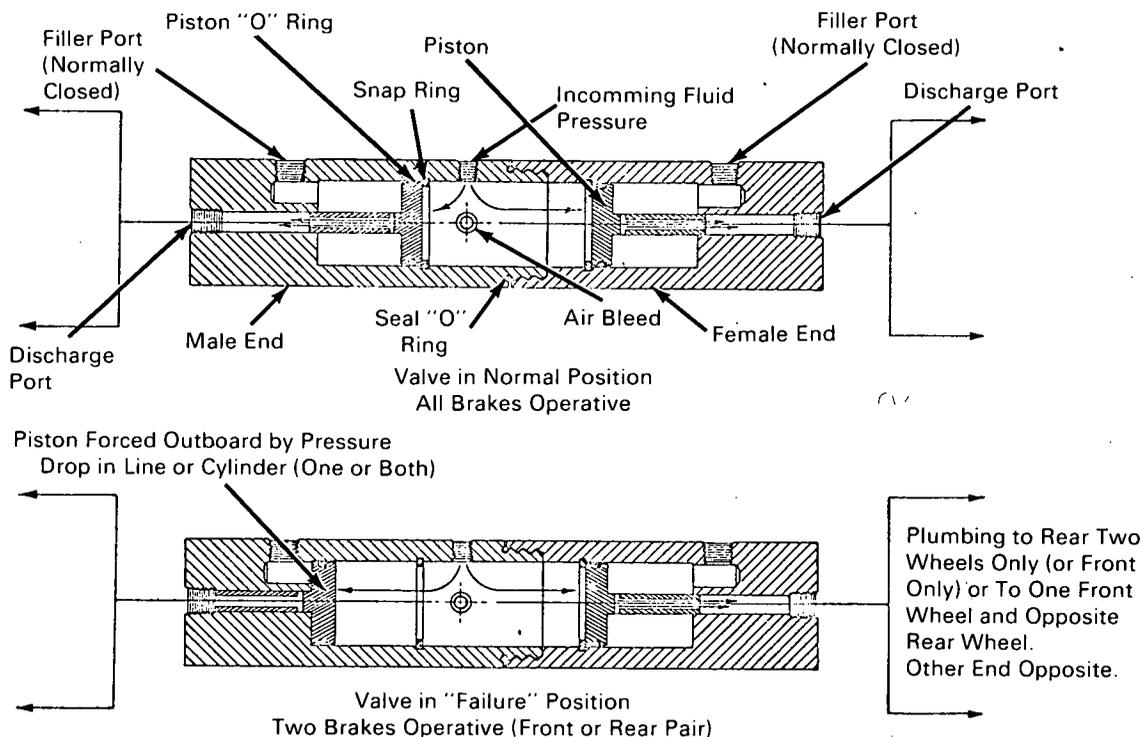


# NASA TECH BRIEF



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## Hydraulic Brake Safety Valve



If one wheel cylinder of a hydraulic brake system fails, the entire system normally becomes inoperative. A concept has been developed in which a safety device, shown in the figure, consisting of three separate fluid chambers, can insure that two wheels of the system continue to function if such a failure occurs. In this concept, the master cylinder of the brake system applies pressure to the center chamber of the safety valve forcing its pistons in an outboard direction. As a result, the fluid in the outboard chambers is forced out to the individual wheels, causing a braking action. When the pressure in the master cylinder is reduced,

the spring tension on the brake shoes forces the fluid back into the safety valve, and from the safety valve back into the master cylinder, causing the pistons in the safety valve to resume their normal position.

Because the brake shoes wear, the brake system may need adjustment, or a wheel cylinder may need repairs, the fluid in the outboard cylinder should be checked at regular intervals. If fluid is needed, add it through the two filler ports while the safety valve is under pressure. After brakes are bled, release fluid pressure and close filler ports; this will restore the pistons to their normal positions.

(continued overleaf)

**Notes:**

1. This concept may be of interest to the manufacturers of automobiles, trucks, and construction equipment.
2. This development is in the conceptual stage only, and as of date of publication of this Tech Brief neither a model nor prototype has been constructed.
3. No additional documentation is available. Specific questions, however, may be directed to:  
Technology Utilization Officer  
Marshall Space Flight Center  
Huntsville, Alabama 35812  
Reference: B70-10207

**Patent status:**

No patent action is contemplated by NASA.

Source: Zone A. Hobson of  
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