

AB-M Contact Aligner Procedure

1. Pre-process Preparation

1.1 Make a reservation through the Montana Microfabrication Facility website to reserve the contact aligner before your usage.

Think ahead and plan your process steps before processing. Once in the clean room, please make sure the house nitrogen and vacuum in the service area are on. It is also a good idea to put on vinyl gloves, since they are required for handling the mask.

1.2 To turn the tool on, locate the power switch underneath the contact aligner table and turn it on.

1.3 Wait 20 minutes and press the start button as well as the orange switch on the right side of the machine. Open nitrogen and vacuum valves to the right of the tool.



Figure 2: Contact aligner power supply. Circled from left to right are the start button, power switch, and intensity meter.

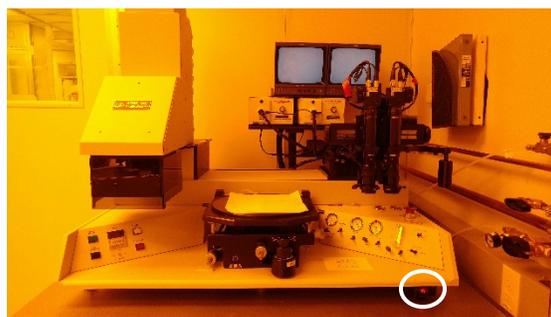


Figure 1: AB-M contact aligner. The orange switch is circled.

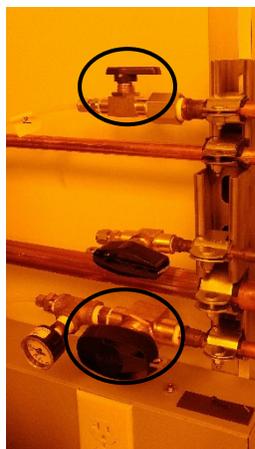


Figure 3: Circled from top to bottom are the nitrogen valve and the vacuum valve.

1.4 If using the i-line filter or long-pass filter, insert it now.

2. Intensity Check

2.1 Allow ten or so minutes to allow the bulb to heat up before checking intensity. To check intensity, turn off auto-exposure and place the intensity meter on the substrate stage. Switch the light source switch to expose and press the manual expose button on the left side of the tool. Do not look directly at the light! Allow the intensity reading to stabilize before recording and pressing the manual expose button again to terminate the exposure. Measure the intensity of contact aligner at each of the four corners of the

stage as well as the center and take the average intensity. Now switch the light source switch to home and turn auto-exposure back on.



Figure 4: Left side of the contact aligner control panel. Circled from left to right are the auto-exposure switch and manual expose button.

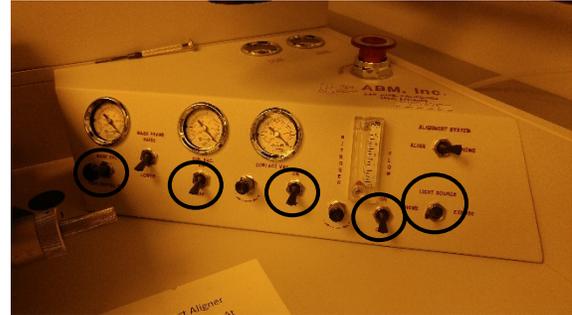


Figure 5: Right side of the contact aligner control panel. Circled from left to right are the switches for mask vacuum, substrate vacuum, contact vacuum, nitrogen flow, and light source.



Figure 6: contact aligner stage.

3. Exposure

3.1 Place wafer on the contact aligner substrate stage.

Be sure to confirm that the substrate stage is below the mask stage.

3.2 Place the lithography mask onto the mask stage and turn the mask vacuum and nitrogen flow on. While depressing the leveling chuck, raise the stage until relatively hard contact is made between the mask and wafer and turn the contact vacuum on.

Rainbow lines will appear between mask and substrate when contact is solid and hard. Contact leveling can be determined by the uniformity of these rainbow lines.

3.3 Calculate exposure time and expose the wafer by entering desired exposure time and switching the align switch on. To calculate exposure time, take the total intensity and divide it by number of exposures and measured intensity.

4. Post-process Shutdown

4.1 Once the wafer has been exposed, turn contact vacuum and nitrogen flow off. Lower the substrate stage, turn off the mask vacuum and remove the lithography mask. Now turn off the substrate vacuum and remove the wafer.

4.2 The contact aligner should be turned off when not in use and/or there is no prospective reservation made on the same day. To do this, close the nitrogen and vacuum valves to

the right of the machine. Turn off the orange switch on the right side of the machine as well as the power switch.

4.3 Clean up. Please wipe over any potential dirt or PR residue on the machine with IPA wetted taxwipes.

4.4 Finally, place a clean Texwipe over the top of the stage.