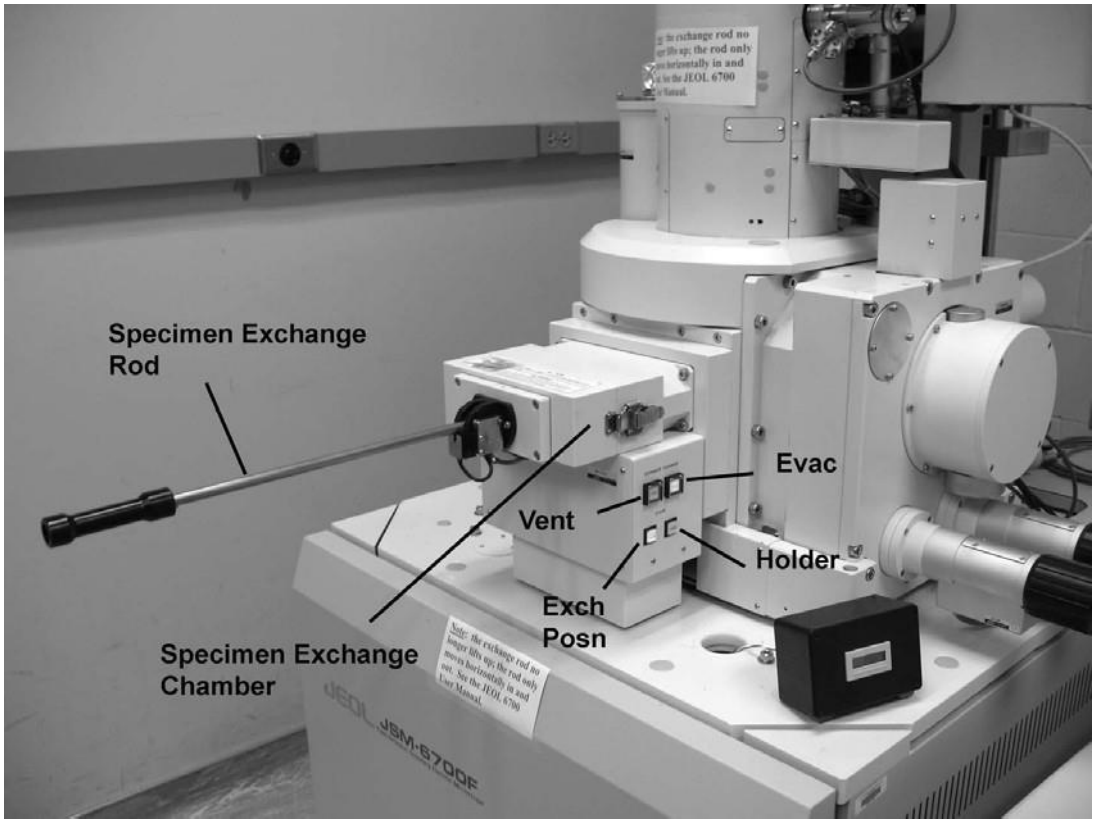
JEOL 6700 User Manual

3/23/2020

LOG IN using Badger

Badger Name:

P5 SEM 6700 JEOL

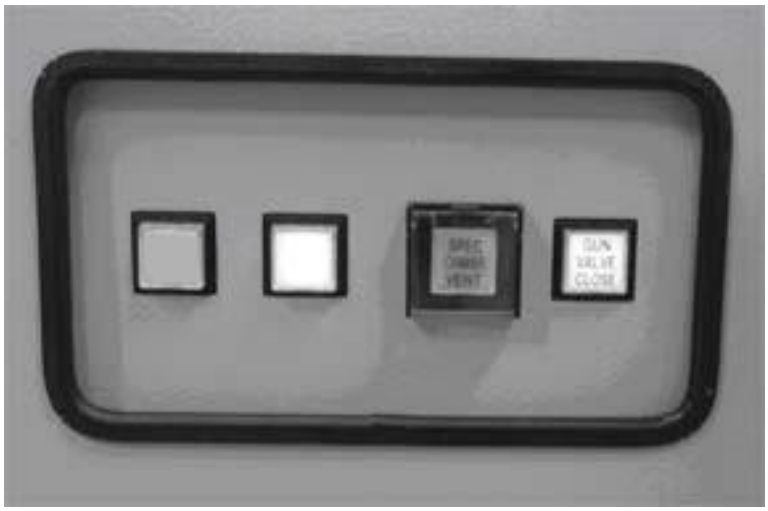


Starting Conditions

1. Click the PVG button and read the Penning Gauge to ensure that the microscope is at appropriate vacuum (10^{-4} -- 10^{-5} Pa). If not, consult with staff.

2. Click the Stage Specimen Holder Exchange button; select the holder you are using; and click the “Exchange” button. Close the “Specimen Exchange” window.

