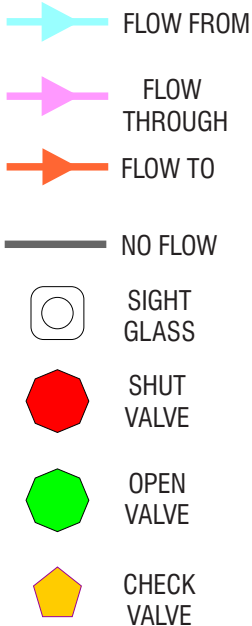
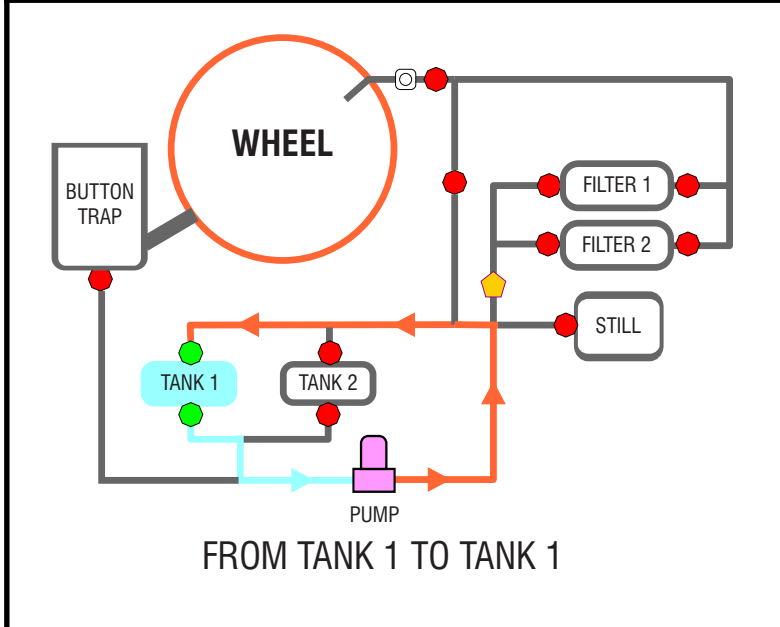


This month, I'll continue on solvent flow by discussing the heart of the solvent flow system, the solvent pump. The solvent pump on most drycleaning machines is a centrifugal-type pump. It is a mechanical device designed to move solvent by a motor rotating a disk-like device called an impeller with vanes on its surface. Fluid enters the rapidly rotating impeller at its center and is cast out by centrifugal force along its circumference through the impeller's vane tips.

