

VACUUM BREAKER VALVE SPECIFICATION

Scope

- 1.1 This specification is intended to cover the design, manufacture, and testing of 2 in. (50 mm) through 42 in. (1050 mm) Vacuum Breakers suitable for pressures up to 400 psig (2760 kPa) water service.
- 1.2 The Vacuum Breaker shall be of the globe style high flow type with rapid linear opening to automatically admit large quantities of air to enter a system on negative pressure. An optional Air Release Valve can be directly piped to relieve air under positive pressures.

Connections

- 2.1 Globe style valves shall be provided in sizes 2 in (50 mm) through 42 in. (1050 mm) and have flanges in accordance with ANSI B16.1 for Class 125 or Class 250 iron 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.

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 valve shall be installed in the vertical position with top protective hood and screened inlet.
- 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 0.25 psi (1.7 kPa) and to fully open at a pressure differential of 2 psi (14 kPa).
- 3.4 The valve disc and seat shall have a seating surface finish of 32 micro-inch or better to ensure positive seating at all pressures. A Buna-N seal shall be provided on the seat 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.

Materials

- 4.1 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.
- 4.2 The seat and plug 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 316 stainless steel with ground ends.

Options

- 5.1 An Air Release Valves shall be furnished and integrally piped with bronze full-ported ball valve when specified.
- 5.1.1 The Air Release Valve shall be automatic float operated and designed to release accumulated air from a piping system while the system is in operation and under pressure.
- 5.1.2 The valve body shall be threaded with NPT inlets and outlets. The body inlet connection shall be hexagonal for a wrench connection. The cover shall be bolted to the valve body and sealed with a flat gasket. Resilient seats shall be replaceable and provide drop tight shut off to the full valve pressure rating.
- 5.1.3 Floats shall be unconditionally guaranteed against failure including pressure surges. Mechanical linkage shall provide sufficient mechanical advantage so that the valve will open under full operating pressure and consist of two levers and an adjustable threaded resilient orifice button.
- 5.1.4 The valve body and cover shall be constructed of cast iron. The orifice, float and linkage mechanism shall be constructed of Type 316 stainless steel. Non-metallic floats or linkage mechanisms are not acceptable. The orifice button shall be Buna-N or Viton.
- 5.2 A flanged inlet per ANSI B16.1, Class 125 shall be furnished when specified.

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

Cross Contamination and Security Protection

- 7.1 All Air (Release, Vacuum, etc) Valves installed in vaults or flood prone locations shall include an inflow preventer to prevent the introduction of contaminated water through the air valve outlet. The inflow preventer shall allow the admittance and exhausting of air while preventing contaminated water from entering during normal operating conditions. The inflow preventer shall be flow tested by an independent third party to certify performance. The third party shall be an approved testing lab of the American Society of Sanitary Engineers.

Certification

- 8.1 Valves shall be manufactured and tested in accordance with American Water Works Association (AWWA) Standard C512.
- 8.2 Valves for use in fire protection systems (series 15A and 22) shall be listed by Underwriters Laboratories and approved by Factory Mutual.
- 8.3 Air Release Valves shall be Series 15A to 50 as manufactured by Val-Matic and Manufacturing Corporation, Elmhurst, IL, USA or approved equal.

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