


Condensed User Manual for SU8010

This condensed manual was created from parts of the full user instruction manual. **Please carefully read SAFETY-1 "SAFETY SUMMARY" of the instruction manual before use.** For full detailed operation instructions please refer to the instruction manual.

(I) Starting the Instrument Refer to 3.1 of instruction manual

- (1) Turn on the Display Power switch (on the front of the display console unit) to 1 ().
- (2) After Windows logon, the SEM software will automatically start and a logon is required for the SEM software.

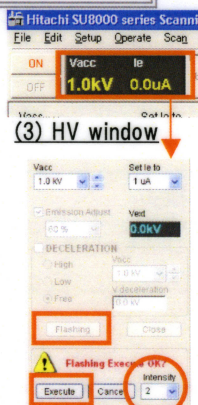


(1) Power Switch of Display Unit

(II) Initial Flashing of the SEM filament Refer to 3.3.3 of instruction manual

- (3) Click the HV and emission current window. The HV control dialog window will open.
- (4) Select the Flashing button, confirm that the flash intensity is "2", and select the Execute button.

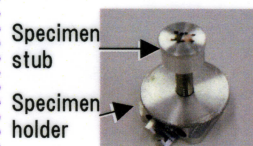
*For cold FE-SEM, flashing is necessary before using the instrument. (Flashing cleans the FE tip and removes gas from the surface of the tip). Flashing of the filament should be carried out on a daily basis. Flashing of the filament should also be performed when emission current becomes unstable over time (typically after 8 hours of operation).



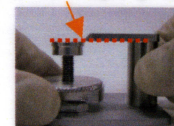
(4) HV control dialog

(III) Specimen Preparation Refer to 3.2.1-3 of instruction manual

- (5) Fix a specimen on the specimen stub by using conductive adhesive tape or paste.
- (6) Place the specimen stub on the specimen holder.
- (7) Adjust to the height of the sample using the height gauge.






Set the position of the specimen equal to the height gauge.



- (6) Attaching specimen stub to the specimen holder
- (7) Adjustment of Specimen Height

(IV) Inserting the Specimen Holder Refer to 3.2.4-5 of instruction manual

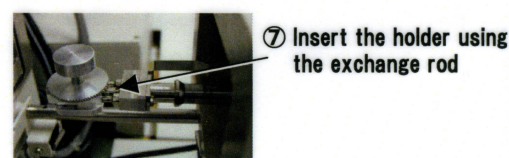
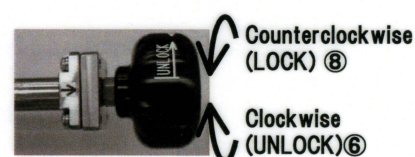
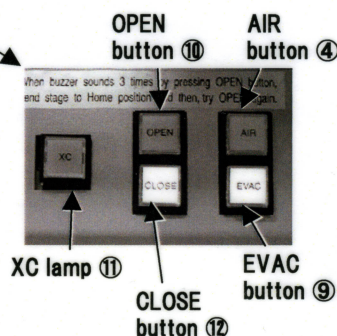
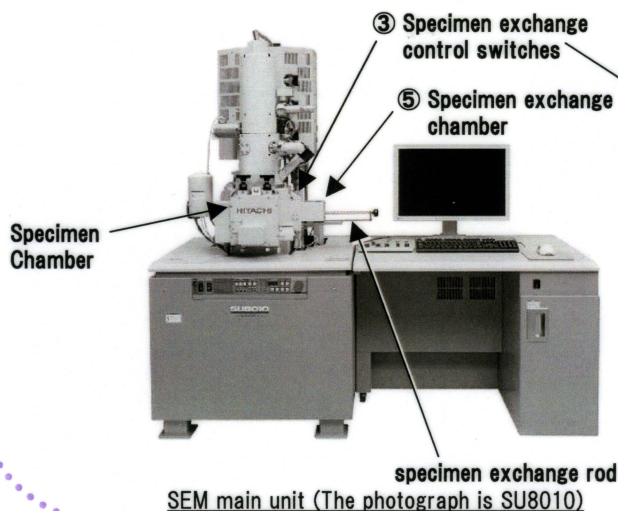
- (8) Check that the accelerating voltage is OFF. (In the case of ON, click  ①)
- (9) Move the specimen stage to the stage home position. Confirm that the indicator light to left of the [HOME②] is active. If the indicator light is not active select the icon [ HOME ②]
- (10) Select the AIR button④ of the specimen exchange control switch. An alarm will sound indicating that the chamber is vented.
- (11) Open the exchange chamber door⑤ and then connect the specimen holder to the specimen exchange rod. Rotate the specimen exchange rod clockwise so that the UNLOCK mark is pointed upwards⑥. Insert the two spring pins at the end of the rod into holes of the specimen holder⑦. Rotate the specimen exchange rod counterclockwise so that the LOCK mark is pointed upwards⑧.
- (12) Pull out the specimen exchange rod completely to the back of the specimen exchange chamber and close the exchange chamber door⑤. Press the EVAC button⑨ on the specimen exchange control switches and an alarm will sound when the specimen exchange chamber is under vacuum. When the specimen exchange chamber is under vacuum, select the OPEN button⑩ to open the chamber door and an alarm will sound when the chamber door is fully open.
- (13) Look inside the specimen chamber, while the XC button is activated⑪ insert the specimen rod and place the specimen holder onto the specimen stage by sliding the specimen holder along the guide rails.
- (14) Turn the specimen exchange rod clockwise so that the UNLOCK mark is pointed upwards. Remove the exchange rod completely.
- (15) Press the CLOSE button⑫ of the specimen exchange control panel and an alarm will sound when the specimen exchange door is closed.
- (16) Select the HOME icon [ HOME ②] to move the specimen stage to the home position.



