

Head Office: Najm Abadi Sq.,
Shams Tabrizi St., Mirdamad
St., Teheran, Iran.

P.O Box: 1919714389

Tel: +98 21 22903200

Fax: +98 21 22279064

Factory: 6th km of Tehran-
arak Road, arak - Iran.

P.O Box: 38135-877

Tel: +98 86 34131220

Fax: +98 86 34131280



Technical Data

Fiber Laser Cutting

Project: KARA FIBER LASER CNC CUTTING MACHINE				Customer: ...		
Date	Mechanical Design		Electronic Design		Technical Proposal Number	Version
	Design	Review	Design	Review		
1403/06/28	A. Tajabadi	R. Hoveidi	M. Moradi	H. Safi	K-1403-008	

Rev.	Date	Description	Prepared by:	Approved by:

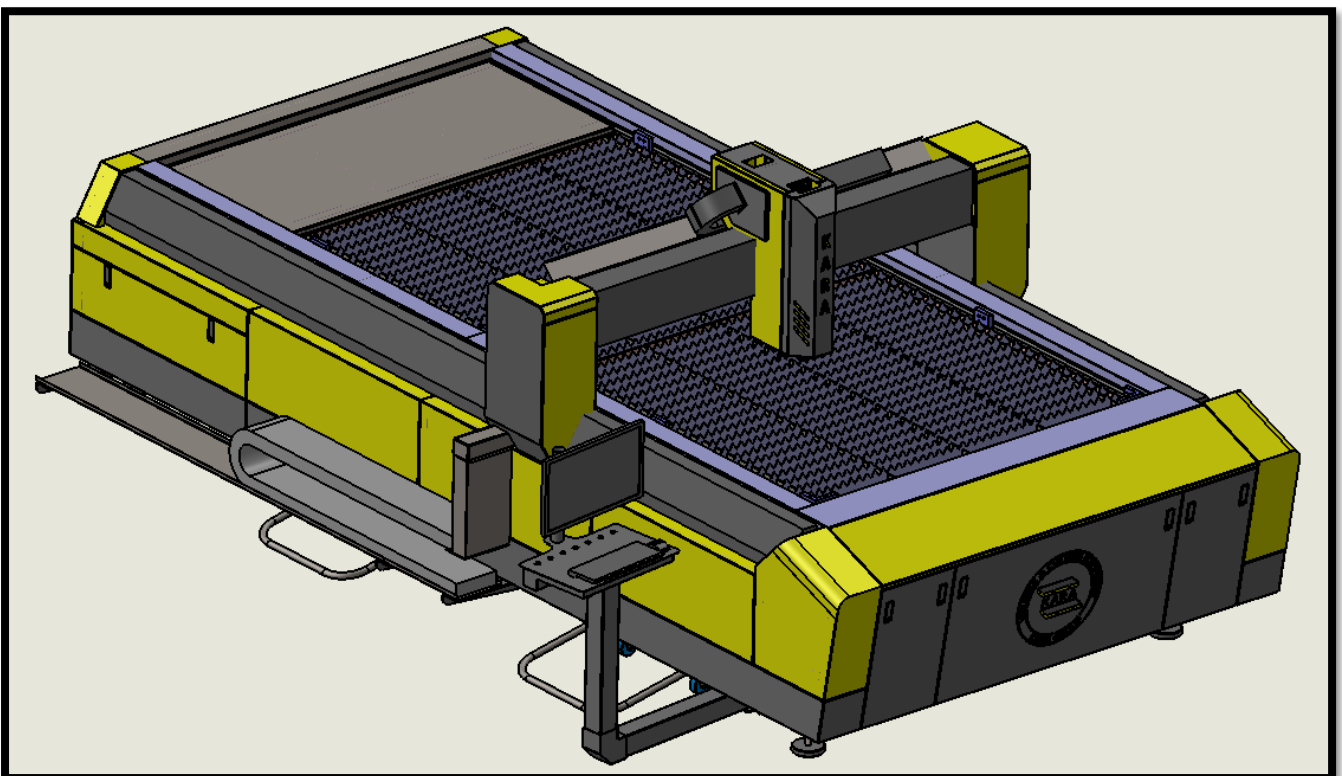




Description

❖ Introduction

Kara Fiber laser cutting machine is exclusively designed to cut various metallic components, accurately and fast. Different materials such as copper, aluminum, stainless steel and construction steel can be cut easily and efficiently by this machine.



