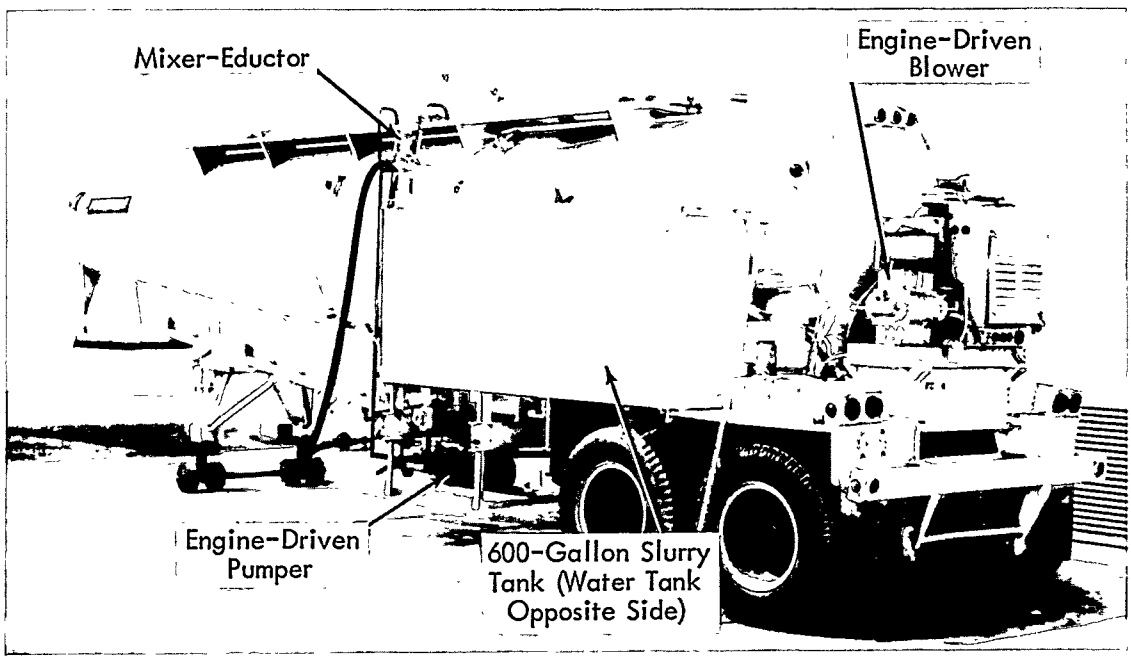
EQUIP TIPS

FOREST SERVICE U. S. DEPARTMENT OF AGRICULTURE 5100 MAY 1971

EQUIPMENT DEVELOPMENT CENTER SAN DIMAS

A MOBILE MIXING BASE FOR PHOS-CHEK FIRE RETARDANTS
ED&T 712



A Mobile Phos-Chek Base

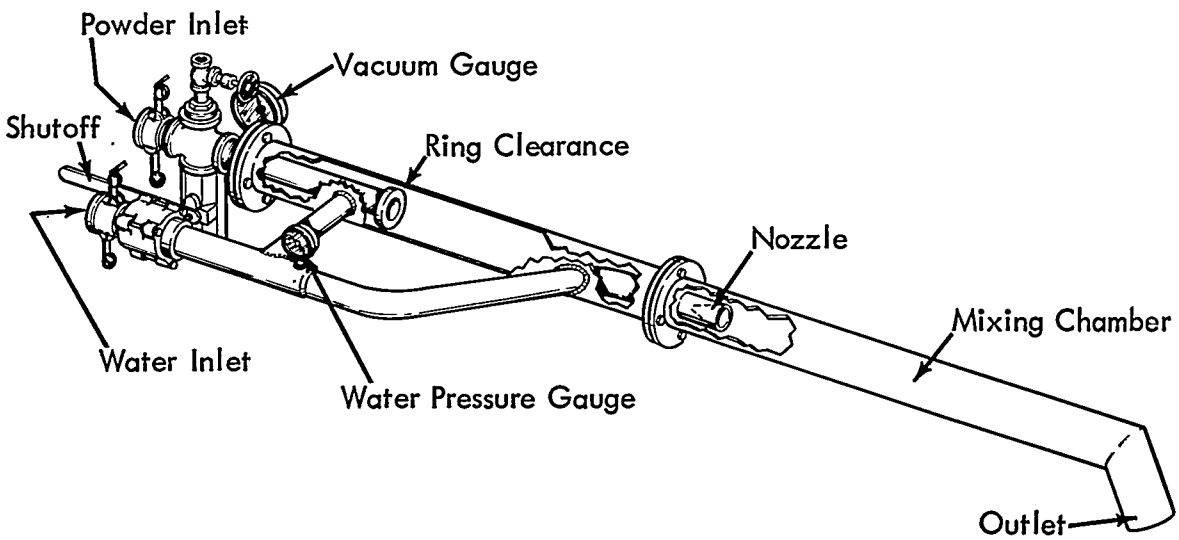
Portable or temporary chemical retardant mixing stations are filling a need in certain fire situations. 1/ Recent improvements in the eductor-mixer system used by Monsanto for approved Phos-Chek formulations have opened new possibilities for mobile bases. Monsanto, working with several fire agencies, 2/ has converted trailers into self-contained "Mobile Phos-Chek Bases" (MPB's) capable of mixing 300 gallons of Phos-Chek per minute @ 60 to 70 psi.

1/ See Chapter XII, National Fire Protection Association Handbook, Chemicals for Forest Fire Fighting, second edition, 1967.

2/ Monsanto Co., 800 North Lindberg Boulevard, St. Louis, Missouri 63166, and cooperating fire agencies including Riverside Forest Fire Laboratory, California Division of Forestry, Los Angeles County Fire Department.

Each trailer is about 40 feet long, carries up to 20 tons of dry retardant, and has a gross weight of about 52,000 pounds. When a loaded trailer responds to a fire it is capable of producing around 26,700 gallons of Phos-Chek 259 slurry or 37,540 gallons of Phos-Chek 202 X-A. The trailer can return to the base plant for reloading, or can be filled by a bulk truck at the mix site or any convenient location.

Operation is as follows: Water is drawn by a centrifugal pump from either the 600-gallon saddle tank on the curb side or from a water trailer, or hydrant, and pumped into the water inlet side of the eductor-mixer (see diagram). About 60% of the water entering the eductor flows through the machined nozzle. The remainder is diverted through the back of the eductor through the ring clearance, and is used as flushing water. 