

**AMS** ADVANCED  
MECHATRONICS  
SOLUTIONS, INC  
AUTOMATION, SMT & LEAN MANUFACTURING

[www.ams-fa.com](http://www.ams-fa.com)



## **HW-450** Wave Soldering Machine



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## **Versatility for any Wave Soldering Application**

HW-450 can be configured with dual waves to accommodate through-hole, surface mount and mixed-technology assemblies.

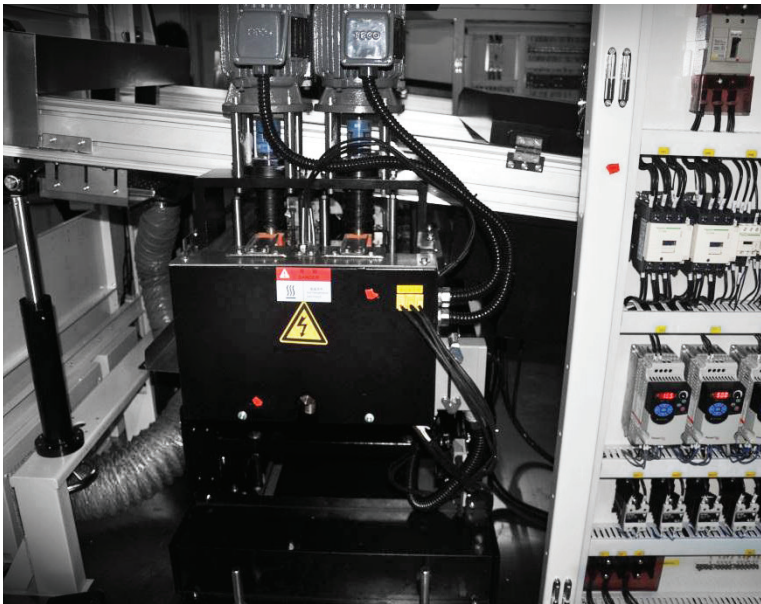
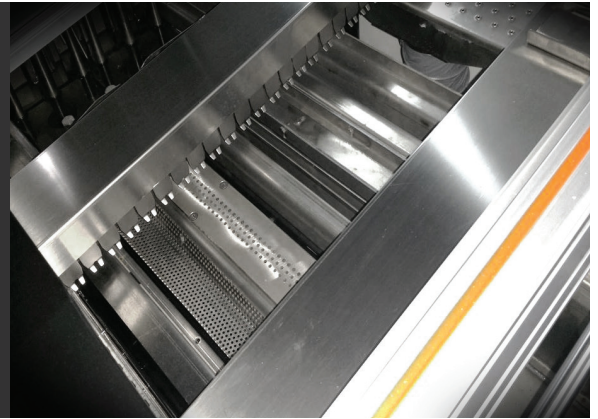
The chip wave can be deactivated through the user interface for non-SMT applications, although the addition of the oscillating wave option will allow the chip wave to aid in hole fill and bridge reduction for difficult-to-solder boards of all technologies.



## Heavy Duty, High-Temperature Pumps and Motors

Dual, high-performance, high-temperature motors pump the molten solder through a titanium-alloy recirculating system and wave nozzles that are specially designed to minimize solder oxidation. Both motors include transducer-controlled flow adjustment to ensure precise wave height and uniformity.

Solder pot inlet / outlet by motor >



Solder pot Inlet / Outlet by motor



## Fluxing System



## KEY FEATURES

**1**

A self-cleaning nozzle and pressure tank flux delivery system are included.

