



FORZA

Ranger

V250701

Datasheet
Model N1530P60



FORZA

Ranger

Industrial CNC laser cutting machine for metal plates

CUTTING / MARKING / PERFORATION

The FORZA Ranger laser cutter represents the latest generation of our mixed line of metal plates machinery with all the upgrades requested by our customers from the previous models.

With the higher cutting speed, acceleration and robustness. It is available for working with full 5ftx10ft (1530mmx3050mm) plates up to 1in (25mm).

Main Features

FEATURES	DETAIL
Application	Plates cutting
Nominal working area	4.9ft x 9.8ft 1500mm x 3000mm
Total plate workspace	5ft x 10ft 1530 mm x 3050mm
Laser power rating	6000W
Nominal cutting thickness (ASTM A36) ⁽¹⁾	3/4in 19mm
Maximum cutting thickness (ASTM A36) ⁽²⁾	1in 25mm
Maximum XY acceleration	32.2ft/s ² 1.0G
Maximum XY travel speed	5.5ft/s 100m/min
Cutting precision ⁽³⁾	± 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



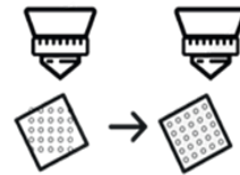
Not only cuts but also performs marking, ideal for engraving bending lines, numbers, and letters.

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%.

Gravity Cut



You can save up to 60% of time when cutting rectangular and circular patterns by taking advantage of the movement inertia.

Automatic Gas Control



The machine automatically exchanges and selects the gas it needs to cut depending on the material, whether oxygen or nitrogen.

General Specifications

SPECIFICATION	DETAIL
Model	FORZA Ranger – N2060P30
Laser Type/Technology	Fiber laser 1064nm \pm 10nm
Fiber laser diameter	150 μ m
Nominal fiber laser power	6000W
Fiber laser power range	5 a 100% (\pm 0.5%)
Output power stability	\pm 1%
Laser working frequency	4 to 5000Hz
Laser source protection level	IP54
Laser source model	MFSC-6000W MAX PHOTONICS
Working modes	CUTTING / MARKING / PERFORATION
Focusing system	SMARTFOCUS TECHNOLOGY ⁽¹⁾
Auxiliar gas type for cutting	O ₂ , N ₂ or Air
Proportional oxygen control	Analog control 145.04psi 10 bar AIRTAC
Laser head model	OSPRI – LC80
Focal range	-15mm ~ +15mm
Maximum focusing speed	7.9in/s 200mm/s
Head protection system	Prevention and detection of impacts
Pre-loaded cutting profiles	Yes ⁽²⁾
Laser cutting width	0.004in ~ 0.06in 0.1mm ~ 1.5mm ⁽³⁾
Cutting precision	Thickness - dependent ⁽⁴⁾

- 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 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° ⁽⁵⁾	
XY movement repeatability	±0.05mm	
XY movement accuracy	±0.02mm	
Nominal working area	4.9ft x 9.8ft 1500mm x 3000mm	
Total plate workspace per unit	5ft x 10ft 1530mm x 3050mm	
Maximum Z-axis travel	3 5/32in 80mm	
Maximum cutting speed	1.64ft/s 30m/min	
Maximum XY travel speed	5.5ft/s 100m/min	
Maximum XY acceleration	32.2ft/s² 1.0G	
XY motion system	Rack / Pinion	
Z motion system	Ball screw	
Servo motor power (XYZ)	X: 1HP 750W	
	Y₁: 1.07HP 800W	Y₂: 1.07HP 800W
	Z: 0.5HP 400W	
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	0.8ton 700kg ⁽⁶⁾	
Laser source power	18.5kW	
Chiller power (HL)	8.5kW	
Fume extractor power	1.5kW	
Motion & control system power	5kW	
Peak machine power	33.5kW	

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.

