# TECHNICAL INFORMATION


# AQUBE® MV3 ONE

Compact fully automatic high-end fine cleaning system for stencils/screens

# AQUBE® MV3 ONE

Compact, fully automatic two-tank high-end fine cleaning system with two separate circuits

Cleans screens, stencils and PumpPrints and PCBAs SMD paste, SMD adhesive, soldering support substances, oil & dust

Capacity: Screen, stencil, carrier, washing frame up to 770 x 950 mm (30" x 37")

Part number: 0900AQ3MV-2

PowerSpray® · PolyPower · ClosedLoop · CWA® Drying · Traceability

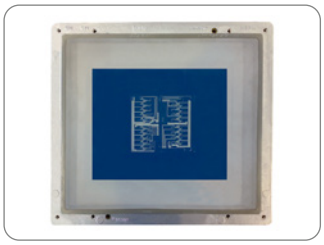
Smart Factory ready PREMIUM

ENERSAVE · WATERSAVE · EASOTECH · SAFEGAR

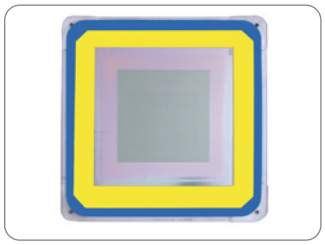
**Certifications:**
This system in its basic version is certified for its energy and water saving processing, for easy operability and for the standard integration of comprehensive safety features.

- Two-tank system with two separate circuits
- Average process time: 16 min per stencil
- Intelligent network connectivity for implementation in industry 4.0 smart factories
- Fully automatic 4-step process: cleaning, MediumWipe®, rinsing, drying with CWA® supercharger compression drying
- Vertical rotor system with ASYNCHRO® spray rotors for thorough wetting (no blind spots)
- Integrated condensate recovery in the process chamber
- Water-free operation possible: the system can operate with suitable cleaning/rinsing detergents for rinsing
- Processes and service intervals PLC controlled with event issuing and software control via 10" touch screen
- Safe installation close to the production line/screen printer possible; no special protection required
- Suitable for high temperature cleaning and rinsing up to 80 °C (176 °F)

## Key applications


Screens


Stencils


M-TeCK stencils


PCBAs

The AQUBE® MV3 ONE is a fully automatic system for reliable precision cleaning of screens, stencils, PumpPrints, Squeegees and solder frames and carriers. It removes quickly and thoroughly contaminations such as SMD-paste, SMD-adhesive, flux residues, stabilizer materials, flux, oil, grease or dust. Also suitable for PCBA cleaning with the corresponding function package.

AQUBE® MV3 ONE is a German engineered and manufactured machine with ClosedLoop water reprocessing and a two-tank and two separate circuits configuration which ensures short cycle times and makes this system the perfect economic choice for the cleaning of screens and stencils and smaller amounts of PCBAs.

The compact, easy-to-operate and easy-to-maintain system is Smart Factory ready.

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

# AQUBE® MV3 ONE

Compact, fully automatic two-tank high end fine cleaning system with two separate circuits for screens/stencils

Part number: 0900AQ3MV-2

## Application overview

| Optional suitable | Most suitable | Optional suitable | Not suitable | Not suitable |
|---|---|---|---|---|
| PCBAs, Hybrids | Stencils | Solder frames | ESD Boxes | Condensation traps |
| Power electronics | Screens | Solder carriers | Containers | Filters |
| Misprints | Misprints (bare boards) | Solder masks | Magazines | 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 ASYNCHRO® spray rotor 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®** (intermediate process 2): The remaining cleaner is blown off from the clean products and blown out of the cleaner circuit and recirculated into the cleaning tank (TA) before the valve switchover closes.

**Rinsing with tap water** (key process 3): 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 and apertures more efficient.

**MediumWipe®** (intermediate process 2): The remaining water is blown off from the products and blown out of the cleaner circuit and recirculated into the rinsing tank (TB/C)

**Final rinsing with DI-/DM-water** (optional process): 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 purified products are dried with the patented CWA®- (Compressed Warm Air) technology. The built-in special compressor compresses the ambient air. At the same time it collects the kinetic energy (frictional heat) of the paddle wheel in the unit, then presses the heated and compressed air into the rotor nozzles which were already used for cleaning and rinsing. There it blows off (pressure) and evaporates (heat) the residual moisture. This method is energetically and constructively highly efficient, as it uses the "waste heat" of the compressor rotation and the compressed air as driving power for the rotors. In addition, a system equipped with CWA®-technology requires no additional hardware and no external compressed air connection for the MediumWipe® process.

**Maintenance:** The system has two large maintenance doors on the right and on the left-hand side. IIn 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.

