



D-026 250 PSI



Combination Air Valve for Wastewater **PATENTED**

Description

The D-026 Combination Air Valve combines an air & vacuum orifice and an air release orifice in a single body. The valve is specially designed to operate with liquids carrying solid particles such as wastewater and effluents. The combination air valve discharges air (gases) during the filling or charging of the system, admits air into the system while it is being emptied of liquid and releases accumulated air (gases) from the system while it is under pressure and operating. The valve's unique design enables the separation of the liquid from the sealing mechanism and assures optimum working conditions.

Applications

- Pump stations for sewage, wastewater & water treatment plants.
- Sewage water, effluent water and sea water supply lines.

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 should not blow the float shut. Water will lift the float which seals 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 discharge of air reduces pressure surges and other destructive phenomena.

The intake of 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.

The air release component releases entrapped air in pressurized systems. Without air valves, 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 as would a partially closed valve.

In extreme cases this will cause complete flow stoppage.

- Accelerate cavitation damages.
- High-pressure surges.
- Accelerate corrosion of metal parts.
- Danger of high-energy bursts of compressed air.

As the system starts to fill, the combination wastewater valve functions according to the following stages:

1. Entrapped air/gas is discharged by the valve
2. When the liquid level reaches the valve's lower portion, the lower float is lifted, pushing the sealing mechanism to its sealing position.
3. The entrapped air is confined in a pocket between the liquid and the sealing mechanism. The air pressure is equal to the system pressure.
4. Increases in system pressure compress the trapped air in the upper section of the conical chamber. The conical shape assures the height of the air gap. This enables complete 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, and 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 drops, unsealing the rolling seal. The air release orifice opens 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, pushing the rolling seal to its sealing position. The remaining air gap prevents the wastewater from fouling the mechanism.

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

1. The floats will immediately drop down, opening the air & vacuum and air release orifices.
2. Air will reenter the system.

Main Features

- Working pressure range: 3 - 250 psi.
- Maximum working temperature: 140° F.
- Maximum intermittent temperature: 194° F.
- The unique design of the valve prevents contact between the wastewater and the sealing mechanism by creating an air gap at the top of the valve. These features are achieved by:
 - **The conical body shape:** designed to maintain the maximum distance between the liquid and the sealing mechanism and still obtain minimum body length.
 - **Spring-loaded joint between the stem and the upper float:** vibrations of the lower float will not unseal the air release component. Release of air will occur only after enough air accumulates.
 - **The Rolling Seal Mechanism:** 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 250 psi).

- **Funnel-shaped lower body:** designed to ensure that residue wastewater matter will fall back into the system and be carried away by the main pipe.

- All inner metal parts made of stainless steel.

- Unique design of external lever prevents contact between the wastewater and the sealing mechanism, prevents clogging by floating solids and ensures drip-tight sealing.

- The D-026 orifice plug-disc linkage assembly is external, keeping the levers and pins outside the air valve body and its corrosive atmosphere.

Valve Selection

- Size availability: 6", 8"

- Valve manufactured with flanged ends to meet ASA 150 standard or any requested standard.

- Standard steel body.

- Valve body coating: FBE coating according to the international standard DIN 30677-2.

- Additional coatings including Halar are available upon request.

- For best suitability, it is recommended to send the fluid chemical properties along with the valve request.

- **Optional Accessories:**

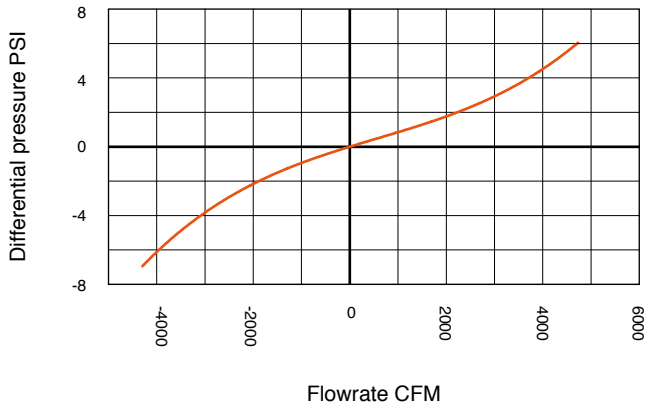
- With a Vacuum Breaker, In-only attachment, allows for air intake only, prevents air discharge.

