

# NASA TECH BRIEF

## Lewis Research Center



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### Low-Cost, Portable Fire Hose Tester

A low-cost portable pumping unit has been developed for performing required hydrostatic pressure tests on fire hoses, in lieu of using fire pumper trucks for this purpose.

The unit consists of a small positive-displacement pump with associated piping, gages, and valves mounted on a simple wheeled cart (Figure 1). Water is supplied to the pump through a hose connected to any convenient source. The fire hoses to be tested are coupled to manifold connections on the pump discharge. Conventional valves and a pressure regulator control the rate of filling and pressurizing the fire hoses to test for strength, leakage, coupling slippage, twist, elongation, wrap, and rise.

A pumping unit of this kind built and used by the NASA Lewis Research Center fire department (Figures 1 and 2) was constructed of readily available commercial components. The pump is driven by  $0.86 \text{ MN/m}^2$  (125 psi) air and is rated at  $1.26 \times 10^{-4} \text{ m}^3/\text{sec}$  (2 GPM) at up to  $6.89 \text{ MN/m}^2$  (1000 psi) pressure rise. This unit is capable of testing fire hoses at pressures up to  $1.8 \text{ MN/m}^2$  (260 psi).

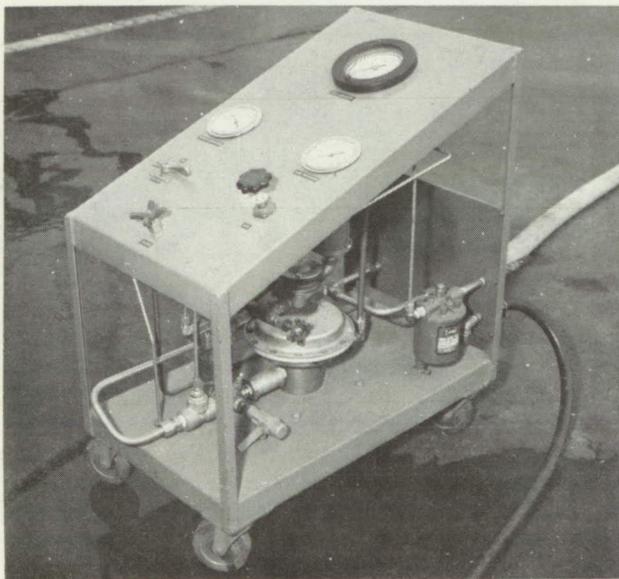


FIGURE 1.

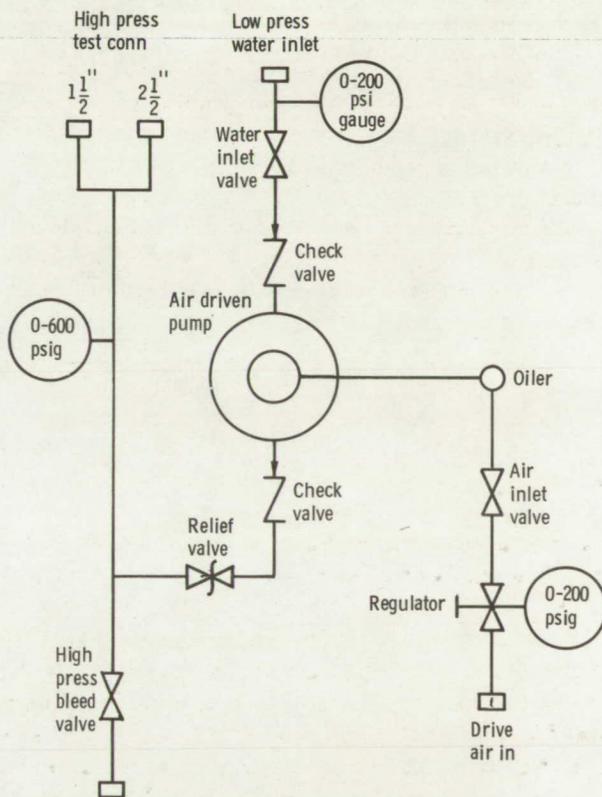


Figure 2. - Piping schematic for low cost fire hose tester.

The availability of this small portable pumping unit permits scheduling and performing required periodic hose tests in the proper manner while retaining full fire equipment readiness; i.e., not taking a fire pumper truck out of service. In addition, the use of the pumping unit preserves the operating life and capability of the pumper truck by eliminating the need to run the engine and pump at high speeds over extended periods for the purpose of testing hoses. A further safety benefit is realized in the event of a hose rupture; there is much less hose whipping and flooding due to the much smaller pumping capacity of the portable pumping unit.

(continued overleaf)

**Notes:**

1. An electrically driven pump can be used instead of an air driven pump, with appropriate controls.
2. A unit of this type could also be utilized for pressure testing sprinkler systems, and other fluid piping systems.
3. No additional documentation is available. Specific technical questions, however, may be directed to:

Technology Utilization Officer  
Lewis Research Center  
21000 Brookpark Road  
Cleveland, Ohio 44135  
Reference: B75-10003

**Patent Status:**

NASA has decided not to apply for a patent.

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