

JUKI

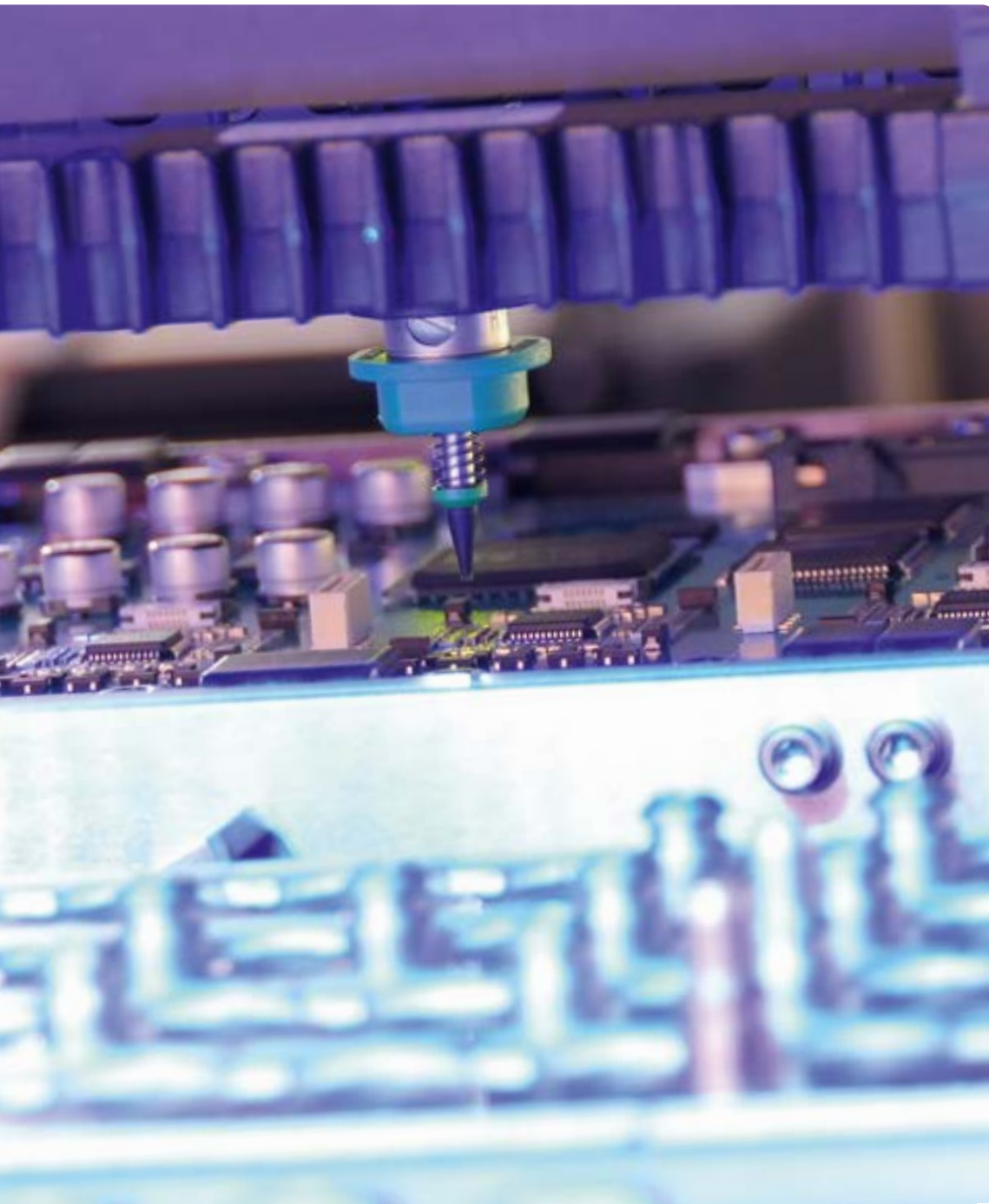
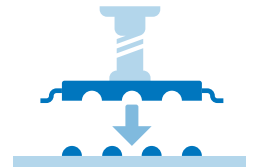
smart.fast.modular.



