



K-020



Air & Vacuum Valve for Wastewater

Description

The K-020 air & vacuum valve discharges air during the filling or charging of the system, and admits air to the system during system drainage.

The valve is specially designed to operate with liquids carrying solid particles such as sewage and effluent.

The valve's unique design guarantees complete separation of the liquid from the sealing mechanism and provides optimum work conditions.

Operation

The K-020 air & vacuum air valve, discharges air at high flow rates during the filling of the system and admits air into the system at high flow rates during its drainage.

High velocity air cannot blow the float shut. Water entry to the lower portion of the valve will cause the sealing of the valve.

At any time during system operation, should internal pressure of the system fall below atmospheric pressure, air will re-enter the system. The smooth release of air prevents pressure surges and other destructive phenomena.

Admitting air in response to negative pressure protects the system from destructive vacuum conditions and prevents damage caused by water column separation. Air re-entry is essential to efficiently drain the system.

Without air valves pockets of accumulated air may cause the following destructive phenomena:

- Obstruction to effective flow and hydraulic conductivity of the system along with a throttling effect similar to a partially closed valve. In extreme cases this will cause complete flow stoppage.
- Accelerate cavitation damages.
- High-pressure surges.
- Accelerate corrosion.
- Danger of a high-energy burst of compressed air.

As the system starts to fill, the K-020 functions according to the following stages:

1. Entrapped air is released by the valve
2. When the sewage level reaches the valve's lower portion, the float rises, and draws the spherical flap to its sealing position.
3. The entrapped air is confined in a pocket between the sewage and the sealing mechanism. The air pressure is the system pressure.
4. Increases in system pressure compress the trapped air in the

upper section of the cone shaped chamber. The conical shape guarantees the height of the air gap. This assures complete separation of the liquid from the sealing mechanism.

5. Entrapped air (gas) accumulating at peaks (where air valves should be installed) along the system rises to the top of the valve, which in turn displaces the liquid in the valve's body.

6. When the liquid level is lowered to a point where the float is no longer buoyant, the float will descend, drawing the spherical flap. This action opens the valve's orifice and allows part of the air that accumulated in the upper portion of the valve to be released to the atmosphere.

7. Liquid enters the valve. The float rises, pushing the spherical flap to its sealing position. The remaining air gap prevents the sewage from fouling the mechanism.

When internal pressure falls below atmospheric pressure (negative pressure):

1. The orifice will be immediately unplugged as the floats drop away.
2. Air is admitted to the system.

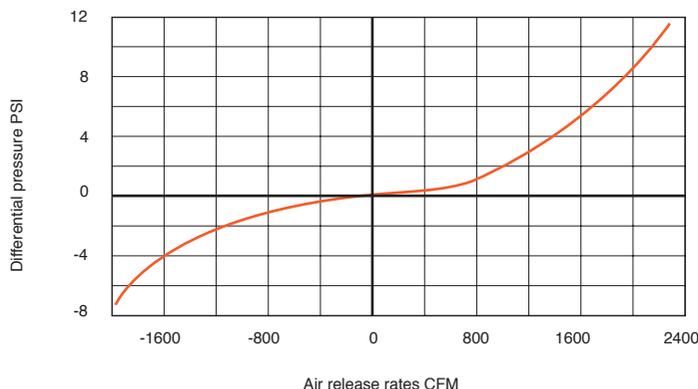
Main Features

- Working pressure range: 3 - 250 psi.
- Testing Pressure : 360 psi
- Working Temperature: 140^o f
- Maximum working temperature for short time period: 194^o f.
- The valve's unique design prevents any contact between sewage and the sealing mechanism by creating an air gap at the top of the valve. This air gap is guaranteed even under extreme conditions. Those features are achieved by:
 - The conical body shape designed to maintain the maximum distance between the liquid and the Sealing Mechanism; so as to obtain minimum body length.
 - The valve design, float mechanism is less sensitive to pressure differentials than a direct float seal. It accomplishes a comparably large orifice for a wide pressure range (up to 250 psi.).
 - Funnel-shaped lower body is designed to ensure that residue sewage matter will sink to the system and be carried away and will not remain in the valve.
 - Flushing is possible while the valve is under pressure, by opening the ball valve in the valve's lower part.
 - Body made of Stainless Steel.
 - All inner metal parts made of stainless steel SAE 316.

Valve Selection

- These valves are manufactured with flanged ends to meet ASA 150 standard or any requested standard.
- These valves are available with body made of stainless steel or steel DIN ST.37 FBE coated.

AIR RELEASE FLOWRATE



DIMENSIONS AND WEIGHT

Nominal Size	Dimension				Weight Lbs.	Orifice Area Sq.in
	A	B	internal C	external		
3"	18.3	30.7	3	4.17	53.7	7.79
4"	18.3	30.7	3	4.17	57.3	7.79

PARTS LIST AND SPECIFICATION

No.	Part	Material
1.	Discharge Outlet	Stainless Steel
2.	Domed Nut	Stainless Steel SAE 316
3.	Washer	Stainless Steel SAE 316
4.	Bushing	Teflon
5.	Cover	Stainless Steel SAE 316 / Steel DIN St.37
6.	Stem + Spherical Flap	Stainless Steel SAE 316
7.	Nozzle Seat	Stainless Steel SAE 316
8.	Nozzle Seal	E.P.D.M.
9.	O-Ring	BUNA-N
10.	Bolt	Stainless Steel SAE 316
11.	Nut	Stainless Steel SAE 316
12.	Joint	Stainless Steel SAE 316
13.	Pin	Stainless Steel SAE 316
14.	Stem + Float	Stainless Steel SAE 316
15.	Body	Stainless Steel SAE 316 / Steel DIN St.37
16.	Ball Valve 1"	Stainless Steel SAE 316

