

COMPONENT DISASSEMBLY & REASSEMBLY

INPUT SHAFT

Disassembly

Remove and discard plastic scoop ring. Press tapered roller bearing from input shaft using Bearing Cone Remover/Installer (T71P-4621-B) and an arbor press. Refer to CLEANING & INSPECTION in this article. Also, see Fig. 4.

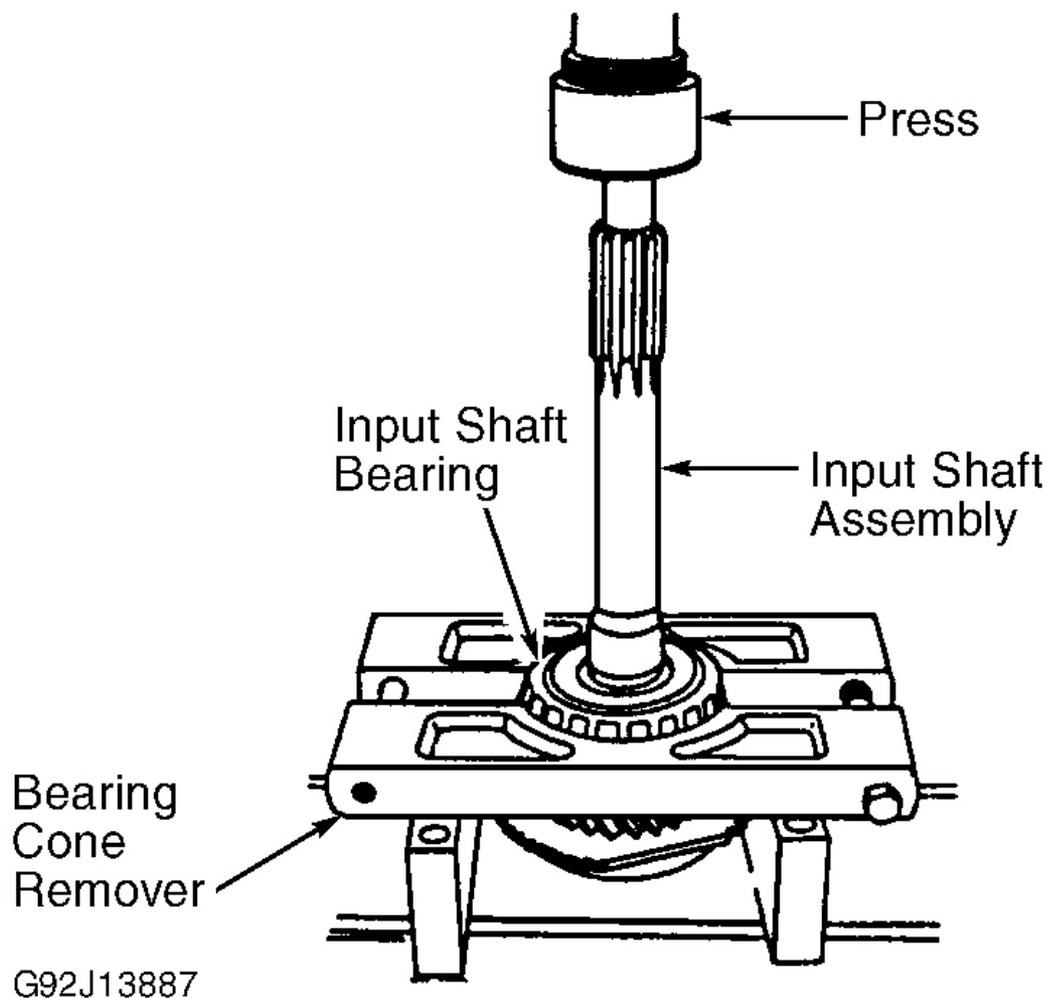


Fig. 4: Removing Input Shaft Bearing
Courtesy of FORD MOTOR CO.

Reassembly

1. Install input shaft bearing onto input shaft using a press and Bearing Cone Remover/Installer (T53T-4621-B and T88T-7025-B).

2. Install NEW plastic scoop ring onto input shaft. Manually rotate ring clockwise to ensure input shaft holes properly engage scoop ring. A click should be heard as scoop ring notches align with input shaft holes.

OUTPUT SHAFT

Disassembly

1. Note location of output shaft flange. See **Fig. 5**. Use this flange as reference point and dividing line during assembly procedure. Remove pilot bearing, retaining ring, needle bearing (plain) and spacer from front of output shaft. See **Fig. 6**.
2. Position front (short side) of output shaft so that it faces upward. Lift off the following components as a unit: clutch hub and sleeve assembly (3rd-4th), 3rd gear synchronizer ring, 3rd gear and needle bearing. See **Fig. 6**.

