SERVICE BULLETIN

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DATE 8 8 75 NO. 21-07-75

SUBJECT: SUJET: TRANSMISSION
NEW OVERDRIVE
4-SPEED TRANSMISSION

MODELS: MODÈLES: 1975 VALIANT AND
DART SO EQUIPPED

This Bulletin details service procedures and specifications for the new Overdrive 4-Speed manual transmission now available as optional equipment on 1975 'A' Body vehicles, (except those equipped with "Rallye" package).

Note the following:

- PART NUMBERS - See Page 25.

- LABOUR OPERATIONS - See Page 27.

- SERVICE AND REPAIR: Although the new transmission is basically similar to the existing A-833 4-speed, there are major differences in disassembly and reassembly procedures, due to changes to the countershaft and associated parts. Only the procedures detailed in this Bulletin should be followed for service and/or repair of the Overdrive transmission. An Index is provided on Page 2.

- SHIFT PATTERN: The external 3rd & O/D lever on the side of the Overdrive 4-speed transmission is in the same location as the regular A-833 4-speed, BUT it is positioned differently. On the regular 4-speed, the 3rd and 4th lever "points" upwards, whereas on the new Overdrive 4-speed, the lever "points" downwards, as shown on Fig. 3, Page 3. If you encounter a complaint of incorrect shift pattern, check to see if the lever has been installed in the correct position for this transmission.

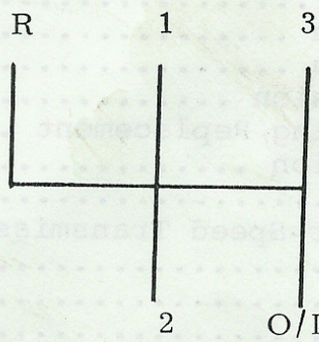


FIG. 0:
CORRECT SHIFT PATTERN

(Over)

(THIS BULLETIN IS SUPPLIED AS TECHNICAL INFORMATION ONLY AND IS NOT AN AUTHORIZATION FOR REPAIRS)

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- SHIFTER HANDLE RETENTION: This is different from the regular 4-speed transmission shifter. On the new Overdrive 4-speed, the handle is rubber isolated and is retained by a spring clip instead of two screws. See Figs. 4A and 4B.

- SHIFTER LUBRICATION TO PREVENT "BUZZ": Grease fittings are now incorporated in the 4-speed shifter mechanism (Overdrive and regular versions). When greasing the mechanism, place the shifter in the Reverse position to allow full dispersion of grease.

K.N. Gilboe
General Service Manager

MANUAL TRANSMISSION OVERDRIVE FOUR-SPEED (A-833)

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GENERAL INFORMATION

The vehicle identification number on the instrument panel starts with a capital letter which indicates the carline or sales name of vehicle (see Introduction of the service manual). These code letters are also used to indicate the vehicle to which the service information applies.

The A-833 overdrive four-speed transmission (Figs. 1, 2, and 3) is available as special equipment for some models.

Synchronizers will be serviced as an assembly. Except for stop rings, synchronizer parts should not be interchanged.

A pad has been provided (Fig. 2) on right side of transmission for transmission and vehicle identification numbers.

The drive pinion (input shaft) is supported by a ball bearing in the transmission case and an oilite bushing pressed in the end of the crankshaft.

The mainshaft front end is supported by roller bearings in the end of the main drive pinion and a ball bearing in the front of the extension housing. The output end of the mainshaft is splined to the sliding universal joint yoke, which is supported by a bushing in the extension housing.

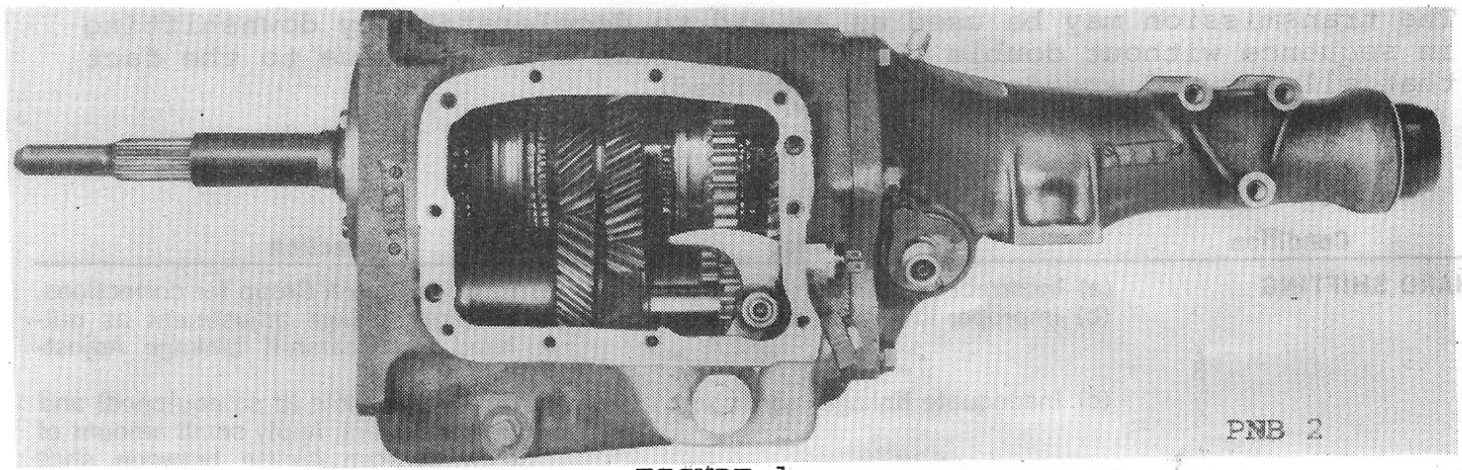


FIGURE 1
A-833 OVERDRIVE FOUR-SPEED TRANSMISSION - CROSS SECTION

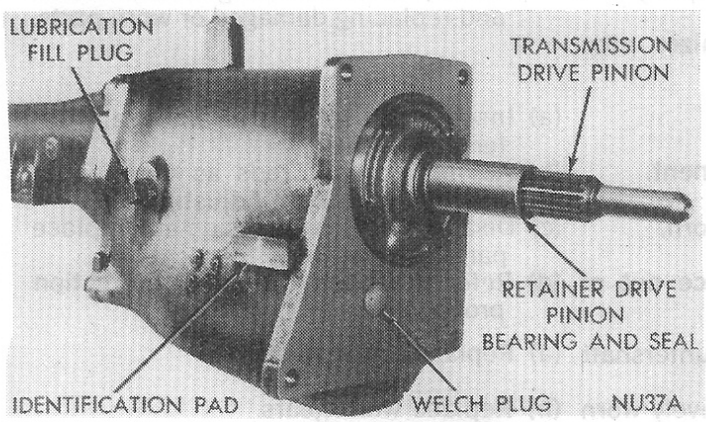


FIGURE 2
A-833 OVERDRIVE FOUR-SPEED TRANSMISSION - RIGHT SIDE

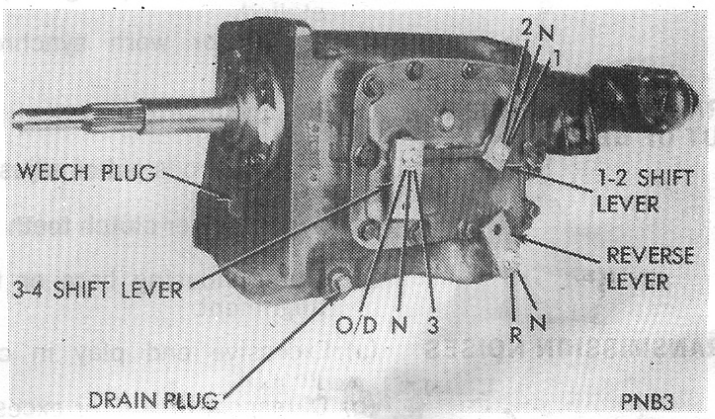


FIGURE 3
A-833 OVERDRIVE FOUR-SPEED TRANSMISSION - LEFT SIDE

The countershaft gear is supported by a double row of needle type roller bearings at each end and the thrust is taken on thrust washers between the ends of the gear and the transmission case. The alignment of the needle type roller bearings within the gear is maintained by a tubular spacer in the center and four thrust washers (one being used between the rows of roller bearings and one at each end).

NOTE: The countershaft is not a press fit in the case bores, but has .005" diameter clearance. An expansion (Welch) plug is pressed into a counter bore at the front of the case to prevent oil leakage around the countershaft.

The reverse idler gear is supported on a bronze bushing, pressed into the gear.

A magnetic disc is attached to bottom, near rear of case under countershaft gear. This magnet collects and prevents circulation of chips in transmission oil.

The gearshifting is manually operated through shift control rods to the transmission. Any forward gear may be engaged while the vehicle is in motion through the use of synchronizing clutches. See "Specifications" for downshift speed limits.

The transmission may be used as an aid to deceleration by downshifting in sequence without double clutching or gear clashing, due to the fact that all forward speeds are synchronized.

SERVICE DIAGNOSIS

Condition	Possible Cause	Correction
HARD SHIFTING	(a) Incorrect clutch adjustment.	(a) Refer to Clutch Group for corrections.
	(b) Improper linkage adjustment.	(b) Perform linkage adjustment as outlined in "Gearshift Linkage Adjustments."
	(c) Inadequate linkage lubrication.	(c) Remove console (if so equipped) and floor pan boot. Apply small amount of multi-purpose grease between shift levers in gearshift unit.
	(d) Synchronizer clutch sleeve damaged.	(d-e-f) Causes noted can only be corrected by disassembling transmission and replacing damaged or worn parts.
	(e) Synchronizer spring improperly installed.	
	(f) Broken or worn synchronizer stop rings.	
TRANSMISSION SLIPS OUT OF GEAR	(a) Linkage interference.	(a) Inspect and remove all linkage interferences.
	(b) Gearshift rods out of adjustment.	(b) Adjust gearshift rods as outlined in "Gearshift Linkage Adjustments."
	(c) Synchronizer clutch teeth worn.	(c) Disassemble transmission and replace parts as necessary.
	(d) Clutch housing bore or face out of alignment.	(d) Refer to Clutch Group for correction procedures.
TRANSMISSION NOISES	(a) Excessive end play in countershaft gear.	(a) Replace thrust washers.
	(b) Damaged, broken or excessively worn gear teeth.	(b) Replace worn gears.
	(c) Rough or pitted bearing races or balls.	(c) Replace worn bearing.

SERVICE PROCEDURES

SERVICE IN VEHICLE

FOUR-SPEED GEARSHIFT

Removal (Fig. 4A and 4B)

1. Disconnect negative (ground) cable from battery.
2. Remove console and wiring if so equipped. (See Body Book).
3. Remove retaining screws from floor pan boot and slide up and off shift lever.
4. Remove shift lever using a .010" feeler gauge as a tool to release the internal spring clip as shown in Figure 4B.
5. Remove retaining clips, washers and control rods from shift unit levers.
6. Remove two bolts and washers which secure shift unit to mounting plate on extension housing and remove unit.

