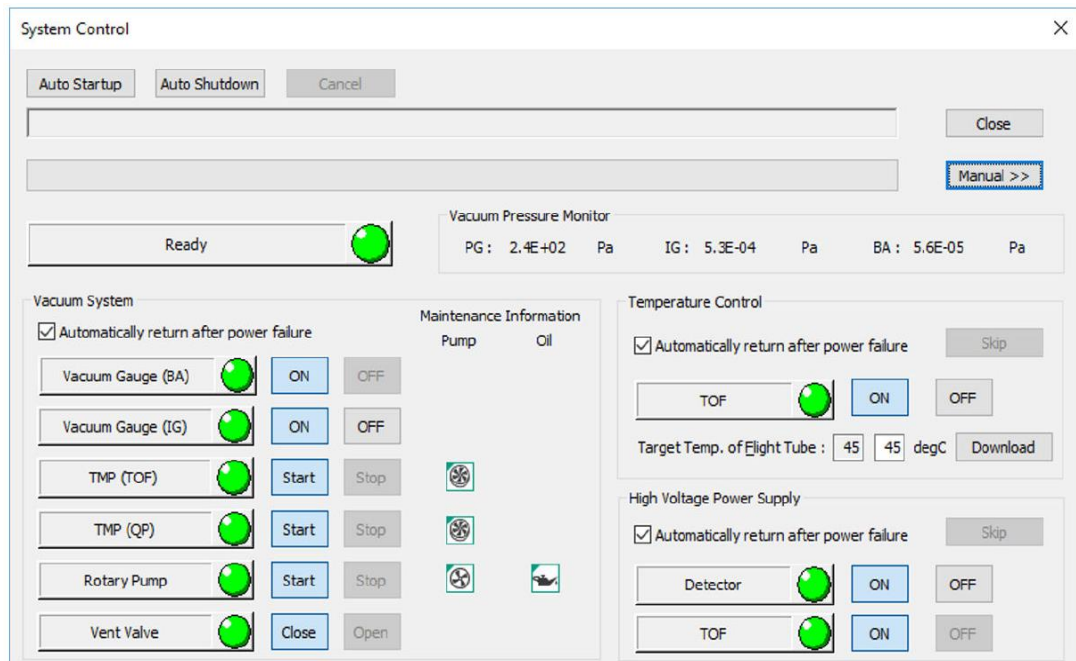


LCMS-9030 Manual Vacuum Procedure

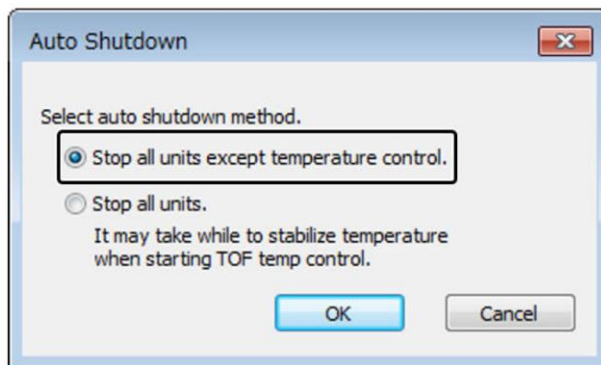
Manual Shut Down

This is a conservative automatic shutdown procedure. The goal is to allow the turbo to spin only when it is under a good vacuum.

1. Turn OFF all heaters.
2. Go to Instrument tab → System control → Select Auto Shutdown



3. Select Stop all units except temperature control (**Please note to maintain temperature control while the instrument is vented there must still be a continuous power supply. If there will be no power going to the instrument please select all units to power down completely.)



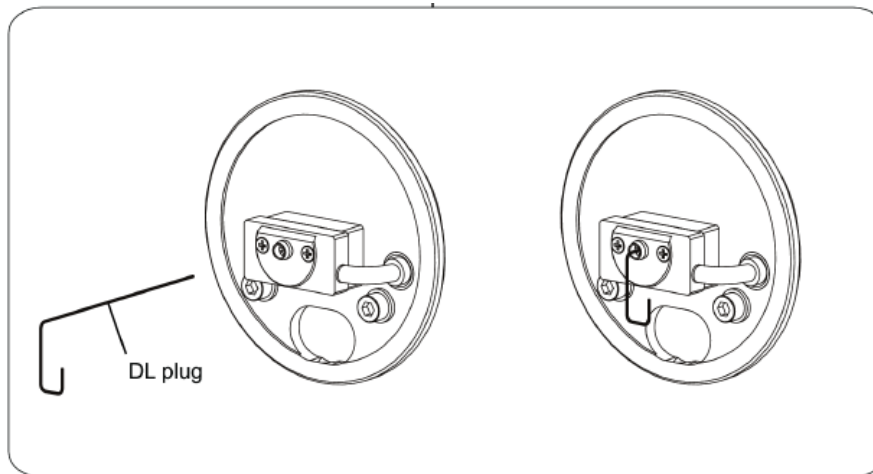
4. The software will automatically shut down each gauge and vent each chamber of the instrument as needed.
5. After all the pumps have stopped and the green icons are grey. (Except for the Temperature control-TOF icon) Perform whatever maintenance is necessary.

**You can place a DL plug in place to prevent contamination if the system will be vented for an extended period.

Manual Start Up

Again the goal is to only allow the turbo to spin while it is under a good vacuum. To perform an automatic start up, the steps are as follows:

1. Make sure all vacuum seals which were opened during maintenance are closed.
2. Go to Instrument tab → System Control → Select Auto Startup (same view as seen in shutdown procedure)
3. Open the source window and place a DL plug or GC septum on the DL. This will effectively close off the DL. Close the source window. If you do not have a DL plug or GC septum this process can still be completed but may take a little longer to reach vacuum.



4. Wait all status lights are solid green. This could take up to 6 hours or more. The first step will always be temperature stabilization before starting to pull down vacuum. (*If all units were stopped the ToF temperature stabilization will take between 48 and 72 hours to reach temperature)

5. Open the source window and remove the DL plug or the septum. Close the source window and turn the DL and Heat Block heaters back on.

6. Verify vacuum gauge readings. Pirani Gauge (PG) should be 100 and 300 Pa, Ion Gauge (IG) should be 6×10^{-3} Pa or less, and the BA gauge should be 3×10^{-4} or less.

**Keep in mind the above values may vary slightly if gas flows or temperature settings are on or off during the readings. These are just the default recommended values.

7. System is ready to run again.