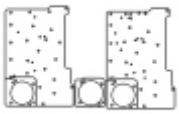
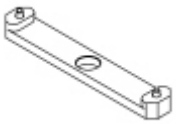
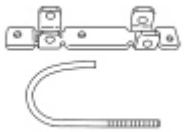
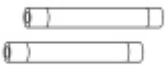
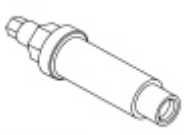
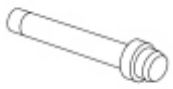
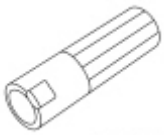
Transmission

Special Tool(s)

 ST1792-A	Adjustment Set, Transmission Band 307-S022 (T71P-77370-A)
 ST2538-A	Air Test Plate and Gaskets, Transmission 307-433-01, 307-433-02, 307-433-03
 ST2426-A	Aligner, Flex Plate 307-403
 ST1639-A	Aligner, Valve Body 307-334 (T95L-70010-C)
 ST2532-A	Alignment Gauge, Transmission Fluid Pump 307-431
 ST2533-A	Alignment Gauge, Transmission Fluid Pump 307-432
 ST1633-A	Alignment Gauge, TR Sensor 307-351 (T97L-70010-A)
 ST2433-A	Alignment Pins, Transmission Fluid Pump 307-399

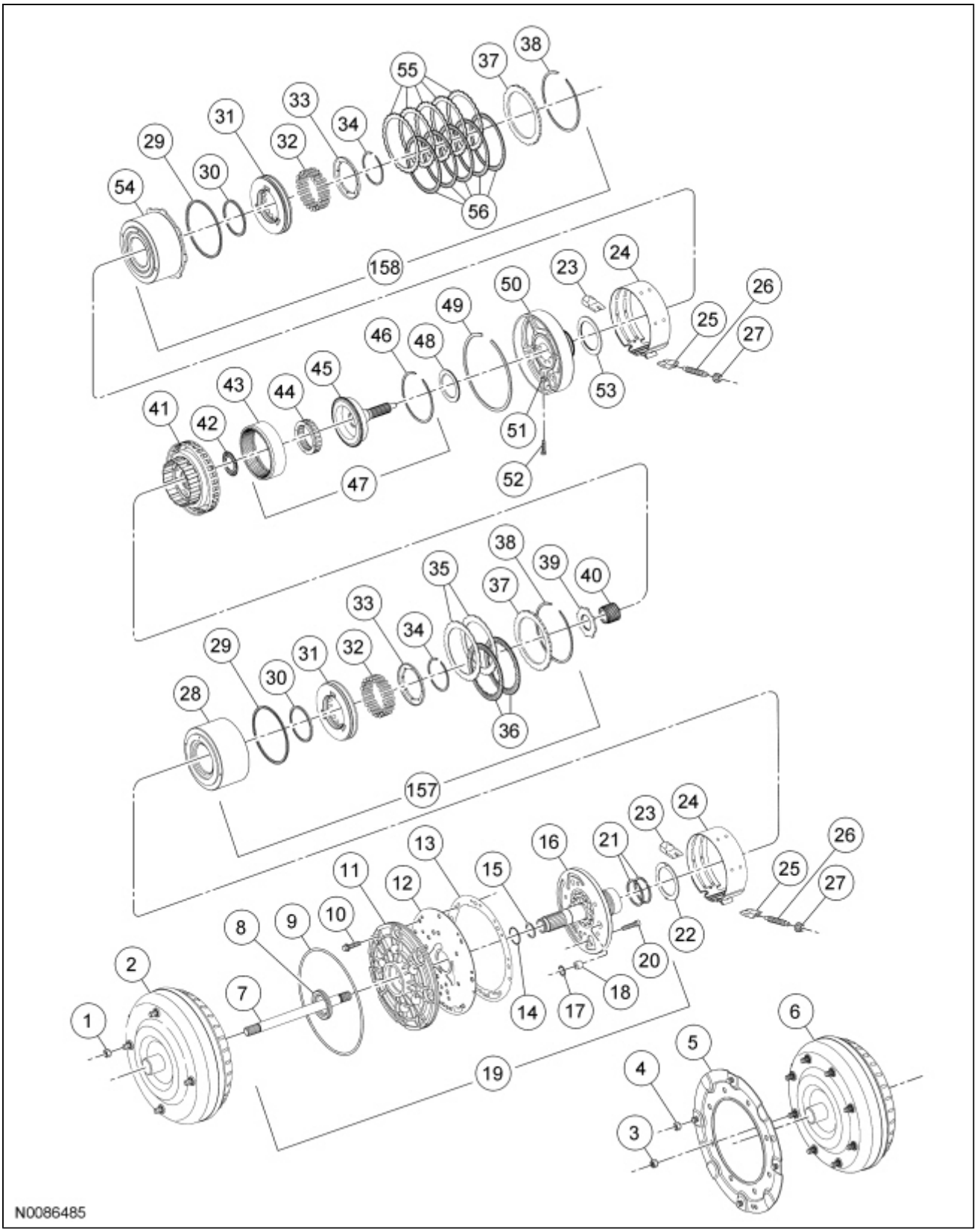
 ST1817-A	Alignment Set, Fluid Pump 307-S039 (T74P-77103-X)
 ST2424-A	Compressor, Cushion Spring 307-401
 ST2393-A	Compressor, Servo Cover 307-402
 ST1274-A	Depth Micrometer 303-D026 (D80P-4201-A) or equivalent
 ST2432-A	Gauge Bar 307-400
 ST1631-A	Handle, Torque Converter 307-091 (T81P-7902-C)
 ST1186-A	Holding Fixture, Transmission 307-003 (T57L-500-B)
 ST2440-A	Installer, Drive Pinion Flange 205-479
 ST2416-A	Installer, Output Shaft Flange 307-404
	Installer, Shift Shaft Fluid Seal 307-050 (T74P-77498-A)