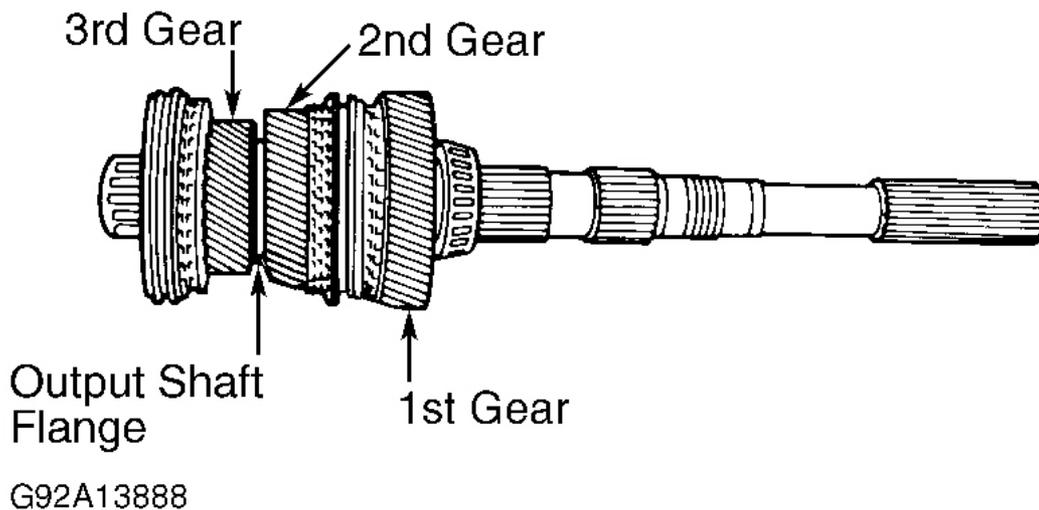
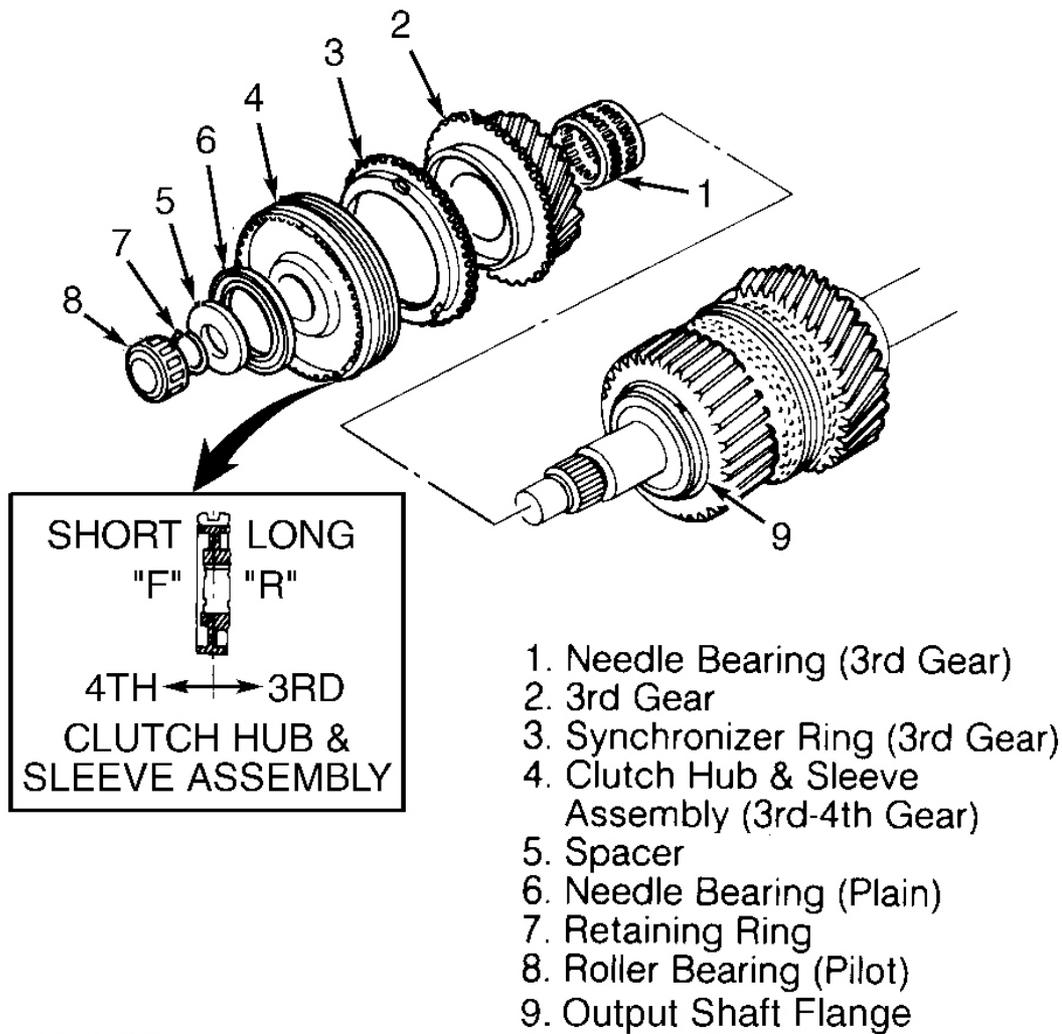