**2**

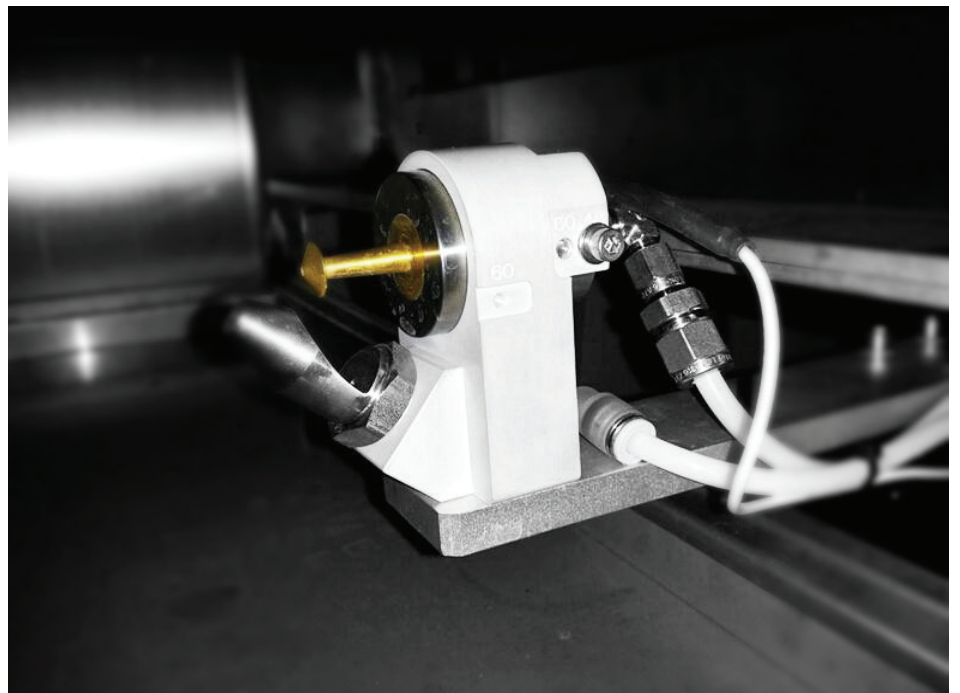
Flux supply and flux flow-meter come as the standard configuration in the system, which allows it to save flux-consumption and guarantees uniform spraying.

**3**

An automatic internal spray fluxing system that features a precision spray nozzle assembly mounted to a reciprocating Y-axis drive mechanism to ensure even and accurate application of flux.

**4**

The system adjusts automatically to accommodate the PCB size and utilizes a high-precision, low-pressure atomizer to provide excellent coating and through-hole penetration.



