



FORZA

Ranger SE

V251111

Datasheet
Model NSE1530P30



FORZA

Ranger SE

Industrial CNC Laser Cutting Machine for Metal Plates

CUTTING / MARKING / PERFORATION

The FORZA Ranger is the latest generation of our plate processing machinery, featuring enhanced robustness, speed, and precision.

Its new structure incorporates a protective cover in the cutting area and a laser protection curtain that detects the entry or exit of people, ensuring operator safety.

Main Features

FEATURES	DETAIL
Application	Plates cutting
Nominal working area	9.8ft x 4.9ft 3000mm x 1500mm
Total plate workspace	10ft x 5ft 3050mm x 1525mm
Laser power rating	3000W
Nominal cutting thickness (ASTM A36) ⁽¹⁾	9/16in 14mm
Maximum cutting thickness (ASTM A36) ⁽²⁾	3/4in 19mm
Maximum XY acceleration	32.2ft/s ² 1G
Maximum XY travel speed	5.5ft/s 100m/min
Maximum XY repetitive positioning precision	±0.03mm
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 Anticollision System



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

Gas Sensor Protection



It features cutting precision with intelligent pressure detection. This feature ensures consistent gas flow, enhancing edge quality, stability, and productivity throughout every laser cutting process.

Marking Technology



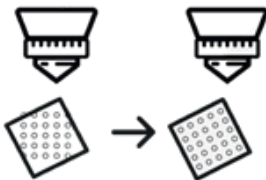
Not only cuts but also performs marking, ideal for engraving bending lines, numbers, and letters.

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%.

Security Enhanced



A network of safety sensors is included to detect entry and exit in the area near the machine, providing additional protection for the operator and the work environment.

General Specifications

SPECIFICATION	DETAIL
Model	FORZA Ranger SE – NSE1530P30
Laser Type/Technology	Fiber Laser 1080nm $\pm$ 5nm
Fiber laser diameter	50 μ m
Nominal fiber laser power	3000W
Fiber laser power range	10 to 100% ($\pm$ 0.5%)
Output power stability	$\pm$ 1.5%
Laser working frequency	1 to 5000Hz
Laser source protection level	IP54
Laser source model	MFSC-3000W 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 MOOXE
Laser head model	BS03K CAT – RAYTOOLS
Focal range	-22mm ~ +22mm
Head protection system	Prevention and detection of impacts
Pre-loaded cutting profiles	Yes ⁽²⁾
Laser cutting width	0.004 ~ 0.06in 0.1 ~ 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	±0.03mm
XY movement accuracy	±0.05mm
Nominal working area	9.8ft x 4.9ft 3000mm x 1500mm
Total plate workspace per unit	10ft x 5ft 3050mm x 1525mm
Maximum Z-axis travel	2.7in 70mm
Maximum cutting speed	1.6ft/s 30m/min
Maximum XY travel speed	5.5ft/s 100m/min
Maximum XY acceleration	32.2ft/s ² 1G
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	0.661ton 600kg ⁽⁶⁾
Laser source power	10kW
Chiller power	3.8kW

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	1.5kW		
Motion & control system power	5kW		
Peak machine power	21kW		
Minimum power for electrical system design ⁽⁷⁾	17.05kW		
Average energy consumption ⁽⁸⁾	12.6kWh		
Operating voltage	220V/250V/380V/440V/480V 3ph 50Hz-60Hz		
Minimum line current	49.7A @ 220VAC 3ph		
	43.8A @ 250VAC 3ph		
	28.80A @ 380VAC 3ph		
	24.9A @ 440VAC 3ph		
	22.8A @ 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 6AWG	3 x 8AWG	220VAC 3ph
	3 x 6AWG	3 x 8AWG	250VAC 3ph
	3 x 8AWG	3 x 12AWG	380VAC 3ph
	3 x 10AWG	3 x 14AWG	440VAC 3ph
	3 x 10AWG	3 x 14AWG	480VAC 3ph
Recommended MCCB and grounding conductor	MCCB	PE Conductor (Copper)	Voltage
	50A	10AWG	220VAC 3ph
	45A	10AWG	250VAC 3ph
	30A	10AWG	380VAC 3ph
	25A	12AWG	440VAC 3ph
	25A	12AWG	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.

