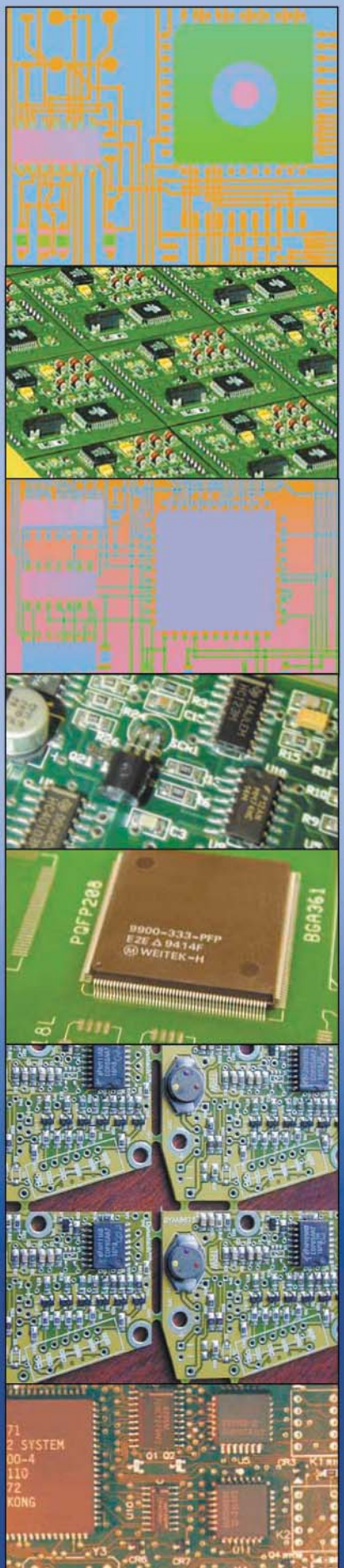
APS Novastar
ADVANCED ASSEMBLY SYSTEMS

L SERIES AUTOMATED PICK & PLACE



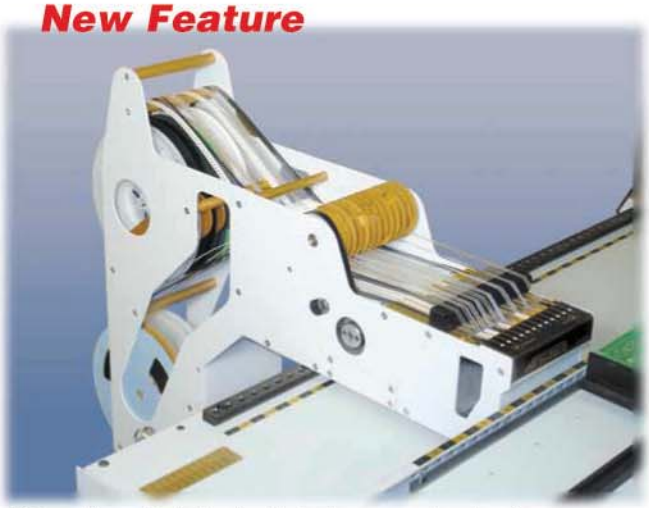
Gold-Place™

Gold-Place™ L Series

Model
L60
Board sizes to 13.5 x 32"
& 96 feeder positions

Model
L40
Board sizes to 13.5 x 22"
& 64 feeder positions

New Feature



12 lane, 8 mm Bank Feeders for both space and cost savings.

