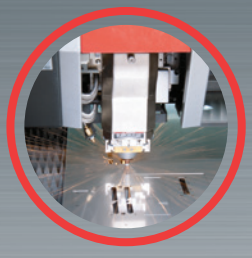
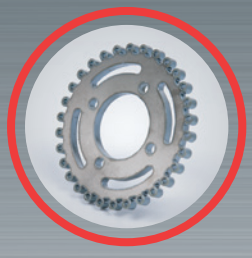
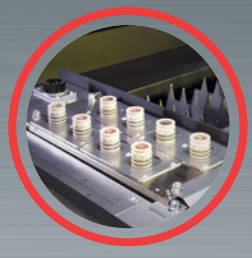
SOLUTION

LASER CUTTING

LCG AJ SERIES

IMPROVED PERFORMANCE AND FEATURES FOR INCREASED PROFITABILITY



AMADA

LCG AJ SERIES

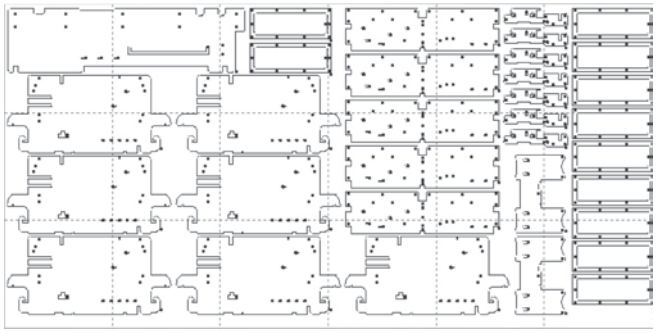
IMPROVED PERFORMANCE AND FEATURES FOR INCREASED PROFITABILITY

THE PERFECT BALANCE OF LOW ENERGY USAGE AND HIGH SPEED PRODUCTIVITY

AMADA INTRODUCES THE LATEST FIBRE LASER TECHNOLOGY

Building on the success of the LCG-AJ range of fibre laser cutting machines, AMADA has moved ahead with the introduction of the 3rd generation of fibre laser engine design. Utilizing 3 kW diode modules, which are the largest available, the improvements in beam quality and reduced power consumption translate into higher productivity and profitability.

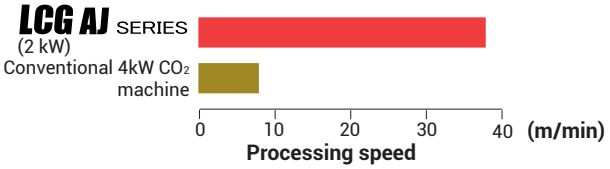
TYPICAL PROCESSING SAMPLES



Material: Stainless steel 304, 1.0 mm
Dimension: 2000 x 1000 mm
Assist gas: Nitrogen

