CC Technology pro-flo
LUBRICATION DIVISION

Divider Block Lubrication System Troubleshooting Guide

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Problem	Possible Cause	Service Procedure and/or Correction
1. Leaking Tubing Connections or Components	**1-A**. Loose Fittings **1-B**. Damaged Tubing	**1-A**. Tighten all tube fittings. If necessary replace tubing fittings and tubing. **1-B**. Replace all leaking tubing. Oil leaks from tubing or connections no matter how small are robbing oil from cylinders or packing. ***No Leaks, No Air, No Trash***
2. No Pressure on Pressure Gauge. Rupture Disc Is **Not** Blown. Compressor is Running	**2-A**. Defective Gauge **2-B**. Defective No-Flow **2-C**. No-flow Disconnected	**2-A**. Loosen tubing fittings to check for oil flow from tubing to atmosphere. If oil is flowing replace gauge and check for pressure indication. **2-B**. (See 8-A,8-B,8-C) **2-C**. Check wiring connections to no-flow and inside of control panel. Correct as needed. ***Never Continue to operate the Compressor With the No-Flow Disabled or Disconnected.***
3. Low Pressure on Pressure Gauge. Rupture Disc Is **Not** Blown. Compressor is Running	**3-A** Defective or Worn Lubricator Pump **3-B**. Defective No-flow **3-C**. Damaged or Broken Tubing Lines	**3-A**. Block tubing line on discharge side of pump. After blocking tubing line on discharge side of the pump it must build sufficient pressure to rupture the blow out disc. If the disc does not rupture the pump is worn or defective and cannot build sufficient pressure to inject oil into cylinders or packing. ***Replace Pump Immediately.*** **3-B**. (See 8-A,8-B,8-C) **3-C**. Check all tubing lines, replace all leaking tubing. Oil leaks from tubing or connections no matter how small are robbing oil from cylinders or packing.
4. Excessively High Pressure On Pressure Gauge, Atmospheric Rupture Disc Is **Not** Blown	**4-A**. Atmospheric Assembly **4-B**. Incorrect Torque of Divider Blocks (Too Tight) **4-C**. Oil Separation	**4-A**. Check for plugged rupture assembly, wrong color rupture disc in assembly or more than one disc in rupture assembly. ***Never Block or Plug the Atmospheric Rupture Assembly.*** **4-B**. Divider blocks are fitted to extremely close tolerances. Over tightening will cause excessive system pressure. Loosen Allen head screws and re-torque to 108 Inch lbs. Max. (See pages 20, 21,22). **4-C**.Wax or soap like deposits indicate separation of lubricant additives. Clean all lube system components. When oil separation is present cleaning will only temporarily solve this problem.
5. Erratic Movement or Wide Swing of Needle on Pressure Gauge	**5-A**. Air or gas in Lube System **5-B**. Leaking Check Valves **5-C**. By-Passing Divider Blocks **5-D**. High Differential Pressure Between Injection Points **5-E**. Incorrect Torque Of Divider Blocks	**5-A**. Purge all tubing lines and divider blocks. (See Purging Air From Divider Block Systems page 14 of training manual). **5-B**. Check temperature of each check valve. Check valves with higher temperatures indicate leakage. Loosen tubing connections at inlet of check valves. Foaming oil indicates leaking check valve. ***Replace All Leaking Check Valves Immediately.*** (See page 13) **5-C.** Pressure test all divider blocks for by-passing. See Pressure Testing Divider Blocks page 10 of training manual. Replace all divider blocks that do not hold pressure. ***DO NOT use emery cloth, bearing cloth or any type of abrasive substance to smooth piston or bore of divider blocks.*** **5-D**. If there is more than 1500# difference between low pressure injection points and high pressure injection points the system should be balanced to within 600#. (See Balancing High Pressure Divider Block Lubrication Systems pages 15,16 & 17). **5-E**. Divider blocks are fitted to extremely close tolerances. Over tightening will cause excessive system pressure. Loosen Allen head screws and re-torque to 108 Inch lbs. Max.
6. Cycle Time of Divider Block Slows Down or Becomes Erratic	**6-A**. Air or Gas in Lube System **6-B**. Defective Lubricator Pump **6-C**. Low Oil Supply From Lubricator Pump	**6-A**. Purge all tubing lines and divider blocks. (See Purging Air From Divider Block Systems page 14 of training manual). **6-B**. Block tubing line on discharge side of pump. After blocking tubing line on discharge side of the pump it must build sufficient pressure to rupture the blow out disc. If the disc does not rupture the pump is worn or defective and cannot build sufficient pressure to inject oil into cylinders or packing. ***Replace Pump Immediately.*** **6-C**. Check for the following: **A.** Blockage in oil supply line. **B.** Oil supply line too small. **C.** In-line filter upstream of pump is blocked. **D.** Viscosity of oil is too heavy to flow through tubing or filter. **E.** Debris under seat of lubricator pump. **F.** Air in lubricator pump or oil supply
7. Atmospheric Rupture Disc is Blown. Compressor is Down	**7-A**. Air or Gas in Lube System **7-B**. Nut on Atmospheric Rupture Assembly Over Tightened	**7-A**. Purge all tubing lines and divider blocks. ((See Purging Air From Divider Block Systems page 14 of training manual). **7-B**. Install new rupture disc and hand tighten nut on rupture assembly. If torque wrench is available torque nut to 36 inch pounds max. If torque wrench is not available hand tighten and tighten with end wrench 1/16th turn. ***Do not over tighten nut.*** Over tightening nut on rupture assembly cuts into aluminum rupture disc causing disc to blow out at lower pressures.

