

Operations for Sample Change in a Dynamic VTI (MAG-B) Quick Start Guide



1. Sample Change in MAG-B.

- 1.1 Collect all the necessary PPE, tools, and equipment: Safety glasses, gloves, sample space blank, heat gun, and helium gas cylinder with regulator.
- 1.2 Warm the VTI and sample temperature to a minimum of 100K by heating on the VTI. Do not proceed until both temperatures are at or above 100K (Figure 1).



Figure 1

- 1.3 Close the needle valve (Figure 2).



Figure 2

- 1.4 Close the VTI pumping valve (Figure 3).

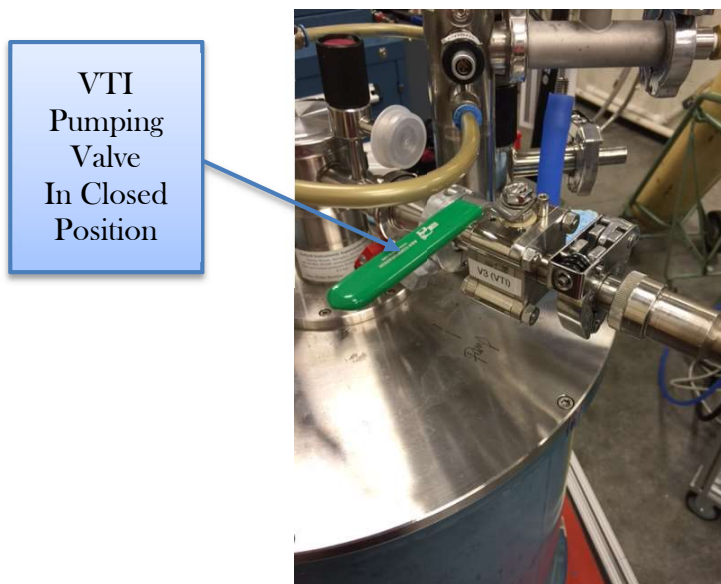


Figure 3

- 1.5 With the helium gas cylinder regulator set to approximately 1-2 psi, connect a helium gas cylinder to the VTI pump venting port (Figure 4).

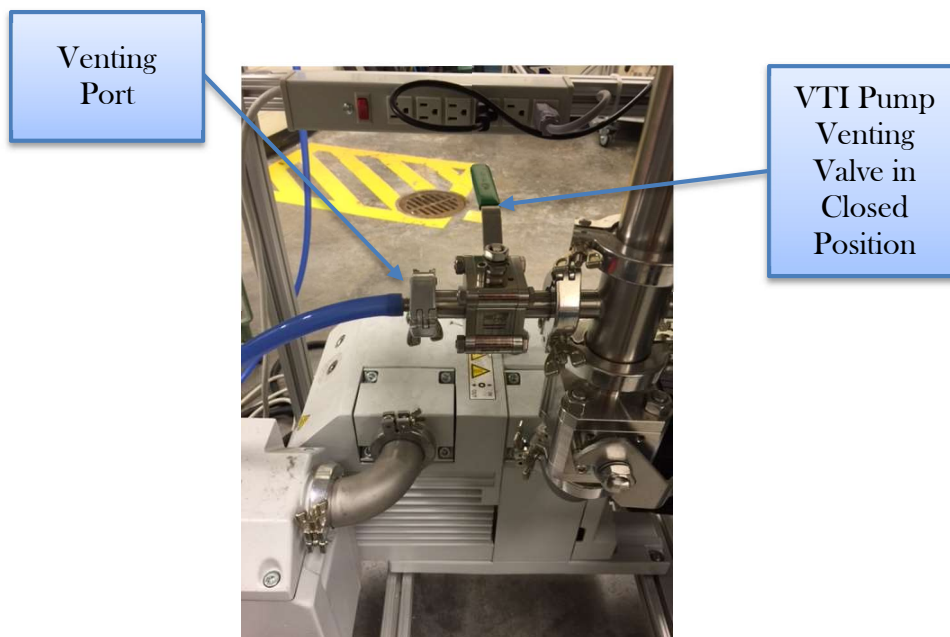


Figure 4

- 1.6 Close the VTI pump inlet valve (Figure 5).

