

[Proposals to address issues]

Respond to Parts Diversification

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Circuit Formation Process Division

Panasonic
CONNECT

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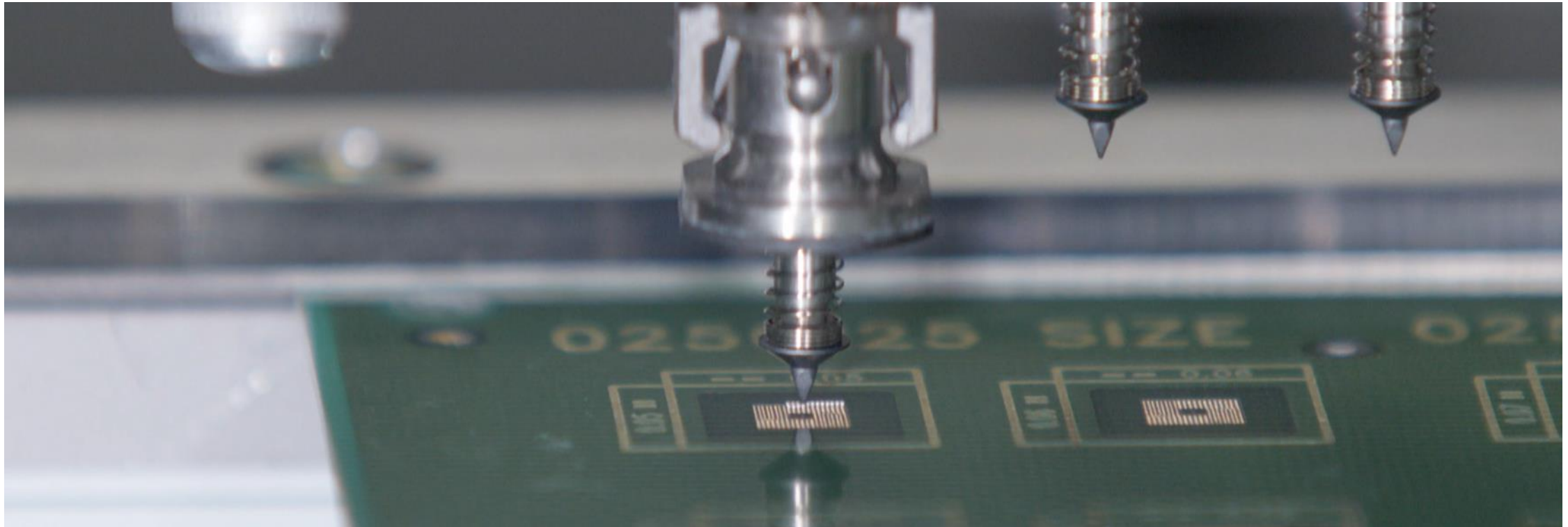
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Diversification of parts

With the diversification of parts, each industry is required to implement a variety of parts, such as small parts and narrowly adjacent parts, large and irregular parts, and mixed small and large parts.

Panasonic offers a variety of solutions, including efficient production and high production while improving and maintaining quality.



Solutions by Panasonic

Parts diversification < Small parts >

Realize high quality and volume production, even in the difficult microparts

0201 Micropart printing and mounting

Need to respond to miniaturized parts and high density mounting

Narrow adjacent mounting

Avoid component breakage due to mounting load

Low/constant load mounting
(Mounting load control)

Parts diversification < Large parts >

Need to mount large BGA parts

Support for large parts

Need to mount large parts

Maximum 100N load mounting

Increased taller power components mounting

Support for taller parts up to 45 mm

Supply a large volume of tray parts efficiently without stopping equipment

Tray Stocker

Parts diversification < Diverse parts >

Stable printing even when parts are mixed

Pre-bend high filling squeegee

Respond to odd-shaped parts

Insertion machine NPM-VF

Respond to DIMM connector insertion

DIMM connector support

Realize high quality and volume production, even in the difficult microparts

0201 Micropart printing and mounting

Mounting of microparts requires high precision basic performance, high aspect ratio printing in the printing process, and stress reduction in the mounting process. We offer products and functions that enable stable mounting of 0201 microparts.

