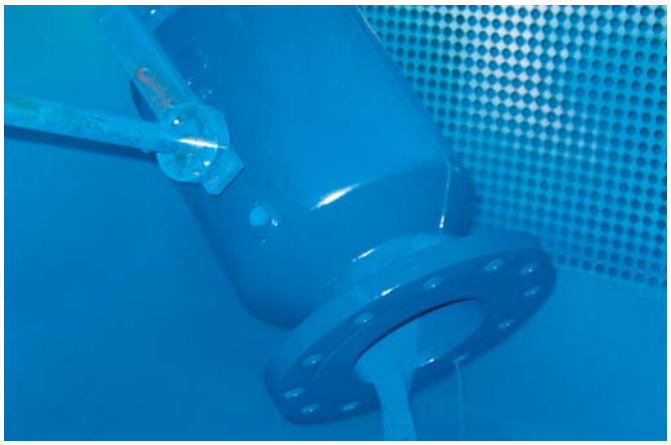
Air valves for sewage

The company was founded in 1987 by transforming the former CSA, which was a trading company dealing with pipes and valves for water networks, into a manufacturing company, through the research and realization of pillar fire hydrants. These were compliant with the UNI 9485 regulation, which was at the approval stage. Since then many other products have been added.
The history of our company is characterised by years of technical and commercial research, which have enabled us to offer a complete range of valves designed for controlling, regulating and protecting the pipelines under pressure in both waterworks and sewage lines as well as fire hydrants.
Our many industrial patents and innovative technical solutions, together with modern and attractive style of design, have made it possible to differentiate our products from those offered by competitors and have allowed us to become a point of reference in our sector.
Flexibility and reliability have been the key points of CSA's rapid growth over the last few years. We are perfectly aware that we are managing the world's most precious resource and, motivated by this responsibility and the commitment towards our customers, we have dedicated ourselves to constantly improving our products, placing them at the highest levels of quality.

Quality

In the manufacturing business today, quality is the fundamental requirement for achieving and maintaining a growing market share.
For this reason we have always aimed at developing a synergy between the various sectors of the company and thus ensuring:
- Quick and precise answers;
- Evaluation of data received and immediate response;
-Rigorous control of incoming and outgoing products.
Since 1998 CSA is certified according to regulation ISO 9001 by RINA (Italian Naval Registry) recently converted into ISO 9001/2008.



During the research and realisation of new products, CSA has always focused his efforts on:
- Listening to the customer's needs and finding the best solution both at the design and operational phases.
- Guiding our R&D department to develop ranges of modern, reliable and complementary products.
- Adopting production techniques that, even while complying with the severest quality standards, would allow us to reduce delivery times.
- Guaranteeing complete technical support for our customers and prompt after-sales assistance.

This philosophy characterizes us not only as a valve manufacturer but also as a reliable partner whom you can
always depend on for consulting and solutions.
The production cycle, aimed at the constant improvement of our products and complete customer satisfaction, ensures predetermined margins of tolerance by establishing production standards, which guarantee that the semi finished products reach the next production stage with the required specifications.
All our valves are made of ductile cast iron GJS 400-15 / 500-7 in absolute compliance with European standards, and are suitable for PN 25-40 bar.
The manufacturing process is carried out exclusively by means of numerically controlled lathes, mills, and horizontal machining units. Subsequent step-by-step controls are based on strict quality procedures. Painting, pre-treated by sand blasting grade SA 2.5, is carried out inside a fluidized bed containing epoxy powder, which guarantees maximum surface protection. All our products are tested under water pressure and certified.

Combination air valve for sewage
Mod. SCF

SCF air valve guarantees the proper operation of sewage lines allowing the entrance and the discharge of large volumes of air, both during pipe draining and filling operations, and the release of air pockets during working conditions.

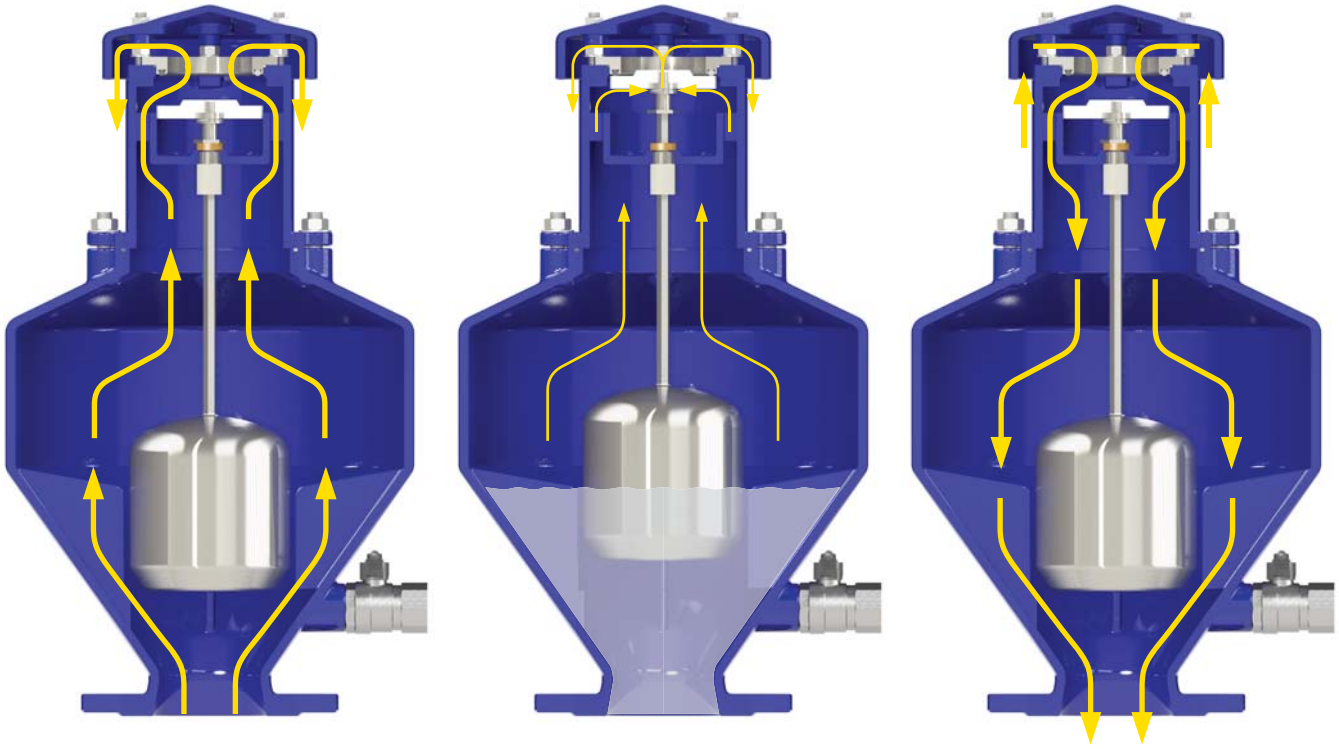
Technical features and benefits

- Large lower body designed with strongly sloped high walls to avoid deposit of grease and/or other material, and containing four ribs obtained by casting to guide the stainless steel float.
- Upper body containing an air release device protection cup against projections during rapid filling phases.
- Mobile block including a large AISI 316 stainless steel float, placed on the lower body, and connected through a stainless steel rod to the air release system.
- Flat obturator in solid polypropylene to avoid deformations and to prevent if from remaining stuck to the gaskets, while other materials have the tendency to do it.
- Drainage valve for chamber control and draining.
- Nozzle and gasket holder (pat. pending) wear resistant thanks to gasket compression control
- Maintenance can be easily performed from the top without removing the air valve from the pipe.
- Evacuation bend in polypropylene standard for DN 50/65 and on request for other DN.

Applications

- Sewage main transmission lines.
- Treatment plants.
- Irrigation systems in presence of solids/debris in suspension.
- Whenever the technology of air valves for treated water can’t be used for the risk of clogging and damages to the internal components.

Operating principle



Discharge of large volumes of air

During the pipe filling it is necessary to discharge air as water flows in. The SCF, thanks to an aerodynamic full port body and deflector, will make sure to avoid premature closures of the mobile block during this phase.

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. This is to avoid negative pressure and serious damages of the pipeline and the entire system.

Optional

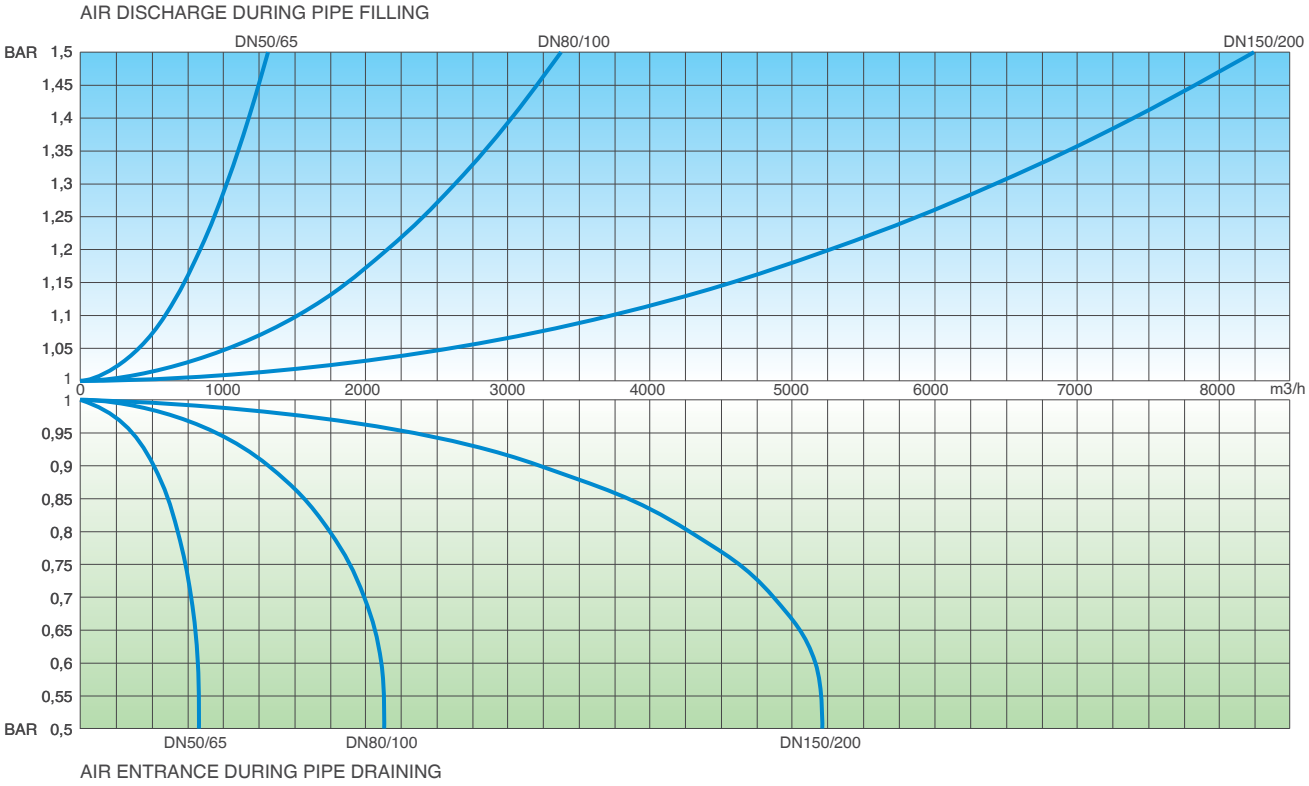
■ **Vacuum breaker version Mod. SCF 2F**, to allow the entrance and discharge of large volumes of air only. This model is normally recommended in changes in slope ascending, long ascending segments, and wherever the air release won't be required.

■ **Version for submerged applications**, **SUB series,** available both for SCF and SCF 2F Models, with elbow for air conveyance. The design sprang from the necessity of having an air valve performing also in case of flood, without the risk of contaminated water entering the pipeline. Another benefit of SUB is to avoid the spray effect, conveying spurts coming from the rapid closure of the air valve.

■ **Version for air discharge only SCF EO series (on request)**, available both for SCF and SCF-2F models. The most important application of EO is to allow the air valve installation in those locations of the system where HGL may drop below the pipe profile, and to any other node where for project requirements air entrance must be avoided.

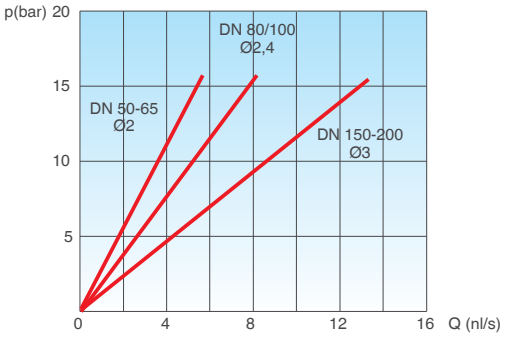
■ **Version for air entrance only SCF IO series**, available for vacuum breaker model only. The most important application of IO is to allow the air valve installation in those locations of the system where, for project requirements, air discharge and release must be avoided.

