

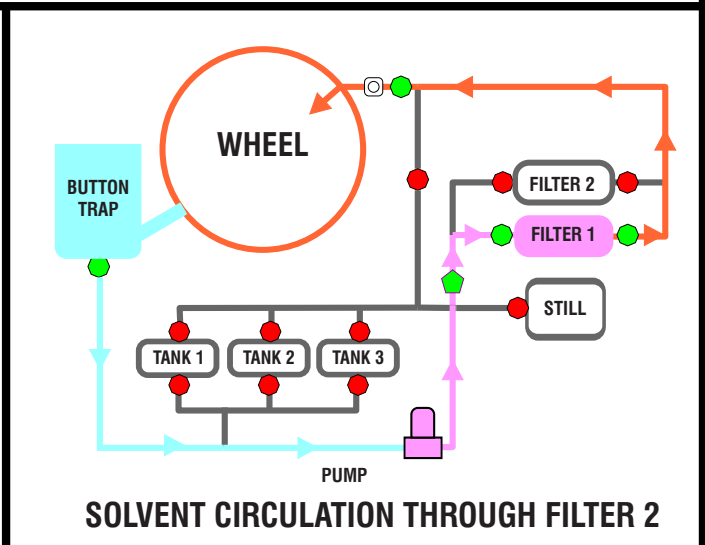
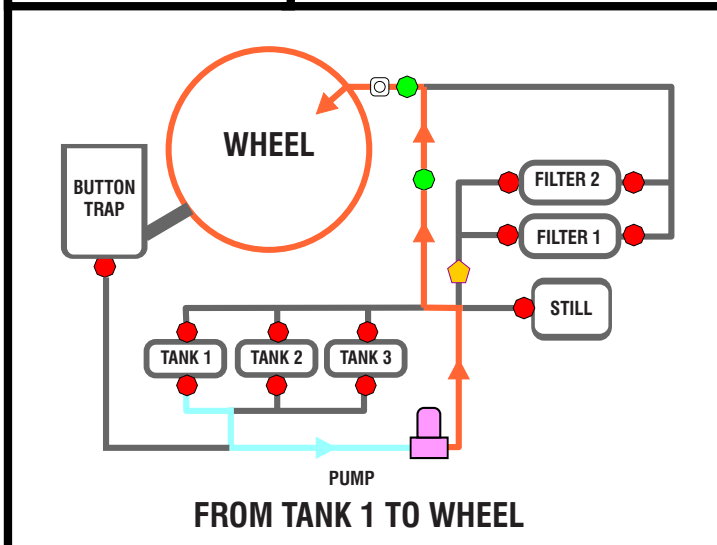
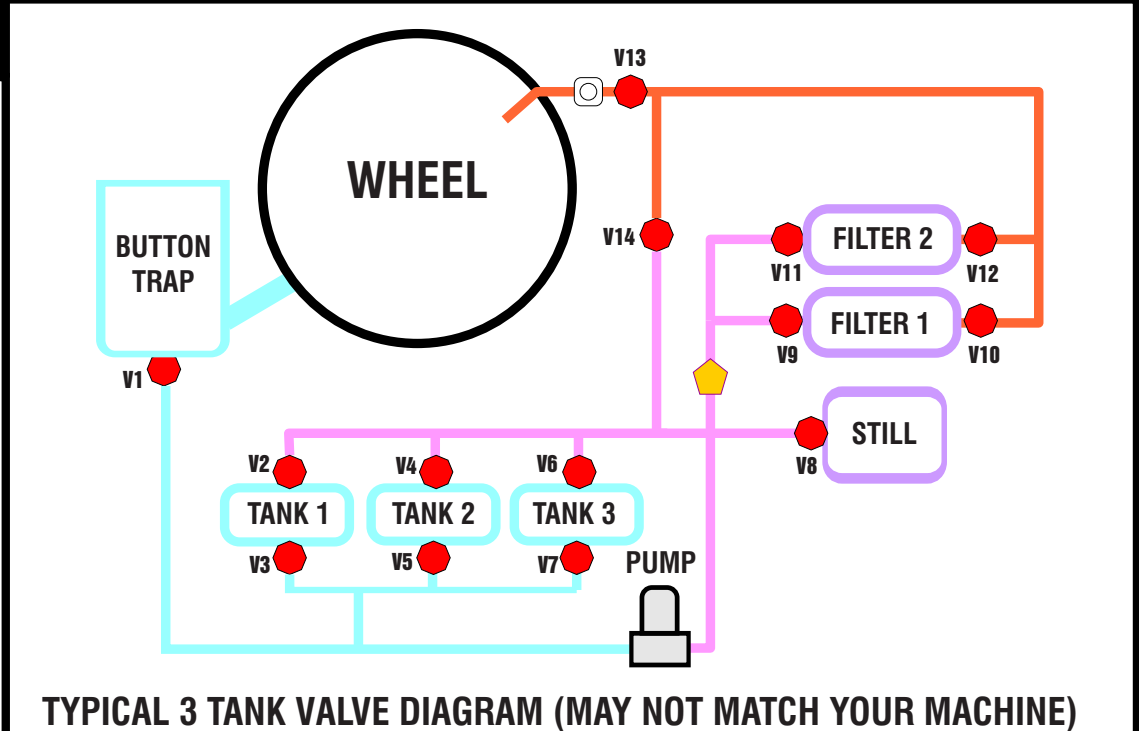
SOLVENT FLOW-1 WHAT'S IT ALL ABOUT

