

10117B

- |                            |                 |
|----------------------------|-----------------|
| 1. Feed Line               | 11. Filler Cap  |
| 2. Hose Clamp              | 12. Fuel Tank   |
| 3. Return Line             | 13. Capscrew    |
| 4. Hose Clamp              | 14. Flat Washer |
| 5. Elbow                   | 15. Lockwasher  |
| 6. Elbow                   | 16. Hex Nut     |
| 7. Plug                    | 17. Loop Clip   |
| 8. Sending Unit and Gasket | 18. Hex Nut     |
| 9. Machine Screw           | 19. Lockwasher  |
| 10. Lockwasher             | 20. Capscrew    |

Figure 5-74. Fuel Tank Assembly Installation

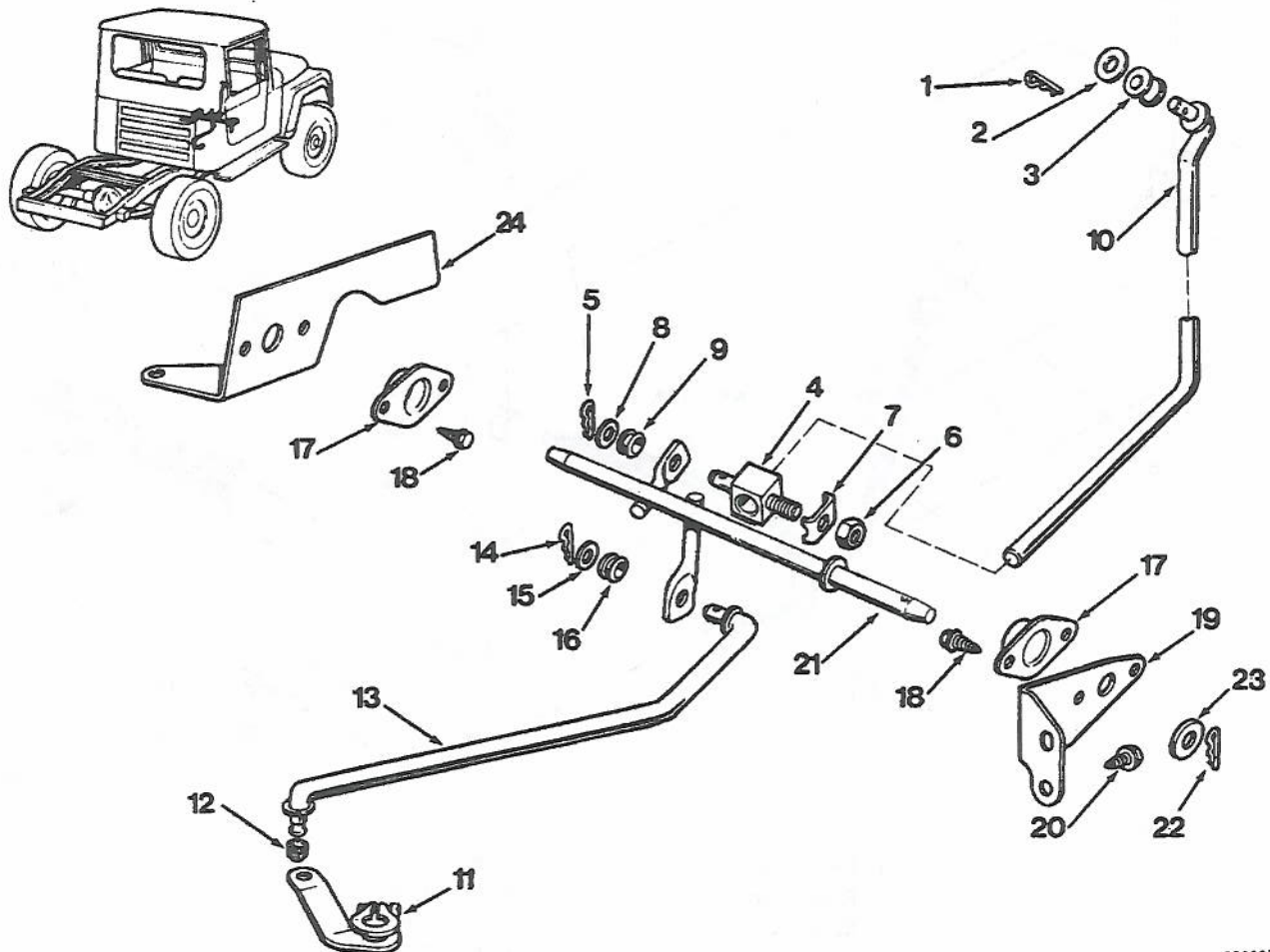
5-5.2. *Transmission.*

5-5.2.1 *Shifting Linkage.* Refer to figure 5-75, and perform the following steps to overhaul the shifting linkage.

a. Removal and disassembly. Disassembly is accomplished during removal. Remove shifting linkage as follows:

(1) Refer to paragraph 5-5.4.2 and remove steering column upper assembly.

- (2) Remove pin (1), washer (2) and grommet (3).
- (3) Remove self-locking nut (6), lock (7) and rod (10).
- (4) Remove pin (5), washer (8), grommet (9) and block (4).
- (5) Remove pin (14), washer (15) and grommet (16).
- (6) Remove bushing (12), rod (13) and lever (11).



09883B

- |                     |             |               |
|---------------------|-------------|---------------|
| 1. Pin              | 9. Grommet  | 17. Bearing   |
| 2. Washer           | 10. Rod     | 18. Screw     |
| 3. Grommet          | 11. Lever   | 19. Bracket   |
| 4. Block            | 12. Bushing | 20. Screw     |
| 5. Pin              | 13. Rod     | 21. Bellcrank |
| 6. Self-Locking Nut | 14. Pin     | 22. Pin       |
| 7. Lock             | 15. Washer  | 23. Washer    |
| 8. Washer           | 16. Grommet | 24. Bracket   |

Figure 5- 75. Shifting Linkage

- (7) Remove washer (23) and pin (22).
- (8) Remove screws (20).
- (9) Remove screws (18), bracket (19) and bearing (17).
- (10) Remove bellcrank assembly (21).
- (11) Remove screws (18), bearing (17) and bracket (24).
- b. Cleaning and inspection. Refer to paragraphs 5-4.3 and 5-4.4 for general cleaning and inspection procedures.
- c. Repair and replacement. Replace all worn or damaged parts.
- d. Assembly and installation. Assembly is accomplished during installation. Install shifting linkage as follows:
  - (1) Install bracket (24), bearing (17) and screws (18).
  - (2) Install bellcrank assembly (21).
  - (3) Install bearing (17), bracket (19) and screws (18).
  - (4) Install washer (23) and pin (22).
  - (5) Install screws (20).
  - (6) Install lever (11), rod (13) and bushing (12).
  - (7) Install grommet (16), washer (15) and pin (14).
  - (8) Install block (4), grommet (9), washer (8) and pin (5).
  - (9) Install rod (10), lock (7) and self-locking nut (6).
  - (10) Install grommet (3), washer (2) and pin (1).
  - (11) Refer to paragraph 5-5.4.2 and install steering column upper assembly.

5-5.2.2 *Throttle Valve Linkage Group*. Data for this paragraph will be provided in a subsequent change to this manual.

*Figure 5-76. Throttle Valve Linkage Group*

5-5.2.3 *Transmission Cooling Lines Group*. Refer to figure 5-77, and perform the following steps to repair the transmission cooling lines group.

- a. Removal and disassembly. Disassembly is accomplished during removal. Remove transmission cooling lines group as follows:

#### NOTE

Transmission cooling group must be drained and flushed before removal.

- (1) Refer to paragraph 5-5.2.4 and drain transmission.
- (2) Place length of hose over cooler outlet line and secure end of hose in waste container.
- (3) Place length of hose over cooler inlet line.

#### WARNING

P-D-680 Type II is toxic to the skin, eyes and respiratory tract. Avoid skin and eye contact. Good general ventilation is normally adequate.

- (4) Pump approximately one pint P-D-680 Type II (7, table 5-1) into auxiliary oil cooler (1) through hose attached to inlet line.

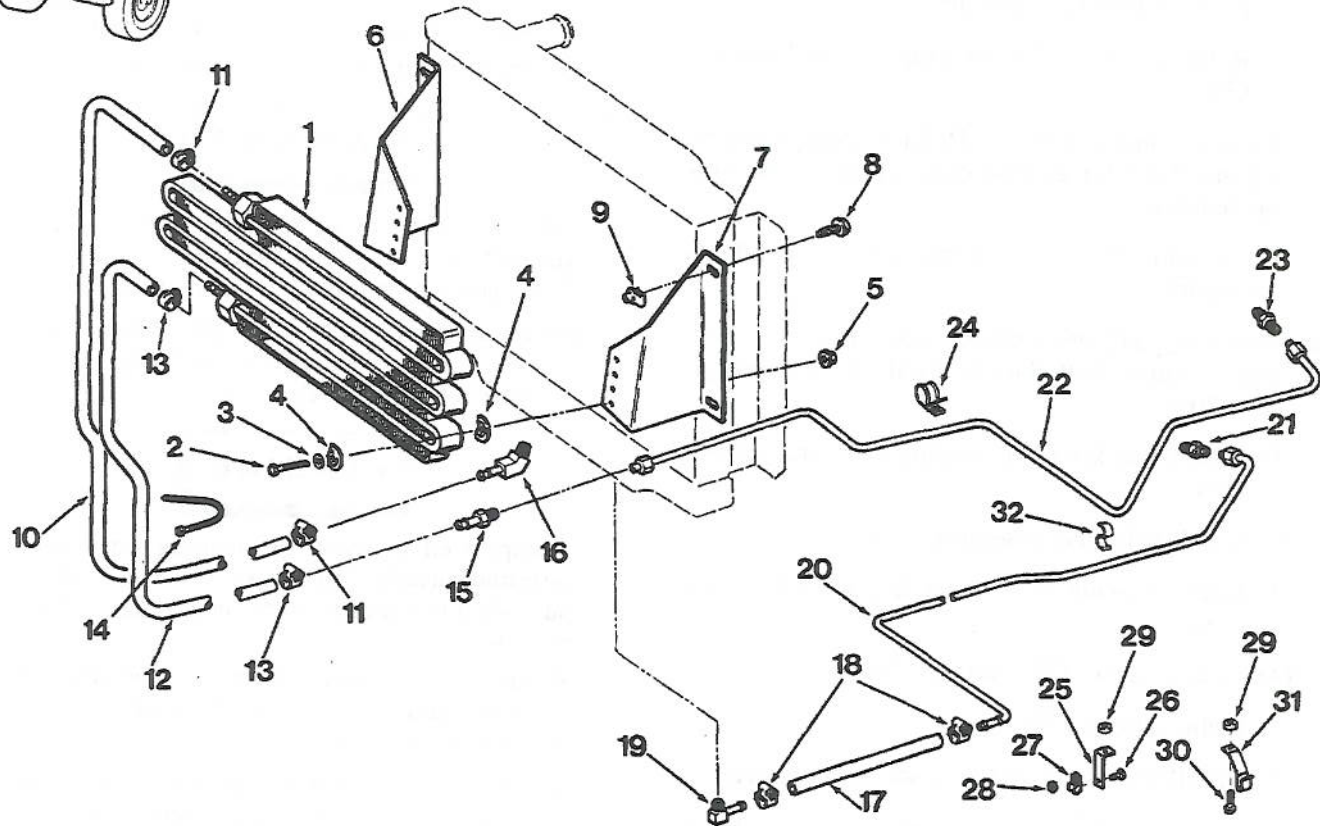
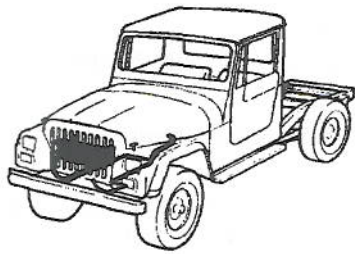
#### WARNING

