

D-060-C HF NS 285 psi

D-062 HF NS 360 psi



Combination Air Valve for High Flow - Non Slam

Description

The D-060-C HF NS series Combination Air Valve is a surge-dampening, slam-preventing, 3-stage combination air valve. It has the features of both an air release valve and an air & vacuum valve. The air release component is designed to automatically release small pockets of air to the atmosphere as they accumulate along a pipeline or piping system when it is full and operating under pressure. The air & vacuum component is designed to automatically discharge or admit large volumes of air during the filling or draining of a pipeline or piping system. This valve will open to relieve negative pressures whenever water column separation occurs.

Applications

- Water pipelines with anticipated conditions of surge and water hammer.
- On the peaks of water pipelines with steep slopes.
- Water pipelines where water column separation occurs.
- Water systems with pressure demands up to 360 psi (D-062 HF NS).

Operation

The D-060-C HF NS series Combination Non Slam Air Valve is a surge-dampening, slam-preventing, 3-stage combination air valve. The air valve provides high capacity vacuum protection and, at the same time, efficient surge suppression. At sudden drainage and/or water column separation (sudden pump trips or valve closure, for instance), the air & vacuum orifice admits air at high flow rates, thus preventing vacuum. As the water column and/or pressure wave returns, large volumes of air are discharged at high velocities, raising the non-slam disc, partially closing the air & vacuum orifice and allowing air to exhaust slowly through the smaller orifice of the non-slam disc. This slowly exhausting air pocket dampens the slam of the returning water column, thus suppressing the pressure surge. As the water flow arrives at a much slower rate, dampened by the slower air discharge, it buoys up the main float, gently closing the air & vacuum component of the air valve. The S-050-C, S-052, S-015 air release component continues releasing air while the pipeline and the air valve are pressurized.

Main Features

- Working pressure range: D-060-C HF NS: 3 - 285 psi.
D-062 HF NS: 3 - 360 psi
- Testing pressure for the air valve is 1.5 times its working pressure.
- Maximum working temperature: 140° F.
- Maximum intermittent temperature: 194° F.
- All main flow cross-sections are equal or greater than the nominal port area.
- Aerodynamic design enables high flow rates of air both at intake and at discharge.
- Reliable operation reduces water hammer incidents.
- Dynamic design allows for high capacity air discharge while preventing premature closure.
- Special orifice seat design: Stainless Steel and E.P.D.M. rubber, assures long-term maintenance-free operation.
- Screen protected outlet.
- The upper screen is protected with a protective cover.

Air Release Component

- Body made of high strength materials.
- All operating parts are made of specially selected corrosion-resistant polymer materials.
- Large sized air release orifice:
 - Dramatically reduces the possibility of obstruction by debris.
 - Discharges high air flow rates.
 - One size orifice for a wide pressure range (up to 360 psi), achieved by the rolling seal mechanism.

Valve Selection

- Size Range: 2" - 10"
- **D-060-C HF NS** vandalism protected by a metal shell covering the air release component, rated for 285 psi.
- **D-062 HF NS** vandalism protected by a metal shell covering the air release component, rated for 360 psi.
- **D-060-C HF NS LP** For Low Pressure Systems 0.725 - 87 psi.
- These valves are manufactured with flanged ends to meet ASA standard (D-060 HF NS ASA 150, D-062 HF NS ASA 300) or any requested standard.
- The 2" valve is also available with a threaded NPT connection.
- Valve coating: fusion bonded epoxy coating in accordance with the standard DIN 30677-2.

- Other coatings are available upon request.
- The automatic air release component and the air & vacuum component are available as separate units.
- For best suitability, it is recommended to send the fluid chemical properties along with the valve request.

Non-Slam Disc

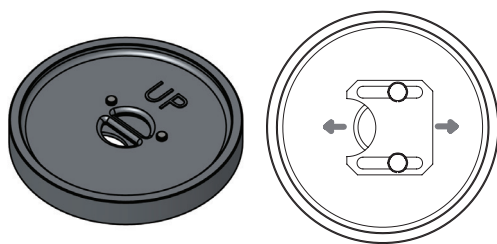
The built-in throttling device on the Non-Slam disc of the D-060-C HF NS Combination Air Valves will allow for the graduated opening and closing of the disc orifice.

Advantages:

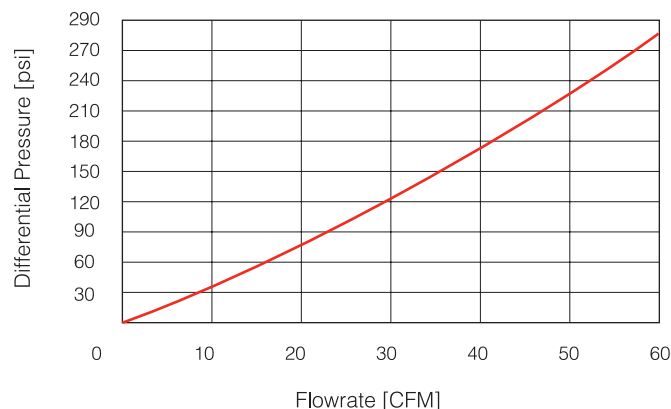
1. The orifice size of the disc can be adjusted to control and throttle the discharge of air during pipeline filling and during the return of the water column after separation.
2. The controlled discharge of air will reduce surge effects and provide for a silent closure of the air valve.
3. The closure of the orifice can be determined by running a surge analysis or by a decision taken in the field.
4. The orifice throttling device allows for a wide range of options from 100% open, partially open, partially closed to 100% closed.