## **Forced Convection Hot Air Pre-heating Zone**

Hot Air preheating zone with 1800mm length



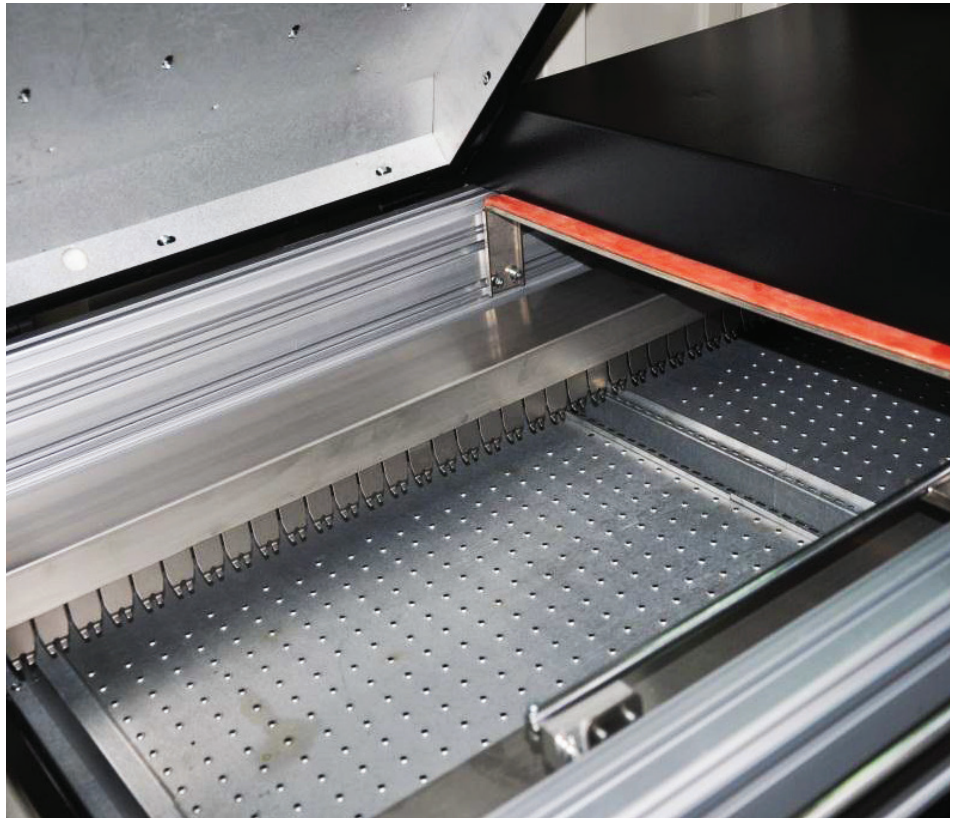
## **KEY FEATURES**

**1**

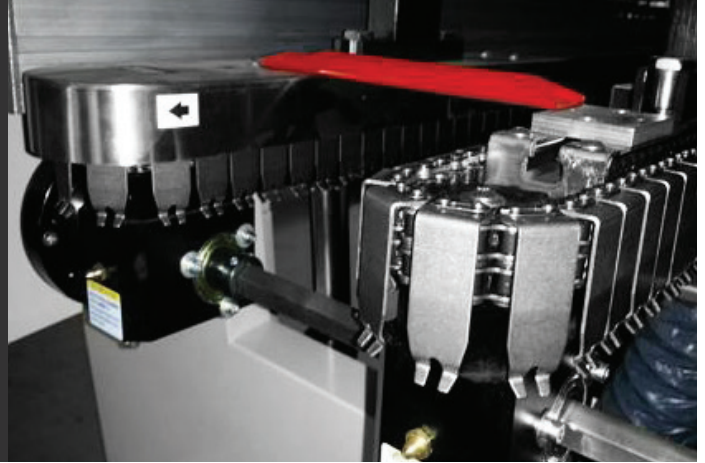
There is a three-zone, high-capacity, forced hot air convection preheater with independent zone temperature controls to allow precise thermal profiling for proper flux activation, and optimal solder wetting as assemblies enter the wave module.

**2**

Each one-piece preheat module is designed to be interchangeable for easy drop-down removal, promoting flexibility on the process.



**Titanium Finger Conveyor Includes Motorized Width Adjustment and PC Software Control**



## KEY FEATURES

**1**

Titanium Finger Conveyor Includes Motorized Width Adjustment, from 50-350mm (450mm), is standard on all HW Wave Soldering Systems. It dramatically reduces setup time and eliminating operator inconsistency. Other conveyor widths are available: 300 mm, 450mm.

**2**

An aluminum-alloy pin-type conveyor input mechanism feeds the dual-titanium-finger conveyor which includes a built-in finger cleaner.

**3**

Conveyor angle is adjustable from 4°-7° and nominal speed setting is variable from 0.5 - 2.2m/min (20"-87"/min) for maximized throughput.

**4**

An optional center PCB support rail can be added to maintain planarity and to prevent sagging of oversize boards through the wave module.





## Nitrogen System for Wave Soldering



### KEY FEATURES

**1**

Using  $N_2$  to generate an inert atmosphere during wave soldering minimizes solder oxidation. This not only saves solder material and lessens maintenance requirements, but also improves solder wetting and ensures the quality of the formed solder joints.

**2**

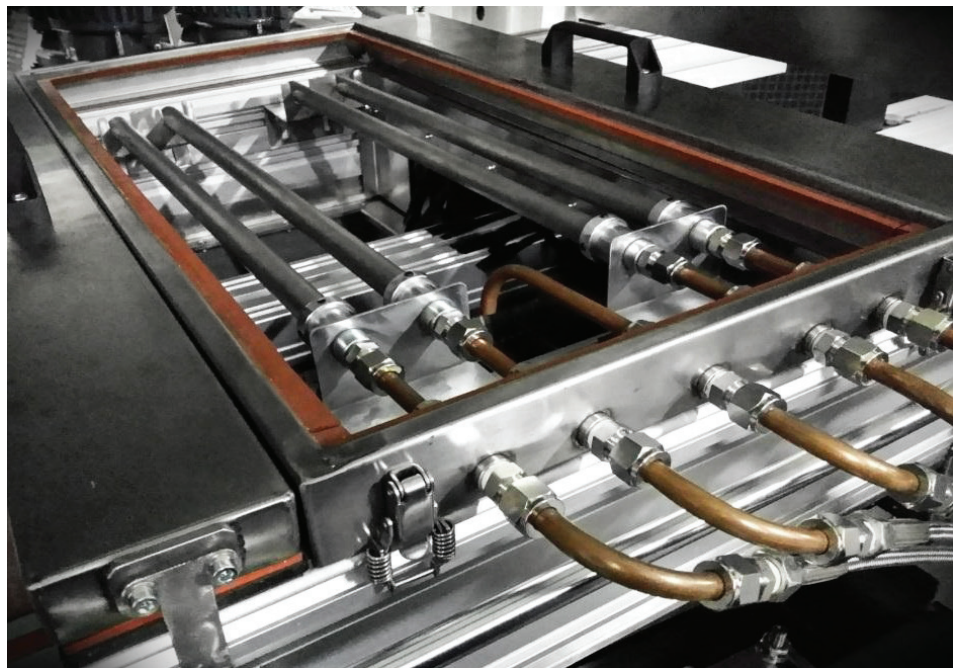
The use of nitrogen as a process gas provides an inert, reduced-oxygen soldering atmosphere. By eliminating the formation of solder oxides, a wetting state is promoted, thus soldering quality is improved.

