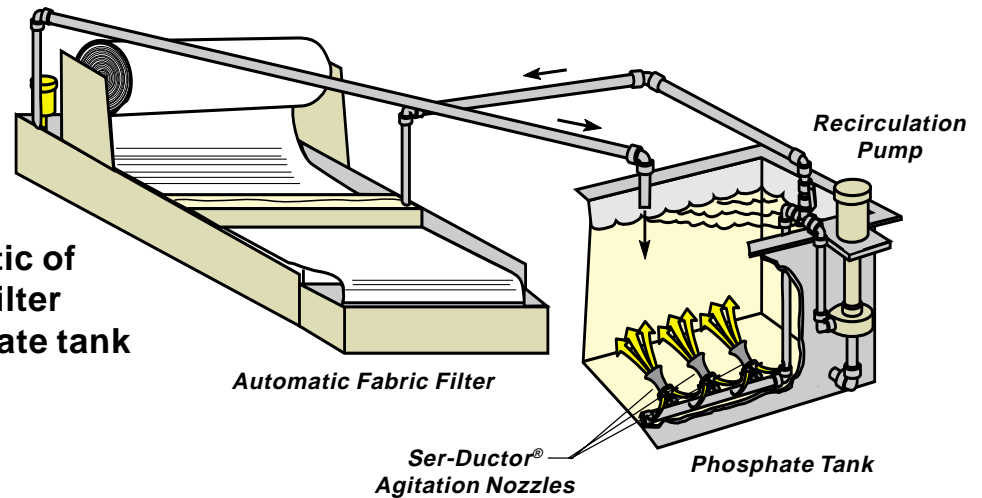


## Installation schematic of Automatic Fabric Filter desludging the phosphate tank



## DESCRIPTION

Phosphating is the surface treatment of bare steel to produce a clean, rust resistant surface, ideally suited for further surface coating with paint or other materials.

Phosphating solutions contain either zinc, iron or manganese phosphate and phosphoric acid with suitable accelerators. During the process, the clean steel parts are immersed in (or sprayed with) the metal phosphate-phosphoric acid bath, iron is dissolved at the surface and a phosphate coating, which is a protective coating as well as a base for further coating, is formed.

## PROBLEM

The operation of these baths requires good chemical control and even application of solution. Chlorate accelerated baths have a high sludging tendency while nitrate accelerated baths have a medium low sludging tendency. The sludge generated will not harm the phosphate process as such, but is detrimental to the operation since it tends to foul heat exchangers by inhibiting heat transfer, as well as plugging circulating pumps and strainers, spray nozzles, etc. Thus, the sludge accumulation results in poor coating quality and lost production because frequent maintenance is required. It must be removed.

## SOLUTION

The solution to the problem of sludge accumulation is simple to achieve. First, an air-less agitation system installed on the phosphate solution reservoir can be used to provide sufficient solution movement to keep the sludge in suspension. The SERFILCO Ser-Ductor air-less agitation system uses a recirculating pump to move the phosphate solution through a series of eductor nozzles which increase solution flow five-fold. Next, an automatic disposable fabric "gravity" filtration system can be used to continuously remove the sludge from solution. The automatic indexing of the media provides "unattended" operation, reducing or eliminating downtime for maintenance and cleaning, and facilitating chemical control of the bath.

Zinc phosphate baths require acid resistant materials such as 316 stainless steel. They generate more sludge than the iron phosphate baths which can be handled with carbon steel and cast iron. Two or more tank turnovers per day using medium porosity media (25 - 40 micron) have proved effective. Either in-tank or out-of-tank pumps may be used to transfer the sludge-laden solutions to the filter and the Ser-Ductor system. Filtrate is returned to the phosphating tank by gravity or by a sump pump in the clean reservoir of the filter.