Minimum power for electrical system design ⁽⁷⁾	30.25kW		
Average energy consumption ⁽⁸⁾	18.15kWh		
Operating voltage	220V/250V/380V/440V/480V 3ph 50Hz-60Hz		
Minimum line current	88.2A @ 220VAC 3ph		
	77.6A @ 250VAC 3ph		
	51.1A @ 380VAC 3ph		
	44.1A @ 440VAC 3ph		
	40.4A @ 480VAC 3ph		
Conductor wire gauge to the thermal-magnetic circuit breaker (MCCB) ⁽⁹⁾	Up to 140°F 60°C (TW, UF)	Up to 194°F 90°C (THHW, THHN)	Voltage
	3 x 3AWG	3 x 4AWG	220VAC 3ph
	3 x 3AWG	3 x 6AWG	250VAC 3ph
	3 x 6AWG	3 x 8AWG	380VAC 3ph
	3 x 6AWG	3 x 8AWG	440VAC 3ph
	3 x 8AWG	3 x 10AWG	480VAC 3ph
Recommended MCCB and grounding conductor	MCCB	PE Conductor (Copper)	Voltage
	90A	8AWG	220VAC 3ph
	80A	8AWG	250VAC 3ph
	60A	10AWG	380VAC 3ph
	45A	10AWG	440VAC 3ph
	45A	10AWG	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

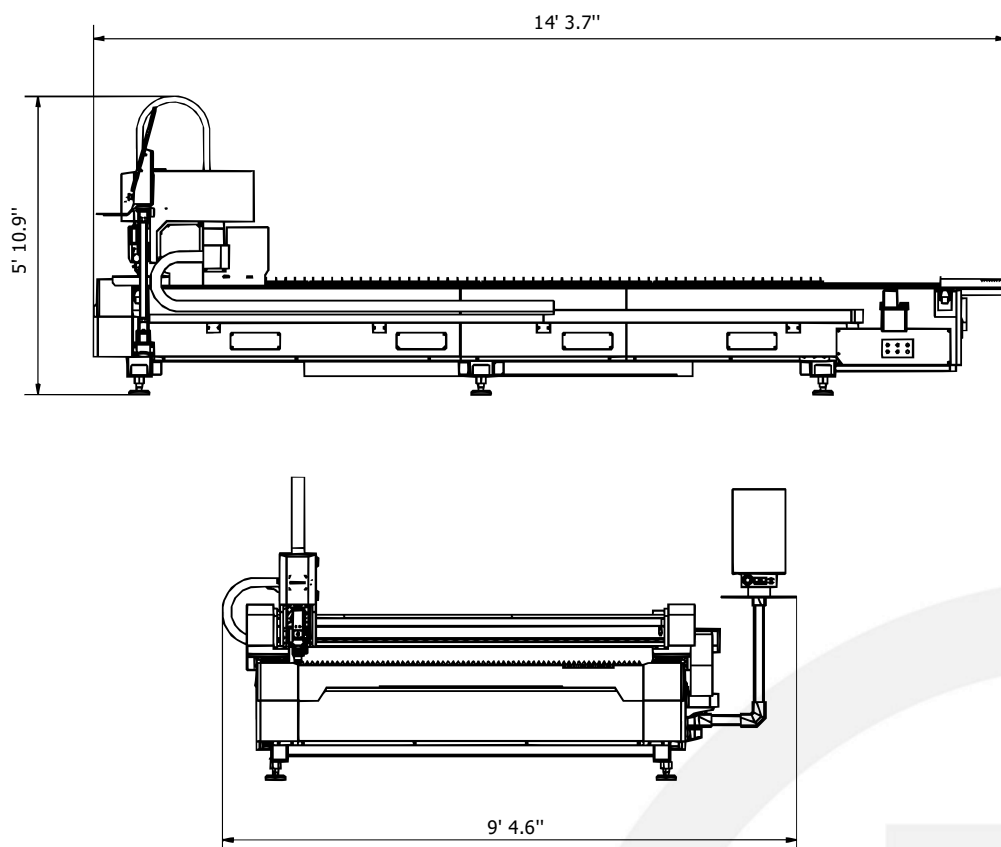
Power cable length ⁽¹⁰⁾	32.8ft 10m		
Pneumatic supply for actuators	87.02psi 6bar		
Communication interface	RJ45, WIFI, USB 3.0		
Compatible design formats	AI, DXF, PLT, LXD, G		
Software	FORZA Play		
Software language	Spanish and English		
PC control interface	By screen and by manual control		
Cooling method	Water-cooled		
Chiller tank capacity ⁽¹¹⁾	TFLW	CWFL	HL
	26.4gal 100L	18.5gal 70L	11.1gal 42L
Gas connection diameter	$\frac{5}{16}$ in (8mm) O ₂ hose and $\frac{5}{16}$ in (8mm) N ₂ hose (Nylon)		
Maximum gas pressure at laser head	362.6psi 25bar		
Maximum air/N ₂ input pressure	290.08 psi 20bar		
Maximum O ₂ input pressure	145.04psi 10bar		
Recommended N ₂ input pressure	≤232.06psi ≤16bar		
Recommended O ₂ input pressure	87.02psi 6bar ⁽¹²⁾		
Machine weight	~1.93ton ~1750kg		
Machine shipping weight	~2.04ton ~1850kg		
Machine dimensions	14.30 x 9.38 x 5.91 ft 4360 x 2860 x 1800 mm		
Machine shipping dimensions	13.93 x 7.61 x 4.1 ft 4245 x 2320 x 1250mm		
Required floor resistance	92.45psi 6.5Kgf/cm ²		
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.