Laser Cutting machine is comprised of several major items such as table, laser source, control systems and user interface. This machine does not have a chamber around the table and operator has full access to every part of the machine and workpiece.



Specifications

Main Technical Specifications

1	Type of gas used for cutting	Air-O2 – N2
2	Material of the sheets to be cut	CS, SS,AL,CU
3	workbench	Single
4	Linear Positioning accuracy	20 µm
5	Maximum jogging speed (m/min)	25 m/min
6	Maximum Acceleration (m/s ²)	G 2 m/s [^] 2
7	Cutting surface roughness Ra	1-10 µm
8	Machine's control system (optional)	PC Base
9	torch's height adjustment system	Automatic height control (capacitive)
10	Protection classification	IP 22
11	Machine's Electric Power Consumption	220V-50 Hz-1PH-16A
12	Cable protection and guidance system	Energy chain guide (Plastic)
13	Machine's linear movement system	Linear Guide Rail + Helical Rack & Pinion
14	Machine's Driving components	Servo Motors + Planetary Gearbox
15	Dimensions workbench (mm)	3000 x 1500 4000 x 2000 6000 x 2000
16	Overall Machine's Dimension (mm)	4600 x 3000 5600 x 3500 7600 x 3500
17	Fluids supply	Oxygen, nitrogen



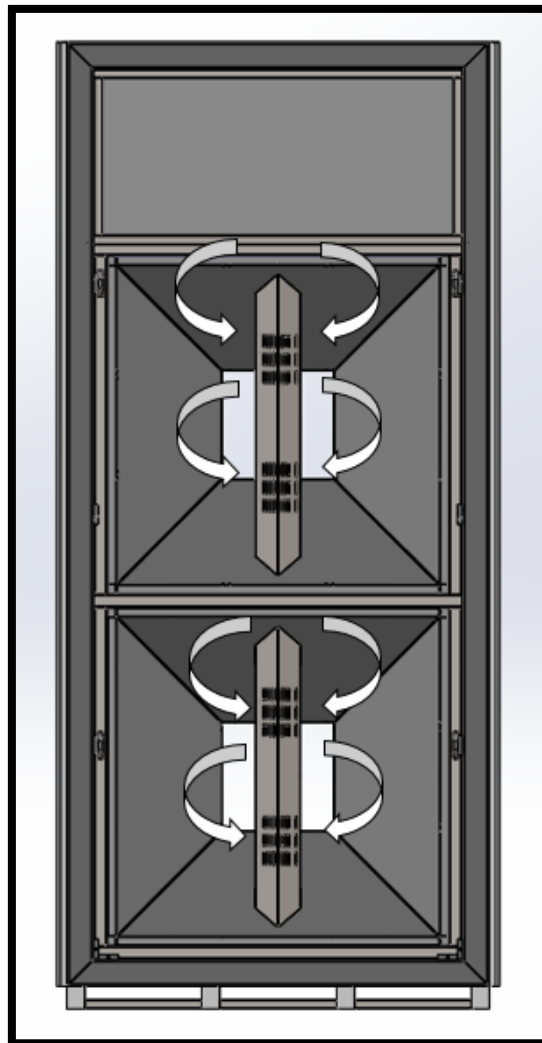


Machine chassis

Chassis of the laser cutting machine is designed to be robust and stable enough to withstand the weight of workpiece and unexpected external shocks and preserve accuracy and quality of cutting pieces.

Main characteristics of the chassis are:

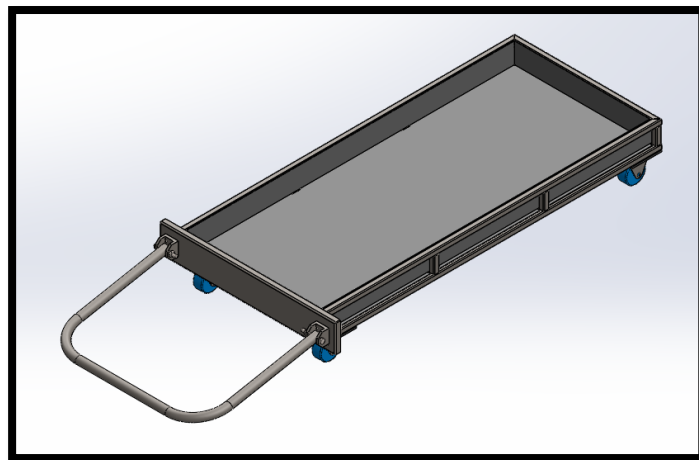
- Standard steel profile of the frame
- Post weld heat treatment in order to relieve residual stresses
- One time machining process after full assembly and welding operation
- Guiding scraps into a small carriage below the chassis
- Equipped with Dust collecting channel
- Rear special box in order to keep welding equipment