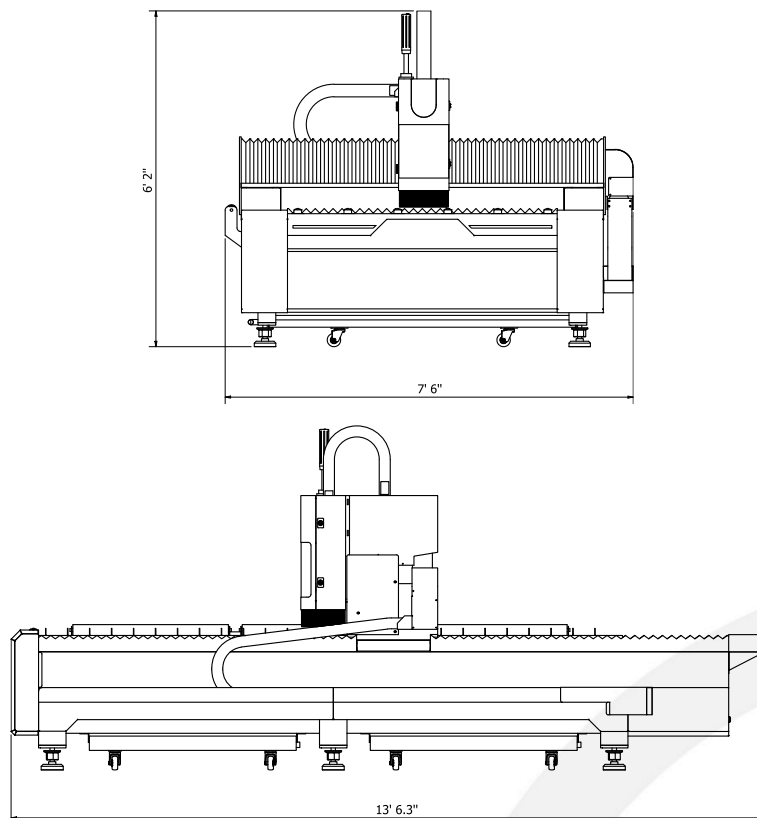
Power cable length ⁽¹⁰⁾	32.8ft 10m		
Pneumatic supply for actuators	87.02psi 6bar		
Communication interface	RJ45, WIFI, USB 3.0		
Compatible design formats	AI, DXF, PLT, LXD, G		
Software	FORZA Play		
Software language	English and Spanish		
PC control interface	By screen and by manual control		
Cooling method	Water-cooled		
Chiller tank capacity ⁽¹¹⁾	TFLW	CWFL	HL
	7.92gal 30L	5.81gal 22L	5.54gal 21L
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	2.8ton 2530kg		
Machine dimensions	13.6x7.5x6.2 ft 4122x2285x1881 mm		
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	FDA, CE, RoHS		