## CHECKING PUMP PERFORMANCE



### SETTING UP SOLVENT FLOW PATH

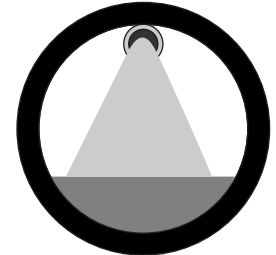


### TANK SIGHT GLASS

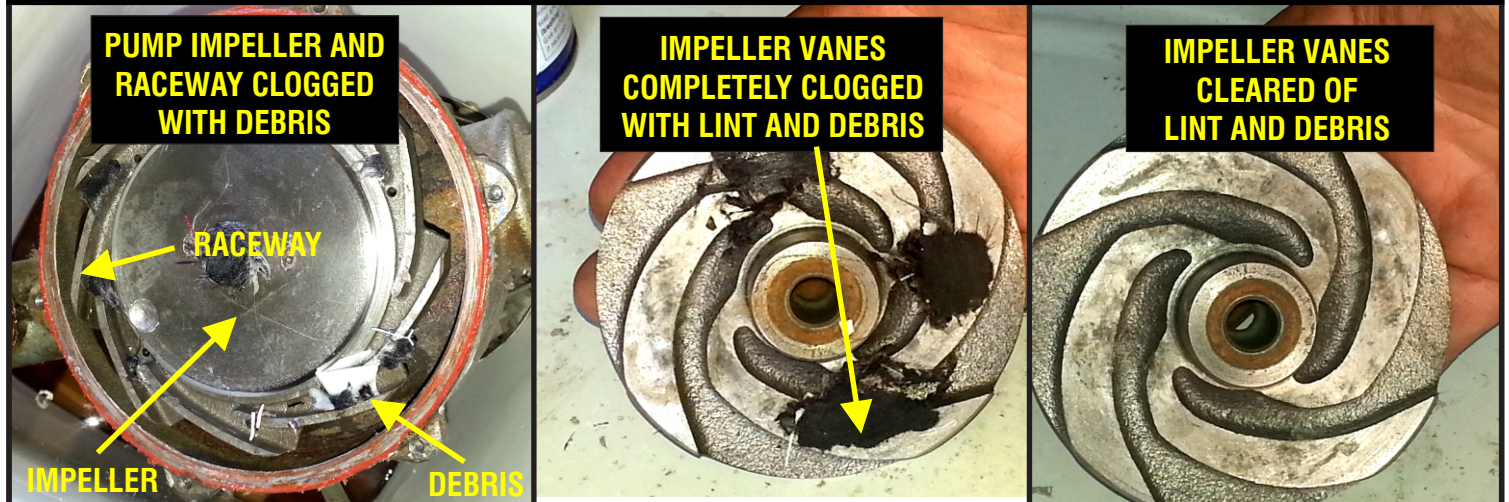
#### LAZY NARROW SPRAY PATTERN



#### FULL POWERFUL SPRAY PATTERN



## HERE'S WHAT THE PUMP INTERNALS LOOK LIKE



### PROBLEMS CAUSED BY PUMP FOULING

As we are all painfully aware, there is no end to the list of junk that solvent washes through the dry cleaning machine. Buttons, lint, pens, pencils, credit cards, collar stays, pins, coins, and the list goes on and on. Hopefully, the button trap strainer will catch most of these objects. As we all know, nothing is 100%, and some debris will get through, and when it does, in most cases, the pump's impeller will chop it up and pass it through to eventually be trapped in the filter or still. However, when the pump can't chew it up and spit it out, the debris often slowly accumulates in the area between the vanes on the pump's impeller. This accumulation is a cascading process (like a snowball rolling downhill); once begun, it will rapidly degrade the pump's performance. The following are the most common symptoms when debris is fouling the solvent pump's impeller, and they fall into two basic categories: electrical and dry cleaning quality.

## ELECTRICAL

**CASE 1**—When an object locks up the impeller, preventing it from rotating, the pump motor's excess current draw almost immediately leads to overload tripping. This results in the machine shutting down and displaying an error message on most dry cleaning machines.

**CASE 2**- When there is a significant debris build-up in the impeller vanes, which "drags" on the motor. After a few minutes of operation, the motor overload will trip, resulting in the machine shutting down and displaying an error message.

**CASE 3**—When debris builds up in the impeller vanes, a reduced flow rate during the drain period results in the solvent level not dropping below the dry cleaning machine basket. Then, when the extract motor turns on, it attempts to spin the basket through the solvent, the extra drag causing the extract motor overload to trip. This debris build-up in the impeller may be in only one or two impeller vanes, leading to intermittent tripping of the extract motor overload.

## CLEANING QUALITY

When debris clogs the impeller, there is a marked decrease in the volume of solvent being moved by the pump. Symptoms of this reduced flow rate can result in any or all of these undesirable effects.

**GREYING (REDEPOSITION)**- With less solvent flushing through the garments in a given time, particulates that would usually be suspended in the solvent and then carried to the filter or still settle back out of suspension onto the garments resulting in greying. Also, suppose the basket attempts to rotate through the solvent remaining in the wheel. In that case, it agitates the solvent, splashing against the tub's sides, thereby washing old accumulated debris onto the garments.

**POOR FILTRATION**- Another symptom of pump problems is poor filtration. Flow rate through the filters is paramount to good cleaning quality. The solvent pump must overcome the filters' resistance to the solvent flow. This resistance is referred to as filter pressure. When the vanes of the solvent pump become fouled, there is a marked reduction in the pump's ability to force solvent through the filter, thereby reducing that vital flow rate with the attendant effects outlined in the preceding paragraph on greying.

## CHECKING PUMP PERFORMANCE

A method I've always found handy to check pump performance is to set up the flow path so solvent is pumped from a tank back to the same tank while watching the spray pattern across the tank sight glass. The area the spray fans out over the sight glass is a good barometer of the solvent pump performance. The accompanying illustrations show the valve setup for the spray pattern check and the pump's internals.

Well, that's it for now. More on valves next time around.

Bruce Grossman is the Chief of R&D for EZtimers Manufacturing. **EZTIMERS MANUFACTURES MACHINES THAT MAKE YOUR MACHINES RUN BETTER.** For those needing to replace **ZERO-WASTE** or **GALAXY** misters, see our **SAHARA** model. For those with boiler problems, check out our EZ-LEVEL and EZ-DOSE machines. For further information on EZtimers products, visit [www.eztimers.com](http://www.eztimers.com). Please address any questions or comments to Bruce at [bruce@eztimers.com](mailto:bruce@eztimers.com) or call 702-376-6693.