



D-090-P PN 16



Underground Air Valve System

Description

The D-090-P Underground Air Valve is designed to save the costs of manholes and provide reliable solutions for special requirements such as:

- Frost protection.
- Savings in installation costs.
- Installation under important crossings, including: roads, pavements, buildings.
- Eliminate the need for confined-space entry - its costs and safety demands.

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 will not blow the float shut. Water will lift the float which seals 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 reduces 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.

The air release component releases entrapped air in pressurized systems.

Without air valves, pockets of accumulated air may cause the following hydraulic disturbances:

- Restriction of effective flow due to a reduction of the flow area. In extreme cases this will cause complete flow stoppage.
- Obstruction of efficient hydraulic transmission due to air flow disturbances.
- Acceleration of cavitation damages.
- Increase in pressure transients and surges.
- Internal corrosion of pipes, fittings and accessories.
- Dangerous high-energy bursts of compressed air.
- Inaccuracies in flow metering.

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

1. Air in the pipeline is discharged by the air valve.
2. Liquid enters the air and vacuum component, lifting the float to its sealing position.
3. Water enters the air release component of the valve, lifting the float and pushing the rolling seal to its sealing position.
4. Entrapped air, accumulating at peaks and along the system, rises to the top of the air release valve, displacing the liquid in the valve's body.

4. The float drops, unsealing the rolling seal. The air release orifice opens and the accumulated air is released.

5. Liquid replaces the air released from the valve, buoying up the float and pushing the rolling seal back to its sealing position.

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

1. The floats will drop down, immediately opening the air & vacuum and air release orifices.
2. Air will enter into the system.

Main Features

- Working pressure:
 - D-090-P with the DG-10 0.1 - 10 bar
 - D-090-P with the D-040 0.2 - 16 bar
- Maximum working temperature: 60° C.
- Maximum intermittent temperature: 90° C.
- Materials: the air valve is made of corrosion-resistant materials.
- Integral check valve: shuts automatically when removing the air valve for maintenance purposes.
- Drainage System: A special one-way outlet drains the water from the valve box and prevents water intake.
- Dynamic design allows high velocity air discharge, prevents premature closing.
- Unique Rolling Seal Mechanism:
 - Dramatically reduces obstruction by debris.
 - The automatic function discharges high air flow rates up to 160 m³/h.
 - Self - cleaning mechanism.
- Low maintenance costs.
- Air valve box made of P.V.C. – according to high-quality standard.
- Lightweight and compact silhouette.

Valve Selection

- Connections: threaded 2", flanged 2", 3", 4" to meet any requested standard.
- Eight different installation lengths: 500 mm, 755 mm, 1055 mm, 1305 mm, 1555mm, 1830mm, 2135mm, 2440mm.

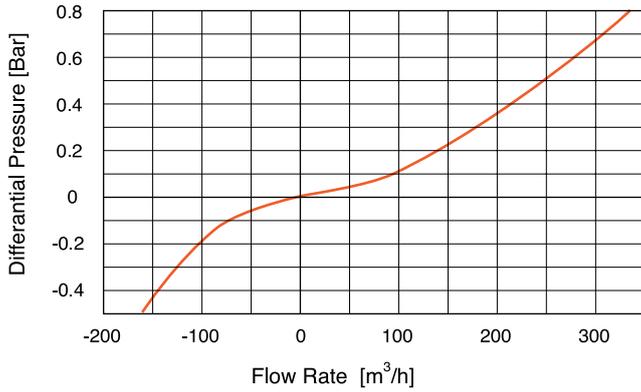
Options

- D-090-P LP: for low pressure
- Internal frost protection.

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, thread and flange standard and type of liquid.