Air flow performance charts



Working conditions

Waste water 70° C max.;
Maximum pressure 16 bar;
Minimum pressure 0,3 bar;
Lower pressure version on request.



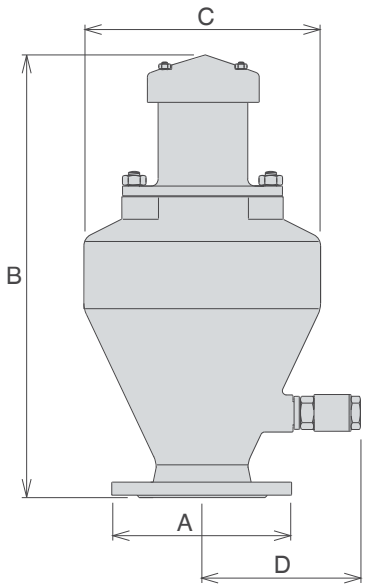
AIR RELEASE DURING WORKING CONDITIONS

Standard

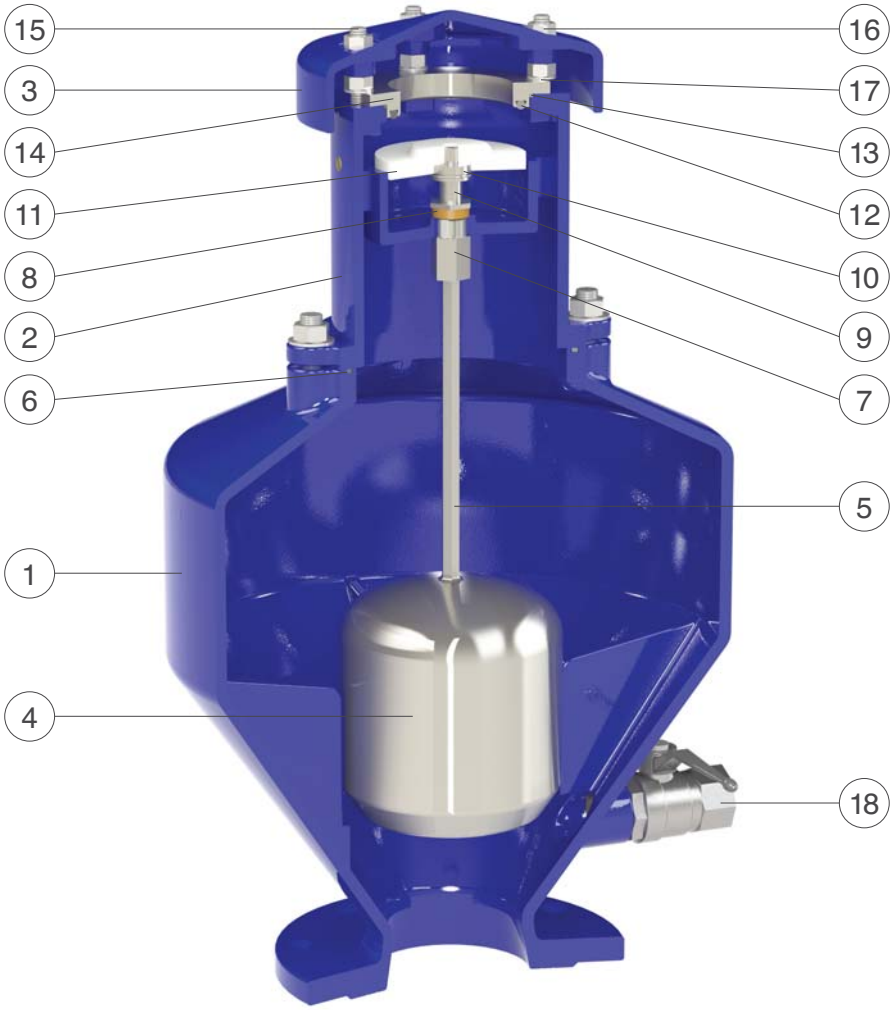
Designed in compliance with EN-1074/4 and AWWA C-512.
Flanges according to EN 1092/2.
Epoxy painting applied through fluidized bed technology blue RAL 5005.
Changes and variations on the flanges and painting details available on request.

DN mm	A mm	B mm	C mm	D mm	Weight Kg
50/65	185	550	300	202	29
80/100	220	600	350	190	40
150	285	850	488	243	78
200	340	850	488	243	82

The dimension B doesn't include the evacuation bend.



Technical details



N.	Component	Material	Standard
1	Lower body	ductile cast iron	GJS 500-7
2	Upper body	ductile cast iron	GJS 500-7
3	Cap	ductile cast iron	GJS 500-7
4	Float	stainless steel	AISI 316
5	Float shaft	stainless steel	AISI 316
6	O-ring	NBR	
7	Driving sleeve	stainless steel	AISI 316
8	Plane gasket	NBR/polyurethane	
9	Gasket holder	stainless steel	AISI 316
10	Nozzle subset	stainless steel	AISI 316
11	Obturator flat	polypropylene	
12	Seat gasket	NBR	
13	O-ring	NBR	
14	Seat	stainless steel	AISI 316
15	Studs	stainless steel	A2/A4/AISI 316
16	Nuts	stainless steel	A2/A4/AISI 316
17	Washers	stainless steel	A2/A4/AISI 316
18	Ball valve 1”	stainless steel	AISI 316

Anti water hammer combination air valve for sewage Mod. SCF - AS

The SCF-AS guarantees the proper operation of pressurized sewage systems allowing the release of air pockets in working conditions, the entrance of large quantities of air in case of pipe bursting or draining operations and a controlled air outflow speed to minimize the risk of water hammer events.

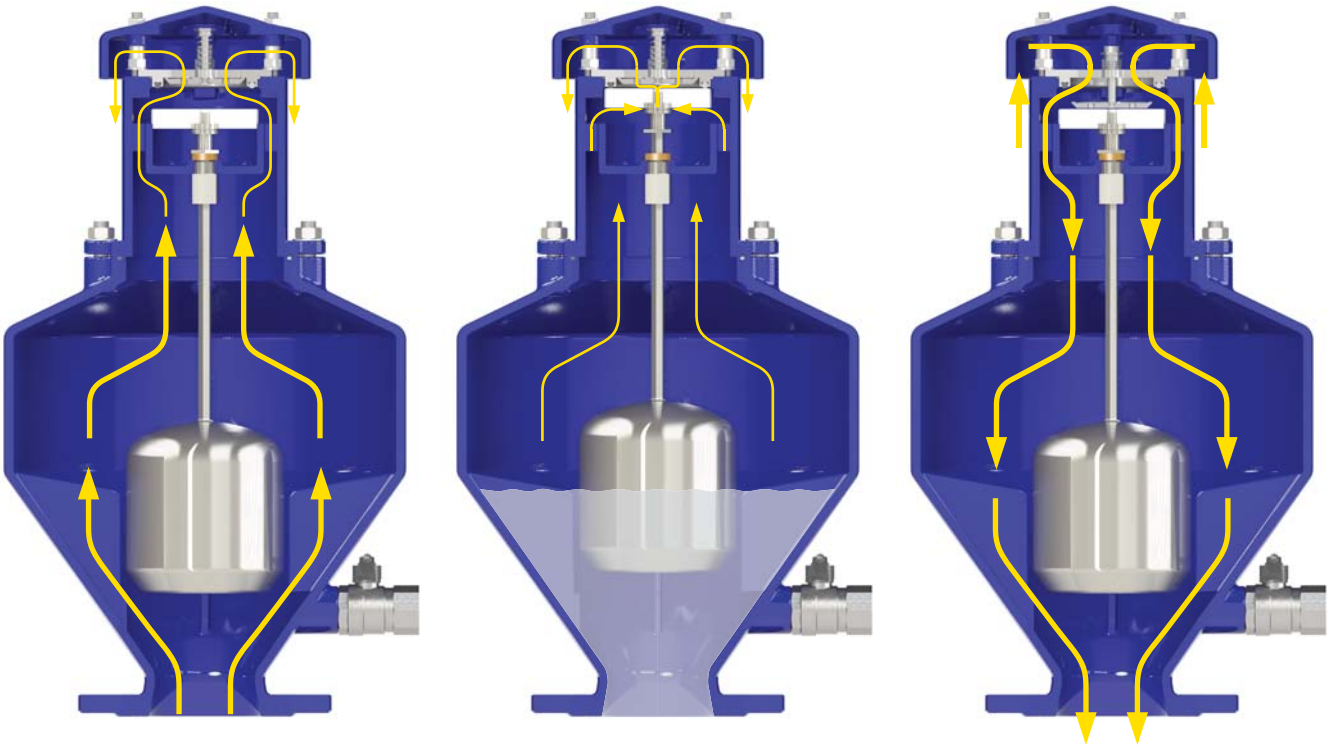
Technical features and benefits

- Large lower body designed with strongly sloped high walls to avoid deposit of grease and/or other material, and containing four ribs obtained by casting to guide the stainless steel float.
- Upper body containing an air release device protection cup against projections during rapid filling phases.
- Mobile block including a large AISI 316 stainless steel float, placed on the lower body, and connected through a stainless steel rod to the air release system.
- 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.
- Nozzle and gasket holder (pat. pending) wear resistant thanks to gasket compression control
- Maintenance can be easily performed from the top without removing the air valve from the pipe.

Applications

- To protect pumping stations of sewage main transmission lines, exposed to water hammer in case of pump failure.
- Treatment plants.
- Irrigation systems in presence of solids/debris in suspension.
- Whenever the technology of air valves for treated water can’t be used and a protection against water hammer is needed.

Operating principle



Controlled air discharge

During the pipe filling it is necessary to avoid rapid closures, responsible of water hammer effects. The SCF- 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. This is to avoid negative pressure and serious damages of the pipeline and the entire system.

Optional

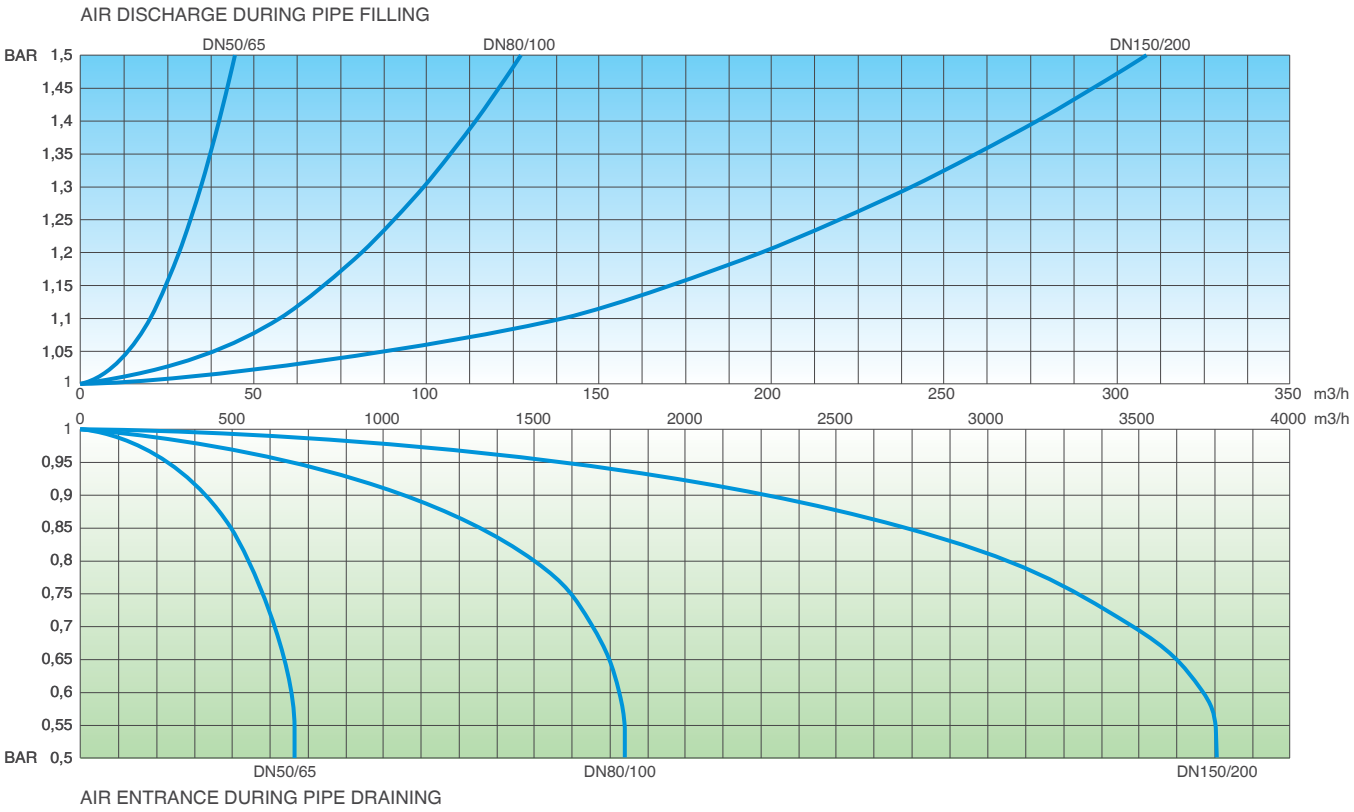
■ **Vacuum breaker version Mod. SCA**, to allow the entrance of large volumes of air only with the anti water hammer feature. This model is normally recommended near the pumps and in changes in slope ascending, long ascending segments exposed to transients events. More in general wherever air release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

■ **Version for submerged applications**, **SUB series,** available both for SCF AS and SCA Models, with elbow for air conveyance. The design sprang from the necessity of having an air valve performing also in case of flood, without the risk of contaminated water entering the pipeline. Another benefit of SUB is to avoid the spray effect, conveying spurts coming from the rapid closure of the air valve

■ **Version for air entrance only SCF 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.

