

General Fluid Power Troubleshooting Charts

Use the charts on the following pages to help in listing all the possible causes of trouble when you begin diagnosing and testing a machine. Once you have located the cause, check the item in the chart again for the possible remedy. The technical manual for each machine supplements these charts by giving more detailed and specific causes and remedies.

System Inoperative

Possible Causes:	Remedy:
No oil in system.	Fill to full mark. Check system for leaks.
Oil low in reservoir.	Check level and fill to full mark. Check system for leaks.
Oil of wrong viscosity.	Refer to specifications for proper viscosity.
Filter dirty or plugged.	Drain oil and replace filters. Try to find source of contamination.
Restriction in system.	Oil lines could be dirty or have inner walls that are collapsing, cutting off oil supply. Clean or replace lines. Clean orifices.
Air leaks in suction line.	Repair or replace lines.
Dirt in pump.	Clean and repair pump. If necessary, drain and flush hydraulic system. Try to find source of contamination.
Badly worn pump.	Repair or replace pump. Check for problems causing pump wear such as misalignment or contaminated oil.
Badly worn components.	Examine and test valves, motors, cylinders, etc. for external and internal leaks. If wear is abnormal, try to locate the cause.
Oil leak in pressure lines.	Tighten fittings or replace defective lines. Examine mating surfaces on couplers for irregularities.
Components not properly adjusted.	Refer to machine technical manual for proper adjustment of components.
Relief valve defective.	Test relief valves to make sure they are opening at their rated pressure. Examine seals for damage that could cause leaks. Clean relief valves and check for broken springs, etc.
Pump rotating in wrong direction.	Reverse to prevent damage.
Excessive load on system.	Check specification of unit for load limits.
Hoses attached improperly.	Attach properly and tighten securely.
Slipping or broken pump drive.	Replace couplers or belts if necessary. Align them and adjust tension.
Pump not operating.	Check for shut-off device on pump or pump drive.

System Operates Erratically

Possible Causes:	Remedy:
Air in system.	Examine suction side of system for leaks. Make sure oil level is correct. Oil leaks on the pressure side of system could account for loss of oil.
Cold oil.	Viscosity of oil may be too high at start of warm-up period. Allow oil to warm up to operating temperature before using hydraulic functions.
Components sticking or binding.	Check for dirt or gummy deposits. If contaminated, try to find the source of contamination. Check for worn or bent parts.
Pump damaged.	Check for broken or worn parts. Determine cause of pump damage.
Dirt in relief valves.	Clean relief valves or replace.
Restriction in filter or suction line.	Suction line could be dirty or have inner walls that are collapsing, cutting off oil supply. Clean or replace suction line. Also, check filter line for restrictions.

Fluid Power General Troubleshooting

Overheating of Oil in System

Possible Causes:	Remedy:
Operator holds control valves in power position too long, causing relief valve to open.	Return control lever to neutral position when not in use.
Using incorrect oil.	Use oil recommended by manufacturer. Be sure oil viscosity is correct.
Low oil level.	Fill reservoir. Look for leaks.
Dirty oil.	Drain and refill with clean oil. Look for source of contamination and replace filters.
Engine running too fast.	Reset governor or reduce throttle.
Incorrect relief valve pressure.	Check pressure and clean or replace relief valves.
Internal component oil leakage.	Examine and test valves, cylinders, motors, etc. for external and internal leaks. If wear is abnormal, try to locate cause.
Restriction in pump suction line.	Clean or replace.
Dented, obstructed or undersized oil lines.	Replace defective or undersized oil lines. Remove obstructions.
Oil cooler malfunctioning.	Clean or repair.
Control valve stuck open.	Free all spools so that they return to neutral position.
Heat not radiating properly.	Clean dirt and mud from reservoir, oil lines, coolers, and other components.
Automatic unloading control inoperative (if equipped).	Repair valve.

System Operates Slowly

Possible Causes:	Remedy:
Cold oil.	Allow oil to warm up before operating machine.
Oil viscosity too heavy.	Use oil recommended by the manufacturer.
Insufficient engine speed.	Refer to operator's manual for recommended speed. If machine has a governor, it may need adjustment.
Low oil supply.	Check reservoir and add oil if necessary. Check system for leaks that could cause loss of oil.
Adjustable orifice restricted too much.	Back out orifice and adjust it. Check machine specifications for proper setting.
Air in system.	Check suction side of the system for leaks.
Badly worn pump.	Repair or replace pump. Check for problems causing pump wear such as misalignment or contaminated oil.
Restriction in suction line or filter.	Suction line could be dirty or have inner walls that are collapsing to cut off oil supply. Clean or replace suction line. Examine filter for plugging.
Relief valves not properly set or leaking.	Test relief valves to make sure they are opening at their rated pressure. Examine valves for damaged seats that could leak.
Badly worn components.	Examine and test valves, motors, cylinders, etc. for external and internal leaks. If wear is abnormal, try to locate the cause.
Valve or regulators plugged.	Clean dirt from components. Clean orifices. Check for source of dirt and correct.
Oil leak in pressure lines.	Tighten fittings or replace defective lines. Examine mating surfaces on couplers for irregularities.
Components not properly adjusted.	Refer to machine technical manual for proper adjustment of components.



System Operates Too Fast

Possible Causes:	Remedy:
Adjustable orifice installed backward or not installed.	Install orifice parts correctly and adjust.
Obstruction or dirt under seat of orifice.	Remove foreign material. Readjust orifice.
Overspeeding of engine.	Refer to operator's manual for recommended speed. If machine has a governor, it may need adjustment.

Foaming of Oil in System

Possible Causes:	Remedy:
Low oil level.	Fill reservoir. Look for leaks. Drain and replace oil.
Water in oil.	Check filler breather on reservoir. Heat exchanger may be cracked.
Wrong kind of oil being used.	Use oil recommended by manufacturer.
Air leak in line from reservoir to pump.	Tighten or replace suction line.
Kink or dent in oil lines.	Replace oil lines.
Worn pump shaft seal.	Clean sealing area and replace seal. Check oil for contamination or pump for misalignment.

Pump Makes Noise

Possible Causes:	Remedy:
Low oil level.	Fill reservoir. Check system for leaks.
Oil viscosity too high.	Change to lighter oil.
Pump speed too fast.	Operate pump at recommended speed.
Suction line plugged or pinched.	Clean or replace line between reservoir and pump.
Sludge and dirt in pump.	Disassemble and inspect pump and lines. Clean hydraulic system. Determine cause of dirt.
Reservoir air vent plugged.	Remove breather cap, flush, and clean air vent.
Air in oil.	Tighten or replace suction line. Check system for leaks. Replace pump shaft seal.
Worn or scored pump bearings or shafts.	Replace worn parts or complete pump if parts are badly worn or scored. Determine cause of scoring.
Inlet screen plugged.	Clean screen.
Broken or damaged pump parts.	Repair pump. Look for cause of damage such as contamination or too much pressure.
Sticking or binding parts.	Repair binding parts. Clean parts and change oil if necessary.

Pump Leaks Oil

Possible Causes:	Remedy:
Damaged seal around drive shaft.	Tighten packing or replace seal. Trouble may be caused by contaminated oil. Check oil for abrasives and clean entire hydraulic system. Try to locate source of contamination. Check the pump drive shaft. Misalignment could cause the seal to wear. If shaft is not aligned, check the pump for other damage.
Loose or broken pump parts.	Make sure all bolts and fittings are tight. Check gaskets. Examine pump castings for cracks. If pump is cracked, look for a cause like too much pressure or hoses that are attached incorrectly.

Fluid Power General Troubleshooting

Load Drops with Control Valve in Neutral Position

Possible Causes:	Remedy:
Leaking or broken oil lines from control valve to cylinder.	Check for leaks. Tighten or replace lines. Examine mating surfaces on couplers for irregularities.
Oil leaking past cylinder packings or O-rings.	Replace worn parts. If wear is caused by contamination, clean hydraulic system and determine the contamination source.
Oil leaking past control valve or relief valves.	Clean or replace valves. Wear may be caused by contamination. Clean hydraulic system and determine the contamination source.
Oil leaking past load holding valve.	Check for proper adjustment. Remove and replace cartridge with spare. (Support boom before removing cartridge.) Do not attempt to repair.
Control lever not centering when released.	Check linkage for binding. Make sure valve is properly adjusted and has no broken or binding parts.

Control Valve Sticks or Works Hard

Possible Causes:	Remedy:
Misalignment or seizing of control linkage.	Correct misalignment. Lubricate linkage joints.
Tie bolts too tight (on valve stacks).	Use manufacturer's recommendation to adjust tie bolt torque.
Valve broken or scored internally.	Repair broken or scored parts. Locate source of contamination that caused scoring.

Control Valve Leaks Oil

Possible Causes:	Remedy:
Tie bolts too loose (on valve stacks).	Use manufacturer's recommendation to adjust tie bolt torque.
Worn or damaged O-rings.	Replace O-rings, especially between valve stacks. If contamination has caused O-rings to wear, clean system and look for source of contamination.
Broken valve parts.	If valve is cracked, look for a cause like too much pressure or pipe fittings that are over tightened.

Cylinders Leak Oil

Possible Causes:	Remedy:
Damaged cylinder barrel.	Replace cylinder barrel. Correct cause of barrel damage.
Rod seal leaking.	Replace seal. If contamination caused seal to wear, look for source. Wear may be caused by external as well as internal contaminants. Check piston rod for scratches or misalignment.
Loose parts.	Tighten parts until leakage has stopped.
Piston rod damaged.	Check rod for nicks or scratches that could cause seal damage or allow oil leakage. Replace defective rods.

Cylinders Lower when Control Valve is in "Slow Raise" Position

Possible Causes:	Remedy:
Damaged check valve in lift circuit.	Repair or replace check valve.
Leaking cylinder packing.	Replace packing. Check oil for contamination that could cause wear. Check alignment of cylinder.
Leaking lines or fittings to cylinder.	Check and tighten. Examine mating surfaces on couplers for irregularities.

