ASSEMBLY

Transmission

Special Tool(s)

ST1214-A	Dial Indicator Gauge with Holding Fixture 100-002 (TOOL-4201-C) or equivalent
ST1186-A	Holding Fixture, Transmission 307-003 (T57L-500-B)
ST1303-A	Remover/Installer, Bearing Tube 308-024 (T75L-7025-B)
ST2338-A	Replacer/Adapter 308-239 (T96P-7025-A)
T96P-7127-A ST1087-A	Installer, Output Shaft Oil Seal 308-246 (T96P-7127-A) or use Installer, Drive Pinion Oil Seal 205-115

(Continued)

Special Tool(s)

ST1255-A	Adapter for 308-220 (handle) 205-153 (T80T-4000-W)
ST2355-A	Installer, Input Shaft Oil Seal 308-220 (T94P-7025-AH)

Material

Item	Specification
MERCON® Multi-Purpose ATF Transmission Fluid XT-2-QDX	MERCON
Premium Long-Life Grease XG-1-C or XG-1-K (Canada CXG-1-C)	ESA-M1C75-B
Threadlock and Sealer TA-25	WSK-M2G351-A5
Clear Silicone Rubber TA-32	ESB-M4G92-A

Assembly

NOTE: Install new roll pins, retaining rings or bearings that were removed during disassembly. Install bearings and bearing cups as a set.

1. Lubricate all components with transmission fluid during assembly.

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ASSEMBLY (Continued)

2. Attach the clutch housing to the special tool.

3. **NOTE:** If a new rear output shaft bearing was installed or a new rear countershaft bearing is being used, install new bearing cups.

   Install the rear countershaft bearing cup and the rear output shaft bearing cup.

   - Lubricate the bearing cups and the shift rail bearing with petroleum jelly.

4. Install the rear countershaft bearing.

5. Install the reverse idler gear bearing on the reverse idler gear shaft.

6. Install the reverse idler gear on the shaft.

7. Install the reverse idler gear into the case.

ASSEMBLY (Continued)

8. Install a new seal on the reverse idler bolt, then install the bolt in the transmission case.
   - Tighten to 27 Nm (20 lb-ft).

9. **NOTE:** If a new front input shaft bearing or front countershaft bearing was installed, install new bearing cups.

   Install the front input shaft bearing cup and the front countershaft bearing cup. Do not install the shims at this time.
   - Install the transmission main case.

10. Install the input shaft with the 3rd/4th synchronizer blocking ring.

11. Install the shift rails and shift forks on the mainshaft.

ASSEMBLY (Continued)

12. Install the mainshaft onto the clutch housing.
    - The notches on the shift rail should be pointing upward.
    - Align the shift rails in the bores.
    - The 3rd/4th shift fork has an oil deflector that will line up with an oil deflector on the inside of the case.
    - Make sure the 3rd/4th synchronizer blocking ring is aligned with the slots in the 3rd/4th synchronizer hub.

13. Using a jack and a block of wood, lift the mainshaft 13 mm (0.50 in) upward, then tilt the countershaft inward and install the countershaft.
    - Make sure all synchronizer assemblies are in the neutral position.

14. Install the case while holding the countershaft bearing in place. Install 2 opposing bolts.
    - Tighten to 32 Nm (24 lb-ft).

15. **NOTE:** Rotate the transmission so that the input shaft is pointing upward.

    NOTE: Rotate the input shaft to seat the bearings.

    Using the special tools, measure the input shaft end play by applying an upward load on the output shaft. Record the measurement.

ASSEMBLY (Continued)

16. Rotate the transmission so that the input shaft is pointing downward.

17. **NOTE:** Rotate the countershaft to seat the bearings.

    Using the special tools, measure the countershaft gear end play by pulling upward on the countershaft. Record the measurement.

18. Remove the 2 bolts and lift the transmission main case off.

ASSEMBLY (Continued)

19. Using a jack and a block of wood, lift the mainshaft 13 mm (0.50 in) upward, then tilt the countershaft outward and remove the countershaft.

20. While holding the mainshaft, release the jack and remove the mainshaft and shift assembly.

21. Remove the input shaft.

ASSEMBLY (Continued)

22. Remove the front input shaft bearing cup and the front countershaft bearing cup.

23. Using the special tools, install the new input shaft seal.

24. Using the recorded end play measurements, select and install the appropriate shims to achieve the correct end play.

25. Install the front input shaft bearing cup and the front countershaft bearing cup.

26. Install the input shaft and the 3rd/4th synchronizer blocking ring.

ASSEMBLY (Continued)

27. Install the mainshaft.
    - The notches on the shift rail should be pointing upward.
    - Align the shift rails in the bores.
    - The 3rd/4th shift fork has an oil deflector that will line up with an oil deflector on the inside of the case.
    - Make sure the 3rd/4th synchronizer blocking ring is aligned with the slots in the 3rd/4th synchronizer hub.

28. Using a jack and a block of wood, lift the mainshaft 13 mm (0.50 in) upward, then tilt the countershaft inward and install the countershaft.

ASSEMBLY (Continued)

29. Clean the mating surfaces of the transmission main case and the clutch housing. Apply a bead of silicone rubber to the sealing surface on the clutch housing, then install the transmission main case.

30. Install the clutch housing-to-main case bolts.
    - Tighten the bolts in a star pattern to 32 Nm (24 lb-ft).

31. Install the lock pins.

32. Install the lock plate and the lock plate bolts.
    - Tighten to 31 Nm (23 lb-ft).

33. Install the 3 detents and the 3 detent springs.

ASSEMBLY (Continued)

34. Install the 3 detent plugs.
    - Tighten to 28 Nm (21 lb-ft).

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

36. **NOTE:** The thrust washer is positioned with the flat surface facing upward towards 5th gear.

    Install the thrust washer and the 5th gear needle bearings.

37. Place the 5th gear synchronizer blocking ring and the synchronizer hub on the countershaft 5th gear. Install the synchronizer springs and inserts.

38. Install the sliding sleeve on the synchronizer hub.
    - Align the pockets in the blocking ring with the struts in the synchronizer.
    - The sliding sleeve is not reversible. Install the sleeve with the pointed teeth on the synchronizer sleeve away from 5th gear.

ASSEMBLY (Continued)

39. Install 5th gear synchronizer blocking ring.

40. Install the 5th gear synchronizer cone.

41. Install the 5th gear shift fork, the synchronizer assembly, the synchronizer cone and 5th gear as an assembly.
    - Lubricate the shift rail with transmission fluid. Using a plastic hammer, alternately tap the shift fork and the synchronizer cone into position.

42. Install a new split pin.
    - Install the pin until it is flush with the fork.

43. Install a new snap ring.

44. Install the 3rd/4th shift finger, then install a new split pin.
    - Install the split pin until it is flush with the shift finger.

45. Install new plastic spacers on the main shift rail.

ASSEMBLY (Continued)

46. Install the main shift rail, then install the 1st/2nd shift finger. Install new split pins.
    - Install the split pins until it is flush with the shift finger and the shift rail.

47. Install the OSS sensor tone wheel check ball.
    - Use petroleum jelly to hold the check ball in place.

48. Place the OSS sensor tone wheel on the output shaft, aligning the slot in the OSS wheel with the check ball. Using the special tool, install the OSS sensor tone wheel.
    - The OSS sensor tone wheel is brittle. Gently tap the tone wheel into position.

49. Install a new OSS sensor tone wheel retaining ring.

50. Install the 5th/reverse gear lockout spring, arm, seal and top bolt.
    - Tighten to 20 Nm (15 lb-ft).

ASSEMBLY (Continued)

51. Install the 5th/reverse gear lockout side bolt.
    - Tighten to 20 Nm (15 lb-ft).

52. Clean the mating surfaces of the transmission main case and the extension housing. Apply a bead of silicone rubber to the sealing surface of the transmission case.

53. Install a new split pin in the gear shift offset lever.
    - The split pin should be flush in the gear shift offset lever.

54. Seat the extension housing and install the bolts.
    - Tighten to 32 Nm (24 lb-ft).
    - Fill the gear shift offset lever with petroleum jelly.

55. Position a new extension housing seal onto the extension housing. Using the special tool, install the extension housing seal.
    - Lubricate the seal with transmission fluid.

ASSEMBLY (Continued)

56. Install the output shaft speed (OSS) sensor.
    - Tighten to 10 Nm (89 lb-in).

57. Position the output flange onto the output shaft. Install the output flange nut and tighten until the output flange is fully seated onto the output shaft.

58. Remove the nut.

59. Install the output flange oil seal, the output flange washer and the output flange nut.
    - Tighten to 142 Nm (105 lb-ft).

60. Install a new plastic retainer.

61. Install the clutch slave cylinder. For additional information, refer to Section 308-02.

62. Install the clutch slave cylinder connector and engage the clip.

63. Fill the transmission with transmission fluid to the specified level.
    - Transmission capacity is 3.0 liters (6.3 pints).

64. Apply threadlock and sealer to the fill plug threads and install the fill plug.
    - Tighten to 25 Nm (18 lb-ft).