SOLUTION

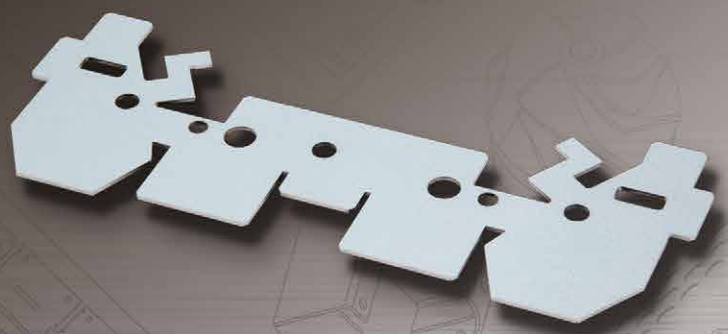
VPSS
Virtual Prototype Simulation System

A new benchmark
in price-performance
fibre laser cutting

LCG 3015 AJ

Fiber Laser

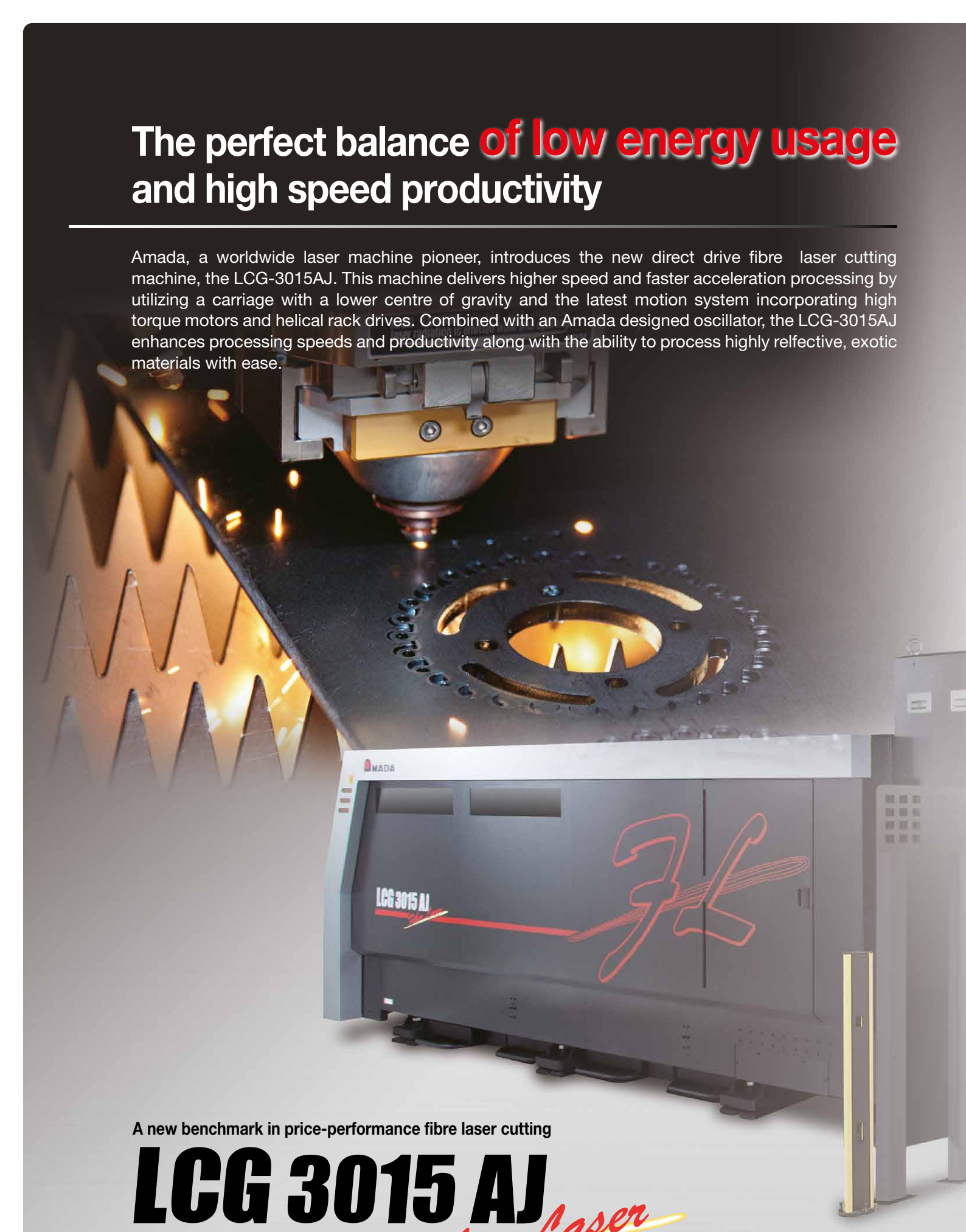
Laser Cutting



AMADA

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-3015AJ. 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-3015AJ enhances processing speeds and productivity along with the ability to process highly relfective, exotic materials with ease.



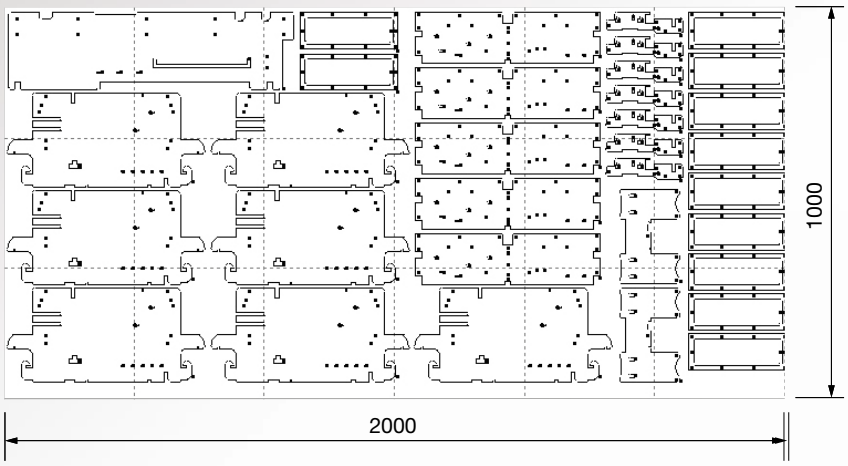
A new benchmark in price-performance fibre laser cutting

LCG 3015 AJ

