

S-020 250 PSI

S-022 360 PSI



Automatic Air Release Valve for Wastewater

Description

The S-020 and S-022 Automatic Air Release Valves are specifically designed to operate with liquids carrying solid particles such as wastewater and effluent.

The valves release accumulated air (gases) from the system while under pressure and operating.

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

The presence of air in a wastewater system can reduce the effective cross sectional flow area, resulting in increased head loss and decreased flow.

Unwanted air may also cause water hammer, metering inaccuracies and internal corrosion.

Applications

- Pump stations for sewage, wastewater & water treatment plants.
- Wastewater and effluent water transmission lines.

Operation

A.R.I. models S-020, S-022 are air release valves for wastewater systems.

As the system fills and is pressurized, the automatic air release valve functions according to the following stages:

1. When the liquid level reaches the valve's lower portion, the lower float is lifted, pushing the sealing mechanism to its sealing position.
2. The entrapped air is confined in a pocket between the liquid and the sealing mechanism. The air pressure is equal to the system pressure.
3. 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.
4. 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.
5. 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.
6. Liquid 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.

Note: Automatic air release valves are designed to release air as it accumulates at peaks in pressurized systems. They are not normally recommended for vacuum protection or for discharging large volumes of air, because of their inherently small orifices. For this purpose, air & vacuum valves are recommended as they have much larger orifices. However, air release valves will permit air to enter the system under vacuum conditions. If this is not desirable, specify the one-way out check valve.

Main Features

- Working pressure range: S-020: 3 – 250 psi, S-022: 3 – 360 psi
- Testing pressure: S-020: 360 psi, S-022: 580 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.
 - Independent spring-guided linkage between the lower float/rod assembly and the upper float sealing mechanism: allows free movement of the float and rod. Vibrations and movement of the lower float due to turbulence will not unseat the upper float 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.
 - Rolling seal: provides smooth positive opening, closing, and leak free sealing over a wide range of pressure differentials.
- Internal metal parts: made of corrosion resistant stainless steel.
- Threaded discharge outlet enables connection of a vent hose.
- 1" ball valve releases trapped pressure and drains the valve body prior to maintenance and for back-flushing during maintenance.

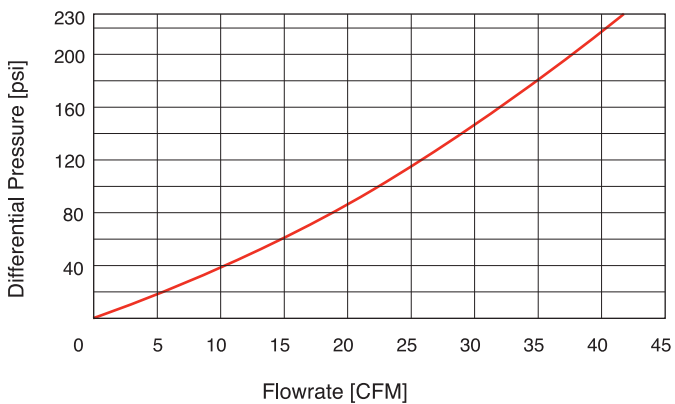
Valve Selection

- Size range: 2"– 4".
- These valves are manufactured with flanged ends to meet any requested standard
- The 2" valve is also available with a NPT male threaded connection.
- Standard stainless steel body, also available in welded/cast steel.
- Valve body coating: fusion bonded epoxy coating according to the standard DIN 30677-2.
- Other coatings are available upon request.

Note

- The S-020, S-022 air valves are 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.