Note

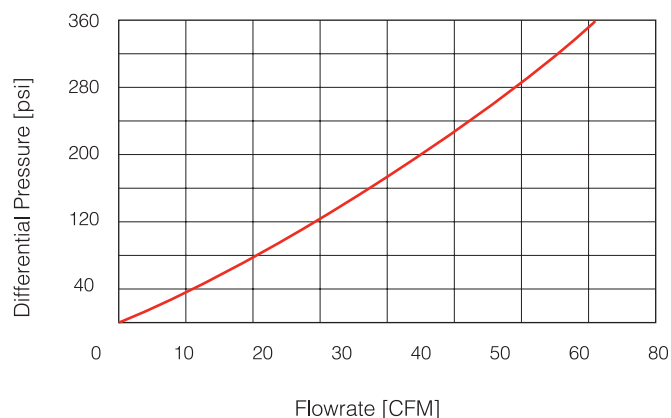
For best suitability, it is recommended to send the fluid chemical properties along with the valve request.
Upon ordering, please specify: model, size, working pressure, threads standard and type of liquid.



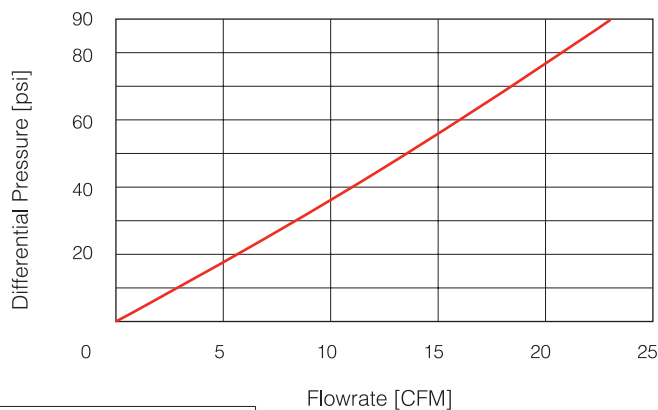
285 PSI AIR RELEASE FLOWRATE



360 PSI AIR RELEASE FLOWRATE



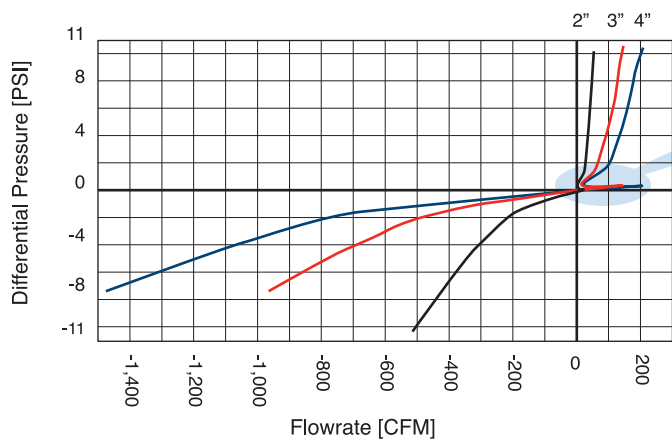
87 PSI AIR RELEASE FLOWRATE



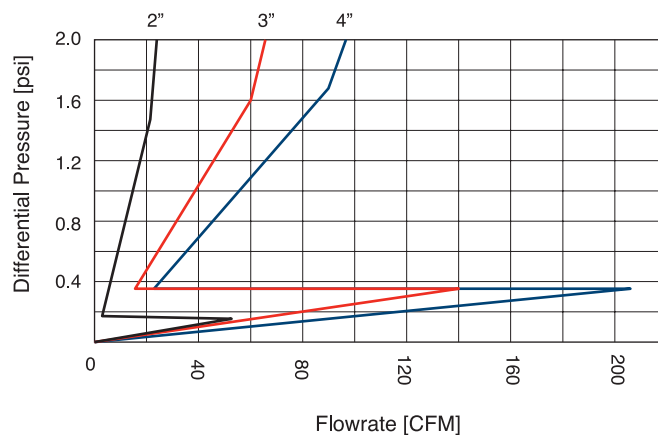
D-060-C HF NS -Non-Slam Orifice Data Table

Nominal Size	Discharge Orifice Inch	Total NS area Sq.In.	NS orifice Inch	Differential pressure psi	Flow at psi Differential pressure (CFM)
2"	2"	0.098	0.35	0.25	40
3"	3"	0.27	0.59	0.35	110
4"	4"	0.74	0.96	0.35	160
6"	6"	1.4	1.3	0.35	627
8"	8"	2.63	1.8	0.45	1200
10"	10"	2.44	1.8	0.36	1483

