

LOW ENERGY CONSUMPTION, HIGH-SPEED PRODUCTIVITY

LCG 3015 AJ

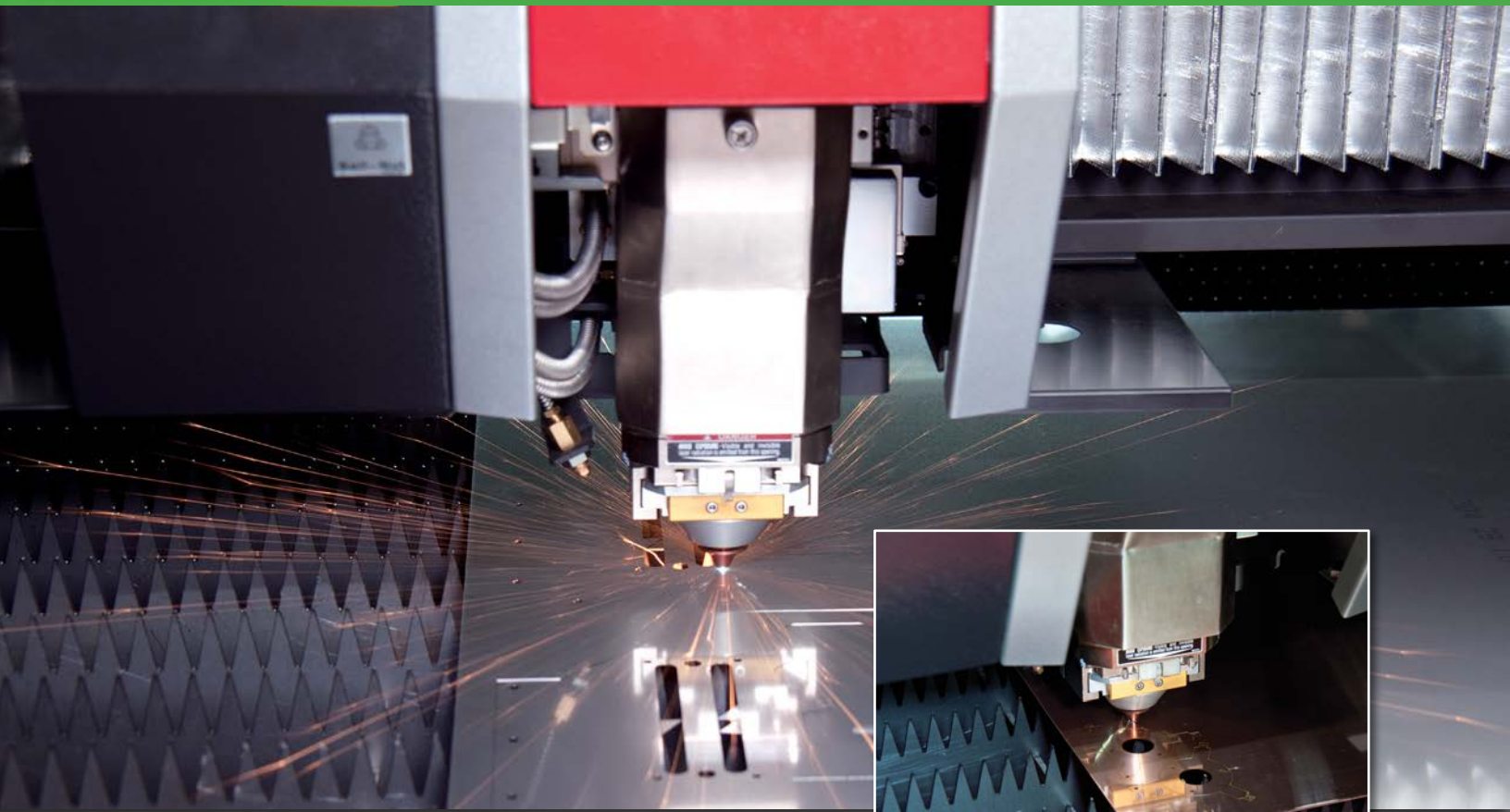
Fiber Laser Cutting System



LCG 3015 AJ

Fiber Laser





DEVELOPMENT CONCEPT

The LCG 3015 AJ is the latest addition to Amada's line of fiber laser cutting systems — available in 2kW, 4kW, and 6kW. The LCG AJ was developed with Amada's proven fiber laser technology. This technology helps achieve Process Range Expansion (P.R.E.) by having the ability to process brass, copper, and titanium — materials that can be difficult to process with a CO₂ laser.

