Wastewater anti water hammer combination air valve in stainless steel AISI 316 Mod. SCS - AS

The air valve guarantees the proper operation of sewage lines allowing the entrance of large air quantity in case of pipe bursting or draining, the release of air pockets during working conditions and the controlled air outflow speed to prevent surge effects.

Technical features and benefits

- Lower body in AISI 316 designed with strongly sloped walls to avoid grease and/or other material deposit.
- Upper body in AISI 316 containing the air release device protected against possible projections and spurts during rapid filling phases, by a stainless steel deflector.
- Mobile block including a shaft and a large float, both in stainless steel AISI 316, placed on the lower body and connected to the air release mechanism and to the main orifice obturator.
- Anti Shock automatism composed of a metallic disk with 2 or more adjustable orifices, a guide bar and a counteracting spring in stainless steel.
- Drainage valve for chamber control and draining.
- Maintenance can easily be performed from the top without removing the air valve from the pipe.
- Evacuation bend suitable for flooded environments with 1" threaded outlet.

Applications

- Industrial and civil plants, exposed to water hammer events, in presence of liquid with solids and debris.
- Mines.
- Desalination plants.
- Deep well boreholes.
- Special version as a gas air release valve.

Operating principle

Controlled air discharge

During the pipe filling it is necessary to avoid rapid closures, responsible of water hammer effects. The SCS AS, thanks to the anti-shock feature, will control the air outflow; the risk of overpressure will therefore be minimized.

Air release during working conditions

During operation the air produced by the pipeline is accumulated in the upper part. Little by little it is compressed and its volume increases, pushing the liquid level downwards allowing the air release through the nozzle.

Entrance of large volumes of air

During pipeline draining, or pipe bursts, it is necessary to bring in as much air as the quantity of outflowing water, to avoid negative pressure and serious damages of the pipeline and the entire system.

Optional

■ **Vacuum breaker version**, to allow the entrance of large volumes of air only with the anti water hammer feature. This model is normally recommended near the pumps and in changes in slope ascending, long ascending segments exposed to transients events. More in general wherever air release won't be required still providing some protection against water hammer.

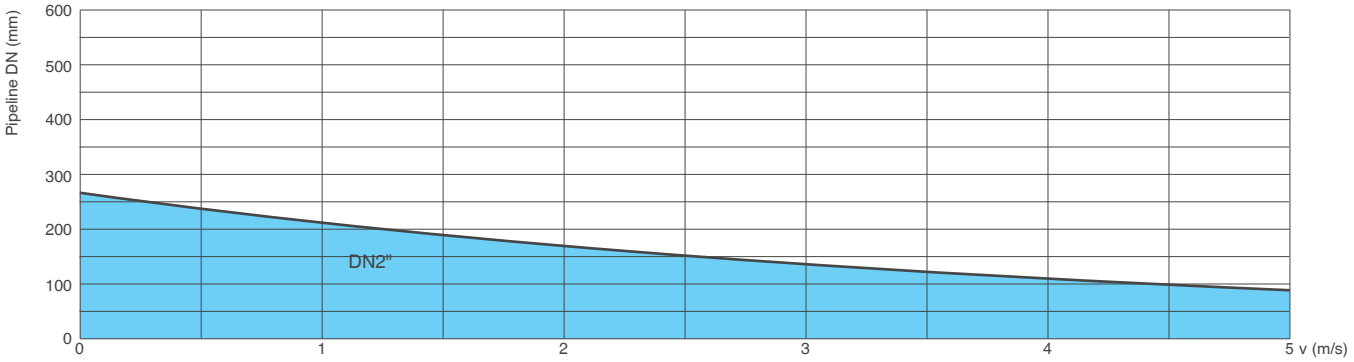
■ **Version for air entrance only SCS IO series**, available for vacuum breaker model only. The most important application of IO is to allow the air valve installation in those locations of the system where, for project requirements, air discharge and release must be avoided.

■ The counteracting spring force as well as the sonic nozzles, both responsible of the proper operation of the AS device, can be modified on request according to the project conditions and the transient analysis.

