Instructions for sample loading and unloading:
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Before loading or unloading samples, make sure that there are no Ar analyses currently running on the furnace section of the 1200 line!!

Sample Loading
Labview scripts for loading and unloading samples from the laser chamber are found on the 1200 computer (right computer console).

- In CAMSVG on the 1200 computer, select the ‘Sample Change’ option, then the ‘Laser’ option (i.e. not “Furnace”).
- A pink screen will guide you through the following sets of steps. Only click ‘okay’ after completing each task.

Opening laserport:
1. Close manual valves to both of the mass spectrometers.

   Manual valve on 1200
   Manual valve on 3600

Use the red torque wrenches to close the valves to 50 inch pounds. (Valves are open when up, and closed when down.)
2. Close manual valves on either side of the laser port. (Use the red torque wrenches to close valves to 50 inch pounds.)

3. Attach the fixing bracket to the laser table. Next, gently push the X-Y stage into position next to the bracket. If your samples are in the laser port, be **extremely** careful so as not to jostle the samples out of their holes in the laser tray. Finally, attach the laserport to the bracket.

After completing the task, the computer window should indicate that it is now safe to open the laserport.
**Loading laser tray into laserport**

Make sure to wear gloves at all times when handling components that see high vacuum.

1. Make sure that the laser is turned off (See file on laser operation).
2. If laser is positioned over the laserport, move it out of the way
   a. Loosen the two screws at the base of the laser frame.
   b. Making sure the laser is upright, slide the laser back (North).
   c. Retighten the screws
3. Sequentially loosen the eight *black screws only* on the top of the laserport then remove each screw.

![Image 1](image1.png)

**IMPORTANT!!!: DO NOT LOOSEN THE SILVER SCREWS ALONG THE TOP OF THE LASERPORT OR WE WILL KILL YOU**

4. Take the top off the laserport making sure not to touch any portion that will be under vacuum. Place the window face down (vacuum side up) on a piece of weighing paper and cover with a piece of aluminum foil.
5. Remove the Cu gasket. If tight, use red plastic wand to loosen. **DO NOT USE METAL ITEMS** (*screwdrivers, pliers, spatulas etc.* ) TO LOOSEN Cu GASKET!!!!

![Image 2](image2.png)

6. CAREFULLY remove K-Br cover slip, making sure not to scratch the surface and place in the white plastic cover. Make sure not to use the same K-Br cover slip for Ar and He analyses. If cover slip is dirty, clean with lens cloth (do not clean with kimwipes). If the cover slip is cracked or very dirty, replace with a new one from the storage units in the north wall cabinet.
7. Take the brass studded screw and loosely screw it into the center of the loaded laser tray, making sure it can be easily disengaged.

8. Carefully transfer the laser tray with a petri dish beneath the tray over to the laserport, and place the laser tray (but not the petri dish) into the laserport, making sure the dimple is pointed at the north wall (towards the psychology dept.)

9. Carefully place the K-Br cover slip on its’ mount.
10. Replace the old copper gasket with a new one (DO NOT TOUCH WITH BARE HANDS!!)
11. Carefully place the top of the laserport over the new Cu gasket. Tighten down the screws making sure to do this slowly and evenly by opposites (see sequence below) by quarter turns until all screws are at 150 inch pounds. Watch the space between the cover and the chamber to make sure the top is even with the base of the laserport at all times.

**Sequence for tightening screws:**

The laserport is now ready to be pumped out.
Evacuating laserport:

The following set of steps are given as prompts on the computer. Only click ‘okay’ after completing each task.

1. Close the manual valve from the 3600 line to the roughing pump to 150 inch pounds.

2. Open the manual valve from the 1200 line to the Balzers pump by the Furnace on 1200 line. (Also make sure that the manual valve on the roughing pump from the 1200 line is open)

3. Remove the screws holding the bracket to the laserport, making sure to hold the laserport, and **gently** guide the laserport back into place. $10,000.00 if you forget!! Then remove the bracket from the laser table.
4. Turn off the ion gauge on the turbo pump (IG1).

5. Gently and slowly open the manual valve on the 1200 side of the laserport (N side), watching the ion gauge on the roughing pump. It should shoot up, maxing out, and then begin recording pressures again after several seconds. If it doesn’t start recording pressures again after ~10 s close valve until it does and open it again. The point is to try to bleed out the air slowly so as not to burn out one of the pumps

6. Wait until the pressure drops below $7 \times 10^{-3}$. This should take ~2 minutes. Record the pump-down time in the 3600 and 1200 log books. If pump-down time is over 10 min, see someone.

7. After pressure drops below $7 \times 10^{-3}$, reopen the 3600 valve to the roughing pump.

Let the line pump down overnight before running analyses.