



BridgeKing Hydraulic Steps and Actions.

- 1. Oil viscosity incorrect, low or wrong specification a. Change to proper ISO spec oil for outside temperature b. ISO 68 (SUS 55-60 below 80 degrees F)
- c. ISO 100 (SUS 60-65 above 80 degrees F) d. Change oil and filters after first 100 hours in service and every six months thereafter
- e. Refill reservoir to proper level f. Use only approved Hydraulic Fluid – **Do Not Use ATF OR ENGINE OIL**
- g. Contact the Con-Tech service department for oil specs

2. Gate valve on reservoir closed

a. Turn counter clockwise until fully open b. When fully open install tie wrap to prevent vibration from

closing gate valve 3. Reservoir outlet plugged

a. Oil must flow freely from reservoir outlet

4. Reservoir vent clogged a. Clean or replace 10 micron breather cap on reservoir b. 10 micron cap c. If breather cap is not installed on your Con-Tech reservoir,

5. Check for proper hose

install breather cap to properly vent the reservoir.

- a. SAE100R4 suction hose should be installed between the reservoir and pump b. Hose should be the same diameter and length as original hose
- c. Improper hose size or rating may collapse under suction d. Inspect for air leaks on suction side

c. Pre fill pump case and hoses

e. Inspect fittings for air leaks f. Inspect spin on filter gasket for air leaks

6. Install new pump

a. Lightly lubricate spline on pump with moly grease or equivalent before installing b. Compensator will require adjustment (see step #12)

7. Excessive internal leakage

a. Remove case drain line pump and measure volume flowing from case drain when pump is at operating temperature b. Measure volume for 15 seconds and multiply by 4 to get your flow per minute

c. Normal case drain is 1.0 gpm on a new pump d. Maximum allowable case drain is 2.5 gpm e. Contact the Con-Tech service department

8. Case drain incorrectly plumbed

a. Current plumbing routes the pressure compensated pump case drain directly to the reservoir b. All BridgeKing pump case drains must ago direct to the

9. Call the Con-Tech service department for assistant at 507-374-

10. Measure oil temperature

a. Measure oil temperature in the reservoir with an infra red heat gun or candy thermometer b. Determine if the heat is caused by hydrostatic system or

BridgeKing hydraulic system c. Maximum temperature should be outside temperature plus d. Ideal oil temperature should be 170 degrees F- 180 degrees F

11. Check pump pressure

a. Deadhead pump pressure line at Parker Filter inlet with a 0 – 5,000 psi gauge b. Pressure should be adjusted at the compensator c. Pressure should be the maximum required amount on the BridgeKing Axle Placard + 100 psi

12. Compensator spool sticky a. Remove spool and clean b. Check compensator spring c. Compensator spool should move freely in bore d. LH and RH PC compensator are the same but mounted

e. Use new O-ring for the installation

13. Check pump shaft a. Check spline for worn spline

b. Replace shaft if worn c. A-Pad receptacle on the Eaton A-Pad may also be worn

14. Check A-Pad receptacle a. Check for worn receptacle

b. Replace receptacle if worn

c. PC pump shaft will also be worn

15. Check cab gauge pressure a. 1,000+ psi minimum pressure typically required to move trailer up and down b. This is approximately the minimum setting of the PRV-2 c. If there is no pressure in the cab gauge, the optional mid position axle stop valve may be activated and neither the trailer

16. Check red chute light

or chutes will function

a. If chute hazard LED light is on, chute is not centered or fully b. If the chute is down, centered, and light remains on 1. Unplug chute center prox, if light goes out, replace the

2. If light remains on, replace the prox relay located in the in-cab control box (C48)

17. Check adjustment PRV-2 valve

a. The pressure should reach compensated pressure when the PRV-2 is turned fully clockwise with trailer in the up position b. Minimum pressure when PRV-2 is turned fully counter clockwise should be approximately 1,000 psi c. Maximum pressure should be the maximum pressure on the BridgeKing placard plus 100 psi

d. The PRV-2 can be cleaned and flushed with WD40 (Do not use a parts washer!) e. Replace the PRV-2 if necessary

18. Check High Pressure Relief Valve (HPRV) a. The HPRV is located on the High Flow Block on the barrel end of the BridgeKing trailer cylinder b. If the HPRV is leaking, partial flow may be going to the

reservoir and preventing full pressure from building up in the down mode - this condition will typically cause heat and slow trailer down speed c. The HPRV can be cleaned and flushed with WD40 (Do not use a parts washer!) d. Replace the HPRV cartridge if it is leaking

19. Check chute function

a. If the chute lift section malfunctions, oil flow can flow to the reservoir which can also cause trailer up/down movement b. Turn the chute up speed flow control fully clockwise to shut off the flow of the oil to the chute system – this will isolate the chute lift system from the BridgeKing trailer system c. See the section on the closed center chute lift block

20. Operate trailer manually (PRV-2 should be adjusted no

higher that 1,000 psi) a. Shift the directional valve manually b. If trailer operates, problem is probably electrical c. If trailer doesn't operate, problem is probably hydraulic d. If trailer safety latch operates, directional valve is sending a hydraulic signal to the high flow block e. CHUTES MUST BE CENTERED AND DOWN PRIOR

TO MANUAL OPERATION OF TRAILER UP/DN.

