

CORVAIR—500, 700 AND 900 SERIES

FOUR SPEED TRANSMISSION

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GENERAL DESCRIPTION

The Corvair four-speed transmission (fig. 6D-29) is of the helical gear, constant mesh type to provide full synchronization in all forward gears. Spur gears on the mainshaft and countershaft are engaged by a small sliding spur gear to provide reverse. Reverse is not synchronized.

Like the Corvair three-speed, the four-speed mainshaft is hollow to permit passage of the clutch shaft forward to the clutch gear. The mainshaft is supported at the front in a double row of needle bearings carried by the clutch gear and at the rear by a ball bearing race. In turn, the clutch gear is carried in the front of the case by an identical ball bearing race.

The countergear is of single piece construction and is carried on double rows of needle bearings at each end. Thrust washers are used both front and rear between the countergear and the transmission case. A slight press fit is used at the front of the countershaft to retain the shaft and to prevent lubrication loss at this point.

Vehicle shift components are comparable to those used with the Corvair three-speed transmission. A long shift tube supported by nylon bushed brackets in the tunnel spans the distance between the driver's compartment and the front of the transmission. At the

front, the tunnel shift tube carries a ball socket at 90-degrees to receive the lower end of the gearshift lever. A rubber sleeved coupling is secured by a clamp nut to the tunnel shift tube at the rear to provide attachment to the transmission shift rod and to provide a means of adjusting the length of the tunnel tube for linkage adjustment. Thus, by moving the gearshift lever, shift tube motion is provided both fore and aft and laterally.

In the transmission, three shift fork rods are mounted parallel above the transmission shift rod which is attached to the tunnel shift tube. The transmission shift rod carries a finger which extends upward to engage the shift forks. As the three forks are mounted on parallel rods, a slight rotation of the shift rod moves the shift finger from the 1-2 fork in the center to the 3-4 fork which is outboard. To engage the reverse shifter head, which is mounted on the in-board shaft, the shift finger must be moved laterally against a spring-loaded plunger at the neutral cross-over point. The plunger is required to prevent accidental shifting into reverse while in motion as the 1-2 fork has a gate to permit passage of the shift finger through it to reach reverse.

Gear ratios are 3.65:1 in first, 2.35:1 in second, 1.44:1 in third, and 1:1 in fourth. Reverse is 3.66:1.

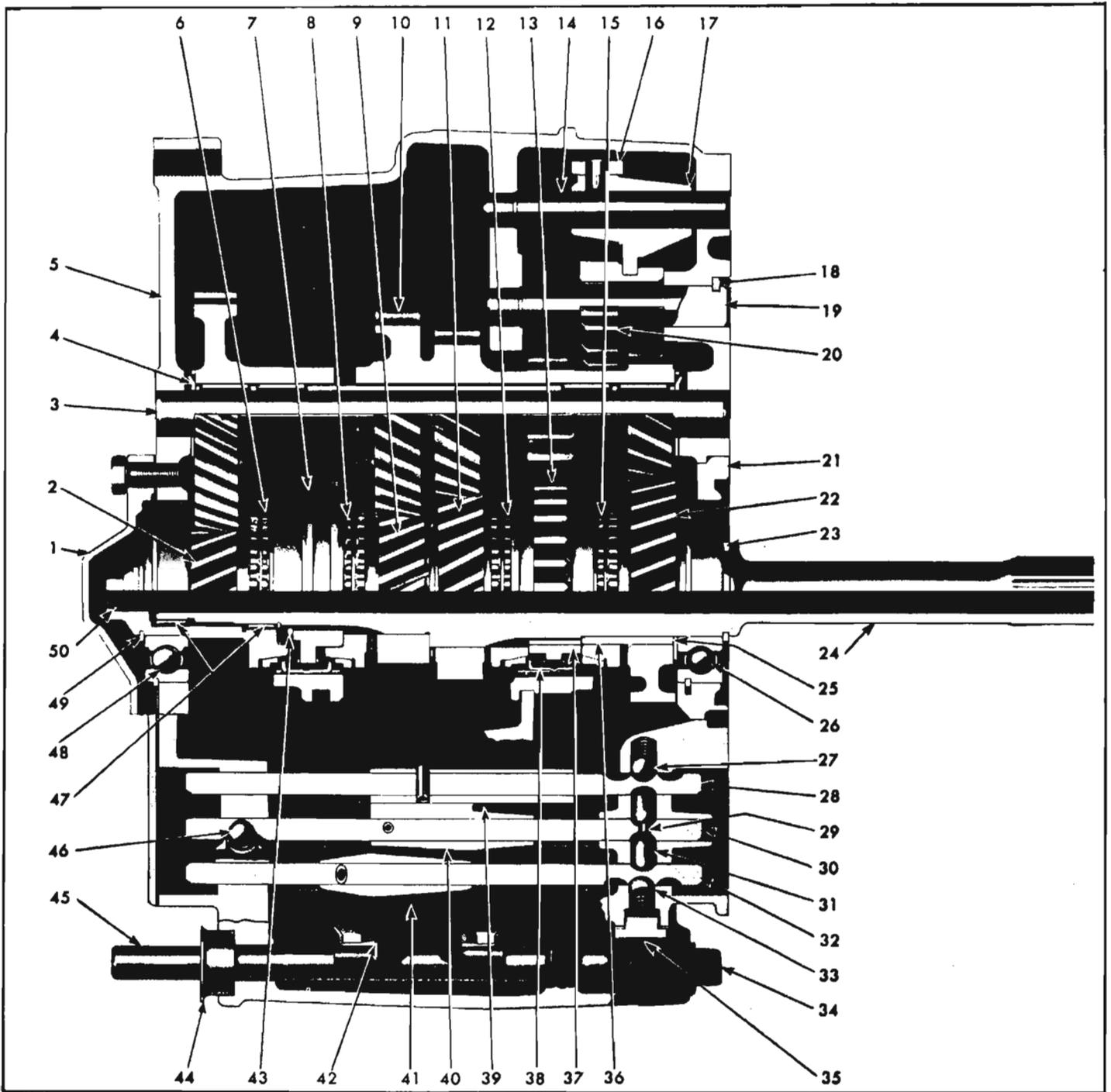


Fig. 6D-29—Corvair Four Speed Transmission—Cross Sectional View

- | | | | |
|--|---|---|--|
| 1. Front Bearing Retainer | 15. 1-2 Blocker Ring | 29. Interlock Pin | 41. 3-4 Shift Fork |
| 2. Clutch Gear | 16. Reverse Shifter Lever | 30. 1-2 Shift Fork Shaft | 42. Shift Finger |
| 3. Countershaft | 17. Reverse Shift Fork | 31. Interlock | 43. Special Snap Ring |
| 4. Countergear Thrust Washer | 18. Woodruff Key | 32. 3-4 Shift Fork Shaft | 44. Shifter Shaft Seal |
| 5. Transmission Case | 19. Reverse Idler Gear Shaft | 33. 3-4 Shift Fork Shaft Detent Ball and Spring | 45. Shifter Shaft |
| 6. 3-4 Blocker Ring | 20. Reverse Idler Gear | 34. Drain Plug | 46. 1-2 Shift Fork Shaft Detent Ball and Spring |
| 7. 3-4 Shift Collar | 21. Rear Bearing Retainer | 35. 3-4 Detent and Interlock Channel Cap | 47. Clutch Gear Roller Bearings (33 Front—37 Rear) |
| 8. 3-4 Blocker Ring | 22. First Gear | 36. First Gear Sleeve | 48. Clutch Gear Bearing |
| 9. Third Gear | 23. Rear Bearing Selective Snap Ring | 37. 1-2 Synchronizer Hub | 49. Clutch Gear Bearing Selective Snap Ring |
| 10. Countergear | 24. Mainshaft | 38. Synchronizer Key | 50. Snap Ring (Clutch Shaft Bottoming Stop) |
| 11. Second Gear | 25. First Gear Thrust Washer | 39. Reverse Shifter Head | |
| 12. 1-2 Blocker Ring | 26. Rear Bearing | 40. 1-2 Shift Fork | |
| 13. 1-2 Shift Collar (with Integral Reverse Spur Gear) | 27. Reverse Shifter Head Shaft Detent Ball and Spring | | |
| 14. Reverse Shift Fork Shaft | 28. Reverse Shifter Head Shaft | | |

MAINTENANCE AND ADJUSTMENTS

LUBRICATION

Common lubricant, SAE 80, Multipurpose Gear Lubricant, is used in the four-speed transmission and differential carrier so no oil seals are used between these units. Actually there is some interchange of lubricant as a lubricant dam is formed at the transmission which prevents entrapment of excess lube in the carrier sump which is below the transmission level, thus maintaining transmission lubrication on upgrades.

