

Surgebuster® Swing Check Valve Val-Matic Specification

1 Scope

1.1 This specification is intended to cover the design, manufacture, and testing of 2 in. (50 mm) through 42 in. (1000 mm) Surgebuster® Swing Check Valves suitable for cold working pressures of 250 psig, 150 psig for 30 in. (800mm) and larger in water, wastewater, abrasive, and slurry service.

1.2 The check valve shall be of the full body type, with a domed access cover and only two moving parts, the flexible disc and the disc accelerator.

2 Standards, Approvals and Verification

2.1 The valves shall be designed, manufactured and tested in accordance with American Water Works Association Standards ANSI/AWWA C508.

2.2 Manufacturer shall have a quality management system that is certified to ISO 9000 by an accredited, certifying body.

3 Connections

3.1 Valves shall be provided with flanges in accordance with ANSI B16.1, Class 125.

4 Design

4.1 The valve body shall be full flow equal to nominal pipe diameter at all points through the valve. The 4 in. (350mm) valve shall be capable of passing a 3 in. (75mm) sphere. The seating surface shall be on a 45 degree angle to minimize disc travel. A threaded port with pipe plug shall be provided on the bottom of the valve to allow for field installation of a backflow actuator, air cushion or hydraulic cushion without special tools or removing the valve from the line.

4.2 The top access port shall be full size, allowing removal of the disc without removing the valve from the line. The access cover shall be domed in shape to provide flushing action over the disc for operating in lines containing high solids content. A threaded port with pipe plug shall be provided in the access cover to allow for field installation of a mechanical, disc position indicator.

4.3 The disc shall be of one-piece construction, precision molded with an integral o-ring type sealing surface, and contain alloy steel and nylon reinforcement in the flexible hinge area. The flex portion of the disc shall be warranted for twenty-five years. Non-Slam closing characteristics shall be provided through a short 35 degree disc stroke and a disc accelerator to provide a cracking pressure of 0.3 psig.

4.4 The disc accelerator shall be of one piece construction and provide rapid closure of the valve in high head applications. The disc accelerator shall be enclosed within the valve and shall be field adjustable and replaceable without removal of the valve from the line. The disc accelerator shall be securely held in place by being captured between the cover and disc. It shall be formed with a large radius to allow smooth movement over the disc surface.

4.5 The valve disc shall be cycle tested 1,000,000 times in accordance with ANSI/AWWA C508 and show no signs of wear, cracking, or distortion to the valve disc or seat and shall remain drop tight at both high and low pressures. The test results shall be independently certified.

5 Materials

5.1 The valve body and cover shall be constructed of ASTM A536 Grade 65-45-12 ductile iron or ASTM A126 Class B for 30 in. and larger. Optional body materials include ASTM A-351 Grade CF8M, stainless steel (sizes 3" through 8").

5.2 The disc shall be precision molded Buna-N (NBR), ASTM D2000-BG. Optional disc material includes Viton.

5.3 The disc accelerator shall be type 302 stainless steel.

6 Options

Note: remove (when specified) to include the following options as part of the specification.

6.1 A screw-type backflow actuator shall be provided (when specified) to allow opening of the valve during no-flow conditions. Buna-N seals shall be used to seal the stainless steel stem in a bronze bushing. The backflow device shall be of the rising-stem type to indicate position. A stainless steel T-handle shall be provided for ease of operation.

6.2 A mechanical indicator shall be provided (when specified) to provide disc position indication on valves 4" and larger. The indicator shall have continuous contact with the disc under all operating conditions to assure accurate disc position indication.

6.3 A pre-wired limit switch will be provided (when specified) to indicate open/closed position to a remote location. The mechanical type limit switch shall be activated by the external position indicator. The switch shall be rated for NEMA 4, 6, or 6P and shall have U.L. rated 5 amp, 125 or 250 VAC contacts.

6.4 A bottom mounted oil dashpot (oil cushion) shall be provided when specified to provide hydraulic control of the final 10% of valve closure and reduce valve slam and water hammer normally associated with rapid flow reversal conditions on pump shut down. The dashpot shall consist of a high pressure hydraulic cylinder, adjustable external flow control valve, oil reservoir, pressure gauge, stainless steel air inlet valve, and piping designed to control the closing speed of the last 10% of travel in 1-5 seconds. A threaded brass dashpot bushing unit with a grease fitting for lubrication shall connect the cylinder to the valve and shall have an air gap to prevent hydraulic fluid from entering the valve and contaminating the water system. A snubber rod fitted with O-ring seals and rod wiper scrapers shall make contact with the lower portion of the disc's stainless steel strike plate.

7 Manufacture

7.1 The manufacturer shall demonstrate a minimum of five (5) years experience in the manufacture of resilient, flexible disc check valves with air and hydraulic cushions.

7.2 All valves shall be hydrostatically tested and seat tested to demonstrate zero leakage. When requested the manufacturer shall provide test certificates, dimensional drawings, parts list drawings, and operation and maintenance manuals.

7.3 The exterior and interior of the valve shall be coated with an ANSI/NSF 61 approved fusion bonded epoxy coating.

7.4 Surgebuster® Swing Check Valves shall be Series #7200 as manufactured by Val-Matic® Valve & Manufacturing Corporation, Elmhurst, IL. USA or approved equal.

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