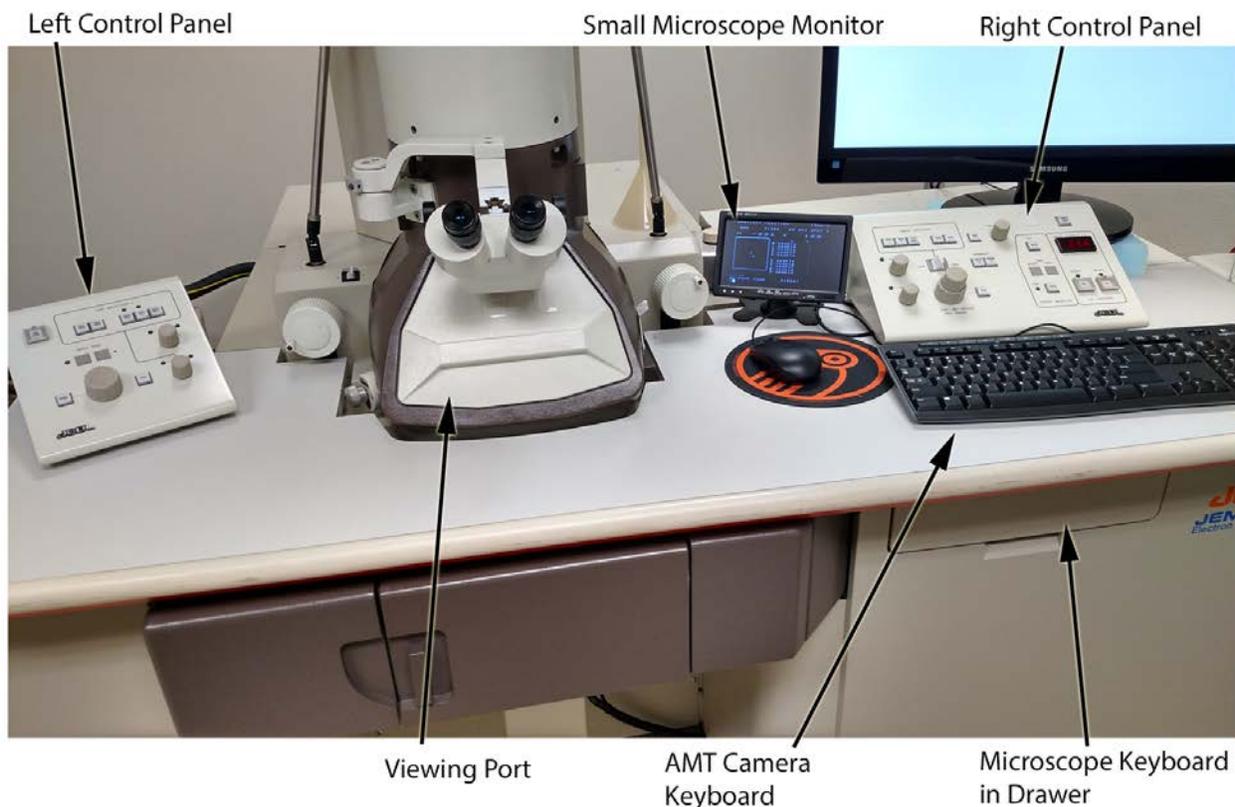


Instruction Guide

JEOL JEM1011 TEM – Room 154

This guide provides basic instruction to assist with specimen loading and operation. It is not intended to replace training by qualified staff at the Center. This guide is not comprehensive and alignment procedures are not included. If you have any questions or problems, contact Center staff.

1011 CONSOLE LAYOUT



PREPARING TO INSERT YOUR SAMPLE

Log on to iLab Tracker with your UGA MyID (not your entire email address)

Check to see if the **HT button is lit** on the right control panel (HT is on/lit and the display reads somewhere near 54).

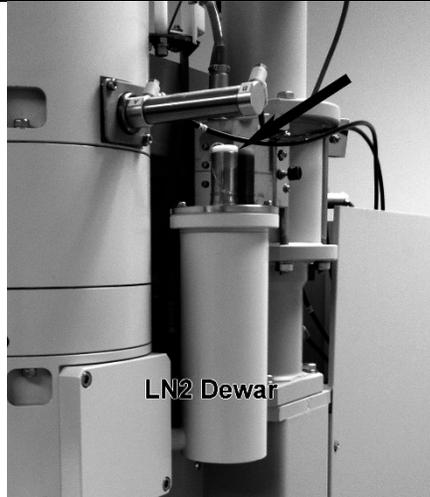
Make sure the FIL button is **OFF (not lit)**.

