

SOLUTION



Fiber laser / punch
combination machine

LC C1 AJ

SERIES

Blanking

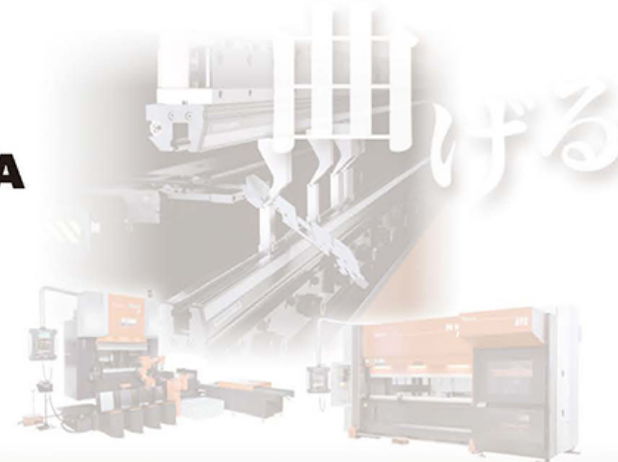


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The Engineering AMADA



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Highly efficient process integration achieved with **energy saving and less cost !**

Debut of machine combined with fiber laser and punch

The laser cutting area is enclosed by a table cabin and a shutter for laser beam shielding.
The machine can be easily combined with peripheral equipment for automation to achieve a shorter total lead time.



Fiber laser / punch combination machine

LC C1AJ SERIES

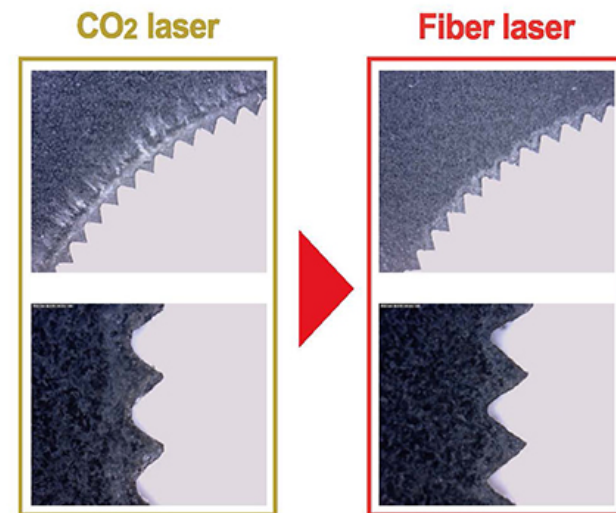
Processing examples of typical workpieces

(Productivity comparison with conventional machine)

Material: Highly corrosion-resistant hot-dip galvanized steel 1.0mm
Size: 100.0×47.0mm



- Number of tools used: 5
- Number of punching hits: 19
- Number of tapping hits: 2



Fiber laser cutting reduces the melting loss of coated surfaces and edges.

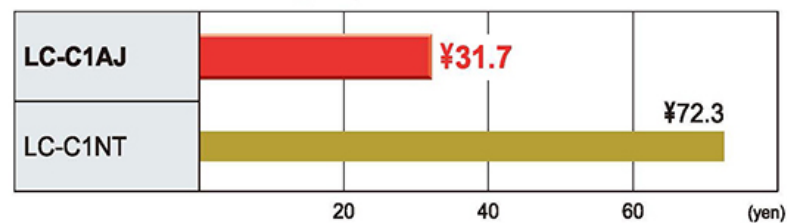
Processing time comparison

27% time reduction per part

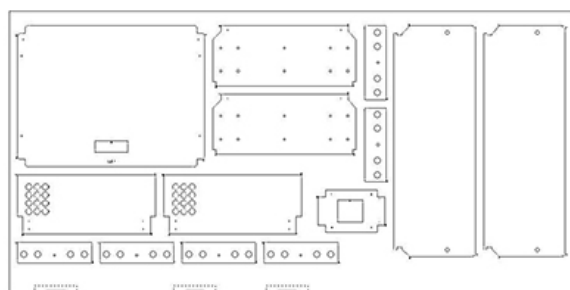
	LC-C1AJ	LC-C1NT
Processing speed	F18000	F4000
Per part	1 min 05 sec	1 min 29 sec