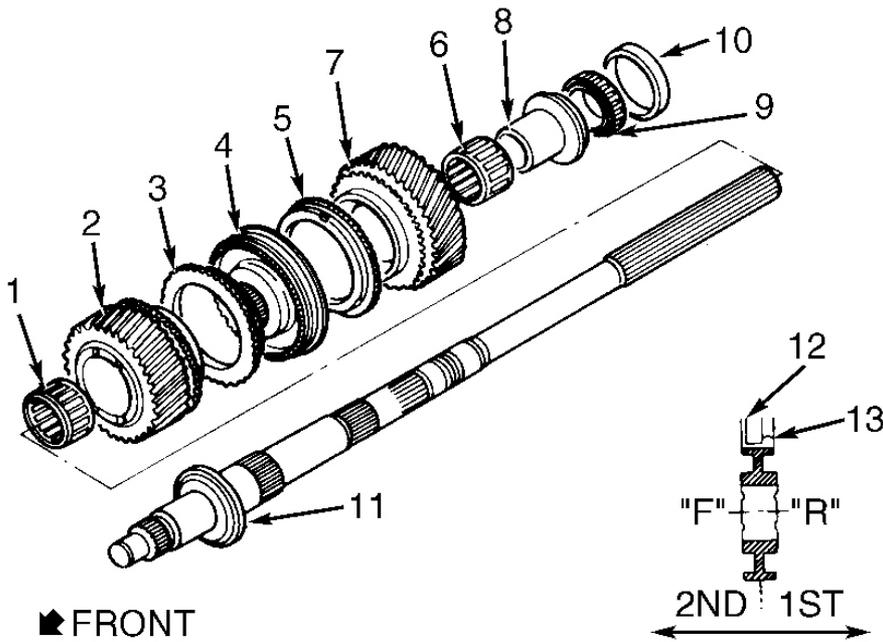
Fig. 5: Locating Flange on Output Shaft Assembly
Courtesy of FORD MOTOR CO.



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Fig. 6: Exploded View of Front of Output Shaft
Courtesy of FORD MOTOR CO.

3. Position output shaft with rear end (long side) facing upward. Position output shaft into press with press cradle contacting lower part of 2nd gear. See **Fig. 7.**
4. Press off the following components as a unit: center bearing, 1st gear sleeve, 1st gear and needle bearing, 1st-2nd clutch hub and sleeve assembly, 1st-2nd synchronizer rings, 2nd gear and needle bearing. See **CLEANING & INSPECTION.**



- | | |
|---|-------------------------------|
| 1. Needle Bearing (2nd Gear) | 7. 1st Gear |
| 2. 2nd Gear | 8. Sleeve (1st Gear) |
| 3. Synchronizer Ring (2nd Gear) | 9. Center Bearing |
| 4. Clutch Hub & Sleeve
Assembly (1st & 2nd Gear) | 10. Center Bearing Outer Race |
| 5. Synchronizer Ring (1st Gear) | 11. Output Shaft Flange |
| 6. Needle Bearing (1st Gear) | 12. Narrow |
| | 13. Wide |

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Fig. 7: Exploded View of Rear of Output Shaft
 Courtesy of FORD MOTOR CO.

