


















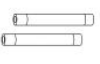



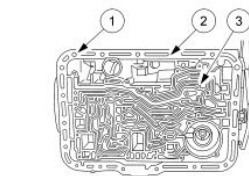


**Transmission****Special Service Tool(s)**

 <p>ST1759-A</p>	A4LD Holding Fixture T93T-77002-AH
 <p>ST1792-A</p>	Band adjustment Torque Wrench Set T71P-77370-A
 <p>ST1200-A</p>	Bearing Cup Puller T77F-1102-A
 <p>ST1635-A</p>	Bearing Installer T97T-77110-A
 <p>ST1186-A</p>	Bench-Mounted Holding Fixture T57L-500-B
 <p>ST1815-A</p>	Converter Guide Pins T95L-7902-A
 <p>ST1274-A</p>	Depth Micrometer D80F-4201-A
 <p>ST1214-A</p>	Dial Indicator With Bracketry Tool-4201-C
 <p>ST1633-A</p>	Digital TR Sensor Alignment Tool T97L-70010-A
 <p>ST1255-A</p>	Drive Handle T80T-4000-W
 <p>ST1700-A</p>	Extension Housing Bushing Replacer T77L-7697-F
 <p>ST1791-A</p>	Extension Housing Seal Replacer T74P-77052-A
	Front Pump Alignment Set T74P-77103-X

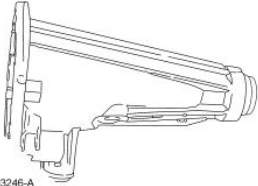
 <p>ST1617-A</p>	
 <p>ST1826-A</p>	<p>Front Pump Seal Sizing Tool T95L-70010-G</p>
 <p>ST1816-A</p>	<p>Gauge Bar T93T-77003-AH</p>
 <p>ST1185-A</p>	<p>Impact Slide Hammer T-50T-100-A</p>
 <p>ST1760-A</p>	<p>Servo Compressor T95L-77028-A</p>
 <p>ST1818-A</p>	<p>Servo Rod Selecting Gauge T74P-77190-A</p>
 <p>ST1199-A</p>	<p>Shift Lever Seal Replacer T74P-77498-A</p>
 <p>ST1631-A</p>	<p>Torque Converter Holding Tools T81P-7902-C</p>
 <p>ST1614-A</p>	<p>Turbine Shaft Speed Sensor Gauge T95L-70010-F</p>
 <p>ST1639-A</p>	<p>Valve Body Guide Pin (.235) T95L-70010-B</p>
 <p>ST1639-A</p>	<p>Valve Body Guide Pin (.248) T95L-70010-C</p>

1. Thoroughly clean the transmission case and extension housing in solvent and blow dry with compressed air.
2. Inspect the transmission case for the following:
  1. Stripped bolt hole threads.
  2. Gasket and mating surfaces for burrs or nicks.
  3. Obstructions to vent and fluid passages.
    - Cracks or warpage.



GD3245-A

3. Inspect the extension housing for cracks, burrs or warpage.



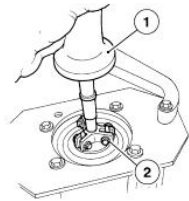
GD3246-A

4. Inspect case bearing for damage. Replace as needed.



GD3247-A

5. Remove the case bearing.
1. Install the Bearing Cup Puller with Slide Hammer into case bearing.
  2. Remove the case bearing.
    - Use an oil stone to remove any nicks or burrs in the bearing case bore.

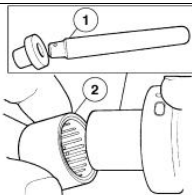


GD2306-A

6.  **CAUTION:** Ensure bearing seal ring is facing drive handle.

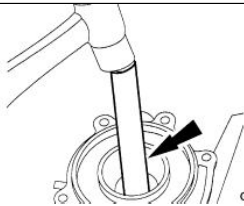
Install a new case bearing.

1. Assemble and install the Drive Handle and Bearing Installer.
2. Position new case bearing onto bearing installer tool.