Compressed air used for cleaning can create airborne particles that may enter the eyes. Pressure shall not exceed 30 psi and goggles must be worn.

Assure that this operation has been evaluated/reviewed and approved by the local bioenvironmental engineer.

- (5) Insert compressed air gun nozzle into hose attached to cooler inlet line. Apply short blasts of compressed air to flush dirt and solvent from cooler and lines. Repeat flushing operation until drained fluid is clear.
- (6) Pump approximately one pint of new transmission fluid into cooler and lines. Repeat flushing operation, using new transmission fluid, to remove all traces of cleaning solvent and any residual dirt.
- (7) Remove wiring strap (14).
- (8) Loosen hose clamps (11) and (13) and remove hoses (10) and (12). Remove hose clamps (11) and (13) from hoses (10) and (12).
- (9) Remove hose connector (16).
- (10) Remove capscrew (26), hex nut (28) and closed clip (27) from bracket (25).
- (11) Remove bracket (25) and spacer (29).
- (12) Remove screw with washer (30), clip (31) and spacer (29).
- (13) Disconnect connector on hose (22) from hose connector (15); remove hose (22) and connector (15).





099068

- |                         |                    |                    |
|-------------------------|--------------------|--------------------|
| 1. Auxiliary Oil Cooler | 12. Hose           | 28. Adapter        |
| 2. Capscrew             | 13. Hose Clamp     | 24. Closed Clip    |
| 3. Flat Washer          | 14. Wiring Strap   | 25. Bracket        |
| 4. Special Washer       | 15. Hose Connector | 26. Capscrew       |
| 5. Extended Nut         | 16. Hose Connector | 27. Closed Clip    |
| 6. Bracket              | 17. Hose           | 28. Hex Nut        |
| 7. Bracket              | 18. Hose Clamp     | 29. Spacer         |
| 8. Screw W/Washer       | 19. Elbow          | 30. Screw W/Washer |
| 9. Spring Nut           | 20. Tube Assembly  | 31. Clip           |
| 10. Hose                | 21. Adapter        | 32. Clip           |
| 11. Hose Clamp          | 22. Tube Assembly  |                    |

Figure 5-77. Transmission Cooling Lines Group

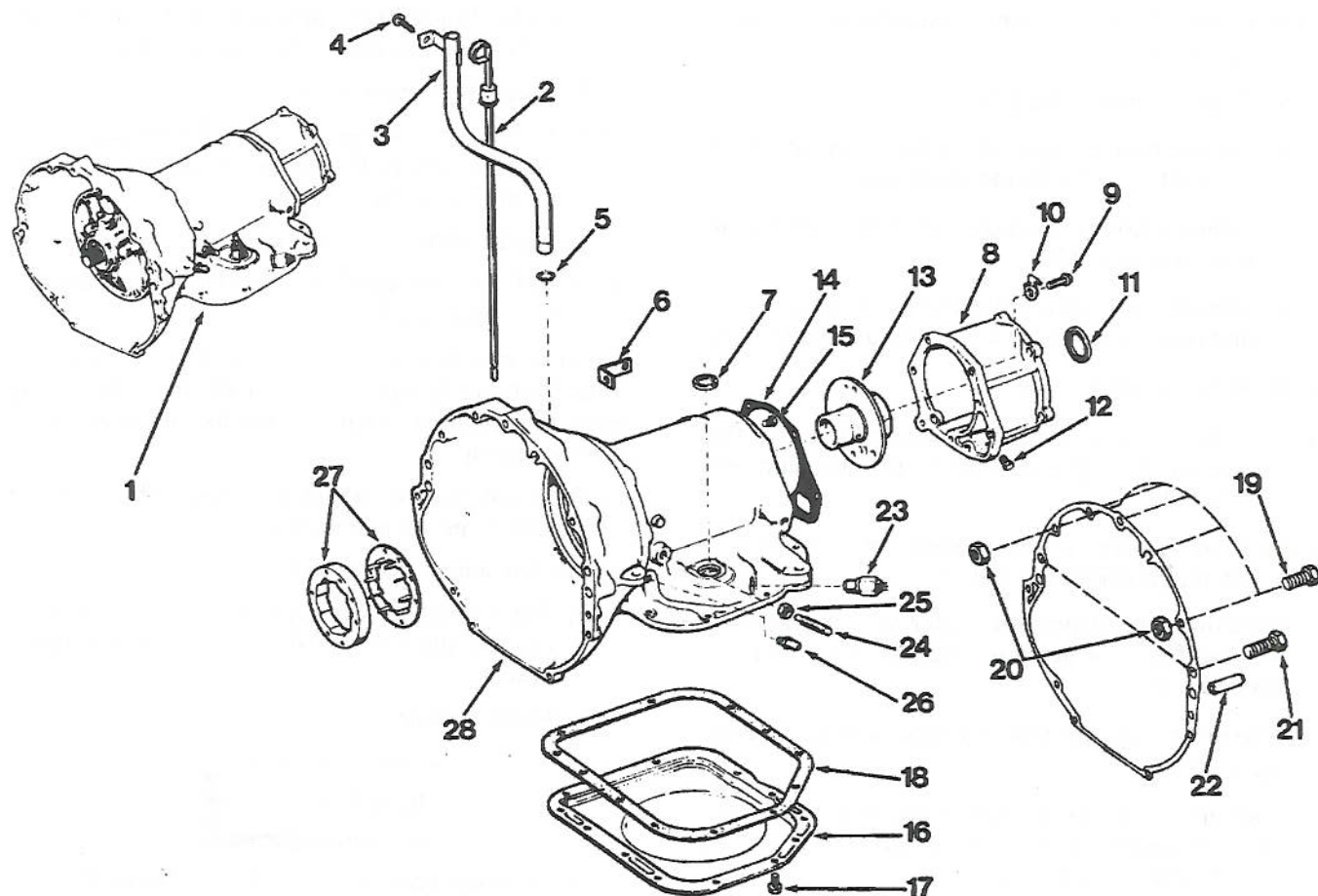
- (14) Remove hose (22) from adapter (23) and remove adapter (23).
  - (15) Remove closed clip (24).
  - (16) Loosen hose clamps (18) and remove hose (17) from elbow (19). Remove elbow (19).
  - (17) Remove hose (17) and hose clamps (18) from tube assembly (20).
  - (18) Remove tube assembly (20) from adapter (21) and remove clip (32) from tube assembly (20).
  - (19) Remove adapter (21).
  - (20) Remove capscrews (2), extended nut (5), flat washers (3), special washers (4) and auxiliary oil cooler (1).
  - (21) Remove screws with washers (8), spring nuts (9) and brackets (6) and (7).
- b. Cleaning and inspection. Refer to paragraphs 5-4.3 and 5-4.4 for general cleaning and inspection procedures.
  - c. Repair and replacement. Replace all worn or damaged parts.
  - d. Assembly and installation. Assembly is accomplished during installation. Install transmission cooling lines as follows:
    - (1) Install brackets (6) and (7) using screws with washers (8) and spring nuts (9).
    - (2) Install auxiliary oil cooler (1) using capscrews (2), flat washers (3), special washers (4) and extended nut (5).
    - (3) Install fitting (21).
    - (4) Install tube assembly (20) on adapter (21).
    - (5) Install hose (17) and hose clamps (18) on tube assembly (20).
    - (6) Install elbow (19) and install free end of tube assembly on elbow. Tighten hose clamps (18).
    - (7) Install closed clip (27).
    - (8) Install adapter (23) and install hose (22) on adapter (23).
    - (9) Install connector (15) and install hose (22) on connector (15).
    - (10) Install clip (32) on tube assemblies (20) and (22).
    - (11) Install clip (31) and spacer (29) using screw with washer (30).
    - (12) Install bracket (25), spacer (29) and closed clip (27) using capscrew (26) and hex nut (28).
    - (13) Install hose connector (16).
    - (14) Install hose clamps (11) and (13) on hoses (10) and (12) and install hoses (10) and (12). Tighten hose clamps.
    - (15) Install wiring strap (14).
    - (16) Refer to paragraph 4-4.10 and refill transmission with fluid.
- 5-5.2.4 *Transmission Assembly and Case Assembly Group.* Refer to figure 5-78, and perform the following steps to overhaul the transmission assembly and case assembly group.
- a. Removal. Remove transmission assembly and case assembly group as follows:
    - (1) Disconnect fan shroud.
    - (2) Remove dipstick (2); remove screw and washer (4) and disconnect oil filler tube (3) at upper bracket.
    - (3) Raise vehicle.

### WARNING

Do not work under raised vehicle without first supporting vehicle with safety jack stands or injury may occur.

