

REBUILD OF SUBASSEMBLIES

PARA 6-22/6-23

cam shaft 66. Remove cam shaft 66. Remove two nuts 56, lock washers 57, and support 58.

Note: Refer to paragraph 6-2, above.

b. Assembly (foldout 13)

(1) If disassembly outlined in a(5), above, was accomplished, reassemble as outlined in (2), (3) and (4), below.

(2) Install anchor bolts 67 through back plate 59, with bolt heads at rear of back plate. Install support 58 onto bolts 67.

(3) Install lock washers 57, and nuts 56 onto bolts 67. Tighten the nuts to 125 to 165 pound feet torque.

(4) After lubricating all points of contact on or in backplate 59 and support 58, with Lubriplate or equivalent lubricant, install cam shaft 66. Install apply lever 54, install the clamp bolt and tighten it securely.

(5) Install brake shoe and lining assemblies 60 and 61 after lubricating all points of contact with Lubriplate or equivalent.

(6) Lubricate both ends of adjusting screw 63 with Lubriplate or equivalent. Assemble screw 63, nut 64 and socket 62. Thread screw 63 fully into nut 64.

(7) Install the parts assembled in (6), above, between the lower ends of the brake shoes, locating socket 62 at the left side.

(8) Install anchor bolt plate 68 onto the heads of bolts 67. Hook the shorter ends of springs 69 into holes in the brake shoes. Stretch the springs and hook their longer ends onto bolts 67.

(9) Hook one end of spring 65 into a hole in one brake shoe. Stretch the spring, and hook the other end into the hole in the other brake shoe. When properly installed the spring bends over, and bears on, the top of the star wheel on screw 63.

(10) Refer to paragraph 3-7e for adjustment of the parking brake.

6-23. TRANSFER GEAR HOUSING COVER, OUTPUT OIL PUMP

Note: Only those transmission assemblies which include an output oil pump (located in the transfer gear housing cover) require the procedures outlined in a and b, below.

a. Disassembly (foldouts 13, 14)

(1) Remove internal snap ring 1 (foldout 14) from the housing cover. Remove output oil pump assembly 2. Remove nine flat-head screws 7, and pump cover 6.

(2) Mark gears 4 and 5 to ensure their reassembly into pump body 3 in the same position as when removed (same side toward cover 6).

(3) Remove gears 4 and 5 from body 3.

(4) Remove plug 2 (foldout 13) from cover 4.

(5) Do not remove pin 3 from cover 4 unless replacement is necessary.

Note: Refer to paragraph 6-2, above.

b. Assembly (foldouts 13, 14)

(1) If pin 3 (foldout 13) was removed from cover 4, install a new pin. Drive the pin until it bottoms in the cover.

(2) Apply sealer to the threads of plug 2, install the plug and tighten it securely.

(3) Install gears 4 and 5 (foldout 14) into pump body 3. Make sure the same sides of the gears are against cover 6, as when the pump was disassembled.

(4) Install cover 6 onto body 3. Install nine 1/4-20 x 5/8-inch flat-head screws 7. Tighten the screws to 6 to 8 pound feet torque.

(5) Install pump assembly 2, cover 6 first, into the housing cover. Engage the slots in cover 6 and body 3 with pin 3 (foldout 13) in cover 4.

PARA 6-23/6-26

(6) Install internal snap ring 1 (foldout 14) into the groove in the housing cover.

6-24. SPEEDOMETER DRIVE SLEEVE

a. Disassembly (foldout 14). Pry oil seal 57 and washer 56 from drive sleeve 55.

Note: Refer to paragraph 6-2, above.

b. Assembly (foldout 14)

(1) Install washer 56 into the counter-bore at the front of drive sleeve 55.

(2) Install oil seal 57, flat side first (sealing lip toward front of transmission), into drive sleeve 55, against washer 56. Press the seal into the sleeve until it is 0.035 to 0.065 inch below the front end of the sleeve.

6-25. TRANSFER GEAR HOUSING

a. Disassembly (foldout 12)

(1) Remove twenty bolts 23, lock washers 24, two covers 25, and gaskets 26.

(2) Remove plugs 30, 49 and 50 if necessary for replacement, cleaning or resealing.

(3) Do not remove dowelpins 28 and 31 unless replacement is necessary.

(4) Do not remove tube 32 unless replacement is necessary (tube used only on models with output pump).

Note: Refer to paragraph 6-2, above.

b. Assembly (foldout 12)

(1) If tube 32 was removed, install a new tube. Press the tube into the front of the housing until its front end is flush with, or to 0.03 inch below the housing front surface.

(2) If dowel pins 28 and 31 were removed, install new pins. Leave them projecting 0.50 inch from the front and/or rear surface of the housing.

(3) If plugs 30 and 49 were removed, coat the threads with sealer and install them. Tighten the plugs securely. Install plug 50 with gasket 51.

(4) Install two gaskets 26, two covers 25, and twenty 3/8-16 x 7/8-inch bolts 23, with lock washers 24. Tighten the bolts evenly to 26 to 32 pound feet torque.

6-26. FLEX DISK

a. Disassembly (B, foldout 4)

(1) If not previously removed, remove flex disk assembly 2 from the engine crankshaft.

(2) Remove twelve bolts 11, and separate plate 10, disks 9, and disk and washer assembly 6 from hub assembly 3.

(3) Do not remove dowel pin 5 from hub 4 unless replacement is necessary.

Note: Refer to paragraph 6-2, above.

b. Assembly (B, foldout 4)

(1) If dowel pin 5 was removed, press a new pin into the rear of hub 4. Leave the pin projecting 0.13 inch.

(2) Install disk and washer assembly 6 onto hub assembly 3, engaging the smaller hole of the inner bolt circle with dowel pin 5. Washer 7 must face toward hub assembly 3.

(3) Install four flex disks 9, engaging each with dowel pin 5, and alining all other holes.

(4) Install plate 10, alining it with the dowel pin, and bolt holes.

(5) Install twelve 1/2-20 x 3/4-inch bolts 11. Tighten the bolts to 96 to 115 pound feet torque.

(6) Install the assembly, larger diameter of hub first, onto the engine crankshaft. Retain the assembly as outlined by the engine or vehicle manufacturer.

6-27. TORQUE SPECIFICATIONS ILLUSTRATION

The cross-section view (fig. 6-10), which follows, shows the torque specifications for the CRT 5630 and 5631 transmissions. Refer also to paragraph 4-11 and the chart it contains.

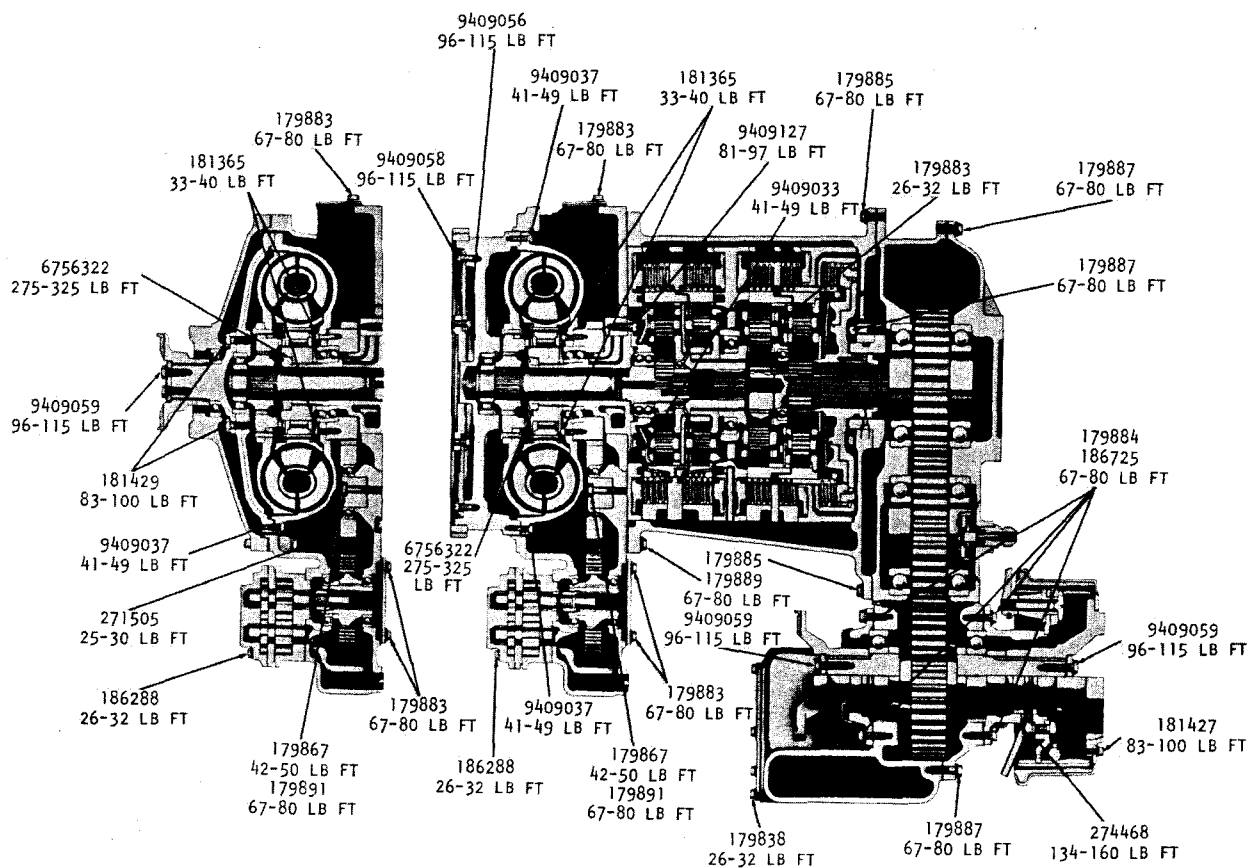


Fig. 6-10. Torque requirements for threaded fasteners

Section 7. ASSEMBLY OF TRANSMISSION FROM SUBASSEMBLIES

7-1. SCOPE OF SECTION 7

a. Procedures, Models

(1) The procedures in this section describe the assembly of the transmission from subassemblies rebuilt in Section 6, and the parts removed in Section 5.

(2) The assembly of CRT 5630 and CRT 5631 models is covered in this section. Options may apply to either model. Procedures are identified with models only when they are peculiar to that model.

b. Sequence of Operations

(1) All assembly procedures, regardless of model, and whether they concern basic equipment or options, are included in one sequence. Thus, any CRT 5630 or CRT 5631 model may be assembled by following these instructions.

(2) Headings and notes indicate procedures which are applicable only to specific models or options. Any procedure not applicable to the transmission being assembled may be passed over, and assembly continued with the next applicable procedure.

c. Illustrations

(1) Assembly procedures are referenced primarily to photographs in this section. When considered helpful, references are made to photographs in Section 5 (disassembly).

(2) Assembly of some components is referenced to foldouts in the back of this manual, especially when several small components are involved or when the assembled relation of components must be known.

7-2. ASSEMBLY - GENERAL INFORMATION

a. Tools, Parts, Methods. Refer to paragraphs 4-3 through 4-5.

b. Parts Cleaning, Inspection. Refer to paragraph 4-6.

c. Component Cleanliness. Continually check the components during assembly to insure that they are free of lint, dirt, or foreign particles.

7-3. ASSEMBLY PROCEDURES

a. Installing Transfer Gear Housing Components

(1) Install the oil strainer and gasket into the transfer gear housing (fig. 7-1). Retain the strainer with six 3/8-16 x 7/8-inch bolts and lock washers. Tighten the bolts evenly to 26 to 32 pound feet torque.

(2) If the transfer drive gear, idler gear, or driven gear assemblies were disassembled after removal, assemble them as outlined in (3), (4) and (5), below.

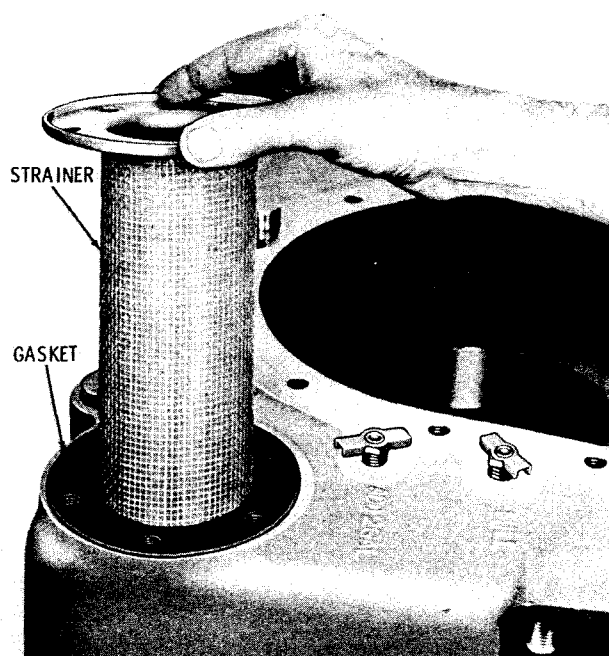


Fig. 7-1. Installing oil strainer

PARA 7-3

Note: A number of optional arrangements of the output components have been provided on various models. Because of this, the location (at front or rear) of the output shaft ball bearing which is provided with a snap ring groove varies among transmissions. Three simple rules to prevent misassembly are: If there is only one output, install the grooved bearing at the output end of the shaft. If there are two outputs, install the grooved bearing at the front output end of the shaft. Never install the grooved bearing at the end of the output shaft which is covered by a blank bearing retainer.

(3) Install bearings 35 and 37 (foldout 12), the identification marks outward, onto gear 36.

(4) Install bearings 34 and 41, identification marks outward, onto gear 39. If plug 40 is required, press the plug, slot outward, into the counterbore of gear 39.

(5) Install shaft 42, 43, 45 or 46 into gear 47. Install spacer 44 at one side of the gear, and spacer 48 at the other side. Press the two output shaft bearings, identification marks (or snap ring groove) outward, onto the output shaft. Refer to the note following (2), above, for the location of the bearing with the snap ring groove.

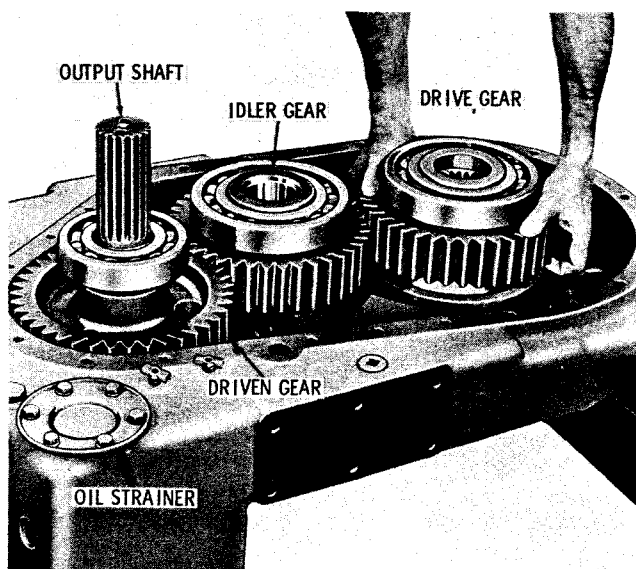


Fig. 7-2. Installing transfer drive gear

(6) Install the drive gear, idler gear, and driven gear assemblies into the transfer gear housing (fig. 7-2). Pay particular attention to the position of the driven gear assembly to insure that the output shaft is properly positioned.

(7) On transmissions which have a speedometer drive (refer to items 52 through 60, foldout 14), install washer 58 onto shaft 60. Install shaft 60 into drive sleeve assembly 54. Install gasket 59 onto sleeve 55. Install the assembled parts into the transfer gear housing cover. Install two 5/16-18 x 7/8-inch bolts, with lock washers. Tighten the bolts to 15 to 18 pound feet.

(8) On transmissions which have a speedometer drive cover (items 8 through 11, foldout 13), install gasket 8, cover 9, and two 5/16-18 x 7/8-inch bolts 11, with lock washers 10. Tighten the bolts to 15 to 18 pound feet torque (fig. 7-3).

(9) Install the transfer gear housing cover and gasket (fig. 7-3).

(10) Install twenty-six 1/2-13 x 1 3/4-inch bolts, with lock washers, to retain the cover (fig. 7-4). Tighten the bolts to 67 to 80 pound feet torque.

(11) On transmissions having an output at only the rear, install the snap ring into the groove in the output shaft rear bearing (fig. 7-4).

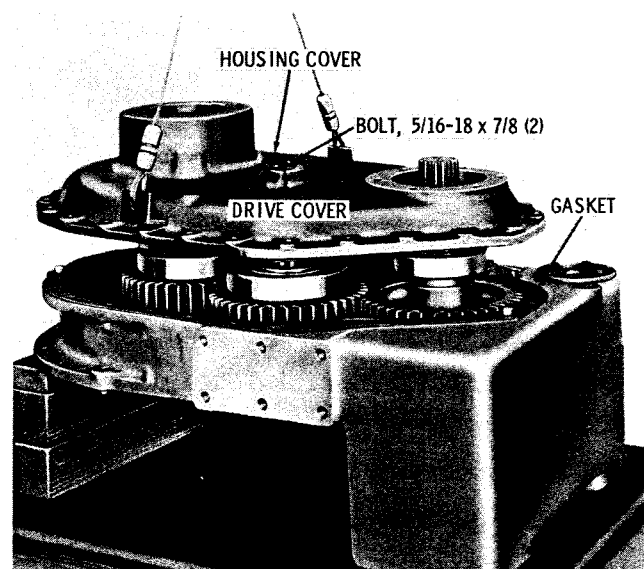


Fig. 7-3. Installing transfer gear housing cover

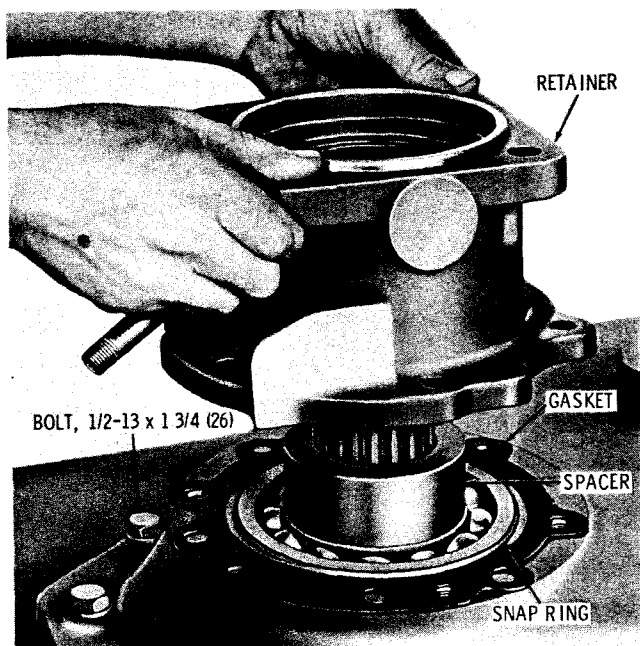


Fig. 7-4. Installing rear bearing retainer (models with parking brake)

Note: On all other transmissions (output at front, or both front and rear), the snap ring will be on the front output shaft bearing.

(12) On transmissions having a parking brake, follow the instructions in (13) through (18), below.

(13) Install the rear bearing retainer gasket (fig. 7-4). Install the spacer onto the output shaft. Install the bearing retainer.

(14) Install six 1/2-13 x 1 1/2-inch bolts, with lock washers. Tighten the bolts to 67 to 80 pound feet torque.

(15) Install the brake shoe assembly (fig. 7-5). Install four 5/8-inch flat washers onto four 5/8-18 x 2-inch bolts and install them through the back plate of the shoe assembly and the rear flange of the bearing retainer. Install four more 5/8-inch flat washers and four 5/8-18 nuts. Tighten the bolts to 134 to 160 pound feet torque, while holding the nuts to prevent rotation.

(16) Establish the proper thickness of the shim pack at the end of the output shaft as outlined in paragraph 4-8b.

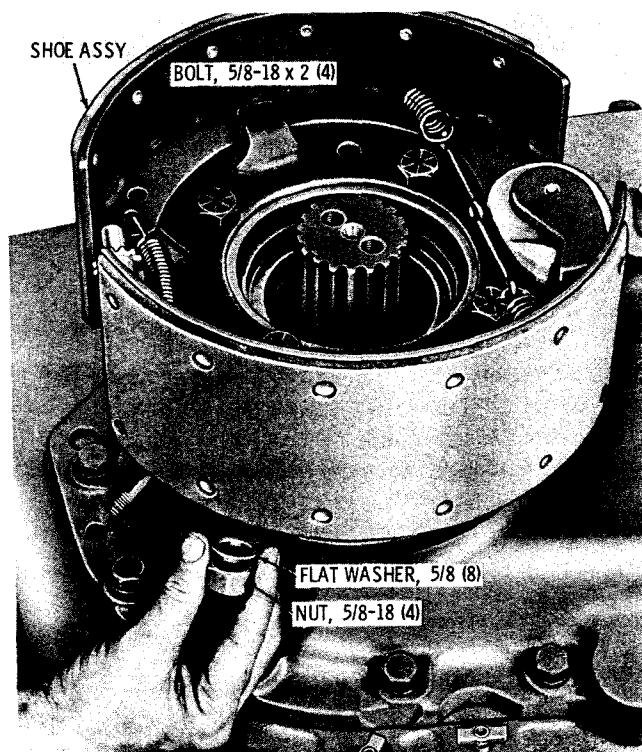


Fig. 7-5. Installing nut onto bolts which retain brake shoe assembly

Note: The installation of this shim pack is recommended for all transmissions even though some did not originally include shims.

(17) Install the brake drum onto the output flange (fig. 7-6). Install eight 1/2-20 x 1-inch bolts, with lock washers, to retain the drum. Tighten the bolts to 83 to 100 pound feet torque.

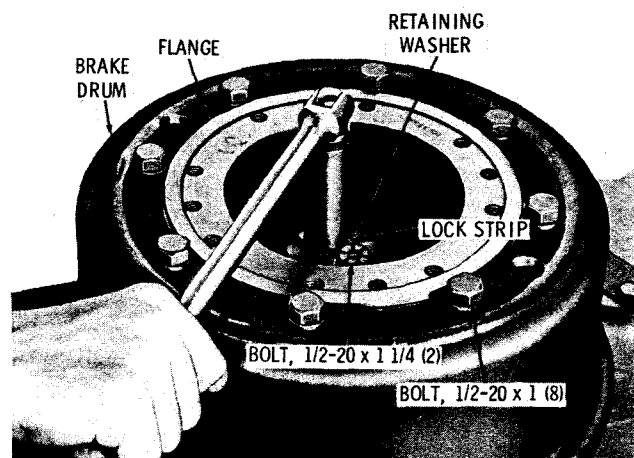


Fig. 7-6. Installing rear output flange bolts

PARA 7-3

(18) Install the output flange and brake drum (fig. 7-6).

Note: If output flange has an interference fit, refer to paragraph 4-8b for installation instructions. The brake drum should not be installed, in this case, until the flange is installed.

Install shim pack established in (16), above. Install the retaining washer, lock strip and two 1/2-20 x 1 1/4-inch bolts. Tighten the bolts to 96 to 115 pound feet torque. Bend a corner of the lock strip against each bolt head.

(19) On transmissions having a rear output but no parking brake, follow the instructions in (20) through (22), below.

(20) Install rear bearing retainer gasket 29 (foldout 13). Install retainer 30 (with oil seal 28), six 1/2-13 x 1 3/8-inch bolts 32 and lock washers 31. Tighten the bolts to 67 to 80 pound feet torque.

(21) Establish the shim pack thickness at the end of the output shaft as outlined in paragraph 4-8b.

(22) Install output flange 43, 44, 49 or 50 (foldout 13), shims 45, retaining washer 46, lock strip 47 and bolts 48 as in (18), above.

Note: On transmissions using shaft 46 (foldout 12) and nut 51 (foldout 13), shimming procedures and the installation of items 45 through 48 is not required. Instead, install nut 51 to retain the flange. Coat the threads with molybdenum disulfide grease before installation. Tighten the nut to 700 to 1000 pound feet torque.

(23) On transmissions having only a front output, follow the instructions in (24) and (25), below.

(24) Establish shims at the end of the output shaft as outlined in paragraph 4-8b, above. Install the shims, retaining washer, lock strip and two 1/2-20 x 1 1/4-inch bolts (fig. 7-7). Tighten the bolts to 96 to 115 pound feet torque. Bend a corner of the lock strip against each bolt head.

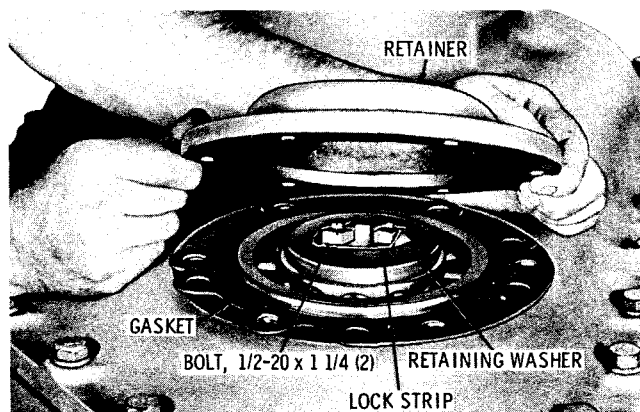


Fig. 7-7. Installing rear bearing retainer (models with only front output)

(25) Install the retainer gasket and bearing retainer (fig. 7-7). Install six 1/2-13 x 1 3/8-inch bolts, with lock washers, to secure the retainer. Tighten the bolts to 67 to 80 pound feet torque.

(26) On transmissions which have a front output, follow the instructions in (27) and (28), below.

(27) Install the retainer gasket and bearing retainer with oil seal (fig. 7-8). Install six 1/2-13 x 1 3/8-inch bolts, with lock washers. Tighten the bolts to 67 to 80 pound feet torque.

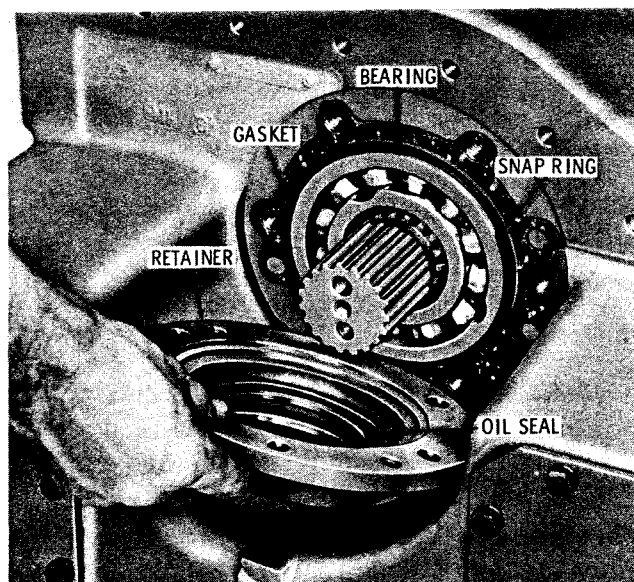


Fig. 7-8. Installing output shaft front bearing retainer

(28) Establish the shim pack thickness at the end of the output shaft as in paragraph 4-8b. Install the output flange, shims, retaining washer, lock strip, and two 1/2-20 x 1 1/4-inch bolts (fig. 7-9). Tighten the bolts to 96 to 115 pound feet torque. Bend a corner of the lock strip against each bolt head.

(29) On transmissions having only a rear output, install items 1 through 8 (foldout 12) as outlined in (24) and (25), above.

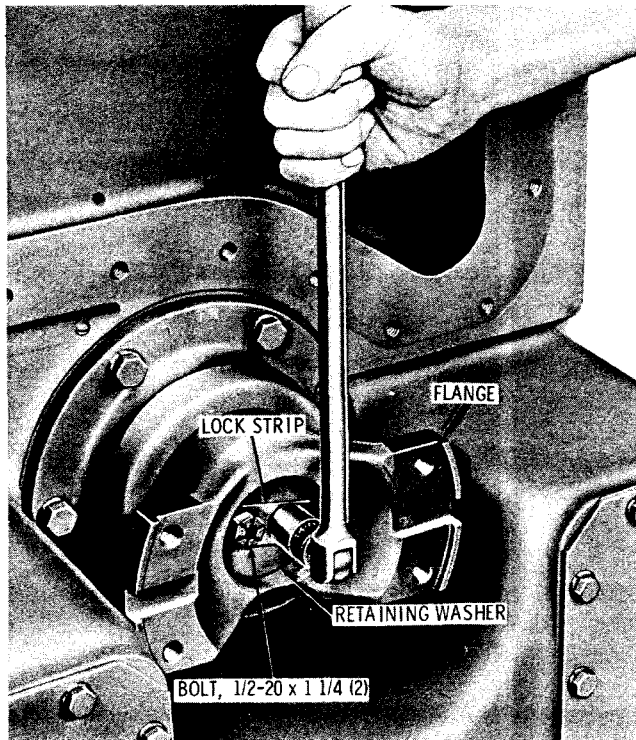


Fig. 7-9. Installing front output flange bolts

b. Installing Range Clutches, Planetary Gearing

(1) Position the transmission housing, rear downward, on blocks so that it clears the work surface by at least 7 inches. Be sure the center area will not obstruct the installation of the main shaft (fig. 7-10).