- With a Non-Slam discharge-throttling attachment, allows for free air intake, throttles air discharge.

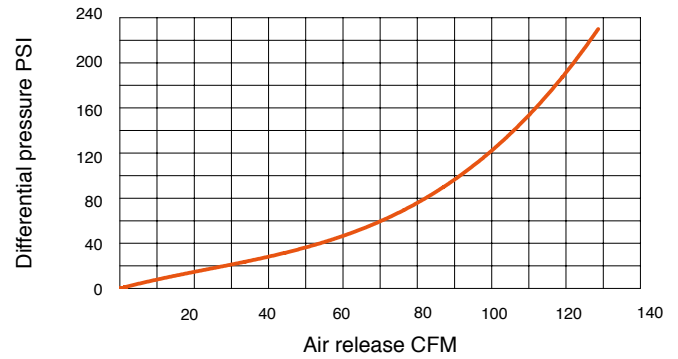
- For best suitability, it is recommended to send the fluid chemical properties along with the valve request.

Upon ordering, please specify: model, size, working pressure, threads standard and type of liquid.

AIR & VACUUM FLOWRATE

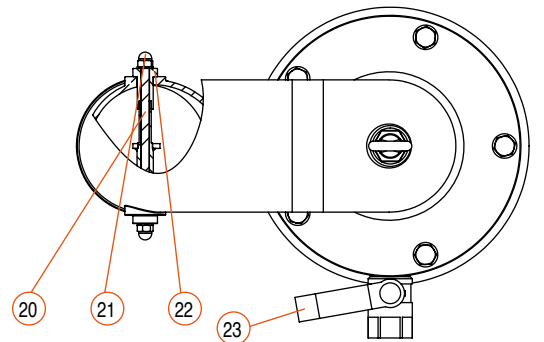


AUTOMATIC AIR RELEASE



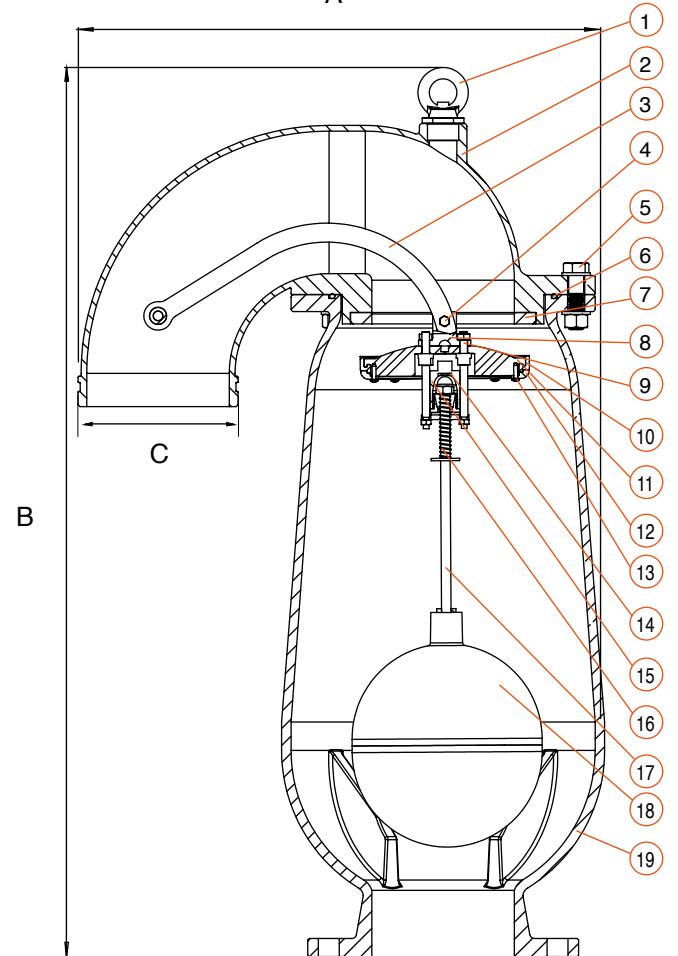
DIMENSIONS AND WEIGHTS

Nominal Size	Dimensions inch			Weight Lbs.	Orifice Area Sq.in	
	A	B	C		Air & Vac.	Auto.
6"	15.9	37	21.8	192	27.376	0.0482



PARTS LIST AND SPECIFICATION

No. Part	Material
1. Lifting Assembly	Stainless Steel SAE 316
2. Cover	Ductile Iron ASTM A536 60-40-18
3. Disc Arm Assy.	Stainless Steel SAE 316
4. Bolt and Nut	Stainless Steel SAE 316
5. Bolt, Nut and Washer	Stainless Steel SAE 316
6. O-Ring	Buna-N
7. Orifice	Stainless Steel SAE 316
8. Flap Adaptor	Reinforced Nylon
9. Guide and Nut	Stainless Steel SAE 316
10. Air & Vacuum Seal	E.P.D.M
11. Air & Vacuum Flap	Reinforced Nylon
12. Air & Vacuum Seal Lock	Acetal
13. Bolt	Stainless Steel SAE 316
14. Air Release Seal	E.P.D.M
15. Air Release Flap	Reinforced Nylon
16. Spring	Stainless Steel SAE 316
17. Float Rod	Stainless Steel SAE 316
18. Float	Polycarbonate
19. Body	Ductile Iron ASTM A526 60-40-18
20. Shaft	Stainless Steel SAE 316
21. Nut	Stainless Steel SAE 316
22. Shaft Bushing	Acetal
23. Ball Valve	Stainless Steel SAE 316



