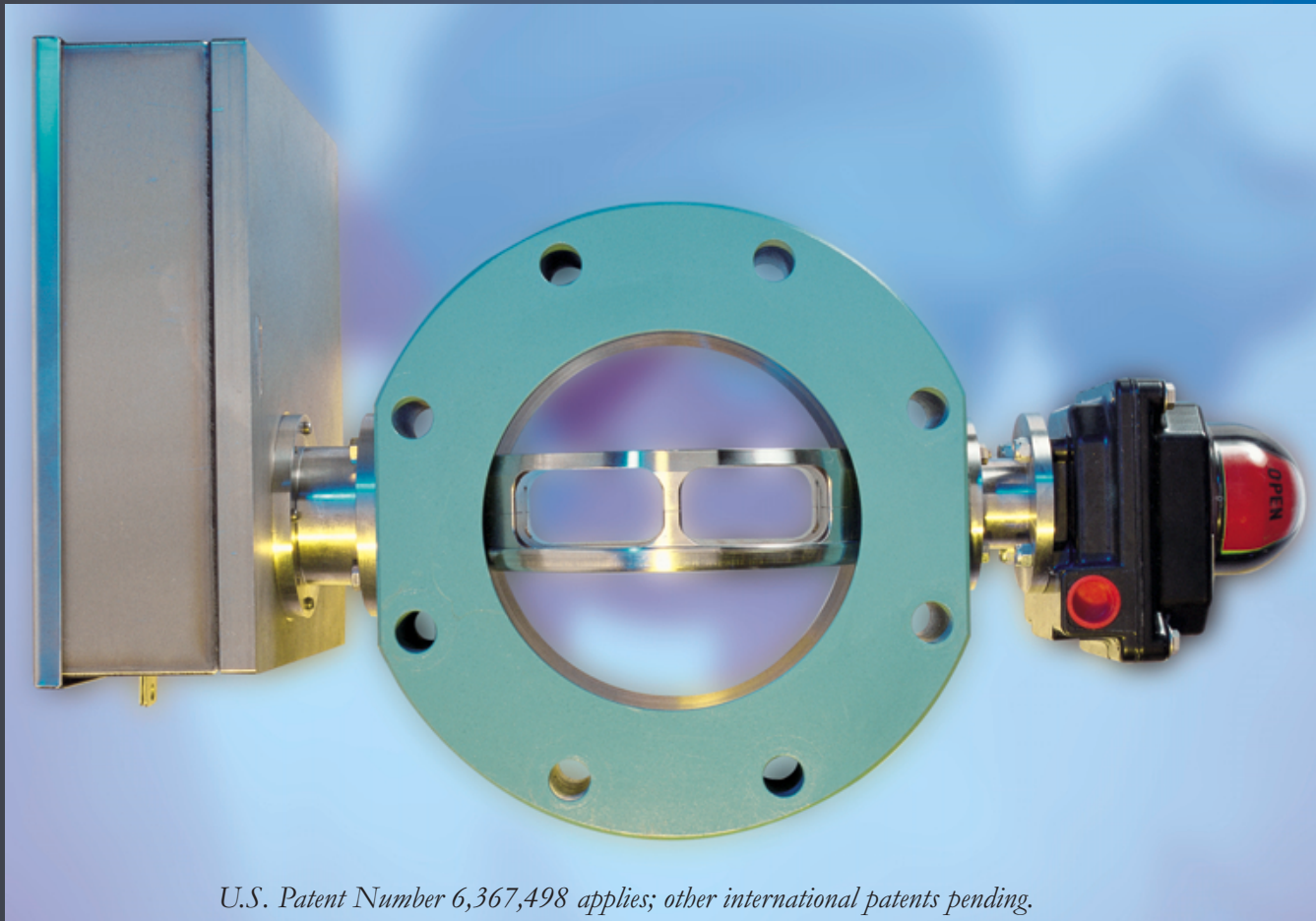




BS&B SAFETY SYSTEMS, L.L.C.  
BS&B SAFETY SYSTEMS LTD.