(8) HV indicator area



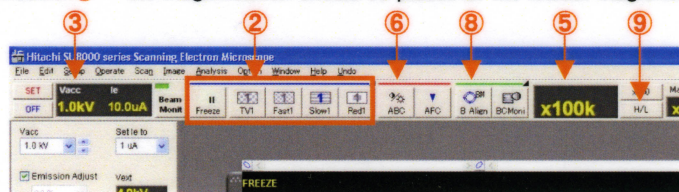
(9) Stage control panel (stage control block)



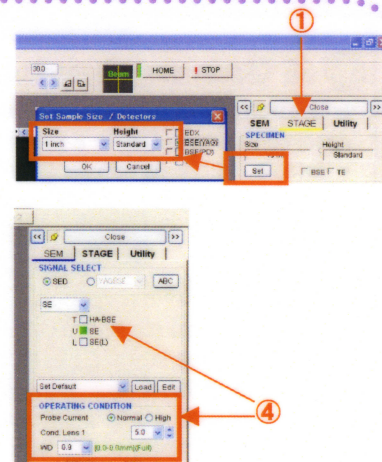
(11) Specimen exchange rod insertion

(V) Specimen Observation Refer to 3.3-8 of instruction manual

- (17) Set the specimen holder diameter and height in the “Stage tab”. Refer to 3.2.6 of instruction manual
- (18) Select the observation condition.
- Scan Rate② Make sure that [RUN] is selected and choose the scan rate [TV/Fast]
 - Set the accelerating voltage and emission current③ Refer to recommended conditions shown on the following page, (i.e. emission current [10 μ A])
 - In the “SEM tab” – “OPERATING CONDITION block”④ the Probe Current should be set to [Normal] and the working distance “WD” should be set to [8.0 mm]
 - In the “SEM tab” – in the “SIGNAL SELECT block”④ the [SE(U)] detector should be selected.
 - Magnification⑤ - the magnification should be placed at the lowest magnification setting.



SEM main window (GUI)



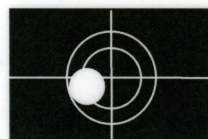
- (19) After the filament has reached the proper accelerating voltage, ABC⑥ can be used to automatically adjust the brightness and contrast of the image.

