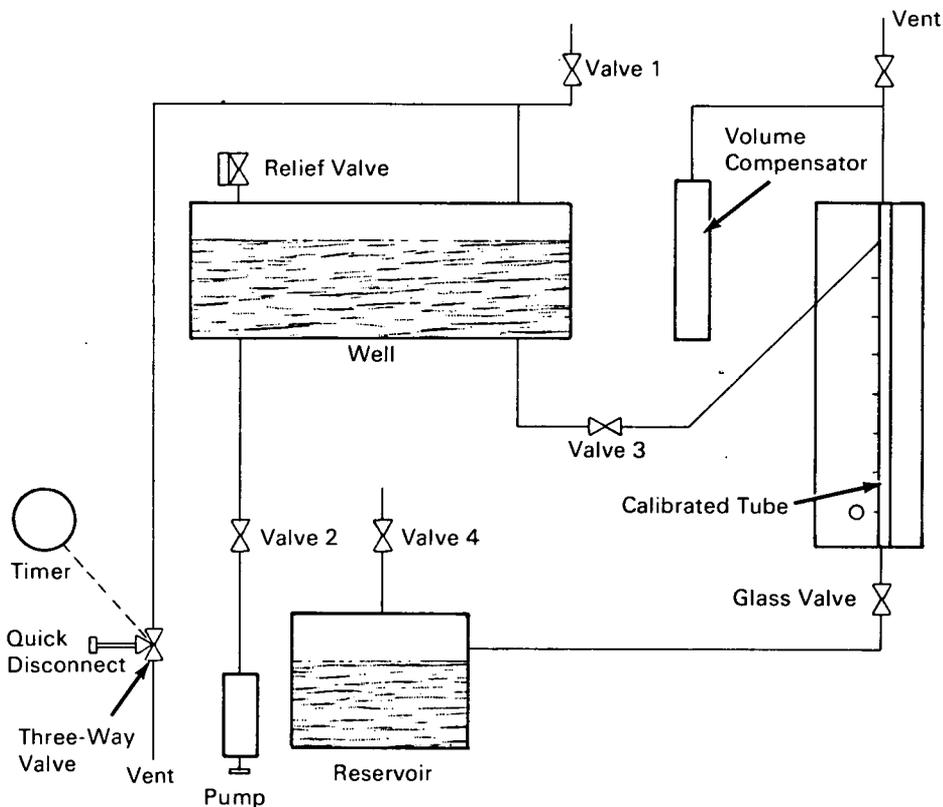


NASA TECH BRIEF



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Volumetric Leak Detector



Schematic of Volumetric Leak Detector System

Manufacturers of fluid handling or transmission equipment will be interested in a portable volumetric leak detector that measures leakage in the range of 5 to 40 cc/hr. The fluid-displacing apparatus, which uses the principle of the manometer, is shown in the drawing. It will measure the leakage of gases across valve seats, for example, and check components and

systems of components independent of size in relatively short periods of time. Since no back pressure is built up, the volume between the component being checked for leakage and this device does not require calibration.

The apparatus consists essentially of a well-type manometer where the well and U tube are of the same

(continued overleaf)

height. As fluid is displaced due to leakage of gases, the fluid will spill over into the calibrated tube where the amount of leakage can be determined.

The quick disconnect provides for attachment to the component or system test point. A three-way valve allows the system to be vented until the reading is made. The timer, which is mechanically linked to the three-way valve, starts automatically when the valve is switched to the test position, and stops automatically when the valve is switched to the vent position. Valve 1 vents the well when refilling with fluid from the pump. A vent to the atmosphere is provided when not used in a closed system.

The volume compensator maintains proper volume in the well, which contains a suitable manometer fluid, and in the calibrated tube, which collects displaced fluid. Valve 2 seals the well from the refill line. Valve 3 can be utilized to shorten the time of reading by storing the leakage gases which will help to overcome fluid inertia, surface tension, and temperature variation.

The glass valve provides drainage of the calibrated tube after a reading has been taken. Valve 4 vents the reservoir for the displaced fluid. A pump returns the displaced fluid to the well.

Note:

Requests for further information may be directed to:
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