SOLUTION

LASER CUTTING

LCG AJ SERIES

A NEW BENCHMARK IN PRICE-PERFORMANCE FIBRE LASER CUTTING




AMADA

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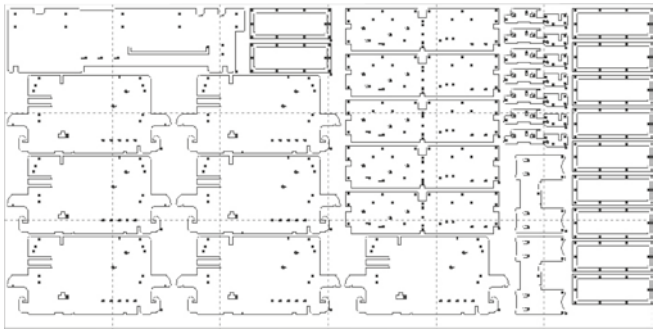
THE PERFECT BALANCE OF LOW ENERGY USAGE AND HIGH SPEED PRODUCTIVITY

AMADA, A WORLDWIDE LASER MACHINE PIONEER, INTRODUCES THE NEW DIRECT DRIVE FIBRE LASER CUTTING MACHINE, THE LCG AJ

This machine delivers higher speed and faster acceleration processing by utilizing a carriage with a lower centre of gravity and the latest motion system incorporating high torque motors and helical rack drives. Combined with an Amada designed oscillator, the LCG AJ enhances processing speeds and productivity along with the ability to process highly relfective, exotic materials with ease.

