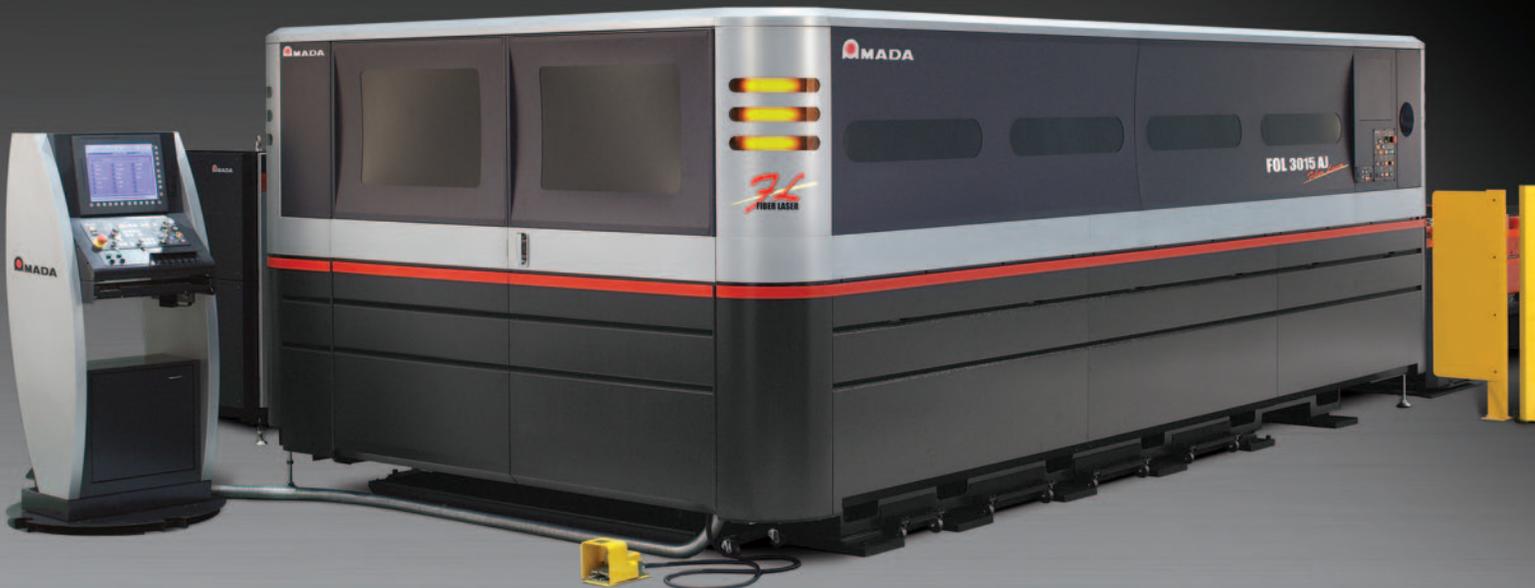


THE WORLD'S MOST PRODUCTIVE FIBER LASER CUTTING SYSTEM

FOL3015AJ Fiber Laser





Amada's 3-axis linear motor drive system sets the global standard for speed and precision — enabled by true closed-loop feedback of the head position directly to the AMNC/PC control.

Innovative Machine Design Provides Unmatched Productivity, Reduced Operating Costs and Process Range Expansion.

The FOL-AJ has revolutionized laser cutting. This system has been specifically engineered to take full advantage of the unique cutting capabilities of fiber laser processing. The laser source was developed by Amada and it's the first high-powered fiber laser designed for the sole purpose of cutting. Amada has engineered an advanced motion system and an innovative beam delivery system to keep pace with the cutting speeds and capabilities of the Amada-designed fiber resonator. The result is an extremely productive fiber laser system that delivers unmatched speed, accuracy, and edge quality, even in thick plate.

