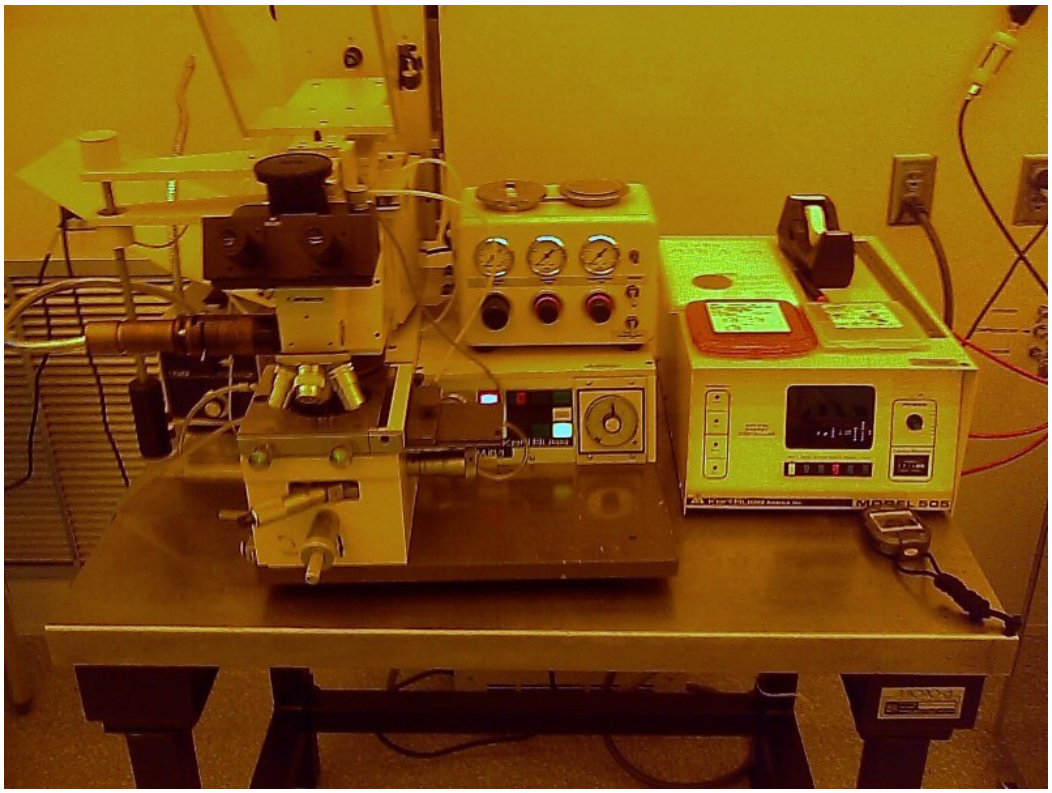
Karl Suss MJB-3 Mask Aligner
User's Manual



Version	Date	Sections Affected	Author
1.0	7-17-08	All Chapters	J. Pulecio

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Follow all steps in order.
Failing to do so could result in damage to the equipment.

I. Chapter 1: Power Up Sequence

[1] Turn on Nitrogen, Compressed Air, and Vacuum lines on back wall .

Figure 1 Open Lines

[2] Flip COMPRESSED AIR toggle on (up).

i. Compressed Air is used to control the Karl SUS via pneumatics.

[3] Flip NITROGEN toggle on (up).

ii. The nitrogen gas is used to cool the mercury lamp source.

