

■ Specification

Item	Model	High-Speed Chip Shooter	High-Speed Flexible Mounter	
		KE-3010AM/KE-3010AL/KE-3010XL	KE-3020VAM/KE-3020VAL/KE-3020VXL	
Board size	M size (330×250mm)	○	○	
	L size (410×360mm)	○	○	
	L-Wide size (510×360mm)*1	○	○	
	XL size (610×560mm)	○	○	
	Applicability to long PWB (M size)*2		650×250mm	
	Applicability to long PWB (L size)*2		800×360mm	
	Applicability to long PWB (L-Wide size)*2		1,010×360mm	
Component height	6mm	○	—	
	12mm	○	○	
	20mm	—	○	
	25mm (XL size)	—	○	
Component size	Laser recognition	0402(01005)~□33.5mm	0402(01005)~□33.5mm	
	Vision recognition	Standard camera	MNVC 3mm*3~□33.5mm	3mm~□74mm or 50×150mm
		High-resolution camera	MNVC 1.0×0.5mm*4~□20mm	1.0×0.5mm*4~□48mm or 24×72mm
Placement speed	Chip	(Optimum)	23,500CPH	20,900CPH
		(IPC9850)	18,500CPH	17,100CPH
	IC*5	MNVC 9,000CPH*6	MNVC 9,470CPH*6	
Placement accuracy	Laser recognition	±0.05mm(±3σ)		
	Vision recognition	±0.04mm	±0.03mm(MNVC ±0.04mm)	
Feeder inputs	Max.160 in case of 8mm tape (on a Electric double tape feeder)*7			
Power supply	200 to 415 VAC,3-phase			
Apparent power	2.2kVA			
Operating air pressure	0.5±0.05Mpa			
Air consumption	50L/min			
Machine dimensions (W×D×H*8)*9	M size	1,500×1,580×1,500mm		
	L size	1,500×1,690×1,500mm		
	L-Wide size	1,800×1,690×1,500mm		
	XL size	2,131×1,890×1,500mm		
Mass (approximately)	M size	1,850kg		
	L size	1,900kg		
	XL size	2,250kg		

- *1 L-Wide size is optional.
 *2 Applicability to long PWB is optional.
 *3 When using MNVC. (option)
 *4 KE-3010A : When using both high-resolution camera and MNVC. (option)
 KE-3020VA : When using high-resolution camera. (option)
 *5 Effective tact : The IC placement speed indicates an estimated value obtained when the machine places 36 QFP (100 pins or more) or BGA components (256 balls or more) on a M size board. (CPH=number of components placed for one hour)
 *6 Estimated value when using MNVC and picking up components simultaneously with all nozzles.
 MNVC is option in the KE-3010A. MNVC is standard in the KE-3020VA, KE-3020VRA.
 *7 When using Electric double tape feeder EF08HD.
 *8 Display is not included in height.
 *9 Dimensions of machine described are for conveyor height 900mm.

■ Options

Recognition system	MNVC*1 / Bad mark reader / High-resolution camera
Operation system	Rear-side operation unit / Touch panel
Inspection function	Coplanarity sensor / Component Verification System(CVS) / SOT detection check function
Conveyor	Automatic board width adjustment / Conveyor extension / L-Wide size / Applicability to long PWB
Electrical protection	Ground-fault interrupter
Others	FCS calibration jig / Feeder position indicator / Offset placement after solder screen-priming / Non-stop operation / Caster/Super foot / Connector bracket / Mini signal light tower / Ionizer / Pin reference / Placement force control / Solder lighting / Residual PWB quantity control / Placement Monitor
Software	IS / IS-Lite / IFS-NX / EPU
Component handling and feeders*2	Matrix Tray Sever TR5 / Matrix Tray Changer TR6 / High Speed Matrix Tray Sever TR7D / Matrix Tray Holder / Dual Tray Server TR1 / Tape feeder / Bulk feeder*3 / Stick feeder / Feeder trolley / IC collection belt / Trash box / Tape cutter / feeder stocker / Fluxer unit / Tape reel mounting base

- *1 MNVC is option in the KE-3010A. MNVC is standard in the KE-3020VA.
 *2 Component supply units are different either by mechanical or electric feeder bank. Make sure correct component supply unit be selected.
 *3 for mechanical bank only

■ Security software

Virus measurement software	White list (standard)
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※ Please refer to the product specifications for details.