21. Check PTS and trailer lock a. Earlier models have the PTS located in the control block b. The PTS should receive a signal when the directional valve is

c. The PTS signal also unlatches the trailer lock – the lock should open when PTS shifts to the down position or the lock should relax in the up position

d. If the PTS doesn't shift fully, the trailer speeds may be slow if the pressure low e. Inspect the PTS O-rings and orifice behind PTS f. You should be able to push in against the spring on the center spool of the PTS and it should return freely

g. The PTS can be cleaned and flushed with WD40 (Do not use

h. Replace the PTS if necessary

a parts washer!)

22. Do chutes work? a. Optional axle mid-position stop valve activated b. Activated mid-position stops all flow to system including 1. Trailer won't operate

2. Chutes won't operate 23. Truck in Reverse

a. Putting truck in reverse automatically raises axle (chutes must be centered and down) b. Putting truck in reverse bypasses chute down or chute centered interlocks

c. Truck in reverse will prevent axle from going down

24. CB (Counter Balance) cartridge a. If CB cartridge is stuck closed, oil cannot leave the rod end of the cylinder and cylinder will move down slowly or stop b. If CB cartridge is stuck closed, dash gauge will not drop when trailer is lowered c. The CB cartridge controls the trailer down speed of 30 - 45

d. Check drain line from CB cartridge - only occasional drops should enter drain line from CB cartridge e. If there is pressure in the drain line (which is a tank line), the CB cartridge will not open and trailer will not lower

f. The CB cartridge can be cleaned and flushed with WD40 (Do not use a parts washer!) g. Replace the CB if necessary

25. BridgeKing Cylinder

a. If oil bypasses at the piston the trailer may be slow, not develop adequate pressure, or not move up or down b. When the cylinder barrel end is pressurized, only drops should bypass to the rod end

c. Check with Con-Tech Service for the proper procedure to check oil bypass in the BridgeKing cylinder

26. CB one way check valve a. The CB Manifold assembly has a one way check valve to allow oil to flow to the rod end of the cylinder when the trailer is being raised

b. The one way check can be cleaned and flushed with WD40 (Do not use a parts washer!) c. Replace the one way check if necessary

27. Check Accumulator

a. Accumulator pressure should be 1150 psi b. Low accumulator pressure may cause trailer down hesitation of up to 20 seconds before trailer starts down c. Other symptoms of a low or flat accumulator include dash

gauge fluctuates and a rough ride for the driver d. A low or flat accumulator will cause damage to the BridgeKing pivot bushings, BridgeKing mount, and BridgeKing cylinder bushings

e. See the section on charging the accumulator for the proper safety procedures

28. Isolate Components a. The trailer and chute lift systems can be isolated from the main control block on the BridgeKing hydraulic system

b. The hydraulic hoses going from the control block to the cylinder can be removed and capped off and the manifold ports plugged at the cylinder or control block – whichever is easiest c. The chute system can be isolated by turning the up flow control fully off on later systems d. Isolating the cylinder and chute lift systems one at a time

29. Check 12 volt coils

a. When the chute up button is depressed, the up coil will be

provides a "process of elimination" to help locate problems

b. When the chute down button is depresses, the down coil will be energized c. An energized coil will be an electromagnet and will attract a piece of metal such as a knife blade d. You can also hear a "clicking" noise when the coil is

g. Most coils have an O-ring seal which must be in place when a

energized if the cartridge is shifting e. If neither coil is energized when the chute up/down button is depressed, check the electrical circuit and or fuses f. If both coils energize correctly when the chute up/down button is depressed, check the hydraulic system

coil is reinstalled

h. If an electrical circuit malfunctions, partial voltage may cause a cartridge to shift slightly resulting in chutes drifting up or abrasions, damage, aging and proper clearance along the frame.

30. Check up flow control (chute up speed) a. If the chute up speed control is turned entirely off, no oil will

be available for the chutes b. If the up speed control is out of adjustment, turn both the up and down speed control to the center of their adjustment range as a place to start again c. If the up speed control is adjusted to approximately maximum up chute speed, the chute may go up when the down button is

depressed

31. Check 3W2P cartridges a. Both 3W2P (three way/two position) cartridges are the same and are interchangeable b. The coil can be removed from the cartridge and the 3W2P cartridges removed for inspection and cleaning

chipped or damaged d. Clean the cartridge with WD40 e. Because both cartridges are interchangeable, they can be swapped into the other cavity which may reverse the problem

c. Inspect the O-ring on the cartridge to be sure they are not

- the chute that wouldn't go up probably won't lower

32. P.O. Check Valves

a. A pilot operated check valve holds the chute in the up position b. If the P.O. check leaks, oil can pass to the reservoir rather than raise the chute c. If the P.O. check leaks; the chute will drift down d. The P.O. check can be cleaned and flushed with WD40 (Do not use a parts washer!)

