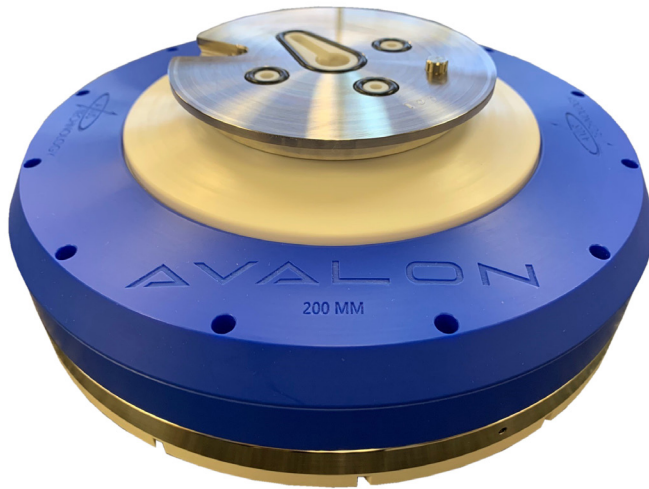


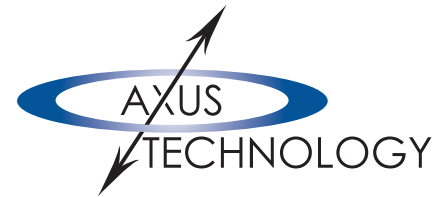
AVALON

Membrane Carrier



Membrane carriers are an industry proven, widely used technology offering low consumables cost and efficient maintainability. Axis designed carriers can be retrofitted onto existing CMP tools, significantly enhancing tool performance and reliability.

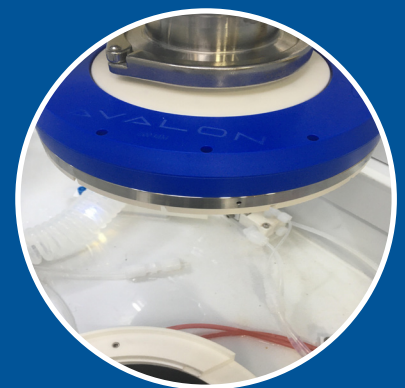
The Avalon is the most advanced 4 zone membrane carrier of its kind on the market with a center pressure zone. Developed to improve wafer polishing profile and eliminate zone cross talk, the performance of the Axis Avalon will achieve your most stringent uniformity, repeatability and polish profile specifications. The Avalon is adaptable to several CMP platforms without the costly pneumatic upgrade to a higher number of pressure zones.



Your source for leading-edge surface processing solutions

FEATURES

- The Avalon carrier offers significantly lower WIW non-uniformity than the legacy carriers using rigid plates.
- The 4 pressure zone Avalon carrier has been designed to reduce the wafer edge non-uniformity.
- Membrane carriers have a large install-base in the CMP industry:
 - Used on over 1,000 CMP tools for 200mm and 300mm
 - Approximately 10,000 heads installed worldwide

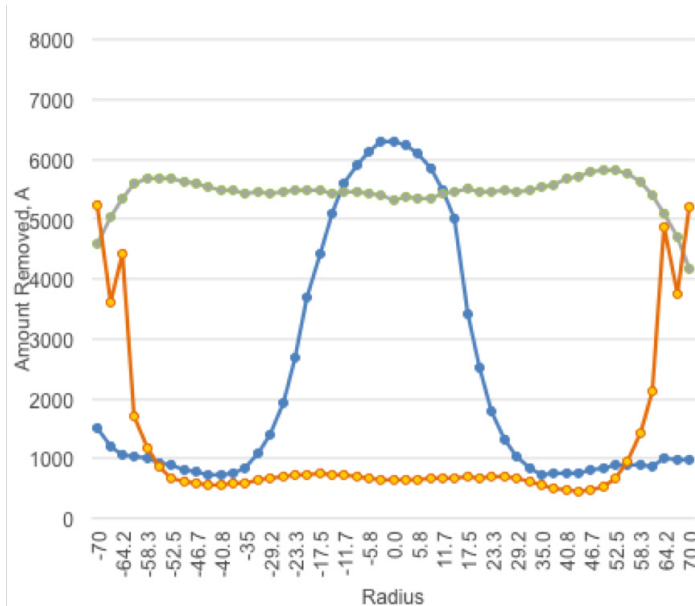


7001 WEST ERIE STREET, SUITE 1, CHANDLER, ARIZONA 85226

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Avalon Rev 03 12 20

Carrier Tunability - Zonal Control Test on Thermal Oxide



- Blue = Center Zone Pressure Only, 3.5psi
- Gray = Membrane Zone Pressure Only, 3.5psi
- Yellow = IT Zone Pressure Only, 3.5psi
- Retaining Ring = Fixed for all tests at 7psi

AXUS Tech Avalon Membrane Carrier Pressure Zones



- Retaining Ring => RR
- Main Membrane => MM
- Center Zone => CZ
- Inner Tube => IT

Retaining Ring (RR) and Membrane (MM) pressures can operate independently from each other.

RR force influences the wafer from 70mm to the wafer edge.

The Retaining Ring (RR) pressure keeps the wafers from slipping out of the pocket and controls the wafer edge exclusion by attenuating the effects of pad rebounding.

MM provides pressure to the entire wafer, ranging from 0.5 to 10 psi.

Inner tube (IT) applies pressure to the edge zone, 55mm to 70mm, ranging from 0 to 10 psi.

Center Zone (CZ) applies pressure to the center zone, wafer center to ~35mm depending on wafer type, ranging from 0 to 10 psi.

The combined pressures of the IT and CZ are in addition to the MM pressure.