JUKI®

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■ JUKI Specifications and appearance may be changed without notice.

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High-Speed Chip Shooter

KE-3010A

High-Speed Flexible Mounter

KE-3020VA

JUKI®



3E EVOLUTION

*Leading the next generation
 All for your production*



JUKI CORPORATION HEAD OFFICE
 The activities of research, development, design, sales, distribution, and maintenance services of industrial sewing machines, household sewing machines and industrial robots, etc., including sales and maintenance services of data entry systems.



High speed flexible mounter
responding to various expectation
- from ultra-small components
to odd-shaped components.



KE-3010A

For placement of ultra-small components

High-Speed Chip Shooter

KE-3010A

- ◎23,500CPH chip (Laser centering/Optimum)
- ◎18,500CPH (Laser centering / IPC9850)
- ◎9,000CPH IC (Vision centering/MNVC option)
- ◎One multi-nozzle laser head (6 nozzles)
- ◎From 0402(01005) to 33.5mm square components
- ◎Supported PWB size: M/L size

※PWB size XL will be KE-3010



KE-3020VA

For placement of large / odd-shaped components

High-Speed Flexible Mounter

KE-3020VA

MNVC is standard

- ◎20,900CPH chip (Laser centering/Optimum)
- ◎17,100CPH chip (Laser centering / IPC9850)
- ◎9,470CPH IC (Vision centering/MNVC)
- ◎From 0402(01005) to 74mm square components or 50×150mm
- ◎Vision centering system (featuring bottom, side, and back lighting, all ball recognition and split recognition)
- ◎Supported PWB size: M/L size

※PWB size XL will be KE-3020V

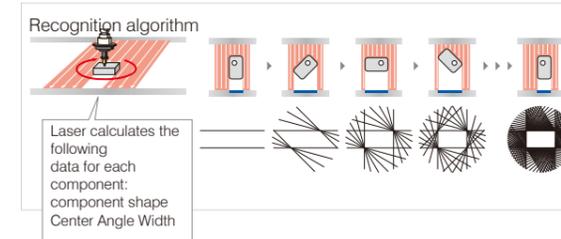
KE-3020VA

- ◎One multi-nozzle laser head (6 nozzles) plus one IC head with CDS sensor (1 nozzle)

1. JUKI Basic Technology

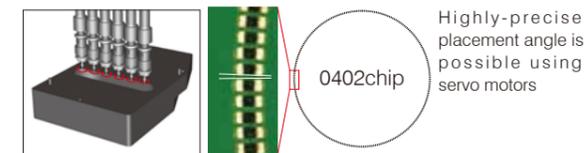
JUKI laser centering for flexibility and quality

The machine can recognize components of various shapes: from an ultra miniature components such as 0402 (01005) chips up to 33.5mm square components such as PLCCs, SOPs, BGAs, and QFPs. When the machine recognizes a component with laser, variations such as shape, color, and reflection do not matter.



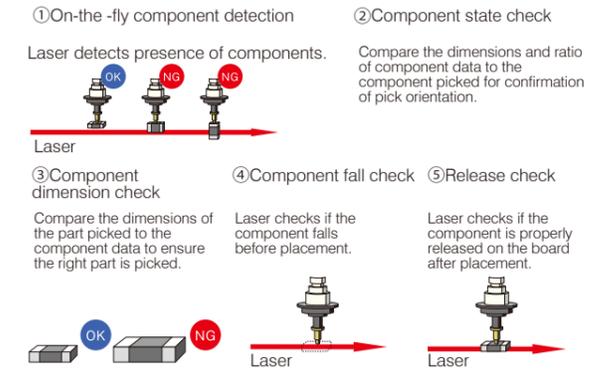
Independent Z and theta-axes control

Each nozzle has independent Z and theta control for superior flexibility, accuracy, and redundancy. The height and angle of each nozzle can be controlled precisely.



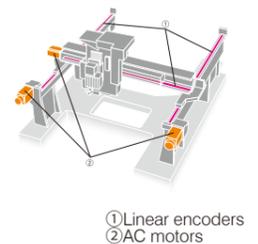
The component check function improves the quality of component placement.

The component check function improves the quality of component placement. Component presence is monitored by the laser from pick to placement, reducing the chance for missing components.



Full closed loop control

X-Y drive system features JUKI's original "full closed loop control" using AC motors and magnetic linear encoders. Both X and Y axis keeps high-speed, and highly reliable placements intact.

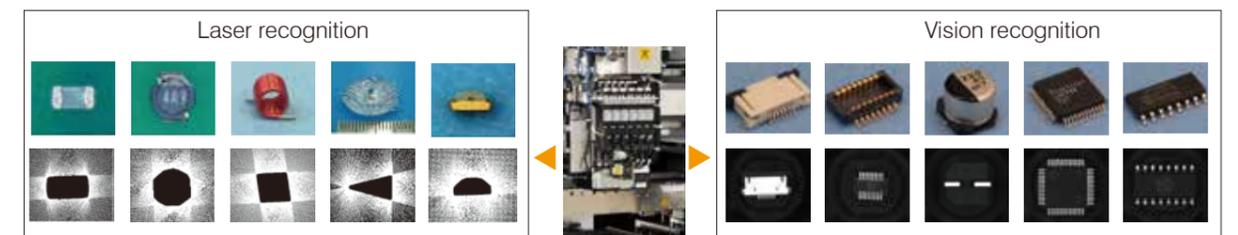


MNVC (Multi Nozzle Vision Centering)

option

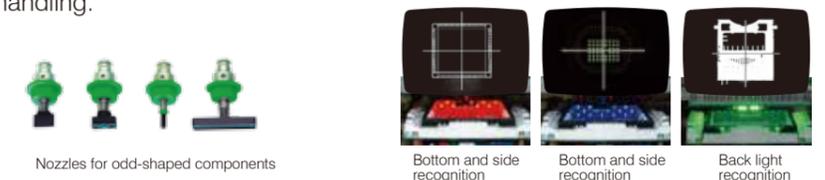
Vision centering by the multi-nozzle head nearly doubles the placement rate for smaller components, including CSPs, BGAs and smaller QFPs.

※Vision centering is available on the KE-3010A with the MNVC option. This function is standard on the KE-3020VA.



Vision centering technology

Centering method can be selected based on component type, shape, size and material. Laser centering is used for high-speed placement of smaller components. Vision is used when lead or ball inspection is needed or when the component is too large for the laser. Many nozzles are available for odd-shaped components providing unsurpassed component handling.

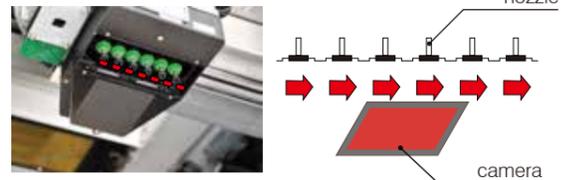


2.High Productivity

High-speed, on-the-fly vision centering

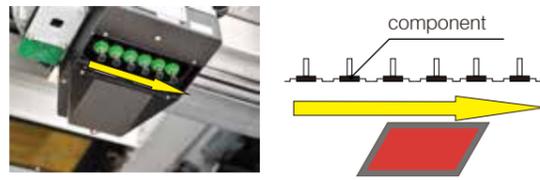
dual upward looking strobing cameras capture images in high speed for large, fine pitch, or odd-form components.