AIR AND VACUUM FLOW RATE



AUTOMATIC AIR RELEASE FLOW RATE



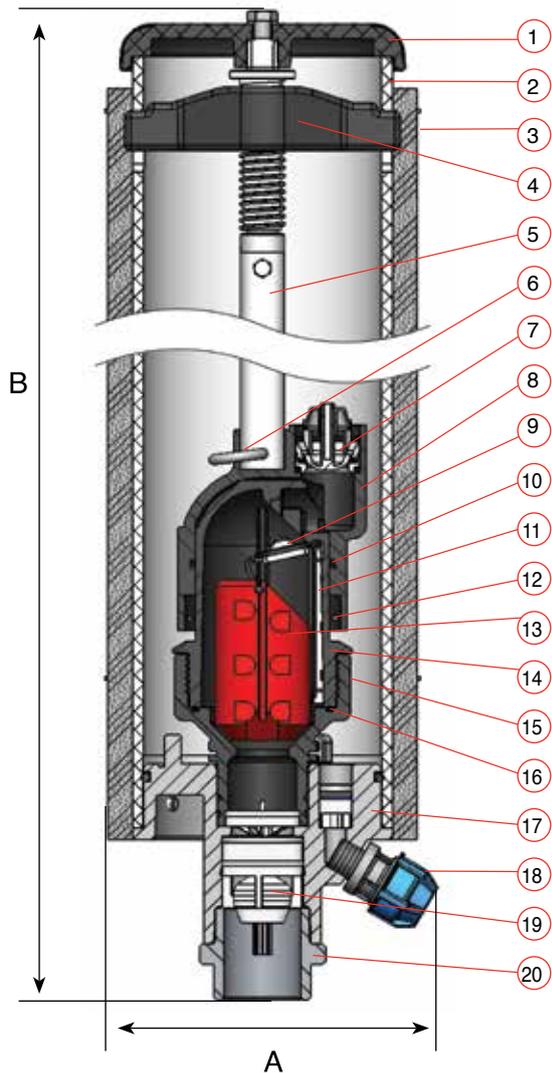
DIMENSIONS AND WEIGHT

Dimensions mm		Weight Kg.	
A	B	Aluminium B.	Ductile Iron B.
202	500	5.8	7
202	755	7.3	8.5
202	1055	8.9	9.8
202	1305	9.9	11.2
202	1555	11.1	12.3
202	1830	12.4	13.6
202	2135	13.7	14.9
202	2440	15	16.3

PARTS LIST AND SPECIFICATION

No. Part	Material
1. Cover	Polypropylene
2. Air Valve Box	PVC
3. Insulation Cover	Aluminum Coated Foamed PE
4. Bridge Assembly	Reinforced Nylon
5. Tightening Rod	Stainless Steel 304
6. Lock Pin	Stainless Steel 304
7. Check Valve (D-090-P V)*	Acetal + NBR + Stainless Steel
8. D-040 Cover	Reinforced Nylon
9. Rolling Seal Assembly	Stainless Steel + R.N + EPDM
10. O-Ring (D-090-P V)*	BUNA-N
11. Clamping Stem	Reinforced Nylon
12. Lock Pin	Stainless Steel 304
13. Float	Foamed Polypropylene
14. D-040 Body	Reinforced Nylon
15. D-040 Base	Reinforced Nylon
16. O-Ring	BUNA-N
17. Base	Reinforced Nylon
18. Drainage Connector	Polypropylene + Acetal
19. Check valve	Acetal + NBR + Stainless Steel
20. Adaptor	Stainless Steel 316

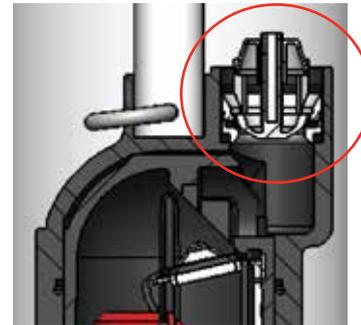
* Optional -upon request



APPLICATIONS / ACCESSORIES

One-Way Options

- One-way attachment for discharge of air only, not allowing for air intake.
- One-way attachment for intake of air only, not allowing for air discharge.
- Non-Slam discharge-throttling attachment, allows full air intake, throttles air discharge.



Internal Frost Protection Element



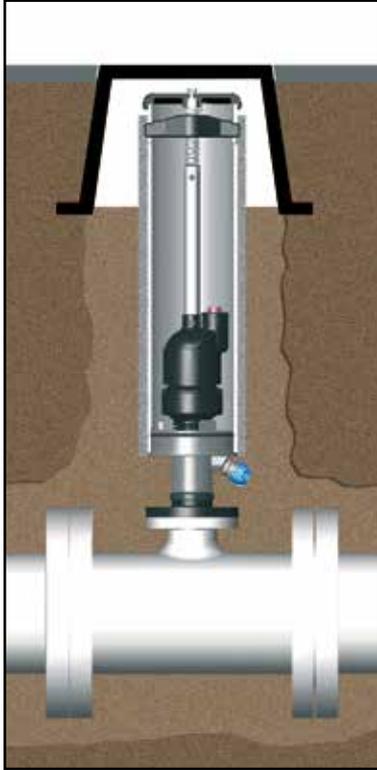
Service Tap

This stand pipe system is installed for the following purposes:

- Extracting water from the line (sampling, cleaning purposes etc).
- Cleaning of the line itself.
- Releasing large quantities of air from the line manually.



Sample Installation Scheme



Important Information: Prior to site preparation and installation, please refer to the D-090-P Installation and Maintenance Manual for all the relevant instructions and information. The manual can be obtained by contacting the A.R.I marketing dept., from your local A.R.I. distributor or downloading the file from our website.