DISASSEMBLY AND ASSEMBLY OF SUBASSEMBLIES

Output Shaft

Special Tool(s)

ST1895-A	Remover, Drive Pinion Bearing Cone 205-D002 (D79L-4621-A) or equivalent
ST2388-A	Installer, Drive Pinion Bearing Cone 205-011 (T57L-4621-B)
ST1303-A	Remover/Installer, Bearing Tube 308-025

Disassembly

1. Remove the retaining ring above 5th gear.

2. ⚠ **CAUTION: Hand tighten the special tool to prevent gear damage.**

   ⚠ **CAUTION: Support the output shaft while using the press to prevent damage to the shaft or gears.**

   Using the special tool, press 5th gear, the spacer, the output shaft bearing and reverse gear from the output shaft.

   - Discard the output shaft bearing.

3. Remove reverse gear needle bearing.
   - Inspect the needle bearing for wear or damage. Install a new needle bearing as necessary.

Copyright © 2004, Ford Motor Company

DISASSEMBLY AND ASSEMBLY OF SUBASSEMBLIES (Continued)

4. Remove the check ball and the blocking ring.
   - Inspect the blocking ring for wear or damage. Install new blocking rings as necessary.

A0031590

5. **NOTE:** Install the special tool with the flat side facing 1st gear.

   Using the special tools, press the bearing spacer, the reverse gear synchronizer cone and 1st gear from the output shaft.

N0029624

6. Remove the 1st gear needle bearing.
   - Inspect the needle bearing for wear or damage. Install a new needle bearing as necessary.

A0031592

7. Remove the 1st gear synchronizer inner cone, the 1st gear synchronizer outer cone and the 1st gear synchronizer blocking ring.
   - Inspect all components for wear or damage. Install new components as necessary.

N0016981

DISASSEMBLY AND ASSEMBLY OF SUBASSEMBLIES (Continued)

8. **NOTE:** Reposition the output shaft on the press with the input shaft end facing upward.

   Remove and discard the retaining ring.

A0031595

9. Remove the 3rd/4th synchronizer hub.

A0023351

10. Remove the 3rd/4th blocking ring.

A0023352

11. Remove the 3rd gear.
    - Inspect the gear for wear or damage. Install a new gear as necessary.

A0023392

12. Remove the 3rd gear needle bearing.
    - Inspect the needle bearing for wear or damage. Install a new needle bearing as necessary.

A0023438

13. **NOTE:** Install the special tool behind 2nd gear with the flat side of the tool facing 2nd gear.

    Using the special tool, remove the spacer, 2nd gear thrust washer and 2nd gear.
    - Inspect the gear for wear or damage. Install a new gear as necessary.

N0029623

DISASSEMBLY AND ASSEMBLY OF SUBASSEMBLIES (Continued)

14. Remove the check ball and 2nd gear needle bearing.
    - Inspect the needle bearing for wear or damage. Install a new needle bearing as necessary.

15. Remove the 2nd gear synchronizer inner cone, 2nd gear synchronizer outer cone and the 2nd gear synchronizer blocking ring.
    - Inspect all components for wear or damage. Install new components as necessary.

16. Remove the snap ring, then using the special tool, press off the 1st/2nd gear synchronizer.

Assembly

1. Carry out the following before reassembling:
    - Inspect the gears for broken or cracked teeth. Check for unusual wear patterns.
    - Inspect the thrust washers for face wear, cracks, scoring and for signs of heat damage.
    - Inspect the bearings, bearing cups and the synchronizers for wear or damage.
    - Inspect the output shaft for scoring or worn or damaged splines. Install new components as necessary.
    - Always install new retaining rings.
2. Lubricate all components with the recommended transmission fluid when reassembling.

DISASSEMBLY AND ASSEMBLY OF SUBASSEMBLIES (Continued)

3. **NOTE:** Position the output shaft with the output end facing upward.

