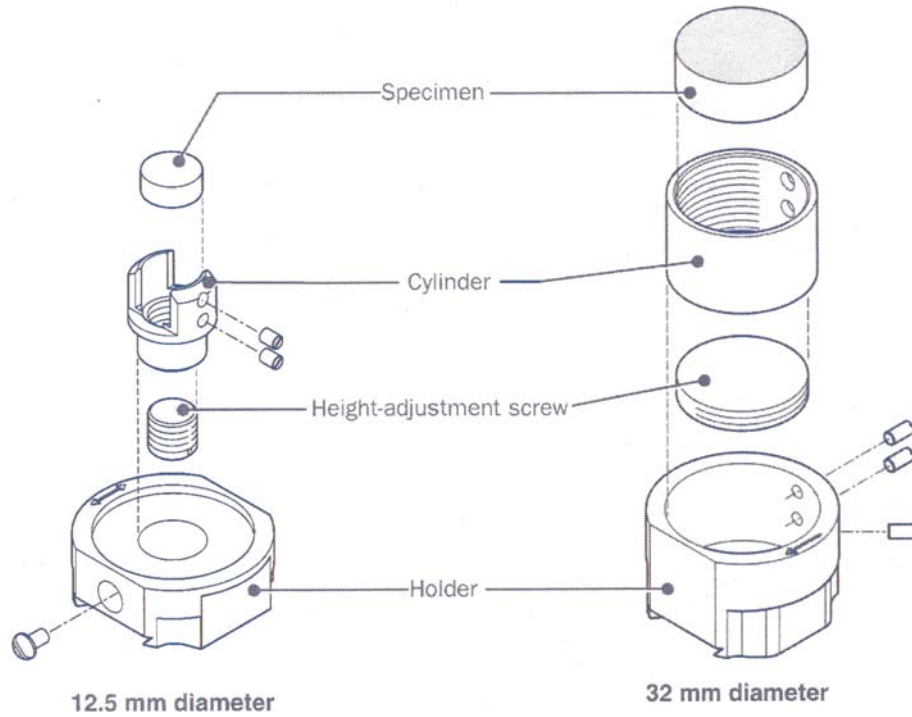


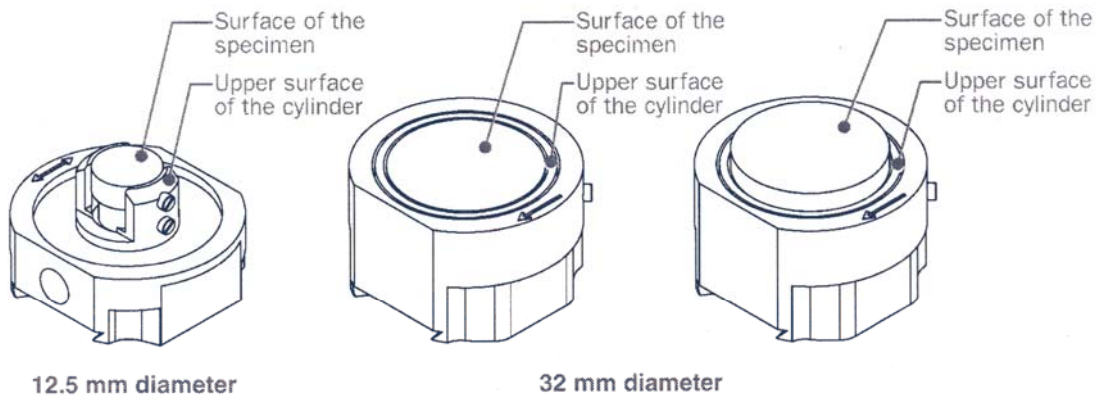
**SEM Operation:**

1. Use **Carbon tape** or **copper tap** or **carbon suspension** located sample on **specimen holder**.  
There are two types of **specimen holder** can choose.