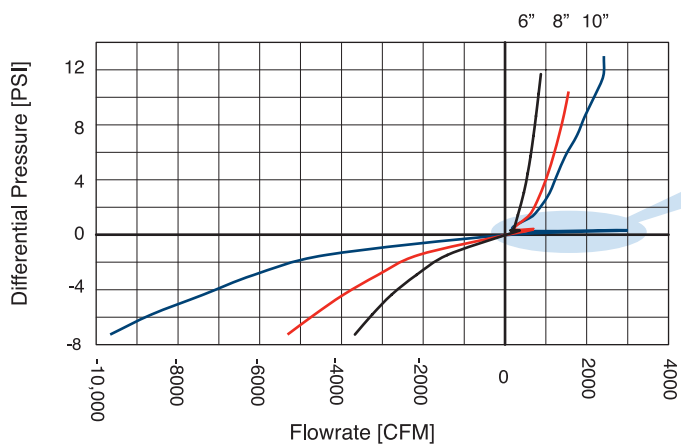
AIR & VACUUM FLOWRATE



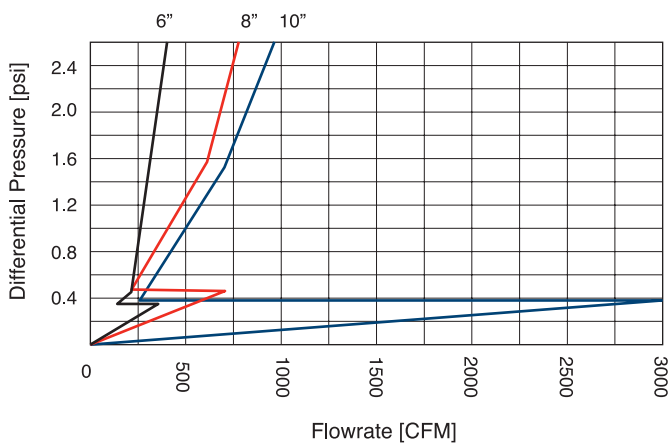
AIR DISCHARGE SWITCHING REGION



AIR & VACUUM FLOWRATE



AIR DISCHARGE SWITCHING REGION

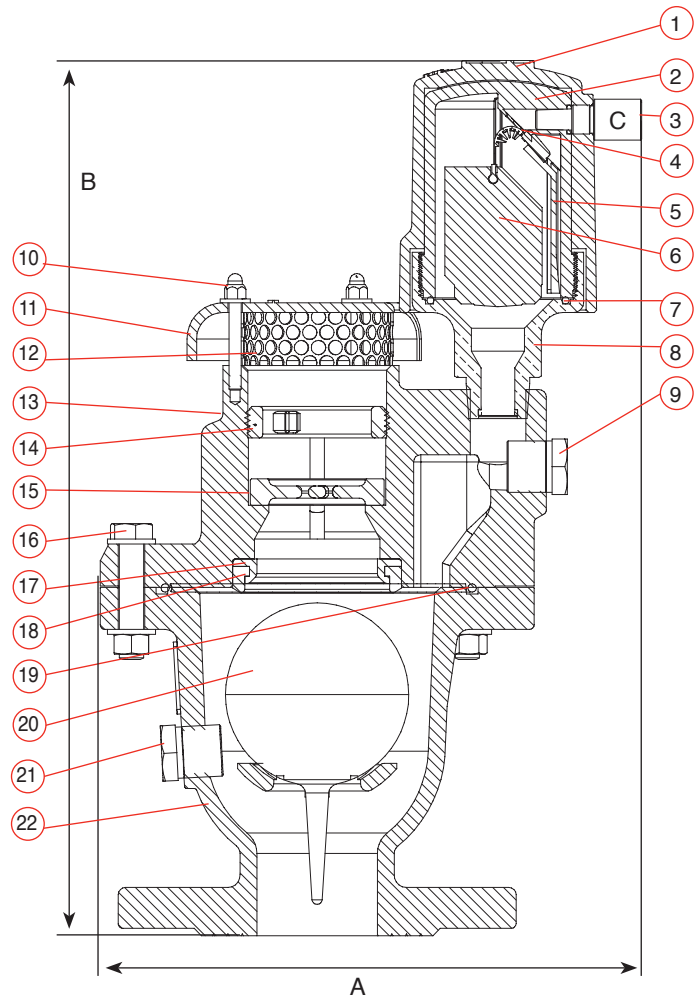


DIMENSIONS AND WEIGHTS

Size	Dimensions Inch		Connections	Weight Lbs.	Orifice Area Sq. In.			
	A	B			C	A / V	Air Release	
							D-060-C HF NS	D-062 HF NS
2" Threaded	8.23	14.764	1/8" NPT	33.07	3.04	0.018	0.014	
2" Flanged	8.23	14.252	1/8" NPT	33.07	3.04	0.018	0.014	

PARTS LIST AND SPECIFICATION FOR 2"

No.	Part	Material
1.	Shell S-050-C	Ductile Iron ASTM A-536 60-40-18 / Resicoat RT R4
	Shell S-052	Ductile Iron ASTM A536 60-40-18 / Resicoat RT R4
2.	Body	NSF 61 Certified Reinforced Nylon
3.	One Way Out	Brass
4.	Rolling Seal	
	285/360 psi	NSF 61 Certified E.P.D.M
	87 psi	Silicone
6.	Float	NSF 61 Certified Foamed Polypropylene
7.	O-Ring	NSF 61 Certified NBR 70
8.	Base	Stainless Steel ASTM A744 CF8M
9.	Plug	Stainless Steel SAE 316 / UNS 31600
10.	Domed Nut & Washer	NSF 61 Certified STST UNS 31600
11.	Screen Cover	Ductile Iron ASTM A-536 60-40-18 / Resicoat RT R4
12.	Screen	NSF 61 Certified STST UNS 30400
13.	Cover	Ductile Iron ASTM A536 60-40-18 / Resicoat RT R4
14.	Ring	NSF 61 Certified STST UNS 31600
15.	Non-Slam Disc	NSF 61 Certified STST UNS 31600
16.	Bolt, Nut & Washer	NSF 61 Certified STST UNS 31600
17.	Orifice Seat	Stainless Steel SAE 316 / UNS 31600
18.	Orifice Seal	NSF 61 Certified E.P.D.M
19.	O - Ring	NSF 61 Certified NBR 70
20.	Float	NSF 61 Certified STST UNS 31600 /NSF 61 Certified polycarbonate
21.	Plug	Stainless Steel SAE 316 / UNS 31600
22.	Body	Ductile Iron ASTM A536 60-40-18 / Resicoat RT R4