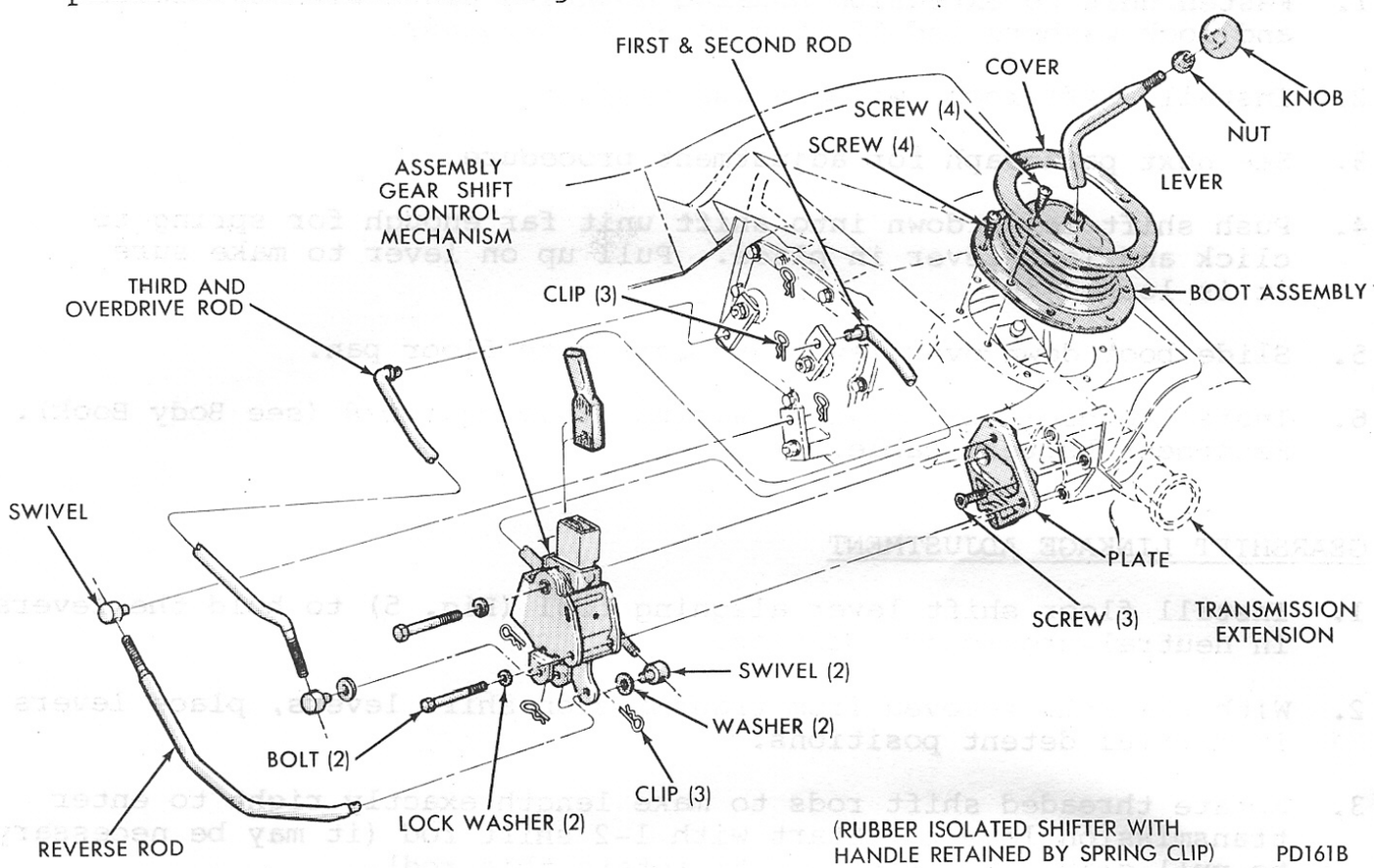


FIGURE 4A
A-833 OVERDRIVE FLOOR SHIFT LINKAGE

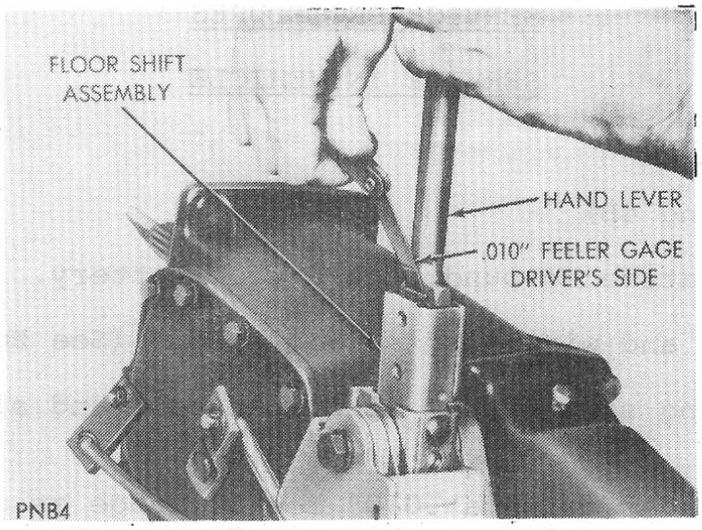


FIGURE 4B
REMOVING FLOOR SHIFT HAND LEVER

Installation (Fig. 4A)

1. Fasten unit to extension housing mounting plate with two bolts and lock washers and tighten to 30 foot-pounds.

2. Install shift rods, washers and clips.

3. See next paragraph for adjustment procedure.

4. Push shift lever down into shift unit far enough for spring to click and lock lever in place. Pull up on lever to make sure it is locked in.

5. Slide boot down over lever and fasten to floor pan.

6. Install console and connect wiring if so equipped (see Body Book). Reconnect battery cable.

GEARSHIFT LINKAGE ADJUSTMENT

1. Install floor shift lever aligning tool (Fig. 5) to hold the levers in neutral-crossover position.

2. With all rods removed from transmission shift levers, place levers in neutral detent positions.

3. Rotate threaded shift rods to make length exactly right to enter transmission levers. Start with 1-2 shift rod (it may be necessary to pull clip at shifter end to rotate this rod).

4. Replace washers and clips.

5. Remove aligning tool and test shifting action.

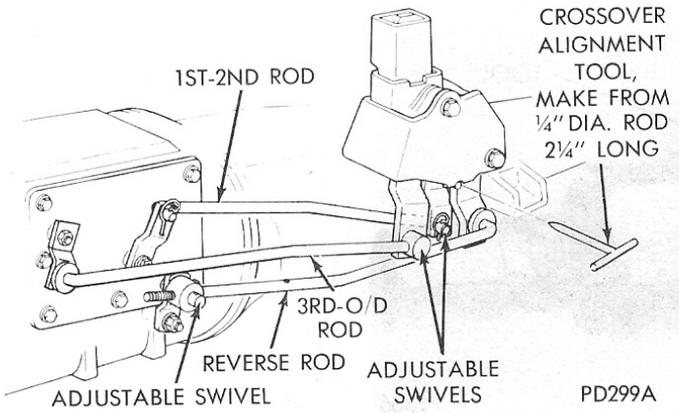


FIGURE 5
GEARSHIFT LINKAGE ADJUSTMENT

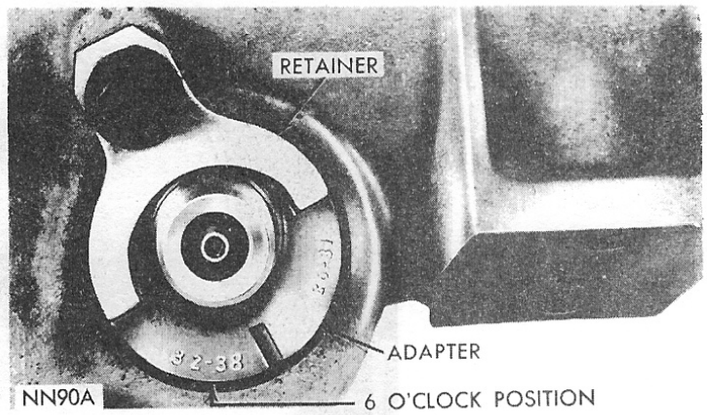


FIGURE 6
SPEEDOMETER PINION AND ADAPTER - INSTALLED

SPEEDOMETER PINION GEAR

Removal and Installation

Rear axle gear ratio and tire size determines pinion gear size requirements. Refer to "Speedometer Pinion Gear Chart" in Specifications for pinion usage.

1. Place drain pan under speedometer adapter.
2. Remove bolt and retainer securing speedometer pinion adapter to extension housing (Fig. 6).
3. With cable housing connected, carefully work adapter and pinion out of extension housing.
4. If transmission fluid is found in cable housing, replace seal in the adapter (Fig. 7). Start seal and retainer ring in adapter, then push them into adapter with Tool C-4004 until tool bottoms (Fig. 8).

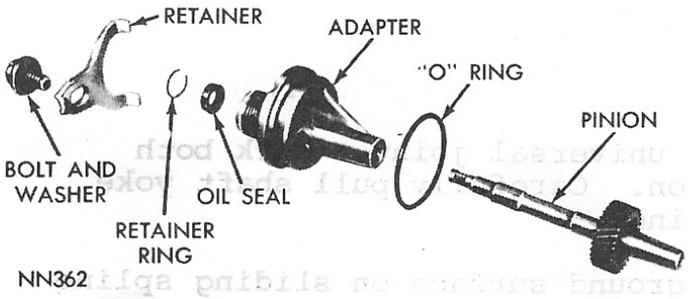


FIGURE 7
SPEEDOMETER PINION AND ADAPTER DISASSEMBLED

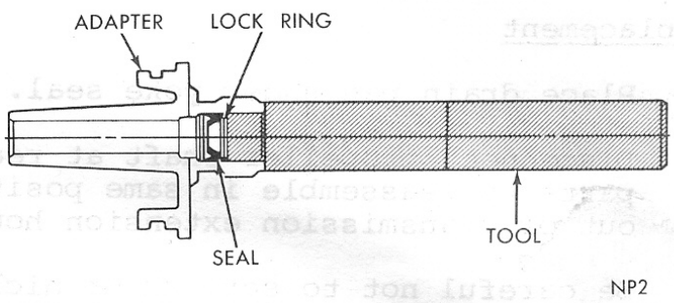


FIGURE 8
INSTALLING SPEEDOMETER PINION SEAL

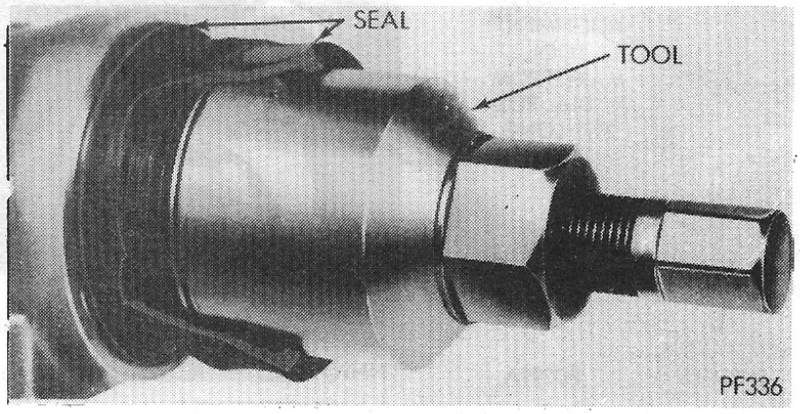


FIGURE 9
REMOVING EXTENSION HOUSING YOKE SEAL

5. Note number of gear teeth and install speedometer pinion gear into adapter (Fig. 7).

   Before installing pinion and adapter assembly, make sure adapter flange and its mating area on extension housing are perfectly clean. Dirt or sand will cause mis-alignment resulting in speedometer pinion gear damage.