3. Check that the lights on side of exchange chamber and front of microscope are as follows:
   “EXCH POSN” — **ON**
   “HLDR” — **OFF** (if it is ON there is a specimen in the chamber)
   “GUN VALVE CLOSE” (front of microscope) — **light ON**.

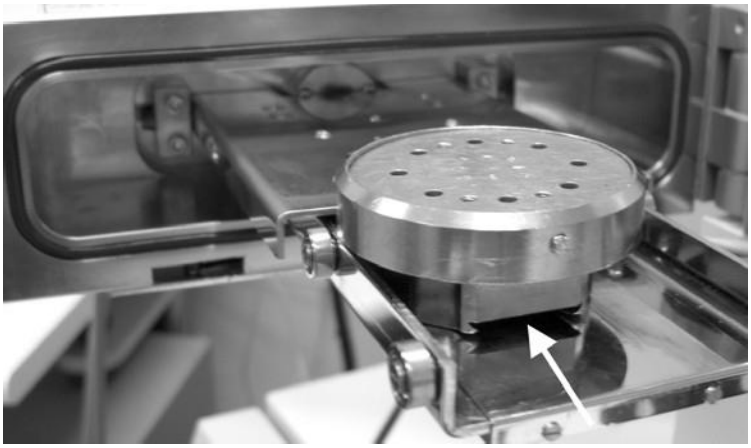


Specimen Loading

1. Loosen clip on side of chamber. Press and hold "Vent" button until it starts to flash.

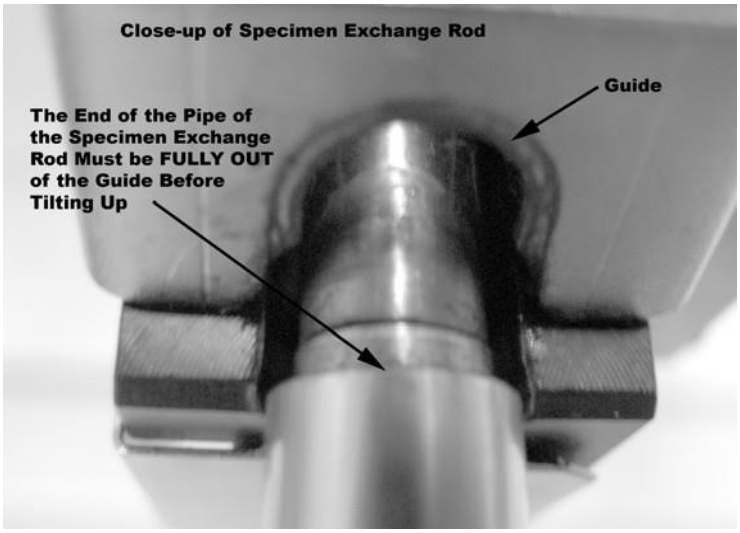
2. Swing back the door when the chamber vents. Check to see that the O-ring is properly fitted into its groove.

3. Mount specimen holder so that the **BOTTOM GROOVE IS PARALLEL TO THE LOADING DIRECTION. The specimen should be flush with the top surface of the specimen holder.** Close door, and clip shut.



4. Press and hold "EVAC" button until it starts to flash. **WAIT** until "EVAC" button stops flashing.

5. **With two fingers, gently bring the rod down and LET IT SELF POSITION—then slide it in completely.** Watch the chamber camera as you do this to ensure a secure connection. If you hear a long beep—STOP!—something is wrong, most likely stage not in exchange position.



6. Withdraw rod, **PULL OUT COMPLETELY** and tilt up until clipped ("HLDR" light should be ON).

7. **WAIT** for 5.00E-004 Pa (or lower)

Specimen Unloading

1. Set stage  to exchange position. ("Exch Posn" is ON).

2. Press HT  to disengage the "High Tension". This will also turn off the "SEI detector" and close the "Gun Valve" (**"GUN VALVE CLOSE"** (front of microscope) — **light ON**.)

3. **With two fingers, gently bring the rod down and let it self position—then slide it in completely.** Withdraw rod, **PULL OUT COMPLETELY** and tilt up until clipped ("HLDR" light should be OFF).

4. Loosen clip on side of chamber. Press and hold "Vent" button until it starts to flash.

5. Open chamber, check O-ring and remove specimen holder.

6. **C**lose door, and clip shut. Press and hold "EVAC" button until it starts to flash.

Software Setup / Obtaining an Image

1. Set imaging parameters by clicking on the:

   "Recipe Setup"  button to choose from a list of predefined recipes; or

   "Column"  button to manually set parameters such as accelerating voltage, emission current, etc.

2. When the vacuum level has reached 5.00E-004 Pa (or lower), press the "High Tension"  button and **wait** for the current to reach the level you set. Engaging "High Tension" will also turn on the "SEI detector" and open the "Gun Valve" (**"GUN VALVE CLOSE"** (front of microscope) — **light OFF**.)

   Note: the current may fall off during your session. Reset it with the  button.

