

DRAFT

Instructions for 300kV operation.

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The 4000FX TEM is now conditioned to operate at 300kV. The TEM accelerating voltage must be left at 315kV at any time the scope is not being used. You are free to use the scope at 100, 200 or 300kV, but it must be left at 315 between sessions.

These steps are required before operation.

FILAMENT KNOB and BIAS. The wehnelt had been adjusted so the filament saturates at BIAS of 7.7. The FILAMENT knob is still set to 5.75.

BEAM CURRENT. The 200kV dark current is still ~61.4. The 300kV dark current is 92.2. REMEMBER that the scope can never be operated a beam current above 10uA. That means at 200kV the current must be 71uA or less and 102uA or less at 300kV.

Setting the accelerating voltage.

You want to use the scope at 200kV.

Issue the keyboard command HTSET 200 <return>. The accelerating voltage will immediately go to 200kV. Saturate as usual.

You want to use the scope at 300kV.

Using the ACCEL VOLTAGE switch and slowly toggle the accelerating voltage from 315 to 305. Saturate as usual. Leave the scope saturated at 305 for 5 minutes. Desaturate to 5 and toggle the ACCEL VOLTAGE switch to 300. Resaturate and operate the scope as usual.

Returning the scope to 315kV.

Issue the keyboard command HTUP <return>, then RUN <return>. Follow the prompts that will ask you what kV you are beginning and the final kV = 315. Use a time of 15 minutes.

Hysteresis: At 300kV, the lenses operate at higher voltage and hysteresis becomes a problem. Even with a perfect alignment, the beam will not remain in the screen center when you switch between magnification ranges. You can minimize the effect by returning the magnification to 5000 and then increase the magnification slowly.

ACD's

The column ion pump has been replaced and now the ACD heaters work properly. **Use both ACD's each time you run the scope.** The last user of the day will insert the heaters and depress the ACD HEAT buttons. The heat cycle will last ~1 hr and the column ion pump will come back on.