Automated Pick & Place

System Features

- Placement rates up to 4800 cph
- Accommodates board widths up to 13.5". Board lengths range from 12" to 32" depending on model. (See Specifications)
- Placement accuracy to 0.001"*
- Vision system with fiducial correction, on-board dual function camera/computer color monitor
- Flexible feeder set-up allows easy interchange of electro-optical SmartCount™ tape, feeders
- On-the-fly component centering or optional touchless Cyberoptics® laser centering
- Resolution of 0.0000787" (2 microns) and accuracy to 0.001 Accurately places virtually all SMT components including discretes, SOICs, PLCCs, QFPs, and BGAs
- Capable of placing fine pitch components as low as 15 mil (0.381mm) and 0201s*
- Interchangeable tape, tube, bulk or tray feeders
- Fully self-contained all electric system. No shop air required
- Friendly, easy to use Windows™ based software
- Automatic 4-position nozzle changer
- Fiducial correction
- Optional CAD transfer software.
- Software for panelized boards
- Accessible, unobstructed work plateau for operator
- Heavy, welded, steel frame construction
- Full interlock system for operator safety
- Optional convenient SuperStrip™ feeders for short tape strips
- Optional fluid dispenser

*with L-GS option (digital scales)

L Series System Configuration

The **L Series** machines come in three basic sizes:

The **L20** has a maximum board size of 13.5" x 12" and a maximum capacity of 32 8 mm tape feeders.

The **L40** has a maximum board size of 13.5" x 22" and a maximum capacity of 64 8 mm tape feeders.

The **L60** has a maximum board size of 13.5" x 32" and a maximum capacity of 96 8 mm tape feeders.

All options are available for all three models.

Operation

Once a specific PCB is programmed, the machine automatically picks up each component from its designated feeder or tray, centers the part via laser Cyberoptics® or centering fingers, moves to the placement location via closed loop servo system, and accurately places the part. The feeders automatically position the next component for pick-up.

The automatic tool changer picks up the optimal nozzle for each particular component.

Feeders

Easy to change SmartCount™ electro-optical feeders available for tape, tube, bulk or matrix tray components.

Standard tape feeder sizes include 8 mm, 12 mm, 16 mm, 24 mm. 32 mm and 44 mm.

The model **L20** has a feeder capacity of 32, the **L40** has a feeder capacity of 64, and the **L60** has a feeder capacity of 96 positions. With the optional 12 position 8 mm bank feeders, capacity can increase by 50%, i.e. the model L60 would increase to a capacity of 144 8 mm tape feeders.

The vibratory feeder can handle loose and tube components.

Unique SuperStrip™ feeders are a convenient way to use short tape strips.

Feeder positions are pre-programmed for quick set-up.

