SERVICE BULLETIN

CAB SERVICE & PARTS CORPORATION #58

SUBSIDIARY OF
CHECKER MOTORS
CORPORATION

NEW YORK * BROOKLINE
CHICAGO * DETROIT

January 1, 1959

Subject: REAR AXLE - MODEL A-9

Description: SERVICING THE POWR-LOK DIFFERENTIAL

The following is recommended procedure for inspection, disassembly and reassembly of the Powr-Lok differential.

OPERATION

1. Improper operation of the Powr-Lok differential is generally indicated in one of two ways:

   a. Differential chatter.

   b. Excessive backlash in vehicle's drive line.

2. Differential chatter is always due to the wrong lubricant being used.

   NOTE: SPECIFIED LUBRICANT MUST ALWAYS BE USED IN REAR AXLE.

3. Excessive backlash in the vehicle drive line might be due to backlash in the transmission, propeller shaft spline, universal joint, ring gear and pinion, axle shaft spline or in the differential.

4. The backlash in the axle can be measured as follows:

   a. Jack up one rear wheel.

   b. Making sure the drive shaft does not move, measure the travel of the jacked-up wheel on a 10" radius from the wheel center. The total movement should not exceed $1\frac{1}{4}$".

5. If the movement exceeds $1\frac{1}{4}$", the Powr-Lok differential is defective and must be repaired.

continued. . . . .

DISASSEMBLY

1. Remove the differential case assembly from the axle housing.

2. Check the clearance between the pin "V" and the cam surface in the case. This must be done using shim stock or feeler gauges under both sides of the "V" on both ends of the pinion mate shaft at the same time.

   NOTE: THIS INVOLVES PLACING FEELERS AT FOUR POSITIONS (see Figure #1).

3. As closely as possible, the same thickness feeler must be used at all four positions. The clearance or the maximum feeler thickness at each of the four positions should not exceed .015. Both pinion mate shafts should be checked in this manner.

4. Mark or scribe both halves of the case for ease of reassembly. Mark each pinion mate shaft so that upon reassembly the pins cam surface will match with the same "V" ramp in the case (note mark in Figure #4).

5. Remove case screws (do not clamp the unit in a vise when loosening the case screws). Separate the case halves, remove the pinion mate shafts, pinion mates, side gears, clutch rings, clutch plates and discs.

6. Mark each splined clutch ring so that it may be reassembled in the same case half. Also note the order in which the friction plates and friction discs are stacked so that they may be put back together in the same way at reassembly.

7. Inspect all parts and replace any items which appear to be worn or defective.

DETERMINE THE THICKNESS OF PLATES

1. Since the clearance under the pins is determined primarily by the stack height of the clutch disc and plates, it will be necessary to replace them with thicker plates and discs.

continued. . . . .

DETERMINE THE THICKNESS OF PLATES (continued)

2. The following procedure should be followed to determine the thickness of the plate to be used.

   As an example - let it be assumed that we used .020 shims under each side of the "V" and at each end of one cross pin and .015 shims under each side of the "V" and at each end of the other cross pin. Note that the clutch which is operated by the cross pin having the .020 clearance is in the opposite case half from the cam surface on which the pin operates. The same is true of the clutch operated by the pin having the .015 clearance (see Figure #2).

3. Let it also be assumed that we wish to wind up with .005 shim clearance under each side of the "V's" at each end of both cross pins when the unit is rebuilt.

4. Perform the following calculations:

   From the side that had .020 shims
   subtract .005 the desired shim
   .015 correction necessary

   Now multiply the .015 by 1.3
   1.3 x .015 = .020 to be added to the clutch pack

   This calculation translates pin clearance on the ramp to clutch stack height.

   Similarly
   From the side that had .015 clearance
   subtract .005 the desired shim
   .010 correction necessary

   Multiply .010 by 1.3
   1.3 x .010 = .013 to be added to the clutch pack

5. Measure each of the original individual plates and discs. For the purposes of our example we will assume that the following measurements were made:

continued. . . . .

