

# Hitachi Scanning Electron Microscope with LaB6 Filament Instructions for Use

These instructions are not to take the place of reading the manual. Always have the manual handy to refer to for more in-depth information.

**First Things First! Sign in the log notebook.**

## Loading a Sample:

1. While wearing gloves, prepare the sample and place it on the sample holder. Check the **sample height** against the height gauge ([Figure 1](#)). Adjust the height by turning the screw and lock the sample with the **lock nut**.
2. Make sure the gun valve is in the closed position ([Figure 3](#)).
3. Vent the chamber by pressing the *Air/Evac* button ([Figure 2](#)) on the column control panel, and wait for the chamber to come to atmosphere.
4. Carefully slide the stage door open and place the sample holder in the stage socket, making sure it is pushed down to the bottom of the socket.
5. Slowly slide the chamber door closed.
  - If you plan on using the upper stage detector, watch your sample to make sure it will clear the pole piece. (Also, read the manual for more in depth information if you are using the upper stage detector).

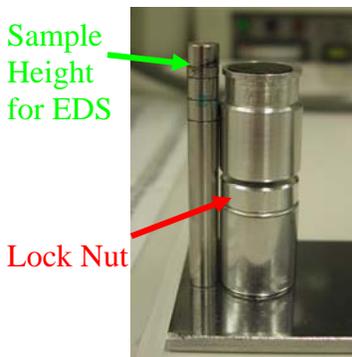


Figure 1

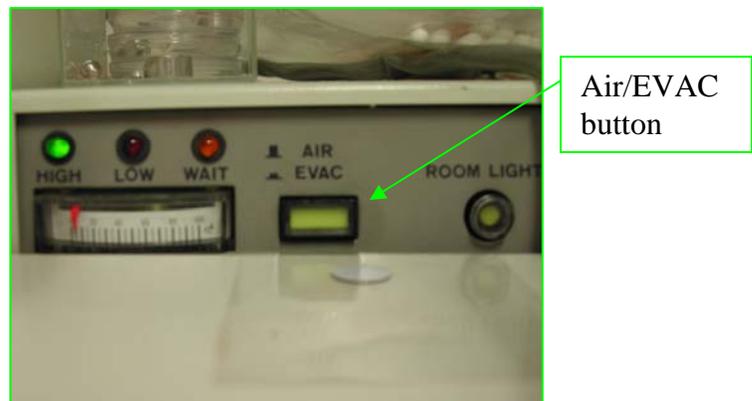


Figure 2

6. Press the *Air/Evac* button (Figure 2) to pump down the chamber.
- It will take approximately 8 to 10 minutes for the system to reach the correct vacuum level, or more if the sample is out-gassing.
  - The vacuum level is correct when the **two green lights** are on. **Both the high vac light on the column control and the high vac light on the gun valve must be lit before opening the gun valve.**