【existing recognition】



pause for each component recognition

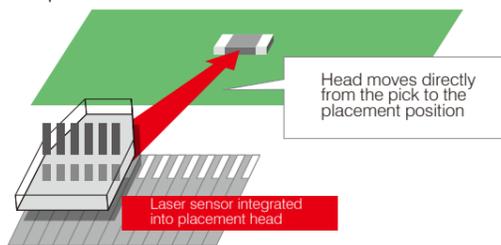
【non-stop Vision recognition】



non-stop recognition for each component

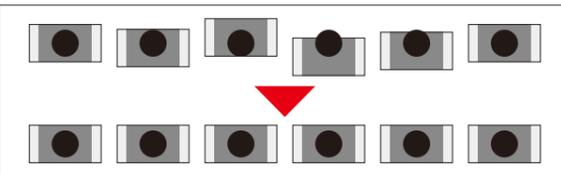
Simultaneous on-the-fly component 2 centering for high-speed production

Laser sensor is integrated into the placement head for on-the-fly centering. Head moves directly from the pick position to the placement position for the shortest possible head travel and maximum placement speed.



Automatic correction of pick position*

The position error information of a nozzle is transmitted to each electric feeder so that each electric feeder automatically adjusts feeding for more stable pick position and for better simultaneous picks.



※Only available on electrical feeder

Tape Cutter*

option

Automatically cuts used tape and stores it in an easily removable trash bin, eliminating mess and decreasing operator workload.

※Option for mechanical feeder specification, standard for electrical feeder specification.

High-resolution Camera

option

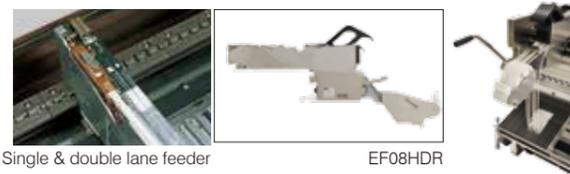
Enable high-accurate inspection for components like QFP with lead pitch 0.2 mm.



VCS unit (Vision Centering System)

160 component inputs

Up to 160 different components can be installed on the machine for ultimate flexibility. The feeder trolley has no cables or hoses to connect for ultra-fast, ultra accurate change-overs.



Single & double lane feeder

EF08HDR

Trolley set up image

High precision and quality placement with Electronic feeders

No tools are required to change the feeder pitch. Pitch is set using buttons on the feeder.



Simple setting of feeder pitch

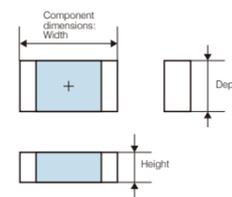
Rear-side Operation Unit

option

Allows complete machine operation from the rear Adjustment side of the machine.

Ease-of-operation improved by automatic component measurement

Component data can be programmed simply by typing approximate dimensions, type and packaging information. Accurate dimensions, number of leads and lead pitch are measured and programmed automatically by the machine.



Component data is updated after automatic measurement.

Flexible vision teaching

Complicated programming of odd-shaped components is made easier by following step-by-step guidelines, reducing programming time significantly.



Flexible vision teaching

Auto Teaching of Pick Position

Auto teaching of pick position reduces changeover time and mis-picks.



Centering errors prevented by self check

Laser contamination is checked prior to the production. If contamination is detected, an alarm is given to prevent centering errors.



Laser contamination check

Easy operation

This function assists operators in the preparation of a new production. By simply following a checklist of setup items from "1. Automatic width adjustment" to "8. Production program check," an operator can be sure they have performed the necessary steps and see which have not been completed.



check list

Feeder Position Indicator

option

LED's on the feeder bank indicates which feeder needs to be replaced or which feeder has an alarm, indicates location of feeders to be set during change over, and helps simplify feeder setup.



