CHASSIS
OVERHAUL MANUAL
SUPPLEMENT
40-60 SERIES TRUCKS

ST 334-71

Fig. 19G–Ring Gear Thrust Pad Adjustment

NOTE: Make sure screw does not turn during locking process. This adjustment provides .005" to .007" clearance between thrust pad and ring gear face.

Installation

1. Clean out axle housing and cover and place new gasket over axle housing.
2. Assemble differential carrier to axle housing, install lockwashers and bolts and tighten securely.
3. Replace axle housing inspection cover, if removed, using new gasket.

NOTE: This propeller shaft to pinion flange fastener is an important attaching part in that it could affect the performance of vital components and systems, and/or could result in major repair expense. It must be replaced with one of the same part number or with an equivalent part if replacement becomes necessary. Do not use a replacement part of lesser quality or substitute design. Torque values must be used as specified during reassembly to assure proper retention of this part.

4. Assemble rear universal joint.
5. Install axle shafts as outlined in applicable axle installation procedure in Service Manual.
6. Fill axle with lubricant to a level even with bottom of filler hole. See Section 0 Service Manual for proper lubricant.

15,000 AND 17,000 LB. CAPACITY TWO-SPEED

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DIFFERENTIAL CARRIER ASSEMBLY

Removal

1. Loosen the lower carrier-to housing attaching cap screws and drain lubricant from housing.
2. Remove axle shafts and electric or vacuum lines as outlined in Truck Service Manual.
3. Remove propeller shaft from pinion flange. Tape bearing caps to keep them in place. Swing the propeller shaft to one side and tie it to the frame side rail.
4. Remove all differential carrier-to-axle housing cap screws and lock washers exept two near top of carrier. Loosen the two cap screws at the top, but leave installed to prevent carrier from falling.
5. Tap along the outer perimeter of the carrier with a soft-faced hammer to break bond between carrier and housing.
6. Support carrier with a roller jack, then remove the remaining cap screws and lock washers. Work the assembly forward until it clears the housing. A small, round pry bar or a long drift may be inserted in one of the upper holes to keep carrier aligned with housing.

from contact with its bearing, then retighten until nut contacts bearing. Tighten right adjusting nut from one to two notches additionally if old bearings are used, and two to three notches if new bearings are used, to a position where nut and nut lock are algined. Install nut lock and torque to specifications.

NOTE: At this point the differential bearings are properly preloaded. If any additional adjustments are required in the following procedures make sure that the preload remains as established. If one adjusting nut is loosened the other nut must be tightened an equal amount to maintain this preload.

5. Mount a dial indicator on the housing and measure the backlash between the ring gear and pinion. Backlash should be from .003" to .012" with .005" to .008" preferred.

NOTE: If backlash is more than .012" loosen the right adjusting nut one notch and tighten left adjusting nut one notch. If backlash is less than .003" loosen the left adjusting nut one notch and tighten the right adjusting nut one notch.

Checking Pinion Depth

1. Thoroughly clean the ring and pinion gear teeth.
2. Paint ring gear teeth lightly and evenly with a mixture of powdered red lead and oil of a suitable consistency to produce a contact pattern.
3. Rotate pinion through several revolutions in the forward and reverse direction until a definite contact pattern is developed on the ring gear. Apply pressure to the ring gear while turning the pinion-this is to create a load on gears to produce a simulated driving pattern.
4. Examine the pattern on the ring gear teeth, if the pinion depth is correct the tooth pattern will be centered on the pitch line and toward the toe of the ring gear (fig. 18G).
5. If the pattern is below the pitch line on the ring gear teeth, the pinion is too deep and it will be necessary to remove the pinion assembly and increase the shim thickness between the pinion bearing retainer and the carrier.
6. If the pattern is above the pitch line on the ring gear teeth, the pinion is too shallow and it will be necessary to remove the pinion assembly and decrease the shim thickness between the pinion bearing retainer and the carrier.
7. Changing the pinion depth will cause some change in the backlash. Therefore adjust backlash, to maintain specified limits, if required.
8. Torque bearing cap bolts to specifications and recheck ring gear to pinion backlash. Install adjusting nut locks and torque to specifications.
9. Install oil trough to differential carrier-adjust trough-to-ring gear so that clearance is .03" to. .09"-torque retaining bolts to specifications.

Shifter Yoke, Sleeve and Shaft Installation

1. Position the shifter yoke in radial groove of shifter sleeve.
2. Slide shifter sleeve over sun gear so that internal splines of sleeve align with splines on sun gear.

NOTE: Splined end of shifter yoke must be positioned toward rear of differential.

3. Install the shifter yoke lever through the housing into the shifter yoke mating splines. Tap end of lever lightly to fully seat it in the shifter yoke.
4. Using a new gasket, position the shifter unit over mounting pad, aligning lever in carrier with shift rod in shift unit.

NOTE: On axles equipped with electrical shift units, shift electrical leads must be connected to shift unit before installing shift unit to carrier.

5. Install shifter-to-carrier retaining bolts and torque bolts to specifications.

Differential Installation

1. Place a new gasket on carrier and place assembly on a roller jack. Make sure assembly is adequately supported on jack to prevent unit from falling and to allow installation in housing.
2. Use a long round-ended pry bar or drift to align carrier assembly with housing, then install carrier and secure with retaining cap screws.
3. Tighten cap screws in a cross-wise pattern until they are all pulled down snugly; then torque to specifications.
4. Swing the propeller shaft into place, remove the tape from the universal joint trunnion bearings and seat them in the universal joint yoke on the pinion flange.

NOTE: This propeller shaft to pinion flange fastener is an important attaching part in that it could affect the performance of vital components and systems, and/or could result in major repair expense. It must be replaced with one of the same part number or with an equivalent part if replacement becomes necessary. Do not use a replacement part of lesser quality or substitute design. Torque values must be used as specified during reassembly to assure proper retention of this part.

6. Connect vacuum lines to shift unit, making sure lines are not transposed.
7. Install axle shafts as outlined under the procedures given in the Truck Service Manual.
8. Fill axle with lubricant to a level even with bottom of filler hole, using lubricant meeting the requirements specified in Section 0 Truck Service Manual.

Assembly

The following paragraphs cover the installation of subassemblies and component parts in the differential carrier.

All gears, thrust washers and contact surfaces should be coated with differential lubricant before parts are installed to prevent scoring during initial operation.

Pinion and Cage-Installation

1. Place same shims (53), that were removed at disassembly, on differential carrier.
2. Press pinion and cage assembly into place in carrier.
3. Install pinion bearing cage attaching bolts and lock washers. Tighten to torque listed in "Specifications."

Differential and Planetary Unit-Installation

1. Position bearing cups (7 and 32) on support case bearing (8 and 31), then position differential and planetary unit in carrier.
2. Install bearing adjusters (6) and (33), caps (5), and cap bolts.

CAUTION: If caps do not position properly, nuts may be cross-threaded. Lift caps and reposition nuts. Forcing caps into position in the event nuts are cross-threaded will result in damage to carrier and bearing caps. Tighten cap bolts snugly, then back off only sufficiently to turn adjusting nuts.

3. Turn in right-hand adjuster until punch mark is in original position (View B, fig. 2L). Turn in left-hand adjuster until no end play exists between differential and carrier. Check for end-play using dial indicator as shown in Figure 7L. Then revolve ring gear and check for run-out.
4. Perform "Backlash Adjustment" shown under "Rear Axle Adjustments." in the Tandem Rear Axle and Power Divider Section

NOTE: Position after final adjustment of left-hand bearing adjusting nut must be such that lock can be properly installed over notches of nut.

5. After gear lash and tooth contact adjustments have been made, and with .000" end play existing between differential and carrier; add light pre-load to differential bearings by turning in right-hand adjuster 1-1/2 to 2 notches.
6. Install right-hand bearing adjuster lock (4) and secure with cotter pin.

NOTE: Check fit of left-hand lock (35) in bearing cap (5). Lock should be an interference fit in the bearing cap. If lock is loose replace with a service lock which is 1/8"wider than the production lock Figure 8L. To fit the new lock to the bearing cap, grind both ends of the lock until an interference fit of .008"to .012" exists between the cap and lock. Care should be taken to keep lock surfaces parallel with the mating surfaces of the bearing cap.

7. Install left-hand lock (35) and attach with two bolts (36). Secure bolt with lock wire.
8. Tighten bearing cap bolts to torque given in "Specifications." Wire bolts securely.

Clutch Gear and Shift Fork-Installation

1. Install sliding clutch gear (34) into left side of differential planetary unit and mesh teeth with idler pinions.
2. Position shift fork (43) in carrier with off-set at lower end of fork toward outside, with lugs inserted in clutch gear grooves.
3. Insert serrated end of shift fork shaft (41) into hole on top of carrier and through hole in shift fork (43). Use brass rod and hammer to drive shaft down until seated. Serrations on shaft will prevent movement of shaft in carrier. At underside of carrier, install expansion plug and at top side of carrier install an expansion plug covering shift fork shaft.