(2) Install two clutch anchor keys into oppositely located slots in the transmission housing (fig. 7-10). Be sure each key is fully seated and against the rear end of its slot.

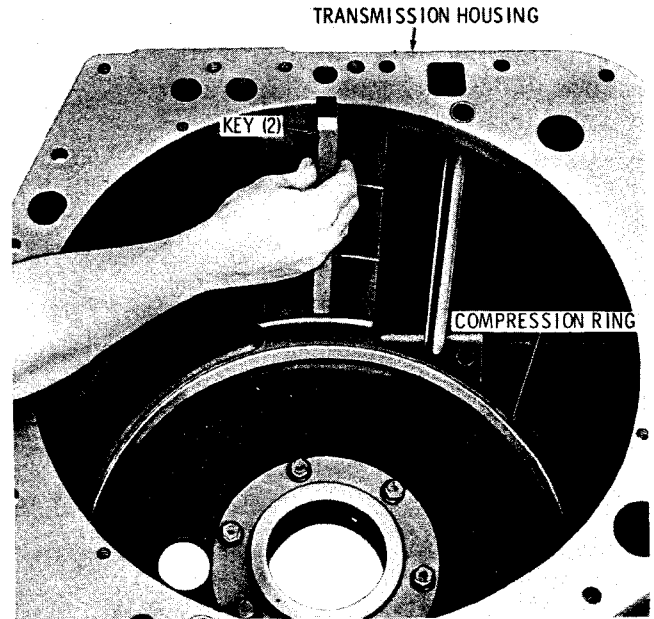


Fig. 7-10. Installing clutch anchor key

(3) Install a new compression (crush) ring into the housing (fig. 7-10). The ring should lay evenly around the inner circle of the large bore in the rear of the housing.

(4) Make sure that thrust washer 16 (A, foldout 10) and two step-joint Teflon seal rings 17 are in place at the rear hub of the low-range clutch.

(5) Using the special lifting hook (refer to para 4-3a), install the low-range clutch assembly (fig. 7-11). Be careful to avoid damage to the seal rings on the rear hub.

(6) Install the thrust washer onto the hub of the low-range clutch assembly (fig. 7-12).

(7) Install the intermediate-range clutch piston housing, piston cavity upward (fig. 7-12). Seat the housing against the compression (crush) ring. Install the 3/8-16 x 2 1/4-inch bolt, with lock washer, to retain the housing. Tighten the bolt to 26 to 32 pound feet torque. Then loosen the bolt 1 to 2 turns.

(8) Install the intermediate-range clutch piston, with seal rings and expanders, into the piston housing (fig. 7-12). The shouldered side of the piston must be facing upward.

PARA 7-3

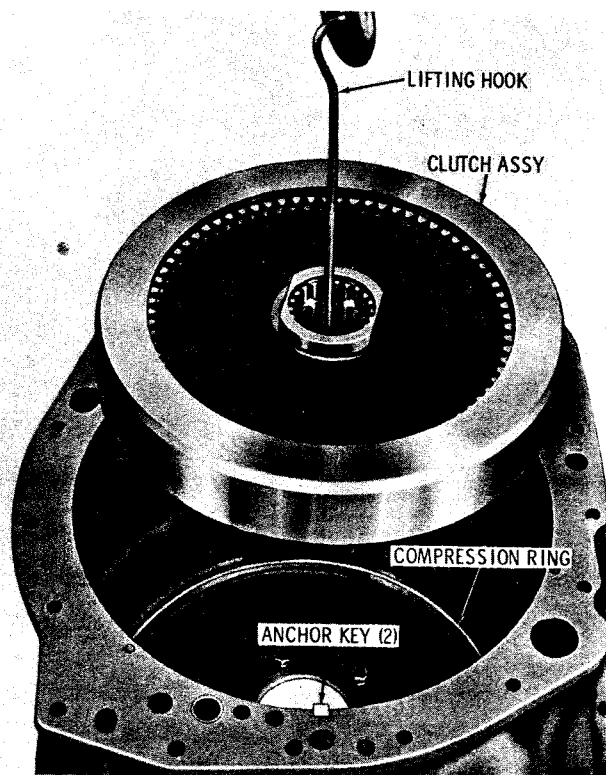


Fig. 7-11. Installing low-range clutch assembly

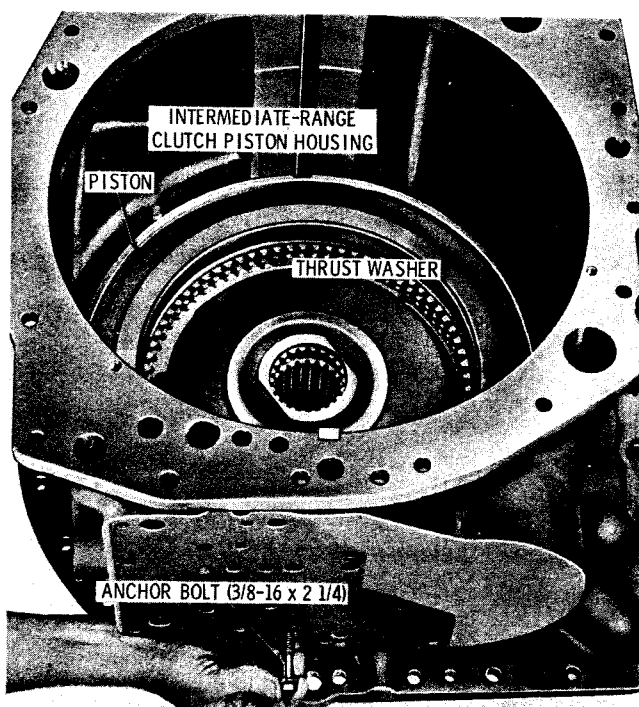


Fig. 7-12. Installing intermediate-range clutch piston housing anchor bolt

(9) Install the intermediate-range planetary ring gear, counterbored side upward, onto the intermediate-range planetary carrier assembly (fig. 7-13).

(10) Install intermediate-range clutch anchor, flat side downward (fig. 7-14). Beginning with an external-splined plate, alternately install three external-splined clutch plates, and three internal-splined clutch plates.

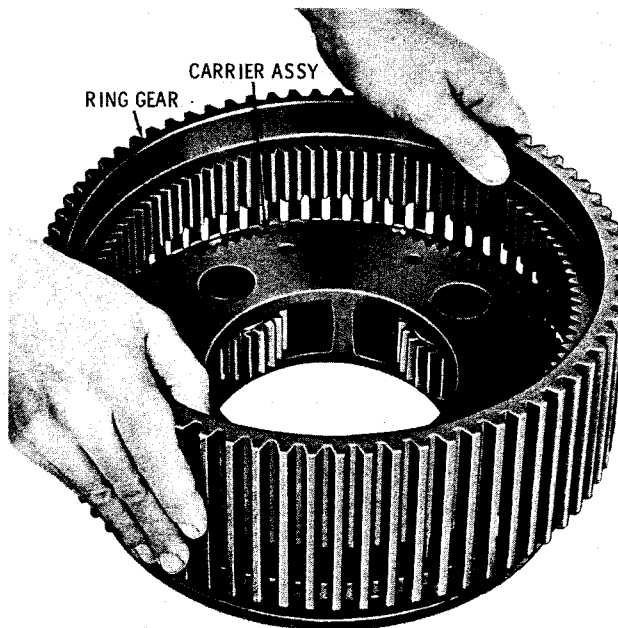


Fig. 7-13. Installing intermediate-range planetary ring gear onto carrier assembly

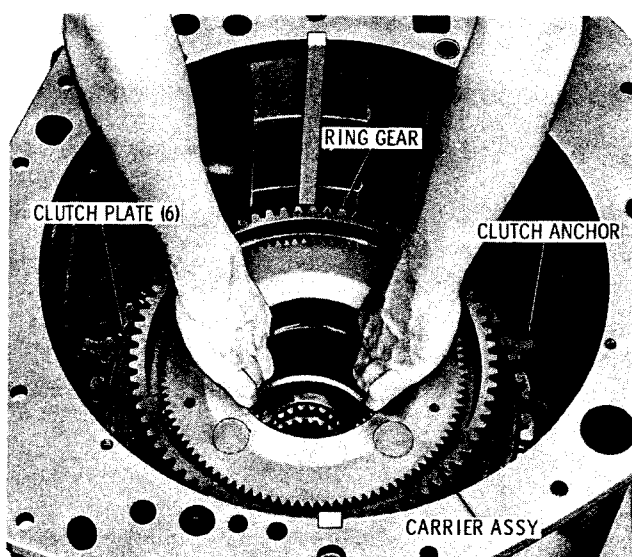


Fig. 7-14. Installing intermediate-range planetary carrier assembly and ring gear

(11) Install the intermediate-range planetary carrier assembly and ring gear, as assembled in (9), above (fig. 7-14). Rotate the carrier assembly during installation to engage both the low- and intermediate-range clutch plates.

(12) Install the high-and-intermediate range clutch back plate (fig. 7-15). Install the intermediate-range sun gear.

(13) If the ball bearing was removed from the main shaft, install it with bearing identification toward the rear. Seat it firmly against the shaft shoulder. Install the main shaft, seating its bearing against the intermediate-range sun gear (fig. 7-15).

(14) Install the high-range planetary ring gear, flat side upward, and mesh it with the splines of the intermediate-range planetary carrier assembly (fig. 7-16).

(15) Install two spindle retainers, two lock strips, and four 3/8-16 x 1/2-inch bolts (fig. 7-16). Tighten the bolts to 26 to 32 pound feet torque. Bend corners of each lock strip against each bolt head.

(16) Install the high-range clutch anchor, broad flat side upward (fig. 7-17). Install fourteen clutch piston return springs.

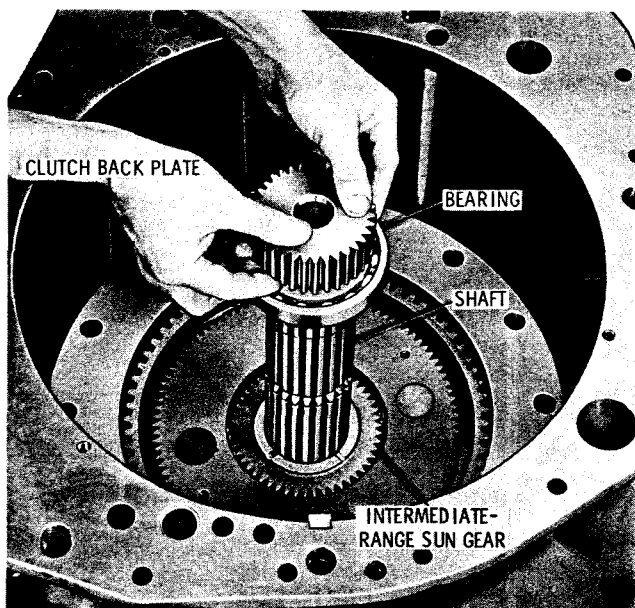


Fig. 7-15. Installing transmission main shaft and ball bearing

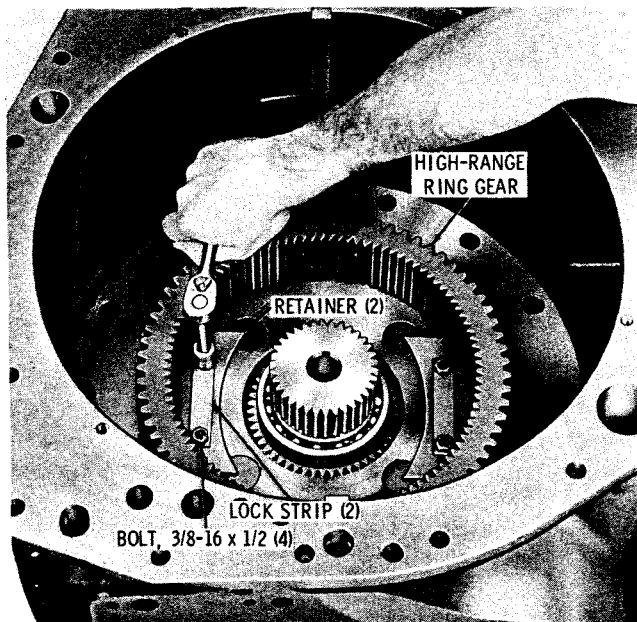


Fig. 7-16. Installing spindle retainer bolts

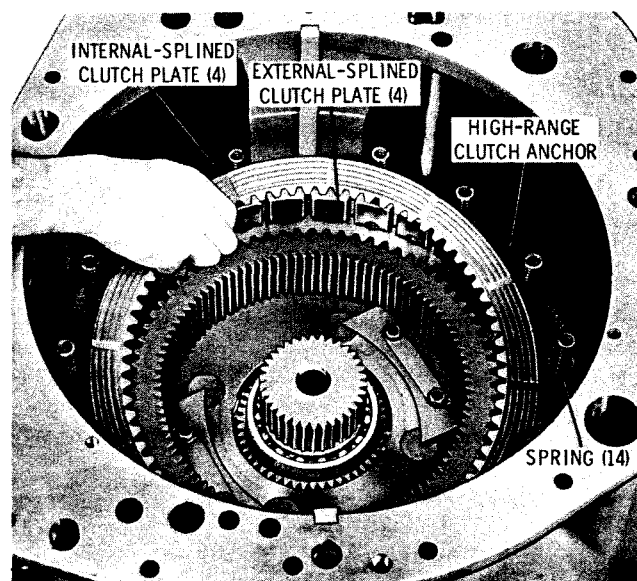


Fig. 7-17. Installing high-range clutch plates

(17) Beginning with an internal-splined clutch plate, and alternating with external-splined plates, install four of each type of plate (fig. 7-17). Note that an external-tanged plate is the last to be installed.

(18) Install ball bearing 22 (B, foldout 8) into diaphragm 28. Retain it with snap ring 21. Install the high-range planetary carrier assembly 10 (A, foldout 9) into the bearing. Retain the carrier assembly with snap ring (fig. 7-18).

PARA 7-3

(19) Install piston 25 (B, foldout 8) with its sealrings and expanders, narrow flat face outward, into the front of diaphragm (fig. 7-18).

(20) Install piston 7 (A, foldout 9), with its sealrings and expanders, narrow flat face outward into the rear of the diaphragm.

(21) Install thrust washer 21 (A, foldout 9) onto the rear hub of carrier 12. Retain the thrust washer with oil-soluble grease.

(22) Using the special lifting hook (refer to para 4-3a), install the diaphragm and parts assembled in (18) through (21), above, into the transmission (fig. 7-18).

Note: Lift and handle the assembly carefully to prevent the high-range clutch piston, and the thrust washer from dropping.

(23) Install the special compressor (refer to para 4-3a), using soft metal blocks under each compressor screw (fig. 7-19). Tighten the compressor screws evenly until all range clutch components are firmly seated.

(24) Install the 3/8-16 x 4-inch anchor bolt, with lock washer (fig. 7-19). Tighten the bolt to 26 to 32 pound feet torque. Then loosen it 1 to 2 turns. Remove the special compressor and soft metal blocks.

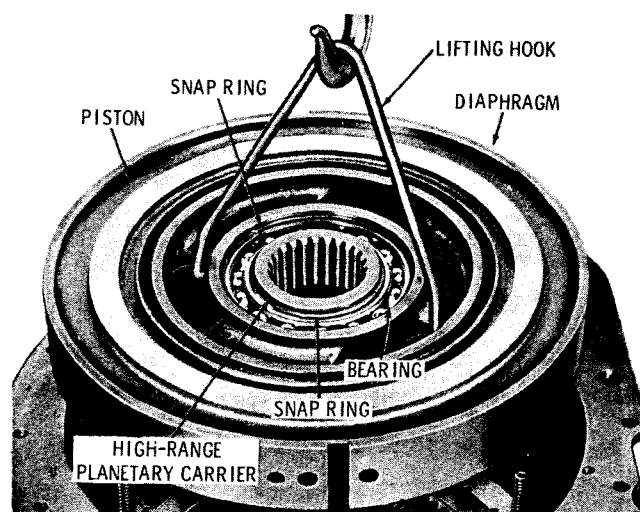


Fig. 7-18. Installing diaphragm

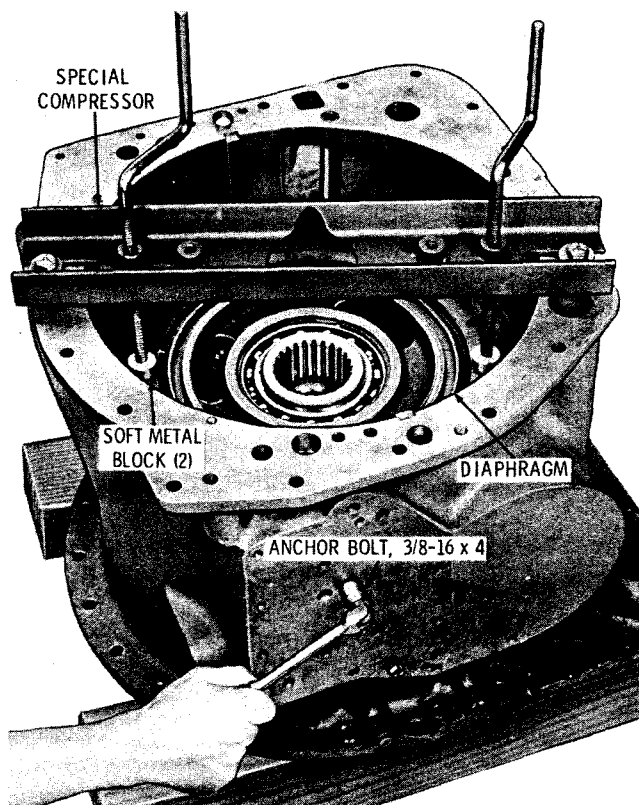


Fig. 7-19. Installing diaphragm anchor bolt

c. Installing Forward, Reverse Clutches, Gearing (5630 models)

(1) Install the reverse clutch anchor, broad flat side downward (fig. 7-20). Beginning with an external-splined clutch plate, and alternating with internal-splined plates, install two of each type plates.

(2) Install the reverse planetary ring gear, counterbored side upward (fig. 7-20). Beginning again with an external-splined clutch plate, and alternating with internal-splined plates, install three of each type plate. Note that the last plate installed is an internal-splined plate.

(3) Install the reverse planetary carrier assembly, open center upward (fig. 7-20). Install the forward-and-reverse clutch back plate.

(4) Install the forward clutch anchor, broad flat side upward (fig. 7-21). Beginning with an internal-splined clutch plate, and alternating with external-splined plates, install two plates of each type.

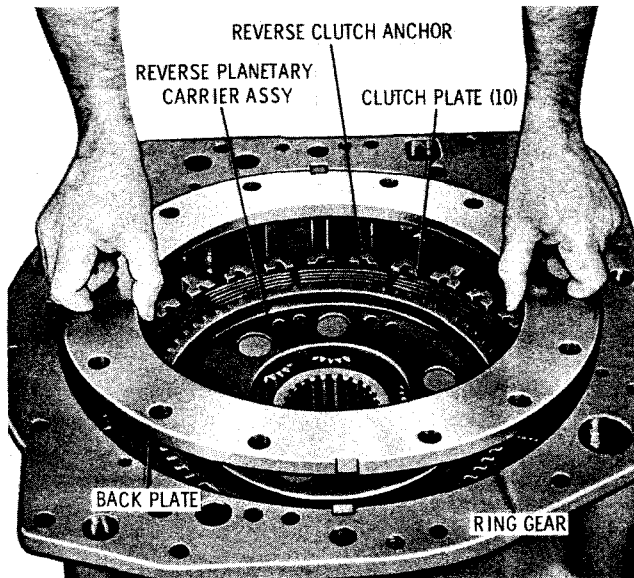


Fig. 7-20. Installing forward-and-reverse clutch back plate (5630 models)

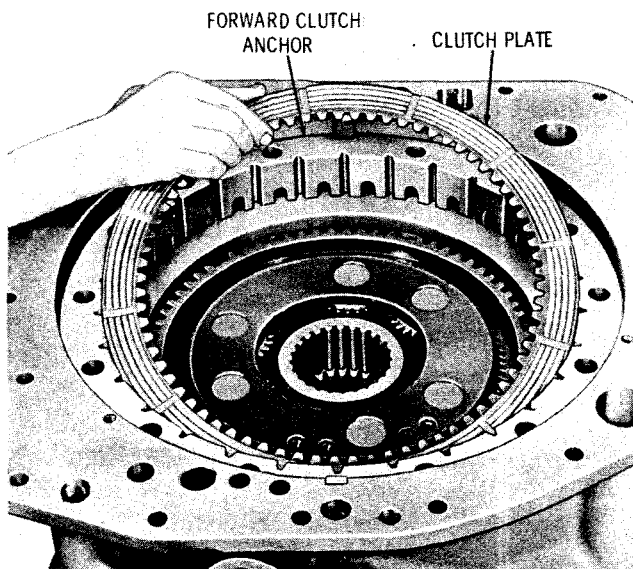


Fig. 7-21. Installing forward clutch plate before installation of ring gear (5630 models)

(5) Install the forward ring gear, shouldered side downward (fig. 7-22). Install the reverse sun gear. Beginning again with an internal-splined clutch plate, and alternating with external-splined plates, install four plates of each type. Note that the last plate to be installed is external splined.

(6) Install the forward planetary carrier assembly (fig. 7-23). Install 14 piston return springs.

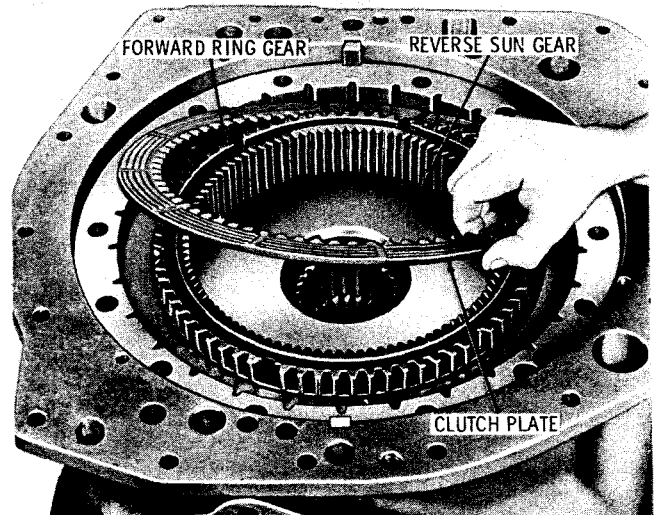


Fig. 7-22. Installing forward clutch plate after installation of ring gear (5630 models)

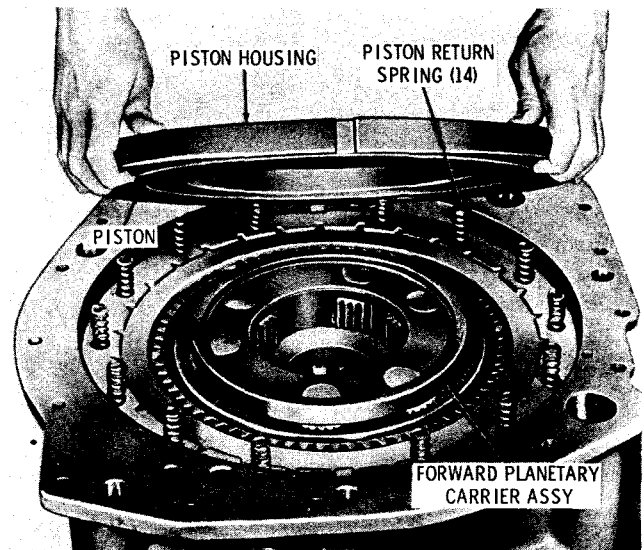


Fig. 7-23. Installing forward clutch piston housing (5630 models)

(7) Install the forward clutch piston, with its sealrings and expanders, narrow flat face outward, into the forward clutch piston housing (fig. 7-23). Install the piston housing, aligning the three milled cutouts at the front edge of the housing with three bolt holes in the transmission housing (fig. 7-24).

(8) Install three 3/8-16x3/4-inch bolts, with flat washers, to retain the piston housing (fig. 7-24). Tighten the bolts evenly to 26 to 32 pound feet torque.

PARA 7-3

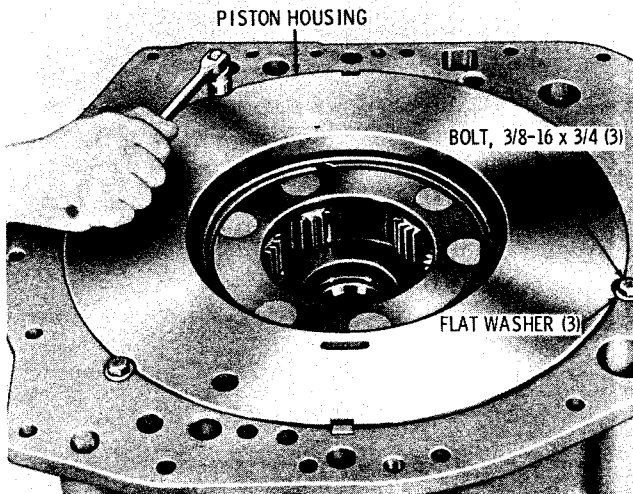


Fig. 7-24. Installing forward clutch piston housing bolts (5630 models)

d. Installing Forward, Reverse Clutches, Gearing (5631 models)

(1) Install the reverse clutch anchor, broad flat side downward (fig. 7-25). Beginning with an external-splined clutch plate, and alternating with internal-splined plates, install three external- and two internal-splined plates.

(2) Install the large internal snap ring into the groove in the reverse clutch anchor (fig. 7-25).

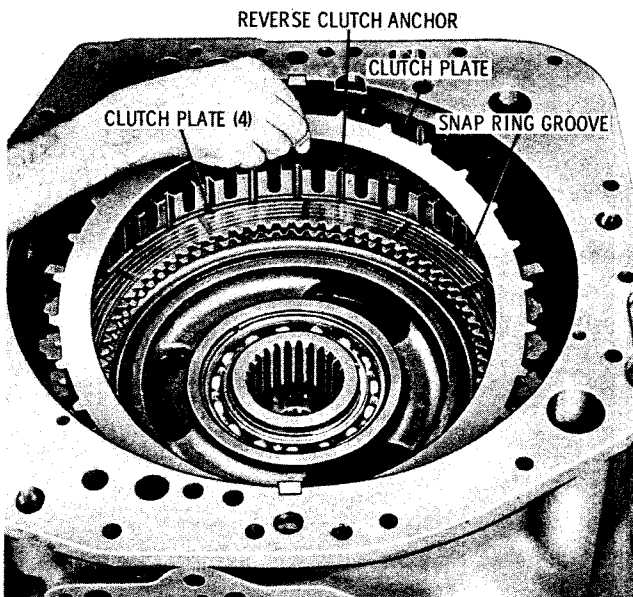


Fig. 7-25. Installing reverse clutch external-splined plate (5631 models)

(3) Beginning with an internal-splined clutch plate, and alternating with external-splined plates, install two of each type plate (fig. 7-26). Install the reverse ring gear, counterbored side upward.

(4) Install the reverse planetary carrier assembly, open side upward (fig. 7-26). Install the remaining internal-splined clutch plate.

(5) Install the forward-and-reverse clutch back plate (fig. 7-27).

(6) Install the forward clutch anchor (fig. 7-28). Install one internal-splined clutch plate.

(7) Install the forward ring gear, shouldered side downward (fig. 7-28). Install an external-splined clutch plate, an internal-splined plate and another external-splined plate.

(8) Install the large internal snap ring into the groove in the forward clutch anchor (fig. 7-28). Install the reverse sun gear.

(9) Beginning with an internal-splined clutch plate, and alternating with external-splined plates, install two plates of each type (fig. 7-28). Note that the last plate to be installed is external splined.