Running cost comparison

56% cost reduction per part

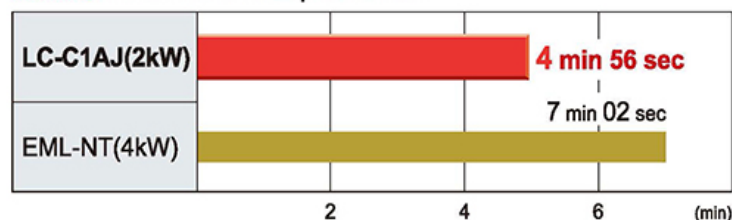


Material: SECC 2.3mm
Sheet size: 1219×2438mm



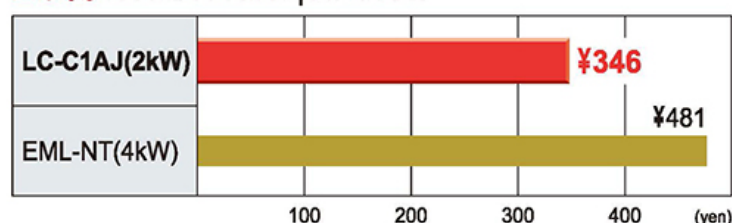
Processing time comparison

30% time reduction per sheet

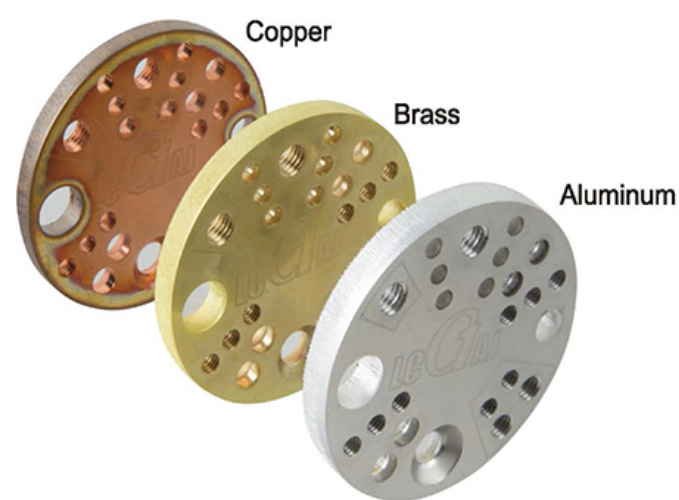


Running cost comparison

28% cost reduction per sheet



Material: Aluminum 6.0mm, Brass 5.0mm, Copper 4.0mm
Size: φ52.0mm



The LC-C1AJ series can cut highly reflective materials that are difficult-to-cut with a CO2 laser.

Maximum material thickness to be cut

		LC-C1AJ	LC-C1NT
Aluminum	mm	6	6
Brass	mm	5	-
Copper	mm	4	-

LC-C1AJ series New technologies

1 Highly productive, energy-saving processing

Energy saving by no laser gas in need

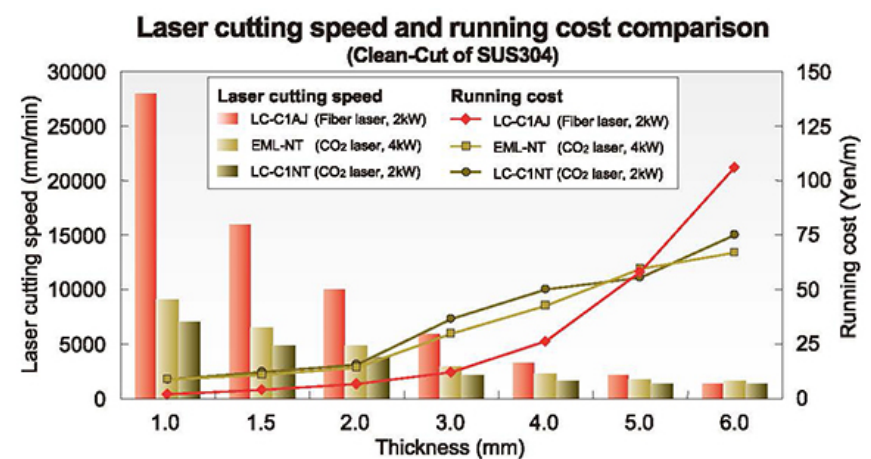
① High speed processing of thin materials

The fiber laser can clean-cut thin materials at higher speed and lower cost than the 4 kW CO₂ laser.