- (4) Remove oil filler tube (3) and preformed packing (5).
- (5) Remove bracket (6).
- (6) Remove starter.
- (7) Mark propeller shafts and axle yokes for assembly alignment reference.
- (8) Refer to paragraph 5-5.3.1 and disconnect propeller shaft at transfer case yoke. Secure shafts to frame rails with wire.
- (9) Drain transfer case lubricant and disconnect speedometer cable at transfer case.
- (10) Disconnect gear shift.
- (11) Disconnect wires at neutral safety switch (23) and remove switch (23).
- (12) Mark torque converter drive plate and torque converter for assembly alignment reference.
- (13) Remove bolts attaching torque converter to drive plate. Rotate crankshaft and drive plate using ratchet handle and socket on crankshaft front pulley to gain access to drive plate bolts.





09949B

- |                          |                      |                            |
|--------------------------|----------------------|----------------------------|
| 1. Transmission Assembly | 10. Clip             | 19. Capscrew               |
| 2. Dipstick              | 11. Seal             | 20. Hex Nut                |
| 3. Oil Filler Tube       | 12. Pipe Plug        | 21. Capscrew               |
| 4. Screw and Washer      | 13. Shaft Support    | 22. Dowel Pin              |
| 5. Preformed Packing     | 14. Gasket           | 23. Neutral Safety Switch  |
| 6. Bracket               | 15. Pipe Plug        | 24. Adjusting Screw        |
| 7. Seal                  | 16. Oil Pan          | 25. Hex Nut                |
| 8. Transmission Adapter  | 17. Screw and Washer | 26. Connector              |
| 9. Screw and Washer      | 18. Gasket           | 27. Overrunning Clutch Kit |
|                          |                      | 28. Transmission Case      |

Figure 5-78. Transmission Assembly and Case Assembly Group

- (14) Support transmission-transfer case assembly using transmission jack. Secure transmission on jack with safety chain.
- (15) Remove bolts attaching rear crossmember to transmission case (28).
- (16) Refer to paragraph 5-5.8.1 and remove rear crossmember.
- (17) Lower transmission slightly and disconnect oil cooler tube from connector (26). Remove connector (26).

- (18) Remove hex nuts (20), capscrews (19) and (21) and dowel pins (22) connecting transmission assembly (1) to engine.
- (19) Move transmission assembly (1) and torque converter rearward to clear crankshaft.
- (20) Lower transmission assembly until converter housing clears engine.
- (21) Refer to paragraph 5-5.3.2 and remove transfer case from transmission assembly (1).
- b. Disassembly. Disassemble transmission assembly and case assembly group as follows:

### CAUTION

Cleanliness during disassembly and assembly is necessary to avoid a further malfunction after assembly. Before removing any of the transmission subassemblies, plug all openings and thoroughly clean the transmission exterior. Steam cleaning equipment is preferable for this purpose. During disassembly, clean all parts in a suitable solvent and dry each part using compressed air. Do not use cloth or paper towels to dry any parts after cleaning, use compressed air only.

- (1) Mount transmission in holding fixture #J-24026.
- (2) Remove screws and washers (17), oil pan (16) and gasket (18). Drain oil pan.
- (3) Loosen clamp bolts and remove throttle and gear selector levers from shafts.
- (4) Remove neutral start switch (23).
- (5) Refer to paragraph 5-5.2.6 and remove valve body.
- (6) Refer to paragraph 5-5.2.6 and remove accumulator piston and spring.
- (7) Refer to paragraph 5-5.2.7 and remove governor and support.
- (8) Refer to paragraph 5-5.2.9 and remove oil pump and reaction shaft support assembly.
- (9) Refer to paragraph 5-5.2.8 and remove kick-down band assembly and front clutch components.
- (10) Refer to paragraph 5-5.2.9 and remove input shaft assembly.
- (11) Refer to paragraph 5-5.2.8 and remove rear clutch components.

- (12) Refer to paragraph 5-5.2.9 and remove output shaft assembly and front planetary carrier assembly.
- (13) Refer to paragraph 5-5.2.8 and remove reverse band assembly; refer to paragraph 5-5.2.6 and remove drum.
- (14) Remove overrunning clutch kit (27).
- (15) Remove manual valve and seal (7).
- (16) Loosen hex nut (25) and remove adjusting screw (24) and hex nut (25).
- (17) Remove screws and washers (9) and clips (10), and remove transmission adapter (8) and gasket (14) from transmission case (28).
- (18) Remove pipe plugs (15) and (12).
- (19) Remove output shaft support (13) from adapter (8) and remove seal (11).
- c. Cleaning and inspection. Refer to paragraphs 5-4.3 and 5-4.4 for general cleaning and inspection procedures.
- d. Repair and replacement. Replace all worn or damaged parts.
- e. Assembly. Assemble transmission assembly and case assembly group as follows:
  - (1) Install output shaft support (13) in adapter (8) and install seal (11).
  - (2) Install pipe plugs (15) and (12).
  - (3) Install transmission adapter (8) and gasket (14) on transmission case (28) and install clips (10) and screws and washers (9). Tighten screws to torque specified in table 6-2.
  - (4) Install adjusting screw (24) and hex nut (25).
  - (5) Install manual valve and seal (7).
  - (6) Install overrunning clutch kit (27).
  - (7) Refer to paragraph 5-5.2.6 and install drum; refer to paragraph 5-5.2.8 and install reverse band assembly.
  - (8) Refer to paragraph 5-5.2.9 and install output shaft assembly and front planetary carrier assembly.
  - (9) Refer to paragraph 5-5.2.8 and install rear clutch components.
  - (10) Refer to paragraph 5-5.2.9 and install input shaft assembly.
  - (11) Refer to paragraph 5-5.2.8 and install kickdown band assembly and front clutch components.



- (12) Refer to paragraph 5-5.2.9 and install oil pump and reaction shaft support assembly.
- (13) Refer to paragraph 5-5.2.7 and install governor and support.
- (14) Refer to paragraph 5-5.2.6 and install accumulator piston and spring.
- (15) Refer to paragraph 5-5.2.6 and install valve body.
- (16) Install neutral start switch (23).
- (17) Install throttle and gear selector levers on shafts and install bolts.
- (18) Install oil pan (16) and gasket (18) using screws and washers (17). Tighten screws to torque specified by table 6-2.
- (19) Remove transmission from holding fixture #J-24026.

f. Installation. Install transmission assembly and case assembly group as follows:

- (1) Refer to paragraph 5-5.3.2 and install transfer case from transmission assembly (1).
- (2) Raise transmission using jack and align converter with drive plate. Refer to assembly alignment marks.
- (3) Move transmission forward.
- (4) Connect transmission assembly (1) to engine using capscrews (19) and (21), dowel pins (22) and hex nuts (20). Tighten hex nuts to torque prescribed by table 6-2.
- (5) Install connector (26) and connect oil cooler line.
- (6) Install rear support cushion on transmission.
- (7) Raise transmission; refer to paragraph 5-5.8.1 and install rear crossmember.
- (8) Remove transmission jack.
- (9) Install speedometer cable.
- (10) Install inspection cover.
- (11) Install starter.
- (12) Connect wires to neutral safety switch.
- (13) Refer to paragraphs 5-5.2.1 and 5-5.2.2 and connect gearshift and throttle linkage.
- (14) Refer to paragraph 5-5.3.1 and install propeller shafts. Refer to alignment marks made during removal.
- (15) Install oil filler tube (3) and preformed packing (5). Install screw and washer (4). Tighten screw to torque specified by table 6-2.
- (16) Install dipstick (2).
- (17) Install bracket (6).
- (18) Fill transfer case to correct level with lubricant specified in table 4-3.
- (19) Lower vehicle.
- (20) Fill transmission to correct level with transmission fluid specified in table 4-3.
- (21) Refer to paragraph 5-5.2.1 and adjust gearshift linkage.
- (22) Road test to check transmission operation.

5-5.2.5 *Torque Converter Group*. Refer to figure 5-79, and perform the following steps to overhaul the torque converter group.

a. Removal and disassembly. Disassembly is accomplished during removal. Remove torque converter group as follows:

- (1) Refer to paragraph 5-5.3.1 and disconnect propeller shafts at transfer case housing.
- (2) Support transmission using transmission jack.
- (3) Refer to paragraph 5-5.2.4 and remove screws mounting transmission to crossmember.
- (4) Refer to paragraph 5-5.8.1 and remove crossmember supporting transmission.
- (5) Remove bolt attaching transmission to engine.
- (6) Remove bolts (2) and move transmission back 6 to 10 inches.
- (7) Flatten fingers of lockplates (5) and remove bolts (4) and lockplates (5).
- (8) Remove drive plate (3), adapter (6) and flywheel assembly (7).
- (9) Remove torque converter (1).
- (10) Remove hex nut (9), lockwashers (10), flat washer (11) and flywheel housing (8).
- (11) Remove mounting studs (12).