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

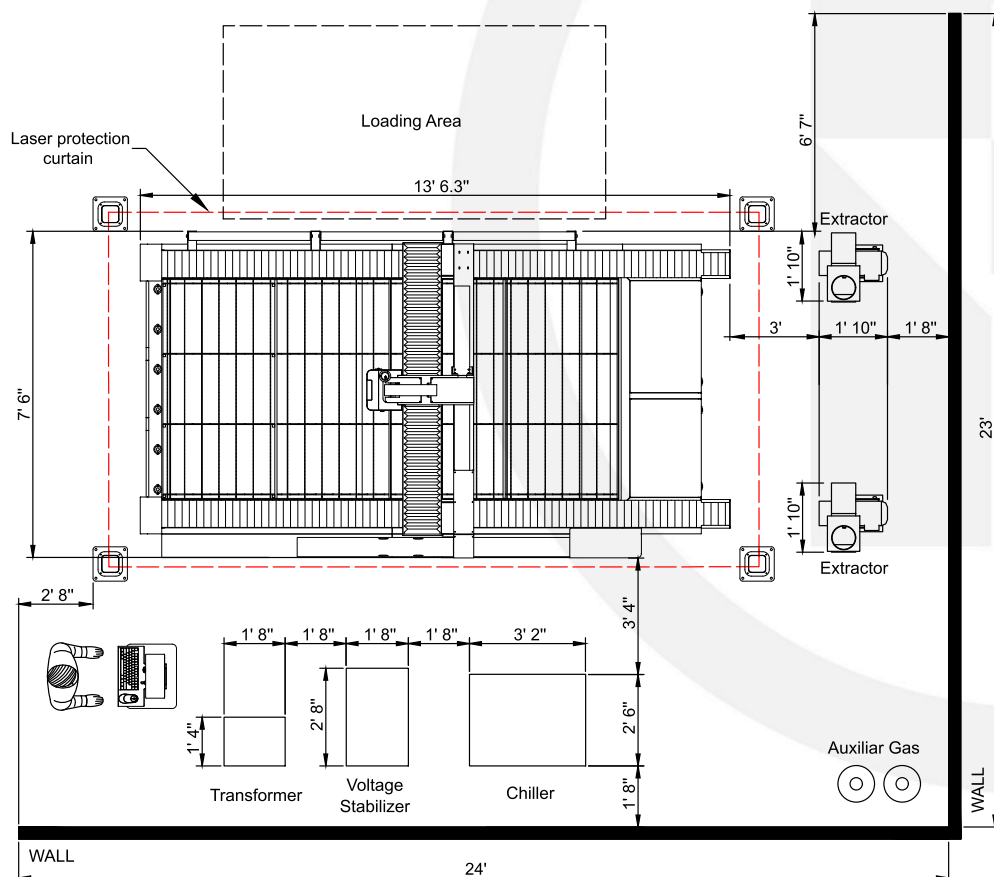
11. The tank size depends on the cooler model equipped in the laser machine. At the time of installation, at least 1.1 gallons (4 liters) of additional distilled water beyond the tank capacity must be available to fill the water circuits between the chiller, the power supply, and the laser head.

