

How to pump down the Mar165?

Tools Needed:

- Vacuum Port Adapter (Homemade) (Figure 1)
- Vacuum Valve Key from Mar kit (Figure 2)
- Pump (Figure 3)
- Mar165 detector + computer running *marccd* GUI

The Mar165 needs the vacuum pressure to be below 1.0 Torr. It needs to be pumped down every 1-2 years. On the back of the Mar165 detector head, there is a “VAC PORT”, which is ¼” steel pipe. In order to attach the vacuum pump to this, one needs a special adapter. It is made using a vacuum hose and KF-50 connector (see Figure 1).

With the detector at **room temperature**, the adapter was fit to the Mar VAC PORT, and the pump was started. The *marccd* program was on to monitor the pressure. Once the pump was running, we opened the valve on the back of the Mar using the special tool, which is part of the Mar toolkit. Once the valve was opened, we saw that the pressure began to drop. It is good practice to monitor the pressure closely as you begin to open the valve since this will indicate if there are any leaks in the system. Once it reached ~0.01 Torr, we closed the valve (hand tight). Then, we turned off the pump.

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.) Attach pump and vacuum port adapter to the Mar’s “VAC PORT”.
- 2.) Turn on pump
- 3.) Turn on Mar165
- 4.) Run *marccd* control software.
- 5.) Reboot detector (Configure → Detector → Reboot), but Do NOT cool!!!!
- 6.) Monitor the pressure on the *marccd* control software.
- 7.) Remove cover on the “VAC VALVE”.
- 8.) Using the Vacuum Valve Key from Mar toolkit, **slowly** begin to open the valve, while monitoring the pressure reading. Open the valve a few turns, but just enough to get the pumping going. Do not open too much or else the valve will come undone. 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 ~ 0.01 Torr.
- 10.) Close the VAC VALVE, hand-tight.
- 11.) Turn off pump and remove vacuum attachments.
- 12.) Check that pressure is steady and stable.
- 13.) Turn off the Mar165 detector.

Figure 1: Special adapter for the Mar165 vacuum port. It is basically a vacuum hose attached to standard vacuum equipment.



Figure 2: Vacuum valve key. This comes with the Mar165 toolkit. It is used to open the VAC VALVE on the mar165.



Figure 3: Vacuum Pump