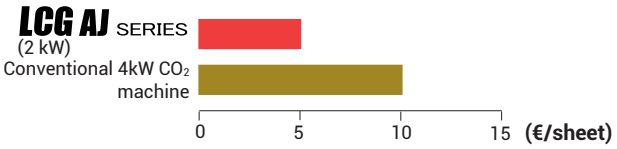
PRODUCTIVITY COMPARISON

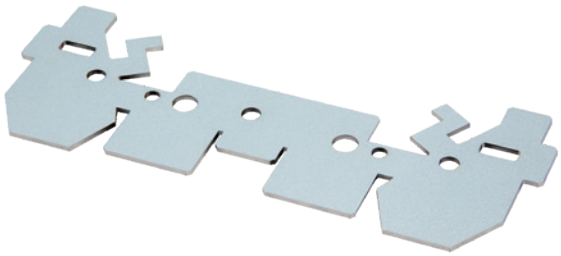
42% TIME REDUCTION



RUNNING COST COMPARISON

50% COST REDUCTION PER SHEET



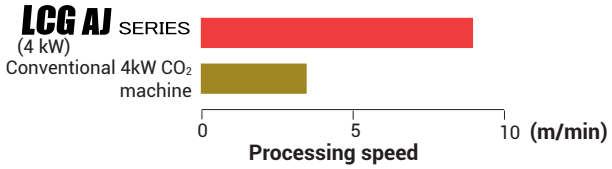


Material: Mild steel, 1.2 mm
Dimension: 68.0 x 176.0 mm

Material: Mild steel, 9.0 mm
Dimension: 104.7 x 90.0 mm

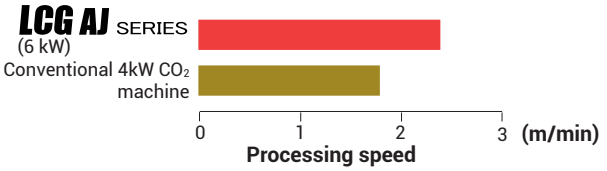
PRODUCTIVITY COMPARISON

34.7% TIME REDUCTION



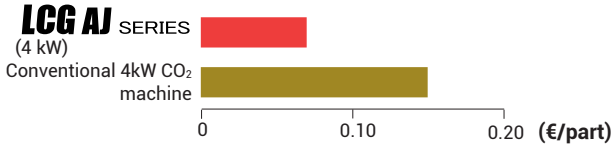
PRODUCTIVITY COMPARISON

25% TIME REDUCTION



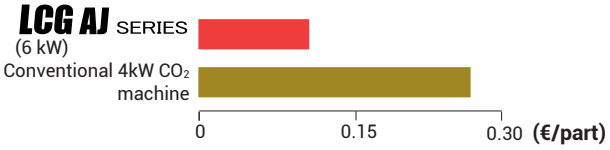
RUNNING COST COMPARISON

53.3% COST REDUCTION PER PART



RUNNING COST COMPARISON

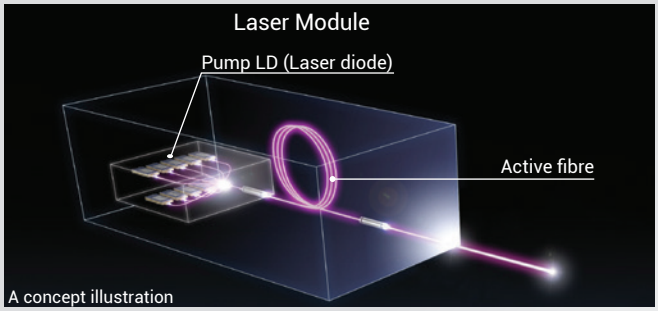
59% COST REDUCTION PER PART



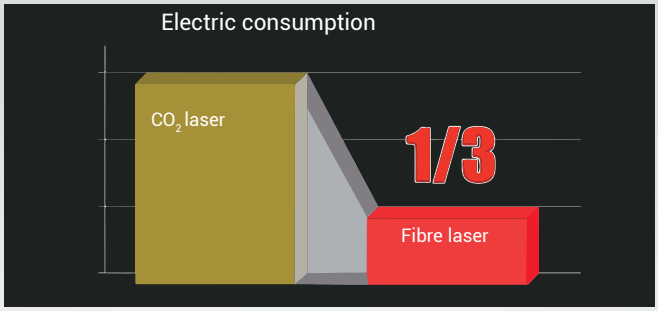
Running costs include assist gases, electricity and consumables. Cost of electricity for compressor added where appropriate when air is used as an assist gas.

A NEW BENCHMARK IN COST EFFECTIVE FIBRE LASERS

ENERGY CONSERVATION AND COST REDUCTION

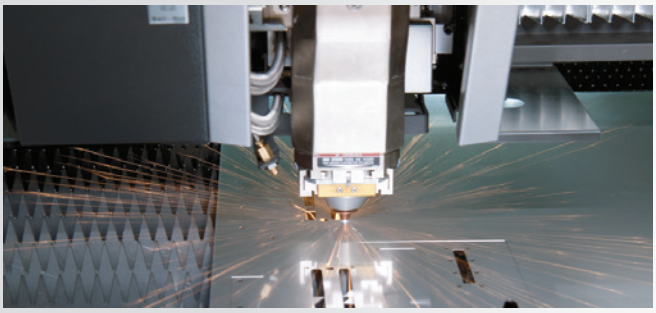


The construction of the fibre laser oscillator and optical transport of the laser beam is less complex than a CO_2 system. This drastically reduces the maintenance requirements of the oscillator and optical parts.



