D-060 HF NS PN 16

WATER SUPPLY

D-060-C HF NS PN 16

D-062 HF NS PN 25

D-014 HF NS PN 40

NS - “NON SLAM” AIR VALVE

Protects from water hammer effects in the pipeline system, in situations such as column separation, deep well pumping and rapid filling of mains.
The NS mechanism is suitable for A.R.I combination air valve models: D-010 HF, D-012 HF, D-060 HF, D-060-C HF, D-062 HF, D-014 HF and kinetic air valve models: K-010 HF, K-060HF, K-060-C HF, K-062 HF, K-014 HF.
In 2" ,3", 4", 6", 8" diameter.
It is suitable for PN-16, PN-25, PN-40.

Operation in Deep Well Pumping

In a deep well, the long suction pipe in the well shaft is full of air. As water is pumped rapidly up the suction pipe, air is forced through the pump air valve in great velocity. If the air valve were to slam shut suddenly, by the approaching water, instantly reducing velocity to 0, it could cause a severe water hammer or surge. The kinetic element of the "Non Slam" air valve shuts in two stages, slowing down the air discharge during the second stage, thus, dissipating the air pocket slowly. The slowly dissipated air pocket cushions the closing of the second stage, as water approaches the float, thus preventing the local water hammer or surge.

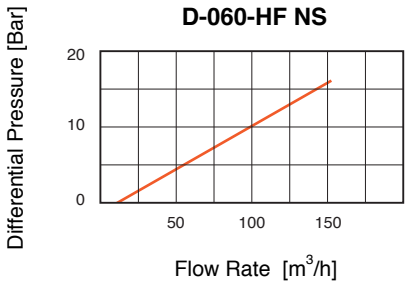
Operation under column separation situation

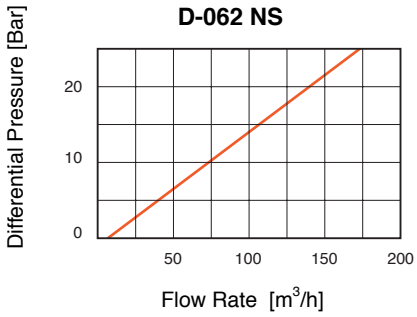
Column separation can occur due to changes in flow condition or/and drainage of the pipe line. The water column will split at an apex point creating a vacuum cavity. After some time the sub-atmospheric pressure pulls the separated water columns back, and they collide. The collision creates a water hammer wave that can burst the pipe.
If the "Non Slam" Air Valve is mounted on the pipe at his apex point it will prevent this water hammer from occuring:
1. when column separation occurs the large orifice introduces large quantities of air into the vacuum bubble and reduces the sub-atmospheric pressure.
2. When the water columns change direction and start moving back towards collision, air is exhausted rapidly through the air Valve, creating a differential pressure higher than 1.0 meter across the Air Valve orifice.
3. The "Non Slam", first stage, partially closes the air outlet, allowing only a slow discharge of the air entrapped in the pipe. This air pocket dampens the velocity of the approaching water columns, and acts as a shock absorber that prevents water hammer.