The FOL-AJ provides many additional benefits — most notably, fiber technology does not require any laser gas in order to generate the laser beam, thereby reducing environmentally harmful emissions. Additionally, the FOL-AJ consumes approximately $\frac{1}{3}$ the amount of energy required by a 4kW CO₂ laser and about $\frac{1}{4}$ the amount

compared to a 6kW CO₂ laser. The system's resonator generates a laser beam with a wavelength that is approximately a tenth of that produced by a conventional gas laser. The 1.08 μ m wavelength expands processing capabilities to include materials that were previously difficult or impossible to cut with CO₂ lasers. The FOL-AJ also delivers dramatic increases in speeds, up to (and beyond) 4 times faster than its CO₂ counterparts in thin materials.

The motion system of the FOL-AJ includes massive linear drive motors in all 3 axes, two of them in the X-axis alone. This provides for over 13,300 ipm in traverse speeds and 5G acceleration over the entire work envelope. While the savings in operating cost of this innovative fiber laser are remarkable, it is the productivity of the FOL-AJ that sets a new global standard for performance.

The FOL3015AJ is equipped with high-speed shuttle tables and a full enclosure.

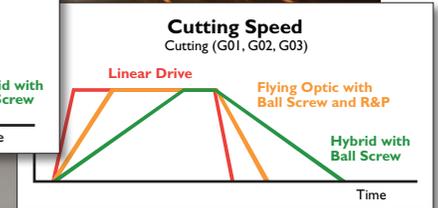
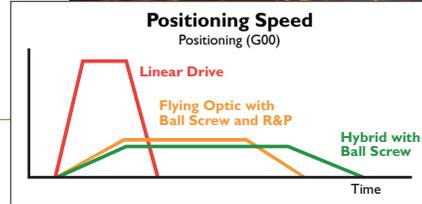
ADVANTAGES OF FIBER LASER TECHNOLOGY

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

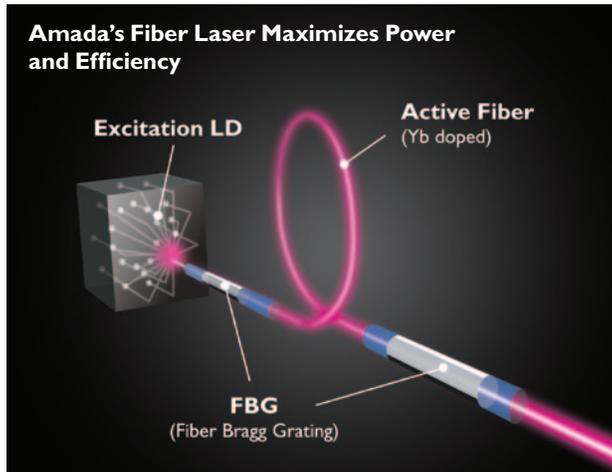
The World's Most Productive Fiber Laser Cuts Processing Time in Half.

3-AXIS LINEAR MOTOR DRIVE SYSTEM PROVIDES UNCOMPROMISING SPEED AND ACCURACY

Unlike other fiber lasers on the market today, Amada designed the FOL-AJ to maximize the inherent benefits of fiber laser technology. Linear drives provide the extreme high speed required to match the highly-productive capabilities of fiber laser processing. Amada's 3-axis linear drive system also ensures absolute accuracy even at the highest cutting speeds. The ability to accelerate and decelerate quickly provides unprecedented processing times along with precise holes and square corners.



The FOL-AJ's unmatched acceleration rates dramatically reduce processing time resulting in unprecedented productivity.



CONTROLLING THE LASER BEAM

It would have been simpler and less costly for Amada to engineer the FOL-AJ's beam delivery system similar to other manufacturers — using only two optics in the cutting head. Instead, Amada has taken a more comprehensive approach by adding 4 additional mirrors in the Z-axis, directly above the cutting head. This innovative design is similar to the beam delivery system featured in Amada's CO₂ laser cutting systems. And, it has given the FOL-AJ the ability to precisely control the laser beam properties based on the material type and thickness to be cut. The result is unmatched edge quality especially in thick, mild steels.