Printing Process (Example: NPM-GP/L)

Basic performance

Repeated positioning accuracy
($2Cpk \pm 3.8 \mu m \pm 3\sigma$)

Support for printing with high aspect ratio

Pre-bend high filling squeegee (see other page)

Improves filling pressure at the bent part of metal squeegee tip



Mounting Process (Example: NPM-GH)

Basic performance

Both high accuracy and high production
($\pm 15 \mu m / 5,000 \text{ cph}$) * 1 per head



FC16 head



Low load mounting for small parts

0.5 N low-load nozzle (see other page)

0.5 N constant load control (see other page)

Merit

Basic performance to maintain high precision printing and mounting and high productivity required for stable mounting of 0201 micro parts

Printing process

Support high-fill printing, which is required for high aspect ratio printing

Mounting process

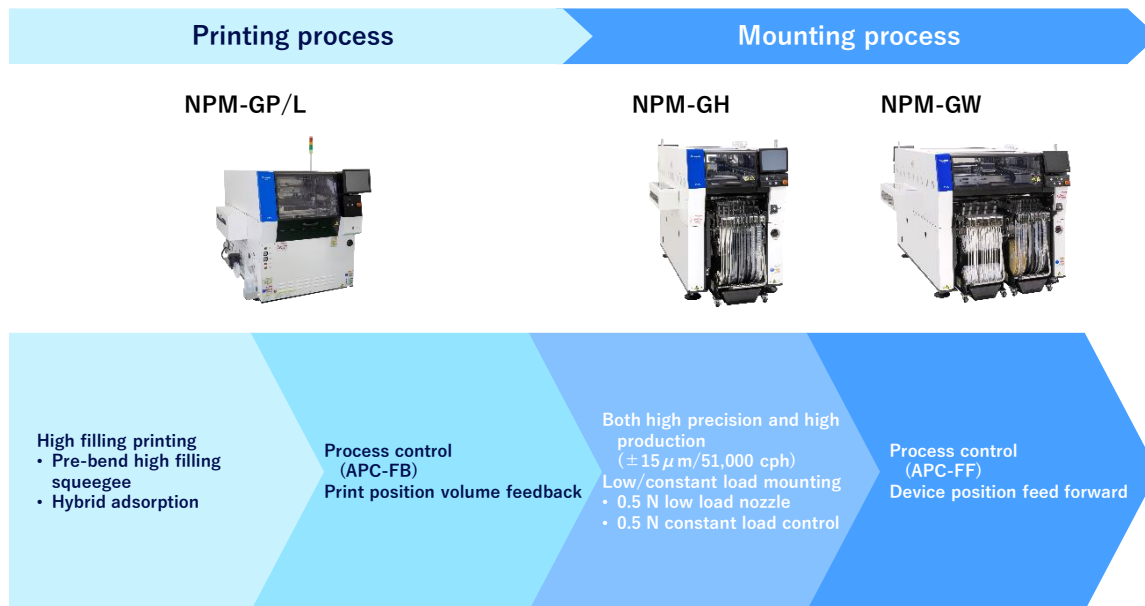
Provides mounting machine mounting load control functions to reduce stress on small parts

*Please contact us for details on products compatible with each function.

Need to respond to miniaturized parts and high density mounting

Narrow adjacent mounting

Panasonic's latest equipment with various solutions for printing and mounting processes required for narrow adjacent mounting, including the NPM-G series, can be provided to existing products with retrofit support.



Merit

Printing machine
High-filling printing

Mounting machine
Balancing high precision and high production

M2M software
Realizing high-quality production and quality maintenance through in-line process control

*Please contact us for details on products compatible with each function.

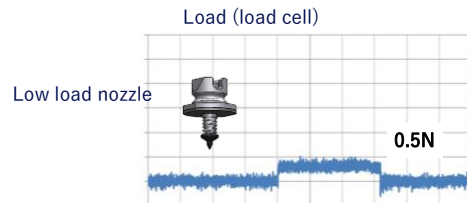
Avoid component breakage due to mounting load

Low/constant load mounting (Mounting load control)

Low/constant load mounting reduces stress on small parts due to impact load during installation. *Low load nozzle and constant load control cannot be used together.

