Argon Gas Bottle Installation Procedure

This procedure will take you step by step through the process of replacing the Argon gas bottle on your 04-303 ion source. It is the same procedure for Oxygen or any of the other gases that you may use on your vacuum chamber. And, although this procedure is written specifically for the gas bottles that RBD Instruments provides for PHI surface analysis systems, the principle can be applied to any gas line.

The reason that you want to pump out the air between the leak valve and the gas bottle is to prevent contaminating your gas with air.

General idea:

1. Install your closed gas bottle.
2. Turn off the system ion gauge and ion pumps.
3. Open the leak valve.
4. Pump out the volume between the leak valve and the gas bottle. In some cases this is a long gas line.
5. Turn on the ion pumps and ion gauge, let the vacuum recover.
6. Close the leak valve.
7. Open the gas bottle.

Procedure for PHI surface analysis systems

1. Make sure that the leak valve is closed.
2. Remove the empty gas bottle from the leak valve.
3. Use a new copper gasket and Install the replacement gas bottle. The re-filled gas bottle comes from RBD Instruments with the valve closed tightly; do not open the gas bottle at this time!
4. Pump out the load lock.
5. Turn off the ion gauge.
6. Turn off the ion pump control.
7. All filaments in the chamber should be off at this point if the system is interlocked. If it is not interlocked, make sure that all filaments are OFF.
8. Open the leak valve. This will equalize the vacuum between the chamber and the small volume between the leak valve and the gas bottle. A semi-soft system dump.
9. Manually open the V1 gate valve. This will enable the turbo pump to pump out the chamber.
10. Wait about 5 minutes and then turn the ion gauge back ON. The vacuum should be recovered into the low 10-5 or high 10-6 Torr range.
11. Start the ion pumps.
12. Close the V1 gate valve.
13. Let the ion pumps work to recover the chamber vacuum. Normally it will pump back down to the base vacuum in 30 minutes or less. Or leave it pump overnight.
14. When the vacuum has recovered, close the leak valve.
15. With the leak valve closed, open the gas bottle.

16. The vacuum in the chamber should not change. If the vacuum degrades then the Varian leak valve may need to be adjusted. Refer to the Varian Leak Valve Adjustment Procedure at RBD TechSpot.