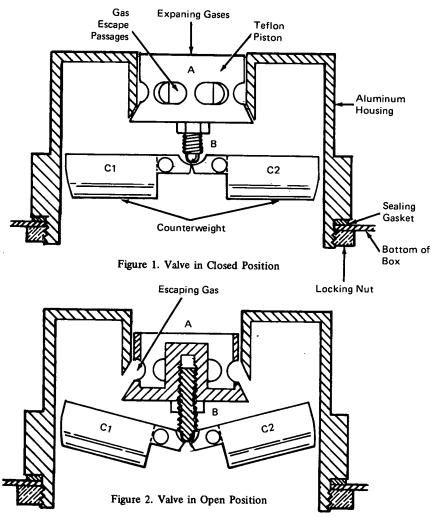
B72-10536

NASA TECH BRIEF John F. Kennedy Space Center



NASA Tech Briefs announce new technology derived from the U.S. space program. They are issued to encourage commercial application. Tech Briefs are available on a subscription basis from the National Technical Information Service, Springfield, Virginia 22151. Requests for individual copies or questions relating to the Tech Brief program may be directed to the Technology Utilization Office, NASA, Code KT, Washington, D.C. 20546.



High-Volume Pressure Relief Valve

The problem:

Large enclosed systems that build up extreme gas pressure in a short time, as from an explosion, require some way of quickly releasing the gas without damaging the system. Currently used valves cannot release a large quantity of gas quickly, while blow out discs leave the system permanently open.

The solution:

Valves have been designed to use counterweights to assist in opening and/or closing. They can release large volumes of gas almost instantaneously and provide an air-tight seal under normal conditions.

How it's done:

Figures 1 and 2 show the valve in the closed and open position, respectively. As shown here, the valve is mounted inside the enclosure in a vertical position with the Teflon piston A at the top. Under normal pressure, the two counterweights, C-1 and C-2, exert pressure on pin B of the Teflon piston, and the valve is closed. When pressure on the top of A is great enough to cause the downward force on the pin B to exceed the upward force from the counterweights, C-1 and C-2 pivot upwards, and the Teflon piston lowers inside the valve housing. This releases gas through the openings in the piston. A cut-out in the counterweights serves as a gas passage to the outside.

This simply constructed valve requires little maintenance. Similar valves may be designed for a wide range of pressures by using different counterweights.

Notes:

- 1. This valve could also be used as a coarse pressure regulator for low pressure systems.
- Requests for further information may be directed to: Technology Utilization Officer Kennedy Space Center Code AD-PAT Kennedy Space Center, Florida 32899 Reference: B72-10536

Patent status:

,

NASA has decided not to apply for a patent.

Source: Wendall H. Dillard of Bendix Corp. under contract to Kennedy Space Center (KSC-10707)