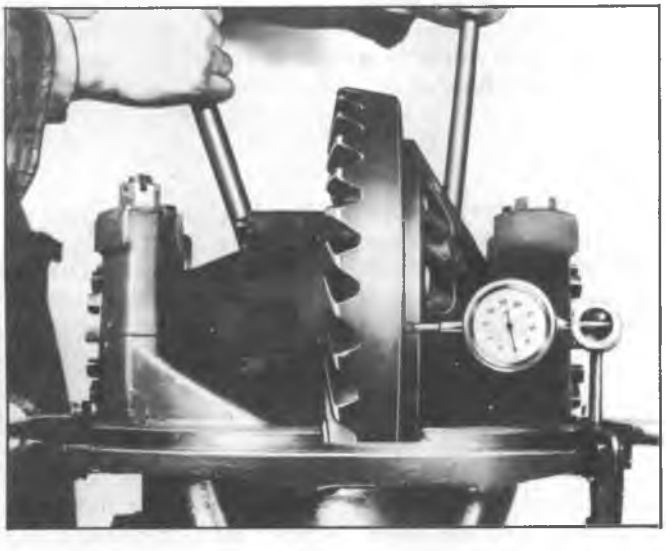

Fig. 7L–Checking End Play, Using Dial Indicator

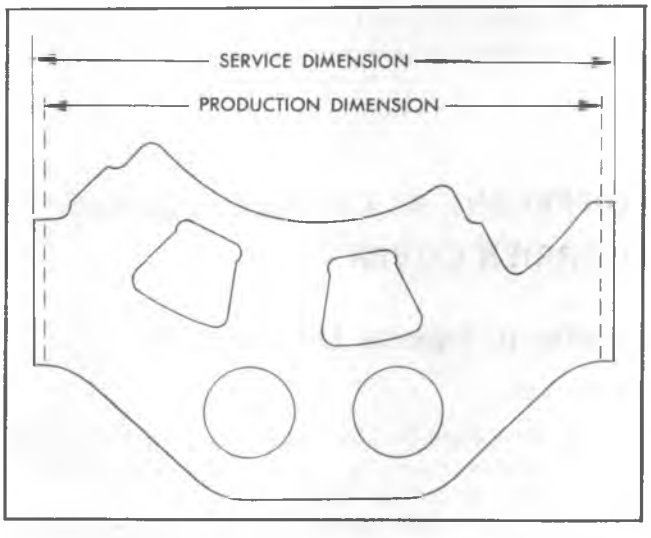

Fig. 8L–Bearing Adjusting Lock Service Replacement

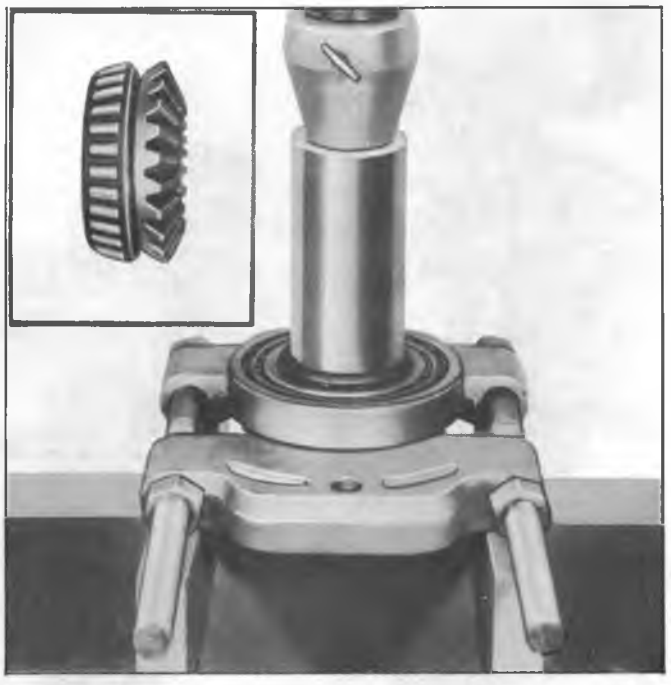

Fig. 20M–Removing Output Shaft Side Gear and Bearing

using Tool J-6419-1 and 2, press race tight against shoulder on shaft (see fig. 29M).

3. To replace bushing, cut old bushing from shaft and using Tool J- 8476 as shown in Figure 21M, press new bushing into shaft until tool bottoms on shaft.
4. Remove output shaft "O" rings and install two new rings.

Fig. 21M–Installing Output Shaft Bushing Using Tool J-8476

Inter-Axle Differential

(Refer to Figure 1M)

Disassembly

1. Mark case halves so they can be reassembled in same relative position. Also mark the half against which nuts are installed for easy identification.
2. Cut and remove lockwire from differential case bolt nuts and remove nuts and bolts.
3. Lift one half of case from assembly and separate thrust washers, side pinions, bushings and spider from other half of case.

Assembly

1. Install bushings on spider journals and install pinions on bushings.
2. Set spider and pinion assembly in one half of case and place other half of case over the assembly so marks made at disassembly are aligned.
3. Install bolts through case halves so nuts will go against case half identified at disassembly. This half has the step, at the mating surface which fits inside the counterbore of the other half.
4. Install nuts, torque to 50-70 ft. lbs. and install lockwire.

Pinion Assembly

Repair operations and adjustment procedures for the pinion assembly are the same as outlined under "Single Speed Eaton Rear Axles"--with the following exceptions:

1. Use Tool J-8479 to install bearing cups in cage as shown in Figure 22M.

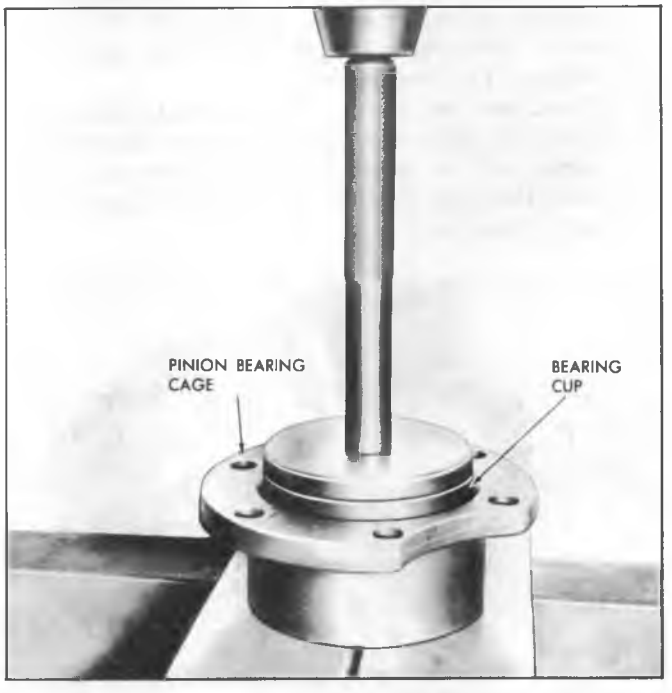

Fig. 22M–Installing Pinion Gage Bearing Cup with Tool J-8479

2. Remove four capscrews (13) and lift off valve body and spring (9).
3. Remove washer (8), diaphragm (7), washer (6), and cup (4) from valve piston (5).
4. Using screwdriver, carefully pry off plastic valve body cover (16).
5. Pry off plastic retainer (1st stage poppet) (15), lift off atmospheric (2nd stage) poppet (14) and then remove vacuum poppet and stem (10) and poppet spring (11) from valve body (12).
6. Using 1-3/8" wrench, remove end cap (1) and gasket (2).
7. To disassemble residual pressure check valve (if used) contained in end cap, use pliers or screwdriver to lift snap ring (D) from groove inside end cap. Remove spring retainer (C) spring (B) and residual pressure check valve (A).

Cleaning and Inspection

Thoroughly clean all metal parts in Bendix Metalclene or equivalent. After cleaning, rewash all hydraulic system parts in clean isopropyl alcohol or equivalent before reassembly. Inspect all parts for excessive wear or damage. Replace worn or damaged parts. Inspect control valve body atmospheric valve seat. If damaged, replace housing. Always use the correct repair kit when overhauling unit.

Assembly (Fig. 4D)

Piston and Push Rod

1. To install a new push rod seal (13) in push rod (8), place new seal (Rubber side down) on a clean block of wood.
2. Hold push rod vertically (threaded end up) with drilled end of rod resting on shaft end of seal and then strike threaded end of push rod with soft hammer to seat seal with its shoulder firmly against end of push rod.
3. Dip cup (9) in brake fluid and assemble cup on piston (10) with lip of cup as shown.
4. Install piston parts (2 through 12) on push rod from seal end of push rod in order shown.
5. Slide snap ring (7), stop washer (6), bearing (4) with "O" ring (5) installed in bearing groove, push rod seal cup (3), seal retainer (2), retainer ring (12) and piston assembly (1) on push rod.
6. Assemble retainer pin (11) through holes in piston and rod. Secure pin in place with retainer ring (12), making certain ring is seated in groove on piston.

Front Shell Assembly to Piston (Fig. 3-D)

1. Place new gasket (3) in groove on flange of hydraulic cylinder (1).
2. Assemble front shell (4) to cylinder, aligning cutout in shell with porting in cylinder flange.
3. Assemble capscrew tighten to 130-230in. lbs.
4. If diaphragm,plate and return spring were disassembled, install nut (7) (if nut is undercut, install undercut, side first) and tighten to 160-200in. lbs., then washer

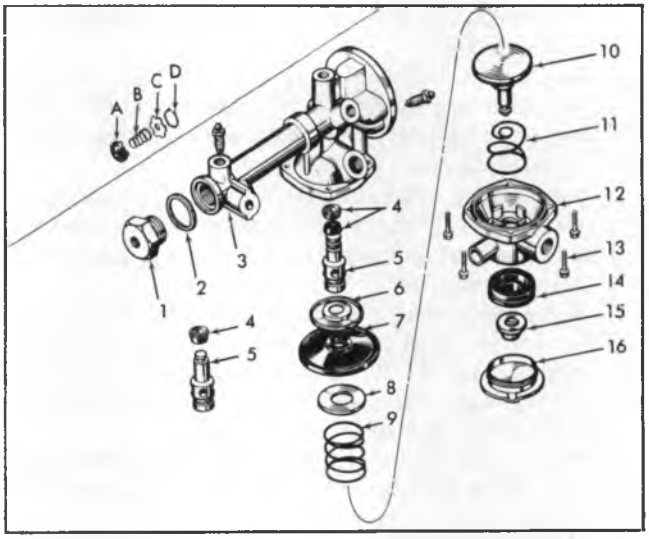

Fig. 5D–Removal and Disassembly of Control Valve

1.	End Cap	11.	Poppet Spring
2.	Gasket	12.	Control Valve Body
3.	Hydraulic Cylinder Housing	13.	Capscrews
4.	Cup	14.	Poppet
5.	Valve Piston	15.	Retainer
6.	Washer	16.	Valve Body Cover
7.	Diaphragm	A.	Pressure Check Valve
8.	Washer	B.	Spring
9.	Valve Body Spring	C.	Spring Retainer
10.	Vacuum Poppet and Stem	D.	Snap Ring

(9), diaphragm plate (10), concave side first, on threaded end of push rod.

