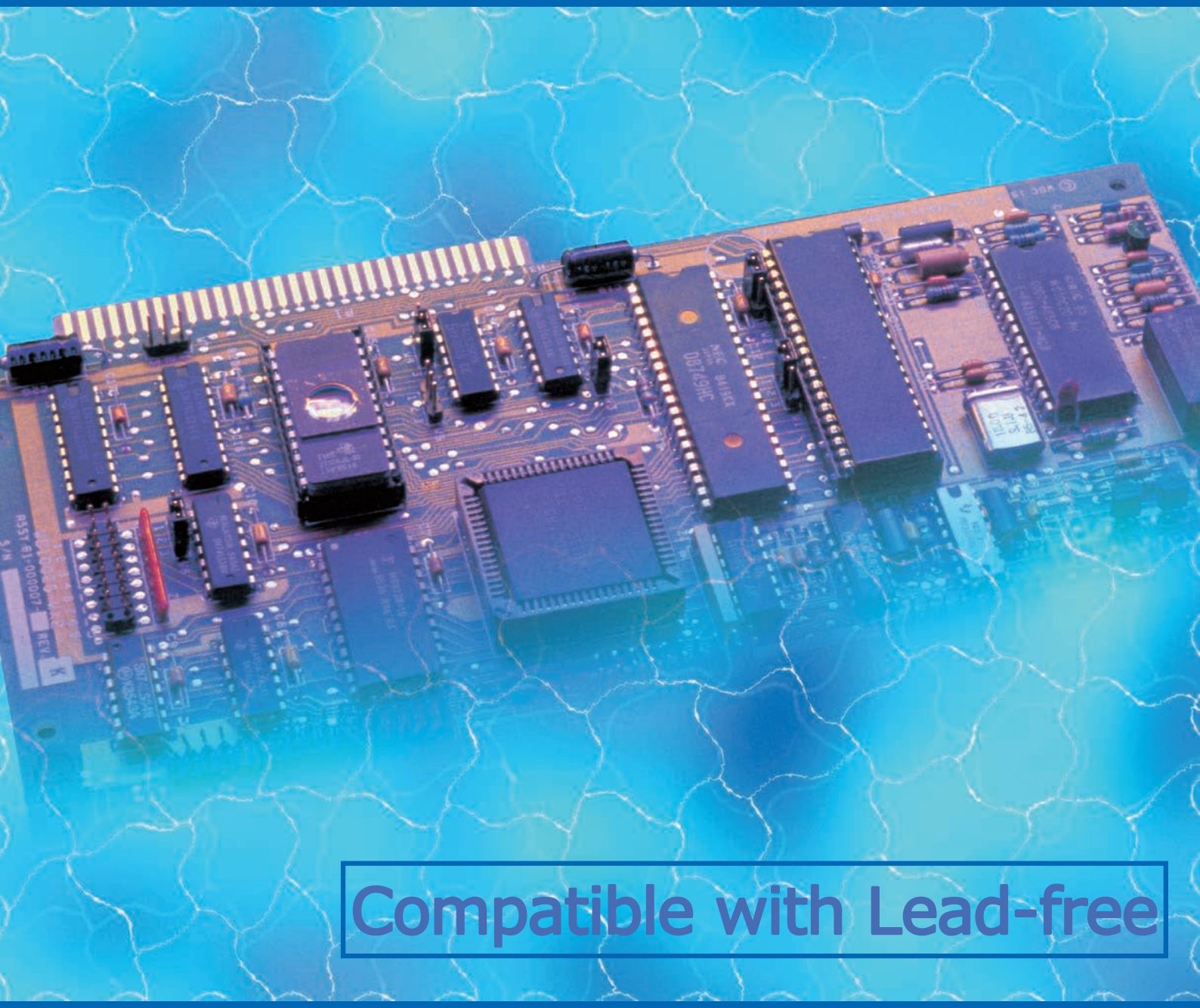
Excellent defluxing system vital to high reliability of electric circuits

MICROCLEANER®

Special Cleaner : MICROCLEAN & MARKLESS®



Compatible with Lead-free

"Creative" is a title only a genuine technology deserves

Creating Unique Materials

KAKEN TECH®

Highly Reliable, Yet Cost-Efficient Performance

Electronic packaging technology progressing and developing with breathtaking speed

Electronic circuits are increasingly becoming denser and more integrated, pursuing capabilities for higher frequencies and speeds, and better quality in accordance with car manufacturing technology developments. Moreover, environmental-consciousness is of the essence in the global market. Therefore, electronic packaging technology is at all times to qualify at its best "performance, quality, environmental-friendliness, and cost-efficiency,"with larger role of flux cleaning process in the electronic packaging line.

