

*"Unparalleled Delivery Times on Custom and Standard Filtration Products"*



## Solving Problems IS OUR BUSINESS

Solving problems is our business. If a hydraulic system goes down, we want to be your first call for help. Knowing that up to 90% of all downtime is caused by contamination, we have a solution in most cases. Contamination is anything that doesn't belong in the system and our strainers and filters are designed to lessen the load so your operation can continue to be smooth and efficient. Check us out to see how we can help. You may find the cost is minimal with maximum results.



## Importance of Lubrication

Lubrication maintains a fluid film between solid surfaces to prevent their physical contact. Lubricants reduce friction, prevent wear, act as a coolant for moving parts, act as a barrier under load pressure, prevent adhesion or galling of materials, and prevent corrosion. For these reasons it is important to understand lubrication.

### What do you think, True or False?

1. **Synthetic lubricants** are generally higher priced than petroleum lubricants. T\_\_ F\_\_
2. **Lubrication contamination** is the main cause of mechanical system failure. T\_\_ F\_\_
3. **Animal and vegetable oils** are used mostly in the food industry. T\_\_ F\_\_
4. **A 10 weight oil** is thicker than a 40 weight oil. T\_\_ F\_\_
5. **Under basic conditions**, as the temperature of oils increases, their viscosity also increases. T\_\_ F\_\_

See answers on back

## FOCUS ON Fluid Power Fundamentals



Because we care about our customers and want you to be the most well informed customers, we encourage you to go to the Hydraulics & Pneumatics website and consider downloading the excellent e-book, "FOCUS ON: Fluid Power Fundamentals." This is an excellent reference for anyone in the fluid power industry.

[www.hydraulicspneumatics.com](http://www.hydraulicspneumatics.com)

## EMPHASIZE YOUR Customers' Filtration Needs

In today's business climate it seems there is a struggle for every piece of business to be found. However, searching for new markets for your products could yield a gold mine. When you do find that new market, as well as, your current markets, placing emphasis on your customers' filtration needs becomes all the more important. Proper filtration helps maintain system components, which helps them "live" longer, which helps save money. It is a win-win situation. Remember, the "Best Cure Is Prevention."



# A Simplified Study in Filtration

PART 3 OF 10

## Common Terms Used with Contamination Causes and Issues in a Hydraulic System

What is listed below in Part 3 are the most common terms used in connection with contamination causes and issues in a hydraulic system.

**Abrasion.** Believe it or not, there are actually solid particles in the hydraulic fluid. These are grinding between moving surfaces and causing wear on the system. Through constant abrasion of these particles more abrasive particles are created.

**Erosion.** This is very much like abrasion. The difference is when all the high speed, abrasive particles attack the surfaces, it causes damage and erosion.

**Adhesion.** When metal moves against metal then adhesion or cohesion can occur. This will cause components to stick.

**Fatigue.** Parts can become stressed, either through age, type of work, or contamination in the system. Fatigue can also cause contamination, which, in turn, can cause fatigue. It can be a vicious cycle.

**Cavitation.** If flow to the pump becomes restricted, either by the oil being too thick, a plugged inlet filter, too small of an inlet line, too many elbows in the inlet line, or even the pump

could be mounted too high above the reservoir, then cavitation can occur by causing excessive vacuum. Bubbles in the fluid will form and collapse which will rip away portions of the metal surfaces of the pump.

**Corrosion.** A surface can deteriorate due to corrosion (like rust) due to foreign substances in the fluid, even water, for example.

**Aeration.** If there are particles that are too large to pass through clearances between moving parts, they will sit at the opening to these moving parts and form excessive gas bubbles in the fluid. This will obstruct flow from passing through the moving parts, which will jam components.

**Viscosity.** A measure of a fluid's resistance to flow.

**Viscosity, SUS.** Saybolt Universal Seconds (SUS), which is the time in seconds for 60 ml of oil to flow through a standard orifice at a given temperature. Often abbreviated SSU. Standard hydraulic fluid is 150 SUS or 10 weight oil.

Next time, in Part 4, we will explore the filter placement locations in a typical hydraulic system. Stay tuned.