

SOLUTION

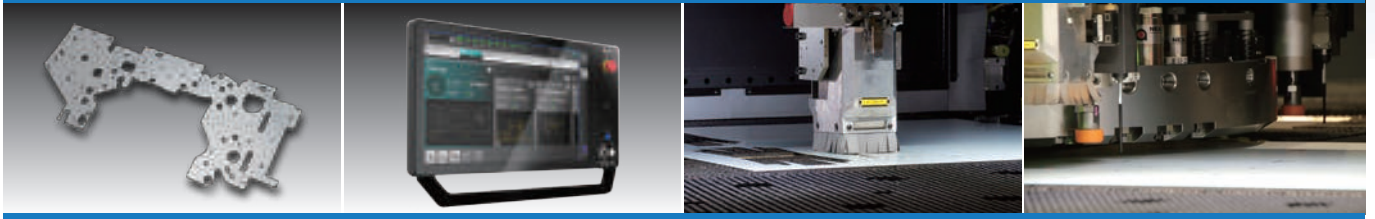


Compact Fiber Laser Combination Machine

LC C1AJ₂

SERIES

Blanking



The Engineering AMADA



Equipped with a Fiber Laser!

Compact, high-productivity, low-cost punch/laser combination machine

The LC-C1NT compact combination machine is now equipped with a fiber laser, dramatically improving laser processing productivity and cost performance.

By covering the laser processing area with a table cabin and shutter, the same workability as before is ensured.

Total lead-time reduction from standalone operation to automation is realized.



Compact Fiber Laser Combination Machine

LC C1AJ e SERIES

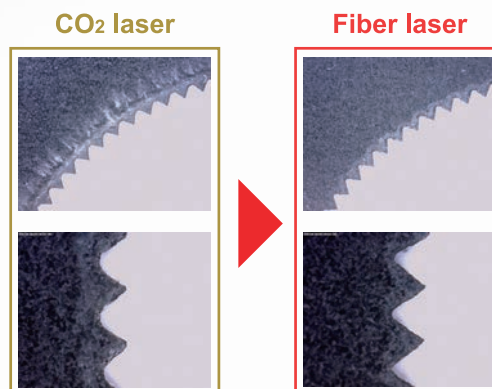
Processing examples with sample workpieces

(productivity comparison with the conventional machine)

Material/thickness: Highly corrosion resistant hot-dip coated steel sheet 1.0mm
 Size :100.0×47.0 mm



- Number of tools used: 5
- Punch count: 19 hits
- Number of tapping: 2 hits



Fiber laser processing reduces melting of the surface treatment and edge.

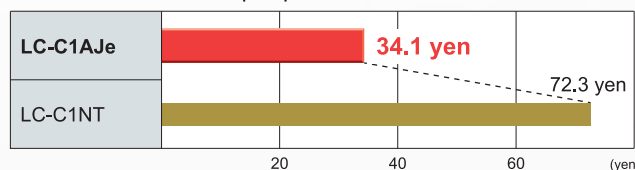
Comparison of processing time

27% reduction in time per product

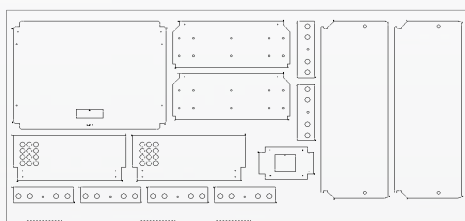
| | LC-C1AJe | LC-C1NT |
|------------------|----------------------------|---------------------|
| Processing speed | F24000 | F4000 |
| Per product | 1 minute 05 seconds | 1 minute 29 seconds |