Going lead-free after CFC-free

The biggest transition regarding environmental-consciousness in the field of electronic packaging technology is CFC-free, followed by lead-free. With the trend of CFC-free, cleaning technology has held the spotlight for the first time in the long history of electronic packaging technology. Hydrocarbon-based detergents for metal cleaning as well as glycol-based detergents for flux cleaning have emerged from various detergents and cleaning methods, leading the field for more than ten years. Meanwhile, although cleaning has not been of major issue with respect to lead-free, many cases have been reported that existing detergents are incapable of completely removing flux as lead-free soldering prevails. The main reasons are that flux becomes more difficult to clean with lead-free soldering and that higher temperature of soldering causes flux residue harder to remove.

Our company immediately adopted not only CFC-free but lead-free cleaning system

Our company has established "cleaning evaluation technology, detergents and cleaning equipments" on its own before anyone else regarding CFC-free in the field of electronic packaging flux cleaning, receiving high reputation for detergents "MICROCLEAN & MARKLESS®" and cleaning equipment "MICROCLEANER®." Likewise, in the forecast of lead-free cleaning difficulty, our company has developed and merchandised pioneering lead-free flux detergents which are already becoming the standard in the field.

Features

1 Sophisticated cleaning ability

Capable of cleaning lead-free soldering flux or flux residue resulting from high temperature soldering, unlike conventional glycol- or hydrocarbon-based detergents.

2 High reliability

Highly reliable performance of flux residue removal, free from deterioration of dielectric property normally associated with hydrophilic circuit surface in the case of water-rinsing, including semi aqueous cleaners.

3 Cost-efficiency as a result of complete recycling

Compact distiller equipped as standard enables rinse agents to be continuously recycled for repeated use, achieving waste-less and low running costs while maintaining high quality cleaning performance.

4 Quick drying even under components

Special rinse agent MARKLESS® permeates into details yet dries four times faster than water, leaving no residue even in the gap under components.

5 Compact and easy mobile design

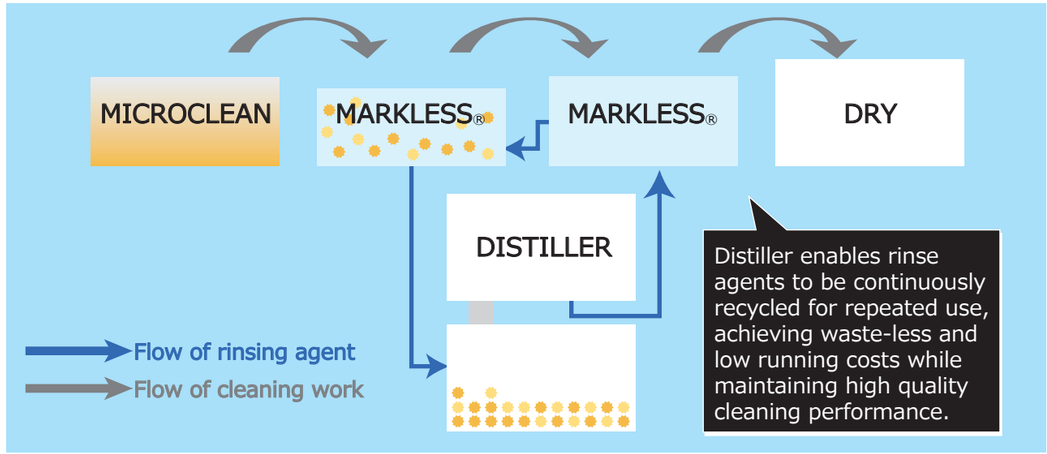
Offering various compact models that are easily-transferred for organizing production line, including a super-compact model eighty centimeters in width consisting of three tanks and a distiller for cell production use.