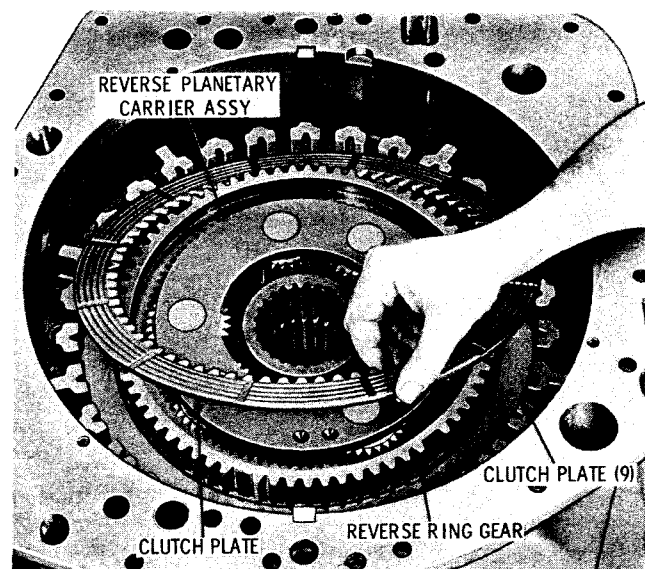


Fig. 7-26. Installing reverse clutch internal-splined plate (5631 models)

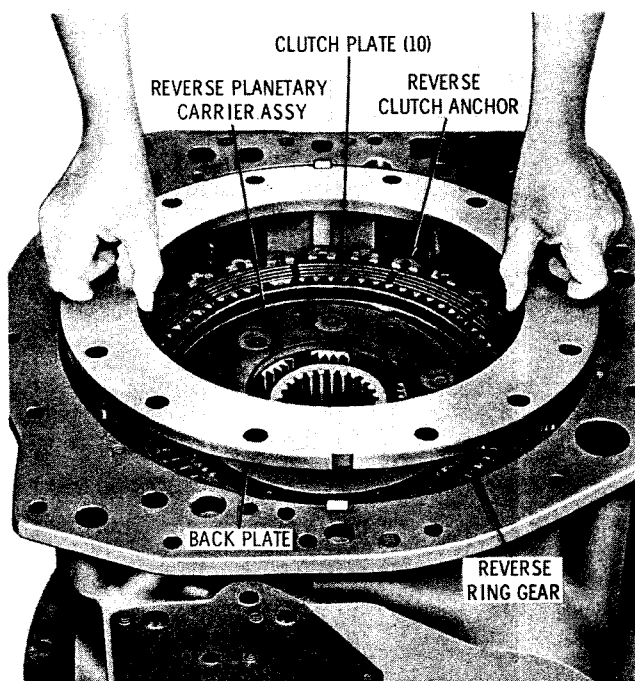


Fig. 7-27. Installing forward-and-reverse clutch back plate (5631 models)

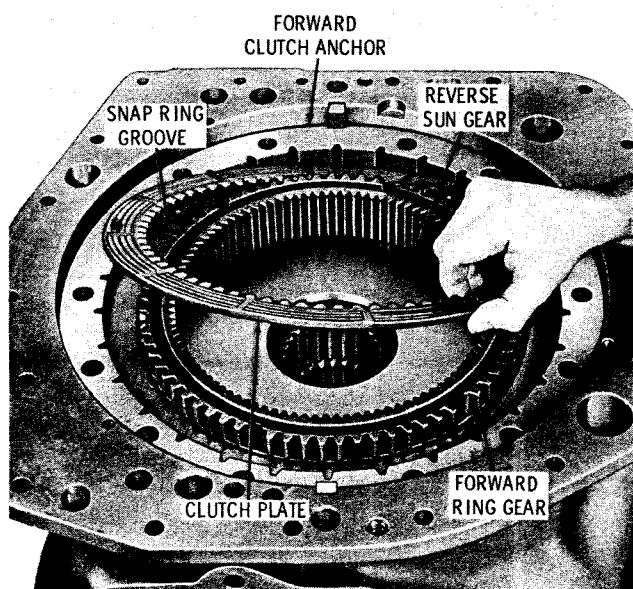


Fig. 7-28. Installing forward clutch internal-splined plate (5631 models)

(10) Install the forward planetary carrier assembly (fig. 7-29). Install 14 piston return springs.

(11) Install the forward clutch piston, with its seal rings and expanders, narrow flat side outward, into the forward clutch piston housing (fig. 7-29). Install the spring pin into the recess in the transmission housing.

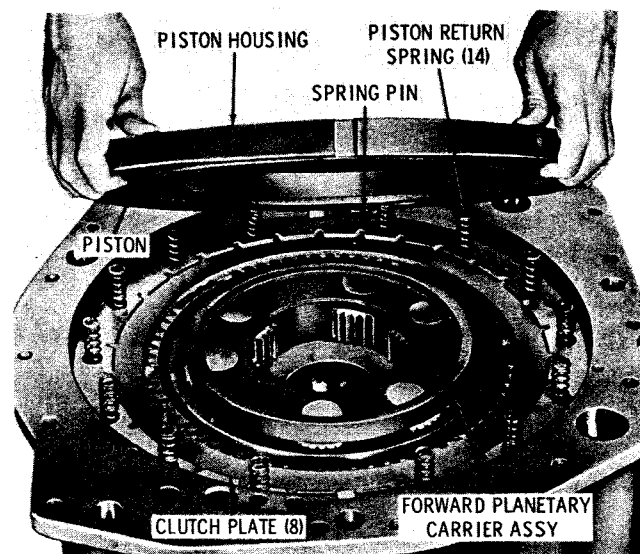


Fig. 7-29. Installing forward clutch piston housing (5631 models)

(12) Install the piston housing, piston downward, aligning the milled cutouts at the front of the housing with three threaded holes in the transmission housing (fig. 7-30).

(13) Install three 3/8-16 x 3/4-inch bolts, with flat washers, to retain the forward clutch piston housing (fig. 7-30). Tighten the bolts evenly to 26 to 32 pound feet torque.

e. Installing Converter Housing, Converter Components

(1) Install the converter output shaft assembly (fig. 7-31). Install five 1/2-13 x 1 1/4-inch self-locking bolts. Tighten the bolts to 81 to 97 pound feet torque.

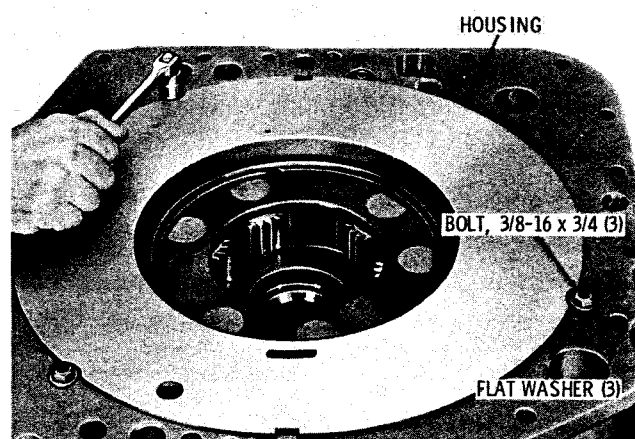


Fig. 7-30. Installing forward clutch piston housing bolts (5631 models)

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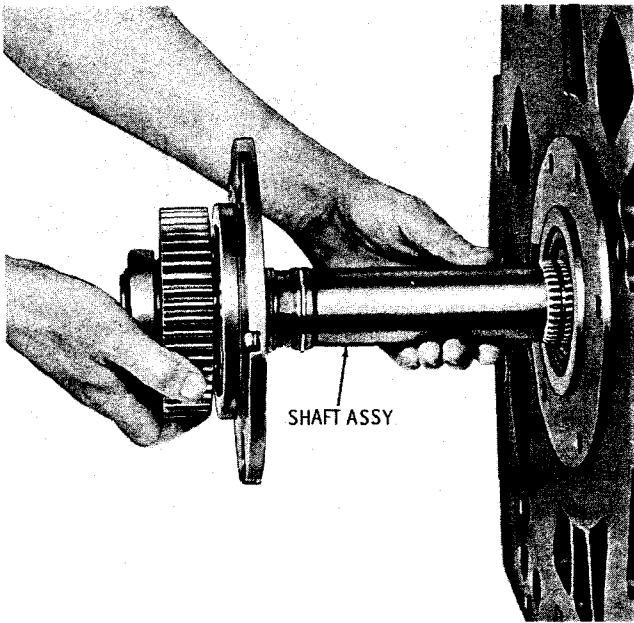


Fig. 7-31. Installing converter output shaft assembly

Note: Although construction of the converter output shaft differs for 5630 and 5631 models, installation procedures are identical.

(2) Install the front ball bearing and spacer into the converter housing (refer to fig. 5-23). Install the pump drive gear, longer end of the hub opposite the spacer.

(3) Install the rear ball bearing onto the shorter unsplined end of the pump drive hub (fig. 7-32). Aline the drive gear and spacer with the front ball bearing and install the hub and rear ball bearing. Tap the drive hub forward until it seats against the spacer.

(4) Install the snap ring which retains the pump drive rear bearing (fig. 7-33).

(5) Install new seal rings onto the oil suction tube (fig. 7-33). Lubricate the seal rings with oil-soluble grease. Install the tube, deeper grooved end first, into the converter housing. Drive the tube inward (forward) until the rear end is recessed 0.010 to 0.040 inch below the rear surface of converter housing.

Note: It is important that the latest type of seal rings be used. These are red (older seal rings are black).

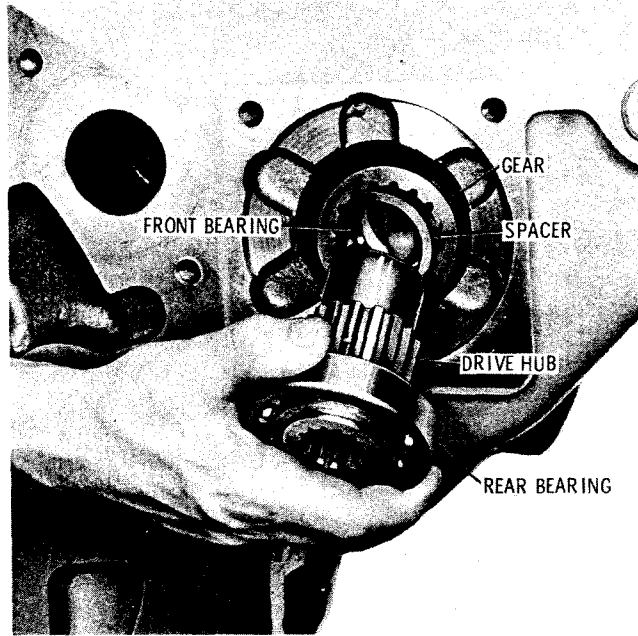


Fig. 7-32. Installing pump drive components

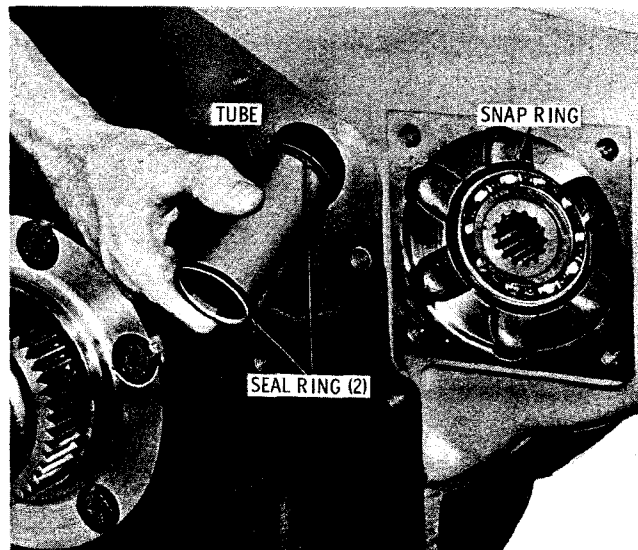


Fig. 7-33. Installing oil suction tube

(6) Install the accessory pad cover gasket and cover (fig. 7-34). Secure the cover with four 1/2-13 x 1 1/4-inch bolts, with lock washers. Tighten the bolts to 67 to 80 pound feet torque.

(7) If ball bearing 34 (A, foldout 6) was removed from gear 33, install it and retain it with snap ring 35. Install spindle 32 into the bore of bearing 34 at the side opposite snap ring 35.

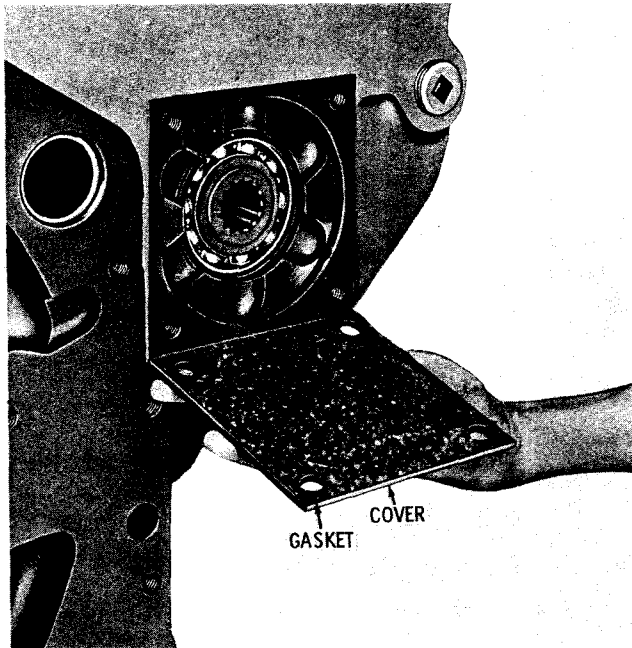


Fig. 7-34. Installing accessory pad cover

(8) Aline the eccentric bore of the spindle with the threaded hole in the converter housing, and install the assembled spindle and idler gear (fig. 7-35). Retain the spindle with either a 7/16-14 x 2 1/4-inch bolt or a 1/2-13 x 2 1/2-inch bolt, and lock washer. Tighten the 7/16-inch bolt to 42 to 50 pound feet torque. Tighten the 1/2-inch bolt to 67 to 80 pound feet torque.

(9) Install the two step-joint seal rings onto the ground sleeve (fig. 7-35). Retain the seal rings with oil-soluble grease.

Note: Early models had hook-type metal seal rings. These should be replaced with Teflon rings available in the current parts catalog. Refer to paragraph 1-4b.

(10) Install the converter housing gasket onto the transmission housing (fig. 7-36). Install the converter housing assembly.

(11) Install one 1/2-13 x 3 1/4-inch bolt, with lock washer, into the hole marked "A" (fig. 7-36). Install three 1/2-20 x 3 1/2-inch bolts at the locations marked "B." Install lock washers and 1/2-20 nuts onto the three bolts last installed (nuts at rear of transmission housing front flange).



Fig. 7-35. Installing ground sleeve seal rings

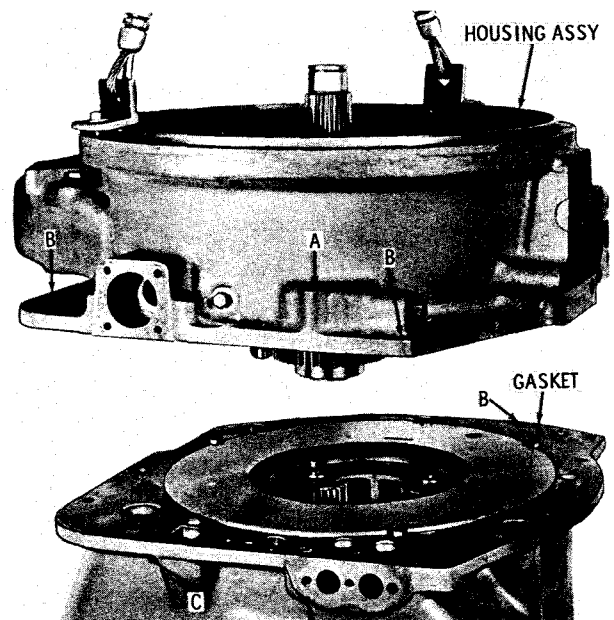


Fig. 7-36. Installing converter housing assembly

(12) At the rear side of the transmission housing front flange, install fifteen 1/2-13 x 1 1/2-inch bolts, with lock washers, in the remaining holes.

Note: Some models use 2-inch long bolts in 13 of these 15 locations, but use 1 1/2-inch long bolts at locations "C" (fig. 7-36).

(13) Tighten the three 1/2-20 nuts to 42 to 50 pound feet torque. Tighten all of the 1/2-13 bolts to 67 to 80 pound feet torque.

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(14) Check to make sure that the two seal rings are in proper position on the converter ground sleeve (fig. 7-37). Install the torque converter pump assembly, seating the ball bearing against the shoulder on the ground sleeve.

(15) Install the stator back plate, contoured side first (flat side upward), against the pump ball bearing (fig. 7-38). Install the freewheel roller race, flat side first.

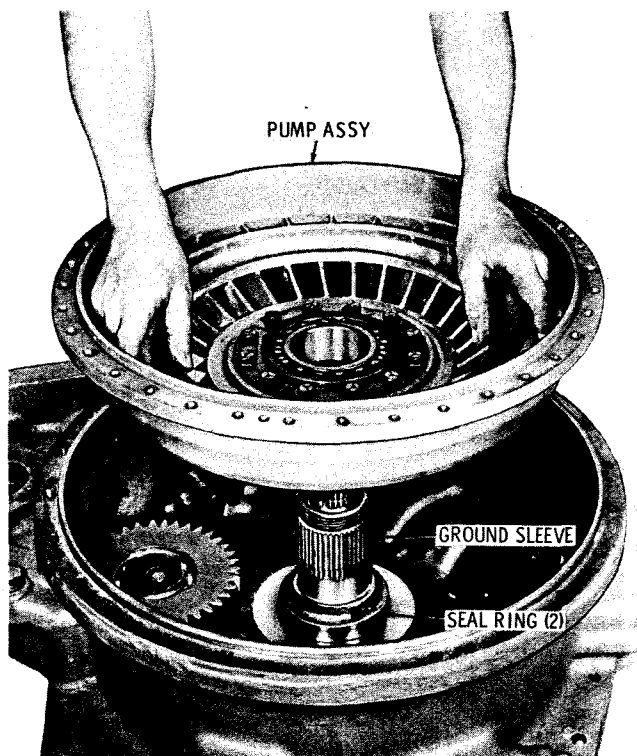


Fig. 7-37. Installing torque converter pump assembly

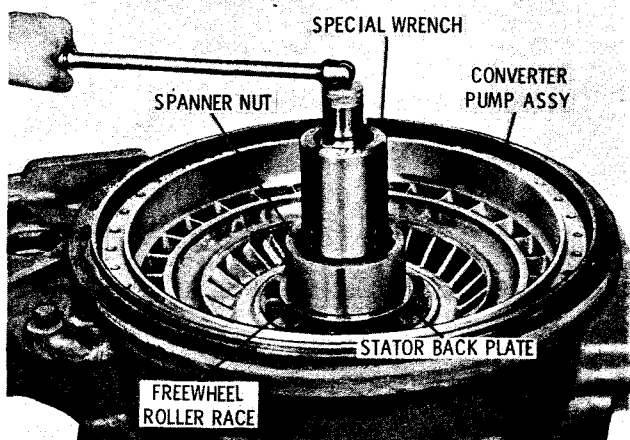


Fig. 7-38. Installing spanner nut to retain torque converter pump

(16) Install the spanner nut, thin outer lip upward (fig. 7-38). Using the special spanner nut wrench (refer to para 4-3a), tighten the nut to 275 to 325 pound feet torque.

(17) Deform the thin outer lip of the spanner nut into one of the recesses in the freewheel roller race (fig. 7-39).

Note: When reusing the nut, avoid staking the same area previously used.

(18) On CRT 5630, and early CRT 5631, model transmissions, install the second-stator assembly, flat side upward (fig. 7-40). Check to make sure that the stator will freewheel clockwise, but lock up when rotated counter-clockwise.

Note: This check is important to insure that the first and second stators are not interchanged.

(19) Install the stator thrust washer (fig. 7-40).

(20) Install the first-stator assembly (fig. 7-40). Check for freewheel rotation as in (18), above.

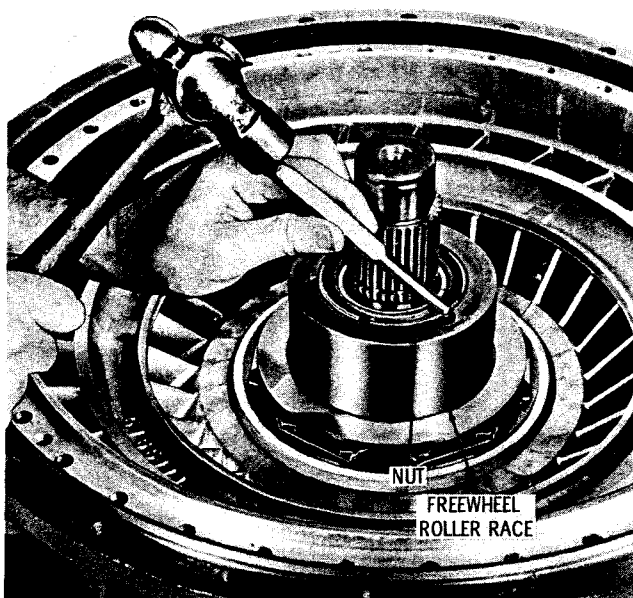


Fig. 7-39. Staking spanner nut

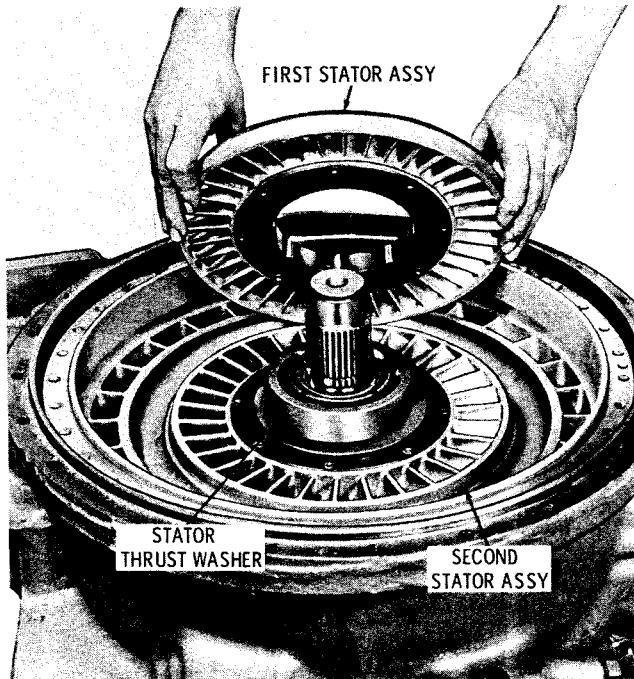


Fig. 7-40. Installing first-stator assembly (5630, early 5631 models)

(21) On current CRT 5631 models, a single stator is used. Install the single stator following the procedures in (16), above. Check the freewheel rotation to assure proper assembly. The stator must freewheel clockwise, and lock up counterclockwise.

(22) Install the snap ring onto the turbine output shaft (fig. 7-41). Install the turbine thrust washer. Install the torque converter turbine, seating it against the snap ring. Remove the lifting bolts, if used.

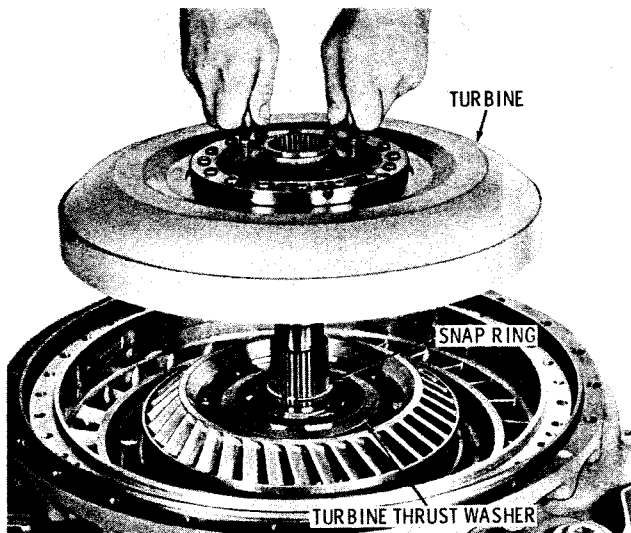


Fig. 7-41. Installing torque converter turbine

(23) Install the turbine roller bearing inner race onto the turbine output shaft (fig. 7-42). Retain the race with a snap ring.

(24) On direct-mount models, install a 3/8-24 headless guide bolt into the flywheel (fig. 7-42). Install the flywheel assembly.

(25) On remote-mount models, install a 3/8-24 headless guide bolt into the converter drive cover (fig. 7-43). Install the cover assembly onto the converter pump.

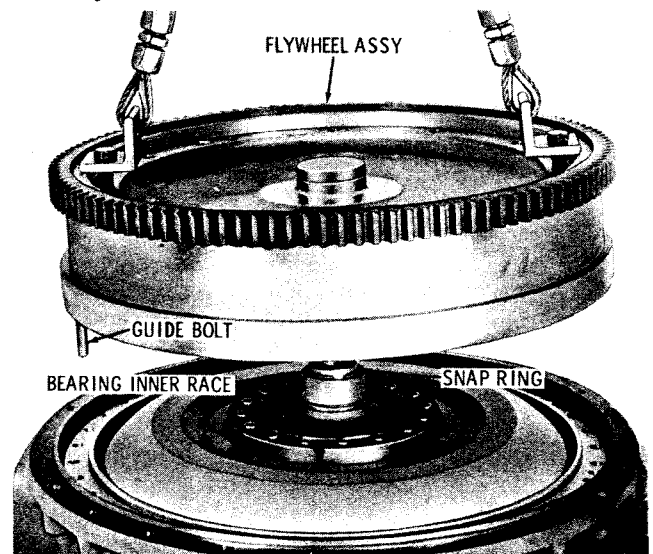


Fig. 7-42. Installing flywheel assembly (direct-mount models)

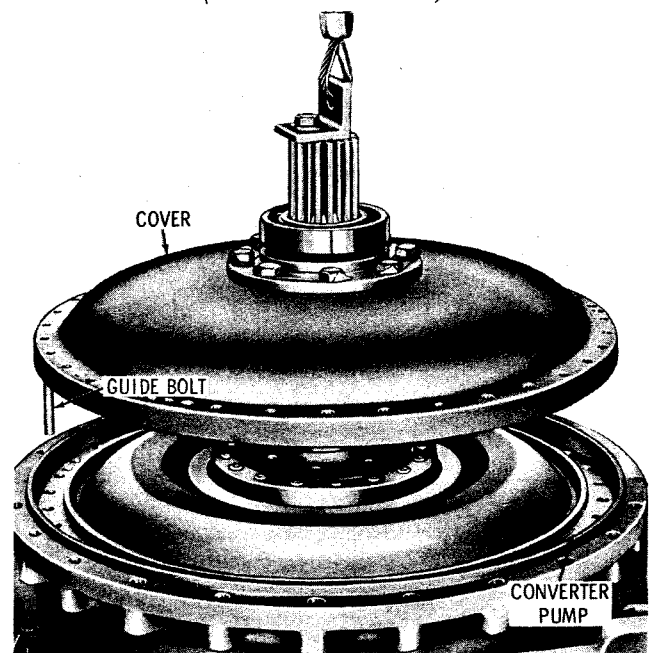


Fig. 7-43. Installing converter drive cover (remote-mount models)

PARA 7-3

(26) Working through the access opening in the converter housing, install thirty-six 3/8-24 x 1 1/4-inch, self-locking bolts, with flat washers to retain the flywheel or drive cover (fig. 7-44). Remove the guide bolt installed in (24) or (25), above. Tighten the bolts evenly to 41 to 49 pound feet torque.

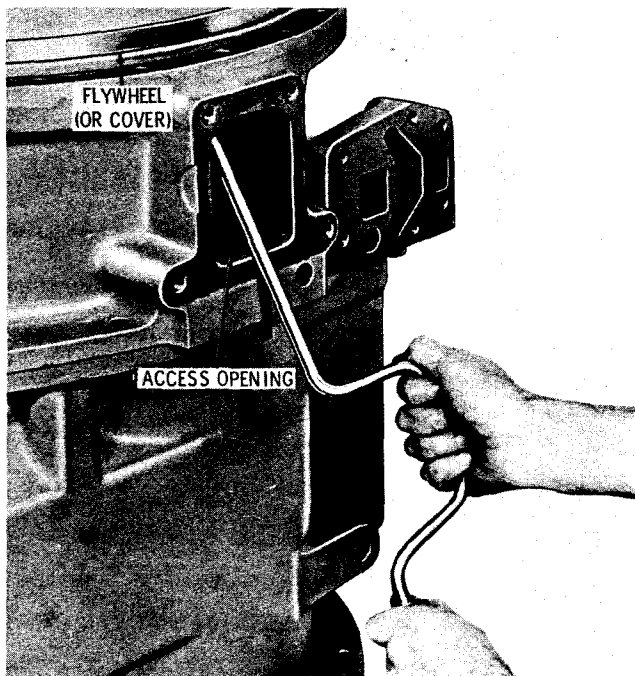


Fig. 7-44. Installing bolts which retain flywheel (or converter drive cover)

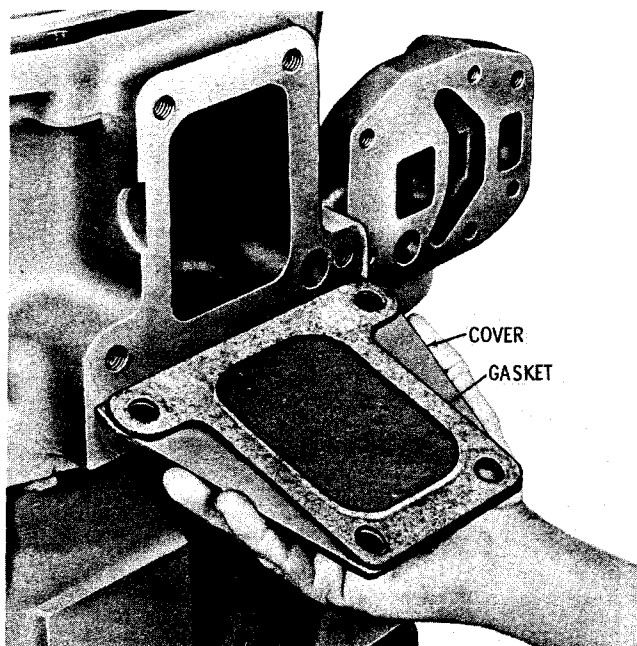


Fig. 7-45. Installing converter housing access cover

(27) Install the converter housing access cover and gasket (fig. 7-45). Retain it with four 1/2-13 x 1 1/4-inch bolts, with lock washers. Tighten the bolts to 67 to 80 pound feet torque.

f. Installing Input Components
(remote mount)

(1) Install the transmission front cover gasket, and cover (fig. 7-46). Aline the cover holes with those in the converter housing.

