




Winners of Advanced Packaging, Surface Mount and Global SMT Vision Awards (2003 – 2009)



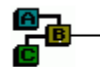
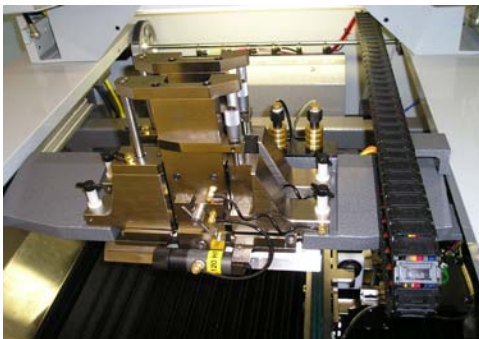
SemiTouch STW-1 Wafer Printer / Bumping System

Milara takes its combined system technology practice one step further with the development of the new SemiTouch Wafer Printer system (STW-1). The system is capable on both wafer stencil printing and bumping within a single system. The STW-1 is molded after our standard SemiTouch printer and by pressing a single button, the system converts itself from a wafer bumper to stencil printer in seconds. Milara has incorporated a new vision system with accuracies of 12um, which yields capabilities of ultra fine pitch printing. Utilizing our patented vibration squeegee technology which has proven viability in wafer bumping, the STW-1 employs the same technology to accomplish ultra fine pitch printing (down to 29um) with 100 percent printing reliability (no missed apertures on wafers with excess of 25,000 per print) in conjunction with unsurpassed solder brick geometry.



The STW-1 semi-automatic wafer printer offers advanced technological features and combines them with unprecedented ease of operation. Windows™ based programming simplifies every aspect of set-up. A customized windows based system allows either first time or experienced operators to use the printer's full capabilities in just a sort time. The STW-1 is engineered to achieve the highest levels of precision and consistency in paste deposition. A self-diagnostic program for instant trouble shooting is built in to ensure maximum productivity.

Milara has been setting the industry standard for printers by combining highly skilled technical expertise with ingenious product design and adding the most important element of all – customer input.



Squeegee Vibration Technology (patented)

The world's first industrial vibrating squeegee from Milara provides multiple benefits including lower squeegee pressures, longer stencil life, consistent paste deposition and eliminates paste scavenging. Higher print speeds, and improving print quality are also achieved through this major break-through in printing technology. **Absolute** solder paste deposition onto the wafer is achieved with this patented technology.

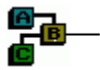


Bottom Side Stencil Cleaning (patented)

Bottom side stencil cleaning is a critical aspect of high quality printing and a definite consideration in overall production cycle time. The STW-1 accomplishes this operation by incorporating a tri-blade ultrasonic vibration wiper system (patent pending). After moving the cleaning squeegees back and forth, the stencil is effectively wiped 6 times in approx. 6 seconds. The small amounts of solder paste on the squeegee blades are removed via ultrasonic cleaning and the blades are 100% clean for the next wiping cycle. The need for vacuum, paper rolls or other consumables is thereby eliminated. Hazardous waste disposal is also simplified by incorporating our own non-

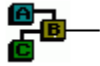


toxic, biodegradable, non-flammable, water based cleaning fluid. Wiper frequency, stroke and ultrasonic clean time are fully programmable.



Resistive Touchscreen Control

The STW-1 is the industries first printer to use a built in resistive, flat panel touch monitor for complete system control. This compact design saves valuable floor space, allows easy access, and does not interfere with the adjacent equipment. The interlocked hood can remain closed for all set up operations throughout the production runs for total operator safety while providing an unobstructed view of machine activity. By employing resistive touch technology, operators may setup the system with protective hand wear.

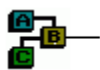


New Manual Vision with SemiIntel™ (Optional)

Milara has redesigned the two camera, manual vision system on the STW-1 which yields higher accuracy and repeatability along with our semi-intelligent vision algorithm (SemiIntel). This feature does not allow the



operator to print a wafer unless the wafer is properly aligned to the trained in stencil images. The large “check mark” indicates the product is aligned to the stencil and is ready to be transported into the print area. A “Ø” image will replace the check mark is the wafer is not aligned to the programmed tolerance set points. Standard overlay and crosshair alignment methods are also included with this option.



Windows Professional™ Operating System

The STW-1 operating system is the latest version of Microsoft's Windows™ Professional. This operating system was chosen due to its flexibility and overall robustness. The STW-1 possesses the ability to easily accept these upgrades and provide customers with the latest in operating software technology. A simplistic, non-embedded menu system simplifies overall use to an operator. All primary setup screens are located only one level below the main menu for less confusion.



Standard Features

- Integrated resistive touchmonitor for reliable operation
- On-board vacuum monitor system (for wafer chuck)
- On and off contact print modes
- Servo shuttle style X, Y, and Theta carriage
- X, Y, and Theta Adjustments
- Servo programmable squeegee speed and positions
- Servo programmable controlled vertical stencil lift
- Double squeegee assembly
- Last wafer recall
- Infinite wafer storage library
- Easy step through programming for new operators
- Interchangeable squeegee heads
- Runtime diagnostics
- Industrial PC main control computer
- Programmable snap off, squeegee up delays and squeegee offset
- Closed loop operator message feedback
- Multiple print modes
- Mylar set up alignment fixture
- Accepts stencil adapter plate for 8" x 10" up to 24" by 24" stencils
- Squeegee downstop via micrometer
- Floating or fixed squeegee holders

- Online software manual is incorporated into the operating system for quick referencing

STW-1 Mechanical Specifications

Print Area.....	16" x 20" (406mm x 508mm)
Wafer Sizes.....	100, 150 and 200mm
Screen Frame.....	8" x 10" (203mm x 254mm) to 29" x 29" (736mm x 736mm)
Repeatability.....	+/- .0005" (12.5µm, 6 Sigma),
X and Y adjustment.....	+/-0.75" manual / fixed lock (19mm)
Theta adjustment.....	+/-10 degrees, manual / fixed lock
Squeegee stroke length.....	1" to 19" (25.4mm to 482mm)
Stencil separation gap.....	0.5" (12.7mm) range programmable
Squeegee pressure.....	1 to 65 P.S.I.
System weight.....	850 pounds
Power.....	150 to 250VAC @5A, 50/60Hz, Auto
Vacuum.....	18 to 23Hg
Dimensions.....	65"(1651mm) L x 36"(914mm) W x 52"(1320mm)H
System weight.....	1200 pounds

Note: Near zero registration error is prevalent due to high precision shuttle transport mechanics and manual locking X, Y and Theta axis (non-free-floating).