PLACEMENT SOLUTION

RX-6 SERIES

High-Speed Compact Modular Mounter



RX-6 BASIC FEATURES



RX-6 SERIES

High-Speed Compact Modular Mounter

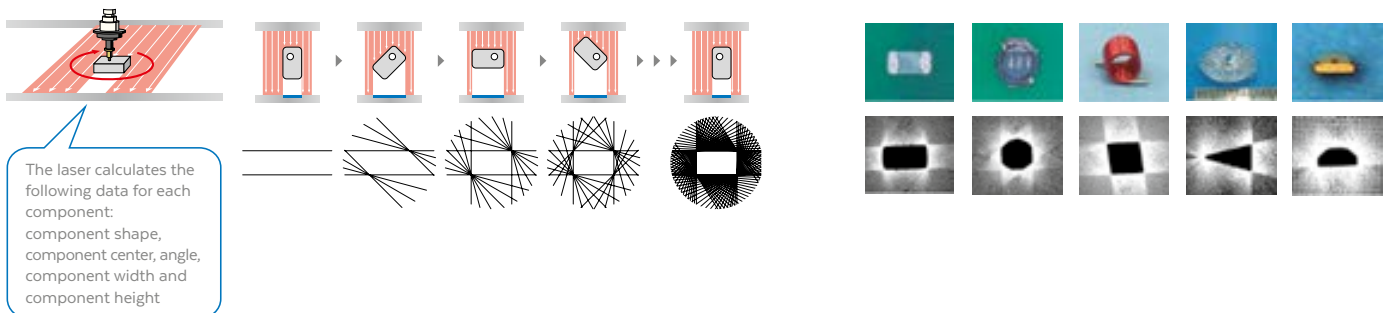
RX-6 is the perfect solution for high-mix / mid-volume productions with fast changeover procedures. RX-6 supports optimized line availability, material savings and reduced downtimes at highest accuracy, quality and flexibility.

- Chip component placement speed 52,000 CPH (optimum)
- Placement speed increased by 24% compared to previous designs
- Compact footprint of just 1.25 m
- Wide range of usable boards and components

JUKI'S LASER CENTERING TECHNOLOGY FOR HIGH-SPEED, ACCURATE PLACEMENT

The machine automatically identifies components of various shapes from ultra-miniature components such as 0402 (metric)/ 01005 (inch) chips up to 50 × 50 mm square components such as PLCs, SOPs, BGAs, and QFPs. When the machine recognizes a component by laser, variations such as shape, color, and reflection do not matter.

Recognition algorithm

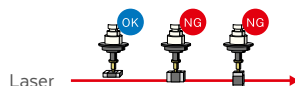


THE COMPONENT CHECK FUNCTION IMPROVES THE QUALITY OF COMPONENT PLACEMENT

The component check function improves the quality of component placement. The presence of components is monitored continuously by laser from the first pick to the final placement – deleting the risk of not detecting any missing or lost components completely.

1. On-the-fly component detection

Laser beam detects presence of components.



2. Component orientation check

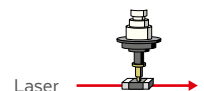


3. Component dimension check



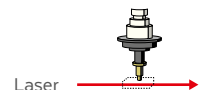
4. Component monitoring

Laser controls presence of component during head movement.



