

How to load and unload the PAC sample changer:

1. Prepare to load the carousel.
 - a. Retrieve the current sample by entering "0" in the Sample Set field in the PAC Sync Set box on the dashboard. When complete, the Results Msg will read "NOSAMPLE".
 - b. Gather the samples to be loaded and fill out the loading sheet with their PAC slots.
 - c. Open the He cylinder in the RMA next to the sample pit (Figure 1). Also open the valve on the yellow gas line going to the PAC sample changer.
 - d. Place the sample pit in access mode (see BL-11a Shutter Operation quick start guide) and enter.
 - e. On the sample changer, close the gate valve to isolate the cold head from the sample carousel (Figure 2).
 - f. On the PLC (Figure 3), go to the "Table Load Cycle" screen and disable das by pressing the green button in the upper left corner so that it turns red and reads "Das Disabled".
 - g. On the same screen, move the first slot under the load port by pressing the load port number to bring up a keypad and enter the value, then pressing the "Move slot under load port" button.

He must be continually flowing while the load port is open, to prevent air from reaching the cold head.

2. Exchange samples.
 - a. Open the He vent valve on the PAC (Figure 2) and verify flow. The upper balloon should start to inflate.
 - b. Leaving the He flowing, remove the clamp and window from the loading port (Figure 2).
 - c. Align the slots on the end of the loading stick with the tabs on the lid of the sample at the loading port. Press down and rotate approximately 30° to engage the can.
 - d. Remove the sample and scan it with the RadEye G radiation monitor.
 - e. Release the old sample from the loading stick by rotating it and attach the new sample.

If the RadEyeG radiation monitor alarms or if loose powder is observed, immediately stop what you are doing and call the RCT (865-274-8658).