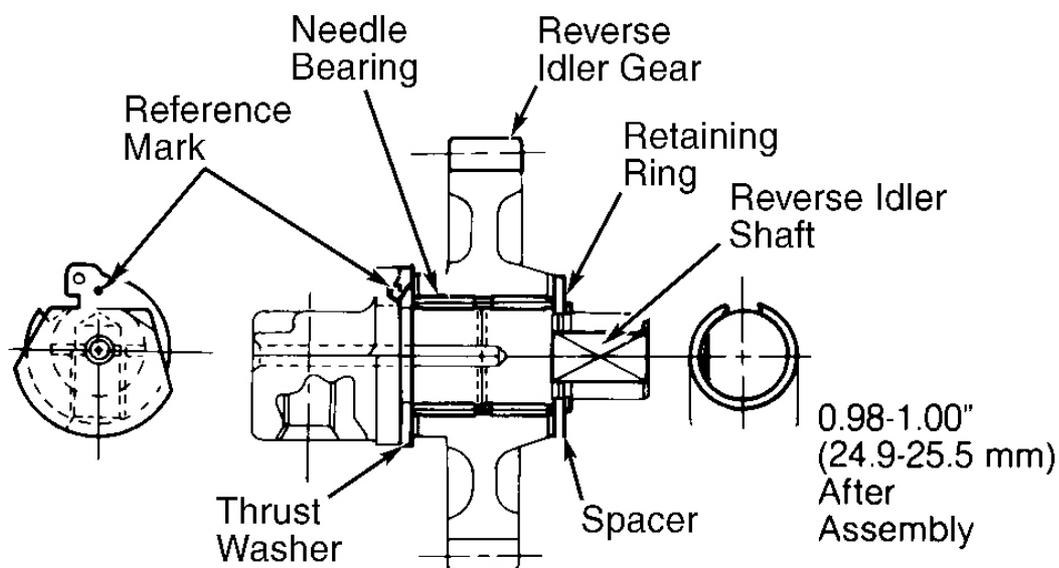
Reassembly

1. Ensure center bearing outer race is installed into transmission case. Position output shaft so that rear (long side) faces upward.
2. Install components onto output shaft in the following order: 2nd gear needle bearing, 2nd gear, 2nd gear synchronizer ring, 1st-2nd clutch hub and sleeve assembly, 1st gear synchronizer ring, 1st gear needle bearing, 1st gear, 1st gear sleeve and inner center bearing. See **Fig. 7**.
3. Press center bearing onto rear (long side) of output shaft. Position output shaft front (short side) facing upward. Install parts in the following order: 3rd gear needle bearing, 3rd gear and 3rd gear synchronizer ring.
4. Mate 3rd-4th clutch hub synchronizer key groove with reference mark on clutch hub sleeve. Install 3rd-4th clutch hub and sleeve with reference mark and long clutch hub flange facing rearward. See **Fig. 6** and **Fig. 16**.
5. Adjust 3rd-4th clutch end hub play to .00-.002" (.00-.05 mm) by selecting proper retaining ring. Retaining ring comes in sizes .59-.077" (1.50-1.95 mm).

REVERSE IDLER GEAR

Disassembly & Reassembly

1. Remove retaining ring, spacer, idler gear, needle bearing and thrust washer. See **CLEANING & INSPECTION**.
2. To install, reverse removal procedure. Ensure that tab on thrust washer mates with groove on reverse idler shaft to prevent rotation of thrust washer. See **Fig. 8**.
3. Install original retaining ring onto reverse idler gear shaft. Insert feeler gauge between retaining ring and reverse idler gear to measure reverse idler gear end play. Adjust reverse idler gear end play to .004-.008" (.10-.20 mm). Reverse idler gear retaining rings come in thicknesses of .059-.075" (1.50-1.90 mm).



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Fig. 8: Assembling Reverse Idler Gear

Courtesy of FORD MOTOR CO.

TOP COVER

Disassembly

1. Position top cover assembly into Top Cover Holding Fixture T88T-7025-C or equivalent.

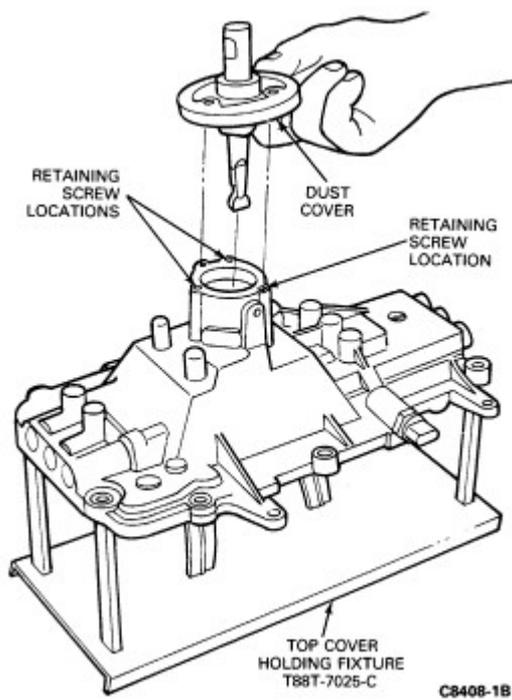


Fig. 9: Positioning Top Cover Assembly On Special Tool
 Courtesy of FORD MOTOR CO.

