



V250630

***Datasheet***  
*Model G3060P120*



# **FORZA**

Goliat

Industrial CNC laser cutting machine for heavy metal plates

**CUTTING / MARKING / PERFORATION**

The FORZA Goliat is designed for continuous operation with heavy-duty, high-volume production.

It features a separated bed system that ensures material loading and unloading without causing deflections in the rest of the equipment, allowing uninterrupted production.

## Main Features

FEATURES	DETAIL
Application	Plates cutting
Nominal working area	9.8ft x 19.7ft   3000mm x 6000mm
Total plate workspace	10ft x 20ft   3050mm x 6100mm
Laser power rating	12000W
Nominal cutting thickness (ASTM A36) <sup>(1)</sup>	1 1/4in   32mm
Maximum cutting thickness (ASTM A36) <sup>(2)</sup>	1 1/2in   38mm
Maximum XY acceleration	25.7ft/s <sup>2</sup>   0.8G
Maximum XY travel speed	5.5ft/s   100m/min
Cutting precision <sup>(3)</sup>	± 0.1mm

1. This is the maximum limit at which a burr-free and clean cut can be obtained. Up to this thickness, cutting can be performed continuously.
2. The maximum thickness is the greatest thickness that can be cut under certain parameter settings. It is not recommended to size the machine based on the maximum thickness. Working with thicknesses closer to the limit significantly restricts the cutting geometries that can be achieved, due to the high temperatures reached by the material.
3. Cutting precision is measured on a 1/32in (0.7mm) stainless steel sheet, considering the machine's repeatability and accuracy. A precision of 0.1mm means that when cutting a 3.937in (100.0mm) plate, the actual measurement may be 3.94in(100.1mm) or 3.933in(99.9mm). If the material thickness increases, the error may become greater due to material properties and cut width.



## Special Features

### Smart Focus Technology



Automatic laser head adjustment for working on uneven surfaces. The head maintains a constant distance, even if the plate is warped.

### Marking Technology



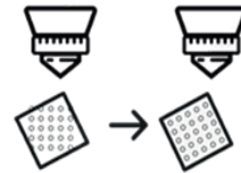
Not only cuts but also performs marking ideal for engraving bending lines, numbers, and letters.

### FORZA Play Software



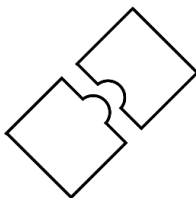
User-friendly Spanish/English cutting software, with anti-collision alarm system and maintenance notices.

### Find Edge System



Automatically detects the edges to position the drawings along the contours and optimizes material usage, reducing material waste by up to 40%.

### Modular Bed



Its modular bed enables continuous production. Plates can be loaded and unloaded in different sections while cutting continues in another, as no deflections are transmitted thanks to the modular design.

### Laser Protection Curtain



It comes equipped with an invisible laser safety curtain installed along the entire movement range of the cutting head. If an obstacle enters the work area, the system immediately stops the machine to prevent a collision.

## General Specifications

SPECIFICATION	DETAIL
Model	FORZA Goliat – G3060P120
Laser Type/Technology	Fiber Laser 1064nm ± 10nm
Fiber laser diameter	150µm
Nominal fiber laser power	12000W
Fiber laser power range	10 a 100% (±0.5%)
Output power stability	± 1 %
Laser working frequency	≤ 5000Hz
Laser source protection level	IP54
Laser source model	MFSC-12000W   MAX PHOTONICS
Working modes	CUTTING / MARKING / PERFORATION
Focusing system	SMARTFOCUS TECHNOLOGY <sup>(1)</sup>
Auxiliar gas type for cutting	O <sub>2</sub> , N <sub>2</sub> or Air
Proportional oxygen control	Analog control 145.04psi   10 bar   AIRTAC
Laser head model	Raytools - BS12K
Focal range	-35mm ~ +25mm
Maximum focusing speed	10.94ft/s   200mm/s
Head protection system	Prevention and detection of impacts
Pre-loaded cutting profiles	Yes <sup>(2)</sup>
Laser cutting width	0.004in ~ 0.06in   0.1mm ~ 1.5mm <sup>(3)</sup>
Cutting precision	Thickness - dependent <sup>(4)</sup>