3. Select "Low Mag" (console) and reduce the magnification to a minimum. Select the lower detector (LEI)

4. Adjust brightness and contrast ("ACB" button or manual knobs) so you can see something & focus using knob on console. (If you have little signal: do gun alignment. If you see nothing, the "Freeze" button on the console may be lit).

5. Use the joystick to move the stage to an area of interest on the specimen.

6. Turn off "Low Mag".

7. Set the working distance to the desired level with the "Focus" slider bar.

   The working distance will be shown in the bottom right corner of the computer screen.

   Bring the specimen to that working distance by typing in the corresponding value into the "Z" box at the lower left portion of the computer screen and then press the "Enter" key. If you touch end of column there will be a warning beep. Go to "Stage" —>"Alarm Recovery".

   Bring the specimen into focus (if necessary) by selecting the  button and using the "Focus" control on the console. Click the  button once again to deselect this function.

8. Go up in magnification, select reduced area view ("RDC Image" on the console) and focus. Athigher magnifications the mouse can be used to move the specimen.

Alignment

1. Align gun.
   - At lower magnification increase “Probe Current” to max (adjust contrast so you can see something).
   - Press “Align” on console; ensure “Gun Align” is selected; and adjust X and Y knobs on control panel to maximize signal (brightness).
   - Press “STIG” on console to turn off alignment and return “Probe current” to previous value (7 or 8 or whatever you want).

2. Align aperture.
   - Find feature at about 5,000X or more (more is better).
   - Press “WOBB” on console; ensure “O L aperture” is selected; and adjust X and Y knobs to minimize motion of image. (Keep feature in field of view by moving stage.)
   - Work up to higher mags (50,000X or more) as needed.
   - When done, press “STIG” button and focus.

3. Stigmate.
   - Find feature at higher magnification (20,000X or more—again, more is better).
   - Roll focus and look for stretching of image. It will switch from one direction to another. Set focus where stretching switches. (If you can’t see the stretch just get the best focus you can.)
   - Adjust X and Y to get sharpest image.
   - Work up to higher magnifications as needed.
   - If image moves while you’re adjusting the stigmators, then the stigmators themselves will have to be aligned. Select “Stig Center X” in the “Alignment” window, press “Wobble” on the console and adjust X and Y to minimize movement. Do the same for “Stig Center Y”

Aperture alignment and astigmatism correction should be done well above the magnification at which the images are acquired.

Acquiring an Image

1. Press “ACB” (Auto Contrast and Brightness) on console.

2. Press PHOTO on console (it will take about 1 min to scan). Frame will be frozen when it finishes. A “Print” window will appear –select “Cancel”

3. Select the “Image File Handler”  button to save the image. Choose your directory: “My Computer” ""7 “jsm6700 on cfserver\Userfiles”.

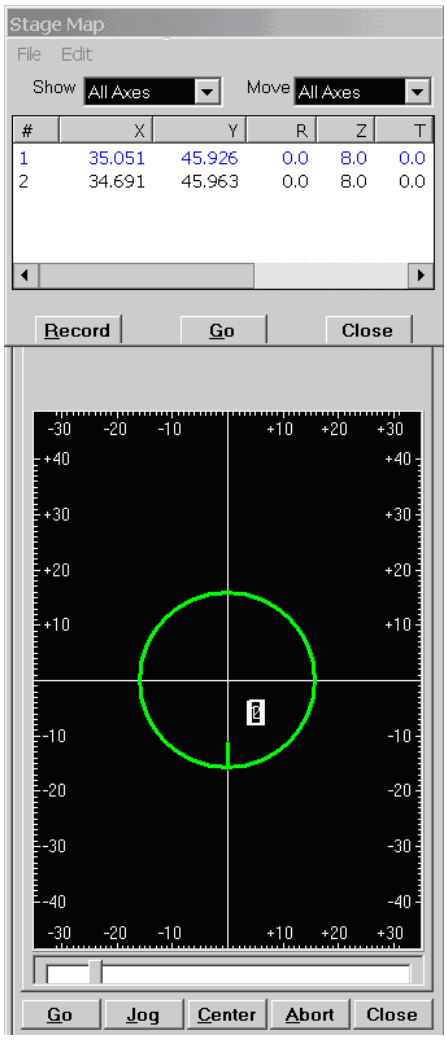
4. Select “Export” (this is necessary to get a micron marker). Choose Filename and Format type.

5. Press Freeze button on console to restore microscope imaging.

LOG OUT of your session on the computer

Recording Stage Positions:

Click the "Stage Map" button 7 "Points Map" 7 "Points File". You can "Record" specific positions and subsequently "Go" to them.



Frame Integration

Select the "Instrument Operation" button. Highlight "Integration" and specify the number in either the "Quick View" or "Fine View" boxes.

When you press the "Freeze" button on the console the software will integrate the number of frames you specified. Select as usual to save the image.

Make sure that "Freeze Frame is highlighted when you are through with image capture