Feeder Position Indicator

Non-stop Operation

option

Non-stop operation allows the operator to replace feeders while the machine continues to run at full speed.

Automation Nozzle Changer (ATC)

Automatically replace nozzles according to component dimensions.



ATC unit(Auto-Tool Changer)

3.High Flexibility

Longer sized PWB in X axis

option

Capable of placing a longer board up to 650mm×250mm(M size), 800mm×360mm(L size), 1,010mm×360mm(L-wide size), 1,210mm× 560mm(XL size) by automatically indexing the board twice in each station. As a result, the production of a long PWB used for the LED lighting etc. is enabled.

●Solder Recognition Lighting (option)

The solder print can be recognized as BOC mark when there is no BOC mark on the PWB or the circuit. When the twice-fed long PWB is transported, the placement pad etc. on which the solder print is performed at the placement of components in the range where the BOC mark is not prepared can be used as BOC mark.



●Component Quantity Control (option)

The lot of the product (PWB) where the components (LED components etc.) are placed is managed. When a PWB is loaded, it is checked whether components required to complete a production of the PWB remain in the feeders with components in different lots not being mixed in a PWB. If components are not enough, a warning is displayed before the placement starts.



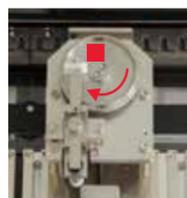
PoP placement

option

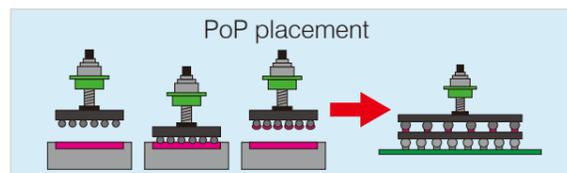
Package-on-Package (PoP) assembly is fully supported using either linear or rotary fluxer units that also support dipping solder paste.



Linear Type Transfer Unit



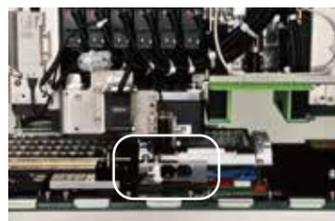
Rotary Type Transfer Unit



Placement force control per each nozzle

option

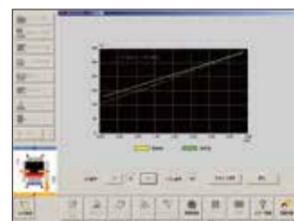
Using a built-in load cell, the placement force of each nozzle can be measured and controlled during the placement process. The placement force can be set individually for every component.