**12.5mm Holder, 32mm Holder**



**Standard specimen holders for JSM-7000F**



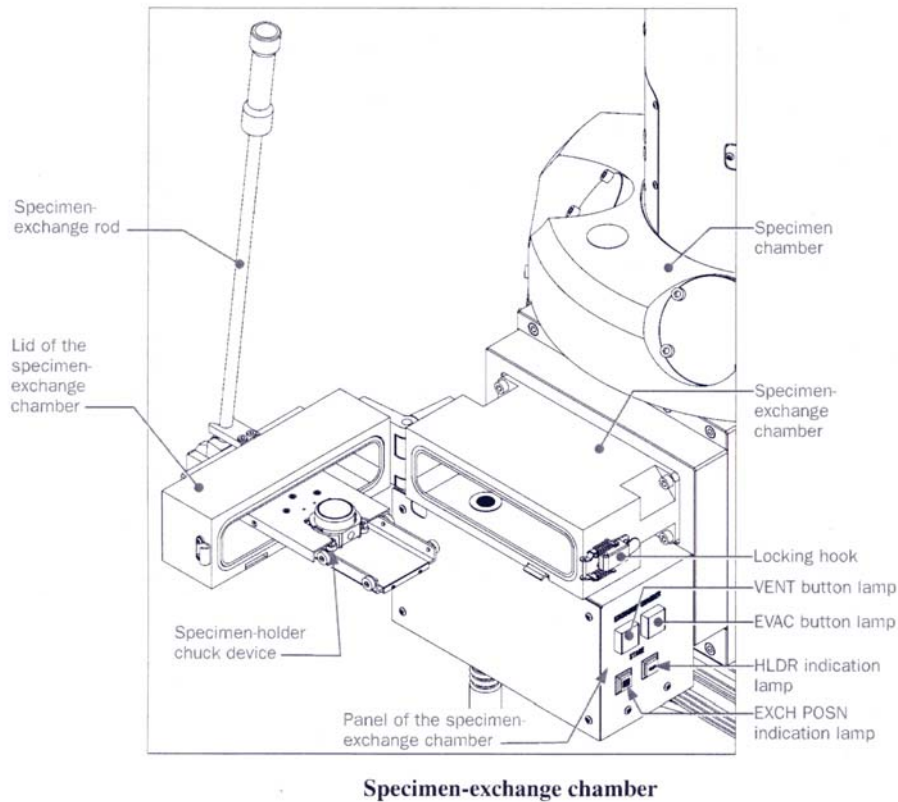
**Good examples**

Align the surface of the specimen with the upper surface of the cylinder, and attach the specimen with the screws.

**Bad example**

If the surface of the specimen is situated higher than the upper surface of the cylinder, it will cause the specimen or the instrument to be damaged.

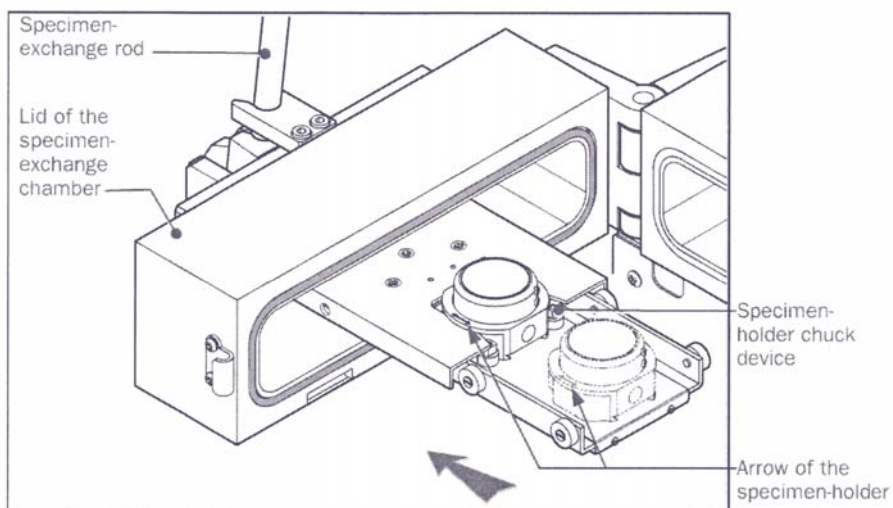
Align the surface of the specimen with the upper surface of the cylinder, referring to the good examples.



Specimen-exchange chamber

2. Push **VENT** button (for ~2sec., **VENT** button start to blink) venting the **specimen exchange chamber**.
3. **VENT** button lit on (venting complete)
4. Release **Looking hook**, open **lid of specimen exchange chamber**.
5. Put in the **specimen holder** on the **specimen holder chuck device**.