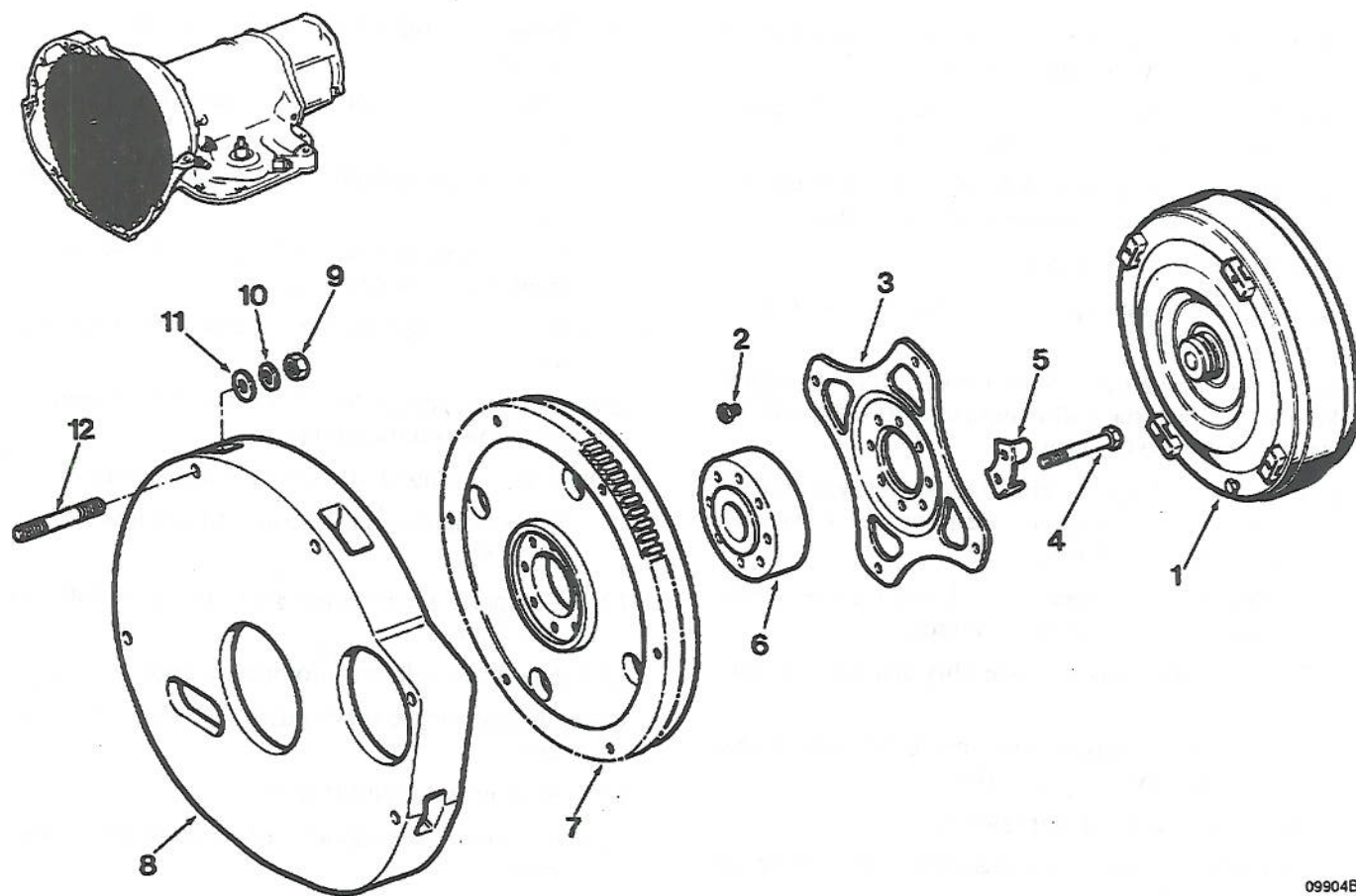
b. Cleaning and inspection. Refer to paragraphs 5-4.3 and 5-4.4 for general cleaning and inspection procedures.

c. Repair and replacement. Replace all worn or damaged parts.

d. Assembly and installation. Assembly is accomplished during installation. Install torque converter group as follows:

- (1) Install mounting studs (12) in engine block.





09904B

1. Torque Converter
2. Bolt
3. Drive Plate
4. Bolt
5. Lockplate
6. Adapter
7. Flywheel Assembly
8. Flywheel Housing
9. Hex Nut
10. Lockwasher
11. Flat Washer
12. Mounting Stud

*Figure 5-79. Torque Converter Group*

- (2) Install flywheel housing (8) using flat washer (11), lockwasher (10) and hex nut (9).
- (3) Install torque converter (1).
- (4) Install drive plate (3), adapter (6) and flywheel assembly (7).
- (5) Install bolts (4) and lockplates (5). Tighten bolts to torque specified in table 6-2.
- (6) Bend fingers of lockplates (5) flush against sides of bolt heads.
- (7) Install bolts (2). Tighten to torque specified by table 6-2.

- (8) Slide transmission against engine and install transmission-to-engine attaching bolts.
- (9) Refer to paragraph 5-5.8.1 and install cross-member supporting transmission.
- (10) Refer to paragraph 5-5.2.4 and install screws mounting transmission to crossmember.
- (11) Remove transmission jack.
- (12) Refer to paragraph 5-5.3.1 and disconnect propeller shaft.

5-5.2.6 *Servo and Valve Body Group*. Refer to figure 5-80 and perform the following steps to overhaul the servo and valve body group.

a. Removal and disassembly. Disassembly is accomplished during removal. Remove the servo and valve body as follows:

- (1) Refer to paragraph 5-5.2.4 and remove transmission assembly from vehicle.
- (2) Mount transmission assembly in holding fixture #J-24026.
- (3) Loosen clamp bolts and remove throttle and gear selector levers from shafts.
- (4) Remove neutral start switch.
- (5) Remove valve body assembly (40) attaching screws (41).
- (6) Remove valve body. Lift body assembly (40) from case and pull rod assembly (46) forward out of case at same time.

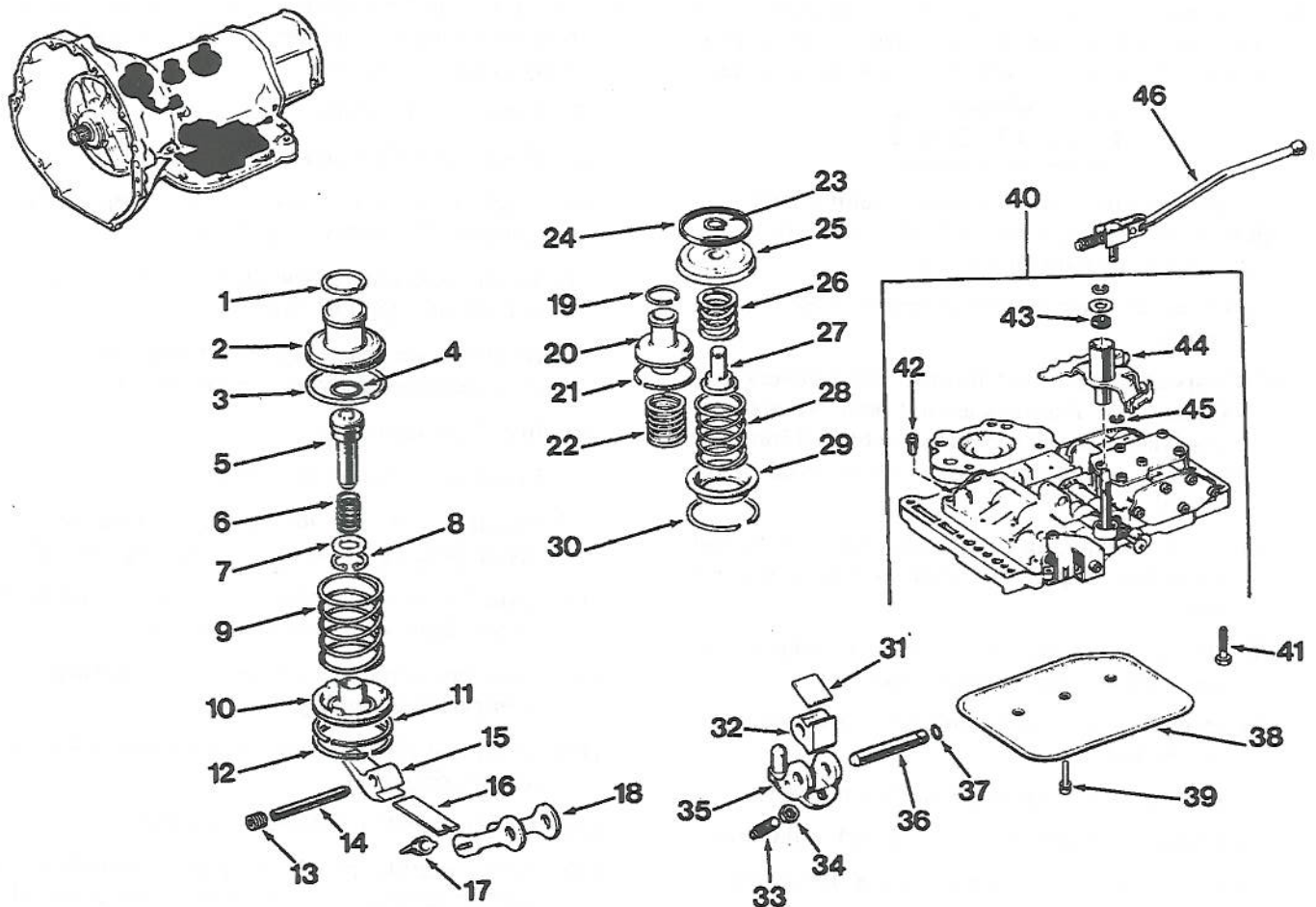
#### NOTE

If necessary, rotate the output shaft to allow the rod assembly to clear the sprag.

- (7) Mount valve body on support stand #J-24043.
- (8) Remove screws and washers (39) and filter assembly (38).
- (9) Remove retaining ring, washer and shaft seal (43), and remove lever assembly (44). Remove valve screen (42).
- (10) Remove retaining ring (45) and remove rod assembly (46) from lever assembly (44).
- (11) Remove lever spring (22) from accumulator piston (20) and remove accumulator piston (20). Remove seals (19) and (21) from piston (20).
- (12) Refer to paragraph 5-5.2.7 and remove governor and support.
- (13) Refer to paragraph 5-5.2.9 and remove oil pump and reaction shaft.

- (14) Refer to paragraph 5-5.2.8 and remove front clutch.
- (15) Refer to paragraph 5-5.2.9 and remove input shaft.
- (16) Refer to paragraph 5-5.2.8 and remove rear clutch.
- (17) Refer to paragraph 5-5.2.9 and remove output shaft and planetary gears.
- (18) Refer to paragraph 5-5.2.8 and remove reverse drum.
- (19) Refer to paragraphs 5-5.2.4 and 5-5.2.9 and remove overrunning clutches.
- (20) Remove plug (13), shaft (14) and pawl (15).
- (21) Remove anchor (17), strut (16) and link assembly (18).
- (22) Compress servo guide (10) until it bottoms in case bore.
- (23) Insert screwdriver into pressure port.
- (24) Slowly release servo guide (10) against screwdriver.
- (25) Remove retaining ring (12).
- (26) Compress servo guide (10) and remove screwdriver.
- (27) Slowly release and remove seal (11), servo guide (10) and piston spring (9).
- (28) Remove retaining ring (8), piston retainer (7) and piston spring (6).
- (29) Remove servo piston assembly (5).
- (30) Remove seals (3) and (4).
- (31) Remove piston (2) and seal (1).
- (32) Compress piston spring (28) and remove retaining ring (30).
- (33) Remove piston spring (28) and piston plug (27).
- (34) Remove retaining ring (23), piston (25) and cushion spring (26).
- (35) Remove seal (24) from piston (25).
- (36) Remove band adjusting screw (33) and locknut (34).
- (37) Remove preformed packing (37) from lever shaft (36). Thread 1/4 inch bolt into lever shaft (36) and remove lever shaft (36) from lever assembly (35).
- (38) Remove lever (32) and strut (31).





