SOLUTION

AMADA DIGITAL INNOVATION
V-factory

Fiber Laser with LBC Technology

VENTIS AJe

SERIES

Blanking

The Engineering AMADA

4kW 6kW

AMADA

The Best and Flexible Laser Beam!

High brightness oscillator and LBC Technology enable enhanced high speed and high quality processing

LBC is an abbreviation of Locus Beam Control which is the world's first technology* that enables free control of the laser beam locus pattern.
The combination of AMADA's high brightness oscillator and optimal beam locus pattern allows the VENTIS to provide the best performance in the 4kW and 6kW class.

*Study conclusion

風

VENTIS means "wind" in Latin. We will introduce the world's first laser cutting machine equipped with new technology to create a new trend (wind).

Fiber Laser with LBC Technology

VENTIS AJ e SERIES

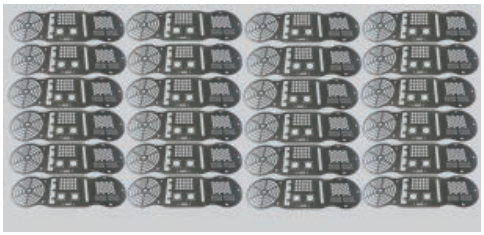
LOCUS BEAM CONTROL TECHNOLOGY

4kW 6kW

Comparison with conventional machine

Thin material by Clean Cut

Material: SUS
Thickness: 1.0mm
Sheet size: 1000×2000mm



Process time comparison — **58.6% reduction** *Comparison between CO_2 laser and VENTIS-AJe (4kW)

Conventional CO_2 laser (4kW)	F8000	1hr. 11min. 36sec.
VENTIS-AJe (4kW)	F50000	29min. 36sec.

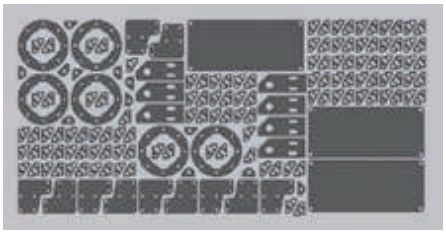
Process cost comparison — **39.9% reduction** *Comparison between CO_2 laser and VENTIS-AJe (4kW)

Conventional CO_2 laser (4kW)		5,139 JPY
VENTIS-AJe (4kW)		3,085 JPY

High speed processing of thin material by high brightness beam !

Thick material by oxygen cut

Material: SS400
Thickness: 19.0mm
Sheet size: 1219×2438mm



Process time comparison — **75.8% reduction** *Comparison between CO_2 laser and VENTIS-AJe (6kW)

Conventional CO_2 laser (4kW)	F900 Piecing time 12 sec.	8hrs. 55min. 56sec.
VENTIS-AJe (4kW)	F900 Piecing time 3 sec.	3hrs. 19min. 02sec.
VENTIS-AJe (6kW)	F1100 Piecing time 1.2sec.	2hrs. 09min. 34sec.

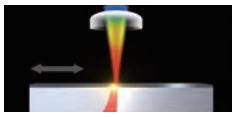
Process cost comparison — **90.2% reduction** *Comparison between CO_2 laser and VENTIS-AJe (6kW)

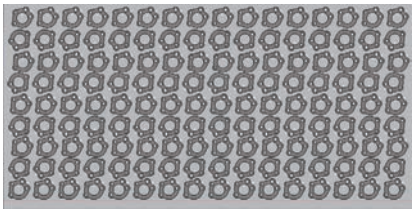
Conventional CO_2 laser (4kW)		34,423 JPY
VENTIS-AJe (4kW)		4,565 JPY
VENTIS-AJe (6kW)		3,350 JPY

Significant processing time reduction by high speed piercing!

Aluminum by Clean Cut

Material: A5052
Thickness: 10.0mm
Sheet size: 1000×2000mm





Process time comparison — **80.1% reduction** *Comparison between CO_2 laser and VENTIS-AJe (6kW)

Conventional CO_2 laser (4kW)	F700	4hrs. 54min. 51sec.
VENTIS-AJe (4kW)	F2500	1hr. 25min. 29sec.
VENTIS-AJe (6kW)	F3500	58min. 31sec.

