



## ONE-WAY DEGASSING VALVE

### A Brief History

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#### Development

The one-way degassing valve was originally developed for coffee. Coffee is unique in that it is the only food product that needs to be completely protected from oxygen (O<sub>2</sub>) while at the same time it gives off relatively large volumes of carbon dioxide (CO<sub>2</sub>) gas. Up until the 1960's it was impossible to package truly fresh, whole bean coffee because there was no package that could be completely sealed off from O<sub>2</sub> while at the same time releasing the CO<sub>2</sub> gas from the package. The invention of the one-way coffee degassing valve and its incorporation into the flexible package changed everything and allowed the market for fresh roasted whole bean coffee to become what it is today.

Like any good invention, the one-way degassing valve has evolved. The first valves were made from two separate pieces: a base and a cap. The original valves were described as "outer" valves because the white plastic cap protruded out of the package making them clearly visible to the consumer. One of the purposes behind the outer valve design was that it allowed the valves to move through the Form /Fill/Seal equipment of the day. As some of the novelty of the valve waned, coffee roasters began to desire a more hidden valve so the graphics on their packages were emphasized over the white plastic valve cap. Eventually, machinery was developed that could accommodate a valve that was completely inside the package and the "inner valve" was born. Introduced in the early 1980's, the Inner Valve still maintained the two-part body with cap, but the valve and all of its components were now completely inside the package.

#### Improvement

The next step in the evolution of the one-way coffee degassing valve was the invention of the Pacific Bag One-Way Coffee Degassing Valve in 1988. The innovation of the PBi valve is that it took the "Inner Valve" another step forward. It did this by holding the valve in place with three projections incorporated directly into the valve body and it uses the package itself as the valve cap. This allows for a more efficient single piece valve body.

#### Efficiency

The patented Pacific Bag single part one way degassing valve is a more efficient design than the original two part valves in that it uses over 30% less material. This allows for a more cost effective product as well as eliminates excess packaging material (i.e. source reduction). Based on estimates of annual one-way degassing valve usage worldwide for all valve producers, switching to the more efficient PBi design worldwide could result in 500,000 less pounds of plastic being used and disposed of every year.

Pacific Bag supplies the one-way degassing valve in the two different sizes that are most common on the market. This means that, as opposed to other manufacturers who only have one size that fits on their own specific valve application equipment, the Pacific Bag valves can run on most valve application equipment on the market with little or no modifications.

Every Pacific Bag valve is tested to ensure performance. Quality control tests ensure consistent opening and closing pressure and periodic large-scale tests with fresh product are done on a routine basis to verify real-life performance.

The efficient design, performance and quality of Pacific Bag's one-way degassing valve, along with the fast friendly service provided by the Pacific Bag organization, have allowed PBI to sell nearly a billion one-way degassing valves into the market since 1988.

## How the Valve Works

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### Description

The Pacific Bag One-Way Degassing Valve is designed to allow pressure to be released from a hermetically sealed package while substantially preventing the ingress of external atmosphere (i.e. O<sub>2</sub>) which can affect the package contents.

Pacific Bag offers two sizes of One-Way degassing valves, Model nos. 101 and 201. The sizes are designed to match with the two most popular styles of application machinery on the market, the Wipf/SIG style and the Goglio/Fres-co style, respectively. The valves are supplied with filter paper (designated as "NF") and without a filter paper (designated as "N"). The filter paper stops small particles from clogging the one-way valve.

### Applications and Uses

Typical uses include:

- Application to flexible packages which require the release of CO<sub>2</sub> gas generated from the fresh roasted coffee
- Large flexible packages which require the release of excess air from the packages for palletization. Examples of large flexible packages are those for pet food, animal nutrition, and plastic resin.

### Function

The Pacific Bag One-Way Degassing Valve consists of a valve body, a rubber disc, and oil. The rubber disc adheres or "seals" to the valve body via a layer of the oil. This creates an oxygen-proof seal. When gas pressure inside a sealed package increases beyond the "valve opening pressure," the seal between the rubber disc and the valve body is momentarily interrupted and gas can escape out of the package. As gas is released and the pressure inside the package drops below the "valve close pressure," the rubber disc re-seals to the valve body and the valve is closed off to oxygen again.

### Typical Performance Data

Open pressure: 20-70 mm H<sub>2</sub>O

Close pressure: 5-45 mm H<sub>2</sub>O

Rubber Disc Service Temperature: -50 to 220 °F

### Valve Dimensions

#### *Model #201*

Outer Diameter: 0.795 inch (+/- 0.005 in.)

Height: 0.224 inch (+/- 0.005 in.)

#### *Model #101*

Outer Diameter: 0.890 inch (+/- 0.005 in.)

Height: 0.176 inch (+/- 0.005 in.)



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