AMADA's fibre laser has a higher energy conversion and 3 times higher energy efficiency than a CO_2 laser. Power consumption of the oscillator is also substantially reduced. There is no need for warm-up operations or laser gas, providing a running cost saving of at least 70%.

AMADA DEVELOPED FIBRE LASER OSCILLATOR



AMADA was the world's first laser manufacturer to develop its own fibre laser oscillator. In a CO_2 laser oscillator, laser light is pumped with laser-gas, emitted via the output mirror and delivered by reflector mirrors to the cutting head. The fibre laser oscillator has no need for this. The monolithic structure allows the laser power produced by the individual laser diode banks to be combined into a single fibre optic cable for direct delivery to the cutting head.

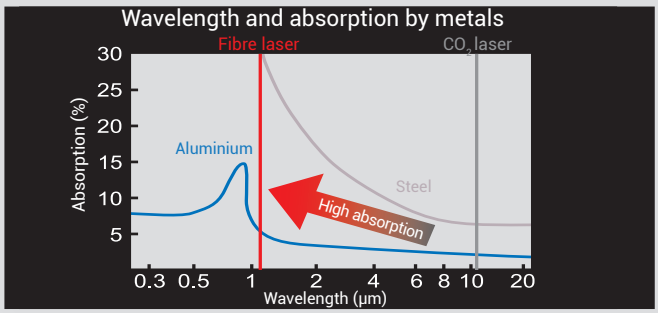
In order to enhance the production of fibre laser oscillators at AMADA's Fujinomiya facility and to meet ever increasing demand, clean rooms have been created specifically for production and assembly operations.

AMADA DIGITAL SUPPORT SYSTEM (ADSS)

The AMADA Digital Support System ensures maximum uptime by constantly monitoring the LCG-AJ and the AMADA fibre laser engine, allowing for a proactive approach to maintenance. Potential issues can be highlighted and fixed by our highly trained service personnel without any customer request, before they become a production issue.

HIGH QUALITY PROCESSING OF HIGHLY REFLECTIVE MATERIALS

PROCESS RANGE EXPANSION

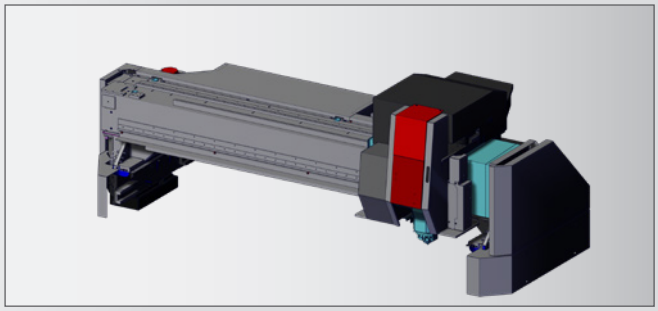


The fibre laser has a shorter wavelength and is 3 to 4 times more easily absorbed than traditional CO_2 lasers.

This enables high-quality processing of highly-reflective, difficult to process materials such as aluminium, brass, copper and titanium.

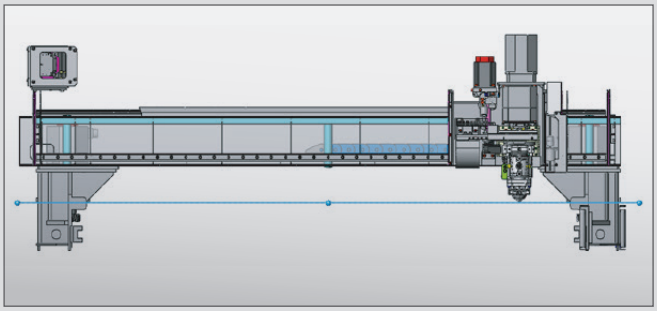
HIGH SPEED PROCESSING OF THIN TO MEDIUM THICK MATERIALS

A CARRIAGE WITH A LOW CENTRE OF GRAVITY AND THE LATEST DRIVE MECHANISM



Lightweight Y-axis carriage

Higher speed is achieved by a 30% reduction in mass of the Y-axis carriage compared with a conventional laser machine.