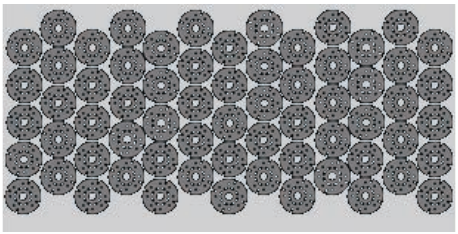
Process cost comparison — **77.9% reduction** *Comparison between CO_2 laser and VENTIS-AJe (6kW)

Conventional CO_2 laser (4kW)		42,999JPY
VENTIS-AJe (4kW)		10,087 JPY
VENTIS-AJe (6kW)		9,461JPY

High speed and low cost processing of aluminum!

Clean Cut vs. Clean Fast Cut

Material: SPHC
Thickness: 6.0mm
Sheet size: 1219×2438mm



Process time comparison — **63.3% reduction** *Comparison between CO_2 laser and VENTIS-AJe (6kW)

Conventional CO_2 laser (4kW) (Clean)	F1800	1hr. 54min. 10sec.
VENTIS-AJe (6kW)	F6000	41min. 49sec.

Process cost comparison — **68.7% reduction** *Comparison between CO_2 laser and VENTIS-AJe (6kW)

Conventional CO_2 laser (4kW) (Clean)		16,649JPY
VENTIS-AJe (6kW)		5,198 JPY

High speed and low cost processing by 6kW+LBC!

*Clean fast cut is available only by 6kW, not by 4kW

•Calculating running cost Electricity: 30JPy/kWh, Laser gas: 40,000JPY/7m³, Oxygen: 30,000JPY/132m³, Nitrogen: 25,000JPY/107m³
Cost for consumables and maintenance parts are included in running costs based on AMADA's recommended period for replacement
*Processing time and running costs may differ from the actual value

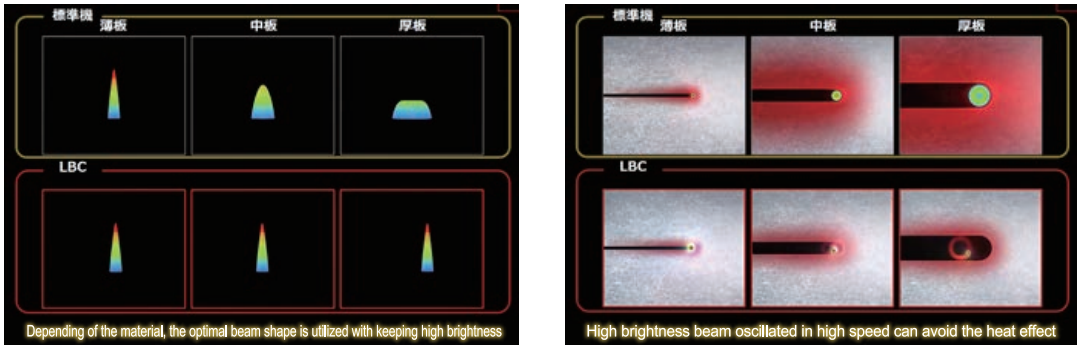
Features of VENTIS-AJe

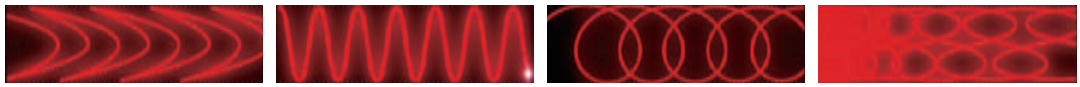
High brightness fiber laser oscillator

Single module high brightness oscillator enables LBC technology, and creates a high quality beam