5. Release check

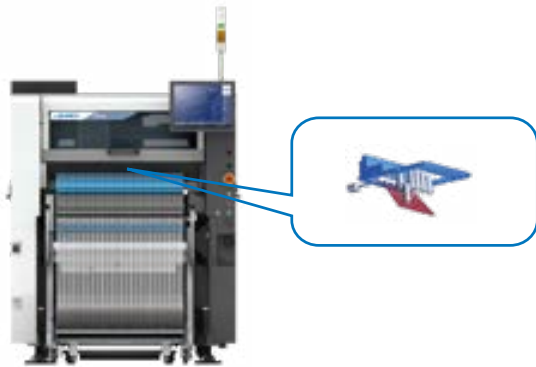
Laser checks whether the component has been properly released on the board after placement.



HIGH QUALITY

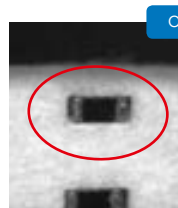
EPV (EMBEDDED PROCESS VERIFICATION) FUNCTION

Six ultra-miniature cameras built into the head section capture component pick&place images without losing placement speed. An analysis runs for presence / absence in real time. This unique function prevents defective boards and potential rework while at the same time minimizing the time for analyzing the root cause of the error.

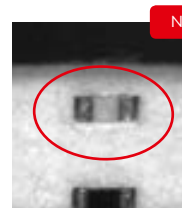


Component upside down

In case a component is placed upside down by mistake, the machine displays an error message and stops automatically.



Component placed correctly



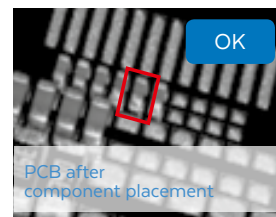
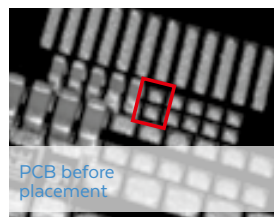
Component placed upside down



Error message and details displayed to operator

Component presence check

Images are analyzed automatically. In case a component is missing or lost, the machine displays an error message and stops automatically.



Root cause failure analysis function

Root cause failure analysis uses image analysis to quickly identify problems in the production process and reduce the time for corrective action.

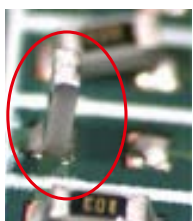


The analysis includes the following items:

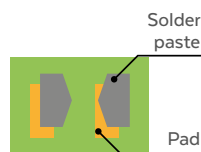
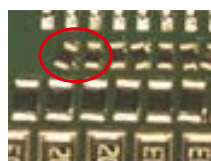
- date / time
- cause of an error
- nozzle
- feeder number
- head number
- barcode

OFFSET PLACEMENT AFTER SOLDER SCREEN PRINTING (OPASS)

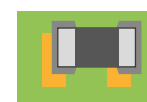
The OPASS function uses the machine's integrated camera to check the location of solder paste vs. the pads and corrects the placement accordingly. This function reduces defects caused by misalignment of the paste on the pads.



A printing misalignment occurs



With OPASS function



Placement based on solder paste location

Without OPASS function

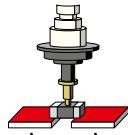


Placement based on pad location

HIGH QUALITY

COMPONENT VERIFICATION SYSTEM (CVS)

By measuring the resistance, capacitance, or polarity before production starts, the machine can prevent incorrect components from being placed. The new CVS unit can check six components simultaneously, reducing the check and changeover times.



Electrodes (A) used to check polarity or measure components

RELIABLE, HIGH-PRECISION RECOGNITION

Height measurement function

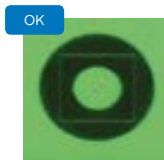
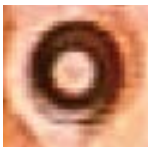
A non-contact laser sensor measures the height of the PCB to prevent excessive force on components and reduce the risk of damage. This sensor can also measure the pick height more accurately and faster than other methods.



HMS (Height Measurement System) sensor unit

Flexible lighting improves fiducial measurement accuracy

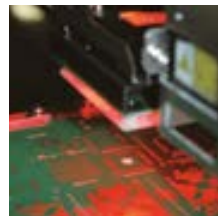
The OCC (Offset Correction Camera) is used for fiducial recognition and bad mark detection. Flexible lighting allows the machine to accurately recognize poor contrast fiducials and barcodes.



