GENERAL DESCRIPTION

SOLITEC MODEL 5110-CD

Single Spindle Spin/Spray Combination Coater-Developer

With this system, wafers or substrates are hand-loaded onto the vacuum chuck; vacuum is applied by pressing the corresponding switch on the controller. Depending on the sequence selected, pressing the START button initiates one of two process sequences: either a coat sequence or develop sequence. Process steps are "deselected" by pressing the corresponding button and turning the light off. Toggle switch on control panel determines process sequence type.

Develop Processes typically consist of spin/spray developing; overlapped develop and rinse; rinse; and spin dry. Puddle develop can also be specified. Coating Processes commonly consist of resist dispense, spread, and spin cycles. However, both processes may be "custom" tailored for specific applications either by design, or as a function of cycle selection. The row of buttons on a controller's front panel (reading left to right) provides an overview of functions available with a given system.

Dynamic braking stops the spindle quickly at the end of a spin cycle. Vacuum is released by pressing the corresponding switch on the controller. The substrate is manually unloaded.

One feature that improves resist uniformity during a coat sequence is the "Spread Cycle". This function allows a slow, adjustable spin speed and time before the high-speed spin. The high-acceleration spin is adjustable from 1K-30K RPM/sec.; it automatically follows the spread cycle.

The following standard features contribute to the reliability and maintainability of this system:

- Modular, plug-in design for easy servicing.
- Over-capacity in airflow, drain, and exhaust ducting to assure fume and liquid disposal requirements are handled safely. Large diameter exhaust improves exhaust airflow and reduces cobwebbing.
- Speed is controlled by a solid-state motor control that utilizes an optical tachometer input.
- Finish is of solvent-resistant paint and may be wiped clean after unit has been used.
- A vacuum interlock prevents machine from starting until the substrate is properly seated. A "Vacuum" indicator light on the controller is illuminated when insufficient vacuum on the chuck is detected. This interlock turns off motor if vacuum should drop during cycle.
- Delrin-lined chucks are easily pressed onto the hollow stainless steel spindle shaft. This feature provides quick installation and removal of chucks without the use of tools.
- Bearings are constructed of stainless steel and are lubricated for life. They are protected from resist and solvents by a rotating "Delrin" skirt mounted on the chuck. The vacuum seal is self-centering.
- A large see-through sump traps liquid spilled on the chuck and prevents contamination of the vacuum system.
- The drive motor is isolated from potential spillage by a high-speed, toothed belt drive. The belt itself is resistant to solvents and photoresist.

SPECIFICATIONS

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Substrate Capacity	up to 9" diameter 6" square 9" diagonal for rectangular substrate
Number of Spindles	1 (8 mm)
Develop Cycle	Aspirating type spray nozzle with flow and atomization controlled by Nitrogen pressure. No-drip draw-back uses syphon action
Rinse Cycle	Same as Develop Cycle
Dry Cycle	Nitrogen Jet Time is the same as Develop Cycle
Constant Level Supply	Automatic control of liquid level by float switch
Spin Speed Range	50 - 10,000 RPM 50 - 8,000 RPM for systems spinning 5x5 and 6x6 mask plates.
Timing Range Each Function	1 - 999 seconds
Spin Acceleration	Separate Control Allows Selectable Acceleration Control From 1K-40K RPM/Sec
Speed Control	Solid State Servo Control with Optical Encoder
Tachometer	Phototransistor pick-up, Digital Read-out

Power Requirement	115 Volts, 50/60 Hz Single Phase
Current Spinner	7 Amps Accelerating to Maximum speed 1 Amp Running
Current Blower	1.4 Amps
Fuses	3 AG 5A SB
Exhaust	40 CFM @ .5" H_2O Max. Back Pressure
Vacuum Interlock	Adjustable set-point, vacuum prevents start-up until substrate is properly seated
Blower Motor Thermal Cut-Out	160•F Automatic Reset
Process Sequences	Develop: Spin/Spray Develop, Overlap Develop and Rinse; Rinse; Spin Dry. If specified process sequence may include a pre-wet function and puddle develop options (positive developers). Coat: Dispense, Spread, Spin. Note: Sequences may vary, depending on options.