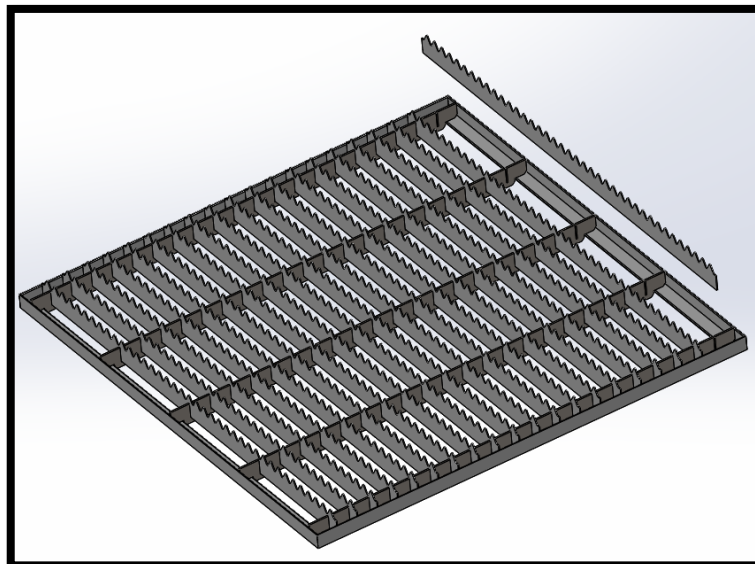
❖ Main characteristics of Carriage below the chassis

- Robust structure
- Equipped with 4 wheels for traverse movement.
- Equipped with hinge handle for easy movement



❖ Machine table

- Equipped with a strong frame to keep steel straps in their proper place
- Distance between straps is optimized in order to hold and distribute workpiece weight on the table
- easy replacement of the whole table set
- easy replacement of straps separately





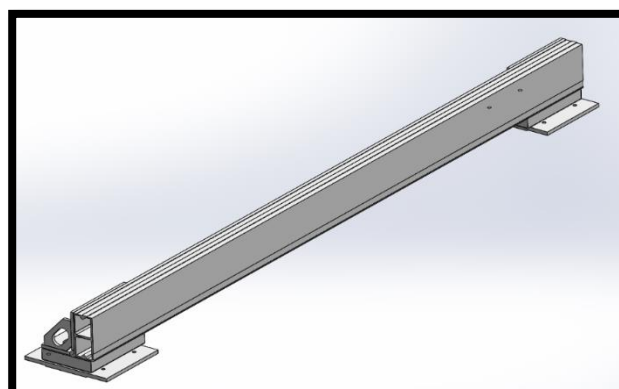
Driving mechanism of the gantry is comprised of servo motor & planetary gearbox and rack & pinion which is located in two sides of the machine. The Low backlash nature of this driving mechanism gives the ability to create smooth and accurate movement of the gantry along the machine table.



Control system is equipped with IPC technology and has the advanced capabilities of complex cutting operation. Beside the control of the movement in 3 main axes, this control system can control the required power of laser beam according to plate thickness, material and cutting parameters.

❖ Aluminum boom

- Robust and accurate frame
- Aluminum Standard profile without residual stress
- Considerably less weight compared to similar size iron boom





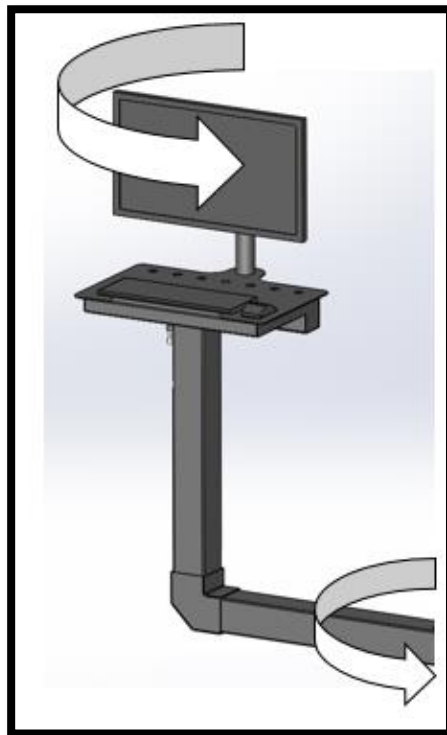
❖ Cnc control system

Cnc control system equipped with industrial hardware and analogue switches. G code cutting program can be loaded either with USB FLASH or WIFI network.

