

Heller Short Cycle Vacuum Reflow Oven

Fast Cycle Time for Maximized Throughput





Short Cycle Vacuum Reflow Oven

HELLER's Short Cycle Vacuum Reflow Oven (SCVR) integrates advanced vacuum soldering technology, a multi-stage conveyor system, intelligent process control, and eco-friendly, energy-efficient design. It delivers superior soldering quality, exceptional process flexibility, and high production efficiency—providing industry-leading solutions. This cutting-edge equipment is the ideal choice for high-end electronics manufacturing, empowering customers to achieve reliable, high-quality soldering results.

Key Advantages



Minimal Cycle Time

The patented, program-controlled multi-stage conveyor system reduces single-board cycle time by half compared to conventional vacuum reflow ovens—effectively doubling units per hour (UPH) and enabling customers to meet stringent production goals.



Highly-efficient Vacuum System

The highly-efficient vacuum module with 5 step closed-loop pressure control eliminates solder defects like bubbles and voids, boosting yield by over 30%. It supports diverse processes like lead-free and high-temperature soldering.



Smart Temperature Control

AI algorithms optimize the temperature curve in real time, paired with a fast-response heating module for $\pm 0.5^{\circ}\text{C}$ accuracy and consistent welding. Nitrogen use is cut by 40%, and with <50 ppm oxygen monitoring, operating costs are significantly reduced.



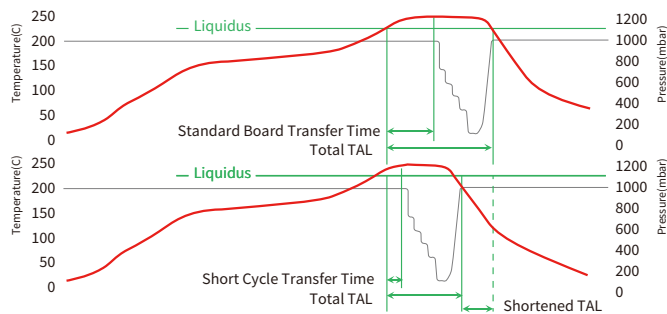
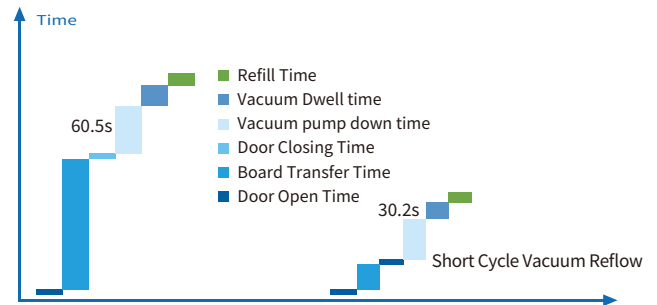
Modular Expandability

Oven features a modular design with open architecture, allowing easy upgrades and additional features for enhanced capabilities with ease. A reserved MES interface enables seamless digital factory integration.

Highlights

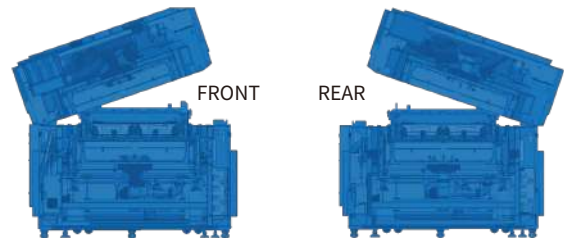
1.SCVR System: Innovative High UPH Design

- Multiple independently-driven conveyor systems;
- Multi-stage conveyors rapidly transfer PCBs to the vacuum chamber;
- Adjustable cooling zone conveyor speed to extend dwell time;
- Reduces board transfer time to increase UPH by up to 100%;
- Cooling time extended 50% compared to regular VR.



2.Flexible Thermal Profile

By shortening the board transfer time entering the vacuum chamber, the total time above liquidus (TAL) can be optimized to match the solder paste recommendation. By slowing down the cooling conveyor, the cooling zone dwell time can be extended to reduce board exit temperature.



