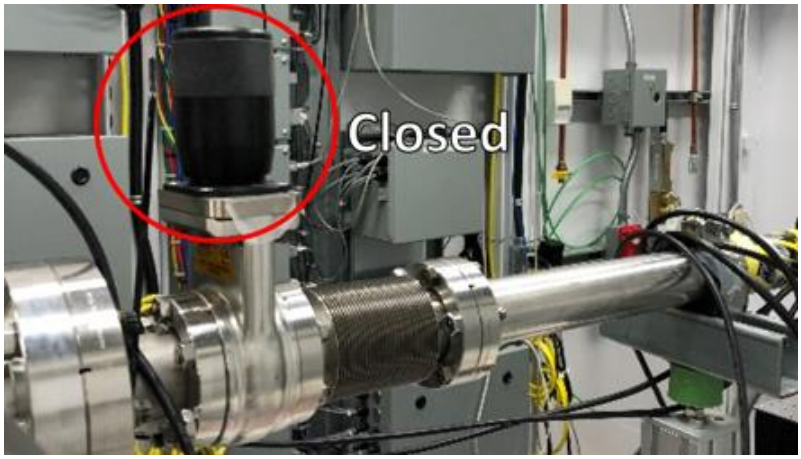
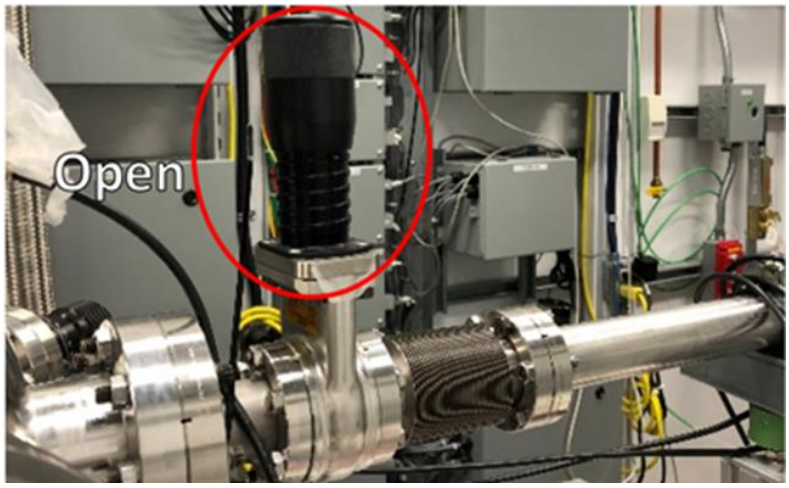
Solid-State Endstation: Sample Loading and Autovent Procedure

Sample Change Venting and Pumpdown

1. Turn the beam off using the Acquaman software by clicking on the “Beam Off” button.

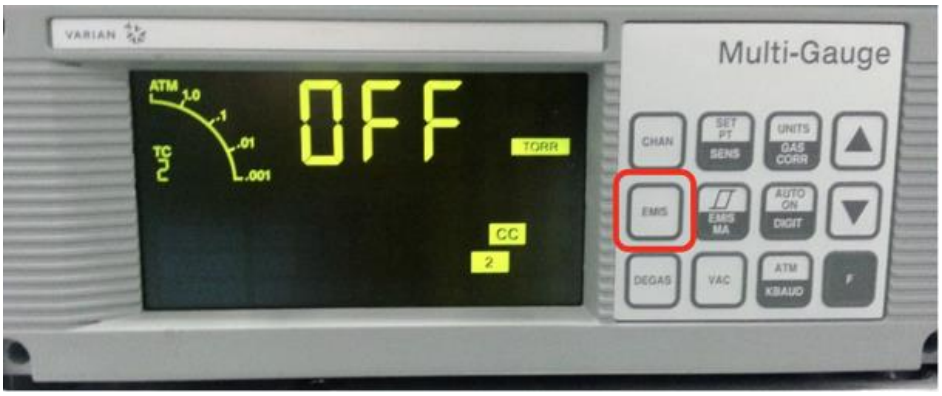
2. If open, **close** the manual gate valve (by twisting the black knob) on the tube connecting the solid state and microprobe endstations:



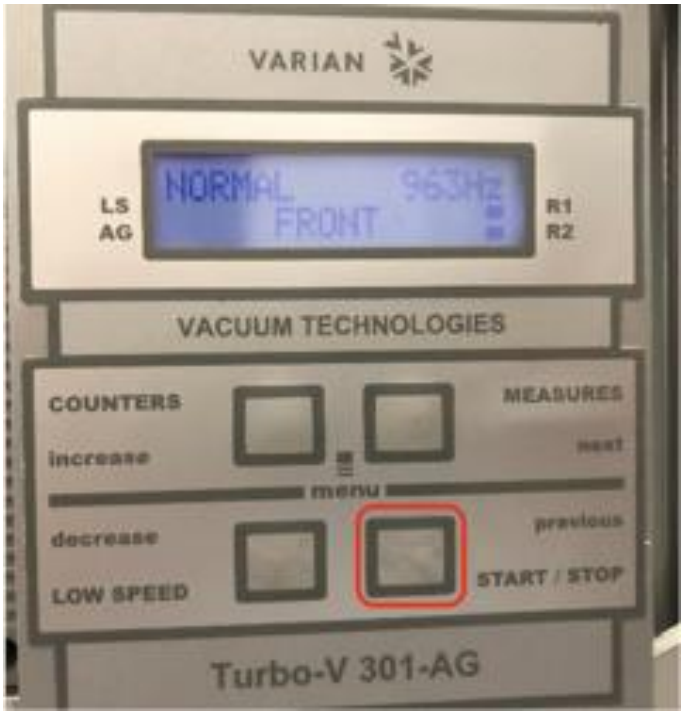


3. Go in to the hutch to turn off the turbo-pump, the roughing pump, and the ion gauge in the following order:

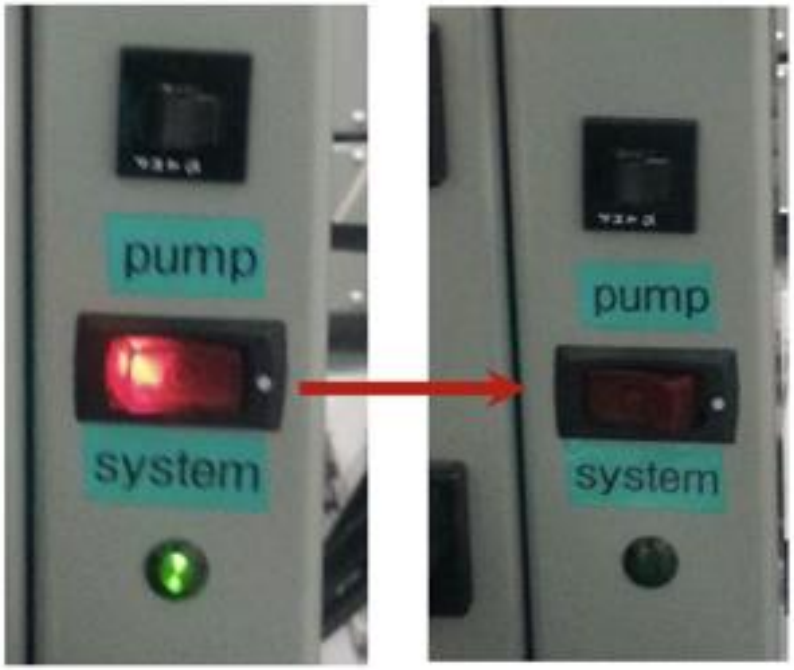
a) Turn off the ion gauge by pressing the “EMIS” button on the Varian Multi-Gauge controller.



b) Turn off the turbo pump by pressing the “START/STOP” button on the Varian Turbo-V 301-AG controller.



c) Turn off the roughing pump using the power bar located on the front left side of the table.



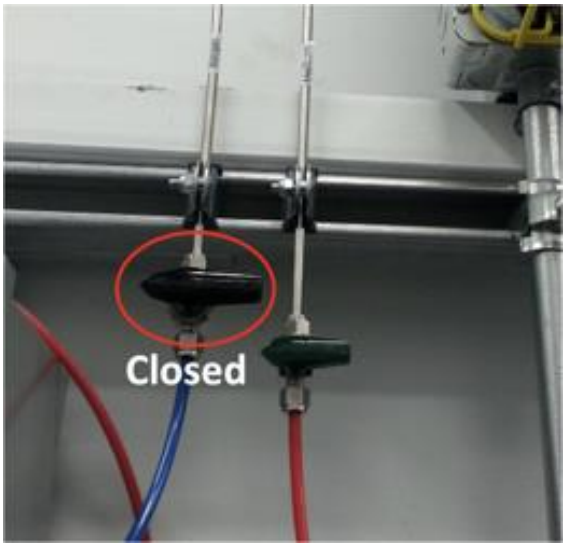
4. Check that the Nitrogen gas cylinder is not empty (above 100 psi - if below this level phone the Floor Coordinator to have them change the cylinder), and that the following valves are open and pressure levels are good:

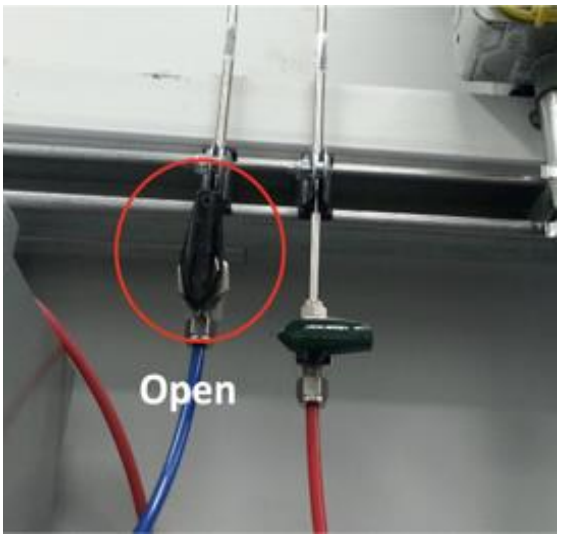
5. Valve on gas cylinder is fully open

6. Valve for **outlet** of gas cylinder regulator is fully open.

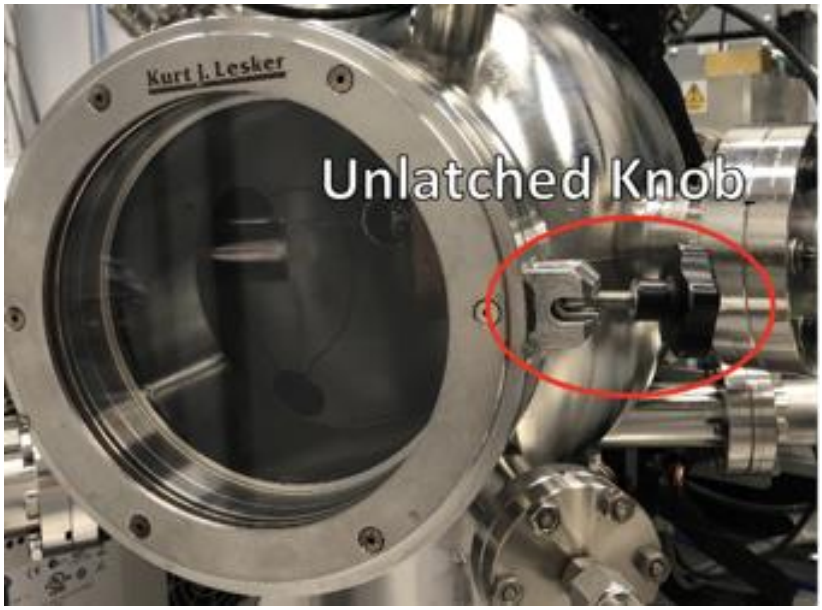
7. Pressure on dial indicator is below 10 psig