09969B

- |                       |                        |                       |
|-----------------------|------------------------|-----------------------|
| 1. Seal               | 17. Anchor             | 33. Adjusting Screw   |
| 2. Front Servo Piston | 18. Link Assembly      | 34. Locknut           |
| 3. Seal               | 19. Seal               | 35. Lever Assembly    |
| 4. Seal               | 20. Accumulator Piston | 36. Lever Shaft       |
| 5. Piston Assembly    | 21. Seal               | 37. Preformed Packing |
| 6. Piston Spring      | 22. Lever Spring       | 38. Filter Assembly   |
| 7. Piston Retainer    | 23. Retaining Ring     | 39. Screw and Washer  |
| 8. Retaining Ring     | 24. Piston Seal        | 40. Body Assembly     |
| 9. Piston Spring      | 25. Piston             | 41. Capscrew          |
| 10. Servo Guide       | 26. Cushion Spring     | 42. Valve Screen      |
| 11. Seal              | 27. Piston Plug        | 43. Shaft Seal        |
| 12. Retaining Ring    | 28. Piston Spring      | 44. Lever Assembly    |
| 13. Plug              | 29. Piston Retainer    | 45. Retaining Ring    |
| 14. Shaft             | 30. Retaining Ring     | 46. Rod Assembly      |
| 15. Pawl              | 31. Strut              |                       |
| 16. Strut             | 32. Short Lever        |                       |

*Figure 5-80. Servo and Valve Body Group*

- b. Cleaning and inspection. Refer to paragraphs 5-4.3 and 5-4.4 for general cleaning and inspection procedures. In addition, perform the following steps:

**CAUTION**

Do not use any type of caustic cleaning solution when cleaning servo and valve body group components as damage may result.

- (1) Clean regulator filter in solvent (9, table 5-1) and air dry.
  - (2) Inspect manual and throttle valve levers and shafts to see that they are not bent, worn or excessively loose. If a lever assembly exhibits any of these conditions, it must be repaired or replaced.
  - (3) Inspect all mating surfaces for burrs, nicks and scratches. Repair minor abrasions or replace part.
  - (4) Use a straightedge and inspect all mating surfaces for warpage or distortion.
  - (5) Inspect accumulator piston (27) for nicks, burrs, scores and wear.
  - (6) Be sure rings turn freely in piston grooves.
  - (7) Inspect case bore for scores or other damage.
  - (8) Inspect spring (22) for cracks or distortion.
  - (9) Check ring grooves for damage. If damaged, piston (2) must be replaced.
  - (10) Inspect piston bore for damage. If damaged, assembly must be replaced.
  - (11) Inspect piston springs (26) and (28) for distortion and inspect bore in piston (25) and seal (24) for damage. Any damaged components must be replaced.
- c. Repair and replacement. Replace all worn or damaged parts. In addition, perform the following steps:

**WARNING**

Avoid breathing fumes generated by soldering or unsoldering as they can cause injury. Eye protection and good general ventilation are required.

- (1) If a lever is loose on a shaft, it may be repaired by silver soldering or by replacing lever and shaft assembly.
- (2) Remove all minor abrasions and correct minor warpage and distortion with crocus cloth using light pressure.

- d. Assembly and installation. Assembly is accomplished during installation. Install servo and valve body group as follows:

- (1) Install rear band in case.
- (2) Install lever (32) and strut (31).
- (3) Install lever shaft (36) and install preformed packing (37) on lever shaft (36).
- (4) Thread adjusting screw (33) in just far enough to hold strut (31) in place.
- (5) Be sure lever assembly (35) is installed to provide clearance for rear band and drum.
- (6) Install locknut (34).
- (7) Install seal (24) on piston (25).
- (8) Install piston (25) and cushion spring (26) on piston plug (27) and install retaining ring (23).
- (9) Install piston assembly and piston spring (28) in case bore with twisting motion.
- (10) Place piston retainer (29) and retaining ring (30) over piston assembly.
- (11) Compress piston spring by hand and install retaining ring (30).
- (12) Install seals (1), (3) and (4) on piston (2).
- (13) Apply petroleum jelly to piston assembly (5) and install piston assembly in piston assembly (2).
- (14) Install piston spring (6) on piston assembly (5).
- (15) Install piston retainer (7); compress piston ring (6) and install retaining ring (8).
- (16) Install piston assembly components into case bore.
- (17) Install piston spring (9) and guide (10). Install seal (11) on servo guide (10).
- (18) Compress piston spring (9) with large C-clamp and install retaining ring (12).
- (19) Slide front band over front clutch assembly.
- (20) Install link assembly (18), strut (16) and anchor (17).
- (21) Install pawl (15), shaft (14) and plug (13).
- (22) Refer to paragraphs 5-5.2.4 and 5-5.2.9 and install overrunning clutches.
- (23) Refer to paragraph 5-5.2.8 and install reverse drum.
- (24) Refer to paragraph 5-5.2.9 and install output shaft and planetary gears.



- (25) Refer to paragraph 5-5.2.8 and install rear clutch.
- (26) Refer to paragraph 5-5.2.9 and install input shaft.
- (27) Refer to paragraph 5-5.2.8 and install front clutch.
- (28) Refer to paragraph 5-5.2.9 and install oil pump and reaction shaft.
- (29) Refer to paragraph 5-5.2.7 and install governor and support.
- (30) Install seals (19) and (21) on accumulator piston (20) and install piston (20) and spring (22) in case bore.
- (31) Insert rod assembly (46) through opening in rear of case.
- (32) Position knob of rod assembly (46) against reaction plug and sprag.
- (33) Move front end of rod assembly (46) toward centerline of transmission while exerting rearward pressure on rod assembly (46) to force it past sprag. Rotate output shaft, if necessary.

#### NOTE

Before installing the valve body, be sure the neutral start switch has not yet been installed.

- (34) Install valve screen (42) and lever assembly (44).
- (35) Install shaft seal (43), washer and retaining ring.
- (36) Connect rod assembly (46) using retaining ring (45).
- (37) Shift lever assembly (44) to DRIVE position.
- (38) Place body assembly (40) in its approximate position.
- (39) Align body assembly (40) in case and install capscrews (41) fingertight.
- (40) Install neutral start switch.
- (41) Shift lever assembly (44) to NEUTRAL position.
- (42) Relocate body assembly (40) if necessary to align lever assembly (44) neutral finger over neutral start switch plunger ball.
- (43) Tighten capscrews (41) to torque specified by table 6-2.
- (44) Install gearshift control lever on lever assembly (44) shaft and tighten bolt.
- (45) Check lever assembly (44) shaft for binding in case by moving lever through all detent positions.

#### NOTE

If binding exists, loosen capscrews and align the valve body.

- (46) Install filter assembly (38) using screws and washers (39).
- (47) Remove transmission assembly from holding fixture #J-24026. Refer to paragraph 5-5.2.4 and install transmission assembly in vehicle.

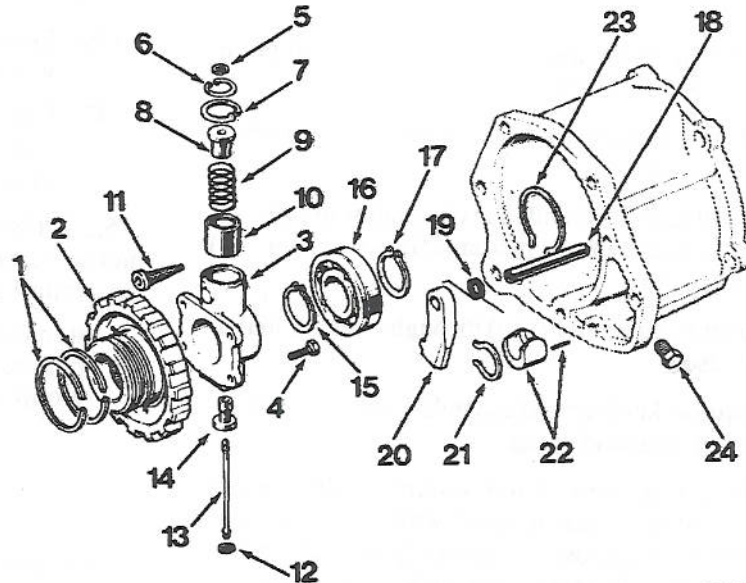
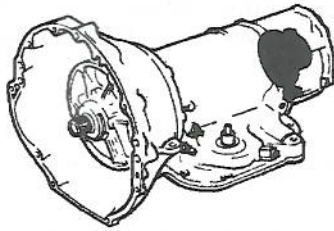
**5-5.2.7 Governor Control Group.** Refer to figure 5-81, and perform the following steps to overhaul the governor control group.

- a. Removal and disassembly. Disassembly is accomplished during removal. Remove governor control group as follows:

#### WARNING

Do not work beneath a vehicle without first supporting it with safety jack stands.

- (1) Raise vehicle and support with safety jack stands.
- (2) Mark propeller shaft yokes for assembly alignment reference.
- (3) Refer to paragraph 5-5.3.1 and disconnect front-rear propeller shafts at transfer case.
- (4) Disconnect speedometer cable at transfer case.
- (5) Place support stand under transmission converter housing.
- (6) Refer to paragraph 5-5.8.1 and remove rear crossmember.
- (7) Disconnect parking brake cable at equalizer and disconnect exhaust pipe support brackets, if necessary.
- (8) Refer to paragraph 5-5.3.2 and remove bolts attaching transfer case to transmission adapter housing. Remove transfer case.
- (9) Refer to paragraph 5-5.8.1 and remove bolts attaching adapter housing to transmission. Remove adapter housing.
- (10) Rotate transmission output shaft until governor weight faces downward.
- (11) Remove retaining rings (12) and (5).
- (12) Remove valve shaft (13) and valve (14).