1. The focusing system incorporates an internal servo motor that moves the lens, along with a capacitive sensor that maintains the distance between the laser head and the plate during cutting.
2. Cutting parameters are available on the [library.forzalaser.com](http://library.forzalaser.com) platform, where customers can download them for free. A local backup is also stored on the machine for quick access.
3. The cutting width is directly proportional to the material thickness; as thickness increases, so does the cutting width. The type of assist gas also plays a role, with oxygen producing a wider cut line
4. Cutting precision is 0.1mm for thicknesses up to 1/32in (0.7mm). As material thickness increases, precision may be affected due to the widening of the cut line, reaching up to 0.02in (0.5mm) on 1/2 in plates.

Cutting angle	< 2° <sup>(5)</sup>
XY movement repeatability	±0.05mm
XY movement accuracy	±0.02mm
Nominal working area	9.8ft x 19.7ft   3000mm x 6000mm
Total plate workspace per unit	10ft x 20ft   3050mm x 6100mm
Maximum Z-axis travel	6.3in   160mm
Maximum cutting speed	1.65ft/s   30m/min
Maximum XY travel speed	5.5ft/s   100m/min
Maximum XY acceleration	25.7ft/s <sup>2</sup>   0.8G
XY motion system	Rack / Pinion
Z motion system	Ball screw
Servo motor brand	INOVANCE
Lubrication system	Automatic by working path
Wireless Control	Wi-Fi remote control
Fume Extraction System	Extraction via external motor
Maximum plate load capacity	4.63ton   4200kg <sup>(6)</sup>
Laser source power	32kW
Chiller power	18kW

5. The cut angle depends on the material thickness and the type of assist gas used. Thicker materials can result in greater cut angles, and oxygen may increase the cut angle.
6. The maximum weight must be distributed across the entire work bed. Although the structure can support full plates of thick material, the specified cutting thickness for this laser power must not be exceeded.

Fume extractor power	11kW		
Motion & control system power	15kW		
Peak machine power	76kW		
Minimum power for electrical system design <sup>(7)</sup>	63kW		
Average energy consumption <sup>(8)</sup>	45.6kWh		
Operating voltage	220V/250V/380V/440V/480V 3ph 50Hz-60Hz		
Minimum line current	184A @ 220VAC 3ph		
	162A @ 250VAC 3ph		
	107A @ 380VAC 3ph		
	92A @ 440VAC 3ph		
	85A @ 480VAC 3ph		
Conductor wire gauge to the thermal-magnetic circuit breaker (MCCB) <sup>(9)</sup>	Up to 140°F   60°C (TW, UF)	Up to 194°F   90°C (THHW, THHN)	Voltage
	3 x 4/0AWG	3 x 2/0AWG	220VAC 3ph
	3 x 3/0AWG	3 x 1/0AWG	250VAC 3ph
	3 x 1AWG	3 x 3AWG	380VAC 3ph
	3 x 2AWG	3 x 4AWG	440VAC 3ph
	3 x 3AWG	3 x 4AWG	480VAC 3ph
Recommended MCCB and grounding conductor	MCCB	PE Conductor (Copper)	Voltage
	200A	6AWG	220VAC 3ph
	175A	6AWG	250VAC 3ph
	110A	6AWG	380VAC 3ph
	100A	8AWG	440VAC 3ph
	90A	8AWG	480VAC 3ph

7. The minimum power sizing for electrical design is calculated based on typical power consumption of the laser source and chiller, along with half the power of the fume extractor and machine actuators
8. Average power consumption is estimated at 60% of the measured peak power. Not all components operate simultaneously; the intermittent activation of systems such as the chiller, motors, and laser source results in lower actual consumption. To estimate hourly power consumption, use the average consumption.
9. The cable gauge sizing was done based on NEC 310-16 for maximum conductor temperatures of 140°F and 194°F, considering conduit installation. If installing cables in open air, a smaller gauge may be used upon consultation with FORZA Laser's technical department.

