



D-021 PN 10



Combination Air Valve - Reclaimed and Non-potable Water

Description

The combination air valve combines an air & vacuum large orifice and an automatic small orifice in a single body. The valve is specially designed to operate with reclaimed and non-potable water.

The combination air valve discharges air (gases) during the filling or charging of the system, intakes air into the system during draining and at water column separation and releases accumulated air (gases) from the system while operating under pressure. The valve's unique design guarantees separation of the liquid from the sealing mechanism and provides optimum work conditions.

Applications

- Reclaimed water
- Raw water
- Effluent water
- Water with suspended solids
- Coolant water

Operation

The air & vacuum component discharges air at high flow rates during the filling of the system and intakes air into the system at high flow rates during its drainage and at water column separation.

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 re-enter the system. The smooth release of air reduces pressure surges and other destructive phenomena. Intake of 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 pressurized systems where the valve is installed.

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.

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When the liquid level reaches the valve's lower float, it rises and rolls the rolling seal to its sealing position.

The entrapped air is confined in a pocket between the liquid and the sealing mechanism. The air pressure is equal to the system pressure.

Increases in system pressure compress the trapped air in the upper section of the cone-shaped chamber. Due to the conical shape, the large initial air pocket guarantees the height of the air gap. This assures complete separation of the liquid from the sealing mechanism.

Entrapped air (gas), accumulating at peaks and at the crown of the pipe at locations along the system, rises to the top of the valve and displaces the liquid in the valve's body.

When the liquid level drops to a point where the float is no longer buoyant, the float descends, rolling the flexible rolling seal away from the smaller orifice, the smaller orifice opens and the accumulated air in the upper portion of the valve is released.

Liquid re-enters the valve. The float rises, rolling the flexible rubber seal back to its sealing position. The remaining air gap prevents the liquid from fouling the sealing mechanism.

When internal pressure falls below atmospheric pressure:

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

Main Features

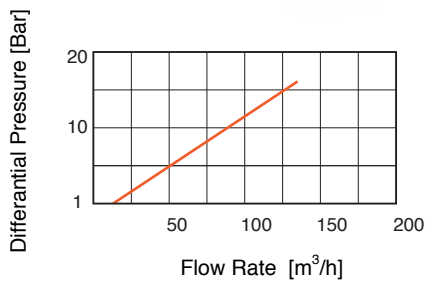
- Working pressure range: 0.2-10 bar
- Testing pressure: 16 bar
- Working Temperature: 60^o C.
- Maximum short-term temperature: 90^o C.
- Body made of composite materials, resistant to corrosion.
- Internal metal parts are made of corrosion-resistant stainless steel.
- Floats are made of composite materials.
- Flexible rolling seal provides smooth positive opening, closing, and leak-free sealing over a wide range of pressure differentials.
- 3/8" threaded discharge outlet enables removal of excess fluids.
- Drainage tap with ball valve is provided.
- The valve's unique design prevents any contact between the 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.
- Spring-loaded float and seal plug connection assures that vibrations of the lower float will not unseal the air release orifice of the air valve.

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- Funnel-shaped lower body automatically drains liquid into the system, allowing valve internals to remain clean and unobstructed.
- The valve discharges air at high flow rate without premature closing.

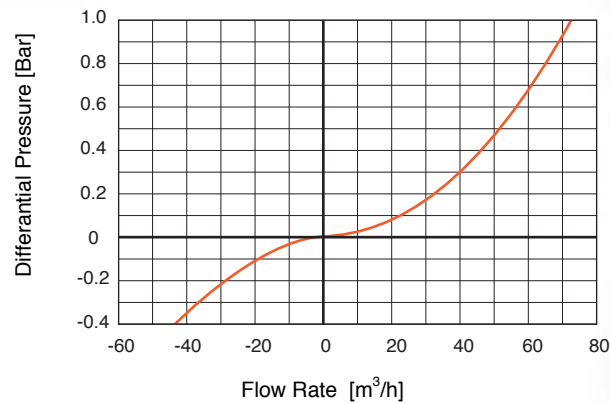
Valve Selection

- These valves are available with 1", 2" BSPT / NPT male threads.
- Additional one-way out check valve attachment allows air discharge, not allowing air intake.

AUTOMATIC AIR DISCHARGE



AIR AND VACUUM FLOW RATE



DIMENSIONS AND WEIGHTS

Model	Dimensions mm			Weight Kg.	Orifice Area mm ²	
	A	B	C		Auto.	A / V
1" 2"	216	324	3/8" BSP	1.78	7.8	100

PARTS LIST AND SPECIFICATION

No.	Part	Material
1.	Body	Reinforced Nylon
2.	Discharge Outlet	Polypropylene
3.	Rolling Seal	E.P.D.M.
4.	Clamping Stem	Reinforced Nylon
5.	Float	Foamed Polypropylene
6.	O-Ring	BUNA-N
7.	Body	Reinforced Nylon
8.	Float Stem	Stainless Steel SAE 316
9.	Clamp	Reinforced Nylon
10.	O-Ring	BUNA-N
11.	Bolt & Nut	Stainless Steel SAE 316
12.	Float	Foamed Polypropylene
13.	Base	Reinforced Nylon
14.	Ball Valve	Brass