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

Machine Dimensions

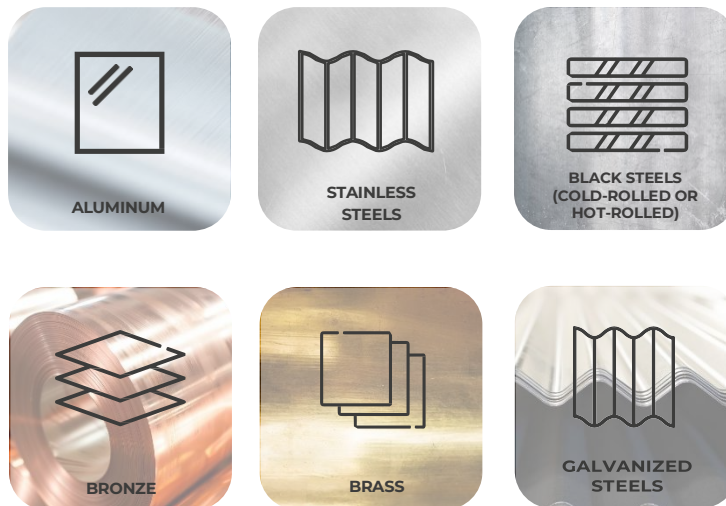


Required Space

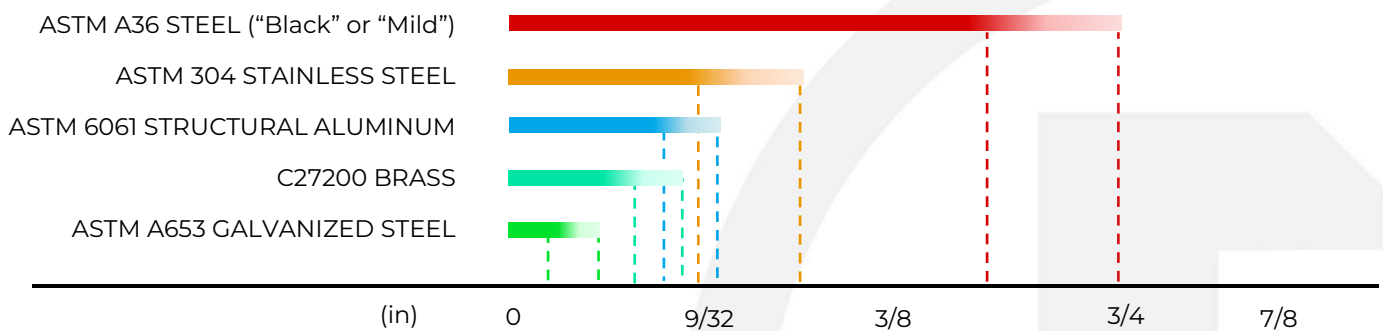


* Peripheral dimensions may vary depending on the machine model

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")	14	9/16	-	19	3/4	-
ASTM 304 STAINLESS STEEL	7	9/32	2	10	3/8	-
ASTM 6061 STRUCTURAL ALUMINUM	5	3/16	6	9	11/32	-
C27200 BRASS	4	5/32	9	7	9/32	2
ASTM A653 GALVANIZED STEEL	2	5/64	14	3	1/8	11

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Packing List:

- ❑ 1 x FORZA Ranger 3000W machine 
- ❑ 1 x BS03K CAT Laser Head 
- ❑ 1 x Wireless remote control 
- ❑ 1 x Wireless keyboard and mouse 
- ❑ 1 x Laser safety glasses with case 
- ❑ 2 x Waste collection cart set 
- ❑ 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 
- ❑ 4 x Security sensors 

- 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 $1\frac{5}{64}$ " (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 $\frac{3}{8}$ " expansion bolts 
- ❑ 30 x Screws + Fischer plugs 
- ❑ 1 x QBH Protective cover 

- 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

- PERIPHERALS -

- ❑ 1 x 380V / 40 KVA Voltage stabilizer (2) 
- ❑ 1 x Automatic chiller 3kW (3) 
- ❑ 1 x Fuente MFSC – 3000W Max Photonics 
- ❑ 1 x Industrial fume extractor 1.5 kW 
- ❑ 1 x 40KVA Transformer [220V - 380V] @220v3ph 
- ❑ 1 x 40KVA Transformer [250V - 380V] @250v3ph 
- ❑ 1 x 40KVA Transformer [440V - 380V] @440v3ph 
- ❑ 1 x 40KVA 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 -

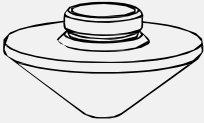
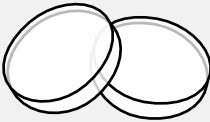
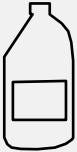
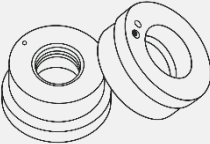
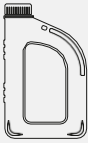
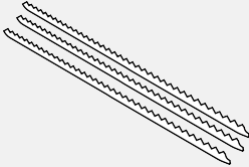
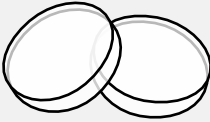
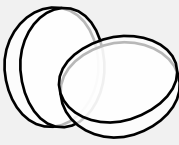
- ❑ 1 x Gas extraction tube/hose x 15.75ft (4.8m) x10" 
- ❑ 1 x Monitor power cable 
- ❑ 132.81 ft (10m) x Metal cable tray 
- ❑ 2 x PU hoses for C-H cooling, 32.81ft x $\frac{5}{16}$ in (10mx8mm) 
- ❑ 2 x PU hoses for C-F cooling, 32.81ft x $\frac{3}{4}$ in (10mx19mm) 
- ❑ 1 x Voltage stabilizer for 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 3x8AWG + 1x10AWG, B-E (T: Ring-Spade) @380v3ph 
- ❑ 16.4ft (5m) x Cable 3x10AWG + 1x12AWG, B-T (T: Ring-Spade) @440v3ph 
- ❑ 16.4ft (5m) x Cable 3x10AWG + 1x12AWG, B-T (T: Ring-Spade) @480v3ph 
- ❑ 6.56ft (2m) x Cable 4x8AWG + 1x10AWG T-E (T: Ring-Ring) @220/250/440/480v3ph 
- ❑ 32.81ft (10m) x Cable 4x8AWG + 1x10AWG, E-M (T: Ring-Spade) 
- ❑ 49.21ft (15m) x Cable 4x12AWG, M-X (T: Ring-Spade) 