LBC Technology

The optimal beam pattern is utilized depending on the material and thickness

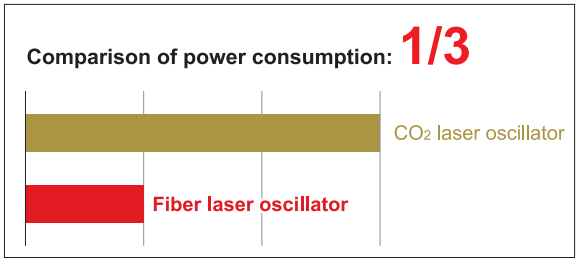


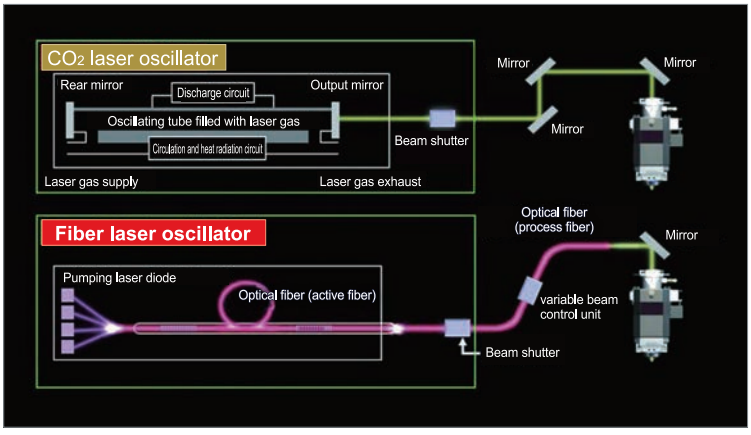


Energy density must be reduced with a conventional laser machine, while LBC technology can keep and control high density beam

Energy-saving performance unique to fiber lasers

Fiber lasers are extremely energy-efficient with an oscillator energy efficiency about three times that of CO_2, enabling a significant reduction in power consumption. The simple structure of the oscillator also minimizes maintenance costs, enabling operation with low running costs.





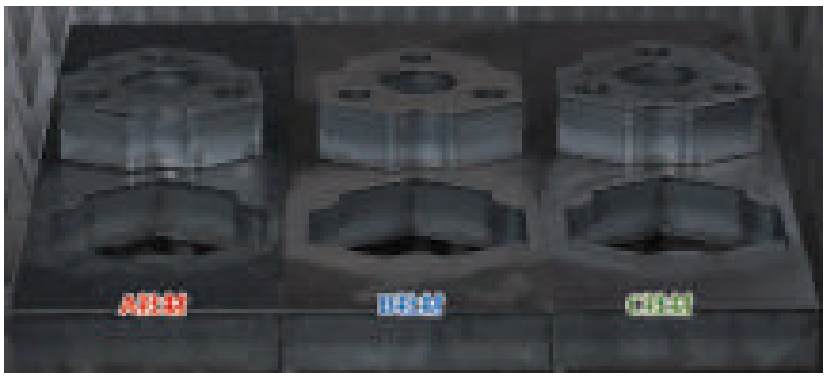
Schematic diagram of an oscillator structure

Benefits of high brightness oscillator and LBC Technology

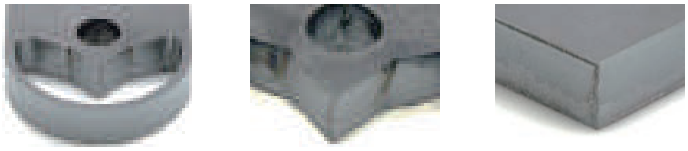
Mild steel: Stable and high quality processing of any material

Blast furnace steel can be cut in the same cutting condition as electric furnace steel.

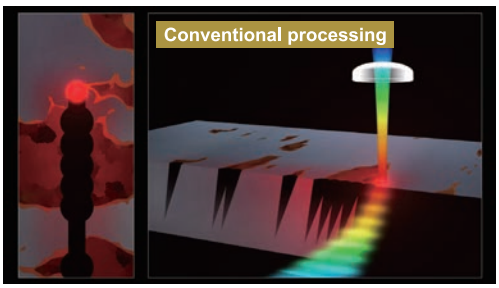
Beam locus image

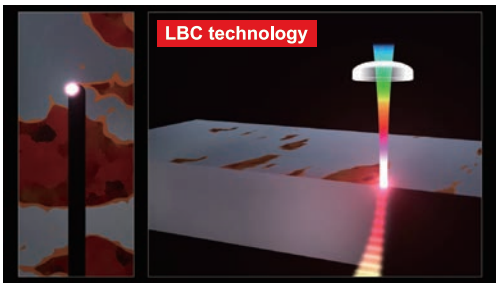


Each material t=25.0mm
*cut by 6kW



Bevel reduction and sharp corner detail (LBC technology + Smart edge)