Hardware components of this cnc controller are suitable to work in harsh environment where dust and electromagnetic noises are rampant.

❖ Monitor support

- Strong structure
- 270 degrees of rotation of column
- 360 degrees of rotation of monitor holder
- Adjustable monitor height
- Wireless mouse and keyboard





❖ Controlled axes

Cnc Controller of the Laser cutting machine can control the movement in 3 independent axes. These axes are listed below.

- Longitudinal axis
- Traverse axis
- Height axis (distance between cutting head and workpiece)

All of these axes are synchronized together with no delay servo system technology.

In order to increase productivity and operator freedom of action machine is equipped with remote control. This Remote control is suitable to work in harsh environment where unwanted shocks are frequent. Connection between remote control and machine is coded and interference with other electrical equipment is almost impossible.





❖ Laser cutting machine equipment

○ Laser power source

- High electro-optic efficiency
- High quality laser beam
- High energy density
- Vast range of frequency modulation
- High reliability in long working periods
- Long working life span without maintenance

Laser power source can be changed according to customer's preference





laser cutting head

- Automatic focus
- Easy replacements of protective lenses
- Can be connected with different QBH power sources
- Using 2 adjusting screws to place laser beam at the center of torch
- Head components Sealed in a tight place and it prevents dust from entering into the optic section
- Laser cutting head brand can be changed according to customer's preference



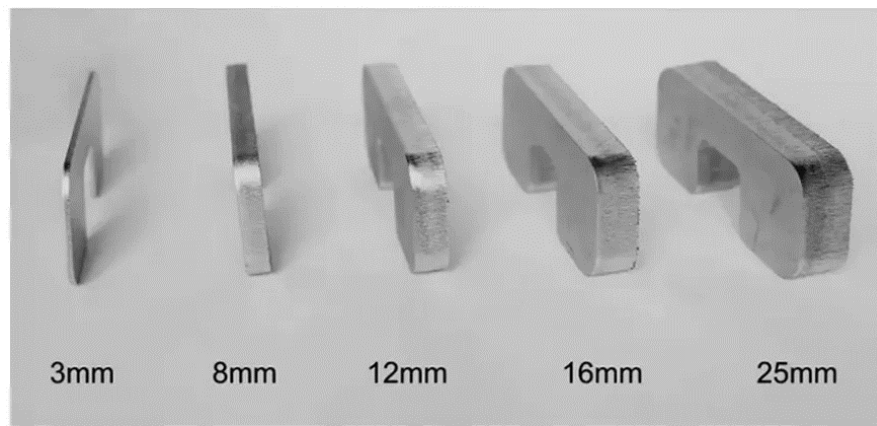


STANDARD CUTTING PARAMETERS

Material	2KW	3KW	4KW	6KW
Carbon Steel	18mm	20mm	22mm	25mm
Stainless Steel	6mm	10mm	12mm	20mm
Aluminum	3mm	4mm	6mm	10mm
Copper	--	10mm	15mm	25mm

Some metallic parts cut with laser cutting machine





❖ **Cooling system**

○ **chiller**

- Designed Cooling system has two separate channels to cool cutting head and fiber laser simultaneously
- Accurate temperature control in the range of ± 0.5 Celsius
- Range of temperature control: 5-35 Celsius
- Constant temperature mode and other intelligent temperature control mode
- Intelligent warning system to prevent problems related to water and temperature
- In accordance with CE,ROHS,ISO,REACH standards
- User friendly temperature controller interface
- Easy connection of Modbus-485 to fiber laser system
- Equipped with V 220 and V 380 input power line.
Chiller brand can be changed according to customer's preference.



KARA Quality Certificates



Contact US



www.karasazeh.com



araksales@karasazeh.com



[karagroup.official](https://www.instagram.com/karagroup.official)



[kara_sazeh_official](https://www.youtube.com/kara_sazeh_official)



[Kara_sazeh_official](https://www.youtube.com/kara_sazeh_official)