Any shape that suitable tooling is not at hand is replaced with laser processing:

- Reduction of programming time
- Reduction of tooling cost
- Reduction of tooling setup time

The lead time can be reduced as a result.



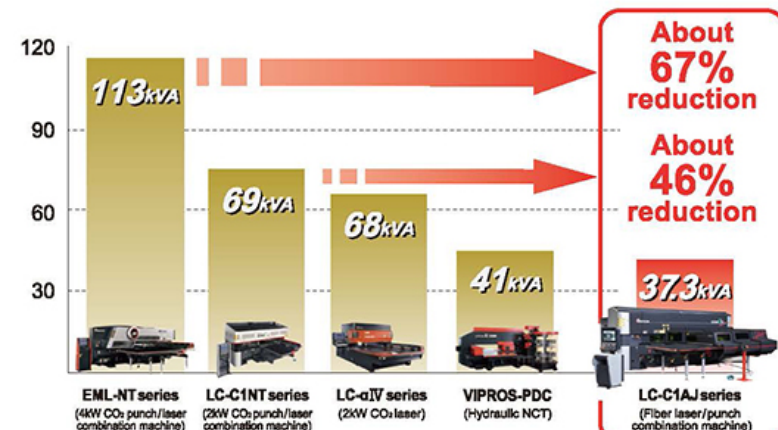
*The running cost includes the cost of laser cutting per meter and excludes the cost of consumables.

*This is a laser cutting speed comparison and is not a productivity comparison.

② Power requirements comparison

The LC-C1AJ series is equipped with a high energy efficiency fiber laser oscillator and a single AC servo press drive motor. The LC-C1AJ series requires about 67% less power than a 4 kW CO₂ punch/laser combination machine and about 46% less power than a 2 kW CO₂ punch/laser combination machine. It requires almost the same power as a hydraulic turret punch press.

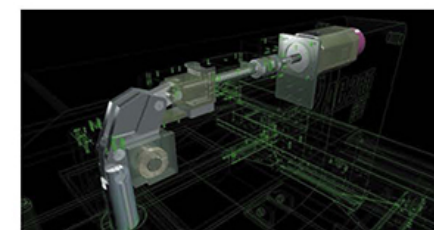
Further cost savings from not requiring laser gas.



*Power requirements (kVA) = Machine (including dust collector) + Oscillator + Chiller



Fiber laser oscillator



AC servo single drive (CG)

2 Compatibility of safety and operability

Secure safety and operability like conventional combination model

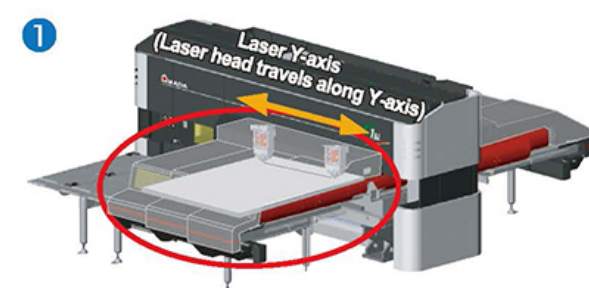
① Table cabin

The laser moves along the Y-axis. During laser cutting, the material moves only along the X-axis. The processing area is fully enclosed with a table cabin and shutter to shield the laser beam completely.

As compared with a fully enclosed machine, this solution saves space and ensures the safety of the operator.

② The second origin setting

The second origin provides material setting without open/close of table cabin. Secure operability like conventional model (LC-C1NT).



Setting the second origin

3 Process integration and stable processing

Stable processing by tool setup

1 Tapping station

A maximum of four types of tapping tool can be loaded for tapping process integration.

*Choice of thread cutting or forming taps.

2 Die lift-up station

Tall dies like forming dies are usually stored below the pass line. They do not interfere with the material during forming and provide high quality processing without bottom scratches.

3 Floating brush table

When the material moves after down-forming, the brush table around the turret rises 5 mm to prevent the material from interfering with the die.