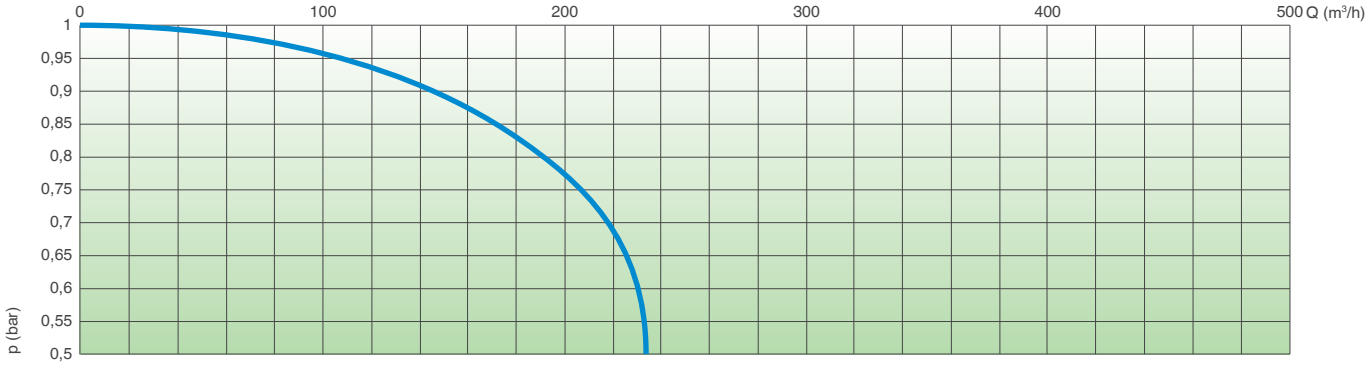
Technical data

Air valve choice chart

Air valve size as a function of pipeline diameter and fluid flow.



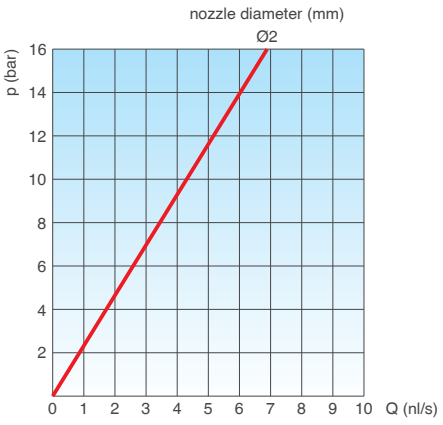
Air flow performance charts



AIR ENTRANCE DURING PIPE DRAINING

The air flow charts were created in Kg/s from laboratory tests and numerical analysis, then converted using a safety factor.

AIR RELEASE DURING WORKING CONDITIONS



Working conditions

Waste water max. 70°C.
Maximum pressure 16 bar.
Minimum pressure 0,09 bar.
Version for high temperature available on request.

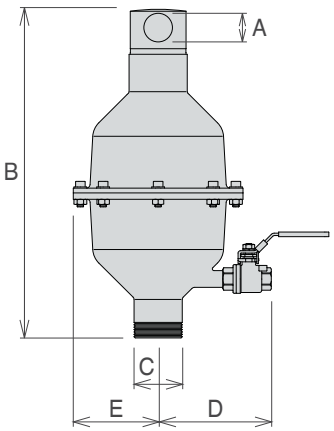
Standard

Designed in compliance with EN-1074/4.
Manufactured with 2" outlet; supplied on request with flanges according to EN 1092/2 or ANSI.
Changes on the flanges details on request.

Nozzle choice

Nozzle diameter in mm according to the size of the air valve and the PN.

