Reference Cell Operating Procedures

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1 Description

The reference cell control panel is comprised of 8 pushbutton switches, which activate the 8 possible valve setting conditions, a baratron pressure gauge which reads between 0–1000 psia, and a toggle switch that enables or disables the pushbutton switches. The eight different conditions are:

1. **Slow Pump Out:** Valves 1, 4, 6 open
2. **Fast Pump Out:** Valves 1, 4, 5, 6 open
3. **Slow Vent:** Valves 4, 5, 7 open
4. **Fast Vent:** Valves 4, 5, 6, 7 open
5. **Slow ^{3}He Fill:** Valves 3, 4, 6 open
6. **Fast ^{3}He Fill:** Valves 3, 4, 5, 6 open
7. **Slow N_2 Fill:** Valves 2, 4, 6 open
8. **Fast N_2 Fill:** Valves 2, 4, 5, 6 open

If the toggle switch is in the enable position (up), the valves will be configured according to the pushbutton switch that is depressed, which will be illuminated. If the toggle switch is in the disable position (down), all of the valves will be closed, and an LED below the toggle switch will be illuminated.

2 Operation

Ordinarily, the toggle switch should be kept in the disable condition. In order to change valve configurations, one should start with the toggle switch on the disable position. The appropriate switch should be pressed (it will lock in place) and the toggle switch should then be set to enable. This will activate the desired condition. One should leave the toggle switch enabled until the desired condition is reached (for example, on slow N_2 fill, until the pressure reaches the desired level as read on the baratron pressure gauge.) The toggle switch should then be disabled.

3 Cautions

1. Be careful with the ^{3}He, we have a limited supply.

2. If the system is above atmospheric pressure, always vent it before pumping. Begin a pumping sequence on slow pump. Note, however, that slow pump is *very* slow. The aim is to not burn out the turbopump.

3. The reference cell is fragile. Therefore, one should fill most of the way to one's target pressure on the slow fill conditions. The slow fill is set so that it fills at about 1 psia/s at near atmospheric pressure. The rate of fill on the slow fill may be adjusted (but probably shouldn't be) with the metering valve located on the reference cell panel in the "triangle" formed by valves 5, 6 and 7.