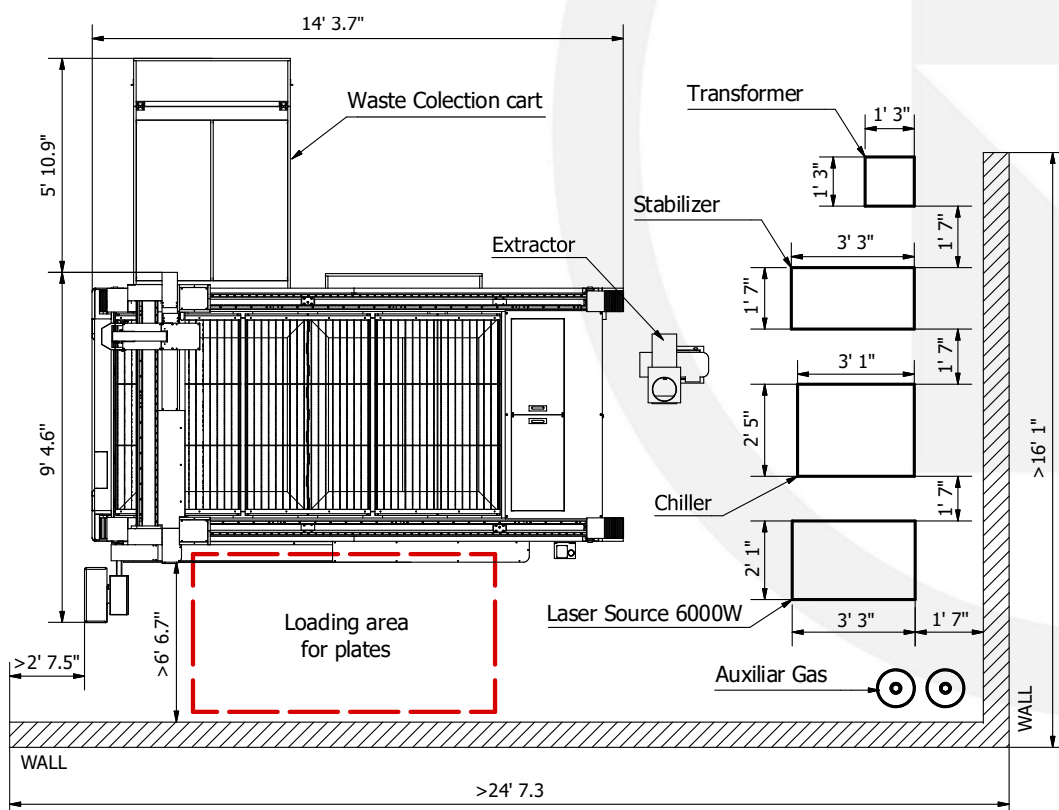
11. The tank size depends on the cooler model equipped in the laser machine. At the time of installation, at least 1.1 gallons (4 liters) of additional distilled water beyond the tank capacity must be available to fill the water circuits between the chiller, the power supply, and the laser head