	ON THE .020 SIDE	ON THE .015 SIDE
	.093	.093
	.094	.094
	.092	.095
	.092	.096
TOTAL	.371	.378
Amt. to be added	.020	.013
Desired stack height	.391	.391

NOTE: THE FIGURES ABOVE ARE EXAMPLES ONLY.

REASSEMBLY

1. Select plates and discs that will give the above stack heights. If the exact stack height cannot be met with the material on hand, a total of plus or minus .002 from the desired stack is acceptable.

2. Clean all parts and oil the plates and discs with the recommended limited slip differential lubricant

3. Stack the plates and discs in the order noted at disassembly and assemble each stack on the clutch ring for the proper side of the case.

4. Place the proper clutch ring and clutch assembly in the case half (see Figure #3).

5. Put the case half hub down on a bench. Put a side gear in the clutch ring and place the pinion mates and pinion mate shafts in the assembly. Make sure that the previously marked shaft corresponds with the mark in the case.

6. Place the other side gear on top of the assembly. Install the other clutch and clutch ring assembly in the other half of the case.

7. Assemble the two case halves as shown (see Figure #4).

8. Install case screws and torque to 40 foot pounds.

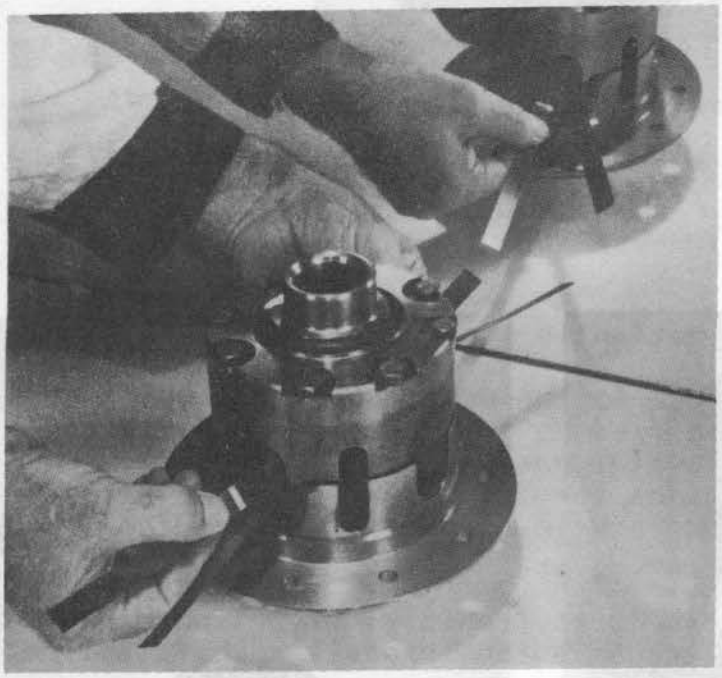
9. Recheck clearance as described on Page 3. If clearances are not below the maximum of .015, the complete procedure must be repeated.

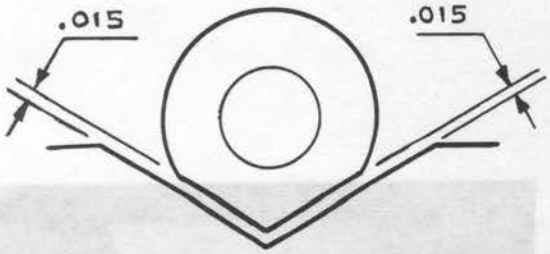
continued. . . . .

REASSEMBLY (continued)

10. Reinstall differential.

CAUTION: DO NOT OPERATE THE VEHICLE WITH ONE WHEEL JACKED UP. INERTIA FORCES IN THE WHEEL MAY ACTUATE THE DIFFERENTIAL, AND THE VEHICLE MAY JUMP OFF THE JACK.





MAXIMUM PERMISSABLE SHIM THICKNESS AT BOTH ENDS OF THE PIN AT THE SAME TIME.

FIG. 1

continued. . . . .