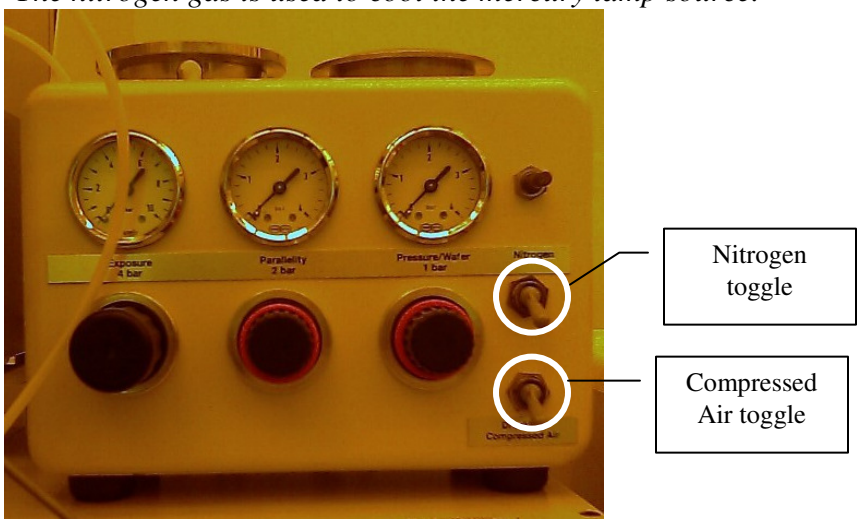

Figure 2 Nitrogen and Compressed Air toggles

[4] Power up the mercury lamp.

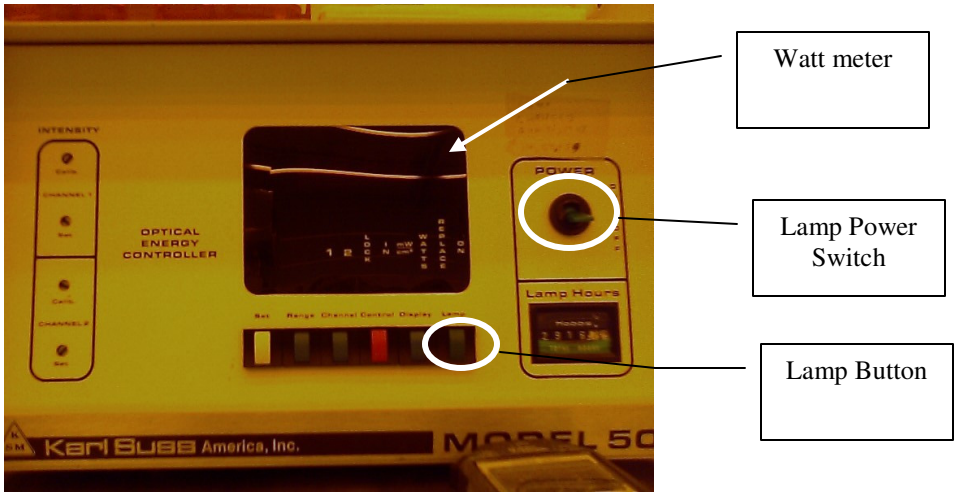

Figure 3 Watt meter, Lamp Power switch and Lamp button

a. Flip Lamp Power Switch on (up).
b. Ignite the Lamp via holding down the LAMP button for a few seconds.
   iii. You should notice the lamp's watt meter begin to increase
   iv. It takes about 5 minutes for lamp to reach a nominal power of ***277 Watts***.
c. If lamp watt meter does not increase reading, repeat step 4b.

[5] Turn on the Karl Sus via pressing the POWER button.