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

Machine Dimensions

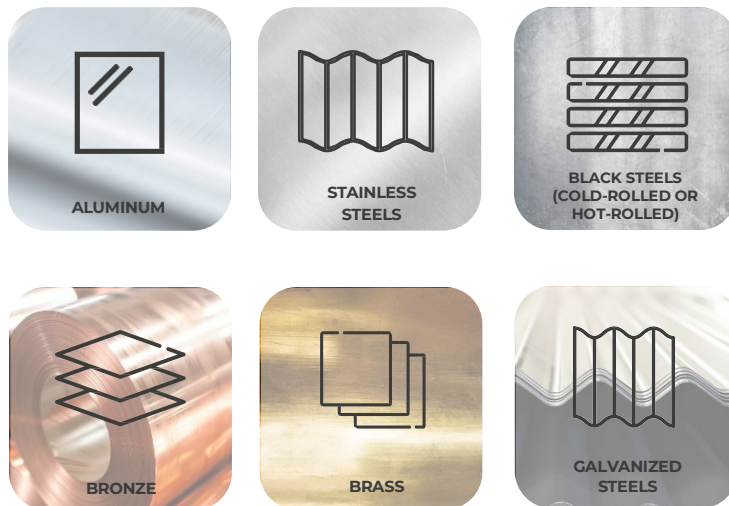


Required Space

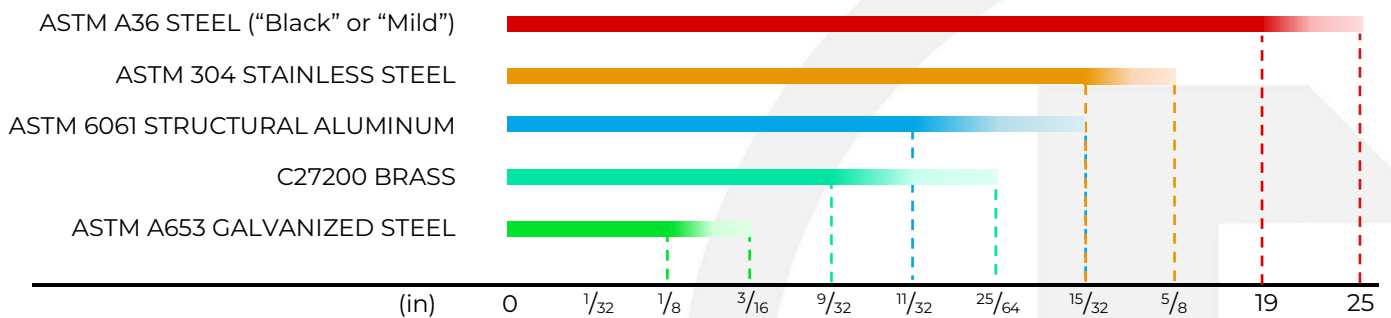


* Peripheral dimensions may vary depending on the machine model.

Applicable Materials















Cutting Thicknesses by Material




















MATERIAL	IDEAL THICKNESS ⁽¹⁾			MAXIMUM THICKNESS ⁽²⁾		
	mm	in	Gauge	mm	in	Gauge
ASTM A36 STEEL ("Black or Mild")	19	3/4	-	25	1	-
ASTM 304 STAINLESS STEEL	12	15/32	-	16	5/8	-
ASTM 6061 STRUCTURAL ALUMINUM	9	11/32	-	12	15/32	-
C27200 BRASS	7	9/32	2	10	3/8	-
ASTM A653 GALVANIZED STEEL	3	1/8	11	5	3/16	6

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Packing List:

- ❑ 1 x FORZA Ranger 6000W machine 
- ❑ 1 x LC80 Laser head 
- ❑ 1 x Wireless remote control 
- ❑ 1 x Wireless keyboard and mouse 
- ❑ 1 x Laser safety glassed with case 
- ❑ 2 x Waste collection cart 
- ❑ 6 x Machine leveling feet 
- ❑ 1 x Screen support structure kit (2 pieces) 
- ❑ 1 x Cable tray and drag chain assembly kit (4 pieces) 
- ❑ 49 x Support slats 
- ❑ 1 x 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 
- ❑ 1 x QBH Protector 
- ❑ 2 x Clamps for 10" extraction duct/tube 






- LICENCIAS -

- ❑ 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 380V / 60 KVA Voltage stabilizer (2) 
- ❑ 1 x Automatic chiller 6kW (3) 
- ❑ 1 x MFSC Source – 6000W Max Photonics 
- ❑ 1 x Industrial fume extractor 1.5 kW 
- ❑ 1 x 60KVA Transformer [220V - 380V] (4) @220v3ph 
- ❑ 1 x 60kVA Transformer [250V - 380V] (4) @250v3ph 
- ❑ 1 x 60KVA Transformer [440V - 380V] (4) @440v3ph 
- ❑ 1 x 60KVA Transformer [250V - 380V] (4) @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 (1 liter) ISO 68 Oil 