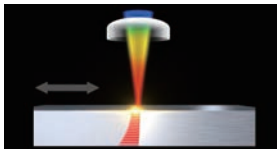




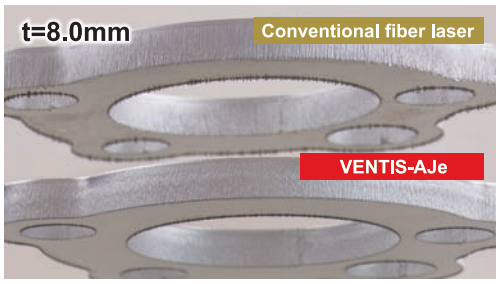
Poor material surface conditions have less effect with LBC technology, minimizing the heat effect significantly. Burning and notch can be reduced.

Aluminum: High quality, High speed, Low cost

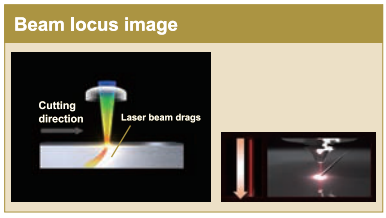
Equivalent performance, in processing time and quality, to the higher power oscillators



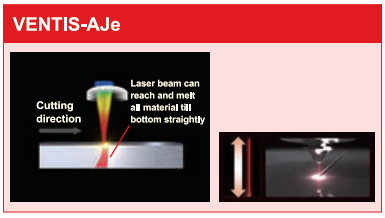
Beam locus image



High quality cutting surface, less dross



Not enough heat at the bottom of the cut, so processing speed cannot be increased

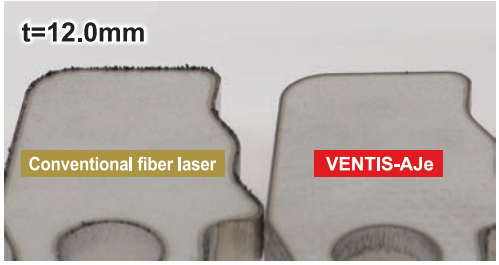


Material is efficiently removed from the cutting surface, increasing cutting speeds

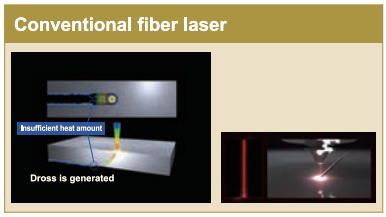
Stainless steel: Less dross, High quality processing

Compared with the conventional fiber laser, reduction in dross is achieved.

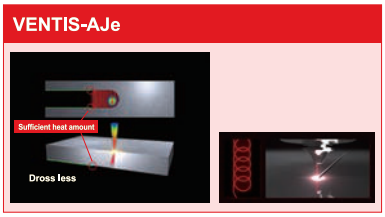
Beam locus image



Dross reduction sample



Not enough heat at the bottom of the cut, generating dross



Beam energy is transmitted effectively to the bottom of the cut, minimizing dross

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	Efficiency in remote operation from anywhere
Easy	**Efficiency**
Environmental sustainability in production	**Evolution together with our customers**
Environmental	**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.

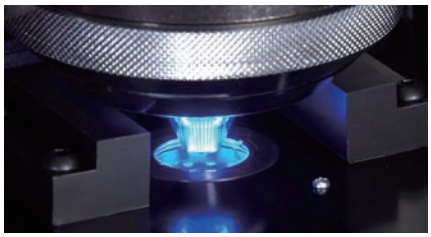
Automatic remnant nesting
Anyone can create high-yield nesting with the i-Camera Assisted System *2.

Joint adjustment function during processing
Adjust the joint strength for each processing condition. This is useful when programming is shared with CO_2 lasers.

