Profactor Armaturen GmbH

EN

PROFACTOR®
DER DEUTSCHE QUALITÄTSSTANDARD

TECHNICAL DATA SHEET AND USER MANUAL

PRODUCT CODE

PF DV 609.10
PF DV 609.15

AUTOMATIC AIR VENT VALVE WITH SHUT-OFF VALVE

1. PURPOSE AND SCOPE

The float air vent valve is designed for automatic removal of air and other gases from pipelines and air collectors in internal systems such as heating, cold and hot water supply, heat supply for ventilation systems, air-conditioning units, and manifolds.

It protects closed pipeline systems from corrosion, cavitation, and the formation of air locks. The air vent can be used in pipelines transporting liquid media that are non-aggressive to the materials of the product (such as water, or propylene and ethylene glycol solutions with a concentration of up to 40%).

The air vent valve is supplied to the customer complete with a shut-off valve. The shut-off valve serves to connect the air vent valve to the system and allows installation and removal of the air vent valve without draining the system.

2. TECHNICAL SPECIFICATIONS

Product Code	PF DV	609.10	609.15
Connection size	DN	10	15
	G	3/8"	1/2"
Maximum operating pressure	bar	6	
Minimum operating pressure	bar	0,1	
Operating medium temperature	°C	0°C to +110°C	
Maximum ambient temperature	°C	60°C	
A	mm	95	
B	mm	33	
Weight	g	135	137
Average service life	years	20	

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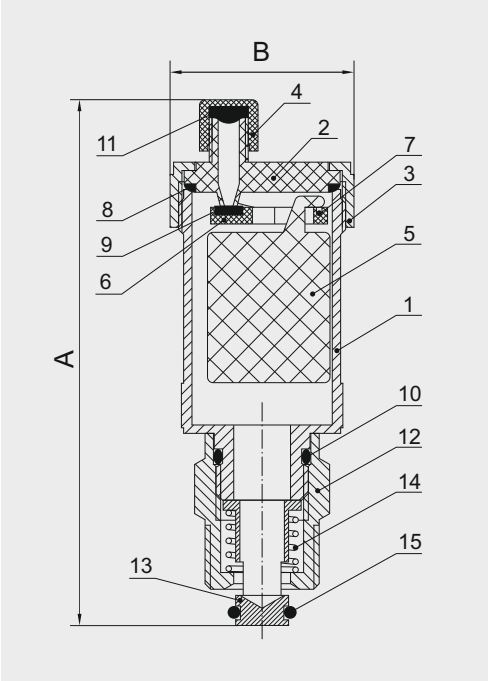
3. DESIGN



Air Vent Valve:

1 – Body

2 – Body cover

3 – Union retaining ring

4 – Protective cap

5 – Float

6 – Lever

7 – Spring clip

8 – Cover gasket

9 – Valve seal

10 – O-ring

11 – Protective cap gasket

Shut-off Valve:

12 – Body

13 – Shut-off element

14 – Spring

15 – O-ring

The body (1) and union retaining ring (3) are made of brass grade according to DIN EN 12165-2011, with nickel-plated surfaces. The body is designed in a cup shape with an opening for connection to the shut-off valve. This opening is located at the bottom of the body and has an external thread of 3/8" is in an accordance with ISO 228-1:2000, DIN EN 10226-2005.

To ensure tightness of the connection between the air vent valve and the shut-off valve, an O-ring (10) is provided. At the top of the body, a metric thread according to ISO 261:1998 is provided for screwing on the union ring (3), which secures the cover (2) to the body.

The tightness between the body and the cover is ensured by the cover gasket (8). The cover has an air outlet opening with an external thread and two lugs for attaching the spring clip (7). The air outlet opening is closed with a protective cap (4), which protects the air passage from dust and dirt and also allows the air vent to be manually shut off during emergency situations or installation work.

The seal between the cover and the protective cap is ensured by the gasket (11). The lever (6), pressed by the spring clip against the air outlet opening, is fitted with a valve seal (9) to ensure tight closure of the discharge valve. The lever is pivotally connected to the float (5), which moves freely inside the body.