# AQUBE® MV3 ONE

Compact, fully automatic two-tank high end fine cleaning system with two separate circuits for screens/stencils

Part number: 0900AQ3MV-2

## Main standard features

| | |
|---|---|
| □ | PowerSpray® technology bundle: magnetically coupled X-Power (tank A) and S-Power (tank B) pump units, twofold ASYNCHRO® volume-spray rotor system with special nozzles, "Option100" software program (100 freely selectable programs) |
| □ | PolyPower® configuration with Power pump unit |
| □ | EATON Programmable Logic Controller (PLC) |
| ■ | Smart Factory ready Premium: for remote control (see options) and traceability with retractable touch monitor and integrated industry PC (see options) |
| ■ | High resolution 10" (1,024 x 600 mm) vertical display with capacitative multi-touch |
| □ | Fourfold alternating LED status light bar integrated in the system frame |
| □ | Full flow coarse filter (process chamber) |
| □ | Function package Fine Filter System Tank B (incl. X-Power pump unit for the cleaning circuit, fine filter system and sediment filter for the cleaning tank A (TA) |
| □ | Fine filter for the rinsing circuit/rinsing tank B/C (TB/C) |
| ■ | MediumWipe® unit for further optimization of detergent and rinsing fluid use |
| □ | ClosedLoop reprocessing of cleaning and rinsing fluids |
| □ | Automatic re-dosage unit for 25 l detergent container |
| □ | CWA® supercharger compression drying |
| □ | Ø 160 mm (6.3") chamber exhaust system with extraction control and integrated condensate recovery system |
| □ | Spare space for DI-/DM-water processing cartridge |
| □ | 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 |
| □ | Front cover made of stainless steel, side and rear covers in painted steel |
| □ | Removable side doors for quick and easy maintenance |
| ■ | Doors, cladding and hinges enclosed without edges, depot for traceability scanner and monitor in the side wall recessed |
| □ | Process sections made of electrolysis resistant elements |

# AQUBE® MV3 ONE

Compact, fully automatic two-tank high end fine cleaning system with two separate circuits for screens/stencils

Part number: 0900AQ3MV-2

## Main options

| | |
|---|---|
| ■ | Function package PCBA Cleaning (incl. option automatic water exchange for rinsing circuit/tank B/C (TB/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 air vent) |
| □ | Function package DI Water System "Combi" (incl. function package DI-water system (incl. DI-/DM-water measuring unit, (residual ion contamination measurement), mixing/blending unit, ion exchanger cartridge, cartridge deaeration) and option automatic water change for the rinsing tank (TB/C) |
| ■ | Function package Online Cleaner Regulation (incl. brix monitor for refraction measurement, automatic re-dosing of the cleaner, flow meter, dosing ball valve) |
| □ | Function package Noise Insulation (incl, option housing insulation and option safety/storage tray with integrated underfloor insulation mat) |
| □ | Function package Traceability "Basic" (SPC data scanner, data backup in CSV file, backup via SD card (via slot in the PLC) |
| ■ | Function package Traceability "Comfort" with PLC data scanner and retractable touch monitor and industrial PC with Intel processor |
| □ | 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/C (TB/C) |
| □ | Heater for cleaning tank A (TA) |
| □ | Remote control (browser-based control/monitoring via mobile device or PC) |
| ■ | RMA Remote Maintenance Assistance (factory-controlled maintenance support) |
| □ | Automatic water exchange with pumping system for the rinsing circuit |
| □ | X-Power pump unit for rinsing circuit/tank B/C (TB/C) |

# AQUBE® MV3 ONE

Compact, fully automatic two-tank high end fine cleaning system with two separate circuits for screens/stencils

Part number: 0900AQ3MV-2

## Technical data

| | |
|---|---|
| Technology base | **kolb** PowerSpray® |
| Capacity per process cycle | Screen, stencil, carrier, washing frame up to 770 x 950 mm (31" x 37") |
| Process chamber dimensions | W 350 • D 980 • H 920 mm (W 13.78" ▪ D 38.58" ▪ H 36.22") |
| Volume tank A (cleaning) | 75 l |
| Volume tank B (rinsing) | 75 l |
| Electrical supply | 400 V AC, 16 A, CEE plug/3 Ph/50 or 60 Hz |
| Power consumption | 4.8 kW |
| Control system | PLC (EATON) |
| Max. cleaning temperature* | 50 °C (122 °F) - *max. temperature load for the tank circuits |
| Filter system | 1. Full flow coarse filter < 2 mm (0.08"), 2. 20“ fine filter (1 - 100µm - 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 2 (compressed air) | 6 - 8 bar (87 - 116 psi) - 100 l/min for option MediumWipe®, connection for 8 mm (0.31") 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 m³/h (7,063 - 10,595 ft³/h) |
| Footprint | 950 x 1,600 mm (37.4" x 63") |
| Operating condition room temperature | 20 - 35 °C (68 - 95 °F) |
| Operating noise | 74 dB (A) |
| Empty weight | 490 kg (1,080 lbs) |