



PSE LH7

CLEANING TECHNOLOGY

Made in Germany

Fully automatic PowerSpray® XL fine cleaning economy system for mass cleaning of assembled PCBs

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

Capacity: up to 540 equals 8.6m² (92.5 ft²) eurocards in up to three variable drawer baskets

Part number: 00900PSE7LH21

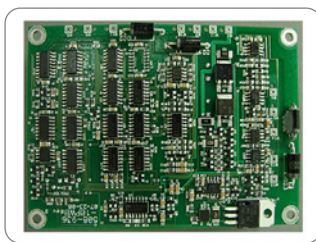


Certifications:

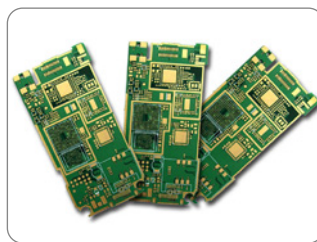
This system in its basic version was certified for its energy and water saving processing, for easy operability and for the standard integration of comprehensive safety features.

- * Two tank system with triple circuit function
- * Fully automatic 4step process: cleaning, rinsing (tap water), DI-water rinsing, VMH® hot air evaporative drying
- * 12 seconds relative cycle time for the cleaning, rinsing and drying one eurocard
- * Horizontal PTFE mounted rotor system with up to six ASYNCHRO® spray rotors for thorough wetting (no blind spots)
- * Heater cleaning tank A, automatic water change 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 as standard
- * Processes and service intervals PLC controlled.
- * Event issuing and software control via touch screen
- * Highest capacity on a very small footprint

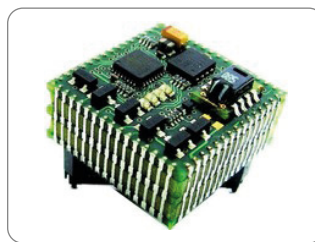
Key applications



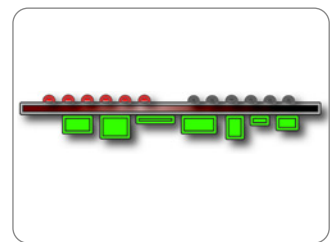
Assembled PCBs



Hybrids (HDIs)



Hybrids (SiPs)



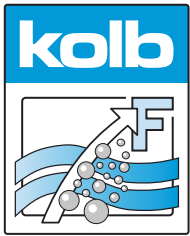
Misprints

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 LH7 is a completely German engineered and manufactured fully automatic high volume PCB cleaning system with an XL process chamber with a capacity of up to 540 (92.5 ft²) eurocards and a relative cleaning time of 12 seconds per card. Except **kolb** AQUBE® and PSE 9 types there are no batch systems with a comparably large chamber size available worldwide. With up to 80 °C (176°F) cleaning and 90 °C (194 °F) drying temperature also ideally suited for parts cleaning of medical equipment and use in the production of medical electronics.

The two-tank, three-circuit configuration ensures short cycle times and makes this system a perfect choice for the precision mass cleaning of assembled PCBs.

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








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Application overview

 Most suitable	 Optional suitable	 Optional suitable	 Optional suitable	 Not suitable
PCBAs, Hybrids Power electronics Misprints (mounted)	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 patented PUSHFORCE® 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. 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 a VARAccess® maintenance access system with recessed, variable doors and removable panels. 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.



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Main standard features

- PowerSpray® technology bundle: magnetically coupled XL-Power (tank A) and S-Power (tank B/C) pump units, lower VA drawer basket, twofold ASYNCHRO® volume-spray rotorsystem with low maintenance PTFE mounted stainless steel rotors and PUSHFORCE® 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 capacitive 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
- Automatic re-dosage unit for 25 l detergent container
- VMH® hot air evaporative drying (control range approx. 70 - 90 °C / 158 - 194 °F)
- ESD grounding point for the operating personnel
- Exhaust air and vapor extraction 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 XXL-Power pump unit for the cleaning circuit, fine filter system and sediment filter 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 PUSHFORCE® special nozzles and SpeedLoad cart to accommodate of two feeder units)
- 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 PUSHFORCE® 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)
- XXL-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)

Performance description of a fully equipped system. All rights for changes reserved that lead to technical improvement.

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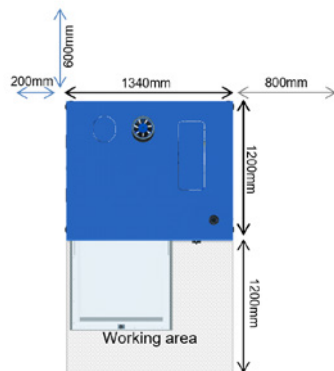
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Technical data

Technology base	kolb PowerSpray®
Capacity	540 (8.6 m ² / 92.5 ft ²) eurocards
Process chamber dimensions	W 700 • D 720 • H 710 mm (W 27.55" • D 28.34" • H 27.95")
Usable space lower basket only	W 610 • D 625 • H 625 mm (W 24.21" • D 24.6" • H 24.6")
Usable space utilizing three baskets	W 610 • D 625 • H 140 mm (W 24.21" • D 24.6" • H 5.51") - three times
Volume tank A (cleaning)	55 l
Volume tank B / C (rinsing)	35 l
Power supply	400 V AC, 16 A, CEE plug / 3 Ph / 50 or 60 Hz
Power consumption	8 kW
Control system	PLC (EATON)
Temperature load	up to 80 °C (176 °F)
Control range drying	approx. 70 - 90 °C (158 - 194 °F)
Filter system	up to three stages - 1. Full flow coarse filter < 2mm (0.08"), 2. Sediment filter inside the tank, 3. 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 options HT-version or 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 ³ / h (7,063 - 10,595 ft ³ / h)
Operating condition room temperature	20 - 35 °C (68 - 95 °F)
Foot print / Empty weight / Operating noise	1,200 x 1,340 mm (47.24" x 52.75") / 480 kg (1,058 lbs) / 63 dB (A)

Top view



Front view



- Recommended maintenance area
- Space for connections