

D-026 250 psi



Combination Air Valve for Wastewater **PATENTED**

Description

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

Applications

- Wastewater and water treatment plants.
- Wastewater and effluent water transmission 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 will not blow the float shut. Water will lift the float which activates 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 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 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 hydraulic disturbances:

- Restriction of effective flow due to a reduction of the flow area. In extreme cases this will cause complete flow stoppage.
- Obstruction of efficient hydraulic transmission due to air flow disturbances.
- Acceleration of cavitation damages.
- Increase in pressure transients and surges.
- Internal corrosion of pipes, fittings and accessories.
- Dangerous high-energy bursts of compressed air.
- Inaccuracies in flow metering.

As the system fills and is pressurized, the combination wastewater air valve functions in the following stages:

1. Air (gas) is discharged by the valve
2. When the liquid level reaches the valve's lower portion, the 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 separation of the liquid from the sealing mechanism.
5. Entrapped air (gas), accumulating at peaks and along the system, rises to the top of the valve and displaces the liquid in the valve's body.
6. When the liquid level lowers to a point where the float is no longer buoyant, the float drops, unsealing the air release sealing assembly. 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 enters the valve. The float rises, pushing the air release sealing assembly 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 float will drop down, immediately opening the air & vacuum and air release orifices.
2. Air will enter into the system.

Main Features

- Working pressure range: 3 - 250 psi.
- Testing pressure: 360 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 and the external guide rod:** designed to maintain the maximum distance between the liquid and the sealing mechanism and still obtain minimum body length.
 - **Spring-guided linkage between the float/rod assembly and the sealing mechanism:** allows free movement of the float and rod. Vibrations and movement of the float due to turbulence will not unseal the sealing mechanism.
 - **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.
- Discharge outlet enables connection of a vent pipe.
- The ball valve can be opened to release trapped pressure and drain the valve body prior to maintenance and for back-flushing during maintenance.

Valve Selection

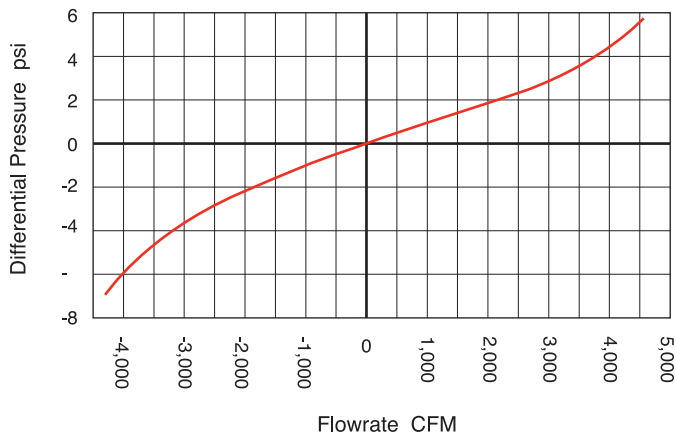
- Size availability: 6", 8".
- Valve manufactured with flanged ends to meet any requested standard.
- An optional Non-Slam discharge-throttling attachment throttles air discharge but allows for full free air intake (see drawings below on pages titled D-026 NS and D-026 NS STST).

- Standard stainless steel body, also available with a cast ductile body and polyethylene cover.
- Valve body coating: fusion bonded epoxy coating in accordance with the standard DIN 30677-2.
- Other coatings are available upon request.

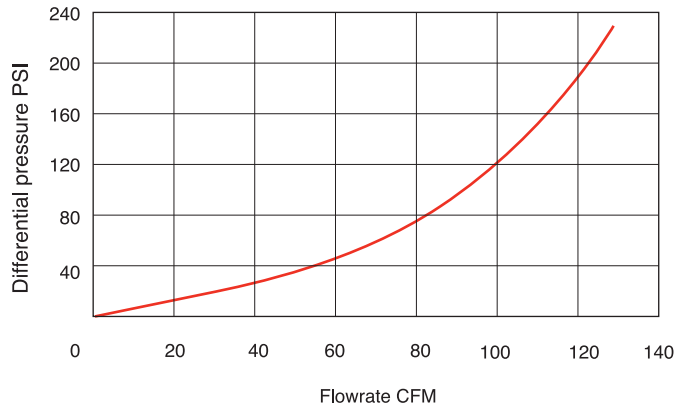
Note

- The D-026 air valve is intended for use with raw wastewater. For use with aggressive liquids, please consult with our application engineers or with the marketing dept.
- 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, thread and flange standard and type of liquid.