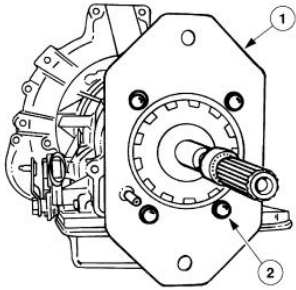
GD2300-A

7. Tap case bearing into case bearing bore.



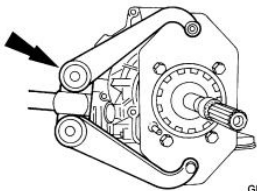
GD2348-B

8. Install the A4LD Holding Fixture Adapter.
1. Position the A4LD Holding Fixture Adapter on the rear of the transmission case.
  2. Install the A4LD Holding Fixture Adapter bolts.



GD2232-A

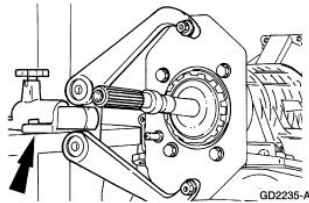
9. Attach the fixture arm of the Bench Mounted Holding Fixture to the A4LD Holding Fixture Adapter.



GD2693-A

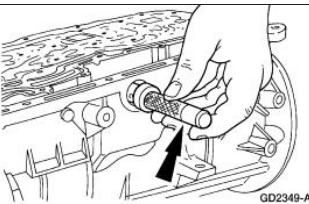
10.  **WARNING: MAKE SURE THE LOCK PIN ON BENCH-MOUNTED HOLDING FIXTURE IS SECURE.**

Install transmission into Bench Mounted Holding Fixture.  
 Rotate the transmission so that the fluid pan rail is facing up.



GD2235-A

11. Using Shift Lever Seal Replacer, install the manual control lever shaft seal.  
 ◦ Lubricate the manual control lever shaft seal with petroleum jelly.



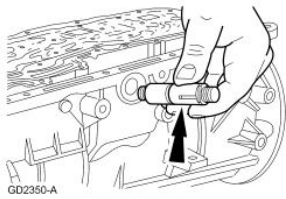
GD2349-A

12. Assemble the manual valve inner lever and parking lever actuating rod as shown.



GD3457-A

13. Install the manual control lever shaft.

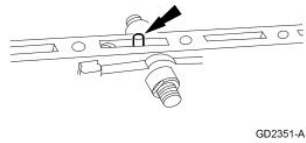


14. **CAUTION:** Use care not to damage the fluid pan rail surface when installing the retaining pin.

**NOTE:** Align the manual control lever shaft alignment groove with the manual control lever shaft spring pin bore in the transmission case.

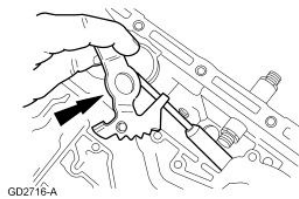
Install the manual control lever shaft spring pin.

- Tap the manual control lever shaft spring pin into the transmission case.



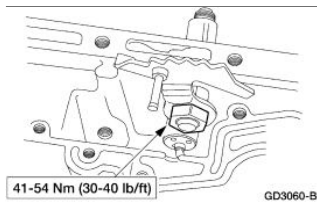
15. **CAUTION:** Align the flats on the manual valve inner lever with the flats on the manual control lever shaft.

Install the manual valve inner lever and parking lever actuating rod on to the manual control lever shaft.



16. **CAUTION:** To avoid damage, do not allow the wrench to strike the manual valve inner lever pin.

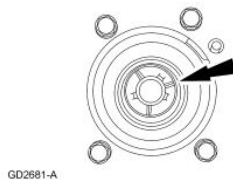
Install the manual valve inner lever nut on the manual control lever shaft and tighten.



17. **CAUTION:** The tabs on the output shaft thrust washer (No. 11) point into the case. Ensure the thrust washer is properly seated.

Install the output shaft thrust washer (No. 11).

- Coat the output shaft thrust washer with petroleum jelly.

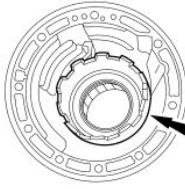


18. Install the park gear.



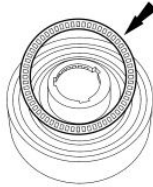
GD2303-A

19. Install the low/reverse brake drum.
- Rotate the low/reverse brake drum clockwise to install.



GD2780-A

20. If not already installed during subassembly, install the No. 10B needle bearing onto the output shaft ring gear and front band servo piston and pin (7A164) assembly.
- Coat the needle bearing with petroleum jelly.