09944B

- |                     |                     |                    |
|---------------------|---------------------|--------------------|
| 1. Seals            | 9. Spring           | 17. Retaining Ring |
| 2. Governor Support | 10. Governor Weight | 18. Sprag Shaft    |
| 3. Governor Body    | 11. Filter          | 19. Spring         |
| 4. Capscrews        | 12. Retaining Ring  | 20. Sprag          |
| 5. Retaining Ring   | 13. Valve Shaft     | 21. Retaining Ring |
| 6. Retaining Ring   | 14. Valve           | 22. Plug Assembly  |
| 7. Retaining Ring   | 15. Retaining Ring  | 23. Retaining Ring |
| 8. Governor Weight  | 16. Reverse Drum    | 24. Pipe Plug      |

Figure 5-81. Governor Control Group

- (13) Rotate output shaft until governor weights (8) and (10) face outward.
- (14) Remove retaining ring attaching governor body (3) to output shaft.
- (15) Remove governor body (3) and governor support (2) from output shaft.
- (16) Remove retaining rings (6) and (7).
- (17) Remove inner weight (8), spring (9) and outer weight (10).
- (18) Lift lock tabs on governor body (3).
- (19) Remove capscrews (4) and remove governor body (3) from governor support (2).
- (20) Remove retaining rings (15), (17) and (23) and reverse drum (16).
- (21) Remove seals (1) and filter (11).
- (22) Remove sprag shaft (18) from adapter housing.
- (23) Remove sprag (20) and spring (19).
- (24) Remove retaining ring (21) and plug assembly (22).
- (25) Remove pipe plug (24).



- b. Cleaning and inspection. Refer to paragraphs 5-4.3 and 5-4.4 for general cleaning and inspection procedures. In addition, perform the following steps:

### CAUTION

Do not clean governor parts with a caustic cleaning solution.

- (1) Thoroughly clean and dry all governor parts and check for free movement. Weights (8) and (10) and valve should fall freely in these bores when clean and dry.
- (2) Polish any burrs or rough spots with crocus cloth.
- (3) Inspect spring (9) for distortion.
- (4) Inspect governor support (2) for damaged ring grooves.

### WARNING

P-D-680 Type II is toxic to the skin, eyes and respiratory tract. Wear skin and eye protection. Good general ventilation is usually adequate.

- (5) Clean filter (11) in P-D-680 Type II (7, table 5-1) and air dry. If damaged or defective, it must be replaced.
- c. Repair and replacement. Replace all worn or damaged parts.
- d. Assembly and installation. Assembly is accomplished during installation. Install governor control group as follows:
- (1) Install pipe pressure plug (24).
  - (2) Install plug assembly (22) and snap ring (21).
  - (3) Install sprag (20) and spring (19).

### NOTE

The square lug on the sprag must face the park gear.

- (4) Position spring so it moves sprag away from gear.
- (5) Install sprag shaft (18).
- (6) Install seals (1) and filter (11).
- (7) Install reverse drum (16) and retaining rings (15), (17) and (23).
- (8) Install governor body (3) on governor support (2) using capscrews (4). Tighten capscrews (4) finger tight.

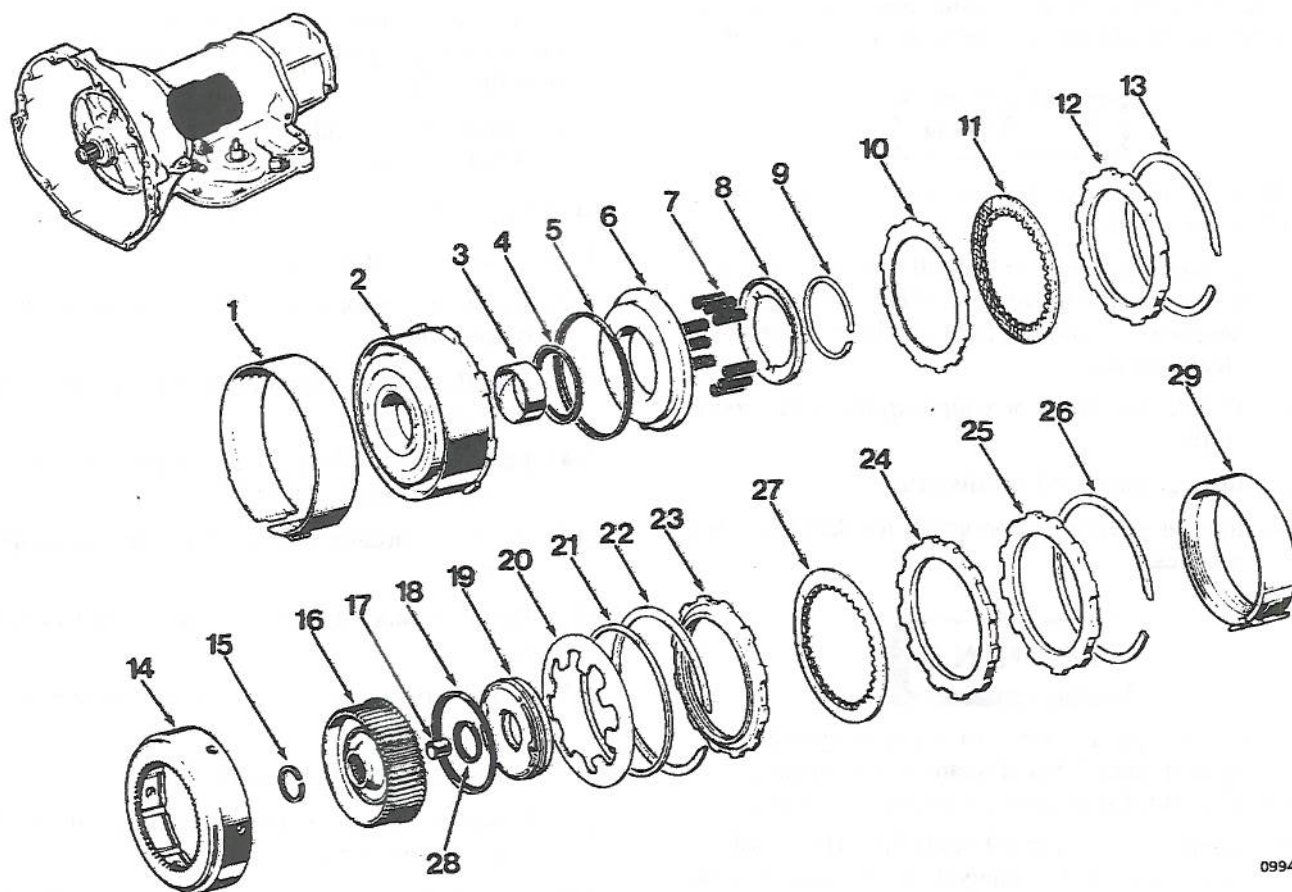
### NOTE

The capscrews must not be tightened to a specific torque until the assembly is installed on the output shaft.

- (9) Install inner weight (8) and spring (9) in outer weight (10) and install retaining ring (6).
- (10) Install outer weight (10) in governor body (3).
- (11) Install retaining ring (7).
- (12) Install governor body (3) and support (2) on output shaft.
- (13) Install retaining ring attaching governor to output shaft.
- (14) Install valve (14) and valve shaft (12). Install retaining rings (5) and (12).
- (15) Refer to paragraph 5-5.8.1 and install adapter housing.
- (16) Refer to paragraph 5-5.3.2 and install transfer case.
- (17) Refer to paragraph 5-5.8.1 and install rear cross-member.
- (18) Connect speedometer cable.
- (19) Connect exhaust support brackets and brake cable, if removed.
- (20) Refer to paragraph 5-5.3.1 and connect propeller shaft.
- (21) Refer to paragraphs 5-5.2.1 and 5-5.2.2 and adjust gearshift and throttle linkage.
- (22) Lower vehicle.
- (23) Fill transmission with transmission fluid.

5-5.2.8 *Clutches Group*. Refer to figure 5-82, and perform the following steps to overhaul the clutches group.

- a. Removal and disassembly. Disassembly is accomplished during removal. Remove clutches group as follows:
- (1) Refer to paragraph 5-5.2.4 and remove transmission assembly from vehicle.
  - (2) Mount transmission assembly in holding fixture #J-24026.
  - (3) Refer to paragraph 5-5.2.9 and remove gears and shafts components as necessary to reach clutch group.
  - (4) Loosen adjusting screw on kickdown band assembly (1) and remove band strut and band.
  - (5) Remove front clutch assembly.



09943B

- |                           |                         |                           |
|---------------------------|-------------------------|---------------------------|
| 1. Kickdown Band Assembly | 11. Clutch Disc         | 21. Spring Spacer         |
| 2. Retainer Assembly      | 12. Clutch Disc         | 22. Retaining Ring        |
| 3. Bushing                | 13. Retaining Ring      | 23. Clutch Disc           |
| 4. Seal                   | 14. Clutch Retainer     | 24. Clutch Plate          |
| 5. Seal                   | 15. Seal Ring           | 25. Pressure Plate        |
| 6. Piston                 | 16. Piston Retainer     | 26. Retaining Ring        |
| 7. Piston Spring          | 17. Input Shaft Bushing | 27. Clutch Disc           |
| 8. Spring Retainer        | 18. Piston Seal         | 28. Seal                  |
| 9. Retaining Ring         | 19. Piston Assembly     | 29. Brake Band and Lining |
| 10. Clutch Disc           | 20. Piston Spring       |                           |

Figure 5-82. Clutches Group

- (6) Remove input shaft bushing (17) and rear clutch assembly by grasping input shaft bushing (17) and pulling assembly straight out of case.
- (7) Remove retaining ring (13) and remove clutch disc (12).
- (8) Remove clutch disc (11) and clutch disc (10).
- (9) Install compressor tool #J-24042 over spring retainer (8).
- (10) Compress piston springs (7) and remove retaining ring (9).
- (11) Slowly release compressor tool until spring retainer (8) is free of hub.



**NOTE**

Do not allow the spring retainer to stick or bind in the snap ring groove.

- (12) Remove compressor tool, retainer (8) and springs (7).
- (13) Turn retainer assembly (2) over and bump on wood block to dislodge and remove seal (6).
- (14) Remove seals (4) and (5) and bushing (3) from retainer assembly (2).
- (15) Loosen adjusting screw on brake band and lining (29) and remove brake band and lining (29).
- (16) Remove retaining ring (26).
- (17) Remove pressure plate (25), clutch plate (24), clutch disc (27) and clutch disc (23).
- (18) Remove retaining ring (22), spring spacer (21) and piston spring (20).
- (19) Turn clutch retainer (14) upside down and bump on wood block to remove piston assembly (19).
- (20) Remove piston seals (18) and (28).
- (21) Remove seal ring (15) and remove input shaft.



