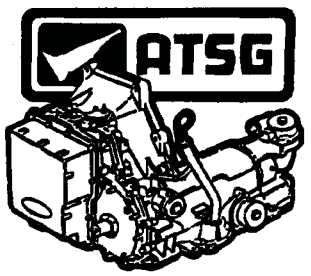

INDEX

203 - 205

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Technical Service Information

INTRODUCTION
NEW PROCESS
203 - 205

With more 4 wheel drive vehicles coming into our shops, the need for information on transfer cases has increased. Mike Weinberg of Rockland Standard Gear has gathered information on various types and model transfer cases that are most common. This series of booklets cover the general information, operation, tear down, and assembly of these units. And in most cases a parts breakdown is shown which helps in ordering replacement parts.

We thank New Process for the information and illustrations that made this booklet possible

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NOTES----NOTES----NOTES----NOTES

GENERAL INFORMATION

The 203 transfer case (Figs. 1, 2, and 3) provides full time four wheel drive. It is a two speed unit which provides speed reduction and transmits power from the transmission to the front drive axle as well as the rear axle by means of two conventional propeller shafts. This model incorporates a differential unit within the transfer case which allows front and rear axles to remain in continuous drive in normal Hi and Lo positions. When positive front and rear wheel drive is desired the differential action in the transfer case is locked out by moving the control lever to either Hi-Loc or Lo-Loc position. This causes both propeller shafts to transmit power simultaneously and at the same R.P.M.

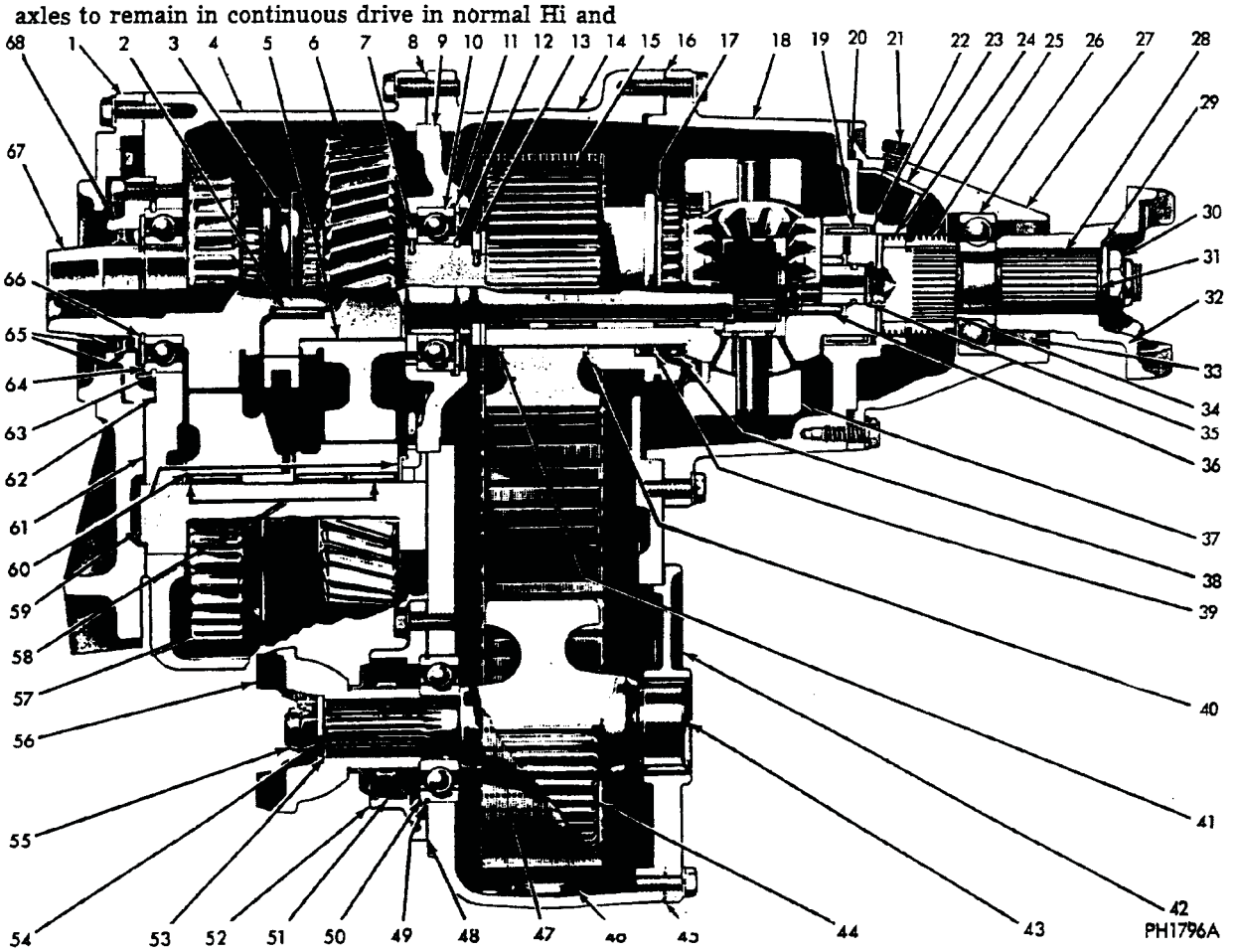
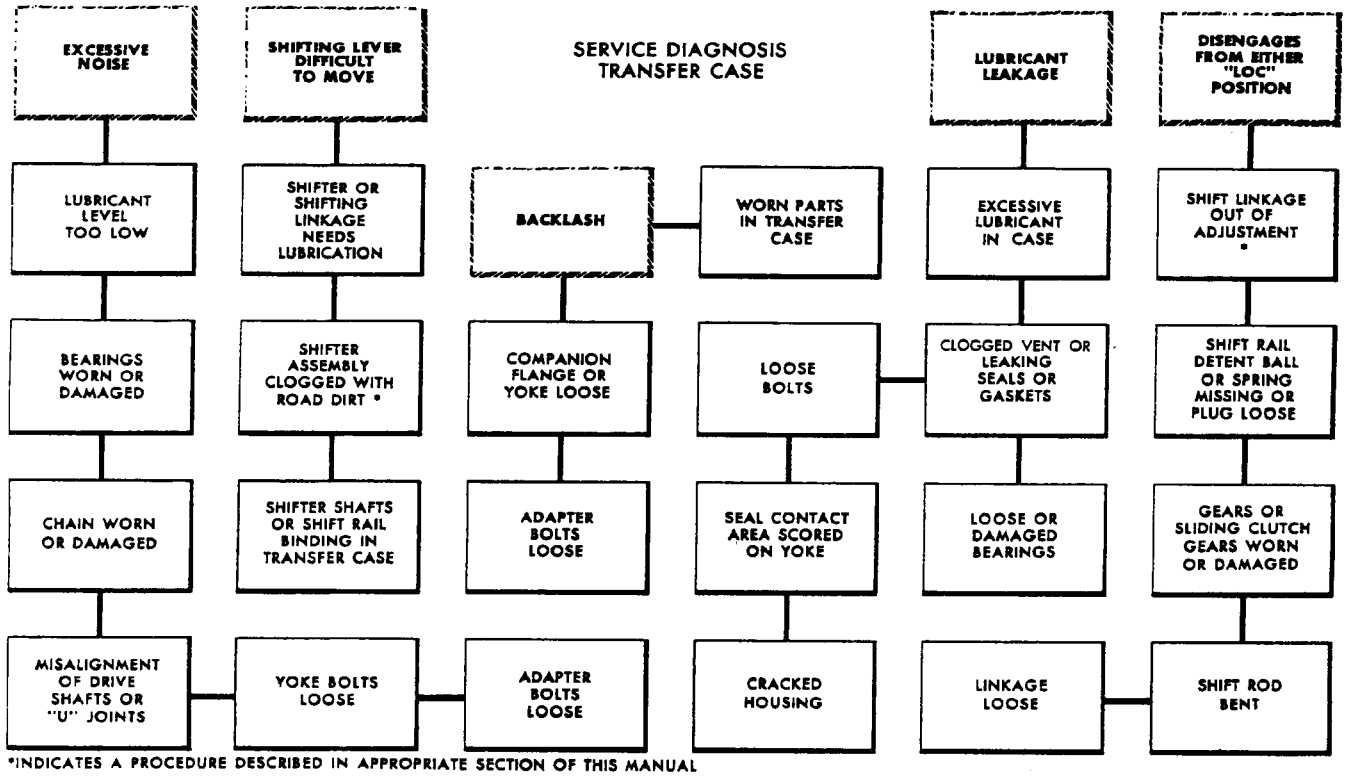


Fig. 1—203 Transfer Case—Cross Section View

LEGEND FOR FIG. 1

1. Adapter
2. Input Drive Gear Pilot Bearings
3. Range Selector Sliding Clutch
4. Range Selector Housing
5. Low Speed Gear Bushing
6. Low Speed Gear
7. Thrust Washer and Locating Pin
8. Gasket, Range Selector Housing to Intermediate Housing
9. Input Bearing Retainer
10. Input Bearing
11. Input Bearing Retaining Ring (Large)
12. Input Bearing Retaining Ring (Small)
13. Thrust Washer, Locating Pin, Lubricating Washer and Retaining Ring
14. Intermediate (Chain) Housing
15. Drive Shaft Sprocket
16. Gasket, Intermediate Housing to Differential Housing
17. Sliding Lock Clutch
18. Differential Housing
19. Rear Output Front Bearing
20. "O" Ring, Differential Housing to Rear Output Shaft Housing
21. Vent
22. Oil Seal, Rear Output Front Bearing
23. Oil Seal, Vent
24. Oil Pump
25. Speedometer Drive Gear
26. Rear Output Rear Bearing
27. Rear Output Shaft Housing
28. Rear Output Shaft
29. Washer, Rear Output
30. Nut, Rear Output
31. Rubber Washer, Rear Output
32. Rear Output Yoke
33. Oil Seal, Rear Output Bearing
34. Shim Pack
35. Input Shaft "O" Ring Seal
36. Input Shaft Roller Bearings
37. Differential Carrier Assembly
38. Spring Cup Washer
39. Lockout Clutch Spring
40. Rear Retaining Ring, Drive Shaft Sprocket
41. Front Retaining Ring, Drive Shaft Sprocket
42. Front Output Rear Bearing Cover
43. Front Output Rear Bearing
44. Front Output Drive Sprocket
45. Gasket, Front Output Rear Bearing Cover
46. Magnet
47. Drive Chain
48. Gasket, Front Output Bearing Retainer
49. Front Output Bearing Outer Retaining Ring
50. Front Output Bearing
51. Front Output Shaft Seal
52. Front Output Bearing Retainer
53. Rubber Spline Seal
54. Washer, Front Output
55. Nut, Front Output
56. Front Output Yoke
57. Countergear
58. Countergear Spacers and Bearings
59. Countergear Shaft
60. Countergear Thrust Washer
61. Gasket, Adapter to Selector Housing
62. Gasket, Input Bearing Retainer
63. Input Bearing Outer Ring
64. Input Gear Bearing
65. Input Gear Seals
66. Input Bearing Retaining Ring
67. Input Gear
68. Input Gear Bearing Retainer



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The two speed feature of the 203 transfer case consists of a 1:1 ratio (direct drive) high range and a 2.01:1 ratio speed reduction in low range.

The speed range and lock positions are controlled by a single shifting lever having five positions, Hi-Loc, Hi, Neutral, Lo, and Lo-Loc. Refer to "Operators Manual 81-370-5407 for operating instructions.

Special towing instructions for disabled vehicles equipped with 203 transfer case can be found in both, "Group 0" of this manual and "Operators Manual."

The transfer case mounts to the rear of the transmission by means of an adapter assembly.

To use transfer case Service Diagnosis chart, look for the squares with broken lines which describe the condition requiring correction, then follow connecting lines into squares indicating possible causes. In most cases corrective procedures are self evident, however, an asterisk (*) indicates a procedure described in appropriate section of this manual.

SERVICE PROCEDURES

SHIFTER CONTROL ASSEMBLY (Fig. 4)

The shift lever attaches to the shifter control assembly. The shifter control assembly is bolted to the adapter, between the transmission and the transfer case. All shifter assemblies are greased at time of manufacture but due to exposure under vehicle, periodic lubrication is necessary. It should be included with regular oil changes and/or suspension lubrication. If clogged with road dirt, the shifter mechanism must be thoroughly cleaned (on or off vehicle). After any cleaning, the mechanism must be completely relubricated. MOPAR Multi-purpose Lubricant Part Number 2932524 or equivalent is recommended. Use a needle fitting grease gun adapter on grease gun nozzle to direct grease into vital areas.

LINKAGE ADJUSTMENT (Fig. 4)

(1) Loosen lockscrews in both swivel rod clamps at shifter assembly (Fig. 5). Rods must be free to slide in swivels.

(2) Place selector lever in cab into neutral position and insert 11/64 inch diameter rod through alignment holes in shifting housing (Fig. 6).

(3) Place range shift lever on transfer case (outboard lever) into neutral position.

(4) Place lockout shift lever on transfer case (inboard lever) in "unlock" position (Figs. 7 and 8).

(5) Retighten rod swivel screws to 100-150 inch-pounds.

(6) Remove 11/64 inch alignment rod from shifter housing.

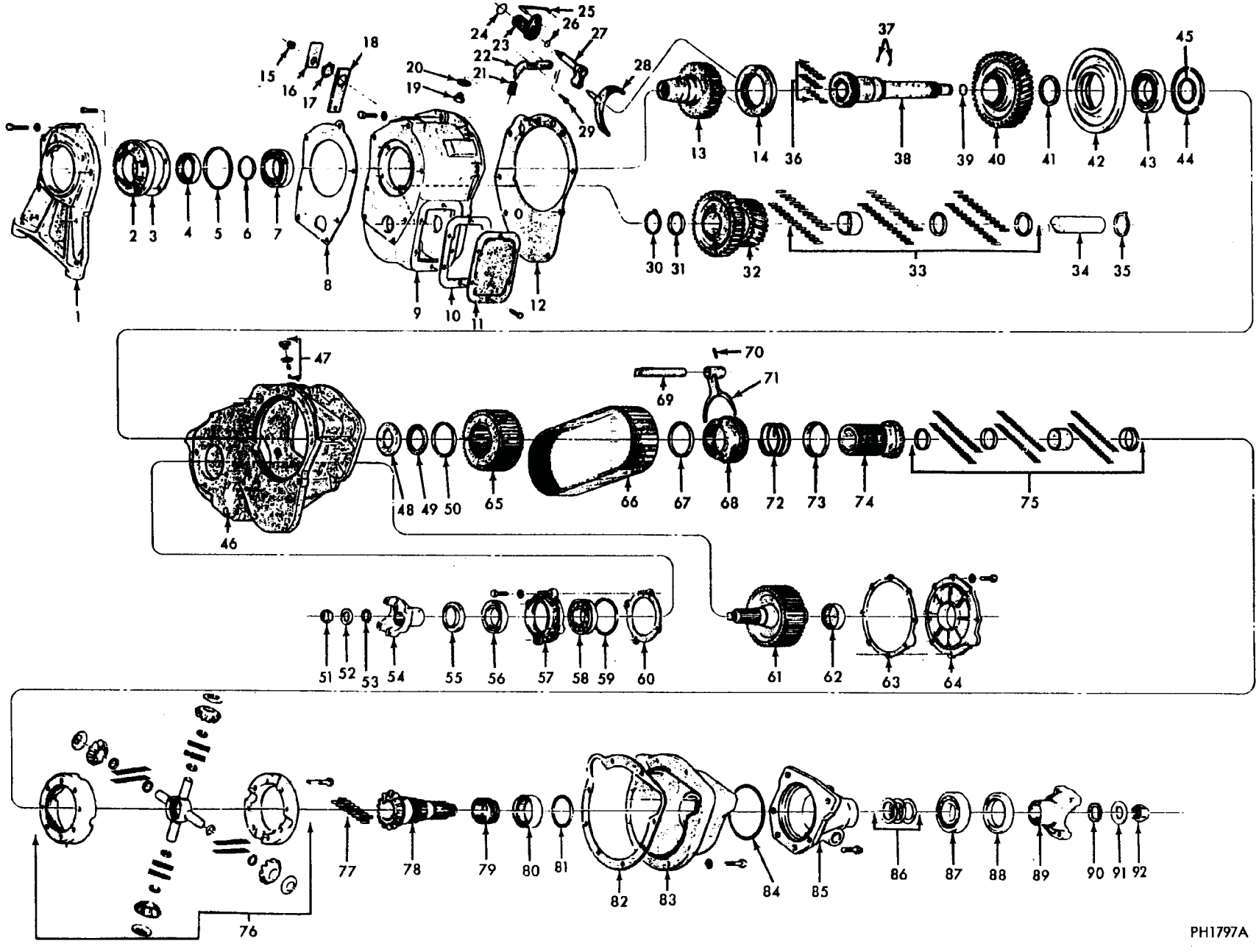


Fig. 2--203 Transfer Case--Disassembled View

(7) Cycle selector lever to check for proper function.

REMOVAL FROM VEHICLE

(1) Remove 4 bolts attaching skid plate rear cross member to underside of frame.

(2) Remove 5 bolts attaching front end of skid plate to transmission cross member. Remove skid plate. **Disregard steps 1 and 2 if vehicle is not equipped with skid plate assembly.**

(3) Remove bottom bolt from front output rear cover and allow case to drain completely. Replace bolt.

(4) Disconnect speedometer cable.

(5) Disconnect front and rear output shafts. **Secure each shaft. Do not allow to hang.**

(6) Disconnect shift rods at transfer case.

(7) With suitable jack, support transfer case. **Be sure transfer case is safely secured in removing device.**

(8) Remove adapter to transfer case mounting bolts.

(9) Move transfer case rearward to disengage front input spline.

(10) Lower transfer case assembly and remove from under vehicle.

DISASSEMBLY OF TRANSFER CASE

(1) Position drained transfer case on suitable work table (Fig. 9).

(2) Using holding tool C-3281 and a 1-5/16 inch socket with suitable handle, loosen rear output shaft yoke nut.

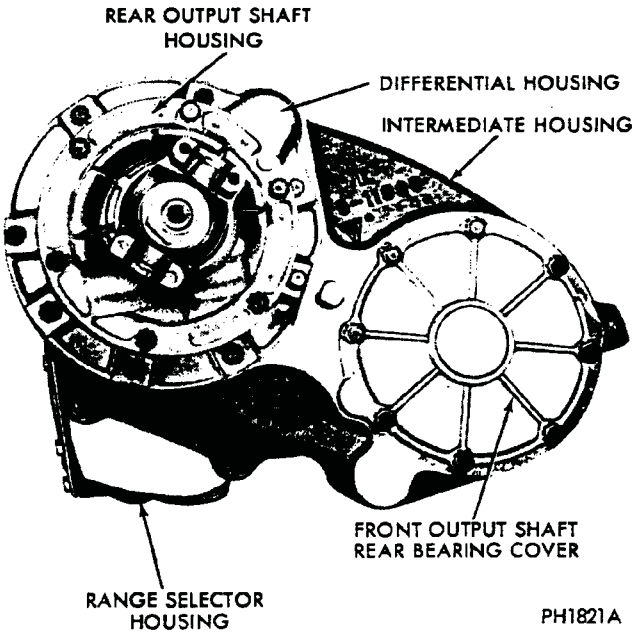


Fig. 3–203 Transfer Case–Rear View

(3) Using holding tool C-3281 and a 1-1/4 inch socket with suitable handle remove front output shaft yoke nut. Remove washer and yoke (Fig. 10).

(4) Remove front output shaft bearing retainer bolts (Fig. 11). Remove retainer. Discard gasket.

(5) Using hoist or other suitable lifting device, posi-

Legend for Fig. 2

1. Adapter
2. Input Gear Bearing Retainer
3. Input Gear Bearing Retainer Gasket
4. Input Gear Bearing Retainer Seals
5. Bearing Outer Ring
6. Bearing to Shaft Retaining Ring
7. Input Gear Bearing
8. Adapter to Selector Housing Gasket
9. Range Selector Housing (Range Box)
10. P.T.O. Cover Gasket
11. P.T.O. Cover
12. Selector Housing to Intermediate Housing Gasket
13. Main Drive Input Gear
14. Range Selector Sliding Clutch
15. Shift Lever Lock Nut
16. Range Selector Shift Lever
17. Shift Lever Retaining Ring
18. Lockout Shift Lever
19. Detent Plate Spring Plug
20. Detent Plate Spring Plug Gasket
21. Detent Plate Spring
22. Detent Plate
23. Lockout Shifter Shaft
24. "O" Ring Seal
25. Lockout Shaft Connector Link
26. "O" Ring Seal
27. Range Selector Shifter Shaft
28. Range Selector Shift Fork
29. Detent Plate Pivot Pin
30. Thrust Washer
31. Spacer (short)
32. Range Selector Counter Gear
33. Countergear Roller Bearings and Spacers (72 Bearings Req'd.)
34. Countergear Shaft
35. Thrust Washer
36. Input Shaft Roller Bearings (15 Req'd.)
37. Thrust Washer Pins (2 Req'd.)
38. Input Shaft
39. "O" Ring Seal
40. Low Speed Gear and Bushing
41. Thrust Washer
42. Input Shaft Bearing Retainer
43. Input Shaft Bearing
44. Input Shaft Bearing Retaining Ring (Large)
45. Input Shaft Bearing Retaining Ring
46. Chain Drive Housing (Intermediate Housing)
47. Lockout Shift Rail (Poppet) Plug, Gasket, Spring and Ball.
48. Thrust Washer
49. Lubricating Thrust Washer
50. Retaining Ring
51. Flange Lock Nut
52. Washer
53. Seal
54. Front Output Yoke
55. Dust Shield
56. Front Output Shaft Bearing Retainer Seal
57. Front Output Shaft Bearing Retainer
58. Front Output Shaft Bearing
59. Bearing Outer Ring
60. Bearing Retainer Gasket
61. Front Output Shaft
62. Front Output Shaft Rear Bearing
63. Front Output Rear Bearing Retainer Cover Gasket
64. Front Output Rear Bearing Retainer
65. Drive Shaft Sprocket
66. Drive Chain
67. Retaining Ring
68. Sliding Lock Clutch
69. Lockout Shift Rail
70. Shift Fork Retaining Pin
71. Lockout Shift Fork
72. Lockout Clutch Spring
73. Spring Washer Cup
74. Front Side Gear
75. Front Side Gear Bearing and Spacers (123 Bearings Req'd.)
76. Differential Carriage Assembly (132 Bearings Req'd.)
77. Rear Output Shaft Roller Bearings (15 Req'd.)
78. Rear Output Shaft
79. Speedometer Drive Gear
80. Rear Output Shaft Front Roller Bearing
81. Oil Pump "O" Ring Seal
82. Differential Housing Gasket
83. Differential Housing
84. "O" Ring, Differential Housing to Rear Output Shaft Housing
85. Rear Output Shaft Housing
86. Shim Pack
87. Rear Output Rear Bearing
88. Rear Output Shaft Seal
89. Rear Output Yoke
90. Rear Output Shaft Rubber Seal
91. Washer
92. Flange Nut

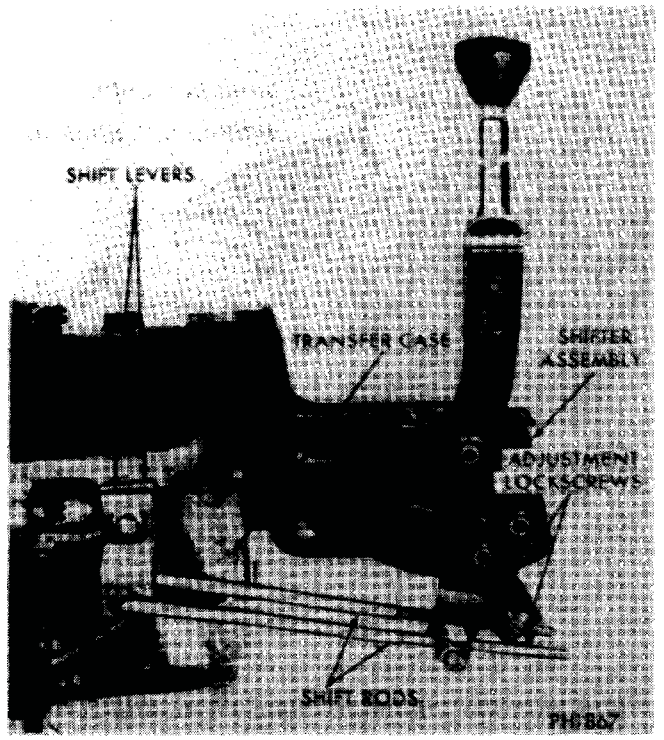


Fig. 4—Shifter Assembly and Linkage

tion transfer case on blocks (Fig. 12).

(6) Remove differential housing retainer bolts and disengage assembly from transfer case. Remove and discard gaskets.

(7) Slide carrier unit from shaft. **1-1/2 to 2 inch band type hose clamp may be installed on the input shaft to prevent losing bearings when removing input shaft assembly from the range box.**

(8) Raise shift rail and drive retaining pin out of shift fork (Fig. 13).

(9) Remove shift rail detent ball plug, gasket, spring and ball from case (Fig. 14). A small magnet may be used to remove ball.

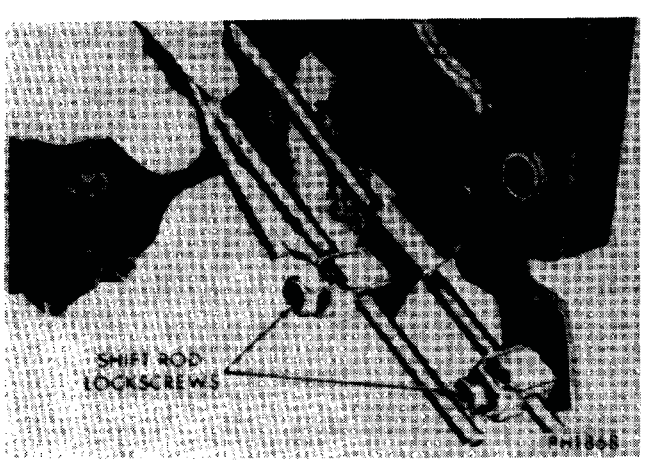


Fig. 5—Loosening Lock Screws

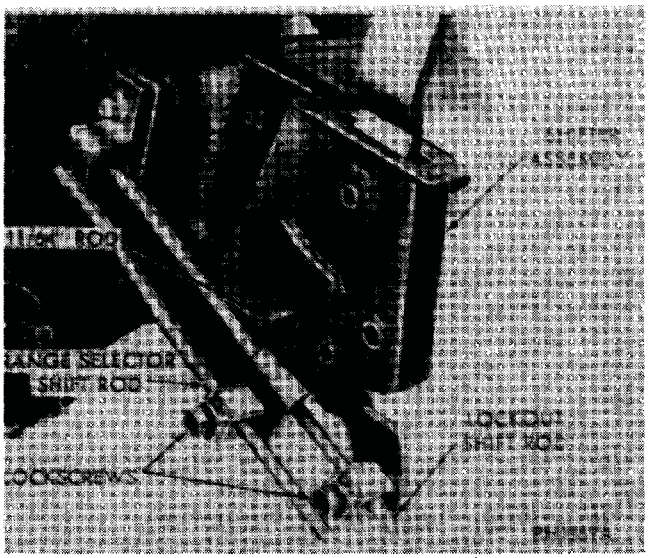


Fig. 6—Alignment Rod in Position

(10) Push shift rail down, lift up on lockout clutch and remove shift fork from clutch assembly.

(11) Remove front output shaft rear bearing retainer bolts. Tap on front of shaft or carefully pry retainer away from case. Remove retainer from shaft and discard gasket. Recover roller bearings which may fall from cover. **If necessary to replace rear bearing, support cover and press out bearing. Position new bearing on outside face of cover and press in until bearing is flush with opening.**

(12) Pry output shaft front bearing out of lower side of case.

(13) Disengage front output shaft from chain and

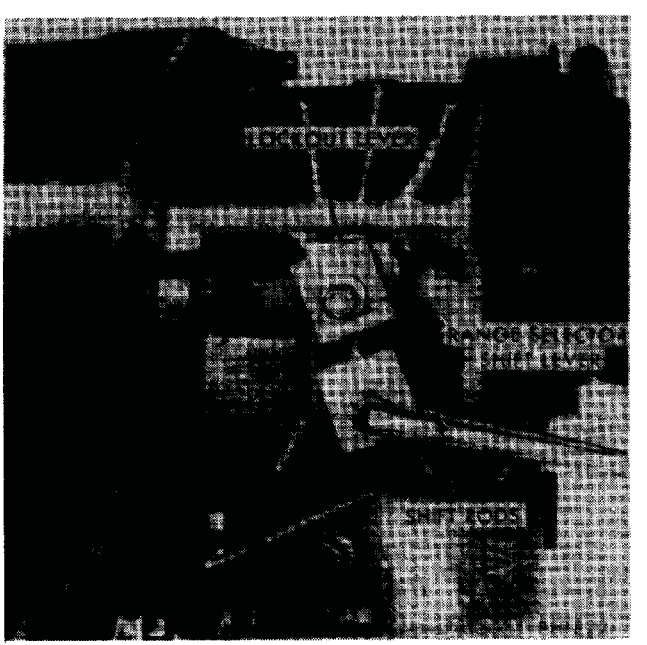


Fig. 7—Lockout Lever in "Unlock" and Range Lever in "Hi" Position

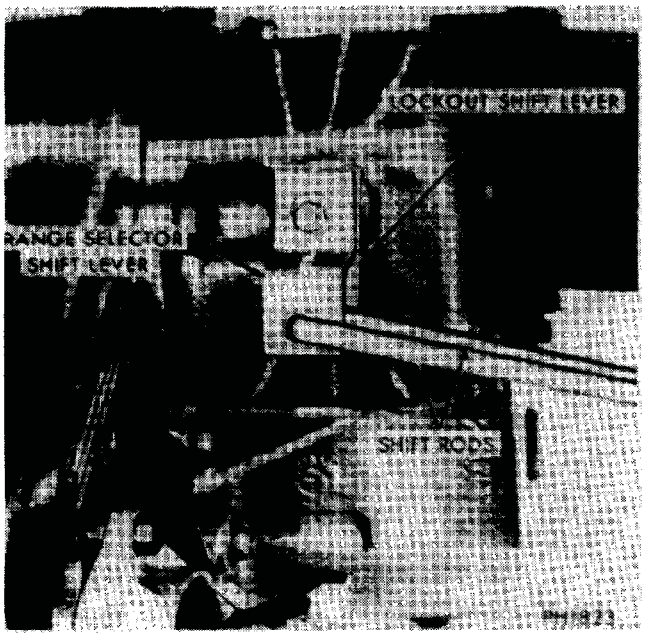


Fig. 8—Both Levers Positioned for Adjustment

remove shaft from case (Fig. 15).

(14) Remove bolts attaching intermediate chain housing to range box. Lift or with chain hoist, remove intermediate housing from range box (Fig. 16).

(15) Remove chain from intermediate housing.

(16) Remove lockout clutch, drive gear and input shaft assembly from range box. **A 1-1/2 to 2 inch band type hose clamp may be used to retain the 123 roller bearings on the input shaft.**

(17) Pull up shift rail and disconnect from link.

(18) Lift input shaft assembly from range box. **See "Disassembly of Subassemblies" for further disassembly procedures.**

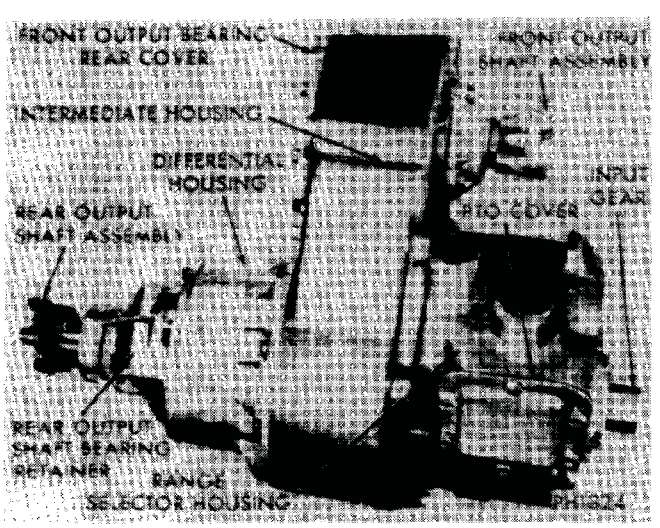


Fig. 9—Transfer Case in Position for Removing Output Yokes

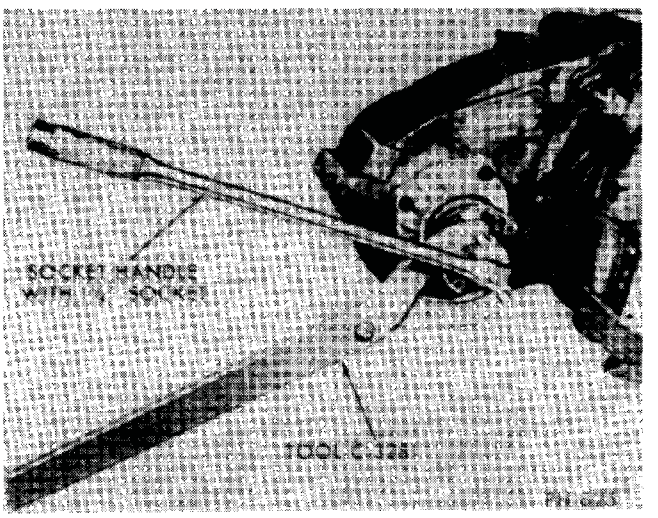


Fig. 10—Loosening Front Output Shaft Yoke Nut

CLEANING AND INSPECTION

Bearings

Clean all bearings in suitable solvent and blow dry with compressed air. **Do not spin bearings.** Immediately after air drying, coat machined surfaces of all components with oil to prevent corrosion.

Shafts and Gears

With suitable solvent, clean all shafts and gears of all deposits. Dry with compressed air.

Case, Cover and Housings

Clean transfer case, cover and housings thoroughly, removing all dirt and lubricant. Remove residual deposit from magnets in range box and chain housing. Remove all gasket material from gasket surface areas.

Inspection

Carefully inspect all bearings and rollers for wear or damage. Use new parts if replacement is necessary.

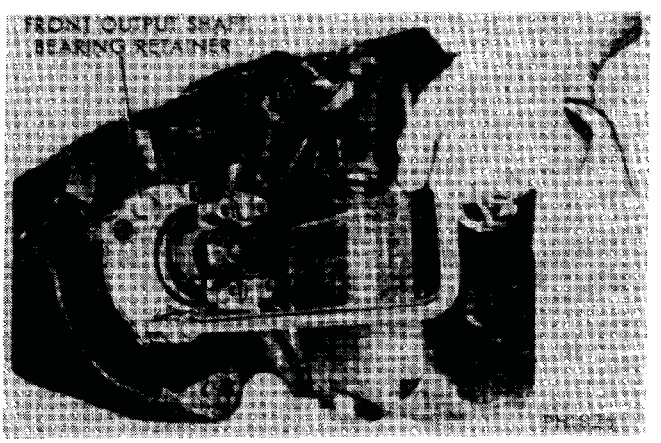


Fig. 11—Removing Bearing Retainer Screws

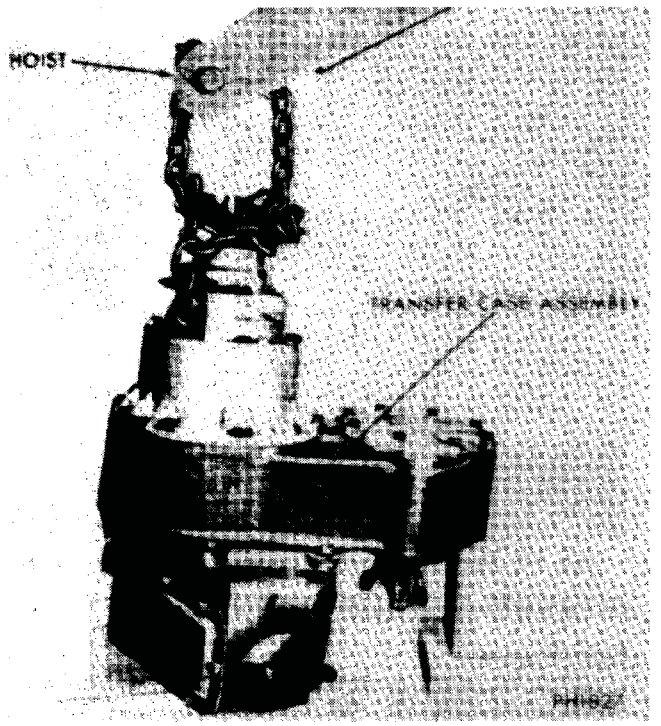


Fig. 12—Positioning Transfer Case on Blocks

Inspect shaft splines, drive chain and gears. Replace any parts showing wear or damage with new parts.