**3**

Our nitrogen system in the wave soldering machine allows the lowest nitrogen consumption and PPM level, and decrease the solder dross as much as possible. The nitrogen tunnel is only placed on the solder pot area to achieve the economy nitrogen consumption.

**4**

Standard configuration includes: Full nitrogen system in the solder pot area, nitrogen flow meter, oxygen analyzer, and air cooling chiller;



MODEL	HW - 450
Dimension (L x W x H) mm	4430 x 1620 x 1710
Weight (kg)	2300
Power Supply	3P5W, 380V /220 V, 50/60HZ 63A
Startup Power	26kw
Operation Power Consumption	12kw
Control System	Siemens PLC+Computer
Transmission Method	Stepping motor
Sprayer Nozzle	Japan ST-6
Spray Pressure	0.25MPa – 0.4 Mpa
FLUX Flow Arrange	10-100ml/min
FLUX Supply	Automatic
Exhaust Capacity	25M3/min
Preheating Method	Hot Air
Control Mode	PID+SSR
Preheating Zones	Length :1800mm Room temperature –250°C
Warm up Time	15 minutes ( setting 150°C )
PCB Width (L*W) mm	Min: 80 x 60; Max: 500 x 450
PCB Conveyor Direction	L to R/ R to L (optional )
PCB Conveyor Height (mm)	750+/- 20
Conveyor Speed (mm/ min )	0-2000
Available Components Height (mm)	Top :120mm ( 160mm Optional ) Down: 15 mm
Finger	Special Titanium Claw
Rail Width Control	Automatic
Conveyor Angle	4° -7°
Soldering Pot Style	Motor Drive
Solder Pot Material	Titanium Alloy
Wave	Duble Wave
Wave Height Adjust	Digital Control by PC
Heater Power	380AC 12KW
Solder Pot Capability	HW-350: Pb-Free 480kg
Solder Pot Temperature	300° C
Solder Pot Warm-up Time	Approx.180 min ( setting 250°C)
Temperature Control Mode	PID + SSR
Cooling System	Forced Air Cooling



The HW-450 has evolved from a long heritage of soldering machines with thousands in production in China and overseas markets worldwide. With technology-driven features developed over generations, the HW-450 is one of the most reliable, dependable, and cost-efficient wave soldering machines available to the industry.

HW-450 gives customers exactly what they need: low cost of ownership, high yields, ease of use, 24/7 repeatability, and high reliability.



### **KEY FEATURES**

#### STANDARD

- > Heavy duty titanium fingers (L+V mixed type) for PCB and PCB with carriers
- > Manual conveyor angle adjustment between 5 and 7 degrees
- > finger cleaner
- > Built-in single nozzle spray fluxer
- > Three PID controlled hot air preheat zones totaling 1800mm
- > Dual wave with Titanium main wave and chip wave
- > Unique dross management system
- > Solder pot in/out and up/down driven by motorized system with security device to avoid any damage caused by incorrect operation
- > Motorized conveyor width adjustment
- > Built-in solder level automatic alarm system

### **OPTIONAL FEATURES**

- > Nitrogen supply tunnel system in solder pot area
- > Top IR Quartz lamp pre-heater has the special function to achieve smart turn-on and turn-off
- > Ultrasonic sprayer
- > Automatic solder bar feeding system with safety solder level alarm system (6 solder bars capability)
- > Receipt driven changing spraying width and wave heights automatically
- > Heavy duty PCB wire support