Do not clamp the seal ring band on bearing journal.

- (22) Clamp input shaft in vise using brass protective jaws.
- (23) Thread bushing remover tool #J-24041 straight into input shaft bushing (17) as far as possible by hand.
- (24) Using wrench, thread puller into input shaft bushing (17) three to four additional turns to fully engage puller threads in input shaft bushing (17).
- (25) Thread slide hammer bolts tool #J-7004-3 into puller.
- (26) Bump outward with slide hammers to remove input shaft bushing (17).
- (27) Grip old input shaft bushing (17) with pliers and remove it from tool.

**NOTE**

Be careful to protect the remover tool threads when using the tool.

- b. Cleaning and inspection. Refer to paragraphs 5-4.3 and 5-4.4 for general cleaning and inspection procedures. In addition, thoroughly clean input shaft and remove chips generated by input shaft bushing (17) removal. Perform the following steps:

- (1) Inspect friction material on driving discs to see if they are cleaned, glazed, heavily pitted or flaking or if friction material can be scraped off easily.
- (2) Inspect clutch disc (10), clutch plate (24), clutch disc (12), clutch disc (23) and pressure plate (25) for overheating, scoring and damaged lugs.
- (3) Inspect clutch discs (10), (11), (24) and (27) for distortion.
- (4) Inspect lug grooves in retainer assembly (2) and clutch retainer (14) to make sure surfaces are smooth. The plates must slide smoothly in these grooves.
- (5) Inspect the clutch piston check ball to see that it moves freely in its cage.
- (6) Inspect seal ring surface in retainer assembly (2) and clutch retainer (14) for nicks or deep scratches. Light scratches will not interfere with sealing.
- (7) Inspect piston spring (7), retaining ring (22) and spring spacer (21) for distortion or breakage.
- (8) Inspect seal ring grooves in input shaft, retainer assembly (2) and piston retainer (16) for nicks, burrs and wear.
- (9) Measure thickness of rear clutch to front clutch thrust washer. Compare measurement to figure specified in table 6-1.
- c. Repair and replacement. Replace all worn or damaged parts.
- d. Assembly and installation. Assembly is accomplished during installation. Install the clutches group as follows:
  - (1) Thread bushing installer tool #J-24040 onto driver handle #J-8092.
  - (2) Position replacement input shaft bushing (17) on installer tool and install bushing straight into shaft until tool bottoms.
  - (3) Clean input shaft bushing (17) thoroughly.
  - (4) Press input shaft bushing (17) into piston retainer (16) and install seal ring (15).

- (5) Lubricate piston seals (18) and (28) with petroleum jelly and install on piston assembly (19).

#### NOTE

Be sure that the lips of the seals face into retainer bore and that seals are properly seated in piston grooves.

- (6) Install piston assembly (19) in piston retainer (16).
- (7) Seat piston at bottom of retainer bore using twisting motion.
- (8) Position clutch retainer (14) over piston retainer (16) splines. Support assembly to maintain position of clutch retainer (14).
- (9) Install piston spring (20) in clutch retainer (14) with spring fingers touching piston.
- (10) Install spring spacer (21). Be sure spring (20) and spacer (21) are centered in retainer recess.
- (11) Install one end of retaining ring (22) in retainer (14) groove. Progressively push or tap ring into clutch retainer until completely seated.

#### NOTE

If necessary, gently tap the piston spring and spacer to keep them centered.

- (12) Install clutch disc (23). Raised side of disc (23) should rest on piston spring (20) and flat surface should face outward.
- (13) Lubricate clutch disc (27) and clutch plates (24) with transmission fluid and install in retainer (14). Alternately install clutch discs (27) and clutch plates (24) until correct number of plates have been installed.
- (14) Install pressure plate (25) and retaining ring (26).
- (15) Measure clutch pack clearance. Press down firmly on pressure plate (25) and retaining ring (26). Insert feeler gauge between pressure plate (25) and retaining ring (26).
- (16) If clutch pack clearance exceeds figures specified by table 6-1, replace retaining ring with one of appropriate thickness to provide proper clearance.
- (17) Install brake band and lining (29).

- (18) Place retainer assembly (2) open end down on clean, smooth surface.
- (19) Insert bushing remover/installer tool #J-24039 into bushing (3).
- (20) Install driver handle #J-8092 in tool #J-24039.
- (21) Position clutch retainer so open end faces upward.
- (22) Install bushing (3) straight into retainer bore until bushing (3) is flush with base of bore chamber.
- (23) Lubricate seal (4) with petroleum jelly and install it on hub of retainer assembly (2).

#### NOTE

Be sure the seal lip faces into the piston bore and is properly seated in the seal groove.

- (24) Lubricate seal (5) with petroleum jelly and install it on piston (6) with seal lip facing into piston bore.
- (25) Install piston (6) in retainer assembly (2) and carefully seat piston at bottom of retainer (2) bore.
- (26) Install piston springs (7) on piston (6).
- (27) Install spring retainer (8) and retaining ring (9).
- (28) Install compressor tool #J-24042 over retainer assembly (2).
- (29) Compress piston springs (7) and seat retaining ring (9).
- (30) Remove compressor tool.
- (31) Lubricate clutch discs (10) and (11) with transmission fluid.
- (32) Install clutch discs (10) and (11) alternately until correct numbers are installed.
- (33) Install clutch disc (12) and retaining ring (13).
- (34) Measure clutch pack clearance using feeler gauge. If clearance is not within limits specified by table 6-1, disassemble clutch pack and measure thickness of clutch discs (10) and (11) and retaining ring (13). Compare those measurements to measurements listed in table 6-1. Replace any components that do not meet these specifications.
- (35) Install kickdown band assembly (1) and tighten adjusting screw to torque specified by table 6-2.



- (36) Install clutch group in transmission assembly.
- (37) Refer to paragraph 5-5.2.9 and install gears and shafts components removed during removal.
- (38) Remove transmission assembly from holding fixture.
- (39) Refer to paragraph 5-5.2.4 and install transmission.

**5-5.2.9 Gears and Shafts Group.** Refer to figure 5-83, and perform the following steps to overhaul the gears and shafts group.

- a. Removal and disassembly. Disassembly is accomplished during removal. Remove gears and shafts group as follows:

- (1) Refer to paragraph 5-5.2.4 and remove transmission assembly from vehicle.

#### NOTE

Measuring end play before disassembly will indicate whether a thrust washer change is required and will save time at assembly.

- (2) Mount transmission assembly in holding fixture #J-24026.
- (3) Remove one capscrew (3), and thread dial indicator support rod #J-5864 into bolt hole.
- (4) Attach dial indicator #J-8001 to rod.
- (5) Position indicator stylus against forward end of input shaft.
- (6) Move input shaft rearward and set dial indicator at zero.
- (7) Pull input shaft (15) forward to obtain end play reading.
- (8) Record reading for future reference.
- (9) Remove dial indicator and rod.
- (10) Refer to paragraph 5-5.2.4 and remove oil pan.
- (11) Refer to paragraph 5-5.2.6 and remove valve body.
- (12) Refer to paragraph 5-5.2.6 and remove accumulator piston and spring.
- (13) Refer to paragraph 5-5.2.7 and remove governor and support.
- (14) Tighten front band adjusting screw until band is tight around front clutch retainer. This pre-

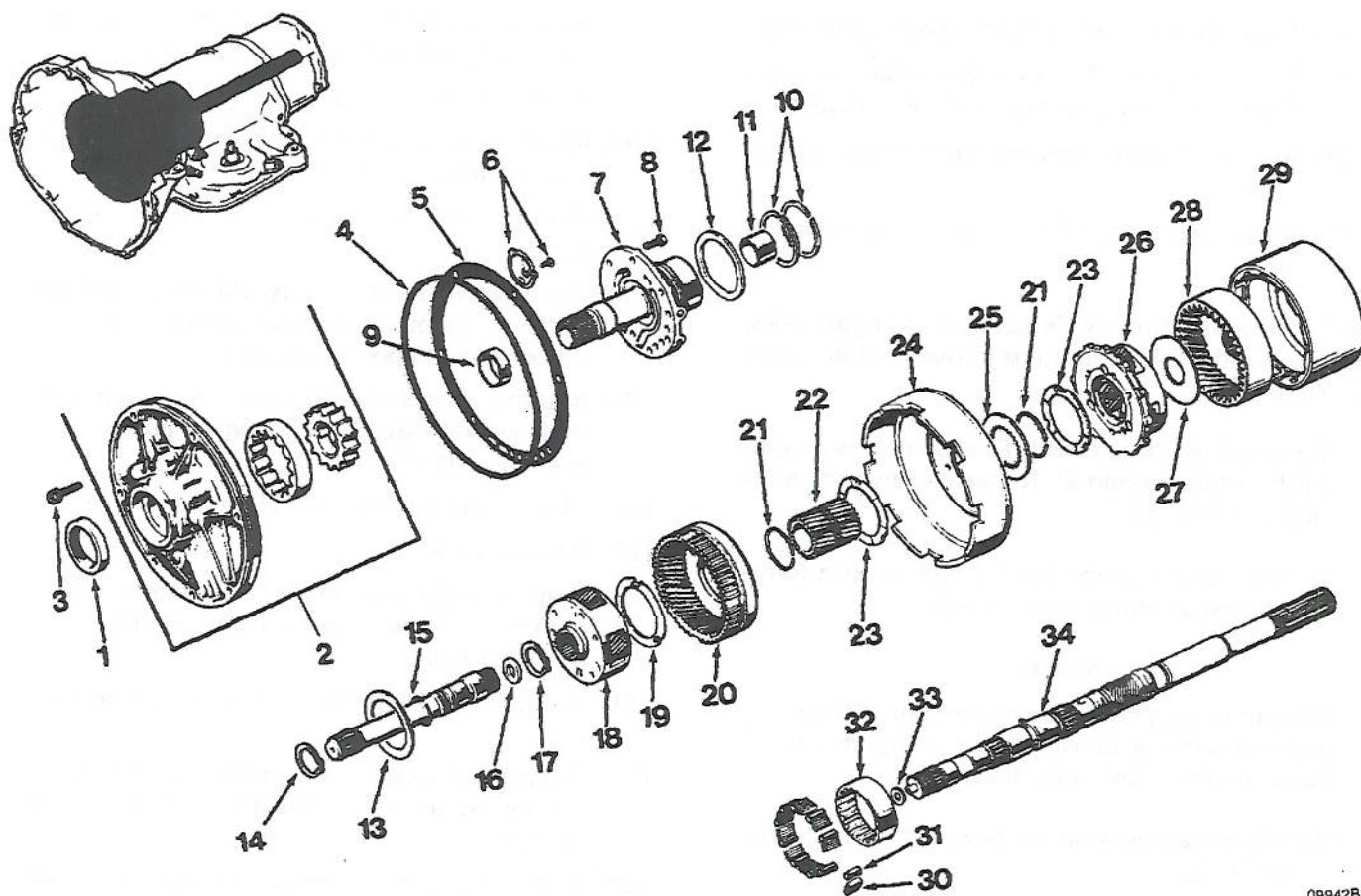
sents front clutch assembly from coming out with pump and damaging clutch discs.