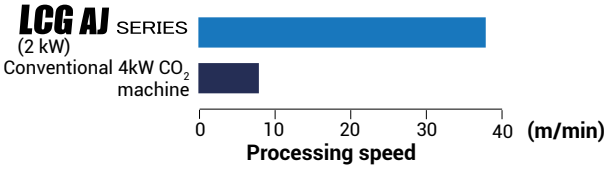
TYPICAL PROCESSING SAMPLES



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

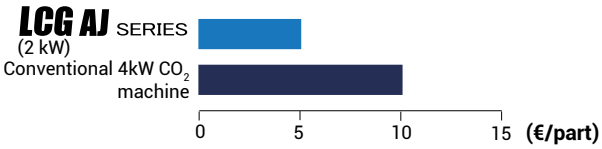
PRODUCTIVITY COMPARISON

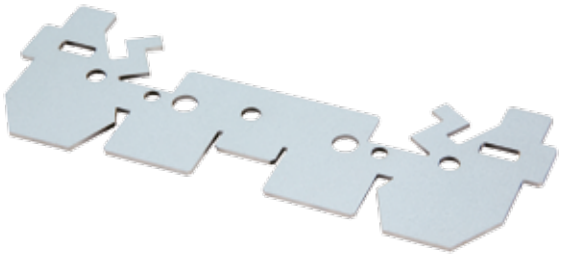
42% TIME REDUCTION



RUNNING COST COMPARISON

50% COST REDUCTION PER PART



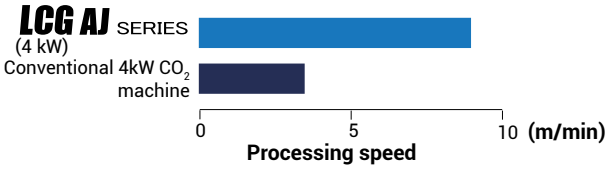


Material: Stainless steel 3.0 mm
Dimension: 68.0 X 176.0 mm

Material: Mild steel 3.0 mm
Dimension: 109.0 X 11.8 mm

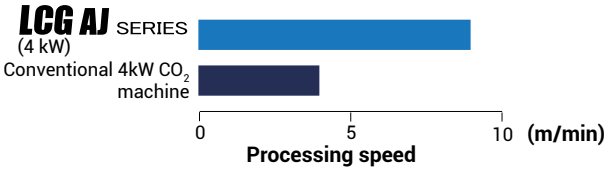
PRODUCTIVITY COMPARISON

40.8% TIME REDUCTION



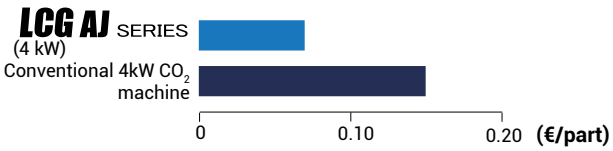
PRODUCTIVITY COMPARISON

28.8% TIME REDUCTION



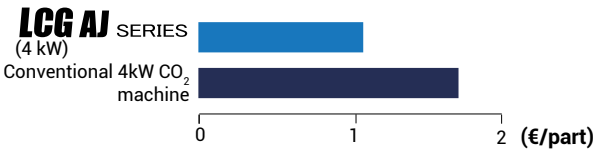
RUNNING COST COMPARISON

53.3% COST REDUCTION PER PART



RUNNING COST COMPARISON

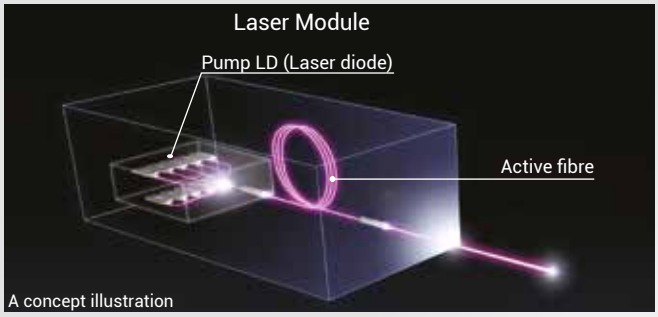
36.6% COST REDUCTION PER PART



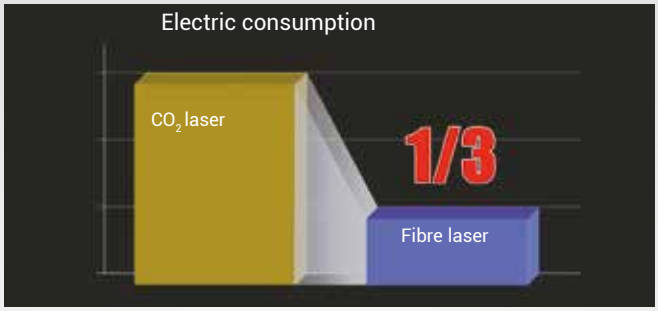
Running costs include assist gases, electricity and consumables. Cost of electricity for compressor added where appropriate when air is used as an assist gas.

A NEW BENCHMARK IN COST EFFECTIVE FIBRE LASERS

ENERGY CONSERVATION AND COST REDUCTION

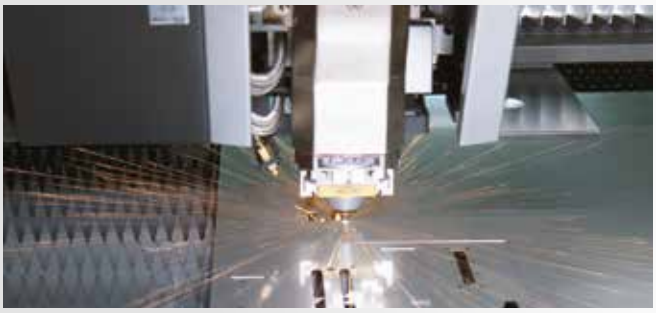


The construction of the fibre laser oscillator and optical transport of the laser beam is less complex than a CO_2 system. This drastically reduces the maintenance requirements of the oscillator and optical parts.



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

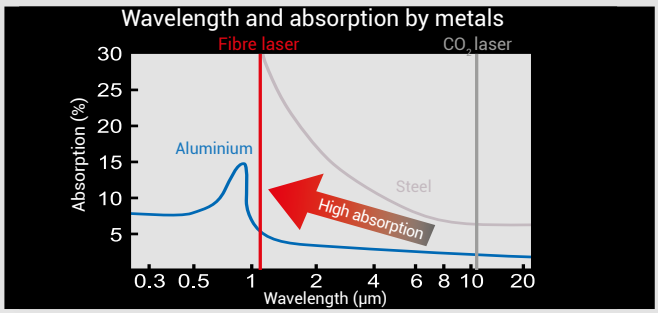


Amada was the world's first laser manufacturer to develop its own fibre laser oscillator. In a CO_2 laser oscillator, laser light is pumped with laser-gas, emitted via the output mirror and delivered by reflector mirrors to the cutting head. The fibre laser oscillator has no need for this. The monolithic structure allows the laser power produced by the individual laser diode banks to be combined into a single fiber 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, 18 clean rooms have been created specifically for production and assembly operations.