0.5 N low load nozzle (Example: FC16)

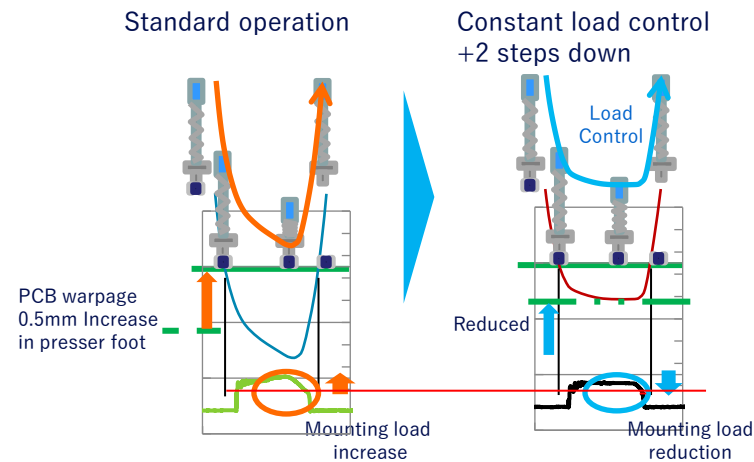
Low-load nozzle + 2-step lowering



Type of low-load nozzle:

0201/03015 nozzle	0603/1005 nozzle
0402 nozzle	1005/1608 nozzle
0603 nozzle	

Constant load control (Example: FC16, FC08)



Standard nozzle can support 1.0 N and 0.5 N
(0.5 N mounting only supports FC16 of NPM-G series)

Merit

0.5 N low load nozzle

Low-load mounting is achieved by selecting a nozzle for each component size and controlling the mounting load

Constant load control (1)

1.0 N and 0.5 N mounting is achieved by controlling the thrust of the Z-axis motor so that a constant load is applied during mounting

Constant load control (2)

Can be mounted on top-bent boards without applying excessive load

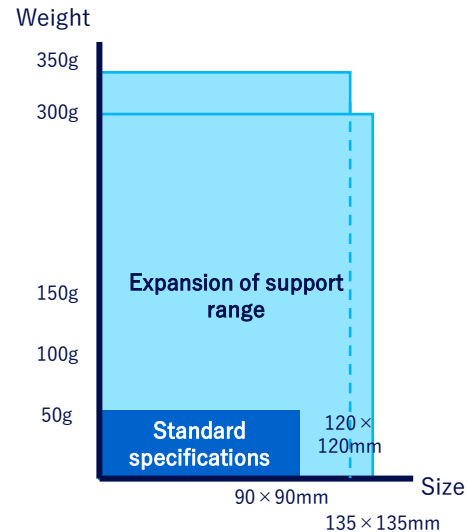
*Please contact us for details on products compatible with each function.

Need to mount large BGA parts

Support for large parts

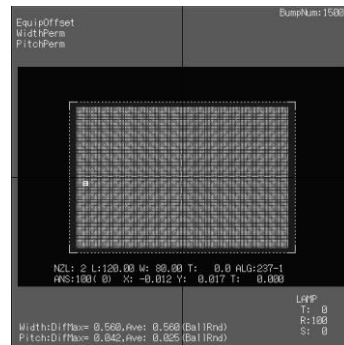
The demand for large/heavy BGA parts are increasing.
Panasonic supports up to □135 mm/300 g.

Supports large/heavy BGA



Ball recognition

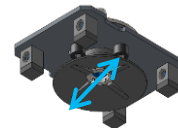
Number of BGA recognition balls :
15,000 pieces



Special nozzle example



φ 20 pads



φ 35 pads

Merit

BGA size □135 mm/300 g (option)

With the increase in the number of balls due to the enlargement of the BGA, all balls of 15,000 points can be recognized.

Without modification of the nozzle head, the optimum nozzle for each BGA size and weight can be proposed

*It is necessary to consider whether to implement the expanded part.

