

WELL SERVICE AIR VALVE WITH DUAL PORT THROTTLING DEVICE SPECIFICATION

Scope

- 1.1 This specification is intended to cover the design, manufacture, and testing of .5 in. (13 mm) through 12 in. (300 mm) Well Service Air Valves suitable for pressures up to 400 psig (2760 kPa) clean or raw water pump discharge service.
- 1.2 Well Service Air Valves shall be fully automatic float operated valves designed to exhaust air which is present in the pump column on pump startup and allow air to re-enter the column on pump shutdown or should a negative pressure occur. The Dual Port Throttling Device (3 in. and smaller valves) shall provide adjustable control of the exhaust rate and allow free flow into the valve through a separate inlet port. The Anti-Slam Device (4 in. and larger valves) shall throttle the flow of water into the upper valve chamber after the air has been exhausted to prevent rapid valve closure.

Connections

- 2.1 Valve sizes 3 in. (76 mm) and smaller shall have full size NPT inlets and outlets equal to the nominal valve size. The body inlet connection shall be hexagonal for a wrench connection.
- 2.2 Valve sizes 4 in. (100 mm) and larger shall have bolted flange inlets equal to the valve size. Flanges shall be in accordance with ANSI B16.1 for Class 125 or Class 250 iron flanges and ANSI B16.42 for Class 300 ductile iron flanges. Valve sizes 6 in. (150 mm) and smaller shall have NPT outlets; larger valves shall have ANSI B16.1 Class 125 outlet flanges.
- 2.3 The valve shall have two additional NPT connections for the addition of Air Release Valves, gauges, testing, and draining.

Design

- 3.1 The valve body shall provide a through flow area equal to the nominal valve size. A bolted cover with alloy screws and flat gasket shall be provided to allow for maintenance and repair.
- 3.2 Floats shall be unconditionally guaranteed against failure including pressure surges. The float shall have a hexagonal guide shaft supported in the body by circular bushings to prevent binding from debris. The float shall be protected against direct water impact by an internal baffle.
- 3.3 The resilient seat shall provide drop tight shut off to the full valve pressure rating. The seat shall be a minimum of .5 in. (12 mm) thick on 2 in. (50 mm) and larger valves and secured in such a manner as to prevent distortion. Valves with working pressures above 400 psig (2760 kPa) shall have metal seats with synthetic seals.
- 3.4 On valve sizes 4 in. (100 mm) and larger, the cover shall be fitted to the valve body by means of a machined register to maintain concentricity between the top and bottom guide bushings at all times. The float shall be double guided with a guide shaft extending through the float to prevent any contact with the body. A resilient bumper shall be provided to cushion the float during sudden opening conditions.
- 3.5 Valves 3 in. (75 mm) and smaller will be equipped with a dual port throttling device to control the discharge of air from the valve and allow full vacuum flow through a separate port. The device shall have an externally adjustable screw and locknut for adjusting the discharge control disc. The disc shall be sized to allow a 5% flow area when fully throttled. The vacuum port shall be equipped with a spring loaded disc to allow flow into the valve during negative pressure conditions. Throttling devices with a common exhaust and vacuum port are not acceptable. The material of the body shall be consistent with the Well Service Air Valve. The spring shall be ASTM A313 Type 316 Stainless Steel.
- 3.6 Valves 4 in. (100 mm) and larger will be equipped with an Anti-Slam Device to prevent valve pressure surges due to rapid changes in velocity and pressure.
- 3.6.1 The Anti Slam Device shall be mounted on the inlet of the Well Service Air Valve, allow free air flow in and out of the valve, close upon water entry, and control the inlet water velocity to reduce valve pressure surges.
- 3.6.2 The Anti Slam Device shall be a flanged, globe pattern, spring operated unit with a center guided disc and seat assembly. The disc shall have threaded holes to provide adjustment of the water flow rate through the valve. The spring shall exert sufficient force to hold the disc open during high air flow conditions and allow the disc to close upon water entry.
- 3.6.3 The material of the body shall be consistent with the Well Service Air Valve. The spring shall be ASTM A313 Type 316 Stainless Steel. The seat and disc shall be ASTM A351 Grade CF8M stainless steel.

Materials

- 4.1 The Well Service Air Valve body, cover, and baffle shall be constructed of ASTM A126 Class B cast iron for Class 125 and Class 250 valves. Class 300 ductile iron valves shall be constructed of ASTM A536 Grade 65-45-12 cast ductile iron.
- 4.2 The float, guide shafts, and bushings shall be constructed of Type 316 Stainless Steel. Non-metallic guides and bushings are not acceptable. Resilient seats shall be Buna-N.

Options

- 5.1 An optional Single Port Throttling Device (valve sizes 4" and larger) shall be provided on the outlet when specified to control the air exhaust rate. The inlet and outlet connections shall be full size NPT with the exhaust outlet directed horizontally.
- 5.2 Optional air valve body materials include ASTM A351 Grade CF8M stainless steel.

Manufacture

- 6.1 The manufacturer shall demonstrate a minimum of five (5) years experience in the manufacture of air valves. 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 alkyd 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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DRWG. NO.

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