

Mask Aligner MJB3 Instructions

Basic Operation (no IR backside illumination)



1. Select suitable mask holder (there are several to choose from depending on your mask size)
2. Place mask on the holder so that the metal side is facing up.
3. Hit the button labeled vacuum mask (see fig 1). This should fasten your mask to the holder.
4. Check to make sure that the vacuum is working--you shouldn't be able to move your mask.
5. Slide mask into mask tray (fig 2).
6. Put your sample on the sample tray and slide it underneath your mask as shown (fig 3).
7. Use the contact arm (fig 4a,b) to raise sample up to the mask, but be careful, as the final height is adjustable. Look from the side to ensure that your sample does not hit the mask as you turn the contact arm. If turning the contact arm raises your sample too high, then lower your sample and use the z-adjustment knob (fig 5) to lower final contact height (turn z-knob clockwise a few rotations).
8. Repeat step 7 until you can raise the sample into contact position without it hitting your sample.
9. Now look through the microscope, and focus onto the area of the mask you are interested in. You will need to turn on the Illumination Power supply in order to see anything (fig 6).
10. Try moving your sample using the x and y micrometers to see if it is in the

- microscope's range. If you cannot see your sample through the mask (for FeO masks), then move it closer to the mask by turning the z knob counterclockwise.
11. Repeat 9 and 10 until you can see your sample.
 12. Now that you can see your sample, perform fine alignment using the x, y, and rotation micrometers until you are satisfied with the sample position.
 13. Make sure the separation lever (fig 4) is in the forward (contact) position. Turn the z-knob counter-clockwise until your sample contacts the mask. You should be able to see Newton rings through the microscope and feel the z-knob become difficult to turn any further. Don't force it--too much pressure can break your sample.
 14. If your alignment isn't perfect, you can use the separation lever (figure 4a,b) back to lower the sample a bit. You should then be able to use the x and y alignment micrometers to align your sample.
 15. Return the separation lever to the contact position.
 16. Set your exposure time.
 17. Hit the Expose Button (fig 1). The microscope body will slide forward, and the UV Source Shutter will open to expose your sample. If you are using 365nm line (CI₁), the display on the UV power supply will show 2.0 mW/cm² (fig. 7). For 405nm line (CI₂), it will display 3.5 mW/cm².
 18. Lower your sample away from the mask by switching the contact arm (fig 4) to the down position.
 19. Slide the sample tray (fig 3) out from beneath the mask.
 20. You're done. Be sure to turn off the microscope illumination.