4 ID tool system

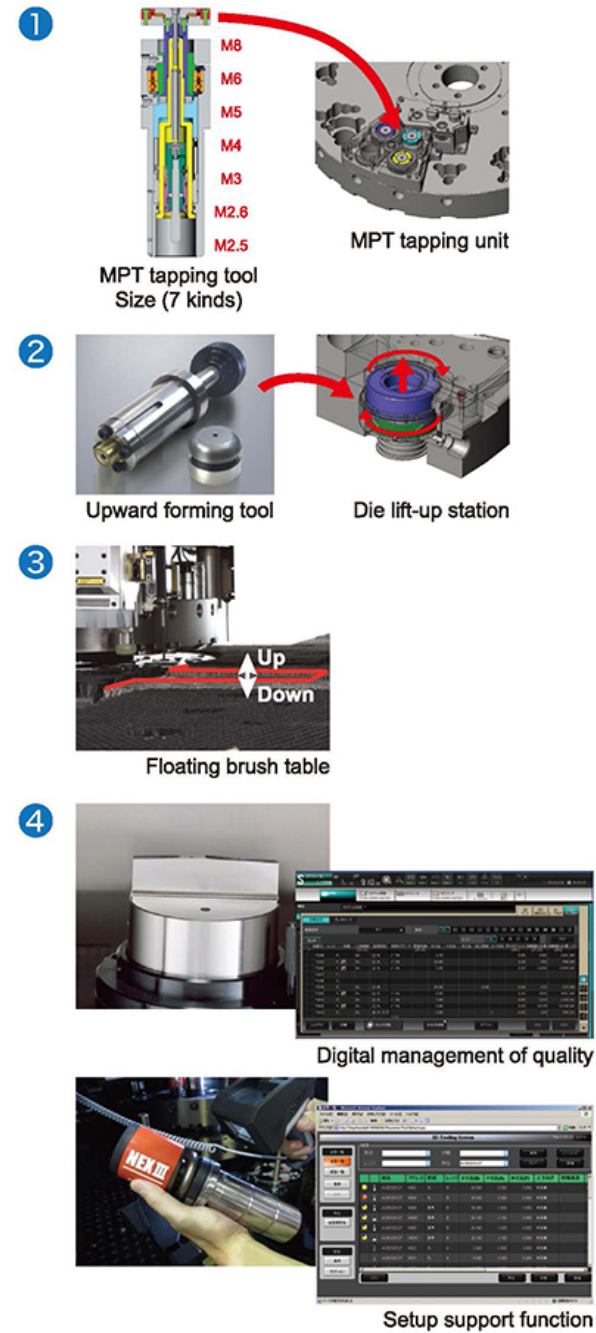
• Digital management of quality

Recognition of tool that requires re-grinding from thickness, material, numbers of hit and etc.,. Providing the optimum tooling condition constantly and generating stable processing quality.

• Setup support function

Display the tooling information for tooling setups on the screen.

Prevention of tooling setup mistakes by checking ID information.



4 Other functions for stable processing (Option)

○ Laser ○ Punching ○ Option

C1-AJ = LC-C1AJ SERIES

C1 = LC-C1NT SERIES

EML = EML-NT SERIES

F1 = LC-F1NT SERIES

FOMII = FO-MII NT SERIES

αIV = LC-αIVNT SERIES

C1-AJ

C1

EML

αIV

C1-AJ

C1

C1-AJ

C1

EML

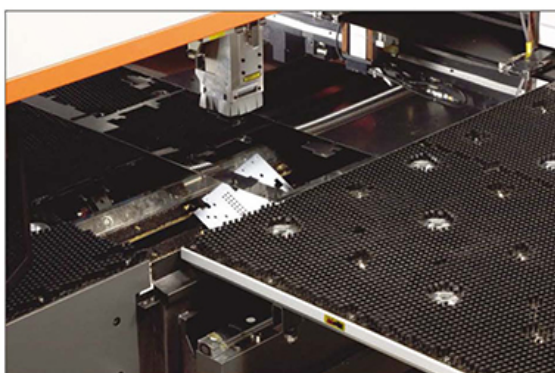
F1

FOMII

αIV

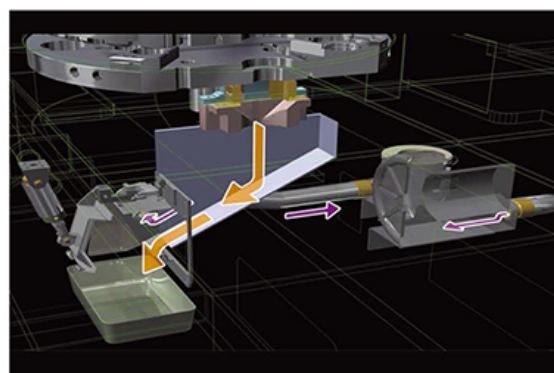
Work chute

Highly effective processing without micro-joint by large work chute (LC-2512C1AJ: 400 x 1270mm, LC-2515C1AJ: 400 x 1525mm).



