SOLID 51

LARGE-FORMAT INDUSTRIAL CO_2 LASER ENGRAVING & CUTTING SYSTEM

CLASS 1 **ENCLOSED**



Product Overview

SOLID 51 is a large-format, fully enclosed Class 1 CO_2 laser engraving and cutting system, engineered for high-throughput industrial applications requiring extended working area, high laser power scalability, and European-standard safety compliance. The platform adopts a heavy-duty motion architecture with servo-driven rack & screw transmission, supporting high-power RF metal CO_2 lasers up to 200W as well as high-power DC glass tubes, enabling professional cutting performance while maintaining stable engraving quality.

1 Working Area & Mechanical Design

ITEM	SPECIFICATION
Working Area (X × Y)	1300 × 900 mm
Z Axis Travel	350 mm (motorized)
Max Workpiece Height	up to 320 mm
Working Table	Honeycomb table (standard), knife blade table (optional)
Max Table Load	60 kg
Machine Frame	Heavy-duty welded steel frame with vibration-damped enclosure
Motion Architecture	Industrial XY gantry
Transmission System	Rack & pinion + precision ball screw
Linear Guidance	Heavy-load precision linear guide rails
Overall Dimensions (L × W × H)	approx. 2150 × 1850 × 1250 mm
Net Weight	approx. 720 kg

2 Laser Source & Optical Configuration Optional

ITEM	CONFIGURATION	
Laser Type	CO_2 RF Metal Laser Tube	CO_2 DC Glass Laser Tube
Laser Wavelength	10.6 μm	10.6 μm
Rated Output Power	60 W / 80 W / 100 W / 150 W / 200 W	100 W / 130 W / 150 W / 180 W / 200 W
Power Control	0–100% digital modulation	0–100% analog modulation
Power Stability	±3% (typical)	±5% (typical)
Expected Laser Lifetime	⩾ 20,000 hours (typical)	⩾ 2,000 – 3000 hours (typical)
Response Time	High-speed RF modulation, optimized for fine engraving	
COMMON OPTICAL CONFIGURATION		
Beam Delivery	Fully enclosed flying optical path	
Focusing System	Motorized autofocus	
Standard Lens	2.5" focal length	
Optional Lenses	1.5" / 2.0" / 4.0"	
Minimum Line Width	⩽ 0.18 mm (material & lens dependent)	
Red Dot Pointer	Coaxial red laser pointer	

3 Motion System & Precision Performance

ITEM	SPECIFICATION
Drive Motors	Direct-coupled AC servo motors
Feedback System	Encoder-based closed-loop control
Max Engraving Speed	up to 1200 mm/s
Max Travel Speed	up to 1500 mm/s
Positioning Accuracy	±0.05 mm
Repeatability	±0.03 mm
Control Resolution	0.001 mm

4 Control Software & Production Workflow

ITEM	SPECIFICATION
Control Software	PC-based driver & industrial control software
Operating System	Windows 10 / 11
Supported File Formats	AI, PDF, DXF, SVG, PLT, BMP, JPG, PNG
Color Mapping	Multi-layer, multi-parameter processing
Material Database	Integrated, user-expandable
Camera Vision	CCD camera for positioning & print-to-cut (optional)
Network Interface	Ethernet/USB
Barcode & QR Code	Supported
Rotary Device	Roller or chuck type (optional)
Automation I/O	External start/stop, exhaust & safety interlock

5 Safety Architecture & Laser Classification

ITEM	SPECIFICATION
Laser Safety Class	Class 1 (fully enclosed system)
Protective Enclosure	Fully enclosed metal housing
Door Interlock System	Dual-channel safety interlock monitoring
Emergency Stop	Compliant with EN ISO 13850
Key Switch	Standard
Laser Emission Indicator	Visual laser status indicator
Protective Viewing Window	IR-absorbing window suitable for 10.6 μm
Operator Exposure	No hazardous laser radiation during normal operation

6 Exhaust, Utilities & Environmental Conditions

ITEM	SPECIFICATION
Exhaust Port	Ø200 mm
Recommended Airflow	⩾ 1200 m³/h
Air Assist	High-flow adjustable air assist
Cooling System	Air cooling (RF) / industrial water chiller (DC tube)
Power Supply	AC 380–400 V, 50/60 Hz, three-phase
Rated Power Consumption	⩽ 6.0 kW
Noise Level	⩽ 68 dB(A) @ 1 m
Operating Temperature	15–30 °C
Operating Humidity	30–70% RH (non-condensing)

Application



SOLID 51 is a high-performance industrial laser system engineered for cutting thick acrylic, plywood, and technical textiles, with applications in fixtures, large-format displays, and technical textile processing.