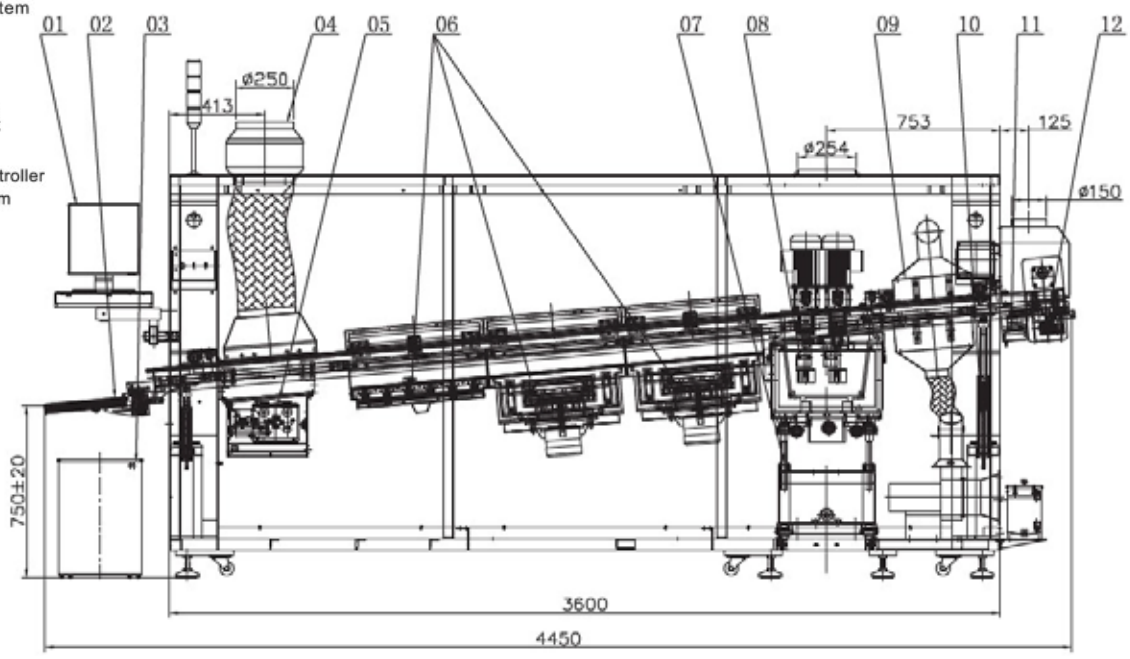
HW450 HEAVY DUTY LEAD FREE WAVE SOLDER MACHINE

DESIGN FOR HEAVY LOAD CARRIER & BOARD

Machine Schematic

01 LCD
02 Buffer system
03 Flux auto-supply system
04 Exhaust fan
05 Flux spray system
06 Pre- heater
07 Solder pot lifting unit
08 Dual wave solder pot
09 Cooling system
10 Angle adjustment controller
11 Finger cleaning system
12 Conveyor system



Main Features

- **Solder Pot** Long lifetime and Good heat uniformity
- **Oxidation Control** Less solder residue generated
- **Wave Generation** Patented design of impeller & channel for improving soldering wave stability
- **Flux Spraying** Spraying evenly and minimized the overlapping
- **Modular design** Convenience for maintenance

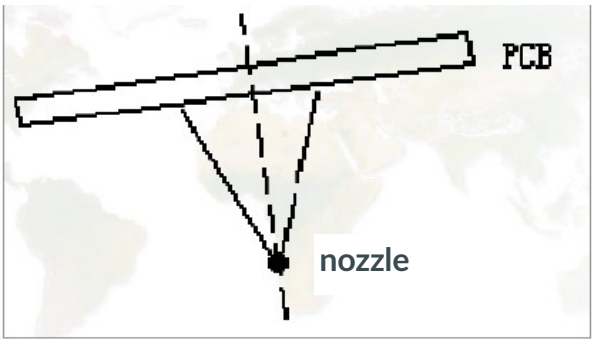
Flux Spraying System

Modularize Flux Spraying system

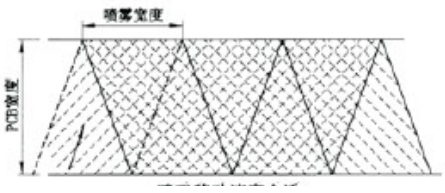
- Plug in and remove connector easily
- Drawer type structure that easy to install or disassemble to maintain
- Air filter easy to remove for cleaning

