

## APPENDIX C: Adjustments for the OAI Mask Aligner

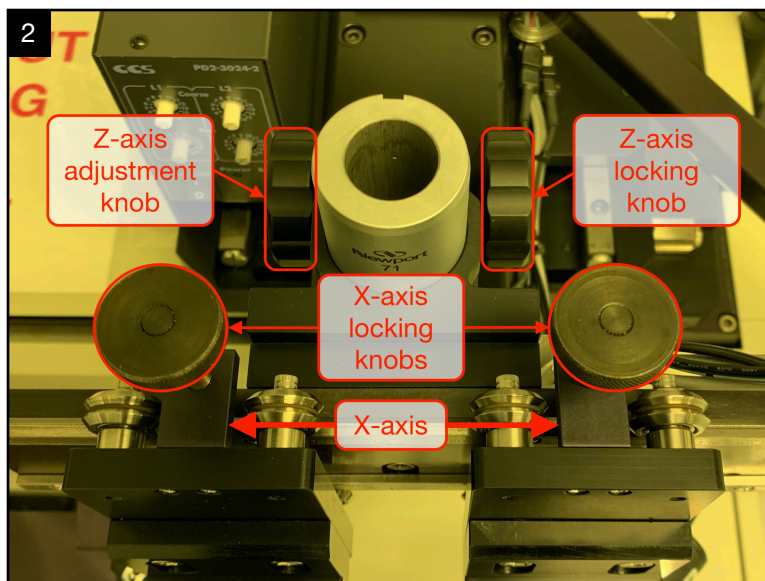
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### General Use Precautions:

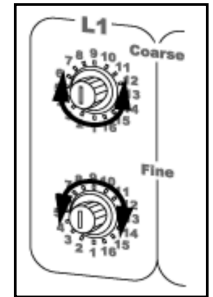
- **Emergency Stop**—If something goes horribly wrong with the system, a large red button (above the right control panel) can be hit to stop the pneumatic system and minimize damage to the equipment.
- **Eye Protection**—UV protective goggles should be worn while using the UV flood source. They are stored in black cases, and kept in the cabinet next to the tool.

### General Use Procedure:

1. If you are going to align your mask over a previously-exposed substrate, it is highly recommended that you *develop the alignment marks* using the appropriate developer prior to the alignment process. This greatly increases the visibility of the alignment marks on the substrate. *Do not submerge the entire substrate in developer*; only develop the alignment marks. This can be done with a dropper and/or a cotton swab. Rinse with water and thoroughly dry the substrate with nitrogen before proceeding.
2. Turn on the exposure system, and mount your substrate and mask according to **steps 1-14** in the **ABM/OAI Flood Source and Alignment System SOP**.
3. Lower the substrate chuck by turning the **LOWER HALF** of the height adjustment knob **Clockwise** two full turns.
4. Power up the alignment system —cameras, monitors, and illuminator— using the red rocker switch at the **lower right** of the table base.
5. On the right control panel, flip the **ALIGNMENT SYSTEM** toggle switch to **ALIGN** to move the cameras over the substrate chuck.
6. Adjust the position of the cameras so that they are over the alignment marks on the mask.
  - a. To change the cameras' general X and Y positions, use the two release buttons on the back side of the positioning handle to free their respective brakes.
  - b. To adjust the cameras' relative position along the X-axis, loosen one or both of the X-axis locking knobs, slide the camera(s) along the track, and then tighten the locking knob(s).

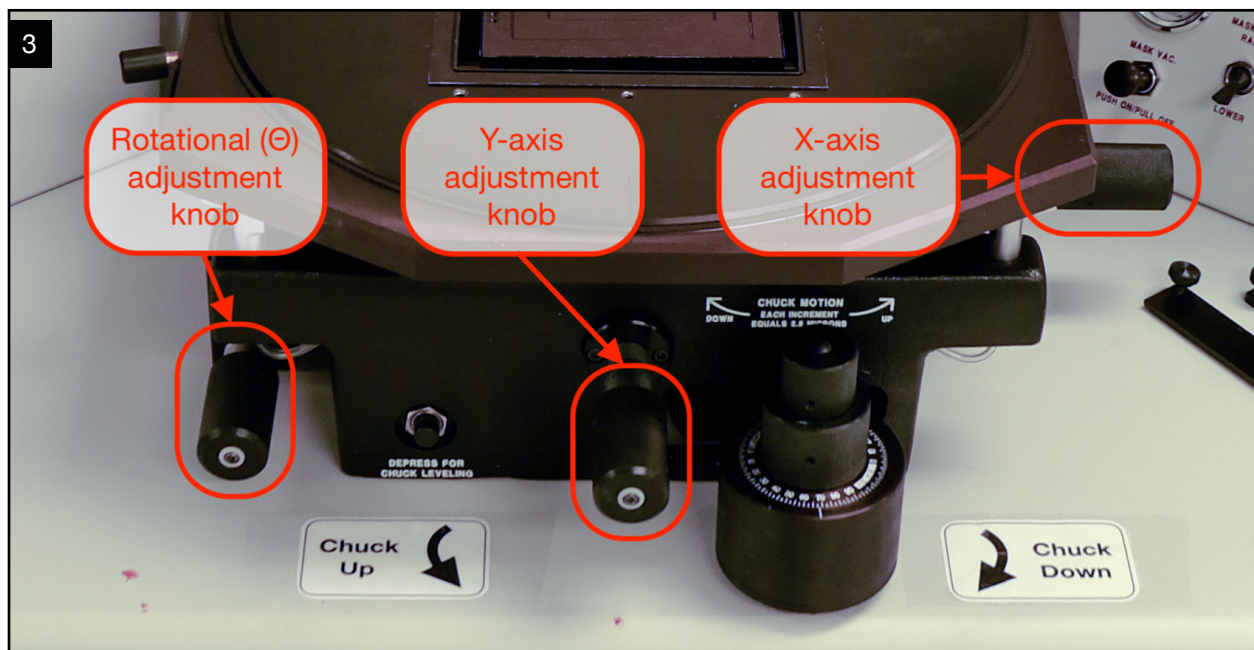


- c. Adjust each camera's magnification and focus. If your structures are outside of the focal limits of the cameras, adjust the Z-axis position of the cameras by loosening the Z-axis *locking* knob, turning the Z-axis *adjustment* knob, and then tightening the locking knob. See *Image 2* above for reference.



- d. If necessary, adjust the image brightness using the fine and coarse controls on the CCS PD2-3024-2 illumination controller.

5. Using the three micropositioners ( $\Theta$ , Y and X) below the chuck, adjust the position of the substrate so that the alignment marks on the substrate are aligned with the alignment marks on the mask.



6. When alignment is complete, flip the **ALIGNMENT SYSTEM** toggle switch to **HOME**.
7. Raise the substrate chuck back up by turning the **UPPER HALF** of the height adjustment knob **Counter-Clockwise** until it slips. Remember to press *and hold* the **Chuck Leveling** button at the base of the mask frame support during this step.
8. Proceed with **step 16** in the **ABM/OAI Flood Source and Alignment System SOP**.
9. When necessary, **turn off the alignment system** by flipping the rocker switch at the **lower right**.