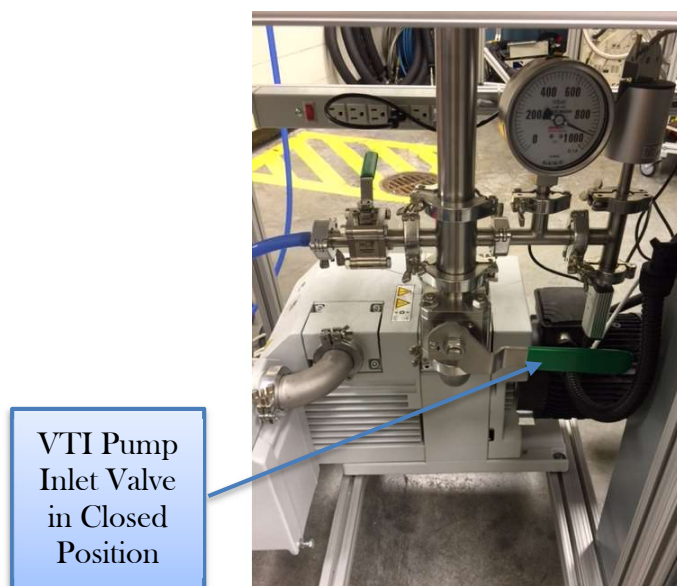


Figure 5

- 1.7 Open VTI pump venting valve to vent the line with 1-2 psi of helium gas (Figure 6).

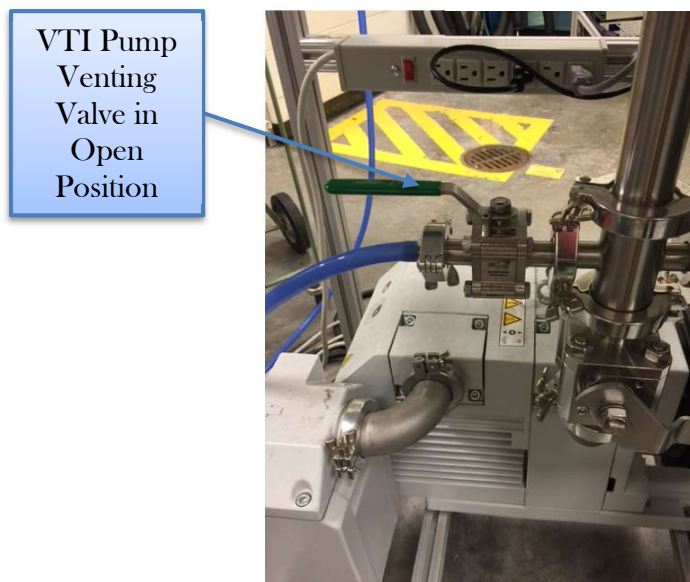


Figure 6

1.8 Close VTI pump venting valve (Figure 4).

1.9 Open VTI pump inlet valve (Figure 7).

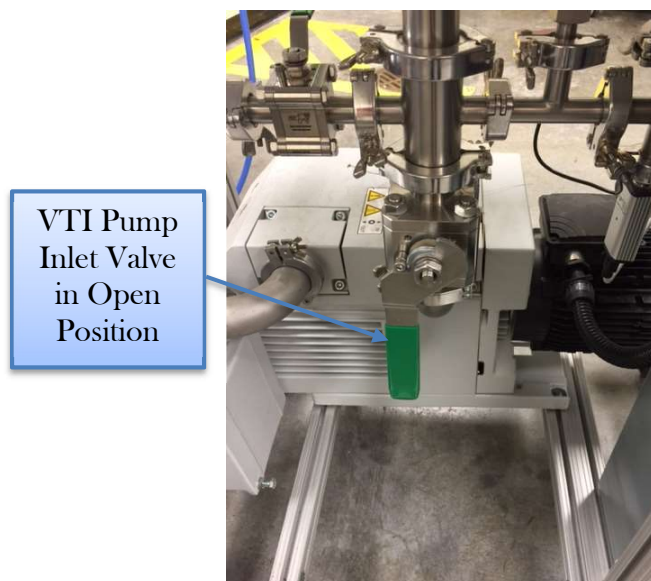


Figure 7

1.10 Once vacuum pressure on pump cart display is less than E10-1mbar, close the VTI pump inlet valve.

1.11 Repeat steps 1.7-1.10 two times.

1.12 Open VTI pump venting valve to vent the line with 1-2 psi of helium gas.

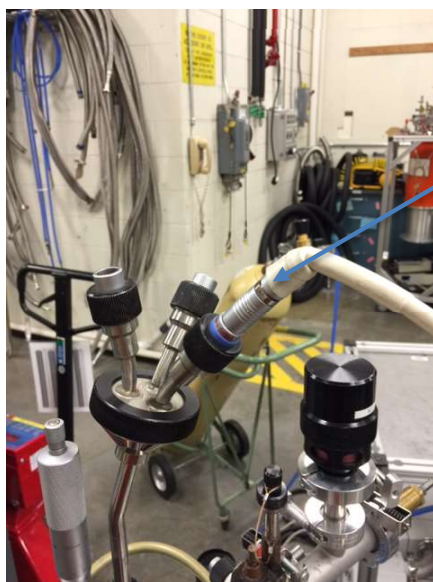
1.13 Open VTI pumping valve (Figure 8).



