

ZSW[®]

EVOL SERIES WAVE SOLDERING

Smart innovation brings the evolution of wave soldering process to another level.



- ⚙️ **Evolution** of wave soldering machine concept
- ⚙️ Extended process window
- ⚙️ Independently controlled conveyors
- ⚙️ Automatic recipe switching and model changeover
- ⚙️ Selective spray fluxing
- ⚙️ Industry 4.0 ready & 24/7 full traceability

More than Fifteen Years Focusing on Soldering Process

JTU

New Concept • New EVOL Series

EVOLUTION of wave soldering machine concept

3-Stage Independent Conveyor System

OPTIMUM SETTING FOR THE DESIRABLE RESULT

- ✦ In traditional wave soldering machines, it is difficult to get the best result as one setting adjustment affects one another
- ✦ In modern wave soldering machines (EVOL Series), different conveyor speed can be set at each stage
- ✦ For instance, when conveyor speed at the soldering module is adjusted to achieve better soldering quality, the optimum setting of fluxer and preheating modules are not affected
- ✦ Quick and easy to optimize the setting at each module to get the best result
- ✦ Provides wide process window due to individual control

BETTER FLUX PENETRATION & REDUCED FLUX CONSUMPTION

- ✦ Conveyor at spray fluxer module can be horizontal with no inclined angle
- ✦ Results in better flux penetration to the plated through holes
- ✦ Improves soldering quality and minimizes flux consumption

ELIMINATION OF FIRE HAZARD

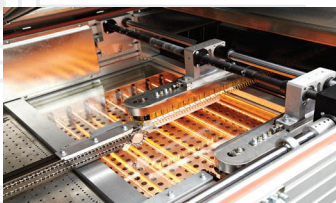
- ✦ No flux residues on spray fluxer module conveyor will be carried forward to other modules
- ✦ Finger cleaning system at soldering module comes with brush only, without any solvent to clean flux residue
- ✦ No more fire hazard in preheating and soldering modules
- ✦ Safer, cleaner and easier for maintenance

IMPROVED STABILITY WITH MINIMUM VIBRATION

- ✦ Finger conveyor is used at soldering module only
- ✦ About 240 fingers in total only (~60% lesser than the traditional wave soldering machines)
- ✦ Minimum vibration of conveyor and better stability
- ✦ Improves soldering quality and consistency

LONGER LIFESPAN

- ✦ Durable chain conveyors are used at spray fluxer and preheating modules
- ✦ With lesser fingers, the conveyor lifespan is much longer
- ✦ Less maintenance and consumable items requirement



INDEPENDENT CONVEYOR SYSTEM



HEAVY-DUTY FINGERS WITH VARIOUS COMBINATION AVAILABLE (V/L/1V+1L/2V+1L)

Automatic Recipe/Model Switching

SHORTER MACHINE DOWNTIME

- ✦ Code reading for automatic recipe switching and automatic model changeover
- ✦ Automatic recipe switch: Flux spray path and wave height are adjusted automatically according to the recipe in mixed production mode
- ✦ Automatic model changeover: All parameters, including solder pot height will be adjusted automatically according to the setting
- ✦ Increases machine flexibility and uptime

Selective Fluxing

MINIMUM FLUX CONSUMPTION & EXCELLENT PENETRATION

- ⚙ Selective area flux application with standard spray nozzle or Z-Select-W ultrasonic nozzle (Optional)
- ⚙ Z-Select-W ultrasonic nozzle - OEM by Sono-Tek (Optional)
 - Sauna infiltration effect (Excellent flux penetration to improve PTH top side fill)
 - Elimination of spattering from drop jet, and overspray from air atomizer
 - Nature of nozzle self-cleaning (Never clogs)
- ⚙ Huge flux saving, much cleaner chamber and better soldering result



Z-SELECT-W - OEM BY SONO-TEK USA (OPTIONAL)