Flux spraying is perpendicular to the PCB

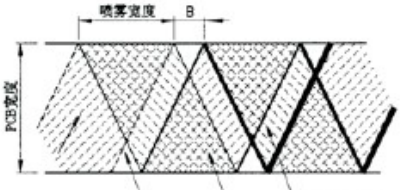
- Spread more even on PCB
- Enhance flux penetrating property to the holes
- Improve the adhesiveness of the solder metal
- Effectively reduce the customer's operating cost



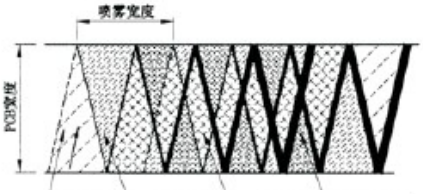
Software will optimize the path to guarantee the flux coating uniformity



Suitable Nozzle speed
Spreading evenly



Nozzle speed too low.
spreading did not cover all



Nozzle speed too high. Introduce
spreading overlap

Preheating System

Modularize Flux Spraying system

- Plug in and remove connector easily
- Drawer type structure that easy to install or disassemble to maintain
- Easy from hot air to IR

Soldering Pot

Modularize solder pot

- Plug in and remove power source and thermocouple easily
- Standard solder pot, suitable different models and PCB size
- Automatic in/out & up/down

Soldering Pot – Design Characteristics

10mm thickness casting iron solder pot

- No easy to deform when heating
- Well contact with heater for more uniform heating

Used graphite for insolation

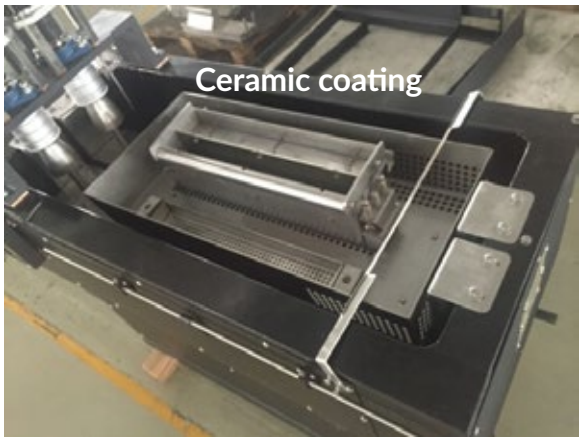
- Anti-moisture And Anti-corrosion

Ceramic coating

- Smoother surface, anti-corrosion, longer lifetime

Insolation and large solder pot

- Reduces heat loss
- Make the solder temperature to be more uniform
- Improves the solder pot heat storage capability



Soldering Pot Warranty

Long lifetime and good temperature uniformity solder pot by casting iron solder with ceramic coating.

Casting Iron Solder Pot

Guaranteed for 5 years

	Solder Pot Size (mm)	Solder Pot Thickness (mm)	Service life (year) 8 hour / day
316 stainless steel	1150 × 480 × 265	3	≥1
Titanium		2	≥5
Heat-resistant casting iron		10	≥8

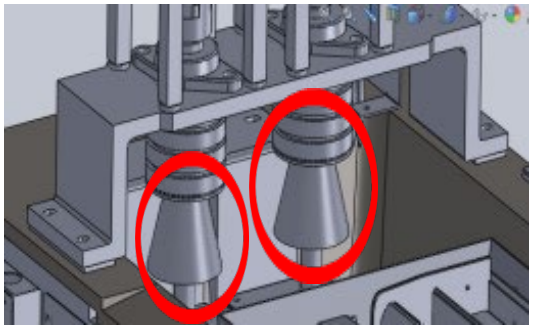
*Titanium solder pot guaranteed for 2 years

Soldering Pot Anti-Oxidation

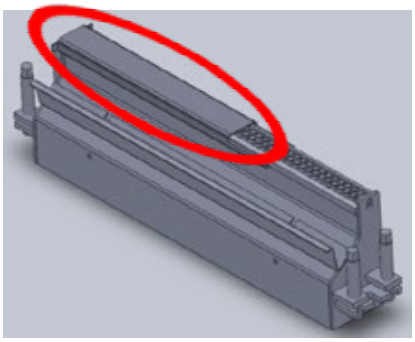
Reviewed the design by above factors. Solder residue is limited < 0.4kg per hour. Cost saved by better utilization.

Dynamic rotating cap isolate air and limit the oxidation

The oxidation reducing cover effectively control the wave flowing speed, lower the falling height and eliminate oxide.