5. Install diaphragm (11), washer (12) and nut (13) on push rod, as shown, and securely tighten nuts (7 and 13) to 160-200 in. lbs.
6. Coat hydraulic cylinder bore with clean brake fluid. Dip hydraulic piston and bearing parts in clean brake fluid. Slide diaphragm return spring (8) onto push rod large diameter of spring first, over hydraulic piston end.
7. Seat spring against concave surface of diaphragm plate (10) and align entire assembly with hydraulic cylinder bore.
8. Carefully insert hydraulic piston assembly, retainer, seal and bearing in cylinder bore. Press against diaphragm and plate to compress return spring and seat stop washer against bearing inside bore and then, using snap ring pliers, install snap ring (2) securely in groove in cylinder bore.

CAUTION: Make sure snap ring is seated all the way around its groove before releasing pressure against return spring. Failure to seat snap ring securely can result in parts damage and personal injury.

Control Valve (Fig. 5D)

1. Assemble cup (4) facing up on control valve piston (5), as shown. If two cups are used, install them on piston back to back. Then assemble piston, washer (6) and

Fig. 10G–Measuring Piston Diameter

rebored, honed, ground oversize. Pistons and rings 0.010", 0.020", and 0.030" oversize are available. Cylinder bores must be smooth, straight, and round and must be finished with a 500 (or finer) grit hone. The clearance between piston and cylinder wall on models using cast iron pistons must not be less than 0.002" or more than 0.004".

Cylinders must be cleaned thoroughly after honing or boring operation. Even slight traces of abrasive material left on the cylinder walls may cause rapid ring and wall wear and early compressor failure. Wipe down the cylinder walls with very fine crocus cloth. This loosens embedded abrasive material and also knocks off foreign material left by the honing stones; then use a stiff brush and hot, soapy water to wash down the walls. It is absolutely essential for a good job, to clean the cylinder walls of all abrasive material, since such material will cause rapid wear of pistons and rings. After cleaning the cylinder walls, wash the walls with a cloth and light engine oil, wiping the oil off with a clean,dry cloth. Repeat this until the clean, dry cloth is free of all visible dirt.

Pistons (Fig. 10G)

Examine pistons for scoring, cracks, or damage of any kind. Measure outside diameter of piston with a micrometer and compare this measurement with the inside diameter of cylinder bore. Clearance should not be less than 0.002" or more than 0.004". Piston over 0.004" smaller than cylinder bore must be replaced with an oversize piston.

NOTE: When measuring the outside diameter of the piston, make sure that the micrometer is at 90 degree angle to the piston pin bore. This will enable correct measurement.

Piston Pins and Bushings

Check fit of piston pins in pistons and connecting rods. Pins must be light press fit in pistons. If piston pin is loose in piston, the pin, piston, or both must be replaced. Check fit of piston pins in connecting rod bushings by rocking pins in bushings. If looseness is evident, replace connecting rod bushings as directed under "Compressor Repair." Discard all piston pin lock wires.

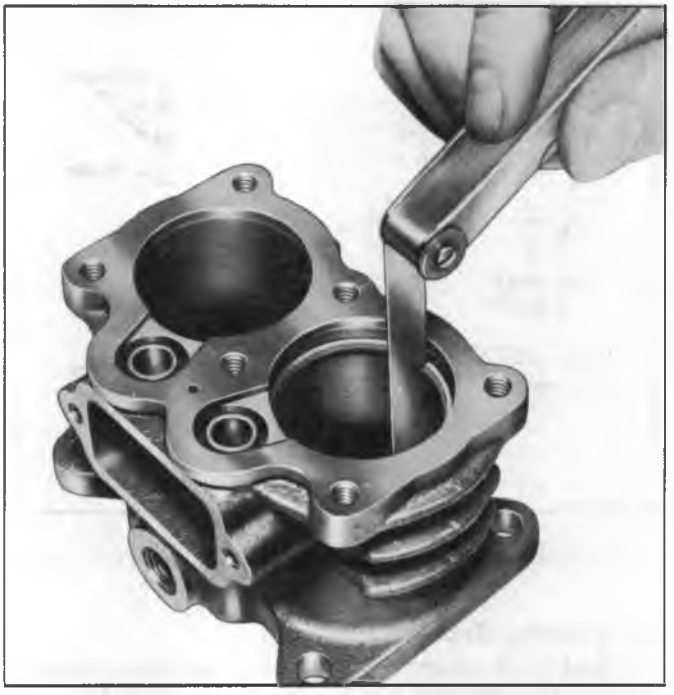

Fig. 11G–Measuring Piston Ring Gap

Piston Rings (Figs. 11G, 12G, and 13G)

Check fit of piston rings in ring grooves, and check ring gap with ring in cylinder bore. Rings are of cast-iron material.

1. Clearance between rings and sides of ring grooves in 7-1/4 cubic-foot compressor should be from 0.0015" to 0.0030" as shown in figure 12G. Ring gap should be from 0.002" to 0.010".
2. Clearance between rings and sides of ring grooves in 12 cubic foot compressor should be from 0.0035" to 0.-0055" for wide rings and from 0.002" to 0.004" for narrow rings as shown in figure 13G. Ring gap should be from 0.002" to 0.010".

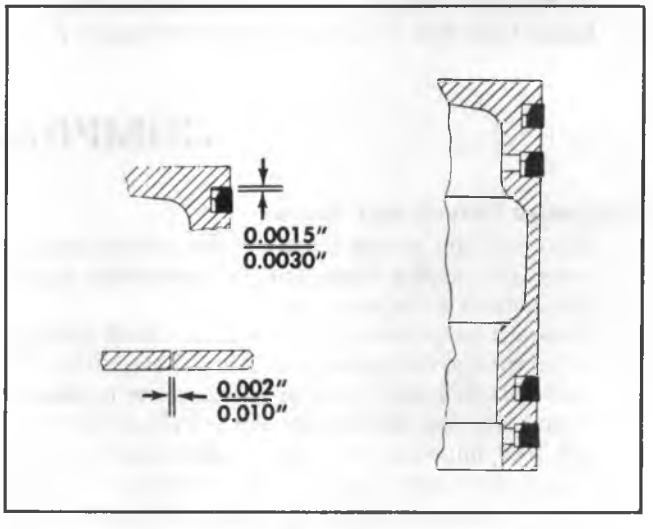

Fig. 12G–Piston Ring Arrangement and clearances 7 1/4 cu. ft. Compressor

Section 6M

CARBURETOR

HOLLEY 4150G

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GENERAL DESCRIPTION

The Holley four-barrel carburetor model 4150G, (fig. H1) is used with either the 366 or 427 cu. in. truck engine.

This is a four-barrel two-stage carburetor consisting of eight sub- assemblies. The sub-assemblies are: the throttle body, the main body, primary and secondary fuel bowls, primary and secondary metering bodies, secondary throttle operating assembly, and the governor assembly. The secondary throttle operating assembly controls the second stage throttle plates (Fig. H2). A vacuum signal to the spring loaded vacuum diaphragm assembly determines the position of the throttle plates.

The governor incorporated on this carburetor (fig. H3) provides a positive means of controlling engine speed. The throttle lever controls the engine until the governing speed is reached, at this time the governor assembly adjusts the throttle plates to maintain this speed under the various loadings. A clutch arrangement on the throttle body allows the manual control below governing speeds.

On the Vehicle Governor and Secondary Diaphragm Control Valve Checks

a. To test governor setting on the service floor, run the engine up to governor specifications Adjust governor as necessary.

b. If there is no governor control, start with step number 1.

c. If the engine governs at light load and doesn't govern at wide open throttle, the problem is probably in the dump valve. Go to step number 3.

Step Number 1

Disconnect vacuum line at slave unit. Leave dump valve line attached; speed the engine up to 2200-2400 rpm, wet your finger and place over the vacuum passage to the distributor. If the engine speed is reduced to near idle, the problem is in the control (spinner) valve or the line or fittings to the control valve.

Step Number 2

If the job does not return to idle; disconnect the line to the dump valve and remove the vacuum fitting from the slave unit. Again speed the engine up to 2200-2400 rpm and place a wet finger over the vacuum passage. If the job now returns to near idle, the problem is in the dump valve line. If it does not return to idle, the problem is in the slave unit or vacuum connections or passages behind the slave unit.

1. Plug-Secondary Control Valve (a)
2. Cover-Secondary Control Valve (a)
3. Gasket (a)
4. Diaphragm-Secondary Control Valve (a)
5. Spring-Secondary Control Valve (a)
6. Housing-Secondary Control Valve (a)
7. Plate-Choke
8. Screw-Nozzle
9. Gasket-Nozzle
10. Nozzle-Pump Discharge
11. Valve-Pump Nozzle
12. Needle-Idle Adjusting
13. Seal-Idle Needle
14. Plug-Sight
15. Gasket-Sight Plug
16. Screw-Valve Seat
17. Gasket-Valve Seat Screw
18. Nut-Valve Seat Adjusting
19. Gasket-Valve Seat
20. Valve-Fuel Inlet
21. Seal-Fuel Inlet Valve
22. Bowl-Fuel
23. Gasket-Fuel Bowl
24. Jet-Main
25. Body-Metering
26. Plate-Baffle
27. Float-Assembly
28. Spring-Float
29. "O" Ring-Fuel Tube
30. Gasket-Metering Body
31. Gasket-Power Valve
32. Retainer-Float Shaft
33. Valve-Power
34. Tube-Fuel
35. Body-Main
36. Gasket-Main Body
37. Screw
38. Retainer
39. Lever
40. Body-Throttle
41. Screw-Pump Lever Adjusting
42. Retainer
43. Lever-Pump Operating
44. Nut-Pump Lever Adjusting Screw
45. Spring-Pump Lever Screw
46. Screw-Throttle Body to Main Body
47. Gasket-Mounting Carburetor
48. Screw-Throttle Plate
49. Plate-Throttle
50. Washer-Throttle Rod
51. Retainer-Throttle Rod
52. Rod-Throttle Connect
53. Screw-Throttle Stop
54. Spring-Throttle Stop Screw
55. Housing-Throttle Operating (b)
56. Cam-Accelerator Pump Operating
57. Lever-Throttle Shaft (b)
58. Screw-Throttle Shaft Lever (b)
59. Screw-Throttle Operating Lever
60. Screw-Throttle Operating Housing
61. Retainer
62. Lever-Throttle Operating (b)
63. Spacer-Throttle Rod
64. Shaft-Throttle
65. Bushing-Throttle Shaft
66. Screw-Throttle Shaft Housing Plate
67. Plate-Throttle Shaft Housing
68. Fitting-Fuel Inlet
69. Gasket-Fuel Inlet Fitting
70. Screen-Filter
71. Screw-Accelerator Pump Cover
72. Cover w/Lever-Accelerator Pump
73. Diaphragm-Accelerator Pump
74. Spring-Accelerator Pump Diaphragm
75. Screw-Float Bowl
76. Gasket-Float Bowl Screw
77. Plug
78. Rod-Choke
79. Retainer-Choke Rod
80. Retainer-Choke Lever
81. Spring-Choke Rod
82. Lever-Choke Rod
83. Seal-Throttle Shaft
84. Shaft-Fast Idle Cam
85. Housing w/Plug-Governor
86. Diaphragm-Governor, Assembly
87. Cover-Governor Diaphragm
88. Screw-Governor Cover
89. Wire-Seal Governor Cover Screw
90. Lever-Governor, Assembly
91. Washer-Governor Lever Nut
92. Nut-Governor Lever
93. Lever-Choke
94. Washer-Choke Lever
95. Wire-Seal
96. Screw-Governor Housing Cover
97. Nut-Choke Lever
98. Screw-Choke Lever Swivel
99. Screw-Choke Cable Clamp
100. Clamp-Choke Cable
101. Cover-Governor Housing
102. Nut-Choke Cable Clamp Screw
103. Gasket-Governor Housing Cover
104. Retainer
105. Spring-Governor
106. Screw-Governor Housing
107. Post-Governor Spring
108. Screw-Fast Idle
109. Pin-Fast Idle
110. Jet-By-Pass-Governor
111. Seal-Governor Passage
112. Gasket-Governor Housing
113. Shaft w/Lever-Choke
114. Seal-Choke Rod
115. Screw-Secondary Control Valve Housing
116. Pipe-Fuel Control Valve
117. Tee
118. Screw-Control Valve Housing
119. Housing-Control Valve
120. Ball-Check
121. Diaphragm-Control Valve
122. Spring-Control Valve Diaphragm
123. Screw-Control Valve Cover
124. Gasket-Secondary Control Valve Plug
125. Retainer-Vent Valve
126. Valve-Vent
127. Rod-Vent Valve Actuating
128. Spring-Vent Valve Rod
129. Retainer-Vent Valve Rod Spring
130. Air Cleaner-Control Valve

(a) Serviceable Only as Part of a Complete Assembly - Not Shown.
(b) Serviceable Only as Part of a Complete Assembly.

6.6″ SERIES 4D TYPE 150 DELCOTRON

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DISASSEMBLY (Fig. 10C)

1. Remove 4 thru bolts (exposed at the slip ring end frame).
2. Extract rotor unit and drive end frame assemblies from the stator and slip ring end frame.

CAUTION: To prevent damage to the brush units insert one of the thru bolts into the end frame opening and physically lift brushes against spring pressure.

3. Place a piece of tape over the slip ring end frame bearing to prevent entry of dirt or other foreign material.
4. Remove shaft nut, pulley, fan and woodruff key from shaft.
5. Slip drive end frame from rotor shaft and disassemble bearing retainer and grease reservoir.

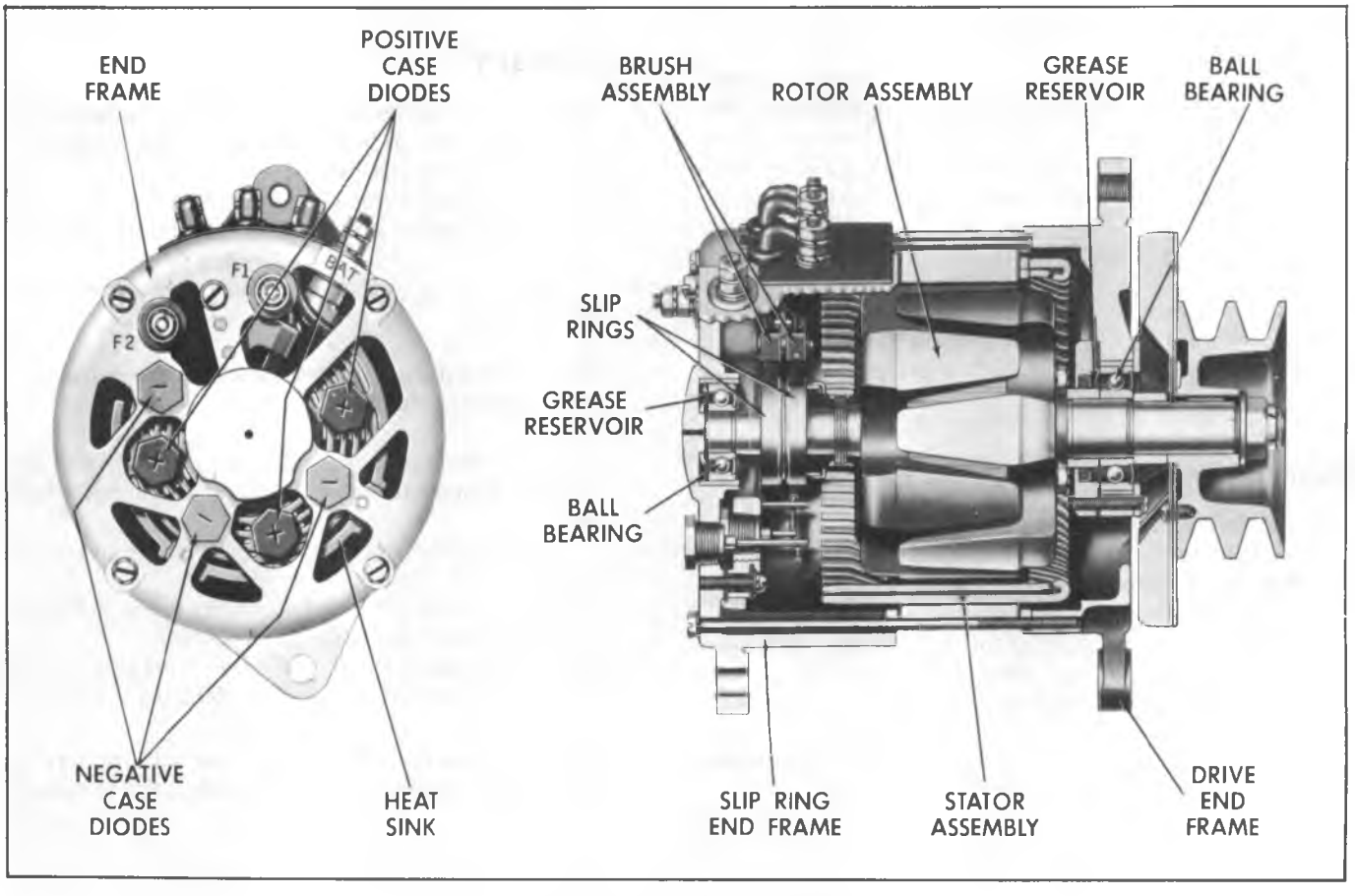

Fig. 10C–130 Amp Series 4D, Type 150 Delcotron

remove inner retainer bolts and retainer. On 542 models, remove inner retainer bolt and retainer.

13. Use brass drift to drive countershaft to rear of case and out of front bearing. Raise front end of countershaft and lift out of case.
14. Remove countershaft front bearing from bore in case by tapping outer bearing race from inside case.

CLEANING AND INSPECTION

Bearings

1. Wash the bearings thoroughly in a cleaning solvent.
2. Blow out the bearings with compressed air.

CAUTION: Do not allow the bearings to spin but turn them slowly by hand. Spinning bearings will damage the race and balls.

Transmission Case

1. Wash the transmission case inside and outside with a cleaning solvent and inspect for cracks.
2. Check the front and rear faces for burrs and if present, dress them off with a fine mill file.
3. Check bearing and shaft bores in case and if damaged, replace case.

Gears

1. Inspect all gears for excessive wear, chips or cracks, and replace any that are worn or damaged.
2. Check first and reverse gear, 2nd and 3rd clutch ring, and 4th and 5th clutch ring for freedom of movement when shifting.

SUBASSEMBLY OPERATIONS

Transmission Cover

Disassembly

1. Using a square edged "easy-out," remove the pin retaining the 1st shifter fork and shifter head to shifter shaft (fig. 4NP).
2. Turn shifter shaft one-half turn to push lock ball out of the notch in the shifter shaft and, with other shifter shafts in neutral position, drive 1st shifter shaft out of cover. Shifter shaft will push out expansion plug.

NOTE: The shifter shafts are in neutral position when the ends of all four shafts are in approximate alignment toward the rear end of the transmission cover.

3. Using an easy out, remove the pins retaining the other forks and heads to their shaft and remove the shafts, one at a time as in Step 2.

CAUTION: Care should be taken so that the shifter lock balls and springs and the interlock balls and pins are not lost as the shifter shafts are removed.

Assembly

1. In reassembling the transmission cover, care should be used in reinstalling the shifter shafts. They should be installed in order; reverse, 4th and 5th, 2nd and 3rd, and 1st speed.
2. Start shifter shafts into cover. Hold shifter forks and heads in position and push shafts through forks and heads.
3. Install shifter shaft detent springs and balls and interlock ball and pins (fig. 5NP). Depress detent balls with small punch and press shafts over balls. Turn shafts, if necessary, to position balls in grooves in shifter shafts.
4. Install shifter fork and shifter head retaining pins.
5. Install shifter shaft hole expansion plugs and stake them in place. Use a small amount of Permatex or equivalent around expansion plugs to seal.

Clutch Gear and Bearing

Disassembly

1. Remove clutch gear bearing retaining snap ring.
2. To remove bearing, place clutch gear and bearing assembly in an arbor press. Using Tools J-2228 and J-1358, press gear and shaft out of bearing (fig. 6NP).
3. To remove transmission mainshaft pilot bearing rollers, remove retainer snap ring and washer and remove rollers from recess in clutch gear shaft.

Inspection

1. Wash all parts in a cleaning solvent.
2. Inspect roller bearings for pits or galling.
3. Inspect bearing diameter in shaft recess for galling.
4. Inspect gear teeth for excessive wear.
5. Inspect clutch shaft pilot for excessive wear.
6. Rotate clutch gear bearing slowly by hand and check for roughness.
7. Inspect seal in retainer for damage of any sort.

Assembly

1. Apply a small amount of grease to bearing surface in clutch gear shaft recess and install transmission mainshaft pilot roller bearings, washer, and snap ring in recess (fig. 7NP).
2. Install bearing on shaft with bearing outer retainer ring toward pilot end (front) of shaft. Use Tools J-8108 and J-0358 to press bearing into position on shaft (fig. 8NP).
3. Install clutch gear bearing retaining snap ring on shaft.

CAUTION: The bearing must turn as freely after it is installed on the shaft, as it turned before being pressed into position.

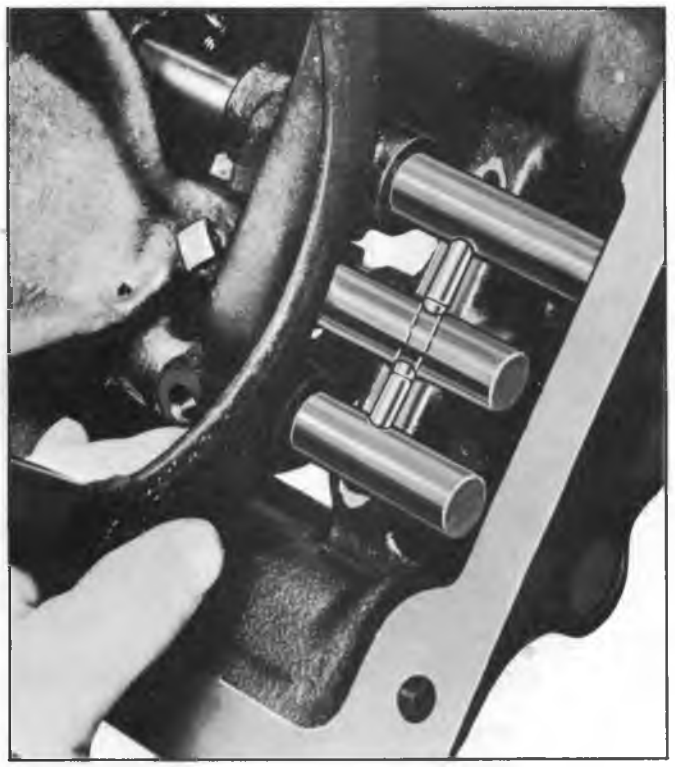

Fig. 10R--Location of Interlock Poppets

shifter shafts so interlock poppet will permit passage of this shaft and slide shaft through forward boss.

8. Install shifter fork on shaft with fork to front (fig. 13R). Install set screw and lock with wire.
9. Install plugs in front of cover (fig. 9R), using a small amount of Permatex or equivalent around plugs to seal.
10. Place cover right side up on bench and install poppet balls and springs in holes in cover (Fig. 14R).
11. Position first-and-reverse shifter lever in control lever housing with boss next to housing and install stud from inside housing. Secure stud with nut and lock washer, then insert plunger pin in first-and-reverse shift lever (fig. 7R). Assemble new gasket on cover and install

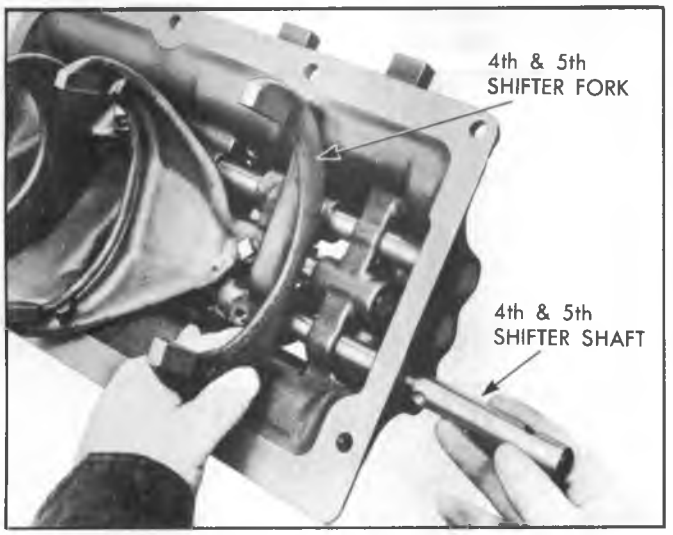

Fig. 11R--Removing Interlock Pin

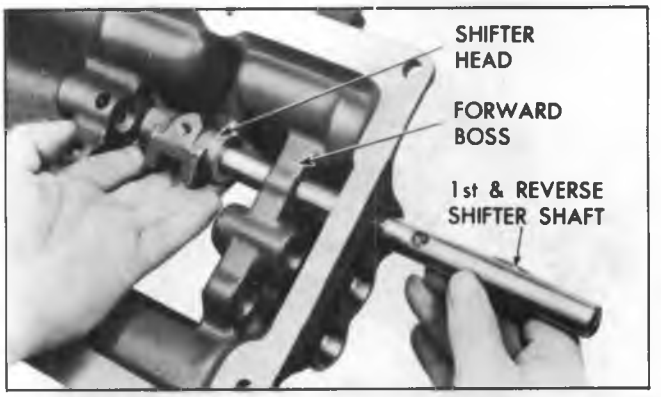

Fig. 12R--Installing Shifter Head

housing so lever fits in slot in shifter head.

12. Insert outer plunger pin in cover and istall spring and retainer as shown in Figure 6R.

Mainshaft

Disassembly (See Fig. 15R)

1. Slide fourth-and-fifth speed synchronizer assembly off forward end of shaft and slide first-and-reverse gear off rear end of shaft.
2. Remove snap ring from mainshaft and slide thrust washer and fourth speed gear off gear sleeve.
3. Support rear face of third speed gear on suitable press plates and press shaft from gear. Fourth speed gear sleeve will be pushed off ahead of gear (fig. 16R).

NOTE: Second-and-third speed synchronizer may be shifted to engage second speed gear to obtain maximum space for placement of press plates (fig. 15R).

4. Slide second-and-third speed synchronizer off shaft.
5. If inspection shows the need for replacement of second speed gear, second-and-third synchronizer hub, or mainshaft, proceed as follows:
   a. Remove synchronizer hub snap ring from shaft.