With JUKI OCC camera



Using ordinary lighting



Poor contrast fiducial mark read by OCC

NEW ON-THE-FLY CENTERING SYSTEM

A new generation of laser sensor, LNC120, for an even more accurate placement.

New LNC120 laser sensor

Light emitter



Light receiver



Laser in motion

HIGH PRODUCTIVITY

MACHINE CONSTRUCTION FOR HIGH-MIX / MID-VOLUME PRODUCTION AT A VERY SMALL FOOTPRINT

52,000
CPH
(optimum)

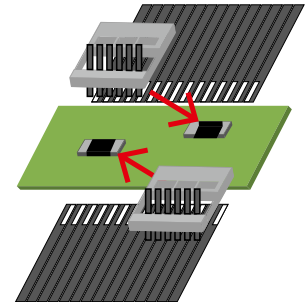
Each machine is equipped with two head units each of which possesses its own on-the-fly centering system. Component positioning during head movement guarantees real high-speed placement with greatest accuracy.



1.25 m wide small-foot design



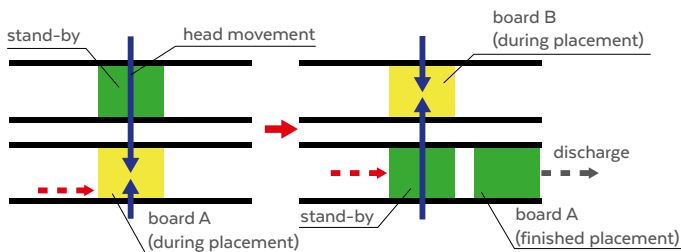
Two head units and two beams per machine



Direct travel to the placement position

THE FOLLOWING IS APPLICABLE TO DUAL-LANE PRODUCTION

The board transport waiting time is reduced while increasing the effective production tact time at the same time.



TRAY SUPPLY DEVICE TR8S IN SPACE SAVING DESIGN

A space-saving design enables operators to apply tape feeders on the rear side as well as tray components at the same time.



When TR8S is attached

HIGH PRODUCTIVITY

VISION RECOGNITION TECHNOLOGY FOR HIGH-SPEED COMPONENT PLACEMENT

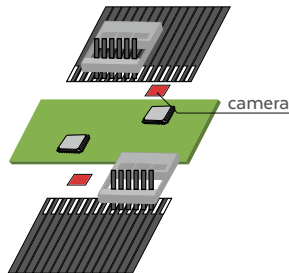
option

Dual camera for high speed

A dual camera enables high-speed placement of large and odd-shaped components.

Simultaneous component pick by six nozzles

Equipped with two cameras



Centering technologies

Multiple centering methods allow the machine to use the fastest and best method for each component type based on size, shape, and design.



bottom recognition



back light recognition



side recognition

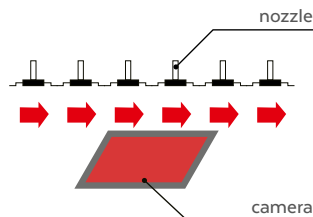
High-speed non-stop vision recognition technology

Dual centering technology: each head includes an on-the-fly centering system. In addition, two camera systems capture images of large, fine-pitch or odd-shaped components individually.