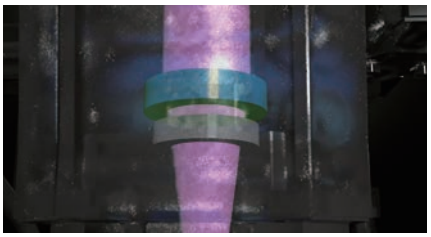
CO_2 emission reporting function
CO_2 emissions are measured for each component, and reports can be created and filed.

Laser Integration System

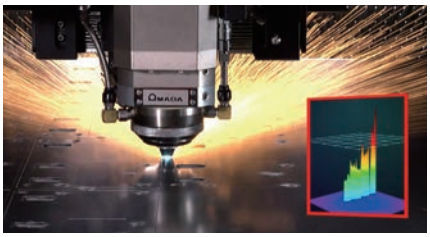
Automation of laser processing operations reduces subjective operator decisions and increases uptime. It supports stable processing with zero downtime and contributes to increased productivity.



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

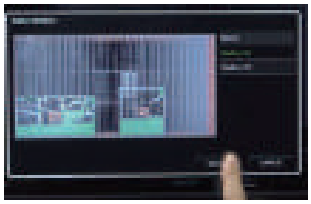
Automatic recovery from head interference
Processing head interference detection ➡ Automatic recovery *3

*1 An optional V-monitor is required to use the start/stop function.
*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 ○

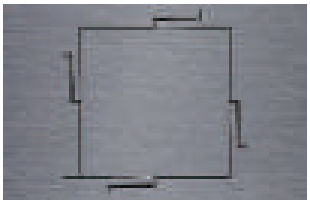
Camera images from inside the machine can be viewed in real time on a smartphone or PC.
You can use the NC to check the video recorded when an alarm is activated.

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.)

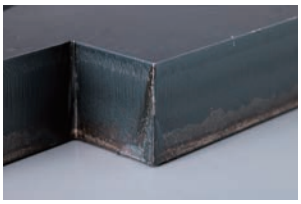
Soft joint *1

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.



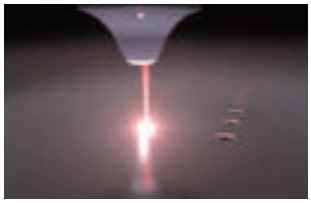
Smart Edge

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



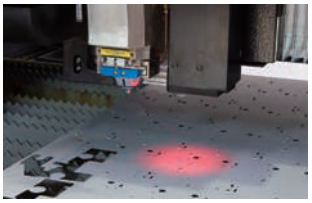
LBC Flash Cut *1

With it's unique round hole processing method, the VENTIS-AJe can produce holes over 3 times faster than a conventional machine.



OVS-D ○

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 ○

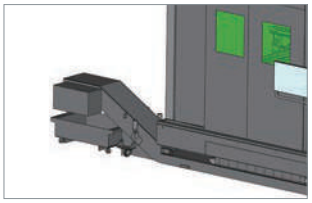
High nitrogen content gas can be extracted from factory compressed air and used as an assist gas. A separate compressor is required. (1300L, 1.37MPa)

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.

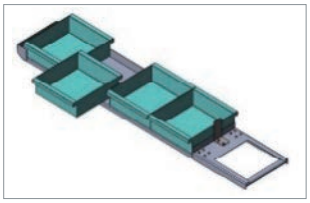
Y-conveyor ○

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



Large capacity scrap tray ○

Approximately 1.8 times larger capacity for scrap or small pieces, and the split-type trays allow easy cleaning.



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 option only for 6kW

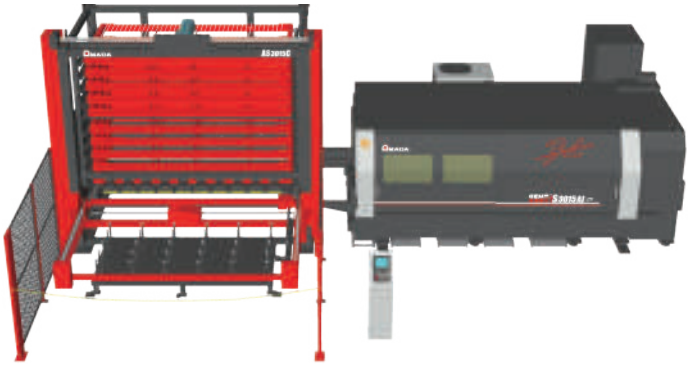
Automation solutions to maximize productivity