Combination Air Valve for Wastewater - Non Slam

The combination air valve Model D-026 NS protects system components from water hammer in the pipeline under conditions of separation of water head or rapid filling of the line with liquid. When assembled on a controlled air release valve mechanism (NS), it becomes a hammer-reducing valve and prevents slam (D-026 NS). This valve integrates a kinetic air valve, automatic air valve and (normally closed) check valve installed at its discharge outlet.



DIMENSIONS AND WEIGHTS

Nominal Size	Dimensions inch			Orifice Area Sq.in	
	A	B	C	Air & Vac.	Auto.
6"	28.8	36.96	5.9	27.376	0.0482

PARTS LIST AND SPECIFICATION

No. Part	Material
1. Lifting Assembly	Stainless Steel SAE 316
2. Cover	Ductile Iron ASTM A536 60-40-18
3. Disc Arm Assy.	Stainless Steel SAE 316
4. Bolt and Nut	Stainless Steel SAE 316
5. Bolt, Nut and Washer	Stainless Steel SAE 316
6. O-Ring	Buna-N
7. Orifice	Stainless Steel SAE 316
8. Flap Adaptor	Reinforced Nylon
9. Guide and Nut	Stainless Steel SAE 316
10. Air & Vacuum Seal	E.P.D.M
11. Air & Vacuum Flap	Reinforced Nylon
12. Air & Vacuum Seal Lock	Acetal
13. Bolt	Stainless Steel SAE 316
14. Air Release Seal	E.P.D.M
15. Air Release Flap	Reinforced Nylon
16. Spring	Stainless Steel SAE 316
17. Float Rod	Stainless Steel SAE 316
18. Float	Polycarbonate
19. Body	Ductile Iron
20. Nut	ASTM A526 60-40-18
21. Shaft Bushing	Stainless Steel SAE 316
22. Ball Valve	Acetal
23. Check Valve	Stainless Steel SAE 316
24. Drainage Outlet	Stainless Steel

