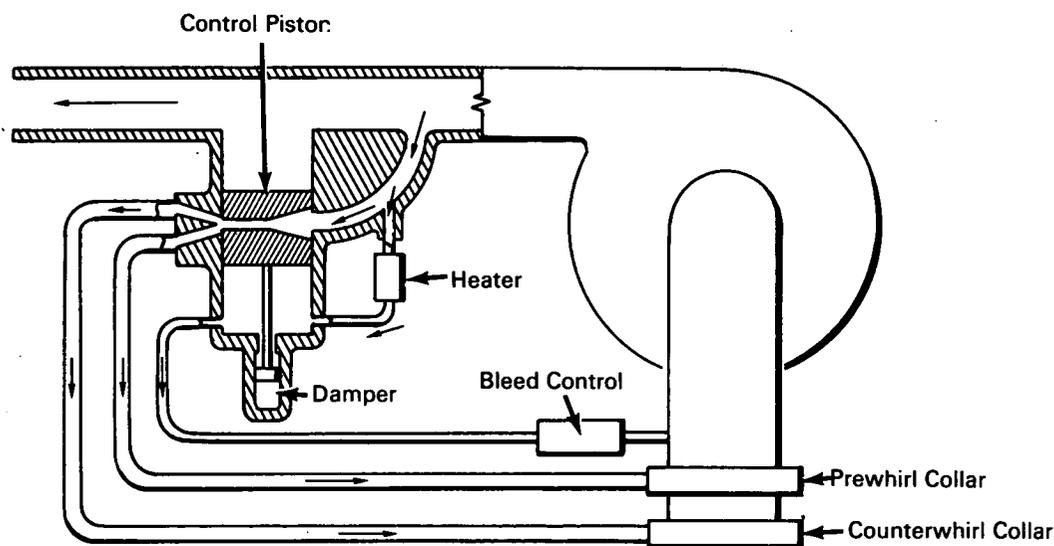


# NASA TECH BRIEF



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## Negative Feedback System Reduces Pump Oscillations



EXTERNAL NEGATIVE FEEDBACK SYSTEM

### The problem:

To devise a method for counteracting low frequency oscillations in rocket engine propellant pumps. Previous methods such as gas injection and holes in inducer blades to counteract oscillations were only partially satisfactory.

### The solution:

An external negative feedback system which utilizes a control piston to sense pump discharge fluid on one side and a gas pocket on the other.

### How it's done:

The system consists of a control piston which dispatches control fluid to either the prewhirl collar or the counterwhirl collar, as required. The former low-

ers the fluid level and the latter raises the fluid level through the pump. The control piston senses pump discharge fluid on one side and a gas pocket on the other. The gas pocket has enough volume to maintain a constant pressure with slight piston motions.

### Notes:

1. This development is in conceptual stage only, and as of date of publication of this Tech Brief, neither a model nor prototype has been constructed.
2. Inquiries concerning this innovation may be directed to:

Technology Utilization  
 Marshall Space Flight Center  
 Huntsville, Alabama 35812  
 Reference: B67-10064

(continued overleaf)

**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: Walter Rosenmann  
of North American Aviation, Inc.  
under contract to  
Marshall Space Flight Center  
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