MODEL	EVOL-350	EVOL-350N	EVOL-510	EVOL-510N	EVOL-610	EVOL-610N
GENERAL						
Dimensions: L x W x H	4,985 x 1,743 x 2,143 mm		4,985 x 2,003 x 2,143 mm		4,985 x 2,003 x 2,143 mm	
Weight	Approx. 1,800 kg					
Control system	PC (Windows 10 Pro) + PLC					
Exhaust flowrate	Fluxing zone: $\geq 30 \text{ m}^3/\text{min} \times 1 \text{ pcs}$; Preheating & soldering zones: $15 - 20 \text{ m}^3/\text{min} \times 3 \text{ pcs}$					
Exhaust opening diameter	200 mm					
Power supply	3 phase 5 wire, 380 V AC, 50/60 Hz 125 A					
Power requirement	45 kW		50 kW		50 kW	
Normal operating power	12 kW		15 kW		15 kW	
Compressed air requirement	0.4 - 0.8 MPa					
CONVEYOR SYSTEM						
Max. board size: L x W	600 x 350 mm		600 x 510 mm		600 x 610 mm	
Board clearance	Top: 90 mm; Bottom: 16 mm					
Edge clearance	5 mm					
Conveyor type	Fluxing & preheating zones: Chain; Soldering zone: Finger					
Finger type	Heavy-duty V or L or 1V+1L or 2V+1L combination					
Conveyor speed	600 - 1,800 mm/min					
Conveyor angle	5.5°					
Conveyor direction	Left to right (Option: Right to left)					
Conveyor height	Entrance: $780 \pm 20 \text{ mm}$ (With casters) / $750 \pm 20 \text{ mm}$ (Without casters) Exit: $1,097 \pm 20 \text{ mm}$ (With casters) / $1,065 \pm 20 \text{ mm}$ (Without casters)					
Conveyor adjustable width	100 - 350 mm		100 - 510 mm		100 - 610 mm	
FLUXING SYSTEM						
Spraying height			70 - 90 mm			
Spraying stroke: X x Y	130 x 350 mm		130 x 510 mm		130 x 610 mm	
Positioning repeatability	$\pm 0.2 \text{ mm}$					
Flux flowrate	6 - 60 mL/min (Manual adjustment)					
Flux tank capacity	3 L					
PREHEATING SYSTEM						
Preheating mode	Hot air convection (Blower fan)					
Number of preheating zones	3 bottom					
Total length of preheating zones	1,800 mm					
Preheating temperature range	Room temperature - 280°C					
Temperature control system	PID + SSR					
SOLDERING SYSTEM						
Solder pot type	Mechanical pump					
Solder pot capacity	600 \pm 30 kg (Lead-free)		690 \pm 30 kg (Lead-free)		740 \pm 30 kg (Lead-free)	
Solder pot operating temperature	Max. 280°C					
Solder pot warm-up time	180 minutes (Set temp.: 260°C)		210 minutes (Set temp.: 260°C)		210 minutes (Set temp.: 260°C)	
Temperature control system	PID + SSR					
Wave driving power	1/2 HP x 2 (3 phase 220 VAC)		1 HP x 2 (3 phase 220 VAC)		1 HP x 2 (3 phase 220 VAC)	
NITROGEN SYSTEM						
Nitrogen consumption	N/A	12 m ³ /h, $\leq 100 \text{ ppm}$	N/A	15 m ³ /h, $\leq 100 \text{ ppm}$	N/A	15 m ³ /h, $\leq 100 \text{ ppm}$
Nitrogen source requirement	N/A	0.5 - 0.8 MPa, $\leq 10 \text{ ppm}$	N/A	0.5 - 0.8 MPa, $\leq 10 \text{ ppm}$	N/A	0.5 - 0.8 MPa, $\leq 10 \text{ ppm}$
STANDARD FEATURES						
Selective area flux application with 1 spray nozzle (Made in USA)						
Double wave soldering						
Titanium alloy solder pot (With 5-year warranty on leakage)						
Heavy-duty fingers						
Solder level detection & alarm						
Automatic solder pot height adjustment						
Motorized solder pot in & out						
Automatic conveyor width adjustment						
Code reading function for automatic program switching						
Fixed type code reader						
Uninterrupted power supply (UPS)						
OPTIONAL FEATURES						
Upgrade to Sono-Tek selective ultrasonic spray fluxer (Z-Select-W)						
Automatic flux flowrate adjustment (Adjustable range becomes 5 - 100 mL/min)						
Real-time fluxer blockage detection & alarm (Not applicable if Z-Select-W is selected)						
Top preheater (Hot air convection [Blower fan] / heating rod / IR lamp)						
Solder pot center board support (CBS)						
Spare solder pot						
Oxygen analyzer (For N ₂ models)						
External air cooler						
External 3-phase transformer						
MES customization (i4.0)						
KIC multi-speed WPI - Essential						

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Manufacturing Supremacy with Absolute Control

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