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

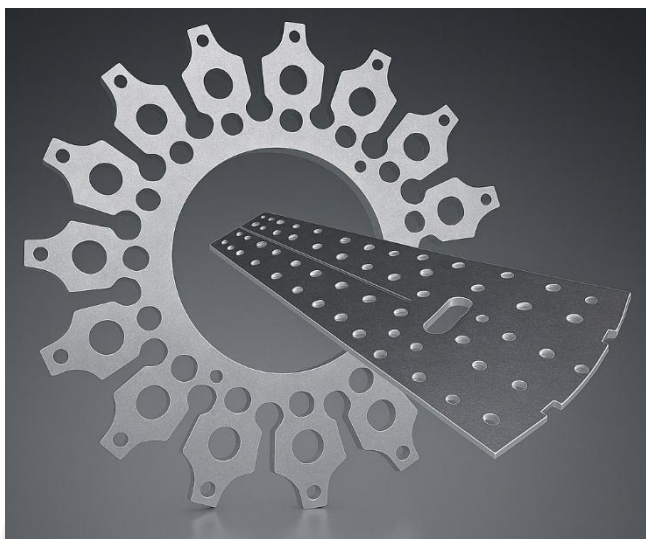
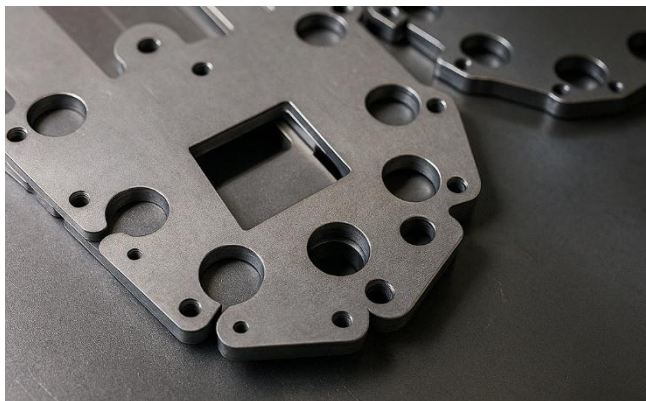
* The reference cables are coated with TW type insulation