(2) Install twenty-one 7/16-20 x 3 1/2-inch bolts through the transmission front cover and converter housing flange (fig. 7-47). Retain the bolts with 7/16-20 nuts and lock washers. Tighten the nuts to 25 to 30 pound feet torque.



Fig. 7-46. Installing (or removing) transmission front cover

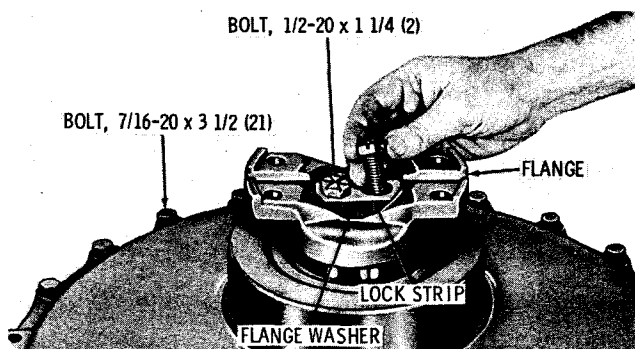


Fig. 7-47. Installing input flange bolts

(3) Install the front input flange (fig. 7-47). If the flange has an interference fit, refer to paragraph 4-8b for installation instructions.

(4) Establish the shim pack thickness to be used at the front of the input shaft, as outlined in paragraph 4-8b.

Note: The installation of this shim pack is recommended for all transmissions even though some did not originally include shims.

(5) Install the shims, flange washer, lock strip, and two 1/2-20 x 1 1/4-inch bolts. Tighten the bolts to 96 to 115 pound feet torque. Bend a corner of the lock strip against each bolt head.

g. Joining Transmission to Transfer Gear Housing

(1) Support the transmission horizontally with a sling and hoist (refer to fig. 7-51). Lubricate the seal ring with oil-soluble grease and install it into the groove in the main shaft (fig. 7-48). Install the Teflon step-joint seal ring into the oil seal. Retain the seal ring with oil-soluble grease.

Note: The Teflon seal ring replaces the metal hook-type seal ring used on earlier models.

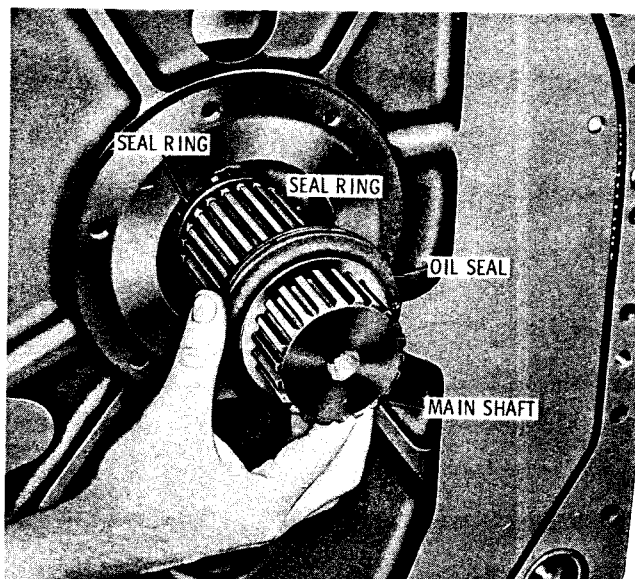


Fig. 7-48. Installing main shaft oil seal components

(2) Install the main shaft oil seal, large diameter first, onto the main shaft (fig. 7-48). Push it up to the seal ring installed on the main shaft.

(3) Install the snap ring into the groove in the main shaft (fig. 7-49).

(4) On transmissions prior to S/N 26374, install the seal ring into the opening at the lower-right rear of the transmission housing (fig. 7-49).

(5) On transmissions prior to S/N 26374, install the cork gasket into the groove at the rear of the transmission housing (fig. 7-50).

Note: Transmissions beginning with S/N 26374 use neither the cork gasket nor seal ring installed in (4), above.

(6) On transmissions beginning with S/N 26374, install gasket 10 (B, foldout 10) onto the transfer gear housing (fig. 7-51). Block the gear housing to prevent its tipping rearward.

(7) Install the transmission onto the transfer gear housing (fig. 7-51). Rotate the main shaft, or brake drum, to engage the main shaft splines in the transfer drive gear.

(8) Install several of the twenty-seven 1/2-13 x 1 1/2-inch bolts, with lock washers, to retain the transmission. Block the transmission securely to support it, and remove the hoist and sling (fig. 7-52).

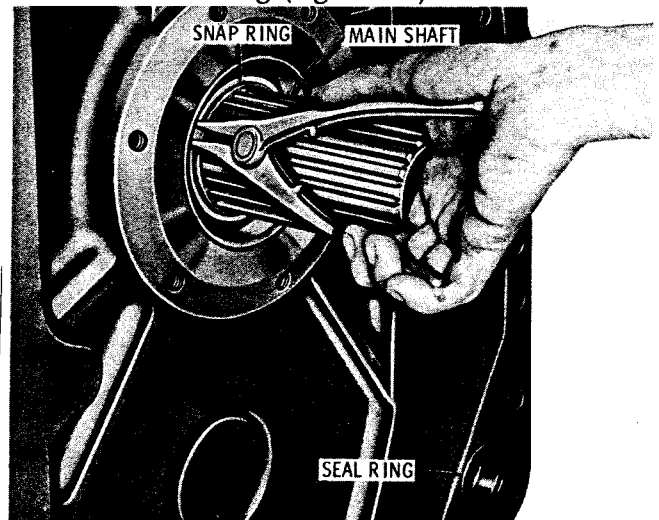


Fig. 7-49. Installing main shaft snap ring

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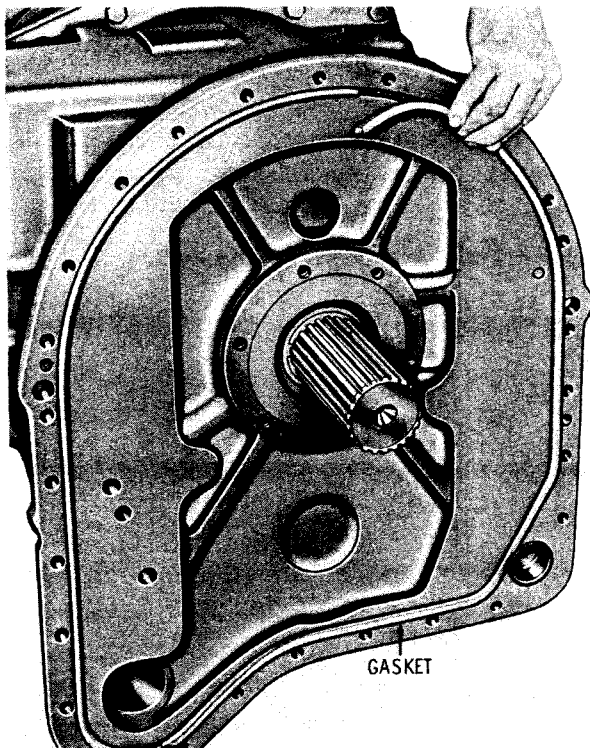


Fig. 7-50. Installing cork gasket at rear of transmission housing

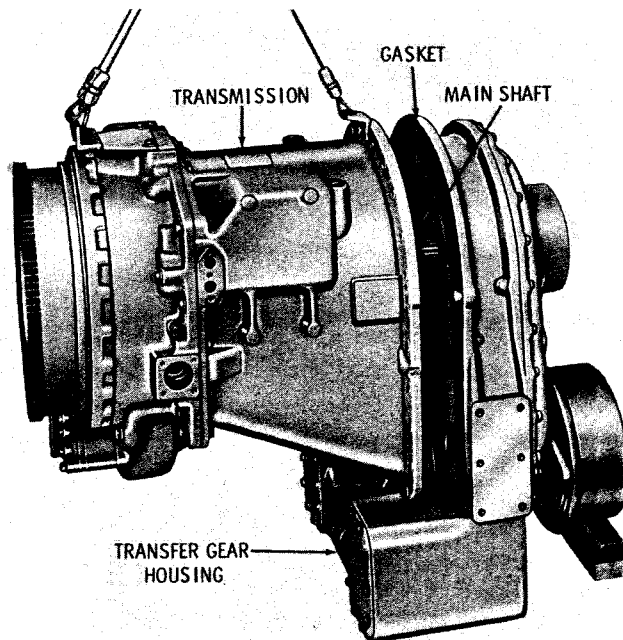


Fig. 7-51. Installing transmission onto transfer gear housing assembly

(9) Install the remaining 1/2-13 x 1 1/2-inch bolts with lock washers. Tighten all of the bolts evenly to 67 to 80 pound feet torque.

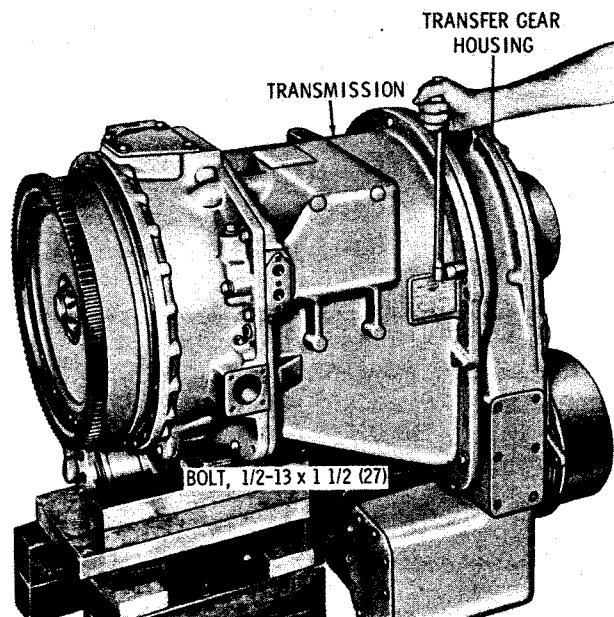


Fig. 7-52. Installing transmission-to-transfer gear housing bolts

h. Installing Exterior Components

(1) Install cone-shaped scavenge pump suction screen 21 (A, foldout 6), smaller, closed end first, into the intake port of the input pressure and scavenge pump assembly (fig. 7-53).

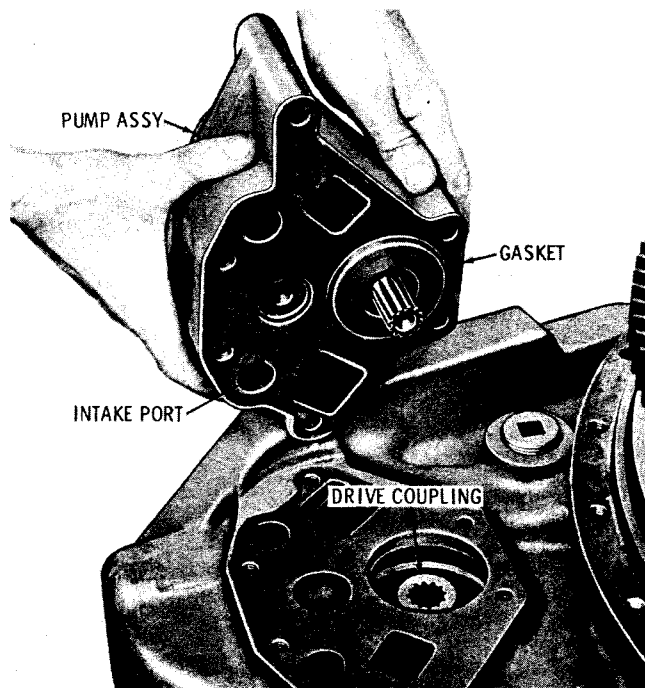


Fig. 7-53. Installing input pressure and scavenge pump assembly

Note: The addition of this screen is recommended for earlier models, which did not originally include it.

(2) Install the gasket onto the input pressure and scavenge pump assembly (fig. 7-53).

(3) Lubricate the internal and external splines of the pump drive coupling with a good quality, antifret grease (such as Molykote G, Lubriplate, or equivalent). Install the coupling (fig. 7-53). Install the pump, with gasket and screen. Retain the pump with six 3/8-16 x 4 1/2-inch bolts. Tighten the bolts to 26 to 32 pound feet torque.

(4) Tighten the two anchor bolts to 26 to 32 pound feet torque (fig. 7-54). Install the oil transfer plate gasket and oil transfer plate. Install 3/8-16 x 1 1/2-inch bolts, with lock washers, into the two lower holes in the transfer plate. Do not tighten the bolts at this time.

(5) Install the gasket and control valve assembly onto the oil transfer plate (fig. 7-55). Retain the valve assembly with seven 3/8-16 x 2-inch, and five 3/8-16 x 3 3/8-inch bolts,

with lock washers. Tighten these 12 bolts, and the two bolts installed in (4), above, evenly to 26 to 32 pound feet torque.

(6) Install the oil filter base gasket, and oil filter base (or oil filter adapter on remote-mounted-filter models) as shown in figure 7-56. Install six 7/16-14 x 4 1/2-inch bolts, with lock washers, to retain the filter base. Install six 7/16-14 x 2 3/4-inch bolts, with lock washers, to retain the oil filter adapter. Tighten the bolts evenly to 42 to 50 pound feet torque.

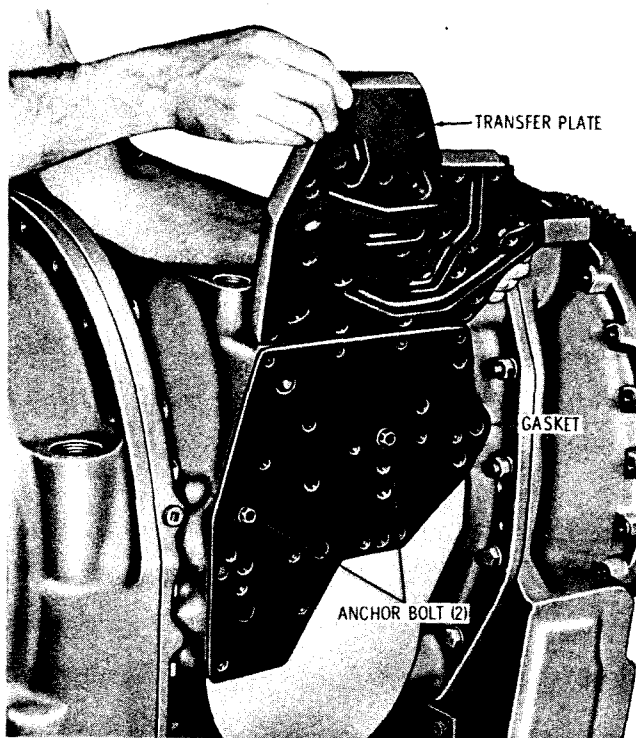


Fig. 7-54. Installing oil transfer plate

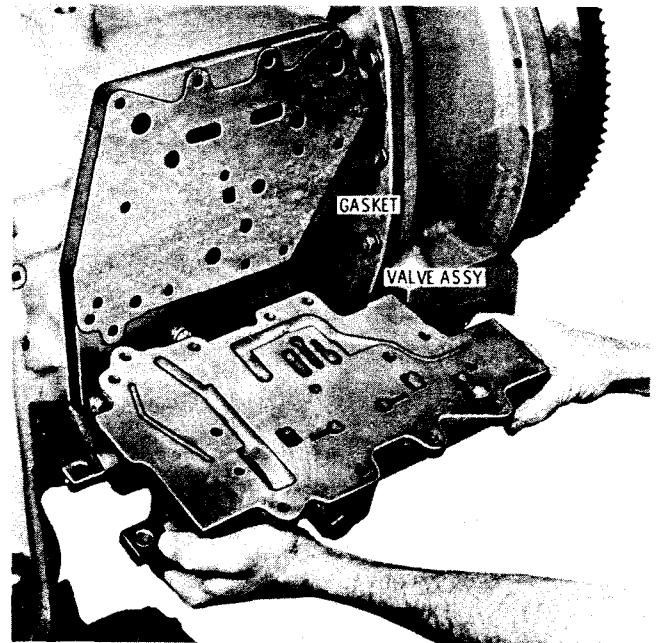


Fig. 7-55. Installing control valve assembly

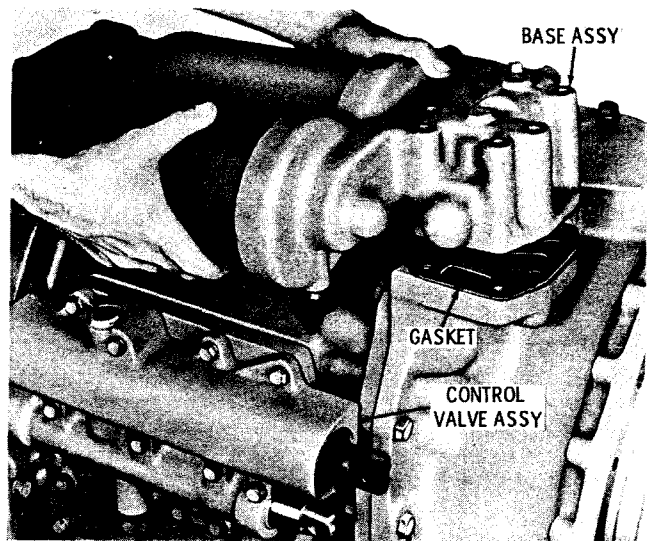


Fig. 7-56. Installing oil filter base assembly

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(7) Assemble the lubrication regulator valve components as illustrated in figure 7-57. Use the same shim pack (thickness) as was removed in disassembly. Position the valve so that its concave side is toward the valve spring. Install the guide pin into the converter housing.

(8) Install the cover gasket and lubrication regulator valve cover (fig. 7-58). Retain the cover with four 3/8-16 x 3/4-inch bolts, with lock washers. Tighten the bolts evenly to 26 to 32 pound feet torque.

(9) Install the manifold gasket and oil cooler manifold (figure 7-59). The threaded ports in the manifold face forward in normal applications. To retain the manifold, install three 7/16-14 x 3 1/4-inch bolts, with lock washers. Tighten the bolts evenly to 42 to 50 pound feet torque.

(10) If the transmission is equipped with a power takeoff at the rear, install shaft 8 (foldout 14), bearing 9, coupling 10 and gasket 11. Install the power takeoff disconnect assembly as rebuilt in paragraph 6-6. Retain the assembly with six 1/2-13 x 1 1/2-inch bolts. Tighten the bolts to 67 to 80 pound feet torque.

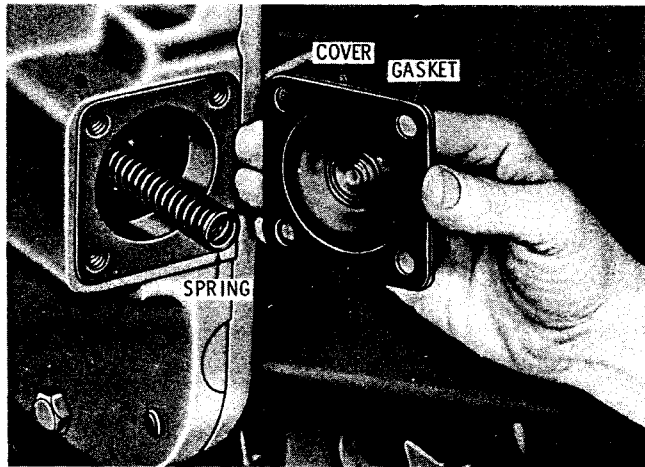


Fig. 7-58. Installing lubrication regulator valve cover

(11) If the transmission is equipped with a governor drive at the rear, install shaft assembly 37 (foldout 14), gasket 45 (or 50), and the governor drive as rebuilt in paragraph 6-5. Retain the assembly with four 5/16-18 x 1-inch bolts, with lock washers. Tighten the bolts to 15 to 18 pound feet torque.

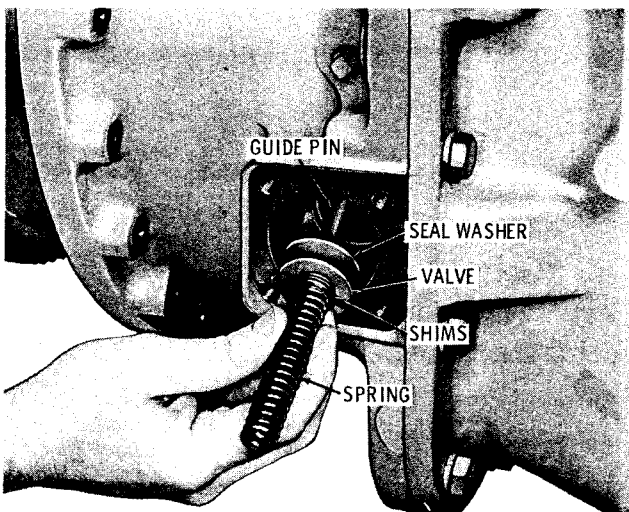


Fig. 7-57. Installing lubrication regulator valve components

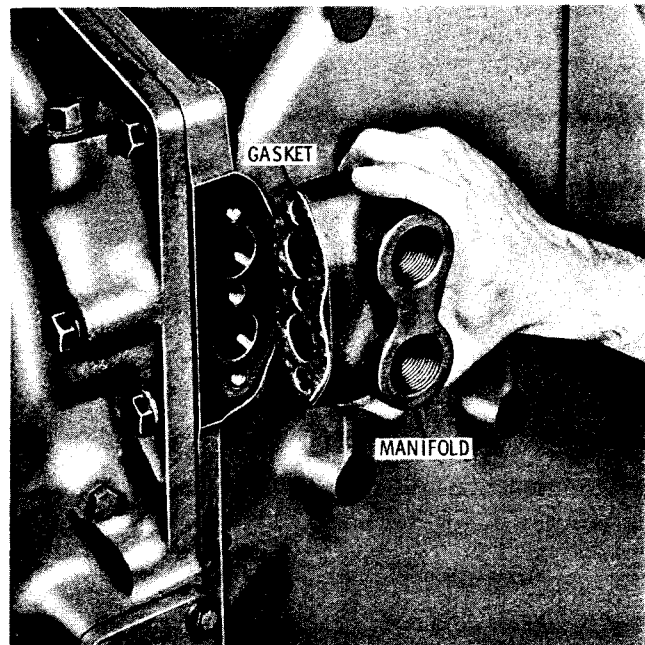


Fig. 7-59. Installing oil cooler manifold

Section 8. WEAR LIMITS AND SPRING DATA

8-1. KEYED TO EXPLODED VIEWS

The wear limits and spring data, below, are keyed to the exploded views (foldouts 4 through 14) in the back of this manual.

8-2. WEAR LIMITS DATA

a. Maximum Variations. The following wear limits information shows the maximum variations at which components are expected to function satisfactorily. The tolerances do not include a life factor for further periods of operation without replacing or reworking work parts.

b. See Cleaning, Inspection. Parts must be clean to permit effective inspection for wear or damage. Refer to paragraph 4-6.

c. Bearings, Bearing Journals, Bores. The application of bearings to any product is based on the recommendations of the bearing manufacturer and, therefore, no diametral dimensional deviation should be permitted in the bearing or mated parts. Bearings should be carefully checked for signs of distress before reinstalling in the transmission.

d. Gears. Gears should be inspected for load pattern and signs of distress. Any distress indicates a possible future failure and the re-using of such gears should be the decision of the individual customer, based on previous experience. Backlash cannot be used to establish critical wear of a gear since backlash tolerances are of such nature that a gear usually pits, scuffs, scores or galls long before the gear wears sufficiently that such wear can be determined by backlash measurement.

e. Splines. Unless severe, spline wear is not considered detrimental except where it affects tightness of an assembly such as

driveline flanges. Here, again, backlash cannot be used to establish critical wear since both mating parts must be concentrically located to obtain accurate measurement of backlash.

f. Oil Seals. Seals should be replaced if there are signs of hardening, cracking, scoring or other deterioration.

g. Springs. Springs should be replaced if there are signs of overheating, permanent set (see spring chart, end of this section, for load versus height dimensions), or wear due to rubbing adjacent parts.

h. Piston-type Seal Rings. Sides of the seal ring should be smooth; maximum wear 0.005 inch. The sides of the groove into which they fit should be smooth (50 micro-inch equivalent), and square with the axis of rotation within 0.002 inch. A new seal ring should be installed if grooves are reworked, or seal ring outside diameter wear causes the possibility of a closed gap between seal ring hooks when the ring is installed.

i. Converter Element Clearances (4-element)

(1) Dimensions which must be checked to assure proper running clearances between torque converter elements are indicated in figure 8-1. They are as follows:

B - A = 0.025 min
D - C = 0.025 min
E (between rivet heads) = 0.005 min
F (between first and second
stator outer shrouds) = 0.005 min

(2) Wear limits of torque converter parts are listed in the wear limits chart (para 8-3, below).

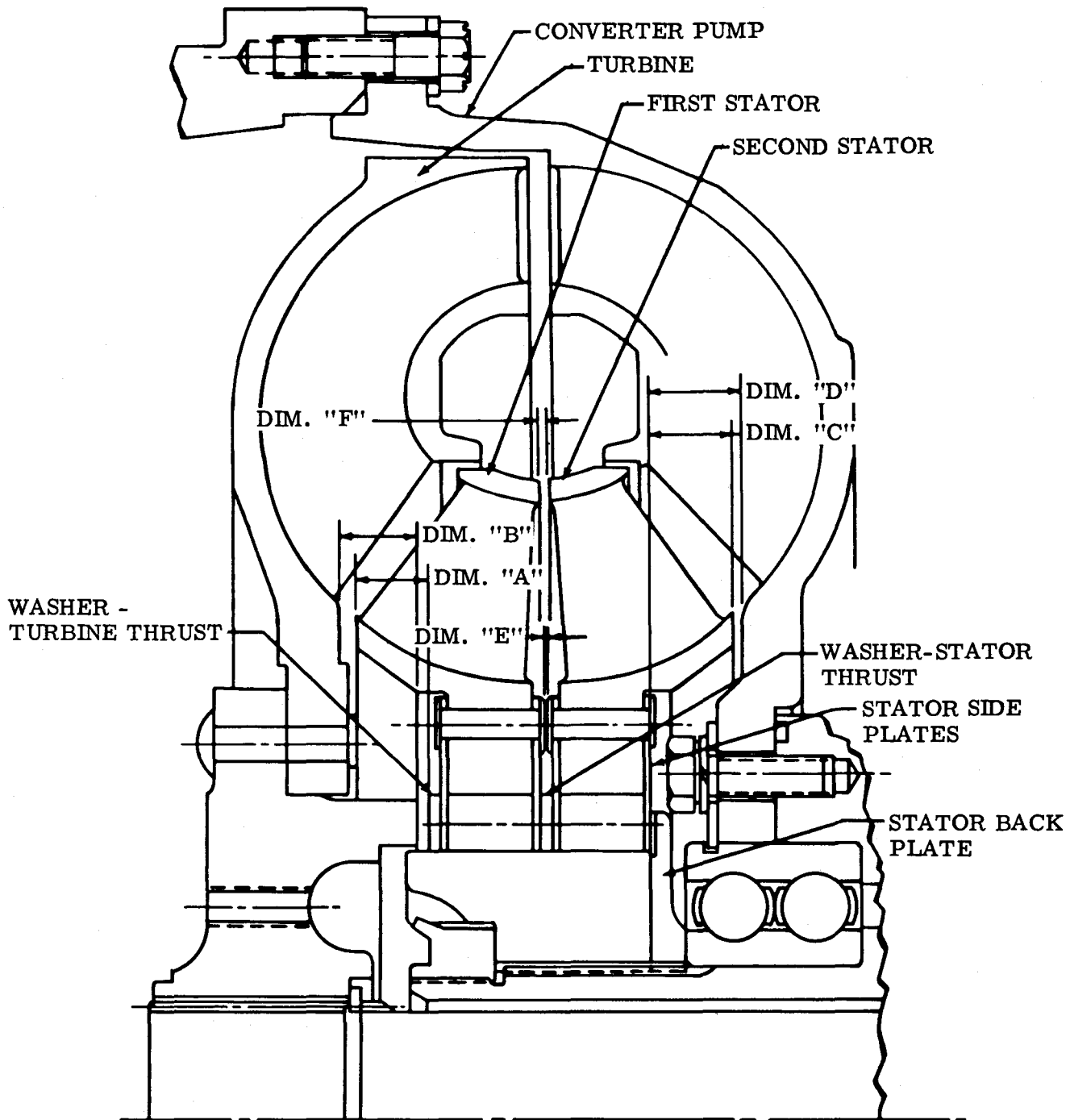


Fig. 8-1. Four-element torque converter clearances

j. Converter Element Clearances
(3-element)

(1) The dimensions which must be checked to assure proper running clearances between torque converter elements are indi-

cated in figure 8-2. They are as follows:

$$A - B = 0.040 \text{ min}$$

(2) Wear limits of torque converter parts are listed in the wear limits chart (para 8-3, below).