The lever, cover, and protective cap are made of rigid low-adhesion plastic (polyoxymethylene, POM), and the float is made of polypropylene (PP). The spring clip is made of stainless steel AISI 304 according to DIN EN 10088-2005.

When there is no air inside the air vent body, the float is in its uppermost position, and the spring clip presses the lever against the valve outlet, keeping it closed. This valve design allows the unit to automatically release or admit air during filling, draining, or operation of the system.

The lever mechanism transferring force from the float to the discharge valve significantly increases the closing force, ensuring tight sealing when the float is raised.

All sealing elements (8, 9, 10, 11) are made of wear-resistant nitrile butadiene rubber (NBR).

Inside the shut-off valve body (12), there is a shut-off element (13) with an O-ring (15). The body has a top opening for connection to the air vent with an internal thread (3/8"), and a bottom opening for system connection with an external thread:for model PF DV 609.10, the thread diameter is 3/8", and for model PF DV 609.15, it is 1/2".

The shut-off element is held in the upper position by a spring (14). The body and shut-off element are made of brass grade CW617N, with nickel-plated surfaces; the spring is made of stainless steel AISI 304, and the O-ring is made of wear-resistant NBR rubber.

4. OPERATING PRINCIPLE OF THE AIR VENT VALVE

When no air is present, the body of the air vent valve is filled with liquid, and the float keeps the discharge valve closed. As air accumulates in the float chamber, the water level decreases, and the float descends to the bottom of the body.

When this occurs, the lever-hinge mechanism opens the discharge valve, allowing the accumulated air to be released into the atmosphere. After the air is expelled, water refills the float chamber, lifting the float, which in turn causes the discharge valve to close.

These opening and closing cycles of the valve continue until all air is fully vented from the adjacent section of the pipeline and no longer accumulates in the float chamber.

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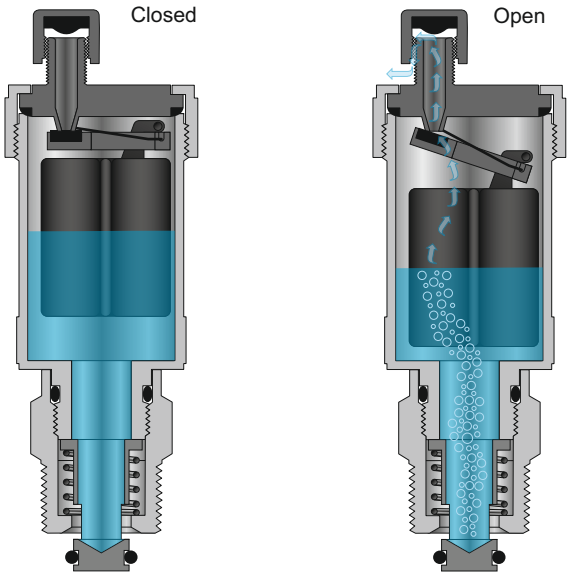
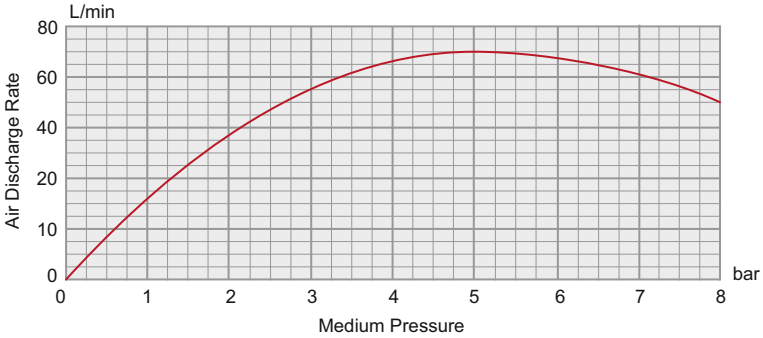


Air Flow Performance Chart:



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5. OPERATING PRINCIPLE OF THE SHUT-OFF VALVE

When the connection fitting of the air vent valve is screwed onto the upper thread of the shut-off valve, the shut-off element moves downward, allowing the flow of the working medium into the air vent valve body.