Highly Reliable Detergents; MICROCLEAN and MARKLESS®

Screening items in the course of development

1. The post-cleaning circuit qualities should remain unaltered. (Circuit qualities include not only insulation resistance but also dielectric property.)
2. Solubility and removability of flux residue after soldering and other pollutants in the process should be maintained high.
3. The detergents should leave no impact or slight, if any, on electronic parts and materials.
4. The detergents should be environmental-friendly and safe for human body.
5. Capabilities of stable supply and recycling are necessary.

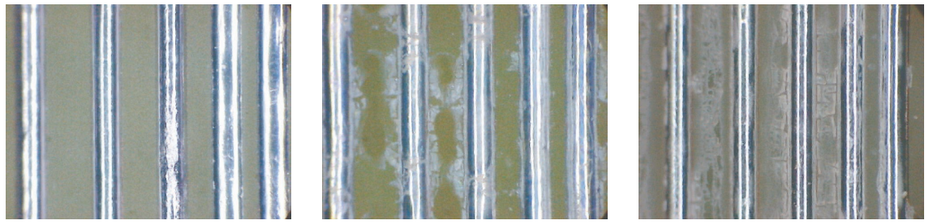
MICROCLEANER® system flow chart



Properties of MICROCLEAN and MARKLESS®

Product No.	Cleaning Agent				Rinsing Agent MARKLESS® ST-05U
	MICROCLEAN WS-1014U	MICROCLEAN WS-3220U	MICROCLEAN WS-2107U	MICROCLEAN RW-4180U	
	Standard	For lead-free	For lead-free	Non-flammability	
Base ingredient	Glycol-based	Alcohol-based	Alcohol-based	Glycol-based	Alcohol-based
Specific gravity (20℃)	0.92	1.00	1.05	0.98	0.89
Viscosity mPa･s (20℃)	7.4	9.3	9.7	11	2.3
Surface tension mN/m (20℃)	29	35	44	36	26
Boiling point ℃	200 or higher	200 or higher	200 or higher	100 or higher	81
Flash point ℃	117	105	100	none	24
ODP	0	0	0	0	0

Capable of Cleaning Lead-free Soldering Flux

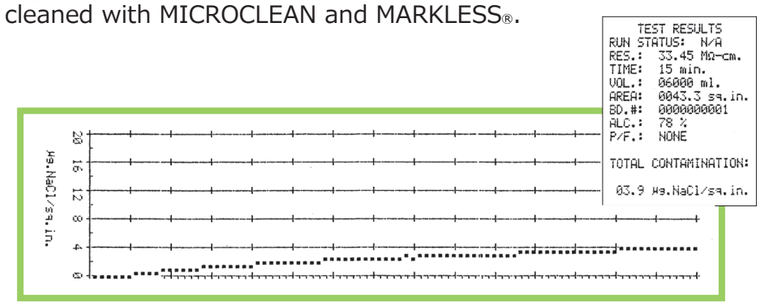


MICROCLEAN WS-3220U | Glycol ether | Hydrocarbon

Technology Behind the High Reliability

Cleanliness (MIL-P-28809A 55110D, J-STD-001F)

The following high cleanliness can be obtained of component-mounted substrate cleaned with MICROCLEAN and MARKLESS®.

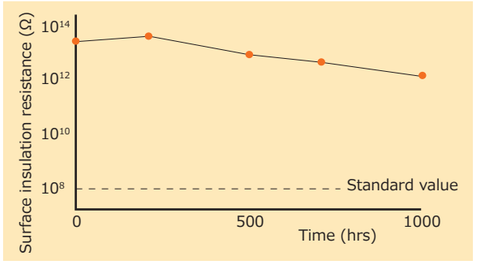


Insulation characteristics

The insularity of JIS-2 comb-shape substrates cleaned with MICROCLEAN & MARKLESS® has proved to be extremely good and reliable under any extremely harsh condition over a prolonged period of time.