1. Before starting, fill nitrogen Dewar with LN₂ from the 4L container.

Make sure the viewing window is covered.
Use a funnel

The arrow indicates the fill spout.
The Dewar does not use much nitrogen, so be careful.

You will probably need the step stool to reach it.

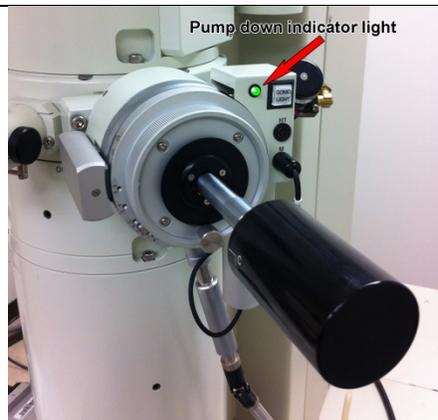


2. Check that the sample holder is centered (check small microscope monitor displaying position).

Remove the Sample Holder from the airlock (if still in place). The indicator light should be dark (off)

It will be under vacuum: carefully pull the rod until it stops, then rotate counterclockwise until it stops. **Do not let go of the rod** until it is in the "Parked" position (shown). **Wait 30 seconds.**

Use two hands **to gently** break the vacuum and completely remove the rod from the airlock.



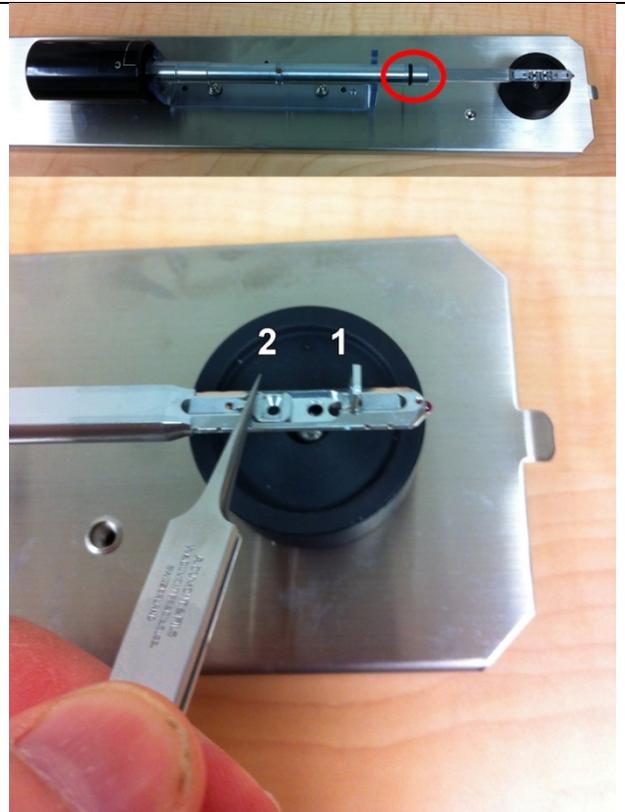
3. Do not touch the area in front of the O-ring (to the right of the circled area).

Use the tweezers provided to lift the retaining clip and place your grid into the depression. You'll note that the sample holder can take two grids.

The clips can be lifted by placing the forceps against the ridge on the top of the clip and pushing it back (see image).

The grid closest to the end is position "1", the grid closest to the black handle is "2".

Always inspect the O-ring to insure there is no debris or cracks.



