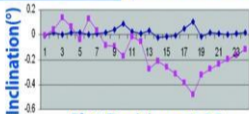
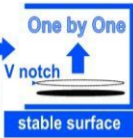


Cassette & FOUP Leveling

Purpose: Verify integrity of FOUP or Cassette

1. Place cassette or FOUP on stable surface.
2. Insert ALS to lowest slot with V notch orientation to the front.
3. Parameters — GO/NG: 0.2° ; relative mode; stability: 0.05° , 5 sec.
4. Make log file, set referential plane & log data.
5. Remove ALS & insert to next slot above, continue the same sequence to top slot.
6. Open the CSV file with Excel & create a graph of displayed roll & pitch.
7. Verify that FOUP or cassette conforms to fab quality tolerance & standards.



Slot Positions 1-25

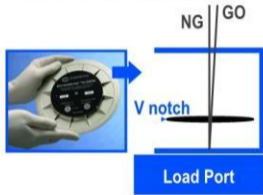


Load Port Leveling

Purpose: Verify proper wafer position before entering tool

1. Set the cassette or FOUP on load port.
2. Insert ALS to the middle slot with V notch oriented to the front.
3. Parameters — GO/NG: 0.2° ; absolute mode; stability: 0.01° , 10 sec.
4. Adjust the load port to set the ALS pitch from 0 to -0.2° (slight backwards tilt).
5. Make the log file, and save the adjusted level value for future reference.

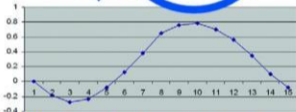
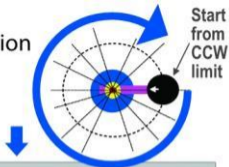
Backward Inclination



Robot Vertical Axis Leveling

Purpose: Mechanical robot arm verification

1. Power off robot, or deservo robot arm control.
2. Rotate end-effector to CCW limit.
3. Place ALS on end-effector with V notch pointing to center of rotation.
4. Parameters — GO/NG: 0.05° ; relative mode; stability: 0.05° , 10 sec.
5. Make log file, set referential plane.
6. Log data for every 30° position of the end-effector before the limit.
7. Open the CSV file with Excel & create a graph of motion for analysis.
8. Inconsistencies in arm motion may indicate potential component failure.



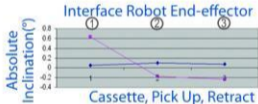
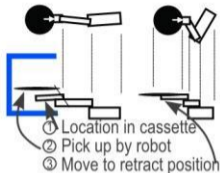
Deflection of wafer on rotating robot



End-effector Leveling

Purpose: Verify proper wafer handling

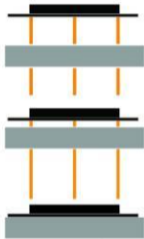
1. Place an empty FOUP at load port.
2. Place ALS into FOUP with V notch orientation to the front.
3. Parameters — GO/NG: 0.2° ; relative mode; stability: 0.05° , 10 sec.
4. Make log file, set referential plane.
5. Lift ALS and log reading.
6. Retract robot arm and log data.
7. Make a graph of displayed roll & pitch to adjust accordingly.



Lift Pin Leveling

Purpose: Prevent wafer damage & particle contamination

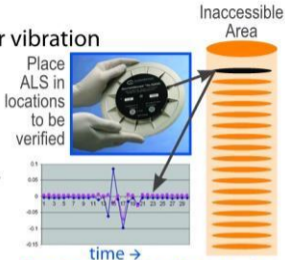
1. Place ALS on lift pins with V Notch oriented toward robot.
2. Parameters — GO/NG: 0.05°; absolute mode; stability: 0.01°, 20 sec.
3. Make log file and set referential plane.
4. Adjust raised lift pins so all are level.
5. Lower lift pins & check levelness in down position. (If lift pins can't be stopped at down position, monitor bubble motion in Level View).
6. Make level adjustments.
7. Execute repeatability testing of lift pin motion to verify level consistency and positioning.



Stability Check

Purpose: Check for wafer jarring or vibration

1. Cool tool to 20°C to 70°C range.
2. Place ALS into chamber or furnace.
3. Parameters — GO/NG: 0.05°; relative mode; stability: 0.01°, 1 sec; auto log: every 2 sec.
4. Make a log file and set the referential plane.
5. Slowly move ALS throughout tool for 5-10 min while recording the data.
6. Open CSV file in Excel & create graph of arm motion for analysis.
7. Readings outside tolerance may indicate excessive wafer vibration, component failure and/or potential wafer damage.



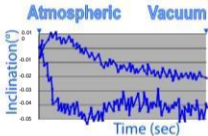
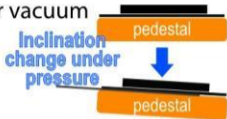
Monitor any shock to wafer



Vacuum Deflection

Purpose: Verify pedestal levelness under vacuum

1. Place ALS in CVD or PVD chamber.
2. Parameters — GO/NG: 0.05°; relative mode; stability: 0.01°, 1 sec; auto log: every 1 sec.
3. Make log file, set referential plane and start auto log.
4. Pull chamber to vacuum.
5. Create a new log file, set a new referential plane and start auto log again.
6. Vent chamber to atmosphere.
7. Open the two log files in Excel & graph the data for both vacuum & atmosphere.
8. Excessive atmosphere to vacuum inclination changes may indicate a processing problem.



Level Copy

Purpose: Verify wafer transfer points at same inclination

1. Place ALS on master pedestal to be copied.
2. Parameters — GO/NG: 0.01° ;
relative mode; stability: 0.05° , 20 sec.
3. Make new log file, set referential plane
and log data.
4. Remove ALS and re-set to slave pedestal.
5. Adjust slave pedestal within tolerance
and log data.
6. Inclination variances between wafer transfer
points introduce potential wafer damage,
mishandling, or particle contamination.



Active Dampening System (ADS) Verification

Purpose: Verify ADS repeatability and verify that ADS returns surface to same position after each test

1. Place ALS on ADS-controlled surface.
2. Take level reading.
3. Shake or jar the ADS surface to simulate movement that is dampened by ADS.
4. After ADS surface and ALS has stabilized take another level reading.
5. Repeat steps 1 to 4 above two to three times recording the ALS reading each time.
6. All repetitions should return to the same level reading. If discrepancies exist then check ADS.