	PN 10	PN 16
DN 2"	2	2

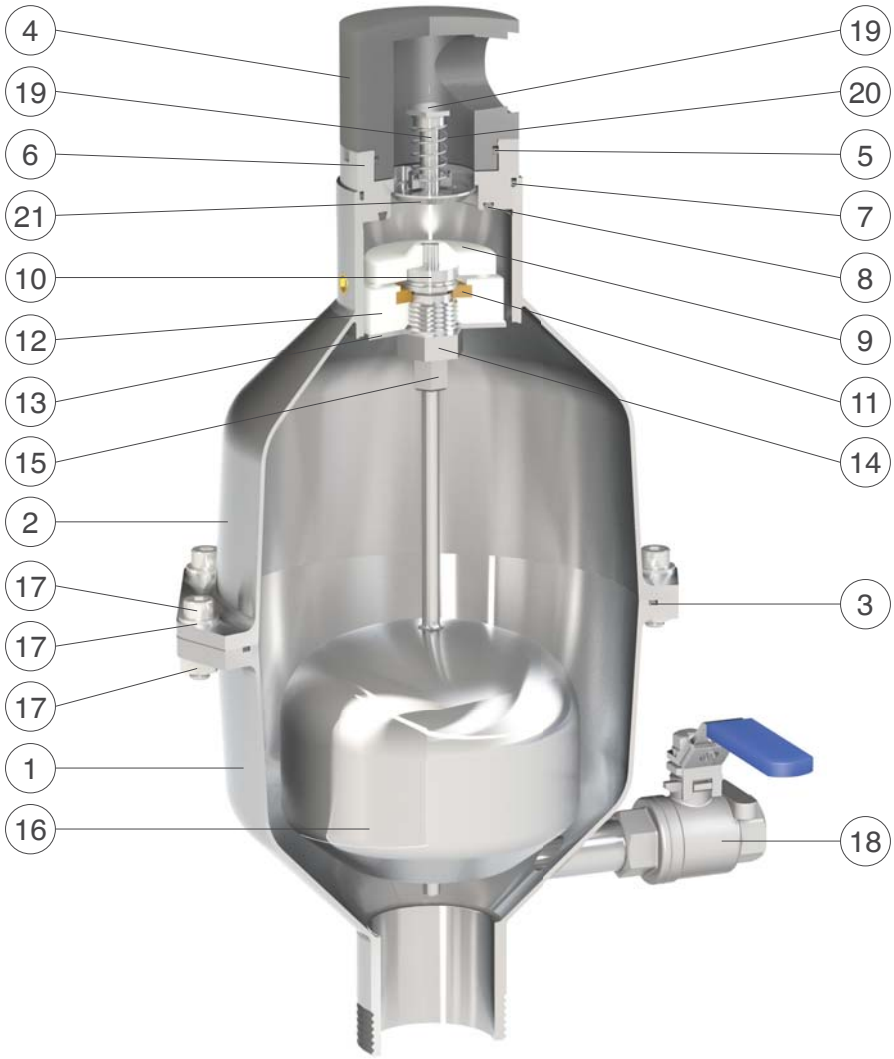


Weight and dimensions

DN (C) inch	A inch	B mm	D mm	E mm	Main orifice mm²	Nozzle mm²	Weight Kg
2"	1"	421	137	106,5	490	2,3	4

All values are approximate, consult CSA service for more details.

Technical details



N.	Component	Standard material	Optional
1	Lower body	stainless steel AISI 316	
2	Upper body	stainless steel AISI 316	
3	O-ring	NBR	EPDM/Viton/silicone
4	Cap	PVC	
5	O-ring	NBR	EPDM/Viton/silicone
6	Seat	stainless steel AISI 316	
7	O-ring	NBR	EPDM/Viton/silicone
8	Seat gasket	NBR	EPDM/Viton/silicone
9	Obturator	polypropylene	
10	Nozzle subset	stainless steel AISI 316	
11	Plane gasket	NBR	
12	Lower gasket holder	polypropylene	
13	Deflector	stainless steel AISI 316	
14	Guiding nut	stainless steel AISI 316	
15	Upper gasket holder	stainless steel AISI 316	
16	Float	stainless steel AISI 316	
17	Screws, washers and nuts	stainless steel AISI 304	stainless steel AISI 316
18	Drain valve	stainless steel AISI 316	
19	AS shaft	stainless steel AISI 316	
20	Spring	stainless steel AISI 302	
21	AS flat	stainless steel AISI 316	

The list of materials and components is subject to changes without notice.