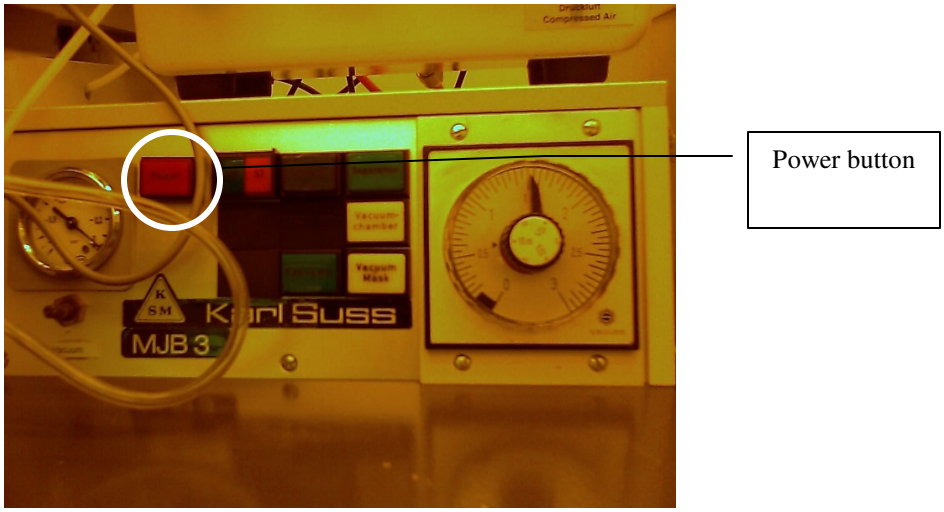

Figure 4 Karl Sus Power button

[6] Load the mask on the Mask Holder.

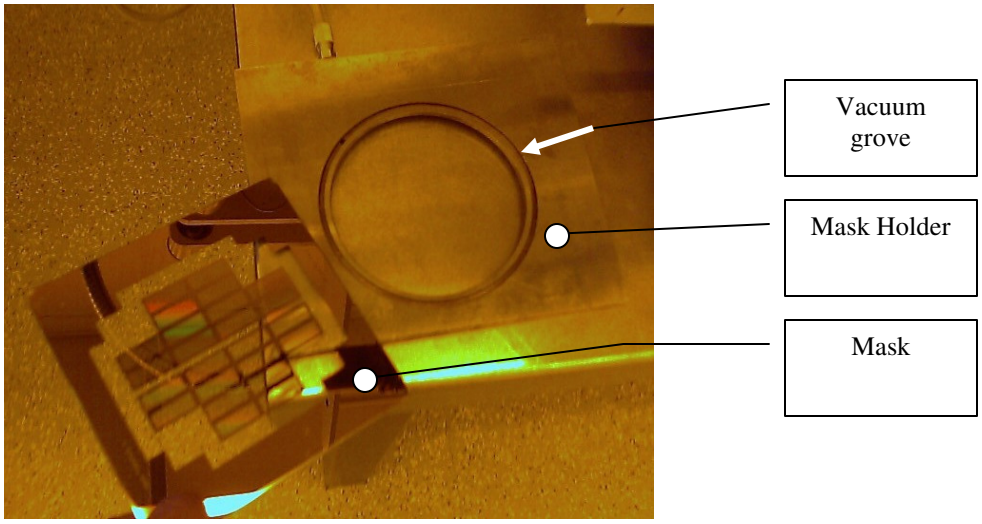

Figure 5 Mask and Mask Holder

d. Ensure your mask is clean.
e. The Mask Holder should be placed face up on the table
    v. *You should see the vacuum grove.*
f. Place you mask, MASK SIDE UP, a top of the Mask Holder.
g. Press VACUUM MASK button to establish a vacuum between your mask and the Mask Holder.