Power cable length <sup>(10)</sup>	32.8ft   10m		
Pneumatic supply for actuators	87.02psi   6bar		
Communication interface	RJ45, WIFI, USB 3.0		
Compatible design formats	AI, DXF, PLT, LXD, G		
Software	FORZA Play		
Software language	Spanish and English		
PC control interface	By screen and by manual control		
Cooling method	Water-cooled		
Chiller tank capacity <sup>(11)</sup>	TFLW	CWFL	HL
	34.3gal   130L	44.9gal   170L	14.5gal   55L
Gas connection diameter	5/16in (8mm) O <sub>2</sub> hose and 5/16in (8mm) N <sub>2</sub> hose (Nylon)		
Maximum gas pressure at laser head	362.6psi   25bar		
Maximum air/N <sub>2</sub> input pressure	290.08psi   20bar		
Maximum O <sub>2</sub> input pressure	145.04psi   10bar		
Recommended N <sub>2</sub> input pressure	≤232.06psi   ≤16bar		
Recommended O <sub>2</sub> input pressure	87.02psi   6bar <sup>(12)</sup>		
Machine weight	8.5ton   7680kg		
Machine shipping weight	8.7ton   7900kg		
Machine dimensions	27.8 x 15.1 x 6.5ft   8466 x 4609 x 1969mm		
Machine shipping dimensions	28.5 x 15.7 x 7.2ft   8700 x 4800 x 2200mm		
Required floor resistance	92.45psi   6.5Kgf/cm <sup>2</sup>		
Relative humidity	< 85%		
Operating temperature	35.6 - 95°F   2 - 35 °C		
Storage temperature	46.4°F – 86°F   8 - 30 °C		
Certifications	CE, RoHS		

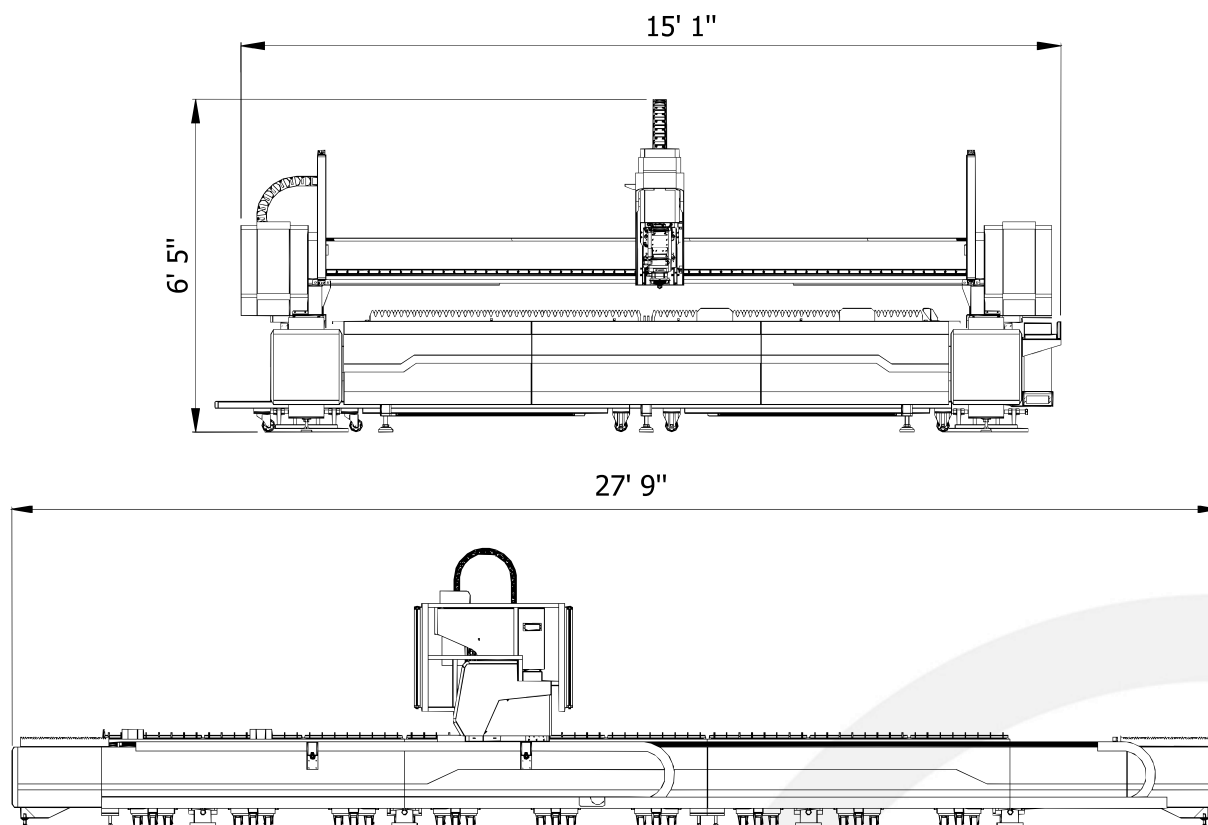
10. The maximum length of the power cable is 32.8 ft (10m) to prevent voltage drops and ensure optimal system performance.

