**High-Speed Chip Shooter**

**High-Speed Flexible Mounter**

**MNVC**
- Option in KE-3010.
- Standard in KE-3020V/KE-3020VR.

**KE-3010**
- When using MNVC and picking up components simultaneous with all nozzles.
- MNVC is option in the KE-3010. MNVC is standard in the KE-3020V/KE-3020VR.

**KE-3020V**
- When using high-resolution camera.

**KE-3020VR**
- When using both high-resolution camera and MNVC.

**KE-3020VXL**
- When using MNVC.

**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)

- Estimated value when using MNVC and picking up components simultaneous with all nozzles.
- MNVC is option in the KE-3010. MNVC is standard in the KE-3020V/KE-3020VR.
- When using Electric double tape feeder EF08HD.
- Display is not included in height.
- Dimensions of machine described are for conveyor height 900mm.

**Software**

- **Component handling and feeders:**
  - Matrix Tray Server (TR)/Matrix Tray Changer (TR)/High Speed Tray Server (TR)/Matrix Tray Holder
  - Dual Tray Server (TR)/Tape feeder/Stick feeder/Feeder holder/IC collection belt/Tape box/Slot roller/Convertible feeder unit/Flow feeder/1 Tape feeder mounting base

**Options**

- **MNVC**
  - Laser mark reader
  - High-resolution camera

- **Operation system**
  - Rear-side operation unit
  - Touch panel

- **Inspection function**
  - CPMV check function

- **Conveyor**
  - Automatic board width adjustment
  - Conveyor extension
  - Applicability to long PWB

- **Others**
  - Ground-fault interrupter
  - FCS calibration jig
  - Feeder position indicator/Offset placement after solder screen-printing

- **Placing force control**
  - Solder lighting
  - Residual PWB quantity control

- **Placement Monitor**
  - IS
  - IFS-NX
  - EPU

- **Matrix Tray Server (TR)/Matrix Tray Changer (TR)/High Speed Tray Server (TR)/Matrix Tray Holder**
- **Dual Tray Server (TR)/Tape feeder/Stick feeder/Feeder holder/IC collection belt/Tape box/Slot roller/Convertible feeder unit/Flow feeder/1 Tape feeder mounting base**

**Please refer to the product specifications for details.**

**JUKI Specifications and appearance may be changed without notice.**

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**http://www.juki.co.jp**
Continued Evolution of the KE Series

High-Speed Chip Shooter

**KE-3010**
- 35,000CPH chip (Laser centering/Option)
- 11,500CPH (Laser centering / IPC9850)
- One multi-nozzle laser head (6 nozzles)
- From 0402(01005) to 33.5mm square components

**Laser centering technology**
- Laser sensor: LNC60
  - Capable of picking six components simultaneously and centering on the fly with the LNC60 laser sensor.

**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.

**High precision and quality placement with Electronic feeders**
- The use of electronic double tape feeders enables mounting of a maximum of 160 component types.
  - The electric double tape feeder holds two reels in the space (17mm) of a single traditional tape feeder. This doubles the feeder capacity of the machine which means there is a greater chance of clustering boards into a single feeder setup. It also could reduce the total number of machines needed in a production line.
  - Simple setting of feeder pitch
    - No tools are required to change the feeder pitch. Pitch is set using buttons on the feeder.
  - Status is displayed on a seven segment LED
    - Before production, electronic feeders communicate with the mounter to verify consistency with the production program: type of feeder and feed pitch. Should there be any discrepancy, the LED display flashes a warning. The LED display also alerts the operator of wrong feeder position and when components are running low. During production, the LED display shows the feeder position.
  - Automatic correction of pick position
    - The position error information of a nozzle is visually confirmed by the laser.

High-Speed Flexible Mounter

**KE-3020V KE-3020VR**
- 20,300CPH chip (Laser centering/Option)
- 17,100CPH chip (Laser centering / IPC9850)
- 9,470CPH IC (Vision centering/MNVC)
- From 0402(01005) to 74mm square components or 50×150mm

**Laser centering technology**
- Laser sensor: LNC60
  - JUKI’s original technologies for high-speed and high-quality placement.
- Low loss ratio
  - Component check function improves placement reliability
  - Since the laser is mounted on the head, it can be used to monitor the presence of components the entire time from pick to placement. This is difficult to accomplish with vacuum detection only. The placement reliability is also improved because the release of the component is visually confirmed by the laser.
- Vision centering is available on the KE-3010 with the MNVC option.

**High-speed, on-the-fly vision centering**
- New on-the-fly vision centering dramatically increases the placement speed by eliminating time wasting stops over the camera. Parallel processing of images means components are ready for placement as soon as the head reaches the placement coordinates.
- MNVC (Multi-Nozzle Vision Centering)
  - Vision centering by the multi-nozzle head nearly doubles the placement rate for smaller components, including CSPs, BGAs and smaller QFPs.

**High-speed feeding of tray components (Option)**
- The TR7DN high speed matrix server is equipped with dual magazines and drive systems to present 2 different trays at the same time. This method eliminates time wasted during tray exchange and increases the efficiency of placement.
- Utilities independent driving systems for the left and right stacker units

**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.
- MNVC (Multi-Nozzle Vision Centering)
  - Vision centering by the multi-nozzle head nearly doubles the placement rate for smaller components, including CSPs, BGAs and smaller QFPs.