HIGH QUALITY PROCESSING OF HIGHLY REFLECTIVE MATERIALS

PROCESS RANGE EXPANSION

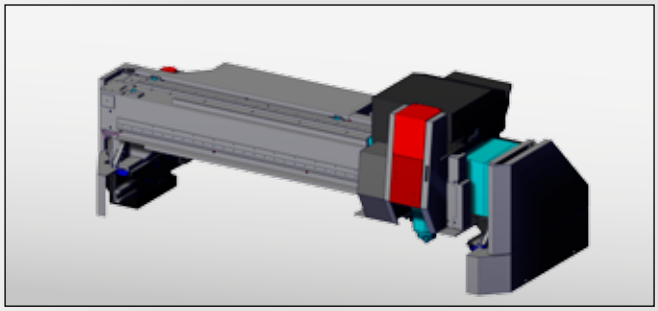


The fibre laser has a shorter wavelength and is 3 to 4 times more easily absorbed than traditional CO_2 lasers.

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

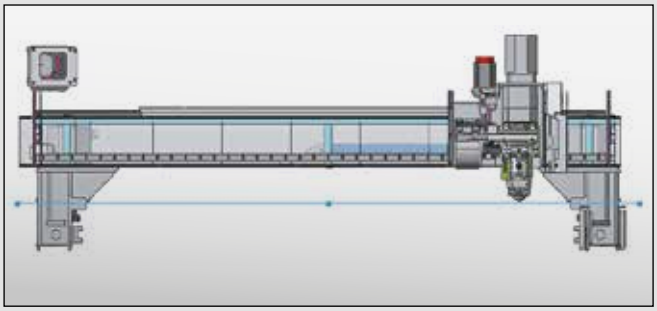
HIGH SPEED PROCESSING OF THIN TO MEDIUM THICK MATERIALS

A CARRIAGE WITH A LOW CENTRE OF GRAVITY AND THE LATEST RIVE 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.

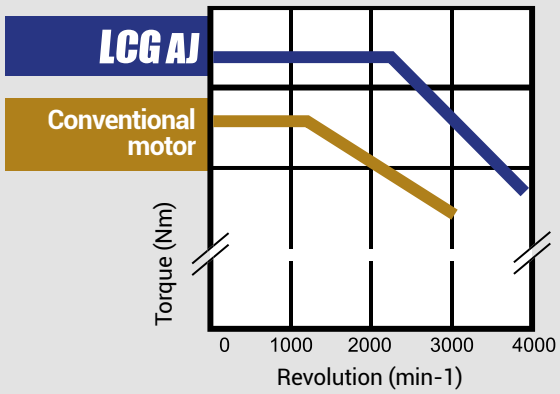


Carriage with a low centre of gravity

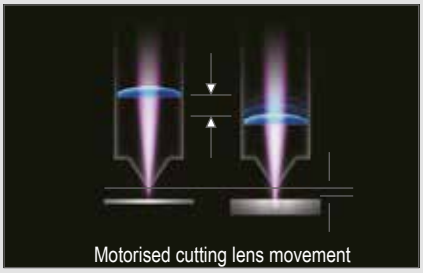
The Y-axis carriage has a low centre of gravity due to a Z-axis height of 100mm, allowing high speed processing of thin materials.