Placement Force Control unit



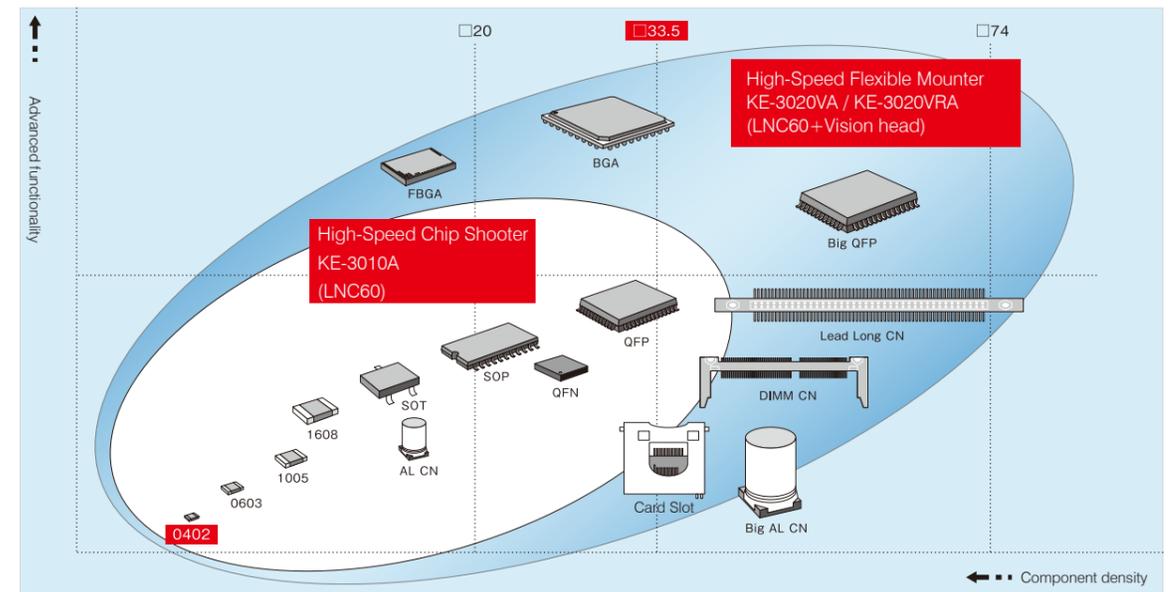
Placement force control nozzle



Data check on monitor

Wide range of supportive parts

The KE series meets the needs of a wide variety of applications with the highest performance. High-speed, high-accuracy component centering using unique laser technology and powerful vision processing.



Total line productivity improvement support system

option

IS-Lite (Intelligent Shopfloor Solutions)
IFS-NX (Intelligent Feeder System)

●IS-Lite

The systems will control and optimize various operations and data within the production line, and contribute to the improvement of line productivity, product quality, and work efficiency.

●IFS-NX

They can also achieve quality control by preventing improper component loading, traceability etc. as well as efficient production changeover to contribute to improvements in quality and work efficiency.

Flexline CAD

option

JUKI's flexline CAD is a data conversion application that reads a text file output by various CAD systems or other assembly machines and converts it to the format used by HLC, FX series, KE series machines, or CX-1. There are several supported CAD formats, but users may also define their own format using an interactive "wizard" and save that definition for later use.

EPU

option

EPU is off-line programming software designed for a single machine. Using EPU software, the best feeder layout and optimized placement order can be achieved with the highest production efficiency. Like the FX series and the KE-2000 series, it has a component database to further decrease programming time.

IC Collection Belt

option

A conveyor belt provides a safe way to handle valuable rejected components. Components gradually index away from the machine and the operator is notified when the belt is full.



IC Collection Belt

Special-order Nozzles

A wide variety of special order nozzles are available for unusual components, including grippers.

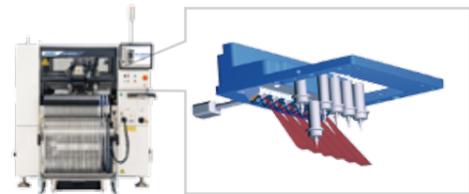


Special-order Nozzles

4.High Quality

Prevention of defective PWBs and rapid analysis of the cause and corrective action Placement Monitor option

An ultra miniature camera built into the head section captures images of component pick and placement in real time. An analysis is run for presence/absence and traceability information can be saved. This unique function prevents defective PWBs and reduces the time for root cause failure analysis.