 ST1199-A	
 ST1188-A	Installer, Transmission Extension Housing Fluid Seal 307-038 (T74P-77052-A)
 ST1826-A	Sizer, Piston Seal 307-338 (T95L-70010-G)

Material

Item	Specification
MERCON® V Automatic Transmission Fluid XT-5-QM (or XT-5-QMC) (US); CXT-5-LM12 (Canada)	MERCON® V
Multi-Purpose Grease XG-4 and/or XL-5	ESB-M1C93-B

Disassembled Views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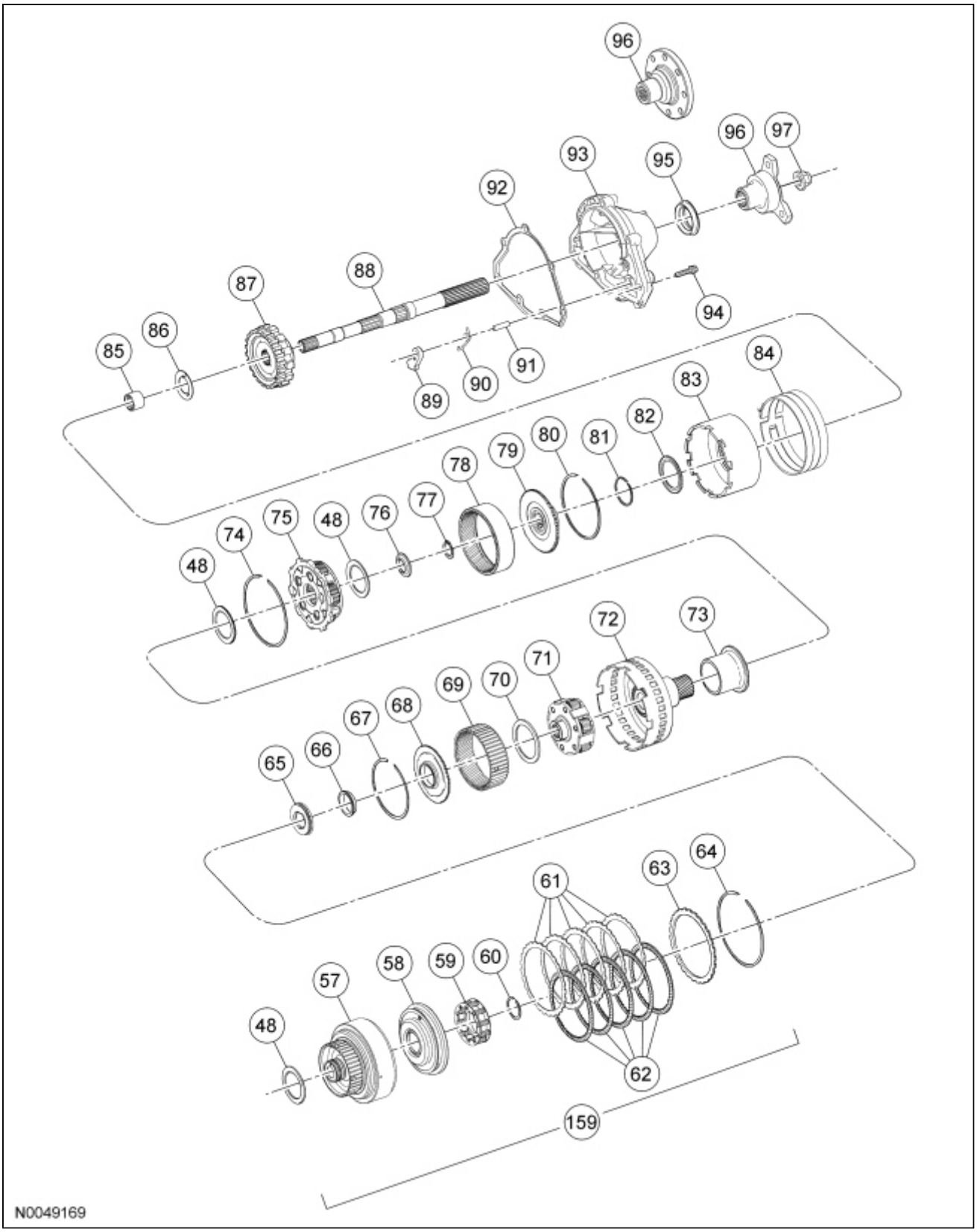
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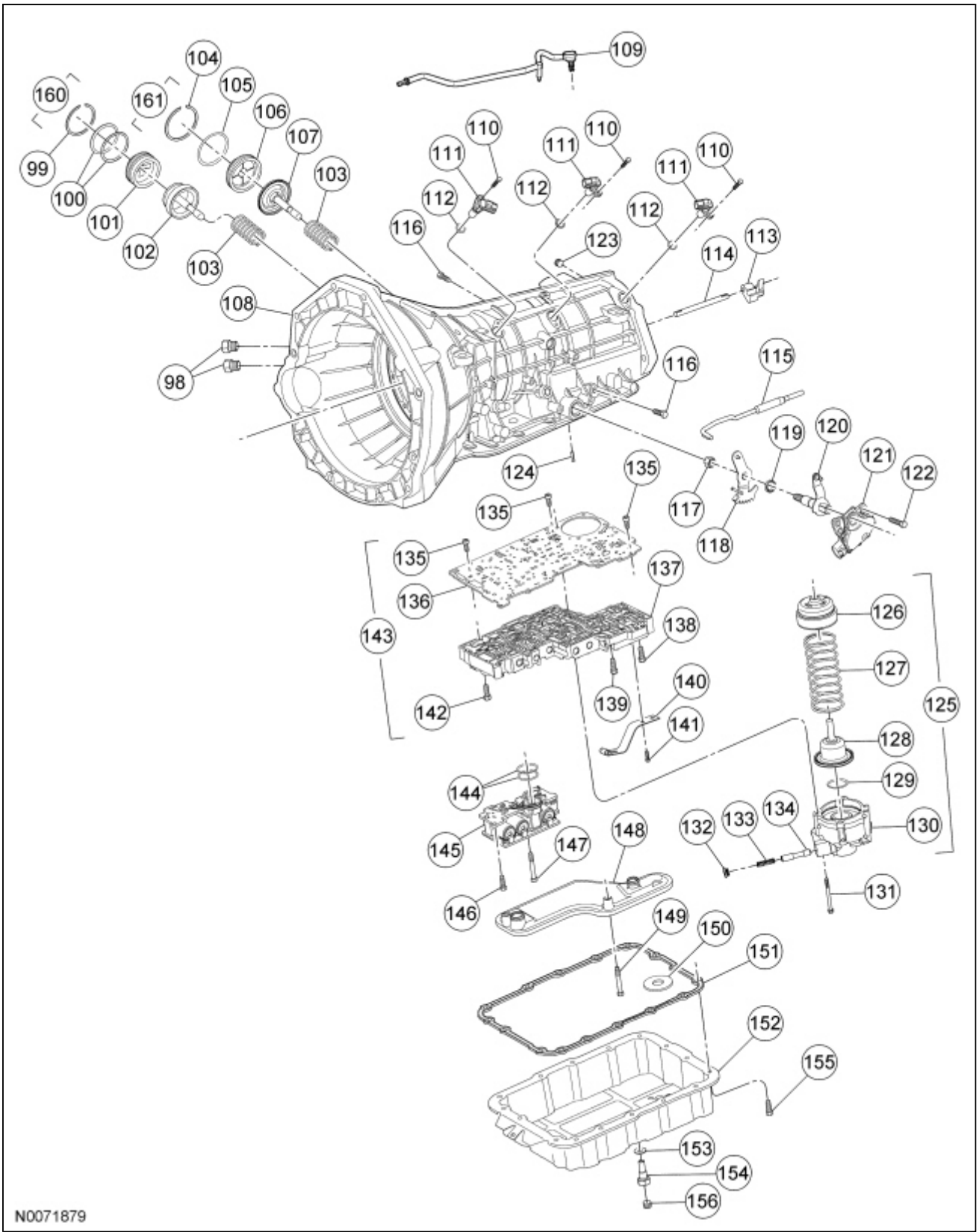