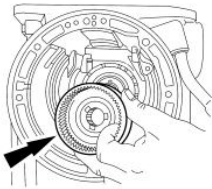
GD2599-A

21. Install the output shaft through the output shaft park gear.



GD2679-A

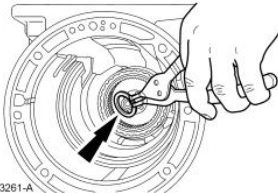
22. Install the output shaft ring gear and output shaft hub.



GD3349-A

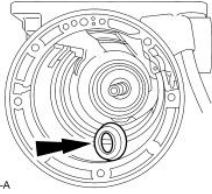
23. **⚠ CAUTION:** Always install a new output shaft retaining ring.

Install a new output shaft retaining ring.



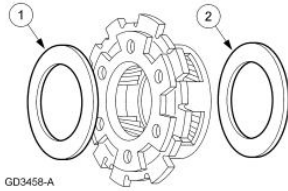
GD3261-A

24. **NOTE:** Install the output shaft sleeve with the cone facing up.
- Install the output shaft sleeve.




GD3262-A

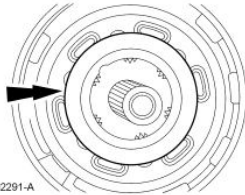
25. Install low/reverse planetary carrier needle bearings.
1. Install low/reverse planetary carrier needle bearing (No. 8) on the front face of the low/reverse planetary.
  2. Install low/reverse planetary carrier needle bearing (No. 9) on the rear face of the low/reverse planetary.
- Coat the the low/reverse planet carrier needle bearing (No. 8) and low/reverse planetary carrier needle bearing (No. 9) with petroleum jelly.




GD3458-A

26.  **CAUTION:** Make sure needle bearings stay in place.

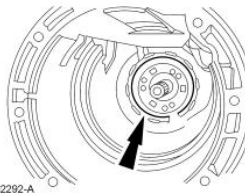
Install the low/reverse planetary assembly with No. 8 and No. 9 low/reverse planetary carrier needle bearings into the output shaft ring gear.




GD2291-A

27.  **CAUTION:** The low/reverse brake drum must be pulled forward to install the low/reverse planet retaining ring.

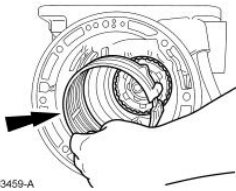
Install the low/reverse retaining ring into the low/reverse brake drum groove.



GD2292-A

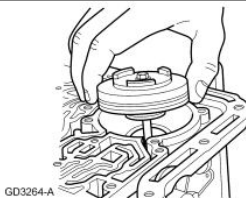
28.  **CAUTION:** Make sure band is resting on the two anchor pins in the case.

Install the low/reverse band over the low/reverse brake drum.



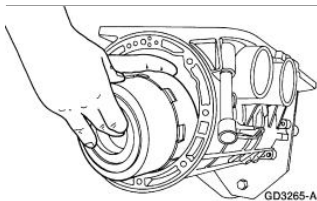
GD3459-A

29. Temporarily install the low/reverse band servo piston and rod to hold the low/reverse band in position.



GD3264-A

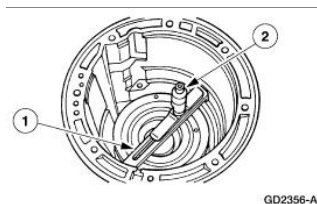
30. Install the previously assembled forward geartrain assembly.



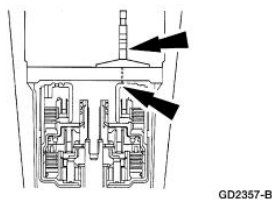
31. **⚠ WARNING: MAKE SURE THE LOCK PIN ON BENCH-MOUNTED HOLDING FIXTURE T57L-500-B IS SECURE.**

Rotate transmission assembly so that the converter housing surface is facing up.

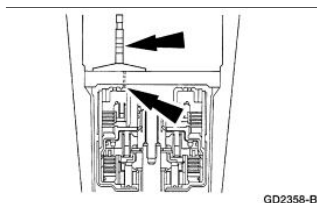
32. Select the intermediate brake drum thrust bearing (No. 4) as follows:
1. Install the Gauge Bar on case assembly shoulder.
  2. Set depth micrometer on top of gauge bar.