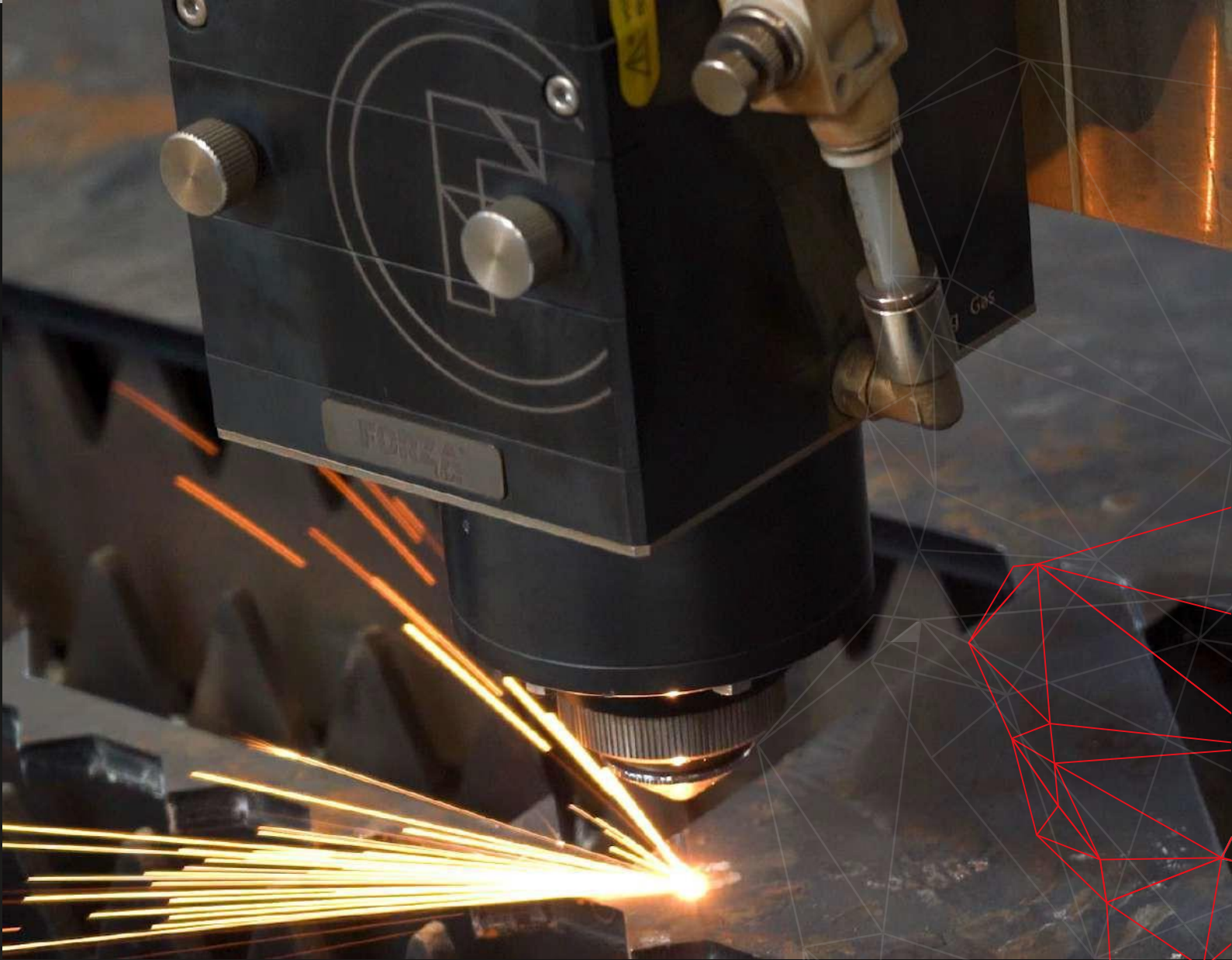
Transport symbols:  (Package),  (Inside the package),  (Installed on the machine).

Consumables:

IMAGE	ITEM	MODEL	DIMENTIONS	LIFETIME
	Cutting nozzle: single/double	xxxx	D:28mm M11 H:15mm	200 hours
	Bottom protective lens	CF-L27.9x4.1-4K	D:27.9mm T:4.1mm	200 hours
	Distilled water	xxxx	3.7gal / 3.7gal / 3.4gal 14L / 14L / 13L	2 months
	Ceramic base for capacitive sensor	CF-BDC28M11L12	D:28mm	1000 hours
			D:24.5mm	
			M11x0.75	
			H:12mm	
	ISOVG68 lubricating oil	xxxx	0.26gal 1L	31.09 miles 50 000 meters
	Support slats	xxxx	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-L27.9x4.1-4K	D:27.9mm T:4.1mm	Not specified
	Top protective lens	CF-L24.9x1.5-4K	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.

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