

2550 East River Road, Suite 12204, Tucson, AZ 85718 USA Telephone: 520.331.4751 / Fax: 520.395.2516 Email: araca@aracainc.com www.aracainc.com

APD-500 Polisher and Tribometer

World's first 200-mm single-platen CMP and polishing system capable of real-time measurement & analysis of:

- Shear force and down force
- Pad temperature, conditioner motor current and other critical polishing parameters

Manufactured by Fujikoshi Machinery Corporation

Powered by Araca's FSX™ – 500 proprietary force acquisition and data analysis system

Intended for process R & D









Control Panel







Force Transducer Signal Amplifiers



Wafer Carrier System



Porous Ceramic Plate

Specification

Wafer Size Down force control = Pneumatic Pressure = 0.7 to 5.7 PSI Rotation rate = 15 to 200 RPM Description Platen Platen Platen Platen Platen Conditioner Conditio	Manufacturers	Fujikoshi Machinery Corporation and Araca Incorporated
Wafer Carrier Down force control = Pneumatic Pressure = 0.7 to 5.7 PSI Rotation rate = 15 to 200 RPM De = 500 mm Rotation rate = 10 to 200 RPM Material = SUS410 Built-in heat exchanger (requires external coolant) De = 108 mm Rotation rate = 10 to 100 RPM Stroke length = 147 mm Sweep velocity = 0 to 500 mm/sec through 10 independently controlled zones Down force = 3.3 to 13.2 lb Scheme = ex-situ or in-situ Three computer-controlled, 20-liter, chemical-resistant, removable tanks with impeller mixers, roller pumps and level sensors Flow rate = 10 to 300 cc/min Pad Water Rinse Force Sensors Temperature Sensor Adjustable single-point pad surface IR detector Platen rotational velocity Carrier rotational velocity Carrier rotational velocity Carrier rotational velocity Conditioner rotational velocity, position, oscillation speed and motor current Tanks 1, 2 and 3 chemical flow rates Shear force and down force Coefficient of Friction (COF) Pad surface temperature Basic Data Analysis Advanced Data Analysis and Correlation Cort vs. pad temperature Average and variance for the entire (or a subset of the) polishing period for all parameters being captured Shear force and down force Fast Fourier Transform (FFT) COF vs. pad temperature Cort vs. pad temperature Cort vs. pad temperature Cort vs. pad temperature Notebook computer for process monitoring and data analysis 66 × 110 × 180 cm (polisher) 90 × 30 × 120 cm (electrical cabinet) 50 × 150 × 81 cm (three chemical delivery systems) Minimum pressure = 73 PSI (500,000 Pa) Capacity = 50 liters per minute	Wafer Size	
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Software and Graphical User Interface

The software designed for APD-500 is written in LabVIEW version 8.0 and used for data acquisition and analysis. The software provides a main menu that contains six programs: calibration, setup, data acquisition, waveform analysis, spectral analysis and correlation.