6. Rotate the speedometer pinion gear and adapter assembly so that the number on the adapter, corresponding to the number of teeth on the gear, is in the 6 o'clock position as the assembly is installed (Fig. 6).

7. Install retainer and bolt, with retainer tangs in adapter positioning slots. Tap adapter firmly into extension housing and tighten retainer bolt to 100 inch-pounds.

8. Fill transmission to level of fill plug (refer to Lubrication Group "0").

EXTENSION HOUSING YOKE SEAL

Replacement

1. Place drain pan under yoke seal.

2. Disconnect propeller shaft at rear universal joint. Mark both parts to reassemble in same position. Carefully pull shaft yoke out of transmission extension housing.

   Be careful not to scratch or nick ground surface on sliding spline yoke during removal and installation of the shaft assembly.

3. Cut boot end of extension housing yoke seal, then screw the tapered thread of Tool C-748 into the seal. Turn the screw of the tool to remove the seal (Fig. 9).

4. To install a new seal, position seal in opening of extension housing and drive it into housing with Tool C-3972.

5. Carefully guide front universal joint yoke into extension housing and on the mainshaft splines. Align marks made at removal and connect propeller shaft to rear axle pinion shaft yoke.

6. Fill transmission to level of fill plug. (Refer to Lubrication Group "0").

SERVICE OUT OF VEHICLE

TRANSMISSION REMOVAL

1. Remove console and four-speed gearshift components, refer to "Four-Speed Gearshift".

2. Drain fluid from transmission.

3. Disconnect propeller shaft at rear universal joint marking parts to reinstall in same position. Carefully pull shaft yoke out of transmission extension housing.

   Be careful not to scratch or nick ground surface on sliding spline yoke during removal and installation of the shaft assembly.

4. Disconnect speedometer cable and back-up light switch leads.

5. Some models have exhaust systems which will have to be partially removed for clearance. See Exhaust System, Group 11.

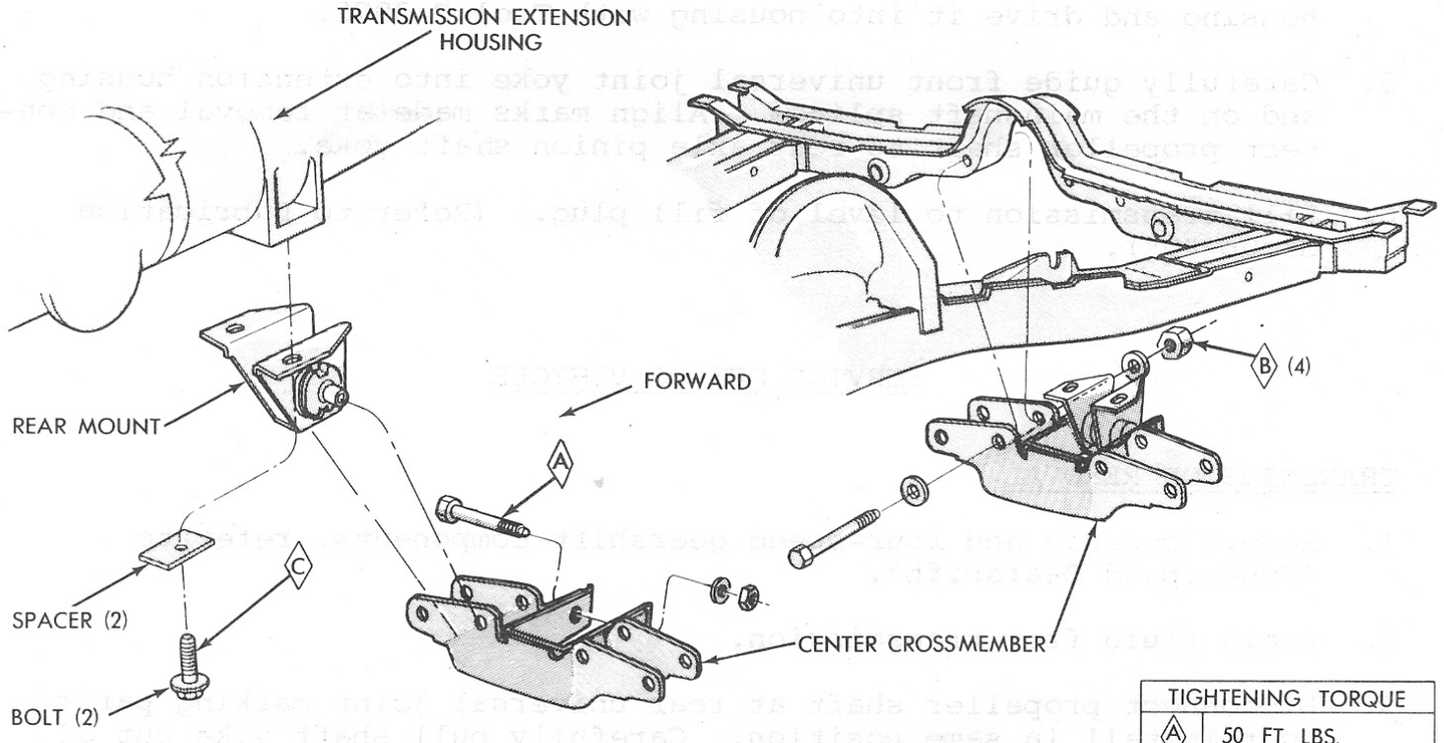
6. Install engine support fixture C-3487-A. Be sure support ends are up against underside of oil pan flange.

7. Raise engine slightly with support fixture. Disconnect extension housing from removable center crossmember (Fig. 11).

8. Support transmission with a suitable jack and remove center crossmember.

9. Remove transmission to clutch housing bolts. Slide transmission toward rear until drive pinion shaft clears clutch disc, before lowering transmission.

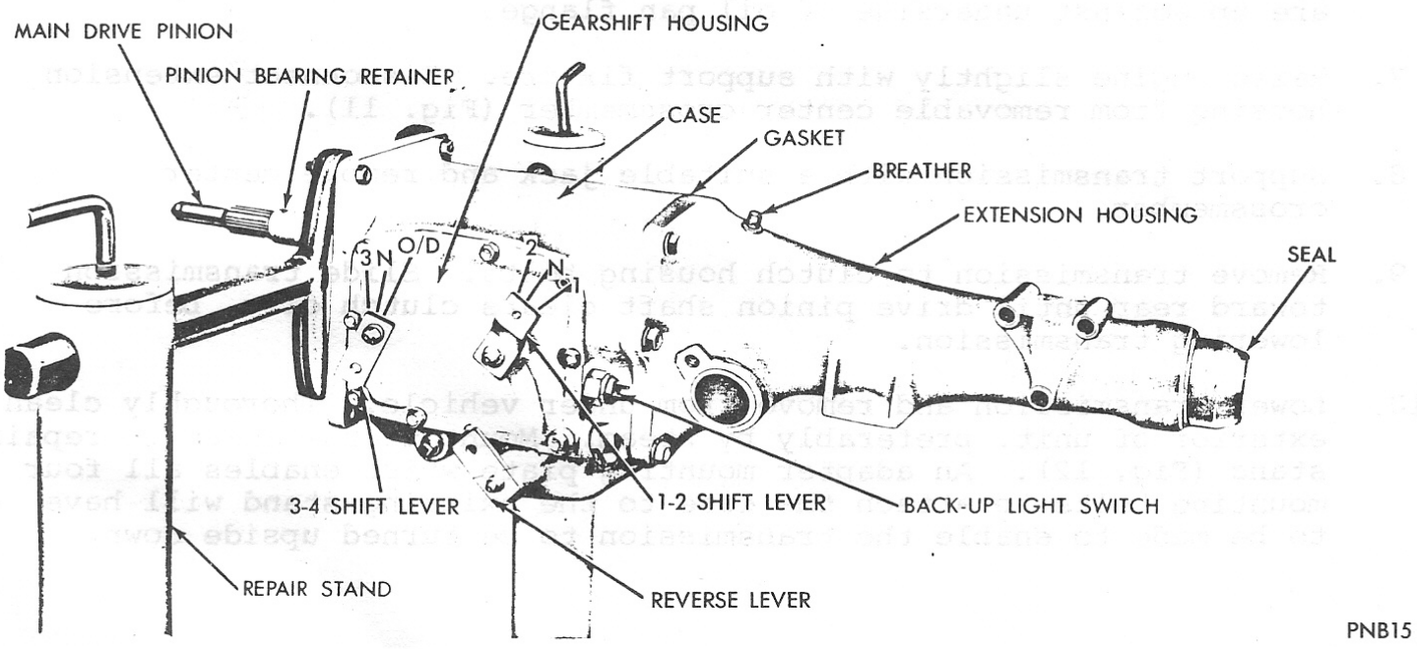
10. Lower transmission and remove from under vehicle. Thoroughly clean exterior of unit, preferably by steam. Mount transmission in repair stand (Fig. 12). An adapter mounting plate which enables all four mounting bolts to attach the case to the existing stand will have to be made to enable the transmission to be turned upside down.



TIGHTENING TORQUE	
A	50 FT. LBS.
B	30 FT. LBS.
C	50 FT. LBS.

PF335

FIGURE 11
CENTER CROSSMEMBER AND ENGINE REAR MOUNT



PNB15

FIGURE 12
A-833 OVERDRIVE TRANSMISSION IN REPAIR STAND

DISASSEMBLING TRANSMISSION (FIG. 13)

Gearshift Housing and Mechanism

1. Remove reverse shift lever from shaft. Remove bolts that attach gearshift housing to transmission case (Fig. 14).
2. With levers in neutral detent position, pull housing out and away from the case. (The two shift forks may remain in engagement with synchronizer sleeves). Work forks out of sleeves and remove from the case. The following three steps need only be done, if oil leakage is visible around gearshift lever shafts, or the interlock levers are cracked.
3. Remove nuts that attach shift operating levers to the shafts. Disengage levers from flats on shafts and remove.
   Make sure shafts are free of burrs before removal otherwise the bores may be scored resulting in leakage after reassembly.
4. Pull gearshift lever shafts out of housing.
5. Remove "E" ring from interlock lever pivot pin and remove interlock levers and spring from housing.

Extension Housing, Mainshaft, and Drive Pinion

1. Remove bolt and retainer securing speedometer pinion adapter in extension housing (Fig. 6). Carefully work adapter and pinion out of extension housing.
2. Remove bolts that attach extension housing to transmission case.
3. Rotate the extension on the output shaft to expose the rear of the countershaft. Clearance has been provided on extension flange to enable one bolt to be reinstalled to hold the extension in the inverted position with access to the countershaft. See Figure 10.