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)*1



Left loading

■**Number of shelves that can be selected according to the factory**

Low height 5-shelf type

20-shelf type

■**Worker support tool**

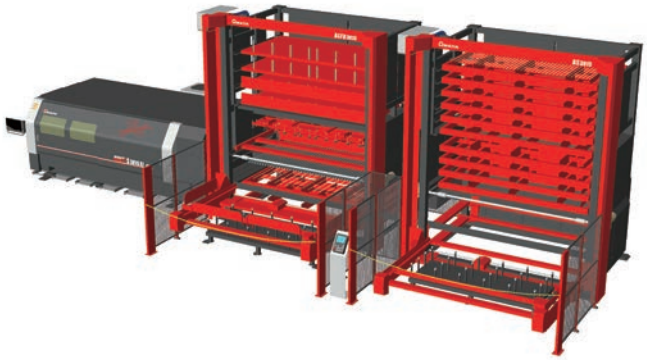
Flexible tool rack (all options*2)

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-C (10 processing pallets) 2-shelf configuration (standard)

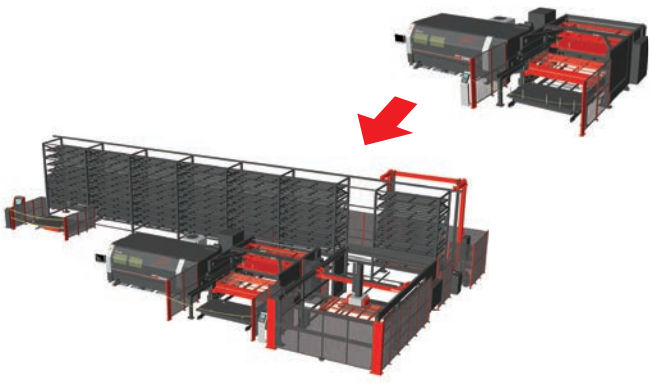


Expansion system to connect multiple machines

Manipulator + Automatic warehouse **MPL-C MARS-N**

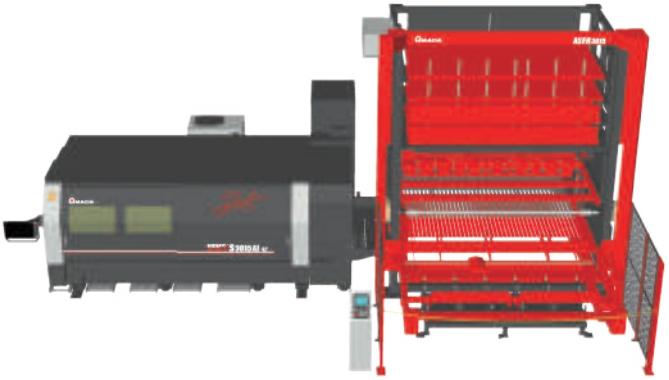
Retrofittable and expandable automation to support variable-quantity production

- MPL-C supports material supply to product accumulation automatically
- 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.



Right-out

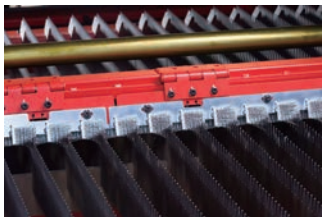
Automation of medium-thickness plate processing from packaging material

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 palettes, two material palettes, and two processing palettes (standard)

