

July 1964

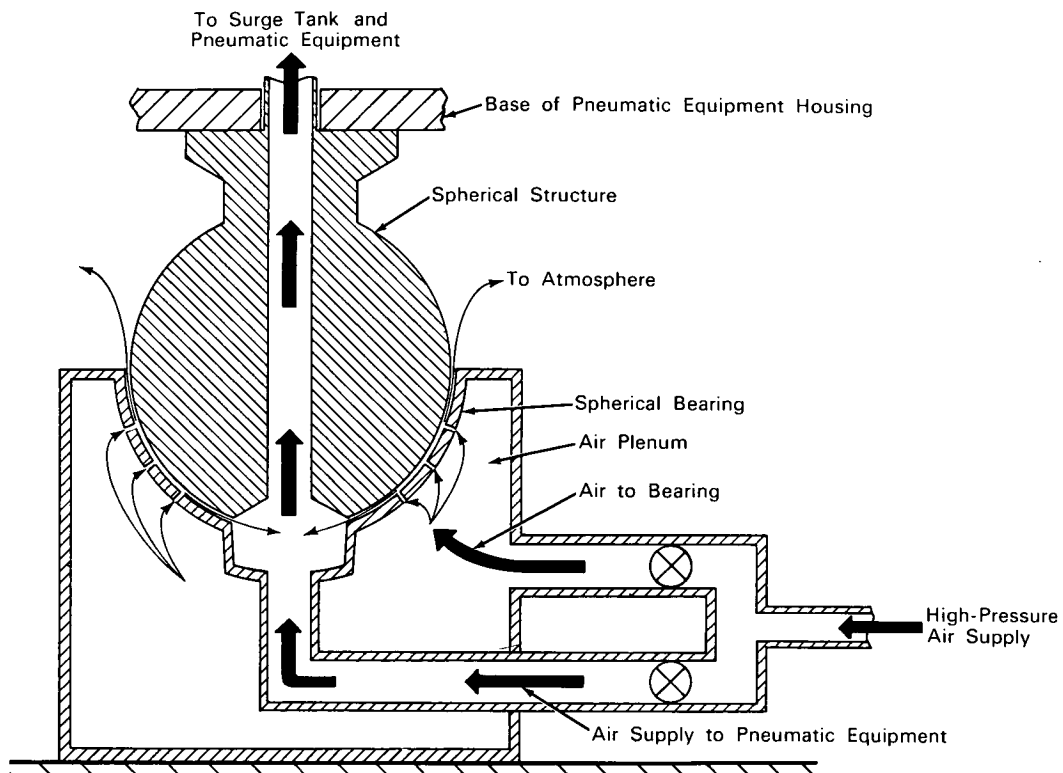
Brief 64-10141

NASA TECH BRIEF



This NASA Tech Brief is issued by the Technology Utilization Division to acquaint industry with the technical content of an innovation derived from the space program.

Pneumatic Power Is Transmitted Through Air Bearing



The problem: Providing an efficient system for simultaneously delivering high-pressure air to an air bearing and to pneumatic equipment mounted on a structure supported by this bearing. Conventional methods for supplying pneumatic power to a movable structure on an air bearing require compressed-air bottles on the structure or the piping of air from a remote location using a flexible hose or rigid passages with rotary seals. The use of air bottles adds excess bulk to the structure and also causes time to be lost when it is necessary to replace the

bottles. Flexible hoses restrict the amount of freedom of the structure, and sealed rotary joints introduce undesirable friction.

The solution: A system employing a conventional air bearing and an air-supported sphere with a central passage that channels high-pressure air to pneumatic equipment housed on the sphere.

How it's done: High-pressure air (or other gas) delivered to the plenum from a regulated source flows at supersonic velocity through the orifices in

(continued overleaf)

the bearing and provides an essentially frictionless cushion of air that supports the spherical structure above the bearing. The air that enters the orifices divides into two flows, one to the atmosphere and the other combining with the flow of air into the central passage in the sphere. High-pressure air from the regulated source is admitted into the central passage of the sphere without disturbing the operation of the air bearing. The air in the central passage flows up to a surge tank rigidly attached to the structure mounted on the sphere and thence to pneumatic equipment housed in this structure.

Notes:

1. The principle of this system should have advantageous application in space-flight and aircraft simulators or parts of rotating machinery.

2. For further information about this innovation inquiries may be directed to:
Technology Utilization Officer
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P.O. Box 1537
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Reference: B64-10141

Patent status: NASA encourages the immediate commercial use of this invention. Inquiries about obtaining rights for its commercial use may be made to NASA Headquarters, Washington, D.C. 20546.

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(MSC-8)