The LCG AJ is a true flying optic laser system — the material remains stationary as the cutting head moves on all three axes (X, Y & Z) to process the sheet. This translates into increased productivity and accurate parts at higher cutting speeds.

The LCG AJ is built to adapt to the evolving production environment of manufacturers. The cutting head is propelled by a dynamic motion system that achieves the accelerations and rapid traverse speeds of more expensive linear drive motion systems.

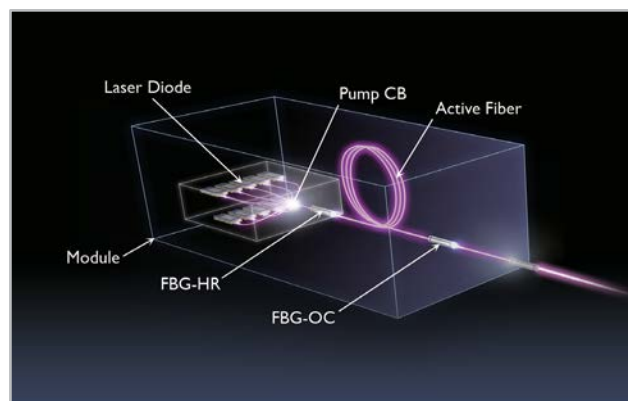
Additionally, the LCG AJ can be fully automated with a variety of material handling options designed and manufactured by Amada.

With an innovative motion system and advanced structural design, the LCG AJ represents an optimal balance of cut speed, positioning acceleration, and overall accuracy.

THE LATEST FIBER TECHNOLOGY

Amada was the first laser manufacturer to engineer and build their own fiber laser source specifically for sheet metal processing. Compared to the previous generation, Amada's current fiber engine uses 60% fewer laser diodes and 75% fewer modules to generate the same amount of power. The reduction in diodes and modules allow the fiber engine to achieve an industry-leading wall plug efficiency and a maximum light conversion efficiency of 75%. When compared to a CO₂ laser system, an Amada fiber laser is over 3 times more efficient and uses 1/3rd of the electricity.

Amada's simplified fiber engine design does not require laser gas, mirrors, or any other items typically associated with CO₂ beam generation. A single fiber optic delivery cable to the laser cutting head eliminates the need for additional external mirrors.

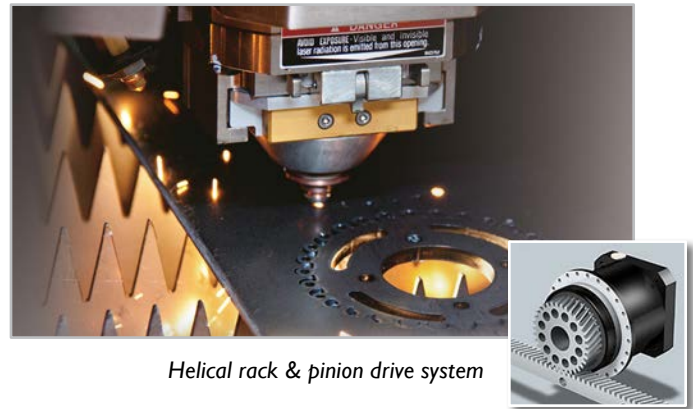


Amada's fiber laser module

ENCLOSURE & DRIVE SYSTEM

The LCG AJ includes a full enclosure that surrounds the entire cutting area with access for part removal. This design protects the operator from gantry movement and the shorter wavelengths associated with fiber lasers. Also, the enclosure helps contain fumes for efficient dust collection and ensures a clean shop environment.

The LCG AJ utilizes a helical rack and pinion drive system for both the X and Y axes, while the Z-axis is equipped with a high-precision ball screw. This innovative drive system allows for higher acceleration and rapid traverse speeds compared to traditional rack and pinion systems. The helical design also ensures smooth and quiet motion.



Helical rack & pinion drive system

DUST COLLECTION



Sectionalized Dust Collection System

Specifically designed to handle high-speed operation, the LCG AJ is also engineered to maximize safety. The area beneath the cutting table is divided into four sections. During the cutting process, only the ducts directly beneath the cutting head are open for fume extraction. The ducts in the other sections remain closed to improve dust collection.