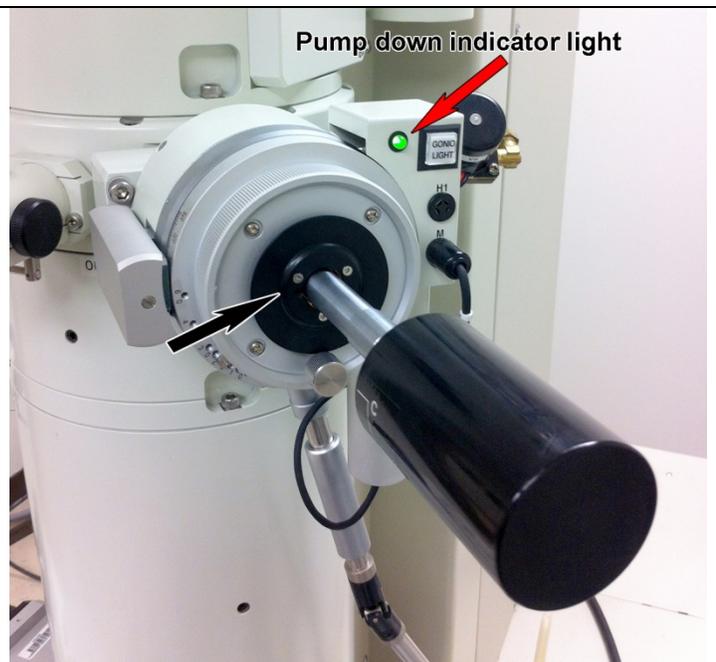
4. Place the specimen rod into the airlock by aligning the pin on the specimen rod with the slot on the airlock (black arrow) and inserting until a click is heard.

The green light (red arrow) will be **ON** indicating that the specimen holder is being pumped down.

The light should cycle **on and off twice** before you attempt to insert fully.

Once the light is **OFF** – turn the specimen holder clockwise until it stops, then in a controlled manner, allow it to be sucked into the column. **Do not let it go** and have it slam into the column. **Do not push** the rod in.

Be aware that if you wait too long, the pump cycle will come back on and you will need to wait again until the light goes off.



5. Turn on the filament by pressing the FIL button (17, on the **Right Control Panel**)

In the viewing port, you should see the beam.
If not, lower the Mag (#3) and move the sample in case you're over a grid bar.

The Right Control Panel also has the **focus knob** (#4) and one of the pair of beam centering knobs (#1) which is labeled "**Shift Y**"

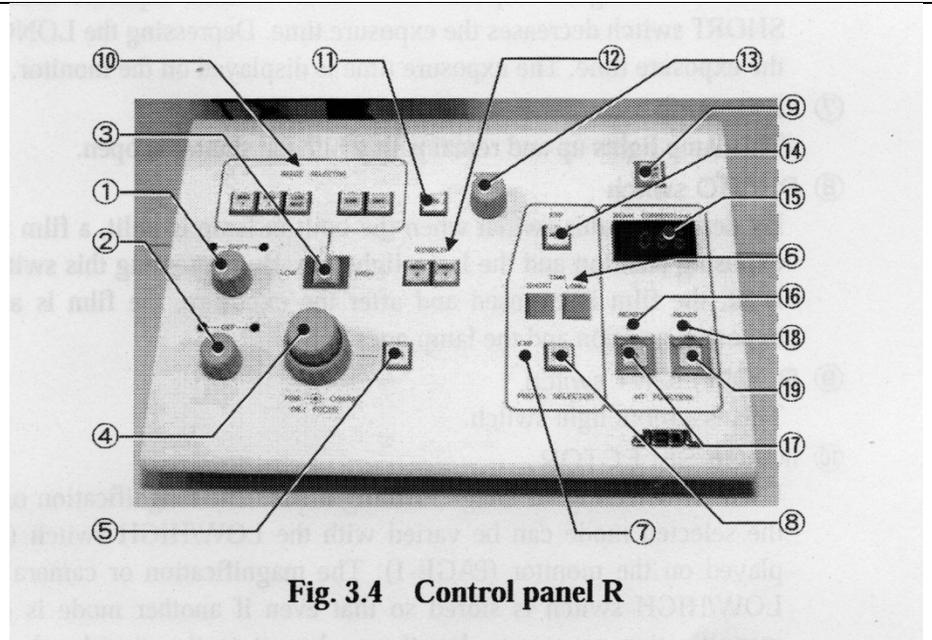


Fig. 3.4 Control panel R

6. The Left Control Panel has the other corresponding beam centering knobs (#7) "**Shift X**".

The other knob is the "**Brightness**" knob (#5). This knob will allow you to condense the beam to the "crossover" point where the beam is at a small spot.
Always work with the beam spread from crossover in the clockwise direction.
You will need to continuously be adjusting the Brightness as you change magnification and adjust exposure on the digital camera.