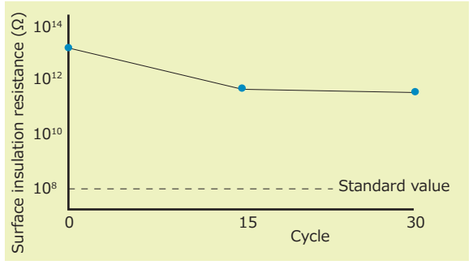
Bias test at high humidity

Subject to 40 ±2℃, 95%RH
Voltage applied at 45VDC for 1000hrs
Measured at 25℃, 95%RH, 100VDC



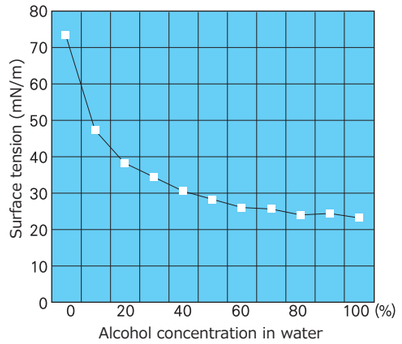
Heat cycle test

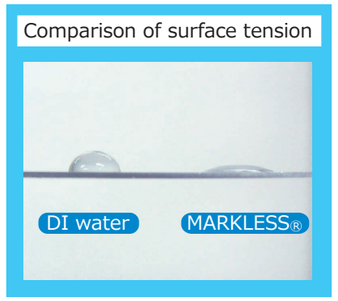
Subject to -40℃(20min)→+25℃(10min)
→+70℃(20min)→+25℃(10min)
Measured at 25℃, 54%RH, 100VDC



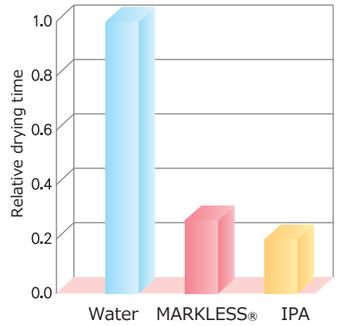
Rinsing Performance and Fast Drying of Rinse Agent "MARKLESS®"

Surface tension of MARKLESS®





Drying speed of MARKLESS®



※The alcohol concentration of MARKLESS® is about 60%.

Mild on Electric Components

MICROCLEAN and MARKLESS® are mild on materials.

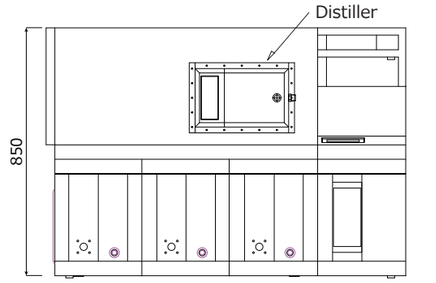
※Most electric component manufacturers answered no effect on their components. However, please contact component manufacturers on compatibility, and have them test if there is any problem before use.