Item	Part Number	Description
1	7045	Converter-to-flexplate nut (attaches the converter assembly to the flexplate) (4.0L only)
2	7902	Converter assembly
3	N800750	Converter-to-adapter plate nut (attaches the converter assembly to the adapter plate) (8 required) (4.6L only)
4	N800750	Adapter plate-to-flexplate nut (attaches adapter plate to the flexplate) (4 required) (4.6L only)
5	6K374	Adapter plate assembly (4.6L only)

6	7902	Converter assembly
7	7017	Input shaft
8	7A248	Front fluid pump seal assembly
9	7A248	Front fluid pump seal
10	W704892	Screw and washer assembly — M8 x 35 internal lobe (attaches pump to case) (8 required)
11	7G178	Fluid pump cover assembly
12	7B472	Fluid pump adapter plate
13	7A136	Front fluid pump gasket
14	W701431	Fluid pump shaft-to-inner gear O-ring seal (also in pump assembly)
15	7L323	Stator support seal
16	7A108	Front pump support assembly
17	7H416	O-ring
18	7H411	Fluid pump control valve
19	7A103	Fluid pump assembly
20	W701429	M8 x 1 x 35 internal lobe screw (attaches pump support to pump assembly) (6 required)
21	7D025	Overdrive (O/D) brake drum seals
22	7D014	Fluid pump input thrust washer No. 1
23	7D029	Intermediate and O/D brake band anchor struts (2 required)
24	7D034	Intermediate and O/D brake bands (2 required)
25	7D029	Intermediate and O/D brake band apply struts (2 required)
26	7C492	O/D /intermediate band adjusting screws
27	71000	O/D /intermediate locking nuts
28	7L669	O/D brake band drum assembly
29	7A548	Direct and O/D piston outer seals
30	7D404	Direct and O/D piston inner seals
31	7A262	Direct and O/D clutch pistons
32	7A480	Direct and O/D clutch piston springs
33	7A527	Clutch piston spring retainers (2 required)
34	E860125	Retaining rings (retains 7D041 to drum) (2 required)
35	7B442	Coast clutch external splined plates (steel) (2 required)
36	7B164	Coast clutch internal splined friction plates (2 required)
37	7B066	Coast and direct clutch pressure plates (2 required)
38	E860126 — E860129	Coast and direct clutch plates retaining rings (select fit) (2 required)
39	7660	Coast clutch-to- O/D carrier adapter
40	7D063	O/D sun gear
41	7B446	O/D planetary gear carrier (with trigger wheel)
42	7L495	O/D planet thrust bearing No. 2
43	7A153	O/D ring gear
44	7A089	Center shaft One-Way Clutch (OWC) assembly
45	7A658	O/D center shaft

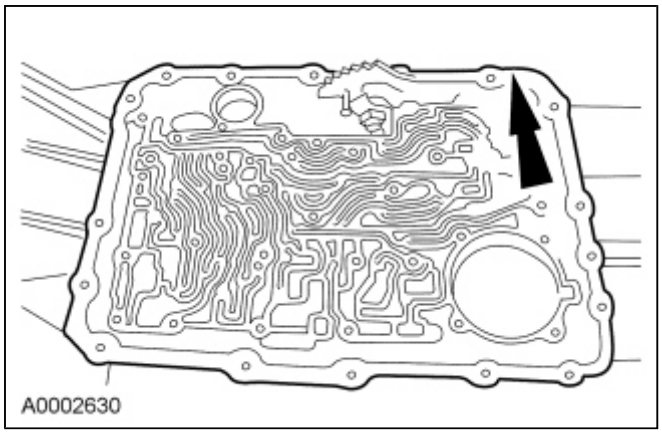
46	W702037	Retaining ring (retains 7686 to 7653)
47	7L678	Hub and ring gear assembly (includes 7C109, 7A153, 7A658, W702037)
48	7M153	Center shaft and forward clutch cylinder bearing assembly No. 3, No. 5, No. 8 and No. 9 (4 required)
49	W702465	Retaining ring
50	7A130	Center support assembly
51	E826160	Nut and cage assembly (attaches center support to case)
52	W705407	Bolt
53	7D014	Intermediate clutch drum bearing No. 4
54	7D044	Intermediate brake drum assembly
55	7B442	Direct clutch external splined steel plates (5 required)
56	7B164	Direct clutch internal splined friction plates (5 required)
57	7A360	Forward clutch cylinder
58	7A262	Forward clutch piston assembly
59	7G299	Forward clutch support and spring assembly
60	E860109	Forward clutch piston and spring retaining ring in forward clutch cylinder
61	7B442	Forward clutch external spline steel plates (5 required)
62	7B164	Forward clutch internally spline friction plates (5 required)
63	7B066	Forward clutch pressure plate
64	7D483	Retaining ring 141.45 x 1.37 internal (select fit)
65	7D234	Forward ring gear hub thrust bearing No. 6A
66	7D090	Forward clutch thrust washer No. 6B
67	7G375	Forward clutch hub retainer ring
68	7B067	Forward ring gear hub
69	7D392	Forward ring gear
70	7F374	Forward planet thrust bearing No. 7
71	7A398	Forward planetary
72	7A019	Shell and sun gear assembly
73	7C167	Low and reverse spacer gear
74	W702775	Reverse carrier drum snap ring
75	7D006	Reverse planet assembly
76	7B176	Output shaft sleeve
77	E860527	External retainer ring
78	7A153	Output shaft ring gear
79	7D164	Output shaft hub
80	7C122	Output shaft ring gear retaining ring
81	7D019	Output shaft hub seal
82	7H027	Low/intermediate sun gear bearing assembly
83	7C498	Reverse brake drum and clutch assembly (includes OWC)
84	7D095	Low/reverse band assembly
85	7R205	Output shaft bearing