AMNC 3i CONTROL

With an upgraded processor, the AMNC 3i is the fastest Amada control available. The large touchscreen allows users to easily see more information and load programs based on filename. Thumbnail views of parts or nests provide for quick and easy identification. Also, the large screen ensures that shop floor editing of a program fast and efficient.

- 21.5" touchscreen display with 16:9 aspect ratio
- Simplified operation panel
- Amada automation system controls integrate into the AMNC 3i interface
- Network ready
- Limit control functions based on user level
- Optimized cutting data library
- Quick and easy control of feed, power, duty cycle, frequency, gas selection, and pressure control



Parts layout



Work history



Inspection

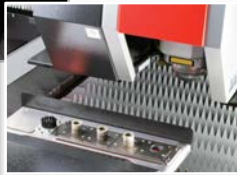
BEAM DELIVERY SYSTEM



The beam delivery system is a simplified design that takes the laser beam from the oscillator to the cutting head via a single fiber cable called the Process Fiber. From there, Amada incorporates a simple, but effective optic system that allows for maximum beam control to the cutting lens. The result is the ability to achieve a high-quality edge on thick materials that rivals most high-powered CO₂ lasers.



Nozzle cleaner



Nozzle changer

Features and Benefits of The High-Speed Cutting Head

- Increased sensing speed for faster cutting and plasma resistance in thin materials
- Lens burn detection stops the machine and alerts the operator of possible damage to the cutting lens
- Auto nozzle cleaning and head calibration
- Auto nozzle changer (4kW and 6kW only)



Quick Setup

Engineered for simplified setup, the lens and nozzle can be easily removed and installed without tools, wires or air lines. Costly downtime and extended setups are eliminated.

TURN-KEY SOLUTION

The LCG 3015 AJ is a complete, turn-key solution. All of the items necessary for installation, training, and production are included with the purchase of the machine. All components are serviced and supported by Amada's highly-trained service personnel.

Items Included

- AMNC 3i Control
- Interlocked enclosure
- NC assist gas
- B-axis NC focus
- Integrated beam purge
- 150 mm lens, 190 mm lens
- High-speed cutting head
- Active Cut
- Clean Cut™
- Dust collector
- Chiller
- Hoses
- Duct kit
- Gas lines and regulator



ADVANTAGES OF FIBER LASER TECHNOLOGY

- **Lower Operating Costs**
 - No spatial cavity in oscillator
 - More efficient processing
- **Expanded Capabilities**
 - 1.08 μm wavelength: Better beam absorption
 - Cuts copper, brass, and titanium
- **Lower Maintenance**
 - No mirrors in the laser source
 - Simplified laser generation

ADVANTAGES OF AMADA'S FIBER LASER

- **Proven Performance**
 - Since 2006, the development and real-world application of Amada's fiber lasers has resulted in proven performance and reliability
- **System Integration**
 - State-of-the-art AMNC 3i control with user-friendly graphical interface
 - Helical rack & pinion drive system provides higher acceleration and rapid traverse speeds

ENVIRONMENTAL ADVANTAGES

- **Energy Efficient**
 - 3-4 times more energy efficient than typical CO₂ lasers
 - A smaller, more efficient chiller reduces environmental impact
- **Elimination of Harmful Emissions**
 - Solid-state technology does not require gas to generate the laser beam

MODULAR AUTOMATION FOR AN EVER-CHANGING MARKET

With the dramatic increase in productivity of the LCG AJ, material handling is more important than ever to realize full machine potential. Amada offers a variety of modular automation options that let you configure your system according to your specific operational needs. All are designed to help improve productivity and increase profits by reducing lead-time and cutting costs.

