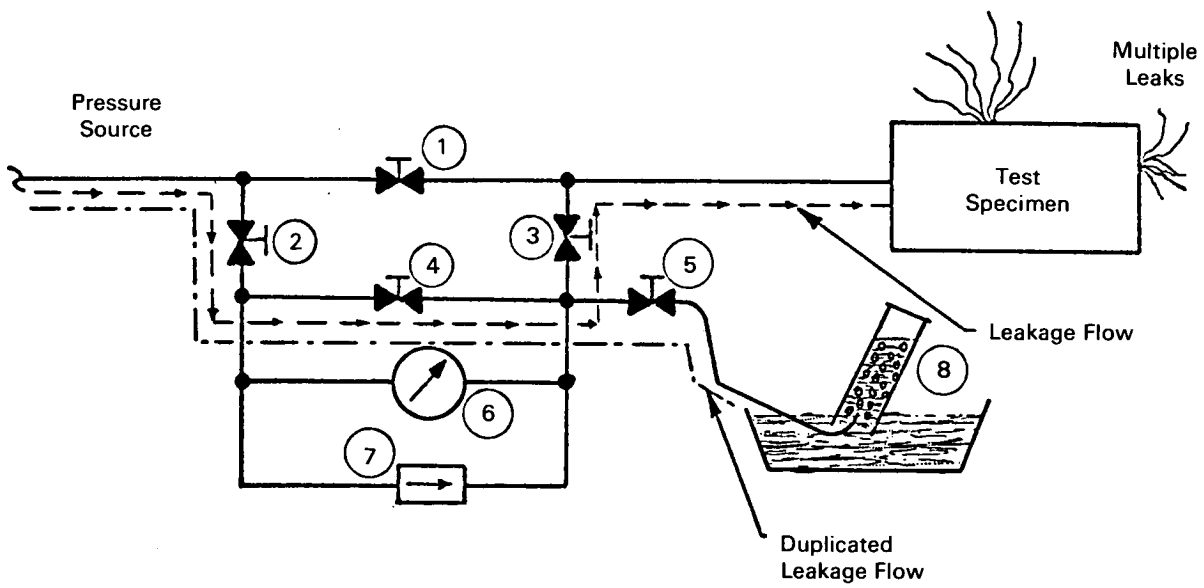
NASA TECH BRIEF

Leakage Measuring Method



The problem:

To measure leakages of high pressure test specimens by paralleling-off the pressure supply line and duplicating and measuring the leakage flowing into a specimen rather than attempting to measure the leakage flowing out of it. Normally, a rotometer is placed in the pressure supply line to measure leakage, but this covers only a narrow range of leakage rates for each size of flow tube and float combination.

The solution:

A technique to measure leakages of high pressure test specimens occurring on the input rather than the output side of a test specimen.

How it's done:

A shutoff valve (1) is located in the pressure supply line to direct the leakage flow through the parallel leak-test setup (see fig.). To measure the leakage, operating pressure is applied to the system while valves (2), (3), and (4) are open and valves (1) and (5) are closed. With the specimen leakage flow passing through valve (4), a differential pressure is set up across this valve by adjusting it towards the closed position until the desired reference reading appears on the gage (6). This may be any arbitrary reading in the mid-scale range of the gage. Leakage flow to the specimen is now shut off at valve (3) and a duplicate leakage flow is set up to the leakage-measuring device by gradually opening valve (5). Valve (5) is adjusted until the previous differential pressure has been re-established on the gage (6) with valve (4) unchanged. Duplicate leakage is then measured from the outlet of valve (5) by conventional equipment operated at atmospheric pressures.

(continued overleaf)

Notes:

1. A check valve (7), with an appropriate opening pressure protects the differential pressure gage.
2. No further documentation is available. Inquiries may be directed to:

   Technology Utilization Officer
   Marshall Space Flight Center
   Huntsville, Alabama 35812
   Reference: B69-10438

Patent status:

No patent action is contemplated by NASA.

Source: Hans J. Clausen of
Douglas Aircraft Company, Incorporated
under contract to
Marshall Space Flight Center
(MFS-14722)