



# TECHNICAL INFORMATION



## PSE LH5

Fully automatic economy ultra-fine cleaning system for assemblies/printed circuit boards



# PSE LH5

## CLEANING TECHNOLOGY

Made in Germany

Fully automatic ultra-fine cleaning economy system with PowerSpray® technology

Cleans PCBAs, hybrids and misprints from flux residues, resin, copper, oxide and soldering support substances

Capacity: up to 176 equals 2.8m<sup>2</sup> (30 ft<sup>2</sup>) eurocards in up to two variable drawer baskets

Part number: 0900PSE5LH-2

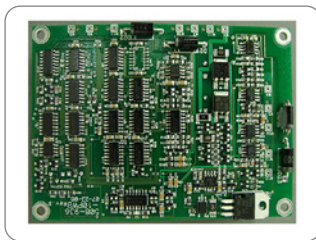


### Certifications:

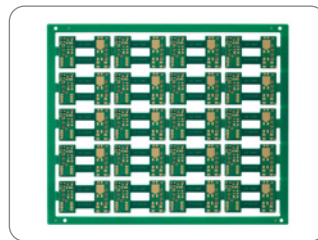
This system in its basic version is certified for its energy and water saving processing, for easy operability and for the standard integration of comprehensive safety features.

- \* Two-tank system with triple circuit function
- \* Average process time: 75 min/cycle = approx. 25 s per eurocard
- \* Fully automatic 4-step process: cleaning, rinsing (tap water), DI-water rinsing, VMH® evaporative drying
- \* Horizontal PTFE-mounted rotor system with up to four ASYNCHRO® spray rotors for thorough wetting (no blind spots)
- \* Heater cleaning tank A, automatic water exchange for the rinsing circuit, DI-water system, mixing-blending unit, water measuring unit (ion contamination measurement), ion exchanger and fine filter systems for both tank circuits
- \* Processes and service intervals PLC controlled
- \* Event issuing and software control via touch screen
- \* Suitable for high temperature cleaning and rinsing up to 80 °C (176 °F)
- \* Also suitable for cleaning up to seven solder carriers up to 540 x 480 mm/21" x 19" (in a washing cart)

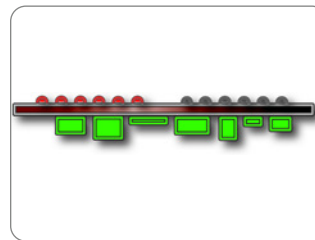
## Key applications



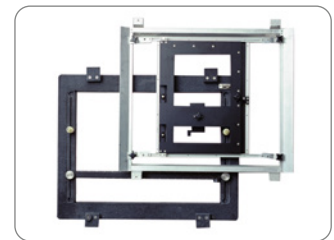
Assembled PCBs



Hybrids



(Mounted) Misprints



Solder Frames/Solder Carriers

The **kolb** PSE economy line is a quality series of advanced cleaning systems, which focuses on all essential criteria for a qualified cleaning process and therefore stands for attractive purchase prices.

PSE LH5 is a completely German engineered and manufactured fully automatic ultra-fine cleaning system for assemblies/PCBs, hybrids, SiPs etc. with a capacity of up to 176 (2.8m<sup>2</sup>/30 ft<sup>2</sup>) eurocards per cleaning cycle.

The configuration with two tanks and triple circulation function, up to 80 °C cleaning temperature and up to 90 °C drying temperature ensures short throughput times and makes the PSE LH5 a perfect economic choice for the qualified cleaning of assemblies/PCBs.

**The cleaning system can be operated with all common electronics cleaning supplies (detergents/chemistry, etc.) which are approved by the manufacturer.**




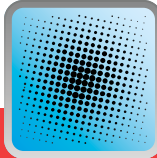



## PSE LH5

Fully automatic PowerSpray® ultra-fine cleaning economy system for assembled PCBs/circuit boards

Part number: 0900PSE5LH-2



### Application overview

				
<b>Most suitable</b>	<b>Not suitable</b>	<b>Most suitable</b>	<b>Optional suitable</b>	<b>Not suitable</b>
PCBAs, Hybrids Power electronics Misprints	Stencils Screens Misprints (bare boards)	Solder frames Solder carriers Solder masks	ESD Boxes Containers Magazines	Condensation traps Filters Steel sheets

Optional suitable applications can also be optimally realized with the appropriate options.

**Cleaning** (key process 1): From the cleaning tank A (TA) the cleaner liquid is sucked by a magnetically coupled pump unit and routed with a controllable volume flow through a separate circuit into the PTFE-mounted ASYNCHRO® stainless steel spray rotors with special nozzles. Their geometry ensures a comprehensive and thorough cleaning, even in inaccessible and critical areas. After the washing procedure, the valve switchover of the process chamber undocks the cleaning circuit until the next process run.

**MediumWipe®** (optional intermediate process): The remaining cleaner is blown off from the clean products and blown out of the cleaner circuit and recirculated into the cleaning tank before the valve switchover closes.

**Rinsing with tap water** (key process 2): From the rinsing tank B/C (TB/C), the water is pumped through the separate second circuit into the spray rotors. For information: Tap water has (compared to DI-/DM-water) the advantage of lower surface tension and thus flushes also critical points as low standoffs more efficient.

**MediumWipe®** (optional intermediate process): The remaining water is blown off from the products and blown out of the cleaner circuit and recirculated into the rinsing tank (TB/C).

**Clear rinsing with DI-/DM-water** (key process 3): The DI-/DM-water is produced from tap water in an integrated MB-cartridge and flushes conducting ions of the previous processes. This process is repeated automatically until the remaining amount of ions falls below the programmed value.

**MediumWipe®** (optional intermediate process): Blowing off and recirculating the remaining DI-/DM-water into the rinsing tank (TB/C).

**Drying** (key process 4): The clean products are dried with the patented VMH®- (Venturi Mixed Hot air) technology. A high volume flow of normal circulating air is blown into a venturi nozzle. The resulting differential pressure there (passively) sucks on a small amount of very high temperature air. The resulting air mixture provides for uniformly high drying temperature, adjustable between 70° and 90 °C (158° and 194 °F), all over the process chamber. Further advantages are robustness and low cost of ownership. Energy is only needed for a fan and the heating of a very small amount of air; the rest is executed by pressure differences and air duct geometry.

**Maintenance:** The system has removable panels for quick and easy maintenance. In the maintenance area among others are the pump-out set, the re-dosage unit with space for a 25-liter detergent container and an optional re-dosing unit for a 5 l additive container as well as the MB cartridge for DI-/DM-water processing. Tank levels as well as pressure values and maintenance cycles are monitored by the PLC and displayed on the touch screen.



## PSE LH5

Fully automatic PowerSpray® ultra-fine cleaning economy system for assembled PCBs/circuit boards

Part number: 0900PSE5LH-2



### Main standard features

- PowerSpray® technology bundle: magnetically coupled S-Power pump units (tank A, tank B/C), lower VA drawer basket, twofold ASYNCHRO® volume-spray rotor system with low maintenance PTFE-mounted stainless steel rotors and special nozzles, "Option100" software program (100 freely selectable process programs)
- EATON Programmable Logic Controller (PLC)
- High resolution 7" (1,024 x 600 px) display with multi-touch and intuitive process view
- Function package PCBA Cleaning (incl. option automatic water change for rinsing circuit/tank C with lifting unit, option heater cleaning tank (TA), function package DI water system (incl. DI/DM water measuring unit (residual ion contamination measurement), mixing-blending unit, ion exchanger cartridge, cartridge deaerator)
- Full flow coarse filter (process chamber)
- ClosedLoop reprocessing of cleaning and rinsing fluids
- VMH® hot air evaporative drying (control range approx. 70 - 90 °C/158 - 194 °F)
- ESD grounding point for the operating personnel
- Integrated VaporStop in the exhaust air unit
- Safety features: safety interlock on the process chamber door, overflow alarm for all tank sections, overheating protection for all heating and drying elements, end switches for all motor-driven valves and drives, personnel protection insulation
- Process sections made of electrolysis resistant elements

### Main options

- Function package Fine Filter System Tank A (incl. upgrade to XL-Power pump unit for the cleaning circuit, fine filter system for the cleaning tank A (TA))
- Function package Traceability "Basic" (incl. SPC data scanner, data backup in CSV file, backup via SD card (via slot in the PLC))
- Function package QuickChange (incl. SlidIn quick-loading feeder unit, upper wash basket with PTFE-mounted ASYNCHRO® TopDown stainless steel double rotors with special nozzles and SpeedLoad cart to accommodate of two feeder units)
- Automatic re-dosage unit for 25 l detergent container
- Automatic re-dosage unit for 5 l additive container
- Decalcification unit for reducing the lime content in the rinsing water (tap water) circuit/rinsing tank B (TB)
- Air filter unit for filtering the drying air according to filter class F7
- MediumWipe® unit for further optimization of detergent and rinsing fluid use
- Upper VA drawer basket with PTFE-mounted ASYNCHRO® stainless steel TopDown-double rotors with special nozzles
- Permanent automatic rotor run control
- Remote control (browser-based control/monitoring via mobile device or PC)
- QuickConnect rotor quick-clamping system for fast insertion or removal of the rotors
- Paint of choice (covering and hood)
- XL-Power pump unit for the cleaning circuit/cleaning tank A (TA)
- X-Power pump unit for the rinsing circuit/rinsing tank B/C (TB/C)



## PSE LH5

Fully automatic PowerSpray® ultra-fine cleaning economy system for assembled PCBs/circuit boards

Part number: 0900PSE5LH-2



### Technical data

Technology base	kolb PowerSpray®
Capacity	176 (2.8 m <sup>2</sup> /30 ft <sup>2</sup> ) eurocards
Process chamber dimensions	W 540 ▪ D 590 ▪ H 570 mm (W 21.25" ▪ D 23.22" ▪ H 22.44")
Usable space lower basket only	W 470 ▪ D 470 ▪ H 500 mm (W 18.5" ▪ D 18.5" ▪ H 19.7")
Usable space utilizing upper and lower basket	W 470 ▪ D 470 ▪ H 220 mm (W 18.5" ▪ D 18.5" ▪ H 8.7") - two times
Volume tank A (cleaning)/tank B/C (rinsing)	55 l/35 l
Electrical supply	400 V AC, 16 A, CEE plug/3 Ph/50 or 60 HZ
Power consumption	5.7 kW
Control system	PLC (EATON)
Max. cleaning temperature*	up to 80 °C (176 °F) - *max. temperature load for the tank circuits
Control range drying	approx. 70 - 90 °C (158 - 194 °F)
Filter system	1. Full flow coarse filter < 2 mm (0.08"), 2. 20" fine filter (1 - 100 µm - process dependent)
Supply connection 1 (tap water)	> 18 °C, 1/2" hose with 30µm water filter (on-site inlet water quality, pressure 3 - 4 bar, < 250 - 350 µS conductivity (< 10° dH) or descaling unit option. Do not use a softening/soft water system in the inlet)
Supply connection 2 (DI/DM water)	> 18 °C, 1/2" hose with 30µm water filter (DI-net provided by customer or bridging to tap water)
Supply connection 3 (compressed air)	6 - 8 bar (87 - 116 psi) - 100 l/min for option MediumWipe®, connection for 8 mm (0.31") compressed air hose
Rinse water drain connection	(with integrated pump-out system) connection for 1" hose
Exhaust connection	Ø 160 mm (6.3"), exhaust capacity 200 - 300 m <sup>3</sup> /h (7,063 - 10,595 ft <sup>3</sup> /h)
Operating condition room temperature	20 - 35 °C (68 - 95 °F)
Footprint/Empty weight/Operating noise	W 1,180, D 840 mm (W 46.46", D 33.07")/380 kg (838 lbs)/63 dB(A)