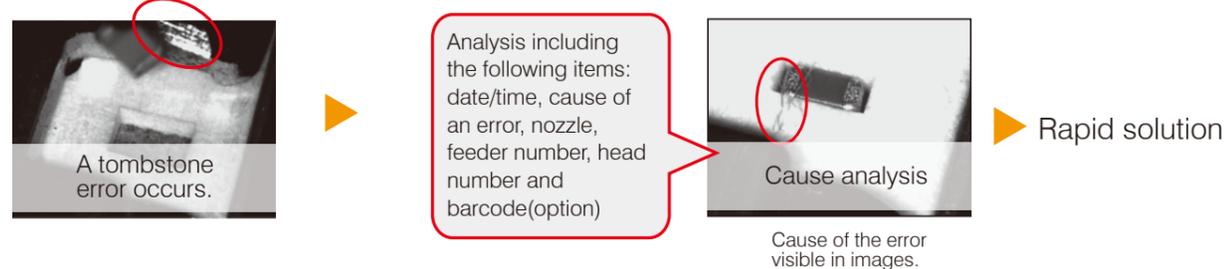
●Component presence check

The images are analyzed automatically. If a missing component is detected, the machine will stop automatically and an error will be displayed.



●Root cause failure analysis function

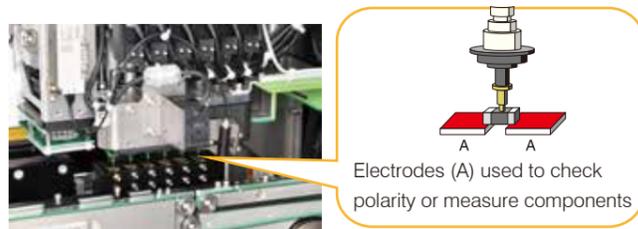
Root cause failure analysis uses image analysis to quickly identify problems in the production process and reduce the time for corrective action.



Incorrect component prevention Component Verification System (CVS) option

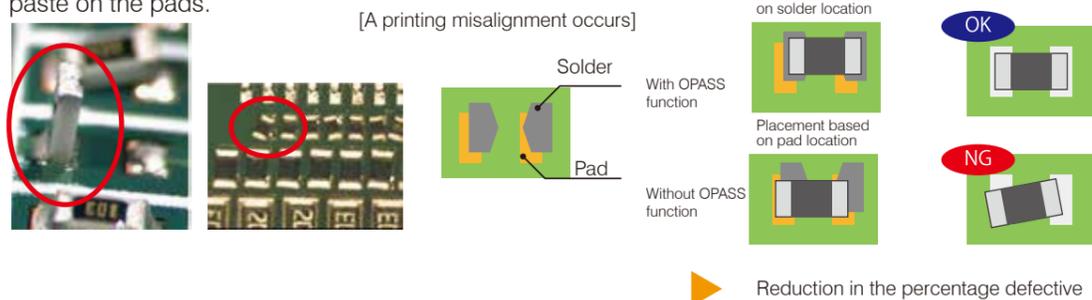
By measuring the resistance, capacitance, or polarity before production starts, the machine can prevent incorrect components from being placed. The new CVS unit can check six components simultaneously, reducing the check and changeover times.

- Check the Resistance, Capacitance and Polarity before production starts.
- Prevents incorrect component/reel from being used
- Prevents incorrect component placement



Reduce errors due to solder paste alignment Offset Placement After Solder Screen printing option

The OPASS function uses the machine's downward looking 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.



Reduction in the percentage defective

Coplanarity sensor - checks balls and leads option

Prevents placement of defective component by checking lead float of lead component and nick of ball component. High accurate and high speed coplanarity check will improve the products' reliability.



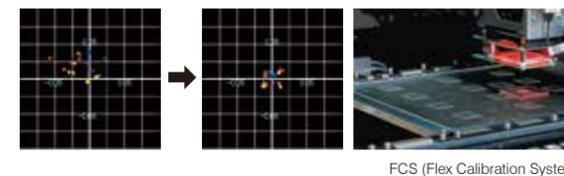
Flexible lighting improves fiducial measurement accuracy

The OCC is a downward looking camera used for fiducial recognition and bad mark detection. Flexible lighting allows the machine to accurately recognize poor contrast fiducials, pattern recognition, and flexible printed circuits (FPC). It can also detect bad board marks to prevent waste of components.