Slug suction unit

Punching slugs are forced by vacuum into the scrap box to prevent even large-diameter slug pulling.



PSA (nitrogen generator)

Nitrogen generator at 99.999% purity with capacity of 500L and 1000L per minute for high pressure applications.



5 Easy operation

AMNC 3i

The latest NC unit, AMNC 3i can be operated quickly and intuitively like smart phone. The large screen provides better visibility and displays many functions and information at the same time. The substantial improvement of operability, drastic reduction of setup time, many functions in supports for quality and equipment management are provided with the unit.



Intelligent

Interactive

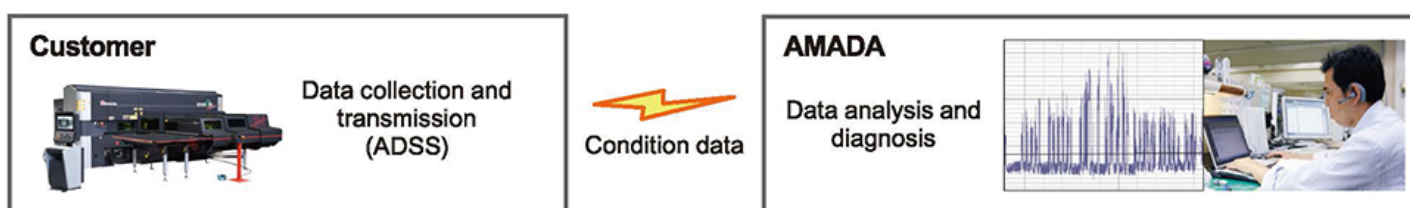
Integrated

● Other functions

- Plotting of process at real time
- Customizing of screen/classifying of operators
- Resuming of TK inclusive program

Remote assistant system (AMDAS*)

Remote operation diagnose for oscillator and machine by using various alarm and sensors.



*AMDAS: Amada Maintenance Digital Analysis Support



Change of processing condition and operation of work chute by touching pattern



Prevention of punching a wrong forming tool when using ID tool



Operation of peripheral equipment/Inventory of material



Under operation Stand by
Under planning Alarm

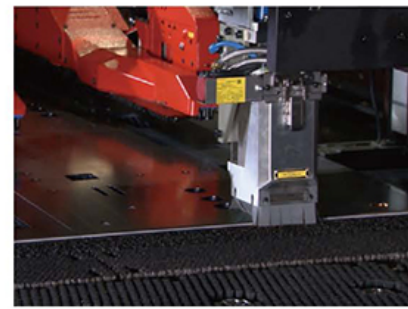
Display of operation results/processing record

LC-C1AJ series automation solutions

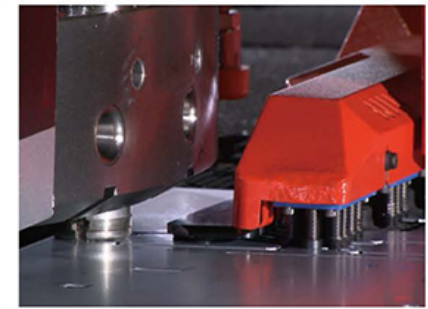
Total lead time reduction

TK automation solution

Take-out loader provides operation without micro-joint
Choice of final cut by Laser or Punch. Small, large or long parts can be taken out by two of left and right arms.



