

# Statement of Performance

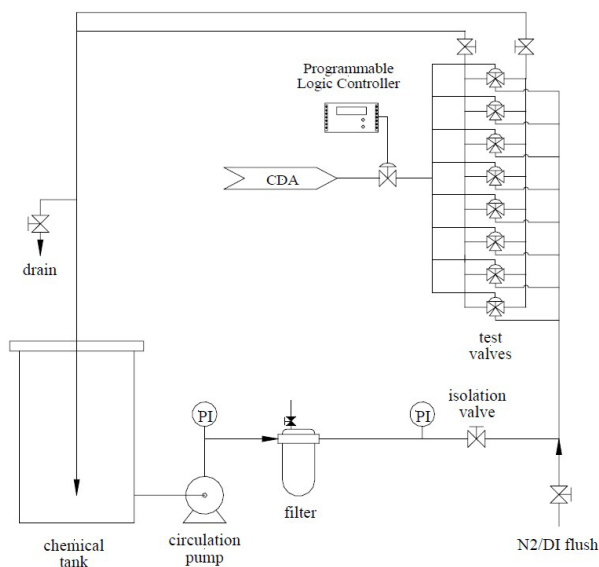
## Furon<sup>®</sup> UPX 3-Way 1/2 Inch Orifice Reliability in 37% HCl

The Furon UPX 3-Way valves with a half inch orifice have been tested for reliability in 37 wt% hydrochloric acid (HCl) by an independent test lab<sup>1</sup> using the protocol of a major US OEM manufacturer.

### Accelerated Life Test Method

Eight UPX3-F88 valves were assembled in a manifold (valve set A on Figure 1) allowing parallel flow paths through each set of 8 valves. The valves were cycled between the two outlet ports every 3 seconds with an actuator pressure of 80 psig.

Figure 1

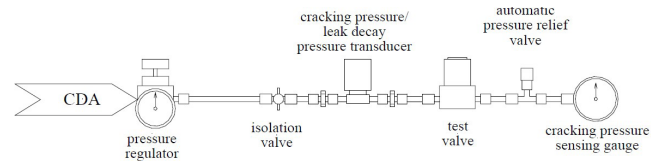


The cleanroom grade HCl delivery pressure to the valves was maintained at 80 psig. The acid was single-pass filtered through a 0.45 $\mu$ m filter prior to the valve manifold and was replenished regularly to insure full chemical strength was maintained.

The valves were tested for cracking pressure internal leakage and external leakage port-to-port leakage at 0 cycles and every 150k cycles.

Prior to each port-to-port integrity test, the valve train was flushed with water and purged with clean dry air. The manifold was removed from the test system and each valve was removed from the manifold. The cracking pressure was measured by applying air pressure to the appropriate port in its closed state and measuring the pressure at which the valve opened (Figure 2). This test was conducted on the COM to

Figure 2



NO, COM to NC, NC to COM and NO to COM. When testing the normally open port, the valve was actuated closed with a pilot pressure of 70 psig. During testing, whichever outlet port was not being tested was capped. Maximum cracking pressure measured was 125 psig. A valve failed the cracking pressure test if the cracking pressure was less than 110% of the specification. The valve leak test measured the loss in pressure upstream of the valve when the rated pressure was applied to the closed valve. The rise in pressure downstream of the valve was also observed. The pressure loss specification corresponds to a leak rate of 0.05 cc H<sub>2</sub>O/hr equivalent. Leak testing was conducted from both NC and NO to COM. After testing, all valves were returned to the test manifold and cycling was resumed.

### Summary

8 UPX half inch orifice valves have been successfully exposed to 1,800,000 cycles accelerated life cycle test in 37 wt% HCl without suffering any major performance loss, all tested parameters completed at fixed intervals were acceptable.

<sup>1</sup>CT Associates, Inc., 10777 Hampshire Ave. S., Bloomington, MN 55438.

The data provided here was obtained under defined test conditions. Saint-Gobain Performance plastics makes no specific claims about the performance of the component with other test parameters or provides any warranties.