This month, we will explore solvent flow, valves, and some of the problems associated with them in the dry cleaning process.

To begin with, what is solvent flow, and what is solvent? In the dry cleaning sense, a solvent is a liquid that is pumped or flushed through the garments to remove dirt and debris.

SOLVENT FLOW OPERATIONS

LEGEND



WHAT DOES SOLVENT DO?

Solvent accomplishes at least two major tasks:

1. Solvent dissolves oils, waxes, grease, and a long list of soluble soil, also called non-volatiles (dissolved compounds that will not evaporate with the solvent). Generally, the solvent itself can dissolve these compounds. However, another common soil family is sugars (often called sweet stains), which don't dissolve in pure solvent but readily dissolve in water. Unfortunately, most common solvents are not miscible with water (won't mix, similar to oil and water) in their pure form. To overcome this immiscibility, a detergent (sometimes called soap) is added to allow the solvent to carry enough water to dissolve the sugar stains.
2. The solvent flushes what's known as particulate soil from the garments. Particulates are dust, lint, hair, and more or less any solid matter that doesn't dissolve in the solvent. Once the particulates are released from the garment, it is essential to keep them suspended in the solvent so they don't fall back onto the fabric. (This undesirable condition is called redeposition or greying). Detergent is vital in keeping these particulates suspended until they can be removed from the system through filtration or distillation.

WHY IS SOLVENT FLOW IMPORTANT?

Think about the qualities of solvent enumerated in the preceding paragraphs. Both are deeply dependent on the volume of solvent circulated through the garments.

1. The more solvent that comes in contact with the dissolved soil, the greater the amount of soluble soil dissolved and removed. Think of how much sooner sugar will dissolve in the coffee if the coffee is stirred rather than sitting still. This process is called the flow rate, or solvent changes per minute moved through the dry cleaning system and depends on the solvent volume over a measured period of time passed through the garments.
2. After the particulates are flushed from the garments and held in suspension, moving them out of contact with the garments is essential to avoid redeposition. The particulate-laden solvent is pumped through a filter of one type or another or into a still for purification. The more passes through the filter or the faster the solvent moves, the less chance exists to redeposit the soil.

The following is a list of common symptoms associated with problems with solvent and solvent flow affecting cleaning quality and how to diagnose them:

POOR SPOT REMOVAL AND EXCESSIVE REDEPOSITION

There are several causes of this type of inferior cleaning performance.

- 1. Detergent charge-** A low concentration of detergent commonly leads to this problem. In most cases, it's unlikely to be able to test for detergent concentration, so add an extra detergent dose manually to a load and look for any improvement. Also, monitor the performance of the detergent injector to be sure it's adding the proper volume.
- 2. Flow rate-** Low flow rate is likely the foremost cause of this type of problem. A rule of thumb for checking the flow rate is that it should take 1 minute to fill the wheel till operating level. A method I've always found handy 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. Often lint, staples, safety pins, and all kinds of detritus clog up vanes on the pump impellor, degrading but not entirely stopping the solvent flow, which affects the solvent spray pattern.

High filter pressure- As I wrote earlier, in most cases, solvent is pumped through some type of filter to remove particulate soil. High filter pressure indicates poor filter performance and results in poor cleaning results. The following are common causes of this type of fault.

Excessive debris build-up on filtration surfaces and excessive moisture in the solvent- More frequent filter replacement in the case of cartridge filters or spinning disk filters more often may rectify this problem. If the previous procedure didn't correct the situation, try cleaning large loads of towels or comforters to adsorb moisture. If the filter pressure drops, excessive water in the solvent is likely the cause, and its source must be