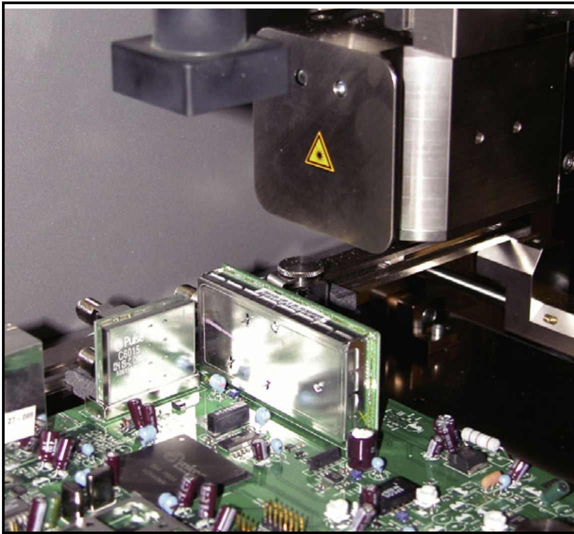
ONYX29 SERIES

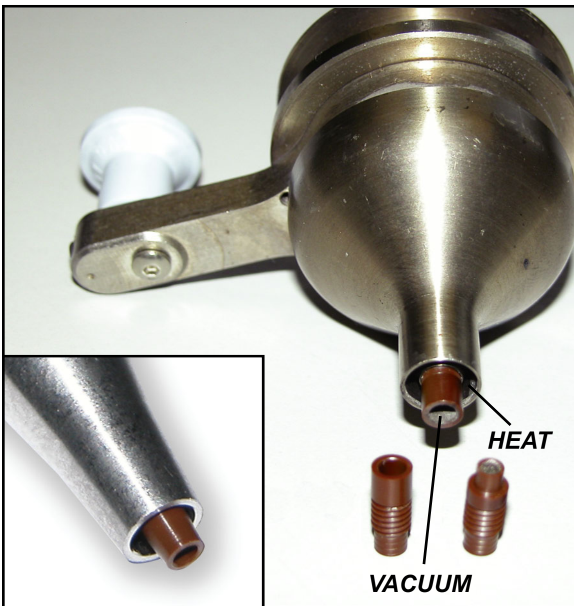
Options



70mm (2.75") Top Side Clearance

Objective
Provide increased top side clearance for assemblies with vertical daughter cards or tall devices that exceed the standard 30mm (1.2") top side clearance.
Includes:
- Machine frame modifications for additional clearance.
- Longer z-axis stroke to access the board.

Photo
- 1.9" tall through hole device fits easily under the Vision System.
- Extended z-axis stroke enables nozzle to reach the board to rework the BGA.



Site Cleaning System

Objective
Fully automated removal of residual site solder without damaging the pads or solder mask. Eliminates the need for traditional solder iron/solder wick process and associated issues (ie. manual intervention, mechanical contact of pads).
How It Works:
- The site cleaning tool pattern is automatically generated based on the part dimension.
- Hot gas reflows the residual solder on the pads.
- A vacuum sensor continuously adjusts the height of the composite vacuum tip to provide non-contact site cleaning.

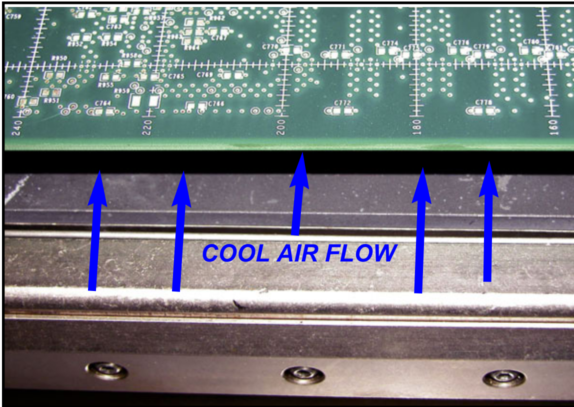
Notes Of Interest:
- Non-contact site cleaning will become critical for lead-free rework due to the significantly higher temperature required to reflow the residual site solder.
- Medium and large composite vacuum tips provided.
- Micro Site Cleaning tips and collectors available.

Photos
- Various size composite tips. (*Inset)* Micro Site Cleaning Tip.

IR Sensor

Objective
Provides process repeatability by insuring that the board is at the exact same target temperatures each time before localized reflow begins.
How It Works:
- Operator is instructed to position the sensor head at the beginning of the process.
- The non-contact temperature sensor monitors topside board temperature and automatically triggers the localized reflow process once the target temperature is reached.