Fiber Laser

Typical Processing Samples
(productivity comparison with a conventional machine)

Processing time and running costs per sheet

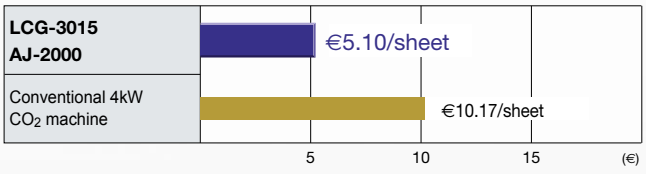


Material	Stainless steel 304
Thickness	1.0 mm
Material size	2000x1000 mm
Assist gas	Nitrogen

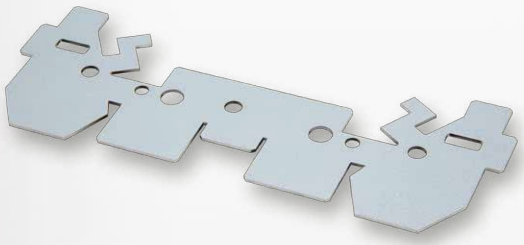
Productivity Comparison
Processing time reduced by 42%

	LCG-3015 AJ-2000	Conventional 4kW CO_2 machine
Processing speed	**38 m/min**	8 m/min

Running Cost Comparison
50% cost reduction per sheet



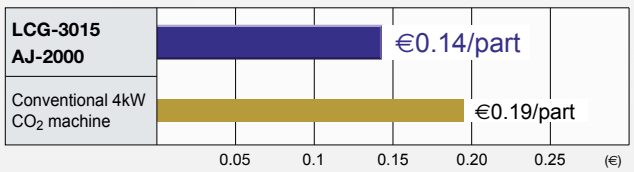
Material: Galvanised steel, 1.2 mm
Size: 68.0 x 176.0 mm