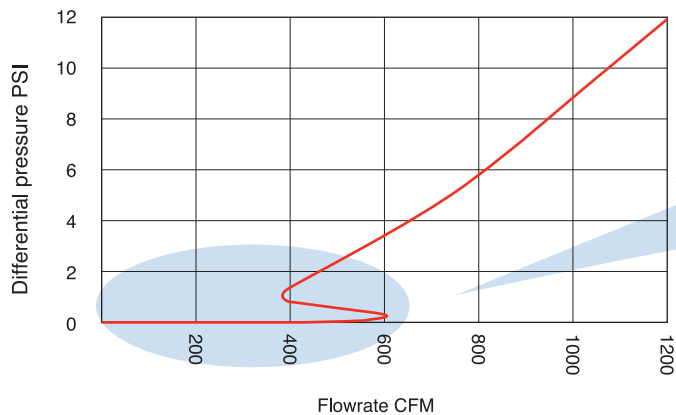
AIR & VACUUM FLOWRATE



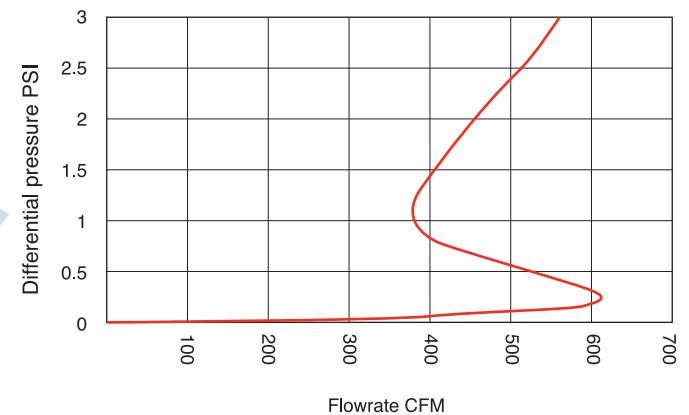
AIR RELEASE FLOWRATE



D-026 NS AIR & VACUUM FLOWRATE



D-026 NS DISCHARGE SWITCHING REGION



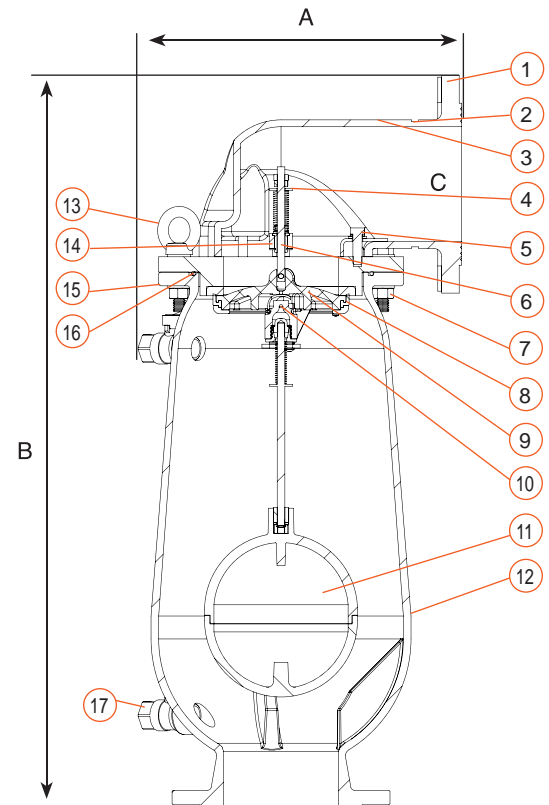
DIMENSIONS AND WEIGHTS

Inlet Size	Dimensions Inch		Connection C	Weight Lbs.	Orifice Area Sq.In.	
	A	B			Air Rel.	A / V
6"	17.6	37.7	6" Fl. / Vic.	177.7	0.0496	27.38
8"	17.6	37.7	6" Fl. / Vic.	184.3	0.0496	27.38