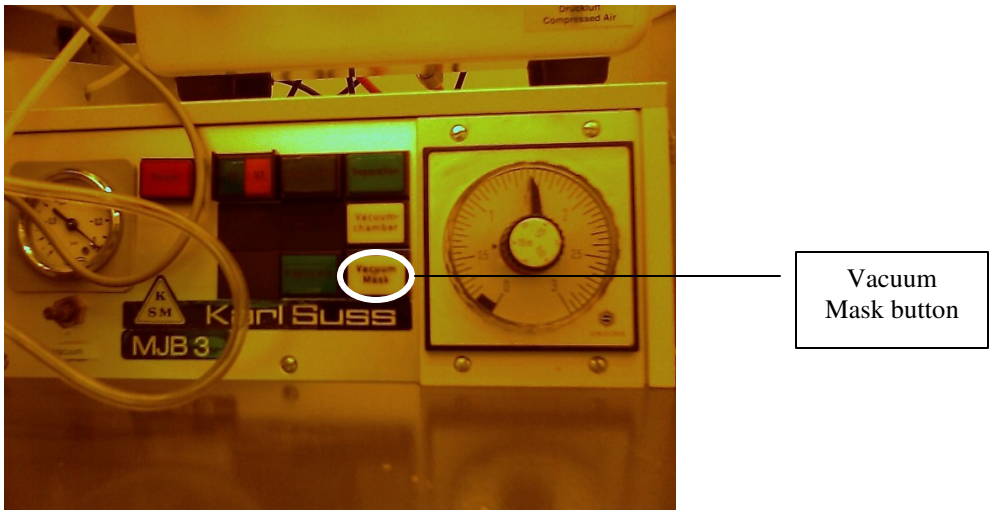

Figure 6 Vacuum Mask button

[7] Load Mask Holder onto the Karl Sus.

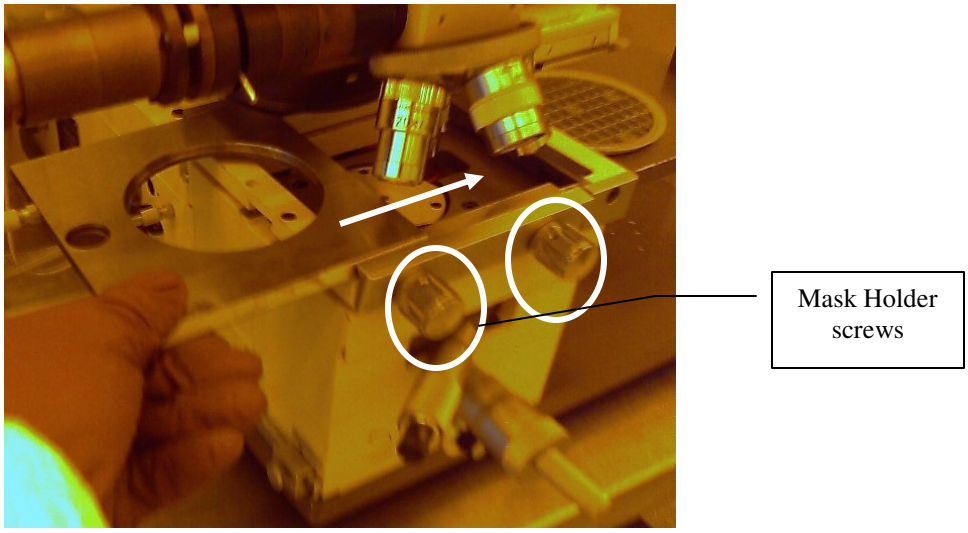

Figure 7 Mask Holder Screws and loading the Mask Holder

h. Ensure you mask is centered on Mask Holder.
i. Slide the Mask Holder, FACE DOWN, onto the Karl Sus.
   vi. Keep a finger on the mask in case the vacuum fails.
j. Secure the Mask Holder by tightening Mask Holder screws.

[8] Load wafer onto the Karl Sus.

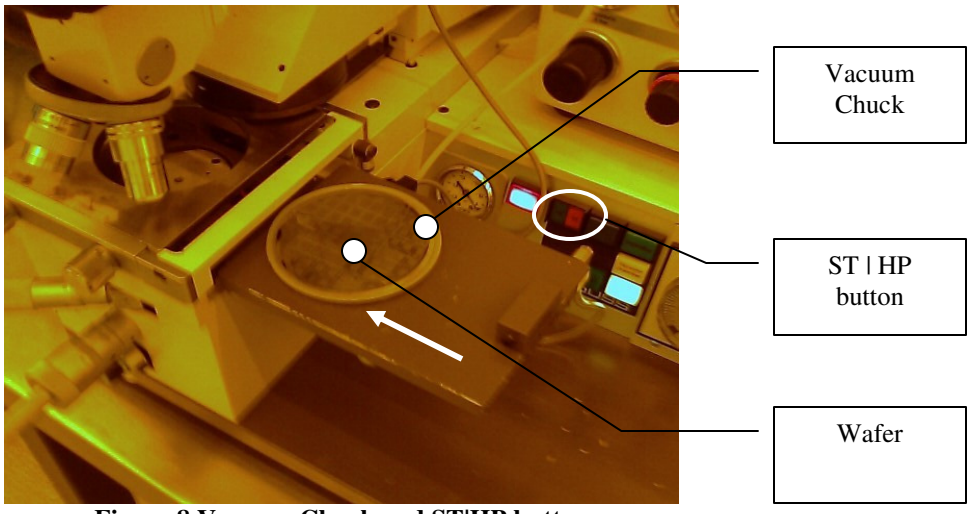

Figure 8 Vacuum Chuck and ST|HP button

k. Center wafer on the vacuum chuck.
l. Slide vacuum chuck into the Karl Sus.
m. Select Standard or High Pressure contact via ST|HP button.
   vii. HP creates a vacuum between wafer and mask.

[9] Bring wafer into contact with the mask.

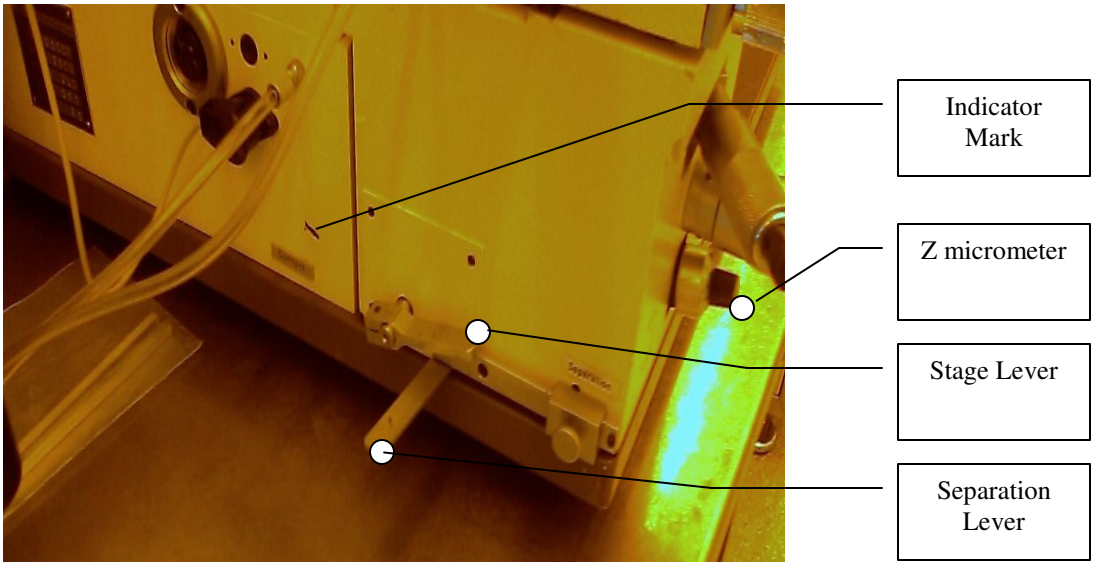

Figure 9 Stage Lever, Separation Levers, and Indicator Mark

n. Carefully use STAGE LEVER to bring wafer into contact with mask.
   viii. Wafer should start contacting mask at the indicator mark.
   - *If not, use Z micrometer to adjust appropriately.*

o. The STAGE LEVER should travel its full range. The CONTACT button will be lit if properly done.

[10] Align your mask.

p. Pull the SEPERATION LEVER towards yourself to separate the wafer from the mask. SEPARATATION button should be lit.
q. Use the MICRSCOPE FOCUS knob and MAGNIFCATION LENSES to view your sample.

r. Use the JOYSTICK to change your viewing field.

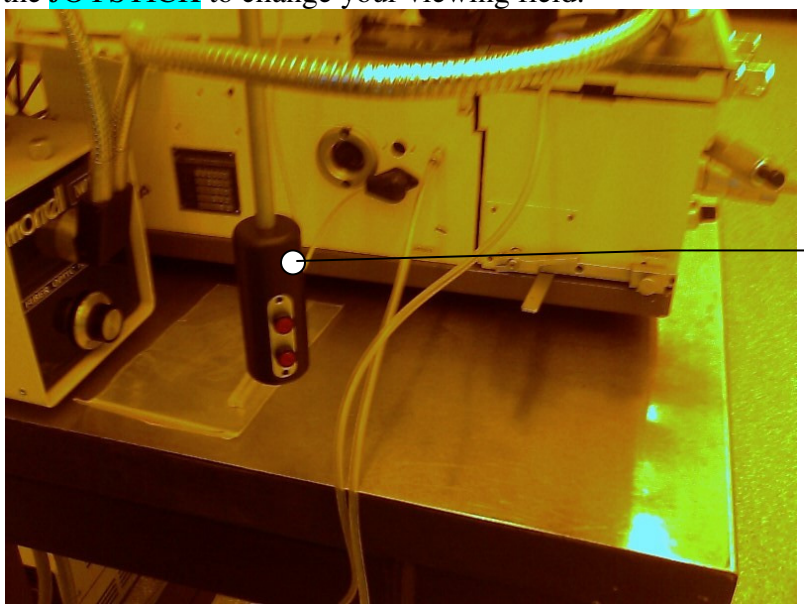

Figure 10 Joystick

ix. The top button allows movement in the Y direction

x. The bottom button allows movement in the X direction

xi. Press both buttons free movement.

s. Move the wafer via the X, Y and Theta Micrometers to align your wafer to your mask.

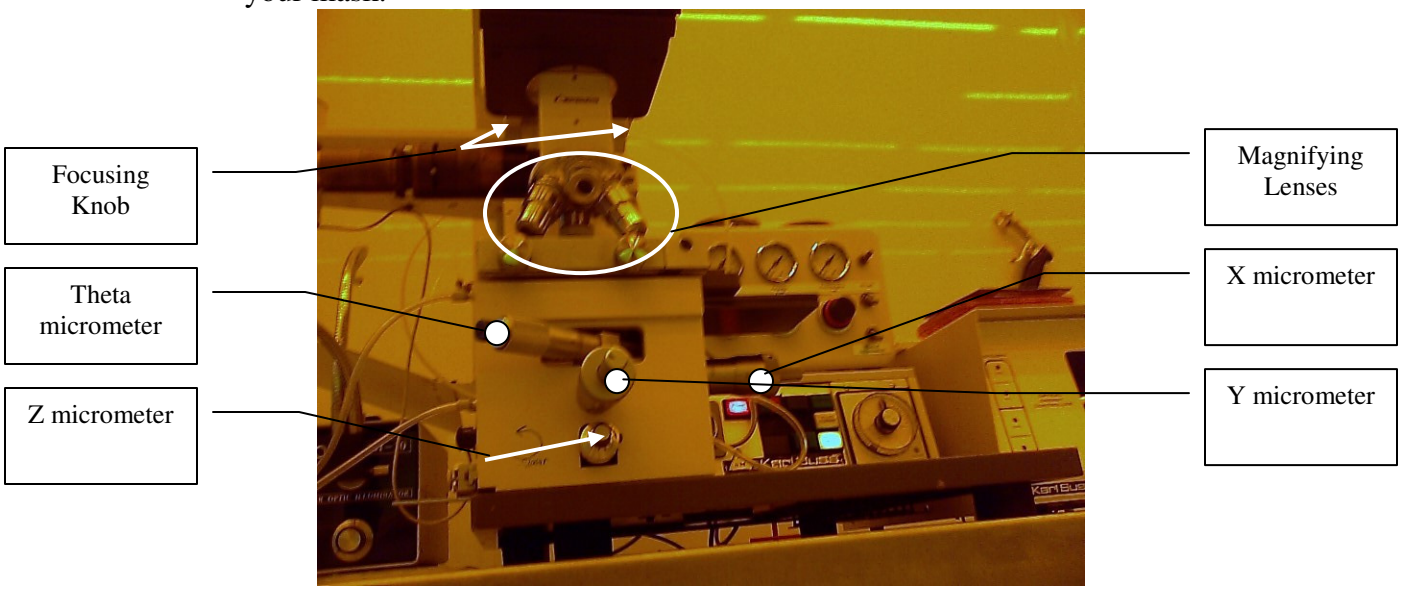

Figure 11 Micrometers and Microscope Lenses

t. Once aligned, move the SEPARATION LEVER back into the contact position. The CONTACT button should now be lit.