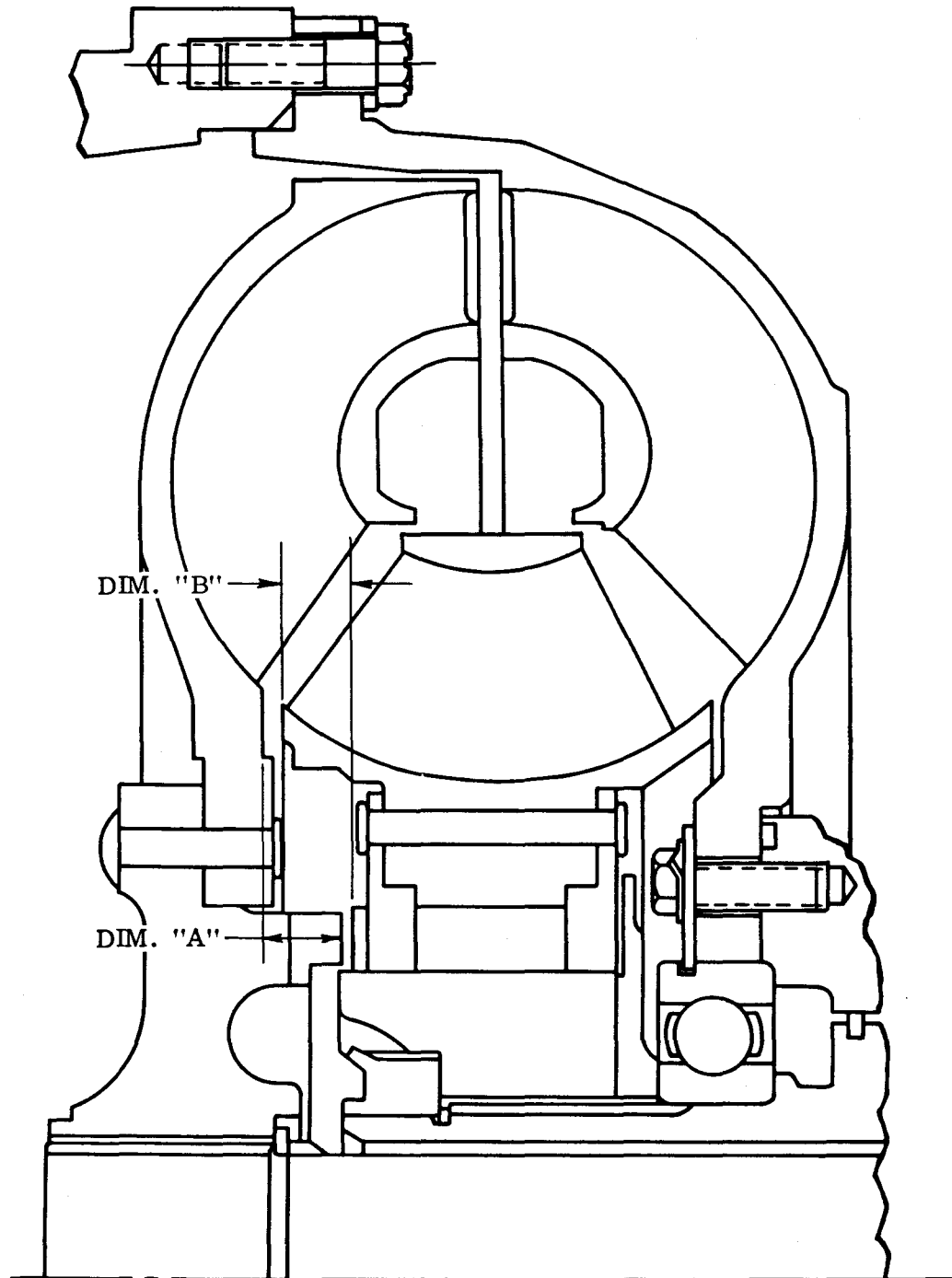


Fig. 8-2. Three-element torque converter clearances

8-3. WEAR LIMITS CHART

The wear limits chart, below, lists the wear limits data and is referenced to the exploded views (foldouts 4 through 14) in the back of the manual.

8-4. SPRING CHART

The chart at the end of this section gives spring specifications and aids in the proper identification of springs. Springs must not be interchanged. Springs which do not meet the load-length specifications should be replaced with new springs.

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WEAR LIMITS CHART

<u>Illustration</u>	<u>Description</u>	<u>Part Number</u>	<u>Dimension</u>	<u>Wear Limit</u>	<u>Cone</u>
A, foldout 5	TORQUE CONVERTER (4-element)				
4, 9	Turbine and stator thrust washer—thickness (wear must be even across the face; no metallic pickup)	6758485	0.1270 to 0.1315	0.117	
5	First stator—thickness of side plate	6768832 6769272	0.058 to 0.062	0.048	
5	First stator—inside diameter of stator cam	6768832 6769272	4.760 to 4.764	4.768	
10	Second stator—thickness of side plate	6768833 6769288	0.058 to 0.062	0.048	
10	Second stator—inside diameter of stator cam	6768833 6769288	4.760 to 4.764	4.768	
14	Freewheel roller race—outside diameter	6756319	4.749 to 4.750	4.749	
15	Stator back plate—thickness at thrust area	6759855	0.298 to 0.302	0.288	
	(refer to fig. 8-1 for assembly clearance limits)				
B, foldout 5	TORQUE CONVERTER (3-element)				
6	Torque converter stator—inside diameter of stator cam	6777223 6778393	4.767 to 4.770	4.773	
	(refer to fig. 8-2 for assembly clearance limits)				
A, foldout 6	REMOTE OIL FILTER ADAPTER				
44, 47	Main-pressure regulator valve—clearance in oil filter adapter body	6770549 6769371	1.1694 to 1.1699 1.1709 to 1.1719	0.004	
B, foldout 6	DIRECT-MOUNT OIL FILTER BASE				
9, 14	Main-pressure regulator valve—clearance in oil filter base	6757591 6771289	1.1609 to 1.1619 1.1594 to 1.1599	0.004	

WEAR LIMITS, SPRING DATA

PARA 8-3

WEAR LIMITS CHART (cont)

<u>Illustration</u>	<u>Description</u>	<u>Part Number</u>	<u>Dimension</u>	<u>Wear Limit</u>	<u>Cone</u>
A, foldout 7	FORWARD CLUTCH, PLANETARY (CRT 5630)				
11, 18	Pinion thrust washer— thickness	6756873 6768499	0.0615 min	0.055	
16, 19	Pinion—end play in forward planetary carrier	6771315 6758587		0.055	
21, 25	External-splined plate— thickness	6769326	0.194 to 0.198	0.184	0.023
*22, 24	Internal-splined plate— thickness	6770647	0.200 to 0.210	0.180	0.018
	Minimum clutch plate pack thickness (total of 8 plates measured individually)			1.523	
B, foldout 7	FORWARD CLUTCH, PLANETARY (CRT 5631)				
11, 18	Pinion thrust washer— thickness	6768499	0.0615 min	0.055	
16, 19	Pinion—end play in forward planetary carrier	6771315 6769357		0.055	
23, 26	External-splined plate— thickness	6769326	0.194 to 0.198	0.184	0.023
*24, 27, 29	Internal-splined plate— thickness	6770647	0.200 to 0.210	0.180	0.018
	Minimum clutch plate pack thickness (total of 8 plates measured individually)			1.520	
A, foldout 8	REVERSE CLUTCH, PLANETARY (CRT 5630)				
1	Forward-and-reverse clutch back plate—face wear (each side)	6768456		0.010	
4, 8	Pinion thrust washer— thickness	6756873	0.0615 min	0.055	
7, 11	Pinion—end play in reverse planetary carrier	6771315 6758229		0.055	
*12, 15	Internal-splined plate— thickness	6770647	0.200 to 0.210	0.180	0.018
13, 16	External-splined plate— thickness	6769326	0.194 to 0.198	0.184	0.023
	Minimum clutch plate pack thickness (total of 10 plates measured individually)			1.900	

*Groove depth on internal-splined plates should not be less than 0.005.

5630, 5631 TRANSMISSIONS

PARA 8-3

WEAR LIMITS CHART (cont)

<u>Illustration</u>	<u>Description</u>	<u>Part Number</u>	<u>Dimension</u>	<u>Wear Limit</u>	<u>Cone</u>
B, foldout 8	REVERSE CLUTCH, PLANETARY (CRT 5631)				
1	Forward-and-reverse clutch back plate—face wear (each side)	6769322		0.010	
4, 8	Pinion thrust washer—thickness	6756873	0.0615 min	0.055	
7, 11	Pinion—end play in reverse planetary carrier	6771315 6758229		0.055	
*12, 15, 17	Internal-splined plate—thickness	6770647	0.200 to 0.210	0.180	0.018
14, 18	External-splined plate—thickness	6769326	0.194 to 0.198	0.184	0.023
	Minimum clutch plate pack thickness (total of 10 plates measured individually)			1.900	
A, foldout 9	HIGH-RANGE CLUTCH, PLANETARY				
12, 15	Pinion—end play in high-range planetary carrier	6768462 6772881		0.055	
13, 19	Pinion thrust washer—thickness	6768759	0.0615 min	0.055	
21	Thrust washer—thickness	6768469	0.201 to 0.211	0.196	
25	External-splined plate—thickness	6769326	0.194 to 0.198	0.184	0.023
*26	Internal-splined plate—thickness	6770647	0.200 to 0.210	0.180	0.018
27	High-and-intermediate-range clutch back plate—face wear (each side)	6768456		0.010	
	Minimum clutch plate pack thickness (total of 8 plates measured individually)		(CRT 5630) (CRT 5631)	1.448 1.520	

*Groove depth on internal-splined plates should not be less than 0.005.

WEAR LIMITS, SPRING DATA

PARA 8-3

WEAR LIMITS CHART (cont)

<u>Illustration</u>	<u>Description</u>	<u>Part Number</u>	<u>Dimension</u>	<u>Wear Limit</u>	<u>Cone</u>
B, foldout 9	INTERMEDIATE-RANGE CLUTCH, PLANETARY				
*1	Internal-splined plate— thickness	6770647	0.200 to 0.210	0.180	0.018
2	External-splined plate— thickness	6769326	0.194 to 0.198	0.184	0.023
9, 11	Pinion—end play in inter- mediate-range planetary carrier	6768464 6771316		0.055	
10, 15	Pinion thrust washer— thickness	6756873 6768499	0.0615 min	0.055	
18	Thrust washer—thickness	6768461	0.244 to 0.256	0.239	
	Minimum clutch plate pack thickness		(CRT 5630)	1.122	
	(total of 6 plates measured individually)		(CRT 5631)	1.140	
A, foldout 10	LOW-RANGE CLUTCH				
1	Low-range clutch drum— face wear at clutch surface	6777814		0.010	
*2	Internal-splined plate— thickness	6770647	0.200 to 0.210	0.180	0.018
3	External-splined plate— thickness	6769326	0.194 to 0.198	0.184	0.023
6	Low-range clutch piston— face wear at clutch surface	6769235		0.010	
16	Thrust washer—thickness	6756027	0.090 to 0.095	0.085	
	Minimum clutch plate pack thickness		(CRT 5630)	0.918	
	(total of 5 plates measured individually)		(CRT 5631)	0.950	

*Groove depth on internal-splined plates should not be less than 0.005.

5630, 5631 TRANSMISSIONS

PARA 8-3

WEAR LIMITS CHART (cont)

<u>Illustration</u>	<u>Description</u>	<u>Part Number</u>	<u>Dimension</u>	<u>Wear Limit</u>	<u>Cone</u>
A, foldout 11 CONTROL VALVE COMPONENTS					
14, 17	Selector valve—clearance in valve body	6756067	0.9985 to 0.9990	0.004	
		6758616	0.9995 to 1.0005		
		6773317	0.9995 to 1.0005		
17, 29	Direction valve piston— clearance in valve body	6758616	1.9995 to 2.0005	0.004	
		6773317	1.9995 to 2.0005		
		6754887	1.9935 to 1.9945		
17, 37	Clutch cutoff valve— clearance in valve body	6773317	0.7495 to 0.7505	0.004	
		6772078	0.7480 to 0.7485		
24, 27, 31	Direction valve—clearance in sleeves	6758615	1.2495 to 1.2505	0.004	
		6758323	1.2480 to 1.2485		
		6758615	1.2495 to 1.2505		
B, foldout 11 CONTROL VALVE COMPONENTS					
17, 22, 24	Direction valve—clearance in sleeves	6758615	1.2495 to 1.2505	0.004	
		6758323	1.2480 to 1.2485		
		6758615	1.2495 to 1.2505		
19, 40	Direction valve piston— clearance in valve body	6754887	1.9935 to 1.9945	0.004	
		6758616	1.9995 to 2.0005		
		6773317	1.9935 to 1.9945		
29, 40	Selector valve—clearance in valve body	6757853	0.9985 to 0.9990	0.004	
		6758616	0.9995 to 1.0005		
		6773317	0.9995 to 1.0005		
40, 41	Clutch cutoff valve— clearance in valve body	6773317	0.7495 to 0.7505	0.004	
		6772078	0.7480 to 0.7485		

*Groove depth on internal-splined plates should not be less than 0.005.

SPRING CHART

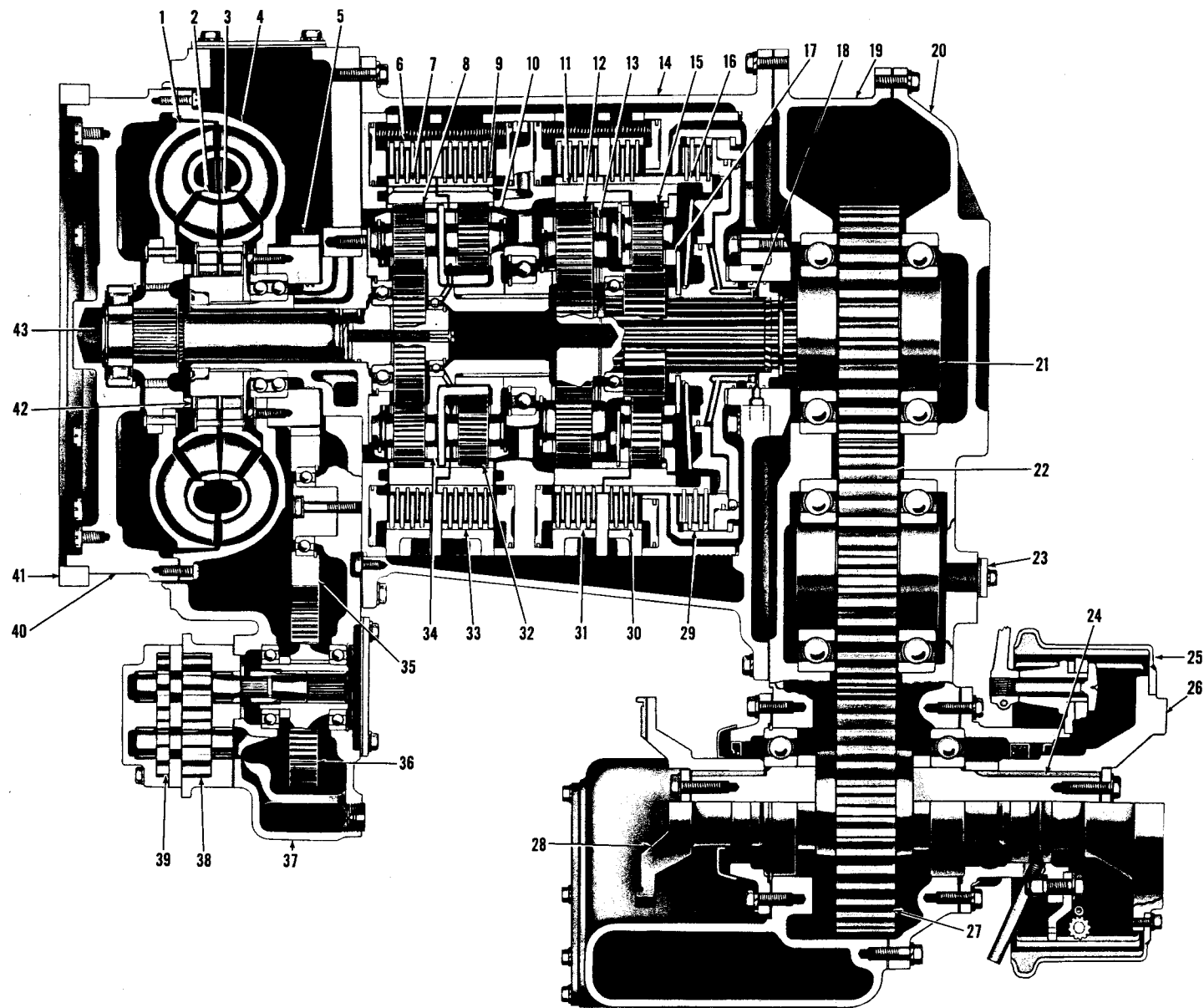
Model CRT 5630, 5631 Transmissions

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WEAR LIMITS, SPRING DATA

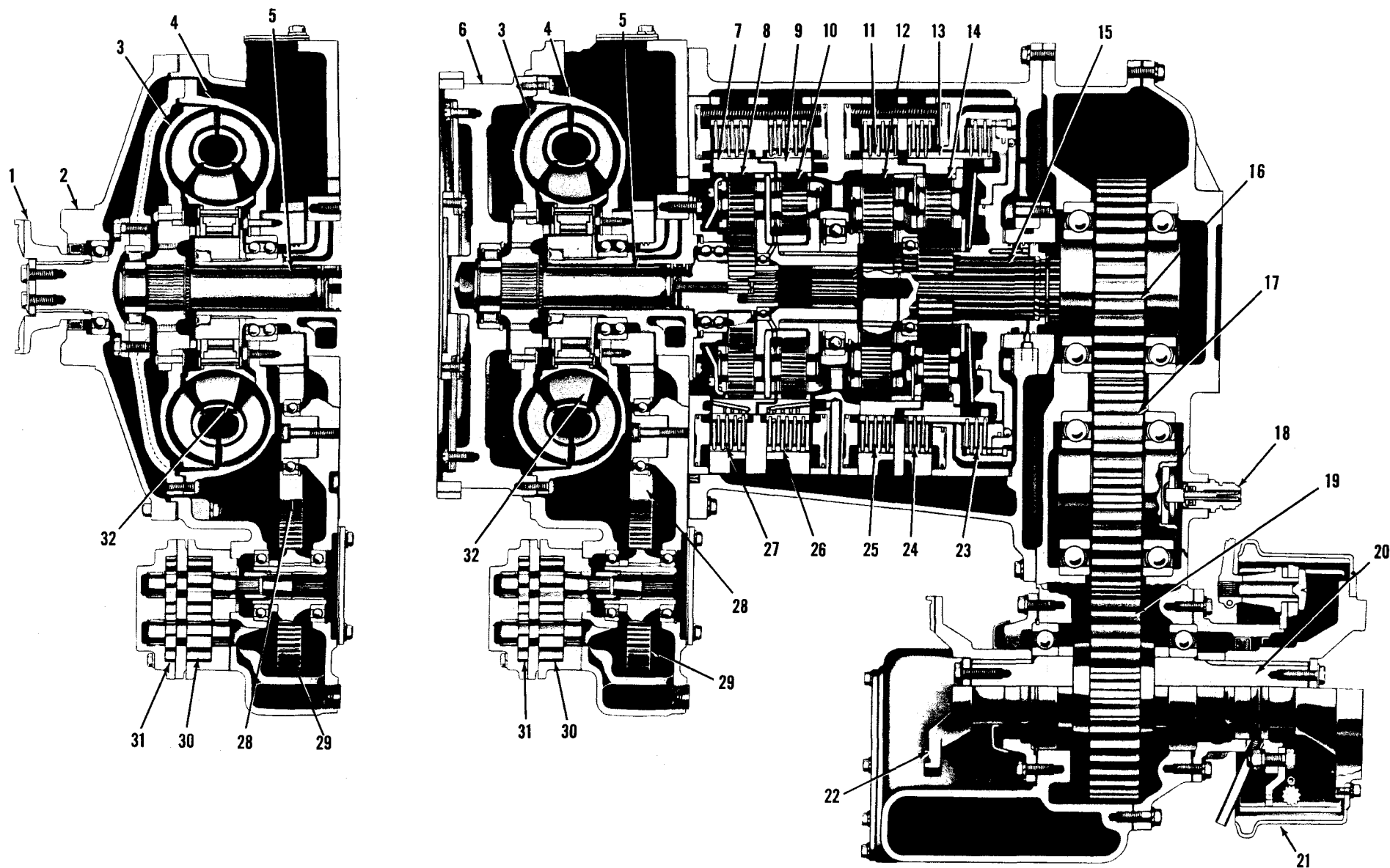
PARA 8-4

- 1 - Torque converter turbine
- 2 - Torque converter first stator
- 3 - Torque converter second stator
- 4 - Torque converter pump
- 5 - Accessory drive gear
- 6 - Forward clutch
- 7 - Forward planetary ring gear
- 8 - Forward planetary pinion
- 9 - Reverse planetary ring gear
- 10 - Reverse planetary carrier
- 11 - High-range planetary ring gear
- 12 - High-range planetary pinion
- 13 - High-range planetary carrier
- 14 - Transmission housing
- 15 - Intermediate-range planetary pinion
- 16 - Intermediate-range planetary ring gear
- 17 - Intermediate-range planetary carrier
- 18 - Main shaft
- 19 - Transfer gear housing
- 20 - Transfer gear housing cover
- 21 - Transfer drive gear
- 22 - Transfer idler gear
- 23 - Speedometer drive
- 24 - Output drive shaft
- 25 - Parking brake
- 26 - Rear output flange
- 27 - Transfer driven gear
- 28 - Front output flange
- 29 - Low-range clutch
- 30 - Intermediate-range clutch
- 31 - High-range clutch
- 32 - Reverse planetary pinion
- 33 - Reverse clutch
- 34 - Forward planetary carrier
- 35 - Accessory idler gear
- 36 - Input pump drive gear
- 37 - Torque converter housing
- 38 - Input pressure pump
- 39 - Scavenge pump
- 40 - Flywheel
- 41 - Starter ring gear
- 42 - Freewheel clutch
- 43 - Converter output shaft

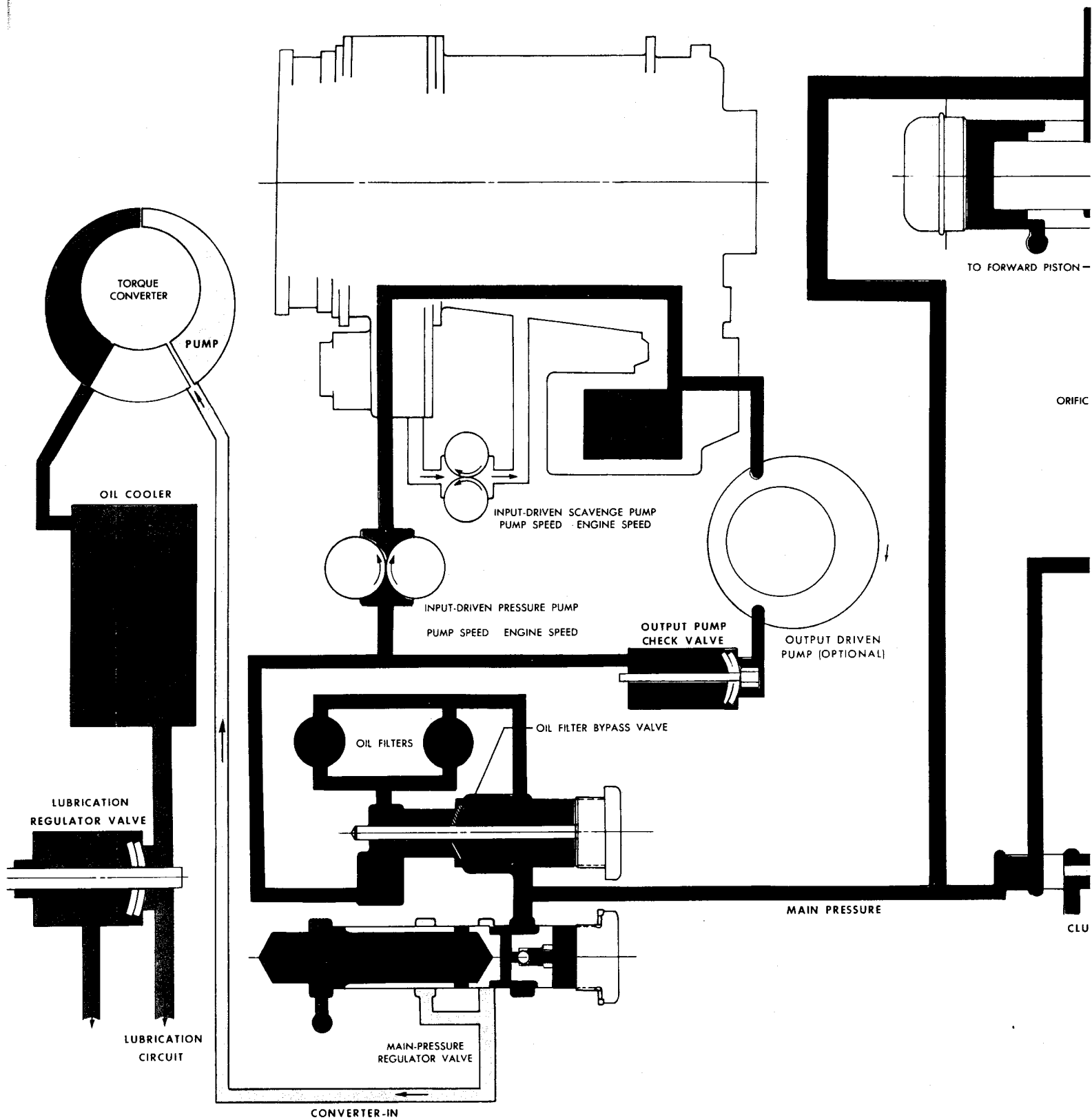


Foldout 1. CRT 5630 transmission—cross-section view

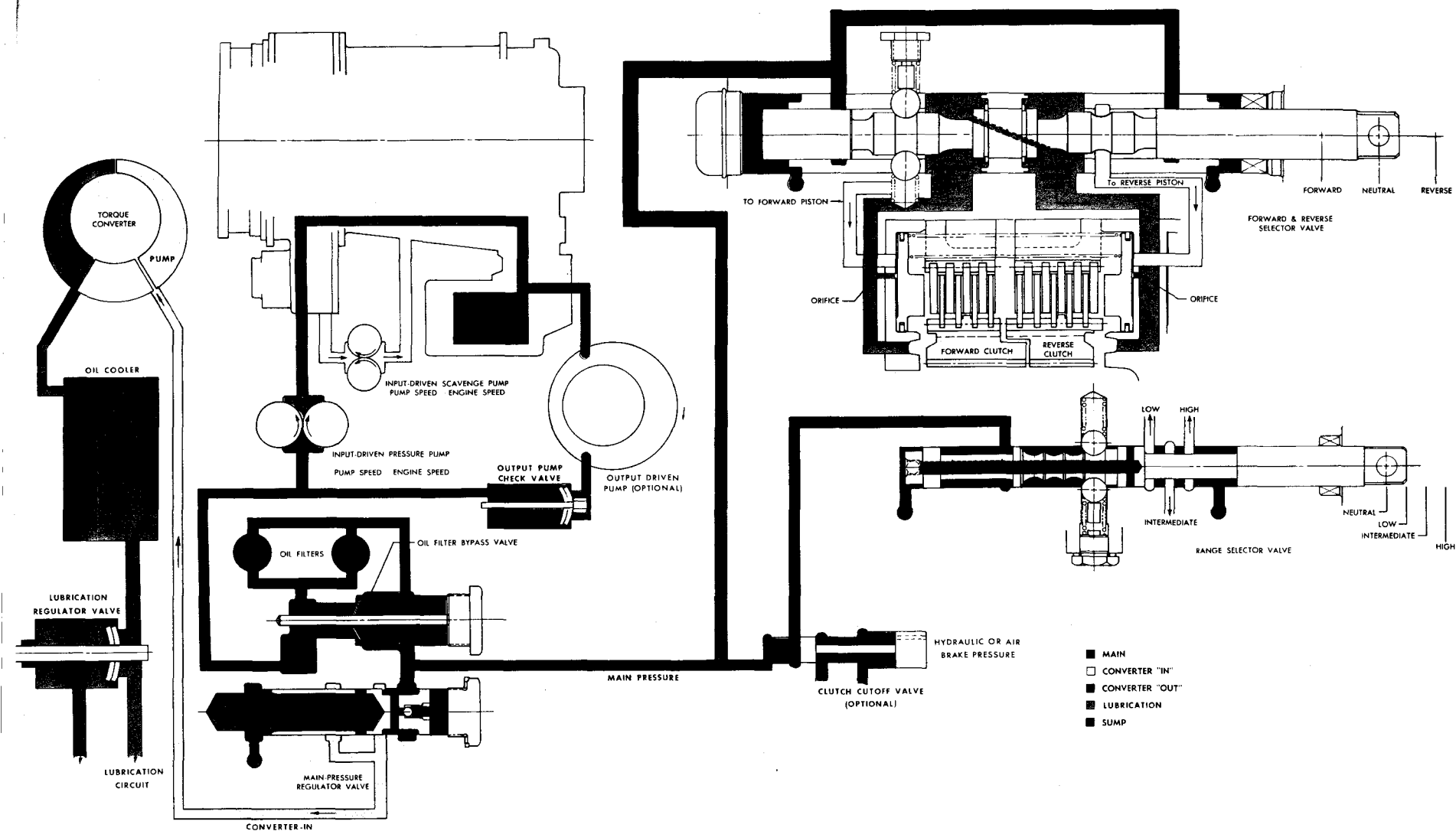
- 1 - Input flange
- 2 - Transmission front cover
- 3 - Torque converter turbine
- 4 - Torque converter pump
- 5 - Converter output shaft
- 6 - Flywheel
- 7 - Forward planetary ring gear
- 8 - Forward planetary pinion
- 9 - Reverse planetary ring gear
- 10 - Reverse planetary pinion
- 11 - High-range planetary ring gear
- 12 - High-range planetary pinion
- 13 - Intermediate-range planetary ring gear
- 14 - Intermediate-range planetary pinion
- 15 - Main shaft
- 16 - Transfer drive gear
- 17 - Transfer idler gear
- 18 - Speedometer drive
- 19 - Transfer driven gear
- 20 - Output drive shaft
- 21 - Parking brake
- 22 - Front output flange
- 23 - Low-range clutch
- 24 - Intermediate-range clutch
- 25 - High-range clutch
- 26 - Reverse clutch
- 27 - Forward clutch
- 28 - Accessory idler gear
- 29 - Input pump drive gear
- 30 - Input pressure pump
- 31 - Scavenge pump
- 32 - Torque converter stator



