LIFT TRUCK SERIES
D20S-3 D25S-3 D30S-3
G20E-3 G25E-3 G30E-3
GC20E-3 GC25E-3 GC30E-3
G20P-3 G25P-3 G30P-3
GC20P-3 GC25P-3 GC30P-3

SUBJECT: Troubleshooting the G5 Brake System (REV: 8/18/04)

The G5 brake system has experienced issues related but not limited to the following: brake linkage adjustment, air in the system, pedal to the floor, and brake fade after long runs. Included in this bulletin is a troubleshooting guide to assist in identifying the true problem based on truck symptom. The adjustment instructions within the service manual are unclear so we have also included proper adjustment procedures for the brake and inching controls that should be easier to follow.

On some trucks, air in the brake lines has been attributed to the common oil return connection for steering and brakes. This connection is located at the top tank port of the brake valve. The factory long ago eliminated this connection in favor of separate lines and only certain trucks are suspect. Refer to Technical Bulletin Code 4200, SUBJECT: BRAKES DRAGGING WHILE STEERING, Aug. 8, 2001 for applicable truck serial numbers.

Brake valve improvements have been made resulting in new part numbers. A215224 was replaced by A215295, which recently has been replaced by A215296. The latest part number is now being installed on new trucks. The brake valves are interchangeable and the parts system links will always supply the latest part available regardless of which part number is ordered. The attached truck serial number list identifies these changes.

Be sure to change the drive axle oil as recommended in the Operation & Maintenance Manual for normal applications. Severe applications may require increased oil change intervals. Contamination and degradation of the special additives within the specified oil over time can affect braking performance. SAE 50 weight oil is no longer recommended for use in the drive axle. Refer to Technical Bulletin Code 7500, SUBJECT: RECOMMENDED OIL LIST, Rev. 10/20/03 for the proper oil to be used.
Troubleshoot - G5 Brake System

1. BRAKE FADE ON LONG RUNS:
   1.1. Change the drive axle oil if it has not been changed per recommendations.
   1.2. API TO-4 SAE 30 wt. is the correct oil for the drive axle. Do not use SAE 50 wt. oil as previously recommended. Refer to Technical Bulletin Code 7500, SUBJECT: RECOMMENDED OIL LIST, Rev. 10/20/03

2. CHECK BRAKE & INCHING LINKAGE ADJUSTMENTS:
   2.1. Set height of pedals to correct position.
   2.2. Make certain the brake valve spool is not extended:
      2.2.1. If connecting link (A211483 & A211485) is loose - setting is good.
      2.2.2. If connecting link is tight - reposition the spool clevis up or down the brake valve spool threads so the connecting link is loose.
   2.3. Check the inching linkage.
      2.3.1. Set inching - brake pedal pick up point.

3. IF BRAKES FEEL SPONGY AND AIR IS IN THE SYSTEM:
   3.1. Check all pump suction lines for loose connections and brake lines for leaks - tighten fittings if loose.
   3.2. Check linkage for proper adjustment, see step 1 above.
   3.3. Bleed the brakes:
      3.3.1. Trucks with separate brake and steering return oil lines bleed as normal.
      3.3.2. Trucks with common steering and brake oil return lines, follow bleed procedure described in Technical Bulletin Code 4200, SUBJECT: NEW BRAKE VALVE REQUIRES NEW BLEED PROCEDURE, OCT. 23, 2000 to include cycling of steering wheel.
      3.3.3. If bleeding still does not resolve the problem:
         3.3.3.1. Check top port of brake valve for common steering/brake oil return fitting:
            3.3.3.1.1. If brake valve has a tee fitting - follow Technical Bulletin Code 4200, SUBJECT: BRAKES DRAGGING WHILE STEERING, AUG. 8, 2001 explaining how to separate the return lines.
            3.3.3.1.2. If brake valve has an elbow fitting - no further action is required.