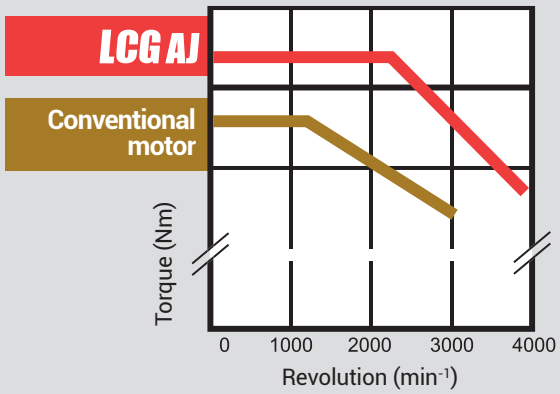


Carriage with a low centre of gravity

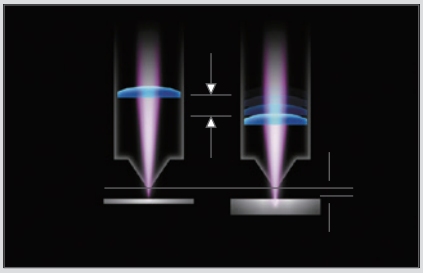
The Y-axis carriage has a low centre of gravity due to a Z-axis height of 100 mm, allowing high speed processing of thin materials.

Highly dynamic drive technology with torque motors

The perfectly coordinated drive system enables high positioning speeds and high acceleration with maximum accuracy.

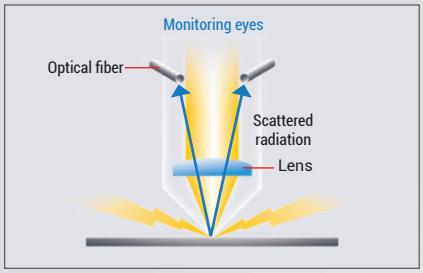


FUNCTIONS AND OPTIONAL EQUIPMENT



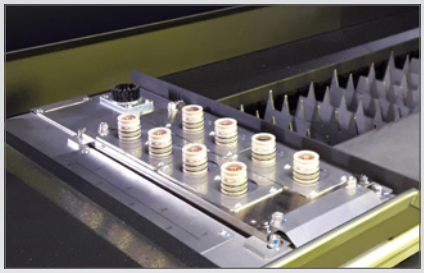
Motorised Auto Focus Control System

The optimum focal point is automatically set from the cutting database to suit each material. A constant focus is maintained, ensuring optimum laser beam quality and reduced assist gas costs.



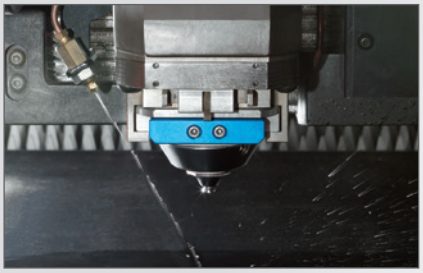
Laser Cutting Process Monitoring

The laser cutting process is constantly monitored for piercing, gouging, plasma, and other cutting defects to ensure constant and stable cutting.



Automatic Nozzle Changer

To ensure fully automatic operation, the LCG-AJ is equipped with a multiple station nozzle change system which includes a nozzle cleaning and head calibration unit.

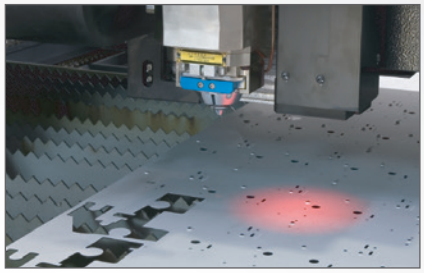


Oil Shot

Before piercing medium thickness sheets, oil is sprayed on the material to prevent spatter build-up, improve processing quality and achieve stable processing.