- POWER CABLES AND TRAYS -

- ❑ 1 x Gas extraction tube/hose x 15.75ft (4.8m) x10" 
- ❑ 1 x Monitor Power Cable 
- ❑ 32.81ft (10m) x Metal cable tray 
- ❑ 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 3x6AWG + 1x10AWG, B-T (T: Ring-Spade) @220v3ph 
- ❑ 16.4ft (5m) x Cable 3x6AWG + 1x10AWG, B-T (T: Ring-Spade) @250v3ph 
- ❑ 16.4ft (5m) x Cable 3x6AWG + 1x10AWG, B-E (T: Ring-Spade) @380v3ph 
- ❑ 16.4ft (5m) x Cable 3x8AWG + 1x10AWG, B-T (T: Ring-Spade) @440v3ph 
- ❑ 16.4ft (5m) x Cable 3x8AWG + 1x10AWG, B-T (T: Ring-Spade) @480v3ph 
- ❑ 6.56ft (2m) x Cable 4x6AWG + 1x10AWG T-E (T: Ring-Ring) @220/250/440/480v3ph 
- ❑ 32.81ft (10m) x Cable 4x6AWG + 1x10AWG, E-M (T: Ring-Spade) 
- ❑ 49.2ft (15m) x Cable 4x12 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

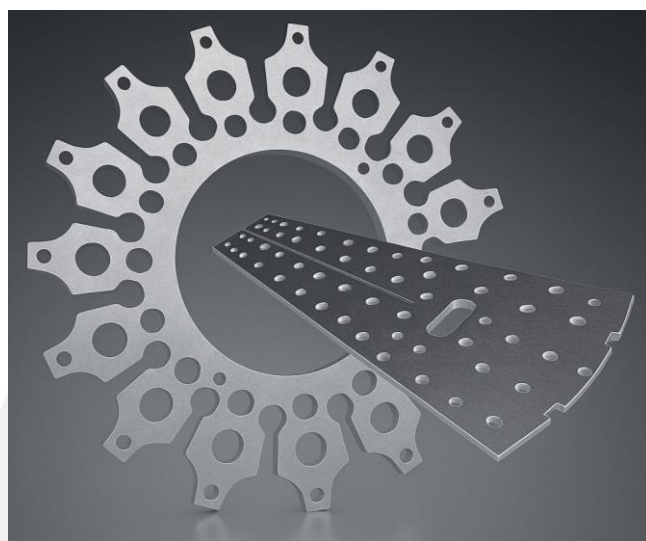
Transport symbols:  (Package),  (Inside the package),  (Installed on the machine).

