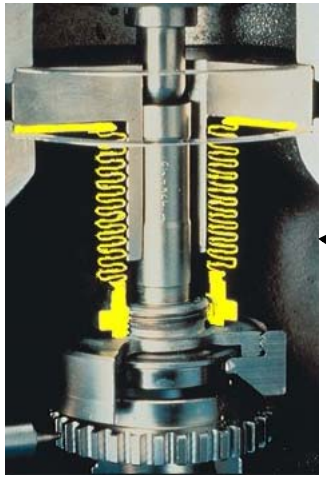
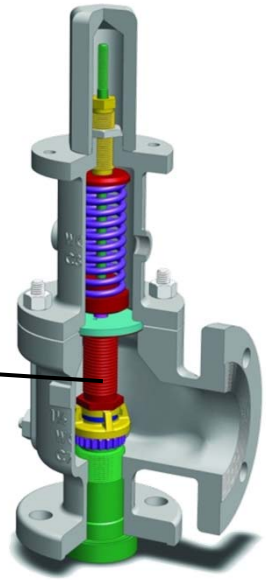
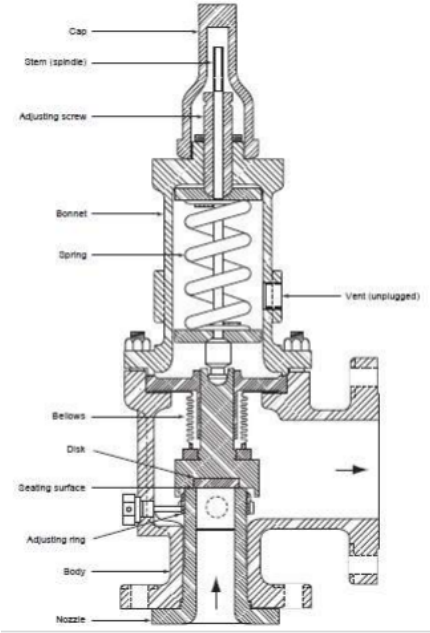
Balanced bellow pressure relief valve
平衡波纹管减压阀

What is the solution of back pressure problem at pressure relief valve ?
减压阀背压问题的解决方法是什么？





- A balanced PSV is a spring-loaded PSV which **incorporates a bellows** of balancing the valve disc to minimize the effects of backpressure on the performance characteristics of the valve.
- For conventional safety valve, total backpressure should not exceed 10% of the set pressure at 10% allowable pressure. However, it is possible to get valve with balanced bellows if total back pressure (superimposed + built-up) is up till 50% of the set pressure.



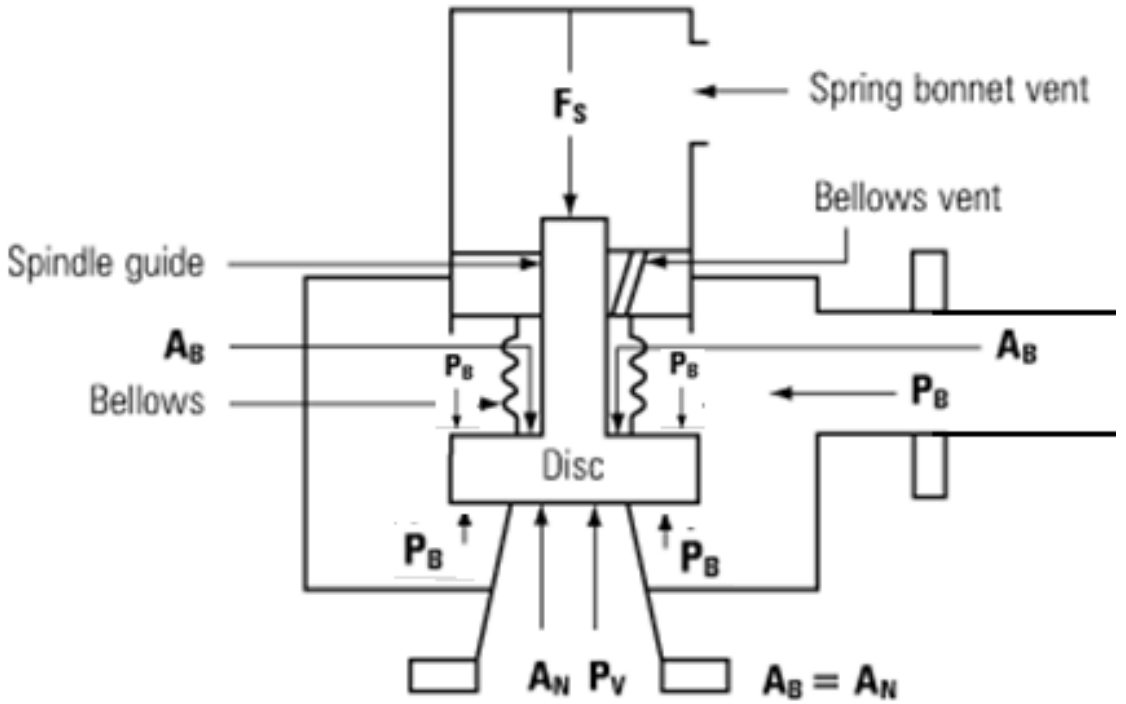
Balanced bellow pressure relief valve

What is the advantage of balanced bellow pressure relief valve ?

- **Advantages**
  - ✓ Relieving pressure not affected by back pressure
  - ✓ Can handle higher built-up back pressure
  - ✓ Protects spring and guiding surface from corrosion
- **Disadvantages**
  - ✓ Bellows susceptible to fatigue/rupture
  - ✓ Will release flammables/toxics to atmosphere in case of bellows rupture
  - ✓ Requires extended venting system for Bonnet vent to safe location
- **Selection Criteria**
  - ✓ Where the total backpressure (superimposed plus built-up) does not exceed approximately 50 % of the set pressure

Balanced bellow pressure relief valve平衡波纹管减压阀

What is the advantage of balanced bellow pressure relief valve ?
平衡波纹管减压阀的优点是什么?



A bellows with an effective area (A_B) equivalent to the nozzle seat area (A_N) is attached to the upper surface of the disc and to the spindle guide.

The bellows arrangement prevents backpressure acting on the upper side of the disc within the area of the bellows. The disc area extending beyond the bellows and the opposing disc area are equal, and so the forces acting on the disc are balanced, and the backpressure has little effect on the valve opening pressure.