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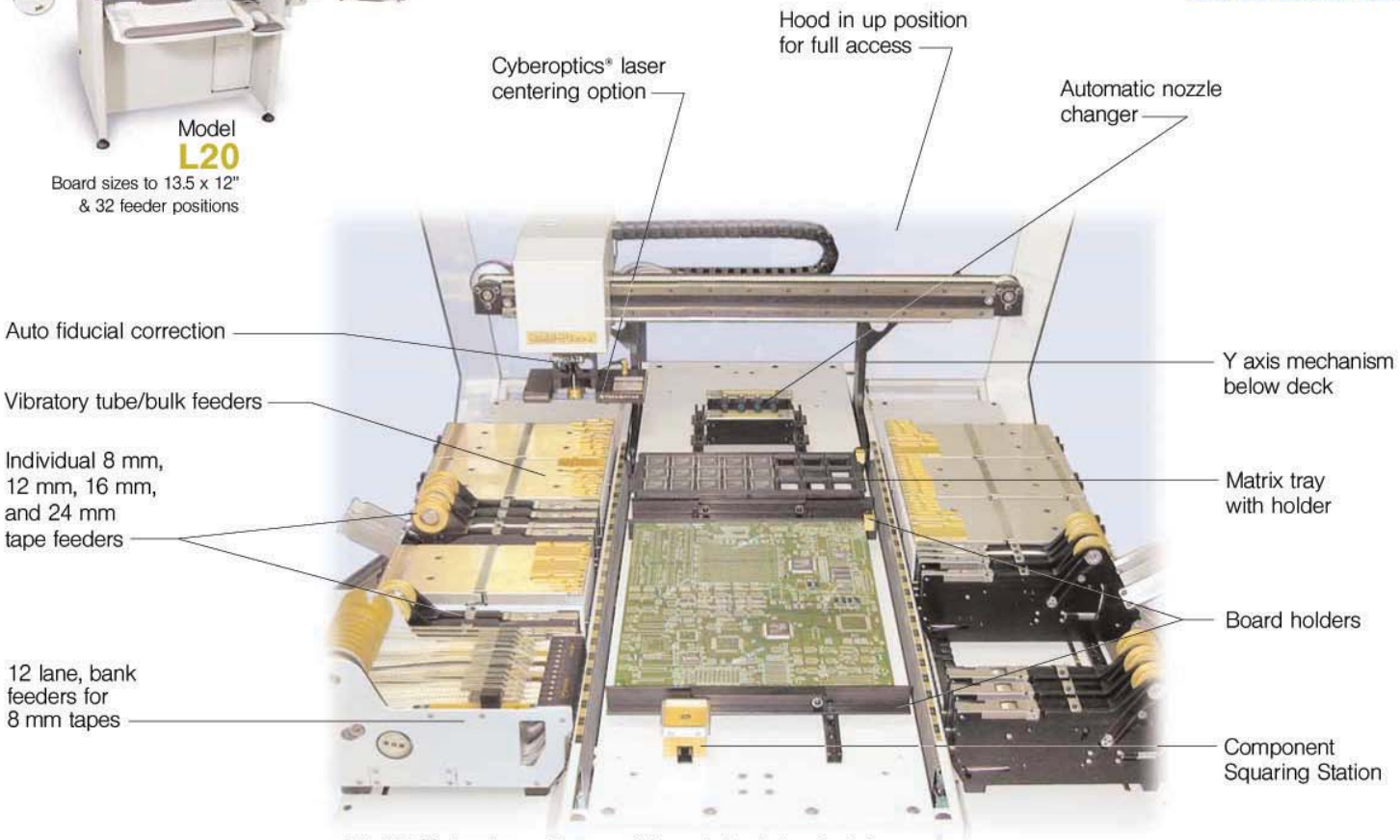
Model
L20
Board sizes to 13.5 x 12"
& 32 feeder positions



Model L60 showing easily accessible, unobstructed work deck

Laser Centering

The touchless Cyberoptics® centering option enables fast and accurate placement of the complete range of components.

Components

A wide range of components can be placed including 0201s, 0402s, 0603s, 0805s, 1206s, melfs, SO-28 to SO-8s, SOTs, SOICs, (fine pitch) QFPs, BGAs, large PLCCs, sockets and many others.

Software

The latest pentium PCs are included with these machines and the software is Windows™ based to allow easy straightforward teach-in, requiring minimal operator training.

Multiple (panelized) boards can be programmed using the quick step-and-repeat feature.

Using the dual function camera/ computer color monitor, standard PC keyboard and mouse, manual programming of a PCB is easy and intuitive.

Using CAD data from various layout systems will speed up the teach-in process for boards with many components.

Vision System

The teach-in camera magnifies the positions onto a dual use color monitor. Its built-in vision software provides fiducial correction of misregistered boards.

Fluid Dispenser

Computer controlled in 10 millisecond increments with separate interval/raise-lower speed allows solder paste or adhesive glue to be applied accurately prior to component placement. This time/pressure fluid dispenser has dispense rates up to 10,000 dots per hour.