■ Maintenance support

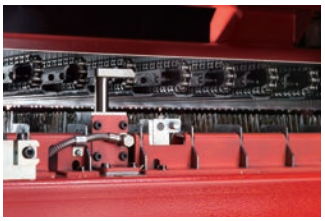


Cleaning brush

■ Automation of material supply

Single sheet pick up device

■ Automation of product accumulation



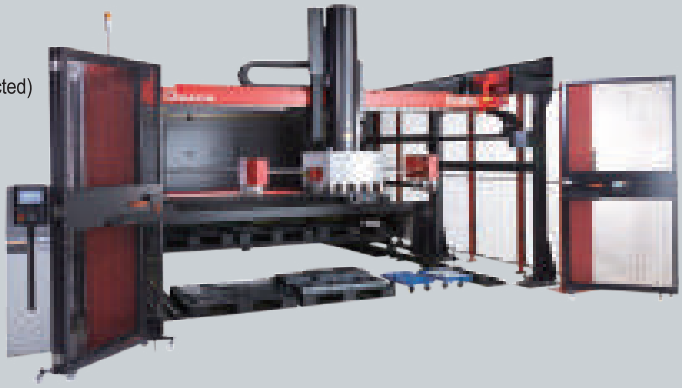
Chain fork unit

Take-out loaders for laser machine

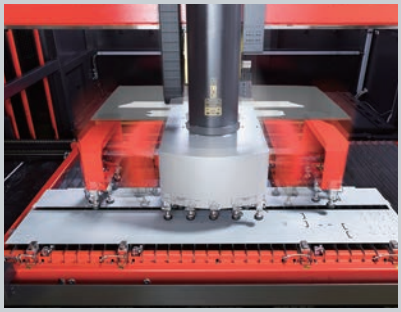
TK3015L (All models can be connected)

Automation of parts removal and sorting operations

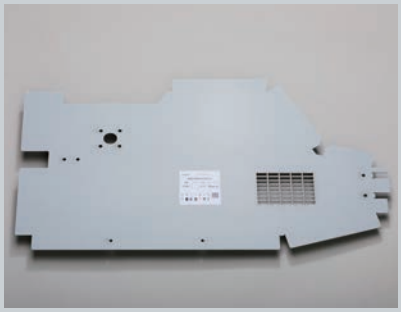
- Reducing the burden of sorting work
- Reduction of lead time by integrating parts
- Maximum load capacity :150 kg
- Maximum sizes: 2500mm×1250mm
- Max. plate thickness :12mm



Reduce heavy burden of part separation and sorting



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



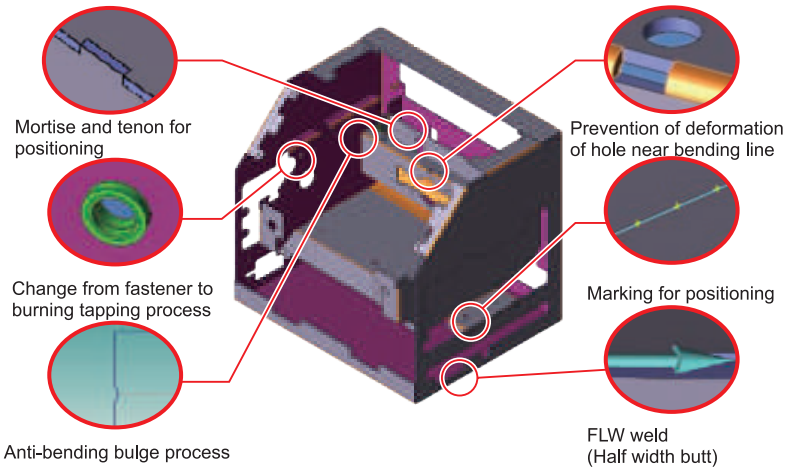
Improved traceability with labeling (option)

Amada's concept of connecting with customers is to

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.

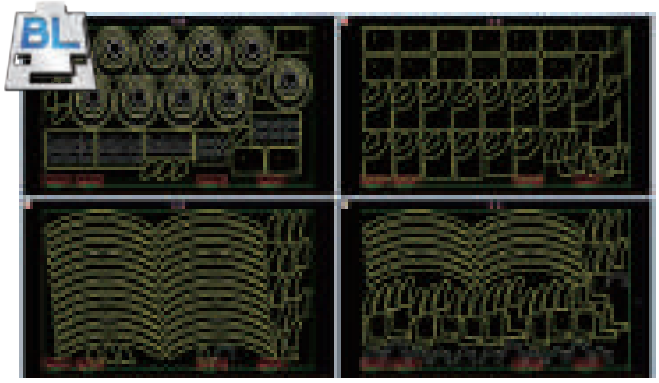


Digital data (SEM) visualizing processing techniques

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.