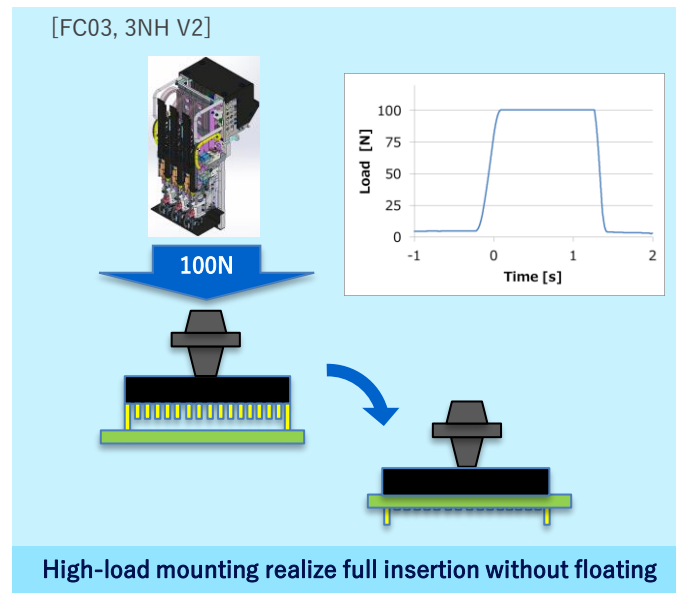
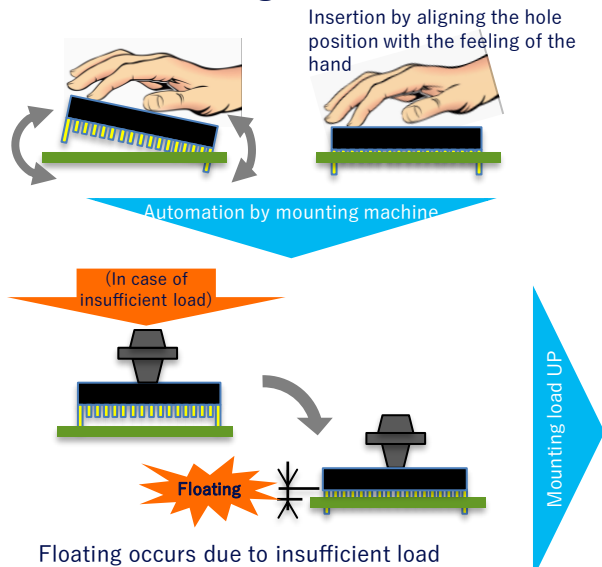
*Please contact us for details on products compatible with each function.

Support for large parts is required

Maximum 100N load mounting

With 100 N load mounting, multi-pin connectors can be automatically inserted from the manual insertion process by the mounting machine to improve mounting quality.

High-load mounting



Merit

Automation of multi-pin connector insertion, which used to be a manual insertion process, is now possible with mounting machines.

Improved motor performance and increased rigidity of the mounting head enables 100N high load mounting and eliminates pin floating.

*Please contact us for details on products compatible with each function.

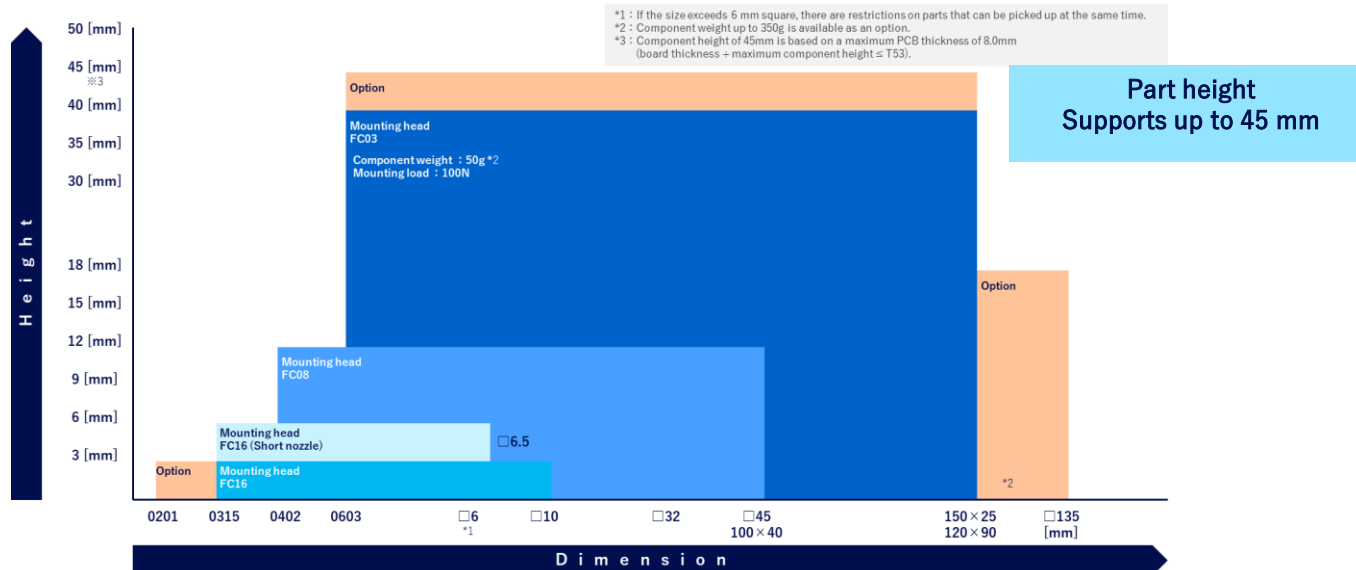
Increased taller power components mounting