Standard Features on all Models

- Automatic 4-position nozzle changer with 4 nozzles
- Friendly easy to use Windows™ interface including software for panelized boards, self diagnostics, error recognition, fault monitoring and more!
- On-the-fly component centering using centering fingers
- Fiducial correction
- The latest pentium PC with flat screen monitor
- Positional resolution of 0.00008" (2 microns) with closed loop micro step driven motion control and digital encoders
- The component squaring station enables accurate placement of fine pitch components while protecting fragile leads from damage due to excessive force

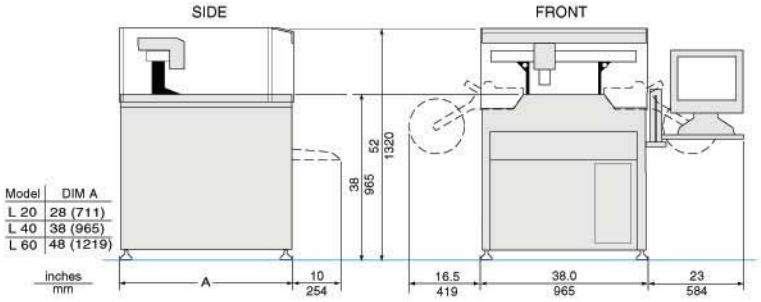
Optional Features

- Linear encoders for ultimate accuracy and repeatability
- Universal CAD transfer software
- Touchless Cyberoptics® laser centering system
- Secondary 4-position nozzle changer
- SuperStrip™ feeders for pick-up from short tape strips
- SmartCount™ electro-optical tape feeders
- Tube and bulk feeders
- Matrix tray holders
- Bank Feeders (12 8mm lanes) offer a lower per lane cost and higher 8mm feeder capacity
- Automatic fiducial correction
- Fully computerized fluid dispensing system
- Micro nozzles or Multi-Micro nozzles for small components
- Touch screen with enhanced operator interface

Gold-Place™ L SERIES AUTOMATED PICK & PLACE

Specifications

Max board area **L60**	13.5" x 32" (343 x 813 mm)
Max board area **L40**	13.5" x 22" (343 x 560 mm)
Max board area **L20**	13.5" x 12" (343 x 305 mm)
Max travel area **L60**	22"(X axis) x 32"(Y axis) (560 x 813 mm)
Max travel area **L40**	22"(X axis) x 22"(Y axis) (560 x 560 mm)
Max travel area **L20**	22"(X axis) x 12"(Y axis) (560 x 305 mm)
Z axis max travel	1.5" (38 mm)
Board thickness	0.020"- 0.156" (0.5mm - 4.0 mm)
Typical verifiable placement rate	2500-3600 cph
Max placement rate	4800 cph
Placement accuracy	±0.006" standard, ±0.001" ***
Fine pitch capability	to 25 mil pitch (0.635mm), 15 mil pitch (0.381mm)***
Smallest component capability	0603 packages standard, 0201s***
Largest component size	1.378" (35mm) square body†
Max no. of feeders (8mm tape)	32 (L20), 64 (L40), 96 (L60)
Max no. of feeders with L-GB-12 bank feeders	48 (L20), 96 (L40), 144 (L60)
Tape feeders	8, 12, 16, 24, 32, 44 mm (Electrical)
Tube feeders (bulk also)	8, 10, 14, 18, 24, 32 mm (Manual freq. control)
Matrix Tray Feeders	with Board/Matrix tray holders
Component orientation Ø-axis motion	± 360° in 0.18° step
System dimensions **L60**	38" x 48" x 52"h (965 x 1219 x 1320 mm)
System dimensions **L40**	38" x 38" x 52"h (965 x 965 x 1320 mm)
System dimensions **L20**	38" x 28" x 52"h (965 x 711 x 1320 mm)
Laser centering	touchless Cyberoptics® laser
Standard centering	Centering fingers - 1 set mounted on head
Weight **L60**	400 lbs (180 kg)
Weight **L40**	350 lbs (160 kg)
Weight **L20**	300 lbs (136 kg)
Board holding	Edge clamp w/optional board support tooling
Data entry	Coordinate entry, "teach" mode, CAD download
Vision system	Color CCD card camera
Automatic 4 position Tool changer	additional changer optional
Operating system	Microsoft Windows
Dispenser option, syringe holder type	up to 10,000 dots/hr.
Power	120 VAC, 50/60Hz, 220-240 VAC available
Vacuum	on-board compressor for nozzles
Compressed air	Shop air required for dispenser option only, 60 psi
Low-force fine pitch squaring station (L-SQ)	dual routines (not required with laser centering option)
Automatic fiducial recognition	Option