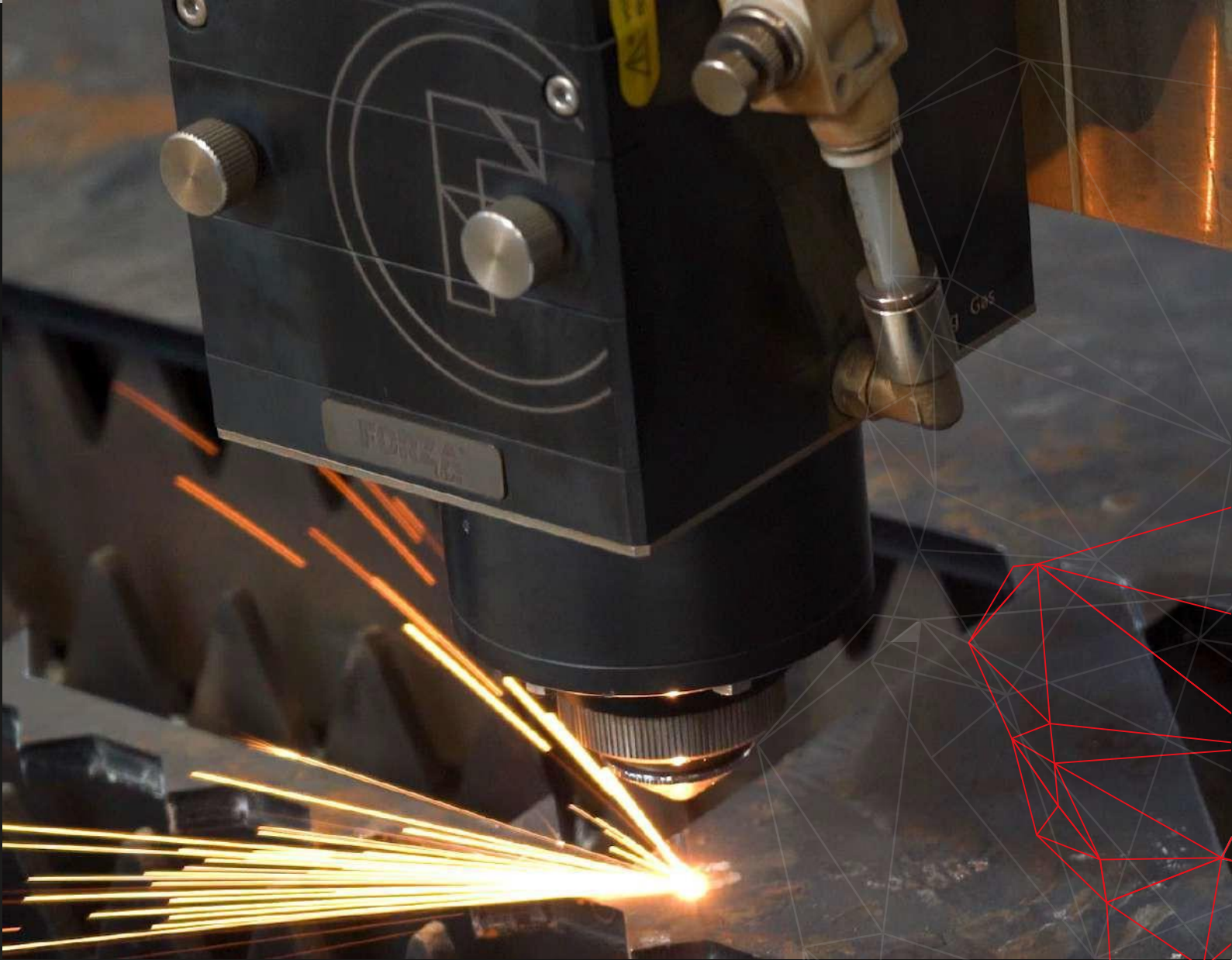
PACKAGE	DIMENSIONS (W x H x L)	NET WEIGHT	GROSS WEIGHT
 (1)	7.6 x 4.1 x 13.9 [ft] 2320 x 1250 x 4245 [mm]	1.75ton 1590kg	1.86ton 1690kg
 (2)	3.4 x 3.4 x 3.9 [ft] 1020 x 1050 x 1200 [mm]	330.7lb 150kg	385.8lb 175kg
 (3)	3.4 x 2.6 x 3.9 [ft] 1020 x 800 x 1200 [mm]	330.7lb 150kg	385.8lb 175kg
 (4)	3.3 x 3.6 x 2.1 [ft] 1000 x 1100 x 640 [mm]	352.7lb 160kg	407.9lb 185kg

Consumables:

IMAGE	ITEM	MODEL	DIMENSIONS	LIFETIME
	Cutting nozzle: single/double	xxxx	D:28mm M11x0.75 H:15mm	200 hours
	Bottom protective lens	CF-L37.0x7.0-8K	D:37mm T:7mm	200 hours
	Distilled water	xxxx	26.4gal / 18.5gal / 11.1gal 100L / 70L / 42L	2 months
	Ceramic base for capacitive sensor	CF-BDC28M11L12	D _e :28mm	1000 hours
			D _i :24.5mm	
			M11x0.75	
			H:12mm	
	ISOVG68 lubricating oil	xxxx	0.26gal 1L	31.09 miles 50 000 meters
	Support slats	xxxx	L: 5.25ft T: $\frac{5}{64}$ in L: 1600mm 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-L37.0x7.0-8K	D:37mm T:7mm	Not specified
	Top protective lens	CF-L21.5x2.0-8K	D:21.5mm T:2mm	Not specified

Manufactured Parts:





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

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