Running cost comparison

53% cost reduction per product

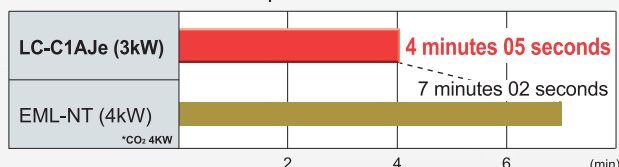


Material/plate thickness: SECC 2.3mm
 Sheet size: 1219 × 2438mm



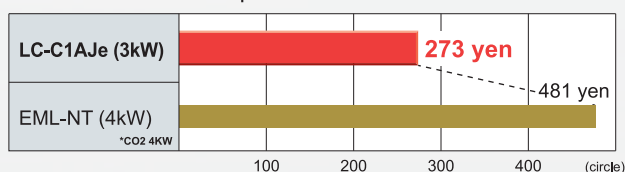
Comparison of processing time

42% reduction in time per sheet

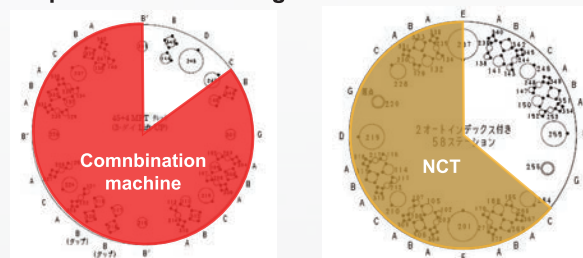


Running cost comparison

43% cost reduction per sheet



Comparison of tool fixing stations



Tool changes are reduced, so most of the turret can be used as a fixed area.

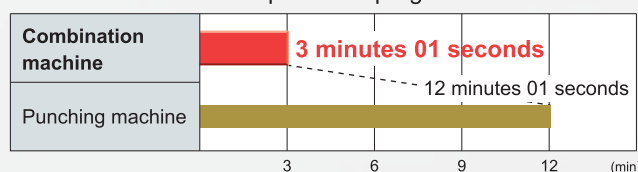
Tooling change & check time

89% reduction in time per sheet program



Program creation time

75% reduction in time per sheet program



LC-C1AJe Series New Technologies

Blank processing that can be changed because of combination machines

Complex shape Laser
Make programs easier

Compatible for automation Laser Punch
Complete blanking process with combination machine

Positioning process Laser Punch
Influence the post-process

Slit process Laser

Legend: NCT (green), Laser (blue), Combination machine (orange)

Processes shown: V cut, Offset, Forming process (Punch), Increase processing range, Mortise and tenon process, Half-shear positioning, Back surface marking, Laser slit, Prevention of bending bulge ~ Venus cut ~.

1 High productivity and low running cost

Fiber laser oscillator: AJ-3000

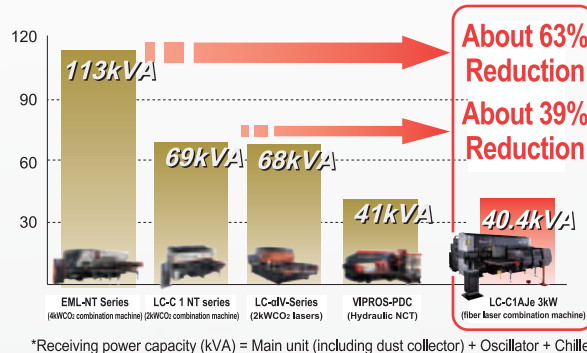
This machine utilizes a fiber laser oscillator with a high-energy exchange efficiency and AC servo single drive. The power receiving capacity is about 1/3 that of a 4kW CO₂ combined machine, and about 1/2 that of a 2kW machine, realizing energy savings. The power receiving capacity is almost the same as that of a hydraulically driven turret punch press. Also, no gas for laser oscillation is required, which further saves energy. Compared to CO₂ (4kW), clean-cut enables high speed processing on thin plate and reduces cost.



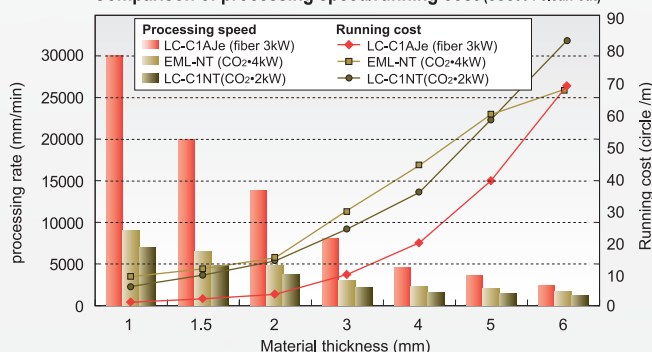
Fiber laser oscillator



AC servo single drive (CG)



Comparison of processing speed/running cost (SUS304 clean-cut)



*The running cost is only the laser-processing cost per 1m and does not include any additional consumables.
*Processing speed comparison is not a comparison of productivity, but a comparison of laser processing speed.

2 High quality punching process

ID tooling system

Digitally manages tools one-by-one using ID engraved on the tooling
 Stable punching quality is achieved by informing the optimal maintenance time for each tools and polishing it before burrs are generated.



