

Machine installation range

Unit :mm

- REGIUS-3015AJe + Shuttle Table (Model Name: LST3015G) L:10125 W:2990 H:2146
- REGIUS-4020AJe + Shuttle Table (Model Name: LST4020G) L:12200 W:3199 H:2146



6kW 9kW 12kW

Machine specifications

| Model | REGIUS-3015AJe | REGIUS-4020AJe |
|--------------------------------------|---|----------------|
| Registered model name | REG3015AJE | REG4020AJE |
| Axis travel distance X×Y×Z mm | 3070×1550×100 | 4070×2050×100 |
| Maximum processing dimensions X×Y mm | 3070×1550 | 4070×2050 |
| Maximum processing weight kg | 920 | 1570 |
| NC type | AMNC 4ie | |
| Axis control method | X, Y, and Z axes (simultaneous 3-axes control) + B-axis | |
| Oscillator | Amada ENSIS-6000S / ENSIS-9000 / ENSIS-12000 | |
| Chiller | RKE7502B-VA-UP2BP-L / RKE11002B-VA-UP2BP / RKE15002B-VA-UP2 | |
| Dust collector | JXN-6XA / JXN-7XA ** (self-standing / pail can type) | |
| Axis travel method | X / Y / Z-axis linear motor system | |
| Rapid traverse X×Y composite m/min | 340 | |
| Process feed rate X×Y m/min | 0 to 240 (maximum command speed) | |
| Least input increment mm | 0.001 | |

Oscillator specifications

| Oscillator type | ENSIS6000S | ENSIS9000 | ENSIS12000 |
|---------------------|---------------------------|-----------|------------|
| Oscillation method | LD excitation fiber laser | | |
| Rated laser power W | 6000 | 9000 | 12000 |
| Stability % | ±2.0 or less | | |
| Pulse peak output W | 6050 | 9150 | 12150 |
| Pulse frequency Hz | 1~10000 | | |
| Duty % | 0~100 | | |
| Wavelength μm | 1.08 | | |

*1 JXN-7XA is ENSIS-12000 only

*Specifications, appearance and equipment are subject to change without notice.

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Inquiries



For your safe use, be sure to read the "Instruction Manual" carefully before use.

*Use of this product requires safeguard measures to suit your work.



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. Do not look into or touch the laser beam.

*Class-visible 3R Lasers: Avoid direct eye exposure

E167-HQ01en

Feb. 2024

SOLUTION

REGIUS AJ

3-axis linear drive
Fiber laser machine

SERIES

Blanking

The Engineering AMADA

6kW 9kW 12kW



Ultra-high-speed, high-precision processing for unrivalled productivity

The REGIUS-AJe is equipped with a 3-axis linear drive system, AMADA's original beam-control technology and the unique Laser Integration System.

AMADA's flagship fiber laser lives up to its Latin name of "king" (REGIUS).

The integration of evolved technologies enables further ultra-high speed, high precision, and a full range of processing with beam control technology.

In addition, new technology enables easy operation. We support processing with zero downtime regardless of skill level.

REGIUS, which realizes optimal processing for various materials, will revolutionize the field of laser processing.



6kW 9kW 12kW

REGIUS AJ SERIES

Comparison with conventional machine

Thin material by Clean Cut

Material: SUS304
Thickness: 1.0mm
Material dimensions: 500×1500mm



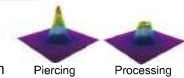
| Comparison of processing time | 62.5% Reduction | *Comparison of CO ₂ laser and REGIUS-AJe (9kW) |
|--|------------------------|---|
| Rack and pinion CO ₂ laser (4 kW) | F8000 | 15 minutes 44 seconds |
| Rack and pinion Fiber lasers (9kW) | F70000 | 8 minutes 15 seconds |
| REGIUS-AJe (9kW) | F70000 | 5 minutes 54 seconds |

| Comparison of processing costs | 40.5% Reduction | *Comparison of CO ₂ laser and REGIUS-AJe (9kW) |
|--|------------------------|---|
| Rack and pinion CO ₂ laser (4 kW) | | 1129 yen |
| Rack and pinion Fiber lasers (9kW) | | 931 yen |
| REGIUS-AJe (9kW) | | 671 yen |

There is a clear difference in axis performance!

