

Statement of Performance

Furon® CDV 2-Way Valve 1/2 Inch Orifice Reliability in 35% HCl

The Furon CDV 2-Way valves with a 1/2 inch orifice have been tested for reliability in 35 wt% hydrochloric acid (HCl) by an independent test lab¹ using the protocol of a major US OEM manufacturer.

Accelerated Life Test Method

Ten valves were assembled in a test manifold allowing parallel flow of 35% HCl through all valves (Figure 1). The valves were cycled approximately ten times per minute under 65 ± 5 psig inlet chemical pressure and actuator pressure of 80 psig.

The acid was supplied to the valves using a double diaphragm pump drawing from a chemical reservoir. Cleanroom grade HCl was filtered through a $0.45 \mu\text{m}$ filter prior to entering the valve manifold. The acid was replenished every 400,000 cycles to ensure full chemical strength was maintained.

Figure 1: Valve Cycling Setup

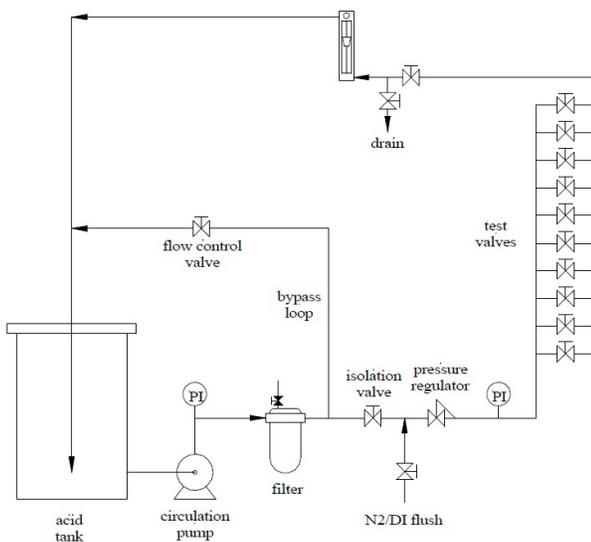
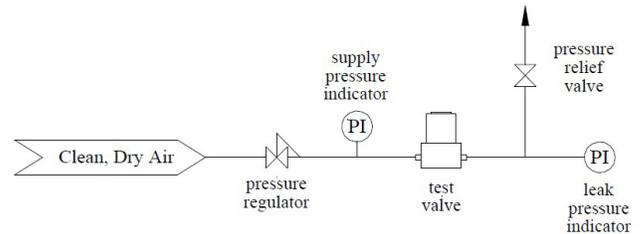


Figure 2



Valves were tested for cracking pressure internal and external port-to-port leakage every 200k cycles, measured by applying air pressure to a closed valve and measuring the pressure when opened (Figure 2). Maximum cracking pressure measured was 125 psi. If the valve pressure was greater than 120% of the rated pressure, the valves were removed from the test manifold. Valves with cracking pressure $\leq 120\%$ of the rated pressure of the valve were tested for port-to-port integrity. This test measures the rise in pressure downstream of the valve when the rated pressure is applied to the closed valve. Valves failed if the pressure rise corresponded to a leak rate in water of $\geq 0.0001 \text{ mL/min}$ or 0.14 mL/day .

Summary

Ten CDV valves with a 1/2 inch orifice have been successfully exposed to 1,000,000 cycles accelerated life cycle test in 35 wt% HCl at room temperature without suffering any major performance loss, all tested parameters completed at fixed intervals were acceptable.

¹CT 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.