Parts separation by Laser

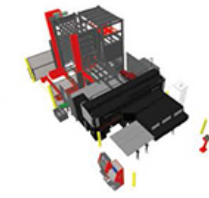


Parts separation by Punch

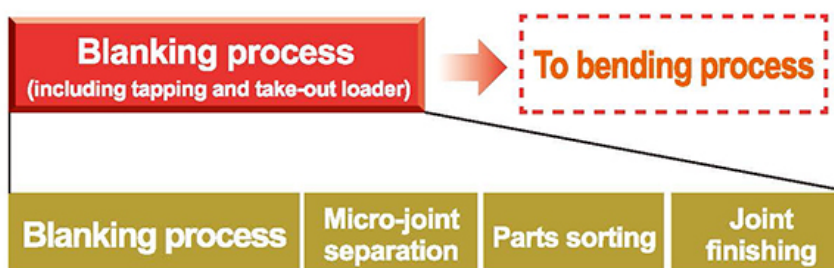
Introducing effects

The LC-C1AJ series solutions allow blanks to be supplied immediately to the next process and provide total lead time reduction.

LC-2515C1AJ (Automation system)

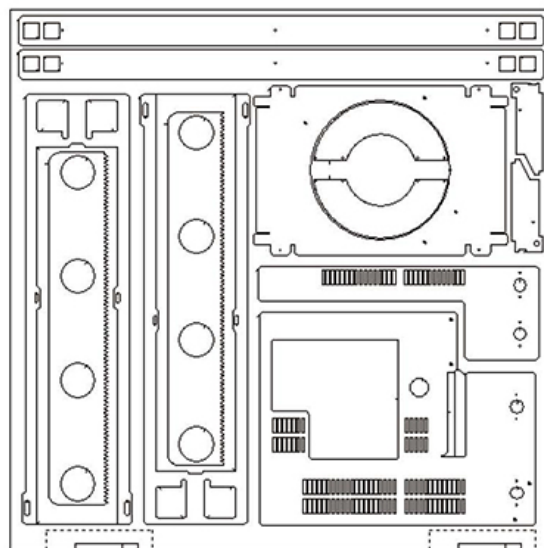


EML-3510NT
(Stand alone)



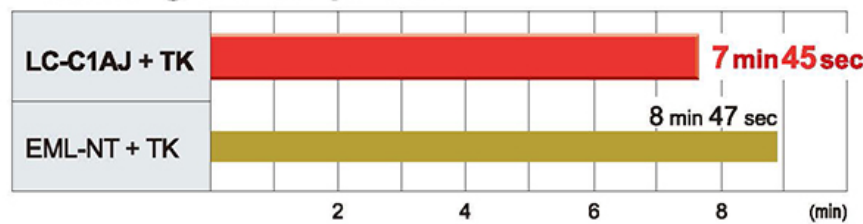
- The automatic loader and take-out loader free the operator from material loading, micro-joint separation and parts sorting, resulting in long hours of continuous operation.

■ **Material: SECC 1.0mm**
■ **Sheet size: 914×914mm**

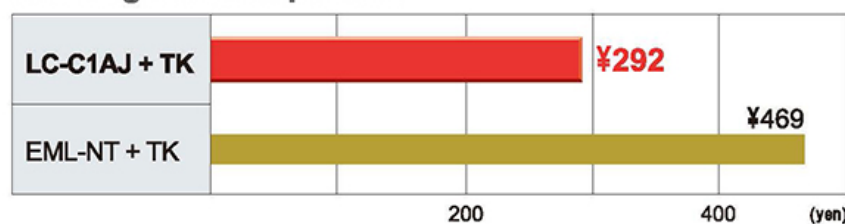


Nesting with 13 parts of 9 kinds

Processing time comparison



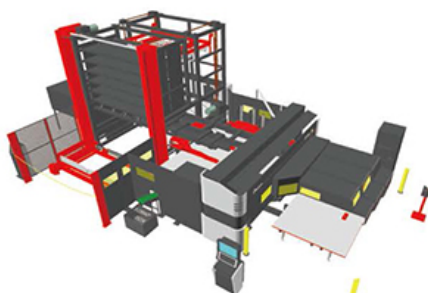
Running cost comparison



- Take-out of small, large or long parts by arms.