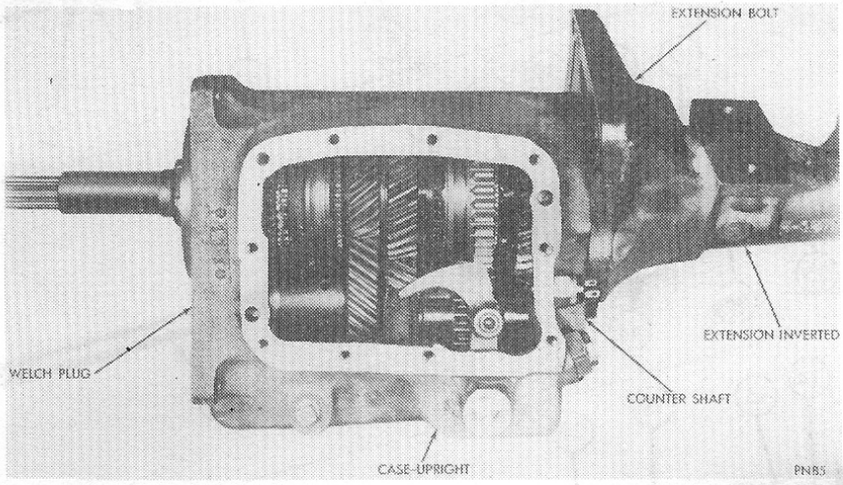


FIGURE 10
ROTATING EXTENSION HOUSING

4. With a centerpunch or drill make a hole in the countershaft Welch plug at the front of the case.
5. Reaching through this hole push the countershaft rearward until woodruff key is exposed. Remove key. Push countershaft forward against the Welch plug. Using a brass drift, tap the countershaft forward until Welch plug is driven out of case.
6. Using the countershaft arbor, C-3938, push countershaft out of rear of case, using care to insure that the countershaft washers don't fall out of position. Lower cluster gear to bottom of case.
7. Rotate the extension back to normal position.

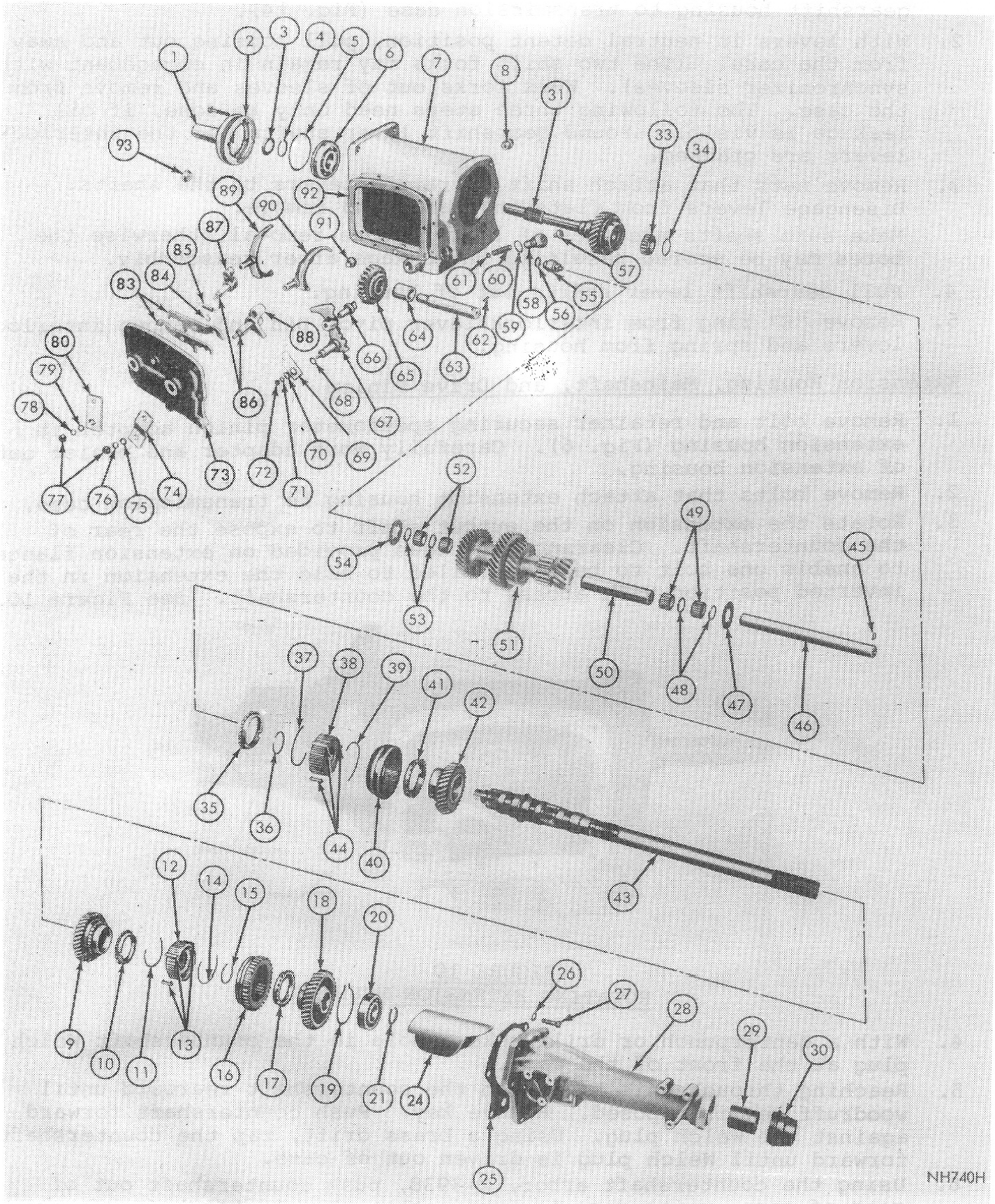


FIGURE 13
A-833 OVERDRIVE FOUR-SPEED TRANSMISSION - DISASSEMBLED

LEGEND FOR FIGURE 13 (A-833)

1. Bearing Retainer
2. Bearing Retainer Gasket
3. Bearing Retainer Oil Seal
4. Snap Ring, Bearing (Inner)
5. Snap Ring, Bearing (Outer)
6. Pinion Bearing
7. Transmission Case
8. Filler Plug
9. Gear, 2nd Speed
10. Snap Ring
11. Shift Strut Springs
12. Clutch Gear
13. Shift Struts (3)
14. Shift Strut Spring
15. Snap Ring
16. 1st and 2nd Clutch Sleeve Gear
17. Stop Ring
18. 1st Speed Gear
19. Bearing Retainer Ring
20. Rear Bearing
21. Snap Ring
24. Baffle
25. Gasket, Case to Extension Housing
26. Lockwasher
27. Bolt
28. Extension Housing
29. Mainshaft Yoke Bushing
30. Oil Seal
31. Main Drive Pinion
33. Needle Bearing Rollers
34. Snap Ring
35. Stop Ring
36. Snap Ring
37. Shift Strut Spring
38. Clutch Gear
39. Shift Strut Spring
40. Clutch Sleeve
41. Stop Ring
42. O D Gear
43. Mainshaft (Output)
44. Shift Struts (3)
45. Woodruff Key
46. Countershaft
47. Thrustwasher, Gear (1)
48. Spacer Ring Needle Roller Bearing
49. Needle Bearing Rollers
50. Bearing Spacer
51. Countershaft Gear (Cluster)
52. Needle Bearing Rollers
53. Spacer Ring Needle Roller Bearing
54. Thrustwasher, Gear (1)
55. Backup Light Switch
56. Backup Light Switch Gasket
57. Plug
58. Retainer, Reverse Detent Ball Spring
59. Gasket
60. Spring, Reverse Detent Ball
61. Ball, Reverse Detent
62. Woodruff Key
63. Reverse Idler Gear Shaft
64. Bushing, Reverse Idler Gear
65. Gear, Reverse Idler
66. Fork, Reverse Shifter
67. Reverse Lever
68. Oil Seal, Reverse Lever Shaft
69. Reverse Operating Lever
70. Flatwasher
71. Lockwasher
72. Nut
73. Gearshift Control Housing
74. 1st and 2nd Operating Lever
75. Flatwasher
76. Lockwasher Lever
77. Nut, Lever
78. Lockwasher, Lever
79. Flatwasher. Lever
80. 3rd and O D Operating Lever
83. Interlock Lever (2)
84. "E" Ring
85. Spring
86. Oil Seal (2)
87. 3rd and O D Lever
88. 1st and 2nd Lever
89. 3rd and O D Speed Fork
90. 1st and 2nd Speed Fork
91. Drain Plug
92. Gasket, Shift Control Housing
93. Welch Plug

8. Remove drive pinion bearing retainer attaching bolts. Then, slide retainer and gasket from pinion shaft (Fig. 2). Pry pinion or seal from retainer. To avoid leakage around new seal, do not nick or scratch seal bore in the retainer or the surface on which seal bottoms.

9. Using a brass drift, tap the pinion and bearing assembly forward and remove through front of case.

10. Slide third and overdrive synchronizer sleeve slightly forward, slide reverse idler gear to center of its shaft, then using a soft faced hammer, tap on extension housing (in a rearward direction). Slide housing and mainshaft assembly out and away from the case (Fig. 15).