Support for taller parts up to 45 mm

Due to the increase of power parts, the mounting of tall parts is required. To meet this demand, Panasonic has expanded the range of parts that can be supported to a maximum height of 45 mm.

Merit

Support range for parts (e.g., NPM-GW): $H \leq 45$ mm Support for tall parts



Support for tall parts $H \leq 45$ mm is option

*Please contact us for details on products compatible with each function.

Supply a large volume of tray parts efficiently without stopping equipment

Tray Stocker

As the size of tray parts increases, it is necessary to increase the number of pallets installed. The tray stoker improves the supply capacity of large parts and enables the supply of large quantities of tray parts without equipment shutdown, greatly increasing the efficiency of the supply operation.

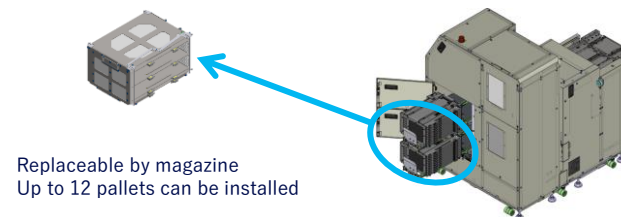
Tray stoker

Up to 144 tray parts can be stocked

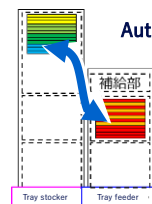


Tray pallet
Number of stocks
Front + Rear: 144

Tray parts replenishment without stopping production



Machine changeover automation



Automatic machine changeover

The pallet layout in the tray feeder is automatically changed and the model is switched

Merit

Reduces the frequency of supply of tray parts by increasing the stock of tray parts

Magazines can be replaced without stopping production, reducing downtime due to supply of tray parts

Automates model switching by pre-loading parts for production of the next model. Reduces man-hours and downtime for machine changeover.

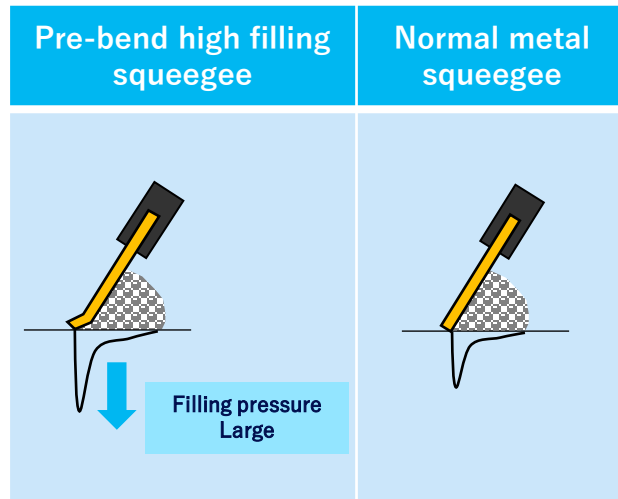
*Please contact us for details on products compatible with each function.

Stable printing even when parts are mixed

Pre-bend high filling squeegee

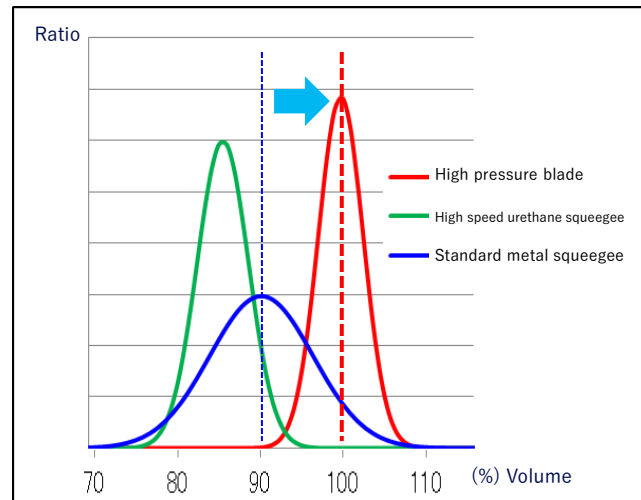
In cream solder printing on substrates where small and large parts are mixed, it is important to secure the opening volume of the metal mask. The Pre-bend high filling squeegee increases the filling pressure at the bent part of the tip, improving the volume ratio and suppressing dispersion.