11. The tank size depends on the cooler model equipped in the laser machine. At the time of installation, at least 1.1 gallons (4 liters) of additional distilled water beyond the tank capacity must be available to fill the water circuits between the chiller, the power supply, and the laser head.

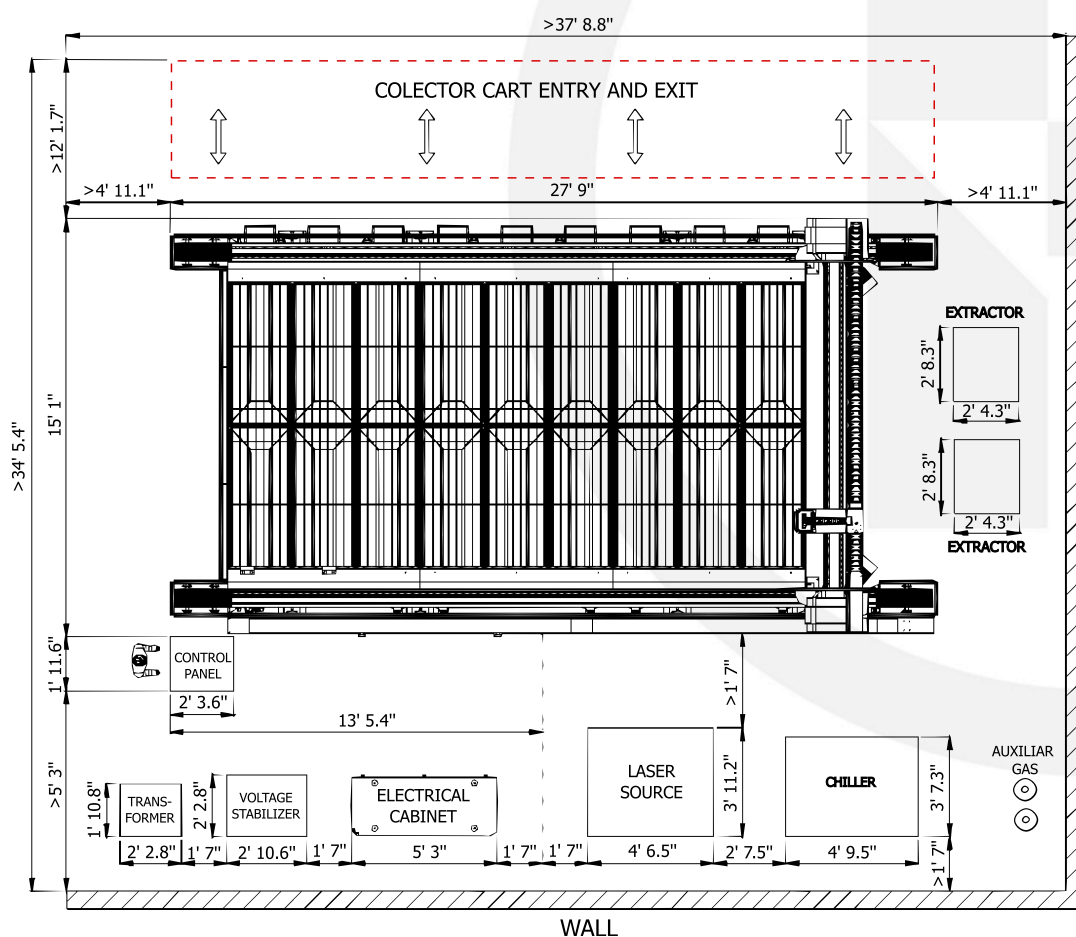
12. The specified pressure is measured at the tank pressure indicator output; from this pressure, the valves are calibrated.