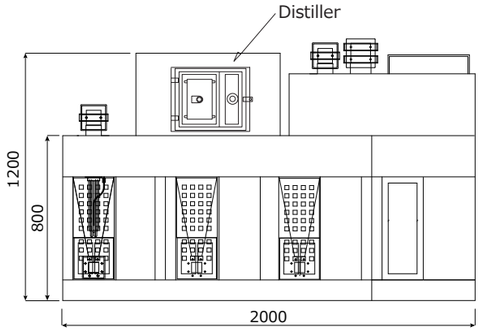
Effects on plastic / elastomer

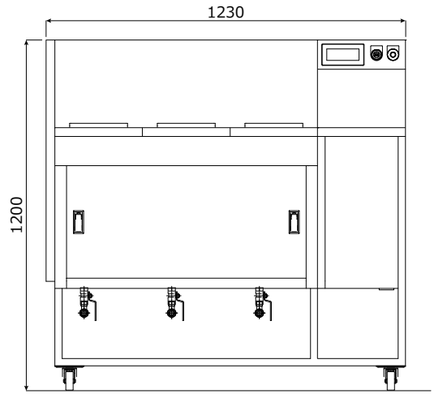
		MICROCLEAN WS-1014U			MICROCLEAN WS-3220U			MICROCLEAN WS-2107U			MICROCLEAN RW-4180U			MARKLESS® ST-05U		
		Weight	Volume	Crack	Weight	Volume	Crack	Weight	Volume	Crack	Weight	Volume	Crack	Weight	Volume	Crack
Plastic	6 Nylon	◎	◎	◎	◎	◎	◎	○	◎	◎	○	○	◎	△	△	◎
	66 Nylon	◎	◎	◎	◎	◎	◎	○	◎	◎	◎	◎	◎	◎	◎	◎
	Polyacetal	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
	Epoxy resin	◎	◎	◎	○	◎	◎	○	◎	◎	○	◎	◎	◎	◎	◎
	LDPE	◎	◎	◎	◎	◎	◎	○	◎	◎	◎	◎	◎	◎	◎	◎
	HDPE	◎	◎	◎	◎	◎	◎	○	◎	◎	◎	◎	◎	◎	◎	◎
	Polypropylene	◎	◎	◎	◎	◎	◎	○	◎	◎	◎	◎	◎	◎	◎	◎
	Polycarbonate	△	△	×	△	△	×	×	×	×	◎	◎	×	◎	◎	◎
	Polyvinyl Chloride	○	○	◎	×	×	△	×	×	△	○	○	◎	◎	◎	◎
	PTFE	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
	PCTFE	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
	Polystyrene	×	×	×	×	×	×	×	×	×	×	×	×	◎	◎	◎
	ABS	×	×	×	×	×	×	×	×	×	△	×	×	◎	◎	◎
Elastomer	Silicone Rubber	◎	◎	–	○	◎	–	○	◎	–	○	○	–	◎	◎	–
	EPT	◎	◎	–	○	○	–	○	○	–	◎	◎	–	◎	◎	–
	IIR	◎	◎	–	○	◎	–	○	◎	–	◎	◎	–	◎	◎	–
	SBR	○	○	–	△	△	–	△	△	–	△	△	–	◎	◎	–
	Neoprene Rubber	○	○	–	×	×	–	×	×	–	×	×	–	◎	◎	–

Test conditions / after dipping in the each cleaner for 60min at 60℃ (MA v c v v RKLESS® ST-05U is at RT).
Standard of evaluation / ◎ : ±1% under ○ : ±1~3% △ : ±3~10% × : ±10% over