When the air vent valve is removed, the valve spring raises the shut-off element to its upper stop position, blocking the flow of liquid from the system.

6. INSTALLATION INSTRUCTIONS

The unit is supplied to the customer fully assembled and ready for operation, requiring no additional adjustment. Before installing the air vent valve, the pipeline must be cleaned of rust, dirt, scale, sand, and other foreign particles that could affect the performance of the device.

Heating, heat-supply, and domestic cold and hot water systems, as well as boiler pipelines, must be flushed with water after installation until the water runs clear and free of mechanical impurities.

The air vent valve must be installed in a vertical position with the protective cap facing upward (connected via a pipe cylindrical thread) in locations where air and gases are likely to accumulate — such as the highest points of pipeline systems, air collectors, boilers, manifolds, and heating devices.

The air vent valve must not be subjected to external loads, such as vibration or uneven tightening of fasteners. Installation without a shut-off valve is permissible, provided there is shut-off equipment nearby in the pipeline and no other strict system requirements apply.

Hydraulic testing of the system must not be performed with the air vents installed or with the shut-off valves open in front of them. No load must be applied to the protective cap.

The air vent valve must be securely fixed to the pipeline, and leakage of the working medium through the threaded connection is not permitted. Threaded connections must be sealed using PTFE tape (polytetrafluoroethylene), polyamide thread with silicone, or flax fiber. Care must be taken to ensure that excess sealing material does not enter the shut-off valve seat, as this may cause valve malfunction. Finally, check the correctness of installation.

After installation, a pressure (manometric) test of the system tightness must be carried out. This test ensures the system is protected against leaks and any associated damage.

To put the air vent valve into operating mode, slightly unscrew (without removing) the protective cap located on the top of the cover.

7. OPERATION AND MAINTENANCE

The air vent valve must be operated without exceeding the pressure and temperature limits specified in the Technical Specifications table. Installation, removal, repair, or adjustment of the device must be performed only when the system is not under pressure.

Allow the equipment to cool down to ambient temperature before servicing. When using the air vent valve with a shut-off valve, subsequent removal and adjustment of the air vent valve may be performed without draining the system.

The air vent valve performance should be checked regularly, at least once every 12 months. During inspection, verify the general condition, tightness of fasteners, and the integrity of seals and gaskets. Maintenance of the device consists of removing accumulated dirt and debris from the body and the air outlet fitting.

8. WARRANTY OBLIGATIONS

The warranty period is 24 months from the date of sale to the end user. During the entire warranty period, the manufacturer guarantees the proper functioning of the product and its compliance with safety requirements, provided the user observes the rules of storage, transportation, installation, operation, and maintenance. The warranty covers all defects resulting from the manufacturer's fault.

The warranty does not cover defects arising from:

— Violation of the rules for storage, transportation, installation, operation, or maintenance;
— Evidence of exposure to substances aggressive to the materials of the product;
— Presence of mechanical damage or destruction;
— Damage caused by fire, natural disasters, or other force majeure circumstances;
— Damage resulting from improper actions of the user;
— Evidence of unauthorized interference or modification of the product design.

The product described in this technical passport is a technically complex device and must be installed by a qualified specialist with the appropriate skills and experience in handling such equipment.

Installation and commissioning must be carried out by an authorized and certified company.

Profactor Armaturen GmbH reserves the right to make design modifications that do not affect the technical characteristics or functional features of the product.

INTERNATIONAL WARRANTY CARD

NAME OF THE PRODUCT _____

PRODUCT CODE, SIZE _____ **QUANTITY** _____

SELLER NAME AND ADDRESS _____

DATE OF PURCHASE _____

SELLER STAMP

SELLER SIGNATURE _____

For the warranty term refer to the Warranty obligation clause in the technical manual

FOLD LINE FOLD LINE

In case of any claims to the product quality the following documents should be submitted:

1. Application with customer and product detailes:
- Name of the customer, actual address and phone number
- Article of the product
- Reason for the claim and photo
- Plumbing system where installed (name, address, phone number)

2. Invoice copy and receipt

3. Warranty card

RETURN/EXCHANGE COMMENTS _____

DATE _____ **SIGNATURE** _____

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