3.Dual-opening top shell (Optional)

The oven top shell can be opened from either the front or rear side to maximize access during maintenance and significantly improves cleaning efficiency, serviceability, and operational safety, especially for ultra-wide tracks.

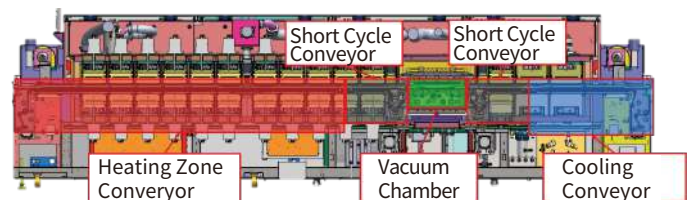
HELLER Patent

Innovative Multi-Stage Conveyor system

The five-independent-conveyor system, powered by servo motors, can rapidly transfer products into and out of the vacuum chamber to reduce cycle time.

Patent No.: CN222728852U

Patent Name: A multi-stage speed-adjustable transmission mechanism



Applications

- High-reliability RF component Vacuum soldering
- Mini LED/Micro LED Mass Reflow
- High-density interconnect soldering
- Highly Reliable SMT
- Automotive-grade IGBT/SiC power module packaging

Specifications

	1911MK5-SCVR	1912MK5-SCVR	2043MK5-SCVR	2046MK5-SCVR	2049MK5-SCVR
Dimensions					
Overall Oven Dimensions	590 cm (L) × 175 cm (W)	620 cm (L) × 175 cm (W)	680 cm (L) × 175 cm (W)	720cm (L) × 200 cm (W)	765 cm (L) ×200 cm (W)
Typical Net Weight (Oven / Pump)	3800 kg / 500 kg	3800 kg / 500 kg	4300 kg / 500 kg	4900 kg / 500 kg	5200 kg / 500 kg
Electric Supply					
Typical Power Consumption (Oven / Pump)	10~16/4 ~ 7kW@480 V	10~16/4 ~ 7kW@480V	20~25/4 ~ 7kW@480V	20 ~ 25/4 ~ 7kW@480V	22 ~ 28/4 ~ 7kW@480V
Process Atmosphere					
Typical Nitrogen Consumption	150 ~ 400 SLPM (9 ~24 m3/hr)**				
Minimum PPM Oxygen	<=25 PPM				
Temperature Control					
Temperature Controller Resolution	± 0.1 °C				
Typical Cross-Width Temperature Uniformity	± 2.0 °C ***				
Temperature Range	60-350 °C (60-450 °C Optional)				
Forced Convection Heating & Cooling Zones					
Heating Zones	10	11	10	11	12
Heated Tunnel Length (Convection/Total)	282 cm / 351 cm	305cm / 360 cm	345 cm / 415 cm	380 cm / 460 cm	410 cm / 490 cm
Cooling Zones	3	4			
Cooling Tunnel Length	116 cm	137 cm	140 cm	140cm	152 cm
Vacuum System Option					
IR Heater Temperature Range	60-400 °C (60-480 °C Optional)				
Minimum Vacuum Pressure	2 mbar (1.5 Torr)				
Vacuum Speed / Pressure Control	5-Step Closed Loop Speed / Pressure Control & Dual Stage Refill				
Vacuum Pump	300m³/hr High-Capacity Rotary Vane Pump				
Edge Hold Conveyor System Option					
Maximum PCB Size (L × W)	50 cm × 45 cm	35 cm × 45 cm	50 cm × 45 cm	60 cm × 70 cm	60 cm × 70 cm
Conveyor Speed Range	1-800 cm/min				
Conveyor Direction	Left to Right (Right to Left Optional)				
Center Board Support System	O	/	O	/	O
Side Chain Belt Conveyor System Option					
Effective Belt Width	45 cm	45 cm	45 cm	Tri-Chain, 2 × 29 cm	Tri-Chain, 2 × 29 cm

** Varies with PPM, product size and oven configuration. Oven only, does not include vacuum chamber refill.

*** Varies with actual PCB board construction

The specifications of customized products are subject to your confirmed order configurations.
HELLER INDUSTRIES reserves the right of final interpretation of product descriptions.

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