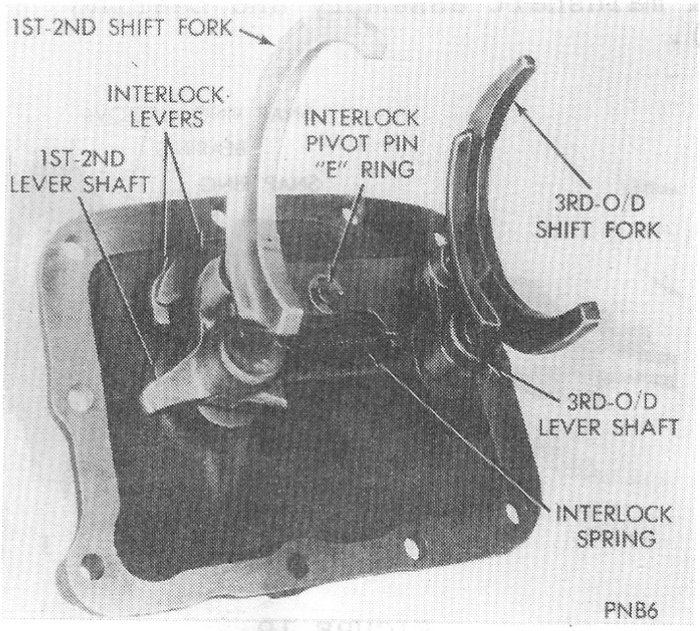


FIGURE 14
SHIFT HOUSING ASSEMBLY

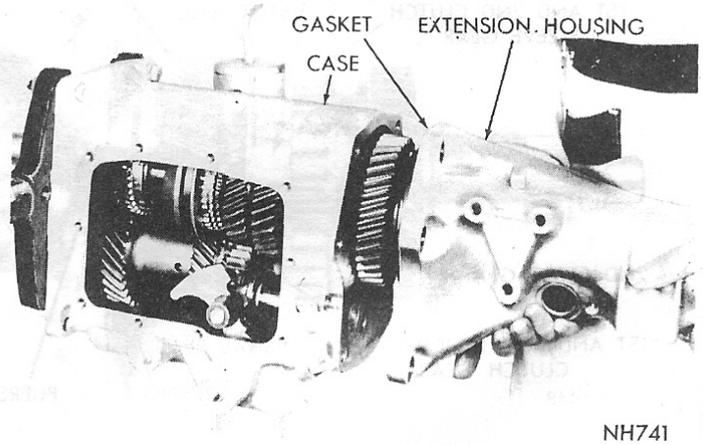


FIGURE 15
REMOVING OR INSTALLING EXTENSION HOUSING AND MAINSHAFT ASSEMBLY

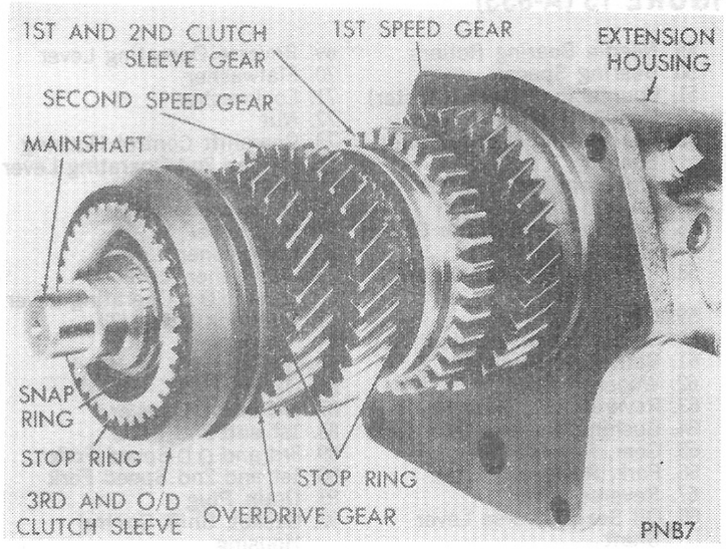


FIGURE 16
MAINSHAFT GEAR IDENTIFICATION

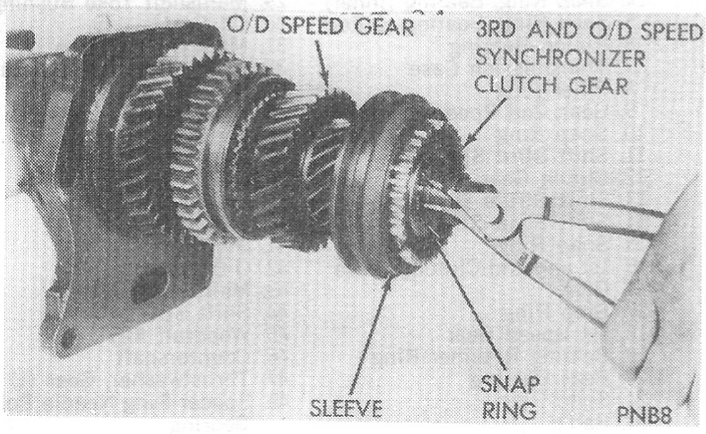


FIGURE 17
DISASSEMBLING MAINSHAFT

11. Refer to (Fig. 16) for location of various gears, synchronizer sleeves and clutches before disassembling mainshaft.

12. Remove snap ring (Fig. 17), that retains 3rd and O/D synchronizer clutch gear and sleeve assembly to the mainshaft then slide 3rd and O/D synchronizer assembly off end of mainshaft.

13. Slide O/D gear and stop ring off mainshaft. (Do not separate 3rd and O/D speed synchronizer clutch gear, sleeve, shift struts or springs unless inspection reveals a replacement part is required).

14. Using a long nose pliers, compress snap ring that retains mainshaft ball bearing in extension housing (Fig. 18).

15. Holding snap ring compressed, pull mainshaft assembly and bearing out of extension housing (Fig. 19).

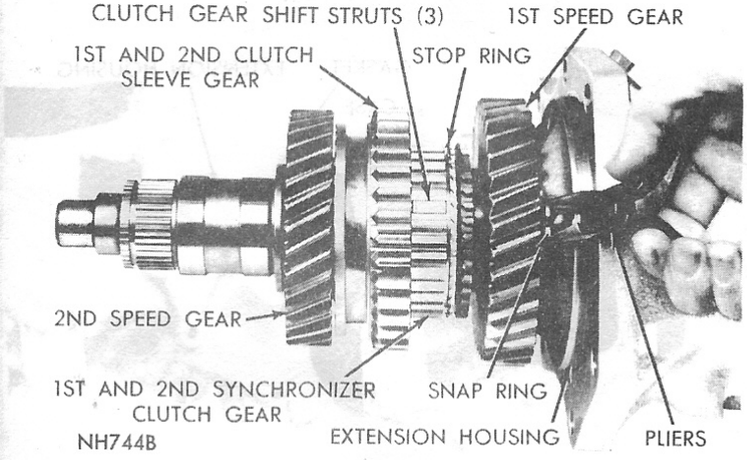


FIGURE 18
REMOVING OR INSTALLING MAINSHAFT BEARING SNAP RING

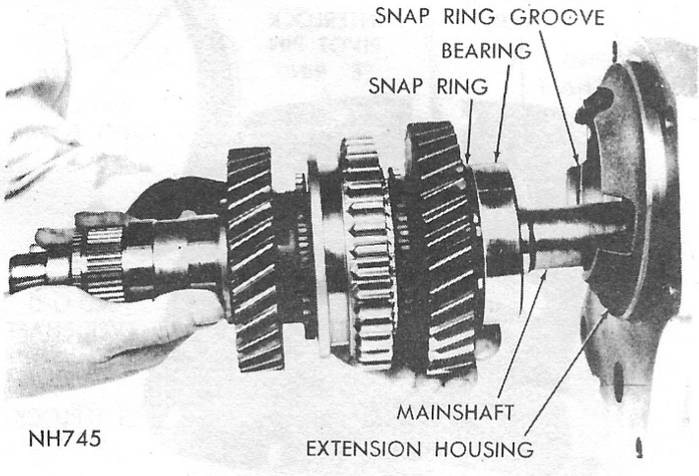


FIGURE 19
REMOVING OR INSTALLING MAINSHAFT

16. Remove snap ring that retains mainshaft bearing on the shaft (Fig. 20).

    Remove bearing from mainshaft by inserting steel plates on front side of 1st speed gear, then press or drive mainshaft through bearing. (Be careful not to damage gear teeth).

17. Remove bearing, bearing retainer ring, 1st speed gear, and first speed stop ring from the shaft.

18. Remove snap ring that retains 1st and 2nd clutch gear and sleeve assembly to mainshaft (Fig. 21).

19. Slide 1st and 2nd clutch gear and sleeve assembly from mainshaft. (Do not separate synchronizer parts unless inspection reveals a replacement part is required). Remove 2nd speed gear.

20. Figure 22 shows various mainshaft bearing surfaces for the gears. Inspect these surfaces for signs of wear, scoring, or any condition that would not allow shaft to be used at reassembly.

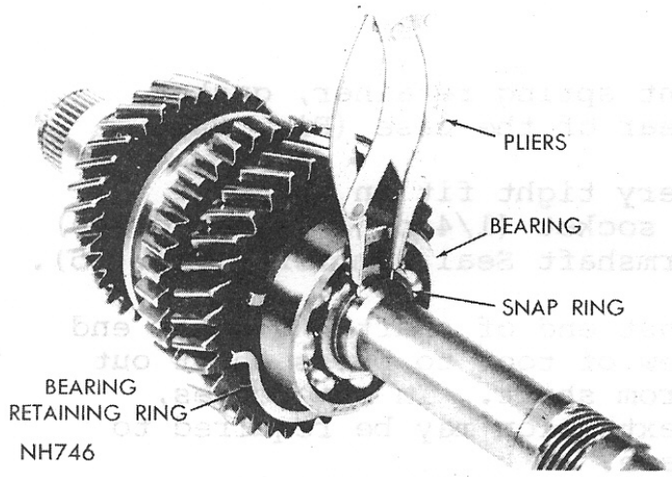


FIGURE 20
REMOVING OR INSTALLING MAINSHAFT BEARING SNAP RING - REAR

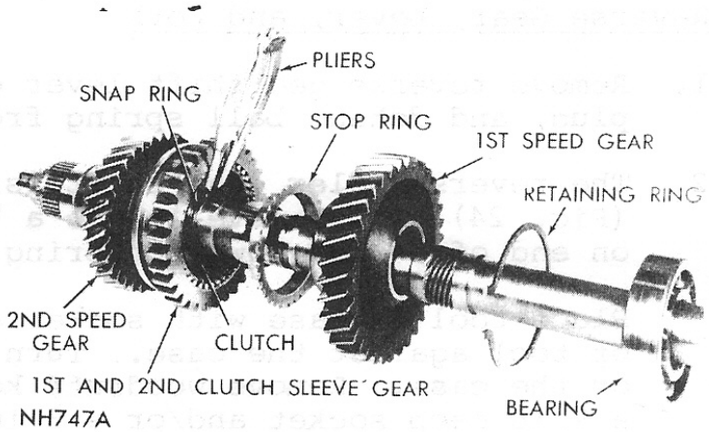


FIGURE 21
REMOVING OR INSTALLING CLUTCH GEAR SNAP RING

Drive Pinion and Countershaft Gear

1. Remove pinion bearing inner snap ring. Using an arbor press, remove bearing from pinion.

2. Remove snap ring and 16 bearing rollers from cavity in drive pinion.

3. Remove countershaft gear from bottom of case (Fig. 27).

4. Remove arbor and 76 needle type bearings, thrust washers, and spacers, from center of countershaft gear.

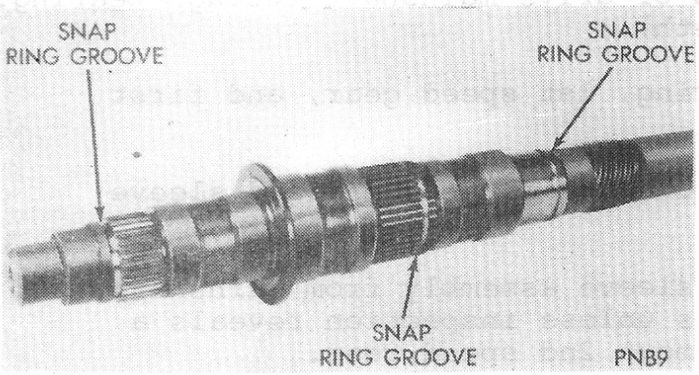


FIGURE 22
MAINSHAFT BEARING SURFACES

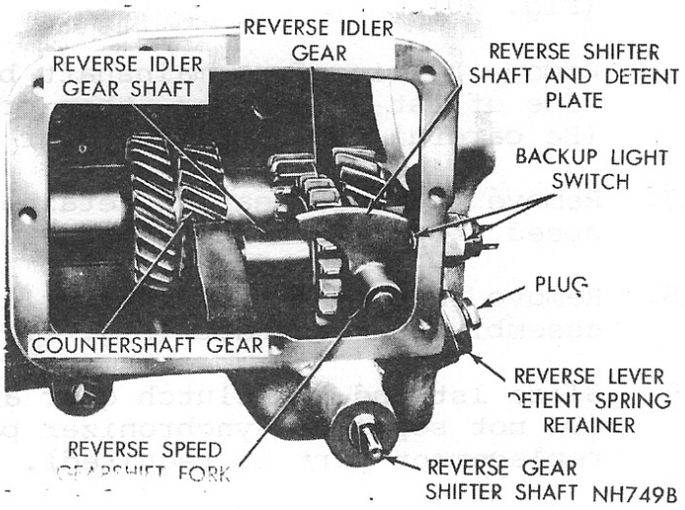


FIGURE 23
GEAR, SHAFT AND LEVER IDENTIFICATION

Reverse Gear, Lever, and Fork

1. Remove reverse gearshift lever detent spring retainer, gasket, plug, and detent ball spring from rear of the case (Fig. 23).

