December 1969

Brief 69-10704

NASA TECH BRIEF

Improved Solenoid Valve Design

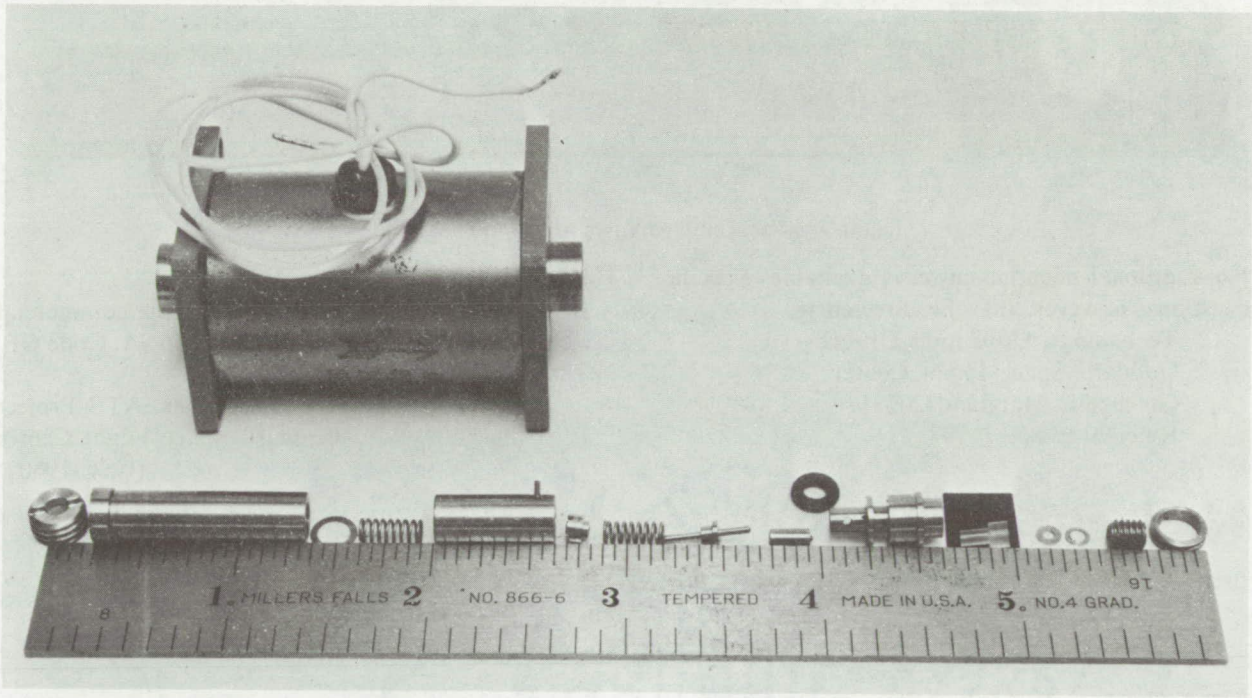

Figure 1. Disassembled Valve Before Modification

The features described in this valve design contribute to increased reliability and extended valve life. The valve design may be of interest to designers in the pneumatic and hydraulic industries.

Solenoid valve life is generally limited by the life of the valve seat. In this case a solenoid valve was modified to reduce valve-seat loading by:

(a) Eliminating off-center operation of the armature by using a nonmagnetic guided poppet.

(b) Reducing the poppet size and spring-cushioning its impact.

(c) Reducing armature impact with a poppet guide stop.

Figures 1 and 2 illustrate the valve differences before and after modification.

Notes:

1. The modified valve has functional reliability through 3×10^6 cycles.

(continued overleaf)

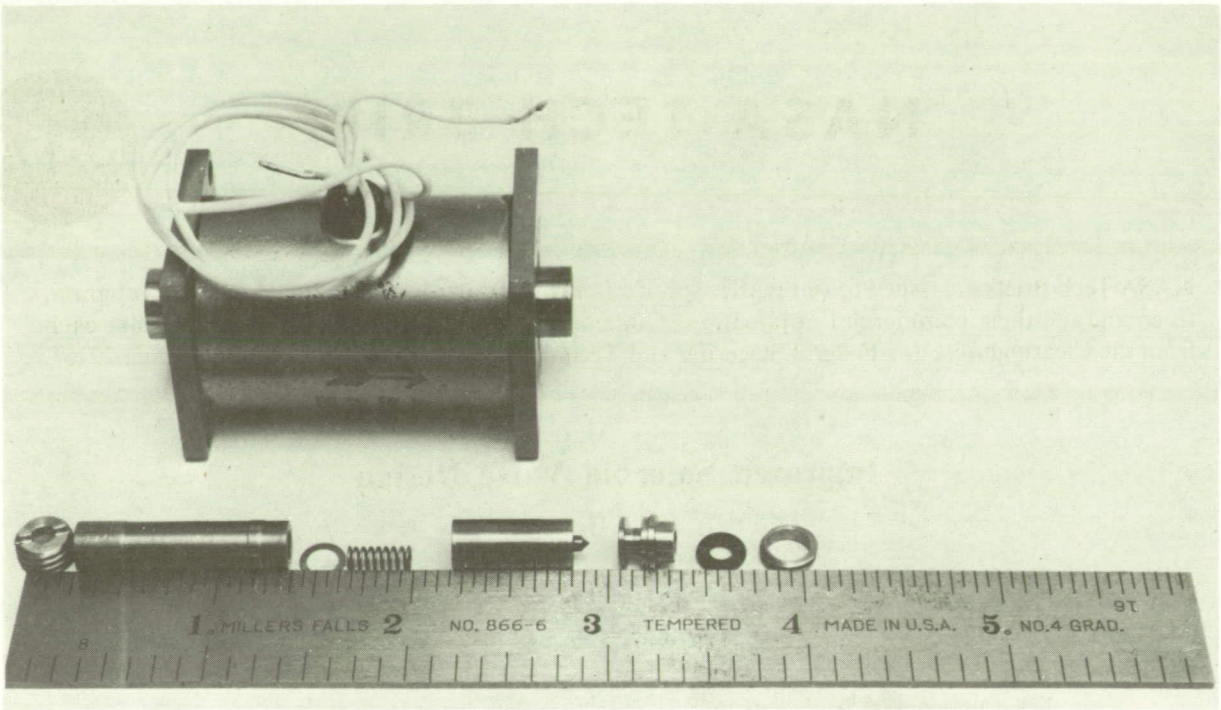

Figure 2. Disassembled Valve After Modification

2. No additional documentation is available. Specific questions, however, may be directed to:

   Technology Utilization Officer
   Goddard Space Flight Center
   Greenbelt, Maryland 20771
   Reference: B69-10704

Patent status:

Inquiries about obtaining rights for the commercial use of this invention may be made to NASA, Code GP, Washington, D.C. 20546.

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(GSC-10607)