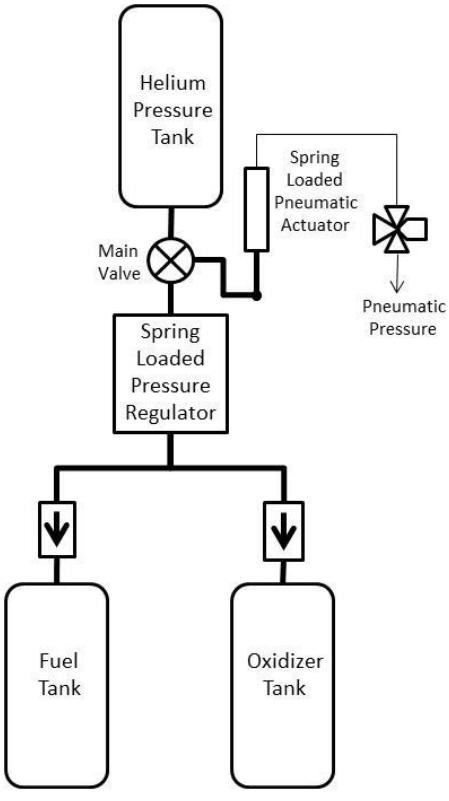
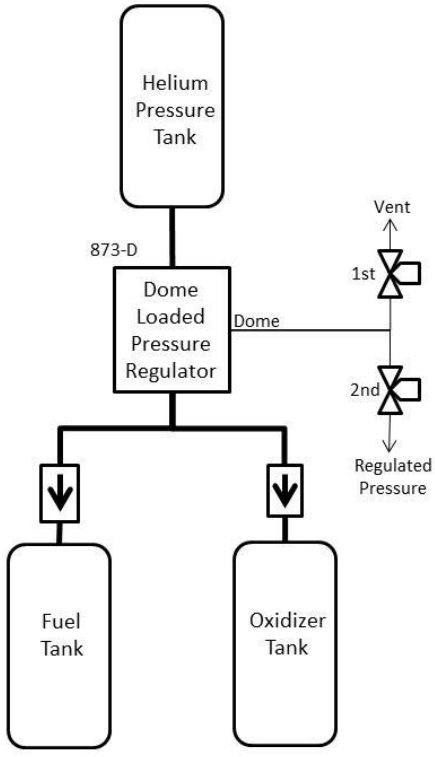
Why I use the 873-D dome-loaded regulator in a rocket.

To reduce the number of parts and cost of the pressurization system for a liquid or hybrid rocket, I use the Aqua Environment 873-D dome-loaded regulator instead of a spring-loaded regulator. The 873-D can pull double-duty as a main valve to turn on and off the pressurization gas and regulate the pressure to your liquid propellant tanks. This can be accomplished by connecting two two-way solenoid valves to the dome of the 873-D. The first solenoid valve is connected to the atmosphere, when energized; it vents the dome and turning off the regulator output. The second solenoid valve connects the dome to a regulated pressure supply. This solenoid valve, when energized, turns on the regulator output and causes the regulator to regulate its output to the regulated pressure. If you de-energize the second solenoid valve, the pressure is captured in the dome and the regulator continues to produce regulated gas output. Energizing the first solenoid valve vents the dome and turns the regulator off. This dome-loaded configuration eliminates a high-pressure valve, actuator, and three-way solenoid valve.

In addition to this on-off capability, the 873-D regulator is a good value for its price. This regulator has a high-flow output with a low pressure drop, from input to output; giving you an extended regulation range before going into blow-down. Also, another characteristic of this regulator is a low increase in output pressure for a decreasing input pressure as you use up the pressure in the pressurant tank. If this regulator becomes leaky and fails to lockup, it can be easily repaired by replacing the valve cartridge at a reasonable cost.



Spring-Loaded Regulator



873-D Dome-Loaded Regulator