



D-040

 PN 16


D-040-C

 PN 16


Combination Air Valve

Description

The D-040 Combination Air Valve has the features of both an Air-release valve and an Air/vacuum valve.

The Air-release component of the D-040 was designed to automatically release to the atmosphere small pockets of air as they accumulate along a pipeline when the pipeline or piping system is full and operating under pressure.

The Air/vacuum component was 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

- Pump stations: after the pump and after the check valve
- Downstream (after) and upstream (before) shut-off valve
- After deep-well pump
- On long contant slope segments
- At peaks along the pipeline and at peaks relative to hydraulic gradient.
- At dead-ends
- Before water meter
- On strainers and filters

Operation

The air & vacuum component, with the large orifice, discharges air at high flow rates during the filling of the system and admits air into the system at high flow rates during its drainage and at water column separation.

High velocity air, should not blow the float shut. Water will life the float and cause sealing of the valve.

At any time during system operation, should internal pressure of the system fall below atmospheric pressure, air will re-enter the systems, preventing down-surge and cavitation.

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

Admitting air in response to negative pressure protects the system from destructive vacuum conditions, prevents damage caused by water column separation. Air re-entry is essential to efficiently drain the system.

The automatic small orifice air release component releases entrapped air in the pressurized systems.

Without air valves pockets of accumulated air may cause the following destructive phenomena:

- Obstruction to effective flow and hydraulic conductivity of the system along with a throttling effect similar to a partially closed valve.

In extreme cases this will cause complete flow stoppage.

- Accelerate cavitation damages.
- High-pressure surges.
- Accelerate corrosion.
- Danger of a high-energy burst of compressed air.

As the system starts to fill, the valve functions according to the following stages:

1. Entrapped air is released by the valve
2. Liquid enters the valve, lifting the float which draws the "seal plug" to its sealing position.
3. Entrapped air, which accumulates at peaks along the system (where combination air valves should be installed), rises to the top of the valve, which in turn displaces the liquid in the valve's body.
4. The float descends, peeling the "rolling seal", the smaller orifice opens and the accumulated air is released.
5. Liquid penetrates into the valve and the float rises unrolling the rolling seal to its sealing position.

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

1. Both orifices will be immediately unplugged and the float drops away.
2. Air is admitted to the system.

Main Features

- Working pressure range: 0.2-16 bar
- Test pressure for the air valve is 1.5 times its working pressure.
- Working temperature: 60⁰ C.
- Maximum short-term temperature: 90⁰ C.
- Light, simple and reliable structure.
- The valve discharges air at high velocity, without premature closing.
- The automatic air release orifice is very large relative to the size of the air valve body, therefore it discharges air at high flow rates.
- The size of the automatic orifice lessens the danger of its obstruction by debris.
- The rolling seal mechanism of the valve is less sensitive to pressure differential than a direct float seal. It is due to its comparably large orifice and its wide pressure range.
- The body is made of high strength composite materials and all operating parts are made of specially selected, corrosion resistant materials.
- Due to its light weight, the valve may be installed on plastic piping systems, as well as other light weight piping.

Valve Selection

The air valve is available with:

- 3/4", 1", 2" male NPT , BSPT connections.
- a ball valve tap BSPT/NPT male connection upon request.
- one-way device.

D-040-C the body is covered with metal casting as an anti-vandalism application

ACCESSORIES

Ball Valve

Shut-off valve

Made of brass ATSM B-124

Suitable for: D-040 1" 2", D-040-C 1" 2"

Flanges

Made of reinforced nylon / cast iron

Suitable for: D-040 1" 2", D-040-C 1" 2"

Diameter 40/50/60 Internal threads: 3/4" 1" 2"

Diameter 40/50/65 Internal threads: 3/4" 1" 2"

Diameter 50mm Internal threads: 1" 2"

Diameter 80mm Internal threads: 2" 3"

Diameter 100mm Internal threads: 3" 4"



Thermal protection Jacket

Made of polyurethan



Extension

Available with extended pipe.

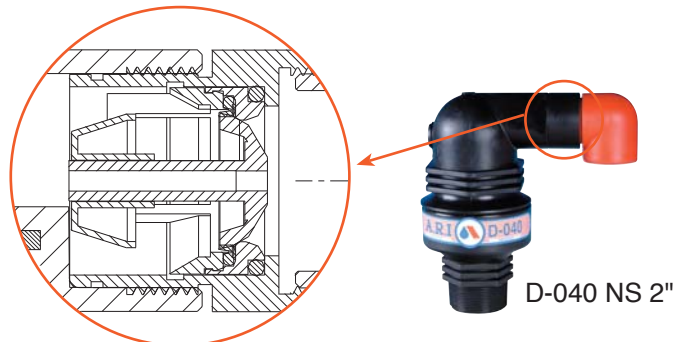
One way models

The D-040 air valve is available as:

D040-V -With a vacuum guarding, out-only attachment, which only allows air discharge, not allowing air intake (all models).

D-040-I -With a vacuum breaking, In-only attachment, which only allows air intake, not allowing air discharge (D-040 2" only).

D-040-NS -With a non-slam, discharge-throttling attachment, which allows free air intake, but throttles air discharge (D-040 2" only).



D-040 NS 2"



D-040 P 1"



D-040 P 2"



D-040 B 2"



D-040 ST 2"



D-040 ST.ST. 2"

PARTS LIST AND SPECIFICATION

No.	Part	Material	Material
		D-040 P / B / ST	D-040 ST ST
1.	Body	Reinforced Nylon	St.St. SAE 316
2.	Drainage Elbow	Polypropylene	Polypropylene
3.	3/4" 1" Rolling Seal 2" Seal Plug Assembly	E.P.D.M.	Viton/BUNA-N/E.P.D.M.
3a.	Screws	Stainless Steel	Stainless Steel
3b.	Plug Cover	Reinforced Nylon	Polypropylene
3c.	Rolling Seal	E.P.D.M.	Viton/BUNA-N/E.P.D.M.
3d.	Plug	Reinforced Nylon	Polypropylene
4.	Clamping Stem	Reinforced Nylon	Polypropylene
5.	Float	Foamed Polypropylene	
6.	O-Ring	BUNA-N	Viton/BUNA-N/E.P.D.M.
7.	Base	Reinforced Nylon / Brass ASTM B124 / St.St. SAE 316	St.St. SAE 316

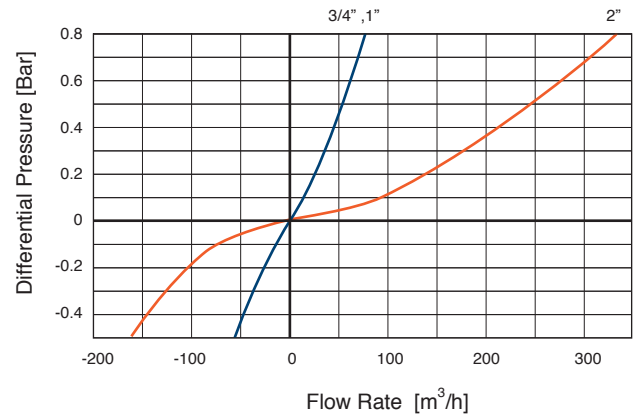
Optional

Ball valve Brass ASTM-B-124, Nickel plated.

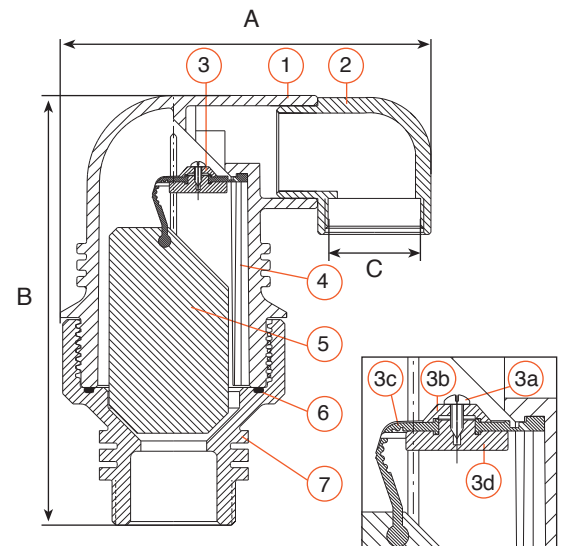
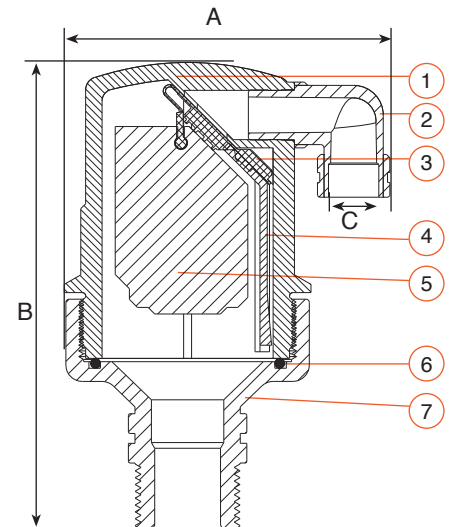
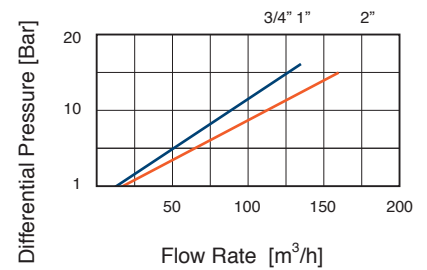
DIMENSIONS AND WEIGHTS

Model	Dimensions mm			Weight Kg.	Orifice Area mm ²	
	A	B	C		Auto.	A / V
1", 3/4"						
D-040 P	100	143	3/8" BSP	0.33	7.8	100
D-040 B	100	143	3/8" BSP	0.70	7.8	100
D-040 ST.	100	143	3/8" BSP	0.65	7.8	100
D-040 ST.ST.	100	143	3/8" BSP	1.40	7.8	100
2"						
D-040-P	180	209	1 1/2" BSP	1.1	12	804
D-040-B	180	209	1 1/2" BSP	1.8	12	804
D-040-ST.	180	209	1 1/2" BSP	2.1	12	804
D-040 ST.ST.	180	209	1 1/2" BSP	3.1	12	804

AIR AND VACUUM FLOW RATE



AUTOMATIC AIR RELEASE





D-040-C 1"



D-040-C 2"



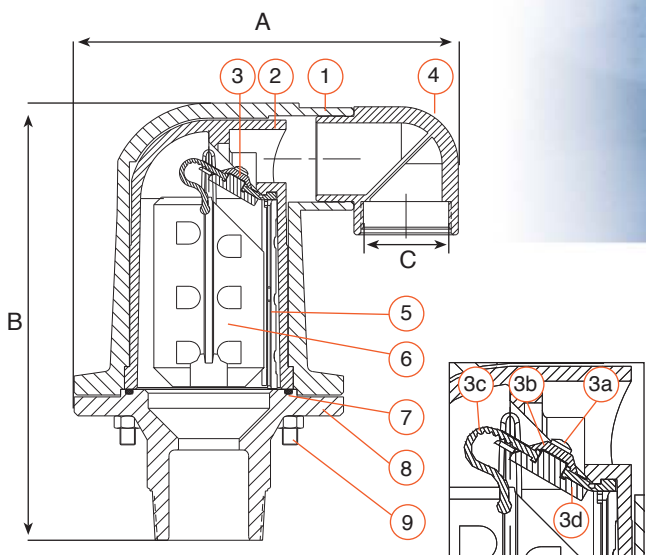
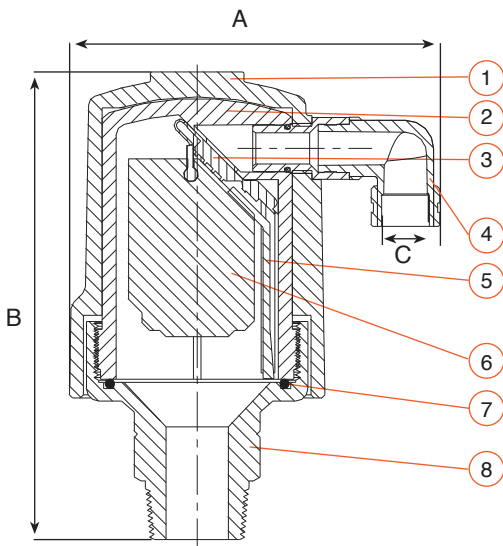
D-040-C F 2"

PARTS LIST AND SPECIFICATION

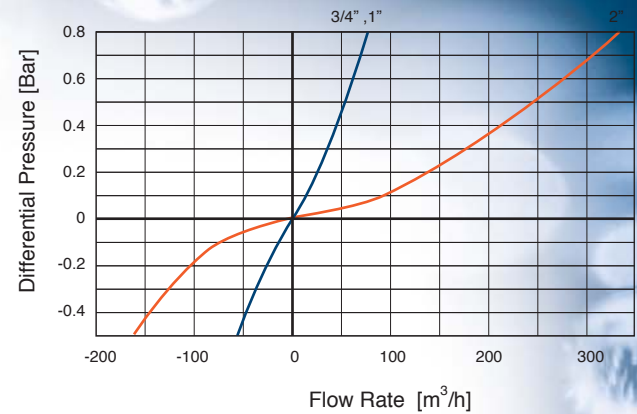
No.	Part	Material
1.	Body	Cast Iron ASTM A48 CL.35B
2.	Sleeve	Reinforced Nylon
3.	3/4" 1" Rolling Seal	E.P.D.M.
3.	Seal Plug Assembly	
3a.	Screws	Stainless Steel
3b.	Plug Cover	Reinforced Nylon
3c.	Rolling Seal	E.P.D.M.
3d.	Plug	Reinforced Nylon
4.	Drainage Elbow	Polypropylene
5.	Clamping Stem	Reinforced Nylon
6.	Float	Foamed Polypropylene
7.	O - Ring	Buna-N
8.	Base 3/4" 1"	Brass
	2"	Cast Iron ASTM A48 CL.35B
9.	Bolt & Nut (x4)	Steel Zinc Cobalt Coated
Optional		
	Ball valve	Brass ASTM-B-124, Nickel plated.

DIMENSIONS AND WEIGHTS

Model	Dimensions mm			Weight Kg.	Orifice Area mm ²	
	A	B	C		Auto.	A / V
1", 3/4"						
D-040-C	119	150	3/8" BSP	1.2	5	82
2"						
D-040-C	203	231	1 1/2" BSP	5.4	12	804
D-040-C F	250	233	1 1/2" BSP	7.3	12	804



AIR AND VACUUM FLOW RATE



AUTOMATIC AIR RELEASE