   NOTE: Install the synchronizer assembly with the deeper center flange of the synchronizer hub facing toward the rear of the output shaft.

   Install the 1st/2nd synchronizer assembly on the output shaft, then install a new retaining ring.

   - If installing the original synchronizer assembly, make sure the index marks made during disassembly are aligned.
   - It may be necessary to press the hub into position on the shaft.
   - Do not overextend the retaining ring. A damaged or overextended retaining ring will not allow 1st gear to fully seat.

A0043367

A0023617

4. Install the 1st gear synchronizer blocking ring.
   - Align the blocking ring tabs with the synchronizer assembly.

N0016983

5. Install the outer 1st gear synchronizer cone.

A0023633

6. Install the inner 1st gear synchronizer cone. Rotate the inner cone till it is seated.

A0023631

DISASSEMBLY AND ASSEMBLY OF SUBASSEMBLIES (Continued)

7. Install the 1st gear needle bearing.
   - Apply petroleum jelly to the bearing.

8. Install 1st gear.
   - First gear is 127 mm (5 in) in diameter.
   - Rotate the gear to align the gear slots with the inner cone tabs.
   - Make sure that the gear fits over the retaining ring.

9. Install the reverse synchronizer cone.

10. Install the reverse gear blocking ring.

DISASSEMBLY AND ASSEMBLY OF SUBASSEMBLIES (Continued)

11. Using the special tools, install the reverse gear bearing spacer.

12. Install reverse gear needle bearing.
    - Apply petroleum jelly to the bearing.

13. Install the reverse gear synchronizer assembly.

14. Install reverse gear.
    - Rotate the gear to align the gear slots with the inner cone tabs.
    - Make sure the clutching teeth on the gear snap inside the sliding sleeve and the sliding sleeve is against the gear.
    - Function the synchronizer sleeve through the 2 positions to make sure of normal function.

15. Install the check ball.
    - Use petroleum jelly to hold the check ball in place.

DISASSEMBLY AND ASSEMBLY OF SUBASSEMBLIES (Continued)

16. Install the thrust washer. Be sure to align the slot in the washer with the check ball.

17. Install the rear output shaft bearing, then 5th gear. Using the special tool, press both the bearing and gear into place.
    - The flatside of 5th gear faces the output shaft end.

18. Install a new retaining ring.
    - Do not overextend the retaining ring.

19. Reposition the output shaft with the input end facing upward.

20. Install the 2nd gear synchronizer blocking ring. Rotate the blocking ring until seated.

21. Install the 2nd gear synchronizer outer cone and the second gear synchronizer inner cone.

DISASSEMBLY AND ASSEMBLY OF SUBASSEMBLIES (Continued)

22. Install the 2nd gear bearing.
    - Apply petroleum jelly to the bearing.

A0031628

A0031629

23. Install 2nd gear.
    - Rotate the gear to align the gear slots with the inner cone tabs.

DISASSEMBLY AND ASSEMBLY OF SUBASSEMBLIES (Continued)

24. Install the check ball.
    - Use petroleum jelly to hold the check ball in place.

A0031630

25. Install the thrust washer. Be sure to align the slot in the washer with the check ball.

A0031631

DISASSEMBLY AND ASSEMBLY OF SUBASSEMBLIES (Continued)

26. Press the bearing spacer onto the output shaft.

A0031632

A0031633

27. Install the 3rd gear bearing.
    - Apply petroleum jelly to the bearing.

DISASSEMBLY AND ASSEMBLY OF SUBASSEMBLIES (Continued)

28. Install 3rd gear.

A0031645

29. Install the 3rd gear synchronizer blocking ring.

A0031646

DISASSEMBLY AND ASSEMBLY OF SUBASSEMBLIES (Continued)

30. Install the 3rd/4th gear synchronizer body.
    - Install the synchronizer body with the raised center facing downward.
    - Rotate the blocking ring until seated.

A0031647

31. Install a new retaining ring.

A0031595