Existing recognition



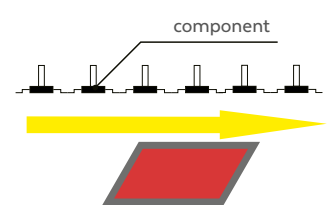
Pause for each component recognition



Non-stop vision recognition

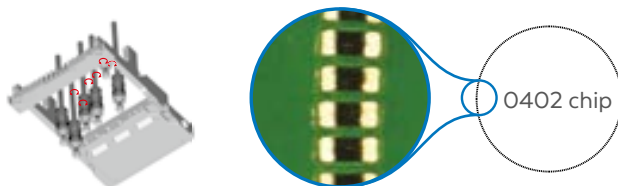


Non-stop recognition for each component



INDEPENDENT Z- AND THETA-AXES CONTROL

Each nozzle has independent Z and theta control for increased flexibility, accuracy and maximum placement speed. The height and angle of each nozzle can be controlled individually.

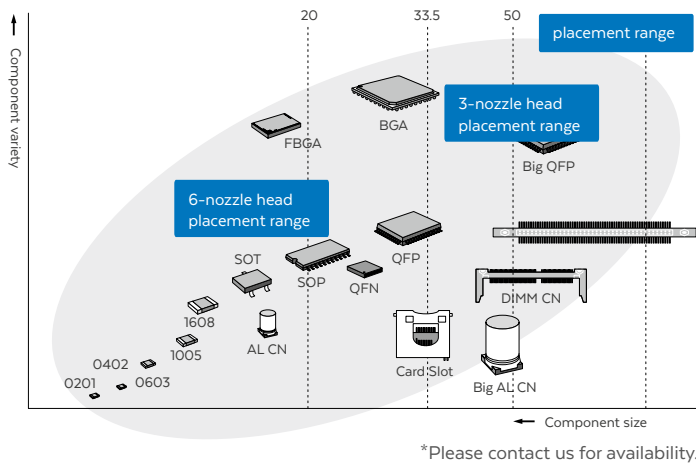


A highly precise placement angle is possible thanks to the use of servomotors

HIGH FLEXIBILITY

WIDE RANGE OF COMPONENTS

The RX-6 6-nozzle system supports components from 0402 (metric)/01005 (inch) up to 50 × 50 mm (square). The 3-nozzle head configuration supports an even wider range from 0402 (metric)/01005 (inch) up to 100 × 100 mm (square) or up to 50 × 180 mm, respectively. The maximum supported component height is 33 mm.



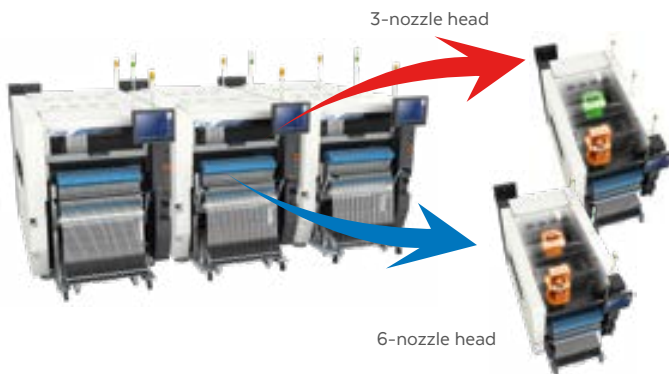
Easy data creation

Component data can be created easily when you enter the following: outer dimensions, component type and packing style. The dimensions, number of leads and the lead pitch can be measured automatically to reduce the programming time and prevent errors.



FLEXIBILITY BY CHANGING THE HEAD UNIT

The rear head can be replaced by a 6-nozzle head and a 3-nozzle head, thus allowing for greater flexibility to configure the production line according to the current requirements.



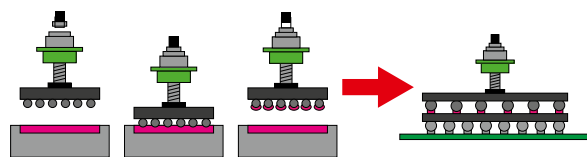
POP (PACKAGE-ON-PACKAGE) SUPPORT option

3D or Package-on-package (PoP) placement is possible using the optional fluxer units.