(Make sure the specimen holder on the correct direction, **arrow mark** on specimen holder should be **parallel** to the long direction of specimen holder chuck device.)



Specimen-exchange rod

6. Close the **lid of specimen exchange chamber**, locking on **Looking hook**.

(**EXCH POSN** indication lamp should be lit on)

7. Push **EVAC** button (for ~2sec., **EVAC** button start to blink), evacuation of the **specimen exchange chamber** to bring it to high vacuum.


8. **EVAC** button lit on (evacuation complete).

9. Use **Specimen exchange rod** push the **specimen holder** into the **Specimen chamber** (**HLDR** indication lamp should be lit on), move out the **Specimen exchange rod**.

**(CAUTION: Specimen exchange rod is easily to damage, use it carefully)**

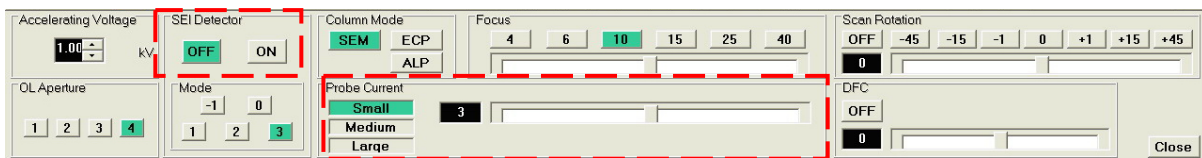
10. **HLDR** indication lamp lit on means that **specimen holder** is on the position to do image observation.

11. On PC, operate **JEOL PC-SEM 7000** program.

**Tool Bar** --->  ---> open **Penning Gauge** window ---> **2.8X10<sup>-4</sup>Pa** (need 5~10min). ---> close **Penning Gauge** window ---> start to do image observation

12. On the basic screen use **Accelerating Voltage** button select a suitable AV (usually 5-20kV).

13. **Tool Bar** --->  ---> open **Instrument Control** window ---> choose a suitable **Probe Current** (usually 7-10)---> turn **ON SEI Detector**