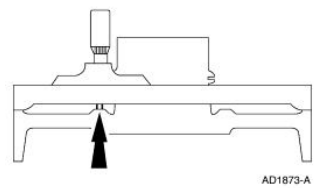
33. Calculate intermediate brake drum thrust bearing thickness:  
Extend the micrometer probe until it contacts the intermediate brake drum thrust bearing surface. Record the reading, this is dimension A.



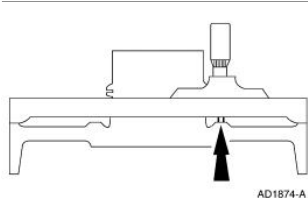
34. Place the micrometer on the opposite side of gauge bar and repeat measurement. This is dimension B.



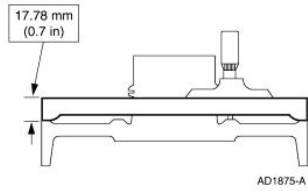
35. Add dimensions A and B, divide the total of A and B by 2. Then subtract the gauge bar thickness 17.78 mm (0.700 in). This is dimension C. Use dimension C, and the following chart to select the correct thickness.  $(A+B) - 17.78 (0.0700) = \text{Dimension C}$ . Reference end play is 0.21-0.51 mm (0.008-0.020 in)
36. Place the Gauge Bar support across the center support. Place the micrometer on the top of the Gauge Bar.
- o Extend the micrometer probe until it makes contact with the center support thrust bearing surface. Record this reading as dimension D.



37. Place the micrometer on the opposite side of the center support.
- o Extend the micrometer probe until it makes contact with the center support thrust bearing surface. Record this reading as dimension F.



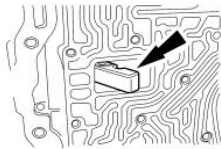
38. Add dimensions D and F; divide the total of D and F by two. Subtract the Gauge Bar thickness dimension E. The total is dimension G.



39. Add dimension C and G. This total is dimension H. Use the following chart to select the proper #4 thrust bearing. Reference end play is 0.21-0.51mm (0.008-0.020 in).

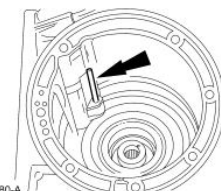
Dimension H	Selective Fit Intermediate Brake Drum Thrust Bearing (No. 4)		Identification (Notches)
3.01-3.15 mm (0.119-0.124 in)	97GT-7D014-GA	2.65-2.80 mm (0.104-0.110 in)	None
3.17-3.34 mm (0.125-0.132 in)	97GT-7D014-HA	2.80-2.95 mm (0.110-0.116 in)	One
3.36-3.54 mm (0.133-0.140 in)	97GT-7D014-KA	3.00-3.15 mm (0.118-0.124 in)	Two
3.57-3.71 mm (0.141-0.147 in)	97GT-7D014-LA	3.20-3.35 mm (0.126-0.132 in)	Three

40. Install the intermediate servo actuating lever.

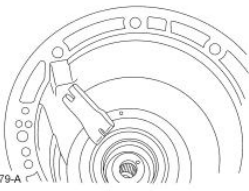


41. **NOTE:** The intermediate band lever shaft is shorter than the front band lever shaft.

Install the intermediate band actuating lever shaft through the intermediate servo actuating lever.

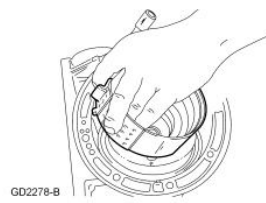


42. Install the intermediate band apply strut on the intermediate servo actuating lever.



43. **NOTE:** Make sure that the intermediate apply strut is aligned with the band notch.

Install the intermediate band.

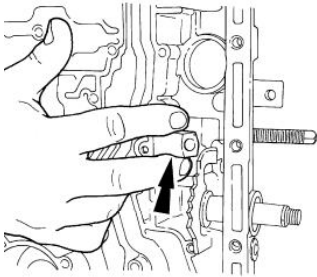


GD2278-B

44. **NOTE:** Use the intermediate band adjusting screw as a temporary alignment guide.

