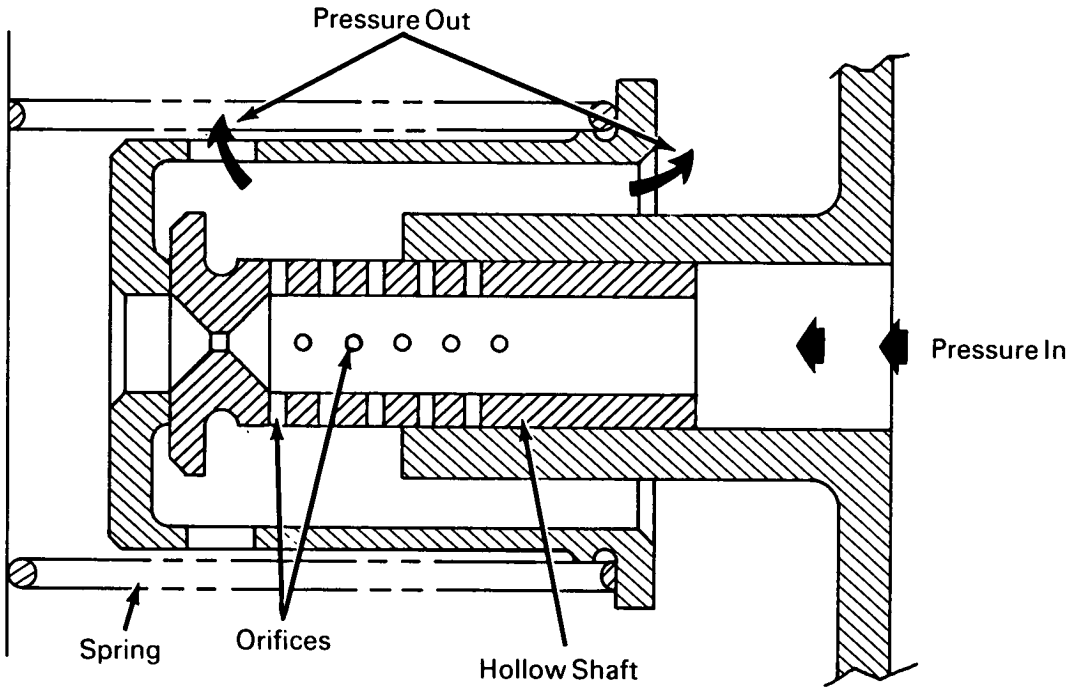
NASA TECH BRIEF

Pressure Variable Orifice for Hydraulic Control Valve



The problem:

To absorb the impact energy generated in the docking or joining of two large bodies, it is necessary to control the energy release in a smooth manner that precludes jarring shock. Hydraulic valves of various types (shafts with graduated slots that index with machined orifices, or tapered shafts mating with machined exit ports) have previously been used with only limited success.

The solution:

A hydraulic valve in which the area of exit porting presented to the hydraulic control fluid is directly proportional to the pressure (head) acting on the fluid.

How it's done:

A hollow shaft with 12 or more orifices located along its wall is lap-fitted to a mating sleeve and its closed end is attached to a spring loaded receiver having large exit ports leading to a large sump. When inlet pressure builds up in the shaft, it is forced forward in its sleeve as tension of the restraining spring is overcome. Movement of the hollow shaft in the sleeve opens an increasing number of orifices to the exit

(continued overleaf)

ports. In this arrangement high pressures are smoothly controlled and limited flow occurs at low pressures.

Note:

Inquiries concerning this innovation may be directed to:

Technology Utilization Officer
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Reference: B68-10120

Patent status:

No patent action is contemplated by NASA.

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