14. Use Vacuum Control panel open **Gun Valve**, use **Gun Valve Close** button to control **Gun Valve**.

**Gun Valve Close** lit on ---> means Gun Valve is closed

**Gun Valve Close** dim ---> means Gun Valve is opened

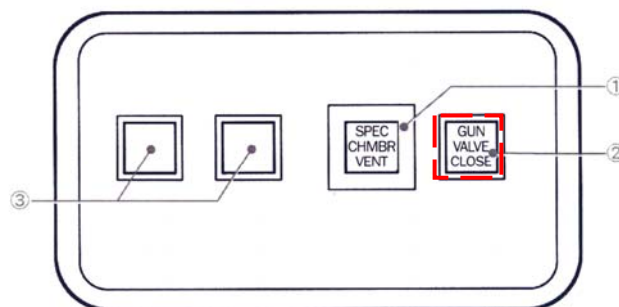


Fig. 3.5 VACUUM CONTROL panel

15. Use **Operation Panel** to get the image.

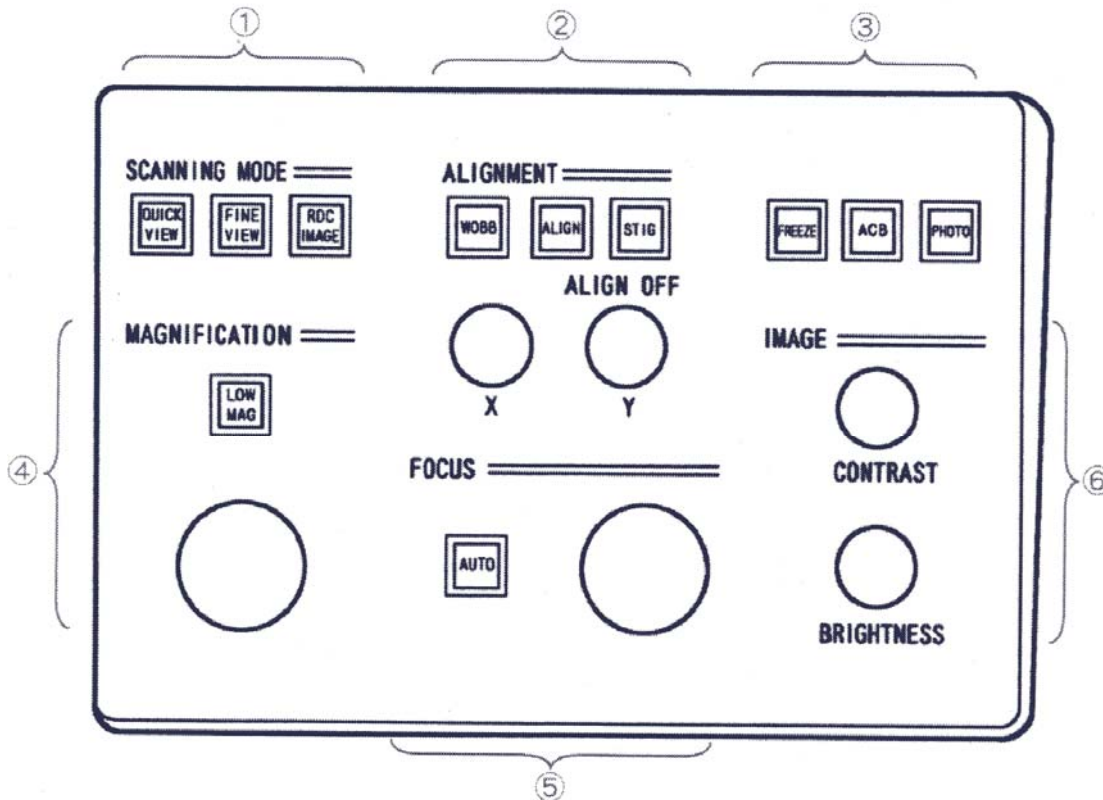


Fig. 3.7 OPERATION panel

- In low magnification find out the place you want to see.
- Use **Brightness/Contrast** knob to control image's brightness and contrast.
- Use **Focus** knob to control the focus.
- Use **Magnification** knob to zoom in the image and check the brightness/contrast and focus. Keep going this processes until you get the image you want.
- If the image have signification you need to use **Alignment X, Y** knob to align the astigmatism corrector X or Y.
- If the image still not in good condition push down **ALIGN** button will open the **Alignment** window. Then push the **HT WOB** button, use **Alignment X, Y** knob to control the image, let it to move on original position, do not move away.

(This process will help you to correct the Beam Align)



**Gun alignment:** clicking the **Gun Alignment** button enables you to align the electron gun by using the **Alignment X** and **Y** knobs.

**Beam alignment:** clicking the **Beam Align** button enables you to align the objective lens by using the **Alignment X** and **Y** knobs.

**Stig Center X or Y:** clicking the **Stig Center X** or **Y** button enables you to align the astigmatism corrector X or Y by using the **Alignment X** and **Y** knobs.

**OL Stigmator:** clicking the **OL Stigmator** button enables you to correct the object lens astigmatism by using the **Alignment X** and **Y** knobs.

**CL Stigmator:** clicking the **CL Stigmator** button enables you to correct the condenser lens astigmatism by using the **Alignment X** and **Y** knobs.

**Align Clear:** resets the clicked alignment items. (X=0, Y=0)

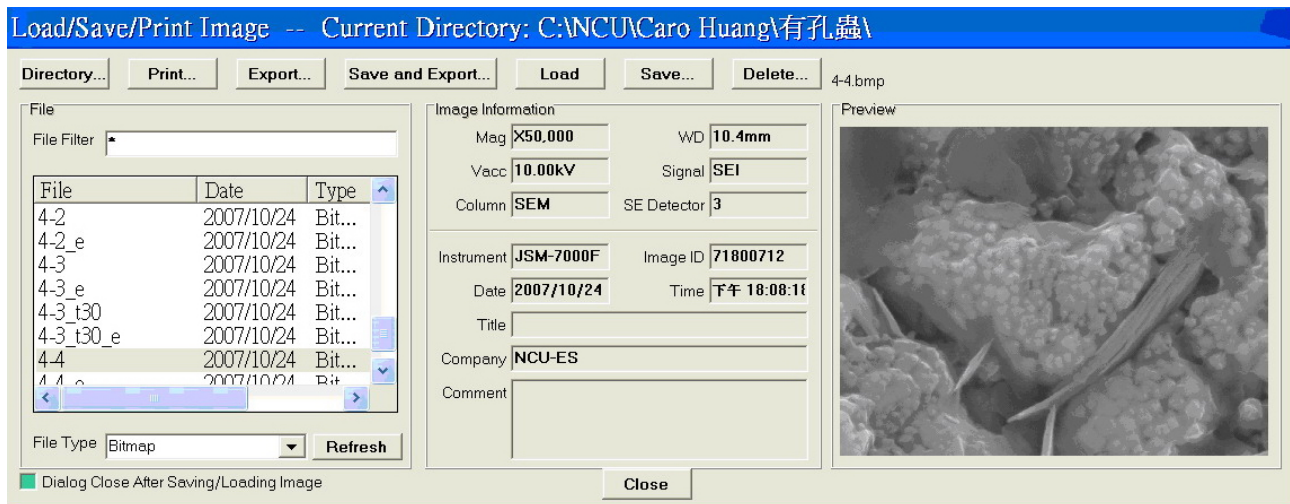
**Align Reset:** resets the all alignment items. (X=0, Y=0)