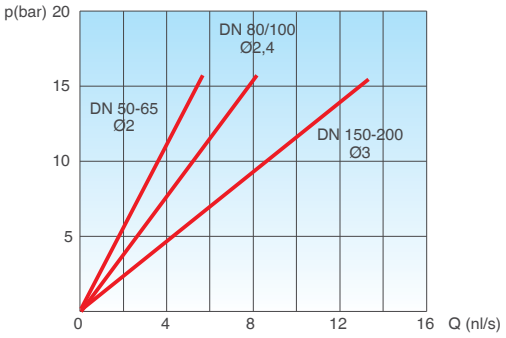
■ The counteracting spring force as well as the sonic nozzles, both responsible of the proper operation of the AS device, can be modified on request according to the project conditions and the transient analysis.

Air flow performance charts



Working conditions

Waste water 70° C max.;
Maximum pressure 16 bar;
Minimum pressure 0,3 bar;
Lower pressure version on request.



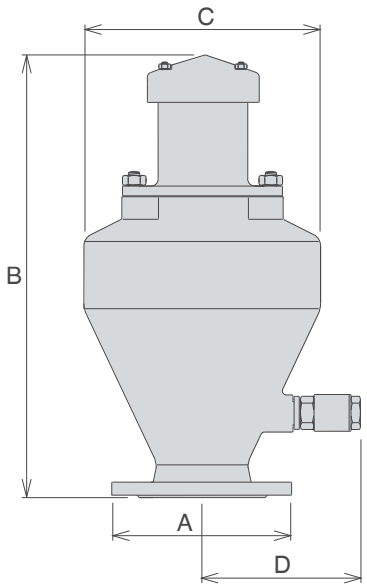
AIR RELEASE DURING WORKING CONDITIONS

Standard

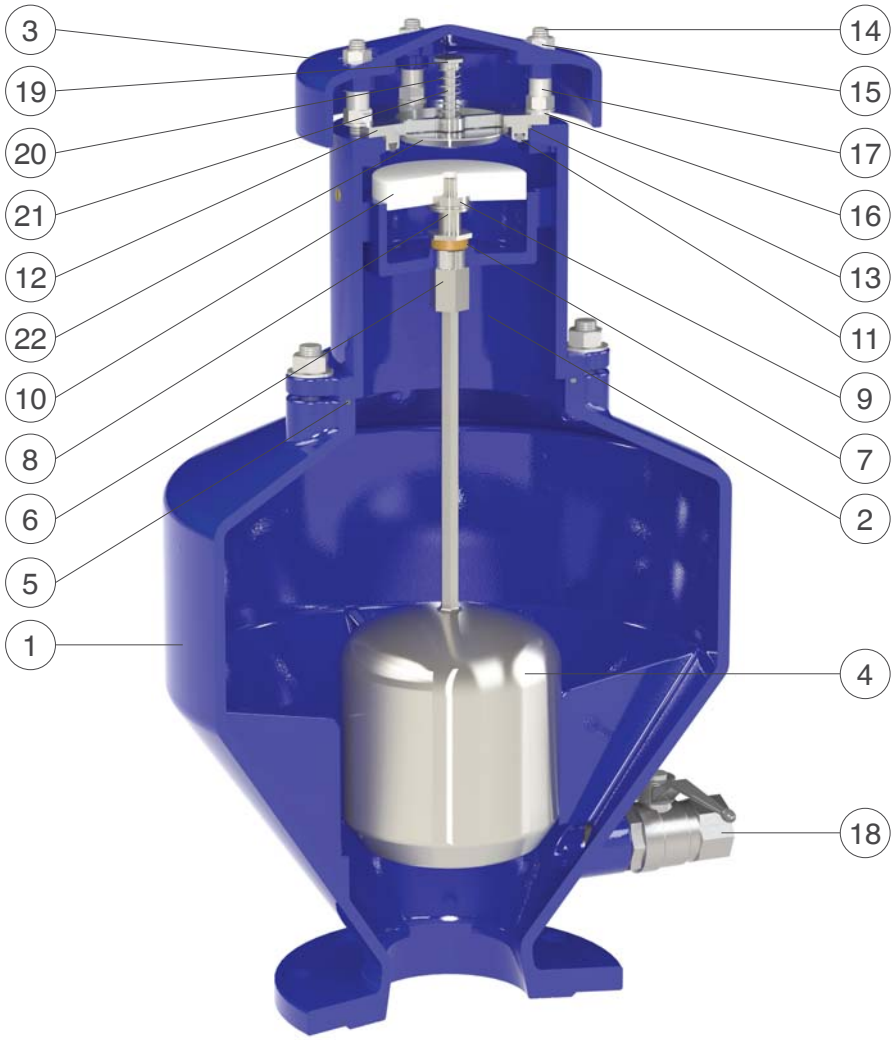
Designed in compliance with EN-1074/4 and AWWA C-512.
Flanges according to EN 1092/2.
Epoxy painting applied through fluidized bed technology blue RAL 5005.
Changes and variations on the flanges and painting details available on request.

DN mm	A mm	B mm	C mm	D mm	Weight Kg
50/65	185	550	300	202	29
80/100	220	600	350	190	40
150	285	850	488	243	78
200	340	850	488	243	82

The dimension B doesn't include the evacuation bend.



Technical details



N.	Component	Material	Standard
1	Lower body	ductile cast iron	GJS 500-7
2	Upper body	ductile cast iron	GJS 500-7
3	Cap	ductile cast iron	GJS 500-7
4	Float with shaft	stainless steel	AISI 316
5	O-ring	NBR	
6	Driving sleeve	stainless steel	AISI 316
7	Plane gasket	NBR/Polyurethane	
8	Gasket holder	stainless steel	AISI 316
9	Nozzle subset	stainless steel	AISI 316
10	Obturator flat	polypropylene	
11	Seat gasket	NBR	
12	AS seat	stainless steel	AISI 316
13	O-ring	NBR	
14	Studs	stainless steel	A2/A4/AISI 316
15	Nuts	stainless steel	A2/A4/AISI 316
16	Washers	stainless steel	A2/A4/AISI 316
17	Spacers	stainless steel	AISI 316
18	Ball valve 1”	stainless steel	AISI 316
19	Spring support	stainless steel	AISI 316
20	Spring	stainless steel	AISI 316
21	AS shaft	stainless steel	AISI 316
22	AS obturator	stainless steel	AISI 316

Combination air valve for sewage with rapid filling preventer mechanism Mod. SCF - RFP

The SCF-RFP guarantees the proper operation and safety of pressurized sewage systems allowing the release of air pockets in working conditions and the entrance of large quantities of air, in case of pipe bursting or draining phases. The discharge velocity is maintained within a safety level by means of a rapid filling preventer mechanism to prevent water hammer.

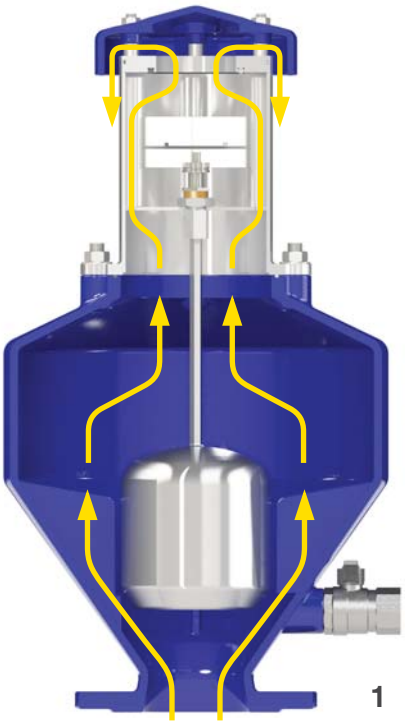
Technical features and benefits

- Large lower body designed with strongly sloped high walls to avoid deposit of grease and/or other material, and containing four ribs obtained by casting to guide the stainless steel float.
- Mobile block including a large AISI 316 stainless steel float, placed on the lower body and connected through a stainless steel rod to the air release system.
- Drainage valve for chamber control and draining.
- RFP automatism composed of two obturators in solid polypropylene, whose the upper one will automatically be activated in case of excessive air outflow.
- Nozzle and gasket holder (pat. pending) wear resistant thanks to gasket compression control.
- Maintenance can be easily performed from the top without removing the air valve from the pipe.
- Upper body in stainless steel.

Applications

- Sewage main transmission lines.
- Treatment plants.
- Irrigation systems in presence of solids/debris in suspension.
- Whenever the technology of air valves for treated water can't be used, for the risk of clogging and damages to the internal components, and the proper protection of the system has to be provided.

Operating principle

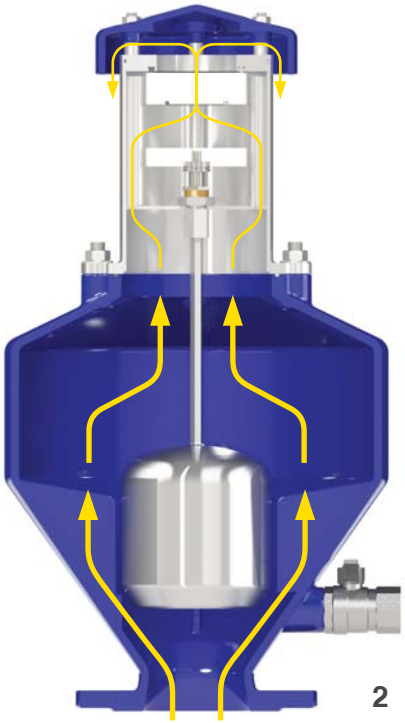


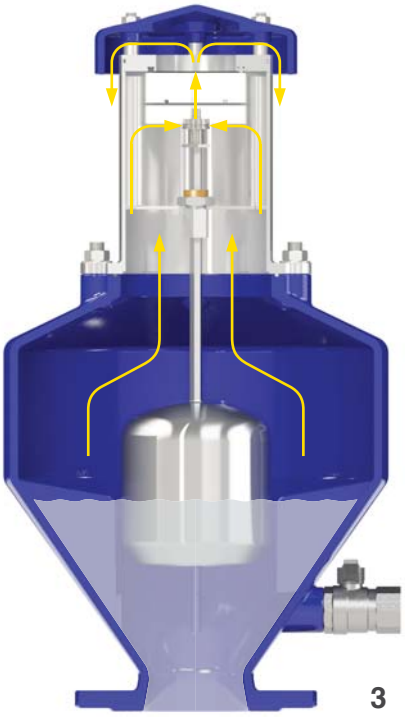
1. Discharge of large volumes of air

During the pipe filling it is necessary to discharge air as water flows in. The SCF RFP, thanks to a large upper body and an aerodynamic deflector, will make sure to avoid premature closures of the mobile block during this phase.

2. Controlled outflow

If the differential pressure of air, during pipe filling, increases above a certain value without control there is the risk of water hammer and damages to the system. Should that happen the SCF RFP upper float will rise automatically, reducing the outflow and consequently the velocity of the approaching water column.



