

**SILENT 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. (1050 mm) Silent Check Valves suitable for pressures up to 500 psig (3450 kPa) water service.
 1.2 The Check Valve shall be of the silent operating type that begins to close as the forward flow diminishes and fully closes at zero velocity preventing flow reversal and resultant water hammer.

2 Standards, Approvals and Verification

- 2.1 Valves for use in fire protection systems shall be Factory Mutual approved in sizes 2 1/2 in.-12 in.
 2.2 Manufacturer shall have a quality management system that is certified to ISO 9001 by an accredited, certifying body.

3 Connections

- 3.1 Globe style valves shall be provided in sizes 2 1/2 in (75 mm) through 42 in. (1050 mm) and have flat faced flanges in accordance with ANSI B16.1 for Class 125 or Class 250 iron flanges. Sizes 10 in (250 mm) and smaller flanged valves shall be capable of mating directly to a wafer butterfly valve without disc interference.
 3.2 Wafer style valves shall be provided in sizes 2 in (50 mm) through 10 in. (250 mm) for installation between ANSI B16.1 Class 125 or Class 250 iron flanges.

4 Design

- 4.1 The valve design shall incorporate a center guided, spring loaded disc, guided at opposite ends and having a short linear stroke that generates a flow area equal to the nominal valve size.
 4.2 The operation of the valve shall not be affected by the position of installation. The valve shall be capable of operating in the horizontal or vertical positions with the flow up or down. Heavy duty springs for vertical flow down installations shall be provided when specified on 14 in. and larger valves.
 4.3 All component parts shall be field replaceable without the need of special tools. A replaceable guide bushing shall be provided and held in position by the spring. The spring shall be designed to withstand 100,000 cycles without failure and provide a cracking pressure of 0.5 psi.
 4.4 The valve disc shall be concave to the flow direction providing for disc stabilization, maximum strength, and a minimum flow velocity to open the valve.
 4.5 The valve disc and seat shall have a seating surface finish of 16 micro-inch or better to ensure positive seating at all pressures. The leakage rate shall not exceed the allowable rate for metal seated valves allowed by AWWA Standard C508 or 1 oz (30 ml) per hour per inch (mm) of valve diameter.
 4.6 The valve flow way shall be contoured and unrestricted to provide full flow areas at all locations within the valve. Cv flow coefficients shall be equal to or greater than specified below and verified by an independent testing laboratory.

VALVE SIZE		Wafer Style Cv	Globe Style Cv
2 in.	(50 mm)	43	N/A
2.5 in.	(65 mm)	88	127
3 in.	(80 mm)	130	155
4 in.	(100 mm)	228	278
5 in.	(125 mm)	350	435
6 in.	(150 mm)	520	625
8 in.	(200 mm)	900	1115
10 in.	(250 mm)	1450	1770
12 in.	(300 mm)	N/A	2500

- 4.7 Wafer-style valve seats shall be fully retained with full size threads, and sealed with an o-ring. Globe style valve seats shall be contained with a machined counterbore and restrained by the mating flange and gasket.

5 Materials

- 5.1 The valve body shall be constructed of ASTM A126 Class B cast iron for Class 125 and Class 250 valves. Optional body material include ASTM A536 Grade 65-45-12 ductile iron.
 5.2 The seat and disc shall be ASTM B584 Alloy C83600 cast bronze or ASTM B148 Alloy C95200 aluminum bronze. Optional trim material include ASTM A351 Grade CF8M stainless steel.
 5.3 The compression spring shall be ASTM A313 type 316 stainless steel with ground ends.

6 Options

- 6.1 A Buna-N seal shall be provided on the seat when specified to provide zero leakage at both high and low pressures without overloading or damaging the seal. The seal design shall provide both a metal to metal and a metal to Buna-N seal.

7 Manufacture

- 7.1 The valves shall be hydrostatically tested at 1.5 times their rated cold working pressure and seat tested at the valve CWP. When requested, the manufacturer shall provide test certificates, dimensional drawings, parts list drawings, and operation and maintenance manuals.
 7.2 The exterior of the valve shall be coated with a universal alkyd primer.
 7.3 Silent Check Valves shall be Series #1400A (Wafer Style) or 1800 (Globe Style) as manufactured by Val-Matic® Valve & Mfg. Corporation, Elmhurst, IL. USA. or approved equal.

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