**Lens Clear:** removes the hysteresis of the lenses.

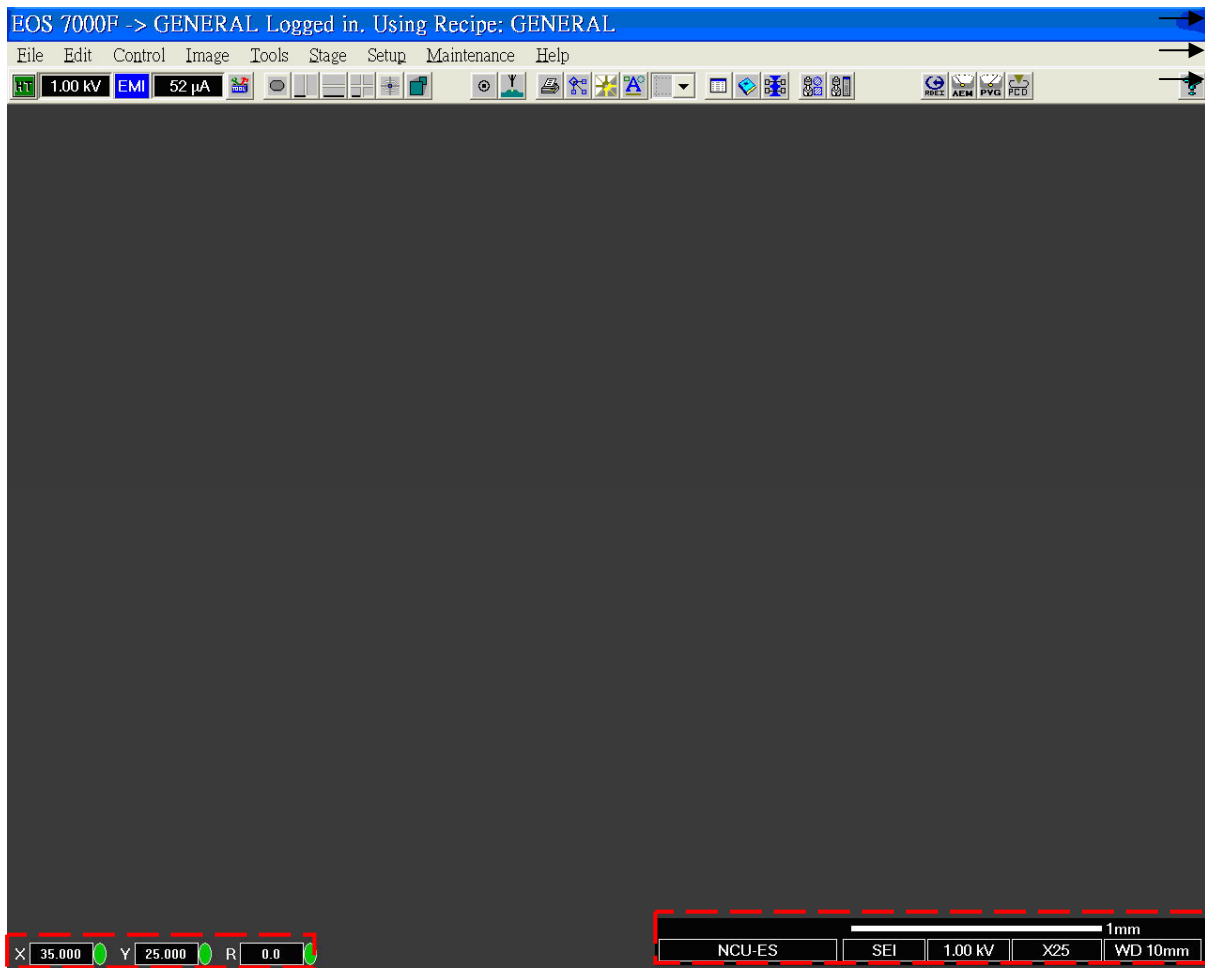
After you get your image:



16. **Tool Bar** --->  ---> open **Image File Handling** window ---> save the files.







Title bar  
Menu bar  
Tool bar

Specimen position indicator

Observation condition indicator

**Title bar:**



EOS 7000F: machine name

Caro: user's name

Using Recipe: which kind of recipe you choose

**Menu bar:**




The name of various menus for condition setting are shown on the menu bar.


**Tool bar:**






Buttons are shown for various operations and settings.

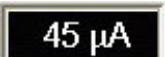



 The accelerating voltage is on and observation is ready.

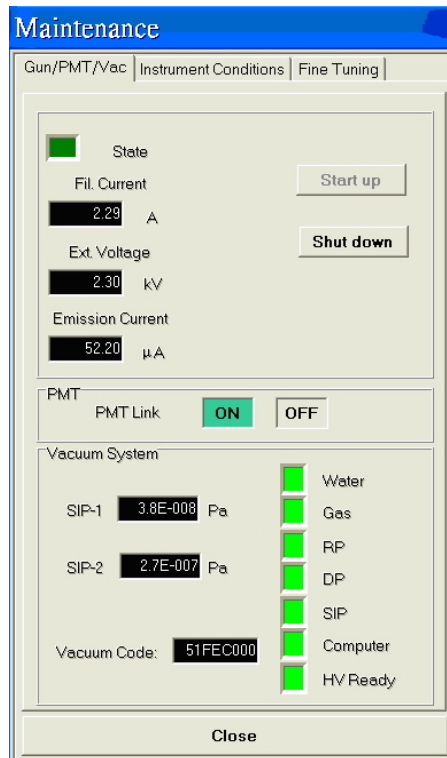
 The accelerating voltage is on and observation is underway.

 Display of the accelerating voltage

  Display of selection between the emission current and filament current

  Display of the emission current or filament current

 The **Instrument Maintenance** button



 The **Normal Display** button

 The **Vertical Dual Image Mode** button

 The **Horizontal Dual Image Mode** button



The **Quad Image Mode** button



The **Spot Mode** button



The **Reduced Scan Mode** button



The **Scan Rotation On/Off** button



The **Image Shift** button

Buttons for image-processing system



The **Format Printout Page** button



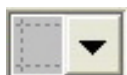
The **Image File Handling** button



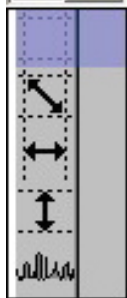
The **Image Contrast/Brightness/Gamma** button