3/ The bottom of the air slide trailer slopes from each end to a low point in the middle, and fluidized action is given the retardant powder by an air line and engine-driven blower, which is usually located at the rear. This discharge is then connected to the powder inlet of the eductor-mixer by a hard rubber suction line. Dual powder lines are sometimes used. The eductor-mixer is tilted slightly downward and discharges the mix overboard into either the MPB saddle tank or a prearranged folding-type tank.



Phos-Chek Slurry Eductor-Mixer

3/ Both the nozzle and orifice must be accurately machined and carefully installed. Improvised hardware has consistently given poor results.

The production rate of the MPB varies with the size of eductor-mixer and pump selected:

Eductor-Mixer	Performance	Remarks
Model 100:	125 gpm @ 60 to 70 psi	Weighs 65 lb, overall length 8 ft
Model 200:	300 gpm @ 60 to 70 psi	" 75 " " " " "

Los Angeles County MPB

Some modifications that have been made by Monsanto to the prototype and first production mobile bases are:

1. Increase of the loading rate from storage mix to aircraft up to 600 gpm.

2. Capability of operation of the eductor-mixer directly from a hydrant if flow and pressure are available.

3. Capability of drafting of the water supply from a stream or reservoir.

4. Major components detachable for portability.

Accessories include lightweight $2\frac{1}{2}$- or 3-inch loading manifold and loading hoses. The manifold can be provided for two or more loading ramps. Also, two 1,500-gallon folding tanks can be interconnected. A 2000-gallon folding dip tank can be used separately for helicopter loading. A hose basket can be built on the trailer for hoses and fittings.