2. The reverse idler gear shaft is a very tight fit in the case (Fig. 24). To remove, place a 7/16 socket (1/4 or 3/8 inch drive) on end of C-3638 Power Steering "Wormshaft Seal Remover" (Fig. 25).

   Place tool in case with socket against end of shaft and other end of tool against the case. Turn screw of tool to press shaft out or the case. Remove woodruff key from shaft. In some cases, a 7/16 deep socket and/or a 3 inch extension may be required to press shaft completely out of the case.

The following step need only be done if oil leakage is visible around reverse gearshift lever shaft.

3. Remove any burrs from shaft so as not to damage the case bore, then carefully push reverse gearshift lever shaft inward and remove it from case (Fig. 26). Retrieve detent ball from bottom of case. Remove shift fork from shaft and detent plate.

CLEANING AND INSPECTION

Clean transmission case thoroughly, using a suitable solvent, dry with compressed air. The magnetic disc, located on bottom of case, can be removed for cleaning by using a screwdriver to pry off the retaining clip. After cleaning the magnetic disc with a clean cloth, the disc and retaining clip can be reinstalled by pressing the clip onto the rib in the case. Inspect case for cracks, stripped threads in various bolt holes and machined mating surfaces for burrs, nicks or any condition that would render the case unfit for further service. The front mating surface should be smooth; if any burrs are present, dress them off with a fine mill file. If threads are stripped, install Helicoil, or equivalent, inserts.

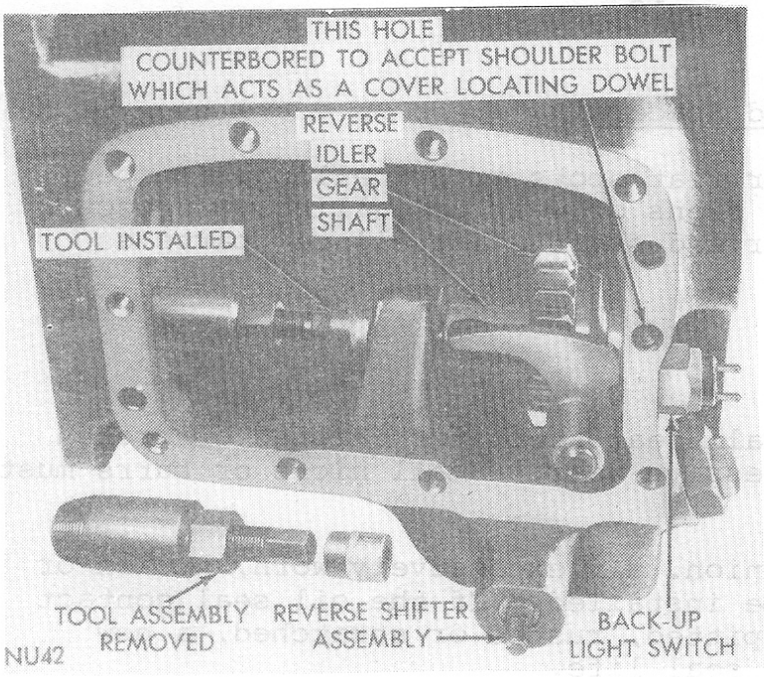


FIGURE 24
REMOVING REVERSE IDLER
GEAR SHAFT

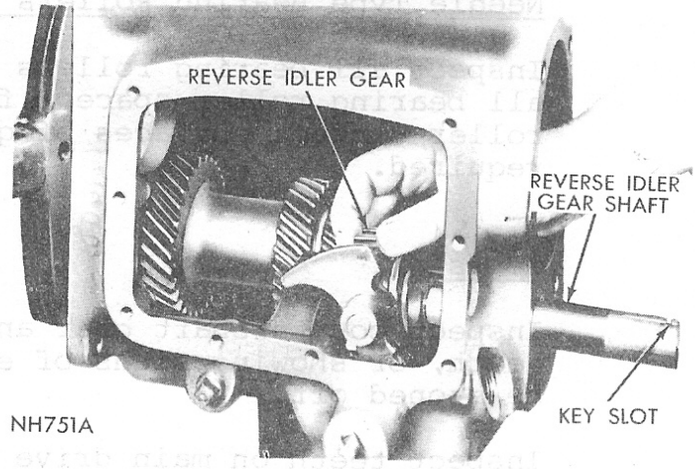


FIGURE 25
REMOVING OR INSTALLING
REVERSE IDLER GEAR

Ball Bearings

Wash ball bearings, using a clean solvent and blow dry with compressed air.

CAUTION: Do not spin bearings with air pressure; turn slowly by hand. Spinning unlubricated bearings may cause damage to races and balls.

Be sure ball bearings are clean, then lubricate them with light grade engine oil. Inspect bearings for roughness. This can best be determined by slowly turning outer race by hand.

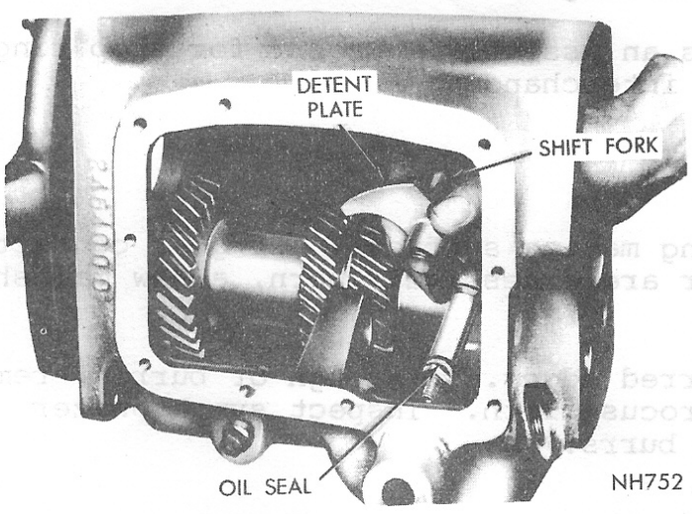


FIGURE 26
REMOVING OR INSTALLING REVERSE
SHIFT FORK AND LEVER

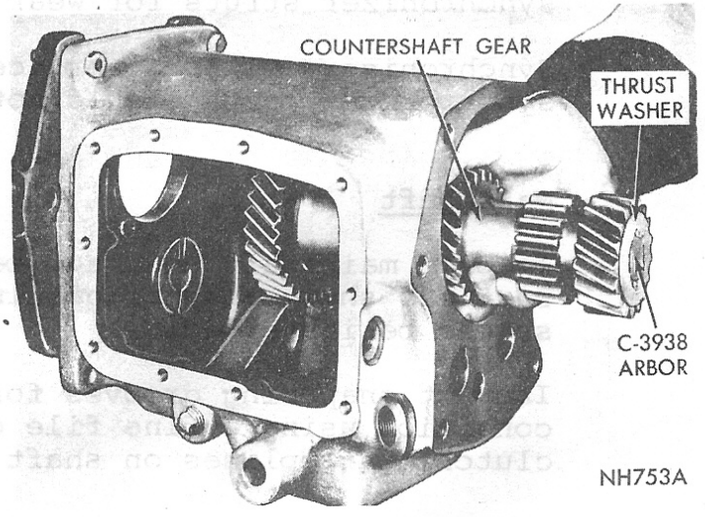


FIGURE 27
REMOVING OR INSTALLING COUNTERSHAFT
GEAR AND ARBOR ASSEMBLY

Needle Type Bearing Rollers and Spacers

Inspect all bearing rollers for flat spots or brinelling. Inspect all bearing roller spacers for signs of wear or galling. Inspect roller contact surfaces of gear and shaft. Install new parts as required.

Gears

Inspect countershaft gear and all gear teeth for chipped or broken teeth, or showing signs of excessive wear. Small nicks or burrs must be stoned off.

Inspect teeth on main drive pinion. If excessively worn, broken or chipped, a new pinion should be installed. If the oil seal contact area on drive pinion shaft is pitted, rusted or scratched, a new pinion is recommended for best seal life.

Inspect interlock levers for cracks at detent and clearance notches at each end of levers. Inspect shift forks for wear on pads and shafts.

Inspect the fork shaft bore in the shift levers for galling.

Synchronizer Assemblies

Inspect spline teeth on synchronizer clutch gears and stop rings. If there is evidence of chipping or excessively worn teeth, install new parts at reassembly. Be sure clutch sleeve slides easily on the clutch gear.

Inspect stop rings for cracks and wear. If rings are cracked or show signs of extreme wear on threaded bore, install new rings at reassembly. Test new rings for good fit on gear cones with minimum wobble. Check synchronizer struts for wear or breakage.

Synchronizers will be serviced as an assembly. Except for stop rings, synchronizer parts should not be interchanged.

Mainshaft

Inspect mainshaft gear and bearing mating surfaces. If gear contact surfaces show signs of galling or are excessively worn, a new mainshaft should be installed.

Inspect snap ring grooves for burred edges. If rough or burred, remove condition using a fine file or crocus cloth. Inspect synchronizer clutch gear splines on shaft for burrs.

ASSEMBLING TRANSMISSION

Reverse Gear, Lever, and Fork

The following step need only be done if the reverse shaft was removed because of oil leak.

1. Install a new oil seal "O" ring on reverse gearshift lever shaft. Coat lever shaft with Multi-purpose grease, then carefully install lever shaft into bore in the case (Fig. 26). Install reverse fork in the lever.

2. Install reverse detent spring retainer and gasket. Torque to 50 foot-pounds. Insert ball and spring. Install plug and gasket. Torque to 24 foot-pounds.

3. Place reverse idler gearshift in position in end of case, and drive it in far enough to position reverse idler gear on protruding end of shaft with shift slot toward rear (Fig. 25). At same time, engage slot with reverse shift fork.

4. With reverse idler gear correctly positioned, drive reverse gear shaft into case far enough to install woodruff key. Drive in shaft, flush with end of case (Fig. 25).

5. Install back-up light switch and gasket. Torque to 15 foot-pounds.

Countershaft Gear and Drive Pinion

1. Coat inside bore of gear at each end with a thin film of grease and install roller bearing spacer with arbor Tool C-3938 into gear. Center spacer and arbor.

2. Install 19 rollers, followed by a spacer ring and 19 more roller bearings and 1 spacer ring into gear (Fig. 13).

3. If countershaft thrust washers are worn or scored, install new thrust washers. Coat thrust washers with grease and install them over arbor with tang side toward the case boss (Fig. 28).

4. Install countershaft gear assembly into the case (Fig. 27). Allow gear assembly to rest on bottom of case. (Be sure thrust washers stay in position).

5. Press drive pinion bearing on pinion shaft. Be sure outer snap ring groove is toward front (Fig. 29). Seat bearing fully against shoulder on gear.