PARTS LIST AND SPECIFICATION

No.	Part	Material
1.	Flange Supports	Stainless Steel SAE 304
2.	Victaulic Connection	
3.	Elbow Discharge Outlet	Polyethylene
5.	Nut, Spring Washer & Washer	Stainless Steel SAE 316 + 304
4.	Spring, Washer, Nut	Stainless Steel SAE 316
6.	Sealing Assembly Guide Rod	Stainless Steel SAE 316
7.	Bolt, Washer, Nut	Stainless Steel SAE 316
8.	Air & Vacuum Seat	Stainless Steel SAE 316
9.	Air & Vacuum Sealing Assembly	RN + Stainless Steel SAE 316 + EPDM
10.	Air Release Sealing Assembly	RN + Stainless Steel SAE 316 + EPDM
11.	Float Assembly	Polycarbonate/Stainless Steel 316 + Stainless Steel 316
12.	Body	Ductile Iron ASTM A-536-60-40-18
13.	Lifting Ring	Stainless Steel SAE 316
14.	Bridge Assembly	Stainless Steel SAE 316 + Aucolon
15.	Cover	Ductile Iron ASTM A-536-60-40-18
16.	O-Ring	BUNA-N
17.	Ball Valve 1"	Stainless Steel SAE 316



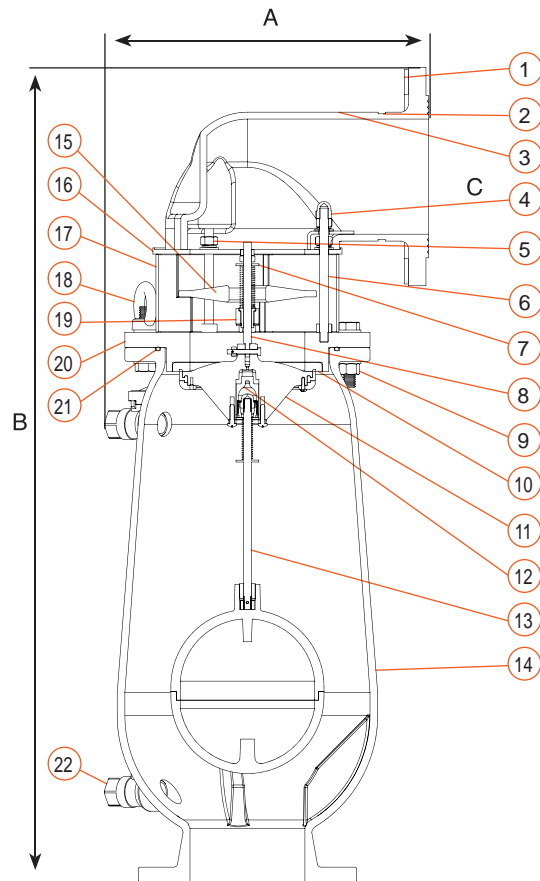
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3.	Elbow Discharge Outlet	Polyethylene
4.	Domed Nut, Washer & Spring Washer	Stainless Steel SAE 316 + 304
5.	Nut, Spring Washer & Washer	Stainless Steel SAE 316 + 304
6.	Threaded Rod	Stainless Steel SAE 316
7.	Spring, Washer, Nut	Stainless Steel SAE 316
8.	Sealing Assembly Guide Rod	Stainless Steel SAE 316
9.	Bolt, Washer, Nut	Stainless Steel SAE 316
10.	Air & Vacuum Seat	Stainless Steel SAE 316
11.	Air & Vacuum Sealing Assembly	RN + Stainless Steel SAE 316 + EPDM
12.	Air Release Sealing Assembly	RN + Stainless Steel SAE 316 + EPDM
13.	Float Assembly	Polycarbonate/Stainless Steel 316 + Stainless Steel 316
14.	Body	Ductile Iron ASTM A-536-60-40-18
15.	Non Slam Disc	Ductile Iron ASTM A-536-60-40-18
16.	Disc Housing Cover	Steel St 37
17.	Disc Housing	Steel St 37
18.	Lifting Ring	Stainless Steel SAE 316
19.	Bridge Assembly	Stainless Steel SAE 316 + Aucolon
20.	Cover	Ductile Iron ASTM A-536-60-40-18
21.	O-Ring	BUNA-N
22.	Ball Valve 1"	Stainless Steel SAE 316