The **Annotate/Measurement** button



The **Measure** button



The **Diagonal Measure** button

The **Measure X** button

The **Measure Y** button

The **Line Measure** button

Buttons for setup system



The **Setup Instrument Operation** button

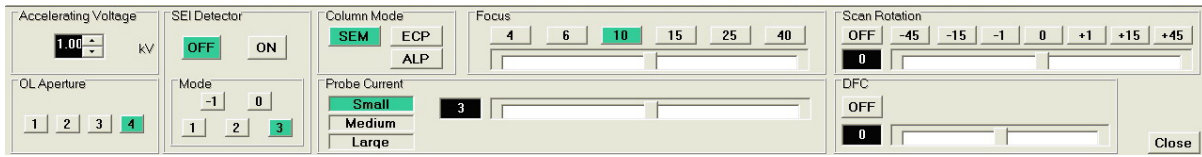


The **Edit or Create Recipe** button





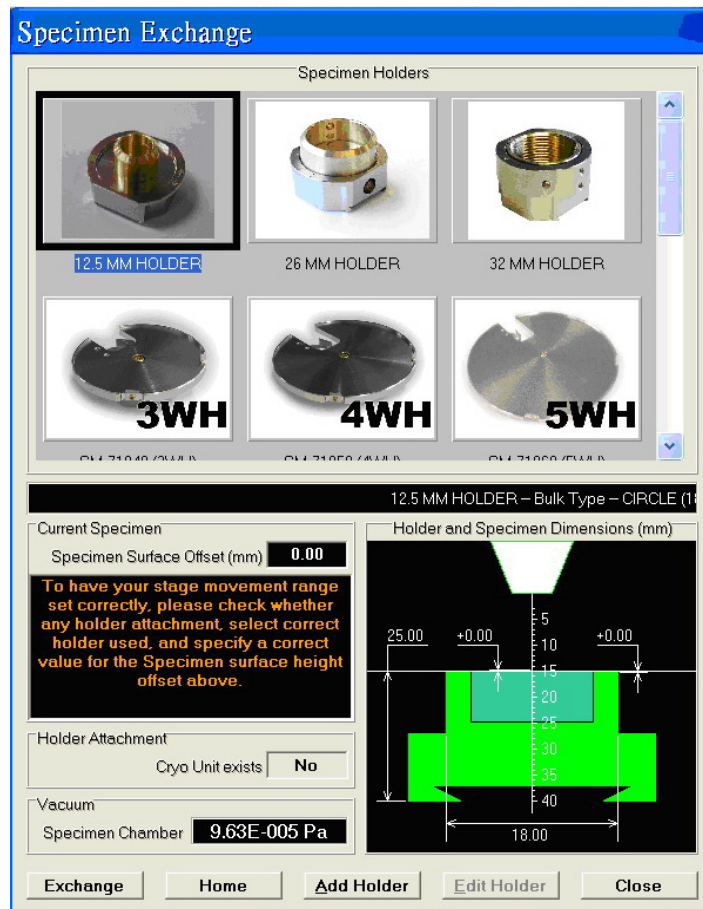
The **Instrument Control** button



Buttons for stage system

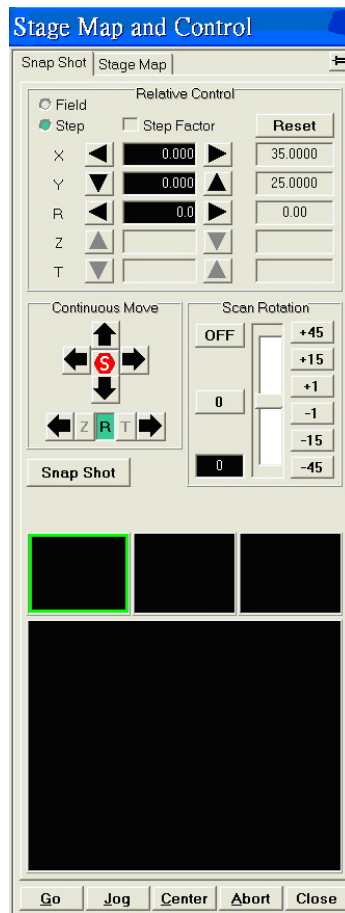


The **Stage Specimen Holder Exchange** button





The **Stage Map and Control** button



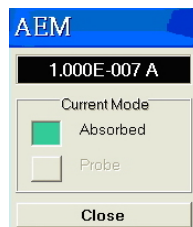
Buttons for attachments



