2. Standard Operating Procedure

Resist spin coating and cleaning the back-side of wafer

The substrate (wafer or piece part) needs to be clean prior to spinning resist. It is usually done with solvent cleaning (ACE/IPA), followed by dehydration. If the backside of the substrate has some resist residue or particulates, please make sure to clean it. This can cause errors in the interpreted best focus point since the wafer surface may be at a different height.

1. Make sure all work surfaces/spin chucks/hot plates are cleaned! Use clean steel surfaces for cooling down substrates after bakes
2. Spin coat resist following the recipe for spinning/baking specific resist
3. Check the backside of the substrate for resist residue/particulates before loading on the chuck
4. If you see particulates, try blowing off with N2 first, you may need a razor blade to remove stubborn particles
5. If you see on your 4inch wafer resist residue, do next:
    - Place the wafer upside down in the POLOS spinner using a non-contact chuck
    - Set spin speed to 2000 rpm
    - Spin wafer, wait until at top speed
    - Squirt Acetone on sample back for 3 seconds, followed by ISO for 3 sec
    - Spin Dry while blowing with N2
6. If your substrate is small piece, please clean the backside gently using the Q-tips
7. Load the substrate on the chuck and the on stage

Logging into computer and checking the system

The system administrator will set up a directory for you to LOG IN and use the stepper at the time of training.

1. At the colon log into the system using **LOG IN [10,xxx]** where **xxx** is your account number.
2. Type **CHUCK** and scroll down through options
3. You need to select **C-change** chuck size. Use 2 for 2” diameter wafers, 3 for 3” diameter wafers, 100 for 4” diameter wafers, and 142 smaller substrates (¼ of 2” or smaller parts). This number is used for telling the system where the chuck center is and for wafer auto leveling.
4. After select proper chuck, use **Q- quit** when done.
5. **FOR STAFF AND EXPERIENCED USERS ONLY**: Type **SETUP** and hit enter. Align the target and press “expose”. We use it as a method to verify all sub systems are operating properly and to reset system focus before an exposure job is performed.

Reticle Loading and Unloading

Loading the reticle:

Mask Alignment on this system is automatic. You need to have the square marks on the top and bottom of the mask. These are put on automatically by Photronix and the gds file can be obtained from Demis John if you use a different vendor. There are 10 reticle box positions on the elevator. **Slot 1** is dedicated for a calibration mask. Slots 2-10 are available for your use. Slots will NOT be dedicated for any users.

1. Load the reticle into a box with chrome side down
2. Type RMSL on the main computer at the colon prompt.
3. Swing the reticle forks 90 degrees away from the reticle elevator.
4. Pull out knob, insert box in one of the slots (2-10), release knob to hold box.
5. Make sure the box is sitting properly in place.
6. Hit Enter on the computer and the system will map the reticles.
7. On them main monitor you will get information about the reticle name and the slot# it is loaded (if the reticle does not have a name it will say just NONE)

Unloading the reticle:

At the end of each job you need to unload the mask

1. Type RMSR on the main computer at the colon prompt.
2. Wait for the reticle to be loaded back in the reticle box.
3. Type RMSL on the main computer at the colon prompt.
4. Get your reticle from the reticle box
5. **NOTE: NEVER** try to manually unload the reticle (as you would in GCA 6300 Stepper #1). Always use commands.

Loading a wafer into the system

1. Attach the appropriate chuck to the system. See the link Autostep 200 Chucks table 2023
2. Make sure you know your substrate thickness and wafer diameter.
3. **TARGET thickness is**: **12.150mm +/- 0.1mm**
   (TARGET= Chuck thickness+ Substrate thickness)
4. Each chuck has two numbers on top side (for example **100mm/500um**) showing wafer diameter, and substrate thickness. See link for the TARGET thickness
5. Place a wafer centered on the chuck, noting the orientation (major flat always touching **two front screws**, minor flat touching the screw either on left or right side)
6. If you are doing an alignment step, make sure to place the wafer in the same orientation as it was in the first exposure.
7. The set screws in the chuck can help to get reproducible placement of the wafer.
8. When the wafer is in place, flip the chuck vacuum switch upwards to hold the sample.

10. Place the chuck with a substrate onto the stage, again trying to be repeatable, and flip the stage vacuum switch upwards to hold the chuck.

11. If your sample is thin (150um thinner than the number on top side of chuck), then you need to use **SHIM (we have 130,180, 230, 260um metal shims).** See this link for a detailed explanation of Substrate/Shim/Chuck Thickness

12. If you need a shim with different thickness, you can try cutting some shim stock (stored in drawer next to Autostep200).

13. Be careful when placing the chuck onto the system. Do not set the chuck onto the built-in reticle on the left side of the stage.

14. Make sure the chuck vacuum is properly holding the chuck in place (it can tip forwards before the vacuum holds it in place).

15. At this stage type **AWLT Jobname\Passname**. This will test the auto-leveling of your wafer (auto-leveling cannot be done on pieces smaller then ¼ of 2", so when writing the program make sure that you at the LEVELER batch size input value -1 (TURN off leveling).

16.At **"START AWH"** (automatic wafer handling) prompt,

17. Press **MANUAL** button.

18. Press **MANUAL** again.

19. Choose "N" to answer to all questions (if not sure, use what is default value (*)).

20. If you have an auto focus error or leveling error, the system will tell you.

21. If MATCH was enabled, the system loads the reticle and you will see the left screen perform the InSitu-Match routine on your mask.

22. Press MANUAL key when "Start AWH" prompt is seen.

23. Press MANUAL again as prompted

24. Sample will move to alignment position/do global alignment.

25. Now you can proceed to wafer alignment to system