Highly dynamic drive technology with torque motors

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

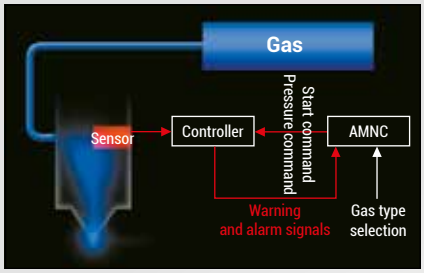


FUNCTIONS AND OPTIONAL EQUIPMENT



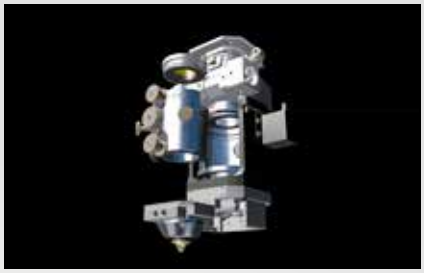
Motorised Auto Focus Control System

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.



High pressure NC assist gas control system

The assist gas selection and pressure is automatically controlled by the NC to suit specific materials. The system is adapted to the processing of various material types and thicknesses.



'One Touch' Lens and Nozzle Exchange

To allow faster machine setup, the cutting head on the LCG AJ is equipped with simple, quick change lens and nozzle cartridges.

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*

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.

* Standard on LCG-4020 AJ

OVS IV

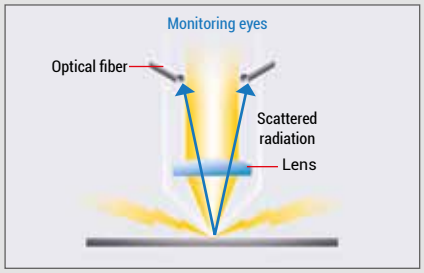
The OVS IV system measures the pitch of two reference holes and automatically compensates for any origin deviation when transferring a sheet of parts from the punch machine. The pitch and circularity of the cut holes are also measured. When the measured values fall outside the specified limits, an alarm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

AUTOMATION OPTIONS (ONLY LCG-3015 AJ)

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.

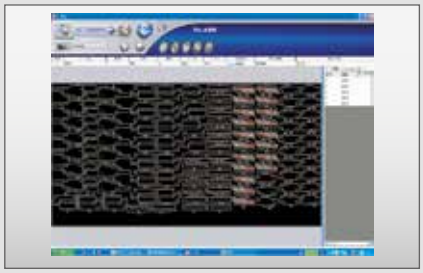
Load\Unload Tower
A fully automated tower system incorporating multiple raw material and finished parts pallets to allow continuous scheduled processing. Parts and material can be loaded\unloaded without interrupting the laser cutting cycle.



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.

* Standard on LCG-4020 AJ

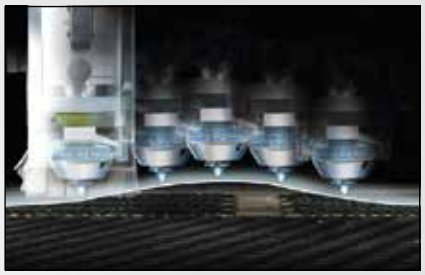


CAD/CAM

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.

Advanced AMNC 3i Control

This user friendly, network-ready NC control is full of Amada's time saving, production orientated features.



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.

Automatic Nozzle Changer

To ensure fully automatic operation, the 4kW LCG AJ is equipped with a multiple station nozzle change system which includes a nozzle cleaning and head calibration unit.

X-direction conveyor *

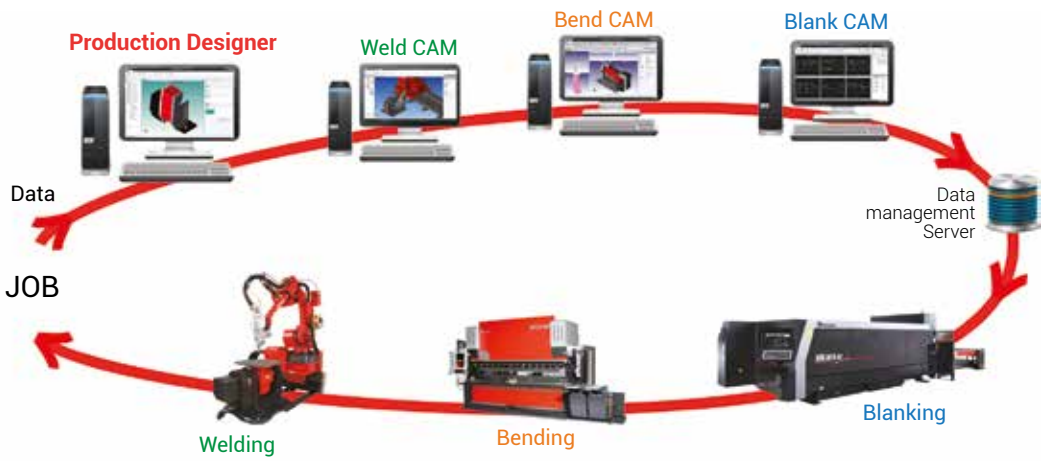
Scrap and small parts are unloaded in the X direction by the conveyor installed in the frame of the laser machine.

