

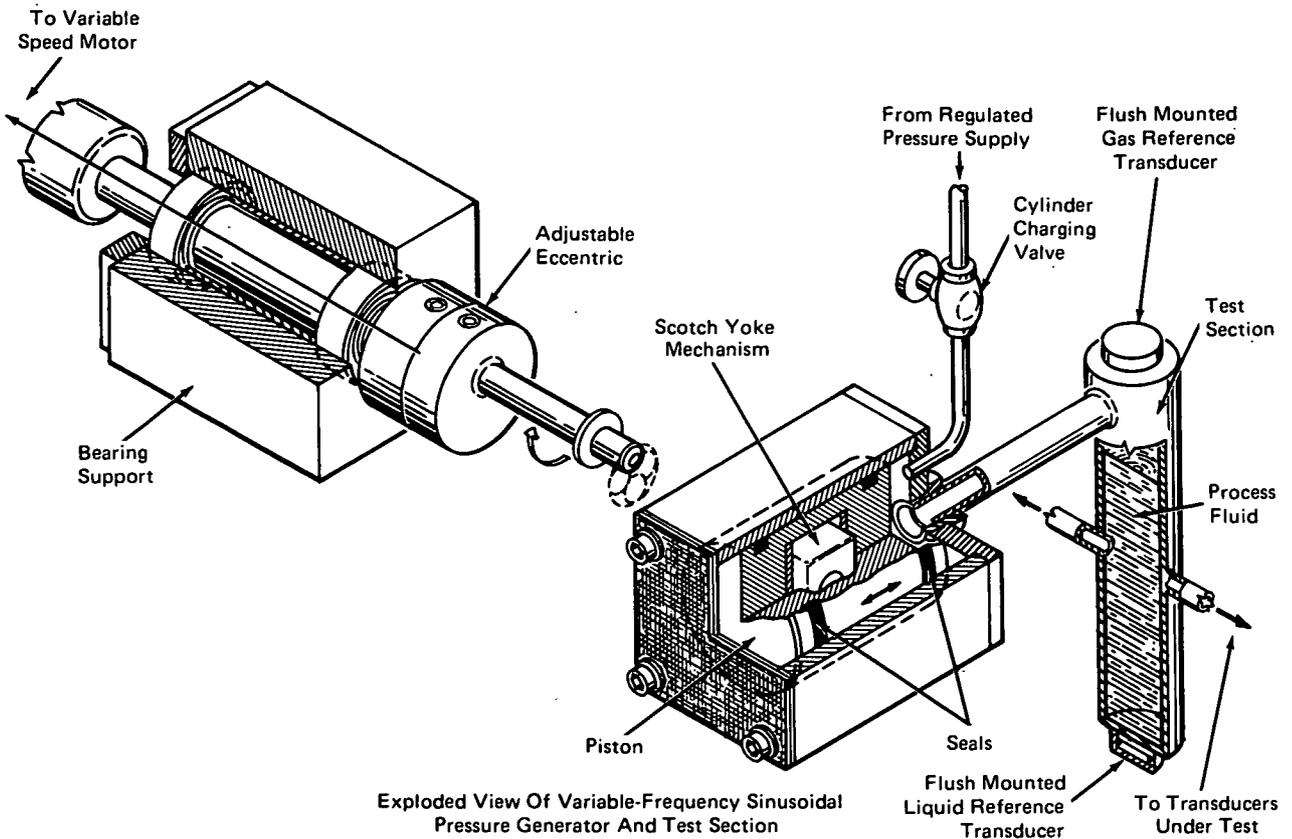
NASA TECH BRIEF

Lewis Research Center



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Low Frequency Sinusoidal Pressure Generator



A low frequency pressure generator has been built to provide a sinusoidal driving function in the frequency range from 0.05 to 50 Hz for frequency response testing of pressure transducers as used in liquid-filled systems. The generator, as shown by the figure, consists mainly of a piston-in-cylinder, a scotch-yoke mechanism machined into the piston, and an adjustable eccentric. When the device is coupled to a variable speed motor, the scotch yoke acts through the eccentric and transfers the rotary motion of the motor to the reciprocating motion of the piston. The displacement of the piston is a simple harmonic, and thus the pressure variations in the

charged cylinder are sinusoidal. The amplitude of the pressure variations is determined by the adjustment of the eccentric, and the frequency is determined by the speed of the motor.

As illustrated by the figure, the transducer systems are attached to the test section, and both are completely filled with the process fluid. The input pressure is generated in the gaseous medium (air) above the liquid in the test section. The pressure is transferred by the liquid, and is sensed by the transducer systems. Two reference transducers are used, one in the liquid, and one in the gas above the liquid. The transducer mounted

(continued overleaf)

in the gaseous medium is used only to show the actual output signal of the generator. The liquid reference transducer is used for the comparison of amplitude ratio and phase shift. The resulting dynamic data are processed by standard techniques.

Notes:

1. The following documentation may be obtained from:
National Technical Information Service
Springfield, Virginia 22151
Single Document price \$3.00
(or microfiche \$0.95)

Reference: NASA TN-D-6166 (N71-17605),
Frequency Response of Two Types of Liquid-
Metal Pressure Transducers with Standoff Tubes

2. Technical questions may be directed to:
Technology Utilization Officer
Lewis Research Center
21000 Brookpark Road
Cleveland, Ohio 44135
Reference: B72-10477

Patent status:

No patent action is contemplated by NASA.

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