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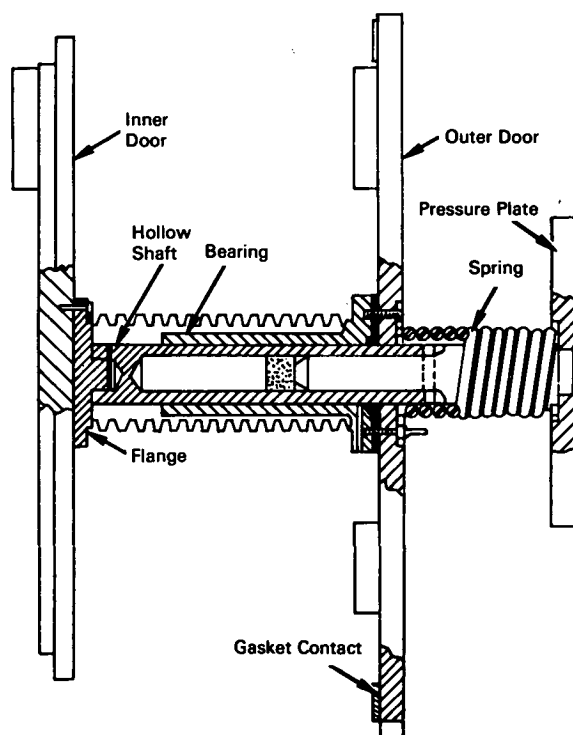
Brief 66-10697

# NASA TECH BRIEF



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## Combination Double Door High-Vacuum Valve Provides Access to Vacuum Chamber



### The problem:

To provide an extreme high vacuum seal as well as access to a vacuum chamber for insertion of test devices into the vacuum environment.

### The solution:

A double door was designed so that the vacuum vessel, consisting of one chamber inside another could be maintained at different levels of vacuum and equalized when desired. This is accomplished by the unique

arrangement of a spring-loaded door which contacts its seat before an inner door seats at the aperture of the inner chamber.

### How it's done:

The inner door is rigidly mounted on the hollow shaft by a flange. The slidable bearing is mounted on the shaft with a sliding fit. The outer door is rigidly mounted on the slidable bearing and kept from the pressure plate by a spring. Appropriate seals are used throughout the structure.

(continued overleaf)

In operation, the outer door seals against the outer chamber bulkhead at the gasket contact. The spring is compressed as the outer door slides along the shaft on the slidable bearing. The inner door then seats against a shoulder surrounding the inner chamber aperture.

In practice, the pressure plate is mounted on a hydraulic jack which applies the sealing pressure to the inner door. The outer door seal is dependent upon the pressure exerted by the spring.

**Notes:**

1. This arrangement is applicable to any vacuum chamber and could be of value in cryopumping or mechanically pumped chambers.

2. Inquiries concerning this invention may be directed to:

Technology Utilization Officer  
Jet Propulsion Laboratory  
4800 Oak Grove Drive  
Pasadena, California 91103  
Reference: B66-10697

**Patent status:**

Inquiries about obtaining rights for the commercial use of this invention may be made to NASA, Code GP, Washington, D.C. 20546.

Source: S. P. Yager  
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