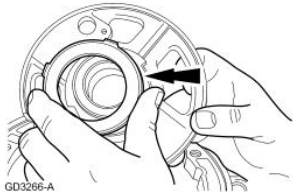
**NOTE:** The intermediate and front band anchor struts and band adjustment screws are the same.

Install the intermediate band anchor strut and the intermediate band adjustment screw.



GD2359-A

45. Install the selected intermediate brake drum thrust washer (No. 4) on the center support.
- Coat the intermediate brake drum thrust washer with petroleum jelly.



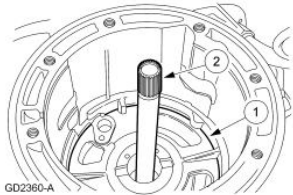
GD3286-A

46. **CAUTION:** Do not apply pressure to the center support while installing. Damage to sealing rings could result. Make sure the rear planetary support is seated.

**NOTE:** Align the center support screw hole with correct case hole.

Install the center support.

1. Position the center support into the intermediate brake and direct clutch drum.
2. Temporarily insert input shaft and gently wiggle it until the center support is seated against the case shoulder, then remove the input shaft.



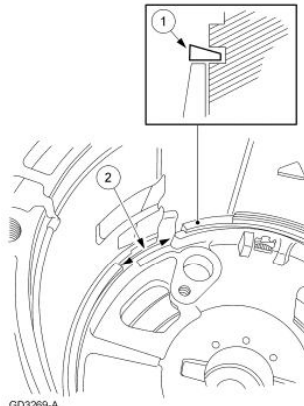
GD2360-A

47. **CAUTION:** Install the center support retaining ring with the tapered side facing up.

**CAUTION:** Ensure the notch opening is not obstructed by the center support retaining ring.

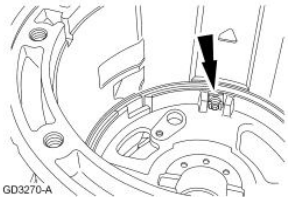
Install the center support retaining ring.

1. Position center support retaining ring with the tapered side facing up.
2. Install the center support retaining ring so that the notch opening is not obstructed.



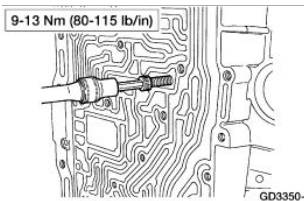
GD3269-A

48. Install the center support locknut and cage.



GD3270-A

49. Install the center support-to-case cap screw.



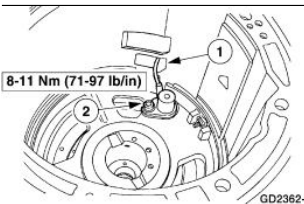
GD3350-A

50. **CAUTION:** Carefully route the turbine shaft speed (TSS) sensor connector and wiring harness through the opening in the case. Do not damage the wiring.

**NOTE:** Route TSS sensor electrical connector and wiring through transmission case opening.

Install the Turbine Shaft Speed (TSS) sensor.

1. Install the TSS sensor.
2. Install TSS sensor screw.

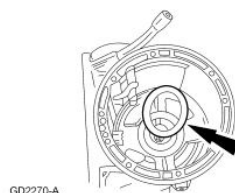


GD2362-B

51. **CAUTION:** Use only the center shaft thrust bearing (No. 3).

**NOTE:** The center shaft thrust bearing (No. 3) has no notches on the outer race.

Install the center shaft thrust bearing (No. 3).



GD2270-A

52. **CAUTION:** Do not bend the trigger wheel.

Install the front planetary carrier, front ring gear, front one-way clutch and center shaft assembly.

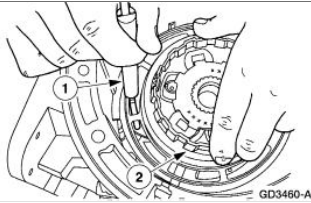


GD2267-A

53. **CAUTION:** The trigger wheel triggering window should pass over the thin blade of the Turbine Shaft Speed Sensor gauge. If it doesn't, the front planetary carrier and trigger wheel must be replaced.

Using the Turbine Shaft Speed Sensor Gauge, check TSS sensor air gap.

1. Place the thin blade of the Turbine Shaft Speed Sensor Gauge over the TSS sensor.
2. Rotate the trigger wheel and repeat checks for all windows.