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Problem	Possible Cause	Service Procedure and/or Correction
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7. Atmospheric Rupture Disc is Blown Compressor is Down	**7-C**. Crushed Tubing	**7-C**. Make a visual inspection of the system and check for crushed tubing lines. Correct as needed.
	7-D. Defective Tubing fitting	**7-D**. Use purge gun to pump oil through tubing lines to locate blockage. Correct as needed.
	7-E. Blocked Injection Point	**7-E**. Use purge gun to pump oil into injection points. Oil should flow freely into each injection point. Correct as needed.
	7-F. Blocked Check Valve	**7-F**. Use purge gun to pump oil through each check valve. Oil should flow easily through check valves with less than 160 psi. If plugged replace check valve.
	7-G. Pipe Plug Improperly Installed in Base Plate	**7-G**. Check to ensure all divider blocks required to discharge oil do not have pipe plugs installed in an outlet designed to disperse oil to an injection point. Divider blocks with a letter "T" stamped on the front should have (2) two outlets open from the base plate. Divider blocks with a letter "S" stamped on the front should have (1) one outlet open on the base plate and one outlet plugged.(See page 23)
	7-H.Trash in Divider Block	**7-H**. Use purge gun to locate blockage. (See Locating Blockage in Divider Blocks pages 6,7,8 & 9.)
	7-I. Wrong Magnet Assembly for Proximity Switch or DNFT.	**7-I**. Each divider valve manufacturer uses a different magnet assembly. Check for correct magnet assembly installed on divider valve. Correct as needed. (See Magnet Assemblies bottom of page 32 of training manual).
	7-J. Divider Block Assembly is out of Sync	**7-J**. If new divider blocks are installed there is a possibility the pistons are out of sync in the hydraulic circuit. To correct this problem remove end plugs from one side of each divider block in the assembly. Using a brass rod push each piston to the opposite end of the divider block. Replace end plugs and purge the divider block assembly to check for correct operation.
	7-K. Oil Separation	**7-K**. Wax or soap like deposits indicate separation of lubricant additives. Clean all lube system components. When oil separation is present cleaning will only temporarily solve this problem.
8. Atmospheric Rupture Disc is Blown. Compressor Does **No**t Shut Down.	**8-A**. No-Flow is Disconnected	**8-A**. Check wiring connections to no-flow and inside of control panel. Correct as needed. ***Never Continue to operate the Compressor With the No-Flow Disabled or Disconnected.***
	8-B. Adjust No-flow	**8-B**.See 9-A,9-B,9-C
	8-C. Defective No-Flow	**8-C**. Check the following no-flows with compressor shutdown. Allow sufficient time for no-flow to change to alarm state (approx. 3 to 8 minutes). **To check operation of Lincoln and Kenco no-flows**: Connect black and red leads of volt ohm meter to leads of Lincoln no-flow. For the Kenco no-flow connect one lead of volt ohm meter to contact end of no-flow and one lead to body. Set meter to Ohms. Indication should show continuity. If meter shows no continuity replace no-flow. No-flow cannot be rebuilt. **To check operation of Trabon no-flow:** Connect red and black leads of volt ohm meter to red and white leads on no-flow. Volt ohm meter should show continuity between red and white wires and open circuit between red and blue wires. If meter shows no continuity between red and white wires replace no-flow. **To check operation of DNFT:** **Red & Black Wires:**Connect red lead of volt ohm meter to red wire on DNFT and black lead of meter to black wire on DNFT. Insert and remove magnet to flash LED. Meter should read 10 megohms. Wait for alarm specified alarm time. After alarm meter should show resistance of less than 10 ohms. **Orange & Black Wires:** Connect (+) red lead of volt ohm meter to orange wire on DNFT and (-) black lead of meter to black wire on DNFT. Insert and remove magnet to flash LED. Meter should read .600 volts or less. Wait for specified alarm time. After alarm meter should read 10 megohms to infinity.
	8-D. DNFT or proflo Jr. is Connected to Control Panel Incorrectly or alarm circuit is desstroyed	**8-D**. For normally open (open loop) operation 1 red wire must be connected to no flow shutdown on control panel. 1 red wire must be connected to green wire and both wires must be grounded to an "earth" ground. For normally closed (closed loop) operation, 1 orange wire must be connected to (+) plus polarity in control panel and 1 orange wire must be connected to common in control panel. Green wire should be connected to "earth"ground. (See page 33 of training manual).
	8-E. Adjust DNFT or pfoflo Jr.	**8-E**. Loosen set screws, slide proflo Jr. or DNFT all the way on hex of magnet housing. Tighten set screws on hex of magnet housing. Torque 25 inch pounds max. Cycle divider valve by pumping clean oil through system with lubrication system purge gun or running compressor. If necessary adjust proflo Jr. or DNFT 1/16" back until LED blinks or LCD changes (DNFT LCD only) with each cycle of divider valve.

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9. Compressor Continually Shuts Down on Lube No-Flow Rupture Disc is **Not** Blown	**9-A**. Adjust Kenco Mechanical No-Flow	**9-A**. **Kenco:** Adjustment screw is located under blue hexagon cover at end of no-flow. Remove hexagon cover. Turn screw clockwise (in) to decrease shutdown time and counter clockwise (out) to increase shutdown time. If compressor continues to shut down on lube no flow adjust screw counter clockwise (out) to decrease spring tension. Adjustments must be made with compressor at normal operating temperatures or by pumping 10 weight oil at room temperature through the no-flow to make adjustments. Test shutdown by connecting volt ohm meter red lead to tip of no-flow and black lead to body of no-flow. Discontinue flow of oil and note the amount of time taken to show continuity on meter. This is the alarm time for no-flow shutdown. If phantom shutdowns continue replace no-flow.
	9-B. Adjust Lincoln Mechanical No-Flow	**9-B**. **Lincoln:** With compressor shut down connect leads of volt ohm meter to wires of no-flow. The meter should show continuity. Connect the purge gun to the inlet of the no-flow and pump oil through the no-flow until the meter shows no continuity. If the meter will not show an open circuit the switch is misadjusted or the piston is stuck in the closed position. For testing and setting the Lincoln no-flow shutdown time the purge gun should contain 10 weight oil at room temperature. Insert a small screw driver in the adjustment screw on the side of no-flow. Adjust the screw flush with housing. Continue flowing oil through the no-flow and slowly rotate adjustment screw clockwise until meter changes modes from closed circuit to open circuit. Stop oil flow and note time for the meter to change states to closed circuit (showing continuity). This is the alarm time for no-flow shutdown. Start oil flow again and meter should change from closed to open circuit. If phantom shutdowns continue replace no-flow.
	9-C. Adjust Trabon Mechanical No-Flow	**9-C**. **Trabon**: With compressor shut down connect leads of volt ohm meter to red and white wires. The meter should show continuity. Connect the purge gun to the inlet of the no-flow and pump oil through the no-flow until the meter shows no continuity. If the meter will not show an open circuit the micro switch is misadjusted or broken or piston is stuck in the closed position. If adjustment of shutdown time is required, the oil in the purge gun used to set the no-flow should be 10 weight at room temperature. With oil flowing through the no-flow. Insert a small screwdriver into the adjustment screw on bottom of no-flow. Adjust the screw flush with housing. Continue flowing oil through the no-flow and slowly rotate adjustment screw clockwise until meter changes modes from continuity to open circuit. Stop oil flow and note time for the meter to change states from open to closed circuit indicating continuity on volt ohm meter. This is the alarm time for no-flow shutdown. Start pumping oil into the no-flow,meter should change from closed circuit to open circuit. If phantom shutdowns continue adjust or replace micro switch in switch housing. If piston is stuck in housing replace no-flow.
	9-D. Check DNFT for Correct Operation	**9-D**. See Trouble shooting DNFT page 32. Replace DNFT if unit is multiple flashing or when red and black wires are connected to a volt/ohm meter and show resistance of more than 10 ohms after specified alarm time. (see page 33)
	9-E. Defective or Worn Lubricator Pump	**9-E**. Block discharge side of pump and check pressure gauge for indication of high pressure. After blocking the discharge side of the pump it must build sufficient pressure to rupture the blow out disc. If the disc does not rupture the pump is worn or defective and cannot build sufficient pressure to inject oil into cylinders or packing. *Replace Pump Immediately*.
	9-F. Trash in Lubricator Pump	**9-F**. Remove suction and discharge assemblies from pump. Check balls and seats for trash. Clean and re-assemble.
	9-G. No Oil Supply to Pump	**9-G**.Check for the following: **1.** Blockage in oil supply line. **2**.Oil supply line too small. **3.** In-line filter upstream of pump is blocked. **4.** Viscosity of oil is too heavy to flow through tubing or filter. **5.** Air in lubricator pump or oil supply **6.** Crushed or leaking tubing.
	9-H. Air or Gas in System	**9-H**. Purge all tubing lines and divider blocks. (See Purging Air From Divider Block Systems page 14 of training manual).
	9-I. Filter Blocked	**9-I**. Check all in line filters for blockage and replace as necessary. All filters in the lubrication system should be changed a minimum of every three (3) to six (6) months depending on the application of the divider block system and environment.
	9-J. Faulty Wiring	**9J**. Stripped wiring is causing ground inside conduit or in control panel. Check all wiring in conduit from no-flow to control panel. An easy check for damaged wiring in conduit is to temporarily run wiring from the no-flow to the control panel outside of the conduit.
	9-K. Defective Tattletale Switch In Control Panel	**9-K**. Replace tattletale switch