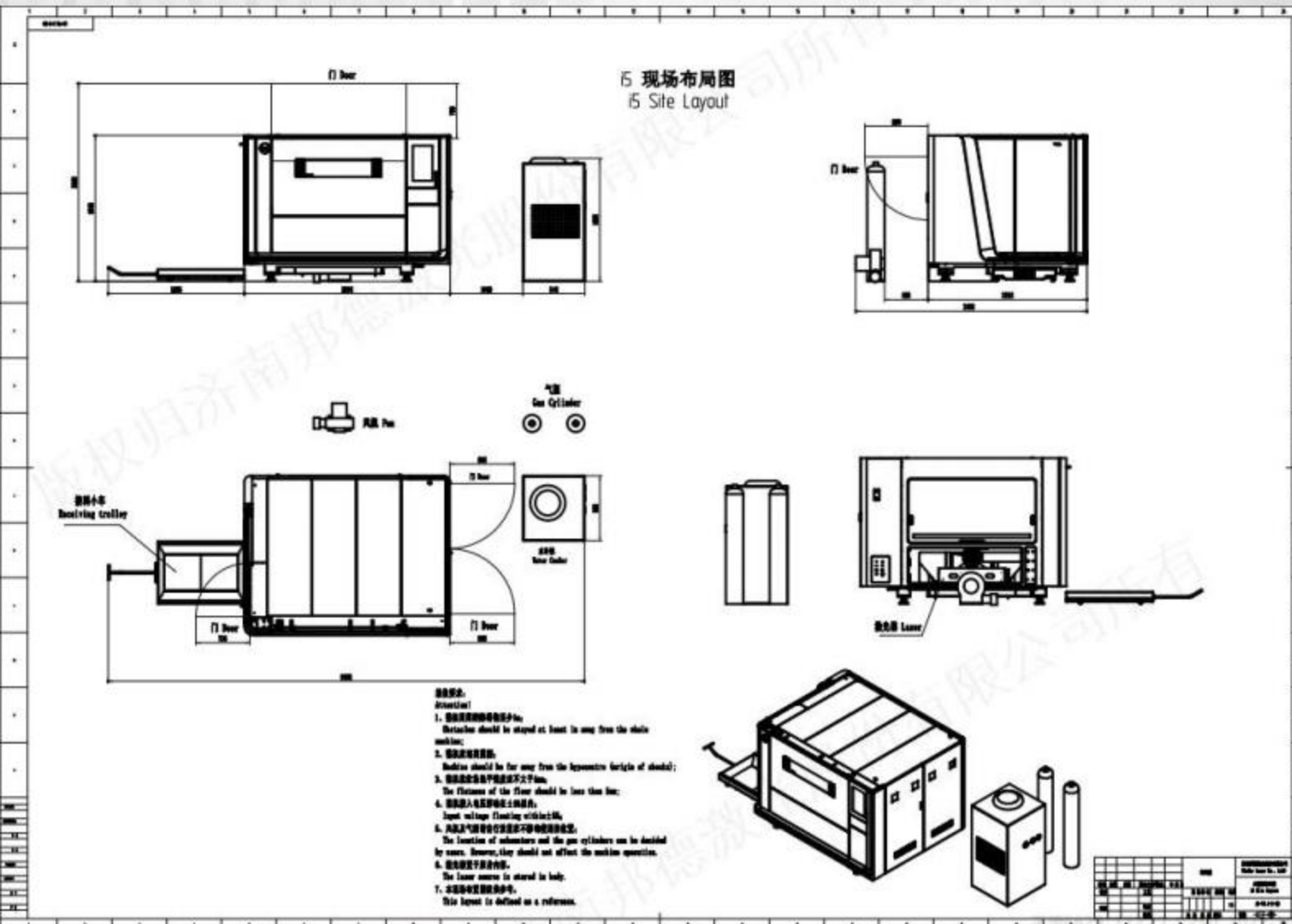
Machine Operation Cost Reference Table

Lifetime of Consumable Parts

Consumable Parts	Lifetime (h)
Collimating protective lens	1600
Focusing protective lens	100
Ceramic ring	200
Nozzle	50
Collimator	1600
Focusing lens	1600

1. The lifetime of consumable parts will vary under different working conditions, and the above is the average lifetime.
2. Under air cutting, the use cost is the power consumption of air compressor and cold dryer, and the cost of purchasing air compressor, cold dryer and other consumables is not calculated.
3. When cutting different materials or materials with different thicknesses, the gas consumption is also different due to the different gas pressure used. (the gas consumption in the table is for reference only)

Layout Design



The above layout drawings and figures are for reference only, the actual drawing shipped with machine prevails.

Cutting sample

Bodor laser uses advanced cutting technology, and the cutting sample has a neat cut surface, a smooth bottom, no burrs, no slag, and no secondary processing. Perfectly realize the cutting requirements of carbon steel extreme cutting, thick plate extreme small hole cutting, and carbon steel thick plate sharp corner-cutting.