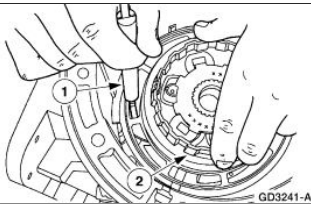


GD3460-A

54. **CAUTION:** The trigger wheel triggering window should not pass over the thick blade of the Turbine Shaft Speed Sensor gauge. If it does, the front planetary carrier and trigger wheel must be replaced.

Use the Turbine Shaft Speed Sensor Gauge to check TSS sensor air gap.

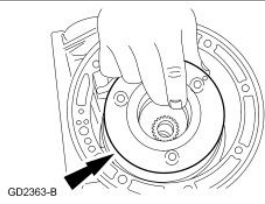
1. Place the thick blade of the Turbine Shaft Speed Sensor Gauge over the TSS sensor.
2. Rotate the trigger wheel and repeat checks for all windows.



GD3241-A

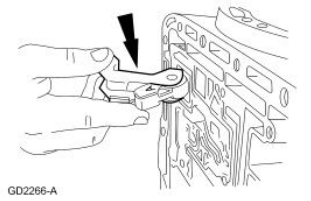
55. **NOTE:** Align the clutch plates and front adapter gear.

Install the front brake drum and coast clutch drum assembly.



GD2363-B

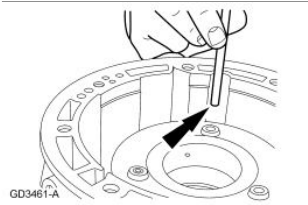
56. Install the front servo band lever and front band lever-to-case bracket into the transmission case.



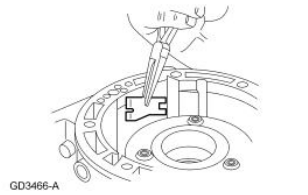
GD2266-A

57. **NOTE:** The front band lever shaft is longer than the intermediate band actuating lever shaft.

Install the front band actuating lever shaft through the front servo band lever.

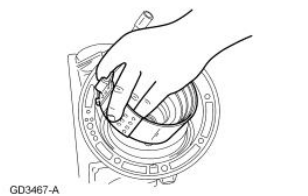


58. Install the front band apply strut.



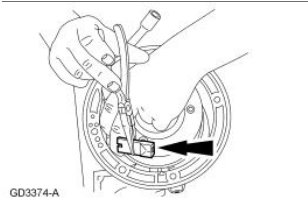
59. **NOTE:** If the front band is reused, it must be installed in the same position as when removed.

Install the front band over the front brake and coast clutch drum.

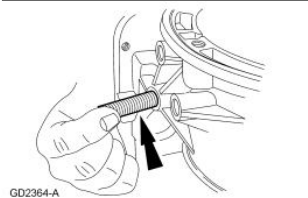


60. **NOTE:** Use the band adjustment screw as a temporary alignment guide.

Install the front band anchor strut.



61. Install the front band adjusting screw.



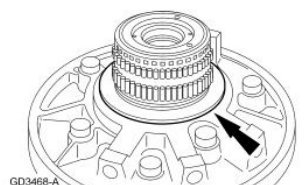
62. **CAUTION:** Ensure that the pump body is seated against the thrust washer and the front brake and coast clutch drum. The pump body must be below the level of the case gasket surface.


**CAUTION:** The tabs on the washer go into the pump face.

Perform front end play check procedure as follows:

Coat the fluid pump inlet thrust washer (No. 1) with petroleum jelly.

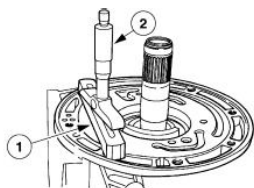
- o Install the fluid pump inlet thrust washer (No. 1) on the rear of the fluid pump and place pump into position in case.



63.  CAUTION: The gauge bar must rest on the gasket surface.

Measure the front end play clearance.

1. Place Gauge Bar across the case.
  2. Place depth micrometer on Gauge Bar and extend micrometer probe until it contacts the fluid pump face.
- Read the measurement and subtract Gauge Bar thickness 17.78 mm (0.700 inch). This is dimension A.
- Repeat the measurement at the opposite side of the transmission case. This is dimension B.
  - Add dimensions A and B together and divide by two. This is front end clearance dimension C.