WACS II

While cutting thick material, water is sprayed on the material to reduce the thermal effect of cutting, prevent cutting defects, and improve the material yield.



OVS IV

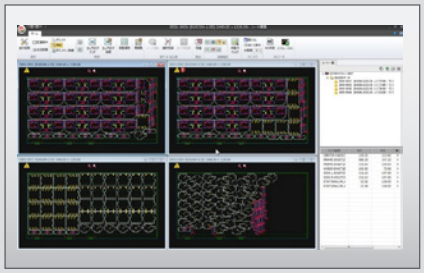
The OVS IV system measures the pitch of two reference holes and automatically compensates for any origin deviation when transferring a sheet of parts from the punch machine. The pitch and circularity of the cut holes are also measured. When the measured values fall outside the specified limits, an alarm is activated.

AUTOMATION OPTIONS

The machine is supplied with a 2 pallet shuttle table as standard

Single Pallet Load\Unload System (MPF)
A simple, fully automated system incorporating a single material pack and front unload table to allow continuous scheduled processing. Material is automatically loaded into the cutting beds and finished parts unloaded with a fork style manipulator.
Only available for 3015 models.

Load\Unload Tower
A fully automated tower system incorporating multiple raw material and finished parts pallets to allow continuous scheduled processing. Parts and material can be loaded/ unloaded without interrupting the laser cutting cycle.



CAD/CAM

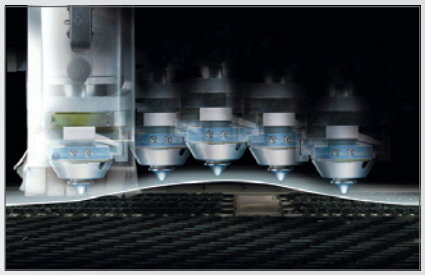
This fully automatic CAM system nests all the user defined parts and quantities, applies punch tooling/laser profiles, defines the processing sequence and generates the NC program. Increase productivity for your punch, laser or combination machines.

AMNC 3i NC

The LCG-AJ is equipped with the AMNC 3i NC and a new touch screen interface providing comfortable operation and impressive ergonomics. It enables simple, intuitive ease of use and fits perfectly into the VPSS 3i digital suite concept.

X-Direction Conveyor

Scrap and small parts are unloaded in the X direction by the conveyor installed in the frame of the laser machine.

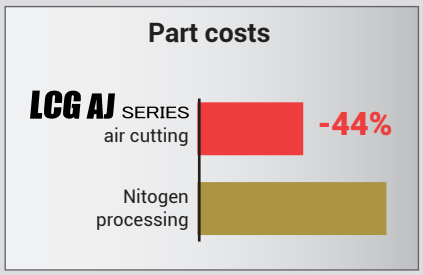


HS Capacitance Head

In order to ensure reliable processing, the LCG-AJ is equipped with AMADA's latest HS capacitance sensing head. This smoothly and quickly follows the sheet profile to maintain a consistent cut even when the sheet is not 100% flat.

Front and Side Access

To allow the most flexible access to the cutting area, the LCG-AJ fibre laser is equipped with front and side opening doors.