PRODUCTIVITY VS. COST

Many look at fiber lasers and immediately think about the savings in operating cost. However, the key benefit is not that the FOL-AJ cuts costs. Rather, it's the profit gained by greater productivity and expanded capabilities that sets Amada's extremely efficient fiber laser apart. Though Amada uses mirrors in the design of the FOL-AJ's cutting head, the reality is that additional mirrors add only cents-per-hour to the overall operating cost. More importantly, the productivity gains in reduced secondary processes and the substantial increase in parts-per-hour more than compensate for any initial increase in part costs. In fact, operating costs typically make up less than 2% of overall part costs and in most cases less than 1%. When looking at fiber laser technology, it is important to fully understand the system's comprehensive design in order to understand how the synergy of all components maximizes productivity while expanding capabilities.

In contrast to other fiber lasers, Amada's FOL-AJ produces phenomenal edge quality in 3/4" and 5/8" mild steel — rivaling some of the finest CO₂ laser cutting systems.



ADVANTAGES OF AMADA'S FIBER LASER

- **Proven Performance**
 - Development began in 2006 by the global leader in fabrication equipment and has now been field tested and proven
- **System Integration**
 - State-of-the-art AMNC/PC control with user-friendly graphical interface
 - 3-axis linear drive system provides unmatched speed and accuracy

AMNC/PC CONTROL

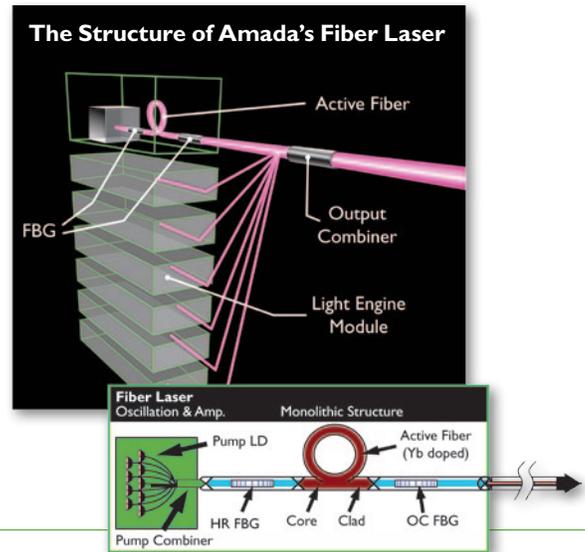


The AMNC/PC control responds quickly and adjusts to requirements for high-mix/low-volume production, shorter lead times and lower cost.

- Graphical touch-screen interface greatly simplifies operation
- Consolidate frequently used functions such as Origin Return, JOG Cut, Positioning and Nozzle/Head Replacement Position
- Set optimum conditions for piercing, corner treatment, etc. with one-touch operation
- Set up to 10 conditions for each material thickness with a maximum of 200 types available
- Automatically notifies an operator of an upcoming part inspection based on the inspection period you set for each item
- Allows you to set a daily schedule for stand-alone machines as well as manufacturing lines and check the overall progress

THE OPTIMUM FIBER LASER SOURCE

Over 6 years of development and refinement have produced the optimum high-powered fiber laser source designed specifically for cutting. The laser source is comprised of multiple 600-watt power stacks. By combining these stacks, Amada's Fiber laser uniquely provides maximum power for laser processing along with maximum efficiency. The FOL-AJ is engineered to send 2000 or 4000 watts of power through a single fiber optic directly to the cutting head. Amada's extremely productive Fiber Laser boasts a maximum light conversion efficiency of 75% and a maximum "wall plug" efficiency of 30%. The FOL-AJ provides unmatched beam stability and quality while requiring no warm-up time.



NON-STOP PRODUCTIVITY



The FOL-AJ's high-speed shuttle tables and automatic nozzle changer maximize productivity. The shuttle tables externalize the material setup eliminating interference with the cutting process. The 8-station changer automatically changes, cleans and calibrates the nozzle based on material processing requirements (ensuring that the laser does not sit idle while waiting for an operator to set-up for the next job).