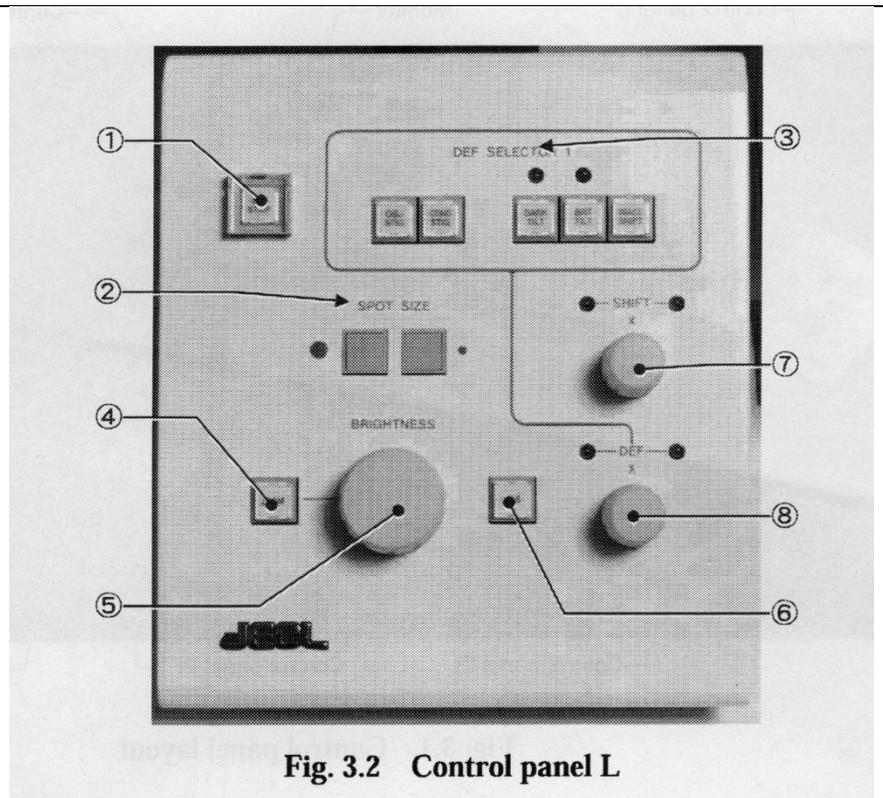
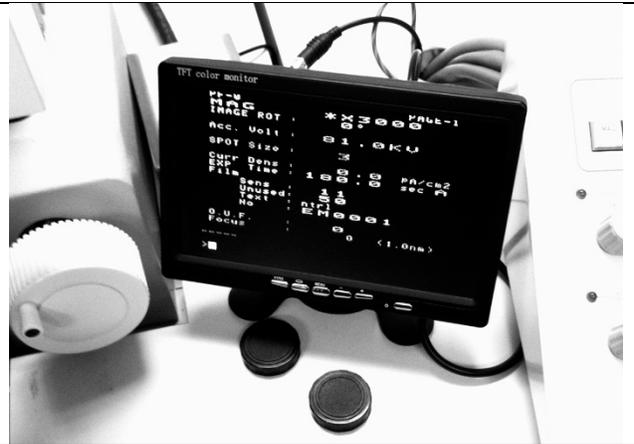


Fig. 3.2 Control panel L

The **Spot size** can be changed to suit the method of imaging and brightness levels by pressing the buttons (#2). Typical operation is at spot size 2.

7. The **magnification** and **spot size** can be seen on the small monitor sitting by the Right Control Panel. It will also display the HT accelerating voltage being used.

This screen will display several parameters and the pages can be cycled by simultaneously pressing the Function and F12 key on the keyboard in the drawer on the right. The main page (Page 1) has the basic information.