86	7B368	Output shaft thrust washer No. 11
87	7A233	Transmission parking gear assembly
88	7060	Output shaft
89	7A441	Parking pawl
90	7D070	Parking pawl return spring
91	7D071	Parking pawl shaft
92	7086	Extension housing gasket
93	7A039	Extension housing
94	W500311	M8 x 1.25 extension housing-to-case screw (5 required)
95	7052	Extension housing seal
96	7089	Output shaft flange
97	W701357	Output shaft flange nut
98	7D273	Fluid tube connector assemblies (2 required)
99	7H074	Ring O/D servo retainer
100	W703119	O/D servo cover seals (2 required)
101	7D027	O/D servo cover
102	7D021	O/D servo piston and rod
103	7D028	Intermediate/ O/D servo piston springs (2 required)
104	W702777	Ring intermediate servo retainer
105	W702969	Intermediate servo cover seal
106	7D027	Intermediate servo cover
107	7D021	Intermediate servo piston and rod
108	7005	Case assembly
109	7034	Case vent assembly
110	W708389	Speed sensor-to-case screws (M6 x 19)
111	7H103	Output Shaft Speed (OSS), Turbine Shaft Speed (TSS) and intermediate shaft speed sensors
112	W702981	Speed sensor-to-case O-ring seals
113	7A179	Reverse brake drum lever
114	7D433	Reverse band actuating lever shaft
115	7A232	Parking pawl actuating rod
116	390318	Pipe plugs
117	W703001	Manual lever shaft outer and inner nut
118	7A115	Manual valve inner lever
119	7B498	Manual control lever seal
120	7A256	Manual control lever
121	7F293	Transmission Range (TR) sensor
122	W500015	TR sensor screw and washer (2 required)
123	6026	Fluid fill plug
124	7B210	Manual lever shaft pin retainer
125	7B193	Reverse servo assembly
126	7D372	Reverse servo plate
127	7D466	Reverse servo accumulator spring

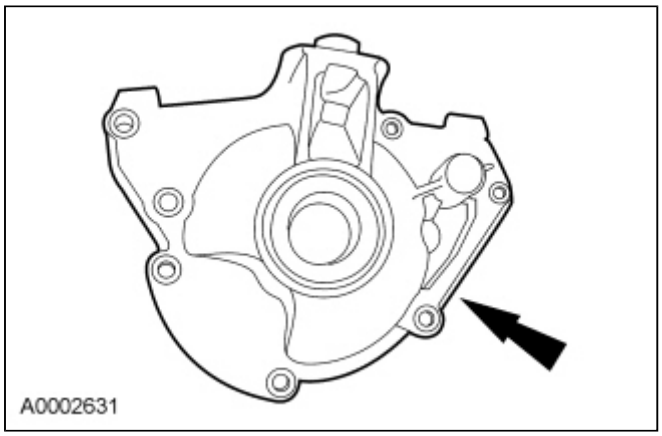
128	7D189	Reverse servo piston and seal
129	—	Reverse servo piston O-ring seal (part of 7D036)
130	7D036	Reverse servo cover
131	W702359	Reverse servo piston-to-case screw (4 required)
132	—	Control valve spring retainer (part of 7D036)
133	—	Main fluid pressure spring regulator valve (part of 7D036)
134	—	Reverse servo check valve (part of 7D036)
135	W701099	Main control valve body separating plate screws
136	7Z490	Main control valve body separating plate (bonded)
137	7A101	Lower main control valve body
138	W500102	Main control valve body screw (18 required)
139	W702791	Main control valve body screw
140	7E332	Manual valve detent spring
141	W500100	Screw detent spring
142	W706672	Main control valve body screw
143	7A100	Main control valve body
144	W705928	Solenoid body connector O-ring seals
145	7G391	Transmission control solenoid body
146	W702921	Transmission control solenoid body screw
147	W703189	Transmission control solenoid body screw (7 required)
148	7A098	Transmission fluid pan filter
149	W705559	Transmission fluid pan filter screw
150	7L027	Transmission fluid pan magnet
151	7A191	Transmission fluid pan gasket
152	7A194	Transmission fluid pan
153	6734	Transmission fluid pan drain plug gasket
154	7A010	Transmission fluid pan drain plug
155	W500213	Transmission fluid pan screw
156	W707919	Transmission fluid pan drain tube plug (short hex)
157	—	O/D /coast clutch assembly
158	—	Direct clutch assembly
159	—	Forward clutch assembly
160	—	O/D servo
161	—	Intermediate servo

