



# S-020 HC VB 16 bar

# S-022 HC VB 25 bar



## High Capacity Automatic Air Release Valve with Vacuum Breaker

### Description

The S-020/S-022 HC VB automatic air release valve releases accumulated air/gas from the system while it is operating under pressure. The presence of air/gas in the system can reduce the effective cross sectional flow area, resulting in increased pressure loss and decreased flow. Unwanted air/gas may also cause water hammer and metering inaccuracies, while hastening corrosion.

The S-020/S-022 HC VB automatic air release component builds an air/gas pocket inside the valve body, separating the liquid with its solid particles from the sealing mechanism and ensuring a leak-free seal. When pressure develops in the S-020/S-022 HC VB air valve, the vacuum breaker orifice is completely closed. With a reduction in pressure during drainage, pump shut off or water column separation, the pressure on the vacuum breaker sealing assembly is diminished. It drops down, opening the vacuum breaker orifice and allowing for the intake of air from the atmosphere into the system and protecting it from vacuum conditions.

### Application

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

### Operation

The S-020/022 HC VB is a high capacity automatic air release valve and vacuum breaker for systems with suspended solids. The valve releases entrapped air from pressurized systems and admits air during vacuum conditions.

**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 wastewater air valve functions in the following stages:**

1. Liquid enters the air valve and lifts the float, 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 entrapped 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. Air/gas, accumulating at peaks and along the system, rises to the top of the air valve and displaces the liquid in the valve's body.

5. When the liquid level lowers 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 liquid from fouling the mechanism.

**The air valve operates when the system is under vacuum conditions according to the following stages:**

1. In the event of a pipe break, pump shut down and during water column separation, the independent normally closed vacuum breaker component will open.
2. The sealing mechanism will drop down from the vacuum breaker orifice and air will enter the air valve and pipeline via the orifice.

### Main Features

- Working pressure range: S-020 HC VB : 0-16 bar (PN16)  
S-022 HC VB : 0-25 bar (PN25)
- Testing Pressure: 1.5 times the maximum working pressure.
- Maximum operating temperature: 60°C.
- Maximum intermittent temperature: 90° C.
- The unique design of the valve prevents contact between the liquid 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-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 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.

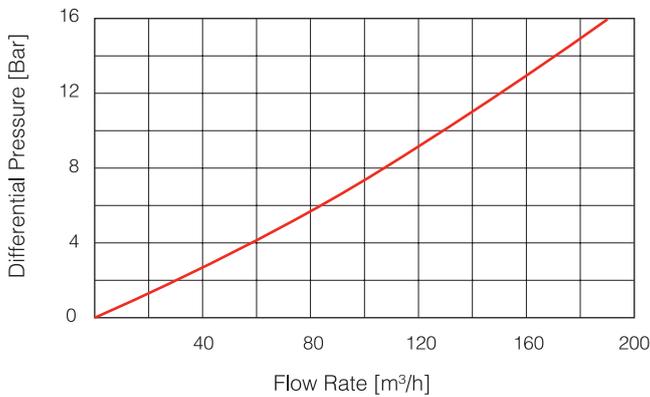
- Internal metal parts: made of corrosion-resistant stainless steel.
- Threaded discharge outlet enables connection of a vent pipe.
- The ball valve can be opened to release trapped pressure and drain the valve body prior to maintenance.
- Normally closed vacuum breaker automatically opens during vacuum conditions to protect the pipeline.

## Valve Selection

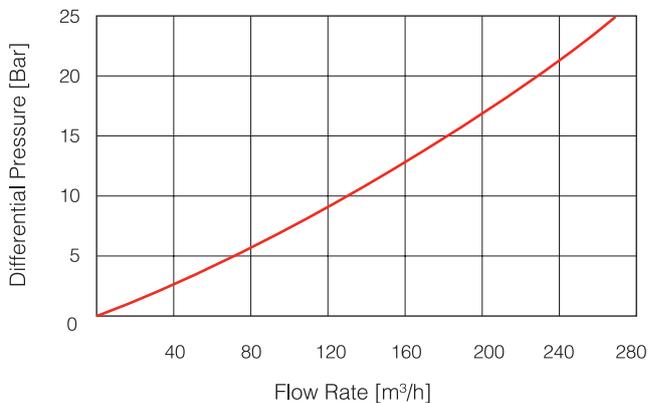
- Size range: 2" – 4".
- These valves are manufactured with flanged ends to meet any requested standard
- The 2", 3" valve is available both BSP or NPT male threaded connection and flanged. 4" - flanged only.
- Valve body coating: fusion bonded epoxy coating in compliance with standard DIN 30677-2.
- Other coatings are available upon request.
- 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.**

AUTOMATIC AIR RELEASE FLOW RATE



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AIR INTAKE



## DIMENSIONS AND WEIGHTS

Nominal Size	Dimensions mm				Weight Kg.	Orifice Area mm <sup>2</sup>
	A	B	C	D		
2" Threaded	271.8	584.2	1"	1 ½"	17.3	40
2" Flanged	271	603	1"	1 ½"	16.5	40
3" Threaded	271	603	1"	1 ½"	16.2	40
3" Flanged	271	603	1"	1 ½"	16.7	40
4" Flanged	271	603	1"	1 ½"	17.2	40

## PARTS LIST AND SPECIFICATION

No.	Part	Material
1	VB Air Inlet	Polypropylene
2	ARV Air Outlet	Polypropylene
3	Coupling	Polypropylene
4	Bolt, Nut & Washer	Steel / Stainless Steel 316
5	O-ring	BUNA-N
6	Cover	Steel DIN ST.37
7	O-ring	BUNA-N
8	Orifice	Reinforced Nylon
9	Spring Pin	Stainless Steel 316
10	Lever	Reinforced Nylon
11	Rolling Seal	EPDM
12	Float Assembly	Float: Polypropylene Rod: Stainless Steel SAE 316
13	Body	Cast Steel ASTM A216 WCB
14	Ball Valve	Brass - Nickel Coated
15	Nut & Washer	Stainless Steel 316
16	Spring	Stainless Steel SAE 16
17	Guide	Stainless Steel 316
18	Safety Bolt	Stainless Steel 316
19	Disc	Stainless Steel 316
20	Orifice Seat	Stainless Steel 316
21	Orifice Seal	EPDM
22	Nut & Washer	Stainless Steel 316
23	Spring	Stainless Steel SAE 316