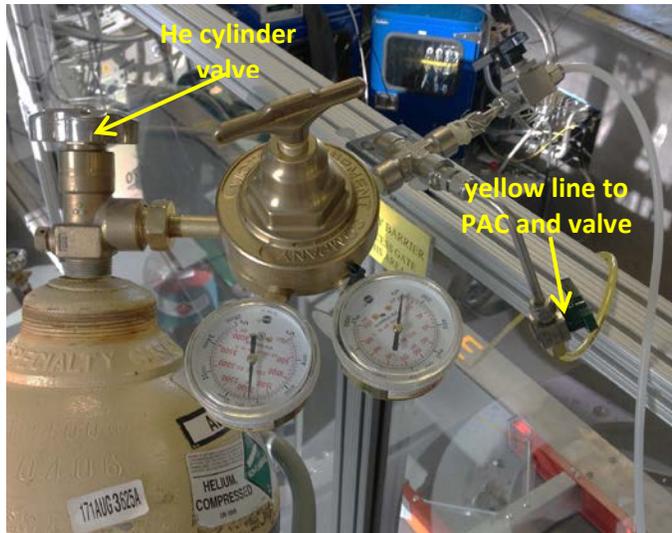


Figure 1. He gas cylinder and yellow line to PAC

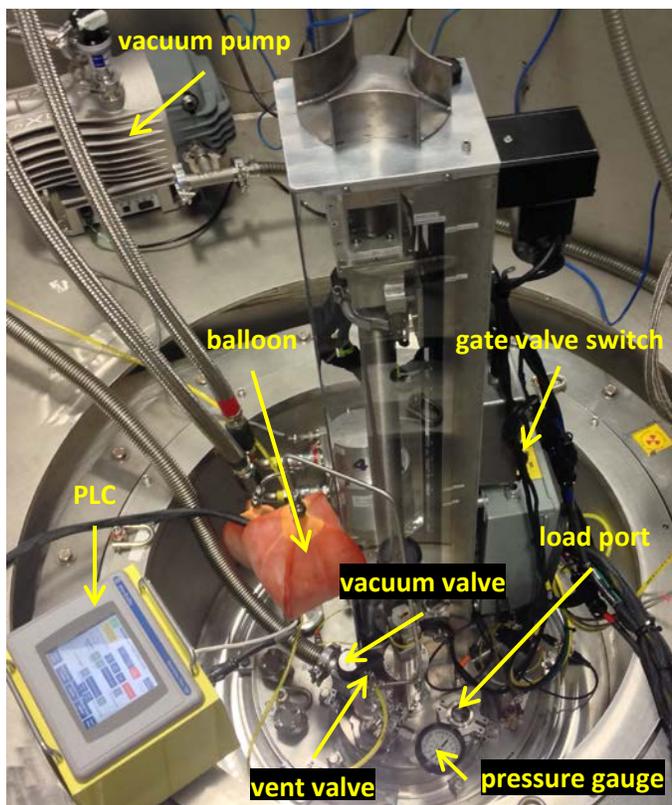


Figure 2. PAC sample changer

How to load and unload the PAC sample changer (cont.):

- f. Align the flat sides of the can lid with the flat sides of the oblong slot in the carousel. Rotate the loading stick to release the sample. Visually verify that the sample is sitting correctly in the slot.
- g. On the PLC, press the “Next slot” button to move the next slot to the loading port.
- h. Repeat steps c-g for all samples.
- i. Replace the window and clamp on the loading port and stop the He flow by closing the vent valve.
- j. Leave the removed samples, with their ITEMS barcode tags, in the appropriate beamline location, on the wooden bench in the RMA.

Never have both the vent and vacuum valves open at the same time, to prevent the vacuum pump from emptying the gas cylinder.

3. Pump/purge the sample chamber three times.
 - a. With the vacuum valve (Figure 2) closed, start the vacuum pump by pressing the green button. Open the valve on the top of the vacuum pump.
 - b. With the He vent valve closed, slowly open the vacuum valve and wait until the pressure gauge reads around 0 mbar or lower.
 - c. Close the vacuum valve, then open the He vent valve and wait until the pressure gauge reads around 900 mbar and the upper orange balloon is partially inflated. Close the He vent valve.
 - d. Repeat steps b and c two more times.
 - e. Close valve on top of vacuum pump and turn off the pump.

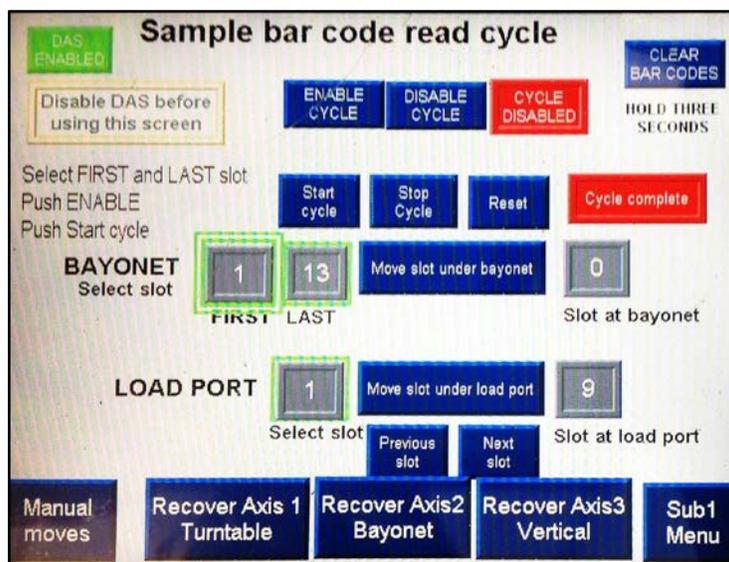


Figure 3. PLC Table Load Cycle screen

4. Run a table load cycle.
 - a. On the PLC, next to “Bayonet” enter the first and last slots that were changed.
 - b. Press the “Move slot under bayonet” button and wait until the correct slot at bayonet is reached.
 - c. Press the “Enable Cycle” button, followed by the “Start cycle” button.
 - d. Wait for the table load cycle to finish and the red “Cycle complete” box to appear (may take up to 30 min).
 - e. On the PLC, press the red “DAS Disabled” button in the upper left corner, so that it turns green and reads “Das Enabled”.
 - f. Scan the loading sheet, using the copier on the mezzanine to send it to “powgen”.



Figure 4. Sample loading stick, showing alignment with sample can lid.