Foldout 2. CRT 5631 transmission—cross-section view



FOLDOUT 3



Foldout 3. CRT 5630, 5631 hydraulic system—composite schematic view

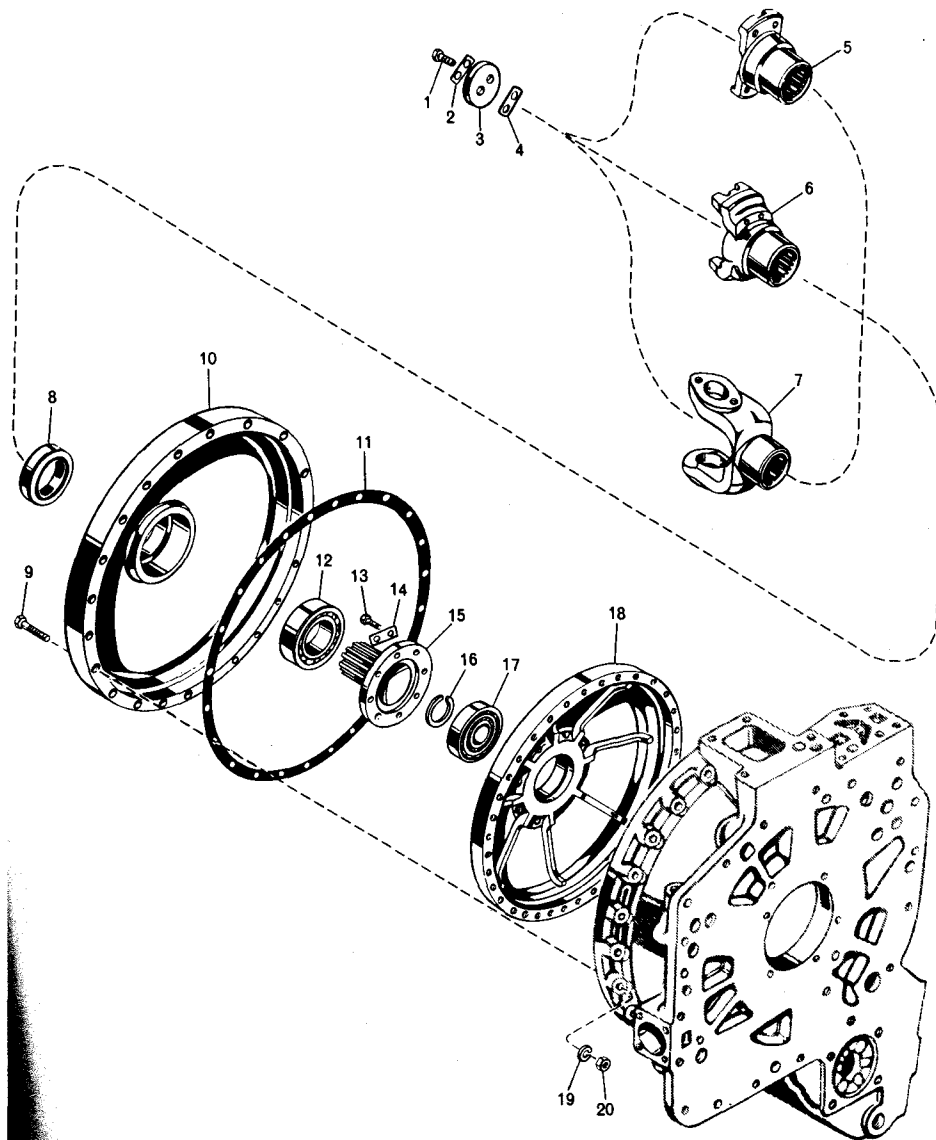
A

- 1 - Bolt, 1/2-20 x 1 1/4 (2)
- 2 - Lock strip
- 3 - Flange retaining washer
- 4 - Shim, 0.005 or 0.025 thk (AR)
- 5 - Input flange
- 6 - Input flange
- 7 - Input flange
- 8 - Oil seal
- 9 - Bolt, 7/16-20 x 3 1/2 (21)
- 10 - Transmission front cover
- 11 - Converter housing gasket
- 12 - Single-row ball bearing
- 13 - Bolt, 1/2-20 x 1 1/4 (8)
- 14 - Lock strip (4)
- 15 - Converter drive housing hub
- 16 - External snap ring
- 17 - Roller bearing assembly
- 18 - Converter drive housing
- 19 - Lock washer, 7/16 (21)
- 20 - Nut, 7/16-20 (21)

B

- 1 - Bolt, 1/2-20 x 1 (12)
- 2 - Flex disk assembly
- 3 - Hub assembly
- 4 - Hub
- 5 - Dowel pin
- 6 - Flex disk and washer assembly
- 7 - Flex disk washer (6)
- 8 - Flex disk
- 9 - Flex disk (4)
- 10 - Flex disk plate
- 11 - Bolt, 1/2-20 x 3/4 (12)
- 12 - Flywheel assembly
- 13 - Flywheel ring gear
- 14 - Flywheel
- 15 - Roller bearing assembly
- 16 - Internal snap ring
- 17 - External snap ring
- 18 - Converter housing gasket

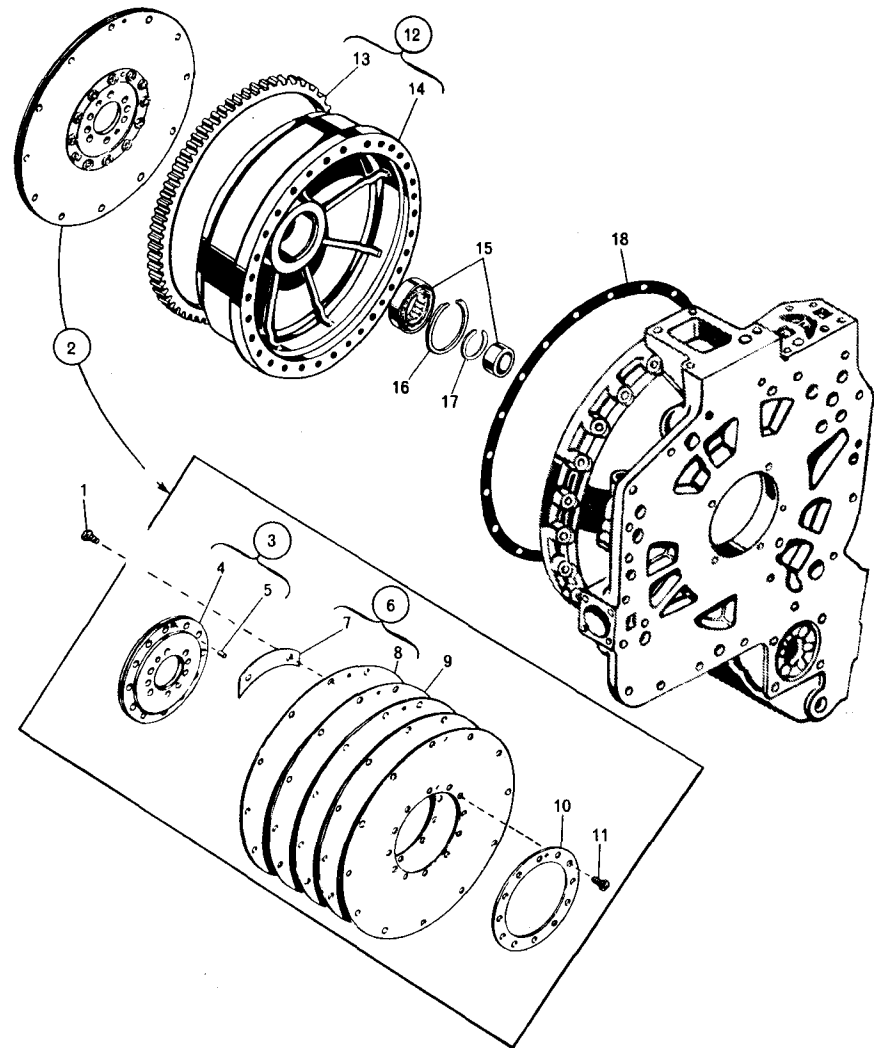
A



4837A

A, foldout 4. Transmission input components (remote mount)—exploded view

B



4838

B, foldout 4. Transmission input components (direct mount)—exploded view

A

- 1 - Torque converter turbine
- 2 - External snap ring
- 3 - Lock nut
- 4 - Turbine thrust washer
- 5 - Torque converter first stator assembly
- 6 - Freewheel roller (5630 model -8);
(5631 model -12)
- 7 - Pin (5630 model -8)
- 8 - Spring (5630 model -8)
- 9 - Stator thrust washer
- 10 - Torque converter second stator assembly
- 11 - Freewheel roller (5630 model -8);
(5631 model -12)
- 12 - Pin (5630 model -8)
- 13 - Spring (5630 model -8)
- 14 - Freewheel roller race
- 15 - Stator back plate
- 16 - Bolt, 3/8-24 x 1 1/8 (12)
- 17 - Lock strip (6)
- 18 - Converter pump retainer (2)
- 19 - Torque converter pump
- 20 - Flat washer, 3/8 (36)
- 21 - Bolt, 3/8-24 x 1 1/4 (36)
- 22 - Double-row ball bearing
- 23 - Accessory drive gear
- 24 - Spring cup (5631 model -12)
- 25 - Needle roller (5631 model -12)
- 26 - Spring (5631 model -12)
- 27 - Spring cup (5631 model -12)
- 28 - Spring cup (5631 model -12)
- 29 - Needle roller (5631 model -12)
- 30 - Spring (5631 model -12)
- 31 - Spring cup (5631 model -12)

B

- 1 - Torque converter turbine
- 2 - External snap ring
- 3 - Lock nut
- 4 - Turbine thrust washer
- 5 - Freewheel roller race
- 6 - Torque converter stator assembly
- 7 - Spring cup (24)
- 8 - Needle roller (12)
- 9 - Spring (12)
- 10 - Freewheel roller (12)
- 11 - Stator back plate
- 12 - Bolt, 3/8-24 x 1 1/2 (12)
- 13 - Lock strip (6)
- 14 - Converter pump retainer (2)
- 15 - Torque converter pump
- 16 - Flat washer, 3/8 (36)
- 17 - Bolt, 3/8-24 x 1 1/4 (36)
- 18 - Double-row ball bearing
- 19 - Accessory drive gear

C

- 1 - Access cover gasket
- 2 - Access cover
- 3 - Lock washer, 1/2 (4)
- 4 - Bolt, 1/2-13 x 1 1/4 (4)
- 5 - Torque converter housing assembly
- 6 - Torque converter housing
- 7 - Pipe plug, 1/4
- 8 - Pipe plug, 1/2
- 9 - Pipe plug, 1 (4)
- 10 - Pipe plug, 1/2
- 11 - Pipe plug, 3/4
- 12 - Dowel pin (2)
- 13 - Dowel pin (2)
- 14 - Pipe plug, 1
- 15 - Gasket
- 16 - PTO cover
- 17 - Lock washer, 7/16 (8)
- 18 - Bolt, 7/16-14 x 7/8 (8)
- 19 - Step-joint Teflon seal ring (2)
- 20 - Torque converter ground sleeve
- *21 - Hook-type seal ring (2)
- *22 - Converter output shaft assembly
- *23 - Single-row ball bearing
- *24 - Bearing retainer
- *25 - Bolt, 1/2-13 x 1 1/4 (5)
- *26 - Forward sun gear
- *27 - Single-row ball bearing
- *28 - External snap ring
- 29 - Bolt, 1/2-13 x 1 1/4 (4)
- 30 - Lock washer, 1/2 (4)
- 31 - Accessory pad cover
- 32 - Cover gasket
- 33 - O-ring seal
- 34 - Oil pump suction tube
- 35 - O-ring seal
- 36 - Check valve guide
- 37 - Output pump check valve
- 38 - Check valve spring
- 39 - Seal washer
- 40 - Lubrication regulator valve
- 41 - Lubrication regulator valve guide pin
- 42 - Spring shim washer (AR)
- 43 - Lubrication regulator valve spring
- 44 - Lubrication regulator valve cover gasket
- 45 - Lubrication regulator valve cover
- 46 - Lock washer, 3/8 (4)
- 47 - Bolt, 3/8-16 x 3/4 (4)
- 48 - Bolt, 1/2-20 x 2 1/2 (3)
- 49 - Lock washer, 1/2
- 50 - Bolt, 1/2-13 x 3 1/4
- **51 - Hook-type seal ring (2)
- **52 - Torque converter output shaft
- **53 - Double-row ball bearing
- **54 - Bearing retainer
- 55 - Bolt, 1/2-13 x 1 1/4 (5)

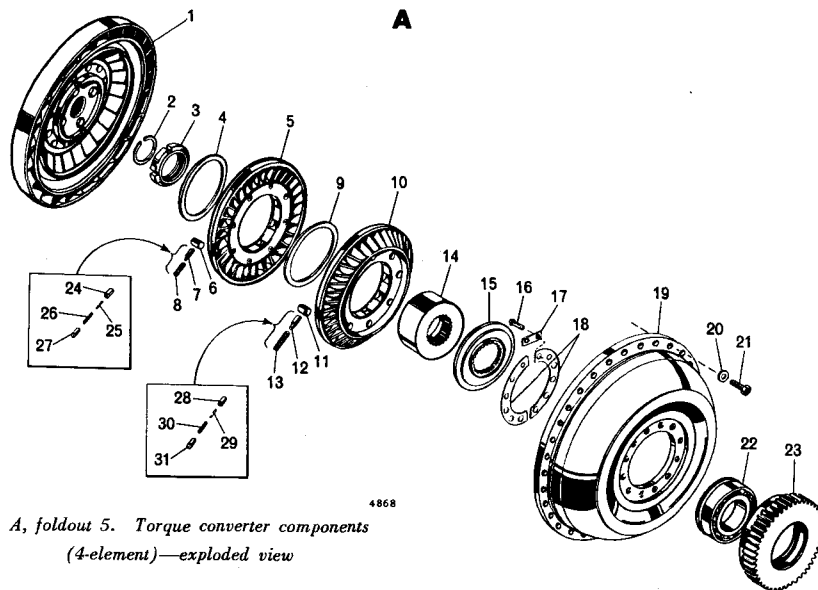
**56 - Fc

**57 - E2

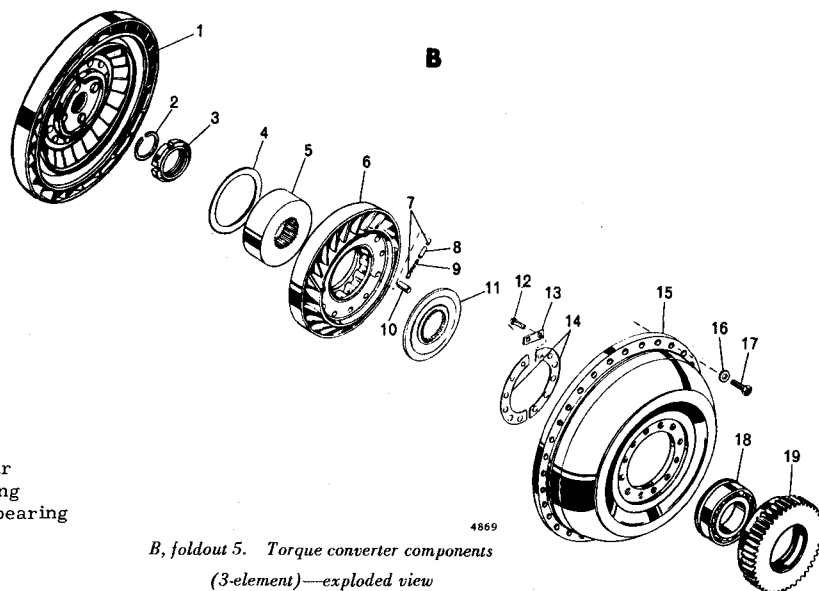
**58 - Siu

*5630

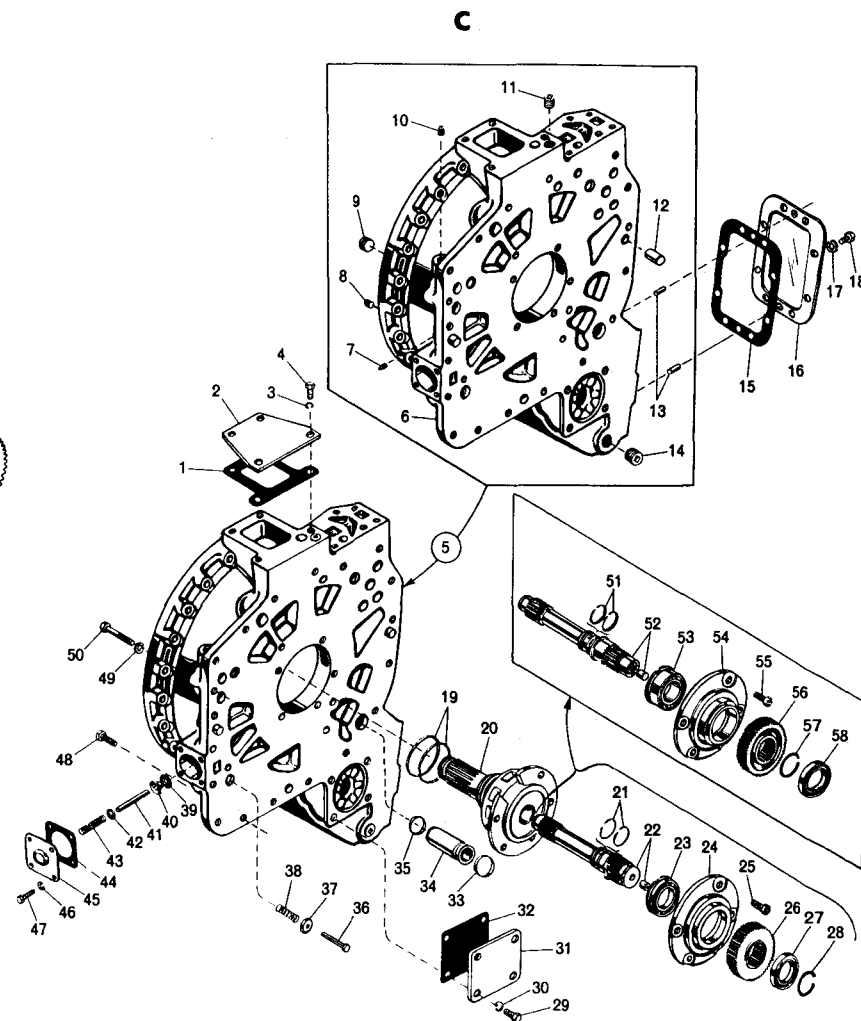
**5631



A, foldout 5. Torque converter components
(4-element)—exploded view



B, foldout 5. Torque converter components
(3-element)—exploded view



C, foldout 5. Torque converter housing components—exploded view

- **56 - Forward sun gear
- **57 - External snap ring
- **58 - Single-row ball bearing

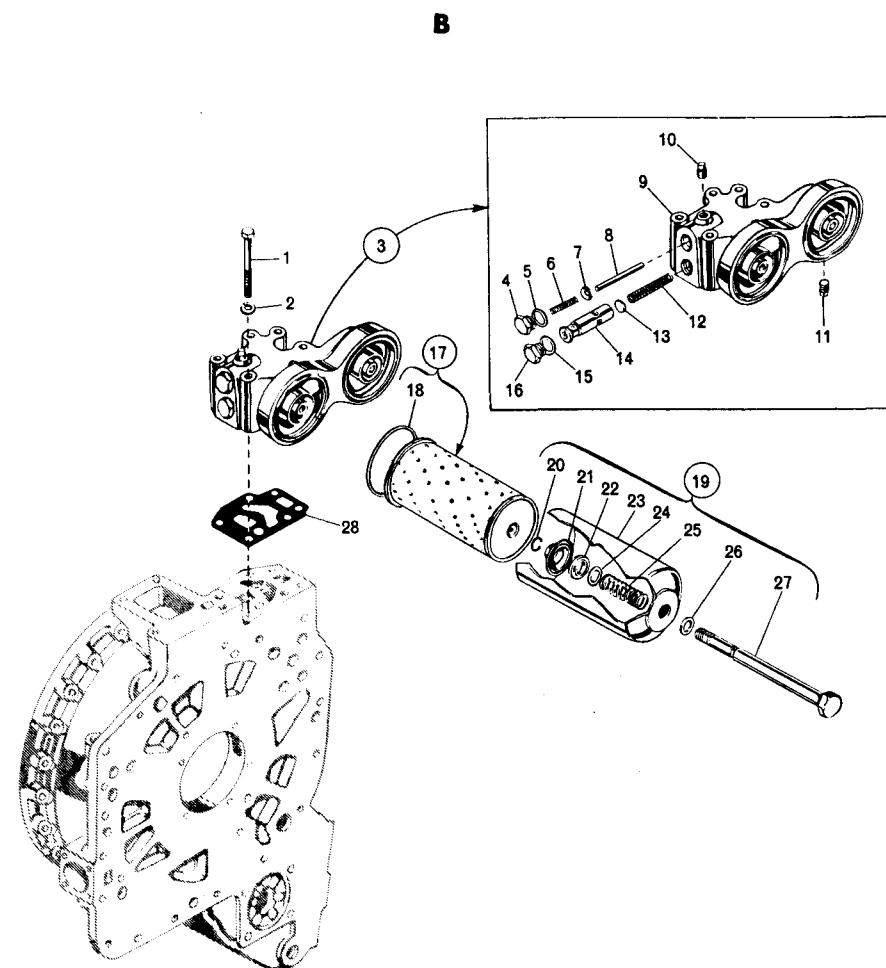
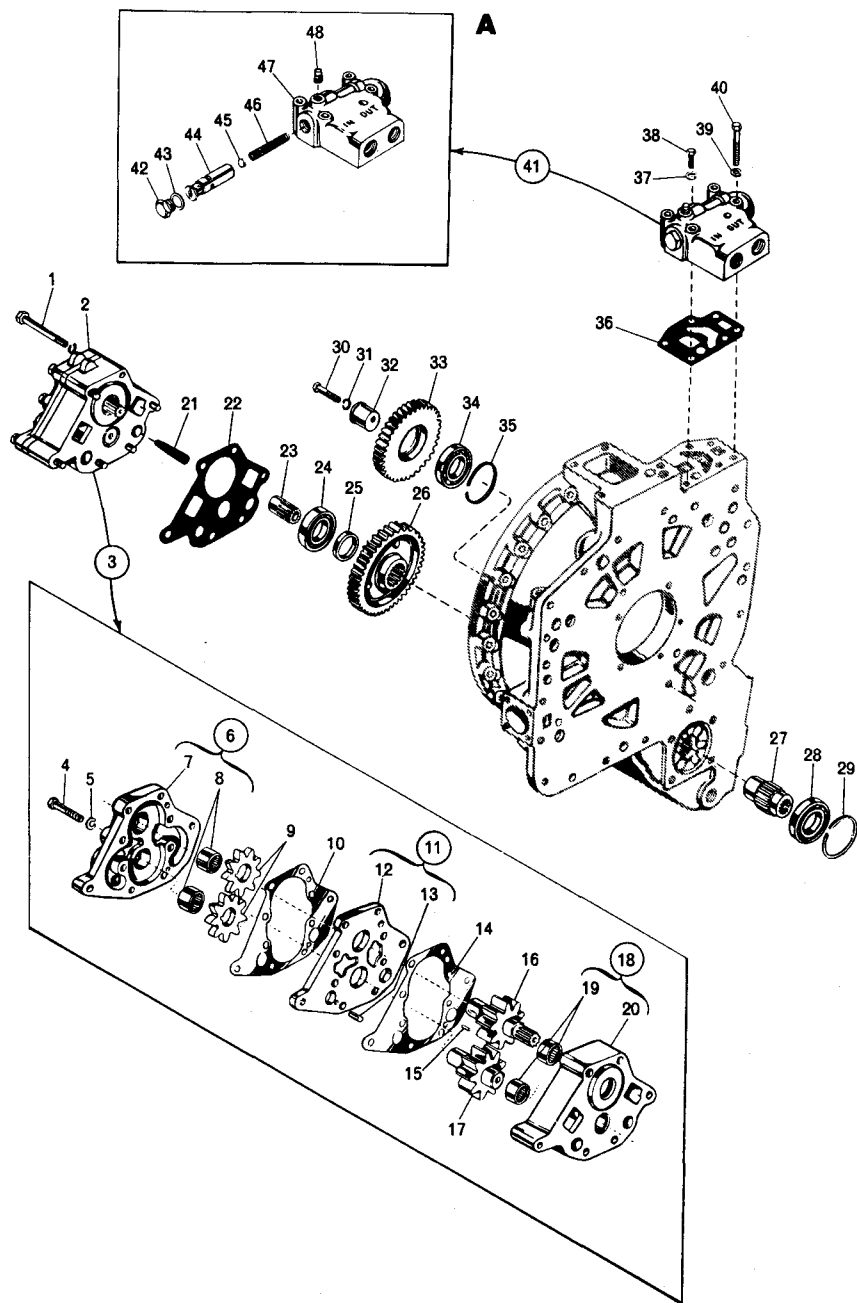
*5630 models
**5631 models