Oil Level Check

Each 1000 miles, check the lubricant of the four-speed Transaxle by removing the filler plug in the differential carrier. If oil is at the level of carrier filler plug, both the carrier and transmission lubricant levels are satisfactory. If oil is below filler plug, add oil to the carrier as required, then check the lubricant level in the transmission by removing its filler plug. Replenish as necessary.

CAUTION: Under no circumstances should any lubricant containing active sulphur be used. Also, do not use mineral oil. Only SAE 80 Multipurpose Gear Lubricant should be used.

Oil Change

At the end of the first 1000 miles and each 10,000 miles thereafter (oftener under severe dust or service conditions), drain both the differential carrier and four-speed transmission by removing the drain plug provided in each. Reinstall the drain plugs and refill each unit to the level of the filler plugs with SAE 80 Multipurpose Gear Lubricant.

SHIFT LINKAGE ADJUSTMENT

After any service operation in which the shift control rod in the tunnel has been replaced or it has been found that transmission response is improper to the shift pattern, adjust the shift linkage.

1. Shift the transmission to fourth, then loosen the coupling clamp nut (fig. 6D-3) on the tunnel shift tube.
2. Move the gearshift lever its full limit rearward in fourth or until it is resting against the edge of the seat, then tighten the coupling clamp nut on the tunnel tube. The shift lever will not touch when a person's weight is on the seat.
3. Test shifts in all ranges.

SERVICE OPERATIONS

SERVICE REFERENCE GUIDE

All service operations relative to the four-speed transmission should be performed with the transmission removed from the vehicle and separated from the power train.

Transmission controls can be serviced without disturbing the power train and therefore are listed under "Service Operations—Transmission In Vehicle" immediately following.

SERVICE OPERATIONS—TRANSMISSION IN VEHICLE

Gearshift Lever Assembly

The removal, overhaul, and installation procedures for the four-speed gearshift lever are identical to those provided earlier in this section for the three-speed transmission. However, the four-speed gearshift lever does not embody the seat (fig. 6D-2) used in three-speed gearshift levers.

Shift Control Rod

The removal, overhaul, and installation procedures for the four-speed transmission shift control rod are identical to those used for the three-speed transmission which are provided earlier in this section.

TRANSMISSION REMOVAL AND INSTALLATION

Instructions for the removal of the power train from the vehicle and the separation of the transmission from the power train are provided in Section 6.

DISASSEMBLY OF TRANSMISSION

1. Remove six bolts securing front cover and eight bolts securing side cover and remove covers from case.

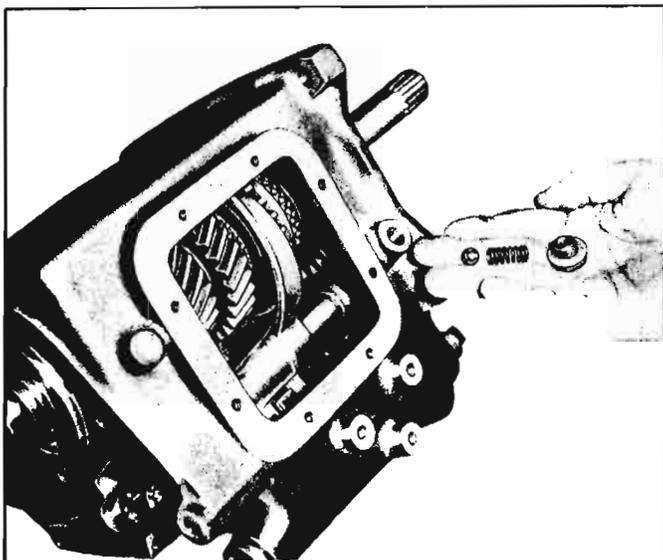


Fig. 6D-30—Removing 3-4 Shift Fork Detent Components

2. Remove plug, detent spring, and ball from 3-4 detent channel (fig. 6D-30) at the left-rear of the case.
3. Shift the 3-4 shift fork (fig. 6D-31) into fourth gear (full forward), then drive roll pin from shift fork with a pin punch. Remove 3-4 shift shaft with a drift and remove fork. Shaft can be driven from case in either direction.
4. Remove plug, spring, and detent ball from 1-2 detent channel at front of case adjacent to shifter shaft.

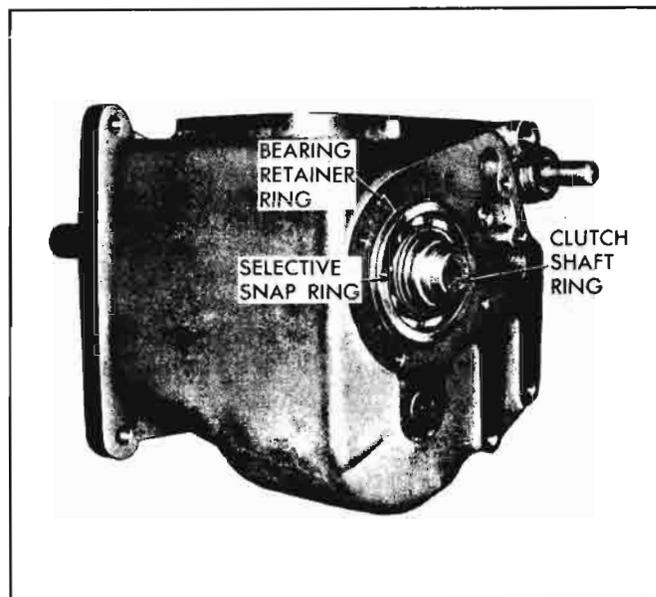


Fig. 6D-32—Clutch Gear and Bearing Snap Rings

6. Remove the snap rings located in the clutch gear bore, between the clutch gear and bearing, and between the clutch gear bearing and case (fig. 6D-32).
7. Install clutch bearing puller J-8880 as follows:
 - a. Assemble puller plates J-8880-1 (fig. 6D-33) onto clutch gear bearing by inserting plates into the bearing groove, then secure puller plates together with two screws.

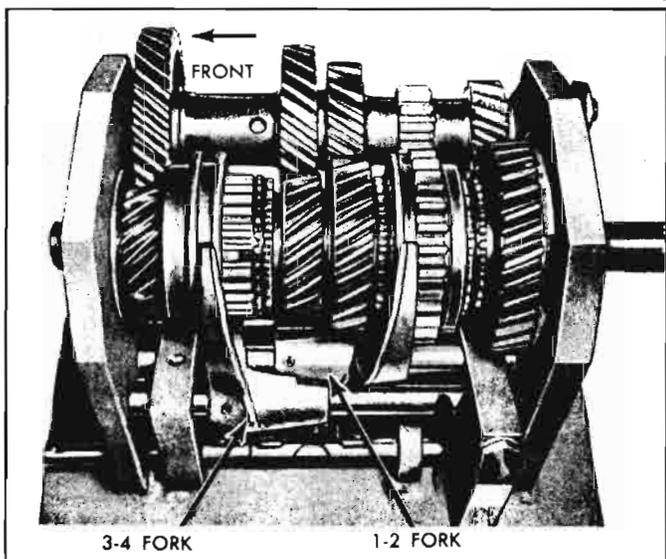


Fig. 6D-31—Shift Forks Installed

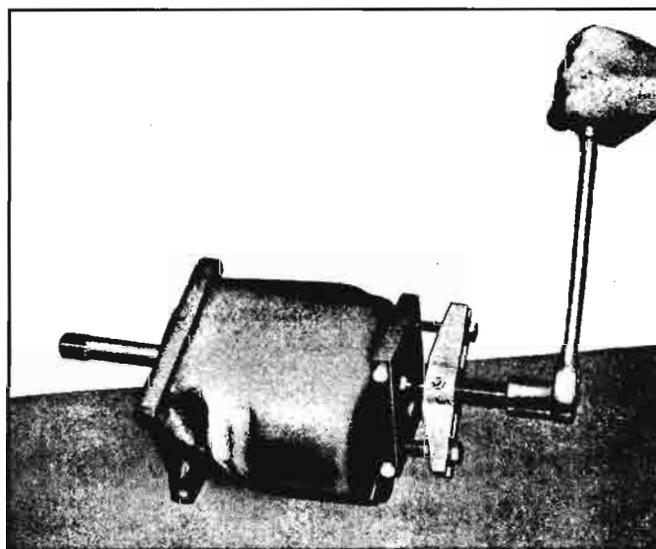


Fig. 6D-33—Removing Clutch Gear Bearing with Puller J-8880

5. Move 1-2 shift fork (fig. 6D-31) into second gear (full forward), then remove roll pin securing fork to shaft with a pin punch. Remove shift fork and shaft by tapping shaft out of case in either direction.