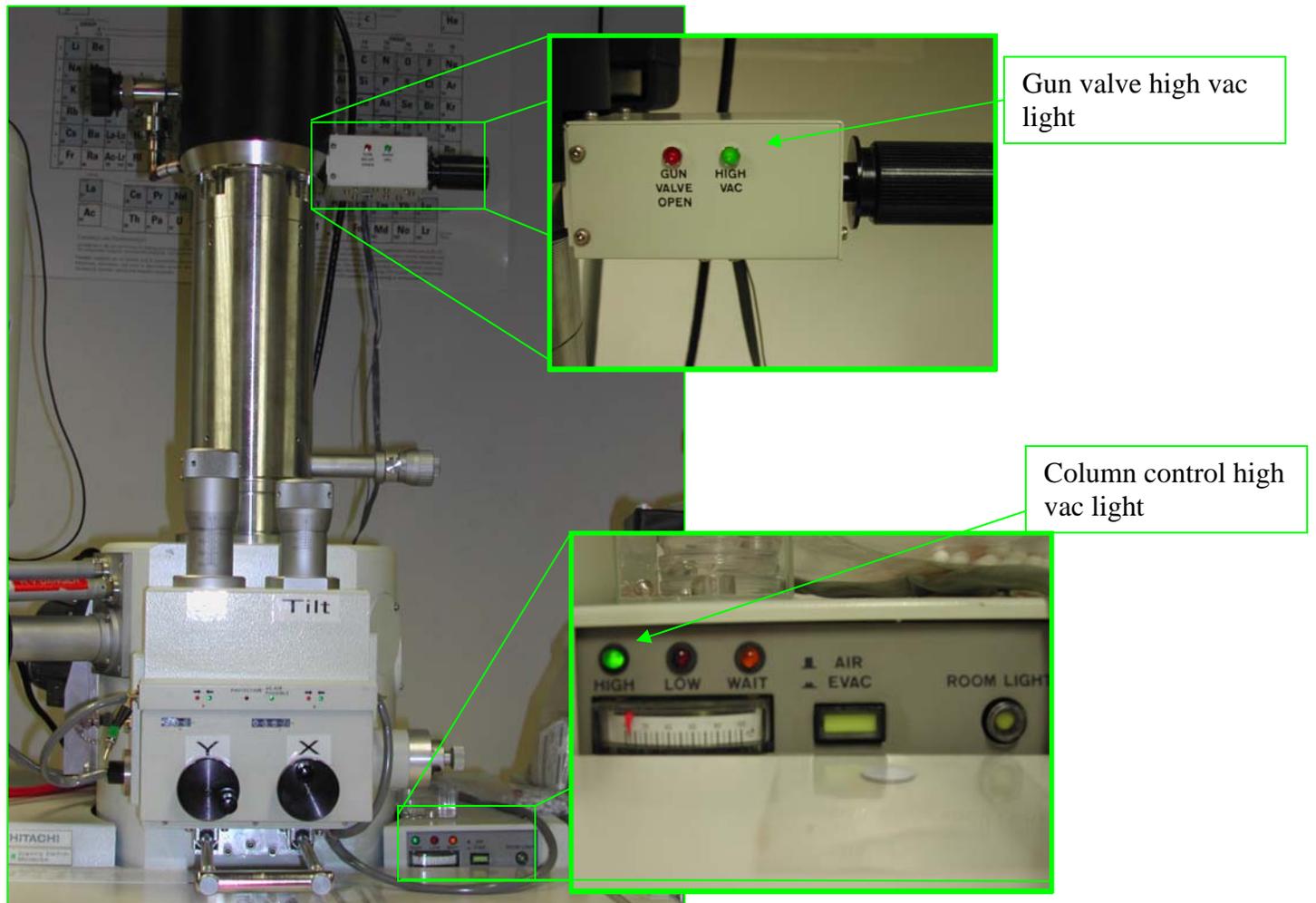


Figure 3

## SEM Operation:

1. Turn on the display power (right switch on the front face of the column console).
  - Make sure you **DO NOT** turn off the **evac power**.
  - Make sure both *Selector Switches* on the electronics panel are set to *SE* ([Figure 4](#)).
  - Confirm that both **high vac** lights are lit, indicating proper operating vacuum.
2. Open the *Gun Valve* by turning it clockwise to the free position, sliding it out to the second line, and turning it back to the locked position.
  - Both the **high vac** and **open** lights will now be lit on the *Gun Valve*.
  - In about thirty seconds, a **ready** light will appear on the console. It is located next to the voltage display panel.
3. Press the *Acc. Voltage On* button.
4. **Slowly** turn the *Filament* on, taking about ten seconds to advance the dial by one tick, until the filament current reads about **80 $\mu$ A** in the Voltage Display.
5. Reduce the *Magnification* to its lowest value.
6. Adjust the *Contrast* and *Brightness* to desired intensities.
7. Focus the image using the *Course Focus* knob, and then increase the magnification as desired.
8. To display image data on the screen, press the *Data Display* button in the top right corner of the console.

