+/- RESIST STRIP & CLEAN

MODELS RSSX133 & 134 NS & PS (Nano-Strip & Piranha)

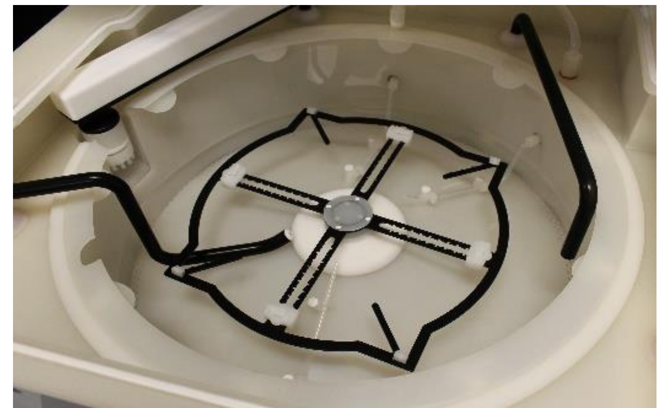
RSSx133 System Cabinet

DESCRIPTION:

The highly efficient Models RSSx133 & 134 are the ideal for Stripping & Cleaning Organic Residue Photoresist, both Positive & Negative, on Photomasks, Wafers & Substrates, & are capable of being configured for either Nano-Strip or Piranha-based applications. The very reliable & cost-effective systems utilize a proven approach for cleaning Photomask. See the included white paper for a comprehensive write-up of this approach.

FEATURES:

- Adjustable chuck capable of 4"x4" up to 14"x14" SEMI standard Photomasks, with Chamber Substrate Compatibility up to 300mm (x133) & 740mm (x134) Diameter
- Capable of 65nm node & better processing.
- Main Spindle Assembly with Servo Motor.
- Oscillating Brush with Programmable Auto Up/Down & Self-Cleaning for Chemical & Heated DI-H_2O Dispenses.
- Heater Enclosure for Oscillating Heated DI-H_2O Low Pressure Dispense Arm.
- Backside Heated DI-H_2O for Strip, Clean & Dry Assist.
- Fully Sealed & Radially Exhausted Chamber for Maximum Laminar Flow with N_2 feed from the lid.
- Rinse to pH of entire process area & substrate with Safety Interlocks to prohibit access to process & Drain Diverter Valves for Chemical & Rinse DI-H_2O
- Process Chamber of FM4910 Compliant PVDF with PTFE coated Stainless Steel surfaces & stand-alone FM4910 Compliant Polypropylene Cabinet, (x134 includes 316 Stainless Steel frame)
- Integrated & Exhausted One (1) Gallon Container Chemical storage with non-contact Level Sensing for Nanostrip applications.
- Microprocessor Control with Thirty (30) Recipes having Thirty (30) Steps each, Touch Screen Graphic User Interface with Adjustable Arm Speed & Travel Positions, On-Screen Error Reporting, & Security Lockouts.
- Flat Lid with Push Button Open/Close
- Designed to SEMI S2/S8 Guidelines
- System Footprint of 43" wide by 43" deep (x133) or 48" wide x 61" deep (x134)



Example of Process Arms & 4"x4" to 14"x14" Adjustable Photomask Chuck

OPTIONS:

- For Piranha applications, an external chemical cabinet with isolated chambers & a footprint of approx. 26" wide X 18" deep, along with a second pump & hardware, is required.
- Chucks for Various Wafers, Photomask, & other Substrates, Adjustable without requiring removal or special tools.
- Additional Chemical Dispenses through Brush or Dispense Arms. Chemical Mixing at Point of Use is Available.
- Oscillating Megasonic or Atomizing Mist Nozzle Arms for DI-H_2O.
- Fixed or Oscillating Top or Backside Low Pressure Dispense with various Nozzles for DI-H_2O.
- "Automation Ready" configuration with Stainless Steel frame & skins for ability to integrate with Equipment Front End Module (EFM) for Automation purposes

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Photo Resist Stripping & Cleaning in the ULTRA t Model RSSx124/126/128/133 NS & PS Systems

ULTRA t employs a unique method for Photo Resist Striping & Substrate Cleaning in the Model RSSx124/126/133/134 NS & PS Systems using single pass ***Nano-Strip***® or **Pure-Strip**®, stabilized premixed formulations of sulfuric acid & hydrogen peroxide compounds. These systems allow complete push button operation with no exposure of the operator to any chemistry with dry in & dry out.

ULTRA t has demonstrated that by using heated DI-H2O to Pre-rinse & Pre-heat the substrate, & then making use of the raised temperature of the substrate to accelerate the chemical reaction, it is not necessary to separately heat the small amount of chemistry to be dispensed. This greatly extends the life of the unused supply chemistry. Stripping & Cleaning a 6"x6" substrate that is completely coated with hard baked Resist from a mask fabrication process requires less than 50ml of chemistry. This is a single use approach because of the low level of chemical consumption required.

The system uses a cup style PTFE 3mil bristle Brush that does not need to be in contact with the substrate, but accelerates the process by being in close proximity to the top surface for depositing & agitating the chemistry. The brush is rotated & oscillated during the process, & the motorized arm can readily be adjusted vertically using the Touch Screen GUI for correct chemistry agitation spacing. The chemistry is dropped into the cup by tubes through the brush arm, & then falls through holes in the brush cup & past the bristles. During this process a heated DI-H_2O backside rinse is performed to flush the backside & maintain the raised temperature of the substrate.

Optionally, if point of use mixing of sulfuric acid & hydrogen peroxide (**Piranha**) is desired, dispensing these chemistries at the brush cup is available. This configuration requires an external double-wide chemical cabinet with isolated chambers & two metering pumps along with related valves, making the system more expensive & having a larger footprint.

When the Resist Strip Cycle is complete, the system flushes the substrate, brush, & chamber with ambient DI-H_2O to eliminate the chemistry from all three. The drain on the System houses a pH meter to monitor effluent for determining when the chemistry has been removed to a safe level. The drain also has a diverter valve to minimize the volume of extraneous fluids that are routed to the chemical drain. Additionally, the lid is maintained in a lockout until the process chamber is completely flushed of chemistry.

The final process steps are a topside & backside substrate flush with heated DI-H_2O, which assists both in cleaning & drying, followed by a high speed spin to completely dry the substrate.

Additionally, ULTRA t has developed a chuck that is compatible with all SEMI standard Mask thicknesses & sizes from 4"x4" to 9"x9", which can be adjusted without removing it from the system. When using an RSSx133NS system, an optional chuck is available that allows up to 14"x14" masks. Ultra t also can provide custom-sized chucks for unique wafer & substrate sizes. When using the recipe driven auto up/down & horizontal positioning of the brush arm, the system can completely clean masks of different dimensions both horizontal & vertical of either positive or negative photoresist.

Customers who previously used a wet deck & rinse/drier application for photomask stripping & cleaning have found a significant reduction in chemistry costs & seen significant enhancement in cleaning capabilities, to the extent that a 6 months or less payback schedule is available & can be provided by Ultra t. These systems can also be provided "Automation Ready" for future integration with robotics, or "Fully Automated" with robotics already included with the system.

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