

# DG-10 PN 10

## Combination Air Valve (PATENTED)

### Description

The DG-10 Combination Air Valve has the features of both an Air-release valve and an Air/vacuum valve. The Air-release component of the DG-10 was designed to automatically release to the atmosphere small pockets of air as they accumulate at local high points 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

- Downstream (after) and upstream (before) shut-off valve
- On long water supply lines
- At peaks along the line
- At the end of lines
- Before water meter
- On strainers and filters

### Valve Selection

- The air valve is available:
- With 3/4", 1", 2" male NPT, BSPT connections, as requested.
  - With a ball valve tap BSPT/NPT male connection upon request.
  - Vacuum check - The valve is available as a valve that will only release air from the system and will not admit air to the system when under pressure condition occur.
  - This feature is accomplished by the addition of a check valve inserted in the air outlet.

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### 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 lift 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.

Pockets of accumulated air may cause the following destructive phenomena:

- Impediment of effective flow and hydraulic conductivity of the system along with a throttling effect as would a partially closed valve. In extreme cases this will cause complete flow stoppage.
- Accelerate cavitation damages.
- High pressure surges.
- Accelerate corrosion of metal parts.
- Danger of high-energy burst of compressed air.
- Inaccuracies in flow metering.

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: 0.2-10 bar (3-150 psi.)

Testing pressure: 16 bar (250 psi.)

- Working Temperature: 60° C  
Maximum instantaneous working temperature: 90° C
- Light, simple and reliable structure.
- Prevents premature closing:  
The valve discharges air at high velocity.
- The orifice of the automatic continuous acting valve is larger than in any other air release valve of its kind, therefore it discharges air at higher flow rates.
- The size of the automatic orifice makes its obstruction by debris most unlikely.
- The valve design - rolling seal mechanism: is less sensitive to pressure differentials than a direct float seal. It accomplishes this by having a comparably large orifice for a wide pressure range (up to 10 bar).
- The body is made of high strength plastic, and all operating parts are made of specially selected corrosion resistant materials.
- The float is made for low sealing pressure.
- Due to its light weight, the valve may be installed on plastic piping systems, as well as other lightweight piping.
- A threaded drainage outlet enables removal of excess fluids (1 1/2" in the 2", 3/8" in the 3/4", 1")

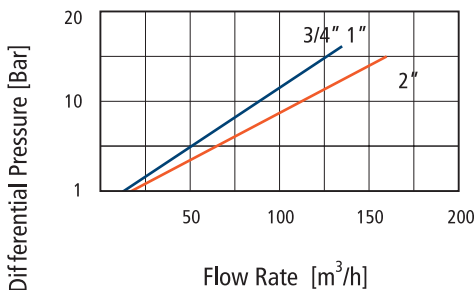
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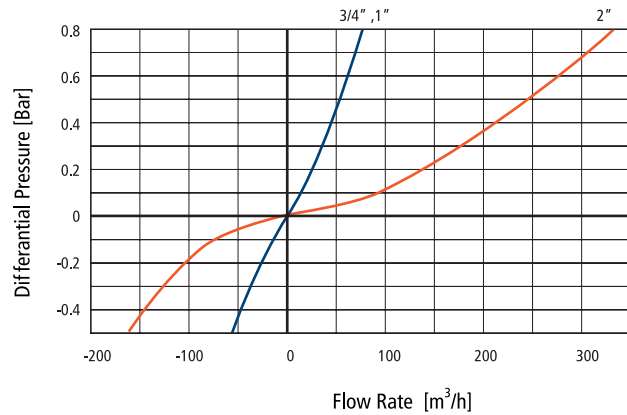
### Dimensions and Weights

Model	Dim. mm			Weight Kg.	Orifice Area mm <sup>2</sup>	
	A	B	C		Auto.	Kin.
1", 3/4"	100	143	3/8" BSP	0.33	7.8	100
2"	180	209	1 1/2" BSP	1.1	12	804

### Automatic Air discharge



### Air and Vacuum flow rate



### parts list and specification

No.	Part	Material 3/4"
1.	Body	Reinforced Nylon
2.	Drainage Elbow	Polypropylene
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.	Clamping Stem	Reinforced Nylon
5.	Float	Foamed Polypropylene (Blue)
6.	O-Ring	BUNA-N
7.	Base	Reinforced Nylon
Optional	Ball valve	Brass ASTM B124