1. Thoroughly clean the transmission case and extension housing in solvent and blow dry with compressed air.

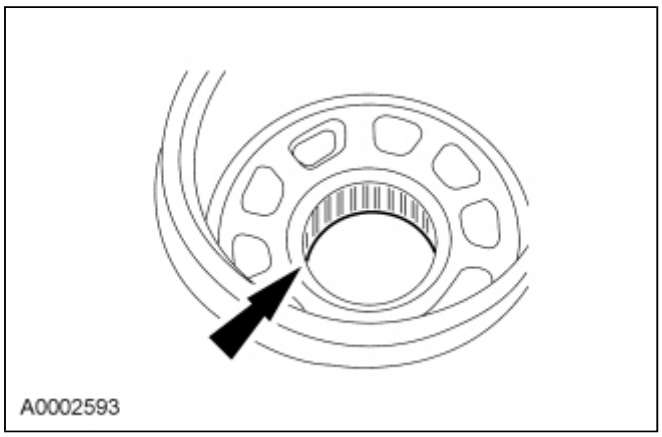
2. Inspect the transmission case for the following:
   - Stripped bolt hole threads
   - Gasket and mating surfaces for burrs or nicks
   - Obstructions to vent and fluid passages
   - Cracks or warping



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

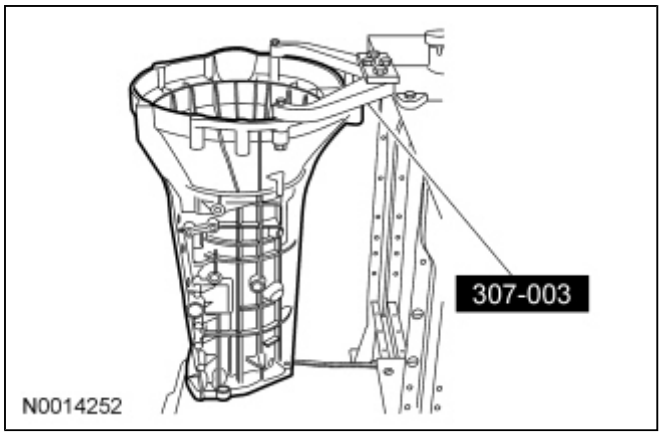


4. Inspect the case bearing for damage. If damage to the case bearing is indicated, install a new case.

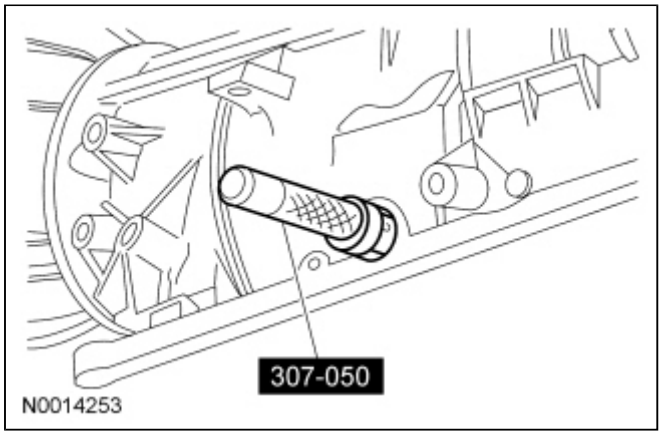


5. **WARNING: Always verify that the lockpin on the bench-mounted holding fixture is correctly secured to help prevent unexpected component rotation. Failure to follow this instruction may result in serious personal injury.**

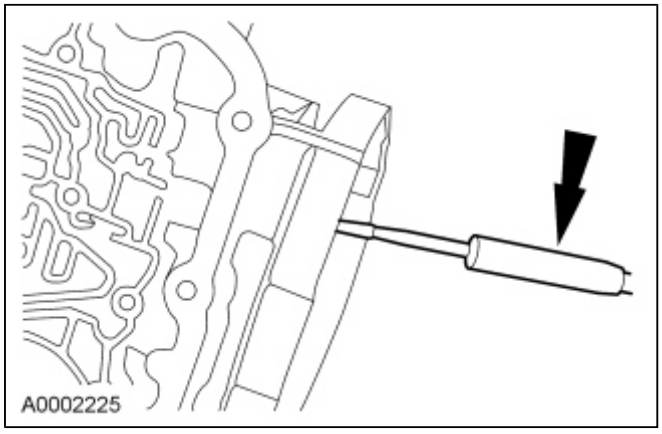
   Using the Transmission Holding Fixture, install the transmission on to the bench with the converter housing facing up.