The **RBEI** button



The **AEM** button



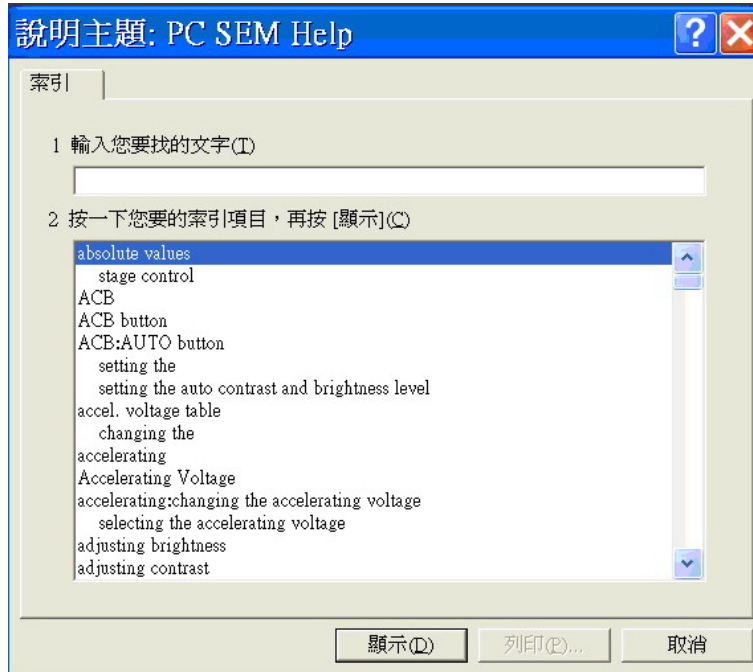
The **PVG** button





The **PCD** button

Help



### Specimen position:



Original position: (35, 25, 0)

In orange color: does not move with the joystick

### Observation condition indicator:



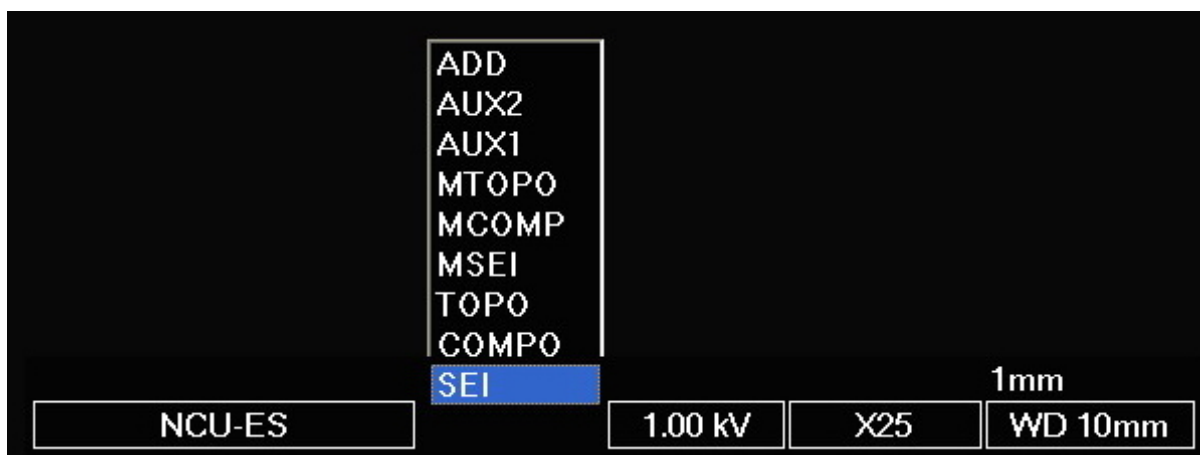
The **Scale** bar:

The magnification scale is indicated with a bar.

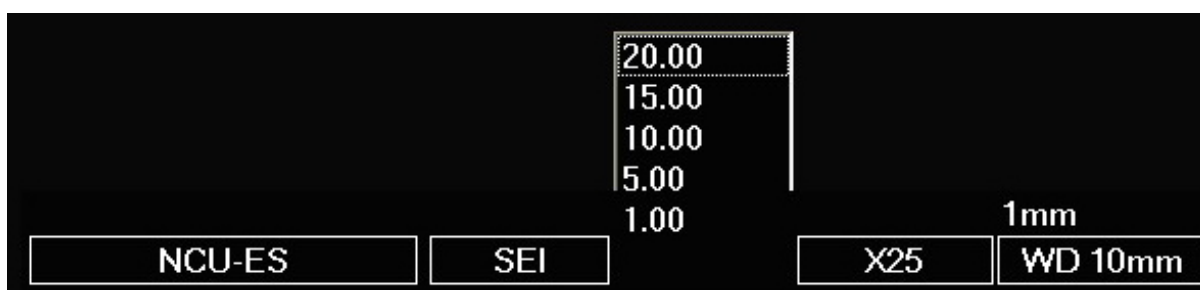
NCU-ES:

It can key in up to 6 alphanumeric characters from the keyboard.

The **Image Selector** button:



The **Accelerating Voltage** button:



The **Magnification** button:



The **Working Distance** button:

