



SPIC-AND-SPAN

Keeping Your Hydraulic System Healthy

www.westsidetractorsales.com   

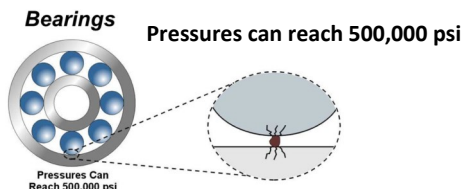
Hydraulic systems are the life blood of your equipment, and should be treated as such. Machines are designed to operate with specific oils to achieve extended component reliability. You need to know the oil signature of a brand of oil you are using, and make sure the oil you plan on putting in the machine, meets or exceeds the recommended oil. This information can be found in the operator's manual supplied during delivery.

Pouring oil out of a pail that has dirt on it, or using a dirty funnel is a bad practice. Most damage to hydraulic systems comes from 6-8 micron particles that are in the system. Typical hydraulic systems are not designed to remove these smaller items due to the fact that if the manufacturer installed a small micron filter, the oil flow alone will damage the filter. So it is up to you to not let them enter the system. If contamination occurs, you need to use a low micron/low flow filter system to remove the small particles.

Think about what happens when you have debris in your hydraulic system; the oil is moving around the system at a great speed like a sander. When the debris hits metal corners, it will wear off more metal particles doubling the amount of debris in the system. The filter is not designed to remove the finer particles, so the system will continually generate higher levels of contamination. Particles can do more damage than just wearing items. It can fracture bearings if left alone. The pressure on bearings when you get a hard particle between the bearing and the race can do significant damage to the bearing due to high pressures at the point of impact.

Another thing you may want to watch out for is cavitation/aeration. Air in the system can cause a lot of damage in ways you may not think about. Yes it does cause the oil to lose its lubricity properties, and cause cylinders to feel spongy. But the more damaging affect is the result of dieseling. When a hydraulic system is operating at high pressures it generates a lot of heat, and the oil is basically a fuel source. All you need to add is oxygen and you have a combustion engine. The explosion in the cylinders and pump can do a lot of damage, so you need to find the source and correct it immediately.

Air is most often introduced to the hydraulic system through the suction side of the system, like a loose suction hose or low oil levels. But sometimes it may be the result of a plugged suction screen, or a faulty cylinder.



Hydraulic cylinders, motors, and pumps usually have some form of a wiper seal on them. They may be part of the seal design, or a separate part all together. This wiper does more than keep the shaft clean, it also keep dirt out of the system. An oil seal is designed to keep the oil in, so if the wiper is missing or damaged, it will let dirt into the system past the seal. This also applies to a damaged cylinders that have scars on the piston rods. Every time it goes in and out, it gives a path for contamination to enter your system

Attachments are also an area that most people do not look at for contamination. If you have an attachment that is used on multiple units, then you have a chance of cross contamination. Some attachments can hold up to 5 gals or more of oil in them along with the lines. It is important to keep connectors clean and free of dirt when connecting the attachment.

Water in oil can lessen the lubricity of your oil along with causing rust to form on items not submerged in oil at all times. In the winter it will freeze and expand, doing a lot of damage to the housings on your machine.

Installing a new hose on a machine sounds harmless enough, but is your new hose clean? Newly fabricated hoses should be cleaned to remove internal debris. If you have a hose fabricated and then it rolls around in the back of a service truck for a few days uncapped, you are most likely installing a dirty hose that will introduce a lot of contamination the minute oil flows through it. You must keep lines capped if stored for later use. A plastic bag over the end and secured is a suitable alternative to no cap at all.

Oil scans are in most cases a great investment if done correctly. The first step is to start taking a good sample at a predetermined schedule to get a trend of that particular machine. The value of having a trend is that the oil scan company/equipment manager will base their recommendations off the machine trend, and not from what an average machine should look like. If your machine always shows a low iron count, and then one sample shows up with an elevated iron count, even though it is still in specification, they will suggest testing the machine to find the source. It will allow you the chance to eliminate down time and expensive repairs by letting you repair the problem before it goes catastrophic. Another important thing is to make sure you are pulling a good sample. John Deere has live sample ports available for most of their equipment. They allow the sample to be pulled from the system, just prior to the filter. If you plan on pulling the sample out of the hydraulic tank, then you want to pull it out of the center of the tank, immediately after shutting it down. The longer you wait; the particles will fall to the bottom of the tank and distort your sample. Same goes for pulling the sample off the bottom.



Pitting on this plate was due to dieseling on the pump valve plate

Written by John Driscoll,
Service Manager and Trainer
for West Side Tractor Sales and
Rail Construction Equipment



JOHN DEERE