

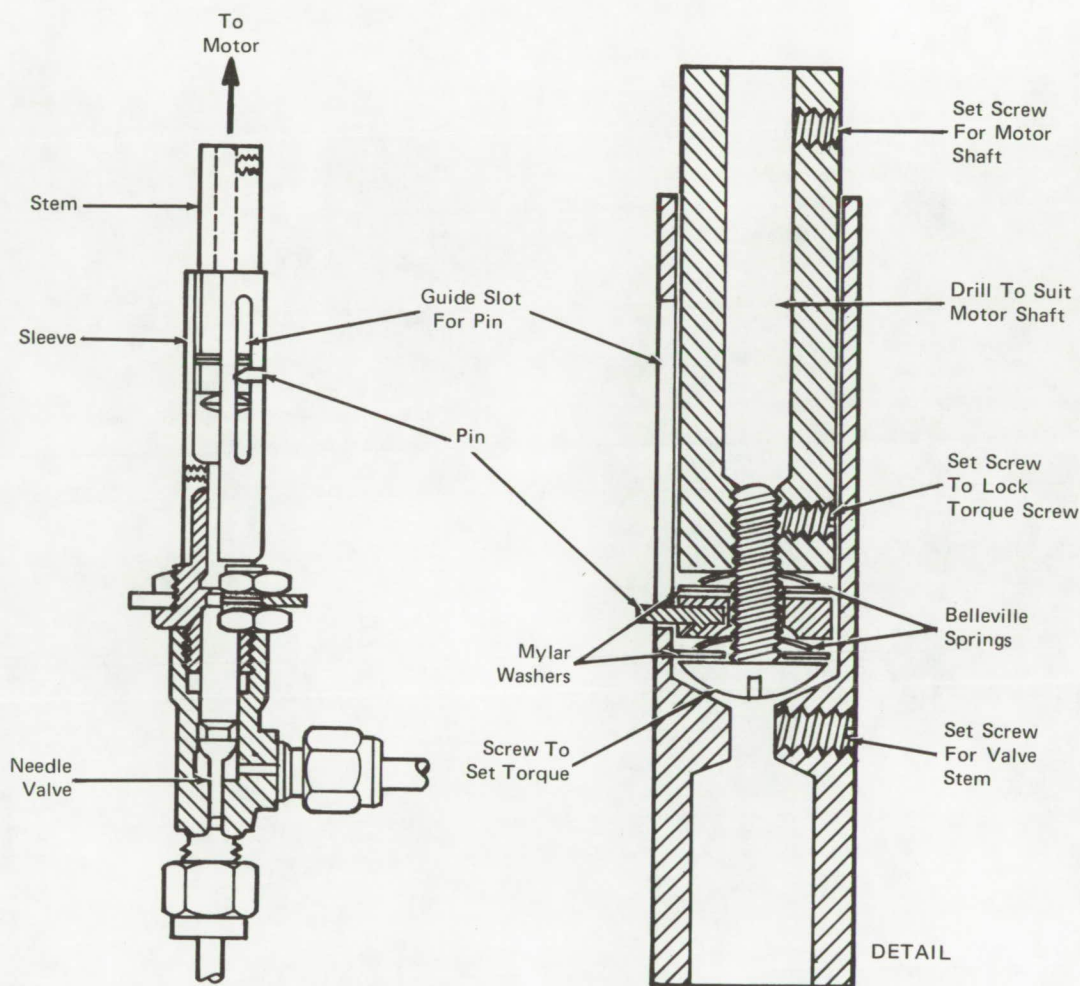
# AEC-NASA TECH BRIEF

## Lawrence Berkeley Laboratory



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### Stem Clutch for Motor Driven Valve



#### The problem:

During operation of the servo-motor driven needle valve, it is necessary to prevent the valve stem from being seized in either an open or a closed position. Such a seizure could damage the stem and possibly the motor as a result of overload. Although designs allow automatic programming of the motor operation, precise stopping of the motor is difficult.

#### The solution:

A mechanical clutch has been developed which introduces friction between the motor shaft and the needle valve when the latter is in danger of seizure.

#### How it's done:

In the present design, as shown in the figure, the needle-shaped valve is advanced into or withdrawn from

(continued overleaf)

the valve seat by a rotatable threaded stem which is connected to the servo-motor. The motor shaft fits inside a sleeve, which is connected to the valve stem. When the motor shaft is turning and the valve stem stops rotating because the valve has closed, the pin in the spacer causes the spacer to overcome the friction provided by the Belleville spring and to slip. The amount of friction is easily adjusted by adjustment of the screw.

**Notes:**

1. Tests show that the clutch prevents overload in a valve using a 300 rpm servo-motor.

2. Requests for further information may be directed to:  
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Lawrence Berkeley Laboratory  
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Berkeley, California 94720.  
Reference: B72-10345

**Patent status:**

No patent action is contemplated by AEC or NASA.

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(LRL-10032)