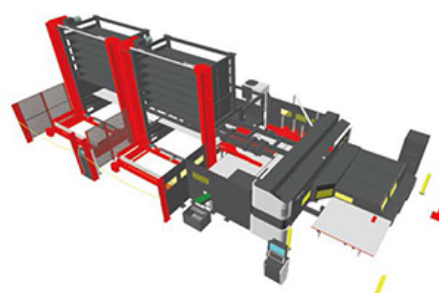
Automation lineup

■ Single-storage tower specification (Space-saving type)



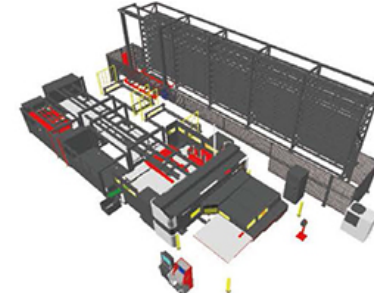
The single sheet picker in the shelves provides flexible processing schedule regardless of material types and thicknesses.

■ Double-storage tower specifications (Materials and parts storage towers)



The double storage tower, material/parts and skeleton shelves provides continuous operation in multiple materials and parts.

■ Automated warehouse connection specification



The LC-C1AJ series can be connected with an automated warehouse to achieve long continuous operation. The overall system can be set to meet floor space and height of customer's demands.

■ Dimensions

Unit : mm

- LC-2512C1AJ
(L:5756 x W:5996 x H:2340)
- LC-2515C1AJ
(L:6420 x W:6927 x H:2377)



■ Machine specifications

Model			LC-2512C1AJ	LC-2515C1AJ
Travel method	Punching	X/Y-axis material travel		
	Laser cutting	X-axis material travel/Y-axis laser head travel		
Punching range	X × Y	mm	2500 × 1270	3050 × 1525
Laser cutting range	X × Y	mm	2500 × 1270	2500 × 1525
Combined processing range	X × Y	mm	2500 × 1270	2500 × 1525
Rapid feed rate	X/YP/YL/Z	m/min	100/80/80/80	
Processing accuracy		mm	±0.07(as AMADA's punching pattern)	
Material thickness (punch)		mm	6	
Material thickness (laser)		mm	6	
Maximum material mass		kg	75(F1) / 150(F4)	75(F1) / 220(F4)
Press capacity		kN	200	
Maximum hit rate (X-axis)		min ⁻¹	370(25.4 mm pitch / 5 mm stroke)	
Maximum hit rate (Y-axis)		min ⁻¹	280(25.4 mm pitch / 5 mm stroke)	
Mass of machine (machine alone)		kg	18000	20000
Power requirements (inclusive of chiller & dust collector)		kVA	28.5	

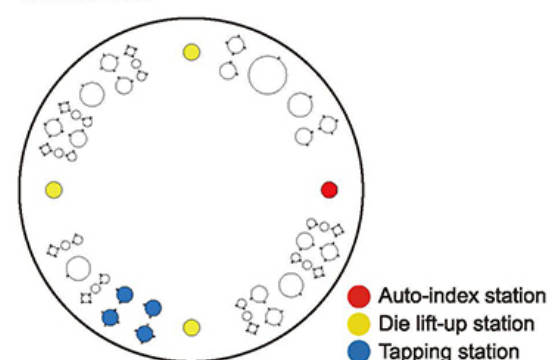
■ Oscillator specifications

Model		AJ-2000
Oscillation method		LD-pumped fiber laser
Output beam wavelength	μm	1.08
Rated laser power	W	2000
Maximum pulse peak power	W	2000
Power requirements	kVA	8.8

■ Turret layout

Range	Tool size	Punch size	Number of stations
A	½"	φ 1.6 ~ 12.7	24(16)
B	1¼"	φ 12.8 ~ 31.7	16(16)
B'	1¼"	φ 12.8 ~ 31.7	3(3)
C	2"	φ 31.8 ~ 50.8	4(4)
D	3½"	φ 50.9 ~ 88.9	1(1)
G	1¼"	φ 12.8 ~ 31.7	1(1)
Total			49(41)

*Numbers in parentheses indicate the station numbers where shaped tools can be installed.



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.

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

*The official model names of machines and units described in this catalog are non-hyphenated like LC2512C1AJ, LC2515C1AJ.

Use these registered model names when you contact the authorities for applying for installation, exporting, or financing.

The hyphenated spellings like LC-2512C1AJ, LC-2515C1AJ are used in some portions of this catalog for sake of readability. This also applies to other machines.

*The specifications described in this catalog are for the Japanese domestic market.

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Inquiry



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 to direct or scattered radiation. Never look into the radiation nor touch it.

●Class 3R visible laser: Avoid direct eye exposure.