NOTE: For reference during assembly, notice that grooves in bushing align with slots in lower shift lever pivot ball. Notice that the notch in the lower shift lever faces toward front of transmission.

2. If necessary, remove dust boot and shift lever from top cover, if not removed during transmission disassembly. Remove three dust cover retaining screws using a T30 Torx® wrench. Remove dust cover.
3. Remove backup lamp switch from top cover. Remove backup lamp switch pin from groove in top cover.

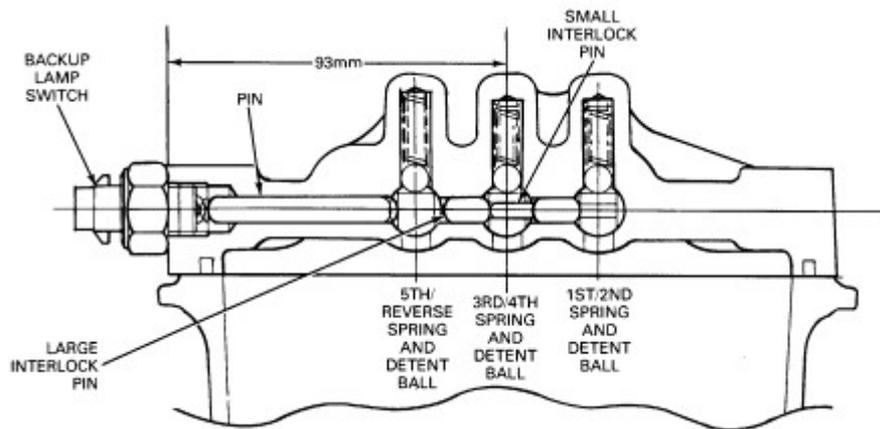


Fig. 10: Locating Backup Lamp Switch, Spring & Detent Balls
 Courtesy of FORD MOTOR CO.

Spring and Detent Ball Assembly

4. Invert top cover assembly on Top Cover Holding Fixture T88T-7025-C or equivalent. Using a 5/32-inch drift punch, remove spring pins retaining shift forks to the shift rail.

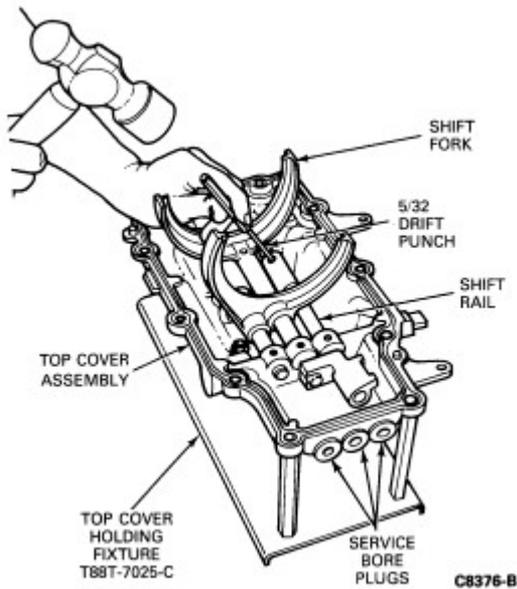


Fig. 11: Removing Spring Pins Retaining Shift Forks To Shift Rail
Courtesy of FORD MOTOR CO.

NOTE: Discard original spring pins.

5. Make sure that fifth/reverse shift rail is in fully forward position. Remove spring pin from end of fifth/reverse rail.
6. Remove three rubber plugs sealing shift rod service bores.

CAUTION: Perform the following shift rail removal procedures with great care. Cover the lock ball bores and friction device and spring seats with a clean cloth held firmly in place during shift rail removal. Failure to firmly cover lock ball bores and friction device can result in component loss when the ball/friction device and spring forcefully leave their installed positions.

WARNING: WEAR SAFETY GLASSES WHILE PERFORMING SHIFT RAIL REMOVAL PROCEDURE.

7. Remove fifth/reverse shift rail from top cover through service bore. If necessary, insert a 5/16-inch drift punch through spring pin bore and gently rock shift rail from side to side while maintaining rearward pressure.
8. Remove first/second shift rail from top cover through service bore. If necessary, insert a 5/16-inch drift punch through spring pin bore and gently rock shift rail from side to side while maintaining rearward pressure.
9. Remove third/fourth shift rail from top cover through service bore. If necessary, insert a drift punch through spring pin bore and gently rock shift rail from side to side while maintaining rearward pressure.

10. Remove fifth/reverse cam lockout plate retaining bolts using a 10mm socket. Remove fifth/reverse cam lockout plate

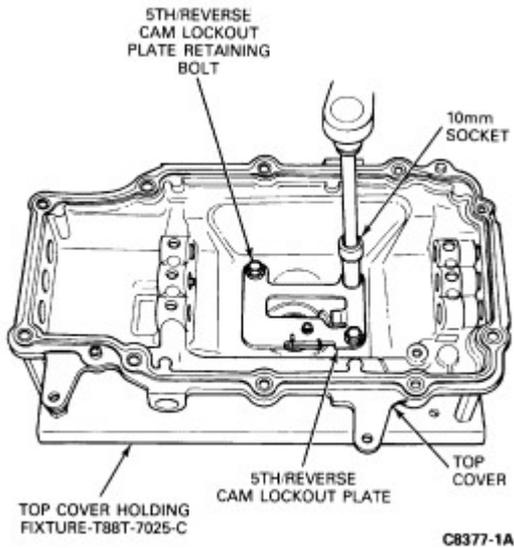


Fig. 12: Removing Fifth/Reverse Cam Lockout Plate Retaining Bolts
Courtesy of FORD MOTOR CO.

Reassembly

NOTE: During assembly, apply Motorcraft MERCON® Multi-Purpose Automatic Transmission Fluid XT-2-QDX or -DDX (E4AZ-19582-B) or equivalent to all rotating or sliding parts.

1. Position top cover into Top Cover Holding Fixture T88T-7025-C or equivalent.
2. Position fifth/reverse cam lockout plate to top cover. Install fifth/reverse cam lockout plate retaining bolts and tighten to 8-10 N.m (6-7 ft. lb.).
3. Position third/fourth shift rail into top cover through service bore. If necessary, insert a 5/16-inch drift punch through spring pin bore and gently rock shift rail from side to side while maintaining forward pressure. Position detent ball and spring into top cover spring seats. Compress the detent ball and spring assembly using a suitable tool, and push shift rail into position over detent ball. Engage third/fourth shift fork with shift rail. Position friction device and spring into top cover spring seats. Compress friction device and spring assembly using a suitable tool, and push shift rail into position over friction device. Install spring pins retaining shift rail to top cover. Install spring retaining third/fourth shift fork to shift rail.
4. Position first/second shift rail into top cover through service bore. If necessary, insert a 5/16-inch drift punch through spring pin bore and gently rock shift rail from side to side while maintaining forward pressure. Position detent ball and spring into top cover spring seats. Compress the detent ball and spring assembly using a suitable tool and push shift rail into position over detent ball. Engage first/second shift fork with shift rail. Position friction device and spring into top cover spring seats. Compress friction device and spring assembly using a suitable tool, and push shift rail into position over friction device. Install spring pins retaining shift rail to top cover. Install spring pin retaining first/second shift fork to shift rail.
5. Position fifth/reverse shift rail to top cover through service bore. If necessary, insert a 5/16-inch drift punch through spring pin bore and gently rock from side to side while maintaining forward pressure. Position detent ball and spring into spring seats. Compress the detent ball and spring using a suitable

tool, and push shift rail into position over detent ball. Engage fifth/reverse shift fork with shift rail. Install spring pins retaining shift rail to top cover. Install spring pin retaining fifth/reverse shift fork to shift rail.

6. Install rubber plugs into service bores.
7. Install interlock pins into first/second and third/fourth shift rails. Make sure that large and small interlock pins are installed into their original positions.

CAUTION: Improper installation of interlock pins will prevent activation of neutral switch and/or backup lamp switch.

8. Apply sealant to backup lamp switch and neutral switch threads. Install switches to top cover and tighten to 25-35 N.m (18-26 ft. lb.).
9. Position lower shift lever and dust cover assembly to top cover. Install three retaining screws and tighten to 8-11 N.m (6-8 ft. lb.).