# Buckling Pin Pressure Relief Technology



*U.S. Patent Number 6,367,498 applies; other international patents pending.*

**The Buckling Pin Relief Valve (BPRV™)  
offers quick and simple  
field reset without removal  
from the piping system.**

**The Buckling Pin Relief Valve (BPRV™) can improve productivity within a facility by dramatically reducing the down time that can be caused with other non-reclosing pressure relief devices.**

The BPRV is an in-line pressure relief device which offers quick and simple field reset without removal from the piping system. This non-reclosing pressure relief device provides practical technology for the protection of applications containing one or more of the following conditions:

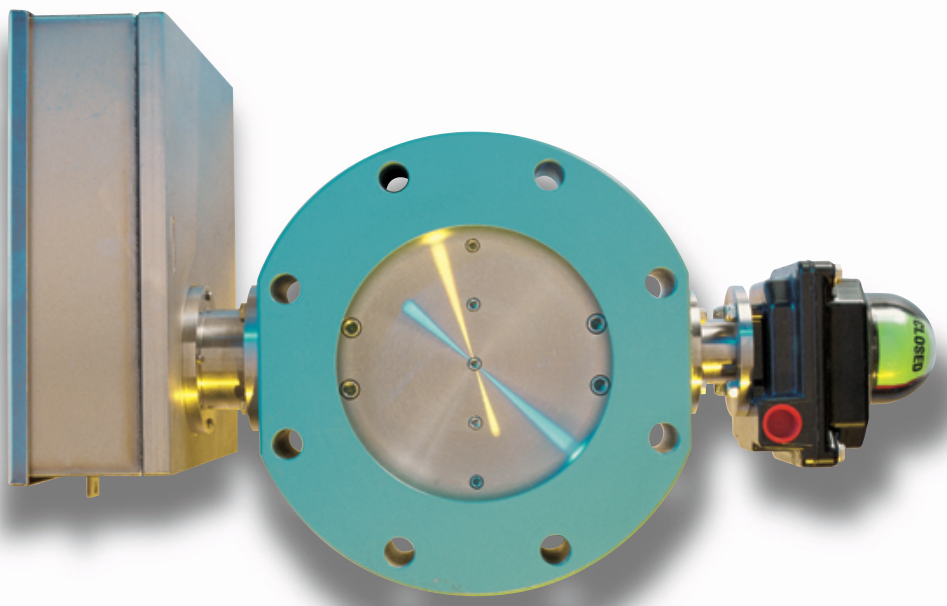
- ◆ **Continuous Processing**  
(fast reset in the line)
- ◆ **Hazardous Service**  
(limits operator exposure)
- ◆ **Large Line Size**  
(convenient reset in the Line)
- ◆ **Inaccessible Location**  
(external reset in the line)
- ◆ **Frequent Operation**  
(fast reset in the line)

# Buckling Pin Pressure

## **Design (U.S. Patent #6,367,498 applies; Worldwide Patents Pending)**

The design of the BPRV™ is based upon the offset shaft butterfly valve concept. The offset of the shaft results in a turning moment being generated about the valve shaft when a pressure differential is applied across the device. A Buckling Pin mounted externally to the process normally resists this turning moment. By calibrating the Buckling Pin to collapse at a load coincident with that resulting from the shaft torque at a predetermined differential pressure, the BPRV provides accurate pressure relief.

Buckling Pin technology provides an accurate and reliable means of calibrating a pressure relief device. When an axial load is applied to a straight cylindrical pin, it will buckle at a specific load according to Euler's Law. Buckling Pins that are manufactured from the same material and have the same configuration will buckle at predictable and repeatable loads.



## **Three Primary BPRV Components**

**1-Rotating Disc.** A rotating disc normally closes the flow path and turns through 90 degrees in response to an overpressure/underpressure condition. The rotating disc is constructed from metal and has a hollow design. This maximizes the flow path through the BPRV and ensures the stability of the disc during normal service and at the time of opening. (See catalog cover photo).

**2-Flanged Body.** A flanged body contains the rotating disc, holding it in place using shaft connections that are sealed within the body and pass through bearings to permit free rotation of the disc within the body. The body is a 1-piece design with no constructional welds or other potential external leak paths.

**3-External Enclosure and Mechanism.** The external enclosure and mechanism provides the set pressure control for the BPRV. The mechanism is designed to resist the turning moment of the disc shaft during normal service pressure conditions. When the desired set pressure is reached, the mechanism releases the disc due to the function of a Buckling Pin which has been built with sufficient strength to resist disc rotation until that point. The mechanism is contained within a stainless steel enclosure. The enclosure door includes a seal to permit service under severe environmental conditions.













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