- (15) Remove capscrew (3).
- (16) Install slide hammer tool #J-6585-1 on slide hammer bolts tool #J-7004-3.
- (17) Thread bolts into holes in oil pump housing flange.
- (18) Bump outwardly and evenly with slide hammers to remove pump housing assembly (2) and reaction shaft support assembly (7).
- (19) Remove capscrews (8) and remove reaction shaft support assembly (7) from oil pump housing assembly (2).
- (20) Mark rotors for assembly alignment reference.
- (21) Remove rotors.
- (22) Remove baffle package (6) and remove housing gasket (5) and seal (4) from pump housing assembly (2).
- (23) Remove seal (1) from pump housing assembly (2).
- (24) Place pump housing with reaction shaft support mating surface facing downward on flat, level surface.
- (25) Remove bushing (9) using remover/installer tool #J-24055 and driver handle #J-8092.



Do not clamp any part of the reaction-shaft support assembly in a vise.

- (26) Remove support seal rings (10) and thrust washer (12).
- (27) Thread bushing remover tool #J-24037 into bushing as far as possible by hand.
- (28) Using wrench, thread remover tool into bushing (11) three or four additional turns to fully engage threads of tool in bushing (11).
- (29) Install slide hammer bolts tool #J-7004-3 and slide hammer tool #J-6585-1 into remover tool. Bump outward with slide hammers to remove bushing (11).
- (30) Thoroughly clean reaction shaft support assembly (7) after bushing removal.
- (31) Remove retaining ring (14). Refer to paragraph 5-5.2.8 and remove front band and front clutch.



099428

- |                                    |                                 |                                |
|------------------------------------|---------------------------------|--------------------------------|
| 1. Seal                            | 12. Thrust Washer               | 23. Thrust                     |
| 2. Oil Pump Housing Assembly       | 13. Thrust Washer               | 24. Driving Shell              |
| 3. Capscrew                        | 14. Retaining Ring              | 25. Thrust Plate               |
| 4. Seal                            | 15. Input Shaft Assembly        | 26. Rear Carrier Assembly      |
| 5. Gasket                          | 16. Thrust Washer               | 27. Thrust Plate               |
| 6. Baffle Package                  | 17. Retaining Ring              | 28. Rear Annulus Gear Assembly |
| 7. Reaction Shaft Support Assembly | 18. Planetary Carrier Assembly  | 29. Reverse Drum               |
| 8. Capscrew                        | 19. Carrier Thrust Washer       | 30. Spring                     |
| 9. Bushing                         | 20. Front Annulus Gear Assembly | 31. Roller                     |
| 10. Support Seal Ring              | 21. Sun Gear Lockring           | 32. Race                       |
| 11. Bushing                        | 22. Sun Gear Assembly           | 33. Thrust Washer              |
|                                    |                                 | 34. Output Shaft               |

Figure 5-83. Gears and Shafts Group



- (32) Remove thrust washer (13), input shaft assembly (15) and rear clutch assembly by grasping input shaft and pulling straight out of case.
- (33) Remove thrust washers (16) and (33).
- (34) Remove retaining ring (17).
- (35) Remove race (32), rollers (31) and springs (30). Refer to paragraph 5-5.2.4 and remove overrunning clutch kit.
- (36) Remove planetary carrier assembly (18), carrier thrust washer (19) and front annulus gear assembly (20).
- (37) Remove lockring (21), sun gear assembly (22) and thrust washer (23).
- (38) Remove driving shell (24).
- (39) Remove thrust plate (25).
- (40) Remove lockring (21) and thrust washer (23).
- (41) Remove carrier assembly (26) and output shaft (34).
- (42) Remove rear annulus thrust plate (27).
- (43) Remove rear annulus gear assembly (28).
- (44) Remove reverse drum (29).
- b. Cleaning and inspection. Refer to paragraphs 5-4.3 and 5-4.4 for general cleaning and inspection procedures. In addition, perform the following steps:
  - (1) Inspect pump rotors for wear and scores.
  - (2) Install pump rotors in pump body. Position straightedge across rotor faces and pump body, and use feeler gauge to measure clearance between straightedge and rotors. Check that clearance is between figures specified in table 6-1.
  - (3) Position inner and outer rotors so that center of one tooth on each rotor is aligned and measure clearance between tips of teeth. Make fan measurements. Rotate inner rotor approximately 1/4 turn between measurements. Rotor tip clearance should be between figures specified by table 6-1.
  - (4) Measure clearance between outer surface of outer rotor and pump bore. Clearance should be between figures specified by table 6-1.
  - (5) If reaction shaft bushing (11) requires replacement, also inspect shaft and support bore for wear caused by input shaft seal ring

bands. If bore is worn or grooved, entire reaction shaft support assembly (7) must be replaced.



Do not clamp any part of the reaction shaft or support in a vise.

- c. Repair and replacement. Replace all worn or damaged parts.
- d. Assembly and installation. Assembly is accomplished during installation. Install gears and shafts group as follows:
  - (1) Install rear drum (29) in transmission housing.
  - (2) Install rear annulus gear assembly (28).
  - (3) Install rear annulus thrust plate (27).
  - (4) Install carrier assembly (26) on output shaft (34) and install output shaft (34).
  - (5) Install thrust washer (23) and install lockring (21).
  - (6) Install thrust plate (25).
  - (7) Install driving shell (24).
  - (8) Install thrust washer (23), sun gear assembly (22) and lockring (21).
  - (9) Install front annulus gear assembly (20), carrier thrust washer (19) and planetary carrier assembly (18).
  - (10) Refer to paragraph 5-5.2.4 and install overrunning clutch kit.
  - (11) Install springs (30), rollers (31) and race (32).
  - (12) Install retaining ring (17).
  - (13) Install thrust washers (33) and (16).
  - (14) Install rear clutch assembly, input shaft assembly (15) and thrust washer (13).
  - (15) Refer to paragraph 5-5.2.8 and install front band and front clutch; install retaining ring (14).
  - (16) Thread bushing installer tool #J-24038 onto driver handle #J-8092.
  - (17) Position bushing (11) on installer tool and install bushing straight into shaft bore until tool bottoms.



**NOTE**

If transmission end play reading obtained during disassembly was not within limits specified by table 6-1, replace thrust washer on reaction shaft support hub, one that will provide correct end play.

- (18) Install thrust washer (12) and support seal rings (10).
- (19) Install bushing (9).
- (20) Install pump rotors in oil pump housing.
- (21) Install reaction shaft support assembly (7) in oil pump housing assembly (2) using capscrews (8). Tighten capscrews to torque specified by table 6-2.
- (22) Install two pilot studs tool #J-3387-2 (figure 5-81) into case pump opening.
- (23) Install seal (1) in pump housing assembly (2).
- (24) Install seal (4) in outer flange of pump housing assembly (2). Coat seal with petroleum jelly.
- (25) Install gasket (5) using baffle package (6).
- (26) Install pump assembly (2) in transmission case.
- (27) Position deflector, if equipped, over vent opening and install four screws and washers (3) finger tight.
- (28) Remove pilot studs and install remaining screws and washers (3) finger tight.
- (29) Rotate input shaft (15) and output shaft (34) to see if any binding occurs.
- (30) If shafts rotate freely, tighten all screws and washers (3) to torque specified by table 6-2.
- (31) Recheck shafts for free rotation. If bind exists, loosen screws and washers (3) and tighten screws alternately and evenly to torque specified by table 6-2.
- (32) Refer to paragraph 5-5.2.7 and install governor and support.
- (33) Refer to paragraph 5-5.2.6 and install accumulator piston and spring.
- (34) Refer to paragraph 5-5.2.6 and remove valve body.
- (35) Refer to paragraph 5-5.2.4 and remove oil pan.
- (36) Remove transmission assembly from holding fixture #J-24026.

- (37) Refer to paragraph 5-5.2.4 and install transmission assembly in vehicle.

**5-5.3 Transfer Case and Propeller Shaft.**

**5-5.3.1 Rear Propeller Shaft Group.** Refer to figure 5-84, and perform the following steps to overhaul the rear propeller shaft group.

- a. Removal. Remove rear propeller shaft group as follows:

**WARNING**

Do not work under raised vehicle without first supporting vehicle with safety jack stands or injury to personnel may result.

- (1) Raise vehicle.
- (2) Mark propeller shaft (3), transfer case and yoke (7) for assembly alignment reference.

**WARNING**

Support rear propeller shaft assembly with safety jack stands before removing straps or injury to personnel may result.

- (3) Remove capscrews (2), straps (1) and rear propeller shaft assembly (3).
- b. Disassembly. Disassemble rear propeller shaft group as follows:

**CAUTION**

Do not clamp propeller shaft tube in the vise. Clamp only the forged portion of the yoke in the vise. Do not overtighten vise or damage to propeller shaft will result.

- (1) Mount propeller shaft yoke (7) in vise.
- (2) Remove retaining rings (6) from spider assemblies (5). Tap on ends of spider assembly (5) with hammer to relieve pressure on retaining rings, if necessary.
- (3) Tap end of one arm of spider assembly (5) until bearing cap comes off opposite arm of spider assembly (5).
- (4) Remove spider assembly (5) and lubrication fitting (4) from yoke (7).
- (5) Repeat steps (3) and (4) for remaining spider assembly (5).
- (6) Remove yoke (7) and seal kit (8).
- c. Cleaning and inspection. Refer to paragraphs 5-4.3 and 5-4.4 for general cleaning and inspection procedures. In addition, perform the following steps: