

Pesflow
ONE STOP INDUSTRIAL VALVE SOLUTIONS

TUVINDIA

Breather Valve

(Pressure / Vacuum Relief Valve)



INTRODUCTION: PESFLOW BREATHER VALVE

Breather Valve, also known as a Pressure and Vacuum Relief Valve, is a vital component for atmospheric tanks and vessels that store and transfer solvents at high flow rates. Installed in the in-and out-breathing lines of tanks, vessels, and process equipment, this valve is engineered by Perfect Engineering Services to contain toxic vapors, prevent atmospheric contamination, and balance unexpected pressure and vacuum fluctuations, thereby enhancing fire protection and safety.

Breather Valves are available in various configurations: pressure-only, vacuum-only, and combined pressure/vacuum types. They safeguard storage tanks from rupture due to excessive pressure and implosion during vacuum conditions. These valves are offered with either a flanged or atmospheric outlet, and come in pallet type, spring type, or a combined design. The combined type is particularly popular, as the spring design operates under excessive pressure, while the pallet design activates during vacuum conditions.

When continuous pump feeding occurs, tanks require "breathing" or air circulation. If the vent is insufficient or closed, the tank can explode or rupture. In such instances, if the pressure exceeds the breather valve's set pressure, it will open to relieve the pressure. Conversely, during continuous pump emptying, the tank needs to draw in air. If the vent is closed or too small, the tank may implode. In this scenario, the breather valve opens to relieve the vacuum.



TYPES & SPECIFICATION

Our Breather Valves from are categorized into various designs to suit diverse vent requirements:

- 01 Breather Valve - Pressure and Vacuum Relief Valve**

Breather Valves (PVRV) are widely utilized for automatic venting and to conserve losses due to evaporation. These valves, offered by Perfect Engineering Services, are highly regarded for their robust construction and ease of installation.
- 02 Breather Valve with In-built Flame Arrester**

This Breather Valve, featuring an in-built Flame Arrester, is designed for dual applications. It allows storage tanks containing flammable liquids or solvents to breathe, maintaining a safe internal working pressure, while also providing crucial protection against fire.
- 03 Breather Valve cum Flame Arrester**

This arrangement positions the Breather Valve on the exhaust port of a Flame Arrester. It enables storage tanks with flammable liquids/solvents to breathe while offering protection against fire and explosions from external ignition sources.
- 04 Breather Valve Pressure & Vacuum Pipe Way Type**

The Pipe Way Type Breather Valve includes flanged pipe way connections on both its relief and suction ports. This design ensures that any changes in tank pressure will cause the breather valve to operate, facilitating the relief and intake of gas/liquid vapor/solvent into the tank. Pipe-way type connections can be customized to customer requirements, typically adhering to ANSI B 16.5 Class #150 RF.
- 05 Pressure Type Breather Valve**

As its name suggests, the Pressure Only Breather Valve is engineered solely for pressure relief operations, ensuring tank safety against rupture from overpressure scenarios and maintaining the specified pressure level.
- 06 Vacuum Type Breather Valve**

Similarly, Vacuum Only Breather Valve is designed exclusively for vacuum-suction operations, safeguarding tanks against implosion from over-vacuum scenarios and maintaining the specified pressure level.



All Breather Valve types mentioned above are designed and tested by Perfect Engineering Services according to industry standards. They are available with a wide range of material selections, different loading types (Spring / Dead Weight), customizable set pressure and vacuum, and various sizes and end connections to meet customer demand.

Pesflow Breather Valves are extensively used for automatic venting and to conserve losses due to evaporation, also facilitating tank breathing. Their pressure and vacuum functions are combined into a single fitting, available in various sizes.

Available Sizes: 1" to 24" and other sizes as per customer request.

Material of Construction: Aluminium, Carbon Steel, SS 304, SS 316, Hastelloy, other MOCs as per request.

Connection Type: ANSI B 16.5 #150 and other as per customer requirements.

Sizing of Pesflow Breather Valves:

Breathing during pumping is due to:
· Pumping Fluid into Tank (Pressure)
· Pumping Fluid out of Tank (Vacuum)

Thermal Breathing is due to:

- Increase in Temperature (Pressure)
- Decrease in Temperature (Vacuum)

In addition to filling and emptying rates, temperature variations, tank capacity, and other variables (including product characteristics and vapor specific gravity) affect the volume of tank breathing.

APPLICABLE DESIGN, PERFORMANCE, TESTING CODES

Perfect Engineering Services ensures that our Breather Valves comply with:

- API 2000: Venting Atmospheric and Low-Pressure Storage Tanks.
- API 2521: Use of Pressure Vent Valves for Atmospheric Loss.
- API 520 Part-I: Sizing, Selection, and Installation of Pressure-Relieving Devices
- API 521: Pressure-Relieving and De-pressuring Systems.
- ISO 28300: Petroleum, petrochemical and natural gas industries, Venting of atmospheric and low-pressure storage tanks.

PRODUCT TESTING:

Our valves are rigorously tested for proper setting and for a leakage rate of less than 0.03 Nm³/hr of air at 90% of the set pressure. Additionally, Pesflow valves are tested for leak tightness at 75% of the set point, as required by API 2000.

*Custom testing specifications can be followed, as required.

Perfect Engineering Services offers the following product tests:

- Flow Capacity
- Dimensional Checks
- Hydrostatic Pressure Test
- Air Leakage Test
- Performance Test, etc.

*Other tests may be performed as per customer request.

CERTIFICATION:

- ATEX Compliance

*Other tests may be performed as per customer request.

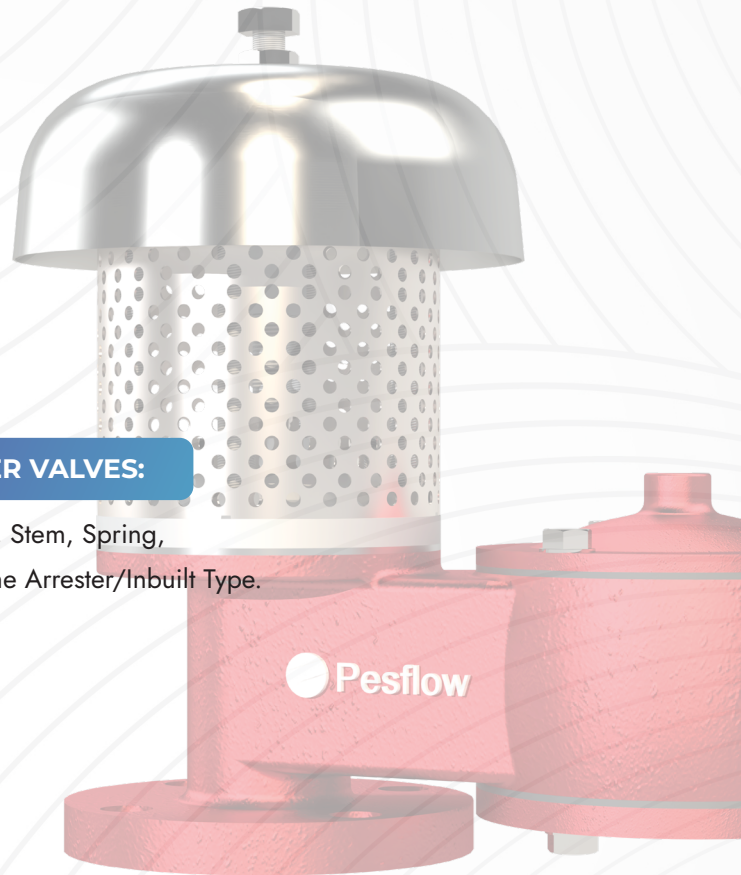
ORDER GUIDE & RECOMMENDED SPARES

ENQUIRY SPECIFICATIONS FOR PESFLOW BREATHER VALVES

1. Service Media Details
2. Tank Volume, Type, MOC of Tank
3. Pump Flow (In-Charge, Discharge Flow Rate)
4. Product Design Condition (Normal Vent / Fire)
5. N2 Blanketing System Available (If Yes, Flowrate / No)
6. System Operating and Design Pressure
7. System Operating and Design Temperature
8. Set Pressure and Vacuum Requirements
9. Material Specifications (Body, Internal)

RECOMMENDED SPARES FOR PESFLOW BREATHER VALVES:

1. Moving Parts Such as, Pallet, Diaphragm, Dead Weights, Stem, Spring,
2. Flame Element Bank for Pesflow Breather Valve with Flame Arrester/Inbuilt Type.



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