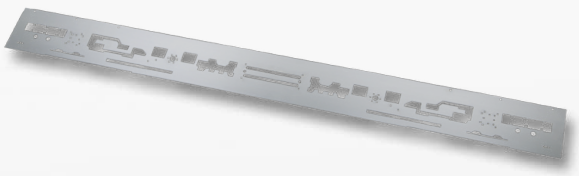
Processing Time Comparison
Processing time reduced by 34.7%

	LCG-3015 AJ-2000	Conventional 4kW CO_2 machine
Processing speed	**25 m/min**	7 m/min

Running Cost Comparison
26.3 % cost reduction per part



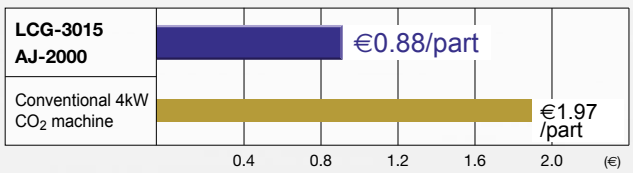
Material: Mild steel, 1.0 mm
Size: 109.0 x 118.0 mm



Processing Time Comparison
Processing time reduced by 46.5%

	LCG-3015 AF-3500i-C	Conventional 4kW CO_2 machine
Processing speed	**30 m/min**	6.8 m/min

Running Cost Comparison
55.3 % 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.

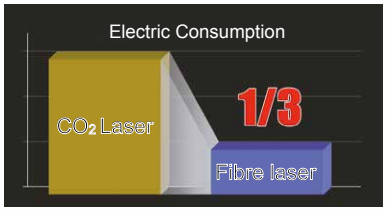
LCG-3015AJ New Technology

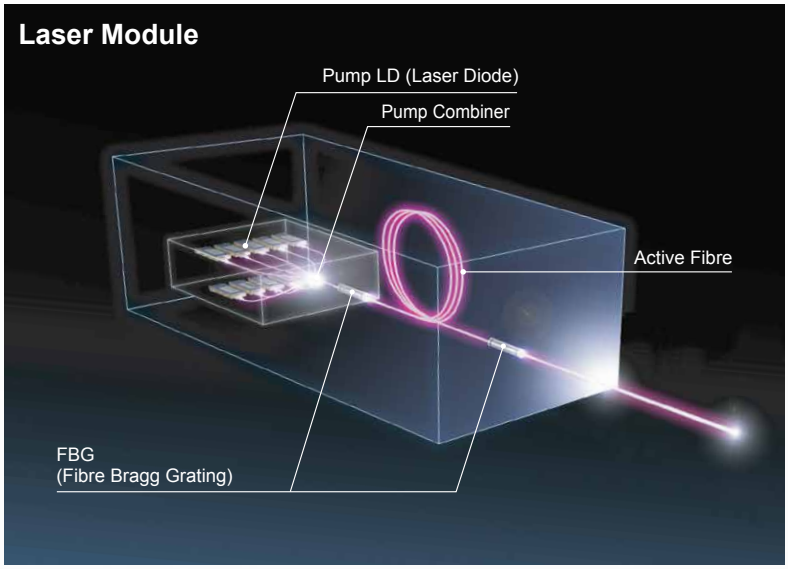
1 A new benchmark in cost effective fibre lasers

Energy conservation and cost reduction

❶ 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 cost of the oscillator and optical parts.

❷ 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%.



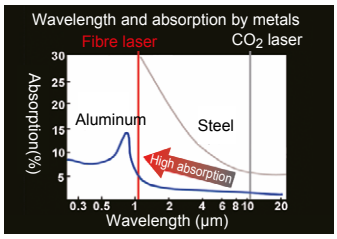


Concept illustration.

2 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.



3 Amada developed fibre laser oscillator

Amada Is The World's First Laser Machine Manufacturer To Develop It's 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.

