

START UP

1. Push on room light button.
2. Turn on CRT.
3. HT is on at 100kV.
4. Mag at 5kX (MAG2). Spot size 1.
5. Remove ACD heater from dewar, fill with LN₂. Fill LN₂ dewar; top off after 15 minutes, and then top off every 1-2 hours.
6. During TEM use, do not leave filament at crossover (focused beam), except those short seconds needed during alignment. Otherwise the screen will be permanently damaged. Replacement costs are in the thousands.

ELECTRON BEAN GENERATION

1. Set the accelerating voltage to 100KV

ACCEL Voltage (kV)	Beam Detecting Current (μ A)	Operating Current (μ A)
100	66	@70-72
2. Set the objective lens current to the standard focusing current

100 KV:	4.39 \pm 0.1
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3. FILAMENT off (fully CCW). Gun Bias at 2. MAG2 ; Insert Condenser Aperture 2
4. Depress the FIL button and very slowly (@ 2minutes) increase FILAMENT knob to 11 o'clock ; leave for 10 minutes. 12 o'clock (just below emission temp.) for 15 minutes. Then 1/2 step increments every minute to saturation. DO NOT OVER SATURATE. DO NOT GO PAST RED ARROW. DO NOT EXCEED 6 uAmps above detecting current.
5. If necessary, adjust Filament gun tilt with DEF SELECTOR 2-GUN TILT button and DEF X, Y knobs.

CL APERTURE ALIGNMENT

1. 5kX ; spot size to 2 or 3. Center beam.
2. Insert a desired aperture (we have a 100-200-300 μ m dia. aperture plate). CL #2 is recommended. Center aperture with CL X, Y knobs.

CONDENSER LENS ALIGNMENT

1. 5kX; SPOT SIZE 1. BRIGHTNESS counterclockwise.
2. Center beam at Spot size 5 with the SHIFT X, Y knobs. then center beam at Spot size 1 with DEF SELECTOR2-GUN SHIFT and DEF X, Y knobs. repeat.

CONDENSER LENS ASTIGMATISM CORRECTION

1. 5kX ; spot size 2 or 3 .
2. Stigmat: DEF SELECTOR1-COND STIG button and DEF X, Y knobs.

SPECIMEN HOLDER INSERTION

1. Filament to 12 o'clock.
2. **Center specimen stage position to near 0,0.**
3. After holder is inserted; increase filament in 1/2 step increments every minute to saturation.

SPECIMEN POSITION SELECTOR.

1. Lock goniometer by pushing stopper forward.
2. Center specimen stage position to near 0,0.
3. Press the LOW MAG button and set MAG to 50X.
4. Set the SPEC SEL switch to desired specimen No (1 or 2)
5. Press the MAG 2 button.

CURRENT CENTER ALIGNMENT

1. 20kX. Spot size to 2 or 3. Fully spread beam. Focus image.
2. Press OBJ WOBBLER button and DEF SELECTOR1-BRT TILT button. Align with DEF X ,Y knobs.

VOLTAGE CENTER ALIGNMENT

1. 100kX times. Spot size to 2 or 3. Fully spread beam . Focus image.
2. Press the WOBBLER-HT button and DEF SELECTOR1-BRT TILT ; Align with DEF X,Y knobs.

Objective Aperture Insertion (50u,100u,150u)

1. 5kX . Brightness CCW . Insert an objective aperture in the beam path.
2. Center the aperture position (a magnification of 1,000 to 5,000 times will be adequate)

OBJECTIVE LENS ASTIGMATISM CORRECTION

1. Press the DEF SELECTOR1-OBJ STIG button and stigmatize with DEF X, Y knobs.
2. Turn off the OBJ STIG button.

Exposures and FILM

1. See Basic operation manual.

SHUTDOWN

1. **Center specimen stage position to near 0,0.**
2. Spread the beam. SPOT SIZE 1
3. Turn FIL knob slowly to 12 o'clock. The turn it slowly fully CCW. Push off FIL button.
4. Set Mag to 5kX.
5. Remove Objective and Condenser apertures. Never leave apertures in column when not in use.
6. Set Specimen Stage to the LOCK POSITION. Remove specimen holder. Return specimen holder to black box. Carefully cover specimen area with plastic cylinder; do not jam it tightly over the o-ring.
7. Replace cover on viewing screen.
8. Shutdown GATAN(including computer), if you used digital camera system. Follow Gatan instruction manual.
9. Record Name, account #, filament time , KV , Plate numbers and comments in log book. If you do not record an account # in the logbook, your charges will be billed directly to your department and you will have transfer the charges at your end.
10. Please turn off penning gauge if it is after 4:30 P.M. Go to Range 1 and then Turn off.
11. If it is after 4:30 P.M. or you are the last user of the day:
HTset to 80
Plug in ACD heater and turn on.
12. Leave room clean and neat. Turn off any panel lights and overhead lights.