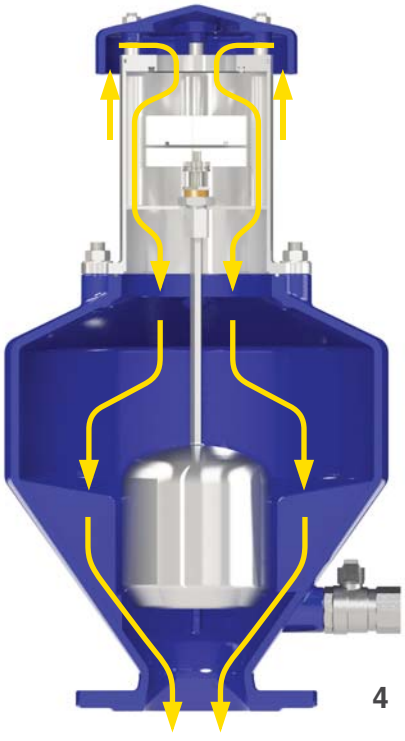


3. Air release during working conditions

During operation the air produced by the pipeline is accumulated in the upper part. Little by little it is compressed and the pressure arrives to liquid pressure, allowing the air release through the nozzle.

4. Entrance of large volumes of air

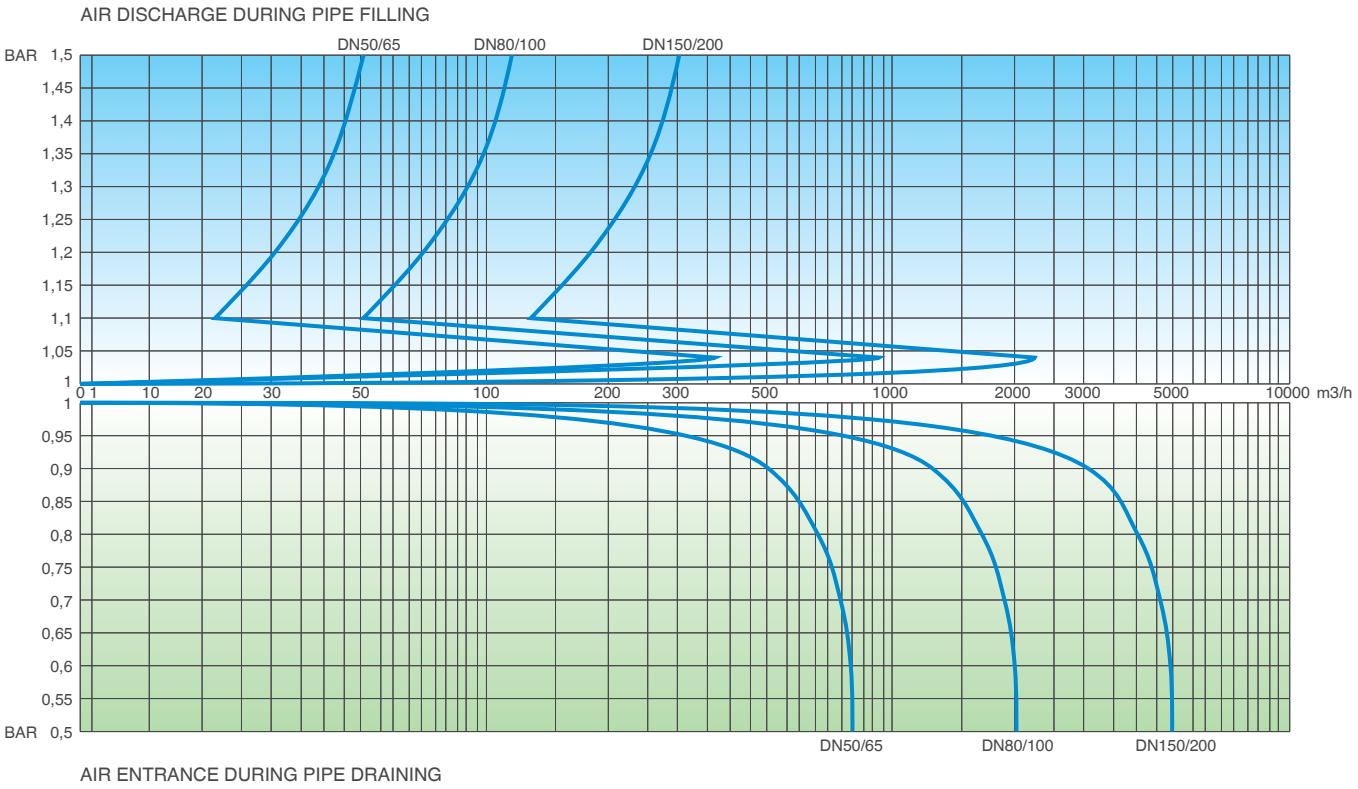
During pipeline draining, or pipe bursts, it is necessary to bring in as much air as the quantity of outflowing water to avoid negative pressure and serious damages of the pipeline, and to the entire system.



Optional

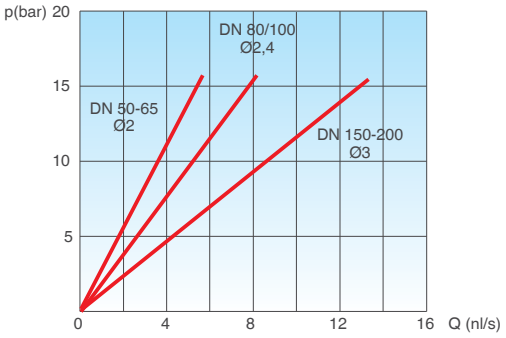
■ **Vacuum breaker version Mod. SCA RFP**, to allow the entrance of large volumes of air only with the controlled air outflow thanks to the RFP technology. This model is normally recommended in changes in slope ascending, long ascending segments, and wherever the air release won't be required.

Air flow performance charts



Working conditions

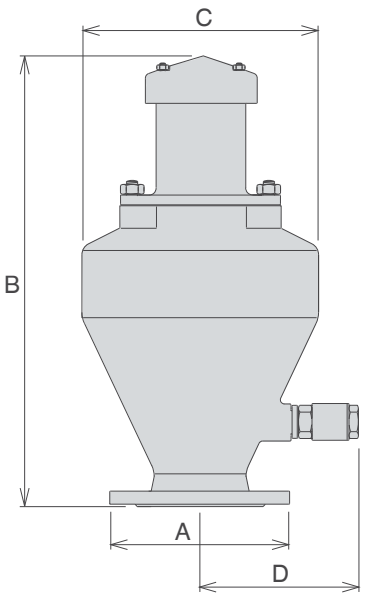
Waste water 70° C max.;
Maximum pressure 16 bar;
Minimum pressure 0,3 bar;
Lower pressure version on request.



AIR RELEASE DURING WORKING CONDITIONS

Standard

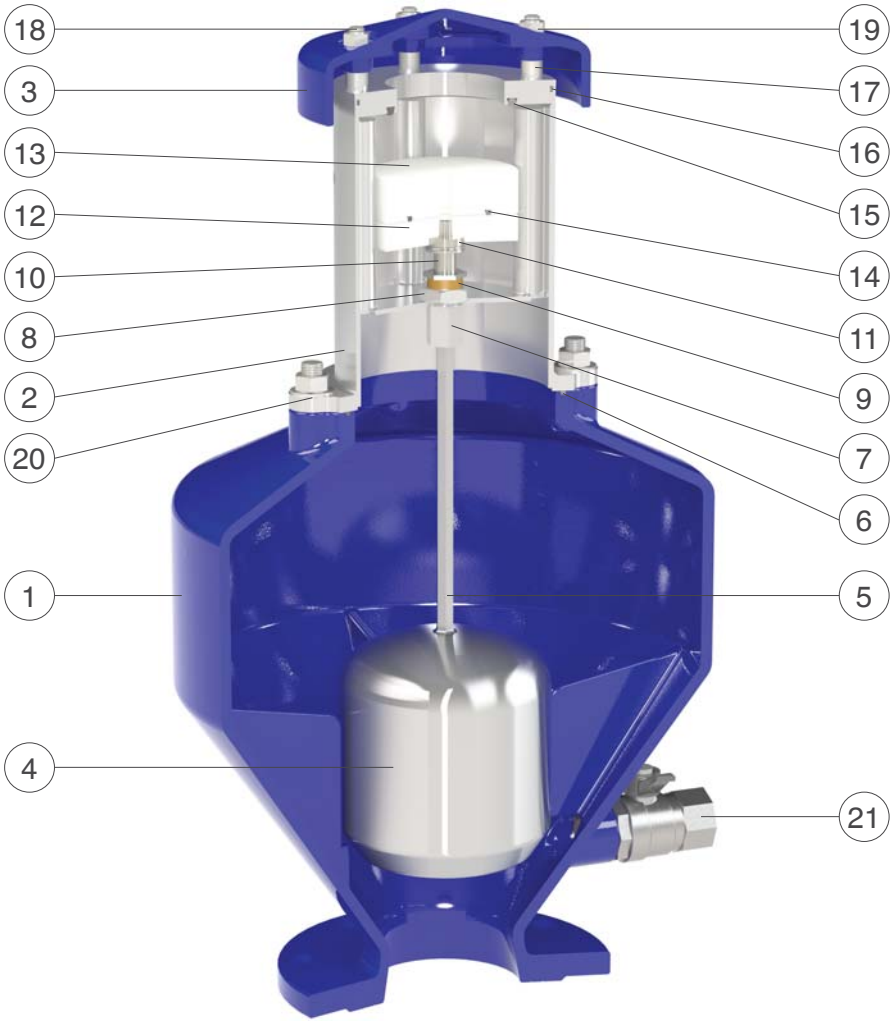
Designed in compliance with EN-1074/4 and AWWA C-512.
Flanges according to EN 1092/2.
Epoxy painting applied through fluidized bed technology blue RAL 5005.
Changes and variations on the flanges and painting details available on request.



DN mm	A mm	B mm	C mm	D mm	Weight Kg
50/65	185	580	300	202	29
80/100	220	645	350	190	40
150	285	870	488	243	78
200	340	870	488	243	82

The dimension B doesn't include the evacuation bend.

Technical details



N.	Component	Material	Standard
1	Lower body	ductile cast iron	GJS 500-7
2	RFP upper body	stainless steel	AISI 316
3	Cap	ductile cast iron	GJS 500-7
4	Float	stainless steel	AISI 316
5	Float shaft	stainless steel	AISI 316
6	O-ring	NBR	
7	Driving sleeve	stainless steel	AISI 316
8	Nut	stainless steel	A2/A4
9	Plane gasket	NBR/Polyurethane	
10	Gasket holder	stainless steel	AISI 316
11	Nozzle subset	stainless steel	AISI 316
12	RFP obturator flat	polypropylene	
13	Anti-shock flat	polypropylene	
14	Anti-shock flat gasket	NBR	
15	Seat gasket	NBR	
16	O-ring	NBR	
17	Spacers	stainless steel	AISI 316
18	Studs	stainless steel	A2/A4/AISI 316
19	Nuts	stainless steel	A2/A4/AISI 316
20	Washers	stainless steel	A2/A4/AISI 316
21	Ball valve 1”	stainless steel	AISI 316

Combination air valve for sewage
Mod. SCF - 2”

The air valve guarantees the proper operation of sewage lines allowing the entrance of a large quantity of air in case of pipe burst or draining, the release of air pockets during working conditions and the discharge during pipe filling.

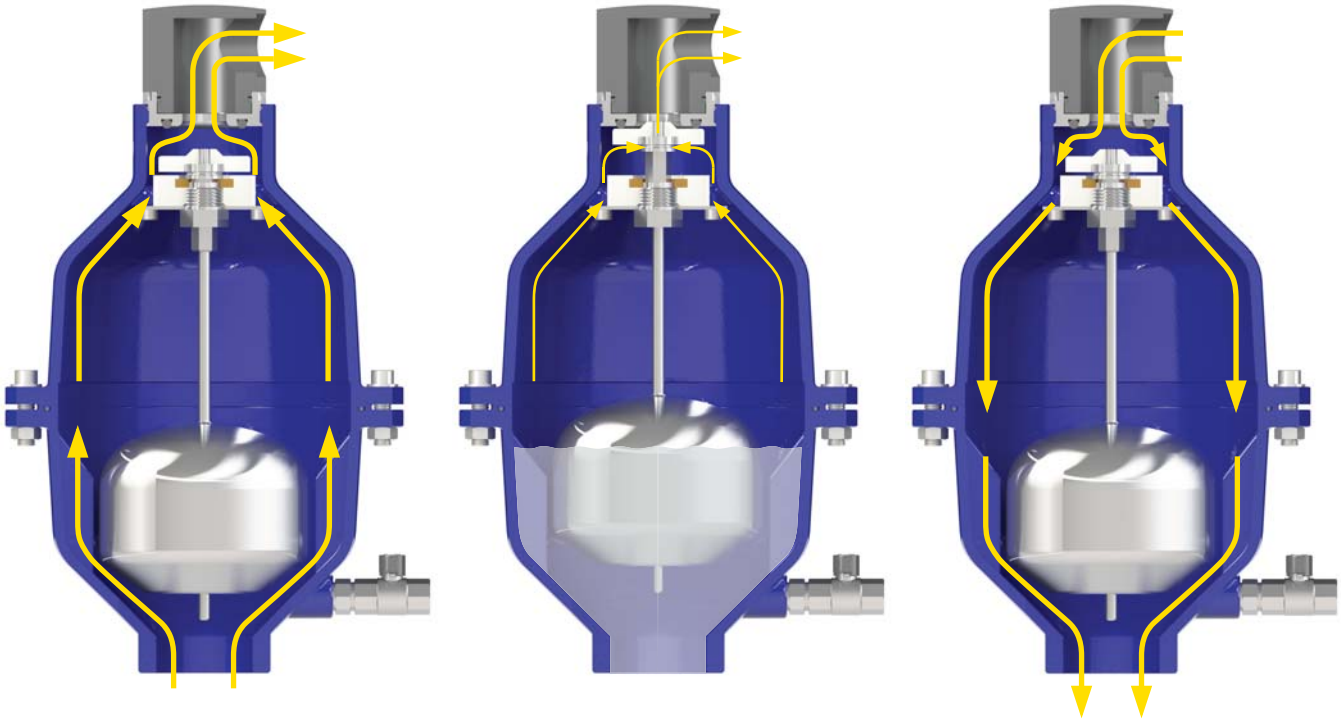
Technical features and benefits

- Lower body designed with strongly sloped high walls to avoid deposit of grease and/or other material, it contains four ribs to guide the stainless steel float.
- Upper body containing the air release device which is protected against projections, during rapid filling phases, by a stainless steel diffuser.
- Mobile block, including a large AISI 316 stainless steel float, placed on the lower body and connected through a stainless steel rod to the air release mechanism.
- Compact and light, the SCF 2” features an innovative technology making it suitable even to the most demanding environments.
- Drainage valve for chamber control and draining.
- Maintenance can be easily performed from the top without removing the air valve from the pipe.
- Evacuation bend suitable for flooded environments with 1" threaded outlet.

Applications

- Sewage main transmission lines.
- Treatment plants.
- Irrigation systems in presence of solids/debris in suspension.
- Whenever the technology of air valves for treated water can’t be used for the risk of clogging and damages to the internal components.

Operating principle



Discharge of large volumes of air

During the pipe filling it is necessary to discharge air as water flows in. The SCF 2", thanks to an aerodynamic full port body and deflector, will make sure to avoid premature closures of the mobile block during this phase.

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. This is to avoid negative pressure and serious damages of the pipeline and the entire system.

Optional

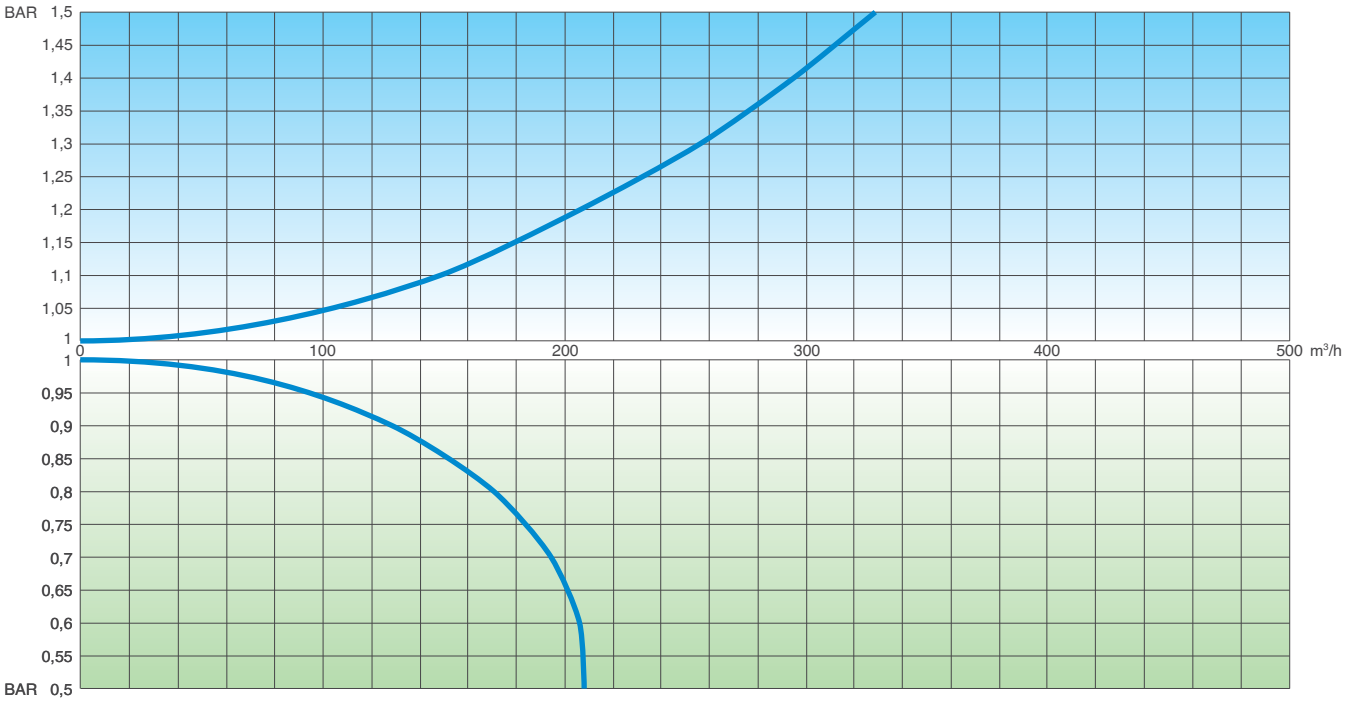
■ **Vacuum breaker version Mod. SCF 2" 2F**, to allow the entrance and discharge of large volumes of air only. This model is normally recommended in changes in slope ascending, long ascending segments, and wherever the air release won't be required.

■ **Version for air discharge only SCF 2" EO series (on request)**, available both for SCF 2" and SCF 2" 2F models. The most important application of EO is to allow the air valve installation in those locations of the system where HGL may drop below the pipe profile, and to any other node where for project requirements air entrance must be avoided.

■ **Version for air entrance only SCF 2" 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.

Air flow performance charts

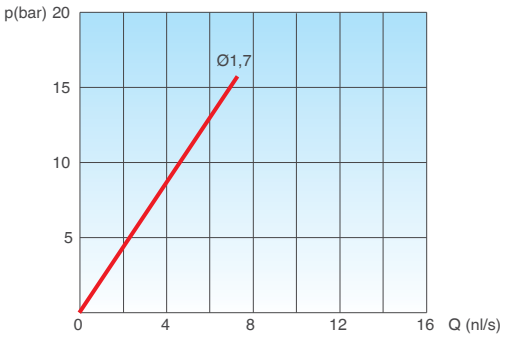
AIR DISCHARGE DURING PIPE FILLING



AIR ENTRANCE DURING PIPE DRAINING

Working conditions

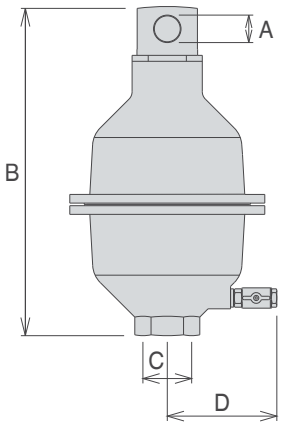
Waste water 70° C max.;
Maximum pressure 16 bar;
Minimum pressure 0,2 bar.



AIR RELEASE DURING WORKING CONDITIONS

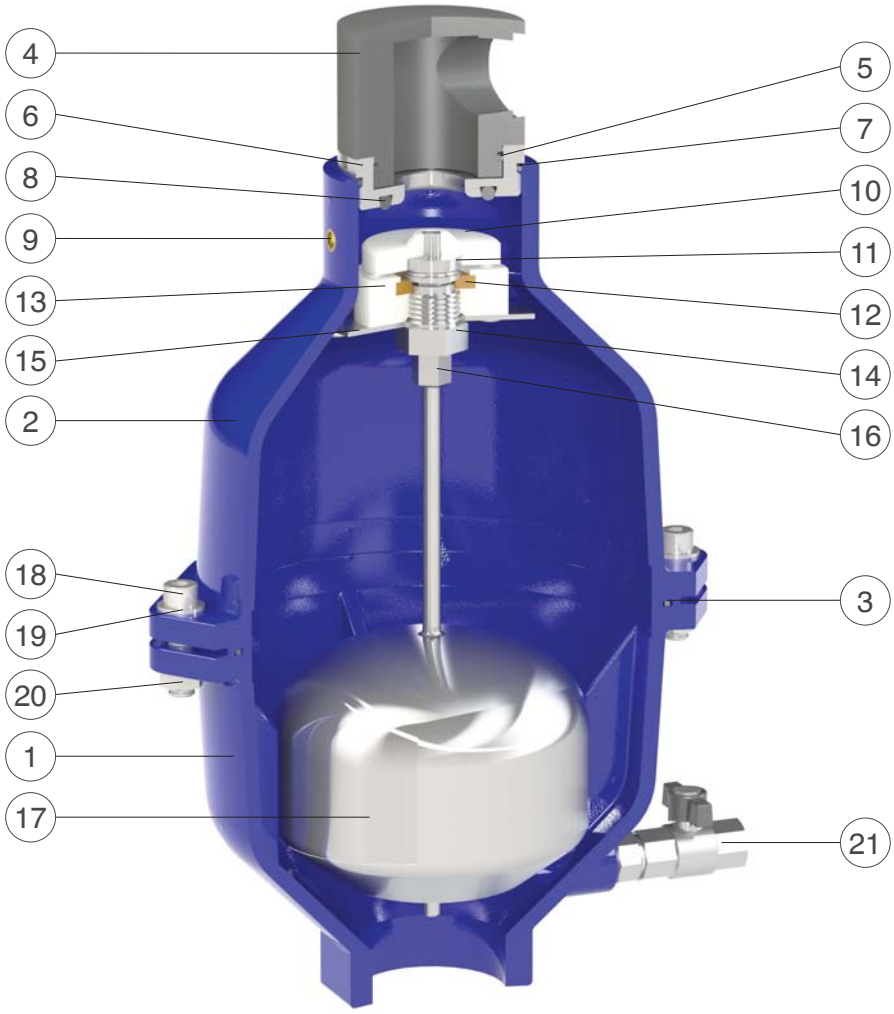
Standard

Designed in compliance with EN-1074/4.
Manufactured with 2” outlet; supplied on request with flanges according to EN 1092/2 / ANSI.
Epoxy painting applied through fluidized bed technology blue RAL 5005.
Changes and variations on the flanges and painting details available on request.



DN (C) mm	A mm	B mm	D mm	Main orifice mm²	Nozzle mm²	Weight Kg
2”	1”	380	137	490	1,7	10,5

Technical details



N.	Component	Material	Standard
1	Lower body	ductile cast iron	GJS 500-7
2	Upper body	ductile cast iron	GJS 500-7
3	O-ring	NBR	
4	Cap	PVC	
5	O-ring	NBR	
6	Seat	stainless steel	AISI 316
7	O-ring	NBR	
8	Seat gasket	NBR	
9	Plug	brass/stainless steel	OT58/AISI 316
10	Obturator	polypropylene	
11	Nozzle subset	stainless steel	AISI 316
12	Plane gasket	NBR/Polyurethane	
13	Lower gasket holder	polypropylene	
14	Diffuser	stainless steel	AISI 316
15	Guiding nut	stainless steel	AISI 316
16	Upper gasket holder	stainless steel	AISI 316
17	Float	stainless steel	AISI 316
18	Screws	stainless steel	AISI 316
19	Washers	stainless steel	AISI 316
20	Nuts	stainless steel	AISI 316
21	Drain valve	stainless steel	AISI 316

Anti water hammer combination air valve for sewage Mod. SCA - 2”

The air valve guarantees the proper operation of sewage lines allowing the entrance of large quantities of air in case of pipe burst or draining phases, the release of air pockets during working conditions and the controlled air outflow speed.

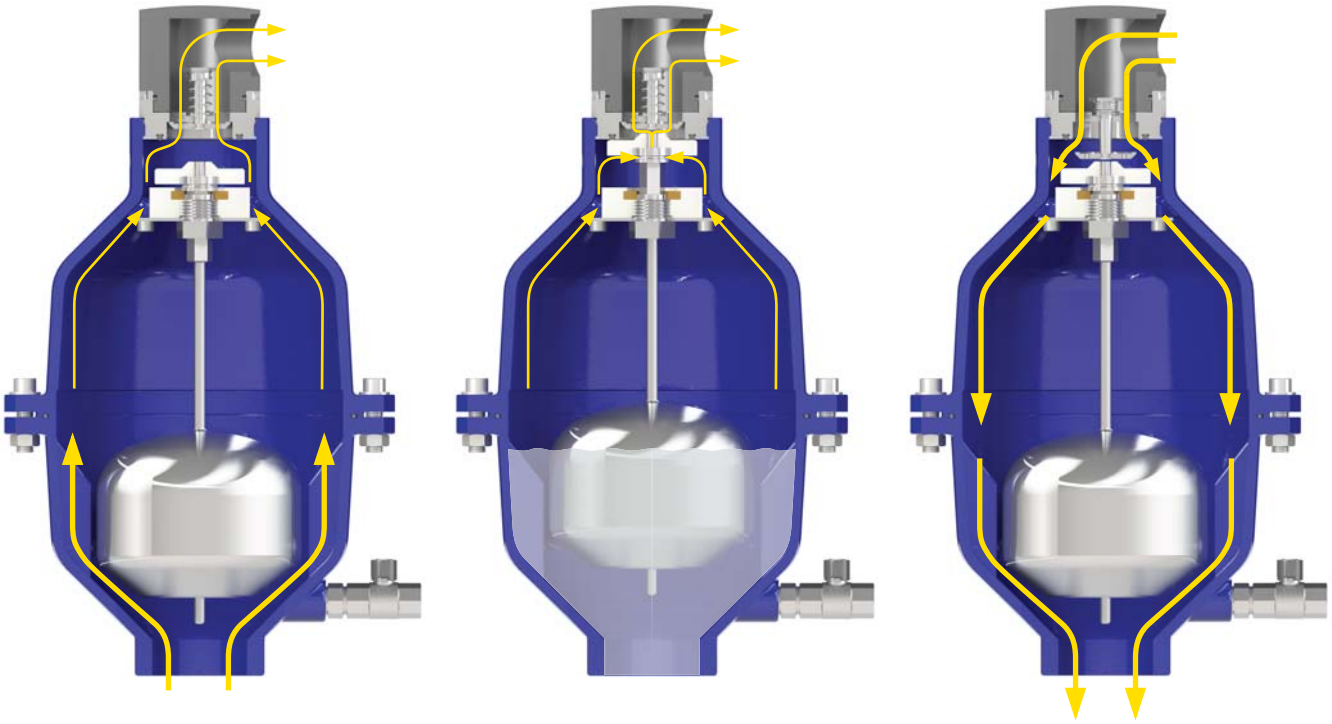
Technical features and benefits

- Lower body designed with strongly sloped high walls to avoid grease and/or other material deposit, and it contains four ribs to guide the stainless steel float.
- Upper body containing the AS and the air release mechanism which is protected against water hammer effect, during rapid filling phases, by a stainless steel diffuser.
- Mobile block including a large AISI 316 stainless steel float, placed on the lower body and connected through a stainless steel rod to the air release mechanism.
- Anti Shock automatism composed of a metallic disk with 2 or more small orifices, a guide bar and a counteracting spring in stainless steel.
- Drainage valve for chamber control and draining.
- Maintenance can be easily performed from the top without removing the air valve from the pipe.
- Evacuation bend suitable for flooded environments with 1” threaded outlet.

Applications

- To protect pumping stations of sewage main transmission lines, exposed to water hammer in case of pump failure.
- Treatment plants.
- Irrigation systems in presence of solids/debris in suspension.
- Whenever the technology of air valves for treated water can’t be used and a protection against water hammer is needed.

Operating principle



Controlled air discharge

During the pipe filling it is necessary to avoid rapid closures, responsible of water hammer effects. The SCA 2”, 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. This is to avoid negative pressure and serious damages of the pipeline and the entire system.

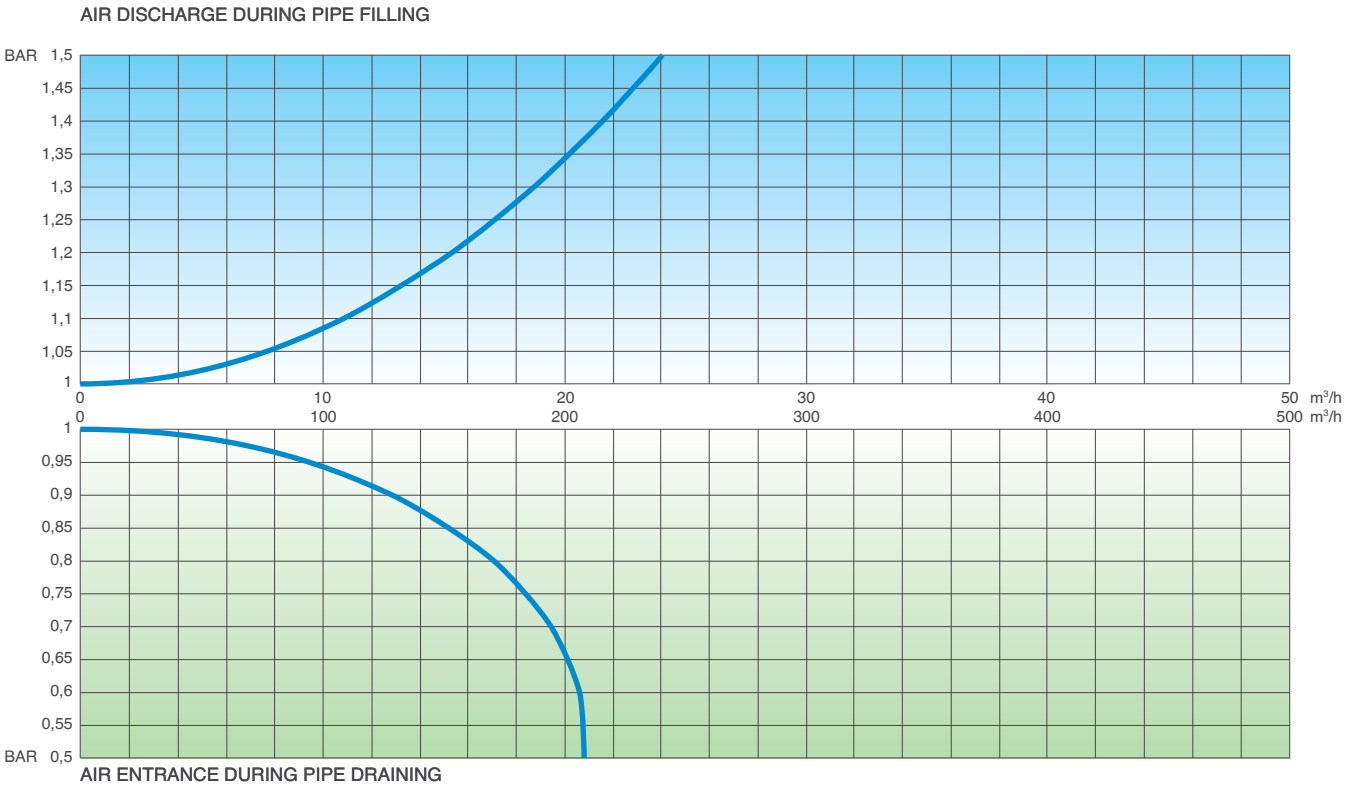
Optional

■ **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 SCA 2” 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.

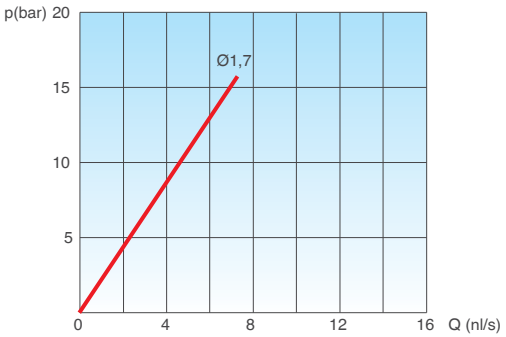
■ The counteracting spring force as well as the sonic nozzles, both responsible of the proper operation of the AS device, can be modified on request according to the project conditions and the transient analysis.

Air flow performance charts



Working conditions

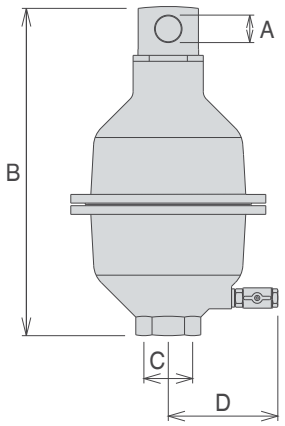
Waste water 70° C max.;
Maximum pressure 16 bar;
Minimum pressure 0,2 bar.



AIR RELEASE DURING WORKING CONDITIONS

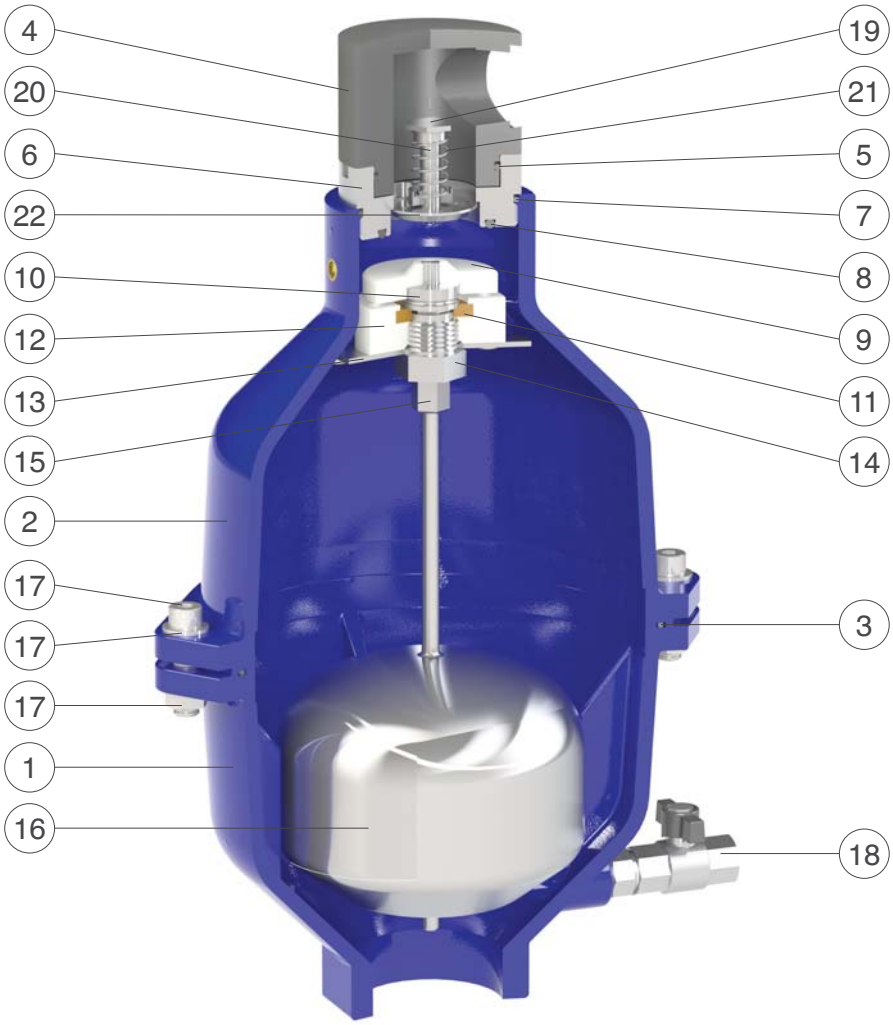
Standard

Designed in compliance with EN-1074/4.
Manufactured with 2” outlet; supplied on request with flanges according to EN 1092/2 / ANSI.
Epoxy painting applied through fluidized bed technology blue RAL 5005.
Changes and variations on the flanges and painting details available on request.



DN (C) mm	A mm	B mm	D mm	Main orifice mm²	Nozzle mm²	Weight Kg
2”	1”	389	137	490	1,7	10,8

Technical details



N.	Component	Material	Standard
1	Lower body	ductile cast iron	GJS 500-7
2	Upper body	ductile cast iron	GJS 500-7
3	O-ring	NBR	
4	Cap	PVC	
5	O-ring	NBR	
6	Seat	stainless steel	AISI 316
7	O-ring	NBR	
8	Seat gasket	NBR	
9	Obturator	polypropylene	
10	Nozzle subset	stainless steel	AISI 316
11	Plane gasket	NBR/Polyurethane	
12	Lower gasket holder	polypropylene	
13	Diffuser	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 316
18	Drain valve	stainless steel	AISI 316
19	Spring support	stainless steel	AISI 316
20	AS shaft	stainless steel	AISI 316
21	Spring	stainless steel	AISI 316
22	AS obturator	stainless steel	AISI 316

Combination air valve for sewage/industry in stainless steel AISI 316 Mod. SCS

The air valve guarantees the proper operation of sewage/industrial lines allowing the entrance of large quantity of air in case of pipe bursting or draining phases, the release of air pockets during working conditions and the discharge during pipe filling phases.

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 in stainless steel, protected against possible projections and spurts during rapid filling phases, by a stainless steel diffuser.
- 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.
- Drainage valve for chamber control and draining.
- Maintenance can be easily 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 in presence of liquid with solids and debris.
- Mines.
- Desalination plants.
- Deep well boreholes.
- Special version as a gas air release valve.

Operating principle

Discharge of large volumes of air

During the pipe filling it is necessary to discharge air as water flows in. The SCS, thanks to an aerodynamic body and deflector, will make sure to avoid premature closures of the mobile block during this phase.

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

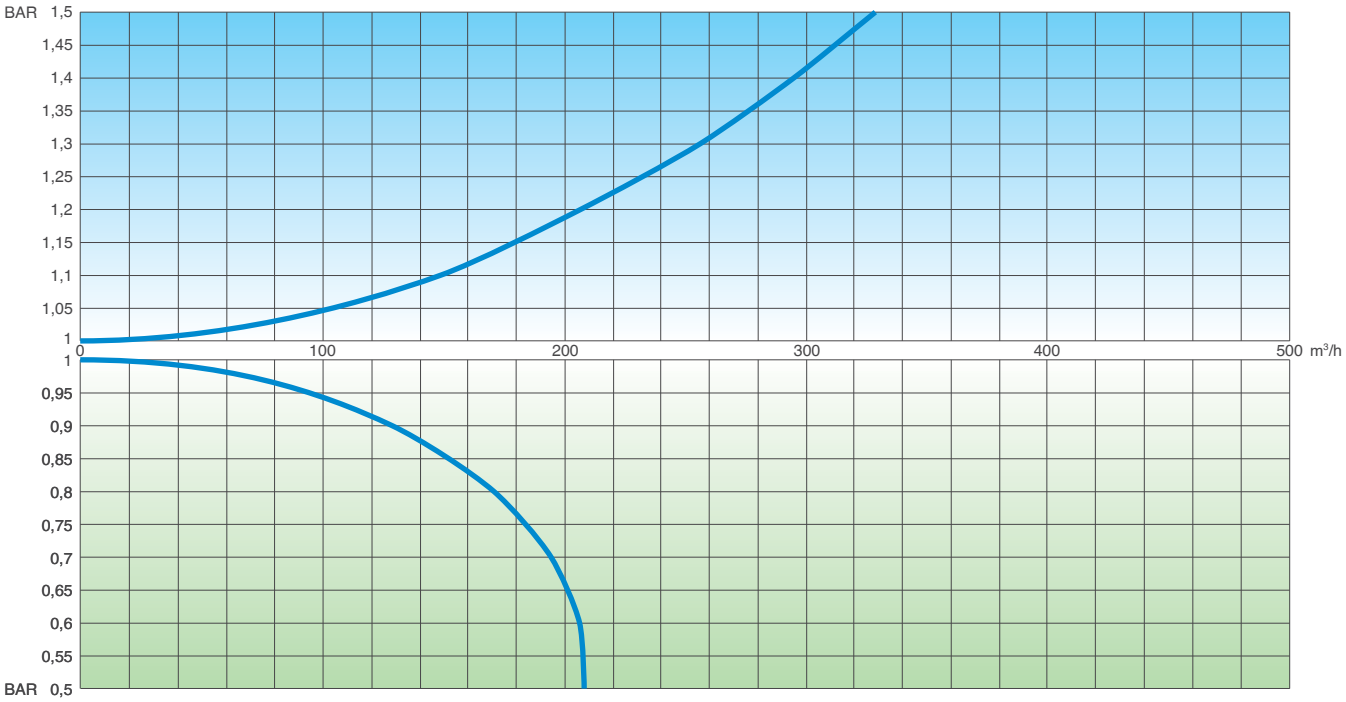
■ **Vacuum breaker version Mod. SCS 2F**, to allow the entrance and discharge of large volumes of air only. This model is normally recommended in changes in slope ascending, long ascending segments, and wherever the air release won't be required.

■ **Version for air discharge only SCS EO series (on request)**, available both for SCS and SCS 2F models. The most important application of EO is to allow the air valve installation in those locations of the system where HGL may drop below the pipe profile, and to any other node where for project requirements air entrance must be avoided.

■ **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.

Air flow performance charts

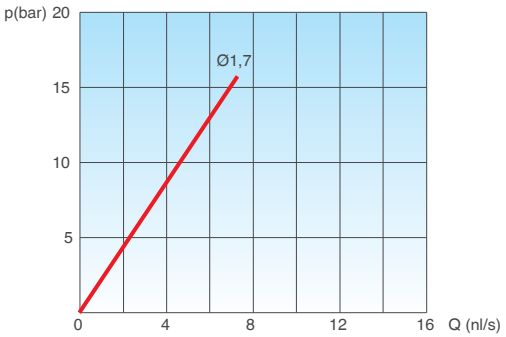
AIR DISCHARGE DURING PIPE FILLING



AIR ENTRANCE DURING PIPE DRAINING

Working conditions

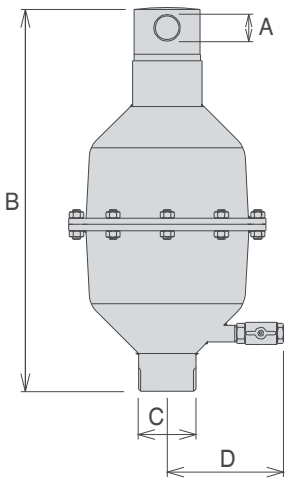
Waste water 70° C max.;
Maximum pressure 16 bar;
Minimum pressure 0,2 bar;
Version for high temperature available on request.



AIR RELEASE DURING WORKING CONDITIONS

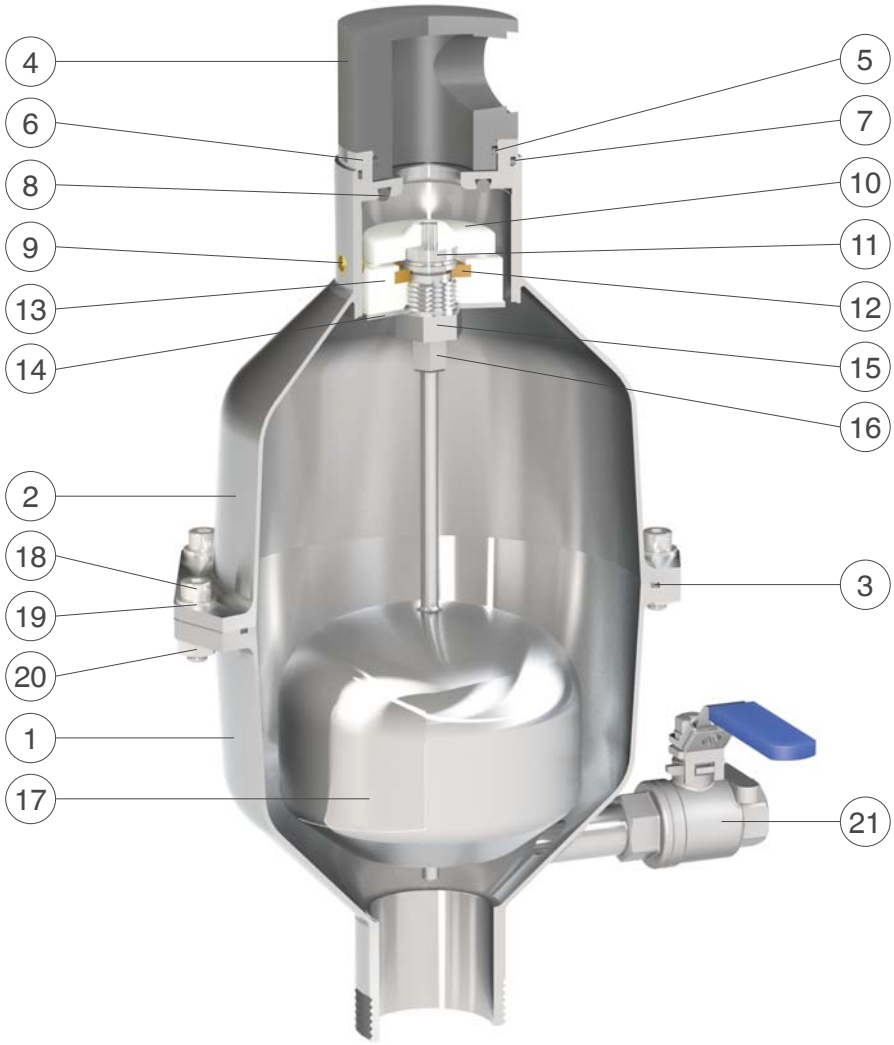
Standard

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



DN (C) mm	A mm	B mm	D mm	Main orifice mm²	Nozzle mm²	Weight Kg
2”	1”	380	137	490	1,7	4

Technical details



N.	Component	Material	Standard
1	Lower body	stainless steel	AISI 316
2	Upper body	stainless steel	AISI 316
3	O-ring	NBR	
4	Cap	PVC	
5	O-ring	NBR	
6	Seat	stainless steel	AISI 316
7	O-ring	NBR	
8	Seat gasket	NBR	
9	Plug	brass/stainless steel	OT58/AISI 316
10	Obturator	polypropylene	
11	Nozzle subset	stainless steel	AISI 316
12	Plane gasket	NBR/Polyurethane	
13	Lower gasket holder	Polypropylene	
14	Diffuser	stainless steel	AISI 316
15	Guiding nut	stainless steel	AISI 316
16	Upper gasket holder	stainless steel	AISI 316
17	Float	stainless steel	AISI 316
18	Screws	stainless steel	AISI 316
19	Washers	stainless steel	AISI 316
20	Nuts	stainless steel	AISI 316
21	Drain valve	stainless steel	AISI 316

Anti water hammer combination air valve for sewage/industry 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 phases, the release of air pockets during working conditions and the controlled air outflow speed.

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 diffuser.
- 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.

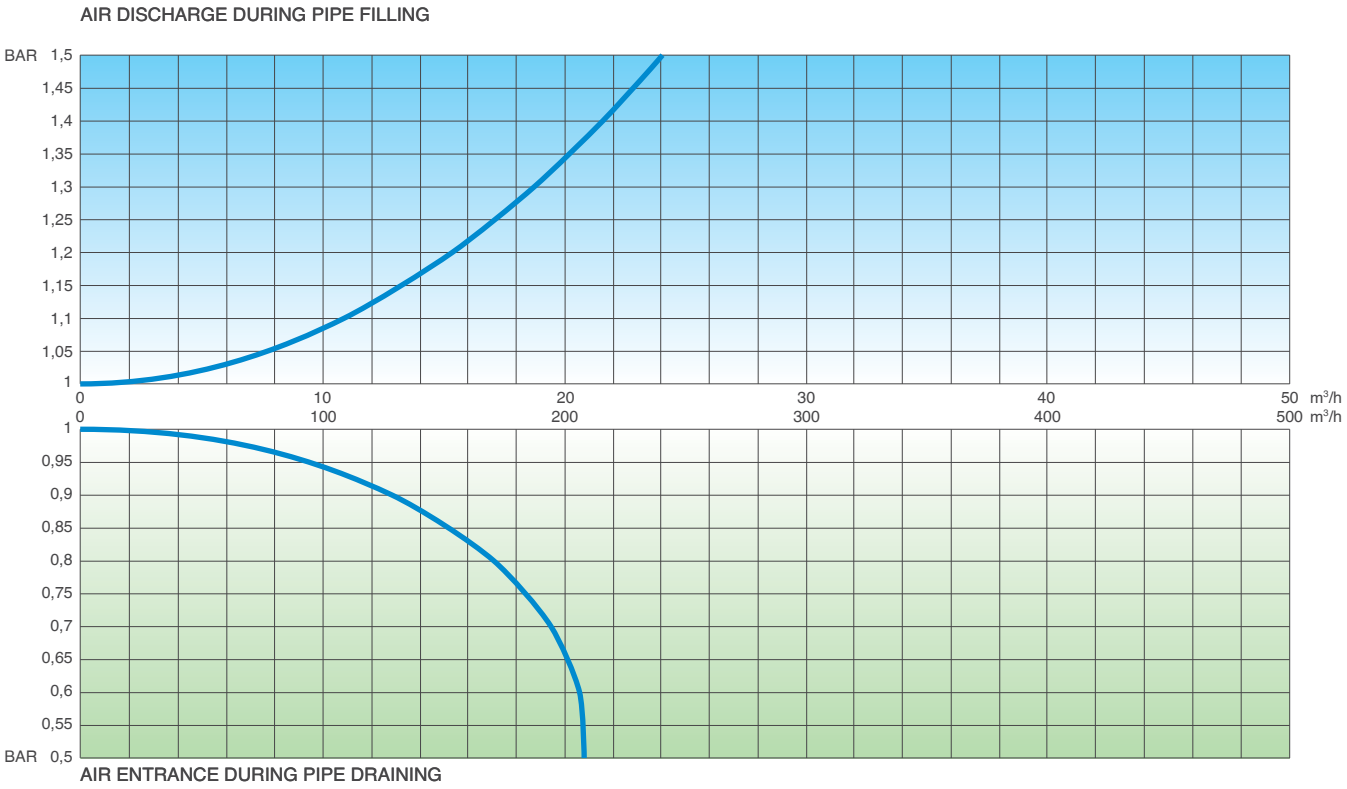
Optional

■ **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.

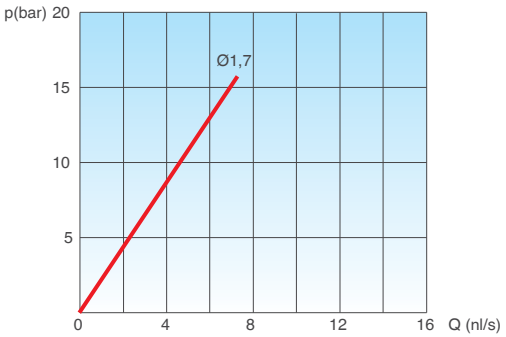
■ The counteracting spring force as well as the sonic nozzles, both responsible of the proper operation of the AS device, can be modified on request according to the project conditions and the transient analysis.

Air flow performance charts



Working conditions

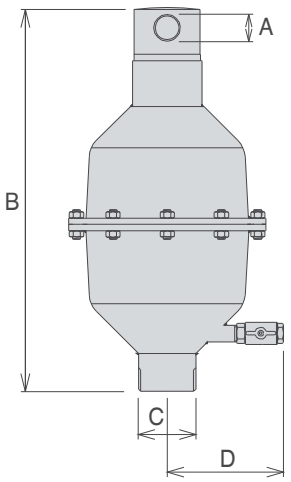
Waste water 70° C max.;
Maximum pressure 16 bar;
Minimum pressure 0,2 bar;
Version for high temperature available on request.



AIR RELEASE DURING WORKING CONDITIONS

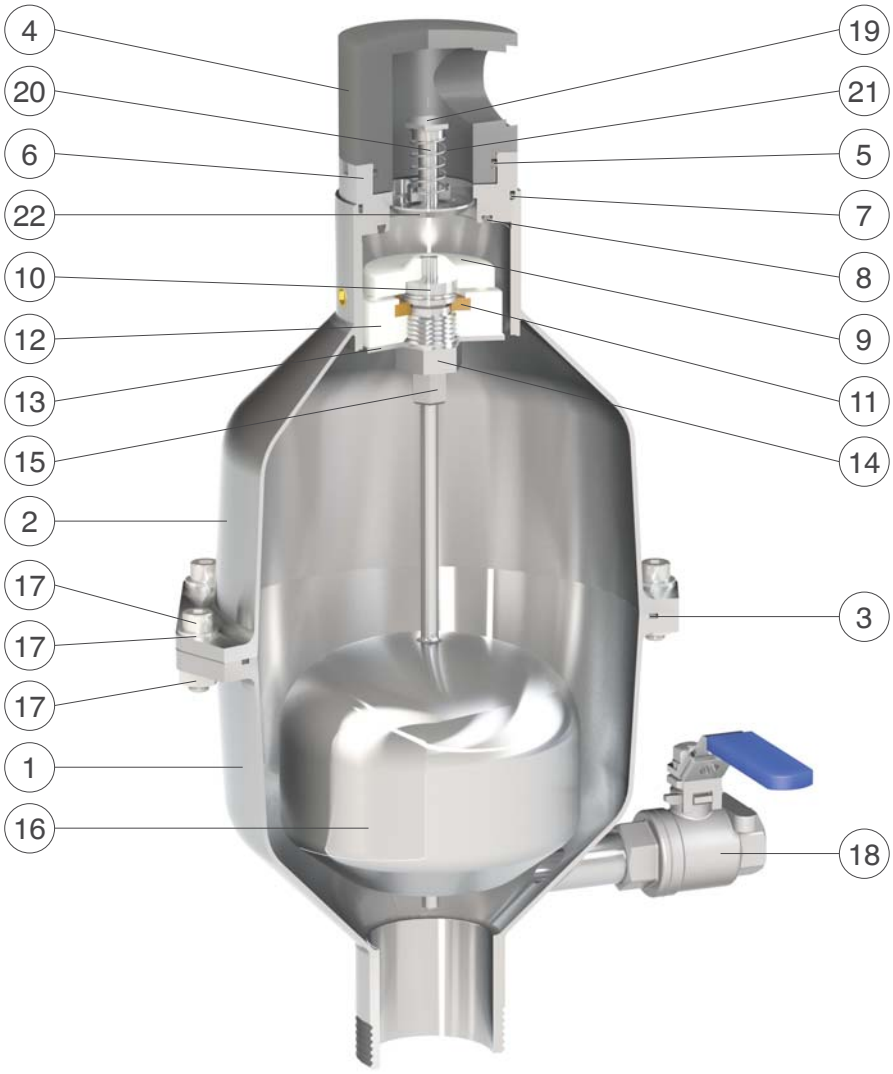
Standard

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



DN (C) mm	A mm	B mm	D mm	Main orifice mm²	Nozzle mm²	Weight Kg
2"	1"	380	137	490	1,7	4

Technical details



N.	Component	Material	Standard
1	Lower body	stainless steel	AISI 316
2	Upper body	stainless steel	AISI 316
3	O-ring	NBR	
4	Cap	PVC	
5	O-ring	NBR	
6	Seat	stainless steel	AISI 316
7	O-ring	NBR	
8	Seat gasket	NBR	
9	Obturator	polypropylene	
10	Nozzle subset	stainless steel	AISI 316
11	Plane gasket	NBR/Polyurethane	
12	Lower gasket holder	polypropylene	
13	Diffuser	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 316
18	Drain valve	stainless steel	AISI 316
19	Spring support	stainless steel	AISI 316
20	AS shaft	stainless steel	AISI 316
21	Spring	stainless steel	AISI 316
22	AS obturator	stainless steel	AISI 316

Advanced testing facilities

Designed to reproduce real conditions of modern water distribution systems the CSA testing facility is able to assess the dynamic performances of automatic control valves, direct acting pressure control valves, air valves and anti water hammer valves.
Provided with a high capacity booster pumps station, and linked to an advanced high frequency pressure transducers and flow meters, the testing rig allows for a real time visualization of pressure and flow evolutions. Water hammer events can also be simulated and recorded to prove the efficacy of CSA fast acting relief valve, in addition to level control for which, using an auxiliary stilling tank, a part of the pipeline system is entirely dedicated. The PLC and control station allows for the operation of step by step and solenoid operated valves to determine the sensitivity of such kind of application and pressure management solutions. Thanks to this important and powerful tool valves can be customized, simulated and set according to the project requirements assuring the perfect performance and accuracy.

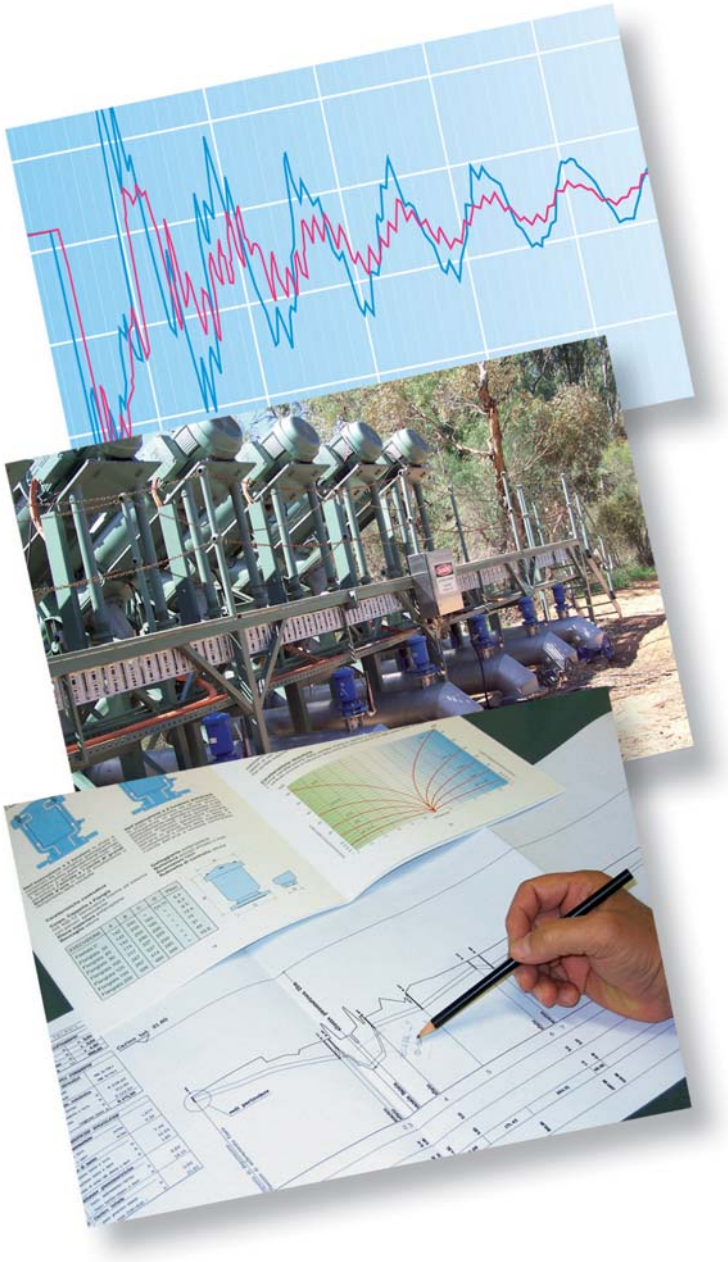
The testing process

All our valves undergo severe tests according to EN standards to ensure they are mechanically resistant, watertight, and high performing. After testing every valve is identified by means of a metallic tag or sticker, and duly registered and certified.

CSA HYCONSULT

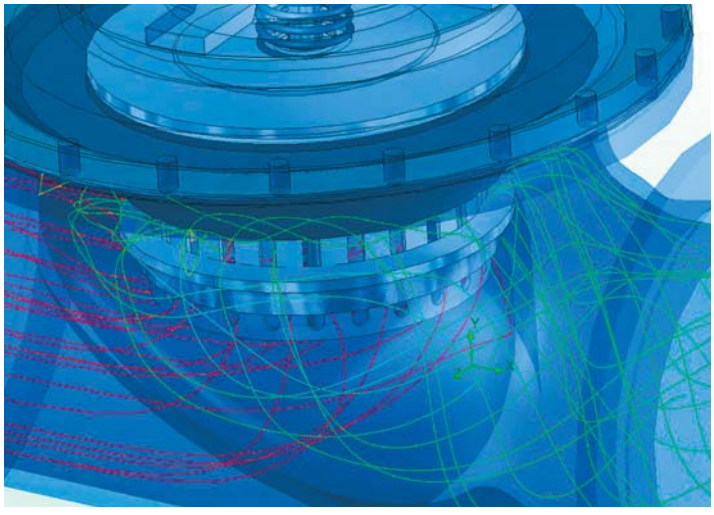
Water hammer analysis
CSA Hyconsult

CSA Hyconsult was founded to provide designers and consultants, involved in the design of water distribution and sewage systems, with accurate and unique technical support.
CSA Hyconsult has specialized in hydraulic modelling and transients analysis, entirely through the use of modern computational tools and advanced algorithms. Simulations are essential to predict system responses to events under a wide range of conditions without disrupting the actual system.
Using simulations, problems can be anticipated in possible or existing situations, and solutions can be evaluated in order to invest time, money and material in the most productive manner.



Research and innovation

CSA has always regarded knowledge as being indispensable for the kind of research that consistently feeds innovation at all levels. The R&D department at CSA constantly strives to improve product performance and continually searches for new solutions to meet our customer's needs. Twenty years of experience in valve design and sizing, supported by advanced computational tools, cooperation with external entities at the highest level, and test facilities for the verification of theoretical results which are available for our customers, guarantee our professionalism and reliability.



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