6. Install a new snap ring on shaft to retain bearing. Be sure snap ring is seated. This snap ring is a select fit for minimum end play.

7. Place pinion shaft in a vise (with soft jaws), then install 16 bearing rollers in cavity of shaft. Coat bearing rollers with heavy grease, then install bearing retaining snap ring in its groove.

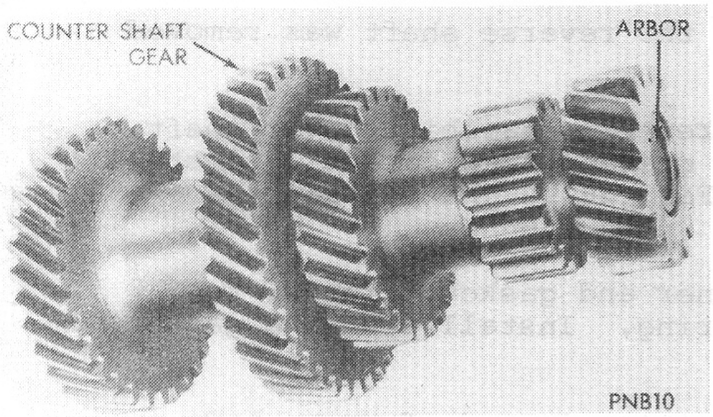


FIGURE 28
COUNTERSHAFT GEAR AND ARBOR ASSEMBLY

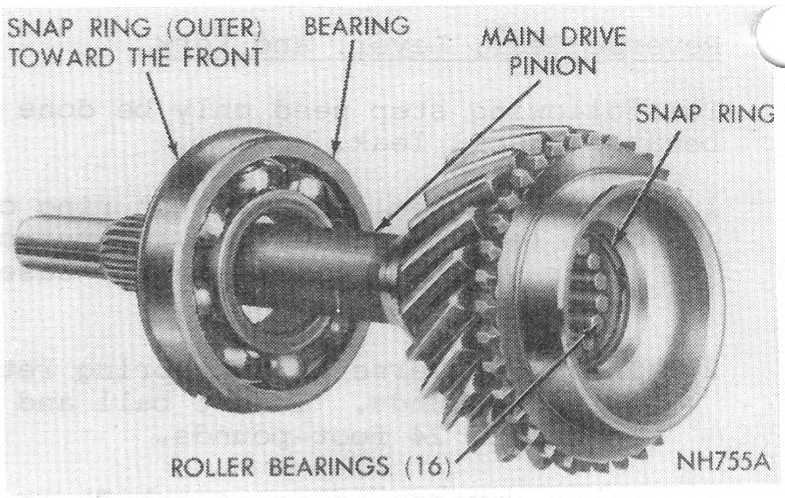


FIGURE 29
DRIVE PINION AND BEARING ASSEMBLY

8. Using Tool C-3789 (Fig. 30), install a new oil seal in retainer bore.

EXTENSION HOUSING BUSHING REPLACEMENT

1. Remove extension housing yoke seal.

2. Drive the bushing out of housing (Fig. 31) with Tool C-3974.

3. Slide a new bushing on installing end of Tool C-3974. Align oil hole in bushing with oil slot in housing, then drive bushing into place (Fig. 31).

4. To install a new seal, position seal in opening of extension housing and drive it into housing with Tool C-3972 (Fig. 10).

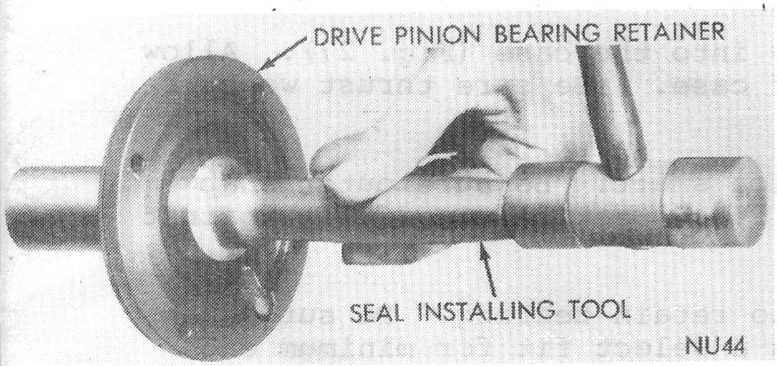


FIGURE 30
REPLACING SEAL IN DRIVE PINION BEARING RETAINER

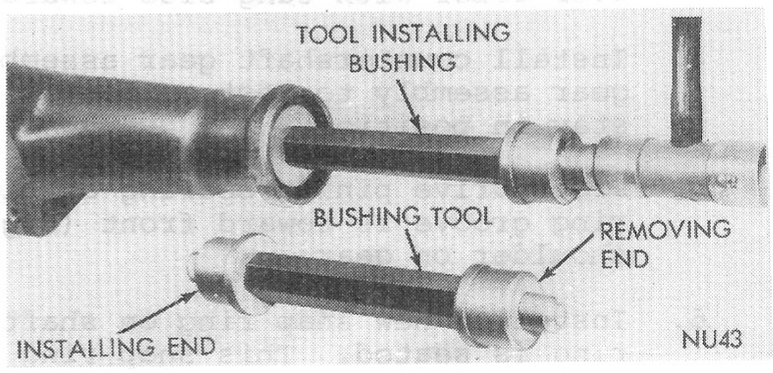


FIGURE 31
REPLACING BUSHING IN EXTENSION HOUSING

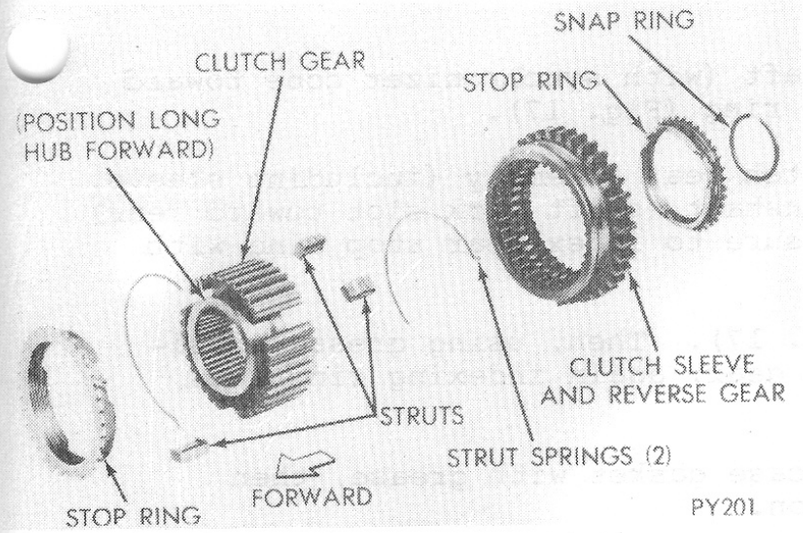


FIGURE 32
1ST-2ND SYNCHRONIZER -
DISASSEMBLED

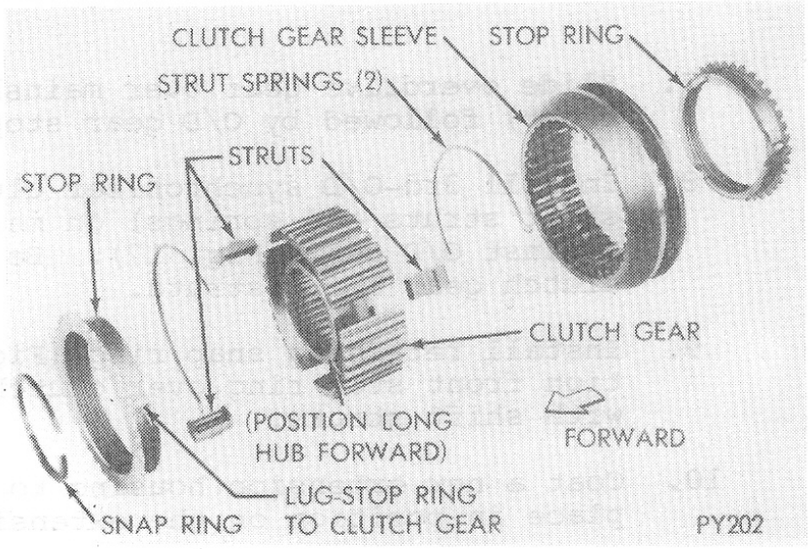


FIGURE 33
3RD-O/D SYNCHRONIZER -
DISASSEMBLED

Mainshaft

1. Sub assemble the synchronizer parts in the order shown in (Figs. 32 and 33) as follows: Place a stop ring flat on the bench followed by the clutch gear and sleeve. Drop the struts in their slots and snap in a strut spring placing the tang inside one strut. Turn the assembly over on the stop ring and install second strut spring tang in a different strut.

2. Slide second speed gear over mainshaft (synchronizer cone toward rear) and down against shoulder on shaft (Fig. 21).

3. Slide 1st-2nd synchronizer assembly (including stop ring with lugs indexed in hub slots, (Fig. 32) over mainshaft, down against second gear cone and secure with a new snap ring (Fig. 21). Slide next stop ring over shaft and index lugs into clutch hub slots.

4. Slide first speed gear (synchronizer cone toward clutch sleeve gear just installed) over mainshaft into position against clutch sleeve gear.

5. Install mainshaft bearing retaining ring, followed by mainshaft rear bearing. Using an arbor and a suitable tool, drive or press bearing down into position. Install a new snap ring on shaft to secure bearing (Fig. 20). This snap ring is a select fit for minimum end play.

6. Install partially assembled mainshaft into extension housing far enough to engage bearing retaining ring in slot in extension housing (Fig. 19). Now compress ring with pliers so that mainshaft ball bearing can move in and bottom against its thrust shoulder in extension housing. Release ring and seat it all around its groove in extension housing (Fig. 18).

7. Slide overdrive gear over mainshaft (with synchronizer cone toward front) followed by O/D gear stop ring (Fig. 17).

8. Install 3rd-O/D synchronizer clutch gear assembly (including sleeve, shift struts and springs) on mainshaft (shift fork slot toward rear) against O/D gear (Fig. 17). Be sure to index rear stop ring with clutch gear shift struts.

9. Install retaining snap ring (Fig. 17). Then, using grease, position front stop ring over clutch gear, again indexing ring lugs with shift struts.

10. Coat a new extension housing to case gasket with grease, then place in position on the extension.

11. To provide clearance so that assembly will be possible, slide reverse idler gear to center of its shaft and move the 3rd and 4th synchronizer sleeve as far forward as practical (do not lose struts).

12. Now slowly insert mainshaft assembly into case (Fig. 15) tilting it as required to clear idler and cluster gears.

13. Place 3rd and 4th synchronizer sleeve in neutral position.

14. Rotate the extension on mainshaft to expose rear of countershaft. Install one extension bolt as shown in Figure 10, to hold extension in inverted position and prevent it from moving rearward.

15. Install drive pinion and bearing assembly through the front of the case and position in the front bore. Install outer snap ring in bearing groove. Tap lightly into place using a soft faced hammer. If everything is in proper position, the bearing outer snap ring will bottom on the case face without excessive effort. If not, check to see if a strut, pinion roller, or stop ring is out of position.