- b. Insert adapter plug J-8880-2 into bore of clutch gear.
- c. Attach body J-8111-3 to puller plates with two $\frac{1}{2}$ "-13 x 2- $\frac{1}{2}$ " screws and two $\frac{1}{2}$ " flat washers. Back out large puller screw in body as required.

to permit attachment of body to puller plates with these screws.

- d. Remove the clutch gear bearing by turning puller screw in J-8880 as shown (fig. 6D-33). Separate puller plates from bearing.

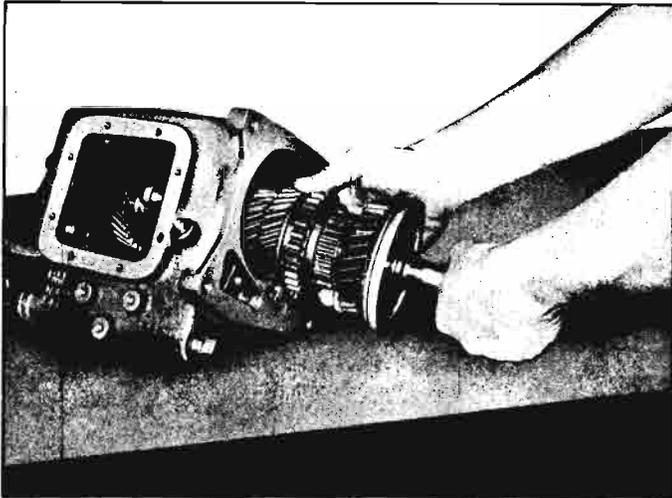


Fig. 6D-34—Removing Assembled Mainshaft Components

8. Remove mainshaft with assembled gears and rear bearing retainer as shown in figure 6D-34. It may be necessary to jiggle the output shaft, making sure the clutch gear does not separate from mainshaft. After removal of mainshaft from transmission, shift synchronizer sleeves to neutral.
9. Using a pin punch, drive roll pin from reverse shifter head (fig. 6D-35), then remove shifter head and shaft from case by tapping shaft out in either direction with a drift.
10. Drive out reverse idler gear and reverse shifter fork shafts from the case by driving rearward with

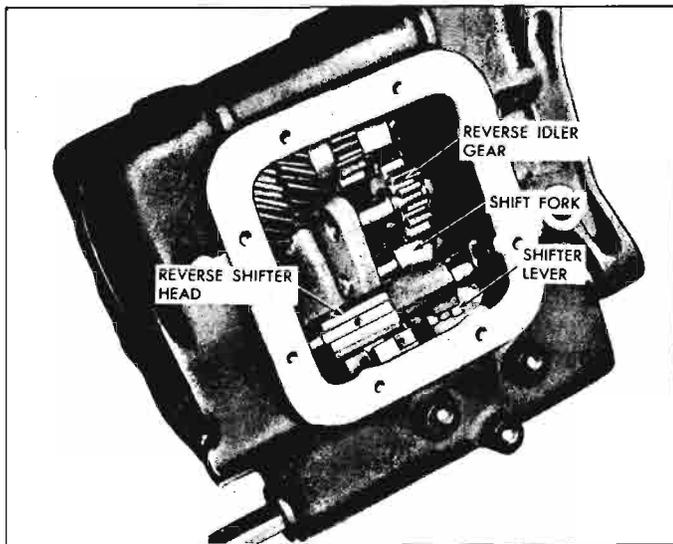


Fig. 6D-35—Reverse Components—Installed View

a drift. Use care not to lose Woodruff key used in reverse idler gear shaft. Remove idler gear and reverse shifter fork (fig. 6D-35) from case.

11. Remove reverse shifter lever (fig. 6D-35) by lifting off its pin in the case.
12. To remove the countergear, improvise a dummy shaft by cutting a 7" length of $\frac{9}{16}$ " roll stock, then drive countershaft rearward using the dummy shaft until the countershaft is fully disengaged from the case and the dummy shaft is fully within the countergear (fig. 6D-36). Carefully remove the countergear and dummy shaft from the case, using care not to tip countergear to prevent needle bearings from falling out.

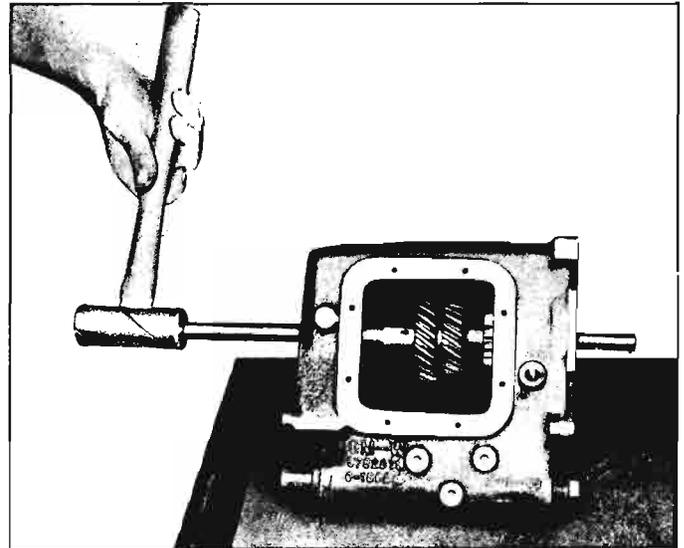


Fig. 6D-36—Removing Countergear Shaft with Dummy Shaft

13. Remove two countergear thrust washers from case.
14. Using a magnet or by tipping the case, remove the two interlocks and the detent ball and spring remaining in the 3-4 detent channel.
15. Remove shift finger from selector shaft by first flattening lock tabs securing the two retaining screws, then remove shifter shaft plug in rear of case. Tap shaft rearward from case out through hole with a drift.
16. Remove two screws securing reverse inhibitor to case and remove inhibitor. This completes disassembly of transmission.

DISASSEMBLY OF MAINSHAFT

1. Place clutch gear downward against table top and carefully lift mainshaft out of clutch gear to prevent disturbing clutch gear roller bearings.
2. Remove special snap ring (fig. 6D-37) from front of mainshaft, then slide 3-4 synchronizer unit with blocker rings, third speed gear, radial needle bearing, and second speed gear from mainshaft.

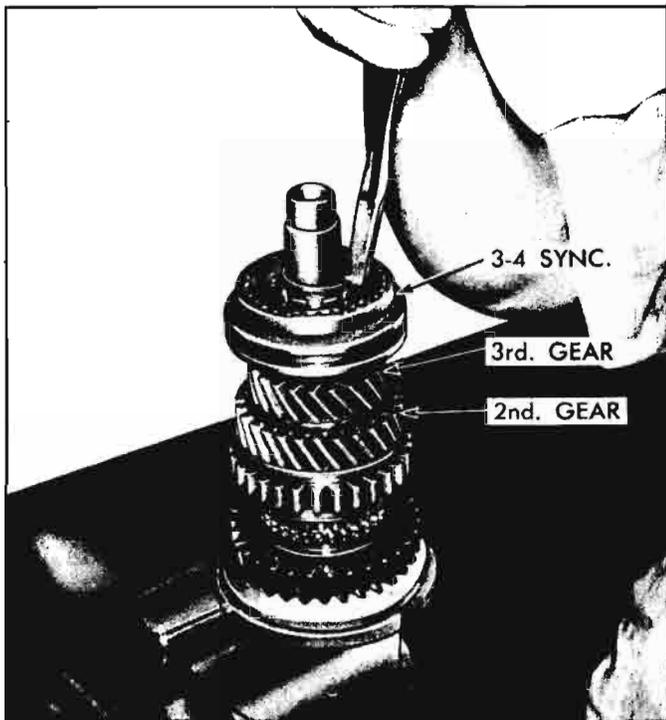


Fig. 6D-37—Mainshaft Front Components

3. Remove rear bearing selective snap ring (fig. 6D-38), then remove rear bearing and retainer as an assembly.
4. Remove first speed gear thrust washer, first speed gear, and 1-2 blocker rings (fig. 6D-38).
5. Press mainshaft out of 1-2 synchronizer unit and first speed gear sleeve (fig. 6D-39). This completes disassembly of mainshaft.