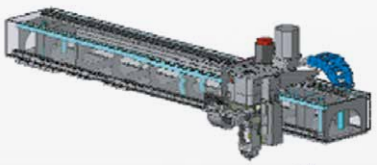
Fibre laser oscillator AJ-2000

4 High Speed Processing Of Thin To Medium Thick Materials

A Carriage With A Low Centre Of Gravity And The Latest Drive Mechanism

A carriage with a low centre of gravity and the latest drive mechanism
Rapid feed rate: 170 m/min (combined X&Y axes). The fastest in class.

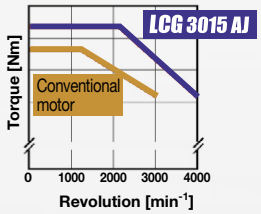
❶ **Lightweight Y-axis carriage**
Higher speed is achieved by a 30% reduction in mass of the Y-axis carriage compared with a conventional laser machine.



❷ **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.

❸ **High torque motors and helical rack drive**
The latest motion system incorporating high torque motors and a helical rack drive is utilized to ensure high speed, smooth acceleration.

Helical rack system

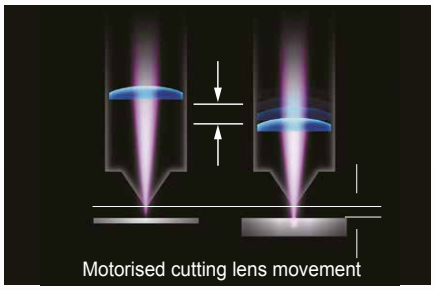


Other Functions and Options

options

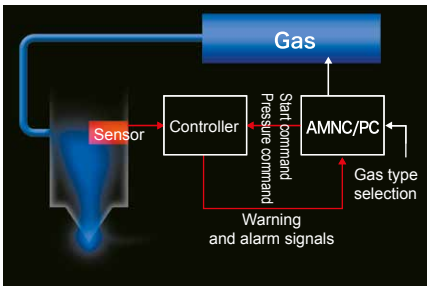
NC Auto Focus Control System and Active Cut

The optimum focal point is automatically set from the cutting database to suit each material. The curvature of the mirrors is altered to keep a constant focus, ensuring optimum laser beam quality and reduced assist gas costs.



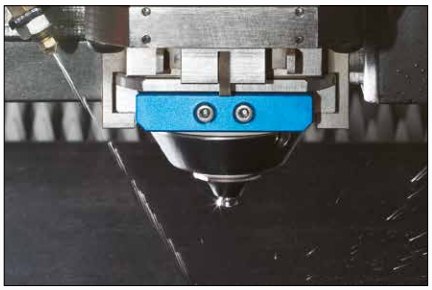
High Pressure NC Gas Control System

The assist gas pressure is automatically controlled for the entire range of materials and thicknesses being processed.



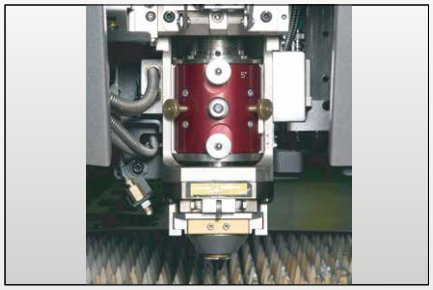
Oil Shot

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



'One Touch' Lens and Nozzle Exchange

To allow faster machine setup, the cutting head on the LCG-3015AJ is equipped with simple, quick change lens and nozzle cartridges.



Cutting Lenses

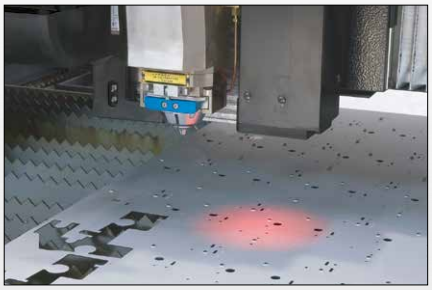
As standard, the LCG-3015AJ is supplied with 3 cutting lenses.