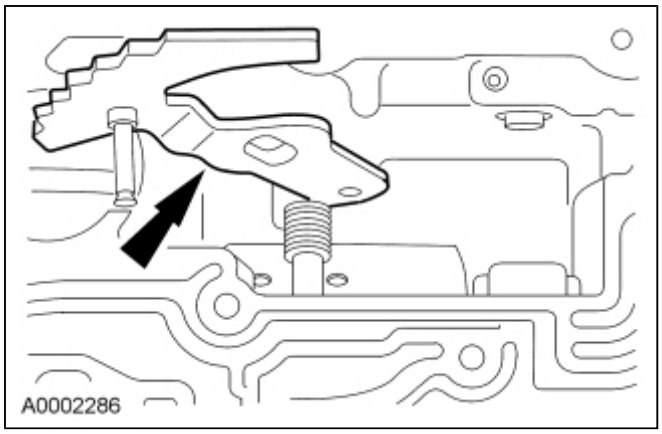
6. Using the Shift Shaft Fluid Seal Installer, install the manual control lever seal and lubricate it with petroleum jelly.



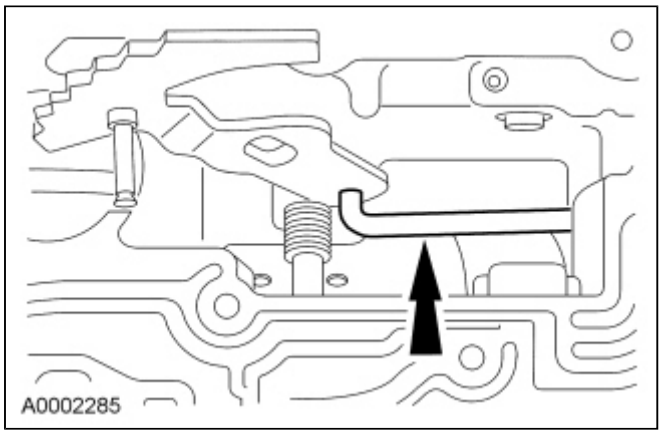
7. Install the parking lever rod.



8. Install the manual control lever.

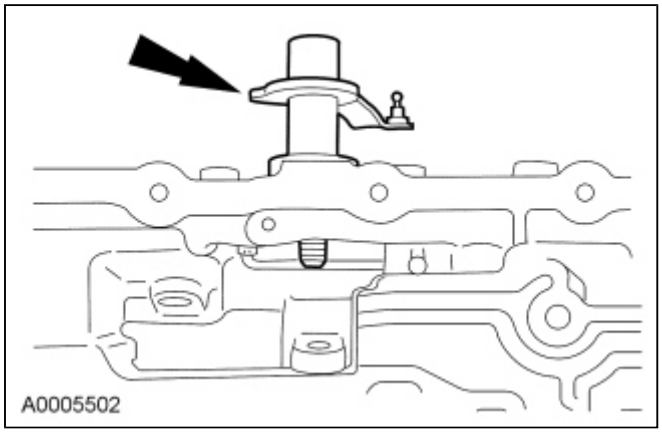


9. Assemble the manual valve inner lever and parking lever actuating rod as shown.

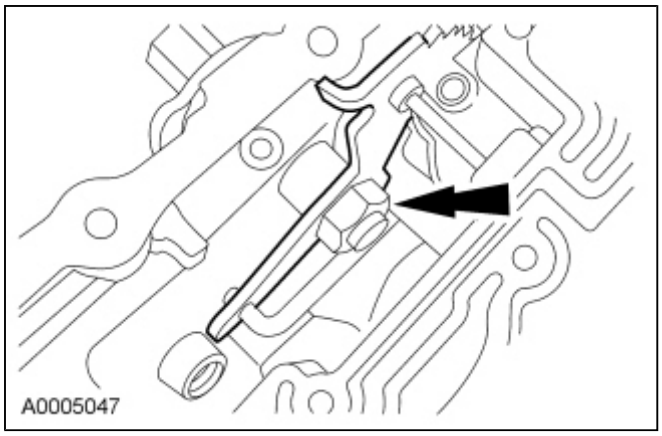


10. **NOTE:** Align the flats on the manual valve inner lever with the flats on the manual control lever shaft.