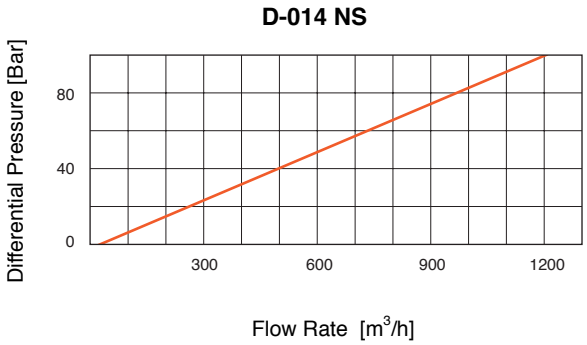
D-060-HF NS

A.R.I. FLOW CONTROL ACCESSORIES

AUTOMATIC AIR DISCHARGE



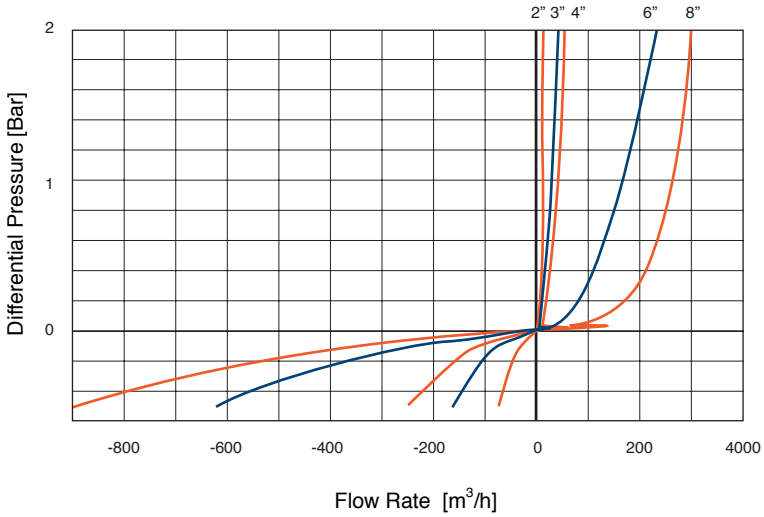




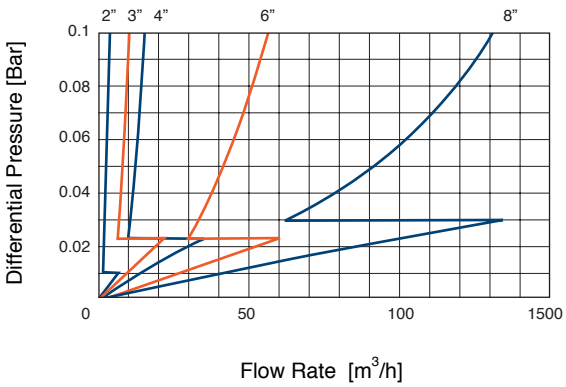
DIMENSIONS AND WEIGHTS

Nominal Size	Dimentions mm A	Dimentions mm B	Weight Kg.
D-060-HF NS			
(50mm) 2" Threded	190	359	14
(50mm) 2" Flanged	190	349	14
(80mm) 3"	234	424	21
(100 mm) 4"	269	459	29
(150mm) 6"	375	707	92
(200mm) 8"	463	832	156
(250mm) 10"	586	993	291
D-060-C-HF NS			
(50mm) 2" Threded	193	369	15
(50mm) 2" Flanged	193	357	15
(80mm) 3"	241	428	22
(100 mm) 4"	272	473	30
(150mm) 6"	375	718	93
(200mm) 8"	463	843	157
(250mm) 10"	586	995	292
D-062 -HF NS			
(50mm) 2" Threded	193	369	15
(50mm) 2" Flanged	193	357	15
(80mm) 3"	241	428	22
(100 mm) 4"	272	473	30
(150mm) 6"	375	718	93
(200mm) 8"	463	843	157
(250mm) 10"	586	995	292
D-014-HF NS			
(50mm) 2"	250	505	17.5
(80mm) 3"	294	555	24.5
(100 mm) 4"	329	612	32.5
(150mm) 6"	399	854	102.5
(200mm) 8"	481	555	159.5
(250mm) 10"	586	1142	303

AIR AND VACUUM FLOW RATE



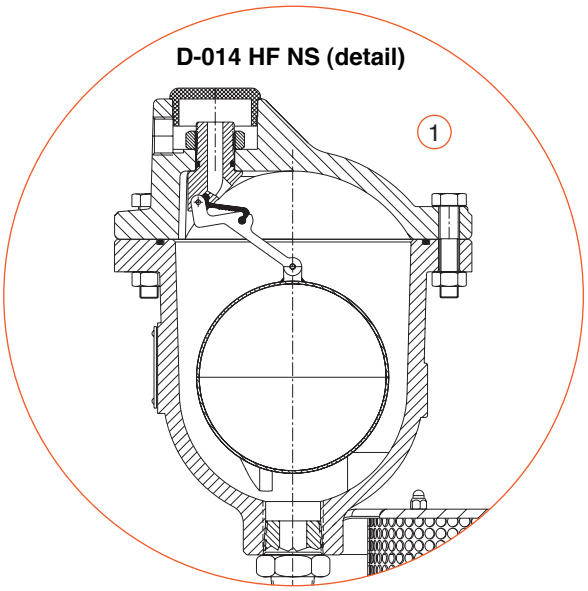
AIR FLOW RATE SWITCHING REGION

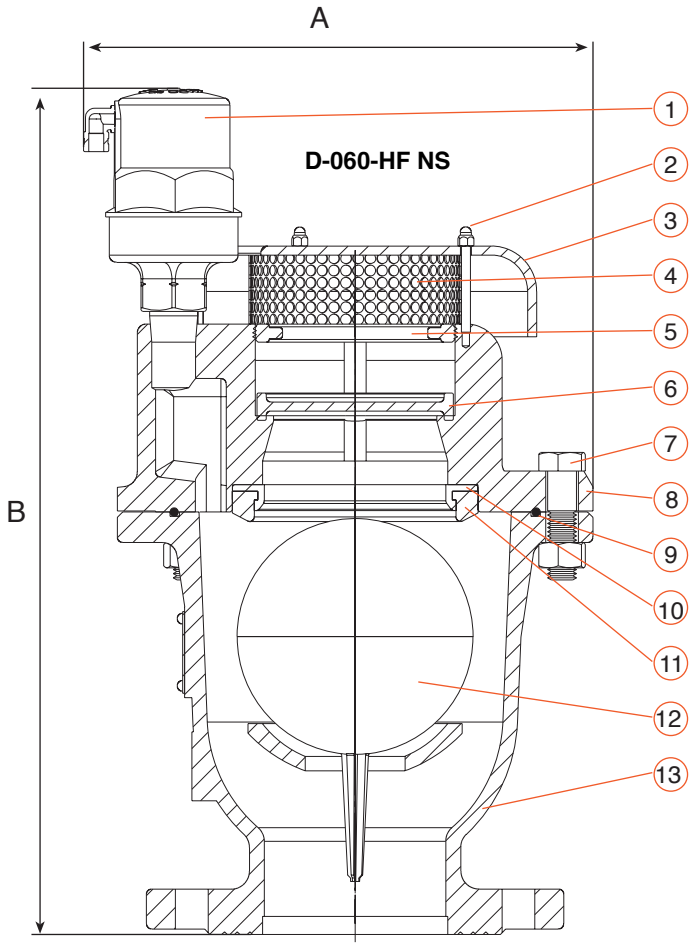


PARTS LIST AND SPECIFICATION

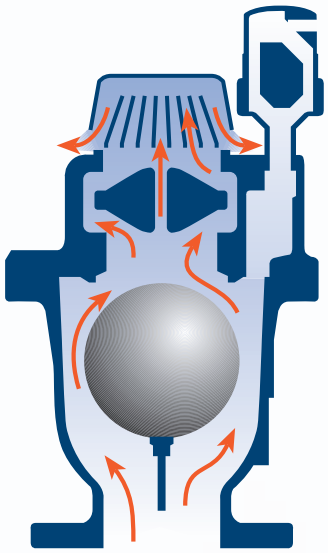
No.	Part		Material
1.	S-050 Body		Reinforced Nylon
	S-050-C Body		Cast Iron ASTM A-48 CL.35B
	S-052 Body		Ductile Iron ASTM A-536 60-40-18
	S-014 Body		Ductile Iron ASTM A-536 60-40-18
2.	Nut & Bolt		Stainless Steel SAE 304
3.	Screen cover		Cast Iron ASTM A-48 CL.35B
4.	Screen		Stainless Steel SAE 304
5.	Ring	2”-4”	Stainless Steel SAE 316
		6”-10”	Steel DIN ST.37
6.	Flap	2”-4”	Stainless Steel SAE 316
		6”-8”	Cast Iron ASTM A-48 CL.35B
7.	Bolt & Nut		Steel Zinc Cobalt Plated
8.	Cover 16 bar	2”-4” 8”	Cast Iron ASTM A-48 CL.35B
		16 bar 6”	Ductile Iron ASTM A-536 60-40-18
		25 bar 2”-8”	Ductile Iron ASTM A-536 60-40-18
		40 bar 2”-6”	Cast Steel ASTM A216 WCB
		40 bar 8”	Ductile Iron ASTM A-536 60-40-18
9.	O-Ring		BUNA-N
10.	Nozzle Seat	2”-8”	Bronze
		10”	Stainless Steel SAE 304/316
11.	Nozzle Seal		E.P.D.M.
12.	Float	2”-8”	Polycarbonate
		10”	Stainless Steel SAE 304
13.	Body	16 bar	Cast Iron ASTM A-48 CL.35B
		25 bar	Ductile Iron ASTM A-536 60-40-18
		40 bar 2”-6”	Cast Steel ASTM A216 WCB
		40 bar 8”	Ductile Iron ASTM A-536 60-40-18

* Option: for different materials, consult with us.

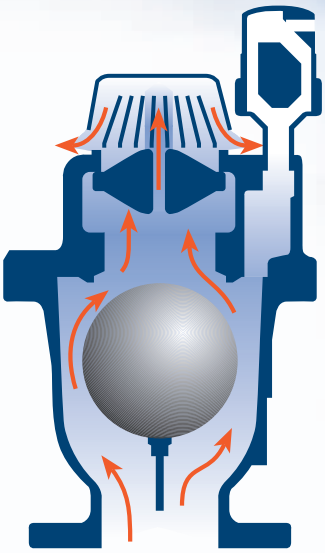




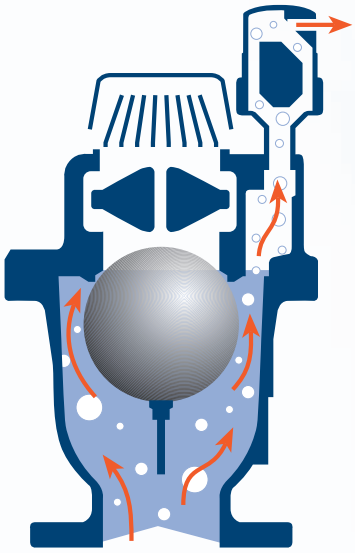
Operation in Rapid Filling of the Pipeline:



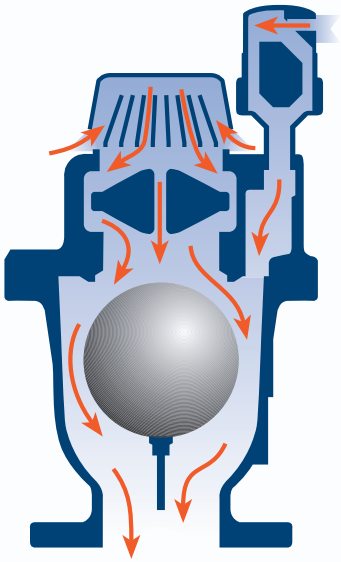
1. When water, rapidly filling the pipe line, pushes the air out through the Air Valve, a differential air pressure is created across the valve orifice.



2. When this differential pressure reaches a prefixed level (usually it will be prefixed at 0.05 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.