

How to change a sample with the Orange Cryostat:

The temperature must be above 100K before changing the sample.

1. Remove old sample.
 - a. On the control computer BL11A-DASOPI0 in the hutch, disable the alarm by clicking the “Alarm Enabled” button in the Cryostat box on the dashboard (Fig 1).
 - b. Close the shutter to allow access to the sample pit. (See *Shutter Operation* quick start guide.)
 - c. Unplug the cable connector on top of the stick by rotating the collar counter-clockwise (Figure 2).
 - d. If the vacuum pump is not running, start it by pressing the green button and open the valve on top of the pump.
 - e. Turn the blue V5 valve (Figure 2) to point up to the vacuum line and loosen the stick clamp.
 - f. Turn the blue V5 valve to point down to fill with He, remove the stick clamp and wait for the sample space to reach atmospheric pressure.
 - g. Leaving the He flowing, remove the stick and hang on the rack in the sample pit. Make sure that the O-ring stays in place on the port hole.
 - h. Cover stick port hole with a blank, press down and turn the blue V5 valve up to vacuum.

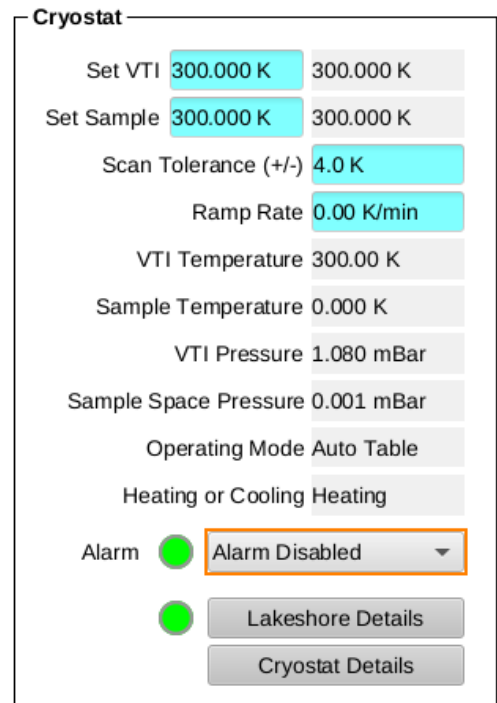


Figure 1. Cryostat controls on the dashboard.

Stick may be very cold. Wear insulating gloves if necessary.

- i. Test the sample with the RadEyeG monitor. If it alarms, or if the sample can is leaking, stop and immediately call the RCT (865-274-8658).
- j. Remove the sample from the stick and place with its barcode tag in the appropriate beamline location, on the wooden bench in the RMA.

BL-11a Orange Cryostat Sample Change

2. Load new sample.
 - a. Completely dry all condensation off the stick using a heat gun and wipes. Do not leave the heat gun focused on one spot for a long time, to avoid damaging the wires.
 - b. Place the new sample on the stick.
 - c. Turn blue V5 valve down to He and wait for the sample space to reach atmospheric pressure.
 - d. Leaving He flowing, remove the blank and carefully insert the stick, aligning the marks so that the pressure gauge does not block the liquid He fill port.
 - e. Replace the stick flange clamp.
 - f. Turn blue V5 valve up to vacuum.
 - g. Once the sample space reaches vacuum (~0mbar), turn the blue V5 valve down to He.
 - h. Once the sample space reaches ~900 mbar, turn the blue V5 valve up to vacuum.
 - i. Repeat steps g and h twice, for a total of three pump-purge cycles.
 - j. Briefly turn the blue V5 valve down to He to add ~40-100 mbar of gas.
 - k. Turn the blue V5 valve to the middle, closed position to isolate the sample space.
 - l. Plug the cable connector back into the top of stick by aligning the tabs and rotating the collar.
 - m. Sweep the sample pit and open the shutter. (See *Shutter Operation* quick start guide.)
 - n. On the front panel of the Lakeshore 336 controller (Figure 3) located in the RMA, hit the escape button to clear the Lakeshore alarm.
 - o. Turn on the sample heater by pressing “B”, “Heater Range”, up arrow to select *High*, then “Enter”. Two red lights on the front panel of the Lakeshore 336 controller should be illuminated (Figure 3).
 - p. Finally, on the control computer in the hutch, re-enable the CSS alarm by clicking the “Alarm Disabled” button in the Cryostat box on the dashboard (Fig 1).
3. During operation, keep the VTI setpoint ~2-4 degrees lower than the sample setpoint.

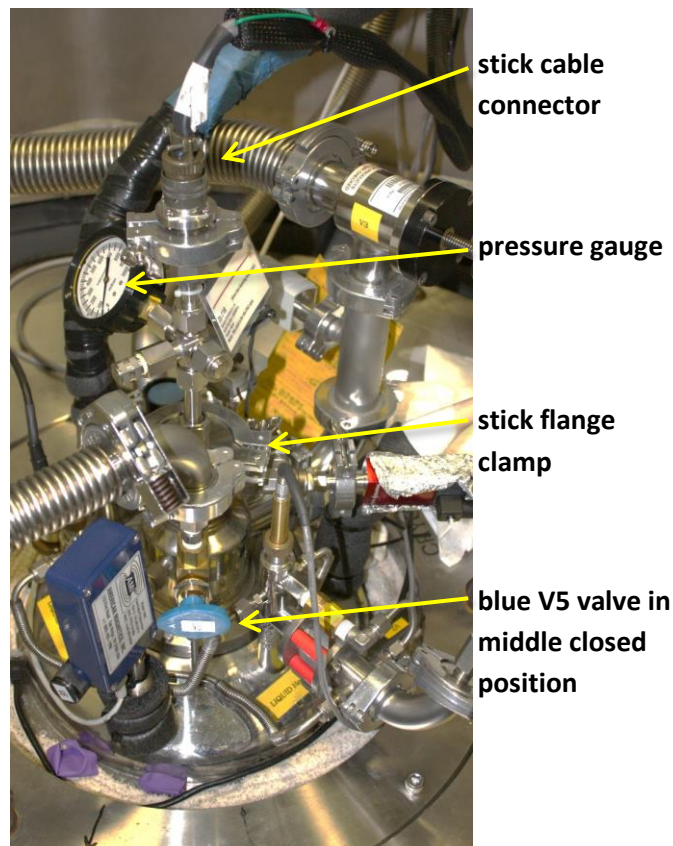


Figure 2. Orange Cryostat connections and valves



Figure 3. Lakeshore 336 temperature controller, showing the Escape button and heater lights.