## Machine Dimensions



## Required Space

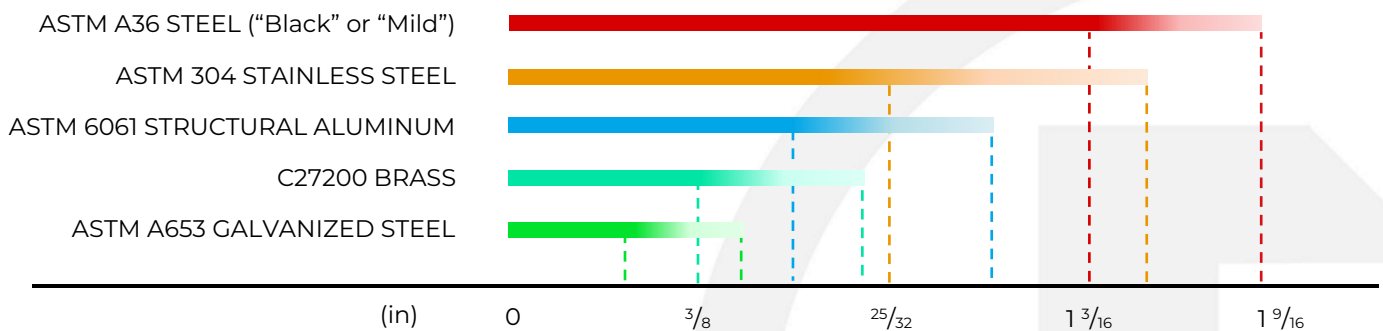


\* Peripheral dimensions may vary depending on the machine model.

## Applicable Materials














## Cutting Thicknesses by Material



















MATERIAL	IDEAL THICKNESS <sup>(1)</sup>		MAXIMUM THICKNESS <sup>(2)</sup>	
	mm	in	mm	in
ASTM A36 STEEL ("Black or Mild")	32	1 1/4	38	1 1/2
ASTM 304 STAINLESS STEEL	20	25/32	35	1 3/8
ASTM 6061 STRUCTURAL ALUMINUM	15	19/32	25	1
C27200 BRASS	10	3/8	18	11/16
ASTM A653 GALVANIZED STEEL	6	1/4	12	15/32

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## Packing List:

- 1 x FORZA Goliat 12000W machine 
- 1 x BS12K Laser Head 
- 1 x Wireless remote control 
- 1 x Wireless keyboard and mouse 
- 1 x Laser safety glasses with case 
- 9 x Waste collection cart 
- 36 x Machine leveling feet 
- 1 x Cable tray and drag chain assembly kit (4 pieces) 
- 144 x Support slats 
- 1 x 22" Monitor screen 
- 1 x Industrial CPU 











### - TOOLBOX -

- 1 x Plastic toolbox 
- 1 x Scotch Tape 
- 1 x Masking Tape 
- 1 x Metric Allen key set 
- 1 x Screwdriver set (4 pieces) 
- 1 x Door and switch keys set 
- 1 x Adjustable wrench 
- 1 x Cotton swabs and cleaners 
- 1 x 15/64" (6mm) bolts and anchors bag 
- 1 x Branding poster 
- 1 x Wi-Fi Module 
- 1 x Electrical terminal set 
- 1 x Service terminal block set 
- 10 x 3/8" expansion bolts 
- 30 x Screws + Fischer plugs 
- 4 x 10" extraction duct clamps 






### - LICENSES -

- 1 x FORZA Play Software License
- 1 x **FORZA Vectors** license - 1 year
- 1 x **FORZA Academy** full license - 1 year
- 1 x **Super 7 SUPPORT** license - 4 years






### - PERIFÉRICOS -

- 1 x Electrical control panel 
- 1 x Control console 
- 1 x 380V / 150 KVA Voltage stabilizer 
- 1 x Automatic chiller 12kW 
- 1 x MFSC Source – 12000W Max Photonics 
- 2 x Industrial fume extractor 5.5 kW 
- 1 x 150KVA Transformer [220V - 380V] @220v3ph 
- 1 x 150KVA Transformer [250V - 380V] @250v3ph 
- 1 x 150KVA Transformer [440V - 380V] @440v3ph 
- 1 x 150KVA Transformer [250V - 380V] @480v3ph 