ENVIRONMENTAL ADVANTAGES

- **Energy Efficient**
 - 3 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

Flexible Automation for an Ever-Changing Market

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

ASLUL

- Automated load/unload for a single laser
- Smallest footprint
- Expandable to Amada's CS and MARS storage systems for additional capacity
- Compact loading/unloading utilizing the area above the shuttle table
- Single tower or twin towers



MP-FLEX

- Automated load/unload for a single laser
- Offers small footprint at low cost
- Expandable to Amada's CS and MARS storage systems for additional capacity
- Provides fast, efficient loading/unloading in a small footprint and low cost
- Approximately 70 seconds for load/unload



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

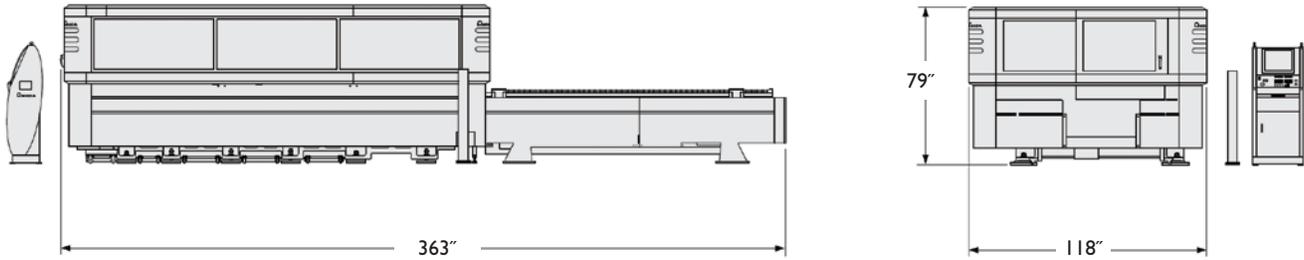


In addition to automated load/unload systems, Amada also offers the CS and MARS storage systems. Offering single or dual row configurations with unlimited expansion capabilities, Amada's storage systems ensure the most flexible and comprehensive automated environment. The CS and MARS storage systems organize the manufacturing process so that machine up-time and machine efficiency are tremendously increased — providing for continuous, on-demand production with minimal supervision.

In order to provide the optimal automated solution, Amada engineers and consultants are ready to evaluate your entire manufacturing process. Our experienced professionals will also examine your shop's growth potential — giving careful consideration to potential structural obstructions. Based on the obstruction, systems can be lengthened or expanded by adding standard modules.

Amada will also prepare digital layouts that will provide an accurate representation of how the system will fit into your shop environment. Overcarts, undercarts, extensions and towers are all modular and can easily be added at any time to meet your specific needs.

DIMENSIONS (INCHES)



SPECIFICATIONS

Technical Data	FOL3015AJ
Maximum Cutting Area	(X) 120.86" x (Y) 61.02"
Axis Travel Cutting Head	(Z) 3.93"
Maximum Material Thickness	0.875" (4kW) – 0.625" (2kW)
Table Loading Weight	1,653.46 lbs.
Positioning Speed X/Y/Z	9,448"/9,448"/4,274"/min.
X, Y Traverse Speed	13,386"/min.
Drive Feed Method X/Y/Z	Linear
Maximum Acceleration	5G
Maximum Cutting Speed	0 - 9,449"/min.
Table Size	120" x 60"
Table Height	37"
LST (Shuttle Table)	Standard
Position Accuracy	± 0.0004"
Power Supply	200/60 V/Hz (±10%), 3 Phase
Machine Weight	31,328 lbs.

Laser	
Oscillator	AJ2000/AJ4000
Oscillation Method	LD to Yb Fiber (monolithic)
Power Output (CW)	2000 W or 4000 W
Principle	Fiber-Laser
Wave Length	1.08µm

Controller	
Model	AMNC-F
Screen	Touch-screen
Number of Controlled Axis	5 (X/Y/Z/B) and Laser Control
Memory Capacity	10 MB

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, its pretreatment, size of the table as well as the location in the work area.

OSCILLATOR

Amada's AJ2000 and AJ4000 oscillators (fiber engines) were developed specifically for cutting and drastically reduce electrical consumption (1/3 the amount of energy consumed by the typical CO₂ oscillators). The oscillator requires a minimal amount of valuable floor space.

Material Thickness Specifications

Material	AJ2000	AJ4000
Mild Steel	0.625"	0.866"
Stainless Steel	0.394"	0.709"
Aluminum	0.315"	0.630"
Copper	0.157"	0.315"
Brass	0.197"	0.315"



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