DISASSEMBLY OF SUBASSEMBLIES (Fig. 2)

Differential Carrier Assembly (Disassembly)

(1) Remove bolts from carrier assembly and separate carrier sections.

(2) Lift pinion gear and spider assembly from carrier. **Observe that undercut side of pinion gear spider faces toward front side gear.**

(3) Remove pinion thrust washers, pinion roller washers, pinion gears and roller bearing from spider unit.

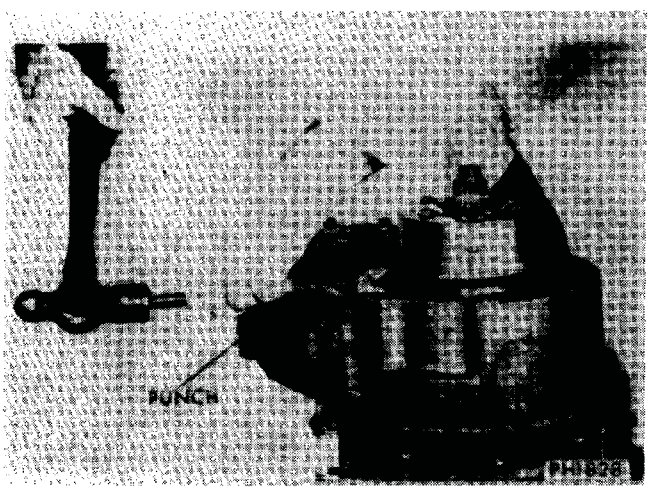


Fig. 13—Removing Retaining Pin

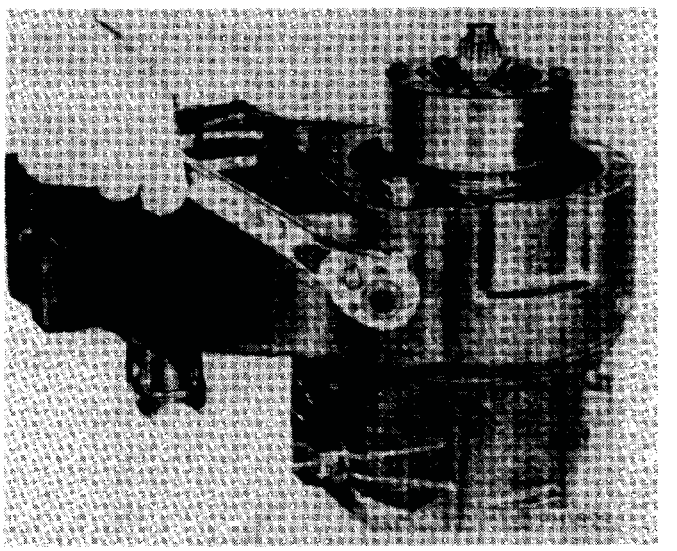


Fig. 14—Removing Detent Ball Plug

(4) Clean and inspect all components. Replace all worn or damaged parts.

Lockout Clutch Assembly (Disassembly)

(1) Remove front side gear from input shaft assembly and remove thrust washer, roller bearings (123) and spacers from front side gear bore. Note position of spacers to facilitate reassembly.

(2) Using snap ring pliers, remove drive sprocket to clutch assembly retaining ring. Slide drive sprocket from front side gear.

(3) Remove lower snap ring.

(4) Remove sliding gear, spring and spring cup washer from front side gear.

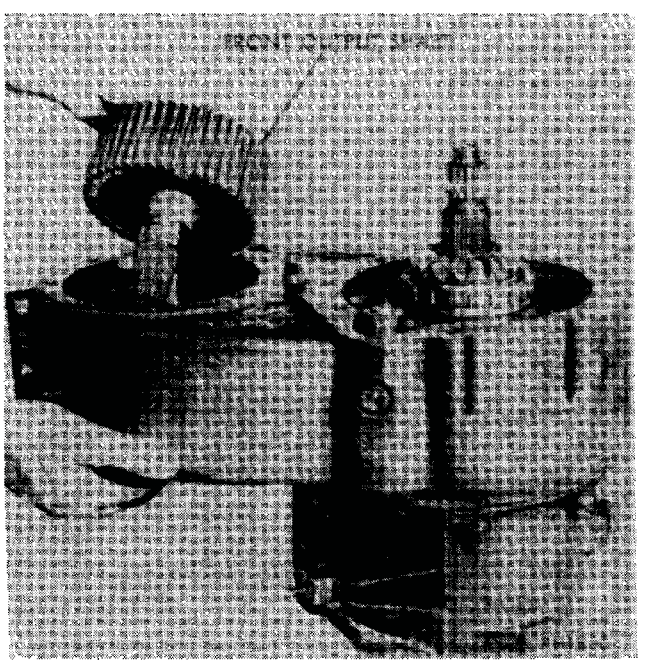


Fig. 15—Removing Front Output Shaft

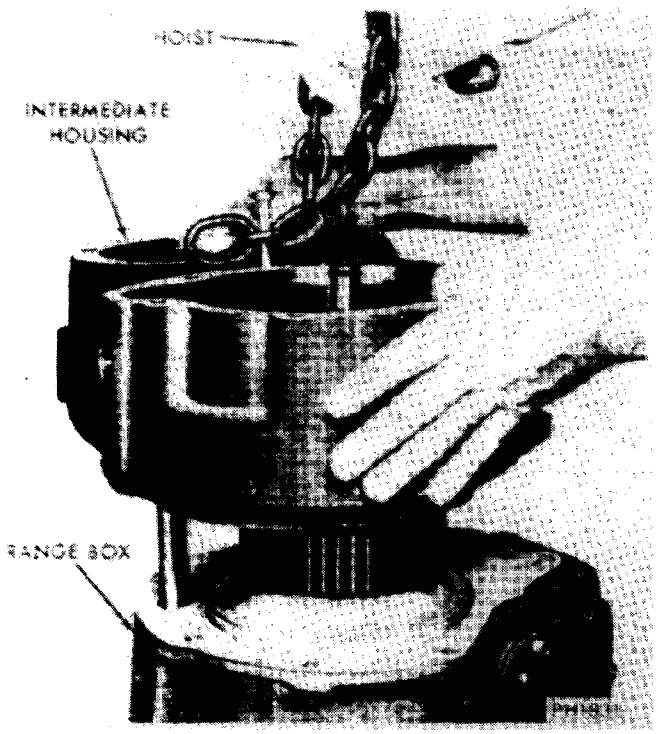


Fig. 16—Removing Intermediate Housing

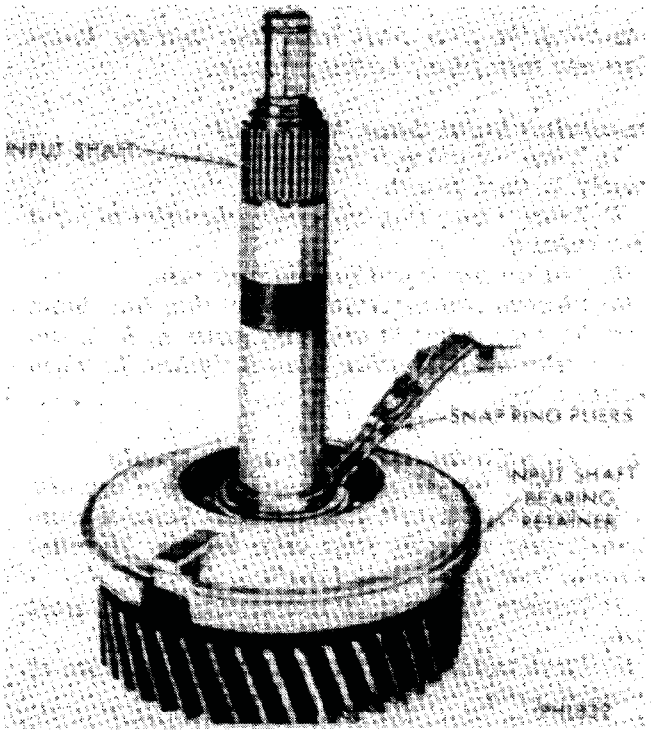


Fig. 17—Removing Input Shaft Bearing Retainer

(5) Clean and inspect all components. Replace all worn or defective parts.

Input Shaft Assembly (Disassembly)

(1) Slide thrust washer and spacer from shaft.

(2) Using snap ring pliers, remove retainer from input shaft (Fig. 17).

(3) Tap shaft out of low speed gear. **Observe two thrust washer pins in shaft.**

(4) With screwdriver remove lock ring out of bearing retainer (Fig. 18). Tap bearing out of retainer bore.

(5) Remove roller bearings (15) from end of input shaft.

(6) Remove and discard "O" ring from end of shaft.

(7) Clean and inspect all components. Replace if worn or damaged.

Range Selector Housing (Range Box)—Disassembly

Removing Shifter Shaft Assembly

(1) Remove detent plate spring, plug and gasket. Discard gasket.

(2) Disengage sliding clutch gear from input gear and remove clutch fork and sliding gear from case.

(3) Remove shift lever assembly retaining nut and range shift lever from shifter shaft.

(4) Remove shift lever snap ring and lock nut shift lever.

(5) Push shifter shaft assembly downward and remove lockout clutch connector link. Long end of connector link engages detent plate.

(6) Remove shifter shaft assembly from case and separate inner and outer shifter shafts. Remove and discard "O" rings.

(7) Inspect detent plate for damage. If necessary to

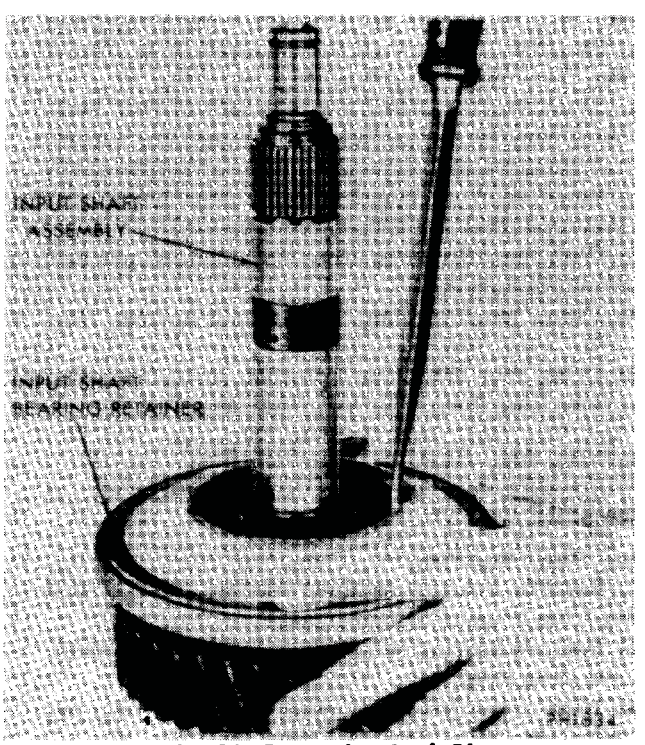


Fig. 18—Removing Lock Ring

remove, drive pivot shaft from case. Remove detent plate and spring from bottom of case.

Removing Input Gear Assembly

(1) Remove input gear bearing retainer and seal assembly. Discard gasket.

(2) Remove snap ring from outer diameter of input gear bearing.

(3) Tap input gear and bearing from case.

(4) Remove bearing retaining snap ring from input shaft. This is a select fit snap ring. Sizes A, B, C, and D are released for service. (Select tightest fit when reassembling).

Removing Countershaft Gear Assembly

(1) From intermediate case side, remove countershaft from countershaft gear and case. Remove countershaft gear assembly from case. **Recover 72 roller bearings from gear case and shaft.**

(2) Remove countershaft gear thrust washers from case.

(3) Clean and inspect components. Replace worn or defective parts.

Differential Housing Assembly—Disassembly (Fig. 2)

(1) Remove speedometer driven gear from housing.

(2) Remove yoke nut and washer (if not removed during disassembly). Remove yoke.

(3) Tap yoke end of shaft with soft hammer and remove shaft from housing. Remove speedometer drive gear from shaft. If it is not on shaft, refer to step (5).

(4) Remove 6 capscrews and separate rear output housing from differential housing.

(5) Remove shim pack from rear face of rear bearing. Also remove speedometer drive gear from housing if it did not already remove with rear output shaft. (Sometimes shim pack and speedometer drive gear will stay on output shaft when it is removed.)

(6) With screwdriver or other suitable tool, pry seal out of output housing.

(7) Tap or press bearing from output housing (Fig. 19).

(8) Using tool W356 (or by other suitable means) remove bearing from differential housing (Fig. 20).

BEARING AND SEAL REPLACEMENT PROCEDURES (WITHOUT DISASSEMBLING TRANSFER CASE)

Input Gear Bearing

(1) Remove bearing retainer screws, retainer and gasket from housing. Discard gasket.

(2) Remove bearing retaining snap ring from shaft. **Discard snap ring.**

(3) With screwdriver or other suitable tool, pry bearing from case and remove from shaft.

(4) Remove 6 capscrews from PTO cover and remove cover. This provides an opening to inspect input and countergear assemblies. Check for burrs, scoring, heat discoloration or other irregularities.

(5) Install outer ring into groove of new input gear bearing and with soft hammer tap into place in housing.

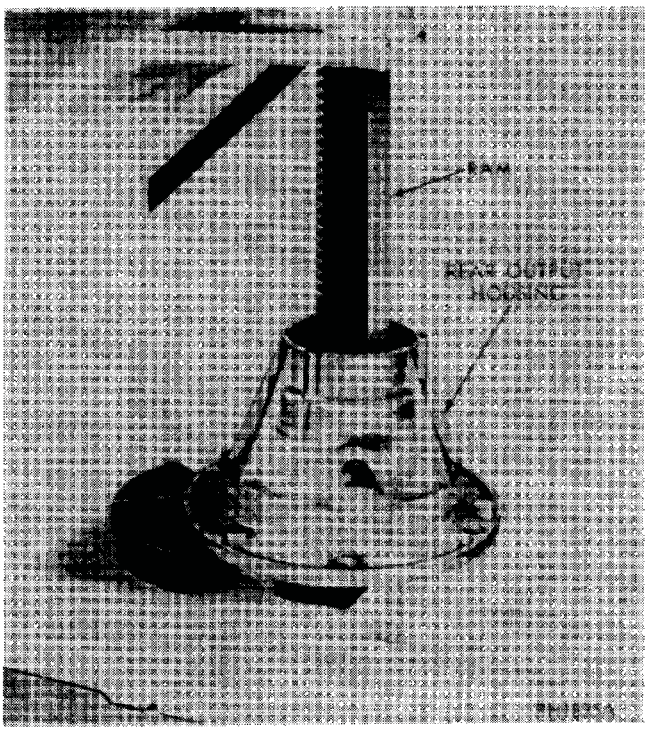


Fig. 19—Pressing Rear Output Shaft Rear Bearing out of Retainer

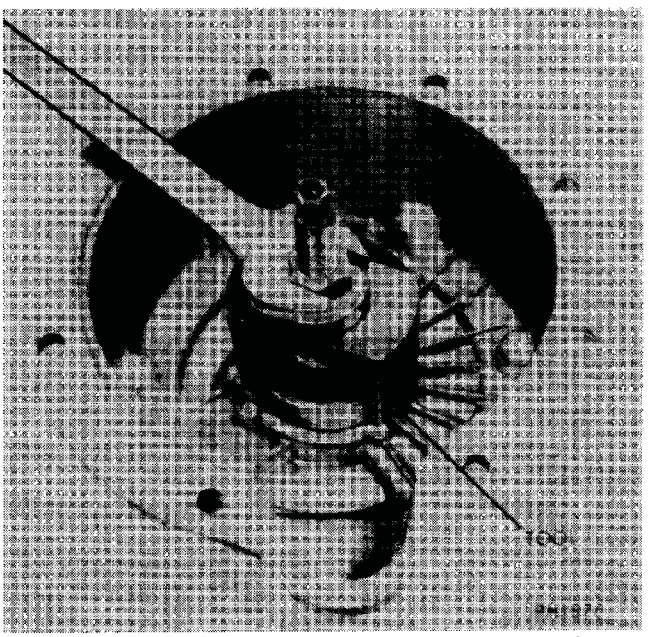


Fig. 20—Removing Rear Output Shaft Front Bearing

(6) Select service ring size A, B, C or D that will provide tightest fit and install ring in bearing retaining groove of input gear shaft.

(7) Position new gasket and the bearing retainer on housing. Install retaining screws. Tighten as specified.

(8) Replace PTO cover gasket and reinstall PTO cover.

Input Gear Bearing Retainer Seal

(1) Remove bearing retainer attaching screws, retainer and gasket from housing. Discard gasket.

(2) Pry seal out of retainer and discard seal.

(3) Apply sealer to outer diameter of new seal and with suitable tool install flush with housing.

(4) Install bearing retainer and gasket on housing and tighten capscrews as specified.

Front Output Shaft Bearing Retainer Seal

(1) Remove front output shaft yoke lock nut, washer and rubber seal. Tap or pry yoke off shaft.

(2) Pry seal out of retainer bore.

(3) Clean and inspect retainer.

(4) Apply sealer to outer diameter of new seal.

(5) Position seal on retainer bore. Using tools C-4299 and C-4300 install seal in retainer (Fig. 21).

Front Output Shaft Rear Bearing

(1) Remove rear cover from transfer case. Remove gasket and discard.

(2) Support rear cover and press bearing from cover.

(3) Position new bearing to outside face of cover and using a piece of wood to cover bearing, press bearing into cover until flush with bore opening.

(4) Position gasket and cover on transfer case and tap into place.

(5) Install retaining bolts and tighten as specified.

REASSEMBLY AND INSTALLATION OF SUBASSEMBLIES (Fig. 2)

CAUTION: All transfer case housing, bearing retainer cover and PTO cover bolts are factory coated with a sealant material. These bolts are generally reusable without additional sealant. However, when replacement bolts are used, they must have sealant coating. Loctite 242, or equivalent, is recommended.

Rear Output Shaft and Differential Housing Assembly (Reassembly)

(1) Position flat rubber seal ring in bearing bore. Use grease to hold in place. Position roller bearing in differential housing bore and press in until bearing bottoms in housing.

(2) Position rear bearing in output shaft housing and tap or press into place.

(3) With tools C-4298 and C-4300 install rear output shaft seal into output shaft housing (Fig. 22).

(4) Install two new seal(s) on inside surface of output housing, centering the holes at vent opening (Fig. 23) (Stack the two seals).

(5) Position sealing "O" Ring on differential housing as shown (Fig. 23).

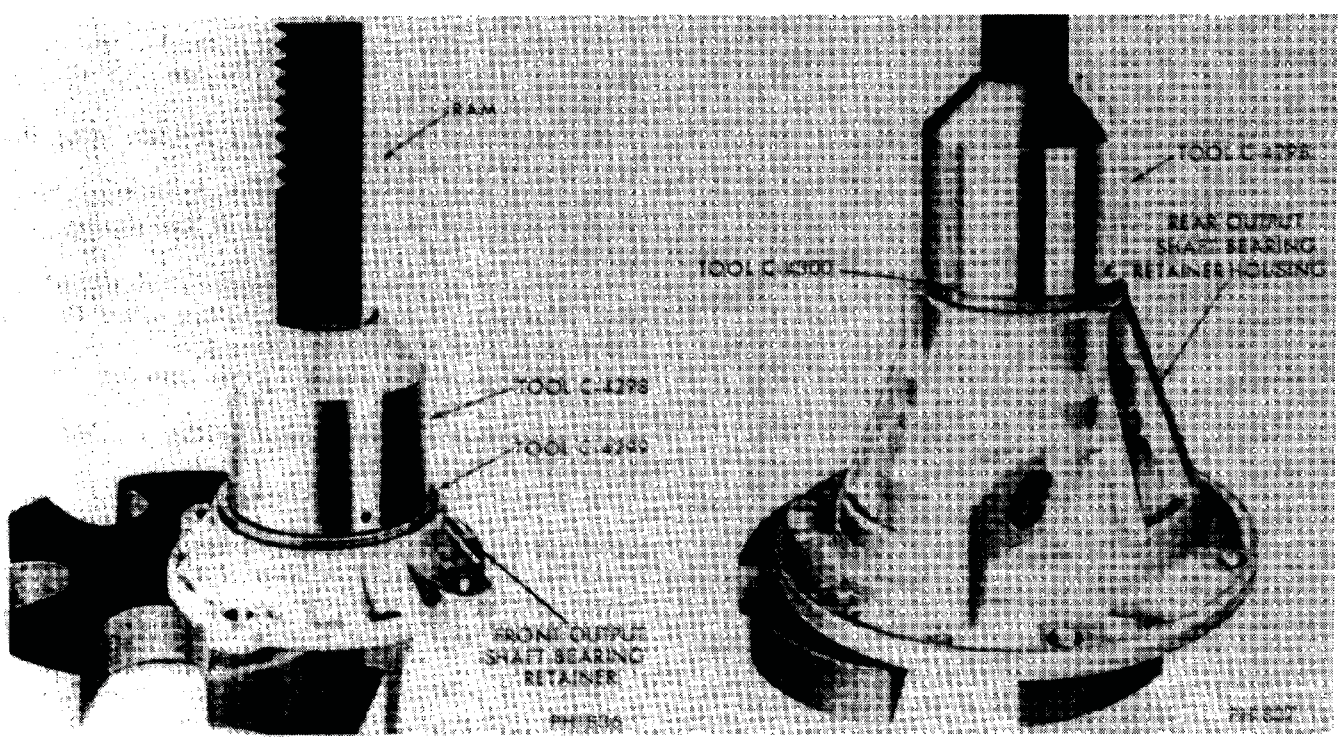


Fig. 21—Pressing in Front Output Shaft Seal

Fig. 22—Installing Rear Output Shaft Seal

(6) Install retainer housing assembly on differential housing. Tighten 6 capscrews as specified.

(7) Install speedometer drive gear and shims (approximately .050 inch thickness) on output shaft. Install shaft into carrier through front opening. (Be careful not to damage oil seal).

(8) Install yoke, rubber seal, washer and retaining nut. Leave nut approximately .060 inch loose until necessary shim thickness is determined.

(9) Install speedometer driven gear in case.

Range Selector Housing (Range Box)—Reassembly

Installing Countershaft Gear Assembly

(1) Using heavy grease for retention, install roller bearings (72 required) and spacers in countergear bore.

(2) Using heavy grease, position countershaft thrust washers in case. Engage tab on washers with a slot in case thrust surface.

(3) Position countergear assembly in case and install countershaft into gear assembly through front face of range box. Countershaft face with flat should face forward and must be aligned with case gasket. (A 1.490" diameter dummy shaft will aid in reinstallation of countershaft).

Installing Input Gear Assembly

(1) Install bearing (without large snap ring) on input gear shaft, positioning snap ring groove outward. Install new retaining ring on shaft. Position input gear and bearing in housing. **The retaining ring is a select fit. Use service ring size A, B, C, or D to provide tightest fit.**

(2) Install snap ring into groove in outer diameter of bearing.

(3) Align oil slot in retainer with drain hole in case and install input gear bearing retainer, gasket and retaining bolts. Tighten as specified.

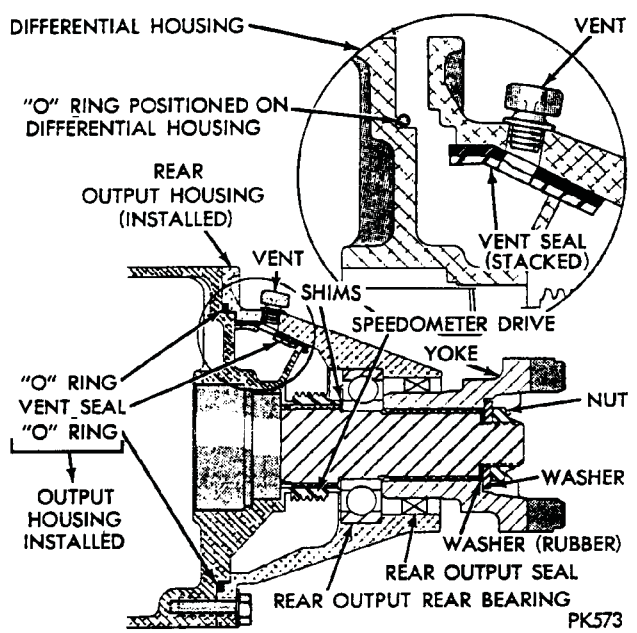


Fig. 23—Rear Output Housing Assembly

Installing Shifter Shaft Assembly

(1) If removed, install detent plate and pivot pin assembly in housing. Use sealant on pin.

(2) Install new "O" rings on the inner and outer shafts. Lubricate "O" rings and assemble inner shaft in outer shaft.

(3) Push shifter shafts into housing, engaging long end of lockout clutch connector link to outer shifter shaft before shaft assembly bottoms out.

(4) Install lockout shift lever and retaining ring.

(5) Install range selector shift lever and shift shaft retaining nut.

(6) Install shift fork and sliding clutch gear. Push fork up into shifter shaft assembly to engage detent plate, sliding clutch gear forward onto the input shaft gear.

(7) Install detent plate spring, gasket and plug in top of housing. Check spring engagement with detent plate.

Input Shaft Assembly (Reassembly)

(1) Position bearing on retainer bore and press or tap into place.

(2) Install large snap ring retaining bearing in retainer. Snap ring is a select fit. Use size A, B, C, or D to provide tightest fit.

(3) Install low speed gear on shaft with clutch end toward gear end of shaft.

(4) Position thrust washers on shaft, aligning slot in washer with pin in shaft. Slide or tap washer into place.

(5) Position input bearing retainer on shaft and install snap ring on shaft. **Snap ring is a select fit. Use size A, B, C, or D to provide tightest fit.**

(6) Slide spacer and thrust washer onto shaft. Align spacer with locator pin.

(7) Using heavy grease, install roller bearings (15 required) in end of shaft.

(8) Install new "O" ring on end of shaft.

Lockout Clutch Assembly (Reassembly)

(1) Install spring cup washer, spring and sliding clutch gear on front side gear.

(2) Install snap ring retaining sliding clutch to front side gear.

(3) Using petrolatum for retention, insert roller bearings (123 required) and spacers in the front side gear.

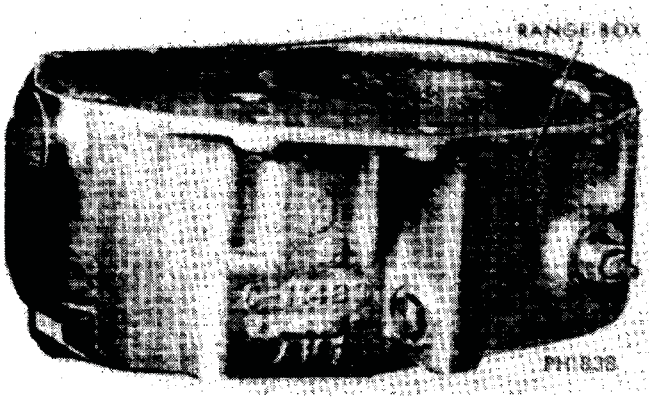


Fig. 24—Range Box Positioned for Assembly

(4) Install thrust washer in gear end of front side gear.

(5) Slide drive sprocket onto clutch splines and install retaining ring.

Differential Carrier Assembly (Reassembly)

(1) Using petrolatum for retention, install roller bearings (132 required, 33 each pinion) into pinion gears.

(2) Install pinion roller washer, pinion gear, roller washer and thrust washer on each leg of spider.

(3) Place spider assembly into carrier (front half) with undercut surface of spider thrust surface facing downward or toward gear teeth.

(4) Align marks on carrier sections and position carrier halves together. Install retaining bolts and tighten as specified.

REASSEMBLY OF TRANSFER CASE (Figs. 1 and 2)

(1) Place range box on blocks with front (input) side down (Fig. 23).

(2) Position gasket on range box (Range Selector Housing).

(3) Install lockout clutch and drive sprocket assembly on input shaft assembly. **A 2 inch band type clamp or other similar device may be used to retain loose bearings.**

(4) Install input shaft, lockout clutch and drive sprocket assembly into range box, aligning tab on bearing retainer with notch in gasket.

(5) Connect lockout clutch shift rail to the connector link and position rail in housing bore (Fig. 24). Rotate shifter shaft while lowering shift rail into housing, to prevent the link and rail from being disconnected.

(6) Install drive chain in chain housing, positioning the chain around outer wall of housing.

(7) Install chain housing on range box (Fig. 25), engaging shift rail channel of housing to shift rail. Position chain on input drive sprocket.

(8) Install front output sprocket in case, engaging drive chain to sprocket. Rotate clutch drive gear to aid in positioning chain on drive sprocket.

(9) Install shift fork on clutch assembly and shift rail, then push clutch assembly fully into drive sprocket. Install roll pin retaining shift fork to shift rail.

(10) Install outer retainer ring on front output shaft bearing and install bearing into housing bore.

(11) Install front output shaft bearing retainer, gasket and retaining bolts.

(12) Install front output shaft seal, yoke, dust shield, rubber seal, washer and retaining nut. Tap dust shield back into place after installing bolts in flange.

(13) Install front output shaft rear bearing retainer, gasket and retaining bolts. **If rear bearing was removed, position new bearing to outside face of cover and press into cover until flush with opening.**

(14) Install differential carrier assembly on input shaft. (Carrier bolt head toward rear of shaft.)

(15) Install rear output housing assembly, gasket and retaining bolts (Load bearings in pinion shaft).

(16) With yoke nut at least .06 loose, push or tap end of rear output shaft into unit. This will put differential into close mesh for next check. Check rear output shaft end play as follows:

(a) Install dial indicator on rear housing (Fig. 26).

(b) Holding rear yoke, rotate front output shaft to determine the highest point of axial movement in the output shaft.

(c) Zero dial indicator with output shaft set at this high point.

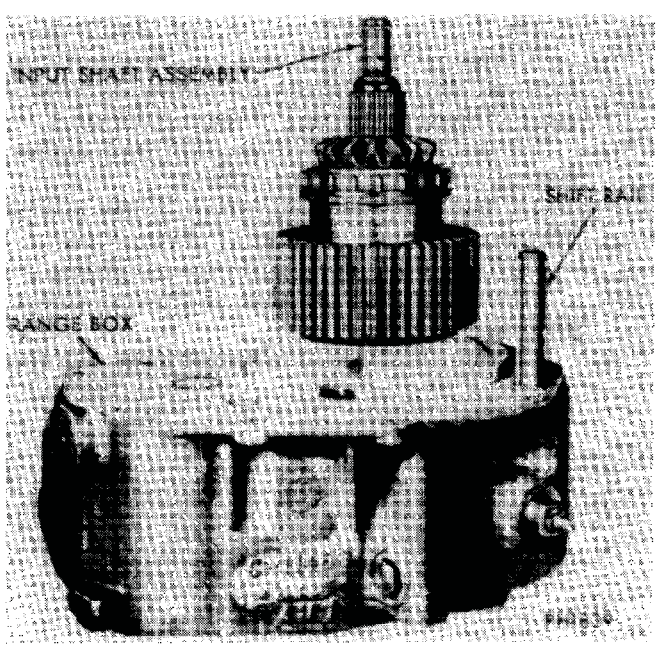


Fig. 25—Shaft Rail in Installed Position

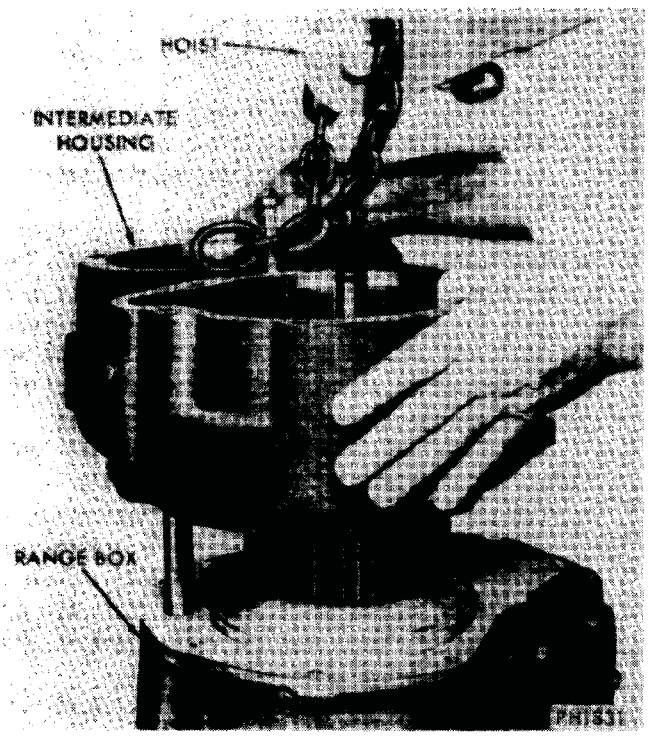


Fig. 26—Installing Intermediate Housing on Range Box

(d) Pull up on yoke to determine end play of shaft. (Gap between bearing shoulders of shaft and housing.)

(17) Remove dial indicator and install shim pack onto shaft in front of bearing to obtain .001 to .010 inch end play. Hold rear yoke and rotate front output shaft to check for binding of rear output shaft.

(18) Install lockout clutch shift rail detent ball, spring and screw plug into case.

(19) Install detent plate spring, gasket and plug, if not installed during reassembly of range box.

(20) Install shift levers on range box shifter shaft.

(21) Torque all bolts, nuts, and plugs (except filler plug) as specified.

(22) Fill transfer case to proper level with specified lubricant and install filler plug. Tighten as specified.

(23) Carefully check transfer case for leaks. If leakage is visible at any bolt head, remove the bolt, clean and recoat with Loctite 242, or equivalent, and reinstall.

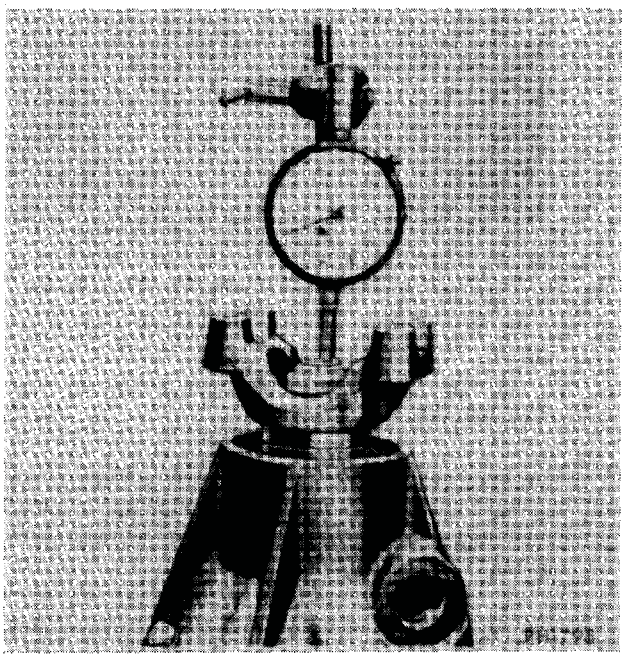


Fig. 27—Checking Rear Output Shaft End Play

INSTALLATION INTO VEHICLE

(1) Place transfer case on suitable jack or other installing device. **Be sure transfer case is safely secured.**

(2) Position transfer case under vehicle then move it upward and forward into alignment with transmission output shaft. Engage input spline with transmission output shaft and install adapter to transfer case mounting bolts.

(3) Remove jack or installing device.

(4) Connect shift rods and speedometer cable.

(5) Connect front and rear propeller shafts to yokes.

(6) Reinstall skid plate assembly (if so equipped).

MAINTENANCE AND ADJUSTMENTS

MODEL 203 TRANSFER CASE-OIL CHANGE

1. Operate truck on road surface to agitate the transfer case lubricant sufficiently to reach normal operating temperatures.

2. Raise the truck on a hoist. Remove the lubricant filler plug.

3. Remove the lowest bolt from the front output shaft rear bearing retainer, and allow the lubricant to drain. See Item A in Figure D-5.

4. Remove six bolts retaining the P.T.O. cover, then remove the cover while allowing lubricant to drain. See item B.

5. Remove speedo driven gear at location C.

6. Use a suction gun at locations B and C to remove as much lubricant as possible.

7. Install speedo driven gear, P.T.O. cover, and lowest bolt into bearing retainer.

8. Add approximately seven pints of engine oil through the filler plug opening. Check the fluid level and add sufficient oil to raise the level to one-half inch below the filler plug opening. Replace the plug. Wipe the surfaces of the case and the skid plate to remove excess oil.

9. Lower the truck to the floor.

LINKAGE ADJUSTMENT AND INSPECTION

The control linkages for transfer cases are shown in Figs. D-6 and D-7. Adjustment procedures for Model 203 are shown in Fig. D-6.

Periodically inspect the linkage system for freedom of operation, proper engagement, loose attaching bolts foreign material, etc. Adjust, clean and tighten as necessary.