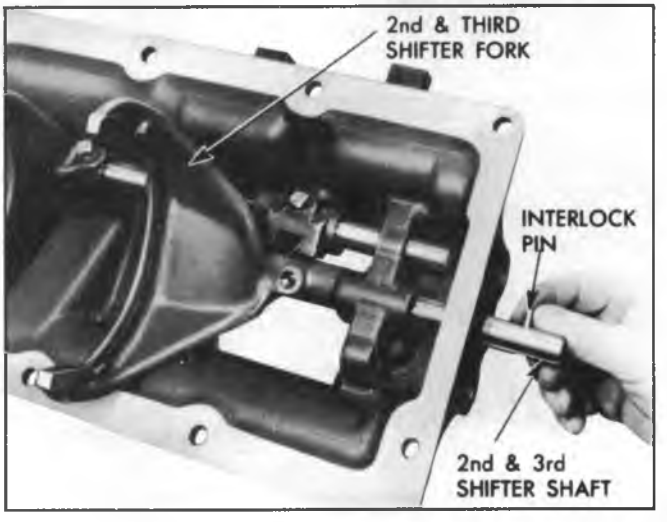

Fig. 13R--Installing 4th and 5th Shifter Fork

1. Shift Rod Cover Screw
2. Shift Rod Cover Screw Lock Washer
3. See Control Cover
4. Control Cover Gasket
5. Mainshaft 5th Speed Synchronizer Cup
6. Mainshaft 4th and 5th Synchronizer Assembly
7. Mainshaft 4th Speed Synchronizer Cup
8. Mainshaft 4th and 5th Shift Hub Sleeve Ret. Ring
9. Mainshaft 4th and 5th Shift Hub Sleeve
10. Mainshaft 4th Speed Gear
11. Mainshaft 3rd Gear Retainer Ring
12. Mainshaft 3rd Gear Locating Washer
13. Mainshaft 3rd Speed Gear
14. Mainshaft Gear Synchronizer Cup
15. Mainshaft 2nd and 3rd Synchronizer Assembly
16. Mainshaft 2nd and 3rd Shift Hub Sleeve Ret. Ring
17. Mainshaft 2nd and 3rd Shift Hub Sleeve
18. Mainshaft 2nd and 3rd Shift Hub Sleeve Ret. Ring
19. Mainshaft 2nd Speed Gear
20. Mainshaft 2nd Speed Gear Locating Washer
21. Mainshaft 2nd Speed Gear Retainer Ring
22. Mainshaft
23. Mainshaft 1st Speed Gear
24. Countershaft Rear Bearing Cap Screw
25. Countershaft Rear Bearing Cap Lock Washer
26. Countershaft Rear Bearing Cap
27. Countershaft Rear Bearing Cap Gasket
28. Countershaft Rear Bearing Retainer Ring
29. Countershaft Rear Bearing
30. Countershaft Rear Bearing Oil Slinger
31. Countershaft
32. Countershaft Gear Key
33. Countershaft 4th Speed Gear
34. Countershaft Drive Gear
35. Countershaft Drive Gear Retainer Ring
36. Filler Plug
37. Magnetic Drain Plug
38. Flange Nut
39. Retainer Nut
40. Lock Washer
41. Flange
42. Parking Brake Assembly
43. Bolt
44. Mainshaft Rear Oil Seal
45. Mainshaft Rear Bearing Cap Screw
46. Mainshaft Rear Bearing Cap Screw Lock Washer
47. Mainshaft Rear Bearing Cap--Inc. Speedometer Driven Gear Bushing
48. Mainshaft Rear Bearing Cap Gasket
49. Speedometer Drive Gear
50. Mainshaft Rear Bearing
51. Transmission Case
52. P.T.O. Cover Plate Gasket
53. P.T.O. Cover Plate
54. P.T.O. Cover Plate Screw
55. Mainshaft Rear Bearing Cap Screw Lock Washer
56. Mainshaft Rear Bearing Cap Screw
57. Speedometer Driven Gear
58. Speedometer Tube Nut
59. Reverse Idler Shaft Lock Screw
60. Reverse Idler Shaft Lock
61. Reverse Idler Shaft
62. Reverse Idler Thrust Washer
63. Reverse Idler Bearing
64. Reverse Idler Gear
65. Mainshaft Spigot Bearing
66. Main Drive Gear
67. Main Drive Gear Bearing Oil Slinger
68. Main Drive Gear Bearing
69. Main Drive Gear Bearing Retainer Ring
70. Main Drive Gear Bearing Cap Oil Seal
71. Main Drive Gear Bearing Cap Gasket
72. Main Drive Gear Bearing Cap
73. Main Drive Gear Bearing Cap Screw
74. Clutch Housing Stud Nut
75. Clutch Housing Stud Nut Lock Washer
76. Clutch Housing Stud
77. Countershaft Pilot Bearing
78. Pedal Shaft Grease Fitting
79. Clutch Housing Inspection Plate Bolt
80. Clutch Housing Inspection Plate Lock Washer
81. Clutch Housing Inspection Plate
82. Clutch Pedal Shaft Bushing
83. Clutch Housing

6. Remove 2nd gear retainer ring, 2nd gear and locating washer (fig. 15N).

Shift Bar Housing Disassembly

1. Remove 1st and reverse shift lug lockscrew, then remove 1st and reverse shift fork, rod and lug from shift rod support (fig. 16N).
2. Using a small pin or drift, remove 2nd and 3rd shift fork roll pin (fig. 17N).
3. Remove 2nd and 3rd shift rod.

CAUTION: Do not lose interlock cross pin or 2nd speed overshift spacer.

4. Remove 4th and 5th shift fork roll pin, shaft rod and fork.

CLEANING

Clean all parts thoroughly using solvent type cleaning fluid. It is recommended that parts be immersed in cleaning fluid and moved up and down slowly until all old lubricant and foreign material is dissolved and parts are thoroughly cleaned.

CAUTION: Care should be exercised to avoid skin rashes, fire hazards, and inhalation of vapors when using solvent type cleaners.

Bearings

Remove bearings from cleaning fluid and strike against a block of wood to dislodge solidified particles of lubricant. Immerse again in cleaning fluid to flush out particles. Repeat above operation until bearings are thoroughly clean. Dry bearings using moisture- free compressed air. Be careful to

NOTE: Clutch housing should not be removed from transmission case unless housing or case require replacement.

Control Tower Removal

NOTE: On transmissions having a conventional gearshift lever, accomplish the following procedures:

1. Move gearshift lever to "Neutral" position.
2. Remove four bolts and lock washers attaching control tower to shift bar housing.
3. Lift shift control tower straight off shift bar housing. Remove and discard tower to housing gasket.

Shift Bar Housing Removal

1. Mount transmission in holding fixture (J-5750); then remove drain and filler plugs and completely drain the transmission.
2. Remove power take-off covers and gaskets. Discard gaskets.
3. Remove bolt and lock washer assemblies, then remove the shift bar housing and gasket from transmission case (fig. 2P). Discard gasket.
4. Shifting by hand, engage transmission into two speeds at the same time to lock up the transmission.

Mainshaft Removal

1. Remove parking brake parts (if used).
2. Remove nut and pull companion flange (and brake drum if used) from rear end of mainshaft.
3. Remove speedometer driven gear and adapter (if used) from the mainshaft rear bearing cap.
4. Remove bolt and lock washer assemblies, then remove mainshaft and countershaft, rear bearing caps and gaskets. Discard gaskets.
5. With transmission still locked in two speeds, remove countershaft rear bearing retaining nut.

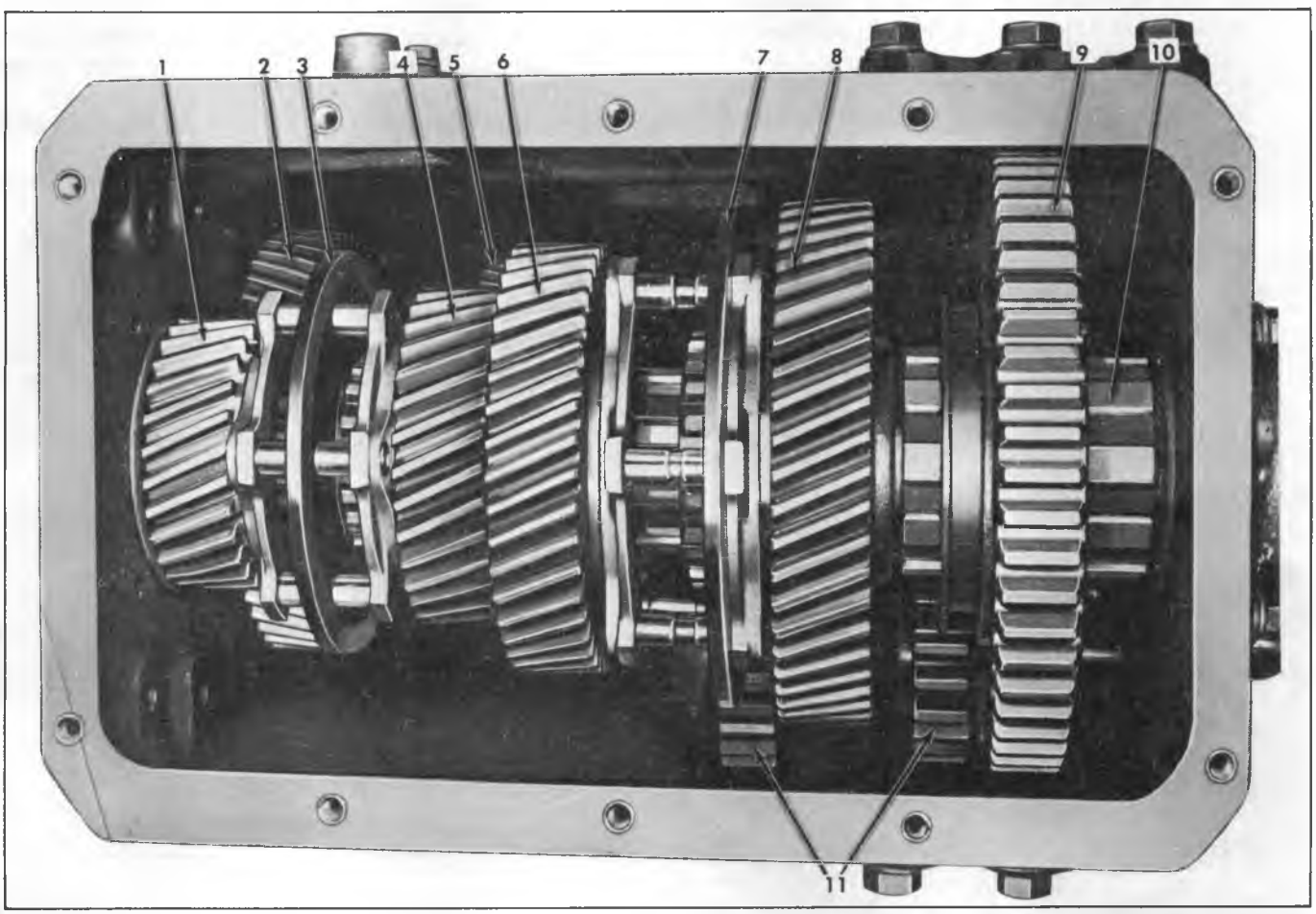

Fig. 2P–Transmission–Shift Bar Removed

1. Main Drive Gear
2. Countershaft Drive Gear
3. 4th and 5th Synchronizer Assy.
4. Mainshaft 4th Speed Gear
5. Countershaft 4th Speed Gear
6. Mainshaft 3rd Speed Gear
7. 2nd and 3rd Speed Synchronizer Assy.
8. Mainshaft 2nd Speed Gear
9. Mainshaft 1st and Reverse Gear
10. Mainshaft
11. Reverse Idler Gear

6. Install clutch throw-out bearing return spring clip under head of bolt when installing bearing cap.
7. Lock transmission gears into two speeds at the same time to lock up the transmission; then tighten countershaft rear bearing retaining nut. After nut is driven up tight, stake nut in position with punch and hammer.
8. Install countershaft rear bearing cap and new gasket. Tighten bolts firmly.
9. Install speedometer drive gear spacer and drive gear (if used) on mainshaft.
10. Install mainshaft rear bearing cap and new gasket. Tighten bolts firmly.
11. Install parking brake drum (if used) and companion flange on rear end of mainshaft.
12. With transmission still locked up in two speeds at the same time install companion flange nut. Tighten nut to 250 foot-pounds torque and install a new cotter pin.

Shifter Bar Housing Installation

1. If previously removed, install P.T.O. covers and new gaskets. Tighten bolts firmly.
2. With transmission in "Neutral," position shift bar housing and new gasket on transmission case. Be sure shift forks engage gear slots.
3. Install shift bar housing to transmission case attaching bolts and lock washer.
4. Install parking brake parts (if used) as directed in BRAKES (Sec. 5) of this manual.

Control Tower Installation

NOTE: On transmissions having a conventional gearshift lever, accomplish the following:

1. With transmission in "Neutral," position a new gasket on shift bar housing.
2. Place shift control lever in shifter shaft collar; then install shift lever pivot bolt, nut, and lock washer attaching control lever to anchor bracket. Tighten nut to 25-31 foot-pounds torque.

AUXILIARY 4-SPEED TRANSMISSION
SPICER MODEL 6041

INDEX

DISASSEMBLY OF TRANSMISSION

NOTE: Refer to Figure 1F.

1. Remove drain plug and drain fluid from transmission. Remove cover to case bolts and lift cover from transmission case.
2. Lock transmission by locking both shift collars into engagement with mating gears at same time. Remove mainshaft nut; then remove rear flange.
3. If front support has not been removed, then remove front support from main drive gear bearing cap.
4. Remove countershaft rear bearing cap, noting number of shims under cap.
5. Remove mainshaft rear bearing cap and gasket with oil seal and speedometer driven gear in cap, then remove oil seal and speedometer driven gear from cap and sleeve.
6. Remove main drive gear bearing cap with bearings, main drive gear, seal and seal cap.
7. Remove speedometer drive gear. Then using puller (J-4558) as shown in figure 2F, press mainshaft with front pilot bearing, mainshaft over drive gear snap ring, overdrive and direct clutch gear, collar, and overdrive gear out through front of case, leaving 1st speed gear, 1st and 2nd speed clutch gear and collar and mainshaft 2nd speed gear and sleeves in case. Remove these items from case after removing mainshaft.
8. Remove mainshaft rear bearing assembly from transmission case.
9. Drive countershaft toward rear far enough to force rear bearing cup out of case. Using snap ring pliers, remove countershaft 2nd speed gear front snap ring from groove, slide 2nd speed gear forward, then lift countershaft assembly out of case.
10. Remove countershaft front bearing cup from case.
11. Remove power take-off covers, and filler plug from case.

through mainshaft rear bearing bore. Lower front of mainshaft into position and mesh all gears.

12. Coat thrust face of 1st speed gear thrust washer (10) with light grease and assemble on rear of mainshaft with flat face in toward 1st speed gear.
13. Use 3/4" stock to block mainshaft across drive gear bearing cap opening at front of case. Position mainshaft rear bearing (11) on shaft with snap ring to rear. Use caution to align outer race of bearing with case bore. Use tubing to drive on inner race of bearing until bearing is seated against thrust washer (10). Remove 3/4" stock and tap bearing into case until snap ring seats against case.
14. Coat rear bearing washer (12) with light grease and assemble next to rear bearing.
15. Assemble speedometer drive gear or spacer (13) on mainshaft.
16. If oil seal (14) was removed from rear bearing cap (15), use gasket cement on O.D. of seal and press into bearing cap.

CAUTION: Use care to avoid distorting seal. Press in new speedometer bushing (16) if removed.

17. Apply gasket cement to mainshaft rear bearing cap gasket and install on rear bearing cap. Align the oil passage ports.
18. Apply gasket cement to other side of gasket and assemble bearing cap and gasket to rear of case with cap screws and lock washers. Torque to 40 lbs. ft.
19. If slinger (17) has been removed from companion flange (18) replace at this time.
20. Assemble yoke or companion flange (18) to rear of mainshaft with tool similar to J-7801-1. If proper tools are not available always block front of mainshaft with 3/4" stock across drive gear bearing bore opening. Use tubing to assemble flange or yoke to mainshaft.
21. Assemble flat washer and lock nut to mainshaft. Hand-tighten nut only at this time.
22. Assemble 3rd-4th speed clutch collar (19) on front of mainshaft, with external clutch teeth toward front of case. Shift clutch collar into mesh with 4th speed gear (4).

Drive Gear (Figure 8F)

1. Position drive gear bearing cap (1) in press, rear bearing (2) in bearing cap. Secure with snap ring (3).
2. Position drive gear (4) on bed of press with spline or front end up. Position drive gear bearing cap sub-assembly down over splines of drive gear. Assemble bearing spacer (5) to front of drive gear. Use tubing and press against spacer until bearing is seated against gear.
3. Assemble smaller bearing (6) over front of drive gear. Use tubing and press on inner race of bearing until seated against spacer.
4. Coat O.D. of oil seal (7) with Permatex or equivalent and assemble to front of bearing cap.

CAUTION: Use care to prevent distortion of seal.

NOTE: If slinger (8) has been removed from companion flange, replace at this time.

5. Prelube lip of front seal and press end yoke or companion flange (9) on drive gear.
6. Rotate bearing cap assembly, under load of press, to see if all parts are seated properly. Bearing cap should rotate freely. Assemble front lock nut hand tight.
7. Apply gasket cement to drive gear bearing cap gasket (10) and install on bearing cap.
8. Apply gasket cement to other side of gasket and assemble drive gear and bearing cap to front of case. Use soft hammer and tap into position.
9. Secure front bearing cap assembly to case with cap screws and lock washers. Torque to 40 lbs. ft.
10. Refer to Figure 5F and engage 3rd-4th speed shift collar (1) with drive gear (8) and 1st-2nd speed clutch collar (3) with 1st speed gear (4) to lock transmission in two gears.
11. Use 2-1/8" socket and tighten drive gear and mainshaft flange nuts. Torque to 425 lbs. ft. and secure with cotter pin if castellated nuts are used.
12. Shift clutch collars back into neutral and make sure all shafts turn free.
13. Use pressure type oil can to force lubricant down the oil holes and end slots of all floating gears on mainshaft to flush out grease and insure initial lubrication of the over-running gear and bearings.
14. Install shift rods, shift forks and cover as outlined under shift controls assembly.

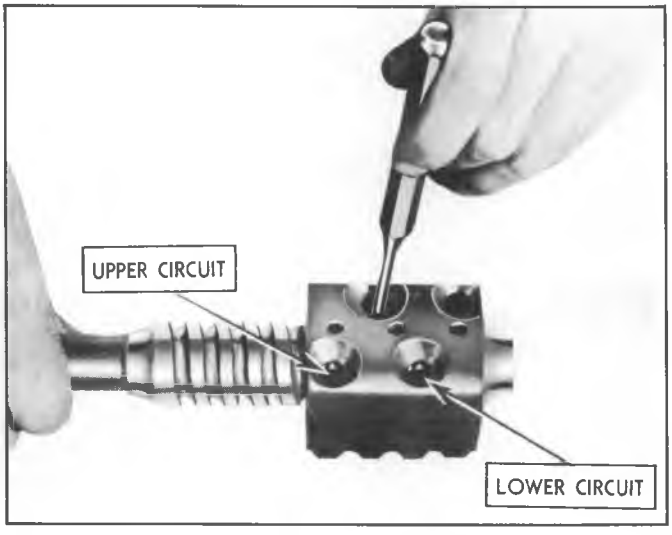

Fig. 11--Filling Ball Circuit in Nut

the pitman shaft (fig. 10). Break the tack-weld and withdraw the retainer from the shaft. Remove the adjuster screw and lockwasher.

2. Install a new thrust washer and screw, lubricating the end of the adjuster with regular steering gear lubricant.
3. Screw the retainer in tight and then back off 30 degrees to obtain the correct adjustment. Tack-weld the retainer at the points shown in Figure 10.

Ball Nut Servicing

As a rule, disassembly of the ball bearing nut will not be necessary, if it is perfectly free with no indication of binding or tightness when rotated on the worm. However, if there is any indication of binding or tightness, the unit should be disassembled, cleaned and inspected.

1. Remove the screws and clamp retaining the ball guides in the nut. Draw the guides out of the nut.
2. Turn the nut upside down and rotate the wormshaft back and forth until all balls have dropped out of the nut into a clean pan. With the balls removed, the nut can be pulled endwise off the worm.

NOTE: On TE 60 Models with 9000 lb. axle, the upper or lower bearing cone must be removed before the nut can be removed from the worm.

3. Place the wormshaft flat on the bench and slip the nut over the worm with the ball guide holes up and the shallow end of the rack teeth to the left from the steering wheel position. Align the grooves in the worm and nut by sighting through the ball guide holes.
4. Count 53 balls (all except TE 60 Models with 9000 lb. axle), 45 balls (TE 60 Models with 9000 lb. axle) into a suitable container. This is the proper number of balls for one circuit. Drop the counted balls from the container into one of the guide holes while turning the worm gradually away from that hole. Continue until that ball circuit is full from the bottom of one guide hole to the bottom of the other or until stopped by reaching the end of the worm.

NOTE: In cases where the balls are stopped by the end of the worm, hold down those balls already dropped into the nut with the blunt end of a clean rod or punch (fig. 11) and turn the worm in the reverse direction a few turns. The filling of the circuit can then be continued. It may be necessary to work the worm back and forth, holding the balls down first in one hole then the other, to close up the spaces between the balls and fill the circuit completely and solidly.

5. Lay one-half of the ball guide, groove up, on the bench and place the remaining balls from the count container in it (fig. 12). The number of the balls remaining should just fill the guide.
6. Close this half of guide with the other half. Hold the two halves together and plug each open end with heavy lubricant so the balls will not drop out while installing the guide.
7. Push the guide into the guide holes of the nut (fig. 13). This completes one circuit of balls. If the guide does not push all the way down easily, tap it lightly into place

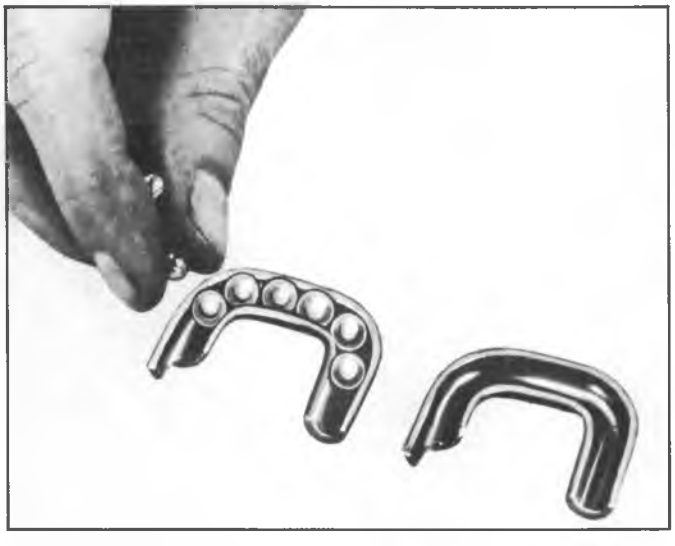

Fig. 12--Filling Ball Guides

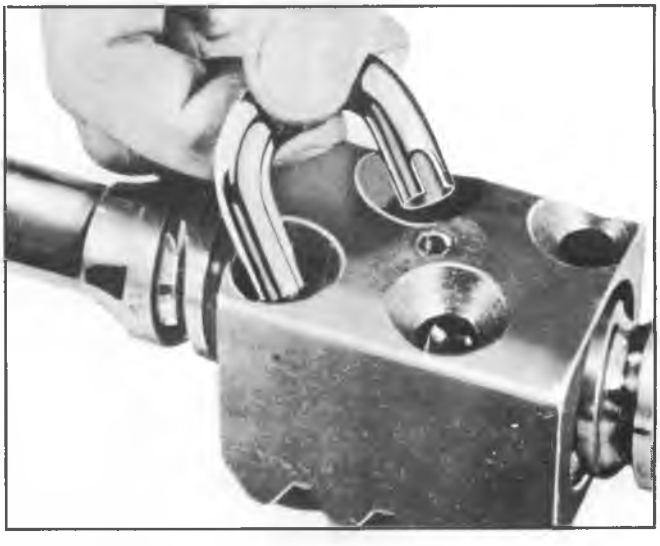

Fig. 13--Removing and Replacing Ball Guide

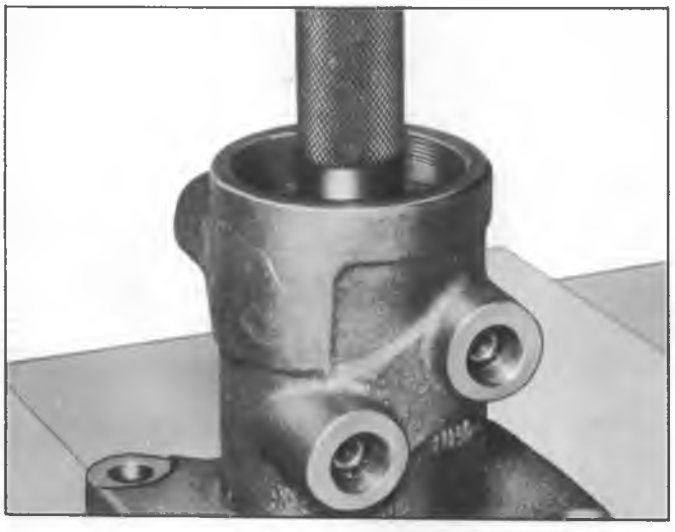

Fig. 31–Installing Top Cover Needle Bearing and Seal Using Tool J-8526-1

against the washer. Hold the bolt from rotating while turning the nut off the bolt. This will force the washer against the port boss and will back out the bolt, thus drawing the connector from the top cover housing. Discard the connector. Clean the housing thoroughly to remove any tapping chips.

Inspection

1. Wash all parts in clean solvent and dry with compressed air.
2. Inspect the worm and ball nut grooves and all balls for scoring.
3. Inspect the ball return guide halves for distortion, especially at the guide ends.

Assembly

1. Drive the new connectors against the housing seat using Tool J-6217, being careful not to damage either the connector or housing seat (fig. 30).
2. Install the new needle bearing, lubricated with Transmission Fluid, using Installer J-8526-1 and Handle J-7079-2 (fig. 31) Press against the stamped identification side of the bearing.
3. Install the seal back-up washer. Lubricate a new seal assembly with Transmission Fluid and press into the top cover housing (open end of seal towards the adjuster plug end of the housing).
4. Place the wormshaft in the top cover, being careful not to damage the seal assembly.
5. Lay the top cover and wormshaft flat on the bench and slip the ball nut over the worm with the ball guide holes up and the shallow end of the rack teeth to the left from the steering wheel position. Align the grooves in the worm and nut by sighting through the ball guide holes.
6. Count 53 balls into a suitable container. This is the proper number of balls for one circuit. Drop the counted balls from the container into one of the guide holes while turning the worm gradually away from the bottom of one guide hole to the bottom of the other or until stopped by reaching the end of the worm.

   NOTE: In cases where the balls are stopped by the end of the worm, hold those balls already dropped into the nut with the blunt end of a clean rod or punch and turn the worm in the reverse direction a few turns. The filling of the circuit can then be continued. It may be necessary to work the worm back and forth, holding the balls down first in one hole then the other, to close up the spaces between the balls and fill the circuit completely and solidly.

7. Lay one-half of the ball guide, groove up, on the bench and place the remaining balls from the count container in it. The number of the balls remaining should just fill the guide.
8. Close this half of the guide with the other half. Hold the two halves together and plug each open end with heavy lubricant so the balls will not drop out while installing the guide.
9. Push the guide into the guide holes of the nut. This completes one circuit of balls. If the guide does not push all the way down easily, tap it lightly into place with the wooden handle of a screw driver.
10. Fill the second ball circuit in the same manner as described for the first circuit.
11. Assemble the ball guide clamp to the nut, being sure to use lock washers under the clamp screws; then tighten the screws securely.

Check the assembly by rotating the nut on the worm to see that it moves freely. Do not rotate the nut to the end of the worm threads as this may damage the ball guides. If there is any "stickiness" in the motion of the nut, some slight damage to the ends of the ball guides may have been overlooked.

Pitman Shaft and Side Cover Assembly

Disassembly

1. Remove the lash adjuster locknut. Discard the locknut.
2. Rotate the side cover counter-clockwise on the lash adjuster and remove the side cover assembly.
3. Slide the lash adjuster and shim from the "T" slot in the end of the pitman shaft.
4. Check the side cover bushing for damage. If the bushing must be replaced, the side cover and bushing must be replaced as an assembly.
5. Check all other parts for signs of wear and replace if needed.

Assembly

1. Assemble the lash adjuster, with shim, in the slot in the end of the pitman shaft. Check the end clearance, which should not be greater than .002". For the purpose of adjusting this end clearance, a steering gear lash adjuster shim unit is available. It contains four shims - .063", .065", .067" and .069" thick.
2. Start the adjuster into the side cover bushing, then with

ENGINE

SECTION 6

NOTE: Procedures for overhaul of engines listed here are covered in the Passenger and 10-30 Series Truck Overhaul Manual

GENERAL DATA:						
Type				V8		
Displacement (cu. in.)				350	366	427
Horsepower @ rpm				215 @ 4000	235 @ 4000	260 @ 4000
Torque @ rpm				335 @ 2800	345 @ 2600	405 @ 2600
Bore				4	3 15/16	4 1/4
Stroke				3.48	3.76	3.76
Compression Ratio				8.0:1		
Firing Order				1-8-4-3-6-5-7-2		
CYLINDER BORE:						
Diameter				3.9995-4.0025	3.9365-3.9395	4.2495-4.2525
Out of Round	Production			.001 Max.		
	Service			.002 Max.		
Taper	Production	Thrust Side		.0005 Max.		
		Relief Side		.001 Max.		
	Service			.005 Max.		
PISTON:						
Clearance	Production			.0012-.0022	.0030-.0040	.0034-.0044
	Service			.0036 Max.	.0055 Max.	.0056 Max.
PISTON RING:						
COMPRESSION	Clearance Groove	Production	Top	.0012-.0032	.0018-.0032	
			2nd			
			3rd	.0010-.0030		
		Service		Hi Limit Production + .001		
	Gap	Production	Top	.010-.020	.010-.020	
			2nd	.013-.025		
			3rd		.010-.020	.010-.030
		Service		Hi Limit Production + .01		
OIL	Groove Clearance	Production		.002-.007	.0020-.0035	
		Service		Hi Limit Production + .001		
	Gap	Production		.015-.055	.010-.023	
		Service		Hi Limit Production + .01		
PISTON PIN:						
Diameter				.9270-.9273	.9895-.9898	
Clearance	Production			.00015-.00025	.00025-.00035	
	Service			.001 Max.		
Fit in Rod				.0008-.0016 Interference		
CRANKSHAFT:						
Main Journal	Diameter			#1-2-3-4 2.4484-2.4493 #5 2.4479-2.4488	#1-2-3-4 2.7481-2.7490 #5 2.7473-2.7483	
	Taper	Production		.0002 Max.		
		Service		.001 Max.		
	Out of Round	Production		.0002 Max.		
		Service		.001 Max.		