



D-020 st.st.

COMBINATION AIR VALVE FOR CORROSIVE LIQUIDS “SAAR”

Description

The Combination Air Valve combines an Air & Vacuum large orifice and an Automatic Air Release small orifice in a single body.

The valve is specially designed to operate with liquids carrying solid particles.

The combination air valve discharges air (gases) during the filling or charging of the system, admits air to the system while it is being emptied of liquid and releases accumulated air (gases) from the system while it is operating under pressure.

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

Operation

The Air & Vacuum component 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 and at water column separation. High velocity air does not blow the float shut. Water entry into 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 enter the system.

The smooth release of air inhibits pressure surges and prevents 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 intake is essential to efficiently drain the system.

The automatic component releases entrapped air from peaks of pressurized systems in areas where the valve should be installed. Pockets of accumulated air may cause the following destructive phenomena:

- Impediment of effective flow and hydraulic conductivity of the system along with a throttling effect partially closed valve. In extreme cases this will cause complete flow stoppage.
- Accelerate cavitation damages.
- Water hammer.
- Accelerate corrosion of metal parts.
- Danger of a high-energy burst of compressed air.

As the system starts to fill, the swage valve functions by the following stages:

1. Entrapped air is released by the valve
2. When the liquid level reaches the valve's lower portion, the lower float rises, and draws the "seal Plug" to its sealing position.
3. The entrapped air is confined in a pocket between the liquid and the sealing mechanism. The air pressure is at 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 separation of the liquid from the sealing mechanism.

5. Entrapped air (gas) accumulating at peaks 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, peeling the rolling seal. 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 re-enters the valve. The float rises, rolling the rubber-sealing band to its sealing position. The remaining air gap prevents the liquid from fouling the mechanism.

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

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

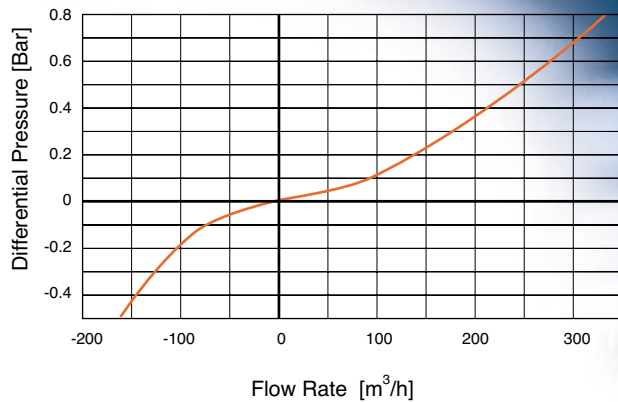
Main Features

- Working pressure range: 0.2-16 bar.
- The valve's unique design prevents any contact between liquid and the sealing mechanism by creating an air gap at the top of the valve. This air gap is kept even under extreme conditions. These 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.
 - Spring loaded joint between the stem and the upper float. Vibrations of the lower float will not unseal the automatic valve. Release of air will occur only after enough air accumulates.
 - The valve design, Rolling Seal Mechanism is less sensitive to pressure differentials than a direct float seal. It accomplishes this by having a comparably large orifice for a wide pressure range (up to 16 bar).
 - Funnel-shaped lower body is designed to ensure that residues solid matter will fall back into the system and be carried away by the main pipe.
- All inner metal parts made of stainless steel.
- 1 1/2" threaded drainage outlet enables removal of excess fluids.
- Stainless Steel SAE 316/317 body.
- Preventing premature closing, the valve discharges air at high velocity.
- Maximum working temperature 90° C.

Valve Selection

- These valves are available with 2" male BSP connections, or flanged 2" -3" -4" -6" -8".
- These valves are also available with a steel body.
- With a Vacuum Guarding, Out-only attachment, which only allows air discharge, not allowing air intake.
- With a Vacuum Breaking, In-only attachment, which only allows air intake, not allowing air discharge.
- With a Non-Slam, discharge-throttling attachment, which allows free air intake, but throttles air discharge.
- For best adjustment, it is recommended to send the fluids chemical properties along with other requirements.

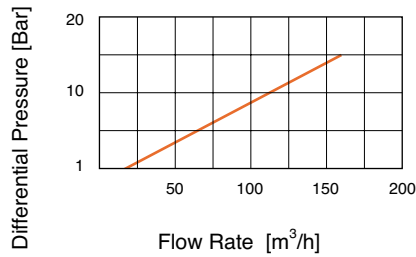
AIR & VACUUM FLOW RATE



DIMENSIONS AND WEIGHT

Nominal Size	Dim. mm		Weight Kg.	Orifice Area mm ²	
	A	B		Air & Vacu.	Auto.
2" (50mm) Treaded	475	644	18.8	12	804
2" (50mm) Flanged	475	605	20.0	12	804
3" (80mm)	475	605	21.5	12	804
4" (100mm)	475	605	22.5	12	804
6" (150mm)	475	610	23.5	12	804
8" (200mm)	475	610	24.5	12	804

AUTOMATIC AIR RELEASE FLOW RATE



PARTS LIST AND SPECIFICATION

No.	Part	Material
1.	Drainage Outlet	Polypropylene
2.	Seal Plug Assembly	PP + Viton + St.St.
3.	Float	Foamed Polypropylene
4.	Clamping Stem	Polypropylene
5.	Body	St.St. SAE 316/317
6.	Cover	St.St. SAE 316/317
7.	O-Ring	Viton
8.	O-Ring	Viton
9.	Bolt	Stainless Steel SAE 316
10.	Crown Nut	Stainless Steel SAE 316
11.	Base	Stainless Steel SAE 316
12.	Stopper	Polypropylene
13.	Spring	Stainless Steel SAE 316
14.	Washer	Stainless Steel SAE 316
15.	Bolt and Nut	Stainless Steel SAE 316
16.	Stem	Stainless Steel SAE 316
17.	Ball Valve 1"	Stainless Steel
18.	Float	Stainless Steel SAE 316
19.	Body	Stainless Steel SAE 316/317