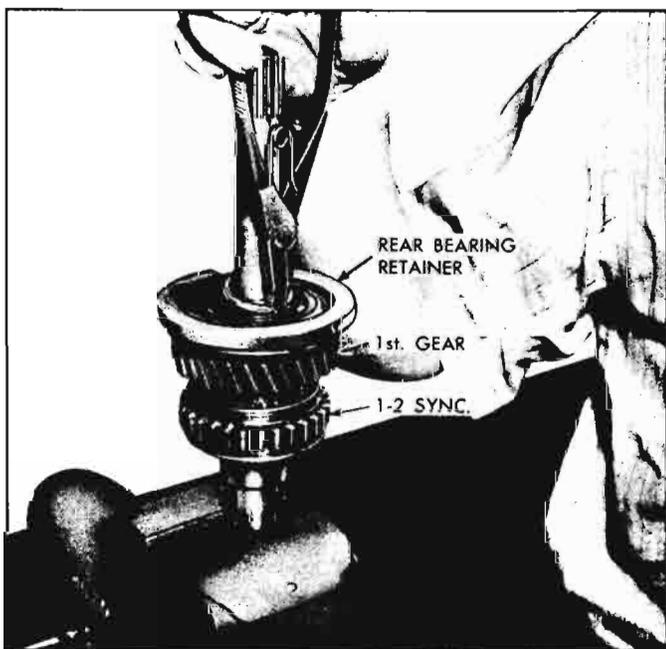


Fig. 6D-38—Mainshaft Rear Components

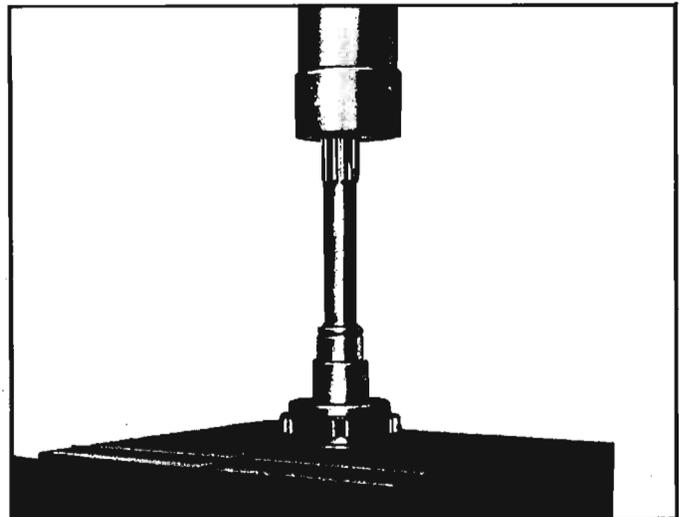


Fig. 6D-39—Removing 1-2 Synchronizer and First Gear Sleeve from Mainshaft

INSPECTION AND REPAIR

Transmission Case

Wash the transmission case inside and out with a cleaning solvent and inspect for cracks. Inspect the rear face which fits against differential carrier for burrs and if any are present, dress them off with a fine mill file.

Also check the condition of the shifter shaft seal and replace if necessary.

Front and Rear Bearings

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

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

3. Make sure the bearings are clean, then lubricate them with light engine oil and check them for roughness. Roughness may be determined by slowly turning the outer race by hand.

Bearing Rollers and Spacers

All clutch gear and countergear bearing rollers should be inspected closely and replaced if worn. Inspect countershaft at the same time and replace if necessary. Replace all worn spacers.

Gears and Thrust Washers

Inspect all gears and thrust washers and, if necessary, replace all that are worn or damaged.

Clutch Keys and Springs

NOTE: The clutch hubs and sliding synchro-

nizer sleeves are a matched assembly and should be kept together as originally assembled, but the three keys and two springs may be replaced if worn or broken.

Replacement

1. Push the hub from the sliding sleeve. The keys will fall free and the springs may be easily removed.

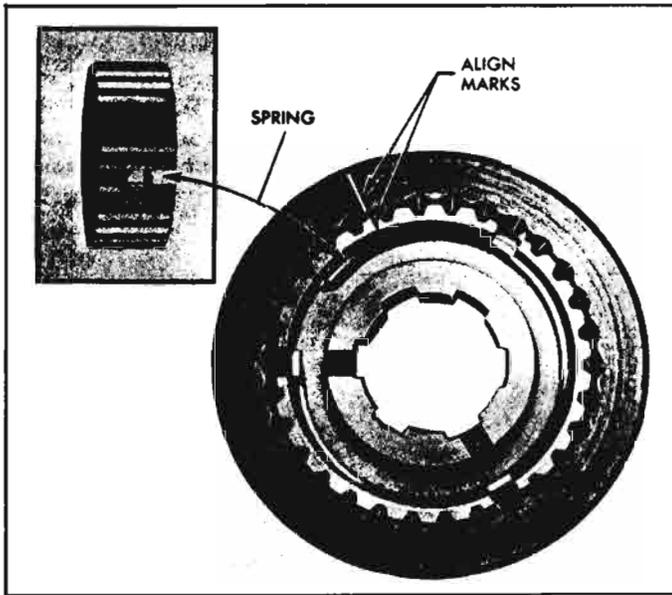


Fig. 6D-40—Synchronizer Spring and Hub Installation

2. Place the two springs in position (one on each side of the hub), so a tanged end of each spring falls into the same keyway in the hub (inset, fig. 6D-40). Holding keys in position, align etched marks (fig. 6D-40), in hub and sleeve, then slide hub into sleeve. Be sure etched marks align after assembly.

Rear Bearing Race Replacement

If inspection reveals the necessity to replace the rear bearing, place the bearing and retainer in a press (fig. 6D-41). Expand retainer ring and press out bearing. Install a new bearing by reversing this procedure.

ASSEMBLY OF MAINSHAFT

1. Install 1-2 synchronizer hub onto mainshaft with shift fork groove of hub downward (fig. 6D-42), then place first gear sleeve on mainshaft. Press both first gear sleeve and synchronizer hub onto mainshaft until they bottom, using J-5590 or other suitable tool.
2. Install blocker ring in rear of 1-2 synchronizer, being sure that notches in blocker ring engage keys in synchronizer unit. It should be noted that blocker rings used in the 1-2 synchronizer have slightly longer hubs (fig. 6D-43) than those used

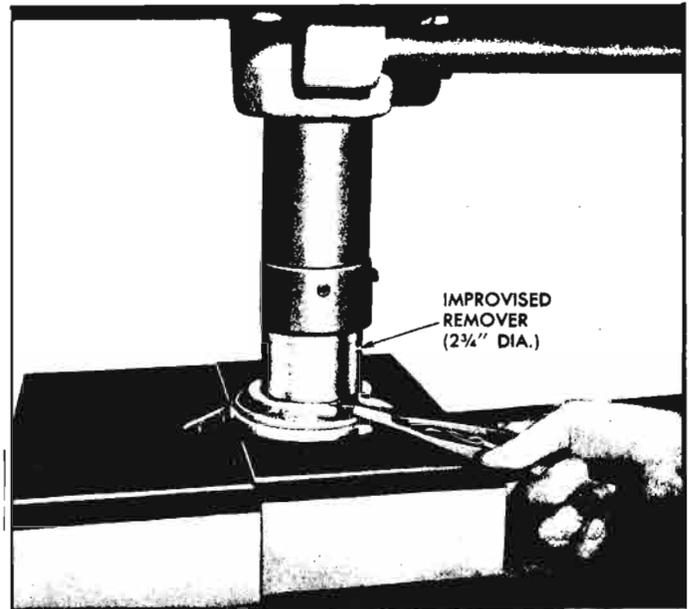


Fig. 6D-41—Pressing Rear Bearing from Bearing Retainer

in the 3-4 synchronizer. Then slide first speed gear (fig. 6D-44) and its thrust washer onto mainshaft.

3. Install assembled rear bearing retainer (fig. 6D-44) and rear bearing onto mainshaft and secure with selective fit snap ring as shown previously in Figure 6D-38. With the proper snap ring installed (three thicknesses available), maximum end play between rear face of rear bearing and snap ring will be .005\".