16. Turn transmission assembly upside down holding the cluster gear assembly to prevent damaging it.

17. Raise the cluster gear assembly into position with the teeth meshed with the drive pinion gear. Make sure thrust washers remain in position on ends of the arbor and tangs are aligned with slots in case.

18. Start the countershaft into bore at rear of case and push forward until the shaft is approximately half way into the case and gear. Install woodruff key. Push shaft forward until end is flush with rear case face. Remove arbor Tool C-3938.

19. Rotate extension into proper alignment with the case.

20. Install extension housing bolts and tighten to 50 foot-pounds.

21. Rotate transmission assembly to normal position.

22. Install drive pinion bearing retainer and gasket. Coat threads with sealing compound, then install attaching bolts and tighten to 30 foot-pounds (Fig. 2).

23. Install new Welch plug in countershaft bore in front of case.

Gearshift Housing and Mechanism (Fig. 34)

1. Install interlock levers on pivot pin and fasten with "E" ring. Use pliers to install spring on interlock lever hangers.

2. Grease and install new "O" ring oil seals on both shift shafts. Grease housing bores and push each shaft into its proper bore.

3. Install operating levers and tighten retaining nuts to 18 foot-pounds.

4. Rotate each shift shaft fork bore to neutral position (straight up) and install the 3-4 shift fork in its bore and under both interlock levers.

5. In the transmission, position both synchronizer sleeves in neutral. Place the 1-2 shift fork in groove of 1-2 synchronizer sleeve.

6. Lay transmission on its right side and position gasket using grease to retain it.

7. As the shift housing is lowered in place, guide the 3-4 shift fork into its synchronizer groove, then lead the shaft of the 1-2 shift fork into its bore in the 1-2 shift lever.

   To finish the installation, a screwdriver must be used to raise the interlock lever against its spring tension to allow the 1-2 shift fork shaft to slip under the levers. The shift housing will now seat against the case gasket.

8. Install housing retaining bolts finger tight and shift through all gears to insure proper operation.

9. Eight of the shift housing retaining bolts are shoulder bolts for accurately locating the mechanism on the transmission. One bolt shoulder is longer and acts as a dowel, passing through the cover and into the transmission case at center of rear flange (Fig. 24). Two bolts are standard, located at lower rear of cover. Tighten all bolts evenly to 15 foot-pounds.

10. The reverse shift lever and 1-2 shift lever have cam surfaces which mate in reverse position (Fig. 35) to lock the 1-2 lever, fork and synchronizer in neutral position.

    Test for correct action by placing transmission in reverse. Then, while turning input shaft, move 1-2 lever in each direction. If input shaft locks or becomes harder to turn, the synchronizer is partly engaging caused by too much cam clearance. Select new 1-2 shift lever, size "A" or "B" as required (Fig. 35). If too little cam clearance exists it will be difficult or impossible to shift to reverse.

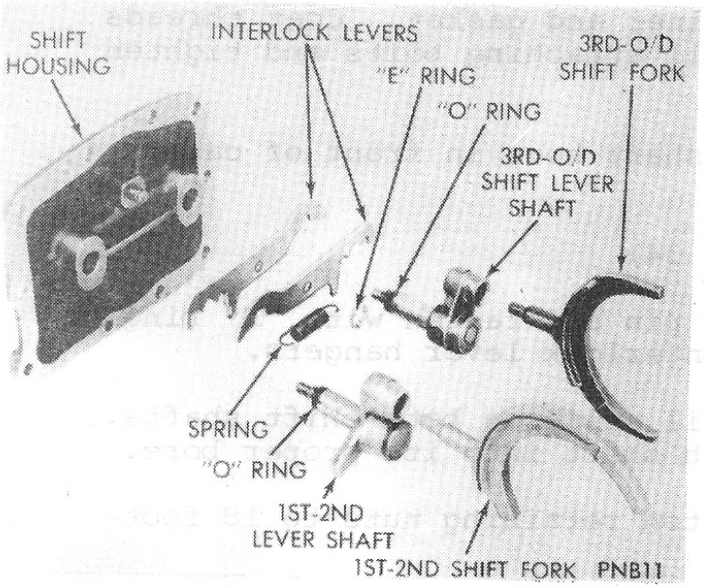


FIGURE 34
SHIFT HOUSING - DISASSEMBLED

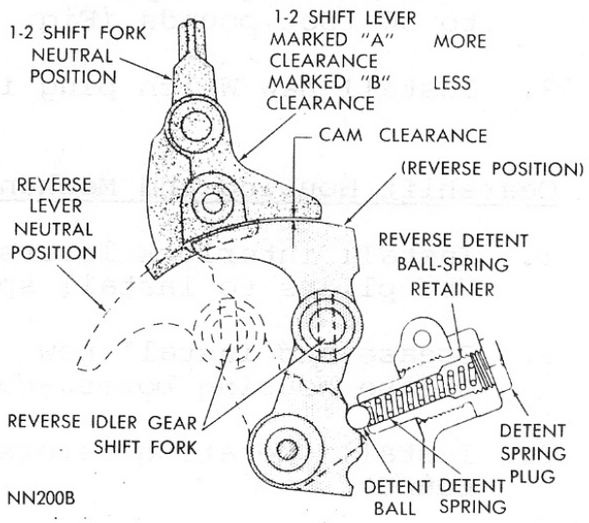


FIGURE 35
REVERSE INTERLOCK

11. Grease reverse shaft and install operating lever and nut. Tighten to 18 foot-pounds (Fig. 12).

12. Install speedometer drive pinion gear and adapter being sure range number, representing number of teeth on gear, is in 6 o'clock position (Fig. 6).

TRANSMISSION INSTALLATION

The transmission pilot bushing in end of crankshaft requires a grease which will stay in place during high temperature operation. Use MOPAR Multi-Purpose Grease, P/N 2932524, or equivalent, which is a grease of this type.

Place a small amount of Multi-Purpose lubricant around inner end of pinion shaft pilot bushing in flywheel and on pinion bearing retainer release bearing sleeve area. Do not lubricate end of pinion shaft, clutch disc splines or clutch release levers.

1. With transmission on a suitable jack, slide assembly under vehicle.

2. Raise transmission until drive pinion is centered in clutch housing bore.

3. Roll transmission slowly forward until pinion shaft enters clutch disc. With transmission in gear, turn output shaft until splines are aligned, then push transmission forward until seated against clutch housing. Do not allow transmission to "hang" after pinion has entered the clutch disc.

4. Install transmission to clutch housing bolts and tighten to 50 foot-pounds. Remove the jack.

5. Using a pointed drift, align crossmember bolt holes, then install attaching bolts. Tighten to 30 foot-pounds (Fig. 11).

6. Remove engine support fixture. Install extension housing to engine rear mount bolts and tighten to 50 foot-pounds. The engine mount to center crossmember bolt and nut, loose assembled to this point, should now be torqued to 50 foot-pounds.

7. Fasten shift unit to extension housing mounting plate with two bolts and lock washers and tighten to 30 foot-pounds. Referring to "Gearshift Linkage Adjustment" connect shift control rods to transmission levers and connect speedometer cable.

8. Carefully guide front universal joint yoke into extension housing and onto mainshaft splines. Connect propeller shaft to rear axle pinion yoke aligning marks made at removal.

9. Reconnect exhaust pipes (if removed).

10. Fill transmission with "DEXRON" type automatic transmission fluid. See Lubrication, Group "0" for details.

11. Lower vehicle, install gearshift lever and console, refer to "Four-Speed Gearshift".

12. Road test vehicle to make sure transmission shifts smoothly and operates quietly.

PARTS PECULIAR TO A-833 FOUR-SPEED TRANSMISSION WITH OVERDRIVE

Part Type Code	Part Name	Part Number
21-03-1	Case	4028122
21-03-1	Plug, Welch	106517
21-09-5	Bearing, without Snap Ring	2801890
21-09-29	Retainer, Bearing	3878596
21-09-33	Gasket, Bearing Retainer	2801893
21-10-16	Gear, Second Speed	3878431
21-10-31	Gear, Overdrive	3878430
21-14-1	Synchronizer Assy. - Direct & Overdrive	3878442
21-14-1	Snap Ring	6027246
21-15-2	Gear, Countershaft	3878432
21-17-2	Roller, Main or Output Shaft Pilot Bearing	1949834
21-24-2	Countershaft	4028123
21-42-23	Lever, Operating, Third O/D	3878684

SPECIFICATIONS

CHRYSLER A-833 OVERDRIVE MANUAL FOUR-SPEED TRANSMISSION

Gear Ratios

		Gear Teeth	
		Counter Gear	Main Drive Gear
FIRST	3.09	17	35
SECOND	1.67	27	30
THIRD (Direct)	1.00	33	22 (input shaft)
OVERDRIVE	0.73	37	18
REVERSE	3.00	17	34 (1-2 syn.sleeve)

GEAR TYPE — All Forward Speeds .. Helical, Reverse .. Spur

Tolerances

COUNTERSHAFT GEAR END PLAY	0.015" to 0.029"
CLUTCH HOUSING FACE SQUARENESS	0.006" Max.
CLUTCH HOUSING BORE RUN-OUT	0.008" Max.
COUNTERSHAFT TO CASE BORE CLEARANCE	0.005"

Lubricant

Capacity

Imperial Pints 5.75

Type — "DEXRON" Type Automatic Transmission Fluid*

Bolt Torques

Input shaft bearing retainer bolts (4)	30 ft.-lbs.
Gear shift housing bolts (10)	15 ft.-lbs.
Extension housing bolts (6)	50 ft.-lbs.
Shift operating lever to shift lever shaft nut (3)	18 ft.-lbs.
Transmission to clutch housing bolts (4)	50 ft.-lbs.
Transmission drain plug	25 ft.-lbs.
Reverse detent spring retainer	50 ft.-lbs.
Reverse detent spring retainer plug	24 ft.-lbs.
Back-up light switch	15 ft.-lbs.
Gear shift assembly	30 ft.-lbs.

A-833 FOUR-SPEED OVERDRIVE

Operation No.	Description	Time
21-00-01-33	TRANSMISSION - Remove and Install	1.9
	Related Operations	
21-00-01-AK	Transmission - Replace	0.2
21-30-02-AK	Group A Includes: Input shaft retainer, gasket, oil seal, input shaft and bearing.	0.4
21-30-03-AK	Group B Includes: Extension housing, gasket, oil seal, gearshift cover, seals, forks, and interlock.	1.7
21-30-04-AK	Group C Includes: Third-Overdrive synchronizer and overdrive gear.	1.4
21-30-05-AK	Group D Includes: Group C and output shaft bearing, 1st gear, 1-2 synchronizer assembly, 2nd gear and output shaft.	2.0
21-30-06-AK	Group E Includes: Groups A and B and countershaft.	2.2
21-30-07-AK	Group F Includes: Groups A, B, and E, case, reverse idler gear, lever, fork and seal.	2.5
21-30-08-AK	Group G Includes: Groups A, B, C, D, E, and F complete.	2.9

FAILURE CODES:

27 Bearing seized
P8 Case extension-bearing
P6 Case extension-cracked
17 Casting defect
R5 Countershaft-defect
18 Gasket-leak
85 Gear-defect
42 Housing-improperly machined
43 Housing-leaks
R2 Main pinion-bearings
P9 Main pinion-defect
R4 Main shaft-defect
R6 Synchronizer-defect