Cap should be clean at least a week



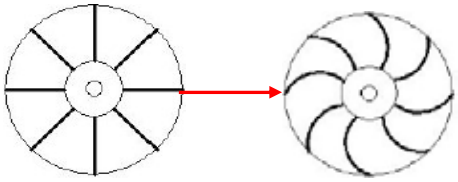
Solder residue should be removed everyday

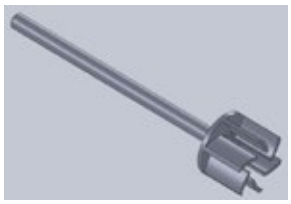
Soldering Pot Wave Generation

- The structure of channel and impeller directly influence the soldering wave stability
- The variation of wave level can be controlled within 0.5mm to ensure good welding.

Impeller design

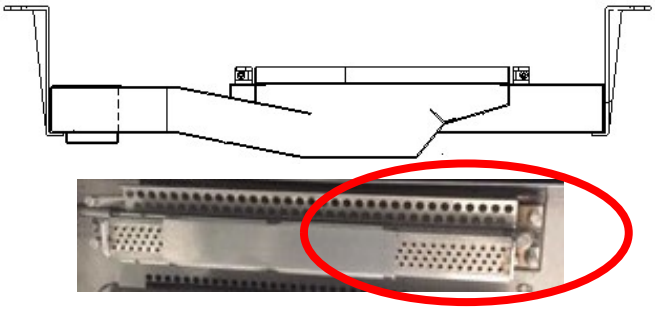
- The impeller design can convert the energy to solder pot constantly for forming more stable solder wave





Channel design

- The channel design optimize the interference between solder wave (more stable)
- Rectifier make the peak of wave more flat



Conveyor Finger

▲ 轻型双钩爪
Light-duty double Hook Finger

Item	参数(Parameter)
Technical distance	≥3mm
PCB thichness	≤2. 5mm
Carrying ability parameter : the whole conveyor	≤130kg
Material	材料有不锈钢和钛合金两种 Material is stainless steel and titanium alloy

Cost down version for double hook finger

Type 1 finger : Stainless steel
Type 2 finger : Titanium

▲ 重型双钩爪
Double hook finger
Type 3 finger : Titanium

Item	参数(Parameter)
Technical distance	≥2mm
PCB thichness	≤3. 5mm
Carrying ability parameter : the whole conveyor	≤130kg
Material	钛合金材料 Titanium alloy

Current standard

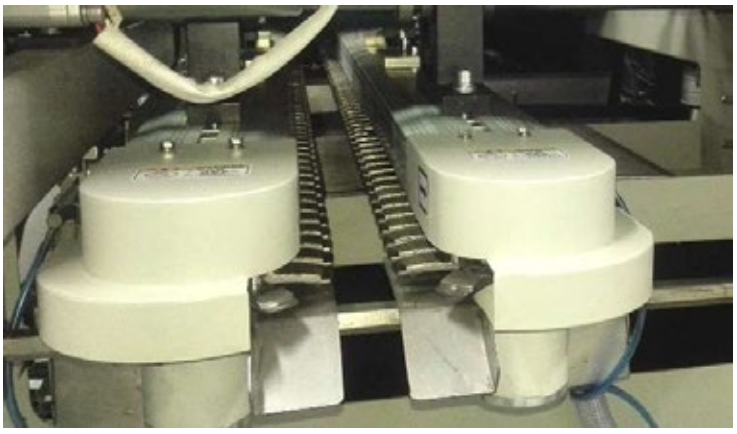
▲ 重型弹簧压片爪
Spring pressed finger
Type 4 finger

Item	参数(Parameter)
Technical distance	≥4mm
PCB thichness	≤5mm
Carrying ability parameter : the whole conveyor	≤130kg
Material	支撑片钛合金材料，压片不锈钢材料 support chip is titanium alloy, tabletting is stainless steel

