Cost Effective Equipment

Apogee™ Bonder – Troubleshooting and Diagnostics

Apogee ™ Typical Identified Failure Modes

System Performance Failures

Failure Mode	*Recommendation*
Lower Chamber Will Not Open/Close	Ensure sufficient air pressure supplied to tool. Check for physical obstruction to chamber motion. Check for pinched airline or possible air leak.
Platens not at Correct temperature	Check process recipe for proper temperature.
Tool is unresponsive	Check Emergency Stop switch is not depressed. Check electrical (utility) supply to tool.

Wafer Alignment Failures

Failure Mode	*Recommendation*
Bond is off-center	Check to ensure that alignment hardware is of the correct size and is installed in the correct location.
Alignment hardware Does not move correctly	Ensure that alignment hardware isn't bent or otherwise damaged. Ensure that the groove in the heated platen surface is clean and free from debris or bond adhesive residue. Ensure that all hardware associated with the alignment hardware is sufficiently tightened.

Wafer Handling Failures

Failure Mode	*Recommendation*
Unable to remove Bonded pair	Choose a suitable wand or other device. Clean wafer bonding residue from platen(s).
Broken Wafer – Thermal Shock	Choosing a handling method / system with low thermal conductivity.
Broken Wafer – Bonding	Ensure both upper and lower platen(s) are clean and free of foreign material. Ensure wafers are free from damage prior to bonding.

Wafer Bonding Failures

Failure Mode	*Recommendation*
Wafers are not bonded	Ensure wafers are not loaded upside down. Ensure sufficient air pressure to tool. Check for pinched airline or possible air/vacuum leak. Check process recipe for proper temperature
Chamber vacuum Cannot be achieved	Check for proper operation of vacuum pump. Check for pinched airline or possible vacuum leak. Check for damaged o-ring on top surface of lower platen.
Bonded wafers Have voids	Check for sufficient chamber vacuum. Check quality of wafer coating prior to bonding. Ensure sufficient bond pressure (recipe).