VTI
Pumping
Valve in
Open
Position

Figure 8

- 1.14 Remove sample stick sensor cable (Figure 9).



Sample
Stick
Sensor
Cable

Figure 9

- 1.15 With helium gas flowing in the sample space, loosen/remove sample space KF vacuum clamp, and remove the sample stick (Figure 10).

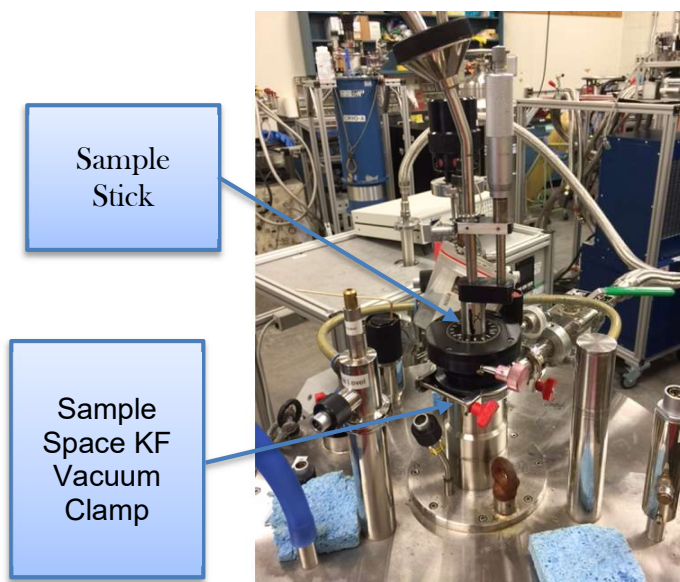


Figure 10

- 1.16 Place KF50 blank over sample space and tighten clamp (Figure 11).

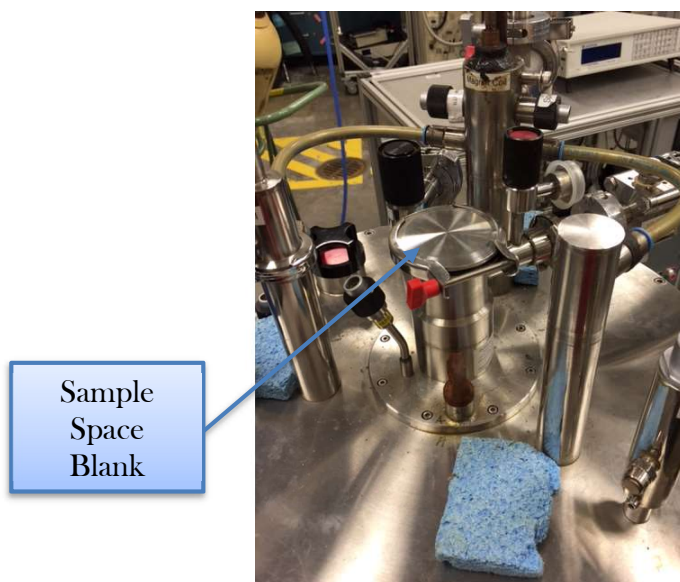


Figure 11

- 1.17 Load sample stick with desired sample (Figure 12)