FCS (Flex Calibration System) option

JUKI's highly regarded easy maintenance just got even easier! The optional FCS calibration jig is a simple to use system to re-calibrate placement accuracy. The machine automatically picks and places jig components, then measures the error and adjusts all necessary calibrations. (optional)



Height measurement function

A non-contact laser sensor measures the height of the PWB 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.



SOT direction check function option

This function uses the left OCC to check the component supply angle by placing a 3-terminal SOT component on the SOT direction check table before production or the restart after components run out.

IONIZER option

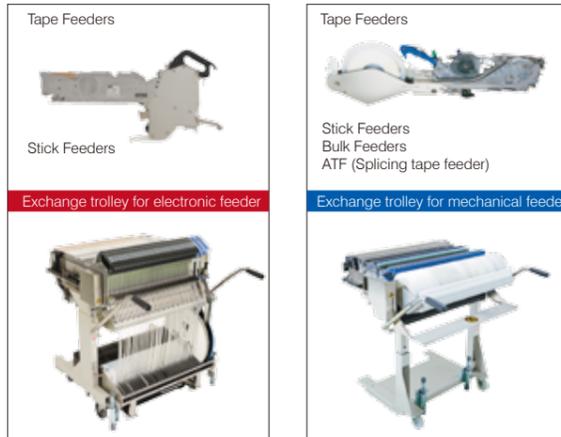
The ionizer (option) adjusts the ion balance inside the machine and removes static electricity from the board and components.



5. Other peripheral equipments

Choice of feeder type (electrical/mechanical)

Please choose electrical feeder or mechanical feeder specification.



Various feeder lineup



TR series



Enriched product lineup of inspection machine and printer RP-1 and RV-1.

Combination with Solder Paste Printer RP-1 and PWB Inspection Machine RV-1 will improve the productivity of whole production line.



Intelligent Storage Management System ISM series

Intelligent storage system will support efficient and safe management of SMT components.



option list

		KE-3010A	KE-3020VA KE-3020VRA	
Recognition system	MNVC	●	○	
	Bad Mark Reader	●	●	
	High-resolution Camera	●	●	
Operation system	Rear-side Operation Unit	●	●	
	HOD	●	●	
Inspection function	Coplanarity Sensor	●	●	
	Component Verification System (CVS)	●	●	
	SOT Direction Check Function	●	●	
Conveyor	Automatic Board Width Adjustment	●	●	
	Conveyor Extension	●	●	
	L-Wide size	●	●	
	Longer sized PWB in X axis	●	●	
Electrical protection	Ground-fault Interrupter	●	●	
	Others			
Others	FCS Calibration Jig	●	●	
	Feeder Position Indicator	●	●	
	Non-stop Operation	●	●	
	Mini Signal Light Tower	●	●	
	Super Foot	●	●	
	Connector Bracket	●	●	
	Caster	●	●	
	Pin Reference	●	●	
	Placement Force Control	●	●	
	Offset Placement After Solder Screen-Printing	●	●	
	Placement Monitor	●	●	
	Lighting Unit For Solder Recognition	●	●	
	Component Quantity Control	●	●	
	Software	IS /IS-Lite	●	●
		IFS-NX	●	●
EPU		●	●	
Flexline CAD		●	●	
Component handling and feeders	Matrix Tray Server	●	●	
	High-Speed Matrix Tray Server TR7DN	●	●	
	Matrix Tray Changer	●	●	
	Matrix Tray Holder	●	●	
	Dual Tray Server	●	●	
	Splicing Tape Feeder / ATF	●	●	
	Tape Feeder	●	●	
	0402 (01005) Tape Feeder	●	●	
	Bulk Feeder	●	●	
	Stick Feeder	●	●	
	Stack Stick Feeder	●	●	
	Feeder Calibration Jig with Monitor	●	●	
	Feeder Trolley	●	●	
	IC Collection Belt	●	●	
	Trash Box	●	●	
Tape Cutter	●	●		

●... option
○... standard