

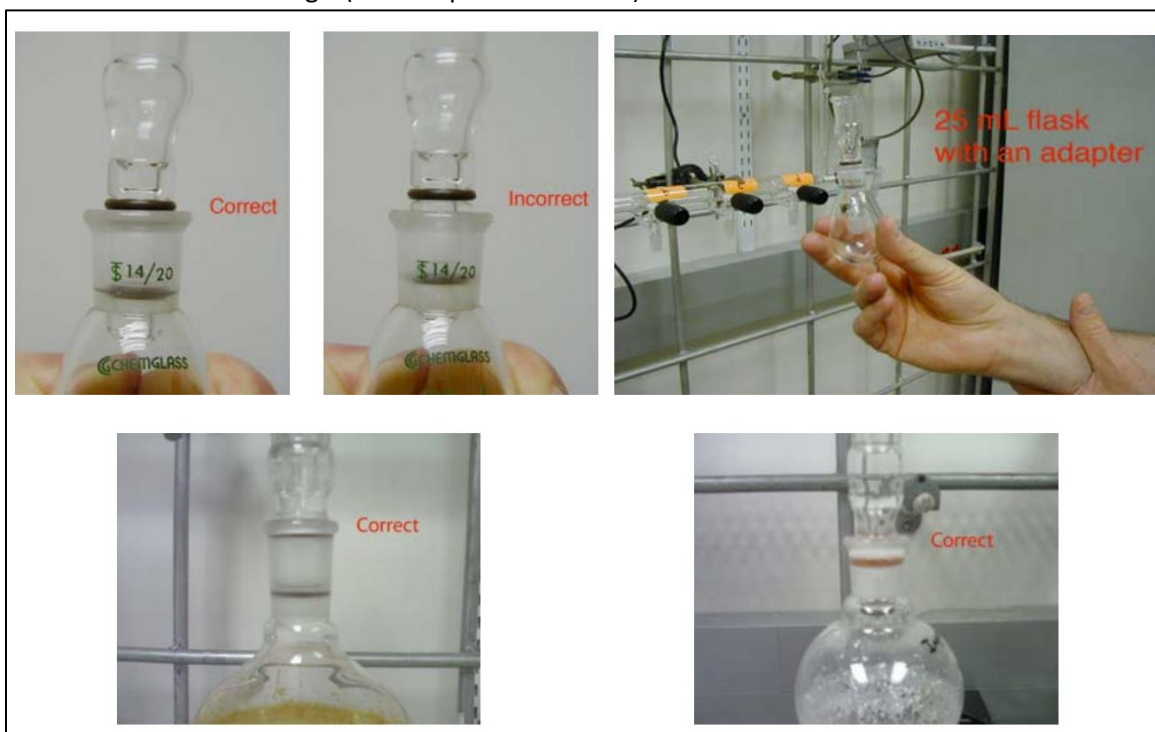
Standard Operating Procedures for the High Vacuum System

* Please read the following guidelines CAREFULLY before using the system! DO NOT touch anything other than the ones specified here. NO ONE OPERATES ON THIS SYSTEM UNLESS YOU ARE TRAINED BY SARAH OR JAMES G. (or our successors). A single misuse of this system can lead to a SERIOUS INJURY OR DEATH in case of an implosion. Wear full personal protective equipment at all times!

General Usage

To attach your round-bottomed flasks (14/20 and 20/40 joints)

1. Connect an adapter (with paper towel or Kimwipe in it) to your flask, tighten until you have a tight seal. DO NOT ASSEMBLE YOUR FLASK AND ADAPTER ON THE MANIFOLD! DO NOT APPLY ANY GREASE on the O-rings. (See the pictures below.)



2. Attach the assembled unit in Step 1 to the manifold, and secure it with a clamp and/or a Keck clip.
3. Open the valve counter-clockwise SLOWLY, where your sample is attached.

* At this point, you should hear pump gurgling for about 10 to 60 seconds. Check the pressure reading on the gauge window. The number should rapidly decrease to less than 100 mTorr within a minute or so. If not or if the pump gurgling continues, close the valve immediately and check your flasks connection with the adapter. If the problem persists, contact Sarah or James G. (or our successors).

To detach your flask from the manifold

1. Close the valve clockwise GENTLY, where your sample is attached. * Tighten ONLY until the O-ring touches the glass. DO NOT OVERTIGHTEN OR THE JOINT WILL BREAK!! * Do not touch other valves when removing your sample from the system.
2. Remove the clamp and Keck clip, if any. You will feel resistance since your flask is still in a vacuum condition. With one hand, grab around the joint between your flask and manifold. Slowly remove your flask WITH THE ADAPTER ATTACHED. (You may use the other hand to support the flask at the bottom.) Do not attempt to remove your flask from the adapter, which may not be easy and may damage the system.
3. After removing your sample, detach the adapter from your flask by pulling and twisting gently.
4. Clean the adapters and manifold joints thoroughly for the next user in order to avoid cross-contamination.

Oil Change

(should be performed every three or four months)

* If the pump's pressure is fluctuating, you may need to just add some oil. If so, you can follow these instructions without draining any of the oil (steps 1-3, 10-12)

*Make sure you do not overfill the pump or leave the cap open, or you could get splashed with oil!

1. Ensure that all flasks are either removed from the system or clipped into place.
2. Turn off pump using switch on the back (on the green piece).
3. Open a valve on the manifold to let the system equilibrate to atmospheric pressure (760 Torr).
4. Attach a tube to the emptying valve and put the other end in a waste bottle.
5. Open the valve and remove the cap from the top of the pump.
6. Let all the oil drain out (will take several minutes), then close the valve.
7. Using a funnel, refill the pump, periodically checking the level of oil using the side window.
8. Put the cap back on top and briefly run the pump a few times (a few seconds-a minute).
9. Drain the oil again (steps 4-6).
10. Refill the pump again until the oil reaches the suggested volume.
11. Cap the pump and close the valve previously opened on the manifold.
12. Turn the pump on.



Defrosting the Trap

(typically performed with the oil change)

1. Ensure that all flasks are either removed from the system or clipped into place.
2. Turn off pump using switch on the back (on the green piece).
3. Open a valve on the manifold to let the system equilibrate to atmospheric pressure (760 Torr). Leave overnight to thaw.
4. While holding the trap, remove the clamps holding the trap in place with the manifold.
5. While holding the trap, open the clamp connecting the trap to the metal rod behind the manifold.
6. Lower the dewar slowly and take the trap out of it.
7. Clean out the trap in a waste container (there will likely be ice/sludge) and rinse with acetone.
8. Empty the dewar in the sink and rinse with IPA.
9. Let both components dry (this is now a good time to change the oil).
10. Put the trap back in the dewar and raise it up so that the trap is aligned with the manifold.
11. Clamp the trap back in place (to the manifold and the metal rod behind).
12. Fill the dewar half-way with crushed dry ice.
13. Fill the rest of the dewar with IPA, let cool, and add more IPA or dry ice as needed.
14. Close the valve previously opened on the manifold and turn the pump back on.