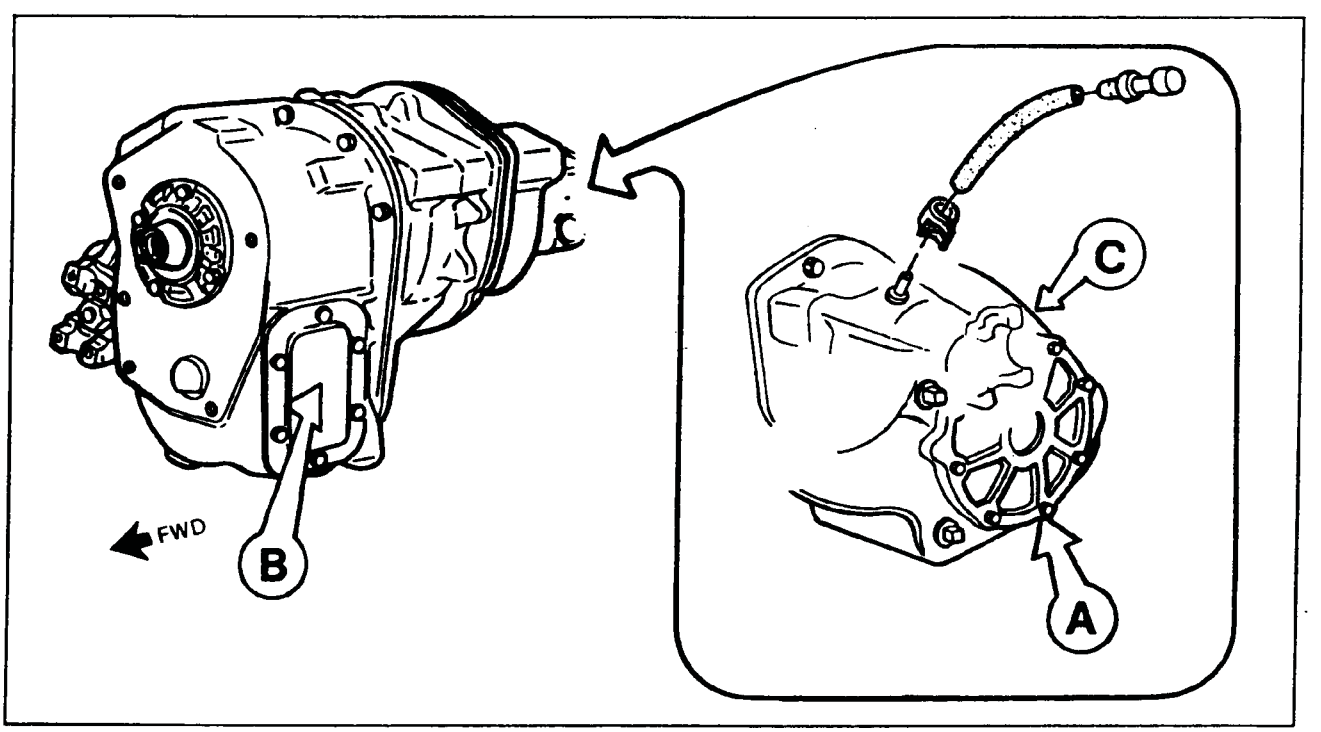
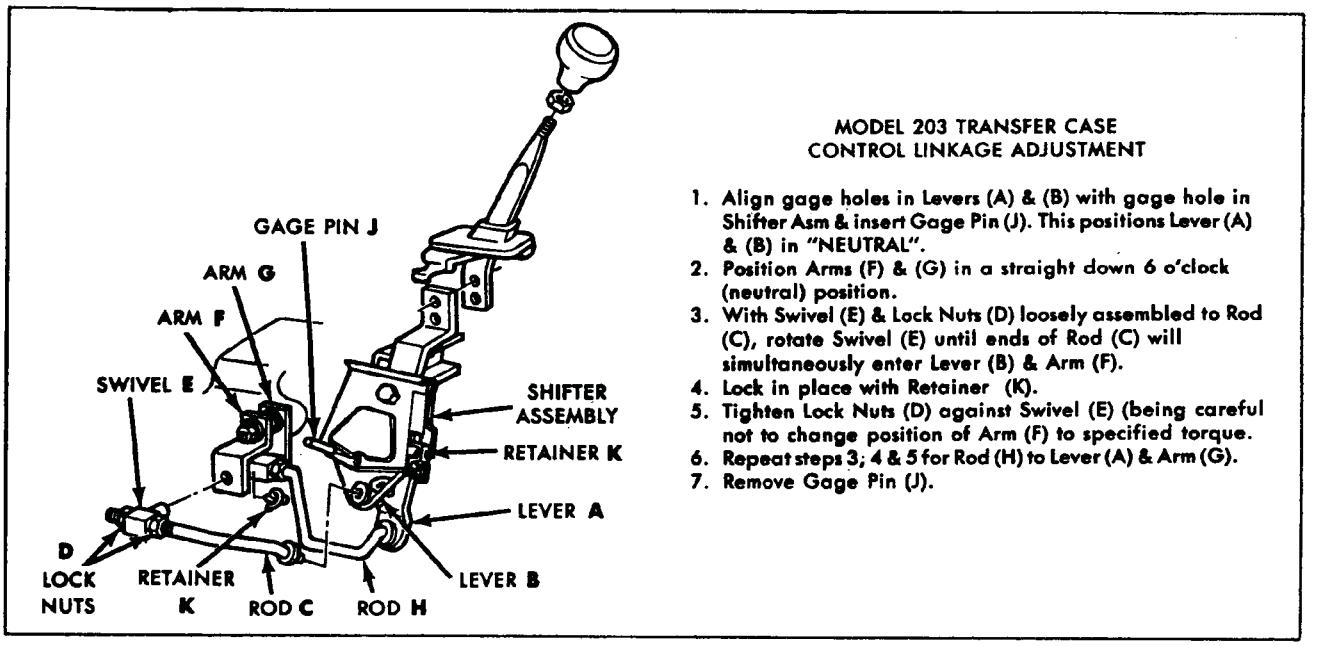


Fig. D-5–Model 203 Transfer Case, Oil Change Location View



MODEL 203 TRANSFER CASE
CONTROL LINKAGE ADJUSTMENT

1. Align gage holes in Levers (A) & (B) with gage hole in Shifter Asm & insert Gage Pin (J). This positions Lever (A) & (B) in "NEUTRAL".
2. Position Arms (F) & (G) in a straight down 6 o'clock (neutral) position.
3. With Swivel (E) & Lock Nuts (D) loosely assembled to Rod (C), rotate Swivel (E) until ends of Rod (C) will simultaneously enter Lever (B) & Arm (F).
4. Lock in place with Retainer (K).
5. Tighten Lock Nuts (D) against Swivel (E) (being careful not to change position of Arm (F) to specified torque.
6. Repeat steps 3; 4 & 5 for Rod (H) to Lever (A) & Arm (G).
7. Remove Gage Pin (J).

Fig. D-6–Model 203 Linkage

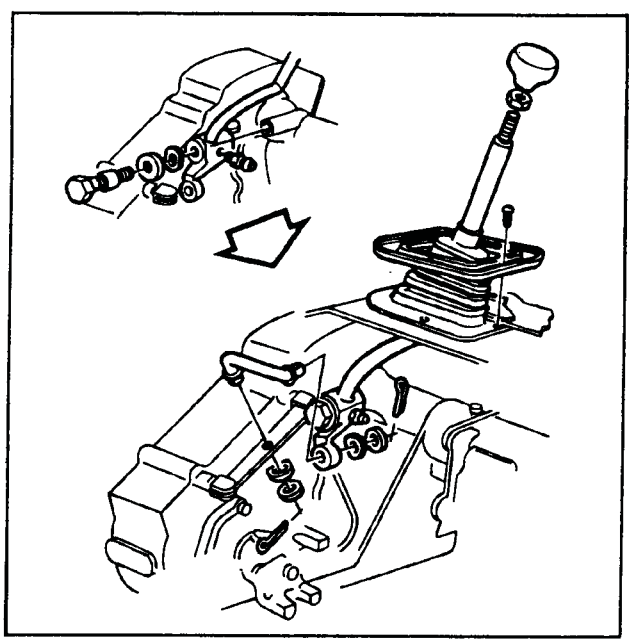


Fig. D-7–Model 205 Linkage

DIAGNOSIS

COMPLAINT	POSSIBLE CAUSES	REMEDIES
Excessive Noise	1. Lubricant level-low 2. Worn or damaged bearings 3. Worn or damaged chain 4. Misalignment of drive shafts or universal joints 5. Yoke bolts loose 6. Loose adapter bolts	1. Fill as required 2. Replace 3. Replace 4. Align 5. Torque to specs. 6. Torque to specs.
Shifter Lever Difficult to Move	1. Dirt/contamination on linkage 2. Binding inside transfer case	1. Clean and lubricate 2. Repair as required
Shifter Lever Disengages from Position	1. Linkage misadjusted/loose 2. Gears worn or damaged 3. Shift rod bent 4. Missing detent ball or spring	1. Readjust/tighten 2. Replace 3. Replace 4. Replace
Lubricant Leaking	1. Excessive lubricant in case 2. Leaking seals or gaskets 3. Loose bolts 4. Scored yoke in seal contact area	1. Adjust level 2. Replace 3. Tighten 4. Refinish or replace

Fig. D-8–Transfer Case Diagnosis

COMPONENT REPLACEMENT

TRANSFER CASE REPLACEMENT

Removal (Fig. D-9)

1. Raise and support vehicle on hoist. Drain transfer case.
2. Disconnect speedometer cable.
3. Remove skid plate and crossmember supports as necessary.
4. Disconnect rear prop shaft from transfer case and tie up away from work area.
5. Disconnect front prop shaft from transfer case and tie up shaft away from work area.
6. Disconnect shift lever rod from shift rail link. Model 203, disconnect shift levers at transfer case.
7. Support transfer case and remove bolts attaching transfer case to transmission adapter.
8. Move transfer case to rear until input shaft clears adapter and lower assembly from vehicle.

Installation

1. Support transfer case in suitable stand and position case to transmission adapter. Install bolts attaching case to adapter and torque to 45 ft. lbs.
2. Remove stand.
3. Install connecting rod to shift rail link or connect shift levers to transfer case, as applicable. On Model 203 case, be sure that nylon spacer (Item #19, Fig. D-3) is in place before installing levers.
4. Connect front prop shaft to transfer case front output flange or yoke.
5. Connect rear prop shaft to transfer case rear output yoke.
6. Install crossmember support and skid plate, if removed.
7. Connect speedometer cable.
8. Fill transfer case to proper level with lubricant specified in section 0-B.
9. Lower and remove vehicle from hoist.

CAUTION: Check and tighten all bolts to specified torques.

NOTICE: Before connecting prop shafts to companion flanges, be sure locknuts are torqued to specifications.

SKID PLATE

STRUT ROD

ADAPTER ASSEMBLIES

Attachment of the above items is shown in Figures D-10, D-11, D-12. Refer to these figures when removing or replacing these components.

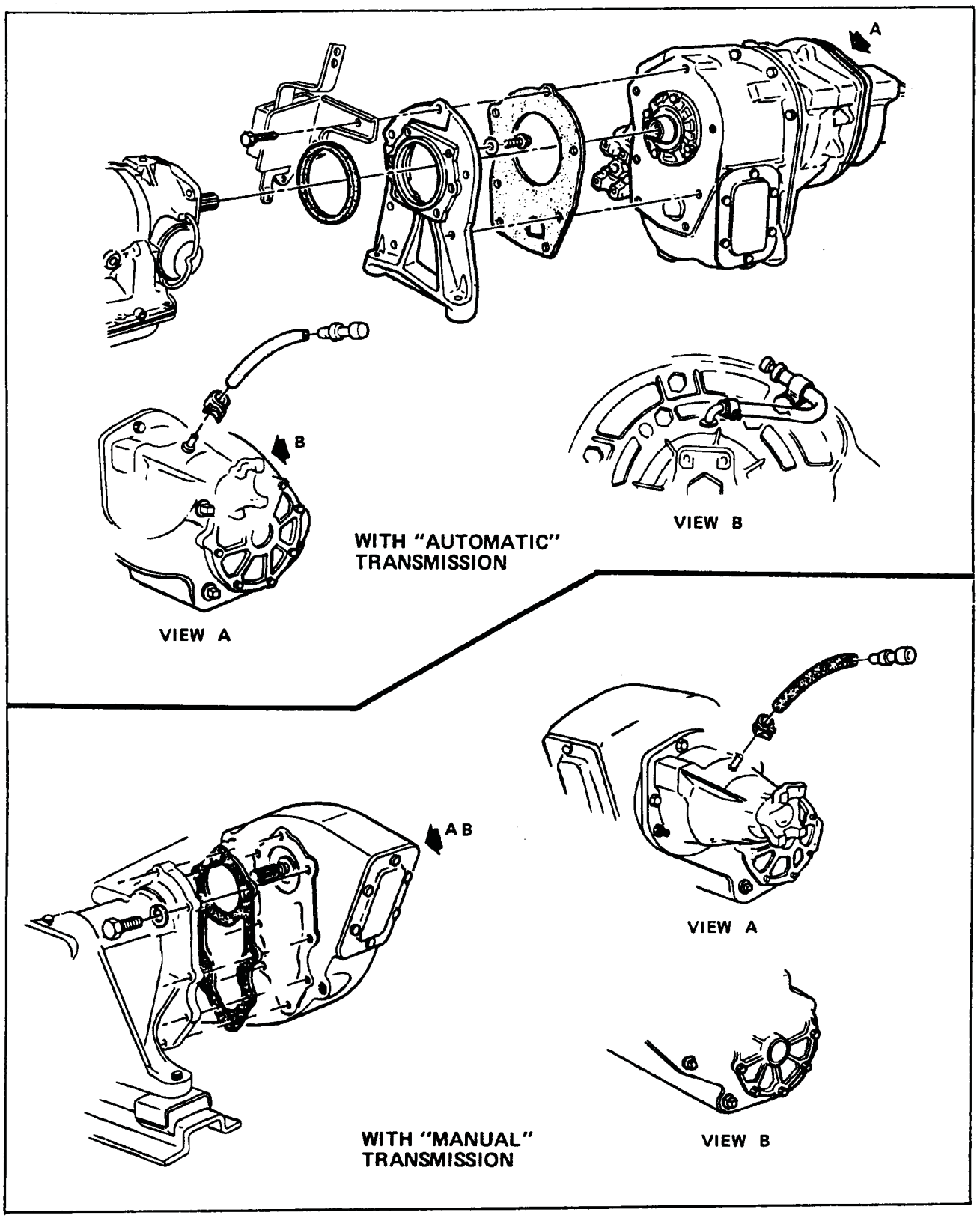


Fig. D-9–Transfer Case Attachment-Typical

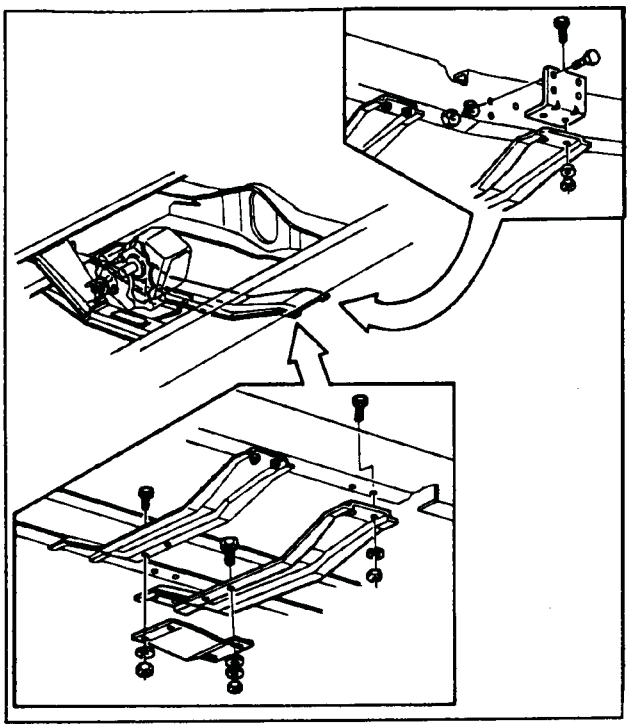


Fig. D-10–Skid Plates

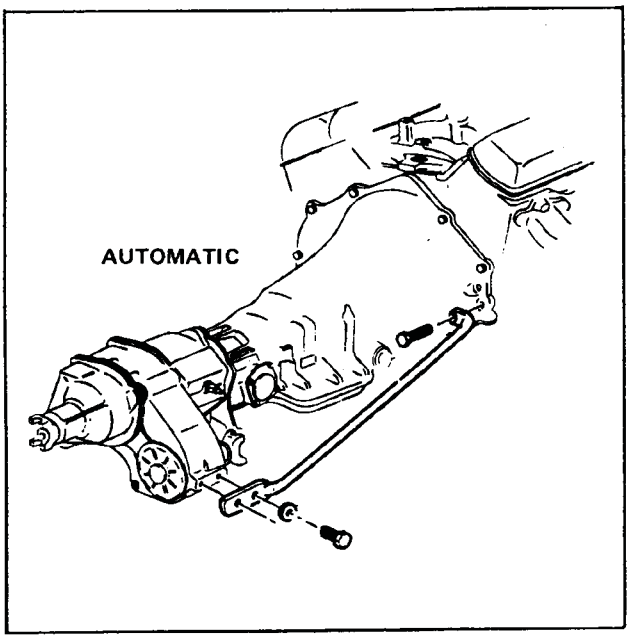


Fig. D-11–Strut Rods

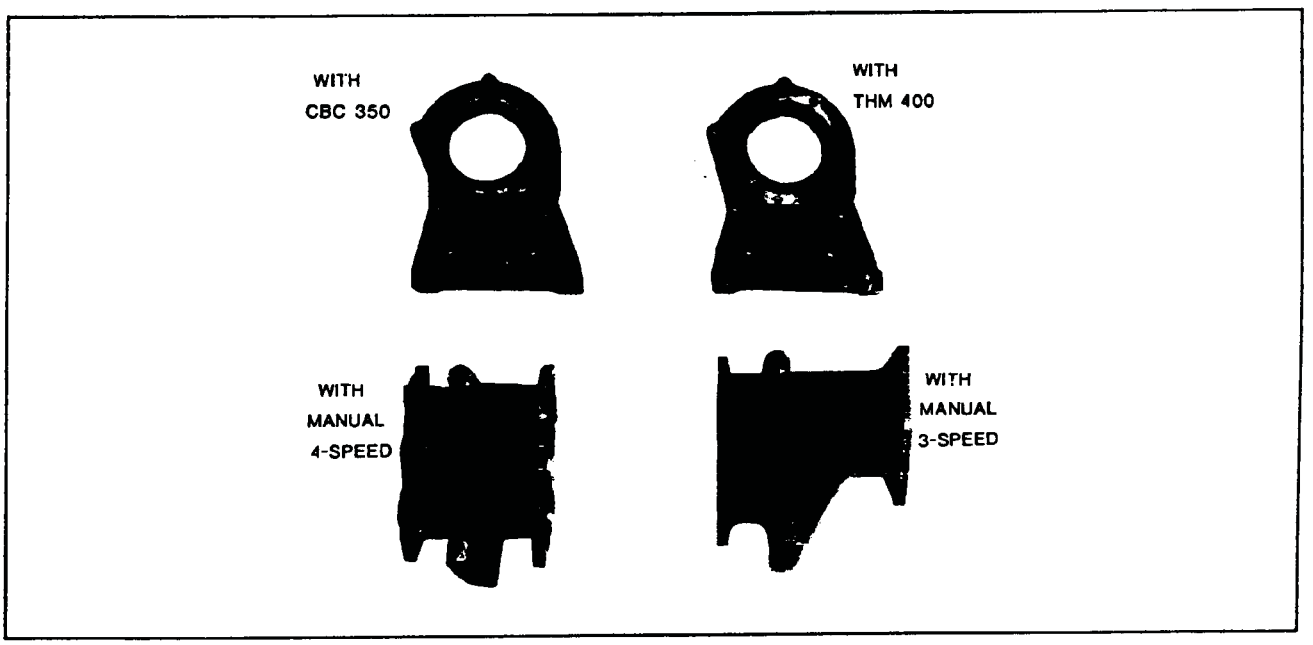


Fig. D-12–Adapter Assembles

SPECIFICATIONS

	N·m	
	Model 203	Model 205
Nut, Shift Lever-to-Shifter Asm	34-48	—
Nut, Knob Asm-to-Shift Lever	14-20	26-40
Bolt, Shifter Asm-to-Transfer Case	46-54	120-140
Nut, Shift Arms-to-Case	14-20	14-20
Screw, Shift Lever Boot Retainer	2.2-3.2	2.2-3.2
Bolt, Adapter-to-Transmission	48-60	26-34
Bolt, Adapter-to-Transfer Case	46-54	27-41
Filler Plug	41-48	41-48
Bolts P.T.O. Cover	20-24	20-24
Nut, Skid Plate-to-Crossmember	55-70	55-70
Bolt, Support Strut Rod		
- Transmission End	40-54	—
- Transfer Case End	150-200	—

Model No.	205 (Part-Time)	203 (Full Time)
Availability	K10-30 (Manual Trans)	K10-30 (Automatic Trans)
Ratios: Hi Range Lo Range	1.00 to 1 1.96 to 1	1.00 to 1 2.00 to 1
Lever Positions	4-Lo (All wheel underdrive) N (Neutral) 2-Hi (Rear wheel drive) 4-Hi (All wheel direct drive)	4-Lo (Lock-all wheels locked - underdrive) 4-Lo (All wheels underdrive) N (Neutral) 4-Hi (All wheels direct drive) 4-Hi (Lock - all wheels locked - direct drive)
Lever Location	Rear of trans. shift lever	Floor, right of center
Power Take-Off Data: Opening & Location	SAE 6-bolt; Left side	
Lubricants: Oil capacity	5.2 pints	8.2 pints
Type, grade	See Owner's Manual	

GENERAL INFORMATION

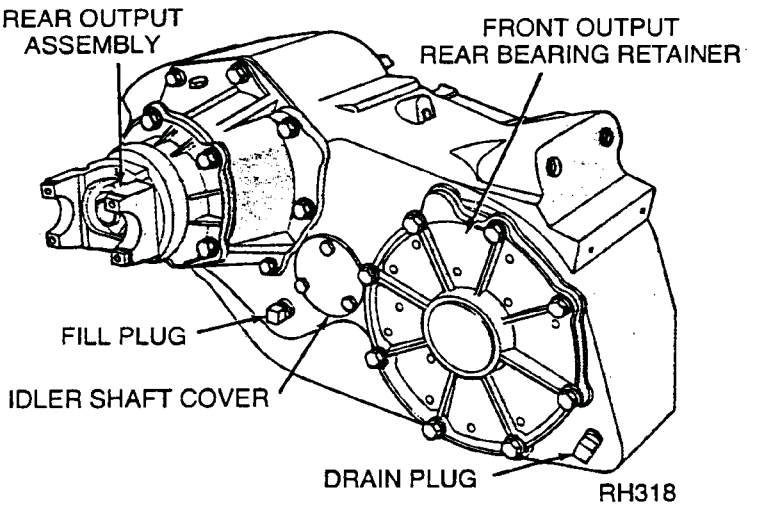


Fig. 2-1 Transfer Case Assembly

DESCRIPTION

The NP205 transfer case (Fig. 2-1) is a two-speed unit which provides speed reduction and transmits power from the transmission to the front drive axle as well as the conventional rear axle.

From the transfer case power is delivered to both front and rear axles by conventional propeller shafts. Contained within the transfer case are five constant-mesh helical gears and shafts mounted on ball and needle roller bearings. These gears provide two speed ranges: A high range with a 1 to 1 ratio for highway driving and a low range with a reduction of 1.96 to 1 for off the road or heavy operation. It is possible to disengage the drive to the front axle when maximum traction is not required.

Sliding clutch gears in the transfer case are controlled by a single shift lever in the vehicle.

OPERATING RANGES

Use the appropriate mode for the conditions described at right:

(2H) Rear wheel drive high range — Normal street and highway driving.

(4H) Four-wheel drive high range — When driving conditions require more traction than two-wheel drive provides.

(N) Neutral — Disengages both driving axles. To be used for towing only. See towing instructions for more information.

(4L) Four-wheel drive low range — When maximum pulling power is required. Do not exceed 25 mph (40 kph).

Note: Before operating in four wheel drive, right and left front hubs must be in the LOCK position.

2H to 4H or 4H to 2H — Shifts between 2H and 4H can be made while the vehicle is moving or stopped.

If the vehicle is stopped, shift the automatic transmission to neutral (N) or depress clutch on manual transmission and shift transfer case.

If the vehicle is moving, shift lever at any speed.

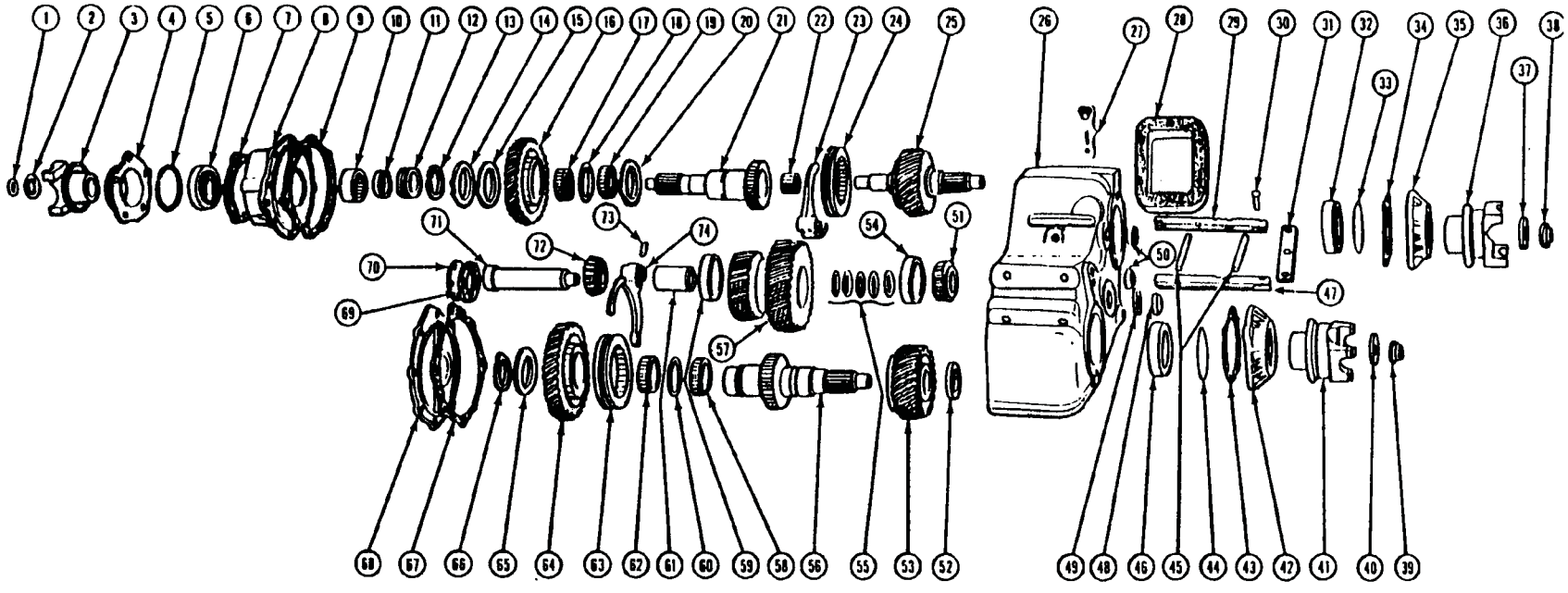


Fig. 2-2 NP205 Transfer Case

205 TRANSFER CASE - TRANSFER CASE COMPONENTS

LEGEND FIG. 2-2

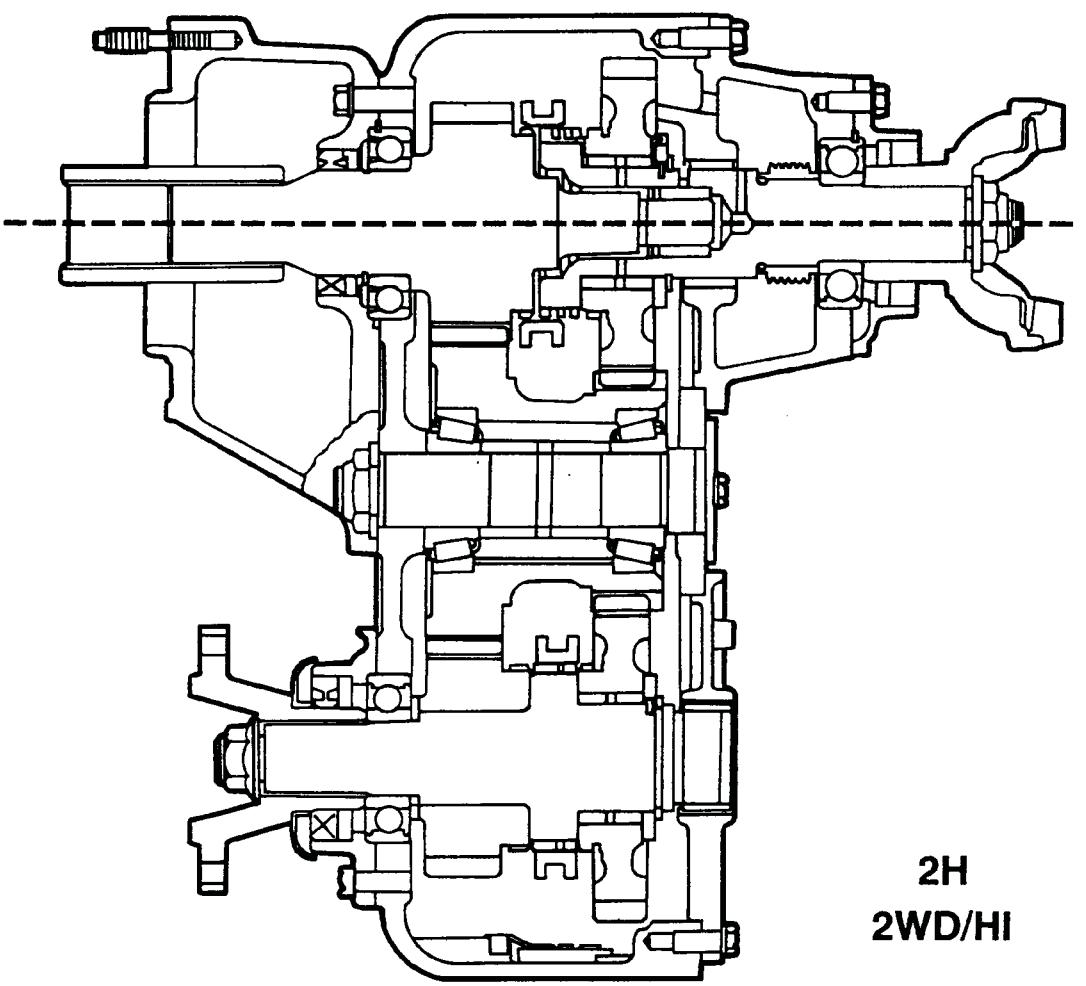
1. Nut
2. Washer
3. Yoke
4. Retainer and Seal Assembly
5. Snap Ring
6. Bearing
7. Gasket
8. Retainer
9. Gasket
10. Spacer
11. Spacer
12. Speedometer Gear
13. Snap Ring
14. Thrust Washer
15. Thrust Washer
16. Input Gear
17. Needle Bearings
18. Spacer Washer
19. Needle Bearings
20. Washer
21. Input Shaft
22. Needle Bearing
23. Shift Fork
24. Sliding Clutch
25. Rear Wheel Output Shaft
26. Case
27. Poppet Plug, Spring and Ball
28. P.T.O. Gasket and Cover
29. Shift Rod
30. Shift Rod Link Clevis Pin
31. Shift Rod Link
32. Bearing
33. Snap Ring
34. Gasket
35. Oil Seal
37. Adapter
39. Nut
40. Washer
41. Yoke
42. Retainer
43. Gasket
44. Snap Ring
45. Interlocks
46. Bearing
47. Shift Rod
48. Nut
49. Washer
50. Oil Seals
51. Bearing
52. Thrust Washer
53. Front Wheel Hi Gear
54. Bearing Cone
55. Shims
56. Front Wheel Output Shaft
57. Idler Gear Assembly
58. Needle Bearings
59. Bearing Cone
60. Spacer
61. Spacer
62. Needle Bearings
63. Sliding Clutch
64. Gear
65. Thrust Washer
66. Snap Ring
67. Gasket
68. Retainer and Bearing Assembly
69. Gasket
70. Idler Gear Cover
71. Idler Gear Shaft
72. Bearing
73. Fork, Lock Pin
74. Shift Fork

GENERAL INFORMATION

2H to 4L or 4L to 2H — With the vehicle STOPPED, shift automatic transmission to neutral (N) or depress clutch on manual transmission. Shift transfer case lever without hesitation to the desired mode (pausing in transfer case neutral (N) may require shutting the engine off to avoid gear clash while completing the shift). If difficulty occurs, pull vehicle forward or rearward; stop, shift transmission to neutral (N) make shift. Attempting to shift with foot on brake may result in a torque lock condition. Momentary release of brake may be necessary.

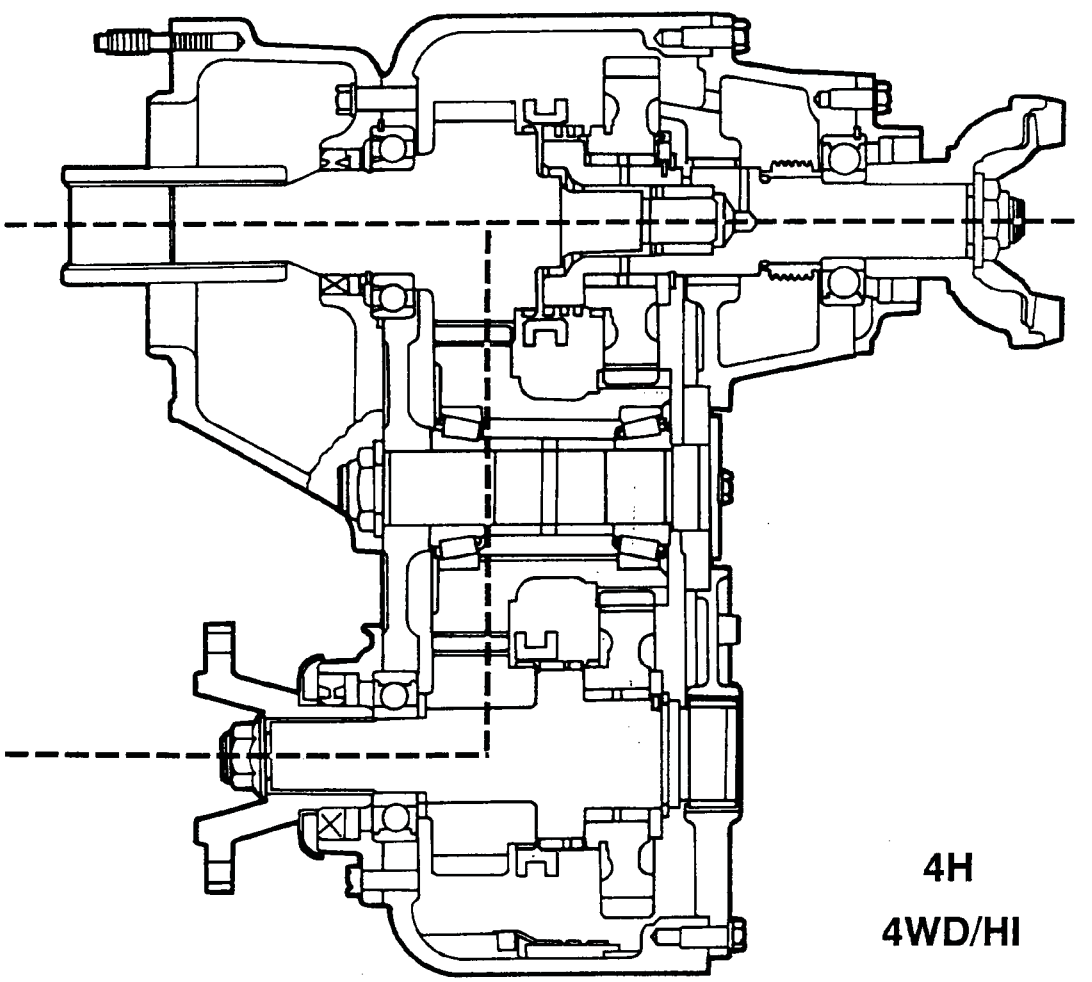
Do not attempt to shift to or from 4L with transmission in gear.