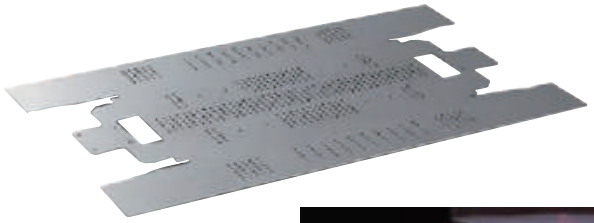
*VPSS 4ie PREMIUM can create efficient programs including bending simulation by CAM for bending.

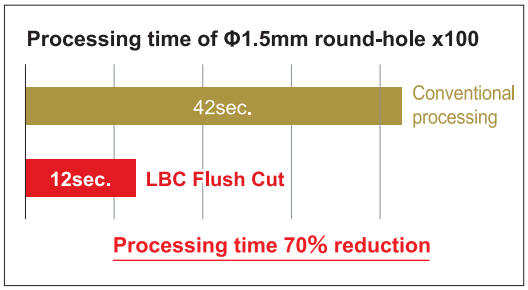


LBC Flash Cut

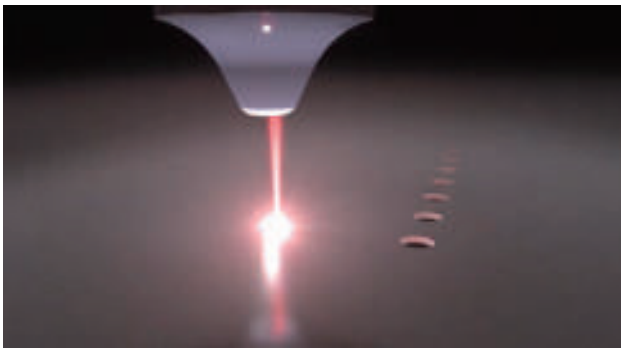
VPSS 4ie BLANK supports the unique high-speed round hole cutting technique called LBC Flash Cut.
This type of processing can cut holes over 3 times faster than conventional methods.

Material: SPCC
Thickness: 1.0mm
Sheet size: 345×212mm
Processing speed: 55000mm/min
*32000mm/min on LBC Flush Cut portion
Processing time: 1min. 31sec.





*Ask us for the details of which shape or material thickness can be processed
*Comparison on the processing by 6kW



Laser head moves in one direction while the laser beam makes round motion.

provide "assurance and satisfaction" to customers

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.

■Machine dimensions

Units: mm

VENTIS-3015AJe+Shuttle table (Model: LST3015G)
L:9900 W:2840 H:2236

VENTIS-4020AJe+Shuttle table (Model: LST3015G)
L:11875 W:3340 H:2236

■Machine Specifications

Model		VENTIS-3015AJe	VENTIS-4020AJe
Registered model name		VN3015AJE	VN4020AJE
Axis travel distance X×Y×Z	mm	3070×1550×100	4070×2050×100
Maximum processing dimensions X×Y	mm	3070×1550	4070×2050
Maximum material mass	kg	920	1570
NC type		AMNC 4ie	
Axis control method		X, Y, Z axes (simultaneous 3-axis control) + B axis + CF axis	
Oscillator		AMADA AJ-4000S / AJ-6000S	
Chiller		RKE5502B-VA-UP2BP-L / RKE7502B-VA-UP2BP-L	
Dust collector		PXN-6XA / JXN-6XA (self-standing pail can type)	
Axis travel method		X- and Y-axis: Rack and pinion Z-axis: Ball screw	
Rapid traverse X×Y Composite	m/min	170	
Processing feed rate X×Y	m/min	0 ~ 120 (maximum command speed)	
Least input increment	mm	0.001	

■Oscillator specification

Model		AJ4000S	AJ6000S
Oscillation method		LD excitation fiber laser	
Rated laser power	W	4000	6000
Stability	%	±2.0 or lower	
Pulse peak output	W	4050	6050
Pulse frequency	Hz	1~10000	
Duty	%	0~100	
Wave length	μm	1.08	

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

AMADA CO., LTD.
200, Ishida, Isehara-shi, Kanagawa, 259-1196, Japan
www.amada.co.jp

Inquiries

For your safe use, be sure to read the operator's 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 3R visible laser : Avoid direct eye exposure

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