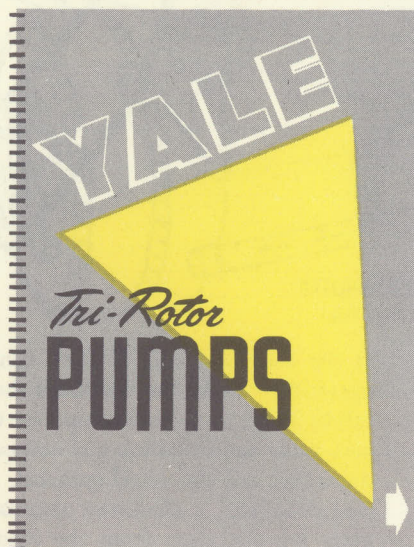


# PUMPER

## YALE & TOWNE

THE YALE & TOWNE MANUFACTURING CO., STAMFORD, CONN.

### PIPE LINES



#### TRI-ROTOR CATALOG WINS MEAD AWARD

Your YALE & TOWNE Tri-Rotor Pump Catalog recently received an award in a nationwide competition for outstanding printing.

The competition is held regularly by the manufacturers of Mead printing papers. In announcing the award, F. J. Clifford of the Mead Sales Company said that "this book was the subject of an unusual amount of interested attention by the judges," and he called it "a handsome book . . . which held its own among entries of unusually high quality." The catalog was printed by offset lithography by the Milford Press, Milford, Conn., and entered in the contest by Mrs. Shirley S. Daley, who sold the paper.

The Mead Award points up the attractive appearance and readability of the Tri-Rotor Catalog, which, with its wealth of accurate information, has become a valuable sales tool for distributors and a useful guide to the installation and operation of YALE & TOWNE pumps for their customers.

THE EDITOR

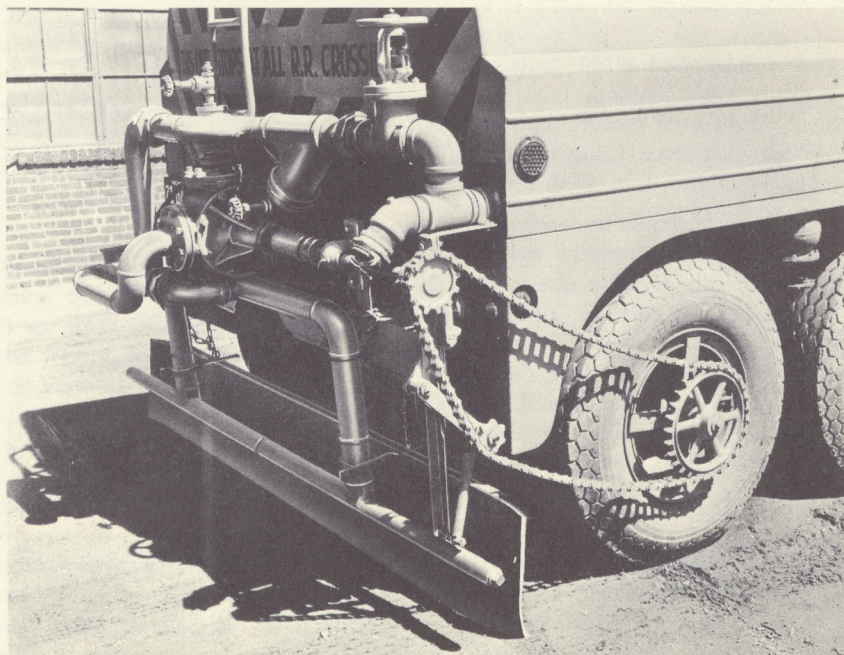
### NOVEL DUST CONTROL METERING APPLICATION

Your average YALE Pump customer either wants to measure out a specific amount of liquid from time to time or needs an unvarying flow through a pipe. He is interested in a number of gallons, or a rate in gallons per minute.

But many potential customers are interested in the number of gallons per mile. The farmer may be treating his fields with a solution. The airport operator may be applying a liquid to his runways or to the area between them. Many roads are treated by applying a liquid to the surface. In these cases, the liquid is usually applied from a tank truck or trailer. Efficiency and economy in such procedures require that a constant rate of flow be maintained in terms of the number of gallons per mile.

That is not an easy thing to do. Truck speeds will vary. If the rate of flow from the tank is constant, the surface receives more fluid when the truck slows down and less when it speeds up. Even under the best of conditions, where the tank can be moved for some distance at a relatively fixed rate, the solution will be wasted at the start and end of each run.

Rural road maintenance authorities are faced with this dilemma in their dust control work. One of the most common procedures for holding down dust on dirt roads is a periodical spray of a calcium chloride solution from tank





# TRI-ROTOR PUMPER

truck or trailer. Until recently, a worker had to be stationed at the rear of the tank to judge the flow by eye and control it by hand.

The Dow Chemical Company, one of the largest suppliers of calcium chloride, developed a system of rural road dust control requiring only one worker per truck, and assuring the most efficient use of calcium chloride.

Since a gallon of 35% calcium chloride solution is enough to treat up to 100 square feet of road surface, no pumping is necessary. In fact, pressures over 10 psi. should be avoided because they cause fogging. The basic requirement, therefore, boiled down to a metering system which would automatically adjust the flow of solution to the speed of the truck.