▲ D-40鸭嘴爪
D-40 duchbill finger
Type 5 finger

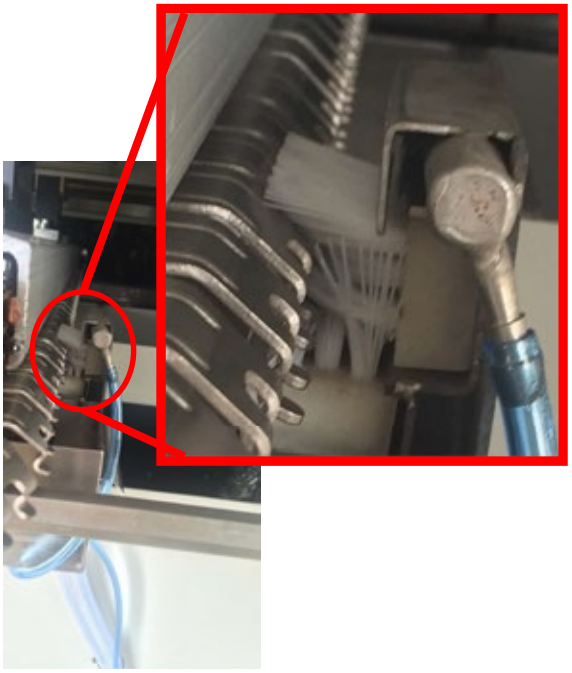
Item	参数(Parameter)
Technical distance	≥3mm
PCB thichness	≤2mm
Carrying ability parameter : the whole conveyor	≤130kg
Material	钛合金材料 Titanium alloy

Options：L5 finger designed for heavy pallet.



Cleaning

Alcohol will to pump to the brush and clean the clamp during moving



User Friendly Interface

Direct input target temperature into the program
Display actual temperature

Specifications

Model	HW350	HW450	HW610
Dimensions LxWxH(mm)	4450x1400x1700	4450x1500x1700	4450x1670x1700
Weight	Approx. 1800kg	Approx. 2100kg	Approx. 2600kg
Power Supply	3PH 380V 50HZ	3PH 380V 50HZ	3PH 380V 50HZ
Startup Power	32KW	32KW	45KW
Operation Power Cons	Approx. 8KW	Approx. 8KW	Approx. 11KW
Control System	PC+PLC	PC+PLC	PC+PLC
Spraying Movement	(step motor)	(step motor)	(step motor)
Spray Pressure	0.2 Mpa - 0.4Mpa	0.2 Mpa - 0.4Mpa	0.2 Mpa - 0.4Mpa
Flux Flow Arranga	Option	Option	Option
Auto Fill Flux	Standars	Standars	Standars
Exhaust	Top Exhaust Side Exahust	Top Exhaust Side Exahust	Top Exhaust Side Exahust
Exhaust Ducting d (mm)	Ø 250	Ø 250	Ø 250
Exhaust Capacity	30M°/min	30M°/min	30M°/min
Preheating Mode	Convection/ IR emitter	Convection/ IR emitter	Convection/ IR emitter
Control Mode	PID	PID	PID
Preheating Zone Number	3	3	3
Preheating Lenght (mm)	1800	1800	1800
Preaheating Temperature	Room temp. -200°C	Room temp. -200°C	Room temp. -200°C
Warm-up Time (min)	Approx. 12min (settings: 150°C)	Approx. 12min (settings: 150°C)	Approx. 12min (settings: 150°C)
Blower Motor	250W 3PH 220 VAC	250W 3PH 220 VAC	250W 3PH 220 VAC
PCB Width (mm)	50-350	50-450	50-610
Conveyor Direction	L→R (option: R→L)	L→R (option: R→L)	L→R (option: R→L)
Conveyor Speed (mm/min)	500-1800	500-1800	500-1800
Conveyor Height (mm)	750±20	750±20	750±20
Available Comp. H(mm)	Top 120 /Opt: 250) Bottom 15	Top 120 /Opt: 250) Bottom 15	Top 120 /Opt:250) Bottom 15
Conveyor Speed Control Mode	Closed Loop	Closed Loop	Closed Loop
Fingers	New design Double-hook Type Finger: 2D-40	Spring Pressing Double-hook Finger	New design Double-hook Type Option
Conveyor Angle	4-7°	4-7°	4-7°
Type of Solder Pot	Motor Drive	Motor Drive	Motor Drive
Solder Pot Material	Casting Iron	Casting Iron	Casting Iron

Wave Height Adjustment	(Inverter) Approx: (Digital Control by PC)		
Cooling Method	(Air Cooling) Option: (Water cooling)		
Heater Power	220 V 13.5KW	220 V 13.5KW	380 V 18KW
Solder Pot Temperature	300°C	300°C	300°C
Solder Pot Capacity	500kg	500kg	650kg
Wave Drive Power	180Wx2 3PH 220 VAC	180Wx2 3PH 220 VAC	180Wx2 3PH 220 VAC
Solder Por Warm-up Time	Approx: 150min (setting 250°C)	Approx: 150min (setting 250°C)	Approx: 150min (setting 250°C)
Temp. Control Mode	PID	PID	PID
Finger Cleaning System	(Brush)	(Brush)	(Brush)