205 TRANSFER CASE - POWER FLOW



2H
2WD/HI

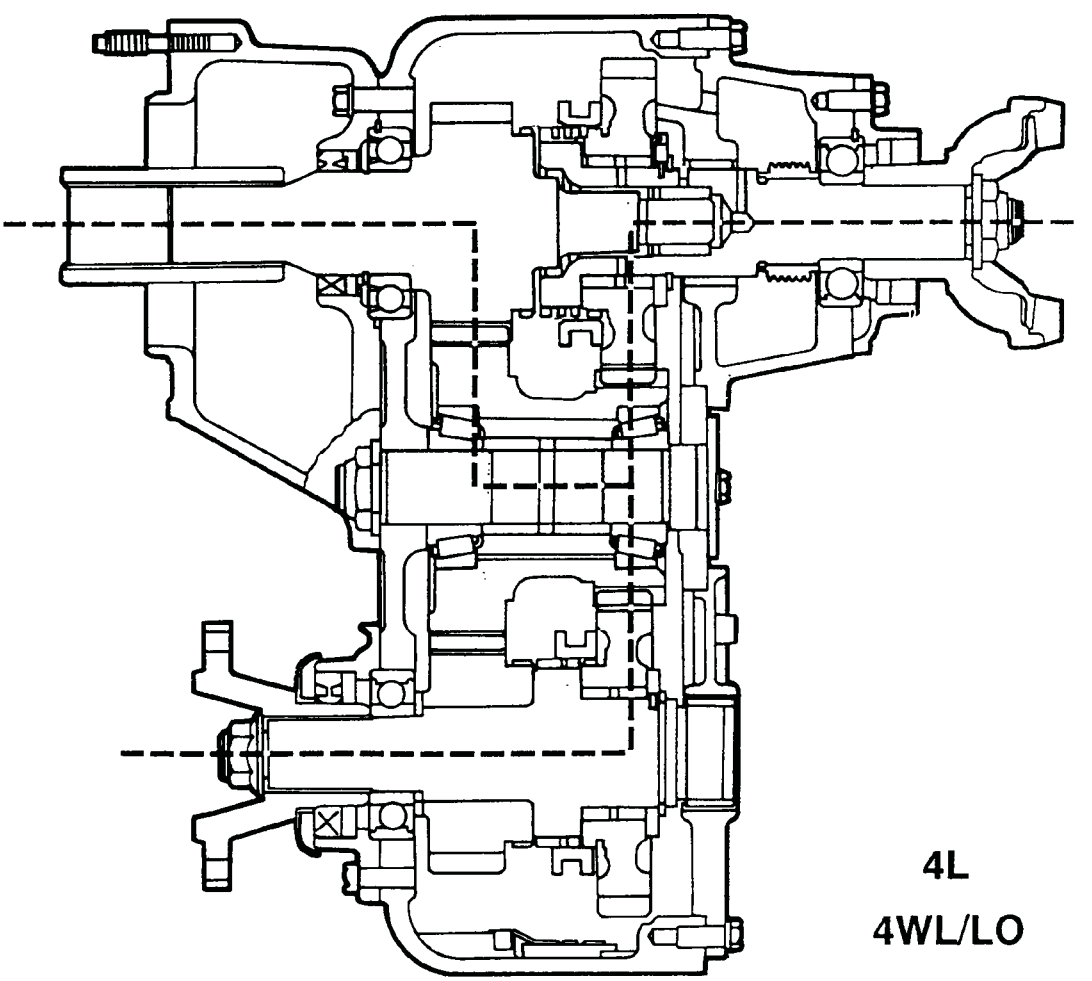
205 TRANSFER CASE - POWER FLOW



4H

4WD/HI

205 TRANSFER CASE - POWER FLOW



4L

4WL/LO

LOCKING HUBS

Lock-out hubs are designed to eliminate unnecessary wear to front drive components. When the lock-out hubs are disengaged, the vehicle is in two-wheel drive (rear wheels only). The front wheels now turn freely on the spindle bearings. This eliminates the rotating of the axle shafts, ring gear, pinion gear and front prop shaft, which decreases tire wear and engine load. This will also give the best fuel consumption.

Lock Position - When operating the vehicle in 4WD, the lock-out hubs must be in the "Lock" position before shifting the transfer case to 4H or 4L. If the selector does not turn freely, move the vehicle a few inches in either direction, then turn the selector.

Free Position - To disengage the hubs, shift the transfer case to 2wd (2H). Turn the hub selector on the front wheels to the "Free" position. If the selector does not turn freely, move the vehicle a few inches in either direction to relieve the torque on the gears, then turn the selector.

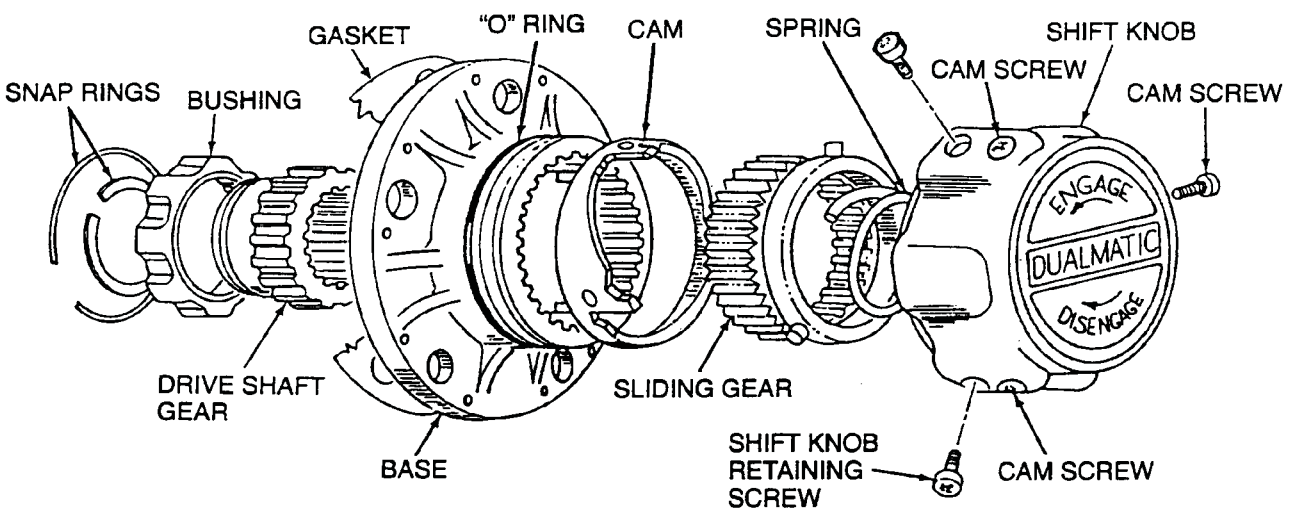


Fig. 2-3 Dualmatic Locking Hub

DUALMATIC LOCKING HUB

Removal and Disassembly

1. Turn shift knob to "engage" position.
2. Apply pressure to the face of shift knob, remove the three screws spaced 120 apart and nearest to the flange.
3. With an outward pull, remove shift knob from mounting base.
4. Remove snap ring from axle shaft.
5. Remove capscrews and lockwashers from mounting base flange.
6. Separate and remove locking hub assembly from rotor hub; remove and discard gasket.

LOCKING HUBS

Inspection

Wash parts in mineral spirits and blow dry with compressed air. Examine splines shift knob, cam, sliding gear, drive shaft gear, and mounting base for damage.

Assembly

Lubricate parts lightly with MOPAR Multi-Purpose lubricant, Part Number 4318063 or equivalent.

1. Position new gasket and locking hub onto rotor hub.
2. Install attaching capscrews and lock washers; tighten to 30-40 ft. lbs. (41-54 N•m).
3. Install axle shaft snap ring.
4. Position shift knob on mounting base. Align splines by pushing inward on shift knob and turning it clockwise to lock it in position.
5. Install and tighten three shift knob retaining screws.

REMOVAL AND DISASSEMBLY OF SUBASSEMBLIES

1. Loosen rear output yoke.
2. Remove rear output shaft housing retainer.
3. Remove yoke previously loosened, discard nut. Remove shaft assembly.
4. Remove snap ring and discard.
5. Remove thrust washer and washer pin.
6. Remove tanged washer. Remove gear, remove needle bearings (32 per row) remove spacer and 2nd row of needle bearings.
7. Remove tanged thrust washer.
8. Remove pilot rollers from shaft (15 rollers).
9. Remove pilot roller retainer ring and discard. Remove roller washer.
10. Remove oil seal retainer, remove ball bearing, speedometer gear and spacer. Discard all gaskets. Press out bearing.

LOCKING HUBS

WARN MANUAL HUBS-MODEL 291

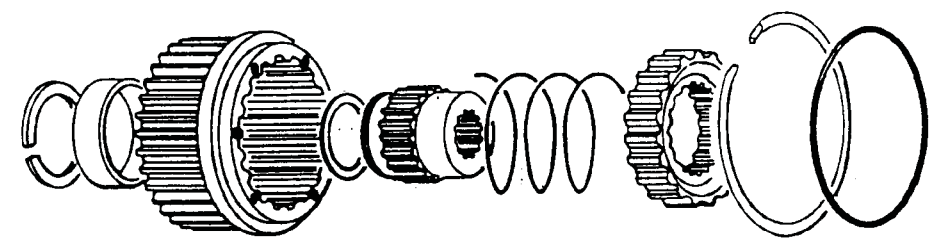
1990 model Dodge Trucks built after August, 1989 will utilize Warn manual locking hubs. The Dual-matic hubs will be dropped. These hubs are not interchangeable.

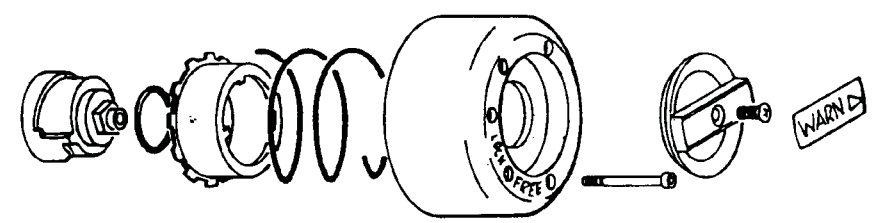
Operating Instructions:

Set both hub control dials at "Free", and the transfer case selector at 2WD for free wheeling two wheel drive. Use the free position for all driving that does not require four wheel traction.

To engage four wheel drive, set both hub control dials at "Lock", move the transfer case selector to 4WD. Do not drive on hard surface roads in this mode. It can result in severe torque windup in the gear train.

Return the transfer case to 2WD before unlocking the hubs.





CAUTION:

Do not move the vehicle if the control dials are anywhere between "Free" and "Lock." To do so may cause hub damage. Driving with only one hub engaged can cause damage to the front differential. Do not attempt to drive the vehicle with the hubs in the "Free" position and the transfer case in the low range mode. This can place excessive torque on the rear gear train. To ensure lubrication of the front axle, engage the hubs for a minimum of one mile monthly.

Service Instructions

Hubs should be serviced at the same interval as the wheel bearings. They should be cleaned and internal working surfaces lightly coated with grease. The hubs should not be packed with grease.

Service kits are available for hubs. They contain the necessary gaskets, seals, lockwashers, retaining rings and screws as necessary, for installing the hubs correctly after wheel bearing or brake work.

205 TRANSFER CASE - OVERHAUL

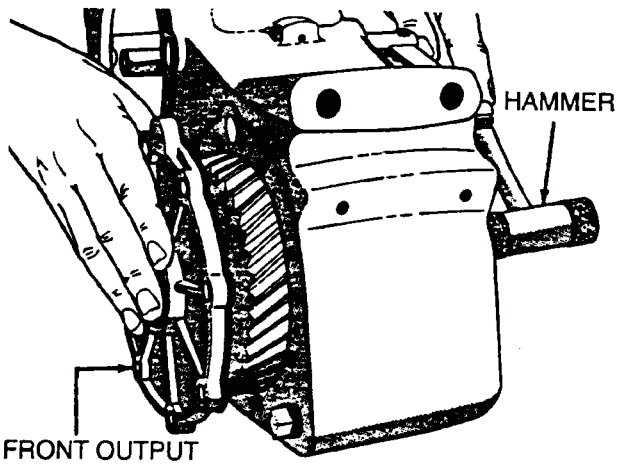


Fig. 2-4 Remove Front Output Shaft Assembly

Input, Front Output, and Idler Gear

1. Remove front output yoke. Remove idler gear shaft nut. Discard all nuts.
2. Remove front output bearing retainer (Fig. 2-1).
3. Remove front input bearing retainer and rear input shaft bearing retainer. Remove PTO cover.
4. Remove idler shaft cover (Fig. 2-1).
5. Remove the two poppet nuts.
6. Remove the two poppet springs and using a magnet, remove the two poppet balls.
7. Remove front output shaft, gear assembly and bearing (Fig. 2-4).
8. Remove snap ring (Fig. 2-5).
9. Remove thrust washer and thrust washer pin. Remove gear and needle bearings (32 per row) and spacer.
10. Remove cup plugs on top of case using a 1/4 inch punch.
11. Position both shift rails in neutral.

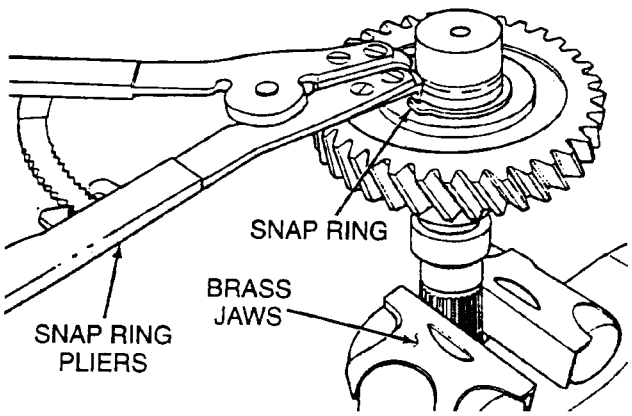


Fig. 2-5 Front Output Shaft Snap Ring

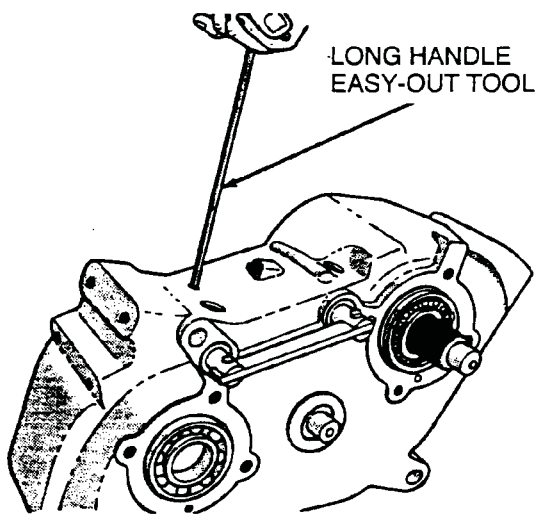


Fig. 2-6 – Remove Shift Fork Pins

12. Using a long-handle easy-out tool, remove shift fork pins (Fig. 2-6).
13. Remove clevis pins, remove shift rail link.
14. Remove shift rails, upper rail (range) first, then lower (4 wheel) (Fig. 2-7).
15. Remove forks and sliding clutches.
16. Remove front output high gear, washer, and bearing.

17. Remove input gear and bearing.
18. Using plastic hammer, remove idler gear shaft (Fig. 2-8).
19. Tilt case at 45 degree angle, roll idler gear to front shaft hole and remove. Note and record number of shims for reassembly.
20. Remove two bearing cups from idler gear.
21. Remove two interlock pins from inside of case (upward) toward PTO opening.

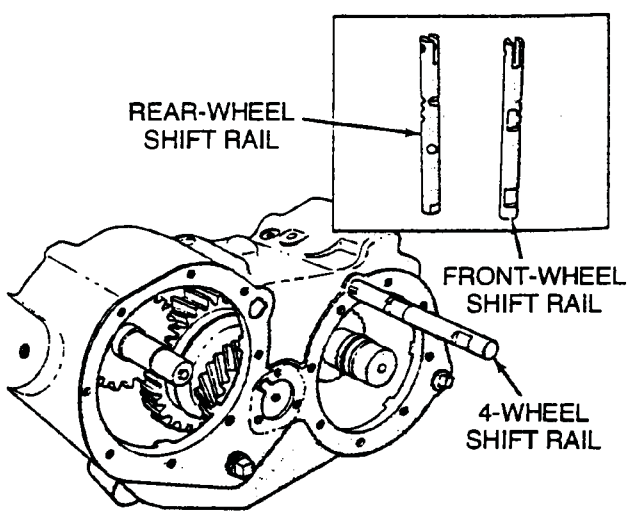


Fig. 2-7 Remove or Install Shift Rails

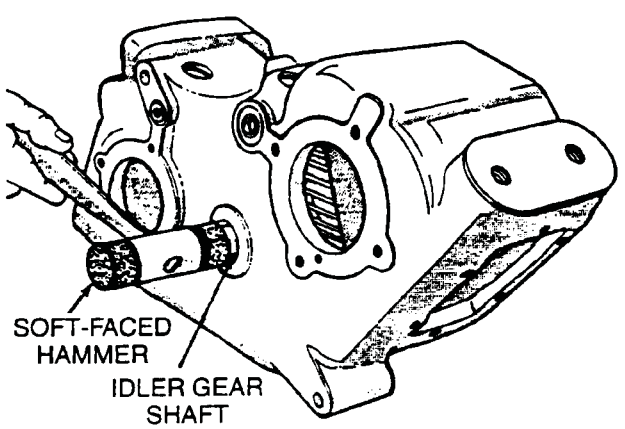


Fig. 2-8 Remove Idler Gear Shaft

22. If necessary to replace front output shaft rear bearing, replace bearing and retainer assembly. **Do not press new bearing in old retainer.**
23. Remove rail seals if needed. Dispose of all gaskets.

ASSEMBLY AND INSTALLATION OF SUBASSEMBLIES

Input, Front Output Gear, and Idler Gear Assemblies

1. Using arbor or hydraulic press, install two bearing cups in idler gear (Fig. 2-9).
2. Assemble the two bearing cones, spacer, shims and idler gear on a dummy shaft (Tool DD1272) with bore up. End play should be .000 to .002 inch loose (Fig. 2-9).
3. Press the two rail seals into case. These seals are wiper type and should be installed with lip outward.
4. Install idler gear assembly with dummy shaft into case through front output bore, large end first. Tilt case at 45 degree angle to facilitate bearing installation at boss (Fig. 2-10).