GD3523-A


64.  CAUTION: If the average front end clearance is below the specification, choose a thinner washer. If the average is above the specification, choose a thicker washer.


**NOTE:** The front end play specification is 0.18-0.70 mm (0.007-0.028 in).

Use dimension C and the chart below to select the correct thickness fluid pump inlet thrust washer (No. 1).

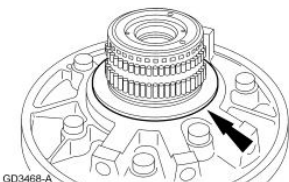
**Front End Play Selective Thrust Washer No. 1**

Front End Play "C" 0.18 - 0.70 mm (0.007 - 0.028 in) Without Gasket		
Selective Pump Support Thrust Washer		
Part Number	Thickness	Color
97GT-7D014-TA	1.55 - 1.60 mm (0.061 - 0.063 inch)	White
97GT-7D014-MA	1.75 - 1.80 mm (0.069 - 0.071 inch)	Green
97GT-7D014-NA	1.85 - 1.90 mm (0.073 - 0.075 inch)	Red
97GT-7D014-PA	1.95 - 2.00 mm (0.077 - 0.079 inch)	Beige
97GT-7D014-RA	2.05 - 2.10 mm (0.081 - 0.083 inch)	Black
97GT-7D014-SA	2.15 - 2.20 mm (0.085 - 0.087 inch)	Yellow

65.  CAUTION: Ensure that the pump body is seated against the thrust washer and the front brake and coast clutch drum. The pump body must be below the level of the case gasket surface.

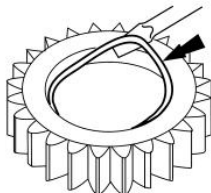
 CAUTION: The tabs on the washer go into the pump face.

Remove pump and install No. 1 thrust washer onto pump. After installing selected front pump thrust washer No. 1, repeat front end play check. Ensure correct end play, then remove pump for assembly.




GD3468-A

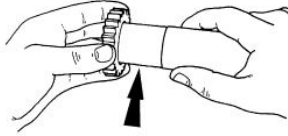
66. Install a new O-ring in fluid pump drive gear.



GD2475-A

67.  CAUTION: Lubricate the Fluid Pump Seal Sizing Tool.

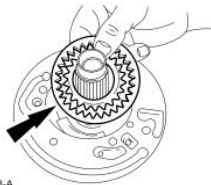
Install fluid pump drive gear on Fluid Pump Sizing Tool to seat O-ring. Remove tool.



GD2367-A

68. **CAUTION:** The chamber on the inside edge of the small gear must be up when in the pump housing gear pocket. The dimple on the larger gear must be down when in the pump housing gear pocket.

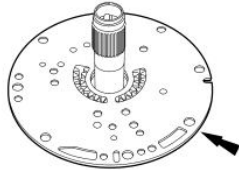
Install the pump gears into the fluid pump housing. Apply lubricant to pump gear to prevent scoring at start up.



GD2368-A

69. **CAUTION:** Ensure the holes in the plate line up with the holes in the pump.

Install the fluid pump adapter plate.



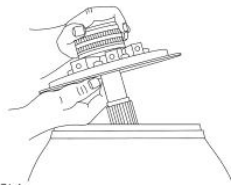
GD2369-A

70. **CAUTION:** Do not allow the pump gears to come out of the pump housing pocket.

**NOTE:** The notch on the outside of the adapter plate will be at the 9 o'clock position relative to the converter housing.

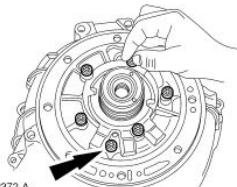
Install the fluid pump on the converter housing.

- Hold the fluid pump adapter plate against the pump housing. Turn the pump and adapter plate over and place on the converter housing.



GD2371-A

71. Loosely install the fluid pump bolts.



GD2372-A

72. **CAUTION:** Fluid Pump Alignment Set must be used to properly align the fluid pump to the fluid adapter plate. This will prevent seal leakage, gear noise, broken gears and bushing failure.

Align the fluid pump to the fluid pump adapter plate and select the gauge from the Fluid Pump Alignment Set that is the snugest fit when placed over the fluid pump.