

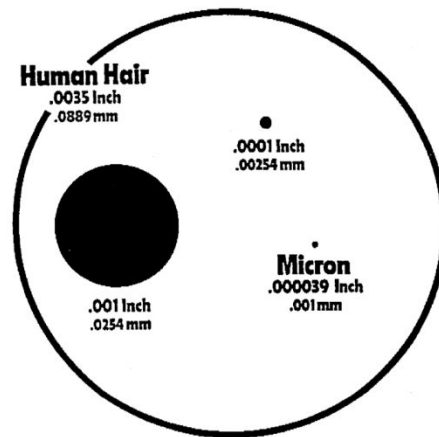


Hydraulic System Contamination

The number one cause for failure in a hydraulic system is contamination. It is important to know the possible sources of these contaminants and how to prevent exposure to them. Let's begin with knowing the quality of the hydraulic oil as it is delivered to you. Your Schramm drill rig uses 7 Micron filters to maintain the proper cleanliness level in the system. It has been stated that oil from suppliers can vary from a cleanliness level of 25 to 100 microns. In order to maintain the 7-micron level, Schramm rigs have been outfitted with a hand pump to add new oil to your system. The pump is connected to one of the in-tank filters with a check valve inline to prevent backflow when running. There is also a 1" JIC port between the hand pump and the filter to allow for an air pump connection for a fast fill. Either way, the oil is filtered to 7 microns prior to introduction to the hydraulic reservoir.

Recognizing the fact that most drill sites are not the most environmentally friendly conditions to expose to a hydraulic system, you must always clean all surrounding areas before performing any work that involves breaking a hose connection or replacing a component in the circuit. Always use clean caps and plugs to cover hose connections while servicing. Cleaning the rig several times a year should be part of your preventative maintenance program. This gives you the opportunity to investigate and repair leaks in the system. If oil will leak out under pressure there is always a risk for contaminants to enter through the leak area when the system is at rest. Repairing observed leaks will also provide a safer working environment and may prevent downtime due to a poor hose condition or worse yet an inexpensive O-ring that stops the drilling production.

How big is a Micron?



With consideration of the working environment, you should also inspect all of the boots over the handles of the directional control valves and the hydraulic remote controls (HRC's). Should the boots be torn it will allow dust to settle on the spools or poppets of these components. This dust is typically the equivalent of sandpaper and will attack the seals as the spools move in and out eventually creating a leak. Even worse is the risk of a poppet sticking in the engaged position on an HRC causing a function to continue its operation after you have placed the handle in the neutral position.

Hoses are an additional consideration for the cause of contamination. Hose manufacturers state the typical life span of a hose is at 10,000 hours of service. Hoses that are installed improperly will have a twist internally that will cause premature wear even with well-filtered oil. This can occur from velocity changes of oil flow between the inside and outside dimensions of the curve in a hose. Think about the hoses that are replaced often. The traveling hoses in the mast for the rotation gearbox come to mind. When these hoses start to wear on the inside, these small rubber particles may cause the tolerance cartridges in the system to stick.

Remember to always use two wrenches when installing hoses to prevent twisting. Use extreme care when using sealing aids such as; pipe dope, Loctite products, or Teflon tape. Although not recommended we do recognize its use. All of these items have been found by Schramm Service personnel as a contributing factor to a hydraulic system component failure.