**High-Speed Matrix Tray Server TR7DN**
- Stacker Unit
- Stacker Unit

**High-Speed Flexible Mounter**

**KE-3020VL**
- One multi-nozzle laser head (6 nozzles) plus one IC head with CDS sensor (1 nozzle)

**High-Speed Chip Shooter**

**KE-3020VR**
- One multi-nozzle laser head (6 nozzles) plus one IC head with FMLA sensor (1 nozzle)
**Component density**

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.

**Advanced functionality**

Together with our customers, we will continue evolving even further.

Aiming to achieve even more enhanced customer satisfaction.

Evolving further for sales and services.

Evolving into even more attractive products.

Evolving further for sales and services.

**More Economical**

More Expandable

More Easy to use

Dual lane electronic feeders increase the feeder capacity to 160 8mm tapes per machine. This allows you to build boards with high part count or can be leveraged to reduce changeover.

This line can hold up to 400 part numbers using dual lane electronic feeders for tremendous flexibility and part capacity.

By combining the FX-3R high-speed chipshooter with the KE-3020V or KE-3020VR, even higher production speeds are possible for high volume production.

Flexible, high-speed production lines

A line consisting of KE-3010 and KE-3020V machines has outstanding efficiency, flexibility, and quality. Production lines using these models are ideal for high mix/mid volume changeover environments and you can combine several machines for high-speed production.

Wide range of supportive parts

This 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.

The ultra-small cameras focus on the lower part of the nozzles from a slanted direction.

A line consisting of KE-3010 and KE-3020V machines has outstanding efficiency, flexibility, and quality. Production lines using these models are ideal for high mix/high changeover environments and you can combine several machines for high-speed production.

**RoP placement**

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

**Linear Type Transfer Unit**

**Rotary Type Transfer Unit**

**Solder Recognition Lighting (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.

**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.

**Operator’s Setup Checklist**

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.

**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.

**Flexible vision teaching**

Complicated programming of odd-shaped components is made easier by following step-by-step guidelines, reducing programming time significantly.
Available options for a wide variety of needs

- **Component Verification System (CVS)**
  Component verification (option) measures the resistance, capacitance or priority of each component before the start of production or after replacing components. This option prevents placement of incorrect components. The new inspection unit features simultaneous measurement of six components, reducing changeover time.

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

- **Offset Placement After Solder Screen-printing**
  Offset Placement After Solder Screen-printing is a system to offset placements to correct for solder paste misalignment, which promotes the self-alignment effect and reduces the deflection.

- **Coplanarity Sensor**
  Measures true coplanarity for both leaded components and BGAs, reducing the chance of a bad solder joint.

- **Placement Force Control**
  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.

- **FCS (Flex Calibration System)**
  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.

- **Nonstop Operation**
  Non-stop operation (NSO) allows the operator to replace feeders while the machine continues to run at full speed.

- **Mini Signal Light Tower**
  In addition to the standard signal tower, this shows the operator which side of the machine a component has run out on.

- **Feeder Position Indicator**
  LEDs on the feeder bank indicate which feeder needs to be replaced, which feeder has an alarm, location of feeders to be set during change over, and helps simplify feeder setup.

- **Bad Mark Reader**
  Selects “bad circuit” marks on matrix type boards and skips placement of parts on defective circuits, preventing waste.

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

- **IC Collection Belt**
  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.

Production efficiency is improved by affluent product variation

**Feeder**

Mechanical and electronic feeder linkers are completely interchangeable allowing companies with previous generations of mechanical feeders to continue to get the most from their investment.

- **Electronic feeders**
  - Tape Feeders
  - Stick Feeders
  - Exchange trolley for electronic feeder

- **Mechanical feeders**
  - Tape Feeders
  - Stick Feeders
  - TFE (Option for tape feeder)

- **Exchange trolley for mechanical feeder**

**Tray feed device**

- **Matrix Tray Server (Rear Type)**
  - Matrix Tray Server (Rear Type)

- **Dual Tray Server**

- **Matrix Tray Holder**

Software

**Floor productivity improvement support system**

IS (Intelligent Shopfloor Solutions)

IFS-NX (Intelligent Feeder System)

IFS-NX raises production preparation, scheduling, quality and monitoring to a new level by combining several related functions into one comprehensive software package. Additionally, the IFS-NX provides users with the packaged software according to the occupational description. The IFS-NX can also achieve quality control by preventing improper component loading, traceability, etc., as well as increased efficiency at the time of production changeover to contribute to improvements in quality and working efficiency.

- **Features**
  - Production planning management of information
  - Inventory management of stock
  - Equipment management of stock
  - Parts verification
  - Feeder maintenance
  - Management of feeder
  - Management of traceability
  - Production monitoring

IFS-NX can help companies to further decrease programming time.

**FLEXLINE CAD**

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 CK-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**

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 FK series and the KE-2000D series, it has a component database to further decrease programming time.

**IFS-NX server**

**IFS-NX client**

**Intelli PM**

**Intelli PE**

**Intelli PD**

**IFS-NX**

**CAH**

**Floor productivity improvement support system**

IS (Intelligent Shopfloor Solutions)

IFS-NX (Intelligent Feeder System)