

# HYDRAULIC PUMP TROUBLESHOOTING GUIDE

CONDITION	LIKELY CAUSE	CORRECTION	
<b>No oil flow from pump.</b>	No oil in reservoir.	Fill reservoir with approved fluid.	
	Closed shut-off valve.	Open valve.	
	Air lock in pump inlet hose.	Use compressed air to pressurize reservoir while running pump or fill inlet hose with oil from the pump end.	
	Pump is wrong rotation for application.	Replace or re-configure pump to correct rotation.	
	Hoses are reversed.	Change inlet and pressure hose locations.	
	PTO not engaged.	See "PTO Troubleshooting."	
	Pump worn or damaged.	Repair or replace pump.	
<b>Pump will not build/hold pressure.</b>	Relief valve improperly set.	Adjust relief valve to manufacturer's specification.	
	Relief valve stuck open.	Remove, clean, and re-set to specification.	
	Pump worn or damaged.	Repair or replace pump.	
<b>Pump is noisy.</b>	Aeration (air in system).	See "Oil foaming."	
	Cavitation (Cavitation is caused by excessive vacuum at the pump inlet. Test with a vacuum gauge at the inlet port. Gauge should register under 5 in. Hg. at normal operating speed.)	Increase inlet hose size; Re-route inlet hose; Check for kinked or collapsed inlet hose; Check for clogged reservoir breather or strainer; Inlet hose should be S.A.E. type 100R4 hose only.	
<b>Pump leaks: At shaft seal.</b>	Dirt under seal.	Replace seal. Examine pump shaft for scoring.	
	Damaged seal or pump body.	Replace seal or body section.	
	Improperly fitted seal.	Replace seal.	
	<b>At body section.</b>	Damaged o'ring or body.	Replace o'ring or body section.
		Improperly torqued bolts.	Torque to specification.
	<b>At pump port.*</b>	Loose fitting.	Tighten fitting.
		Damaged fitting.	Replace fitting.
*DO NOT USE TEFLON TAPE ON PIPE THREAD FITTINGS	Damaged pump body.	Replace body section.	
<b>Pump is hot.</b> [Oil temperature should not exceed 140° F (60° C)]	Low oil level.	Fill reservoir.	
	Reservoir too small.	Increase reservoir size.	
	Dirty oil.	Replace oil and filter.	
	Relief valve stuck open.	Remove, clean, and re-set. Adjust relief valve to manufacturer's specification.	
	Relief valve improperly set.	Review application.	
	Pump too large for application.	Replace with correct model.	
	Undersized system component.	Review application. Replace with correct model.	
	Improper weight oil.	Replace with correct oil.	
<b>Oil foaming.</b>	Low oil level.	Fill reservoir.	
	Loose inlet fitting.	Tighten fitting.	
	Damaged shaft seal.	Replace seal.	
	Leak in inlet hose.	Replace hose.	
	Improper tank baffle.	Install baffle or diffuser.	

# **COMMON ERRORS**

## **HERE ARE TYPICAL AND CHRONIC HYDRAULIC PROBLEMS**

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- I. Systems are not adequately protected from contamination, causing excessive wear, hydraulic inefficiency & premature failure. STILL the most frequent cause of hydraulic system failure.**
- II. Systems often have the wrong oil, causing oil to...**
  - A. Be replaced more often.
  - B. Create heat from high viscosity (oil too thick) sluggishness, or from cavitation.
  - C. Create heat from low viscosity (oil too thin), causing excessive slippage, poor efficiency, and component wear.
- III. System operators are not trained to recognize...**
  - A. When the system requires servicing.
  - B. When they are damaging the system by forcing flow over relief.
  - C. How much damage they can inflict.
  - D. When systems should be disengaged.
- IV. Replacement pumps are often larger in displacement than they need to be. As a result, they...**
  - A. Require higher input torque than necessary.
  - B. Operate at less efficient speeds.
  - C. Create more heat.
  - D. May cause transmission torque converter slippage.
- V. Hydraulic lines and hoses are too small, or are the wrong type. Because of this, they...**
  - A. Require additional horsepower to compensate for the pressure losses in the system.
  - B. Create heat, which damages hoses and oil, requiring both to be replaced more often than should be necessary.
  - C. Restrict the amount of oil which can flow without turbulence, causing cavitation, aeration, and heat.
  - D. Collapse or burst, making the system fail.
  - E. Create higher system neutral pressure and higher operating pressure.
- VI. Systems are not calibrated, and are often set up improperly.**
  - A. Relief valve set either too high, not protecting components, or too low, cycling unnecessarily.
  - B. Relief valve isolated by quick disconnect, eliminating protection.
  - C. Incorrect circuit continuity.
- VII. Improperly installed drivelines cause vibration, noise, seal leakage, contamination, and pump shaft damage.**
  - A. Allows dirt to invade seal area by distorting seal.
  - B. Allows dirt to abrade the shaft seal area, requiring shaft replacement.
- VIII. Systems are operated without any oil, or with the supply valve closed.**
- IX. Systems are not disengaged after use, causing excessive heat.**
- X. System Breathers become clogged or are inadequate, resulting in cavitation.**