* Standard on LCG-4020 AJ

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.

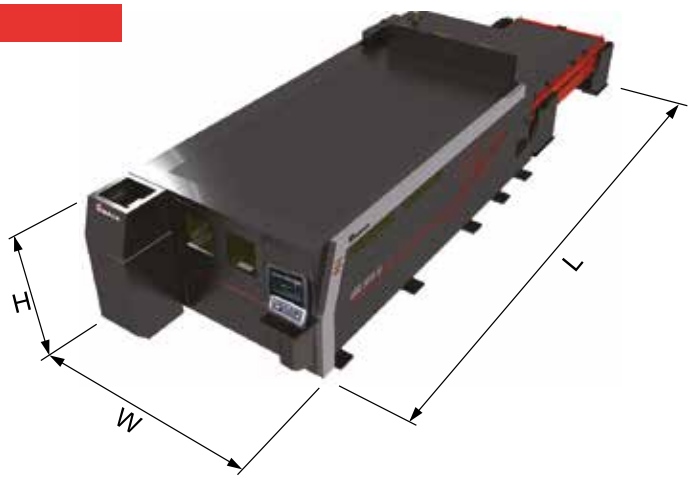


DIMENSIONS

LCG-3015 AJ + shuttle table (LST)
(L) 9997 x (W) 2840 x (H) 2140

LCG-4020 AJ + shuttle table (LST)
(L) 11846 x (W) 3340 x (H) 2340

Unit : mm



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	
Positioning accuracy		mm	± 0.1	
Maximum material mass		kg	920	1570
Processing surface height		mm	840	940
Machine mass		kg	11000	12370

SHUTTLE TABLE SPECIFICATIONS

LST			LCG-3015 AJ	LCG-4020 AJ
Maximum material dimensions	X x Y	mm	3050 × 1525	4050 x 2030
Number of pallets			2	

OSCILLATOR SPECIFICATIONS

			AJ-2000	AJ-4000
Beam generation			Laser diode-pumped fibre laser	
Maximum power		W	2000	4000
Wavelength		µm	1.08	
Maximum processing thickness	Mild steel	mm	16	20
	Stainless steel		10	18
	Aluminium		8	16
	Brass		4	8
	Copper		5	8

Specifications, appearance 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.

This laser product uses a Class 4 invisible laser for processing and a Class 3R visible laser for positioning.
Class 4 invisible laser: avoid eye or skin exposure or direct or scattered radiation. Never look into the laser beam or allow skin contact.
Class 3R visible laser: avoid direct eye exposure.

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.

AMADA UK LTD.
Spennells Valley Road,
Kidderminster,
Worcestershire DY10 1XS
United Kingdom
Tel: +44 (0)1562 749500
Fax: +44 (0)1562 749510
www.amada.co.uk

AMADA SA
Paris Nord II
96, avenue de la Pyramide
F-93290 Tremblay
France
Tél : +33 (0)149903000
Fax : +33 (0)149903199
www.amada.fr

AMADA GmbH
Amada Allee 1
42781 Haan
Germany

Tel: +49 (0)2104 2126-0
Fax: +49 (0)2104 2126-999
www.amada.de

AMADA ITALIA S.r.l.
Via Amada I., 1/3
29010 Pontenure (PC)
Italia

Tel: +39 (0)523-872111
Fax: +39 (0)523-872101
www.amada.it