Thick material by oxygen cut

Material: SS400
Thickness: 16.0mm
Material dimensions: 1524×3048mm



| Comparison of processing time | 69.4% Reduction | *Comparison of CO ₂ laser and REGIUS-AJe (12kW) |
|---|-----------------------------------|--|
| Previous model CO ₂ Laser (4 kW) | F900 pierce duration of 8 seconds | 5 hours 50 minutes 39 seconds |
| REGIUS-AJe (6kW) | F1400 pierce duration 1 second | 2 hours 19 minutes 08 seconds |
| REGIUS-AJe (9kW) | F1600 pierce duration 0.5 seconds | 2 hours 01 minutes 48 seconds |
| REGIUS-AJe (12kW) | F1800 pierce duration 0.5 seconds | 1 hour 47 minutes 04 seconds |

| Comparison of processing costs | 81.8% Reduction | *Comparison of CO ₂ laser and REGIUS-AJe (12kW) |
|---|------------------------|--|
| Previous model CO ₂ Laser (4 kW) | | 22,082 yen |
| REGIUS-AJe (6kW) | | 4638 yen |
| REGIUS-AJe (9kW) | | 4162 yen |
| REGIUS-AJe (12kW) | | 4014 yen |

Pierce time 8 sec → 0.5 sec, significantly reducing processing time!

Clean Cut vs Easy Fast Cut Technology Processing Comparison

Material: SECC
Thickness: 6.0mm
Material size: 914×1829mm



| Comparison of processing time | 79.1% Reduction | *Comparison of CO ₂ laser and REGIUS-AJe (12kW) |
|---|------------------------|--|
| Previous model CO ₂ Laser (4 kW) | F1800 | 1 hour 06 minutes 16 seconds |
| REGIUS-AJe (6kW) | F6500 | 21 minutes 00 seconds |
| REGIUS-AJe (9kW) | F10000 | 16 minutes 06 seconds |
| REGIUS-AJe (12kW) | F14500 | 13 minutes 52 seconds |

| Comparison of processing costs | 91.8% Reduction | *Comparison of CO ₂ laser and REGIUS-AJe (12kW) |
|---|------------------------|--|
| Previous model CO ₂ Laser (4 kW) | | 7527 yen |
| REGIUS-AJe (6kW) | | 667 yen |
| REGIUS-AJe (9kW) | | 621 yen |
| REGIUS-AJe (12kW) | | 615 yen |

Assist gas fee 0 yen, ultra-low cost machining!

Clean Cut vs Easy Fast Cut Technology Processing Comparison

Material: SUS304
Thickness: 12.0mm
Material size: 1000×2000mm



| Comparison of processing time | 84.0% Reduction | *Comparison of CO ₂ laser and REGIUS-AJe (12kW) |
|---|------------------------|--|
| Previous model CO ₂ Laser (4 kW) | F700 | 1 hour 55 minutes 51 seconds |
| REGIUS-AJe (6kW) | F1800 | 46 minutes 30 seconds |
| REGIUS-AJe (9kW) | F3500 | 22 minutes 00 seconds |
| REGIUS-AJe (12kW) | F4800 | 18 minutes 30 seconds |

| Comparison of processing costs | 84.5% Reduction | *Comparison of CO ₂ laser and REGIUS-AJe (12kW) |
|---|------------------------|--|
| Previous model CO ₂ Laser (4 kW) | | 23,445 yen |
| REGIUS-AJe (6kW) | | 7730 yen |
| REGIUS-AJe (9kW) | | 4171 yen |
| REGIUS-AJe (12kW) | | 3615 yen |

High speed, low cost processing of medium-thickness plates!