### - CONSUMABLES -

- 1 x Top protective lens 
- 9 x Bottom protective lenses 
- 20 x Cutting nozzles, multiple sizes 
- 1 x Ceramic base for capacitive sensor 
- 1 x 0.26gal (1Liter) ISO 68 Oil 

### - POWER CABLES AND TRAYS -

- 1 x Gas extraction tube/hose x 15.75ft (4.8m) x10" 
- 1 x Monitor power cable 
- 2 x PU hoses for C-H cooling, 32.81ft x 5/16in (10mx8mm) 
- 2 x PU hoses for C-F cooling, 32.81ft x 3/4in (10mx19mm) 
- 1 x Voltage stabilizer for monitor 
- 16.4ft (5m) x Cable 3x4/0AWG + 1x6AWG, B-T (T: Ring-Spade) @220v3ph 
- 16.4ft (5m) x Cable 3x3/0AWG + 1x6AWG, B-T (T: Ring-Spade) @250v3ph 
- 16.4ft (5m) x Cable 3x1AWG + 1x6AWG, B-E (T: Ring-Spade) @380v3ph 
- 16.4ft (5m) x Cable 3x2AWG + 1x8AWG, B-T (T: Ring-Spade) @440v3ph 
- 16.4ft (5m) x Cable 3x3AWG + 1x8AWG, B-T (T: Ring-Spade) @480v3ph 
- 6.56ft (2m) x Cable 4x1AWG + 1x6 AWG T-E (T: Ring-Ring) @220/250/440/480v3ph 
- 32.81ft (10m) x Cable 4x1AWG + 1x6 AWG, E-M (T: Ring-Spade) 
- 98.42ft (30m) x Cable 4x14 AWG, M-X (T: Ring-Spade) 

T: Transformer, B: MCCB, E: Stabilizer, M: Machine, F: Laser Source, C: Chiller, H: Head, X: Extractor, G: Ground.

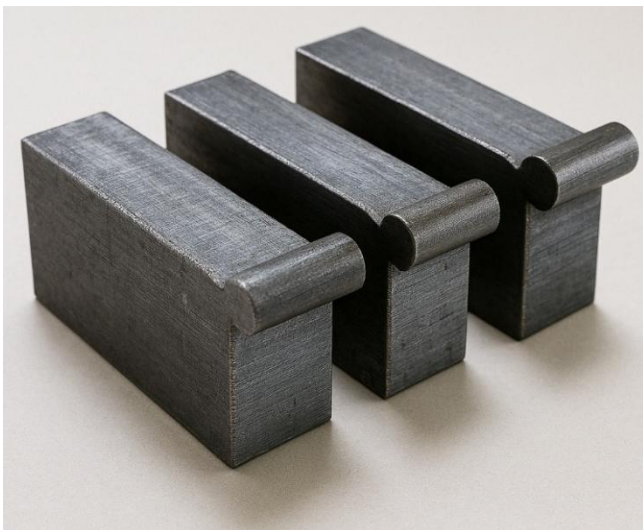
\* The reference cables are coated with TW type insulation

Transport symbols:  (Package),  (Inside the package),  (Installed on the machine).