8. Nitrogen Swagelok valve inside the hutch is open (handle in-line with tubing)





9. Loosen and unlatch the knob (counter-clockwise) on the sample chamber door.



10. Start the auto-vent script from the main acquisition computer by double-clicking the shortcut icon:

11. Select option: “2) Vent” by typing the number “2” and pressing the Enter/Return key.

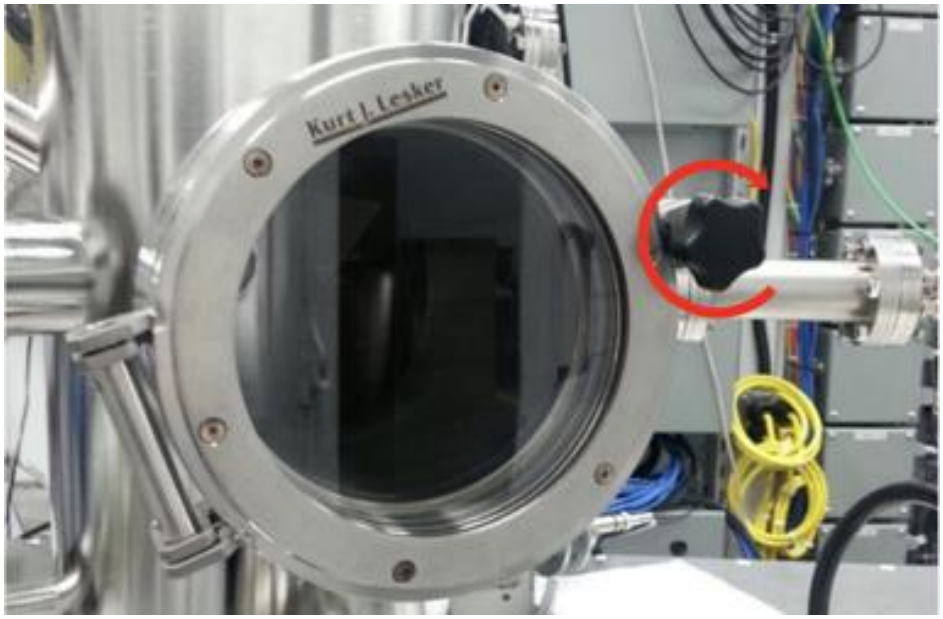
```
~ — sxrmb@opi1606-604:~/bin — ssh -Y sxrmb@opi1606-604.clsi.ca
[sxrmb@opi1606-604 ~/bin]$ ./autovent_SXRMB_SS_v8.sh

+--------------------------------+
| SXRMB Solid-State Autovent Menu |
+--------------------------------+
|  1) Pump Down                  |
|  2) Vent                       |
|  3) Exit                       |
+--------------------------------+
Enter your choice [1-3]:
```

12. Patiently wait for the chamber to vent to atmospheric pressure. This takes about **20 minutes**.
13. While waiting for the chamber to vent adjust the sample manipulator (in Acquaman) to the following position for ease of access:
    1. Vertical (Z-axis) to **+30 mm**; and rotation to **+30 degrees**
14. Open the chamber door slowly and remove the existing sample plate by sliding the plate up and away from the manipulator.
15. Insert the new sample plate. Ensure to align the two pins of the plate with the holes of the manipulator and lower into place.

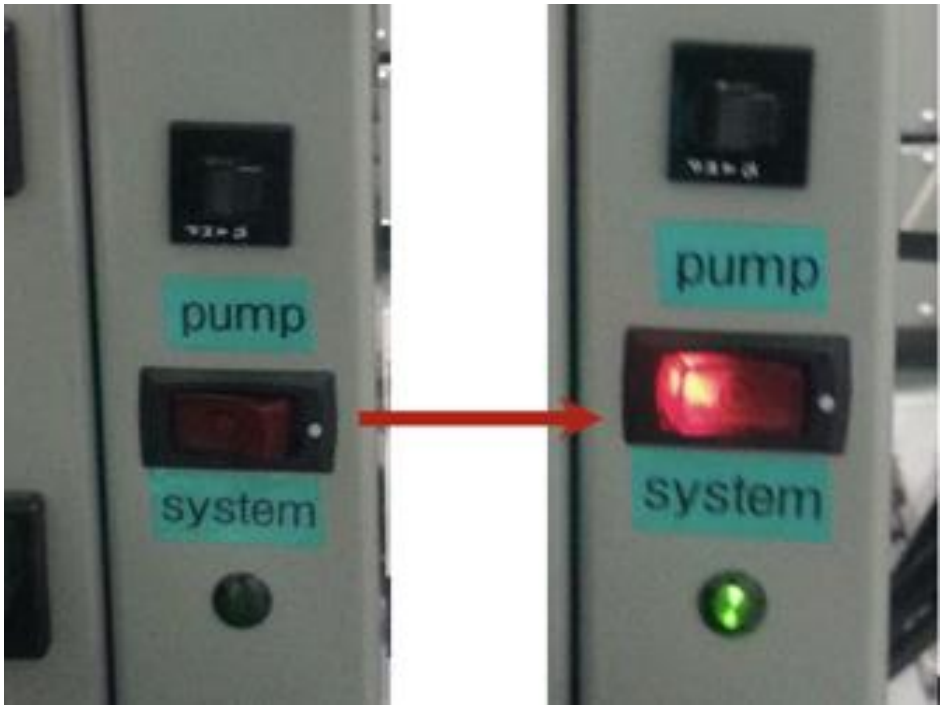
    Ensure **BOTH** pins are secured and the plate is sitting **FLAT.**

16. Close the chamber door knob finger tight.



If the endstation does not seem to be pumping down, try tightening the chamber door some more.

17. Turn on the roughing pump using the power bar.



18. Restart the autovent script if needed and select option: “1) Pump Down” by typing the number “1” and pressing the Enter/Return key.

