

## TROUBLE SHOOTING FOR HYDRAULICS

### CAUSES

### REMEDIES

#### A-PUMP UNUSUALLY NOISY OR CAVITATION

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|---|---|
| 1. Low oil supply.  | 1. Fill oil to proper level.  |
| 2. Oil too heavy.   | 2. Change to proper weight oil.   |
| 3. Dirty oil filter   | 3. Clean and replace filter element.  |
| 4. Suction line too small.  | 4. Increase size of suction line.   |
| 5. Restriction or partially clogged suction line.   | 5. Remove restriction in suction line.  |
| 6. Clogged suction or sump filter.  | 6. Clean out filter or replace element.   |
| 7. Air bubbles in intake oil.   | 7. Use non-foaming hydraulic oil.   |
| 8. Reservoir air vent plugged.  | 8. Air must be allowed to breathe into reservoir. Clean out or replace breather.                    |
| 9. Pump running too fast.   | 9. Check recommended maximum speeds, and get bigger pump, or reduce speed.                          |
| 10. Air leaks at pump intake piping joint or at pump shaft packing or inlet pipe opening. | 10. Test by pouring oil on joints while listening for change in sound of operation. Tighten joints. |
| 11. Flexible coupling misalignment.   | 11. Re-align flexible coupling.   |
| 12. Filter too small.   | 12. Filter capacity may be adequate only when just cleaned, filter should be larger size.           |
| 13. Stuck pump vane (in vane type pumps.)   | 13. Inspect for chips wedged in pump or sticky oil and reassemble.                                  |
| 14. Worn or broken parts.   | 14. Replace parts.  |
| 15. Pump head too loose or faulty head gasket.  | 15. Test by pouring oil over pump head, and tighten head carefully or replace gasket.               |
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#### B-PUMP TAKES TOO LONG TO RESPOND OR FAILS TO RESPOND

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| 1. Low oil supply.  | 1. Fill oil to proper level.   |
| 2. Relief valve pressure set too low.                                     | 2. Reset to correct pressure setting using gauge.  |
| 3. Pump worn or damaged.  | 3. Inspect, repair, or replace pump.   |
| 4. Oil intake pipe or suction filter plugged.                             | 4. Clean filter or clean out intake pipe.  |
| 5. Wrong direction of shaft rotation.                                     | 5. Must be reversed immediately to prevent seizure and breakage of parts due to lack of oil. |
| 6. Pump shaft turning too slowly to prime itself. (Vane type pumps only.) | 6. Check minimum recommended speed.  |
| 7. Dirt in pump.  | 7. Dismantle and clean pump.   |
| 8. Air leak in suction line, preventing priming.                          | 8. Repair leaks.   |
| 9. Oil too heavy to pick up prime.  | 9. Use lighter oil.  |
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#### C-NO PRESSURE IN THE SYSTEM

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| 1. Pump not delivering oil.                                      | 1. Follow remedies given above.  |
| 2. Relief valve setting not high enough.                         | 2. Increase pressure setting of relief valve.                            |
| 3. Relief valve leaking.   | 3. Check valve seat for scoring mark and reseal.                         |
| 4. Spring in relief valve broken.                                | 4. Replace spring and readjust valve.                                    |
| 5. Free circulation of oil to tank being allowed through system. | 5. Control valve may be in neutral, or return line open unintentionally. |
| 6. Internal leakage in control valves or cylinders.              | 6. Repair and replace.   |
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#### D-EXCESSIVE WEAR ON PUMP

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| 1. Abrasive material in the hydraulic oil being circulated through the pumps.    | 1. Install adequate filter, operate one hour, then replace element. |
| 2. Oil weight too light at working conditions.                                   | 2. Check for recommended oil weight.                                |
| 3. Sustained high pressure above maximum pump rating.                            | 3. Check relief valve maximum setting.                              |
| 4. Sustained high speed at PRESSURE above maximum pump rating.                   | 4. Check maximum recommended speed.                                 |
| 5. Drive misalignment or tight belt drive or supporting pump by its drive shaft. | 5. Check and correct.   |
| 6. Air circulation causing chatter in system.                                    | 6. Remove air from system.  |
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#### E-BREAKAGE OF PARTS INSIDE PUMP HOUSING

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| 1. Excessive pressure above maximum pump rating. | 1. Check relief valve maximum setting.  |
| 2. Seizure of parts due to lack of oil.          | 2. Check reservoir level, oil filter, rotation direction and restriction in suction line. |
| 3. Solid material being wedged in pump.          | 3. Install filter in system.  |
| 4. Excessive tightening of head screws.          | 4. Follow pump makers recommendations.  |
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#### F-EXCESSIVE HEATING OF OIL

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| 1. Foreign material lodged between the relief valve plunger and relief valve seat. | 1. Inspect and remove foreign material.                         |
| 2. Using too heavy oil.  | 2. Drain and refill with proper weight oil.                     |
| 3. Using too heavy oil.  | 3. Use recommended weight oil.                                  |
| 4. Dirty oil.  | 4. Drain, flush, and refill with clean oil, and install filter. |
| 5. Oil level too low.  | 5. Fill to proper oil level.                                    |
| 6. Relief valve pressure too high or too low.                                      | 6. Set relief valve at correct pressure.                        |
| 7. Pump worn and oil slips by pump.  | 7. Replace or repair pump.                                      |
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### REMEDIES

#### F-EXCESSIVE HEATING OF OIL - Continued

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| 8. Leaking relief valve.                       | 8. Replace or repair relief valve.   |
| 9. Relief valve does not operate.              | 9. Replace or repair relief valve.   |
| 10. Pump assembled too tightly which produces. | 10. Is unlikely unless parts are out of place in pump or not in tolerance. Should check by turning shaft with pliers before installing pump. |
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#### G - HEATING BECAUSE OF CONDITIONS IN SYSTEM

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| 1. Hoses or valves too small.                       | 1. Replace with larger hoses or valves.                         |
| 2. Restricted lines or piping.                      | 2. Reroute lines to eliminate restriction.                      |
| 3. Reservoir too small to provide adequate cooling. | 3. Replace with larger reservoir or install cooler or radiator. |
| 4. Insufficient heat radiation.                     | 4. Use radiator cooling.  |
| 5. Internal leaks.                                  | 5. Locate leaks and repair.                                     |
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#### H- OIL FOAMING

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|---|---|
| 1. Air leaking into suction line from tank to pump. | 1. Tighten all connections.                                 |
| 2. Wrong kind of oil.                               | 2. Drain and refill with non-foaming type of hydraulic oil. |
| 3. Oil level too low.                               | 3. Fill to proper oil level.                                |
| 4. Improper tank or reservoir baffling.             | 4. Put correct type of baffles in reservoir.                |
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#### I - CYLINDERS CREEP WHEN STOPPED IN INTERMEDIATE POSITION

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| 1. Internal leakage in cylinder or control valves. | 1. Replace piston packing or replace cylinder if walls are scored.<br>Replace or repair valve. |
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#### J - TIMES OF OPERATION LONGER THAN SPECIFIED

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|---|---|
| 1. Worn pump.   | 1. Repair or replace pump.  |
| 2. Internal leak in cylinder or control valve.  | 2. Replace piston packing or replace cylinder if walls are scored. Replace or repair valve. |
| 3. Air in system.   | 3. Bleed the system and tighten joints.   |
| 4. If action is slow on starting up, then speeds up after oil heats up; oil is too heavy. If action slows down after oil heats up; oil is too light weight. | 4. Use oil weight recommended by manufacturer.  |
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#### K - EXTERNAL OIL LEAKAGE ON CYLINDERS

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| 1. End caps leaking.      | 1. Tighten if possible or replace gasket if necessary. |
| 2. Packing gland leaking. | 2. Tighten or replace packing if necessary.            |
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#### L - ABNORMAL PACKING GLAND WEAR ON CYLINDERS

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| 1. Cylinder not securely fastened to frame.           | 1. Tighten cylinder to frame, check this periodically. |
| 2. Misalignment of cylinder and piston rod extension. | 2. Check and correct misalignment.                     |
| 3. Side load on piston rod.                           | 3. Change construction to eliminate side loads.        |
| 4. Burr on piston rod tears out packing.              | 4. Remove burr and replace packing.                    |
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#### M - MOTOR TURNING IN WRONG DIRECTION

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| 1. Incorrect piping between motor and control valve. | 1. Check layout to determine correct piping. |
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#### N - MOTOR NOT TURNING OVER OR NOT DEVELOPING PROPER SPEED OR TORQUE

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| 1. Relief valve adjustment not set high enough.                       | 1. Check pressure and reset relief valve.                           |
| 2. Relief valve sticking open.  | 2. Remove dirt under ball or piston in relief valve.                |
| 3. Free circulation of oil to reservoir being allowed through system. | 3. Control valve is in neutral or return line unintentionally open. |
| 4. Pump not delivering sufficient pressure or volume.                 | 4. Check pumps output and pressure.                                 |
| 5. Driven mechanism binding because of misalignment.                  | 5. Realign motor and check torque requirement of driven shaft.      |
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#### P - MOTOR SHAFT SEAL LEAKS, MOTOR SHAFT BREAKS, HOUSING BREAKS, HOSES BURST

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| 1. When a standard control valve is returned to neutral to stop or start a motor, sudden excess pressure is created which will break seals, tear off motor shafts, burst motor housings, or burst hoses. This sudden shock cannot be relieved through the primary relief valve in the system. | 1. Must use a free-wheeling control valve, SPXTE-F4-HP. Can also use a DWV-75 or RC12DD CUSHION VALVE when using a standard 4-way control valve BA11AG3EBO or SP-4 or when using no control valve. |
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