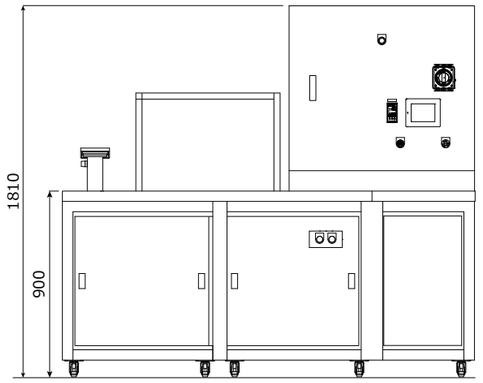
Machine Specifications







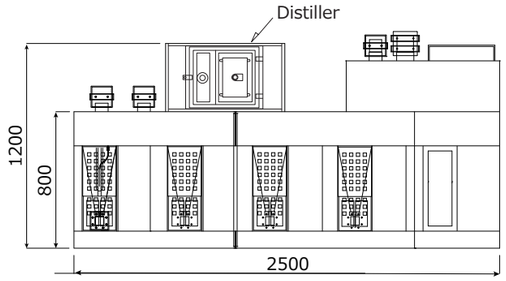
MC3HD-1.5E

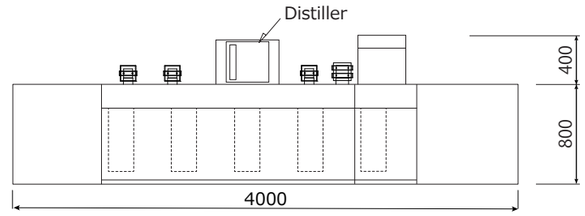


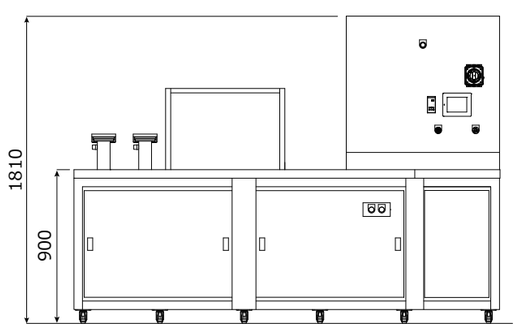
MC3HD-6E

Model No.	MC3HD-1.5E	MC3HD-6E
Power supply	3-phase 200V AC 16A	3-phase 200V AC 50A
Cooling water (Rinse tank) (Distiller)	10 lit/min or more at 10℃ or less 10 lit/min or more at 25℃ or less	20 lit/min or more at 10℃ or less 20 lit/min or more at 25℃ or less
Cleaning capacity	80 pieces of 5.8” x 8.3” / 8hrs	125 pieces of 8.3” x 11.7” / 8hrs
Applicable substrate size	7.9” x 6.5” (Max)	14.6” x 13.6” (Max)
1st tank (Cleaning)	Capacity : 9 lit (approx.) Circulation cleaning, Heating control	Capacity : 50 lit (approx.) Circulation cleaning, Heating control, Circulation filtering
2nd tank (Rinsing)	Capacity : 9 lit (approx.) Circulation cleaning, Circulation filtering, Cooling	Capacity : 50 lit (approx.) Circulation cleaning, Circulation filtering, Cooling
3rd tank (Rinsing)	Capacity : 9 lit (approx.) Circulation cleaning, Circulation purification, Cooling	Capacity : 50 lit (approx.) Circulation cleaning, Circulation purification, Cooling
4th tank (Drying)	Volume : 9 lit (approx.) Circulation air drying, Heating temp. control	Volume : 50 lit (approx.) Circulation air drying, Heating temp. control
Distiller	Distillation system (2nd→3rd tank) Max. quantity of cleaning agent carried into 2nd tank : 85g/h	Distillation system (2nd→3rd tank) Max. quantity of cleaning agent carried into 2nd tank : 350g/h
Transporting method	Manual transport	Manual transport
Additional equipment required	Ventilation, Coolant supplier	Ventilation, Coolant supplier

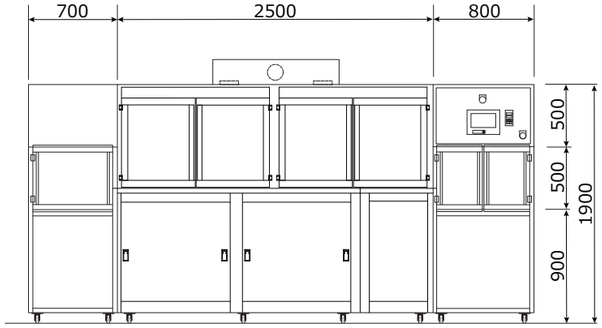
Check MICROCLEANER® system on YouTube.