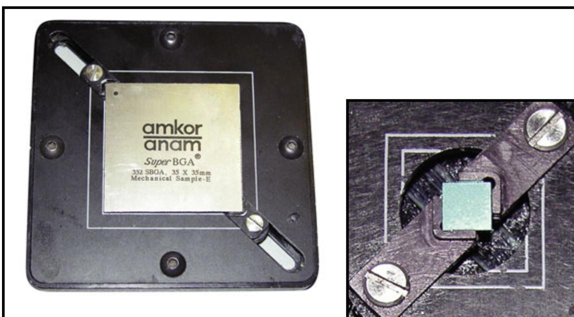
Photo
- Non-contact IR Sensor with pivoting head and laser pointer.



▶	Cooldown	30	0	40	0	2: Joint TC	183	☑	☐
	Cooldow...	60	0	40	0	Time	0	☑	☑

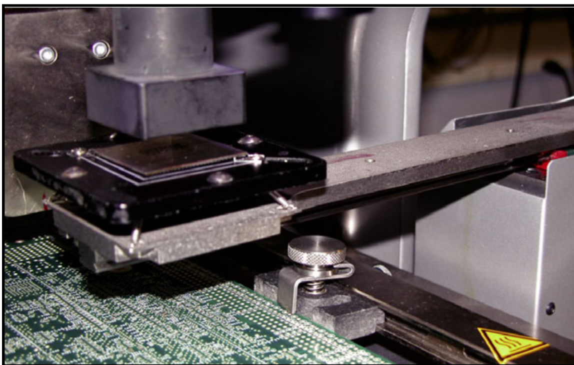
Board Cooling System

Objective
Provides controlled cool down of both the device and assembly to effectively manage time-over-reflow and to facilitate handling of the assembly after rework.
How It Works:
• High laminar flow of cool air is directed between the bottom heater and the assembly, providing rapid cooling.
• Programmable control allows the cooling air to be turned on/off whenever desired.
Notes Of Interest:
• The cooling rate of the solder joint after reflow is critical. The faster the cooling rate, the smaller the solder grain size and the higher the fatigue resistance.
Photos
• Illustration of laminar flow of cool air passing between the bottom of the board and top of preheater.
• Software controlled cool down.



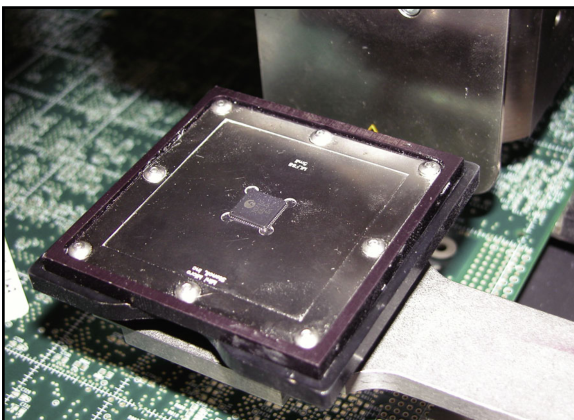
Universal Insertion Tool

• Mechanically self-centers any square device for accurate pick up.
• Used in conjunction with component shuttle.
Photos
• Mechanically centered 35mm SBGA.
• (Inset) 6mm Flip Chip.



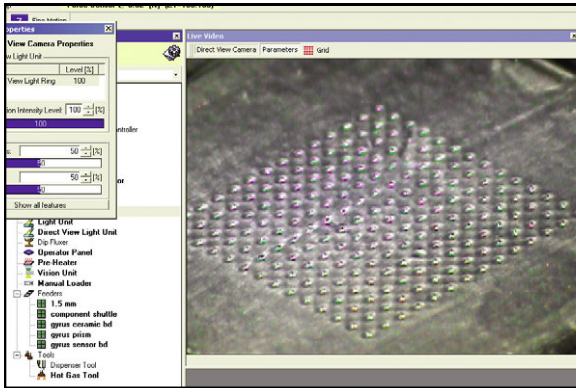
Automatic Component Shuttle

Objectives:
• Provides a safe, repeatable location for component pick up, flux dipping and drop off away from the heated work area.
• Eliminates manual component loading and removal in the heated work area.
How It Works:
• Software-controlled pneumatic shuttle enters the work area for pick up, flux dipping or drop off, then exits the work area.
• Shuttle-based component pick up and flux dipping is force controlled.
Notes Of Interest:
• Multi-location pick and flux dipping capability for multi-processing of small devices (custom tooling required).
Photo
• Work position for force-controlled component pick-up.