19. After about 10 minutes the pressure should reach to ~3 Torr.

Once this happens the script will show the following message:

```
Ready for endstation vacuum pump (turbo-pump) startup.
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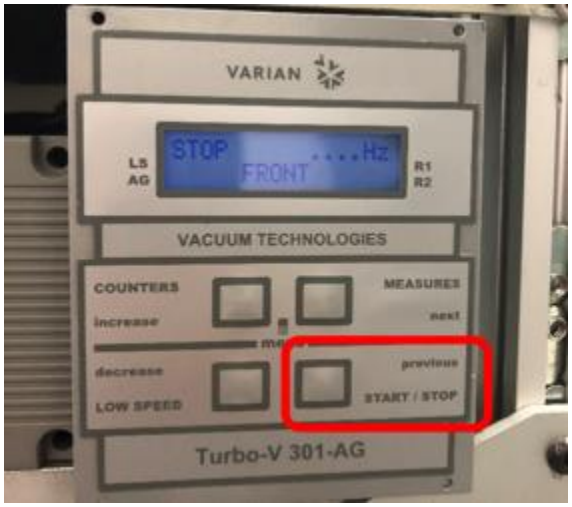
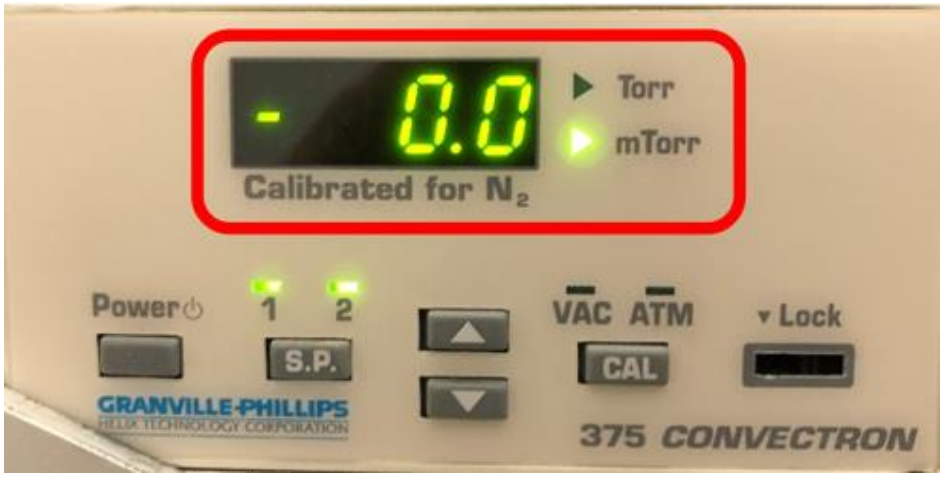
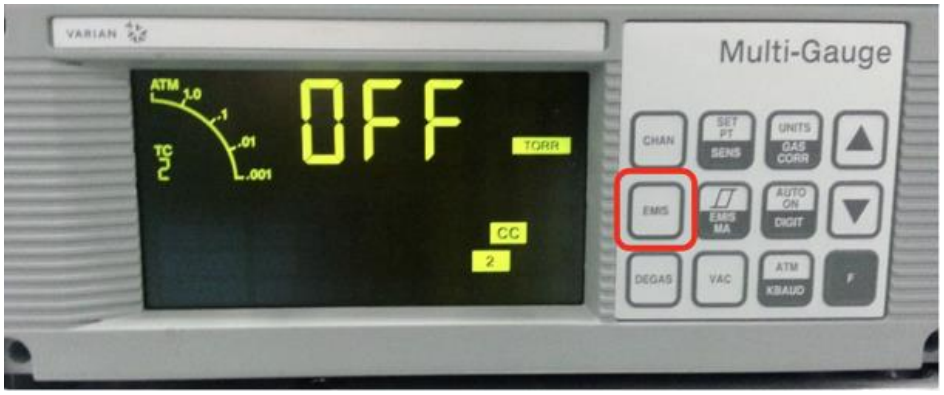
20. Turn on the turbo pump by pressing the “START/STOP” button on the Varian Turbo-V 301-AG controller.



21. Wait for the Convectron (TCG) gauge to read -0.0 mTorr



22. Turn on the ion gauge using the “EMIS” button on the Varian Multi-Gauge controller.



23. You can exit the hutch and start measurements once the ion gauge has been turned on and provides a reading. After approximately 30 minutes the chamber will be evacuated and reach a pressure in the 10^{-5} Torr range.

Last Updated: March 19, 2026