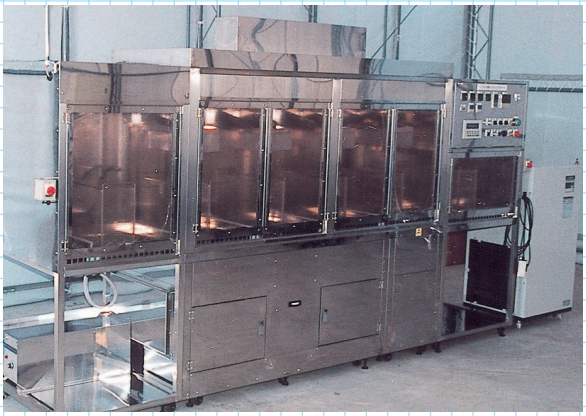
MC4HD-6E



MC4HD-6E-AS13

Model No.	MC4HD-6E	MC4HD-6E-AS13
Power supply	3-phase 200V AC 57A	3-phase 200V AC 72A
Cooling water (Rinse tank) (Distiller)	20 lit/min or more at 10℃ or less 20 lit/min or more at 25℃ or less	20 lit/min or more at 10℃ or less 20 lit/min or more at 25℃ or less
Cleaning capacity	500 pieces of 8.3” x 11.7” / 8hrs	500 pieces of 8.3” x 11.7” / 8hrs
Applicable substrate size	14.6” x 13.6” (Max)	14.6” x 13.6” (Max)
1st tank (Cleaning)	Capacity : 50 lit (approx.) Circulation cleaning, Heating control, Circulation filtering	Capacity : 50 lit (approx.) Circulation cleaning, Heating control, Circulation filtering
2nd tank (Rinsing)	Capacity : 50 lit (approx.) Circulation cleaning, Circulation filtering, Cooling	Capacity : 50 lit (approx.) Circulation cleaning, Circulation filtering, Cooling
3rd tank (Rinsing)	Capacity : 50 lit (approx.) Circulation cleaning, Circulation filtering, Cooling	Capacity : 50 lit (approx.) Circulation cleaning, Circulation filtering, Cooling
4th tank (Rinsing)	Capacity : 50 lit (approx.) Circulation cleaning, Circulation purification, Cooling	Capacity : 50 lit (approx.) Circulation cleaning, Circulation purification, Cooling
5th tank (Drying)	Volume : 50 lit (approx.) Circulation air drying, Heating temp. control	Volume : 50 lit (approx.) Circulation air drying, Heating temp. control
Distiller	Distillation system (2nd→4th tank) Max. quantity of cleaning agent carried into 2nd tank : 1,100g/h	Distillation system (2nd→4th tank) Max. quantity of cleaning agent carried into 2nd tank : 1,100g/h
Transporting method	Manual transport	Basket type automated transport
Additional equipment required	Ventilation, Coolant supplier	Ventilation, Coolant supplier

What customers say about MICROCLEANER

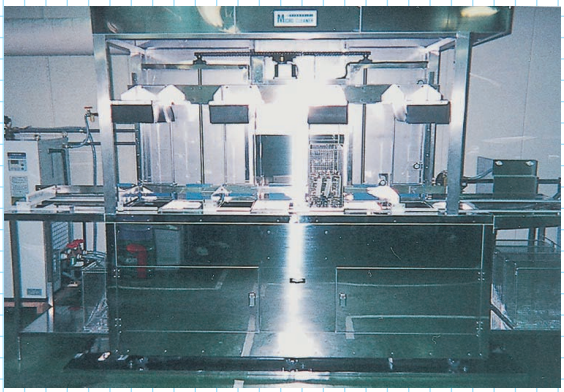


MC4HD-6E-AS33

Product : High frequency components
Interested in : Improve product quality
Satisfied with : Improved product quality
& reduced running cost

MC3HD-1.5E

Product : Automotive components
Interested in : Compact & low-price
Satisfied with : Improved product quality

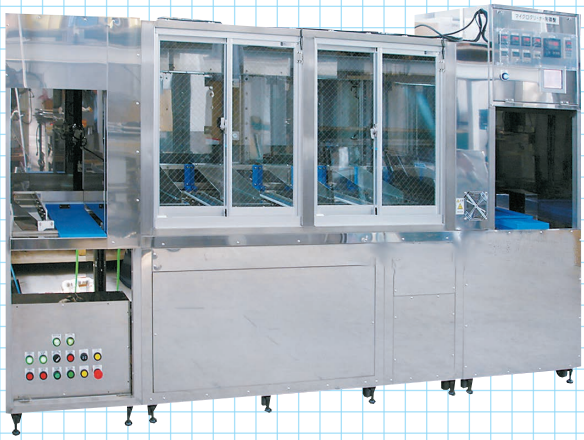


MC4-6E-AS11

Product : Computer PCBs
Interested in : Compact & low-price
Satisfies with : Improved product quality
& reduced running cost

Custom

Product : Automotive HIC
Interested in : High reliability
Satisfied with : Improved product quality



Distributor:

Creating Unique Materials
KAKEN TECH CO., LTD.

- Head Office
  1-23-2, Morikita, Katano-shi, Osaka, 576-0036, JAPAN
  Phone:+81-72-894-2590 Fax:+81-72-894-2592
- R&D Institute
  3-1-3, Hino Industirial park#2, Kitawaki, Hino, Gamou, Shiga, 529-1663, JAPAN
  Phone:+81-748-53-8600 Fax:+81-748-53-8601
- URL:https://www.kaken-tech.co. jp/english/

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