e. Replace the P.O. check if necessary

33. Check down flow control a. If the chute up speed control is turned entirely off, the chutes b. If the down speed control is out of adjustment, turn both the up and down speed control to the center of their adjustment range as a place to start again c. The down flow control cartridge can be cleaned and flushed with WD40 (Do not use a parts washer!) d. Replace the cross checks if necessary

34. Check return line

a. An obstructed return line to the reservoir will prevent oil from leaving the chute lift system b. An obstructed return line will result in a chute which won't

thoroughly bled from the chute lift cylinder and hydraulic hose

or the air (which is compressible may trip the flo-fuse

35. Flo-Fuse Down

Use the proper tools and equipment when servicing the hydraulic a. Excess chute speed will trip flo-fuse and chute will not lower system. Use only Con-Tech charging kit when recharging the b. If flo-fuse is tripped. The chute must be lifted to reset the floaccumulator. Call Con-Tech Mfg. Inc. at (507)-374-2239 for assistance required. c. If new chute lift cylinder is installed the air must be

Never operate the hydraulic system if a leak is present.

Hydraulic Safety Information

(507)-374-2239 if you require assistance.

(507)-374-2239 for assistance if required.

pressure or hydraulic shock conditions.

WARNING!

WARNING!

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abrasions, damage or rust.

may result from hot oil.

Hydraulic hoses must be inspected on a weekly basis for cuts,

Immediately replace any damaged or aged hydraulic hoses. Please

referance the Con-Tech service manual or Call Con-Tech Mfg. Inc. at

Hydraulic system is hot – **DO NOT TOUCH** – serious personal injury

Correct hoses, fittings and adapters with the correct SAE rating must

be used when replacing hoses to prevent possible serious injury. Never

mix brands of hose, fittings and adapters. Example: brand "A" hose may

Never remove hydraulic lines, fittings, or adapters until all pressure has

been relieved from the hydraulic system. Contact Con-Tech Mfg. Inc. at

If hydraulic pipe must be replaced be sure to follow the specifications

in the Con-Tech Service Manual. If incorrect hydraulic pipe is installed

from hydraulic pipe failure. Inspect hydraulic pipe on a weekly basis for

Do not heat hydraulic pipe. The carbon content of this steel tube is such

that if heated for bending and either water or air quenched, the pipe

may have lost its ductility and thereby be subject to failure under high

the hydraulic system may fail. Serious personal injury could also result

not be compatible with a brand "B" fitting or adapter. If you have any

questions, please contact Con-Tech Mfg. Inc. at (507)-374-2239.

Charging The BK Accumulator

Simple BridgeKing

It is important to always maintain the BridgeKing cylinder accumulator pressure. This should be checked every 60 days. It is normal for the accumulator to lose some of the nitrogen during normal use. Con-Tech offers a charge kit, Part # 750005.

1. To charge the accumulator in the BridgeKing cylinder you must adjust your PRV2 valve to the minimum and then lower the BridgeKing trailer. If the PRV2 is not at minimum, the trucks rear wheels can come off the ground, causing it to roll away. Always have your truck wheels blocked for safety.

2. When the trailer is lowered, turn off the engine. Turn the key back on and operate the Up/Down switch for the trailer to relieve the pressure in the BridgeKing system. Turn the key back off.

3. When the ignition is off, follow all OSHA Lockout-Tag Out procedures to prevent anyone from starting the truck and raising the trailer arm during the charge process.

4. When the truck is properly locked out, bring the nitrogen cylinder next to the chassis and prepare the truck. Double check to make sure your charging bottles have more pressure than the cylinder. If it does not, the nitrogen will flow back towards the bottle. (Image A)

5. Clean and remove any concrete or dirt off of the area of the charging stem.

6. Remove the accumulator charge stem cap. Do not lose this cap. It is needed to keep debris and contamination out of the charging stem. (Image C)

7. Before installation, make sure the accumulator charge system has the O-ring installed. Install the accumulator charge kit on to the BridgeKing charge stem(finger tight)

8. The air in the charging hose must be purged before you charge the system. **D.** Slightly loosen the charge stem adaptor and turn on the nitrogen allowing the air to be pushed out. Re-tighten the stem adaptor finger tight. (Image D)

9. Using a 3/4" wrench on the stem mounting nut, and another 3/4" wrench on the charge stem, carefully loosen the nut. Turn the nut one full rotation counterclockwise before the tapered seat begins to open. Turn the nut an additional 1/4 turn and read the gauge on the accumulator charge kit. The reading is the current pressure in the BridgeKing Accumulator. (Image E)

10. After the air has been purged, and the stem opened, open the nitrogen bottle until the accumulator charge kit gauge reads 1100 psi. When this achieved, carefully close the stem. Do not overtighten the stem. This can cause damage to the charge stem. (Image F)

11. After the charge stem is closed, check the seal with some soapy water for leaks. If the stem is not sealed properly, the soapy water will bubble.













