

## SILENT CHECK VALVE SPECIFICATION

### Scope

1.1 This specification is intended to cover the design, manufacture, and testing of 2 in. (50 mm) through 48 in. (1200 mm) Silent Check Valves suitable for pressures up to 740 psig (5100 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 is fully closed at zero velocity preventing flow reversal and resultant water hammer or shock.

### Connections

2.1 Globe style valves shall be provided in sizes 2 in. (50 mm) through 48 in. (1200 mm) and have flanges in accordance with ANSI B16.1 for Class 125 or Class 250 iron flanges and ANSI B16.5 for Class 150 or Class 300 steel flanges. Iron flanges shall be flat faced. Sizes 10 in. (250 mm) and smaller shall be capable of mating directly to a wafer butterfly valve without disc interference.

2.2 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 or ANSI B16.5 Class 150 or Class 300 steel flanges.

### Design

3.1 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 pipe size.

3.2 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.

3.3 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 and to fully open at a flow velocity of 4 ft/sec. (1.22 M/sec).

3.4 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.

3.5 The valve disc and seat shall have a seating surface finish of 32 micro-inch or better to ensure positive seating at all pressures. The leakage rate shall not exceed one-half of the allowable rate for metal seated valves allowed by AWWA Standard C508 or 0.5 oz (15 ml) per hour per inch (mm) of valve diameter.

3.6 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)	66	N/A
2.5 in.	(65 mm)	88	110
3 in.	(80 mm)	130	155
4 in.	(100 mm)	228	278
5 in.	(125 mm)	N/A	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

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### Materials

4.1 The valve body shall be constructed of ASTM A126 Class B cast iron for Class 125 and Class 250 valves. Class 150 and Class 300 steel valves shall be constructed of ASTM A216 Grade WCB cast steel. Optional body material include ASTM A536 Grade 65-45-12 ductile iron.

4.2 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.

4.3 The compression spring shall be ASTM A313 Type 302 stainless steel with ground ends.

### Options

5.1 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.

### Manufacture

6.1 The valves shall be hydrostatically tested at 1.5 times their rated cold working pressure. Additional tests shall be conducted per AWWA, ANSI, MSS or API standards when specified. When requested, the manufacturer shall provide test certificates, dimensional drawings, parts list drawings, and operation and maintenance manuals.

6.2 Valves shall be Factory Mutual approved in sizes up to 12 in. (300 mm).

6.3 The exterior of the valve shall be coated with a universal alkyd primer.

6.4 Silent Check Valves shall be Series #1400 (Wafer Style) or 1800 (Globe Style) as manufactured by Val-Matic® Valve & Mfg. Corporation, Elmhurst, IL, USA. or approved equal.

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