Machines

MODEL **L60**	Auto pick & place (13.5 x 32" boards, 96 feeder positions)
MODEL **L40**	Auto pick & place (13.5 x 22" boards, 64 feeder positions)
MODEL **L20**	Auto pick & place (13.5 x 12" boards, 32 feeder positions)

Machine Options

L-NC4	Extra 4 position nozzle changer - for 8 total positions
L-CL	Cyberoptics® centering laser
L-LD	Liquid dispenser
L-GS	Digital linear scale encoders
L-BHS	Board support
L-UCT	CAD editor software option
L-AFC	Auto fiducial recognition
L-TS	Touch screen with enhanced operator interface

Tape Feeders

L-T8	8 mm tape feeder - option
L-T8-0402	8 mm tape feeder - for 0402 or larger components - option
L-T8-0201	8 mm tape feeder - for 0201 or larger components - option
L-T12	12 mm tape feeder - option
L-T16	16 mm tape feeder - option
L-T24	24 mm tape feeder - option
L-T32	32 mm tape feeder - option**
L-T44	44 mm tape feeder - option**
L-GB-12	Bank feeder with 12 positions for 8 mm tapes - option

Vibratory Feeder Inserts

L-VF	Vibratory tube/bulk feeder - option
L-VFI-1	Tube insert for SO8M, component width of 0.236" (6.0 mm)
L-VFI-2	Tube insert for SO14/16M, component width of 0.236" (6.0 mm)
L-VFI-3	Tube insert for PLCC84M, component width of 1.190" (30.2 mm)
L-VFI-4	Tube insert for SOP16M, component width of 0.311" (7.9 mm)
L-VFI-5	Tube insert for SOL28M, component width of 0.405" (10.3 mm)
L-VFI-6	Tube insert for SOW32M, component width of 0.480" (12.2 mm)
L-VFI-7	Tube insert for SOX40M, component width of 0.540" (13.7 mm)
L-VFI-8	Tube insert for SOY40M, component width of 0.567" (14.4 mm)
L-VFI-9	Tube insert for SOZ44M, component width of 0.630" (16.0 mm)
L-VFI-10	Tube insert for SOLJ32, component width of 0.331" (8.4 mm)
L-VFI-11	Tube insert for SOXJ44, component width of 0.441" (11.2 mm)
L-VFI-12	Tube insert for PLCC28M, component width of 0.490" (12.4 mm)
L-VFI-13	Tube insert for PLCC44M, component width of 0.690" (17.5 mm)
L-VFI-14	Tube insert for PLCC68M, component width of 0.990" (25.1 mm)
L-VFB-0305	Bulk insert for 0603 and 0805 components
L-VFB-0608	Bulk insert for 1206 and 1008 components
L-VFB-1012	Bulk insert for 1210 and 2512 components

Other Feeders*

L-MBH	Matrix tray holders (set of 2) - option
L-SS-XX	Dual Lane SuperStrip™ feeder for strips from 1" to 12"- option

XX indicates tape width: 8, 12, 16, 24, 32, 44, or 56 mm

Nozzles*

L-N025-030	Standard
L-N035-050	Standard
L-N050-080	Standard
L-N109-140	Standard
L-N187-218	Large nozzle option
L-N281-312	Large nozzle option
L-N016-020	Micro nozzle option
L-N4X5-020	Multi micro nozzle option

*Custom options, nozzles and feeders available - contact factory.
**Max. component depth to 0.500 inches including carrier
***with L-GS option (digital glass scales)
†30 mm square (1.18" square) max size with Cyberoptics® centering laser option

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