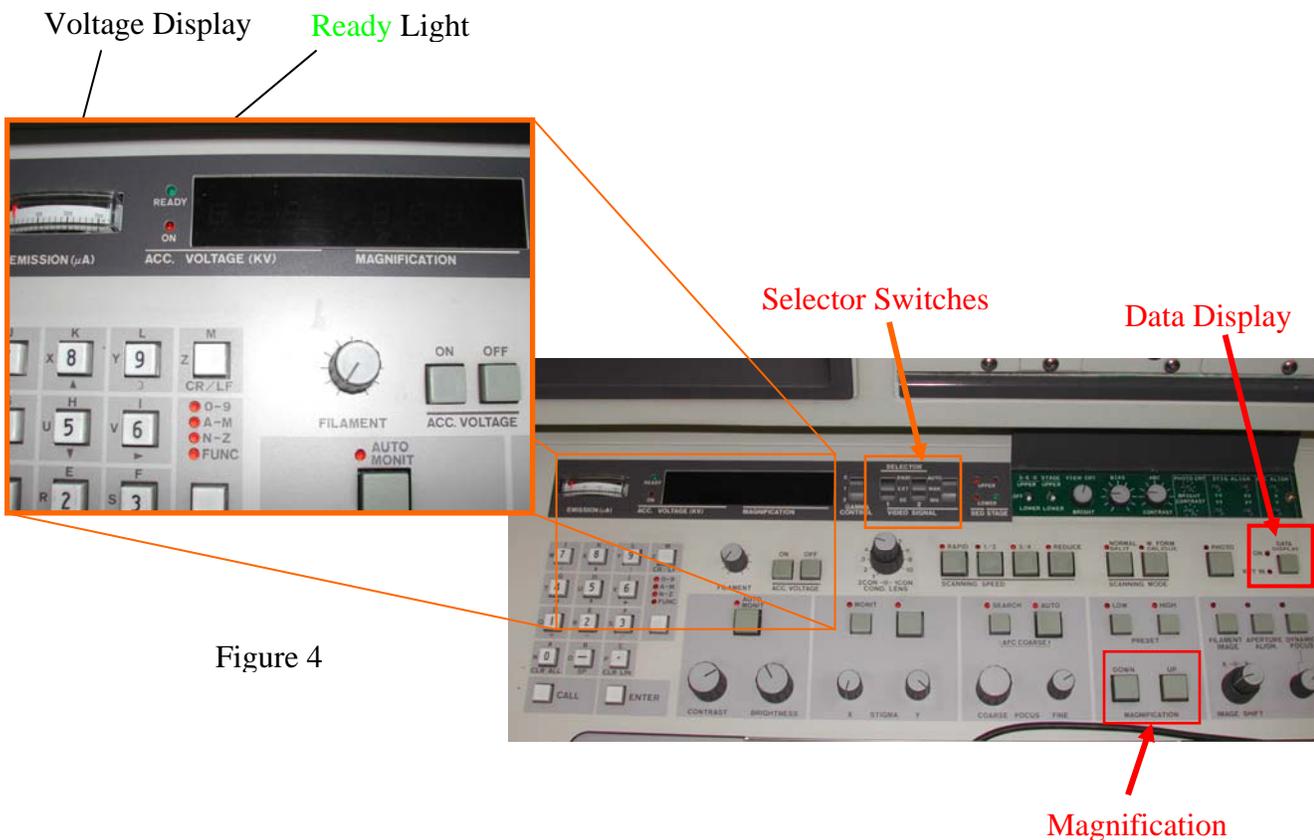


Figure 4

**Shut Down:**

1. When you are finished with the SEM, close the [Orion](#) program and shut down the computer.
2. Reduce the SEM magnification to its lowest setting.
3. Slowly turn the *Filament* down to zero.
4. Turn *Acc. Voltage Off*.
5. Unlock and close the *Gun Valve*.
  - Make sure the *Gun Valve* is in the fully closed and locked position.
6. Press the *Air/Evac* button to bring the chamber back to atmosphere and remove your sample.
  - Please remember to press the *Air/Evac* button again to pump the chamber down when you are finished using the SEM for the day.