



White Paper

Swing-Flex® Check Valve Cycle Test Report

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Swing-Flex® Check Valve Test Report



Professional Service Industries, Inc.

August 2, 1991

Val-Matic Valve and
Manufacturing Corporation
905 Riverside Drive
Elmhurst, Illinois 60126

Attention: Mr. Phil Landon

Re: Witness Swing Test Check
Valve Size 8", Model 508

Dear Mr. Landon:

A Professional Service Industries inspector was at the Val-Matic Valve and Manufacturing Corporation to monitor a Swing Test conducted by Val-Matic personnel.

The PSI inspector verified the valve tested had met the requirements as noted in the product design.

PSI provided inspections at 500,000, 750,000, and 1,000,000 cycles. The enclosed information represents the observations made during this test.

Should you have any questions, please do not hesitate to contact me.

Respectfully submitted,

PROFESSIONAL SERVICE INDUSTRIES, INC.



License #27601-11-30-114

Richard C. Eartly
Project Manager

David A. Dunn, P.E.
Senior Vice President

RCE/DAD:jmp

Enclosure

Swing-Flex® Check Valve Test Report

PROOF OF DESIGN TEST REPORT

Manufacturer: Val-Matic and Manufacturing Corporation
905 Riverside Drive
Elmhurst, Illinois 60126

1. Product: Val-Matic Swing Flex Check Valve
Size 8", Model 508 with ANSI 125 lb. flanges,
constructed of a cast iron body and cover with
a molded, nylon and steel reinforced Bun-N disc.
2. Test Description: Proof of Design
1,000,000 cycles with Hydrostatic tests
3. Purpose of Tests: To demonstrate the reliability, durability and
performance of the valve's disc, seating and
signal switch.
4. Procedure: The valve was assembled to the manufacturer's
specification. A hydrostatic test fixture was bolted to
the downstream flange. The fixture contained a pressure
line and a vent line. The upstream end of the valve was
left open to atmosphere.

With the valve's disc in the closed position, the downstream side of the valve was filled with water through the pressure line. The air within the valve was allowed to escape through the vent line. Once the valve was filled, the valve seat sealed and no leakage was observed with a static head of approximately 1 foot (.43 psi). A hydrostatic pressure was then applied. A low pressure test of 55 psi (City water pressure) was held for 5 minutes. The seating was inspected and no leakage was observed. A high pressure test was then conducted at 200 psi for 5 minutes. Again, the seating was inspected and no leakage was observed.

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Val-Matic Valve and
Manufacturing Corporation

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Upon conclusion of the initial seat test, the hydrostatic test fixture was removed and the cycle test was started. The cycle test utilized Val-Matic's optional signal switch to activate the counting device which recorded the open/close cycles. One cycle was counted for each time the disc returned to its seated position. A pneumatic cylinder was installed in a tapped hole, located in the lower portion of the valve body, normally used for an optional back flow device. The cylinder rod fully opened valve's disc and then retracted rapidly, allowing the valve's disc to fall freely back to the valve seat. Several proof cycles were conducted to demonstrate the operation of the cylinder and counter.

At the conclusion of the proof cycles, the cycle counter was zeroed and locked. Appropriate seals were placed on the valve's housing and disc to insure that the valve was not tampered with during the test. The valve was then cycled 24 hours per day at a rate of approximately 20 cycles per minute. Inspections, by the inspecting engineer, were conducted at 500,000, 750,000 and 1,000,000 cycles. At each inspection interval, the valve's disc was checked and the hydrostatic tests were conducted as indicated in the initial test.

Pressure Gage Calibration:

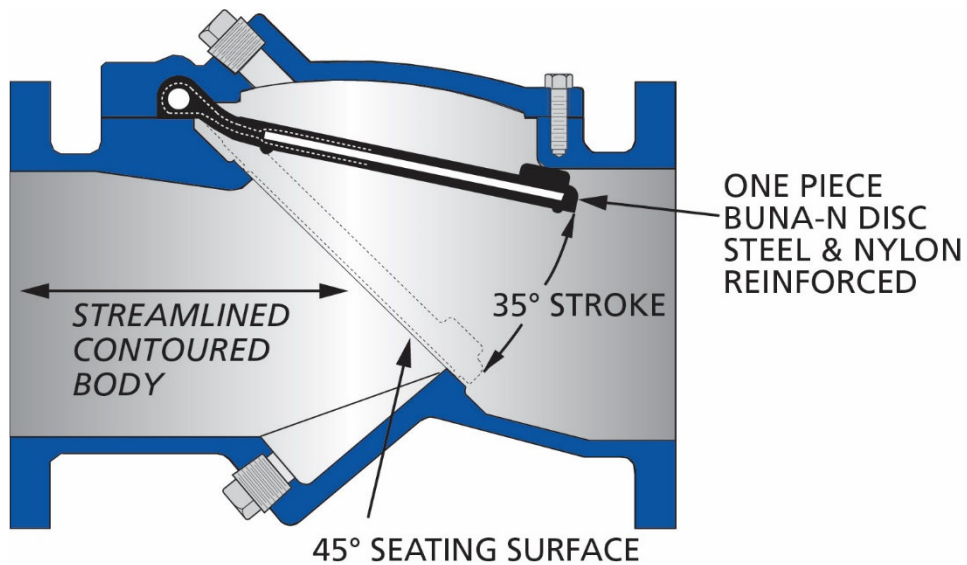
The pressure gage utilized during the hydrostatic test was a U.S. Model No. 1404 with a range of 0 to 600 psi. The gage was calibrated and certified by JLV, Inc., the Metrology Affiliate of Master Gauge Company of Chicago, Illinois to an accuracy of 0.25 percent. See attached for the Certification of Calibration.

Conclusions:

- 1.) After 1,000,000 cycles, the valve's disc showed no signs of wear or distortion. The flexible hinge area showed no signs of fatigue or stress cracks.
- 2.) After 1,000,000 cycles, the valve seating areas showed no signs of wear or distortion. The valve seating remained drop tight during the low and high pressure hydrostatic tests.
- 3.) After 1,000,000 cycles, the signal switch continued to function as designed.

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Swing-Flex® Check Valve



An independent, third party Proof of Performance report for Abrasive Service is also available. For copies, please contact Val-Matic Corp.

Disclaimer

Val-Matic White Papers are written to train and assist design engineers in the understanding of valves and fluid systems. Val-Matic offers no warranty or representation as to design information and methodologies in these papers. Use of this material should be made under the direction of trained engineers exercising independent judgement.