Fig 1: Mask Aligner Buttons

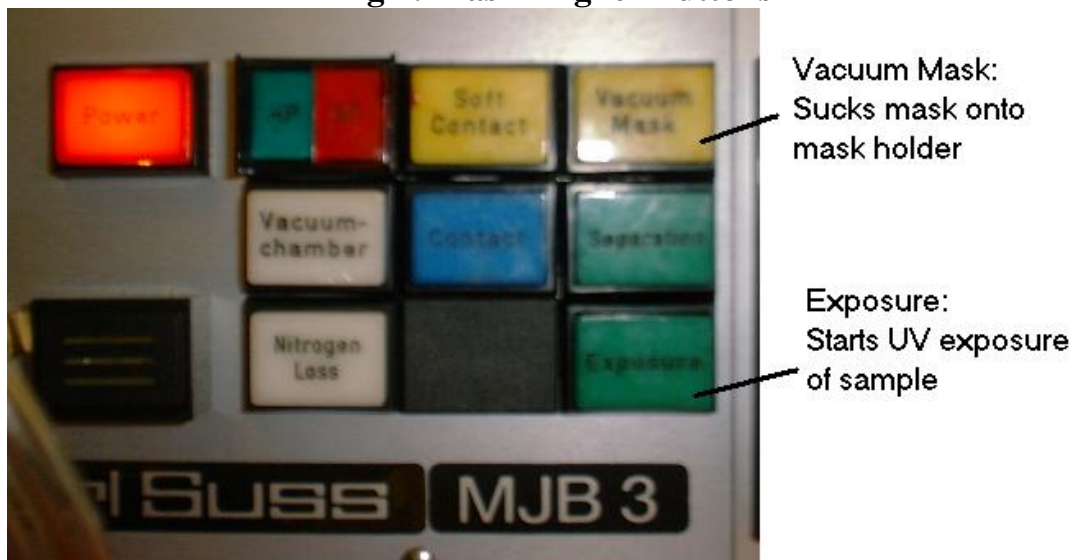


Fig 2: A Mask Holder and Mask Tray

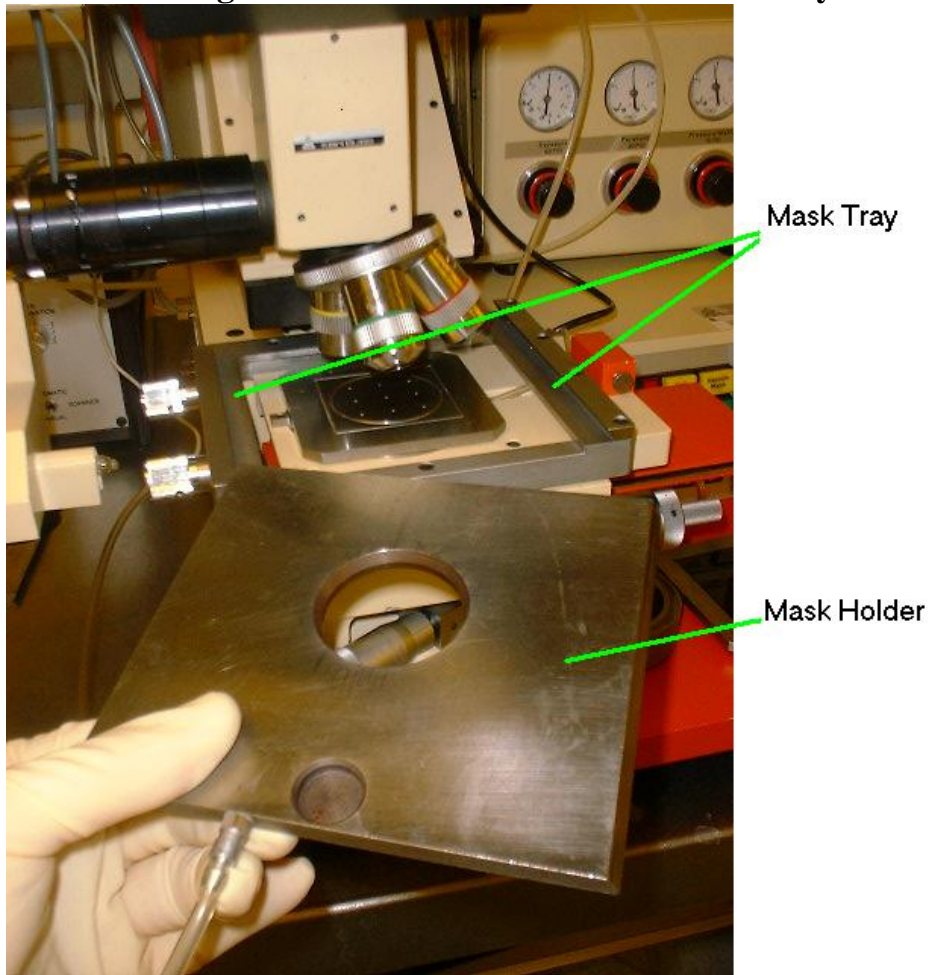
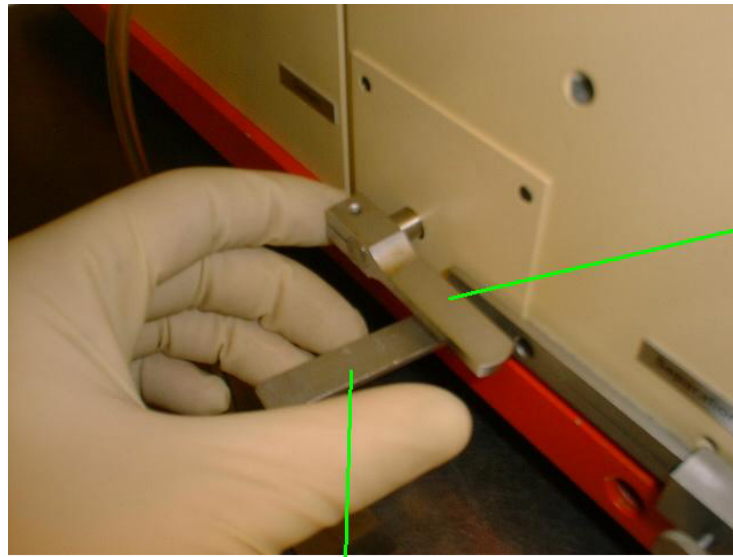


Fig 3: Sample Tray



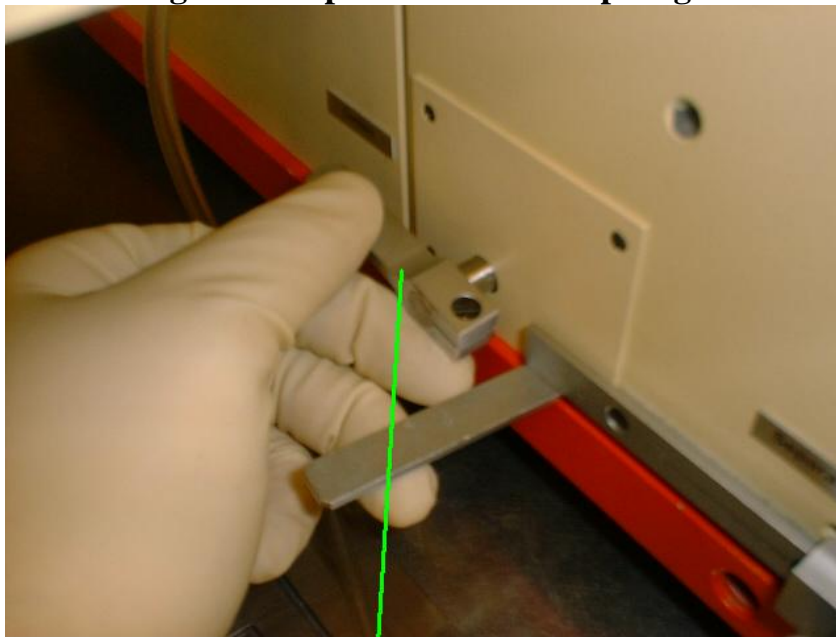
Fig 4: Contact Arm and Separation Lever



Contact Arm
(In Down position,
twist counter
clockwise to raise
sample)

Separation Lever

Fig 4b Arm position with Sample against mask



Contact Arm with sample in
UP position (against mask)

Fig 5: Position Adjustment Knobs

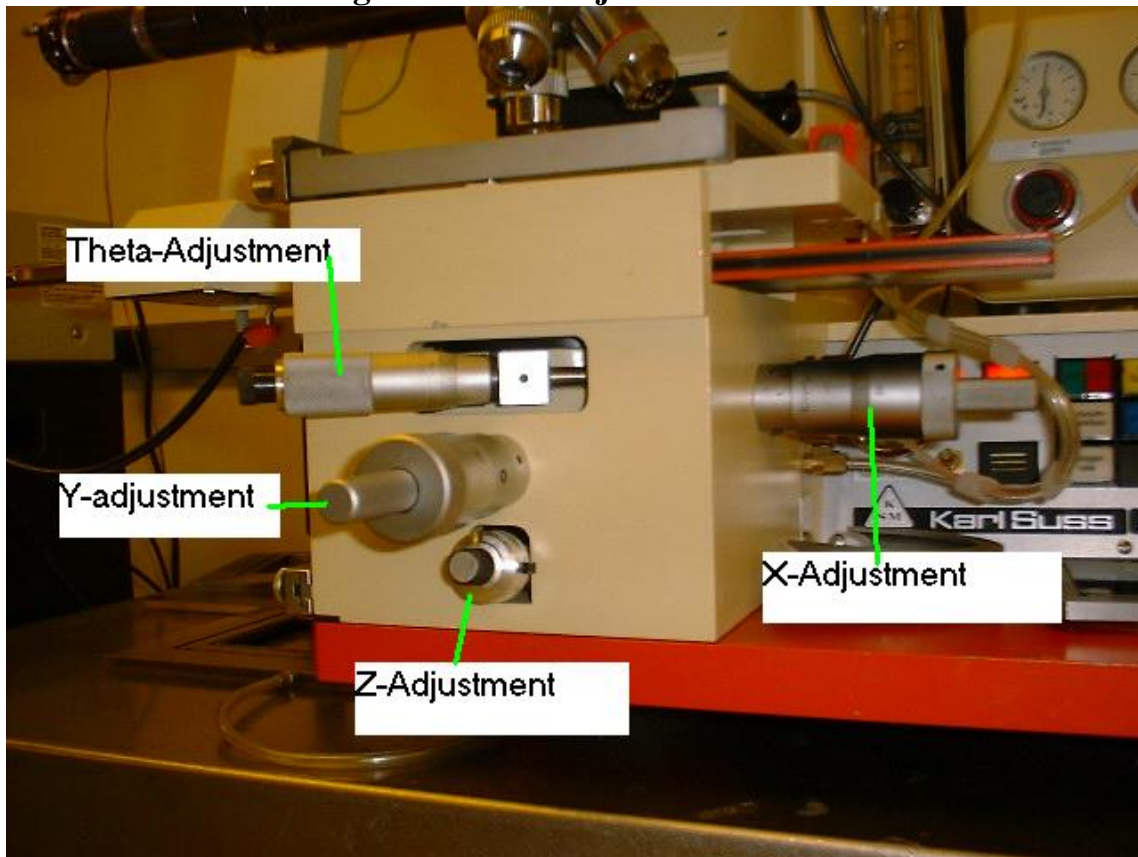


Fig 6: Illumination Power Supply:

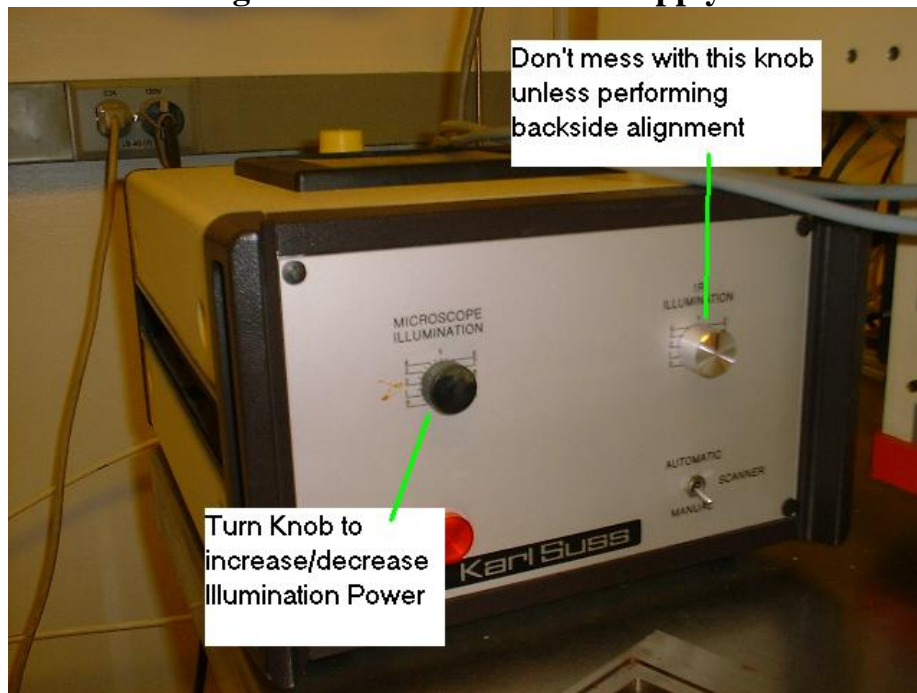
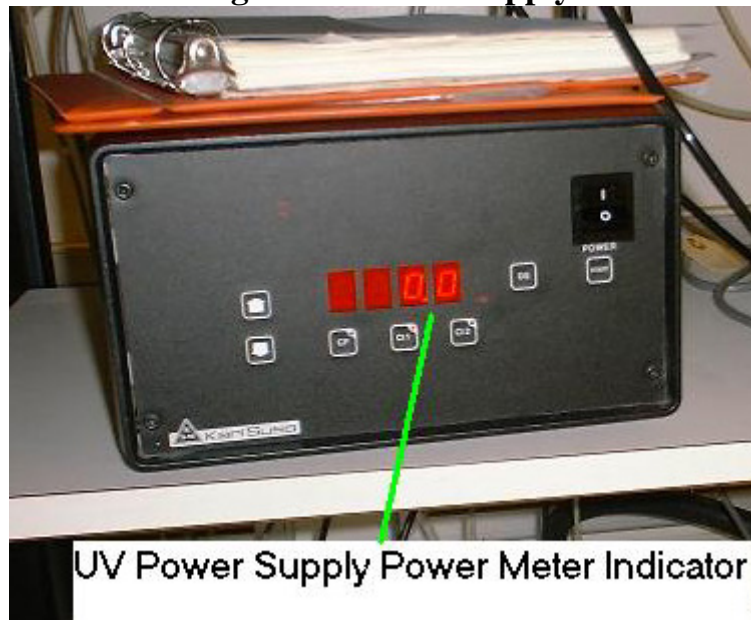


Fig 7: UV Power Supply

Feature Size	Resist	Spin Speed	Exposure	Develop
0.7 μ m	1805	4000 rpm, 40sec	30sec	1 312MIF :1 H2O
>2 μ m	4210	4000 rpm, 40sec	45sec	1 AZ400K : 3.5 H2O

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