STEP 1.17

NOTE

Distance from KF flange to beam center: 33.75 inches

Sample stick interface: M6 female

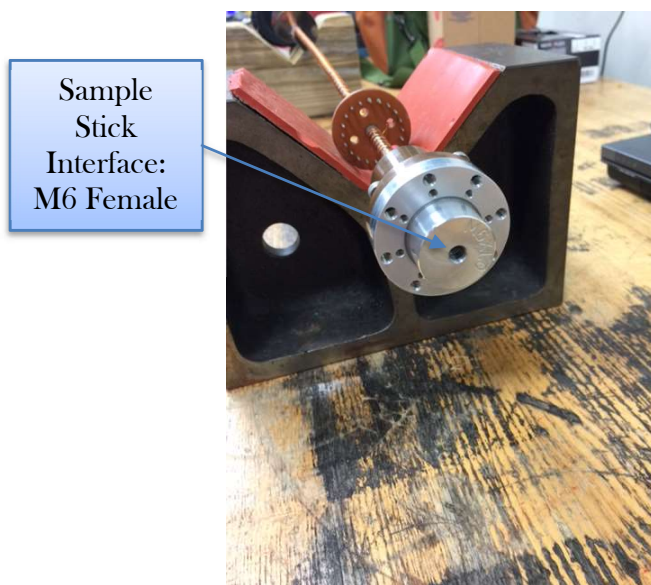


Figure 12

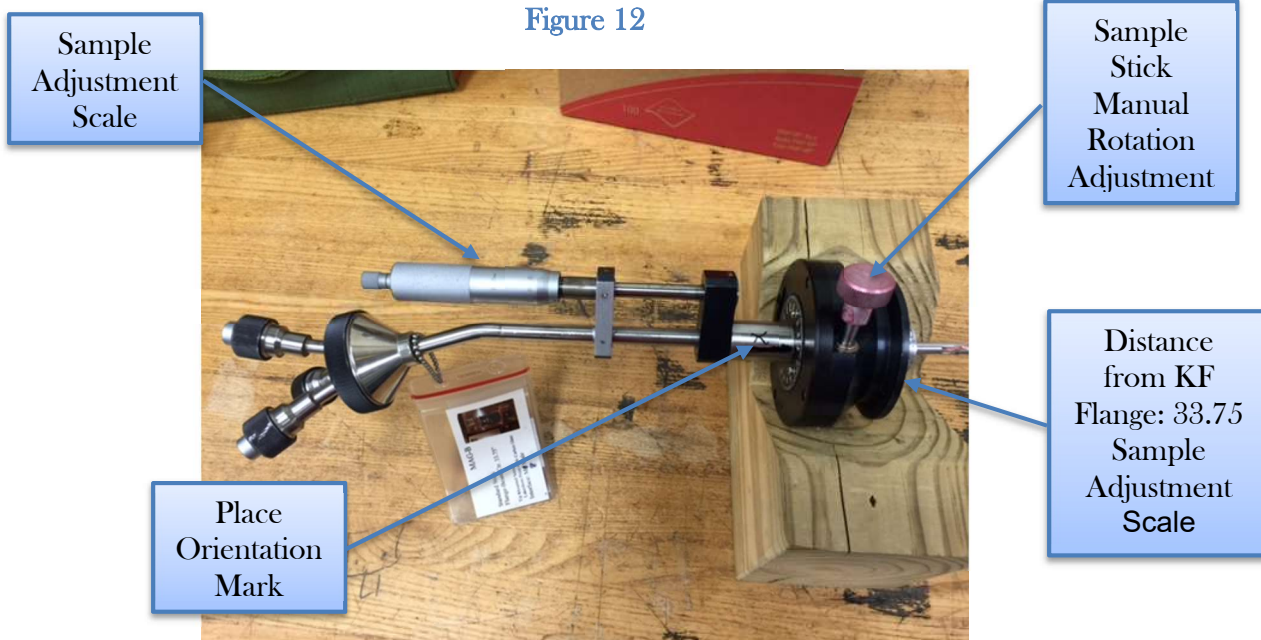


Figure 13

- 1.18 Ensure that sample is oriented in beam center position by measuring 33.75in from KF flange (Figure 13).

- 1.19 Ensure the bottom of sample does not exceed a measurement of 35.43 in. This is the distance from the KF flange to bottom of sample well.
- 1.20 If necessary, use the sample stick adjustment scale to make any small adjustments to place sample in desired position (Figure 13).
- 1.21 If the sample has a unique orientation requirement, place a mark indicating desired orientation on the upper region, above the KF flange, of the sample stick (Figure 13).
- 1.22 With sample loaded, in desired position, and sample stick free of any condensation or moisture, remove the KF flange blank.
- 1.23 Load sample stick in cryostat.
- 1.24 Tighten KF vacuum clamp.
- 1.25 Close VTI pump venting valve (Figure 4).
- 1.26 Open VTI pump inlet valve (Figure 7).
- 1.27 Open needle valve to desired position (Figure 2).
- 1.28 Connect sample stick sensor cable (Figure 9).
- 1.29 Close helium gas cylinder valve, remove cylinder from VTI pump, and safely return the gas cylinder to the proper storage location.