MPL

- Automated load/unload for a single laser
- Utilizes area above the laser shuttle table
- Expandable to Amada's MARS storage system for additional capacity
 - Provides fast, efficient loading/unloading in a small footprint at an economical cost
 - Single shelf, compact system



ASFH

- Automated load/unload for a single laser
- Utilizes area above the laser shuttle table
- Expandable to Amada's MARS storage systems for additional capacity
 - Compact loading/unloading system
 - Single tower or twin towers
 - Multiple shelves support a variety of material types and thicknesses



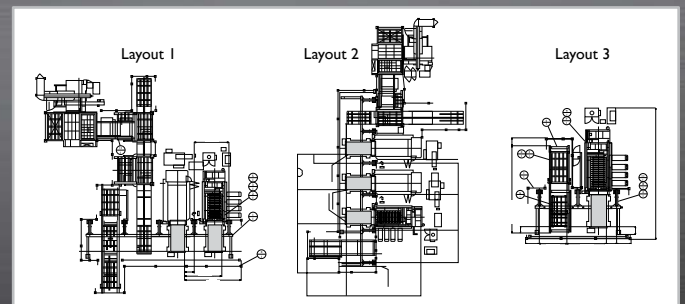
AMS

- Provides maximum flexibility for multiple lasers
- Best expandability options
 - Allows modules to be configured to meet each customer's individual layout, expansion plans and changing needs
 - Engineered to accommodate multiple towers and lasers
 - Equipped with multiple methods of ensuring precise sheet separation



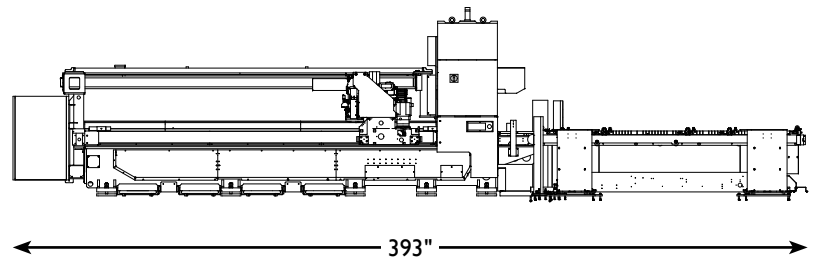
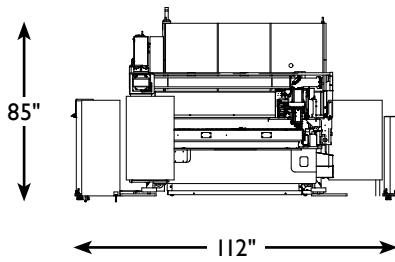
FLEXIBILITY & GROWTH

In order to provide the optimal automated solution, Amada engineers and consultants are ready to evaluate your entire manufacturing process. Our experienced professionals will examine your shop's operational space potential — giving careful consideration to any structural obstructions. Based on your shop's layout, systems can be lengthened or expanded by adding standard modules. Overcarts, undercarts, extensions and towers are all modular and can easily be added at any time to meet your specific needs. Amada will also prepare digital layouts that will provide an accurate representation of how the system will fit in your shop environment.



AMS layout samples

DIMENSIONS



SPECIFICATIONS

Motion Package	
Travel Method	Stationary table, X, Y and Z-axis movement for cutting head
Control Method	X, Y and Z simultaneous 3-axis control
Drive Motors	FANUC AC servo motors
Max. Sheet Size (X, Y)	120" x 60"
Max. Axis Travel (X, Y, Z)	121" x 61" x 3.93"
Max. Axis Positioning Speed (X, Y)	4,724"/min. per axis (6,693"/min. 45° vector)
Max. Speed Z-Axis	4,724"/min.
Repeatability	±0.0002"
Max. Material Weight	2,000 lbs.
Assist Gas	4 ports with NC pressure control
Electrical Requirements	200V, 3-Phase, 60Hz

Fiber Laser Resonator	
Model	2kW - 4kW - 6kW
Resonator Style	LD excited Yb fiber
CW Output Power	2kW - 4kW - 6kW
Peak Pulse Output Power	2kW - 4kW - 6kW
Power Stability	±2%
Laser Wave Length	1.08 μm
Laser Power Mode Selection	CW, gated pulse (CNC controlled)
Laser Beam Mode Output	Multimode Mode
Beam Divergence	< 3mm-mrad
Pulse Frequency	1 – 10000Hz
Pulse Duty	0 – 100%
Interlocks	Electrical, mechanical, and chiller
Electrical Requirements	200V, 3-Phase, 60Hz

In the interest of technological progress, we reserve the right to make any changes to technical dimensions, construction and equipment as well as illustrations. Workpiece precision and material thickness to be processed are also dependent on production conditions, material, type of workpiece and its pretreatment.



AMADA
Amada America, Inc.