4. TEST BRAKE VALVE:
   4.1. Remove outlet tube and plug brake valve - bleed while tightening plug - apply pedal force:
      4.1.1. If it holds pressure and pedal does not drop - assume brake valve is good.
      4.1.2. If it does not hold pressure and pedal drops - replace brake valve.

5. CHECK FOR POSSIBLE WHEEL PISTON SEAL LEAKAGE:
   5.1. Check axle oil level:
      5.1.1. If normal - assume no leaks.
      5.1.2. If oil level is high - check for possible piston seal leaks:
         5.1.2.1. Remove brake line at one wheel end and install plug into tube - bleed line while tightening plug - apply pedal force:
         5.1.2.2. If the pedal goes down - assume the piston seals on the unplugged side are bad - replace them.
         5.1.2.3. If the pedal holds - assume seals are good and repeat test on the opposite side.
Adjustment - G5 Brake and Inching Linkage

G/GC/D20,25,30,32S,E,P-3
Brake and Inching pedal adjustment procedure

1st - Brake valve spool

Adjust the rod end to get proper stroke of brake valve. Reference distance from the center of the connecting pin to the top face of brake valve body is 94 mm (3.7 in.).

94 mm (3.7 in.)
2nd - Brake pedal height

Adjust brake pedal against rubber stop so pedal height is set above floor plate, as shown. Tighten the pedal stop nut.

Pedal Height Adjustment:
- Cushion - 119 mm (4.7 in.)
- Pneumatic - 150 mm (6.0 in.)

3rd - Inching pedal height

Set the inching pedal height the same as the brake pedal, shown above. Set the rubber stop against the pedal stop and tighten nut.

Pedal stop
4th - Inching rod

Adjust the inching rod length so the inching pedal has no free-play and the linkage is not loose but is not tight either. Tighten the locking nut.

5th - Inching spool

The brake pedal pick-up bolt should be set to contact the brake pedal stop plate when the inching spool has extended 9.0 +/- 1.0 mm (0.35 +/- 0.04 in.)
Adjust the rod length so the brake pedal has 5.0 mm (0.2 in.) of free-play. Tighten the locking nut. The connecting link between the brake valve and brake bell crank should be loose to the touch.

**BRAKE VALVE CHANGES BY TRUCK SERIAL NUMBER**

<table>
<thead>
<tr>
<th>MODEL</th>
<th>A215224 Brake Valve D503307 Seal Kit</th>
<th>A215295 Brake Valve D503307 Seal Kit</th>
<th>A215296 Brake Valve D504734 Seal Kit</th>
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<tr>
<td>D20/25/30/32/33S-3</td>
<td>90-03904 ~ 90-08703</td>
<td>90-08704 ~ 90-10682 E5-00510 ~ UP</td>
<td>90-10683 ~ UP FK-00336 ~ UP GP-00122 ~ UP</td>
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<td>G20/25/30/32E-3</td>
<td>CW-00102 ~ CW-03092 CX-00199 ~ CX-00636</td>
<td>CW-03093 ~ CW-04192 CX-00637 ~ CX-08134 DX-00219 ~ UP</td>
<td>CW-04193 ~ UP CX-08135 ~ UP GA-00001 ~ UP G9-00102 ~ UP</td>
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<td>CU-00115 ~ CU-00196 CV-00747 ~ CV-02716</td>
<td>CU-00197 ~ UP CV-02717 ~ UP DY-00192 ~ UP</td>
<td>FP- 00097 ~ UP FQ-00110 ~ UP</td>
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<td>D2-00001 ~ D2-02819</td>
<td>D2-02820 ~ D2-03796 DZ-00154 ~ UP</td>
<td>D2-03797 ~ UP GB-00170 ~ UP GQ-00097 ~ UP</td>
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<tr>
<td>GC20/25/30/32P-3</td>
<td>DM-00001 ~ DM-01059</td>
<td>DM-01060 ~ UP E1-00164 ~ UP</td>
<td>FR-00103 ~ UP</td>
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A: added pneumatic truck pedal height adjustment