Filling pressure image



Average volume ratio: 10% improvement

*Comparison with normal metal squeegee



Merit

Effective for PCBs with thick resist/silk, such as industrial, automotive use

Higher filling performance than urethane squeegee

Easy to handle like normal metal squeegees

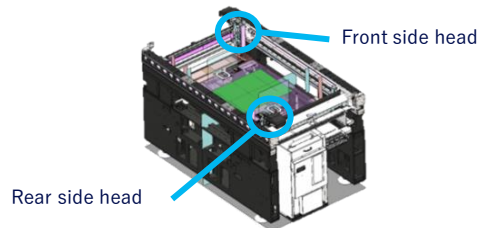
*Please contact us for details on products compatible with each function.

Respond to odd-shaped parts

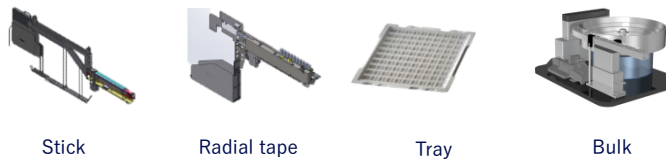
Insertion machine NPM-VF

NPM-VF can insert odd-shaped parts and large parts in-line. With 2 beams of head configuration, high productivity of up to 0.65 seconds is achieved.

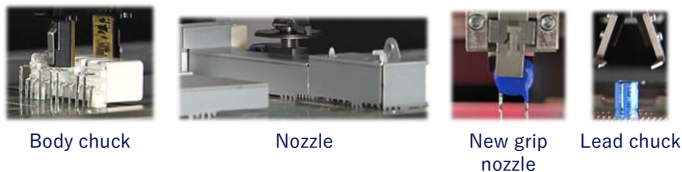
High productivity by alternate insertion of 2 beams



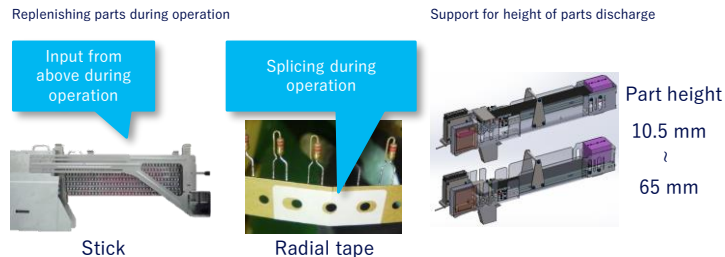
Parts supply section for various types



Head tool for various types of parts



High productivity by continuous operation



Merit

Equipped with head tools such as body chucks, nozzles, new grip nozzles, and lead chucks to handle a variety of parts

Capable of providing parts supply sections for a variety of types, such as sticks, radial tape, trays, and bulk parts

Improved uptime through non-stop supply of parts during operation, etc.

*Please contact us for details on products compatible with each function.

Respond to DIMM connector insertion

DIMM connector support

DIMM connectors, which are expected to have a narrow supply pitch and a narrow mounting pitch, can be supplied efficiently by the mounting machine and mounted in close proximity. Eliminates pin bending caused by manual supply and insertion.

DIMM connector supply

DIMM connector feeder
Up to 70 DIMM connectors
can be installed



Automatic
feeder



Narrow adjacent feed

Nozzle dedicated to DIMM connectors



Narrow adjacent mounting

Merit

DIMM connector supply

In addition to the DIMM connector feeder, an automatic feeder attached to the mounting machine can be provided for efficient supply of parts

Nozzle

Developed both a nozzle that grips the inner surface of the DIMM connector and a suction nozzle, enabling the optimum nozzle to match the shape of the connector

*Please contact us for details on products compatible with each function.

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