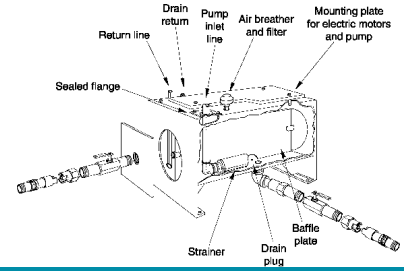


# Maintenance of Hydraulics

## “TOOL BOX TALK”

Maintenance Supervisors should use this tool to train their maintenance techs,  
10-20 minutes – Post in the Maintenance Shop after use



### **General Rules which must be followed:** (if you want to stop self induced failures)

1. Never apply hydraulic fluid into a hydraulic reservoir without filtering the oil first, to the requirement of the component requiring the lowest micron rating. Hydraulic Fluid is delivered contaminated (unless you pay extra and specify it) and must be filtered or premature component failure will occur.
2. Never allows one's hands to touch the outside of a hydraulic filter insert. Your hands are contaminated. If your filter is a 10 micron filter, 25 microns is the size of a white blood cell, just a thought.
3. Never allow a hydraulic hose to be stored without haven been flushed clean and both ends sealed or capped. Remember contamination.
4. When installing a new hydraulic pump (which is not submerged in the reservoir), always allow oil to flow into the pump and then rotate by hand until oil flows out the pressure side of the pump and tighten fittings and start up” would read better as “always allow oil to flow into the pump and then rotate by hand until oil flows out the pressure side of the pump before tightening fittings and start up”. Allowing hot oil into a cold pump will either cause the pump to fail immediately or will reduce life by allowing small medal parts to expand rapidly and scratch the inside of the pump.
5. Be sure and change the zinc anodes in your water cooled heat exchanger every 3-6 months to insure the copper tubing does not fail due to galvanic corrosion.
6. Insure all hydraulic fluid is kept under a water free shelter or with rubber covers over the drums. When water and dust settles on a drum, if the drum is not covered, the drum expands during the heat of the day and draws a vacuum at night pulling in water and contamination.
7. Oil sampling is a must and should be taken using a procedure and sample valve on the return line or mid level of the reservoir on the return side of the baffles.

8. Ensure maintenance techs are trained and used effective procedures on all of the above items.
9. Only a small portion of maintenance techs should possess the knowledge of troubleshooting hydraulics systems unless a troubleshooting guide is developed and taught to everyone.

### **Hydraulic Component Most Common Failure Mode:**

- **Valve Malfunction – Failure of a servo or proportional valve to provide the specified control or pressure. Failure of directional valves to move when properly energized (sticking). Failure of check valves to effectively control flow in specified direction.**
  - One cause is contaminated fluid as stated in the “General Rules” of this document.
  - Another cause could be low oil viscosity caused by hydraulic fluid over 145 degree F (with most petroleum based hydraulic fluids) or could be caused by water in the oil which typically is introduced by a water cooled heat exchanger or hydraulic oil stored outside without overhead cover.
- **Wear– Failure of a hydraulic pump to provide adequate pressure or flow. Failure of hydraulic motors to provide adequate force and rate.**
  - One cause of wear is contamination of the hydraulic fluid as stated in the “General Rules” of this document.
  - Another cause of wear is due to lack of lubrication caused when either the oil is burnt (not kept at around 125 degrees F for most petroleum based hydraulic fluids), water in oil coming from water cooled heat exchangers or hydraulic fluid stored outside with overhead cover.

If you have questions send me an email at [rsmith@gpallied.com](mailto:rsmith@gpallied.com)