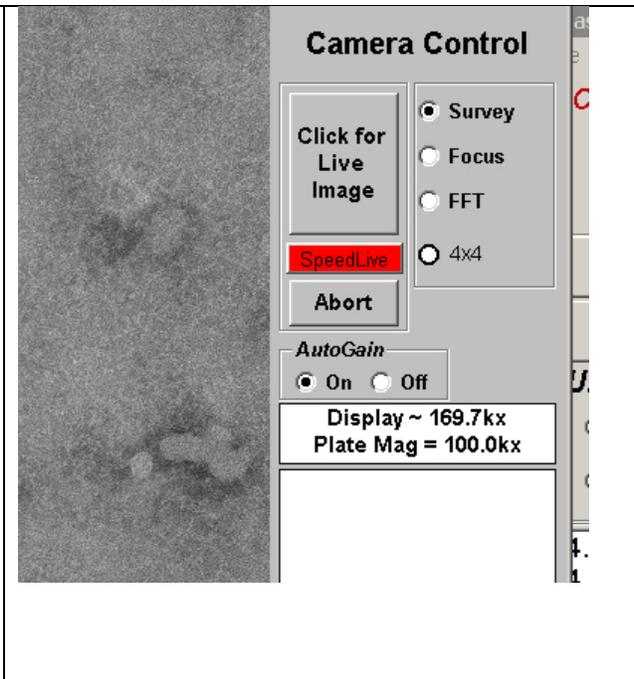


8. Taking an image

When you are ready to capture images on the mid-mounted digital camera, put the cover on the viewport. The AMT capture software should already be running. If not, open the software.

The AMT software has a button to press that says "Click for LIVE image". This will provide an image on the computer screen that you can adjust. When you are ready to capture, click on that same button, which now reads "Click for Final image".

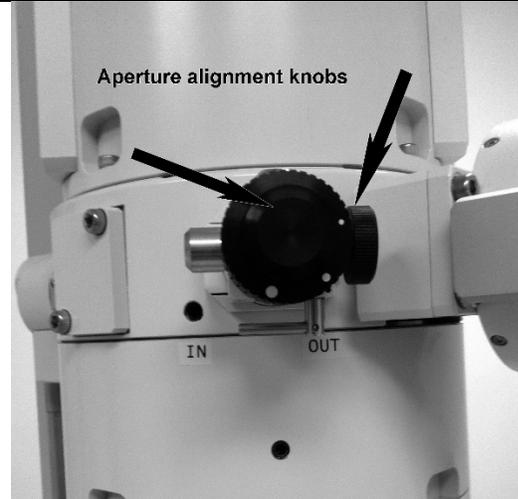
Note that you can switch between looking through the viewport without turning off the live image mode. Click on the "Camera Control" button (above the Live/final capture button) to lower and raise the screen.



9. Switching between regular mag and low mag
#10 on the Right Control Panel (see step #5 above)

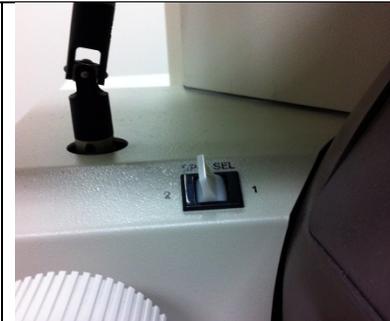
If you need to see the entire grid or a larger viewing area of the sample, you will need to press the Low Mag button, then remove the Objective aperture (moving the bar under the aperture from "IN" to "OUT").

To change back to regular mag, **re-insert the Objective aperture first** and then press the Mag button (#10 on Right Control Panel). If the aperture has moved and is not centered, use the alignment knobs indicated by the arrows.



10. Changing Specimens

When you are ready to move **from position 1 to position 2**, simply push the toggle switch on the left side of the column to the appropriate number. The sample holder will move for you. Note that it may randomly land on a grid bar – repeat the steps from step #5 described above for "lowering the mag".



ENDING YOUR SESSION

Once you are finished and ready to leave:

Make sure the specimen holder is close to **centered** – the display panel (page-2) will indicate the position of the sample holder (P) in relation to the center (+). You can also move the X and Y coordinates close to a value of “0”.

Turn off the Filament. *Always turn off the Filament (not the HT) for every change of grids.*

Repeat the steps outlined in Step 2 above to **remove the Specimen holder.**

Repeat Step 3 above to **remove your grids.**

Replace the specimen holder into the airlock and insert once the cycle to pump down is complete.



Transfer your images from the folder on the computer to your USB storage device or via Dropbox/Drive etc...

Do NOT close the AMT Camera software!!

Log off of iLab Tracker.

Do NOT turn off computer!!

Clean up after yourself.

If there is ever a question or something does not appear to be correct, contact one of the Center Staff.

If the computer shuts down and you are required to restart, user ID is AMT, the login password is EMLab153. You will need to wait several minutes for iLab tracker to load before you can begin again. Once the AMT capture engine is started again, pull out the TEM keyboard (drawer) and type “ext 1” for the microscope to resume communicating with the AMT software.