MPT tapping unit

Tap unit is mounted in the turret.
 The punching and tapping ranges are common, reducing programming and machining time.

*Supports M2.5–M8 taps.
 *Cutting and rolling taps can be used

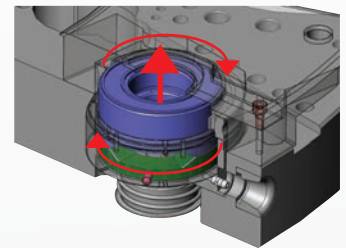


Die lift-up station

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.



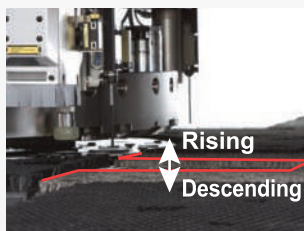
Upward forming mold with high die height



Die lift-up station

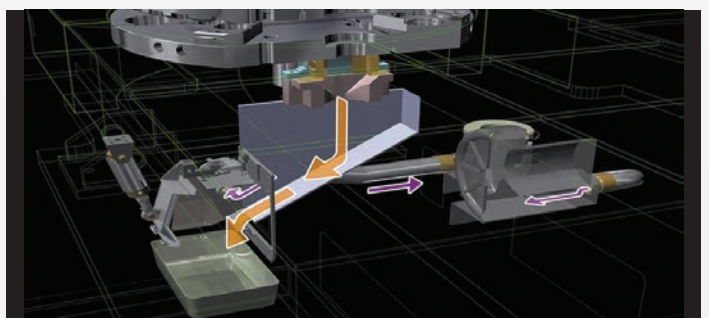
Floating brush table

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



Slug suction unit

Vacuum powerfully discharges the extracted slugs into the scrap box. The attachment prevents slug pulling with the inverter-controlled suction force stages on each station.



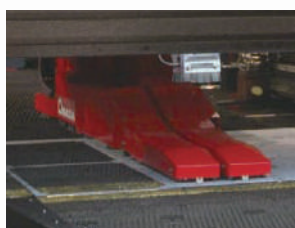
LC-C1AJe Series New Technologies

3 Solutions to prevent machine stoppage (options)

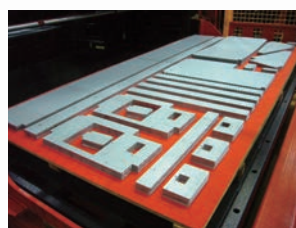
TK automated solution

The automatic feeder and automatic product accumulation arm (TK) free the operator from material feeding, disassembly, and sorting operations.

Independently driven left and right arms enable joint-less removal of small, large, and long parts.



Accumulation after laser cutting



Accumulation and sorting by product



Automatic skeleton accumulation



Nozzle changer

Up to 4 types of nozzles can be automatically exchanged according to processing conditions for each plate thickness and material. Automatic replacement is possible when the same nozzle is installed and the cutting time exceeds a certain level.



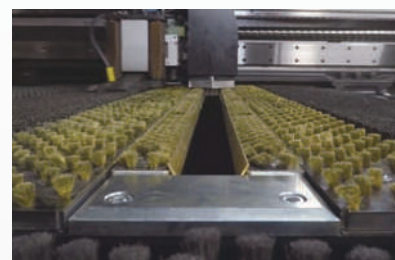
Laser slug automatic removal

Laser slug is automatically transferred to the outside of the machine. Continuous operation is possible without stopping the machine for scrap removal.



Cutting plate automatic cleaning

Automatic cleaning of dross adhering to the cutting plate. Reduces operator man-hours for cleaning and reduces scratches on the bottom surface.



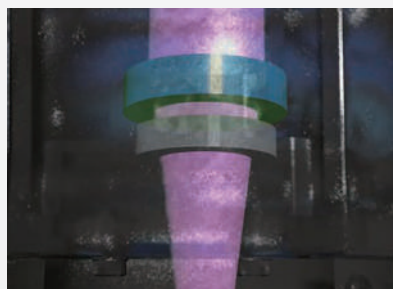
4 Laser stable processing support features

Automation of laser processing operations reduces operator variability and waiting time.

Contributes to increased productivity by supporting zero downtime and stable processing.

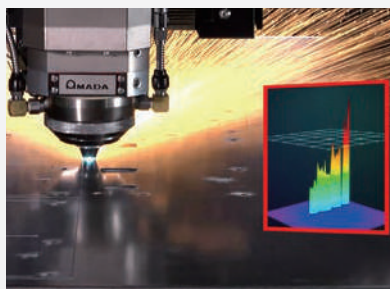
i-Optics Sensor (Standard)

Automatic protection glass inspection.



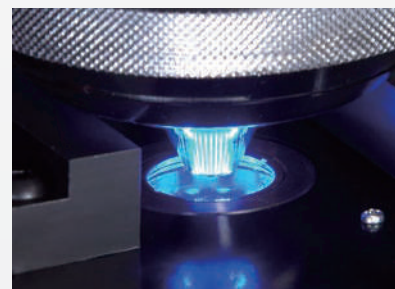
i-Process Monitoring (Standard)

Cut/piercing failure monitoring.



i-Nozzle Checker (Option)

Nozzle status inspection and automatic laser beam centering.



5 Compact process integration and its effects

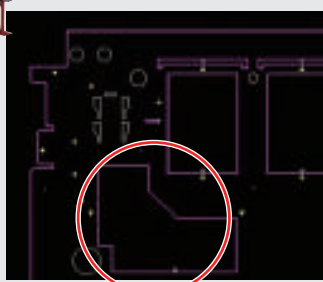
Space-saving combination machine

Among the three fiber laser combination machines in our lineup, the LC-C1AJe is the most space-saving. It achieves process integration through combined production in a compact installation space.



LC-2012C1AJe is an oscillator mounted model that saves even more space.

Easy programming



- ★ Laser cutting for outer edges and irregularly shaped holes
- ★ Since it is a laser, there is no need to check the tooling for slits
- ★ Tooling is only for single hole.

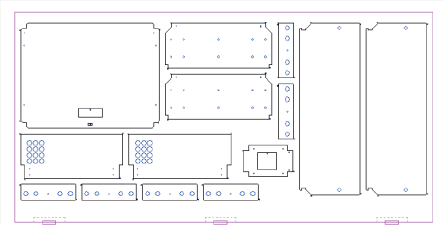


- No tools are available that meet the specified slit size...
- Punching combinations are manually allocated.
- Risk of shavings or tooling breakage if the processing order is not taken into consideration. Risk of crushing the tooling

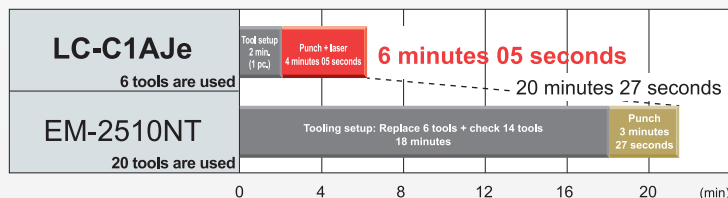


Comparison of processing time and running cost

Material/plate thickness: SECC 2.3mm
Sheet size: 1219 × 2438mm



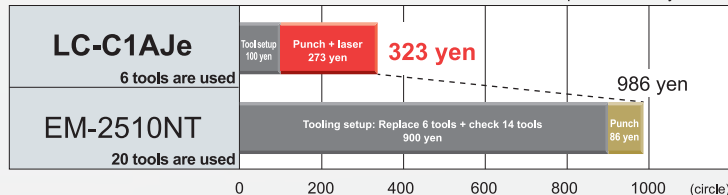
Tool change & processing time
65% reduction in time per sheet



Running cost comparison

67% cost reduction per sheet

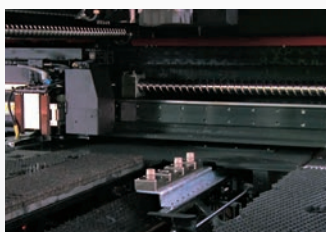
*Personnel expenses: 3000 yen/hour



LC-C1AJe Series New Technologies



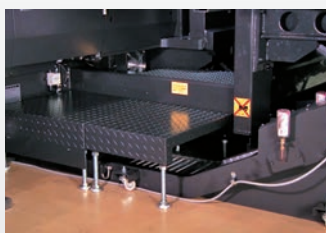
Automation solutions that prevents machine stoppage



Nozzle changer



Automatic product sorting arm



Laser slug automatic removal

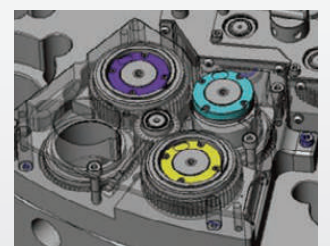


Cutting plate automatic cleaning

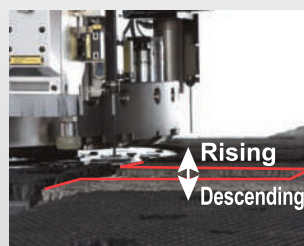
High quality punching process



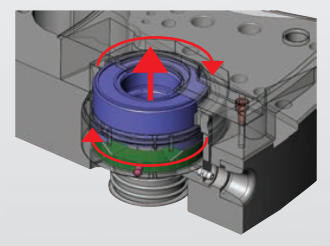
ID Tooling system



MPT tapp



Floating brush table



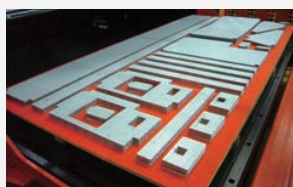
Die lift-up station

TK automated solution

The automatic feeder and automatic product accumulation arm (TK) free the operator from material feeding, disassembly, and sorting operations. Independently driven left and right arms allow joint-less removal of small, large, and even long parts.



Accumulation after laser cutting



Accumulation and sorting by product



Automatic skeleton accumulation

Automation solution lineup

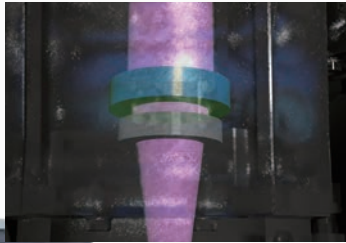
2 tower specifications

(Material and product tower)

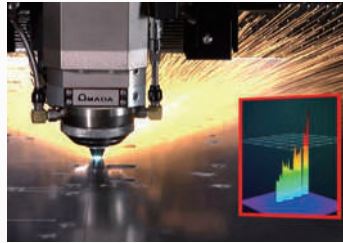
Two-shelf specifications for material shelves/products and skeleton shelves enable continuous operation of multiple materials and products.

LC-C1AJe

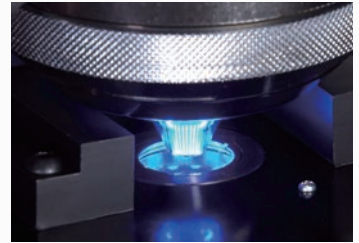
•Laser Stable Processing Solution



i-Optics Sensor
Automatic protection glass inspection



i-Process Monitoring
Cut/piercing failure monitoring



i-Nozzle Checker
Nozzle condition inspection and automatic laser beam centering

•Solutions for manual operation



Second origin



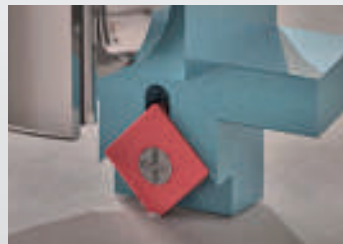
ing unit

•Latest tooling solutions

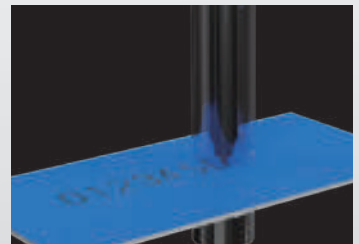


Ball chamfering

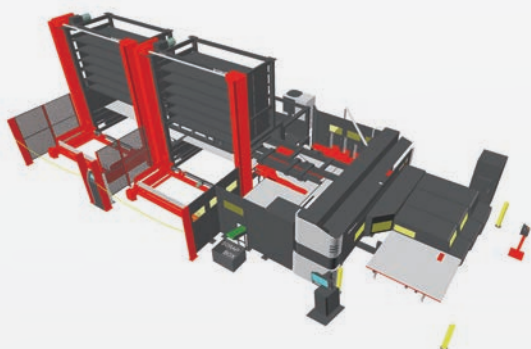
Note: Only chamfering after punching can be processed.



T-Up II
Weld positioning

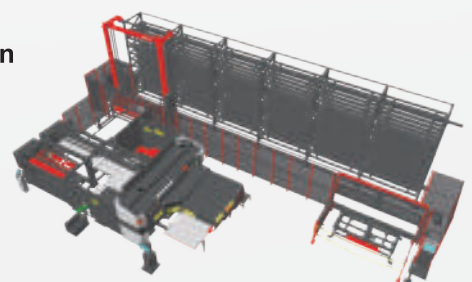


ARFT marking
Support sorting
Note: Use protective film for fiber lasers for the material to be processed.



■Automatic warehouse connection specification

Continuous operation is realized by connecting to automatic warehouses. Efficient layout is possible according to the customer's installation space and height.



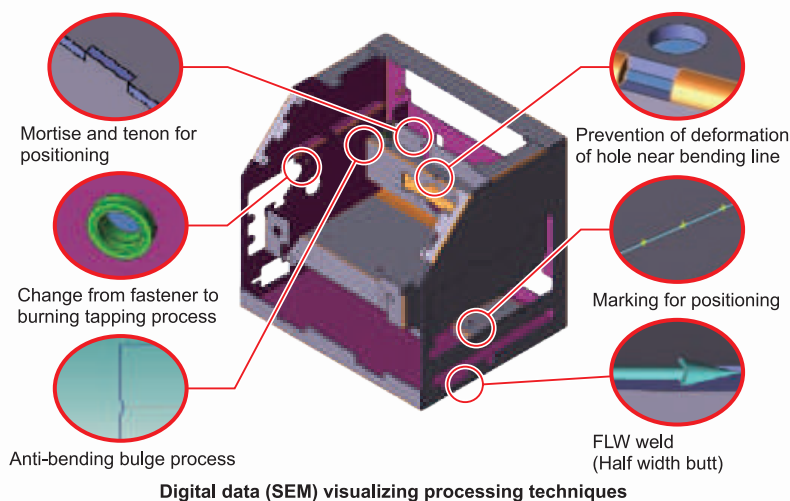
The concept that offers customers connects by conn

Software

Advanced sheet metal engineering system

VPSS 4ie

The evolved sheet metal engineering system, VPSS 4ie, is more intelligent and automated than ever before, digitizing the processing know-how of all processes and bringing revolutionary benefits by connecting machines, software, and people in the factory with information.



CAM (VPSS 4ie PREMIUM/BLANK for blanking)

Blank CAM software for sheet metal that fully utilizes the performance of our blank cutting machines.

It performs cutting, automatic allocation, and processing verification for each part and assembly. It reduces data preparation time and maximizes productivity and utilization of our blank machines.

*VPSS 4ie PREMIUM can create efficient programs including bending simulation by CAM for bending.



Link machines with customers **AMNC 4ie**

The new AMNC 4ie NC system is developed based on the concept of the "4 e's" to address the key issues in sustainability, namely "human issues" and "environmental issues." In addition to controlling machines and peripheral devices, the AMNC 4ie has enhanced interface functions to connect customers and machines.



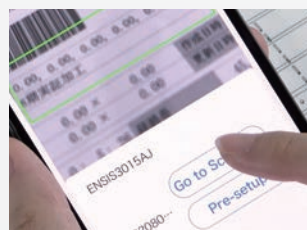
| | |
|--|---|
| Easy operation for anyone to use Easy | Efficiency in remote operation from anywhere Efficiency |
| Environmental sustainability in production Environmental | Evolution together with our customers Evolution |



Facial recognition
Language and screen display can be switched. (setting is required in advance)



Startup inspection guidance
Navigation video that allows anyone to perform startup inspections according to the procedures. Management and sharing of inspection history.



Mobile HMI
Notification of remote start/end prediction/completion using mobile HMI.



CO2 emission reporting function
CO2 emissions are measured for each component, and reports can be created and filed.

ecting to Amada

V-factory

Amada's recommended V-factory is based on the concept of "creating profits for customers". V-factory will co-create factory reforms with customers by providing visualization, taking advantage of IoT technology and maximizing machine utilization.

V-factory Connecting Box

Used to connect machines to the cloud and start V-factory.

V-monitor *

Automatically records the state of the machine during automatic operation.



- Visualization of machine operation, production, and consumption
- Visualization of machine maintenance and utilization status

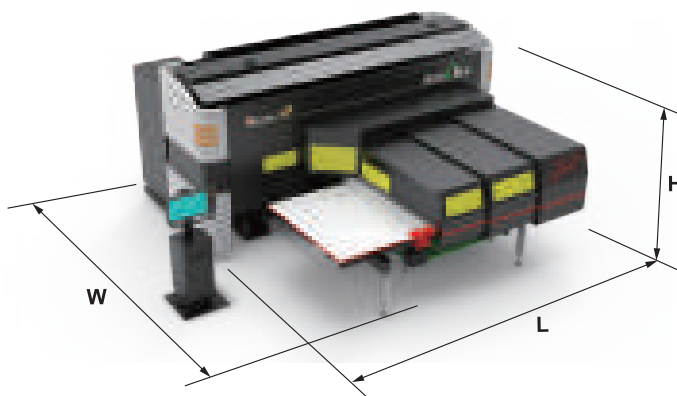
- Constant monitoring of operating conditions, sensors, power consumption, etc.

■ Dimensions

Unit :mm

- LC-2515C1AJe
(L : 5465 x W : 6927 x H : 2377)
- LC-2512C1AJe
(L : 4775 x W : 6077 x H : 2340)
- LC-2012C1AJe (oscillator placed separately)
(L : 5185 x W : 4946 x H : 2340)
- LC-2012C1AJe (with oscillator)
(L : 4775 x W : 5039 x H : 2340)

*Dimensions above, includes oscillator



■ Machine specifications

| Model | | LC-2012C1AJe | LC-2512C1AJe | LC-2515C1AJe |
|--|-----------------------|--|--------------|----------------------------------|
| Model Names (Note the points listed below) | | L2012C1AJE | L2512C1AJE | L2515C1AJE |
| Travel method | Punching | X/Y axis material travel | | |
| | Laser cutting | X-axis material-travel/ Y-axis laser head travel | | |
| Punching range | X × Y mm | 2000 × 1270 | 2550 × 1270 | 3050 × 1525 |
| Laser processing range | X × Y mm | 2000 × 1270 | 2550 × 1270 | 3050 × 1525 (with repositioning) |
| Combined processing range | X × Y mm | 2000 × 1270 | 2550 × 1270 | 3050 × 1525 (with repositioning) |
| Rapid feed speed | X / YP / YL / Z m/min | 100 / 80 / 80 / 80 | | |
| Machining accuracy | mm | ±0.07 (according to 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 (25.4mm pitch/5mm stroke) | | |
| Maximum hit rate (Y-axis) | min ⁻¹ | 280 (25.4mm pitch/5mm stroke) | | |
| Machine mass (including oscillator) | kg | 17500 | 18000 | 20000 |
| Power requirements (machine alone) | kVA | 15 | | |

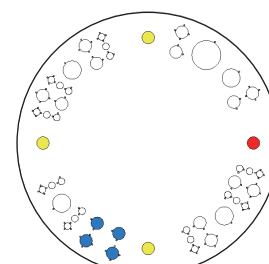
■ Oscillator specifications

| Oscillator type | AJ-3000 |
|---------------------------------------|--------------------------------------|
| Oscillation method | LD-pumped fiber laser Fiber laser |
| Output beam wavelength | μm 1.08 |
| Rated laser power | W 3000 |
| Maximum pulse peak power | W 3000 |
| Mass | kg About 400 |
| Power requirements | kVA 10.1 |
| Compatible chiller power requirements | kVA 9 |

■ Turret layout

| Range | Tool size | Punch size | Number of stations |
|-------|-----------|--------------|--------------------|
| A | ½" | Φ1.6 ~ 12.7 | 24(16) |
| B | 1¼" | Φ12.8 ~ 31.7 | 16(16) |
| B' | 1¼" | Φ12.8 ~ 31.7 | 3(3) |
| C | 2" | Φ31.8 ~ 50.8 | 4(4) |
| D | 3½" | Φ50.9 ~ 88.9 | 1(1) |
| G | 1¼" | Φ12.8 ~ 31.7 | 1(1) |
| Total | | | 49(41) |

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



- Auto-index station
- Die lift-up station
- Tapping station

⚠ For your safe use
Be sure to read the "Instruction Manual" carefully before use.

•When using product, appropriate personnel protection equipment must be used.

*Specifications, appearance and equipment are subject to change without notice.
*For applications related to the administration of machines and equipment (installation notification, export, financing, etc.) described in this catalog, please use the model name. The hyphenated spellings like LC-2012C1AJe 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 Japanese domestic market.

⚠ This laser product uses a Class 4 invisible laser for processing and a Class 3R visible laser for positioning.

- Class 4 invisible laser: Exposure to the eyes or skin of beams or scattered light is dangerous! Do not look or touch.
- Class 3R visible lasers: Avoid direct eye exposure.

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Inquiries



E155-HQ01en

Jan. 2024