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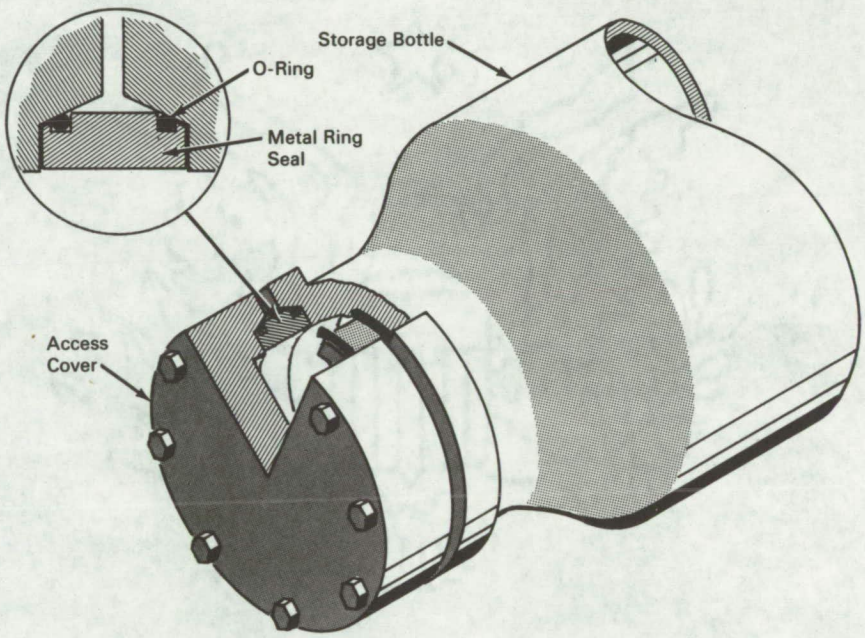
NASA TECH BRIEF

Large Diameter Metal Ring Seal Prevents Gas Leakage at 5000 psi



The problem:

To provide large diameter seals (approximately 18 inches) for hydrogen, helium, or nitrogen storage bottles, at pressures up to 5,000 psi. Previously, large diameter O-rings have not been satisfactory in high pressure applications because the expansion of the sealing surfaces allows the O-ring to extrude and rupture.

The solution:

Install a grooved metal ring seal containing elastomer O-rings between the mating faces of the access cover and the storage bottle.

How it's done:

A grooved metal ring seal containing elastomer O-rings is installed between the mating faces of the access cover and the storage bottle. As the access cover is tightened, the metal ring and the O-rings are compressed, forcing the O-rings to be extruded from the grooves and make contact with the mating faces of the access cover and storage bottle.

Notes:

1. This sealing technique can be readily used in the chemical, petroleum, medical supply, and related industries where high pressure storage bottles and tanks are required.

(continued overleaf)

2. Inquiries concerning this invention may be directed to:

Technology Utilization Officer
Marshall Space Flight Center
Huntsville, Alabama 35812
Reference: B66-10422

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: James H. Middelkoop
of North American Aviation, Inc.
under contract to
Marshall Space Flight Center
(M-FS-1064)