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BTS Mar165 CCD Pump Down Procedure V2

Subject:
This document describes the steps to pump down the Mar165 CCD head vacuum chamber.

Revision History:
Original 9/27/05 (t madden)
V2: 06/25/200/8 updated photos, added comments (t lutes)

Review Period:
Three years or as needed.

Related Documents:
marusa_marccd_manual.pdf (complete manual from MarUSA)
www.mar-usa.com

Tools Needed:

- Mar165 Vacuum Port Adapter (Figure 1)
- Mar165 Vacuum Valve Key (Figure 2)
- Vacuum Pump (Figure 3)
- Mar165 detector and computer running *marccd* GUI

The Mar165 should be pumped down if the pressure reading exceeds 1.0 Torr when the detector is at room temperature. The detector will not cool to the desired temperature, ~ -70C, if the pressure is above this level, and it may take longer to cool if the pressure is 1.0 - 0.5 Torr. The vacuum decreases approximately 0.1 Torr per week. It is possible to pump the chamber to .01 Torr, but that will only increase the lifetime of the vacuum by about a week. Usually 0.1 - 0.2 Torr is sufficient.

Directions also exist in the Mar165 manual at the end, under "Procedure for re-evacuating CCD chamber", but follow instructions for external vacuum port model.

Detailed Pumping Procedure:

1.) Turn on Mar165 controller.
2.) Run *marccd* control software.
3.) Reboot detector (Configure → Detector → Reboot), but do not start cooling.
4.) Verify that CCD is at room temperature.
5.) Attach pump and vacuum port adapter to the ¼" vacuum port on the rear of the CCD head labeled "VAC PORT".
6.) Turn on the pump.
7.) Remove cover on the "VAC VALVE".
8.) Use the key to **slowly** open the valve, while monitoring the pressure reading. Open the valve a few turns so the pressure falls steadily. The pressure should immediately begin to drop as you open the valve. If not, close the valve and check the connections.
9.) Wait until pressure has gone down to 0.1 - 0.01 Torr.
10.) Close the VAC VALVE, hand-tight.
11.) Turn off pump and remove adaptor.
12.) Check that pressure is stable.
13.) Turn off the Mar165 detector or start the cooling from *marccd* GUI.

Figure 1: Swagelok adapter attached to standard Vacuum hose for the Mar165 vacuum port.

Figure 2: Vacuum valve key. This is in the Mar165 toolkit.

Figure 3: Vacuum Pump. Any style pump that reaches 0.01 Torr is sufficient.