Product Test Report

PTR-1211

Swagelok Company
29495 F.A. Lennon Drive
Solon, Ohio 44139 U.S.A.

TITLE

Venting Volume of the Swagelok® Stream Selector System (SSV Series) with Water Flow

PRODUCT TESTED

Test Quantity: One 3-stream selector system, SS-SSV-V-3-F2, with three SSV series DBB (double block-and-bleed) modules.

PURPOSE

To determine the volume of system fluid vented during an individual cycle, the DBB modules were cycled with water flowing through the system. Actuation pressure was varied to determine its effect on the venting volume. The downstream flow rate was also measured when the DBB module was closed to confirm that the module had shut off.

TEST CONDITIONS

Original test date: March 2006

Inlet pressure: 250 psig (17.2 bar) water

Outlet pressure: 200 psig (13.7 bar) water

Downstream flow rate: 1.5 U.S. gal/min (5.6 L/min) water

Temperature: room temperature

Valve actuation: manual actuation with a vented plug valve (SS-4P4V) attached to a 3 ft length of ¼ × 0.062 in. wall plastic tubing

TEST METHOD

1. The water collection container was put on a scale, and the scale was zeroed to compensate for the weight of the container.
2. The tube from the SSV system vent port was discharged into the water collection container.
3. The DBB module under test was actuated, and the water flow through the system was started.
4. Once the water flow stabilized, the DBB module was closed and opened and the water from the vent was collected in the container.
5. The cycling of the module was repeated, and the container was weighed after 10 cycles and then after an additional 20 cycles. The scale was zeroed in between the two measurements.
6. After 30 cycles were completed, the DBB modules were closed, and the downstream flow was observed to determine if a leak greater than 0.1 U.S. gal/min (0.38 L/min) was present.
7. This procedure was repeated on the three different modules at three different actuation pressures: 40, 50, and 75 psig (2.7, 3.4, and 5.1 bar).

TEST RESULTS

Actuation Pressure	Average Volume of Water Vented per Cycle	Standard Deviation
40 psig (2.7 bar)	0.076 $in.^3$ (1.25 cm^3)	0.022 $in.^3$ (0.36 cm^3)
50 psig (3.4 bar)	0.049 $in.^3$ (0.80 cm^3)	0.004 $in.^3$ (0.07 cm^3)
75 psig (5.1 bar)	0.041 $in.^3$ (0.67 cm^3)	0.005 $in.^3$ (0.08 cm^3)

These results show that actuation pressures of 50 psig (3.4 bar) and 75 psig (5.1 bar) reduced both the average volume of water vented per cycle and the variation of the volume of water vented per cycle when compared to an actuation pressure of 40 psig (2.7 bar).

No leakage was observed when the DBB modules were closed.

Data presented is not offered as statistically significant test results.

These tests were performed to consider a specific set of conditions and should not be considered valid outside those conditions. Swagelok Company makes no representation or warranties regarding these selected conditions or the results attained. Laboratory tests cannot duplicate the variety of actual operating conditions. Test results are not offered as statistically significant. See the product catalog for technical data.

SAFE PRODUCT SELECTION

When selecting a product, the total system design must be considered to ensure safe, trouble-free performance. Function, material compatibility, adequate ratings, proper installation, operation, and maintenance are the responsibilities of the system designer and user.