

3D Six Axis Robot Laser Cutting Machine

The 3D laser cutting machine is a perfect combination of six axis industrial robots and high-precision laser systems, paired with a specially designed lightweight 3D anti-collision cutting head. It can cut the spatial curve trajectory of various irregular 3D workpieces and add multiple additional axes to achieve seven axis and eight axis linkage. The overall structure is designed according to ergonomics, meeting the needs of small and medium-sized batches and diversified flexible processing in industries such as locomotive manufacturing and helmets, and strongly promoting the upgrading of industrial intelligent manufacturing.



Main features:

- ✧ Strong adaptability to materials, able to adapt to cutting and processing of various irregular workpieces;
- ✧ High production efficiency, which can replace traditional manufacturing processes such as trimming and punching molds;
- ✧ High economic efficiency, significantly reducing the research and development cycle of new products, and seizing market opportunities;
- ✧ High cutting accuracy, smooth and burr free cutting surface, meeting the manufacturing accuracy requirements of the locomotive industry;
- ✧ The operation is simple and fast, with a rich process database embedded, which can be called or modified with one click;
- ✧ Stable and reliable performance, efficient and energy-saving, low maintenance costs, and long service life;
- ✧ Strong scalability, can increase external axes for linkage or collaborative processing, and shorten cutting time;
- ✧ Green and environmentally friendly processing, no production of cattle pollutants, no consumables, and high yield rate;

Main technical parameters:

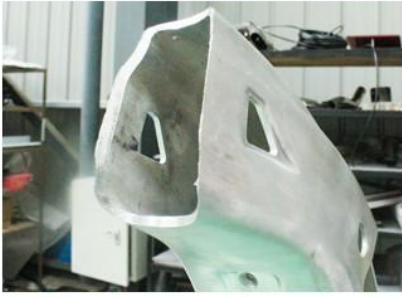
Laser cutting light source	High performance anti high reflection fiber laser
Laser power	1500W/3000W/6000W
Repetitive positioning accuracy	± 0.03mm
Cutting wall thickness	0.5-10mm (depending on material)
Cutting speed	≤ 12m/min
Cutting aperture	≥ 3mm
Robot model	FANUC-M20iA/B/D&YASKAWA-GP25
Airspeed	≤ 30m/min
Path accuracy	± 0.12mm
Scope of Work	2200 * 1800 * 200mm (cutting width is related to the shape and height of the workpiece)
Effective radius of robot	1853mm
Worktable load	≤ 25kg (at the center of the flange)
source	Three phase five wire system AC380V 50HZ
Protection level of main power supply	IP54

Note: 1. The above parameters are based on FANUC-M20iB, and the configuration and parameters of each model are subject to the technical solution provided by our company; 2. This equipment is not suitable for cutting metal waste and **solid cylindrical workpieces**; (实心柱状工件) 3. Although the processed workpiece belongs to the same specification variety, there may be differences in processing performance and quality due to differences in actual processing parts, surface conditions, material composition, or processing shapes.

Application field:

Widely used for cutting edges and holes in various sheet metal stretching parts (钣金拉伸件), thermoformed parts (热成型件) and covering parts; 3D arc cutting and hole position cutting of various hardware shaped pipe fittings. It is an aluminum alloy frame, baby bike frame, new energy electric vehicle, electric tricycle, beach bike, motorcycle industry, fitness equipment **flat tube** and other irregular three-dimensional metal parts, composite materials such as glass fiber, carbon fiber, Kevlar, and some plastic cutting holes, edges, and arc cutting tools.

Sample display:



Real shot case:



Ordering Guide

Model STC-XXXX-YY-Z-AA

STC	XXXX Laser power (W)	YY Robot model	Z Assembly method	AA fixture
laser cutting	one thousand and five hundred	MA: M-20iA/20M	U formal attire	L2: L-type biaxial displacement
	two thousand	MB: M-20iB/25	D Inversion	L1: L-type single axis displacement
	three thousand	MD: M-20iD/25		H1: Horizontal single axis displacement
	six thousand	MG: MOTOMAN-GP25		VT: Vertical rotation displacement
				U1: U-shaped box displacement
				W1: one-dimensional displacement workpiece movement
				R1: one-dimensional displacement robot movement
				WS: Workstation
				** Other customization

Optional:

1. **High precision six axis industrial robot:** Robots can be selected based on process requirements such as workpiece size and cutting accuracy requirements. The following robots can be perfectly matched with PLC systems, offline mapping software, displacement machines, and protective rooms.



M-20iA/20M



M-20iB/25



M-20IDD/25

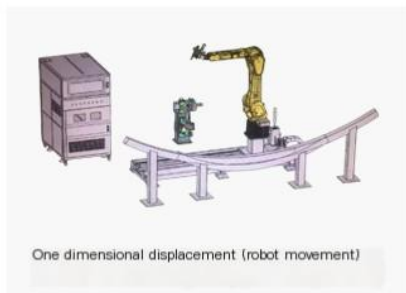
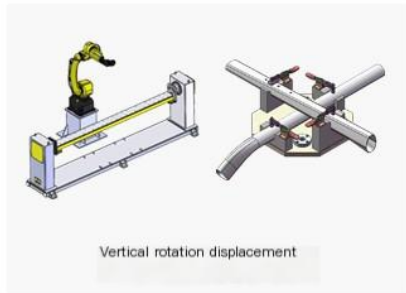
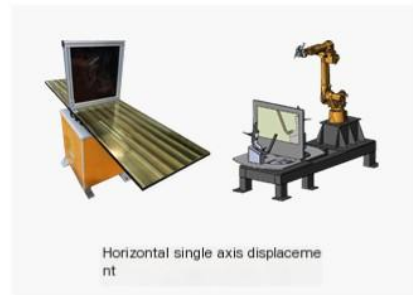
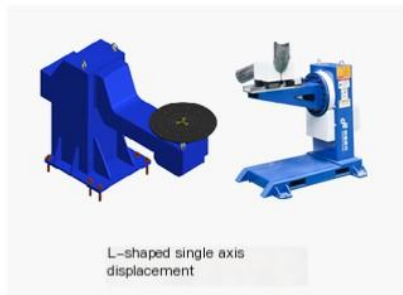


机动战士-GP25

2. **Robot installation method:** A. Robot inversion: paired with a gantry frame to expand processing space, very suitable for flexible processing of large and ultra long workpieces; B. Robot formal attire: can be paired with a multi-station workbench, with a small footprint and flexible posture, suitable for cutting small workpieces.



3. Customized fixture: Different types of linkage or collaborative displacement machines, sky rails or ground rails, and supporting fixtures can be developed based on the processed workpiece to achieve precise and efficient cutting of irregular workpieces of different materials, shapes, and sizes.



4. Offline programming map: Equipped with a manual teaching device as standard, it can directly generate, edit, and transfer processing programs without programming; Alternatively, a 3D offline simulation system can be installed for direct digital and analog import, generating cutting paths with one click, shortening the preparation time before processing, and easily adjusting to the optimal cutting state.