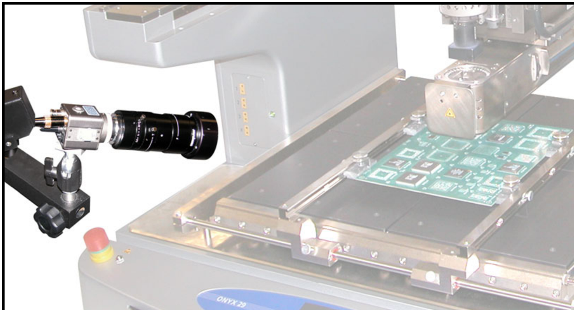
Paste-On-Device Micro Stencil Adapter

• Component-specific micro stencil applies solder paste directly to the component spheres.
• Pasted device in stencil is placed in micro stencil adapter, which is used in conjunction with the component shuttle to pick the pasted device.
Notes Of Interest:
• Air-Vac does not supply the component-specific micro stencils. Recommended supplier is Mini Micro Stencil (760-591-3804).
Photos
• MLF68 with center ground pad in micro stencil (solder paste applied to device).
• Micro stencil installed into adapter for direct pick from shuttle.



Flux Dip Pedestals

• Stainless steel fluxing pedestals with precision-machined depth provides controlled application of tacky flux directly to the solder spheres on the device.
• Used in conjunction with the component shuttle.
Notes Of Interest:
• Various sizes and depths available. Recommended depth is 50% of ball height.
Photo
• PBGA196 imprint on flux pedestal in component shuttle.

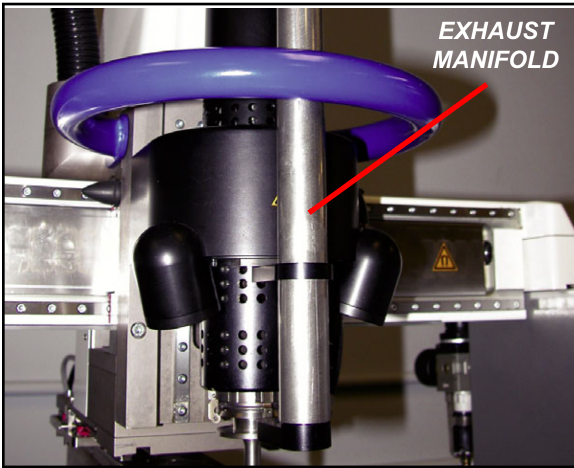


Direct View Camera & Mount Assembly

Objective
Provides high magnification site viewing including the ability to verify that component reflow has occurred.
How It Works:
• Operator is instructed to position the DV camera on the site. Focus, zoom and lighting adjustments are made to optimize clarity.
• The site image is integrated with the software and displayed on the PC monitor.
Notes Of Interest:
• The DV camera is a valuable process development aid especially for difficult to see tiny devices.
• The DV camera is also recommended for use in conjunction with the dispensing option to provide dispense inspection capability.
Photos
• Camera/mount assembly.
• Close-up view of BGA spheres.

Dispensing System

• Provides on-machine dispensing of flux, solder paste, adhesive, epoxy or underfill.
• Proprietary time/pressure dispenser features automatic pressure compensation and programmable vacuum adjustment for accurate and repeatable results.
• Uses precision DL Technology dispense needles.
• Automatic pattern generation software makes creating dispensing patterns a snap.
Notes Of Interest:
• Dispensing requires ambient machine/assembly temperature. Nozzle cool air injection and the board cooling system can be simultaneously activated to prepare the machine and assembly for dispensing, however this is not practical from a time standpoint for each individual rework process.
• The on-machine dispense option is typically used in either a batch mode or for low volume, specialty applications.
Photos:
• Dispensing control system (top) and dispensing nozzle (bottom).



Fume Extraction Manifold

Objective
Removes flux vapors from the work environment for operator health and safety.
Includes:
• Fume extraction manifold and hose assembly.
Notes Of Interest
• Requires connection to a central exhaust or self-contained filtering system.

Ergonomical Workstation

Objective
Provides a self contained work cell environment for the machine and operator.
Features:
• 60"W x 36"D ultra-sturdy construction with anti-static laminate surface.
• Includes lockable storage drawer, built-in outlet strip, nozzle rack, monitor stand, CPU holder and keyboard tray. All are designed for ergonomic operation.