



K-060 NS 16 bar

K-062 NS 25 bar

K-064 NS 40 bar



Air & Vacuum Air Valve for High Flow Non Slam

Description

The K-060 NS series Air & Vacuum Valve is a surge-dampening, slam-preventing air valve.

The valve 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 pressure 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 high pressure demands (K-062 NS, K-064 NS).

Operation

The air & vacuum valve discharges air at high flow rates during the filling of the system and admits air at high flow rates during drainage, pump shut-off or at water column separation. High velocity air will not blow the float shut. Liquid entry will cause the sealing of the valve.

At any time during system operation, should internal pressure of the system fall below atmospheric pressure, air will enter the system.

The smooth discharge of air prevents pressure surges and other destructive phenomena.

The intake of air in response to negative pressure protects the system from destructive vacuum conditions and prevents damage caused by water column separation. Air entry is essential to efficiently drain the system.

As the system fills and is pressurized, the air valve functions in the following stages:

1. Air is discharged by the valve.
2. Liquid enters the valve, lifting the float which pushes the sealing mechanism to its sealing position.

When internal pressure falls below atmospheric pressure (negative pressure):

1. The float will drop down, immediately opening the air & vacuum orifice.
2. Air will enter the system.

Main Features

- Working pressure range:
 - K-060 NS 0.2-16 bar
 - K-062 NS 0.2-25 bar
 - K-064 NS 0.2-40 bar
- Testing pressure for the air valve is 1.5 times its working pressure.
- Maximum working temperature: 60°C.
- Maximum intermittent temperature: 90°C.
- 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.

Valve Selection

- Size Range: 1"-10" (50mm - 250mm) for all models in the series.
- These valves are manufactured with flanged ends to meet any requested standard.
- The 1", 2" valve is also available with a threaded male BSP/NPT connection.
- Valve coating: FBE coating in compliance with the standard DIN 30677-2.
- Other coatings are available upon request.
- The K-060NS series air & vacuum air valve is also available as a combination air valve for Models D-060 NS, D-060-C NS, D-062 NS, D-065 NS, with the addition of an Automatic Air Release valve.

Note

For best suitability, it is recommended to send the fluid chemical properties along with the valve request.

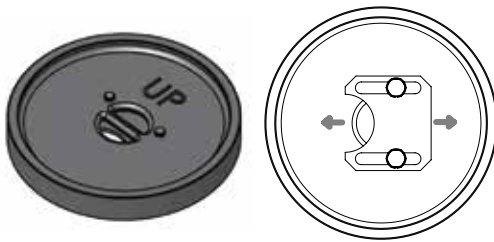
Upon ordering, please specify: model, size, working pressure, threads standard and type of liquid.

Non-Slam Disc

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

Advantages:

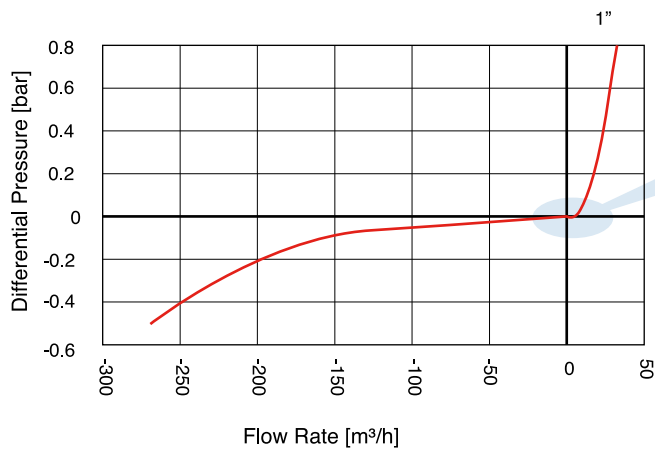
1. The orifice size of the disc can be adjusted to control and throttle the discharge of air during pipeline filling and during the return of the water column after separation.
2. The controlled discharge of air will reduce surge effects and provide for a silent closure of the air valve.
3. The closure 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.



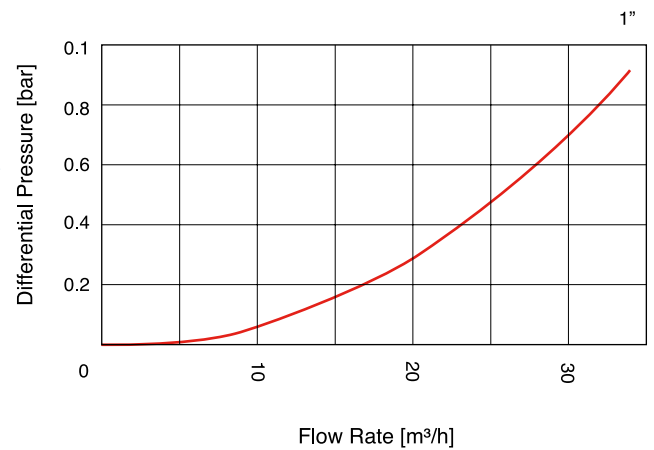
K-060 Non-Slam Orifice Data Table

Nominal Size	Discharge orifice mm	Total NS area mm ²	NS orifice mm	Switching point cm	Flow at 0.4 bar m ³ /h
1" (25 mm)	37.5	12.6	4	Spring loaded normally closed	17.5
2" (50mm)	50	63	9	10	90
3" (80mm)	75	175.4	15	23	240
4" (100mm)	100	476.4	24.5	23	350
6" (150mm)	150	900.6	34	23	600
8" (200mm)	200	1696.9	46.5	30	1200
10" (250mm)	250	1575.7	45	25	5100

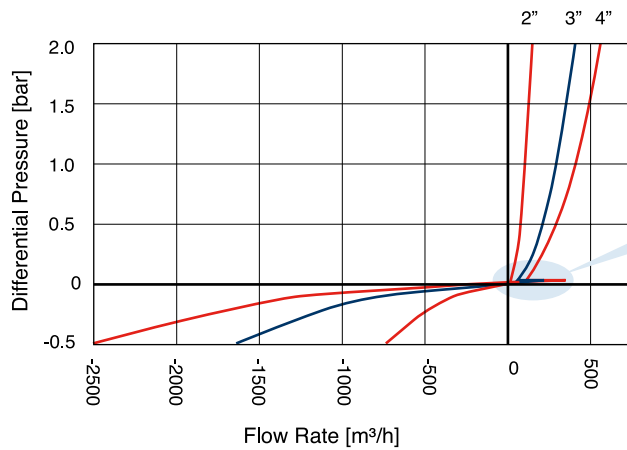
AIR & VACUUM FLOW RATE



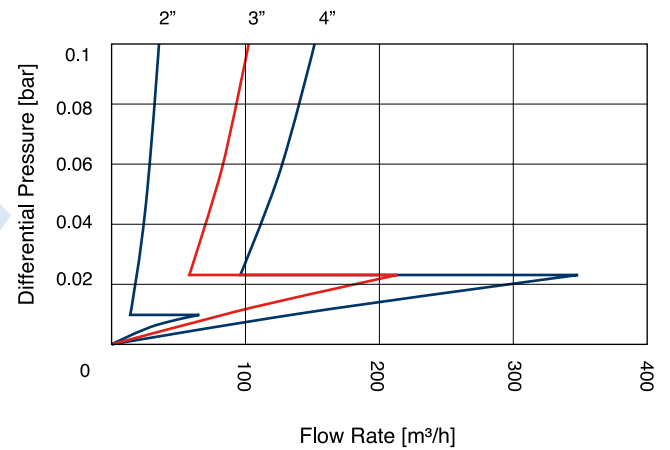
AIR DISCHARGE SWITCHING REGION



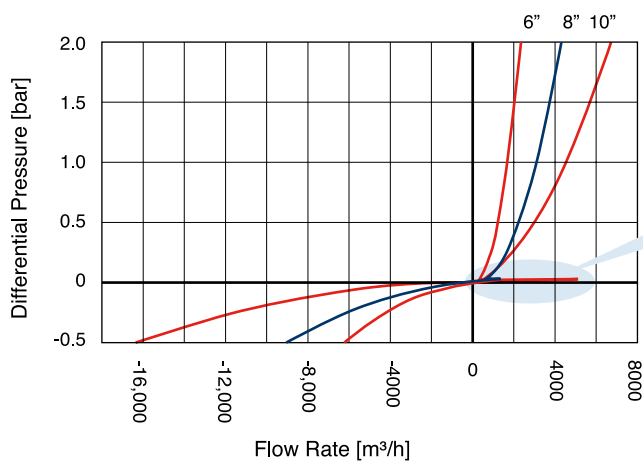
AIR & VACUUM FLOW RATE



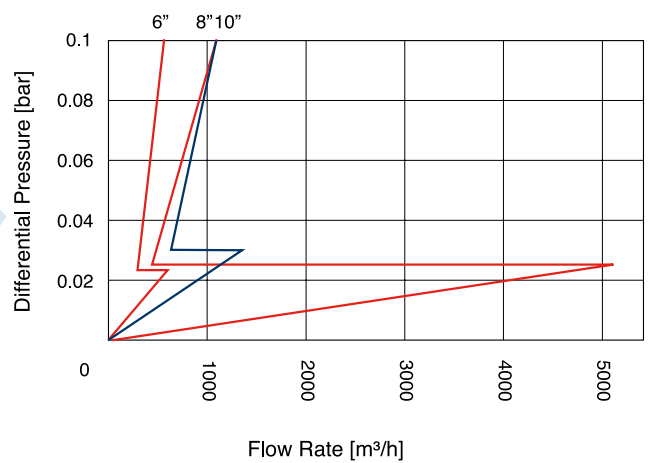
AIR DISCHARGE SWITCHING REGION



AIR & VACUUM FLOW RATE



AIR DISCHARGE SWITCHING REGION

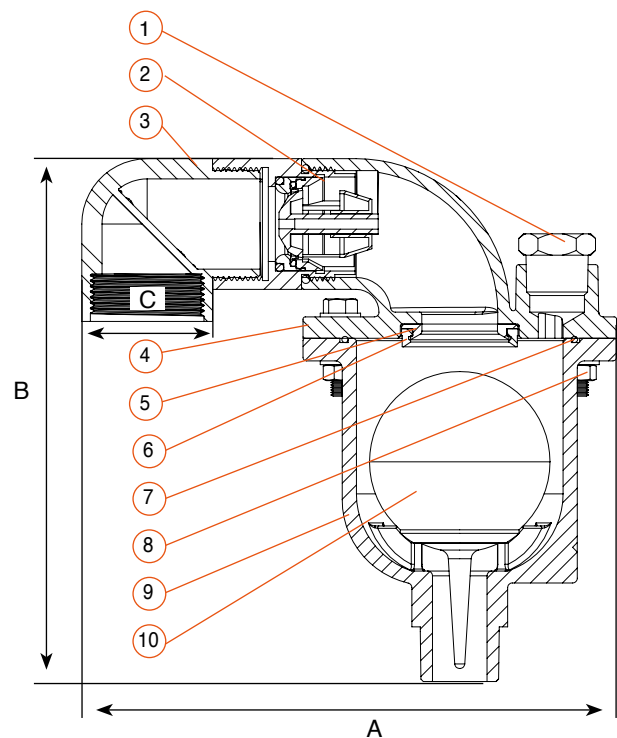


DIMENSIONS AND WEIGHTS

Nominal Size	Dimensions mm		Connection C	Weight Kg.	Orifice Area mm ²
	A	B			
1" (25mm) Threaded	243	225	1½" Female	4.1	506.7
1" (25mm) Flanged	243	225	1½" Female	5.1	506.7

1" PARTS LIST AND SPECIFICATION

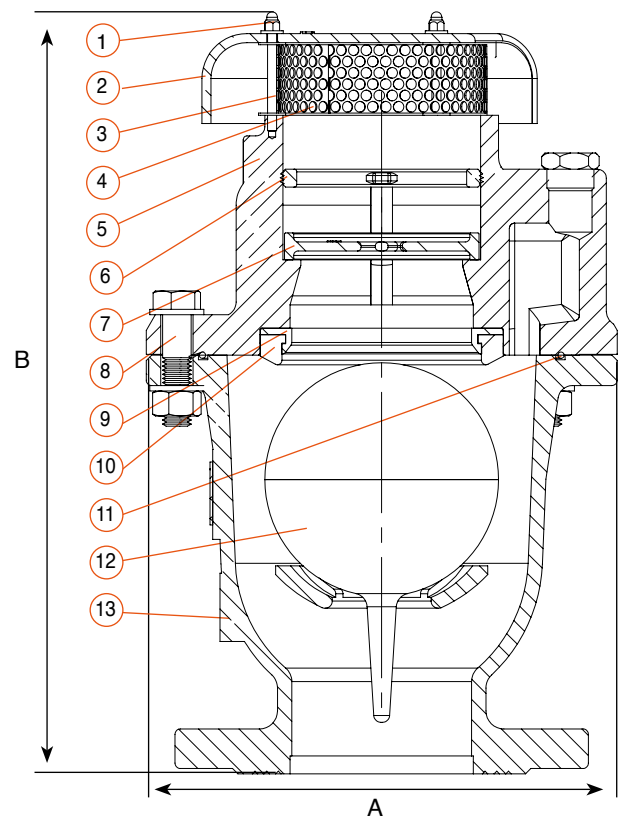
No. Part	Material
1. Plug	Brass
2. One Way Check Valve	Acetal
3. Discharge Outlet	Polypropylene
4. Cover	Ductile Iron
5. Orifice Seat	Bronze
6. Orifice Seal	EPDM
7. O-Ring	BUNA-N
8. Bolt, Nut & Washer	Steel, Zinc Cobalt Plated
9. Body	Ductile Iron
10. Float	Polycarbonate /Stainless Steel



Nominal Size	Dimensions mm		Weight Kg.	Orifice Area mm ²
	A	B		
2" (50mm) Threaded	185	288	12 - 12.4	1960
2" (50mm) Flanged	185	277	12.1 - 12.4	1960
3" (80mm)	219	362	18.4 - 19.4	5030
4" (100mm)	262	420	26 - 27.3	7850
6" (150mm)	375	615	85.5 - 90.3	17662
8" (200mm)	463	777	130 - 138.3	31400
10" (250mm)	586	900	294.5 - 306.8	49087

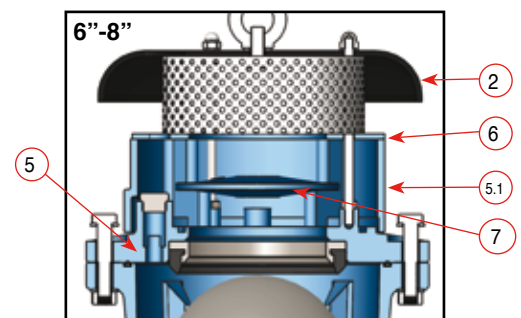
PARTS LIST AND SPECIFICATION

No. Part	Material
1. Domed Nut & Washer	Stainless Steel 304
2. Screen Cover	Polyethylene
3. Threaded Rod	Stainless Steel 304
4. Screen	Stainless Steel 304
5. Cover	Ductile Iron
6. Ring	Stainless Steel 316
7. Non-Slam Disc	Stainless Steel 316 / Ductile Iron / Carbon Steel
8. Bolt, Nut & Washer	Steel, Zinc Cobalt Coated
9. Orifice Seat	Bronze
10. Orifice Seal	EPDM
11. O-Ring	BUNA-N
12. Float	Polycarbonate / Stainless Steel
13. Body	Ductile Iron



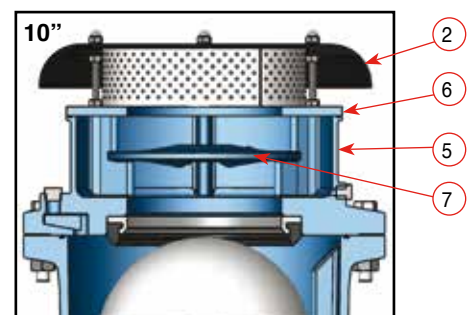
6"-8" SPECIAL PARTS

2.	Screen Cover	Polyethylene
5.	Cover	Ductile Iron
5.1	NS Housing	Polyethylene
6.	Ring	Carbon Steel
7.	Non-Slam Disc	Ductile Iron

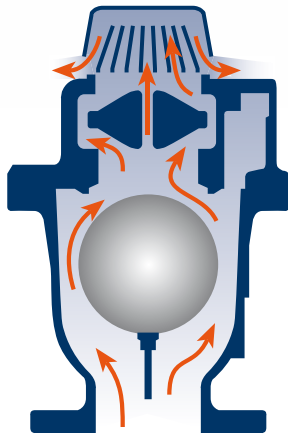


10" SPECIAL PARTS

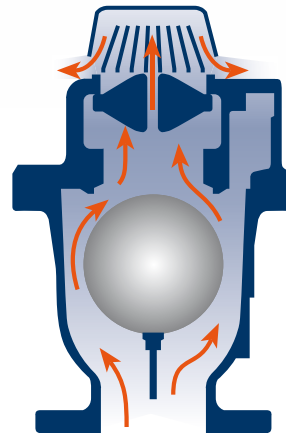
2.	Screen Cover	Polyethylene
5.	Cover	Ductile Iron
6.	Ring	Carbon Steel
7.	Non-Slam Disc	Ductile Iron



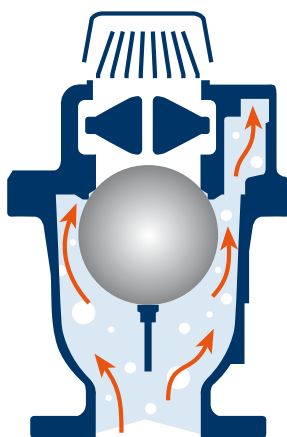
Operation in Rapid Filling of the Pipeline:



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.

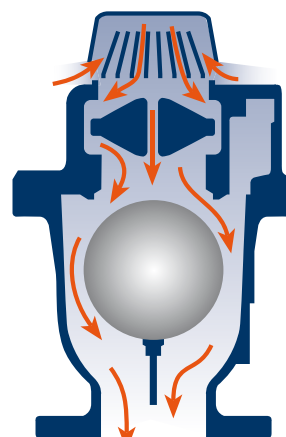


2. When this differential pressure reaches a prefixed level (usually it will be prefixed at 0.02 - 0.03 bar) the orifice disc will close.
3. Air will continue to come out through the small orifice disc - until all the air will be exhausted and water will reach the kinetic float. This double stage kinetic 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.