A

- 1 - Bolt, 3/8-16 x 4 1/4 (6)
- 2 - Lock washer, 3/8 (6)
- 3 - Input pressure and scavenge pump assembly
- 4 - Bolt, 3/8-16 x 2 1/4 (4)
- 5 - Lock washer, 3/8 (4)
- 6 - Scavenge pump body assembly
- 7 - Scavenge pump body
- 8 - Needle bearing (2)
- 9 - Scavenge pump gear (2)
- 10 - Separating plate gasket
- 11 - Separating plate assembly
- 12 - Separating plate
- 13 - Dowel pin (2)
- 14 - Separating plate gasket
- 15 - Needle roller
- 16 - Pressure pump drive gear
- 17 - Pressure pump driven gear
- 18 - Pressure pump body assembly
- 19 - Needle bearing (2)
- 20 - Pressure pump body
- 21 - Scavenge pump suction screen
- 22 - Input pump gasket
- 23 - Input pump drive coupling
- 24 - Single-row ball bearing
- 25 - Spacer
- 26 - Input pump drive gear
- 27 - Pump drive hub
- 28 - Single-row ball bearing
- 29 - Internal snap ring
- 30 - Bolt, 1/2-13 x 2 1/2 (older models 7/16-14 x 2 1/4)
- 31 - Lock washer, 1/2 (older models 7/16)
- 32 - Idler gear spindle
- 33 - Accessory idler gear
- 34 - Single-row ball bearing
- 35 - Internal snap ring
- 36 - Oil filter adapter gasket
- 37 - Lock washer, 7/16
- 38 - Bolt, 7/16-14 x 1 1/4
- 39 - Lock washer, 7/16 (5)
- 40 - Bolt, 7/16-14 x 2 3/4 (5)
- 41 - Oil filter adapter body assembly
- 42 - Plug, 1 1/4-12
- 43 - Gasket
- 44 - Main-pressure regulator valve
- 45 - Shim (AR)
- 46 - Main-pressure regulator valve spring
- 47 - Oil filter adapter body
- 48 - Pipe plug, 1/4

B

- 1 - Bolt, 7/16-14 x 4 1/2 (6)
- 2 - Lock washer, 7/16 (6)
- 3 - Oil filter base assembly
- 4 - Plug, 1 1/4-12
- 5 - Gasket
- 6 - Bypass valve spring
- 7 - Bypass valve
- 8 - Bypass valve guide
- 9 - Oil filter base
- 10 - Pipe plug, 1/4
- 11 - Pipe plug, 1/4
- 12 - Main-pressure regulator valve spring
- 13 - Shim (AR)
- 14 - Main-pressure regulator valve
- 15 - Gasket
- 16 - Plug, 1 1/4-12
- 17 - Oil filter element (2)
- 18 - Oil filter shell gasket (2)
- 19 - Oil filter shell and stud assembly (2)
- 20 - Retainer ring (2)
- 21 - Retainer (2)
- 22 - Seal (2)
- 23 - Oil filter shell (2)
- 24 - Washer (2)
- 25 - Spring (2)
- 26 - Gasket (2)
- 27 - Stud (2)
- 28 - Oil filter base gasket



B, foldout 6. Direct-mount oil filters and base—exploded view

A, foldout 6. Input pump, accessory drive, and remote oil filter adapter—exploded view

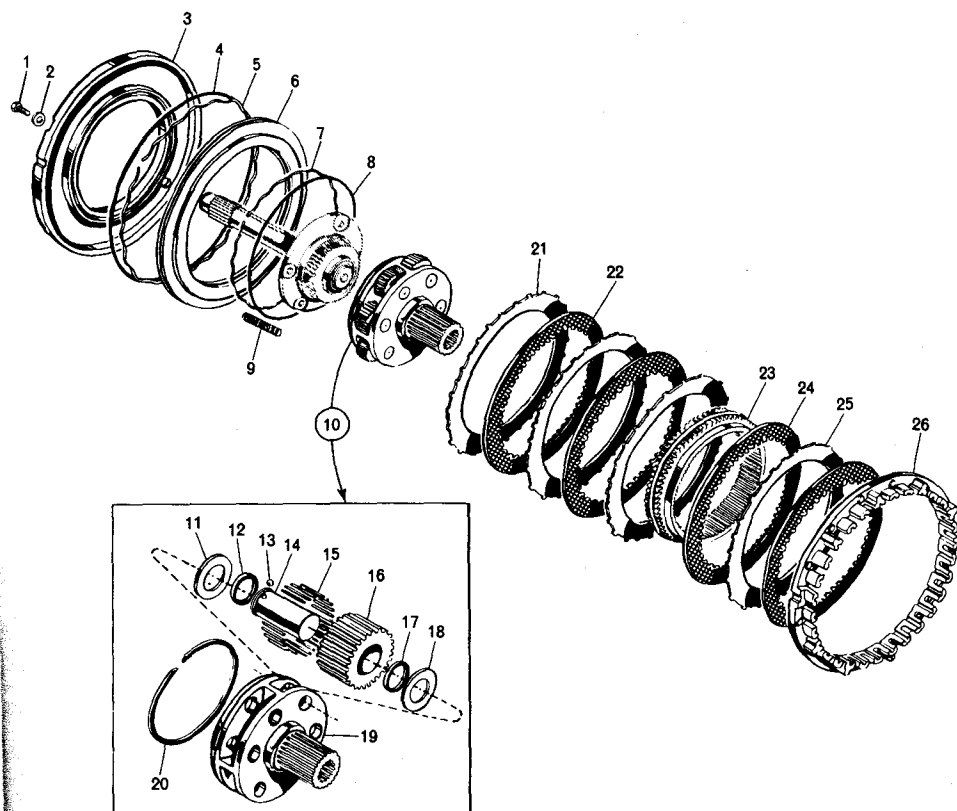
A

- 1 - Bolt, 3/8-16 x 3/4 (3)
- 2 - Flat washer, 3/8 (3)
- 3 - Forward clutch piston housing
- 4 - Clutch piston outer seal ring
- 5 - Seal ring expander
- 6 - Forward clutch piston
- 7 - Seal ring expander
- 8 - Clutch piston inner seal ring
- 9 - Piston return spring (14)
- 10 - Forward planetary carrier assembly
- 11 - Pinion thrust washer (6)
- 12 - Spacer (6)
- 13 - Ball, 3/16 (6)
- 14 - Pinion spindle (6)
- 15 - Needle roller (144)
- 16 - Pinion (matched set of 6)
- 17 - Spacer (6)
- 18 - Pinion thrust washer (6)
- 19 - Forward planetary carrier
- 20 - Internal snap ring
- 21 - Forward clutch external-splined plate (3)
- 22 - Forward clutch internal-splined plate (2)
- 23 - Forward planetary ring gear
- 24 - Forward clutch internal-splined plate (2)
- 25 - Forward clutch external-splined plate
- 26 - Forward clutch anchor

B

- 1 - Bolt, 3/8-16 x 3/4 (3)
- 2 - Flat washer, 3/8 (3)
- 3 - Forward clutch piston housing
- 4 - Clutch piston outer seal ring
- 5 - Seal ring expander
- 6 - Forward clutch piston
- 7 - Seal ring expander
- 8 - Clutch piston inner seal ring
- 9 - Piston return spring (14)
- 10 - Forward planetary carrier assembly
- 11 - Pinion thrust washer (6)
- 12 - Spacer (6)
- 13 - Ball, 3/16 (6)
- 14 - Pinion spindle (6)
- 15 - Needle roller (144)
- 16 - Pinion (matched set of 6)
- 17 - Spacer (6)
- 18 - Pinion thrust washer (6)
- 19 - Forward planetary carrier
- 20 - Oil collector
- 21 - Lock washer, 3/8 (9)
- 22 - Bolt, 3/8-24 x 5/8 (9)
- 23 - Forward clutch external-splined plate (2)
- 24 - Forward clutch internal-splined plate (2)
- 25 - Internal snap ring
- 26 - Forward clutch external-splined plate (2)
- 27 - Forward clutch internal-splined plate
- 28 - Forward planetary ring gear
- 29 - Forward clutch internal-splined plate
- 30 - Forward clutch anchor

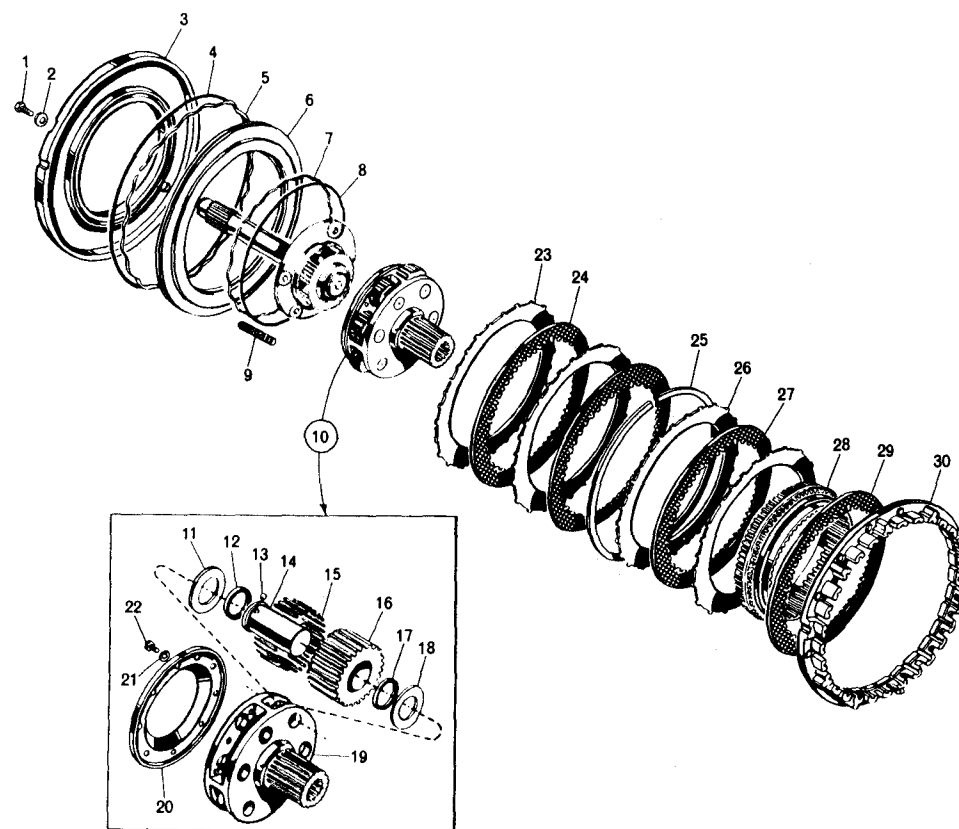
A



4817A

A, foldout 7. Forward clutch and planetary carrier assembly (5630 models)—exploded view

B



4818A

B, foldout 7. Forward clutch and planetary carrier assembly (5631 models)—exploded view

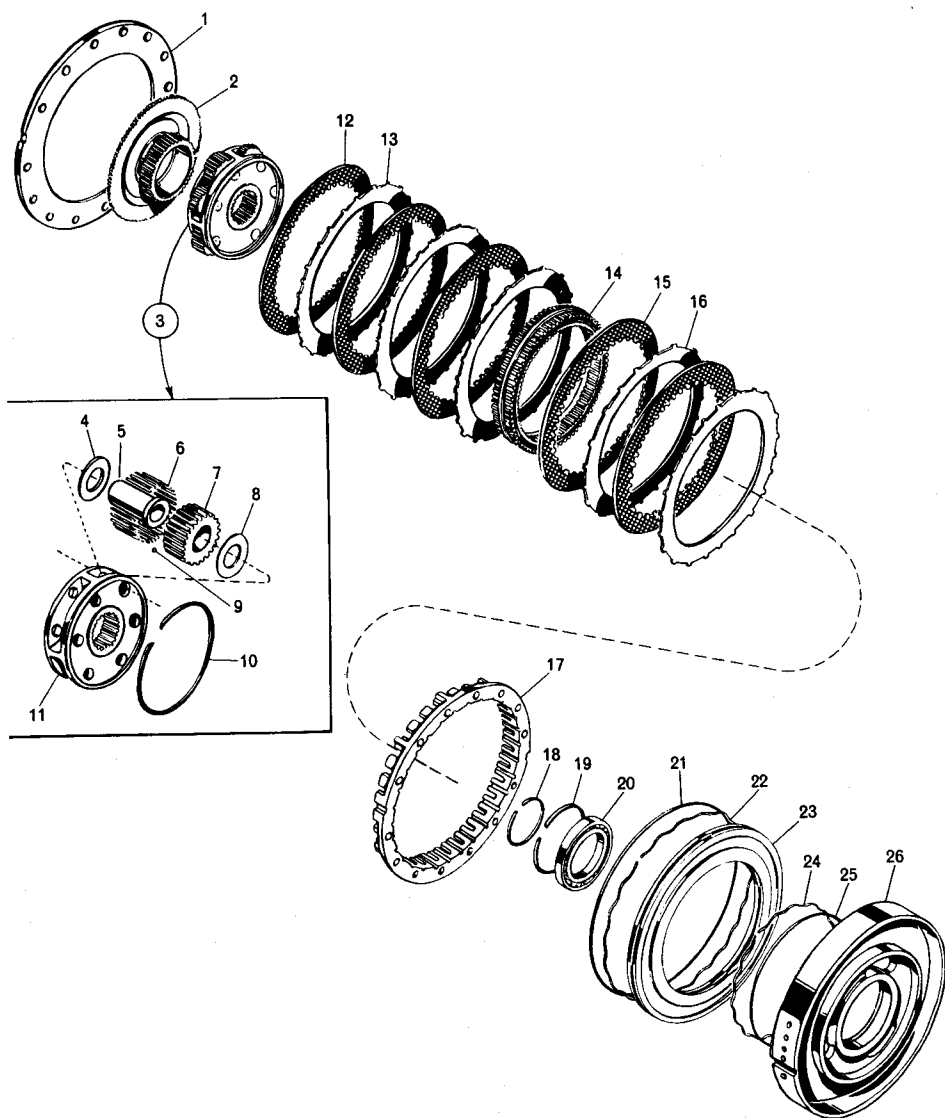
A

- 1 - Forward-and-reverse clutch back plate
- 2 - Reverse planetary sun gear
- 3 - Reverse planetary carrier assembly
- 4 - Pinion thrust washer (6)
- 5 - Pinion spindle (6)
- 6 - Needle roller (144)
- 7 - Pinion (matched set of 6)
- 8 - Pinion thrust washer (6)
- 9 - Ball, 3/16 (6)
- 10 - Internal snap ring
- 11 - Reverse planetary carrier
- 12 - Reverse clutch internal-splined plate (3)
- 13 - Reverse clutch external-splined plate (3)
- 14 - Reverse planetary ring gear
- 15 - Reverse clutch internal-splined plate (2)
- 16 - Reverse clutch external-splined plate (2)
- 17 - Reverse clutch anchor
- 18 - External snap ring
- 19 - Internal snap ring
- 20 - Single-row ball bearing
- 21 - Clutch piston outer seal ring
- 22 - Seal ring expander
- 23 - Reverse clutch piston
- 24 - Seal ring expander
- 25 - Clutch piston inner seal ring
- 26 - Diaphragm

B

- 1 - Forward-and-reverse clutch back plate
- 2 - Reverse planetary sun gear
- 3 - Reverse planetary carrier assembly
- 4 - Pinion thrust washer (6)
- 5 - Pinion spindle (6)
- 6 - Needle roller (144)
- 7 - Pinion (matched set of 6)
- 8 - Pinion thrust washer (6)
- 9 - Ball, 3/16 (6)
- 10 - Internal snap ring
- 11 - Reverse planetary carrier
- 12 - Reverse clutch internal-splined plate
- 13 - Reverse planetary ring gear
- 14 - Reverse clutch external-splined plate (2)
- 15 - Reverse clutch internal-splined plate
- 16 - Internal snap ring
- 17 - Reverse clutch internal-splined plate (3)
- 18 - Reverse clutch external-splined plate (3)
- 19 - Reverse clutch anchor
- 20 - External snap ring
- 21 - Internal snap ring
- 22 - Single-row ball bearing
- 23 - Clutch piston outer seal ring
- 24 - Seal ring expander
- 25 - Reverse clutch piston
- 26 - Seal ring expander
- 27 - Clutch piston inner seal ring
- 28 - Diaphragm

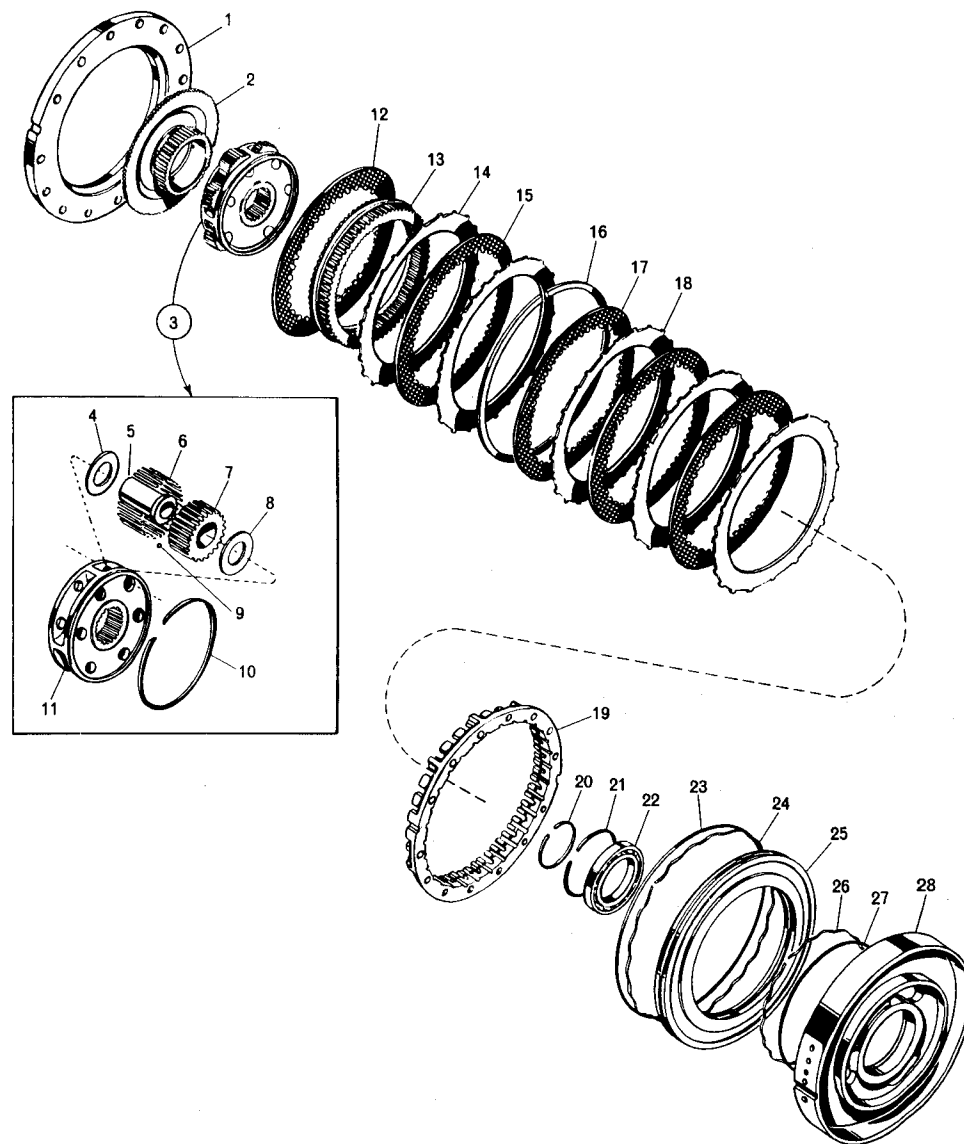
A



4819A

A, foldout 8. Reverse clutch and planetary carrier assembly (5630 models)—exploded view

B



4820A

B, foldout 8. Reverse clutch and planetary carrier assembly (5631 models)—exploded view

A

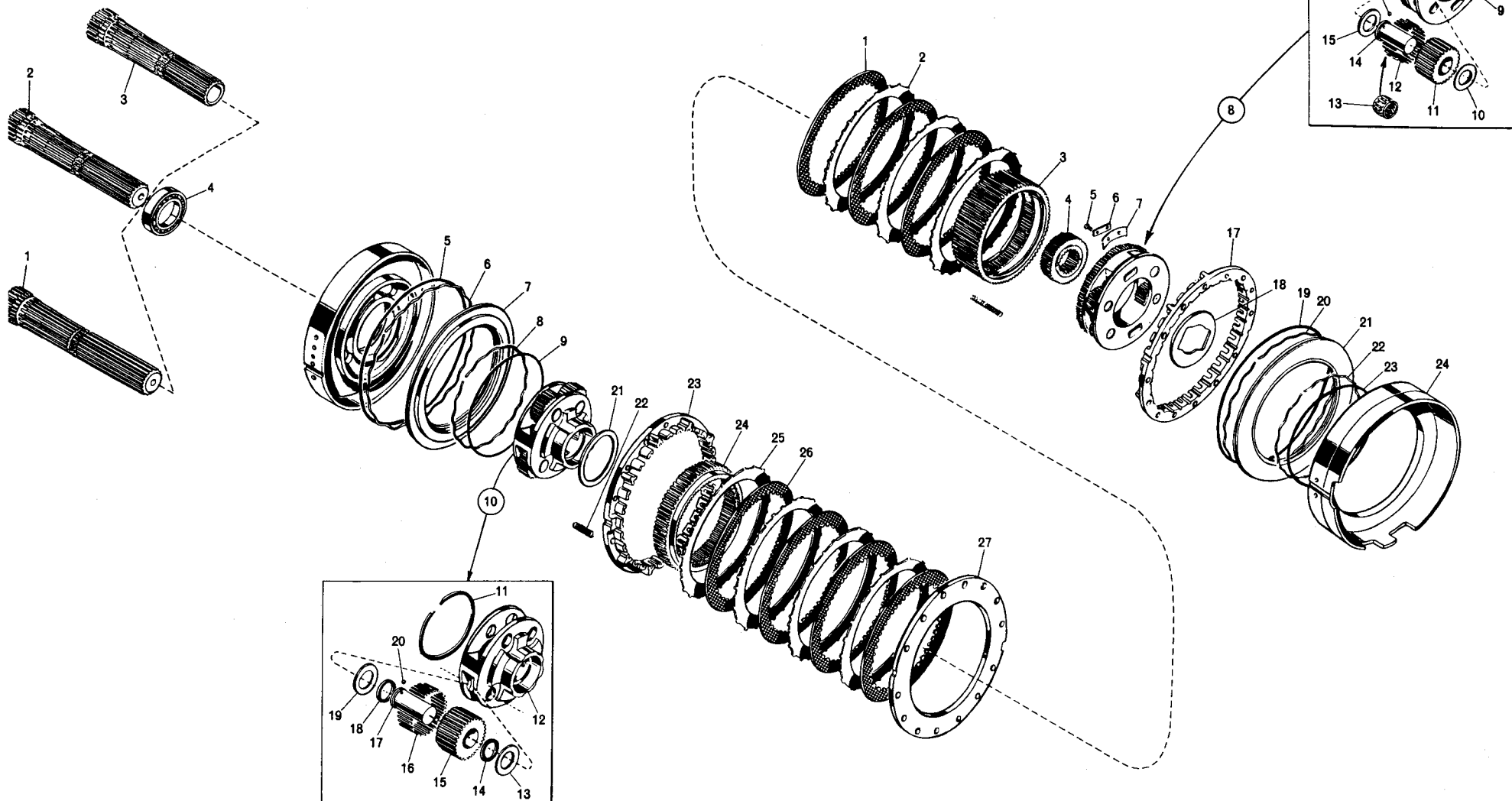
- 1 - Main shaft (models with output oil pump)
- 2 - Main shaft (models without output oil pump, governor drive, or rear PTO)
- 3 - Main shaft (models with governor drive, or rear PTO)
- 4 - Single-row ball bearing
- 5 - Clutch piston outer seal ring
- 6 - Seal ring expander
- 7 - High-range clutch piston
- 8 - Seal ring expander
- 9 - Clutch piston inner seal ring
- 10 - High-range planetary carrier assembly
- 11 - Internal snap ring
- 12 - High-range planetary carrier
- 13 - Pinion thrust washer (4)
- 14 - Spacer (4)
- 15 - Pinion (matched set of 4)
- 16 - Needle roller (112)
- 17 - Pinion spindle (4)
- 18 - Spacer (4)
- 19 - Pinion thrust washer (4)
- 20 - Ball, 3/16 (4)
- 21 - Thrust washer
- 22 - Piston return spring (14)
- 23 - High-range clutch anchor
- 24 - High-range planetary ring gear
- 25 - High-range clutch, external-splined plate (4)
- 26 - High-range clutch, internal-splined plate (4)
- 27 - High-and-intermediate-range clutch back plate

B

- 1 - Intermediate-range clutch, internal-splined plate (3)
- 2 - Intermediate-range clutch, external-splined plate (3)
- 3 - Intermediate-range planetary ring gear
- 4 - Intermediate-range planetary sun gear
- 5 - Bolt, 3/8-16 x 1/2 (4)
- 6 - Lock strip (2)
- 7 - Spindle retainer (2)
- 8 - Intermediate-range planetary carrier assembly
- 9 - Intermediate-range planetary carrier
- 10 - Pinion thrust washer (4)
- 11 - Pinion (matched set of 4)
- 12 - Needle roller (96) (5630 models)
- 13 - Needle bearing assembly (4) (5631 models)
- 14 - Pinion spindle (4)
- 15 - Pinion thrust washer (4)
- 16 - Ball, 3/16 (4)
- 17 - Intermediate-range clutch anchor
- 18 - Thrust washer
- 19 - Clutch piston outer seal ring
- 20 - Seal ring expander
- 21 - Intermediate-range clutch piston
- 22 - Seal ring expander
- 23 - Clutch piston inner seal ring
- 24 - Intermediate-range clutch piston housing

A

B



A, foldout 9. Main shafts, high-range clutch, and planetary carrier assembly—exploded view

B, foldout 9. Intermediate-range clutch, and planetary carrier assembly—exploded view

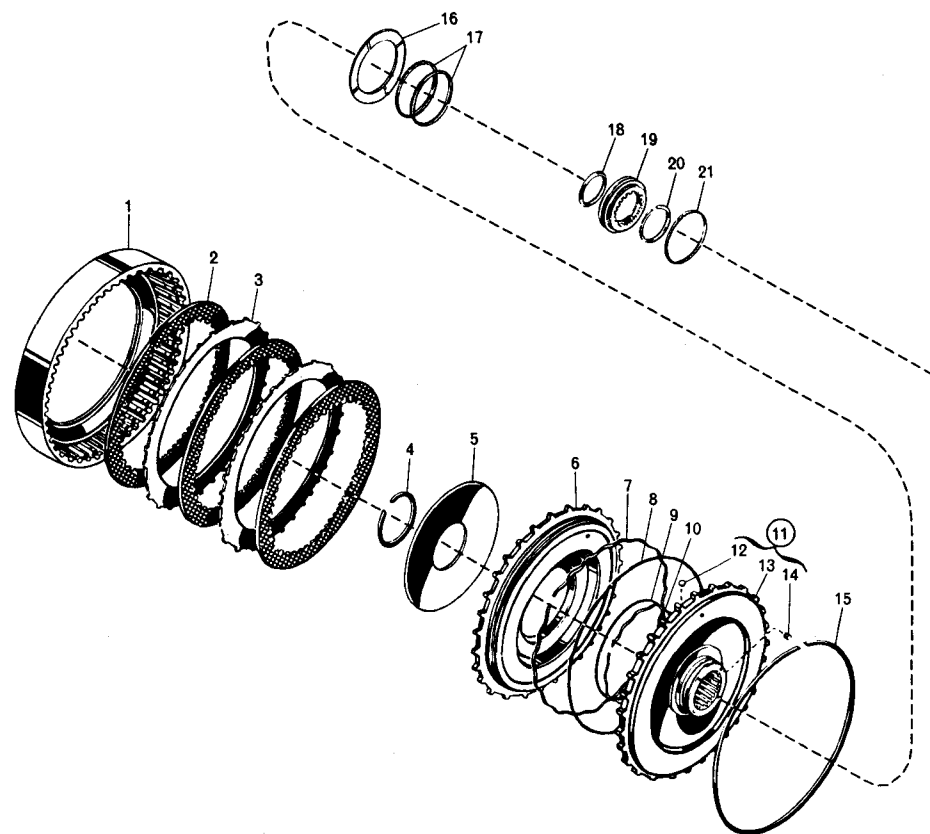
A

- 1 - Low-range clutch drum
- 2 - Low-range clutch, internal-splined plate (3)
- 3 - Low-range clutch, external-splined plate (2)
- 4 - External snap ring
- 5 - Piston return spring
- 6 - Low-range clutch piston
- 7 - Seal ring expander
- 8 - Clutch piston outer seal ring
- 9 - Clutch piston inner seal ring
- 10 - Seal ring expander
- 11 - Low-range clutch hub assembly
- 12 - Ball, 5/16 (2)
- 13 - Low-range clutch hub
- 14 - Dowel pin (4)
- 15 - Internal snap ring
- 16 - Thrust washer
- 17 - Step-joint Teflon seal ring (2)
- 18 - Seal ring
- 19 - Main shaft oil seal
- 20 - External snap ring
- 21 - Step-joint Teflon seal ring