・150mm lens assembly (including lens holder)
・190mm lens assembly (including lens holder)
・190AXmm lens assembly (including lens holder)

OVS IV

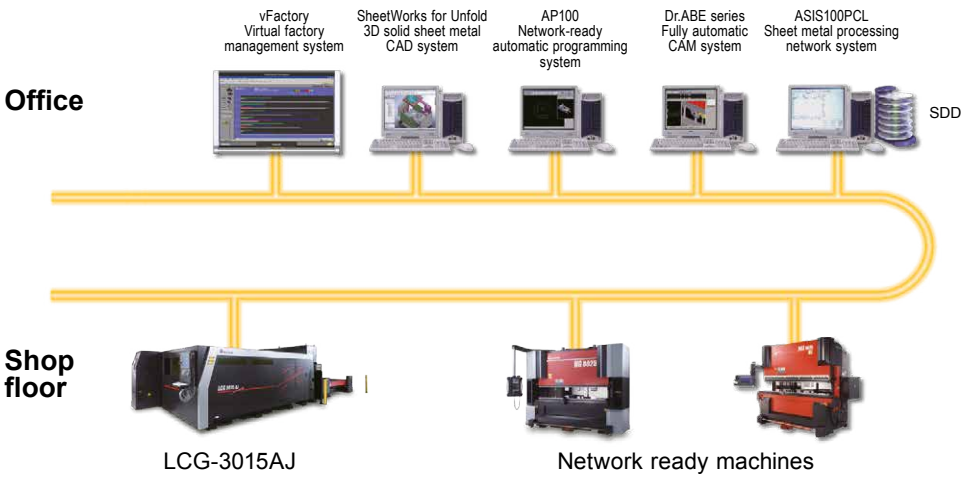
options

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.



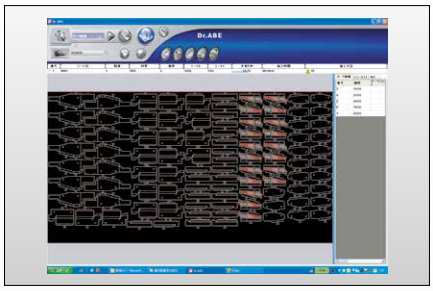
Network Diagram

Amada has developed the VPSS (Virtual Prototype Simulation System) digital manufacturing solution to ensure the seamless flow of production data between the programming office and the shop floor. Amada's CADCAM systems are directly linked to the machines via the SDD database across the computer network. This solution ensures reduced programming times and increased productivity.



Dr. ABE Blank

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/PC Control

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

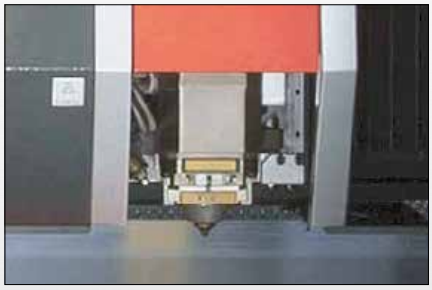
Dust Collector

Efficiently collects any dust and particles generated during the cutting process to ensure a clean working environment.

*For illustrative purposes only

HS Capacitance Head

In order to ensure reliable processing, the LCG-3015AJ 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.



Hyper (HP) EZ Cut

This simple nitrogen generating system allows customers to use compressed air to achieve cutting results comparable to using pure nitrogen. The system generates 95 to 97% pure nitrogen at a fraction of the cost of a dedicated nitrogen supply.

Bar Code Reader

The LCG-3015AJ can be equipped with a bar code reader to allow reliable recall of programming data on the shop floor. By scanning the setup sheet from the Dr. ABE Blank CAM system, the operator ensures the correct, latest version of the program is loaded into the machine control.

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.

• For illustrative purposes only

Load/Unload Tower (ASF-EU)

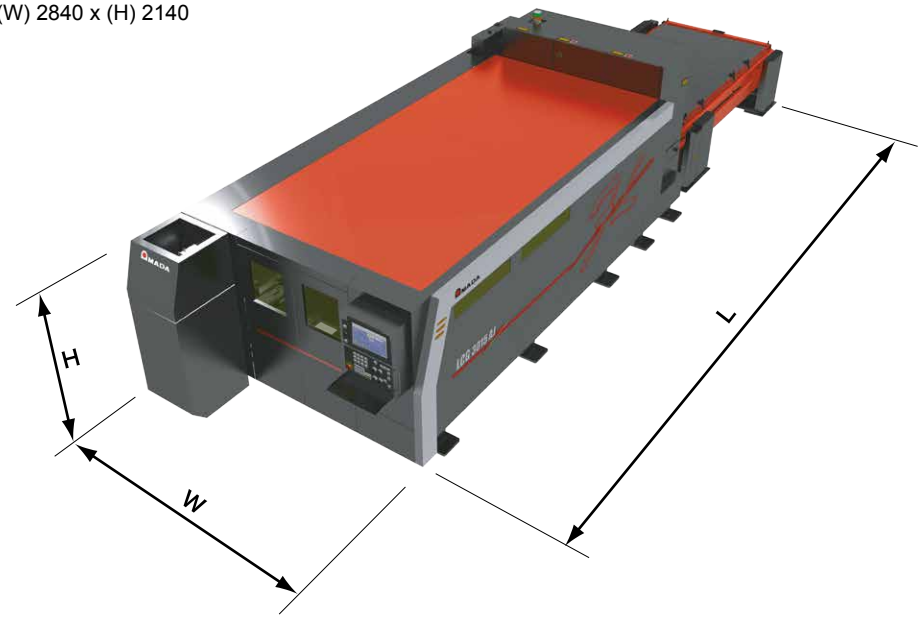
A fully automated tower system incorporating multiple raw material and finished parts pallets to allow continuous scheduled processing. Parts and material can be loaded\unloaded without interrupting the laser cutting cycle.

• For illustrative purposes only

■ Machine Dimensions

Unit : mm

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



■ Machine specifications*

Model		LCG-3015AJ
NC		AMNC/PC
Oscillator		AJ-2000
Axis travel method	X/Y axes	Helical rack
	Z axis	Ball screw
Axis control method		X, Y, Z axes (three axes controlled simultaneously) + B axis
Axis travel distance	mm	(X) 3070 × (Y) 1550 × (Z) 100
Maximum processing dimensions	mm	(X) 3070 × (Y) 1550 × (Z) 100
Rapid feed rate: Combination of X&Y	m/min	170
Positioning accuracy**	mm	+/- 0.01
Repeatable positioning accuracy**	mm	+/- 0.005
Processing feed rate, X x Y	m/min	(0 ~ 120) × (0 ~ 120)
Least input increment	mm	0.001
Maximum material mass	kg	920
Processing surface height	mm	840
Mass of machine (main unit only)	kg	11000

■ Shuttle table specifications*

Model		LST-3015
Maximum material dimensions	mm	(X) 3050 × (Y) 1525
Number of pallets		2
Working surface height	mm	840
Maximum material mass	kg	920
Skid pitch	mm	75

■ Oscillator specifications*

Model		AJ-2000
Beam generation		Laser diode-pumped fibre laser
Maximum power	W	2000
Stability	%	+/- 2.00
Pulse peak power	W	2000
Pulse frequency	Hz	1 ~ 10000
Duty	%	1 ~ 100
Wavelength	μm	1.08

For Your Safe Use
Be sure to read the operator's 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.**

* Specifications, appearance and equipment are subject to change without notice by reason of improvement.
** Specifications of accuracy are in conformance with the VDI/DGQ 3441.
The accuracy of the workpiece and the thickness of the material that can be cut, is dependent on the cutting conditions, the material, the type of workpiece, its pretreatment, the size of the panel as well as the position in the working area.

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-3015AJ 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 UNITED KINGDOM 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 GmbH
Amada Allee 1
42781 Haan - Germany
Telefon: +49 (0)2104 2126-0
Fax: +49 (0)2104 2126-999
www.amada.de

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 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

E051-EU01en
Apr 2014