ABM Mask Aligner

Operating Instructions

Nitrogen should always be on when using the aligner. The flow should be set at 4 scfm.

Setup:

1. Verify the power to the lamp controller is on. If not, contact MFC staff. **Do not change any settings!**
2. Reserve and start a use session in iLabs.
3. Make sure all pneumatic switches are set to the "OFF" position and the aligner and light sources are set to "Home"
4. Turn on power by pressing the switch at the lower right of the ABM aligner.
5. Set the timer to the desired exposure time.
6. Select the mask to be used and set it into the holder, silvery side up and push in the Mask Vac. knob.
7. Raise the mask by switching the mask position to "Raise"
8. Place desired substrate on chuck and turn on the substrate vacuum
9. Lower mask
10. Turn Z control knob (black micrometer) counterclockwise while pressing the button located in the front of the module (chuck leveling) until the clutch begins to slip and more importantly, birefringent rings are seen on the mask indicating that substrate-mask contact has been achieved.
11. Release the button to lock the chuck planar to the mask
12. Switch "CONTACT" to "ON"
13. If alignment is required skip to **ALIGNMENT**
14. Switch "HOME/EXPOSE" to "EXPOSE"
15. Hit the auto exposure button, the lamp shutters will open exposing the wafer to UV light. When the exposure time is complete the shutter will close.
16. Switch "HOME/EXPOSE" to "Home"
17. Switch "CONTACT" to "OFF"
18. Switch "MASK RAISE" to lift mask assembly
19. Switch "SUBSTRATE" to "OFF"
20. Unload sample.
21. Remove the mask and return it to its box and put it away.

22. When finished with the aligner, the machine should be turned off (not the intensity controller), all pneumatic switches to the "OFF" position, and the light source should be in the "HOME" position. The mask holder should be in the lowered position.

Alignment:

1. Follow previous section SETUP to step 11.
2. Switch "CONTACT" to "OFF"
3. Set separation gap by turning the Z control knob clockwise to the desired gap setting.
   Note: With automatic planarization function, after setting separation gap wafers thereafter can be planarized by pushing, then releasing chuck level. Wafer will planarize to mask then drop to preset gap setting.
4. Switch "ALIGN" button to bring alignment optics over tooling module.
5. The wafer can now be aligned to the mask using the X, Y, and Theta micrometers. The operator can easily scan the microscope over the substrate in either the X or Y direction, or both simultaneously, by using the precision microscope manipulator. The buttons on the handle of the scanning mechanism can be pressed to move the microscope on at a time or together.
6. When satisfactory alignment has been achieved, switch "CONTACT" to the "ON" position. The wafer is now ready to be exposed; Step 14 to 20 in previous section SETUP.