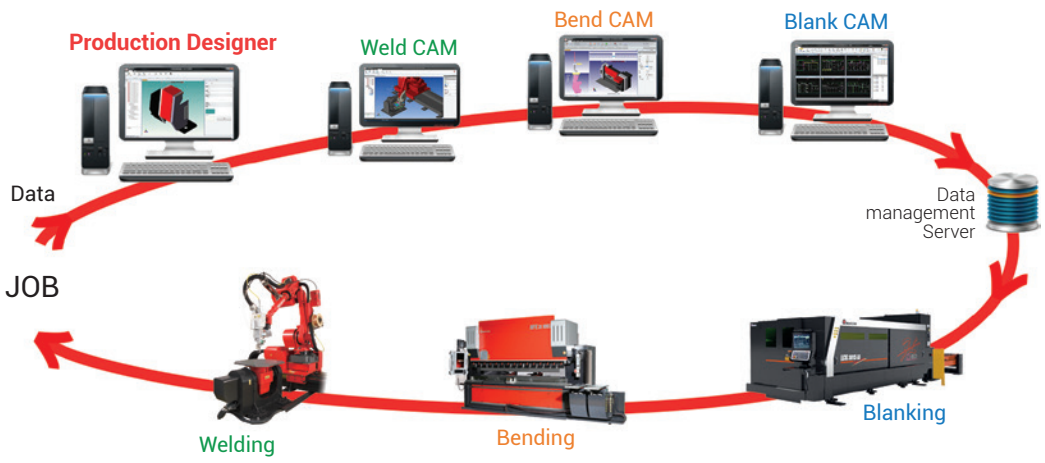
Compressed Air Cutting

To keep part cost to a minimum, AMADA fibre lasers allow you to process many materials with the standard compressed air cutting system, giving high quality results. Assist gas costs are, therefore, zero.

THE SHEET METAL DIGITAL FACTORY

AMADA proposes digital manufacturing using VPSS (Virtual Prototype Simulation System).

All data is created in the office and utilised in the workshop via a network.



DIMENSIONS

LCG-3015 AJ + shuttle table (LST)

2 kW / 3 kW / 4 kW / 6 kW
(L) 10136 x (W) 2840 x (H) 2432

9 kW
(L) 10136 x (W) 2840 x (H) 2730

Unit : mm

LCG-4020 AJ + shuttle table (LST)

2 kW / 3 kW / 4 kW / 6kW
(L) 12111x (W) 3340 x (H) 2432

9 kW
(L) 12111 x (W) 3340 x (H) 2730

MACHINE SPECIFICATIONS

			LCG-3015 AJ	LCG-4020 AJ
Numerical Control			AMNC 3i	
Controlled Axis			X, Y, Z axes (three axes controlled simultaneously) + B axis	
Axis travel distance	X x Y x Z	mm	3070 × 1550 × 100	4070 x 2050 x 100
Maximum processing dimensions	X x Y	mm	3070 × 1550	4070 x 2050
Maximum simultaneous feed rate	X/Y	m/min	170	
Repeatable positioning accuracy		mm	± 0.01	
Maximum material mass		kg	920	1570
Processing surface height		mm	940	
Machine mass (main unit only)	2kW or 3kW 4kW 6kW 9kW	kg	9100 9300 9500 9600	12200 12400 12600 12700

OSCILLATOR SPECIFICATIONS

			AJ-2000	AJ-3000	AJ-4000	AJ-6000	AJ-9000
Beam generation			Laser diode-pumped fibre laser				
Maximum power		W	2000	3000	4000	6000	9000
Wavelength		µm	1.08				
Maximum processing thickness*	Mild steel Stainless steel Aluminium Brass Copper Titanium	mm	16 10 8 5 4 5	18 15 12 8 6 5	20 18 16 10 8 10	20 25 25 15 12 10	20 25 25 18 12 15

* Maximum value depends on material quality and environmental conditions

SHUTTLE TABLE SPECIFICATIONS

LST-E			LCG-3015 AJ	LCG-4020 AJ
Maximum material dimensions	X x Y	mm	3070 × 1550	4070 x 2050
Number of pallets			2	

Specifications, appearance, options and equipment are subject to change without notice by reason of improvement.

For your safe use
Be sure to read the user manual carefully before use.
When using this product, appropriate personal protection equipment must be used.

Laser class 1 when operated in accordance to EN 60825-1

The official model name of the machines and units described in this catalogue are non-hyphenated like LCG3015AJ. Use this registered model names when you contact the authorities for applying for installation, exporting, or financing.
The hyphenated spellings like LCG-3015 AJ are used in some portions of the catalogue for sake of readability. This also applies to other machines.
Hazard prevention measures are removed in the photos used in this catalogue.

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