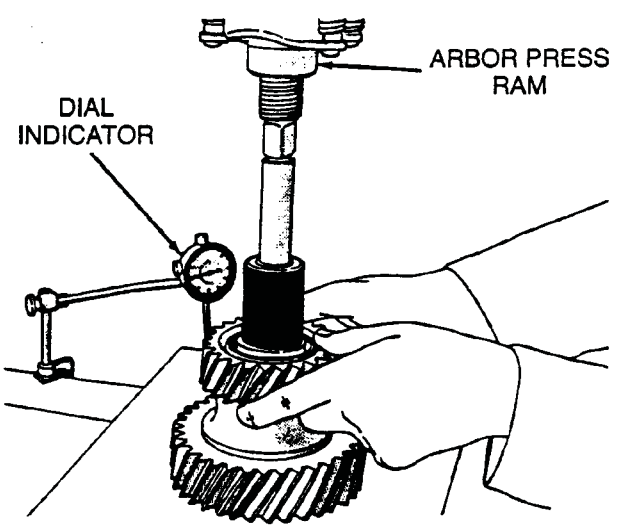


Fig. 2-9 Press in Bearing Caps and Check End Play

205 TRANSFER CASE - OVERHAUL

5. Install idler shaft from large bore side and drive dummy shaft through; use a heavy, soft hammer (plastic or leather).

6. Install washer and **new** locknut. Check end play and free rotation. Tighten nut to 150 ft. lbs. (203 N•m).

7. Install input and front output shaft bearings.

8. Check input and front output bearing seals, replace if necessary. Install input and front output bearing retainer assemblies. Check with gasket to determine if one or two are needed. Dip bolts into sealant before installing. Install retainers with oil drain slot aligning with drain hole.

9. Install interlock pins from large bore or PTO opening.

10. Install input gear assembly.

11. Install front wheel Hi gear and washer on front output shaft in case. Install clutch gear on the shaft.

12. Start front wheel shift rail into case from back, slotted end first, poppet notches up (Fig. 2-7).

13. Install sliding clutch onto fork (long end inward), then place over front output shaft. Slide onto clutch gear and position to receive rail. Push rail through to neutral position.

14. Start range rail into case from back, poppet notches up.

15. Install sliding clutch onto fork, place over input shaft. Slide onto clutch gear and position to receive range rail. Push rail through to neutral position.

16. Install **new** lock pins through holes at top of case, into forks and drive to seat.

17. Install two rows of 32 needles each separated by spacer in front low output gear. Retain with sufficient amount of grease. Place front output shaft in soft-jawed vise, yoke end down. Install front lower output gear over shaft with clutch gear facing down. Install thrust washer pin, thrust washer and **new** snap ring. Position snap ring with opening opposite pin. Place front output shaft yoke in position in retainer. Place case on bench yokes down. Line up output shaft yoke, washer, and front wheel high gear with bearing bore. Lock high gear in place by putting fork in 4-wheel high range. Insert front output shaft and low gear assembly through front wheel high gear washer and bearing. Turn yoke until splines mate with shaft and mesh. Turn case over and install washer and **new** nut on front output shaft. Tighten nut to 130 ft. lbs. (176 N•m).

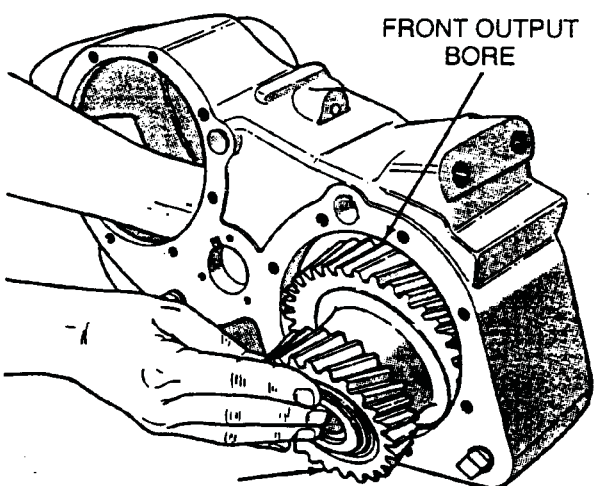


Fig. 2-10 Install Idler Gear Assembly

18. Clean and grease rollers in front output rear bearing retainer. Install onto case using one gasket. Dip bolts in sealant. Tighten to 40 ft. lbs. (54 N•m).

19. Install PTO cover and gasket. Tighten bolts to 15 ft. lbs. (20 N•m).

20. Install idler shaft cover and gasket. Tighten bolts to 25 ft. lbs. (34 N•m).

21. Install poppet balls, springs, gaskets and nuts. Tighten nuts to 20 ft. lbs. (27 N•m).

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Rear Output Retainer Assembly (Fig. 2-11)

1. Install rear output low gear needle bearings, 32 per row, separated by a spacer. Use sufficient amount of grease to retain needle bearings.

2. Install thrust washer onto rear output shaft, tang down in clutch gear groove. Install needled gear onto shaft over washer, clutch gear facing down. Install second thrust washer with tab pointing up and away from gear. Install washer pin. Install large thrust washer over shaft and pin; rotate to fit tab into slot, 90 degrees way from pin. Install **new** snap ring, tap to seat. Check end play. End play should be .002 to .027 inch.

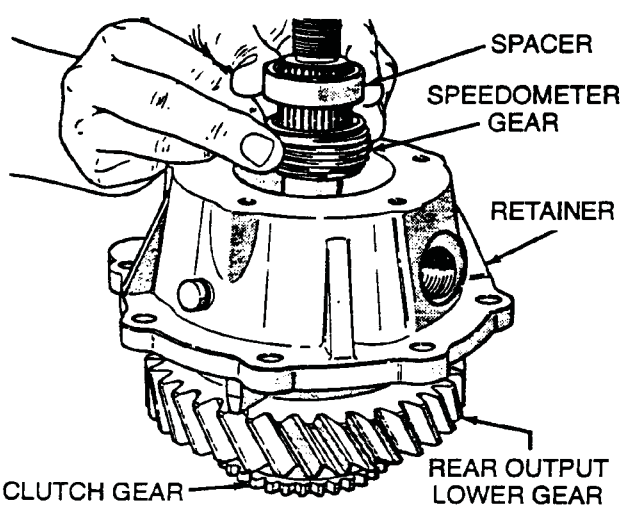


Fig. 2-11 Rear Output Retainer and Gear Assembly

3. Grease pilot bore of rear output shaft and install needle bearings (fifteen).

4. Install needle bearing thrust washer and **new** snap ring.

5. Clean, grease, and install needle bearing in retainer housing.

6. Install retainer onto output shaft assembly, install speedometer gear and spacer, install bearing.

7. Install bearing onto rear retainer assembly with one or two gaskets, depending on clearance. Tighten bolts to 40 ft. lbs. (54 N•m).

8. Position range rail in high, install the retainer assembly on transfer case. Tighten bolts to 40 ft. lbs. (54 N•m). Install the yoke and **new** nut and tighten 130 ft. lbs. (176 N•m).

9. Install drain and filler plugs. Install and seal cup lugs at rail pin holes.

10. Install shift rail cross link.

11. Fill transfer case with proper lubrication (See "Group O Lubrication"), to bottom of fill plug hole.

LINKAGE ADJUSTMENT

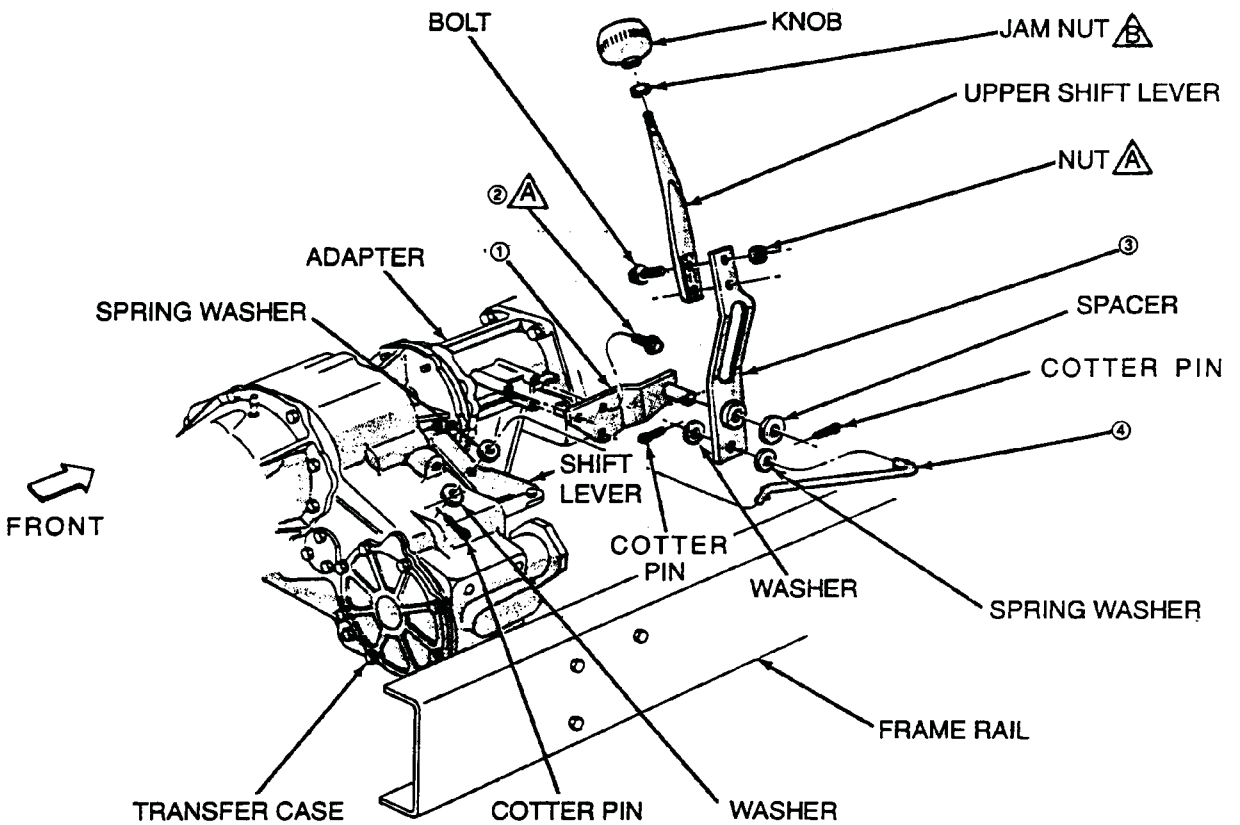


Fig. 2-12 NP205 Transfer Case Controls and Adjustment

SHIFT LINKAGE ADJUSTMENT PROCEDURE

1. INSTALL LOWER SHIFT LEVER ③ TO BRACKET ①.
2. MOUNT BRACKET ① LOOSE TO ADAPTER.
3. INSTALL SHIFT ROD ④.
4. POSITION BRACKET ① AS FAR FORWARD AS POSSIBLE AND TIGHTEN BRACKET SCREW ②.
5. CYCLE SHIFT LEVER ③ TO CHECK FOR PROPER FUNCTION.

TORQUE		
LET.	POUNDS	NEWTON METERS
A	30 FT.	41
B	55 IN.	6

DIAGNOSIS

Condition	Possible Cause	Correction
EXCESSIVE NOISE	(a) Lubricant low.	(a) Fill with proper amount.
	(b) Bearings improperly adjusted worn or damaged.	(b) Adjust or replace bearings.
	(c) Gears worn or damaged.	(c) Replace gears.
	(d) Misalignment of drive shafts or U-joints.	(d) Check alignment of driveshafts.
SHIFTING LEVER DIFFICULT TO MOVE	(a) Control lever bracket or stabilizer loose.	(a) Tighten bracket bolts.
	(b) Stabilizer bracket to shift lever bolt tight.	(b) Tighten bolt finger tight.
LUBRICANT LEAKAGE	(a) Excessive lubricant in case.	(a) Drain to proper level.
	(b) Vent clogged.	(b) Clean vent.
	(c) Oil seals or gaskets leak.	(c) Replace seals and gaskets.
	(d) Propeller shaft companion yoke scored where seal contacts.	(d) Replace yoke.
	(e) Bearings loose or damaged.	(e) Tighten or replace bearings.
OVERHEATING	(a) Lubricant level too high or too low.	(a) Check lubricant level.
	(b) Bearings adjusted too tight.	(b) Check bearing adjustment.
FRONT AXLE DRIVE DISENGAGES	(a) De-clutch lever rod improperly adjusted.	(a) Adjust de-clutch rod.
	(b) Gears or sliding clutch gears worn or damaged.	(b) Replace gears.
	(c) Shift rail poppet ball or spring missing.	(c) Replace poppet ball and/or spring.
	(d) Improper adjustment of stabilizer and/or control rods.	(d) Adjust rods, refer to paragraphs — Linkage Adjustments.
BACKLASH	(a) Companion yoke loose.	(a) Tighten yoke.
	(b) Transfer case loose on mounting brackets.	(b) Tighten brackets and case.
	(c) Worn parts.	(c) Replace all worn parts.

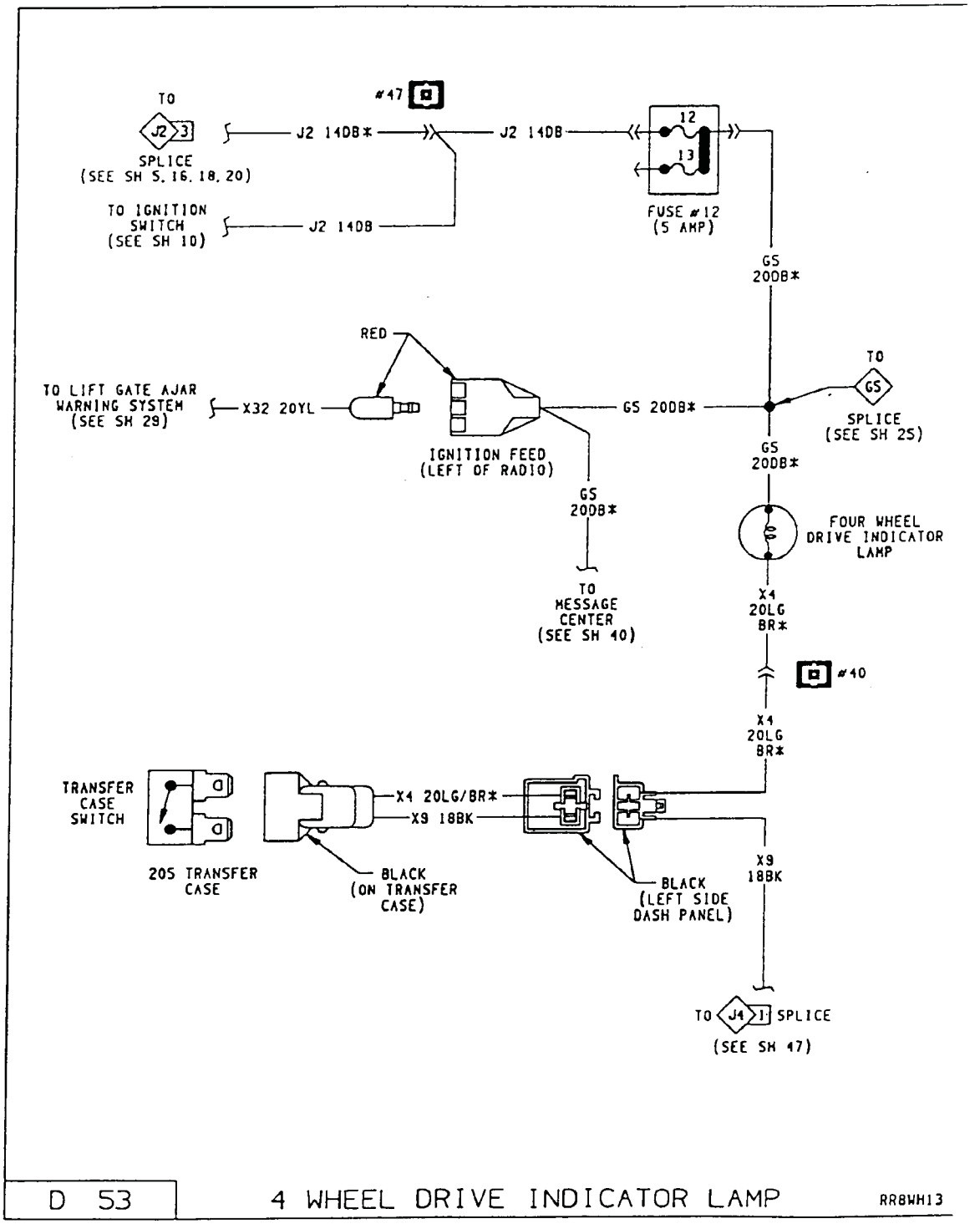
SPECIFICATIONS

NP205 TRANSFER CASE	Ft. Lbs.	N•m	NP205 TRANSFER CASE	Ft. Lbs.	N•m
Bearing Preload	5-30*	7-41	Poppet Screw	20	27
Drain & Fill Plugs	40	54	PTO to Case	35	47
Front Adapter Screws	30	41	PTO Cover Screws	35	47
Front Output Flange Nut	110	149	Rear Output Yoke Nut	138	187
Front Output Rear Brg. Retainer	30	41	Rear Retainer Assy..	30	41
Front Output Seal Retainer	30	41	Rear Seal Retainer	30	41
Idler Shaft Cover	20	27	Transfer Case to Extension	35	47
Idler Shaft Nut	138	187			

NP205 TRANSFER CASE

Model No.—205 . . . . No. of Speeds—2 Ratio (High) 1:1 Ratio (Low) 1.96:1
Lubricant Capacity . . . (U.S. Pints)—4.5 (Liters)—2.1
Lubricant Type . . . . . (See "Group-O, Lubrication")

WIRING SCHEMATIC



D 53 — 4 WHEEL DRIVE INDICATOR LAMP — RR8WH13

TOWING PROCEDURES

TOWING 4WD VEHICLES EQUIPPED WITH MANUAL LOCKING HUBS KEY AVAILABLE - ENGINE OPERATIONAL

Turn engine OFF, Assure manual locking hubs are in the free or unlocked position. Turn ignition key to the OFF position - NOT THE LOCK POSITION. Shift transfer case to NEUTRAL (N). Place manual transmission into gear or automatic transmission into park (P).

DO NOT exceed 30 mph (50km/h) and distances greater than 15 miles (25 km). If the vehicle is to be towed more than 15 miles, disconnect the rear propeller shaft or tow the vehicle with the rear wheels lifted off the ground.

CAUTION

With the transfer case in the NEUTRAL (N) position, the vehicle could roll unexpectedly. The parking brake should always be applied when the driver is not in the vehicle.

EMERGENCY TOWING, TRANSFER CASE CANNOT BE SHIFTED TO NEUTRAL (N).

If the engine is not operational or transfer case neutral is not obtainable, tow the vehicle with either the front or rear off the ground and the opposite end on a towing dolly to prevent the wheels from rotating their respective propeller shafts.