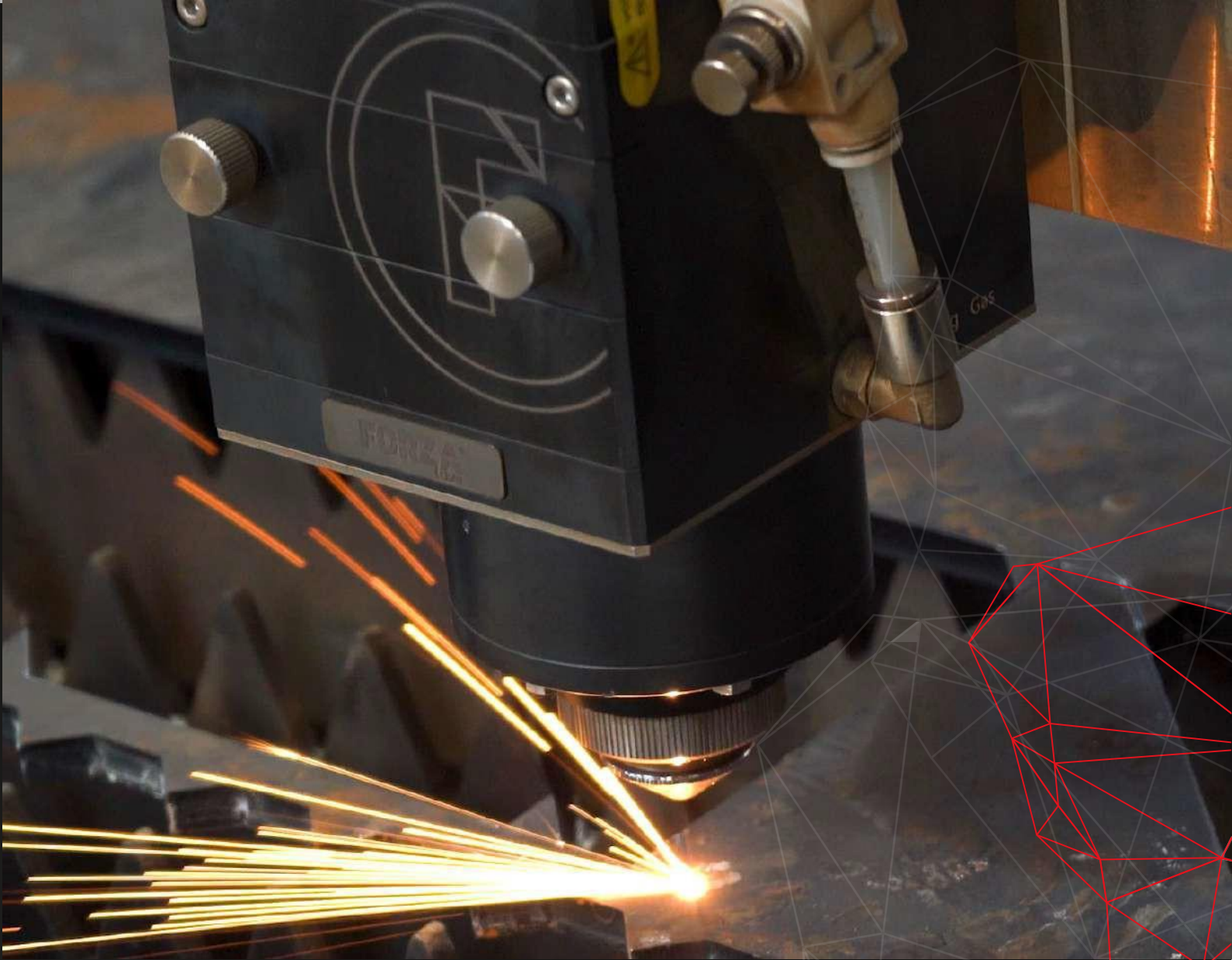
## Consumables:

IMAGE	ITEM	MODEL	DIMENSIONS	LIFETIME
	Cutting nozzle: single/double	xxxx	D:28mm M11x0.75 H:15mm	200 hours
	Bottom protective lens	CF-L37.0x7.0-12K	D:37mm T:7mm	200 hours
	Distilled water	xxxx	34.3gal   44.9gal   14.5gal 130L   170L   55L	2 months
	Ceramic base for capacitive sensor	CF-BDC41M11L50	D <sub>e</sub> :41mm	1000 hours
			D <sub>i</sub> :24.5mm	
			M11x0.75	
			H:48.5mm	
	ISOVG68 lubricating oil	xxxx	0.26gal 1L	31.09 miles 50 000 meters
	Support slats	xxxx	L: 10.17ft T: 5/16in L:3100mm T:2mm	186.4 miles 300 000 meters
	Blue grease for pinions	xxxx	Lithium grease	6.21 miles 10 000 meters
	Secondary bottom protective lens	CF-L37.0x7.0-12K	D:37mm T:7mm	Not specified
	Top protective lens	CF-L24.9x1.5-12K	D:24.9mm T:1.5mm	Not specified

## Manufactured Parts:







At FORZA Laser, laser specialists, our team has everything you need to take your business to the next level.

Find us on our social media



[forzaser.com](https://forzaser.com)

**FORZA**<sup>®</sup>  
Laser