SPECIMEN ROD/CHANGING GRIDS

The specimen rod is normally kept in the column as this helps to preserve the vacuum. Leo/Zeiss also recommend turning off both the filament and HV when removing or inserting the specimen rod: this helps prolong the filament life.

Always stand up to remove or insert the specimen rod and use both hands, as the rods are heavy. Use the steps if necessary; you need to be at eye level with the airlock. (If you have to reach up to insert the rod you will exert undue downward force on the rod that will damage the rod and the airlock, and compromise vacuum and goniometer operation)
When handling the specimen rods do not touch the rod beyond the 'O' ring (this is the part that inserts into the microscope under high vacuum). Check the 'O' ring to make sure there is no grit or dust on it.

A) Removing specimen rod.
After turning off the filament and HT, pull the rod back to the first stop. Turn the rod anti-clockwise until it will not turn anymore. Push the rod towards the column a short distance and then continue to turn the rod in an anti-clockwise direction until it will not turn any more. Slowly and gently pull the rod out of the airlock and place into the box so as to load/change grids.
Place grids into rod section-side up (dull side up).

B) Inserting specimen rod.
Locate the specimen rod pin in to the airlock groove, and push until the first resistance (the pin on the rod interrupts a LED light path to control the vacuum electronics – therefore insert and withdraw the rod slowly so as to activate the system). Turn the rod **90˚ clockwise** until the rod stops. There is a click (V4 switch on), and the red STOP sign on the airlock lights up. When the airlock is pumped-out the red STOP goes out; pull back the rod a short way until it stops and continue to turn clockwise as far as it will turn and then carefully (and slowly) allow the rod to move into the microscope.
Do not allow the rod to slam into the column.

The LED above the HV button on the right hand panel will show a green READY (The ready sign is lit once the vacuum reaches $2x10^{-6}$ Torr).
Press the High Voltage [HV] button (right hand panel); the green will go out and the red ON light will start flashing. This flashes for ~35 sec (for 80 kV – varies depending on kV selected) until the HV is ready.
Press filament button (on left next to HV button) The red ON will light up and flash.
If there is no light on the fluorscent plate check to see if the BEAM BLANKER is activated (BEAM BLANKER button hightlighted on microscope computer screen).

BASIC ALIGNMENT

'Z' (eucentric) HEIGHT

1] Find a reasonably contrasted object on section – bring to centre of screen; you don't need to have the specimen in critical focus although you need some degree of focus to see the object.
2] In FOCUS area [right hand side] press CALIBRATE.
3] Press FOCUS AID button to activate.
4] Using Z-controls +/- bring object into best focus – it may not be an absolutely sharp focus but by using the +/- buttons to go through the focus point it should be possible to get a reasonably sharp image.
5] Turn-off AID.
6] Focus specimen using focus controls as normal.

N.B. You should re-set the Z height when you move between the 2 grid positions in the holder and each time you change grids.

Objective focus
From main menu: PAR – FOCUS PAR – WOBBLE on
Illumination button: change from SHIFT to TILT
Use the X-Y encoders in the ILL. SHIFT controls (illumination – right hand side panel) to minimize specimen movement.
Return illumination to SHIFT.
Switch off WOBBLE OBJ. and return to main menu.

Centre Image
Go to 25,000 mag. and centre a defined object at centre of field.
Go to 31,500 mag. and bring object back to centre using combination of left shifts and stage [half and half].
Return to 25,000 and centre by half and half.
Repeat as necessary until object remains central between magnifications.

LowMag Imaging
Press M/LM switch (activated switch will be lit)
Remove condenser aperture (top)
Remove objective aperture (second)
Remove slot aperture (bottom left)
Bring section or region of interest to the middle of the screen.
Insert condenser aperture to third position; insert objective aperture to first position.
Press M/LM.
Insert slot aperture.

Centre objective aperture
Press IMAGE to DIFF and centre aperture to diffraction point.
Press DIFF to return to IMAGE mode.

END OF SESSION

At the end of each session switch off the filament and HV, remove all grids from the specimen rod and reinsert the rod back into the microscope.
Exit from the menus to the main menu using the RETURN button.