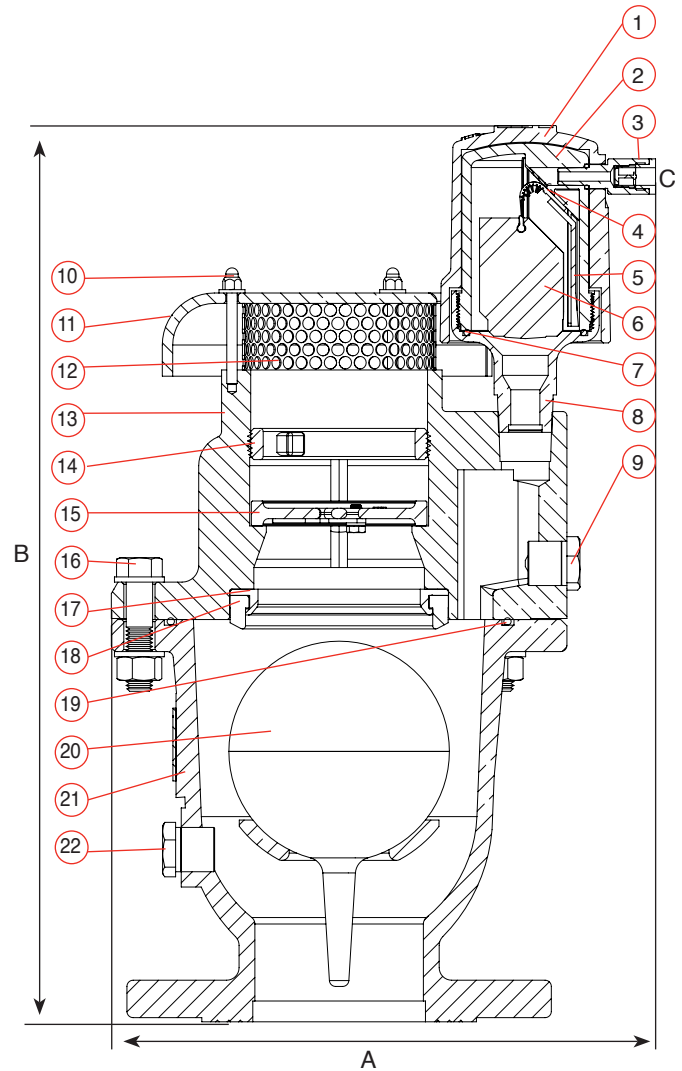


DIMENSIONS AND WEIGHTS

Size	Dimensions Inch		Connections	Weight Lbs.	Orifice Area Sq. In.			
	A	B			C	A / V	Air Release	
							D-060-C HF NS	D-062 HF NS
3" Flanged	9.567	16.93	1/8" NPT	48.5	7.80	0.018	0.014	

PARTS LIST AND SPECIFICATION FOR 3"

No.	Part	Material
1.	Shell S-050-C	Ductile Iron ASTM A-536 60-40-18 / Resicoat RT R4
	Shell S-052	Ductile Iron ASTM A536 60-40-18 / Resicoat RT R4
2.	Body	NSF 61 Certified Reinforced Nylon
3.	One Way Out	Brass
4.	Rolling Seal	
	285/360 psi	NSF 61 Certified E.P.D.M
	87 psi	Silicone
6.	Float	NSF 61 Certified Foamed Polypropylene
7.	O-Ring	NSF 61 Certified NBR 70
8.	Base	Stainless Steel ASTM A744 CF8M
9.	Plug	Stainless Steel SAE 316 / UNS 31600
10.	Domed Nut & Washer	NSF 61 Certified STST UNS 31600
11.	Screen Cover	Ductile Iron ASTM A-536 60-40-18 / Resicoat RT R4
12.	Screen	NSF 61 Certified STST UNS 30400
13.	Cover	Ductile Iron ASTM A536 60-40-18 / Resicoat RT R4
14.	Ring	NSF 61 Certified STST UNS 31600
15.	Non-Slam Disc	NSF 61 Certified STST UNS 31600
16.	Bolt, Nut & Washer	NSF 61 Certified STST UNS 31600
17.	Orifice Seat	Stainless Steel SAE 316 / UNS 31600
18.	Orifice Seal	NSF 61 Certified E.P.D.M
19.	O - Ring	NSF 61 Certified NBR 70
20.	Float	NSF 61 Certified STST UNS 31600 /NSF 61 Certified polycarbonate
21.	Body	Ductile Iron ASTM A536 60-40-18 / Resicoat RT R4
22.	Plug	Stainless Steel SAE 316 / UNS 31600

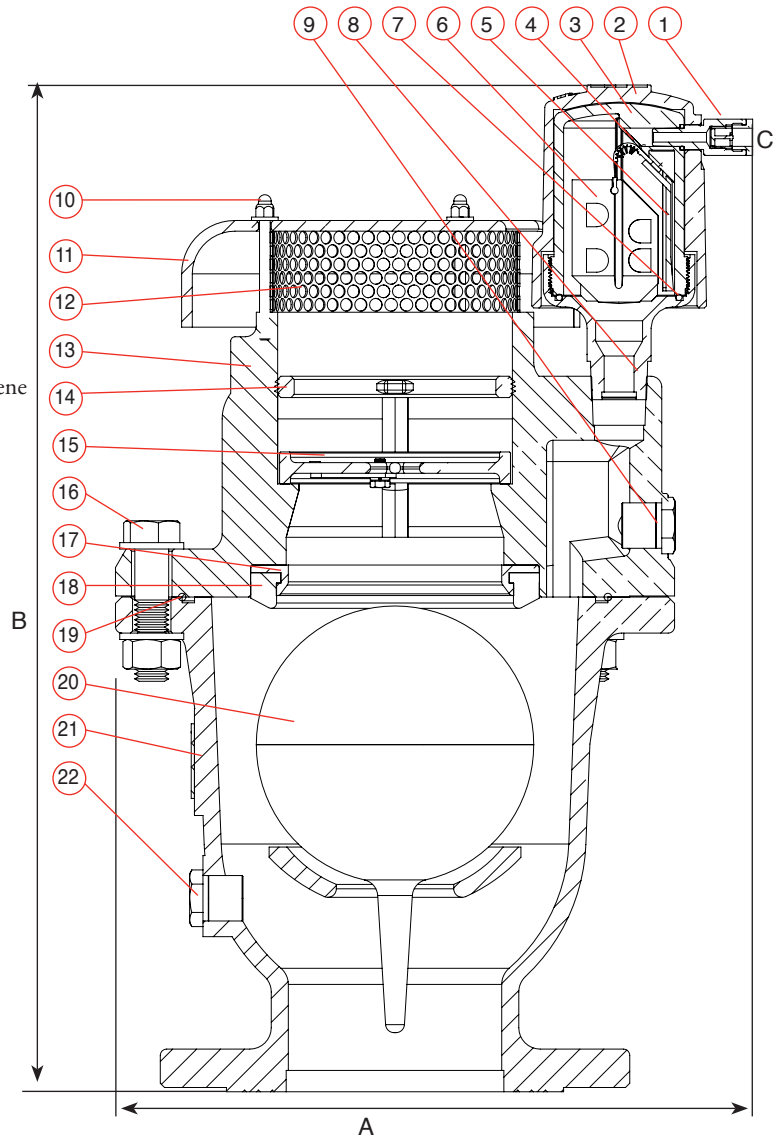


DIMENSIONS AND WEIGHTS

Size	Dimensions Inch		Connections	Weight Lbs.	Orifice Area Sq. In.			
	A	B			C	A / V	Air Release	
							D-060-C HF NS	D-062 HF NS
4" Flanged	11.023	18.62	1/8" NPT	66.14	12.17	0.018	0.014	

PARTS LIST AND SPECIFICATION FOR 4"

No.	Part	Material
1.	One Way Out	Brass
2.	Shell S-050-C	Ductile Iron ASTM A-536 60-40-18 / Resicoat RT R4
	Shell S-052	Ductile Iron ASTM A536 60-40-18 / Resicoat RT R4
3.	Body	NSF 61 Certified Reinforced Nylon
4.	Rolling Seal	
	285/360 psi	NSF 61 Certified E.P.D.M
	87 psi	Silicone
5.	Clamping Stem	NSF 61 Certified Reinforced Nylon
6.	Float	NSF 61 Certified Foamed Polypropylene
7.	O-Ring	NSF 61 Certified NBR 70
8.	Base	Stainless Steel ASTM A744 CF8M
9.	Plug	Stainless Steel SAE 316 / UNS 31600
10.	Domed Nut & Washer	NSF 61 Certified STST UNS 31600
11.	Screen Cover	Ductile Iron ASTM A-536 60-40-18 / Resicoat RT R4
12.	Screen	NSF 61 Certified STST UNS 30400
13.	Cover	Ductile Iron ASTM A536 60-40-18 / Resicoat RT R4
14.	Ring	NSF 61 Certified STST UNS 31600
15.	Non-Slam Disc	NSF 61 Certified STST UNS 31600
16.	Bolt, Nut & Washer	NSF 61 Certified STST UNS 31600
17.	Orifice Seat	Stainless Steel SAE 316 / UNS 31600
18.	Orifice Seal	NSF 61 Certified E.P.D.M
19.	O - Ring	NSF 61 Certified NBR 70
20.	Float	NSF 61 Certified STST UNS 31600 /NSF 61 Certified polycarbonate
21.	Body	Ductile Iron ASTM A536 60-40-18 / Resicoat RT R4
22.	Plug	Stainless Steel SAE 316 / UNS 31600

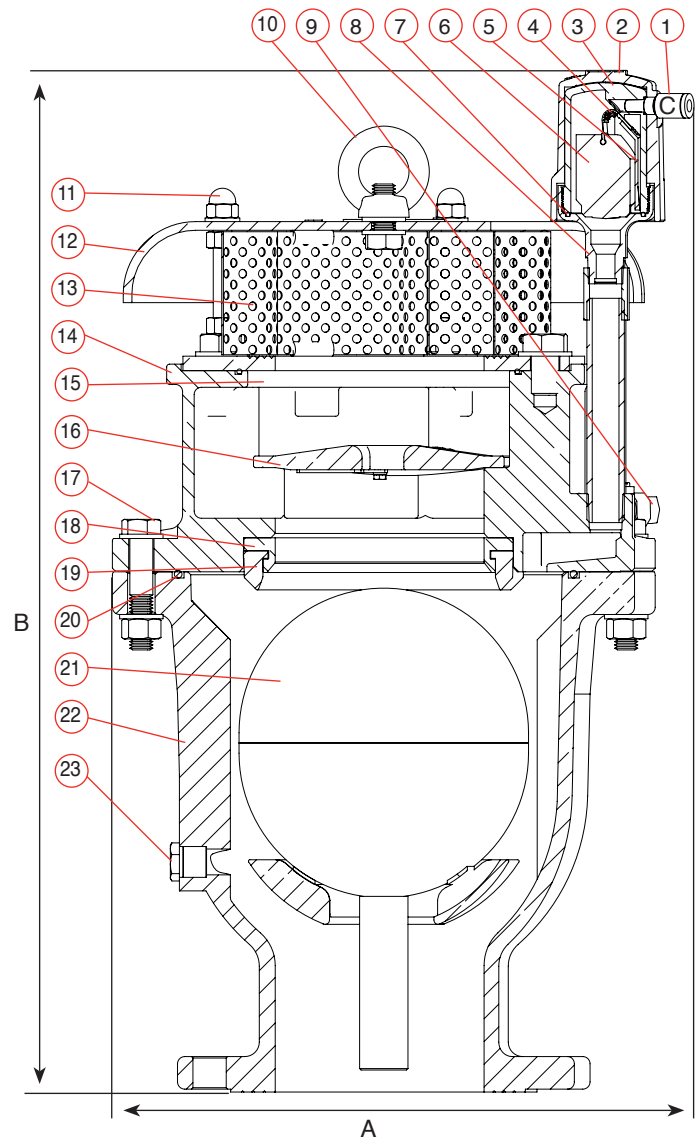


DIMENSIONS AND WEIGHTS

Size	Dimensions Inch		Connections	Weight Lbs.	Orifice Area Sq. In.			
	A	B			C	A / V	Air Release	
							D-060-C HF NS	D-062 HF NS
6" Flanged	14.76	27.56	1/8" NPT	205.03	27.38	0.018	0.014	

PARTS LIST AND SPECIFICATION FOR 6"

No.	Part	Material
1.	One Way Out	Brass
2.	Shell S-050-C	Ductile Iron ASTM A-536 60-40-18 / Resicoat RT R4
	Shell S-052	Ductile Iron ASTM A536 60-40-18 / Resicoat RT R4
3.	Body	NSF 61 Certified Reinforced Nylon
4.	Rolling Seal	
	285/360 psi	NSF 61 Certified E.P.D.M
	87 psi	Silicone
6.	Float	NSF 61 Certified Foamed Polypropylene
7.	O-Ring	NSF 61 Certified NBR 70
8.	Base	Stainless Steel ASTM A744 CF8M
9.	Test Cock + Adaptor	Test Cock + Adaptor
10.	Lifting Ring	NSF 61 Certified STST UNS 31600
11.	Domed Nut & Washer	NSF 61 Certified STST UNS 31600
12.	Screen Cover	Ductile Iron ASTM A-536 60-40-18 / Resicoat RT R4
13.	Screen	NSF 61 Certified STST UNS 30400
14.	Cover	Ductile Iron ASTM A536 60-40-18 / Resicoat RT R4
15.	Ring	NSF 61 Certified STST UNS 31600
16.	Non-Slam Disc	Ductile Iron ASTM A-536 60-40-18 / Resicoat RT R4
17.	Bolt, Nut & Washer	NSF 61 Certified STST UNS 31600
18.	Orifice Seat	Stainless Steel SAE 316 / UNS 31600
19.	Orifice Seal	NSF 61 Certified E.P.D.M
20.	O - Ring	NSF 61 Certified NBR 70
21.	Float	NSF 61 Certified STST UNS 31600 /NSF 61 Certified polycarbonate
22.	Body	Ductile Iron ASTM A536 60-40-18 / Resicoat RT R4
23.	Plug	Stainless Steel SAE 316 / UNS 31600

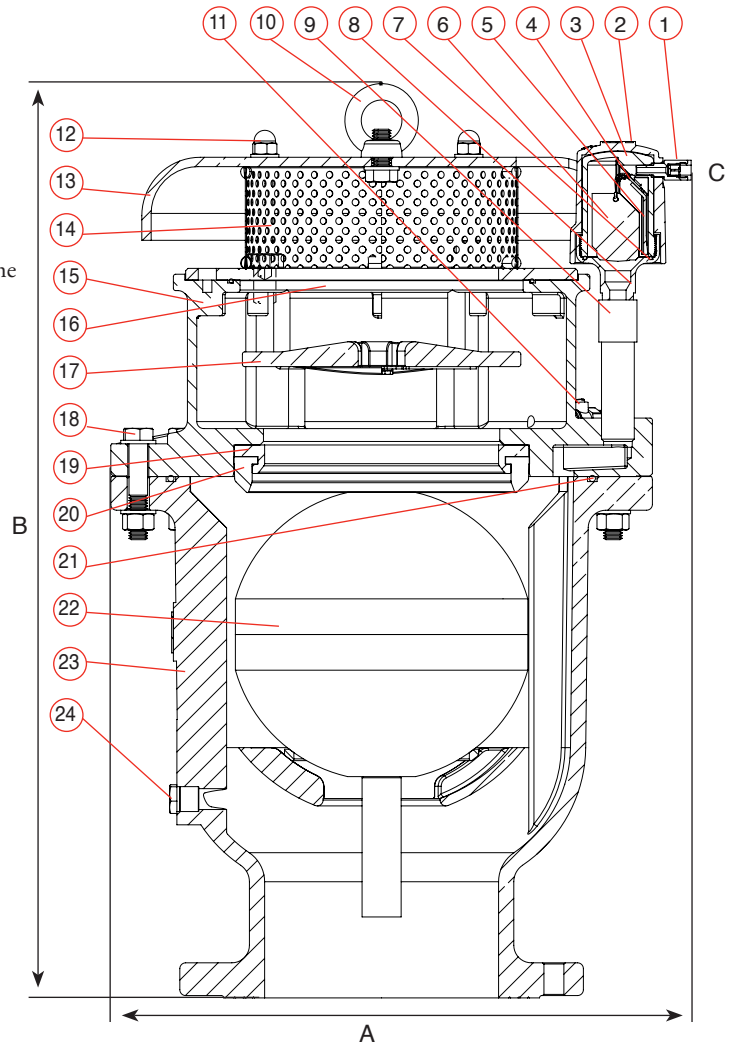


DIMENSIONS AND WEIGHTS

Size	Dimensions Inch		Connections	Weight Lbs.	Orifice Area Sq. In.			
	A	B			C	A / V	Air Release	
							D-060-C HF NS	D-062 HF NS
8" Flanged	18.23	31.496	1/8" NPT	346.125	48.67	0.018	0.014	

PARTS LIST AND SPECIFICATION FOR 8"

No.	Part	Material
1.	One Way Out	Brass
2.	Shell S-050-C	Ductile Iron ASTM A-536 60-40-18 / Resicoat RT R4
	Shell S-052	Ductile Iron ASTM A536 60-40-18 / Resicoat RT R4
3.	Body	NSF 61 Certified Reinforced Nylon
4.	Rolling Seal	
	285/360 psi	NSF 61 Certified E.P.D.M
	87 psi	Silicone
6.	Float	NSF 61 Certified Foamed Polypropylene
7.	O-Ring	NSF 61 Certified NBR 70
8.	Base	Stainless Steel ASTM A744 CF8M
9.	Nipple & Coupling	NSF 61 Certified STST UNS 31600
10.	Lifting Ring	NSF 61 Certified STST UNS 31600
11.	Test Cock + Adaptor	Test Cock + Adaptor
12.	Domed Nut & Washer	NSF 61 Certified STST UNS 31600
13.	Screen Cover	Ductile Iron ASTM A-536 60-40-18 / Resicoat RT R4
14.	Screen	NSF 61 Certified STST UNS 31600
15.	Cover	Ductile Iron ASTM A536 60-40-18 / Resicoat RT R4
16.	Ring	NSF 61 Certified STST UNS 31600
17.	Non-Slam Disc	Ductile Iron ASTM A-536 60-40-18 / Resicoat RT R4
18.	Bolt, Nut & Washer	NSF 61 Certified STST UNS 31600
19.	Orifice Seat	Stainless Steel SAE 316 / UNS 31600
20.	Orifice Seal	NSF 61 Certified E.P.D.M
21.	O - Ring	NSF 61 Certified NBR 70
22.	Float	NSF 61 Certified STST UNS 31600 / NSF 61 Certified polycarbonate
23.	Body	Ductile Iron ASTM A536 60-40-18 / Resicoat RT R4
24.	Plug	Stainless Steel SAE 316 / UNS 31600

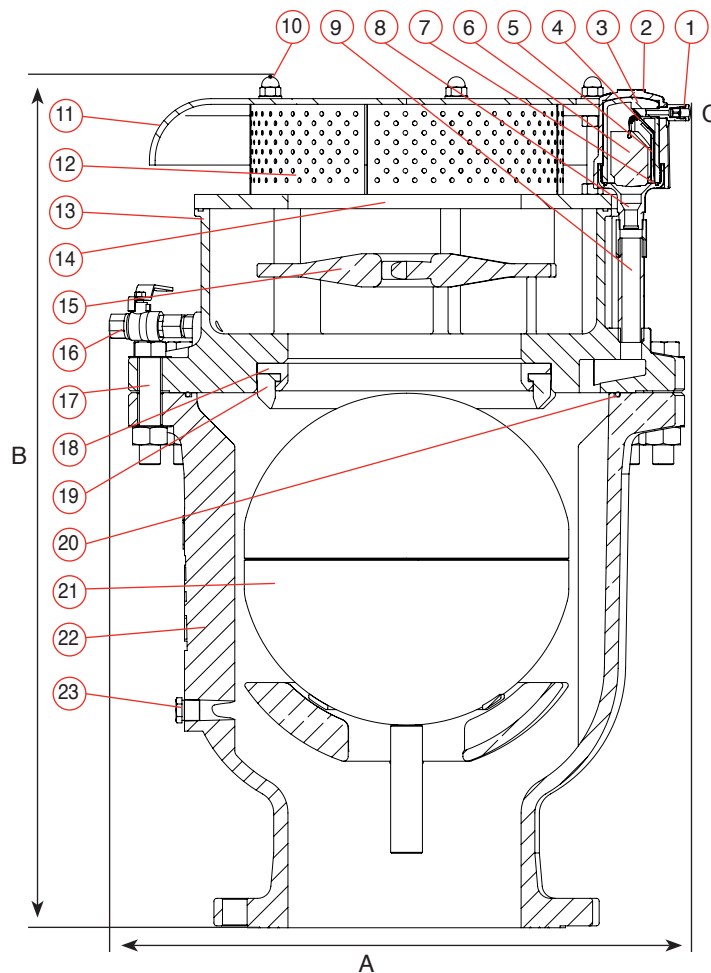


DIMENSIONS AND WEIGHTS

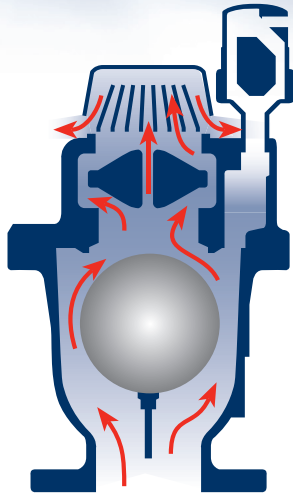
Size	Dimensions Inch		Connections	Weight Lbs.	Orifice Area Sq. In.			
	A	B			C	A / V	Air Release	
							D-060-C HF NS	D-062 HF NS
10" Flanged	23.070	38.90	1/8" NPT	643.75	76.08	0.018	0.014	

PARTS LIST AND SPECIFICATION FOR 10"

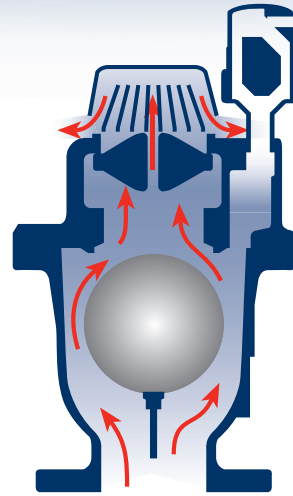
No.	Part	Material
1.	One Way Out	Brass
2.	Shell S-050-C	Ductile Iron ASTM A-536 60-40-18 / Resicoat RT R4
	Shell S-052	Ductile Iron ASTM A536 60-40-18 / Resicoat RT R4
3.	Body	NSF 61 Certified Reinforced Nylon
4.	Rolling Seal	
	285/360 psi	NSF 61 Certified E.P.D.M
	87 psi	Silicone
6.	Float	NSF 61 Certified Foamed Polypropylene
7.	O-Ring	NSF 61 Certified NBR 70
8.	Base	Stainless Steel ASTM A744 CF8M
9.	Nipple & Coupling	NSF 61 Certified STST UNS 31600
10.	Domed Nut & Washer	NSF 61 Certified STST UNS 31600
11.	Screen Cover	Ductile Iron ASTM A-536 60-40-18 / Resicoat RT R4
12.	Screen	NSF 61 Certified STST UNS 30400
13.	Cover	Ductile Iron ASTM A536 60-40-18 / Resicoat RT R4
14.	Ring	NSF 61 Certified STST UNS 31600
15.	Non-Slam Disc	NSF 61 Certified STST UNS 31600
16.	Test Cock + Adaptor	Test Cock + Adaptor
17.	Bolt, Nut & Washer	NSF 61 Certified STST UNS 31600
18.	Orifice Seat	Stainless Steel SAE 316 / UNS 31600
19.	Orifice Seal	NSF 61 Certified E.P.D.M
20.	O - Ring	NSF 61 Certified NBR 70
21.	Float	NSF 61 Certified STST UNS 31600 /NSF 61 Certified polycarbonate
22.	Body	Ductile Iron ASTM A536 60-40-18 / Resicoat RT R4
23.	Plug	Stainless Steel SAE 316 / UNS 31600



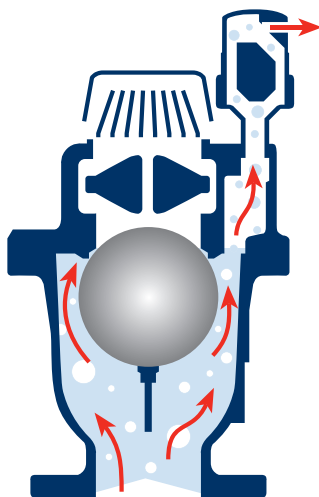
Operation in Rapid Filling of the Pipeline:



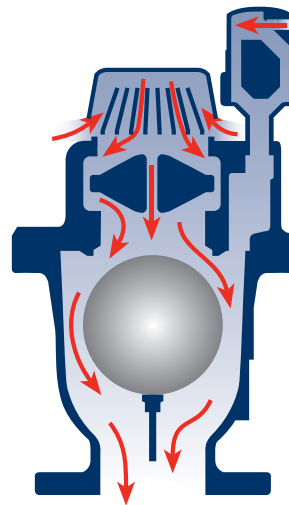
1. When water, rapidly filling the pipe line, pushes the air out through the Air Valve, a differential air pressure is created across the valve orifice.



2. When this differential pressure reaches a prefixed level (usually it will be prefixed at 0.72 psi) the orifice disc will close.
3. Air will continue to come out through the small orifice disc - until all the air will be exhausted and water will reach the kinetic float. This double stage kinetic air discharge prevents the slam effect and therefore suppresses water hammer.



4. When water reaches the kinetic float, it lifts it up, closing the kinetic orifice and completing the kinetic cycle.
5. The «vented Check Valve Orifice Disc» will come back to its normal open position.



6. When water is drained out of the pipe line, the resulting pressure drop lets the kinetic float fall down, opening the orifice fully for intake of high volume of air into the line.