[11] Adjust the Z Micrometer up (counter-clockwise) until you feel resistance on the micrometer.

[12] Expose the resist.

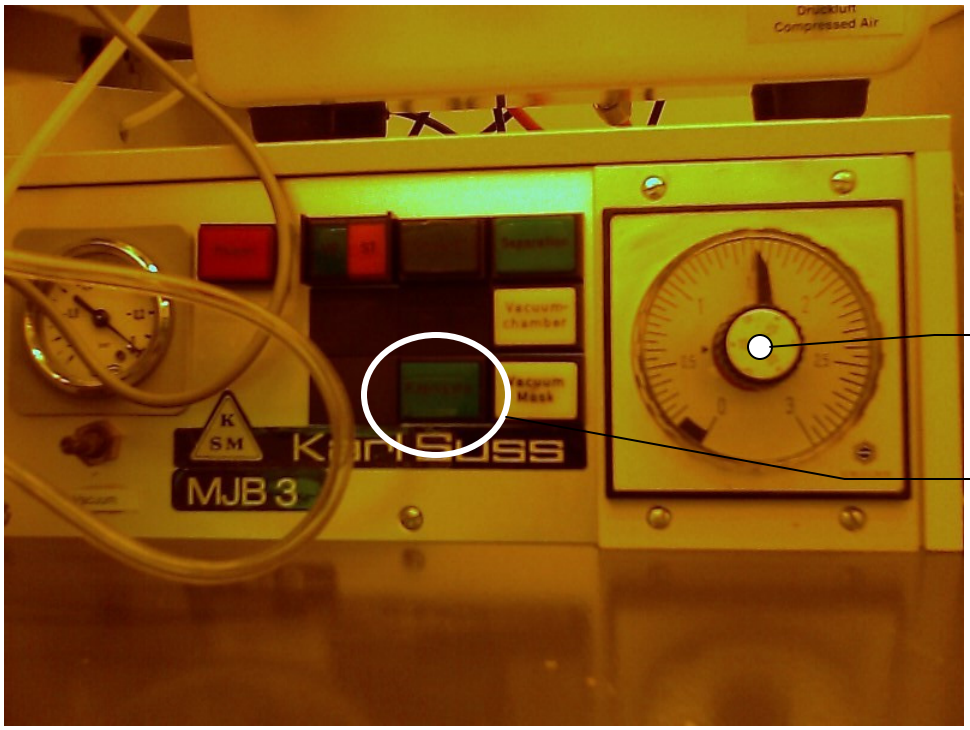

Figure 12 Timer

u. Set the TIMER to desired exposure.
v. Ensure the JOYSTICK is back in the center position and no obstructions are in front of it.
w. When ready press the EXPOSURE button, to expose your resist.

II. Chapter 2: Power Down Sequence

[13] Use the STAGE LEVER to lower the wafer from the mask.

[14] Slide out the VACUUM CHUCK and remove your wafer.

[15] Remove Mask.

a. Unscrew Mask Holder screws.
b. Place hand underneath mask holder.
c. Carefully slide out the Mask Holder and place the Mask Holder, MASK SIDE UP, on the table.
d. Press the VACUUM MASK button and remove your mask.

[16] Press the POWER button on the Karl Suss.

[17] Flip the Lamp Power Switch off (down).

[18] Flip the NITROGEN toggle off (down).

[19] Flip the COMPRESSED AIR toggle off (down).

[20] Close Nitrogen, Compressed Air, and Vacuum lines at the wall.

Figure 13 Closed Lines