*Calculation of running cost Electricity cost: 30 yen /kWh, Laser gas: 40,000 yen /7m³, Oxygen: 30,000 yen /132m³, Nitrogen: 25,000 yen /107m³
Consumables and maintenance parts are included in the running costs based on Amada's recommended period for replacement.
*Processing time and running costs may differ from actual values.

Compatibility between high-speed and high-precision processing

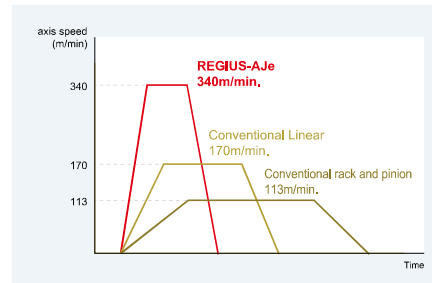
3-axis linear drive

Amada's 3-axis linear drive system is the ideal match for high-speed, high-precision processing.



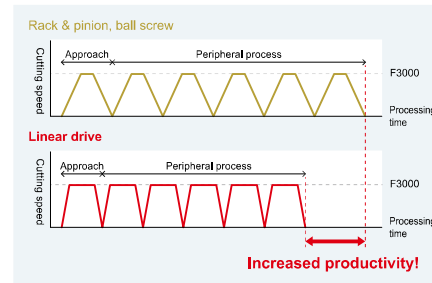
1 High-speed processing

■ **Increase of axis travel speed, (XY combined: 340m/min)**
Faster positioning time, shorter processing time



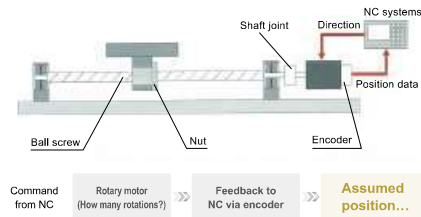
■ **Increased acceleration**

Differences in processing time at the same command speed



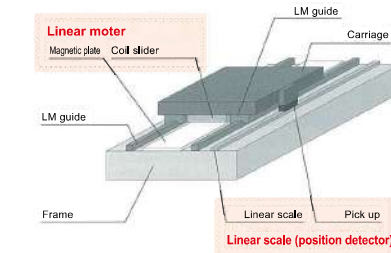
2 High-precision processing

Semi-closed loop control (ball screw drive: conventional laser)

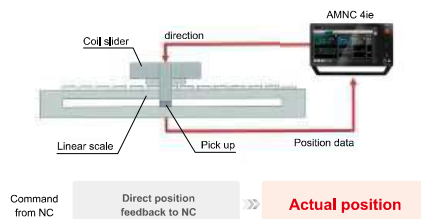


Effect of linear drives

No contact with the drive system, so no wear of the drive system over time
Accuracy can be maintained for a long time

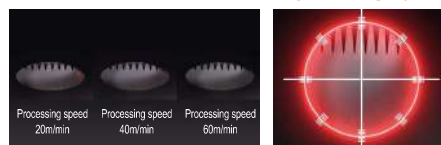


Fully closed loop control (linear drive: REGIUS)



Circularity decreases with speed on conventional machines.

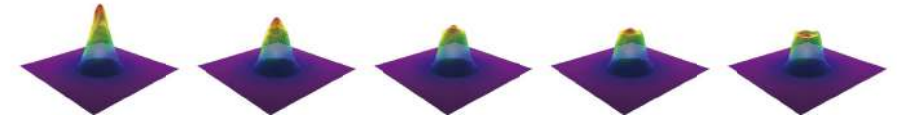
Linear drives achieve accurate circularity, even at high speeds.



ENSIS Variable Beam Control Technology

Thin-to-thick processing with one machine

ENSIS technology creates the most suitable beam shape according to the material type and thickness due to the Variable Beam Control Unit, and realizes wide range processing with one machine. The best laser machine for those who process variety of thickness and materials.