B

- 1 - Transmission housing assembly
- 2 - Pipe plug, 3/8
- 3 - Oil transfer tube (models with output pump)
- 4 - Oil pump pressure tube
- 5 - Pin
- 6 - Pipe plug, 3/8
- 7 - Cup-type expansion plug
- 8 - Transmission housing
- 9 - Oil transfer hub
- 10 - Gasket
- 11 - Seal ring
- 12 - Nameplate
- 13 - Drive screw, no. 4 x 1/4 (4)
- 14 - Nut, 1/2-20 (3)
- 15 - Lock washer, 1/2 (3)
- 16 - Bolt, 1/2-13 x 1 1/2 (15)
- 17 - Lock washer, 1/2 (15)
- 18 - Bolt, 1/2-13 x 2 (13)
- 19 - Lock washer, 1/2 (13)
- 20 - Gasket
- 21 - Oil cooler manifold
- 22 - Lock washer, 7/16 (3)
- 23 - Bolt, 7/16-14 x 3 1/4 (3)
- 24 - Gasket
- 25 - Anchor key (2)
- 26 - Compression (crush) ring
- 27 - Bolt, 1/2-13 x 1 3/4 (6)
- 28 - Lock washer, 1/2 (6)
- 29 - Spring pin (5631 models)
- 30 - Lock washer, 3/8
- 31 - Bolt, 3/8-16 x 4
- 32 - Lock washer, 3/8
- 33 - Bolt, 3/8-16 x 2 1/4
- 34 - Bolt, 1/2-13 x 1 1/2 (27)
- 35 - Lock washer, 1/2 (27)

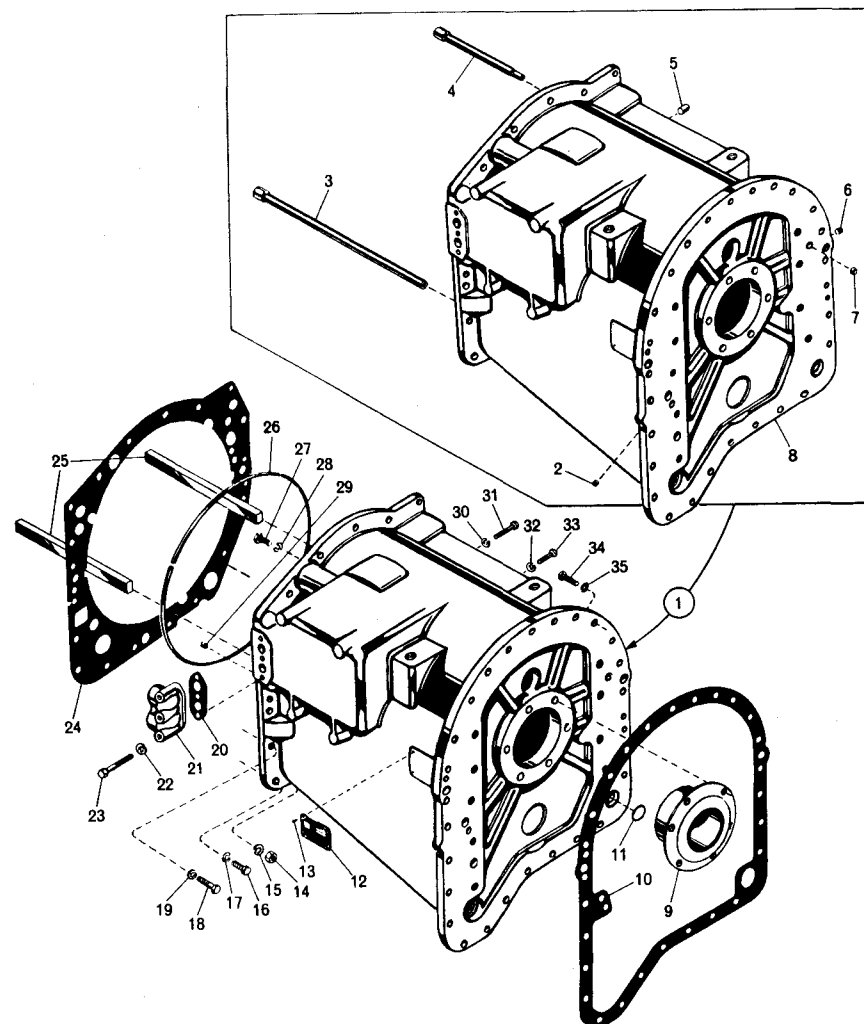
A



6253

A, foldout 10. Low-range clutch—exploded view

B



4848

B, foldout 10. Transmission housing assembly and related components—exploded view

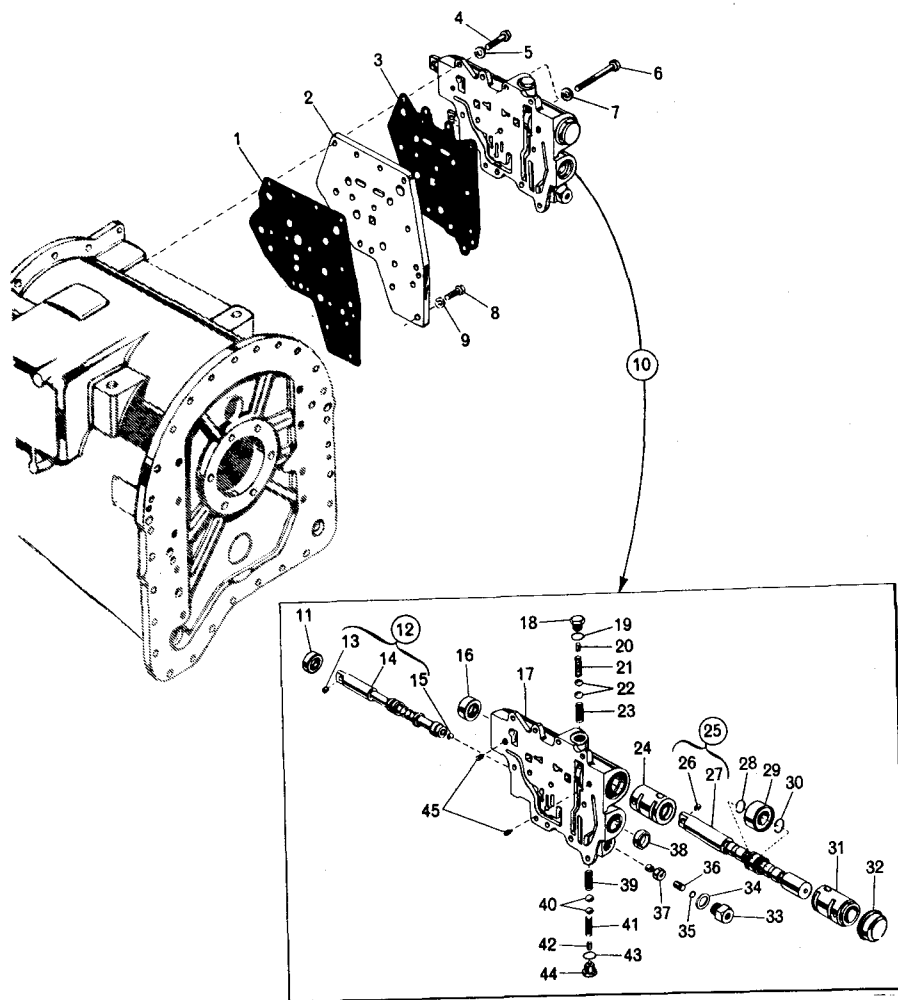
A

- 1 - Oil transfer plate gasket
- 2 - Oil transfer plate
- 3 - Control valve gasket
- 4 - Bolt, 3/8-16 x 2 (7)
- 5 - Lock washer, 3/8 (7)
- 6 - Bolt, 3/8-16 x 3 3/8 (5)
- 7 - Lock washer, 3/8 (5)
- 8 - Bolt, 3/8-16 x 1 1/2 (2)
- 9 - Lock washer, 3/8 (2)
- 10 - Control valve assembly
- 11 - Oil seal
- 12 - Selector valve assembly
- 13 - Bushing
- 14 - Selector valve
- 15 - Ball, 5/8
- 16 - Oil seal
- 17 - Valve body
- 18 - Plug
- 19 - Gasket
- 20 - Pin
- 21 - Detent spring
- 22 - Detent ball, 5/8 (2)
- 23 - Detent spring
- 24 - Sleeve
- 25 - Direction valve assembly
- 26 - Bushing
- 27 - Direction valve
- 28 - External snap ring
- 29 - Direction valve piston
- 30 - External snap ring
- 31 - Sleeve
- 32 - Cap
- 33 - Clutch cutoff valve retainer
- 34 - Copper gasket
- 35 - Seal ring
- 36 - Clutch cutoff valve plug
- 37 - Clutch cutoff valve
- 38 - Cap
- 39 - Detent spring
- 40 - Detent ball, 5/8 (2)
- 41 - Detent spring
- 42 - Pin
- 43 - Gasket
- 44 - Plug
- 45 - Setscrew, 3/8-16 x 9/16 (2)

B

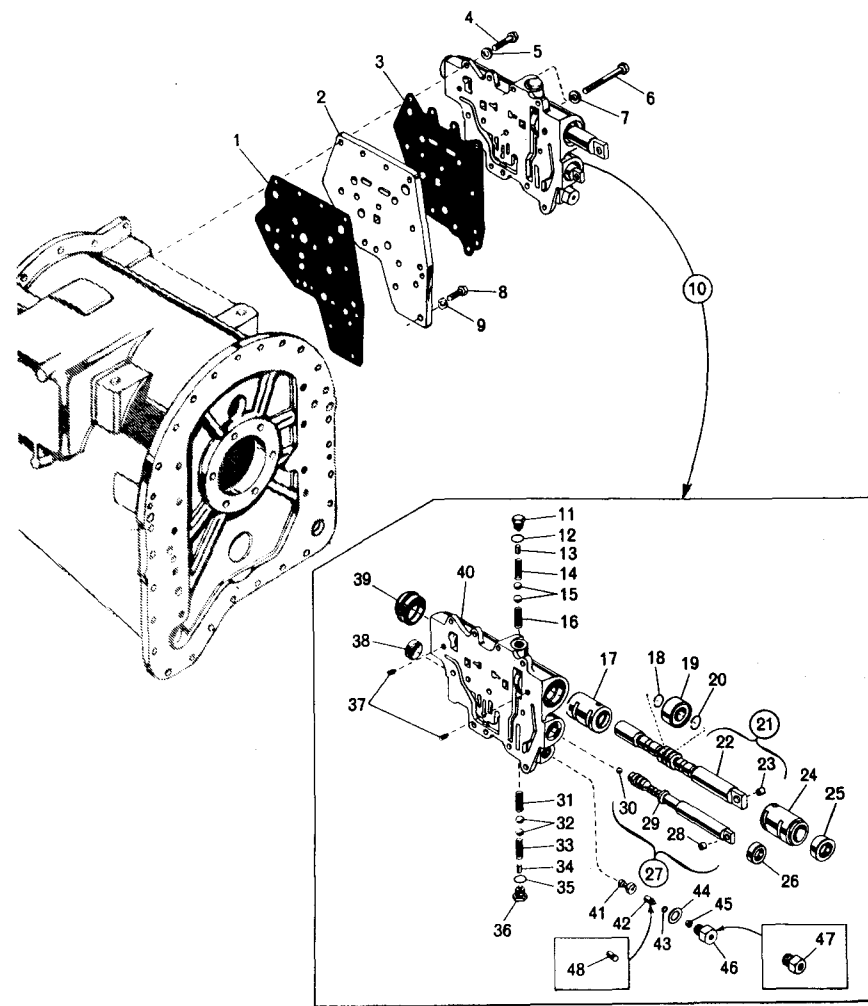
- 1 - Oil transfer plate gasket
- 2 - Oil transfer plate
- 3 - Control valve gasket
- 4 - Bolt, 3/8-16 x 2 (7)
- 5 - Lock washer, 3/8 (7)
- 6 - Bolt, 3/8-16 x 3 3/8 (5)
- 7 - Lock washer, 3/8 (5)
- 8 - Bolt, 3/8-16 x 1 1/2 (2)
- 9 - Lock washer, 3/8 (2)
- 10 - Control valve assembly
- 11 - Plug
- 12 - Gasket
- 13 - Pin
- 14 - Detent spring
- 15 - Detent ball, 5/8 (2)
- 16 - Detent spring
- 17 - Sleeve
- 18 - External snap ring
- 19 - Direction valve piston
- 20 - External snap ring
- 21 - Direction valve assembly
- 22 - Direction valve
- 23 - Bushing
- 24 - Sleeve
- 25 - Oil seal
- 26 - Oil seal
- 27 - Selector valve assembly
- 28 - Bushing
- 29 - Selector valve
- 30 - Ball, 5/8
- 31 - Detent spring
- 32 - Detent ball, 5/8 (2)
- 33 - Detent spring
- 34 - Pin
- 35 - Gasket
- 36 - Plug
- 37 - Setscrew, 3/8-16 x 9/16 (2)
- 38 - Cap
- 39 - Cap
- 40 - Valve body
- 41 - Clutch cutoff valve
- 42 - Clutch cutoff valve plug (hydraulic actuated)
- 43 - Seal ring
- 44 - Copper gasket
- 45 - Cup (hydraulic actuated)
- 46 - Clutch cutoff valve retainer (hydraulic actuated)
- 47 - Clutch cutoff valve retainer (air actuated)
- 48 - Clutch cutoff valve plug (air actuated)

A



A, foldout 11. Control valve components (selector valve at front)—exploded view

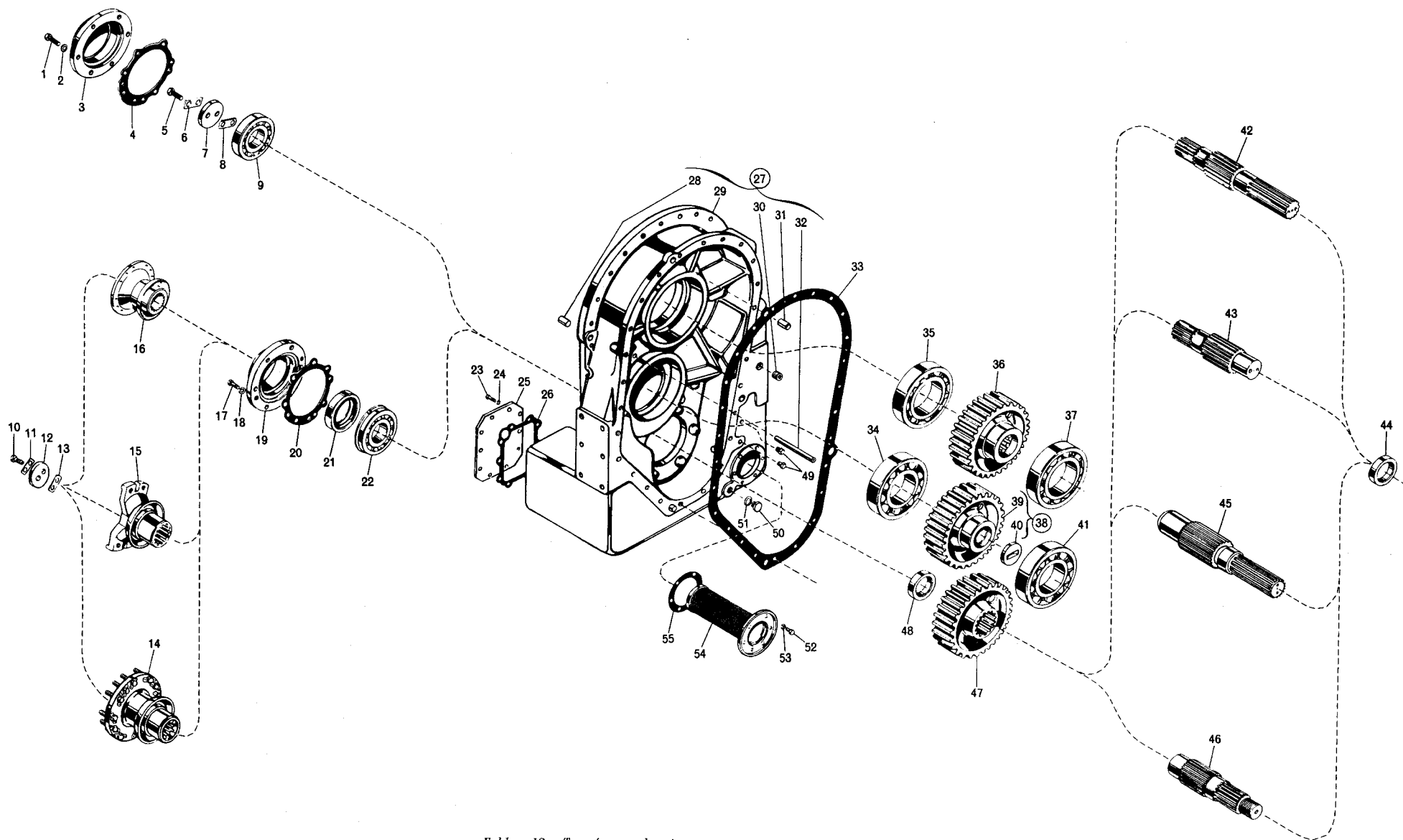
B



B, foldout 11. Control valve components (selector valve at rear)—exploded view

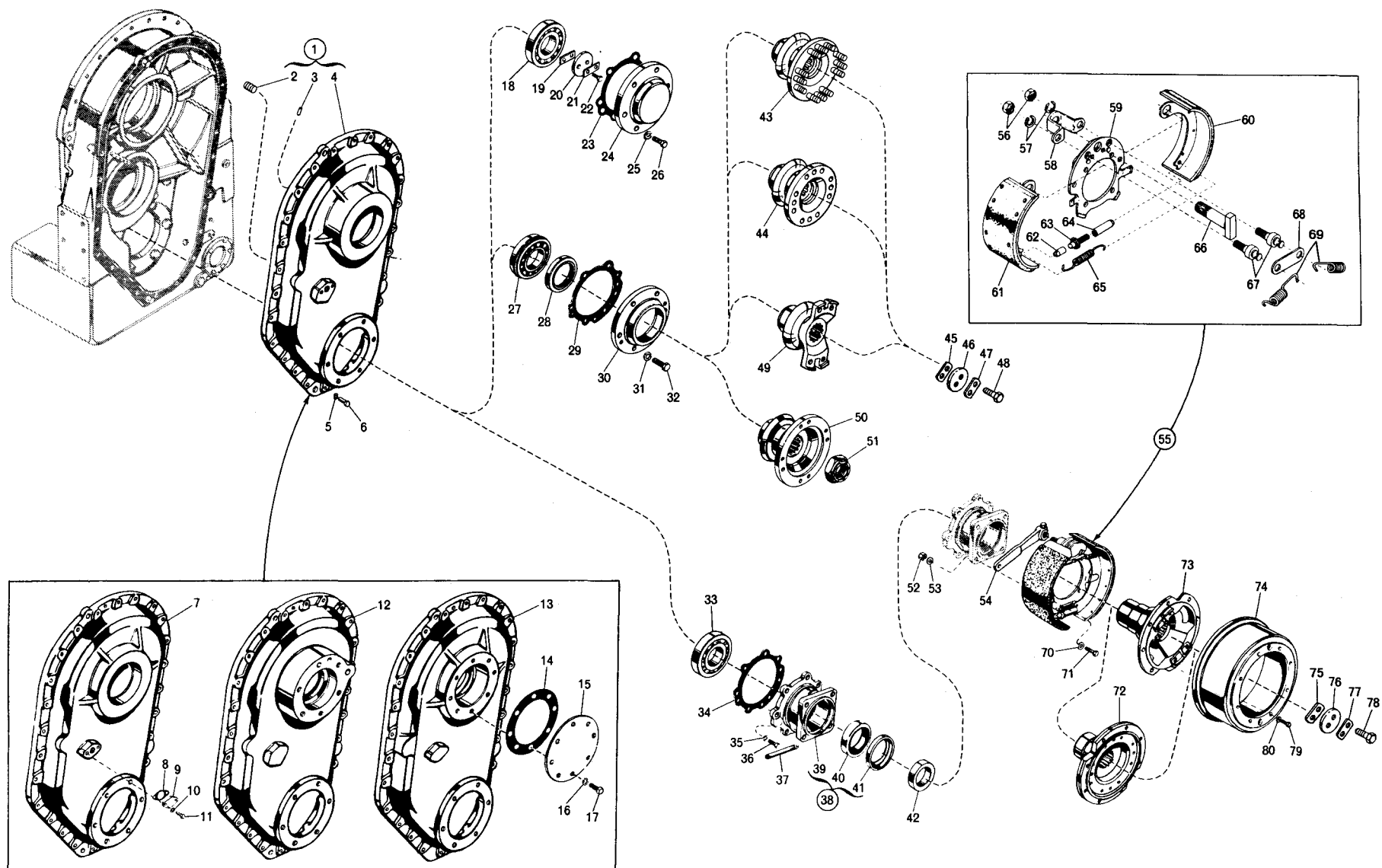
1 - Bolt, 1/2-13 x 1 3/8 (6)
2 - Lock washer, 1/2 (6)
3 - Bearing retainer
4 - Retainer gasket
5 - Bolt, 1/2-20 x 1 1/4 (2)
6 - Lock strip
7 - Flange retaining washer
8 - Shim, 0.005 or 0.025 thk (AR)
9 - Single-row ball bearing
10 - Bolt, 1/2-20 x 1 1/4 (2)
11 - Lock strip
12 - Flange retaining washer
13 - Shim, 0.005 or 0.025 (AR)
14 - Output flange
15 - Output flange
16 - Output flange
17 - Bolt, 1/2-13 x 1 3/8 (6)
18 - Lock washer, 1/2 (6)
19 - Bearing retainer
20 - Retainer gasket
21 - Oil seal
22 - Single-row ball bearing
23 - Bolt, 3/8-16 x 7/8 (20)
24 - Lock washer, 3/8 (20)
25 - Inspection cover (2)
26 - Cover gasket (2)
27 - Transfer gear housing assembly
28 - Dowel pin (2)

29 - Transfer gear housing
30 - Pipe plug, 1
31 - Dowel pin (2)
32 - Output oil tube (models with output pump)
33 - Gasket
34 - Single-row ball bearing
35 - Single-row ball bearing
36 - Transfer drive gear
37 - Single-row ball bearing
38 - Idler gear assembly
39 - Idler gear
40 - Idler gear plug
41 - Single-row ball bearing
42 - Output drive shaft
43 - Output drive shaft
44 - Spacer
45 - Output drive shaft
46 - Output drive shaft
47 - Transfer driven gear
48 - Spacer
49 - Oil level check plug (2)
50 - Magnetic drain plug
51 - Drain plug gasket
52 - Bolt, 3/8-16 x 7/8 (6)
53 - Lock washer, 3/8 (6)
54 - Oil strainer
55 - Oil strainer gasket



Foldout 12. Transfer gear housing, gears, output components—exploded view

- | | |
|--|-------------------------------------|
| 1 - Transfer gear housing cover assembly | 41 - Baffle |
| 2 - Pipe plug, 1 (2) | 42 - Spacer |
| 3 - Pin | 43 - Output flange |
| 4 - Transfer gear housing cover | 44 - Output flange |
| 5 - Lock washer, 1/2 (26) | 45 - Shim, 0.005 or 0.025 thk (AR) |
| 6 - Bolt, 1/2-13 x 1 3/4 (26) | 46 - Flange retaining washer |
| 7 - Transfer gear housing cover | 47 - Lock strip |
| 8 - Gasket | 48 - Bolt, 1/2-20 x 1 1/4 (2) |
| 9 - Speedometer drive cover | 49 - Output flange |
| 10 - Lock washer, 5/16 (2) | 50 - Output flange |
| 11 - Bolt, 5/16-18 x 7/8 (2) | 51 - Flange retaining nut |
| 12 - Transfer gear housing cover | 52 - Nut, 5/8-18 (4) |
| 13 - Transfer gear housing cover | 53 - Flat washer (4) |
| 14 - Gasket | 54 - Brake apply lever |
| 15 - Cover | 55 - Parking brake shoe assembly |
| 16 - Lock washer, 7/16 (8) | 56 - Nut, 3/4-16 (2) |
| 17 - Bolt, 7/16-14 x 1 1/4 (8) | 57 - Lock washer, 3/4 (2) |
| 18 - Single-row ball bearing | 58 - Cam shaft support |
| 19 - Shim, 0.005 or 0.025 thk (AR) | 59 - Brake back plate |
| 20 - Flange retaining washer | 60 - Brake shoe and lining assembly |
| 21 - Lock strip | 61 - Brake shoe and lining assembly |
| 22 - Bolt, 1/2-20 x 1 1/4 (2) | 62 - Adjusting screw socket |
| 23 - Retainer gasket | 63 - Adjusting screw |
| 24 - Bearing retainer | 64 - Adjusting screw nut |
| 25 - Lock washer, 1/2 (6) | 65 - Spring |
| 26 - Bolt, 1/2-13 x 1 3/8 (6) | 66 - Cam shaft |
| 27 - Single-row ball bearing | 67 - Anchor bolt (2) |
| 28 - Oil seal | 68 - Anchor bolt plate |
| 29 - Retainer gasket | 69 - Retracting spring (2) |
| 30 - Bearing retainer | 70 - Flat washer, 5/8 (4) |
| 31 - Lock washer, 1/2 (6) | 71 - Bolt, 5/8-18 x 2 (4) |
| 32 - Bolt, 1/2-13 x 1 3/8 (6) | 72 - Output flange |
| 33 - Single-row ball bearing | 73 - Output flange |
| 34 - Retainer gasket | 74 - Brake drum |
| 35 - Lock washer, 1/2 (6) | 75 - Shim, 0.005 or 0.025 thk (AR) |
| 36 - Bolt, 1/2-13 x 1 1/2 (6) | 76 - Flange retaining washer |
| 37 - Oil drain nipple | 77 - Lock strip |
| 38 - Bearing retainer assembly | 78 - Bolt, 1/2-20 x 1 1/4 (2) |
| 39 - Bearing retainer | 79 - Bolt, 1/2-20 x 1 (8) |
| 40 - Oil seal | 80 - Lock washer, 1/2 (8) |



Foldout 13. Transfer gear housing covers, output components, and parking brake—exploded view

- | | |
|---------------------------------------|--|
| 1 - Internal snap ring | 31 - Flange retaining washer |
| 2 - Output oil pump assembly | 32 - Lock strip |
| 3 - Pump body | 33 - Bolt, 1/2-20 x 1 1/4 (2) |
| 4 - Pump drive gear | 34 - Disconnect shifter fork |
| 5 - Pump driven gear | 35 - Bolt, 1/2-13 x 1 1/2 (6) |
| 6 - Pump cover | 36 - Lock washer, 1/2 (6) |
| 7 - Flat-head screw, 1/4-20 x 5/8 (9) | 37 - Governor drive shaft assembly |
| 8 - Power takeoff drive shaft | 38 - Pin |
| 9 - Single-row ball bearing | 39 - Governor drive shaft |
| 10 - Power takeoff coupling | 40 - Coupling |
| 11 - Power takeoff gasket | 41 - Internal snap ring |
| 12 - Power takeoff housing | 42 - Single-row ball bearing |
| 13 - Oil seal | 43 - External snap ring |
| 14 - Shifter shaft | 44 - Oil seal |
| 15 - Needle bearing | 45 - Gasket |
| 16 - External snap ring | 46 - Governor drive adapter |
| 17 - Bearing inner race | 47 - Lock washer, 5/16 (4) |
| 18 - Thrust washer | 48 - Bolt, 5/16-18 x 1 (4) |
| 19 - Disconnect coupling | 49 - Governor drive adapter |
| 20 - Detent spring | 50 - Gasket |
| 21 - Detent ball, 1/2 (2) | 51 - Spacer |
| 22 - Power takeoff output shaft | 52 - Bolt, 5/16-18 x 7/8 (2) |
| 23 - Single-row ball bearing | 53 - Lock washer, 5/16 (2) |
| 24 - Retainer gasket | 54 - Speedometer drive sleeve assembly |
| 25 - Bearing retainer | 55 - Drive sleeve |
| 26 - Lock washer, 1/2 (6) | 56 - Washer |
| 27 - Bolt, 1/2-13 x 1 1/2 (6) | 57 - Oil seal |
| 28 - Oil seal | 58 - Washer |
| 29 - Power takeoff output flange | 59 - Gasket |
| 30 - Shim, 0.005 or 0.025 thk (AR) | 60 - Speedometer drive shaft |

