

Quick Guide: Tescan Vega-3 SEM



1. **Startup the software and log in to your account.**

2. Check that your settings are up to date with the latest filament change. See note next to SEM to see how to upload newest settings.

2. **Turn on the chamber view camera.** (1) Tools menu → chamber view or (2) click camera icon in the top right of the screen



3. **Check that the stage is dropped about an inch** (you should notice space enough to fit your thumb on the top of the door) **and the tilt is set to 0**. If the stage is all the way up, then drop it with the course Z knob (large/black, turn right to drop).

3. **Vent the chamber**

4. The message should read "venting complete" at this point **open the chamber door** gently.

5. **Place your stub(s) into the place holder** with the stub tweezers and tighten the set screw with the small allen wrench (it's red and black). Use light force when tightening, if you over tighten you'll strip the set screws. You can rotate the stage with the navigation stage to allow yourself access to tighten the screws (**SEM → Nano Stage Control**).

6. **Close the door**, hold lightly, **and pump** the chamber. Once you hear the hiss you can let go of the door (about 2 seconds).

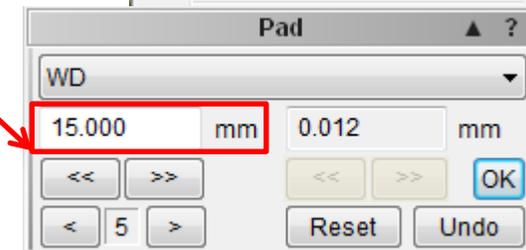
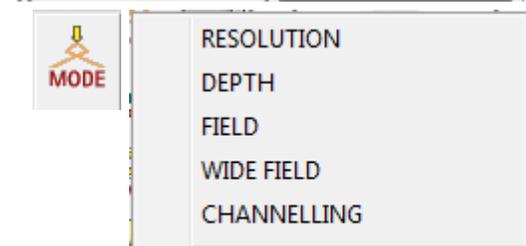
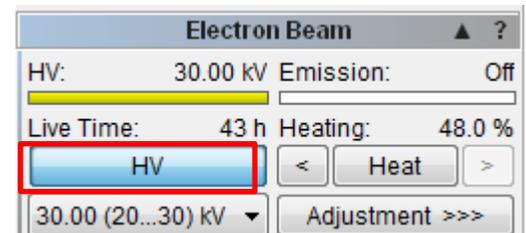
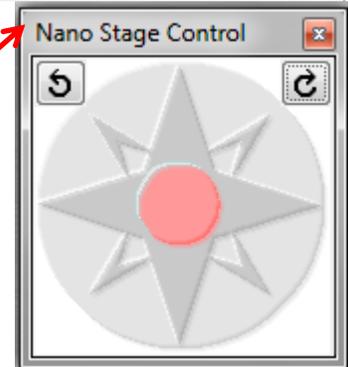
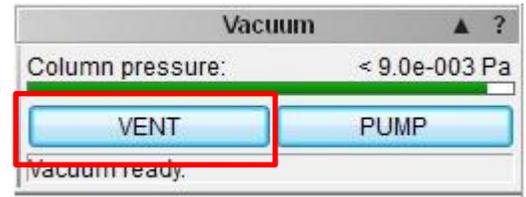
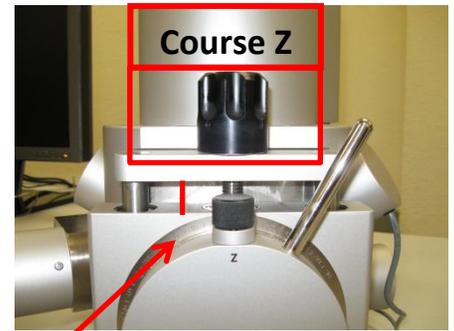
7. **Turn the high voltage on**, click the HV button. You can adjust your desired voltage underneath the HV button.

8. **To start imaging**, click on "mode" on the right hand side of the viewing window, and choose wide field. At this point you should see your stubs and you can move the stage to center on your sample. Once your sample is centered choose "mode" once again, and set it to resolution. Note: it may zoom you in a bit.

9. Set your working distance at 8 mm (it'll take you out of focus). Bring your sample into focus now by adjusting the stage up by turning the large black course knob. All other fine focusing can be done using the Tescan pad "WD" knob wheel.

Resolution

- On the Tescan, resolution is referred to working distance "WD"
- You can adjust resolution in multiple ways, but we find the easiest way is to use the Tescan pad. See the picture on following page.



- Pull up a reduced area box by double clicking in the viewing window. This box allows you to slow the scan speed and realize changes in focus much quicker than if you were to use the entire viewing window.
- Set the physical working distance at about 8 mm for relatively low magnification (<10kx). For higher magnifications, set the distance at 5mm.
- At higher magnifications, much more than simply adjusting WD is involved. Please see an EM associate if you'd like to image above 10kx effectively.

Magnification, Contrast/Brightness, Beam Intensity, etc.

>Magnification can be adjusted via the wheel on the Tescan pad. This scope can easily image specimens at 15kx. Imaging at magnifications higher than this will require some technical skill.

>Auto signal is auto contrast/brightness. Right click on the viewing screen to select auto signal, or click on the viewing screen's side-bar. You can manually adjust these using the pad.

> The beam intensity corresponds to the spot size. To increase the spot size you need to increase the beam intensity, and vice versa. For most work, a beam intensity of 10 will suffice. Spot size bounds the smallest image resolvable, i.e. a small spot size (low beam intensity) is needed for high resolution work.

>Scan speed. Usually you'll get a good image around 6-7 without too much wait time. The higher you go, the longer you'll wait for an image.

>**TO SAVE**. Take an image by pressing the acquire button. A window will display prompting you to add any notes that you would like about the. You can adjust saving parameters by clicking on SEM→Image parameters. Please save in Desktop→ShareData. Create a folder for yourself or your group. Every image that you save will also save with a text file that describes your notes (if you added any) and all the SEM parameters.

>WHEN YOU ARE DONE!!!

- >>You must remember to make sure that the scope is under **high vacuum** by pumping the chamber.
- >>HV needs to be off!
- >>Please only log off of your account. Do not exit or "x" the software. This may turn off the microscope.
- >>**MAKE SURE** that the set screws are flush with the stage. **IF** they stick out they can bump the stage for the next user and potentially damage the specimen stage.