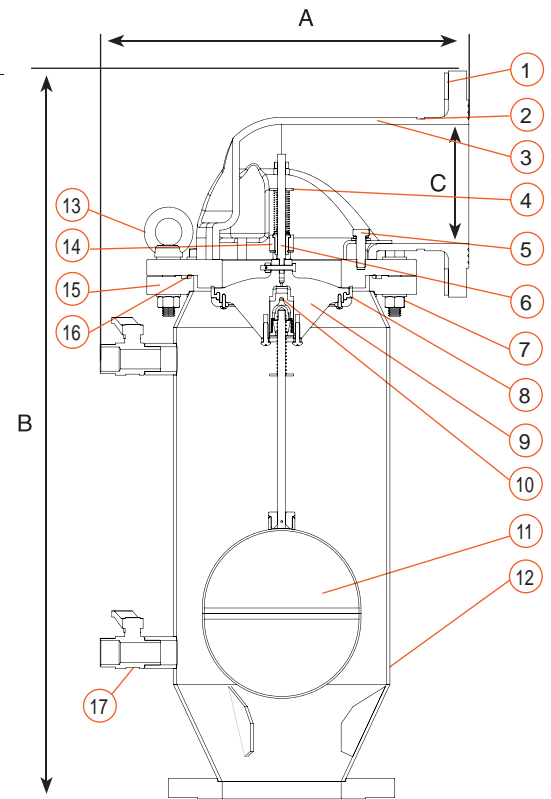
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4.	Spring, Washer, Nut	Stainless Steel SAE 316
6.	Sealing Assembly Guide Rod	Stainless Steel SAE 316
7.	Bolt, Washer, Nut	Stainless Steel SAE 316
8.	Air & Vacuum Seat	Stainless Steel SAE 316
9.	Air & Vacuum Sealing Assy.	RN +Stainless Steel SAE 316 +EPDM /Viton
10.	Air Release Sealing Assy.	RN +Stainless Steel SAE 316 +EPDM /Viton
11.	Float Assembly	Stainless Steel SAE 316 / Polycarbonate + Stainless Steel SAE 316
12.	Body	Stainless Steel SAE 316
13.	Lifting Ring	Stainless Steel SAE 316
14.	Bridge Assembly	Stainless Steel SAE 316 + Aucolon
15.	Cover	Stainless Steel SAE 316
16.	O-Ring	BUNA-N
17.	Ball Valve 1"	Stainless Steel SAE 316