Rotary fluxer

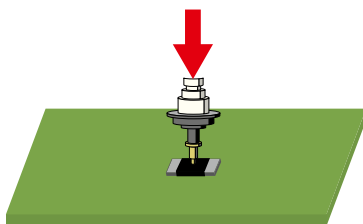
Linear fluxer



PoP placement

EASY LOAD CONTROL option

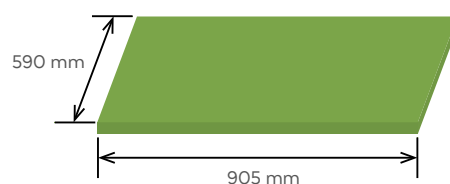
Precise placement control is possible using precision-designed nozzles along with a load cell. Placement with a force up to 50N is available for press-fit components.



Placement with a force of up to 50N available.

SUPPORT OF LARGE BOARDS

Board sizes up to 905 × 590 mm are supported as a standard.



SPECIFICATIONS

High-Speed Compact Modular Mouter				
RX-6B				
			2 head units with 6/6 nozzles	2 head units with with 6/3 nozzles
Board size	Single-lane conveyor		50 × 50 ~ 905 × 590 mm	
	Dual-lane conveyor		50 × 50 ~ 360 × 250 mm*1	
Component height			6 / 12 / 20 / 25 / 33 mm	
Component size	Laser recognition		0402 (01005) ~ 50 mm	0402 (01005) ~ 50 mm
	Vision recognition	Standard camera	3 mm ~ 33.5 mm	3 ~ 100 mm/50 × 180 mm
		High-resolution camera	1005 ~ 20 mm	1005 ~ 48 mm/24 × 72 mm
Placement speed	Chip	Optimum	42,000 CPH	34,000 CPH
		IPC 9850	26,000 CPH	23,000 CPH
Placement accuracy	Laser recognition		±0.04 mm (Cpk≥1)	
	Vision recognition*2		±0.04 mm	±0.03 mm
Component loading quantity			Max. 160 in case of 8 mm tape (Electric double tape feeder)	
Power supply			200 ~ 415 VAC, 3-phase	
Apparent power			3.5 kVA	
Operating air pressure			0.5 ± 0.05 MPa	
Air consumption			100 L / min	
Machine dimensions (W × D × H)			1,250 × 2,095 × 1,440 mm	
Mass (approximately)	Single-lane conveyor		1,800 kg	
	Dual-lane conveyor		1,830 kg	

^{*1} Single-lane conveyor specification mode max 360 × 450 mm

^{*2} Under the JUKI condition

03/2018_Rev02

OPTIONS

Recognition system	High-resolution camera (27 mm view) / component recognition camera (54 mm view)
Inspection function	Coplanarity sensor / Component Verification System(CVS) / Small Outline Transistor (SOT) detection check function
Conveyor	Conveyor extension
Component handling and feeders	Feeder trolley / electric tape feeder / electric stick feeder / high-speed matrix tray server TR7DN / matrix tray server
	TR8S / Integrated Circuit (IC) collection belt / trash box / tape reel mounting base / feeder stocker /
	splicing jig / feeder calibration jig with monitor tray holder / electric trolley power station / auto tape cutter
Software	IS / JaNets / IFS-NX
Others	Offset Placement After Solder Screen Printing (OPASS) / solder lighting / Flexible Calibration System (FCS) / calibration
	jig / placement monitor inspection function / fluxer unit / linear type / rotary type caster

LINE CONTROL SOFTWARE

Product Name	Major functions
IS / JaNets	User definition / facility definition / component database / creating production programs / line optimization /
	line monitoring / CAD conversion / cluster optimization / etc.
IFS-NX	Full line traceability / intelligent feeder verification / component management / full maintenance control
	function / binning control / kitting control / Moisture Sensitive Device (MSD) control / open interface /
	Intelligent Storage Management (ISM) tower connection / feeder anywhere

Specifications and design subject to change without notice.

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