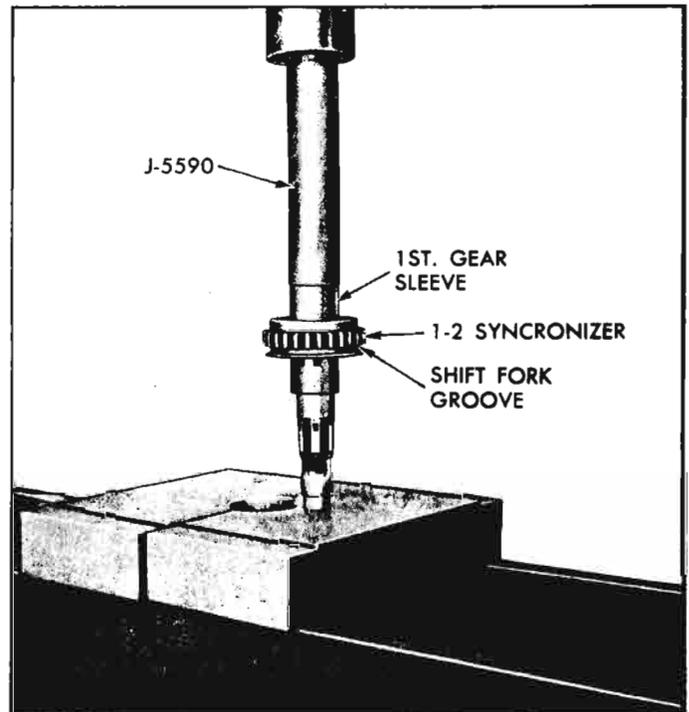


Fig. 6D-42—Installing First Gear Sleeve and 1-2 Synchronizer on Mainshaft with J-5590

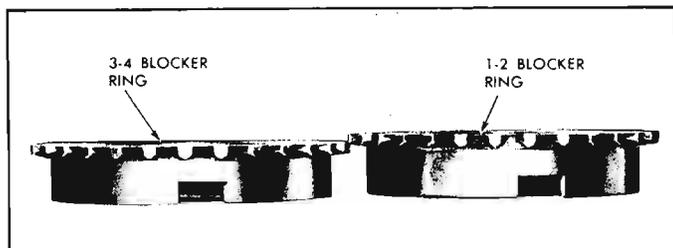


Fig. 6D-43—Blocker Ring Length Comparison

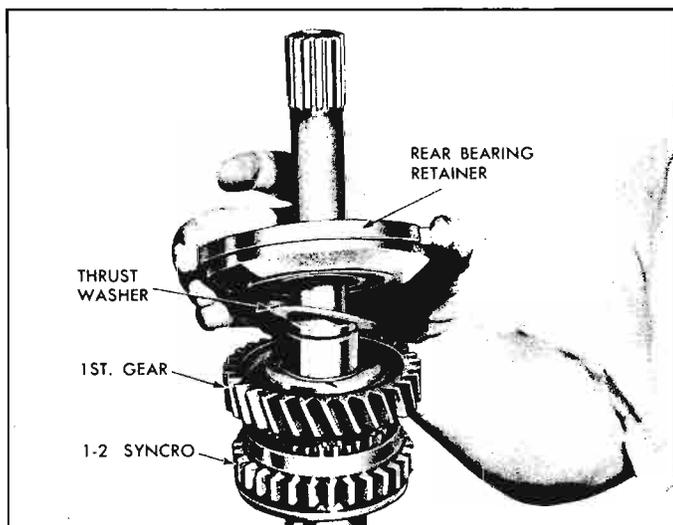


Fig. 6D-44—Installing 1-2 Synchronizer, First Gear, and Rear Bearing Retainer on Mainshaft

4. Invert mainshaft, then install the second blocker ring (long hub) in front side of 1-2 synchronizer (fig. 6D-45), again being sure to engage blocker ring notches with keys in synchronizer unit.

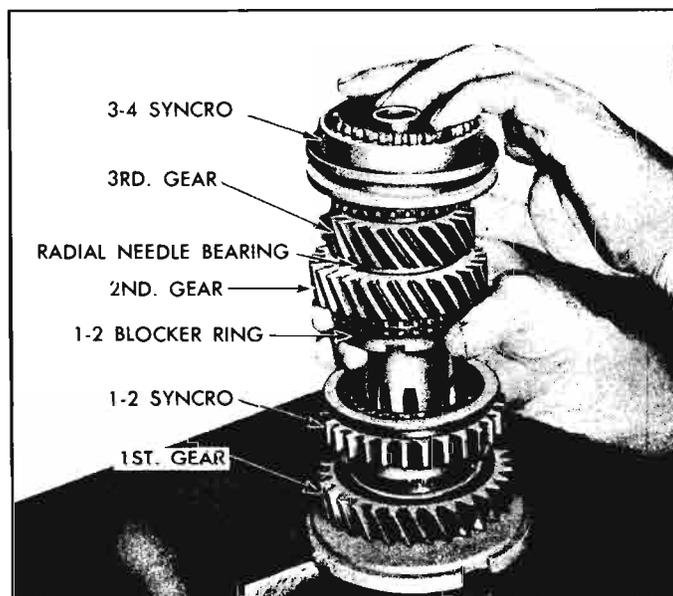


Fig. 6D-45—Installing Second Gear, Third Gear, and 3-4 Synchronizer on Mainshaft

5. Install second speed gear (fig. 6D-45) with clutching teeth toward 1-2 synchronizer, then place radial needle bearing on second speed gear.
6. Install third speed gear, clutching teeth upward, onto mainshaft and seat it against the radial needle bearing (fig. 6D-45).
7. Place 3-4 blocker ring on cone surface of third speed gear, then slide 3-4 synchronizer unit onto blocker ring. Be sure notches in blocker ring engage clutch keys in synchronizer unit. Install second blocker ring onto 3-4 synchronizer unit.
8. If clutch gear roller bearings have become displaced, load 33 needle bearings into innermost diameter and 37 needle bearings into outermost diameter, using a generous amount of petroleum jelly to prevent roller bearings from becoming displaced (fig. 6D-46).

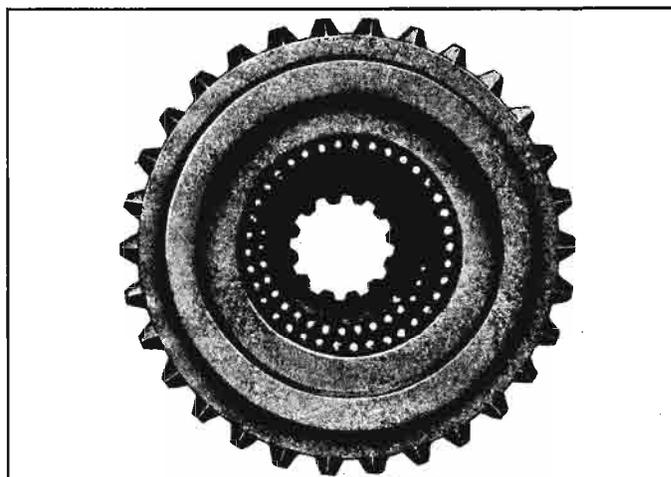


Fig. 6D-46—Clutch Gear Roller Bearings Installed

9. Carefully slide clutch gear onto mainshaft. It is good practice to place the clutch gear on a bench with its pilot bore upward and insert the mainshaft into the clutch gear. This prevents accidentally dislodging the clutch gear roller bearings. Set assembled mainshaft (fig. 6D-47) aside for later installation into transmission.

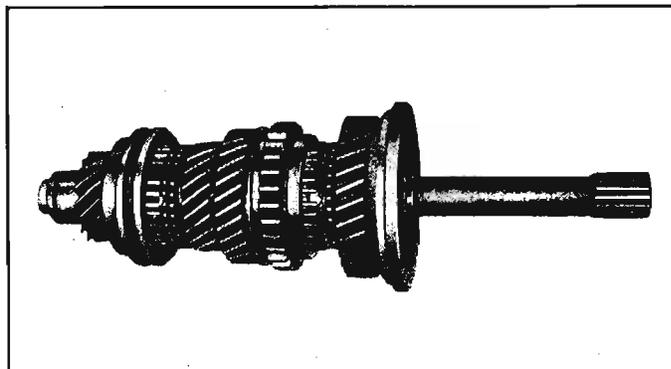


Fig. 6D-47—Assembled Mainshaft

ASSEMBLY OF TRANSMISSION

1. Position reverse inhibitor body (fig. 6D-48) in transmission case on its dowel pin and secure with two screws and lockwashers. Be sure to install plunger in inhibitor body.



Fig. 6D-48—Reverse Inhibitor and Shift Finger Installation

2. Coat selector shaft with grease, then insert through seal from the inside of the case. Do not install shaft from front of case as notches in selector shaft will damage seal lips.
3. Attach shift finger to selector shaft using two bolts and lock tabs (fig. 6D-48). Bend tabs onto bolt heads after tightening bolts, then install drain plug in case at rear of selector shaft.
4. Using a generous amount of petroleum jelly, position the countergear thrust washers in the case. Be sure the thrust washer tabs engage the grooves in the case.
5. Insert the countergear with its roller bearings and dummy shaft ($\frac{9}{16}$ " x 7") into the case via the

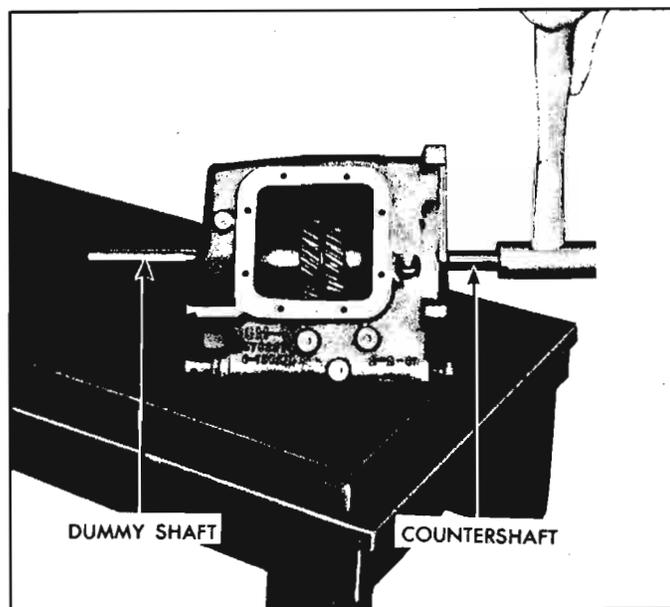


Fig. 6D-49—Installing Countergear Shaft

rear bearing hole. Carefully lift the countergear into alignment with the countershaft holes in the case, then tap the countershaft into the gear from the rear of the case (fig. 6D-49). Use care to keep the dummy shaft constantly against the countershaft during the installation to prevent losing countergear roller bearings. Tap countershaft in until it is flush with the rear face of the case. The countershaft is a slight press fit at the front of the case.

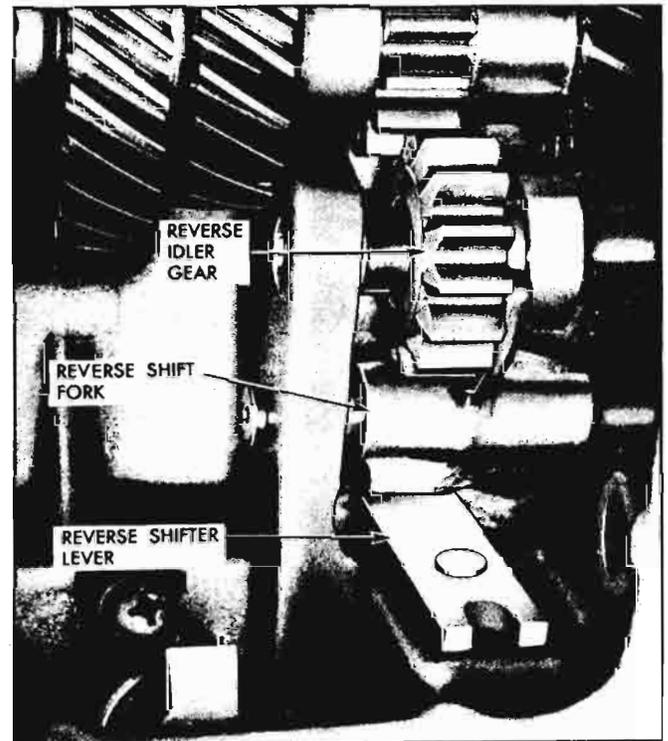


Fig. 6D-50—Installation of Reverse Shifter Lever, Shift Fork, and Reverse Idler Gear

6. Place reverse shifter lever (fig. 6D-50) on pin in case with tapered end away from the reverse inhibitor.
7. Place the reverse idler gear shift fork in the case with its pin toward the front (fig. 6D-50). Engage the fork pin with the reverse shifter lever, then insert the shift fork shaft.
8. With the reverse idler gear shift fork fully rearward, engage the reverse idler gear to the shift fork (fig. 6D-50). Then align the Woodruff key groove in the idler gear shaft with the keyway in the rear face of the case and slide the shaft almost fully into the case, install Woodruff key in shaft, then fully bottom shaft.
9. Tap both reverse idler and shift fork shafts to insure full seating, then stake each shaft bore in two places below the rear face of the case adjacent to the shaft chamfer. Be sure stakes do not protrude above the rear face as this would disrupt the mating surface for the axle.

10. Insert a detent spring and ball in the 3-4 detent channel, checking that the spring goes fully to the bottom of the channel and that the detent ball does not roll out the reverse shifter head shaft hole in the detent channel.

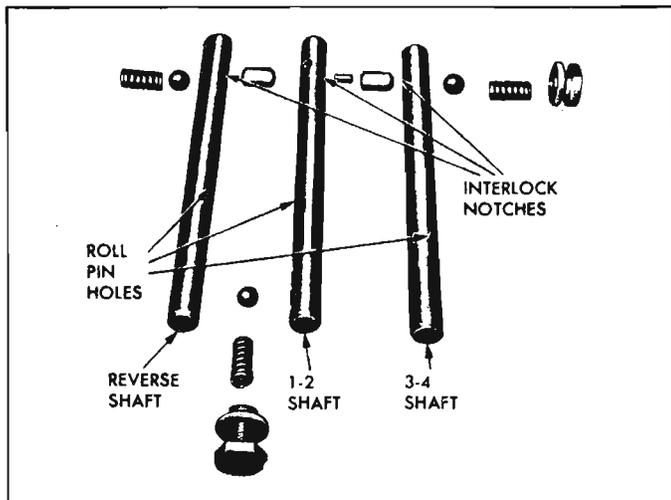


Fig. 6D-51—Shift Fork Shaft Identification

11. Lay out the shift fork shafts as illustrated in Figure 6D-51 to prevent mixing the shafts during installation. With the interlock notches aligned, the reverse shifter head shaft can be identified as its pin hole is approximately centered on the shaft. The 1-2 fork shaft is most easily recognized as it has two interlock notches in the shaft and these notches are connected by a drilled hole which houses the interlock pin. Finally, the 3-4 fork shaft roll pin hole is closest to the end of the shaft opposite the detent notched end.
12. Depress the detent ball and spring in the 3-4 detent

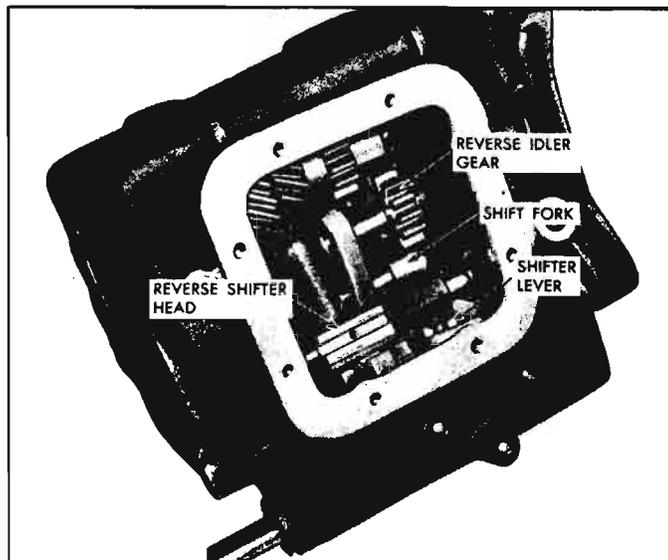


Fig. 6D-52—Reverse Shifter Head Installation

channel slightly with a small drift and insert the reverse shifter head shaft (fig. 6D-52) partially into the case to compress the detent. Then engage the pin of the reverse shifter head with the yoke of the reverse shift lever. Check that the shaft pin hole is aligned with the pin hole in the shifter head and push the shaft through until the pin holes in the head and shaft align. Secure shifter head to shaft with roll pin.

13. To install the assembled mainshaft in the case, shift the synchronizers into second and fourth simultaneously (both full forward) to provide clearance to pass the countergear. Insert the mainshaft through the rear bearing bore into the case. Align rear bearing retainer portion of clearance hole with portion of clearance hole located at the 2 o'clock position on the rear face of the case, then tap rear bearing retainer into case until flush with the rear face.
14. With large snap ring installed in outer diameter of front bearing, tap bearing into front of case and over clutch gear hub until large snap ring seats against front of case.

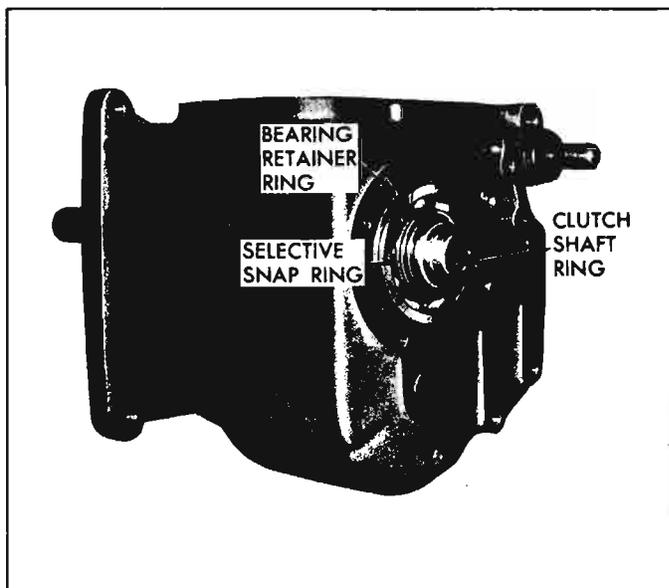


Fig. 6D-53—Clutch Gear and Bearing Snap Rings

15. Retain clutch gear in bearing with selective snap ring (fig. 6D-53). With proper snap ring installed, maximum end play between bearing and snap ring will be .005".
16. Install small snap ring in inner diameter of clutch gear (fig. 6D-53). This snap ring acts as a bottoming stop for the clutch shaft.
17. Prior to installing the 1-2 shift fork, shift the 1-2 synchronizer and the 3-4 synchronizer to neutral. Then install one interlock in the 3-4 detent channel.
18. With the interlock pin in the hole in the interlock notch end, push the 1-2 shift fork par-

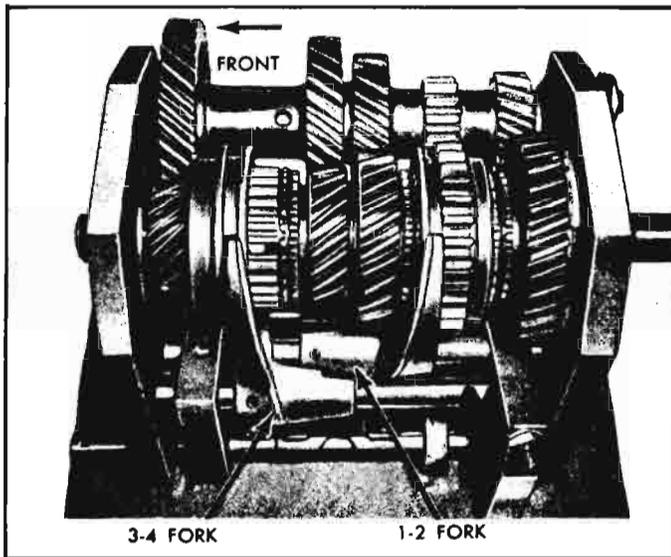


Fig. 6D-54—Shift Forks Installation

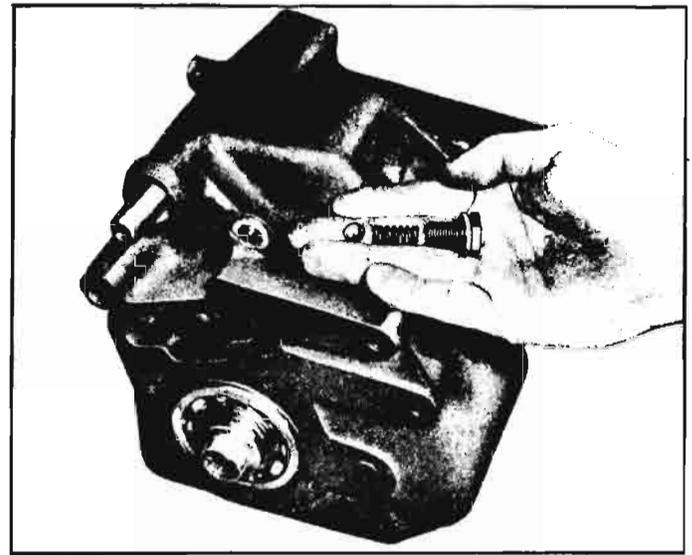


Fig. 6D-55—Installing 1-2 Shift Fork Detent Components

tially into the case. The interlock end (two opposite notches) of the shaft goes to the rear of the case. Engage 1-2 shift fork (fig. 6D-54) which is identified by the thru gate at the shift location, with the 1-2 synchronizer. Align the pin holes in the shaft and fork, then tap shaft rearward until it engages interlock and secure fork to shaft with roll pin.

19. Install detent ball, spring, gasket, and cap in 1-2 detent channel (fig. 6D-55). Cap used at this location has the longer shank.
20. Drop remaining interlock into 3-4 detent channel, then push 3-4 shift fork shaft partially through hole in front of case. Engage 3-4 shift fork (fig. 6D-55) in 3-4 synchronizer, align pin hole in shift

fork and shaft, then push shaft fully to rear of case until it engages interlock. Secure shift fork shaft with roll pin.

21. Install remaining detent ball, spring, nylon washer, and cap in 3-4 detent channel at left-rear of case.
22. Prior to installing front bearing retainer and side cover, test operation of shift forks by actuating the shift selector lever with a small pin punch inserted in the hole in the shifter shaft. If transmission shifts satisfactorily, install front bearing retainer using a new gasket and secure with seven bolts tightened 15-20 ft. lbs. Complete assembly of transmission by installing side cover with new gasket and secure with eight bolts tightened 3-4 ft. lbs.

TROUBLES AND REMEDIES

Symptom and Probable Cause	Probable Remedy
Slips Out of High Gear	
<ul style="list-style-type: none"> a. Transmission loose on differential carrier. b. Control linkage does not work freely, binds, or does not fully engage. c. Damaged or missing mainshaft pilot bearings. d. Clutch gear bearing retainer loose or broken. e. Dirt between transmission case and differential carrier. 	<ul style="list-style-type: none"> a. Tighten mounting bolts. b. Adjust and free up shift linkage. c. Replace pilot bearings in clutch gear. d. Tighten or replace clutch gear bearing retainer or bearing. e. Clean mating surfaces.
Noisy in All Gears	
<ul style="list-style-type: none"> a. Insufficient lubricant. b. Worn countergear bearings. c. Worn or damaged clutch gear and countergear. d. Damaged clutch gear bearing or mainshaft rear bearing. 	<ul style="list-style-type: none"> a. Fill to correct level. b. Replace countergear bearings and shaft. c. Replace worn or damaged gears. d. Replace damaged bearings.
Noisy in High Gear	
<ul style="list-style-type: none"> a. Damaged clutch gear bearing. b. Damaged mainshaft bearing. 	<ul style="list-style-type: none"> a. Replace damaged bearing. b. Replace damaged bearing.
Noisy in Neutral with Engine Running	
<ul style="list-style-type: none"> a. Damaged clutch gear bearing. b. Damaged mainshaft pilot roller bearings. 	<ul style="list-style-type: none"> a. Replace damaged bearing. b. Replace damaged roller bearings.
Noisy in All Reduction Gears	
<ul style="list-style-type: none"> a. Insufficient lubricant. b. Worn or damaged clutch gear or countergear. 	<ul style="list-style-type: none"> a. Fill to correct level. b. Replace faulty or damaged gears.
Noisy in Second Only	
<ul style="list-style-type: none"> a. Damaged or worn second speed constant mesh gears. b. Worn or damaged countergear bearings. 	<ul style="list-style-type: none"> a. Replace damaged gears. b. Replace countergear bearings and shaft.
Noisy in Low and Reverse Only	
<ul style="list-style-type: none"> a. Worn or damaged first and reverse sliding gear. b. Damaged or worn low and reverse countergear. 	<ul style="list-style-type: none"> a. Replace worn gear. b. Replace countergear assembly.
Noisy in Reverse Only	
<ul style="list-style-type: none"> a. Worn or damaged reverse idler gear teeth. b. Worn reverse idler gear bushings. c. Damaged or worn countergear reverse teeth. 	<ul style="list-style-type: none"> a. Replace reverse idler gear. b. Replace reverse idler gear. c. Replace countergear.
Excessive Backlash in All Reduction Gears	
<ul style="list-style-type: none"> a. Worn countergear bushings. b. Excessive end play in countergear. 	<ul style="list-style-type: none"> a. Replace countergear. b. Replace countergear thrust washers.
Leaks Lubricant	
<ul style="list-style-type: none"> a. Excessive amount of lubricant in transmission. b. Loose or broken clutch gear bearing cover. c. Clutch gear bearing retainer gasket damaged. d. Cover loose or gasket damaged. e. Shifter shaft seal leaks. f. Countershaft loose in case. 	<ul style="list-style-type: none"> a. Drain to correct level. b. Tighten or replace cover. c. Replace gasket. d. Tighten cover or replace gasket. e. Replace shifter shaft seal. f. Replace case.

CORVAIR 95 AND GREENBRIER—1200 SERIES

THREE SPEED TRANSMISSION

Service procedures for three speed transmissions used in 1200 Series vehicles are identical to those provided for Corvaire Passenger Car three speed transmissions. Gear shift linkage used with 1200 Series vehicles is distinctly different to accommodate the undercarriage of the van type vehicle. This linkage is illustrated in Figure 6D-56.

FOUR SPEED TRANSMISSION

Service procedures for the four speed transmission

used in 1200 Series vehicles are identical to those provided for the Corvaire Passenger Car four speed transmission as the transmissions differ in reduction gear ratios only.

First speed gear ratio is 4.26:1, 2.55:1 in second, 1.68:1 in third, and 1:1 in fourth. Reverse is 4.27:1. Increased torque multiplication in the three reduction gears is required to compensate for the lowered rear axle ratio of 3.27:1 used as standard equipment when the four speed transmission option is selected.

Gear shift linkage used in 1200 Series vehicles differs from that used in Corvaire Passenger Cars and is illustrated in Figure 6D-56.

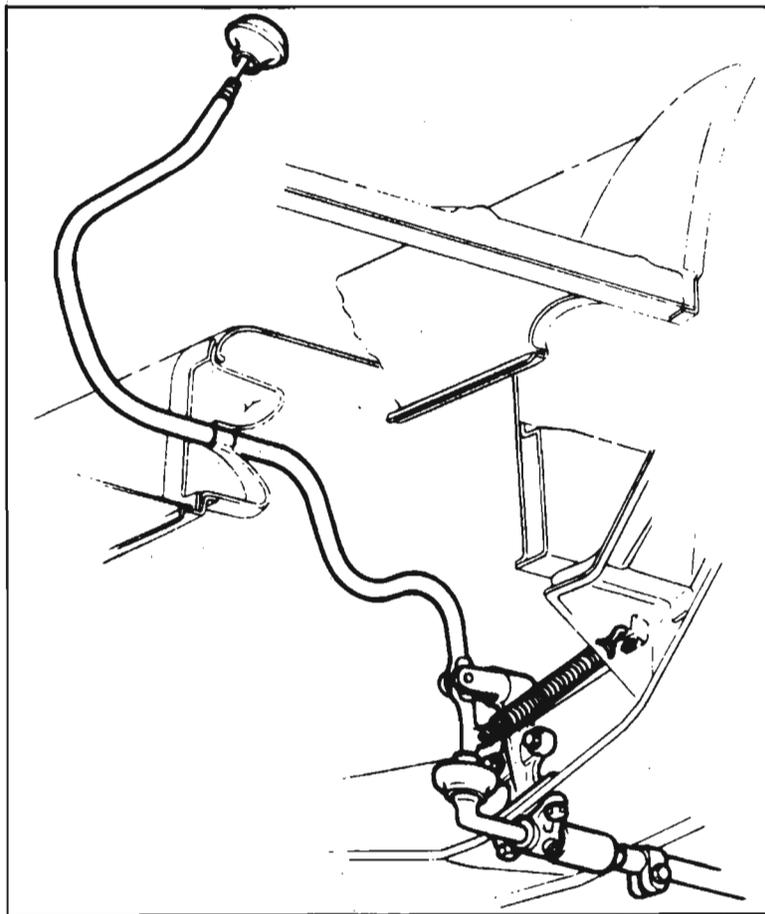


Fig. 6D-56—Gearshift Linkage—1200 Series

SPECIFICATIONS

All specifications for the three and four-speed transmissions are carried in Section 12 of this Manual.

SPECIAL TOOLS

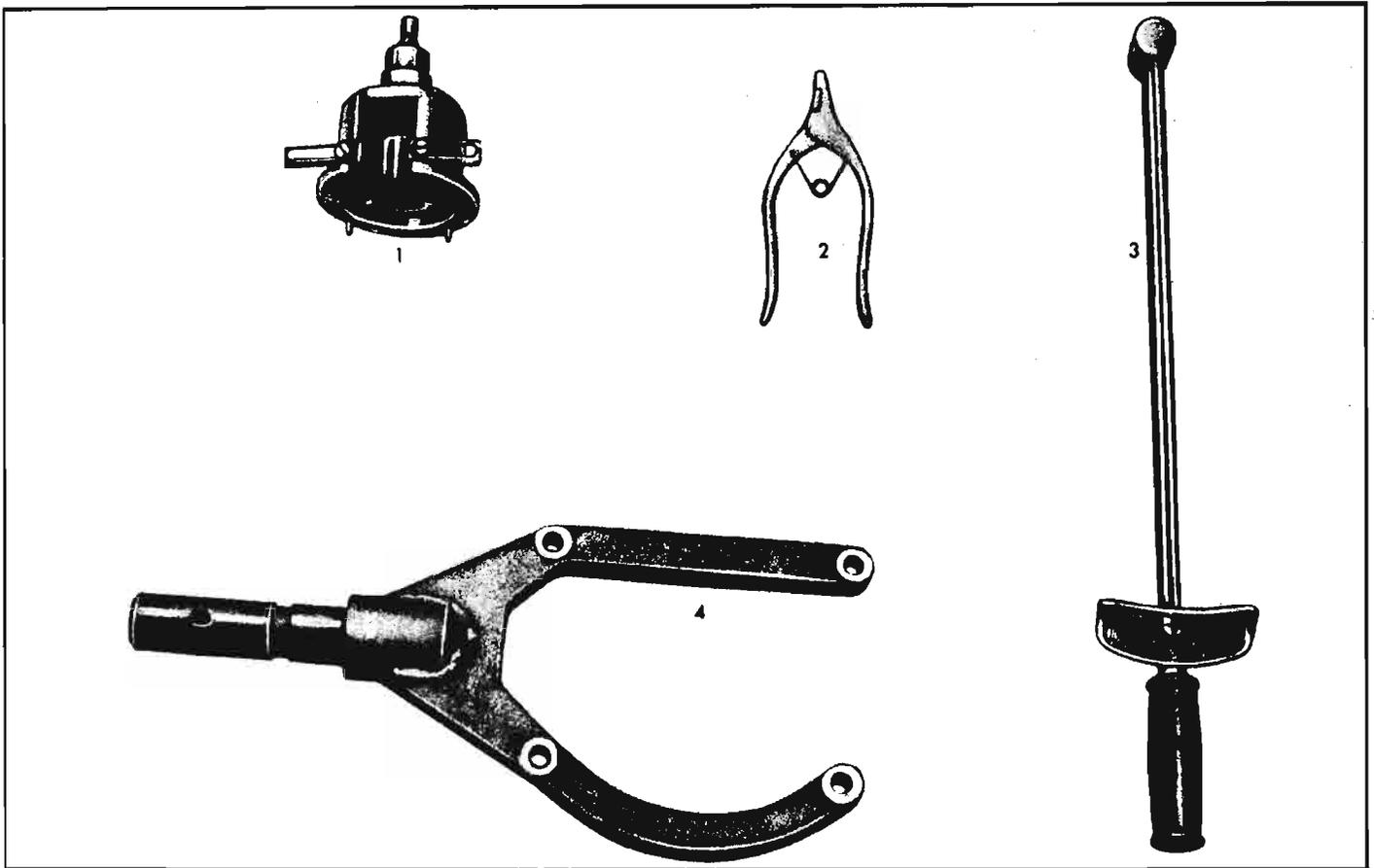


Fig. 6D-57—Three Speed Transmission Special Tools

- | | |
|---------------------------------------|---------------------------|
| 1. J-8361 Clutch Gear Puller | 3. J-1264 Torque Wrench |
| 2. J-972 Synchronizer Retainer Pliers | 4. J-7896 Holding Fixture |

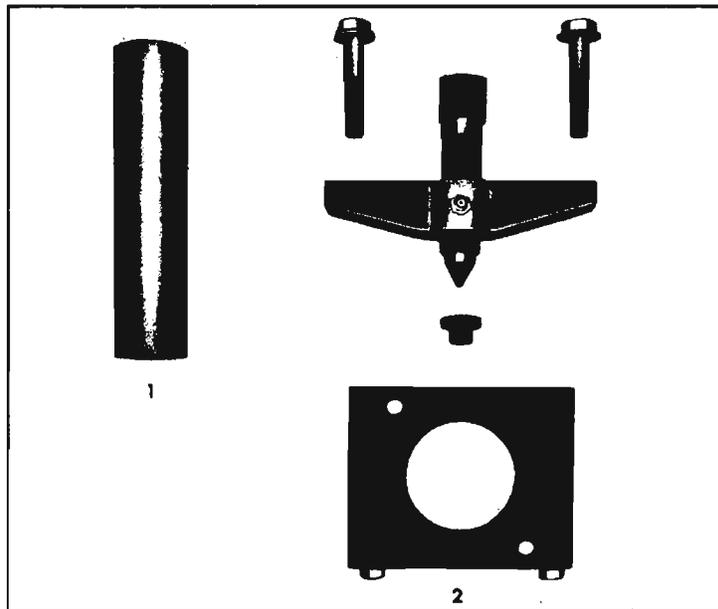


Fig. 6D-58—Four Speed Transmission Special Tools

- | | |
|---------------------|--------------------------------------|
| 1. J-5590 Installer | 2. J-8880 Clutch Gear Bearing Puller |
|---------------------|--------------------------------------|