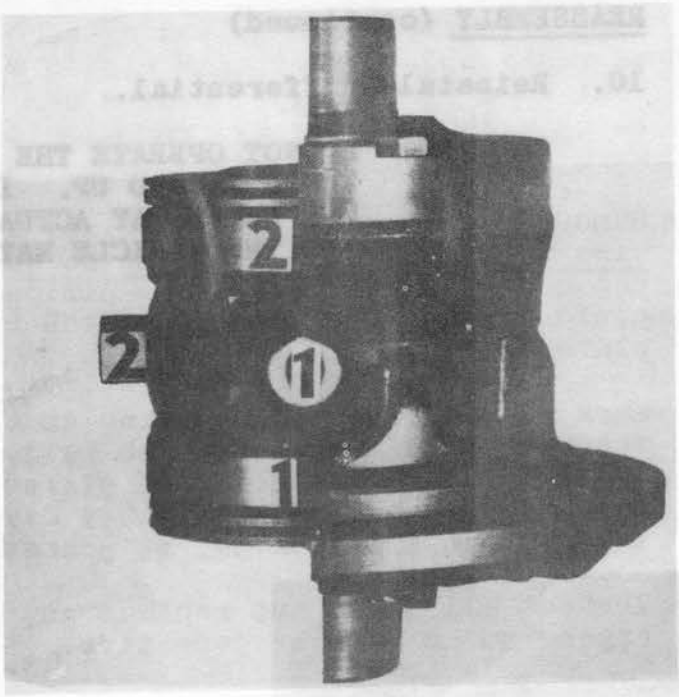


Fig. 2

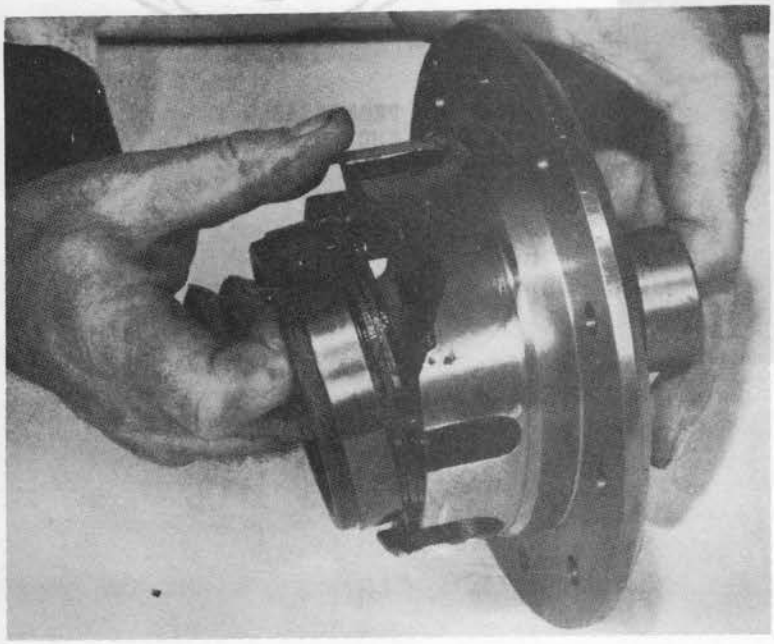


FIG. 3

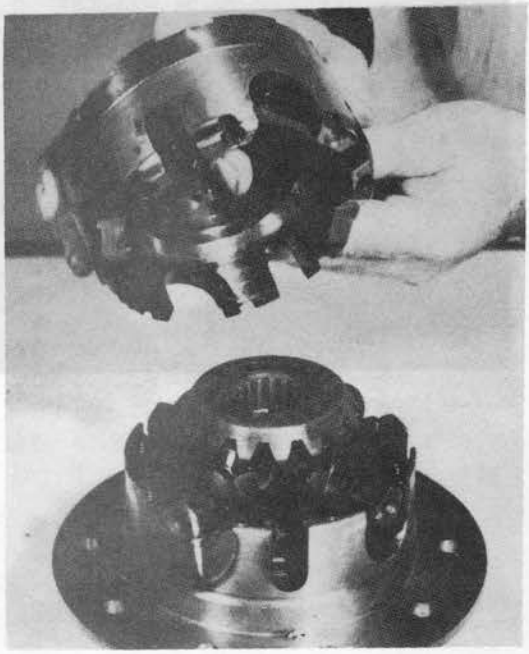


FIG. 4

By: NEW YORK SERVICE DEPARTMENT