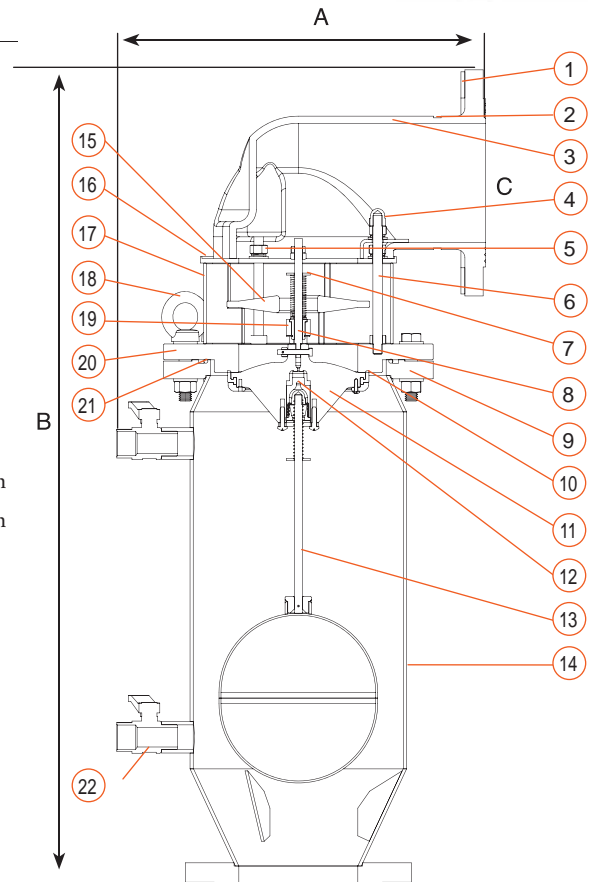
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7.	Spring, Washer, Nut	Stainless Steel SAE 316
8.	Sealing Assembly Guide Rod	Stainless Steel SAE 316
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10.	Air & Vacuum Seat	Stainless Steel SAE 316
11.	Air & Vacuum Sealing Assy.	RN +Stainless Steel SAE 316 +EPDM /Viton
12.	Air Release Sealing Assy.	RN +Stainless Steel SAE 316 +EPDM /Viton
13.	Float Assembly	Stainless Steel 316 + Stainless Steel 316 / Polycarbonate
14.	Body	Stainless Steel SAE 316
15.	Non Slam Disc	Stainless Steel SAE 316
16.	Disc Housing Cover	Stainless Steel SAE 316
17.	Disc Housing	Stainless Steel SAE 316
18.	Lifting Ring	Stainless Steel SAE 316
19.	Bridge Assembly	Stainless Steel SAE 316 + Aucolon
20.	Cover	Stainless Steel SAE 316
21.	O-Ring	BUNA-N
22.	Ball Valve 1"	Stainless Steel SAE 316



Convert D-026 to Non Slam

Prepare the D-026 Wastewater Air Valve – see FIG. 1

1. Unscrew the three Bolts (2) that attach the Discharge Outlet (1) to the Cover (14)
2. Place the Washers (8), Spring Lock Washers (7) and Elbow Support (3) to the side for use when assembling the Non Slam addition. The Bolts can be discarded.
3. Remove the Discharge Outlet from the air valve.

Add the Non Slam Addition to the D-026 – see FIG. 3

1. Manually screw each of the three Threaded Rods (10) to the maximum into their corresponding holes on the air valve Cover (14).
2. Screw a Nut (6) onto each of the three Threaded Rods until the bottom of the rod and tighten each one with the aid of a key wrench.
3. Firmly press the slotted side of the two Disk Housing Seals (13), one on each end of the Disk Housing (12).
4. Place the Disk Housing over the Threaded Rods and lower it to sit flatly on the air valve Cover.
5. Place the Disc (11) inside the Disk Housing.
6. Slide the Disc Housing Cover (9) down over the three Threaded Rods until it sits flatly on the Disk Housing.
7. Slide the Washer (8) and Spring Lock Washer (7) down on each the three Threaded Rods until they sit flatly on the Disc Housing Cover.
8. Screw the Nut (6) on each of the three Threaded Rods and tighten each one against the corresponding Spring Lock Washer.
9. Slide the Discharge Outlet (1) down on the three Threaded Rods until it sits flatly on the Disc Housing Cover.
10. Slide the Washer and Spring Lock Washer (parts saved from the D-026 – see A. Step 2) down on each the two Threaded Rods found on the outside of the Discharge Outlet until they sit flatly on the Discharge Outlet.
11. First slide the Elbow Support (3) on the Threaded Rod found inside the Discharge Outlet (see FIG. 2), the slide on the Washer and Spring Lock Washer (parts saved from the D-026 – see A. Step 2) down on the Threaded Rod.
12. Screw the Domed Nut (4) on each end of the three Threaded Rods and tighten accordingly.

