Sintec Optronics

High precision 3-dimensional 5-axis small size metal laser cutting machine

The High precision 3-dimensional 5-axis small size metal laser cutting machine is a new machine that Sintec independently researches and develops combine with many years of experience of producing laser equipment and accumulation of application cases in automotive industry.The main part refer to CNC machine design concept, compact structure,high stability,can realize high precision stable cutting. The gantry is double-drive structure, the worktable adopts a beam which is formed by integrated welding and has high-rigidity, high-dynamic response and a dedicated guide rail base, double-sided gear rack and double motor driver for linear guides, and a fully enclosed hard optical path to ensure the cleanliness and dust-freeness of the optical path system; it is standardly equipped with n×360° rotating three-dimensional cutting head and ±125° swing, which can realize free switching between three-dimensional and plane cutting, the CNC system with a good human-machine interface can control six axes (XYZACB axes) in real time; it can also control peripheral equipment such as lasers, fixtures, turntables, safety protection, etc. in real time to achieve remote monitoring and diagnosis. The machine tool safety protection complies with CE international safety standards. The whole machine has completely independent intellectual property rights, and all major core components are domestically produced, breaking the core monopoly of foreign companies on three-dimensional five-axis laser cutting machines.The processing format has two specifications: 3m×1.5m and 4m×2.2m. Other formats can be customized. The workbench can be selected according to customer needs, such as rotary, translational or fixed workbench, and can be applied to a wide range of applications. It mainly solves the hole cutting and trimming problems of automotive high-strength steel hot-formed parts, and meets the beat requirements of the automotive industry.Cutting with this equipment is economical and efficient, long-term stable and has excellent processing quality. It can be customized according to production needs, greatly shortening the new product development cycle and reducing manufacturing costs.Laser replaces traditional punching and shearing processing methods, reducing mold investment, and has a high cost-effectiveness. The investment in new product development is 30% of punching and shearing, and the processing cost is 10% of punching and shearing. The cutting speed and efficiency are more than 3 to 5 times that of robots, which greatly shortens the development cycle of automobile manufacturers and parts suppliers, improves processing efficiency and workpiece accuracy, and reduces production costs.

Main features:

1.Highly stable mechanical structure: The gantry dual-drive structure is designed and installed, and the steel bed is welded to ensure the excellent rigidity and stability of the overall equipment;

2.First-class dynamic performance: The X-axis adopts imported brand dual-motor servo synchronous drive, and the Z-axis adopts aviation cast aluminum material to ensure that the equipment can run stably at high speed and high precision;

3.Intelligent CNC system: The system has super computing power, a clear human-computer interaction interface and a powerful expert laser process database, making the generation and debugging of cutting programs simple and convenient;

4.Excellent cutting technology: thanks to the n×360° rotating three-dimensional cutting head, it has super high dynamic performance and running accuracy, ensuring high-quality cutting;

5.Higher capacity mass production: equipped with a rotating worktable to achieve semi-automation, which can maximize processing efficiency and shorten production cycle;

6.Compact structure saves space: the equipment has a compact structure, optimized layout, and very small footprint, and multiple equipment can be arranged according to the production workshop;

7.Green, environmentally friendly, safe and reliable: green, environmentally friendly and safe design concept, fully enclosed machine tool cover, double grating protection, protective doors are all with interlocking protection, video monitoring machine tools, to ensure human and machine safety;

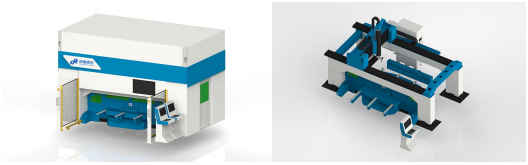
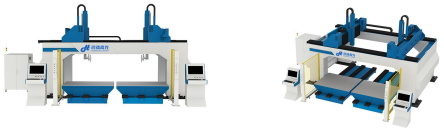
8.Completely localized, breaking through foreign technology blockades, with independent intellectual property rights, can be customized according to more sustainable needs.

Main technical parameters:

X-axis travel	standard：3000m，Optional: 4000 mm ~6000 mm
Y-axis travel	standard：1500mm，Optional：2000mm ~ 2500 mm
Z-axis travel	standard：650mm，Optional: 750mm ~ 800mm
A-axis travel （swing axis）	±125°
C-axis travel （rotating axis）	±360°
Follower axis travel (floating axis)	±13.5mm
X/Y/Z axis maximum speed	100/100/100m/min
X/Y/Z axis comprehensive speed	173 m/min
A/CX/Y/Z axis maximum speed	90r/min
X/Y/Z axis maximum acceleration	1.0G
A/C axis maximum acceleration	200rad/s2
X/Y/Z axis positioning accuracy	±0.03mm
X/Y/Z axis repeat positioning accuracy	±0.02mm
A/C axis positioning accuracy	±0.015°
A/C axis repeat positioning accuracy	±0.005°
Turntable load (one side)	500KG
Turntable rotation radius	4200mm
Fastest rotation time of turntable	2.5s
Maximum laser power	6000W
Power parameters	Three-phase 380V/ 50Hz
Total power protection level	IP54
Machine weight	standard：≈20 T
Floor space dimensions (length x width x height)	standard：6600×6400×3970mm，optional：6600×7100×3970mm，6750×5300×4300mm，8250×5300×4300mm

Application areas:
Widely used in automobile manufacturing, mold manufacturing, engineering machinery manufacturing, elevator manufacturing, home appliance manufacturing, medical equipment and other industries, such as automobile hot forming parts, 3D metal forming parts, curved parts, special-shaped pipes and three-dimensional precision high-speed cutting (hole cutting, edge cutting) for other metal materials

Available options:

	
Soft mold trial model	Automobile Thermoforming Production Line Model
	
In and out double station model	Special-shaped pipe fittings model

Sample display:

			
Car door knocker	Car side panels	Car rear panel	Tail light mounting plate
			
Car B-pillar	Anti-collision beam	Support frame	Automobile beam
			
Engine bonnet	Special-shaped structural parts	Special-shaped structural parts	Special-shaped structural parts
			
Special-shaped pipe fittings	Special-shaped pipe fittings	Special-shaped pipe fittings	Special-shaped pipe fittings