

# Amada Laser Cutting Machine

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*Quattro 1Kw*



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## Quattro 1Kw

### Overview

The Quattro has been designed as an entry level flying optics laser but, boasts many features associated with higher specification machines.

The 1260 x 1260 working area and state of the art 1kw oscillator. The Quattro is able to process mild steel, stainless steel and aluminium with cutting speeds up to 10m/min.



### Characteristics

- Clean cut facility for superior edge quality
- Self calibrating non – contact head for scratch free processing
- 100mm Z axis for cutting formed parts
- Worlds smallest footprint
- Easy material load and unload



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### Machine Specification

<b>Machine</b>	Model	...	Quattro	
	Traverse Method	...	X,Y Axis Optics Travel	
	Axis Traverse Distance	...	1260 x 1260 x 100mm (Z Axis)	
	Maximum Sheet Size	...	1250 x 1250mm	
	Maximum Guaranteed Material Thickness	...	6mm Mild Steel 4mm Stainless (Oxygen Cut) 2mm Stainless (Clean Cut) 2mm Stainless (Air Cut) 1mm Aluminium (A5052)	
	Material Weight	...	80kg	
	Minimum Unit	...	0.001 mm	
	Positioning Accuracy	...	± 0.01 mm	
	Axis Drive (X,Y & Z)	...	AC Servo Motor	
	Assist Gas	...	3 Ports, Auto Change	
	<b>Speed</b>	Maximum Speed	...	30m/min (X + Y Axis) 15m/min (Z Axis)
		Laser Cutting Speed	...	0 ~ 10m/min



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<b>Installation</b>	Electric Power Required (includes Oscillator)	...	25 KVA 400V (50Hz) $\pm$ 10%
	Air Requirements (Machine Only)	...	6.0 Kgf/cm <sup>2</sup> 250 l/min
<b>Dimensions</b>	Machine Length	...	2158 mm
	Machine Width	...	2870 mm
	Machine Height	...	2000 mm
	Machine Weight	...	3.3 tonnes



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### Oscillator Specification

<b>Oscillator Model</b>	...	Fanuc C –1000E
Type	...	RF Discharge Excited Fast Axial Flow CO2 Laser
Unit Build	...	Integrated with Main Machine
Rated Output	...	1000W
Output Stability	...	Less than $\pm 1.0\%$ (Closed loop control at rated output)
Wave Length	...	10.6 $\mu\text{m}$
Output Mode	...	Continuous Wave(C.W.)or Pulse Mode
Beam Mode	...	Low Order Mode
Beam Diameter	...	$\varnothing 20\text{mm}$ (max)
Polarization	...	Linear Polarisation in 40° Direction
Beam Divergence	...	2mrad or Less
Pulse Frequency	...	5 ~ 2000 Hz
Pulse Duty	...	0 ~ 100%
Laser Gas Mixture	...	CO2:He2:N2 = 5:40:55 $\pm 2\%$ for each volume
Pressure	...	1.75 $\pm 0.25$ Kgf /cm <sup>2</sup> (at regulator)
Consumption	...	10 L/Hour
Cooling Water Flow	...	40 L/Min or More
Interlocks	...	Electrical Systems
	...	Mechanical Systems
	...	Gas
	...	Cooling Water
Number of External Mirrors	...	4 (Including 1 Circular Polarisation Mirror)



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<b>Specification</b>	Model	...	Fanuc FS-16i-LA
	Controlled Axis	...	X, Y & Z (2 Axis Simultaneous Controlled)
	Programming Mode	...	Absolute/Incremental
	Minimum Input	...	0.001mm
	Single Block	...	Yes
	Block Delete	...	Yes
	Editing	...	Yes
	Manual Data Input	...	Yes
	Memory Capacity	...	320 Kb
	Display	...	9.5" Monochrome Display
	Machine Operation	...	Memory, MDI or Manual
	Data Interface	...	RS232C
	Input Method	...	RS232C, MDI, EDIT & Integral 3½" F.D Unit
	<b>Functions</b>	Preparatory Function	...
M Function		...	M – 3 digit
F Function		...	F1 – 10000
S Function		...	SO – 1000
<b>Display Functions</b>	- Program Content		- Program Directory
	- Position Information		- Program Check
	- Settings		- Tool Diameter Compensation (Offset)
	- Parameters		- Messages
	- Cutting Conditions		
	- Self Diagnostics		
<b>Interlock Displays</b>	- Gas Pressure		
	- Vacuum Leak		
	- Turbo Blower Malfunction		
	- Shutter Errors		
	- Laser Discharge		
	- Assist Gas Abnormal		
	- Door Open		



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## Chiller Specification

<b>Chiller</b>	Model	...	Tricool KKW Reidel PC 80.01 - NE
	Type	...	Air Cooled, floor mounted
	Water Specification		
	Cooling Capacity	...	12.5 Kw
	Flow	...	2.4 m / Hour
	Pressure	...	4.5 bar
	Outlet Temperature	...	25° C
	Type	...	Demineralised Water
	Water Tank Capacity	...	120 Litres
	Pipe Connections		
	Supply	...	3/4" BSP
	Power Requirement	...	415V 3 phase + Earth
	Power Consumption	...	5.2 Kw
	Operating Current		
	Starting	...	46 Amps
	Running	...	14 Amps
	Dimensions	...	1070mm(L) x 905mm(W)x1700mm(H)
	Weight Transportation	...	340 kg
	Operational	...	375 kg



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### Dust Collection Specification

Model	...	Torit DFPRO 4
Capacity	...	1800m <sup>3</sup> /hr @ 20°C
Filtration Class	...	Emission < 0.2 mg/m <sup>3</sup> (BIA cat C)
Emission	...	< 2 mg/m <sup>3</sup>
Air requirements	...	6 Bar (7 bar max)
Air connection	...	1" BSP (female)
Flow Rate	...	270 L/min
Fan Motor	...	3.0 Kw
Extractor Connection	...	Ø 200mm
Extractor Hose	...	5m flexible hose supplied
Power Supply	...	3 ph 400 VAC 50 Hz + Earth
Dimensions	...	1390 mm (W) x 1500 mm (L) x 2295 mm (H)
Weight	...	730 Kg





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## Health & Safety

The Amada Laser Cutting machine has been designed and manufactured to be safe and without risks when properly used. However, the following requires careful consideration by the user.

## Laser Safety Glasses

The Amada Laser machines are categorised as a Class 1 Laser product, providing all guards are in place and not damaged. Never remove guards with the laser active. Replace guards immediately if they become damaged

## Training

Ref: PUWER 98 Regulation 9

- 1) *“Every employer shall ensure work equipment have received adequate training for purposes of health and safety, including training in the methods which may be adopted when using the work equipment, any risks which such use may entail and precautions to be taken.”*
- 2) *“Every employer shall ensure that any of his employees who supervises or manages the use of work equipment has received training for purposes of health and safety, including training in the methods may be adopted when using the work equipment, any risk which such use may entail and precautions to be taken.”*

## Cutting of non metallic materials

Amada Laser products and associated extraction systems are Designed predominantly for sheet metal applications. Due to the Differing types of dust, fumes or gases given off when cutting other Materials such as plastic, wood resins etc. it is essential that the Responsibility to verify the machine specification, extraction capabilities and a COSHH assessment for their particular applications. Please be aware that certain materials may give off harmful gases when melted under the Laser Cutting process. Amada can therefore Take No Responsibility for damage to the machine and accessories, or for damage to persons health whilst cutting these materials.