- (20) Column alignment (to be performed if no image is visible)

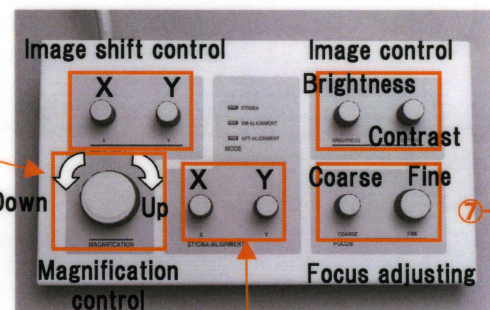
Select the “B Align” button⑧
Adjust the ALIGNMENT knobs⑦-1 so that the circular beam image is placed in the center of screen (A), and the select the “Off” button.

- (21) Select a suitable magnification⑦-2 and focus the image using the COARSE focus knob⑦-3 and find a suitable area for imaging.
(When observing the specimen at magnification levels of several hundred times or less, use the Low-Mag imaging mode.)

- (22) Adjust the beam properties (alignment, focus, and astigmatism) at a location near the area of interest for imaging.

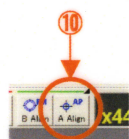


(A) Beam Alignment window



Manual operation panel

Image Adjustment Method



(Aperture Alignment)

Click “A Align” button⑩, adjust the ALIGNMENT knobs ⑦-1 so that the motion of the image is minimized.

Column Alignment Operation

Image drift

(drift during focusing)

Turn the Focus knob

Image distortion

(stretched in one direction)

Astigmatism Correction Operation

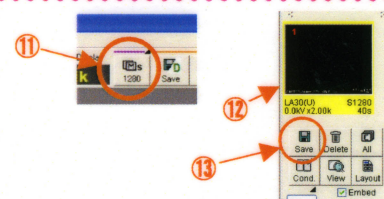
(Astigmatism Correction)

Focus the image and adjust the stigmator X and Y knobs⑦-1 alternately to obtain the sharpest image so that the distortions (stretching of image) is minimized.

※Repeat the adjustment steps when imaging at higher magnifications until all distortions and artifacts are removed from the image.

- (23) Prior to capturing an image, verify the image quality using the Slow scanning speed.
Click the Capture button⑪ to capture an image.

- (24) To save the captured image (highlighted by a yellow border)⑫, click the Save button⑬.
To select the folder for saving the images press the “Select” button, choose the storage location and enter the file name.



(24) Captured Image window

(VI) Removing the Specimen Refer to 3.9.1-3 of instruction manual

- (25) Click the HV OFF button **OFF** in the control panel.
- (26) Move the specimen stage to the stage home position. (Same procedure as in step (9))
- (27) Removing the Specimen
- Push the OPEN button of the specimen exchange control switch and an alarm will sound when the specimen exchange door is open.
 - Rotate the specimen exchange rod clockwise so that the UNLOCK marking is pointed upwards. Look into the specimen chamber, insert the exchange rod until the exchange rod is positioned onto the specimen holder.
 - Rotate the exchange counterclockwise so that the LOCK marking is pointed upwards. Look into the specimen chamber and remove the specimen exchange rod.
 - Push the CLOSE button on the specimen exchange control panel and an alarm will sound once the specimen exchange door is closed. Select the AIR button to vent the specimen exchange chamber.
 - Open the exchange chamber door and then push the specimen exchange rod forward while holding onto the exchange chamber door.
 - Rotate the specimen exchange rod clockwise so that the UNLOCK is pointed upwards and remove the specimen holder from the rod.
 - Pull out the rod completely.
 - Close the exchange chamber door and push the EVAC button.

(VII) Shut-down Procedure Refer to 3.9.4 of instruction manual

- (28) Check that the EVAC button of the specimen exchange control is activated.
- (29) Close the SEM PC-SEM software and shutdown the computer.
- (30) Set the DISPLAY switch (on the front of the display console unit) to O ().