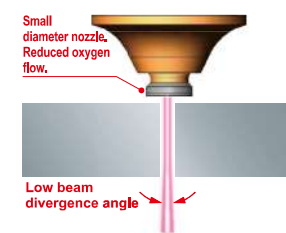
Thick material capability increase by dynamic beam control

High power ENSIS machines*1 are equipped with the Auto Collimation feature to control the beam diameter and focal point.

Dynamic beam control in combination with the Variable Beam Control unit provides improved process times and, product quality (such as cutting surface and bevel angle).

*1 3kW excluded

■ **Beam divergence CG**

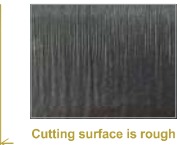


Before: Conventional fiber laser

■ **Bevel angle comparison**



■ **Cutting surface comparison**



Excessive oxygen combustion and wide beam divergence occurs on the underside. This results in poor quality cutting surface and cutting edge.

After: ENSIS-AJ (6kW/9kW)

■ **Bevel angle comparison**



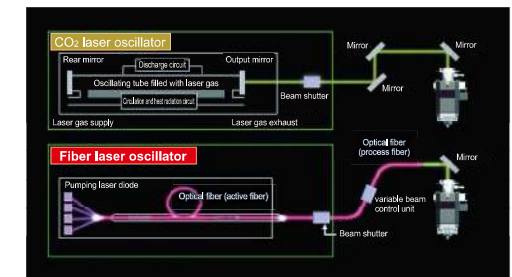
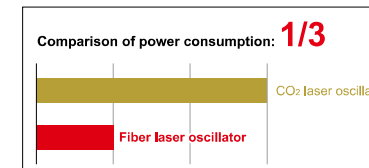
■ **Cutting surface comparison**



The Auto collimation system can control the beam shape and minimizes the beam divergence. Utilizing small diameter nozzle minimizes oxygen combustion on the underside, helping to reduce the bevel angle by up to 90%. The cutting surface is improved significantly and high quality processing is realized.

Energy-saving performance unique to fiber lasers

Fiber lasers are extremely energy-efficient lasers with an oscillator energy efficiency about three times that of CO₂, enabling a significant reduction in power consumption. The simple structure of the oscillator also minimizes maintenance costs, enabling operation with low running costs.



Schematic diagram of an oscillator structure

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 *1
The status of the machine (status, remaining time, and on-site image) can be checked with a smartphone. Schedule editing and start/stop can be performed remotely.



Automatic remnant nesting
Anyone can create high-yield nesting with the i-Camera Assisted System *2.



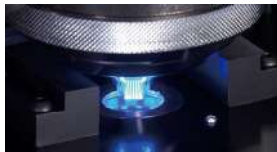
Joint adjustment function during processing
Adjust the joint strength for each processing condition. This is useful when programming is shared with CO₂ lasers.



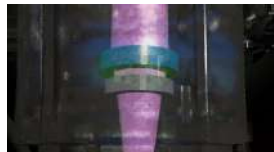
CO₂ emission reporting function
CO₂ emissions are measured for each component, and reports can be created and filed.

Laser Integration System

Automation of laser processing operations reduces subjective operator decisions and increases uptime. It supports stable processing with zero downtime and contributes to increased productivity.



i-Nozzle Checker*2
Automatic beam centering function
Nozzle status diagnosis function
Autofocus function



i-Optics Sensor
Protective glass contamination detection
Status diagnosis function



i-Process Monitoring
Processing defect detection → Automatic recovery
Pierce defect detection



Automatic recovery from head interference
Processing head interference detection → Automatic recovery *3

*1 Start/Stop function requires V-monitor (option).
*2 Option
*3 Operator's intervention might be required in such case as nozzle breakage or serious collision.
Automatic recovery from head collision requires i-Nozzle Checker.

Other Functions (○: Option)

i-Camera Assisted System ○

This function recognizes the material with the camera and enables manual or automatic plate removal and placement of products.



V-monitor ○

Camera images from inside the machine can be viewed in real time on a smartphone or PC. You can use the NC to check the video recorded when an alarm is activated.



Nozzle changer ○

The necessary nozzles can be automatically replaced according to cutting conditions. Continuous automatic operation is possible from thin to thick plates. (standard 8 pcs., OP16 pcs.)



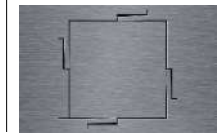
Monitor

A screen is built into the front partition so processing can be viewed.



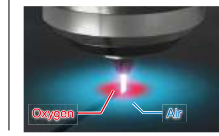
Soft joint *1

This new joint uses the thermal distortion generated in the slit section to clamp the product. Prevents parts from rising, reduces manual removal time, and reduces man-hours required for finishing joint marks.



Dual gas *2 ○

When processing mild steel plates with oxygen, the use of oxygen assist gas in the inner nozzle and air in the outer nozzle reduces processing defects.



Smart Edge

This processing technology achieves sharp edge quality when processing mild steel plates.



Fiber silky cut *3 ○

This processing technology improves the cutting quality of stainless steel. Optimal beam formation improves surface roughness and dross quality.



OVS-D *4 ○

CMOS camera for combined machining with a punch press (NCT). This enables combined processing by measuring the hole position processed by the NCT machine and correcting the origin position.



Automatic WACS II ○

This system automatically supplies water to the WACS equipment. This system makes it possible to extend the cooling water replenishment cycle.



HP Easy Cut Device ○

High nitrogen content gas can be extracted from factory compressed air and used as an assist gas. A separate compressor is required. (1300L, 1.37MPa)



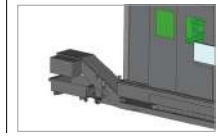
DR cutting device ○

A small amount of air is mixed into the assist gas to reduce dross in aluminum processing. Gas density can be automatically switched by NC control.



Y-conveyor *4 ○

Take out the scrap and small items to the machine rear (or front).



Additional shaded windows ○

Fiber laser safe windows can be added to the center gull wing door. You can check the inside of the machine not only through the monitor but also through the window.



Warning light ○

Three-color tower-type signalling lights allow you to check the operating status of the machine even from a distance. (Amada standard lighting conditions)



*1 VPSS 4ie BLANK is required. *2 3kW oscillator cannot be selected. *3 Ask Amada engineer for the required equipment and details. 3kW or 6kW oscillator cannot be selected. *4 ENSIS-Rie cannot be selected.

Automation solutions to maximize productivity

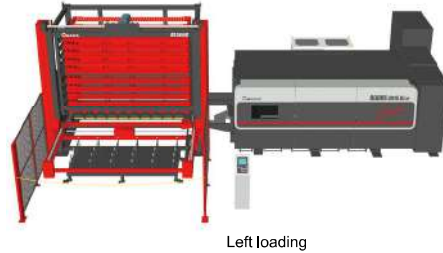
Automation of thick plate processing

Pallet changer

AS-C

Long-time continuous operation of thick plate processing

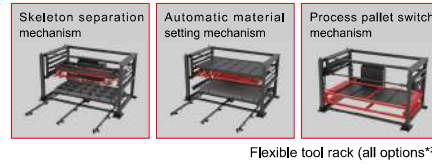
- Process pallet: 10 shelf (standard)
- Lineup from minimum 5 to maximum 20 shelves
- Add the operator support tool to the flexible tool rack (option)**



Number of shelves that can be selected according to the factory



Worker support tool



Automation to expand production volume and range

Twin tower

AS-T

Compatible with the production of a wide variety of materials from thin to thick sheets

- ASFH (2 product pallets, 2 material pallets, 2 processing pallets) + AS (10 processing pallets) 2-shelf configuration (standard)



Expansion system to connect multiple machines

Manipulator + Automatic warehouse

MPL-C
MARS-N

Retrofittable and expandable automation to support variable-quantity production

- Automated operation from material supply to product accumulation in MPL-C: Max. plate thickness 12mm
- If connected to a MARS, the number of shelves and station numbers can be customized according to the customer.
- Connection with multiple blanking machines is also supported



*1 The area for three shelves is used, 5-stage specifications are not selectable.
*2 You cannot select more than one.

All automation solutions can be set to right loading or left loading.

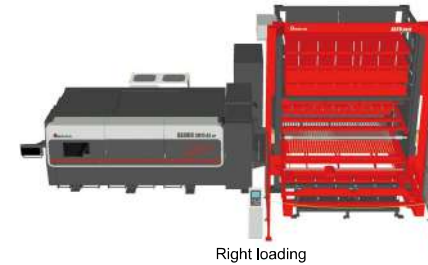
Automation of medium-thickness plate processing from packaging material

Fork type Pallet changer

ASFH

Long-term continuous operation up to medium-thick plates using packing materials

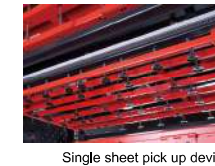
- Automatic operation of product accumulation from material supply
- Maximum plate thickness :12mm
- Two product pallets, two material pallets, and two processing pallets (standard)



Maintenance support



Automation of material supply



Automation of product accumulation



Take-out loaders for laser machine

TK 3015L (All models can be connected)

Automation of parts removal and sorting operations

- Reducing the burden of sorting work
- Reduction of lead time by integrating parts
- Maximum load capacity :150 kg
- Maximum sizes: 2500mm×1250mm
- Max. plate thickness :12mm



Free from the heavy workload of sorting balaclavas



Rotation and extension/contraction of the suction cup unit to accommodate various products



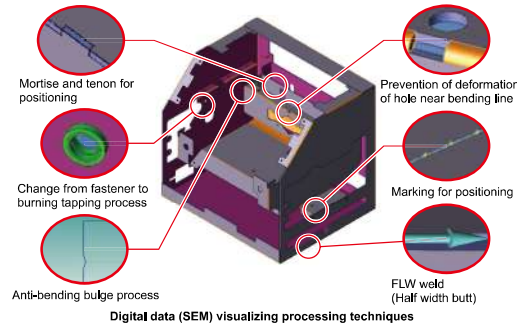
Improved traceability with labeling (option)

Amada's concept of connecting with customers is to provide "assurance and satisfaction" to customers

Software

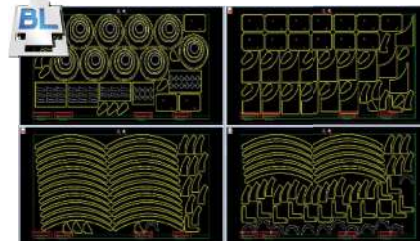
Advanced sheet metal engineering system **VPSS 4ie**

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 blanking 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 blanking machines.

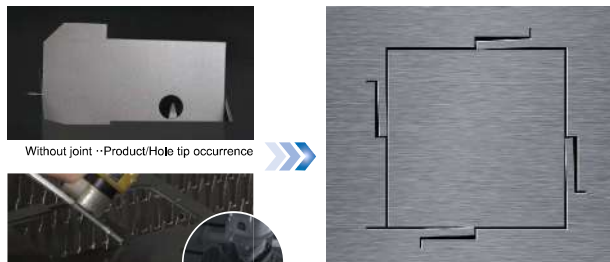


*VPSS 4ie PREMIUM can create efficient programs including bending simulation by CAM for bending.

Soft Joint (Option)

Soft joints can be utilized if using VPSS 4ie BLANK.

This new joint uses the thermal distortion generated in the slit section to clamp the product.



Secondary process required to remove joint marks.

- Prevents parts from tipping or falling
- Reduction of manual removal time
- Reduced man-hours for finishing joint marks

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.