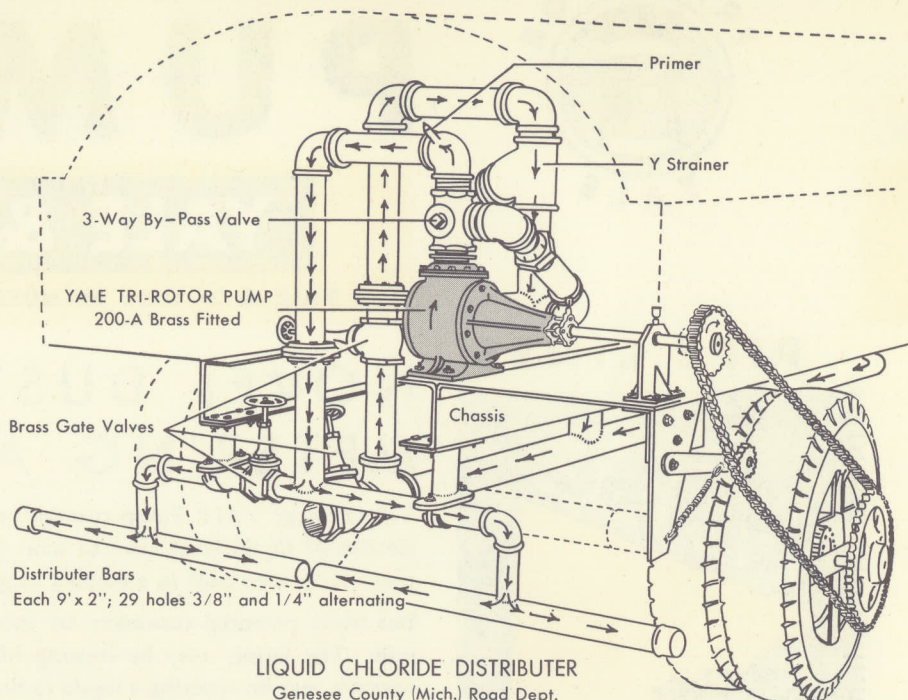
The J. N. Fauver Company, Inc., Detroit distributor of Yale & Towne Pumps, prescribed a type 200-A, bronze fitted Tri-Rotor Pump. The Dow Chemical Co. was the first to use a Yale pump, chain driven by one of the rear wheels of the tank trailer, for this type of metering work.

Since that time, the J. N. Fauver Co. reports, more than 50 Tri-Rotor Pumps have been placed in use in spraying dirt roads in various parts of Michigan.

Typical of these installations is that of the Genesee County Road Department. The bronze fitted, standard-head, clockwise rotation, 200-A Tri-Rotor Pump is mounted on the back of a 2,000 gallon tank trailer. The only modification to this pump is in the shaft, which has 25 inches extra length, and is supported at the sprocket end by a pillow block bearing. It is connected to the right-hand trailer wheel by a chain-and-sprocket drive. Complete construction details are shown in the drawing.

The sprocket ratio is simple to determine. The Genesee Road Department uses a 35% solution of calcium chloride; it requires 534 gallons per mile for each 10 foot traffic lane. This is about 99 sq. ft. per gallon. The 200-A Tri-Rotor Pump delivers .46 gallons each revolution. Dividing the number of gallons per mile by the number of gallons per revolution gives you just under 1161 pump revolutions per mile.

If the trailer is equipped with 9.00-20 tires, its wheel will revolve 531 times in each mile. In this case, a 35 tooth sprocket on the wheel will drive a 16 tooth



pump sprocket the required 1161 revolutions per mile. If the trailer has 10.00-20 tires, sprockets having 36 and 16 teeth will drive the pump at 1163 revolutions per mile; for 11.00-20 tires, 35 tooth and 15 tooth sprockets will give 1162 revolutions per mile.

Providing a suitable distributor is employed, each arrangement will spread the required 0.01 gallon on each square foot of road surface, no matter how fast or how slowly the trailer may be moving.

The distributor pipe, however, must be carefully designed. The J. N. Fauver Co. points out that the success of the installation depends largely on this element of the system. Spreading the calcium chloride solution evenly without excessive spray or high back pressure depends on the number, size and spacing of holes in the distributor pipe.

Some variants of the basic installation have proven successful. Where several road boards or commissions must use the same tank, a variable displacement head can be specified to meet the different ideas on amount of solution, or varying strengths of solution which will be encountered. The by-pass head will eliminate the need for an external by-pass, and provide an extra margin of safety for the pump. In the Genesee County installation, the by-pass valve is opened and closed by hand, and the sprocket chain adjusted and removed by the truck driver

at the start and end of each run; both operations can be handled from the truck cab by using a solenoid to operate the by-pass valve and installing a clutch between the wheel and the wheel sprocket. In the case described, a clockwise rotation provides for operation from the right-hand wheel; however, the left-hand wheel may be used if counterclockwise pump rotation is specified.

The pump should be carefully protected in use. The strainer in the intake line will prevent jamming due to hard objects which may get into the tank. A weak link in the drive chain or a shear pin will prevent damage in case the pump does jam. The pump drive should always be disconnected and the solution by-passed when the trailer is being moved to and from the road to be sprayed. The inside of the pump should be spread with a protective coating such as crude oil before handling calcium chloride, and it should be flushed out with clean water after every day in use. With proper protection, the installation will last for at least two years of heavy use.

The need for efficient spreading of calcium chloride is common throughout the country. There are, furthermore, many times when a liquid must spread accurately over the ground or a paved surface.

A carefully designed installation based on a Yale Tri-Rotor Pump is the economical and dependable solution to this problem.

## YALE & TOWNE