S-020 AIR RELEASE FLOWRATE



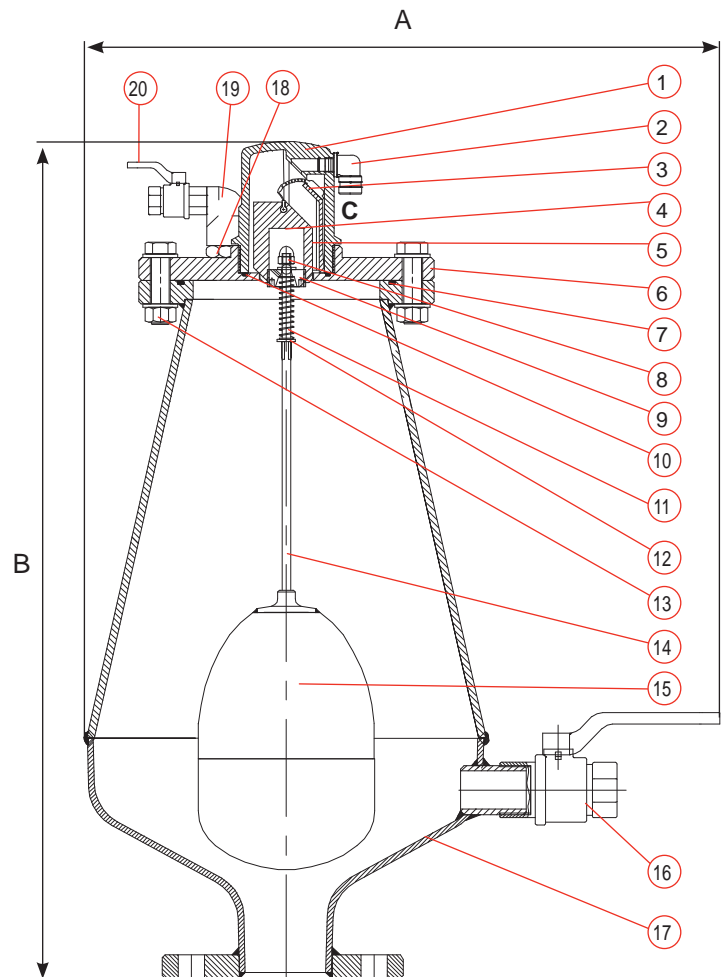
DIMENSIONS AND WEIGHT



Inlet Size	Dimensions Inch		Connection C	Weight Lbs.	Orifice Area Sq.In.
	A	B			
2" Threaded	18.2	22.6	1/8" NPT Female	35.3	0.018
2" Flanged	18.2	22.6	1/8" NPT Female	37.5	0.018
3" Threaded	18.2	22.6	1/8" NPT Female	37.5	0.018
3" Flanged	18.2	22.6	1/8" NPT Female	39.7	0.018
4" Flanged	18.2	22.6	1/8" NPT Female	41.9	0.018

PARTS LIST AND SPECIFICATION

No.	Part	Material
1.	Body	Reinforced Nylon
2.	Discharge Outlet	Polypropylene
3.	Rolling Seal	E.P.D.M.
4.	Float	Foamed Polypropylene
5.	Clamping Stem	Reinforced Nylon
6.	Cover	ST ST SAE 316 / Reinforced Nylon
7.	O-Ring (cover)	BUNA-N
8.	Domed Nut	Stainless Steel SAE 316
9.	Stopper	Polypropylene
10.	O-Ring	BUNA-N
11.	Spring	Stainless Steel SAE 316
12.	Washer	Stainless Steel SAE 316
13.	Bolts and Nuts	Stainless Steel SAE 316
14.	Stem	Stainless Steel SAE 316
15.	Float	Polycarbonate / St. St. SAE 316
16.	Ball Valve 1"	Stainless Steel SAE 316
17.	Body 2", 4" - 8" 3"	ST ST SAE 316 / Steel DIN ST.37 / Steel A216 WCB / ST ST ASTM A744 CF8M
18.	Nipple	Stainless Steel
19.	Elbow Connection	Stainless Steel
20.	Ball Valve 1/8"	Stainless Steel SAE 316



DIMENSIONS AND WEIGHT

Inlet Size	Dimensions Inch		Connection C	Weight Lbs.	Orifice Area Sq./In.
	A	B			
2" Threaded	18.2	23.3	1/8" BSP Female	37.5	0.014
2" Flanged	18.2	23.3	1/8" BSP Female	39.7	0.014
3" Threaded	18.2	23.3	1/8" BSP Female	39.7	0.014
3" Flanged	18.2	23.3	1/8" BSP Female	41.9	0.014
4" Flanged	18.2	23.3	1/8" BSP Female	44.1	0.014



PARTS LIST AND SPECIFICATION

No.	Part	Material	
1.	Shell	Ductile Iron	
2.	Body	Reinforced Nylon	
3.	Rolling Seal	E.P.D.M.	
4.	Float	Foamed Polypropylene	
5.	Clamping Stem	Reinforced Nylon	
6.	Cover	Stainless Steel SAE 316 / Steel DIN ST.37	
7.	O-Ring	BUNA-N	
8.	Domed Nut	Stainless Steel SAE 316	
9.	Stopper	Polypropylene	
10.	O-Ring	BUNA-N	
11.	Spring	Stainless Steel SAE 316	
12.	Washer	Stainless Steel SAE 316	
13.	Bolts and Nuts	Stainless Steel SAE 316	
14.	Stem	Stainless Steel SAE 316	
15.	Float	Stainless Steel SAE 316	
16.	Ball Valve 1"	Stainless Steel SAE 316	
17.	Body	2", 3" 4" - 8"	ST ST SAE 316 / Steel DIN ST.37 / Steel A216 WCB / ST ST ASTM A744 CF8M
18.	Nipple	Stainless Steel SAE 316	
19.	Angle	Stainless Steel SAE 316	
20.	Ball Valve 1/8"	Stainless Steel SAE 316	

* The float in the drawing is made of St.St.