    Install the manual control lever shaft.



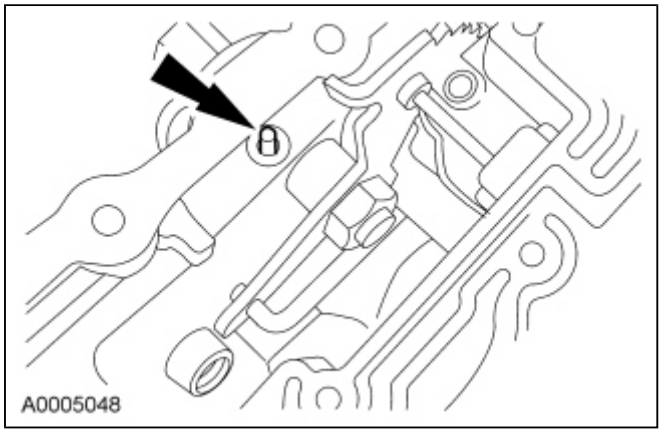
11. Install the manual valve inner lever onto the manual shaft and loosely install the nut.



12. ***NOTICE:*** **Use care not to damage the transmission fluid pan rail surface when installing the retaining pin.**

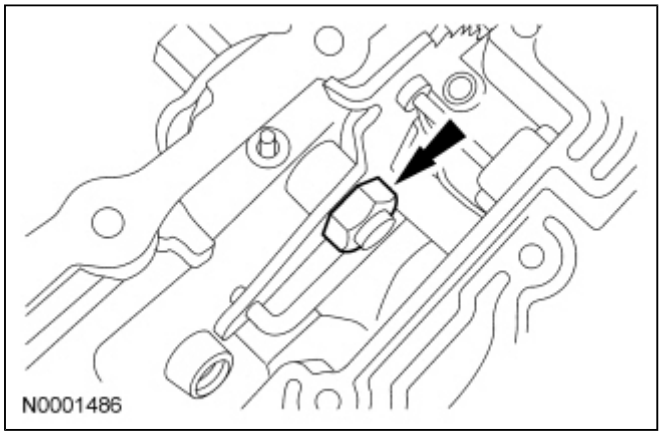
    NOTE: Align the manual control lever shaft alignment groove with the manual control lever shaft spring pin bore in the transmission case.

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



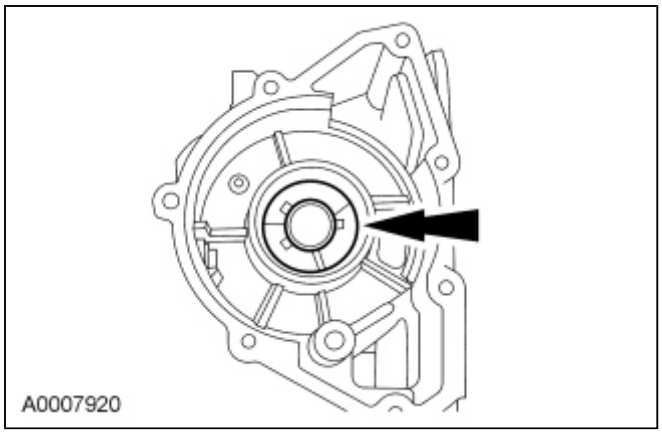
13. ***NOTICE:*** **To avoid damage, do not allow the wrench to strike the manual valve inner lever pin.**

    Tighten the manual control lever shaft nut.
    - Tighten to 48 Nm (35 lb-ft).

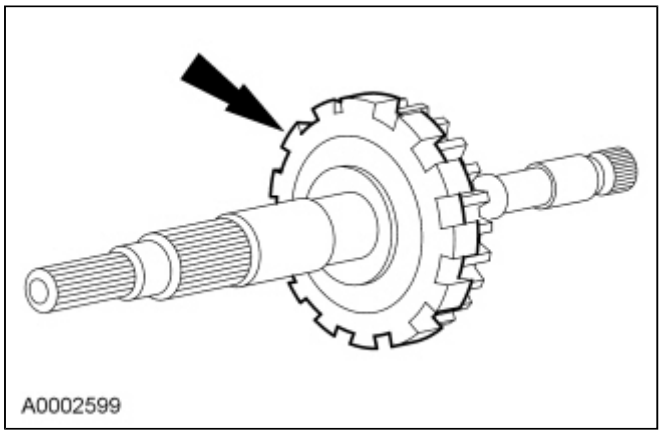


14. ***NOTICE:*** **The tabs on the output shaft thrust washer (No. 11) point into the case. Make sure the thrust washer is correctly seated or damage may occur.**

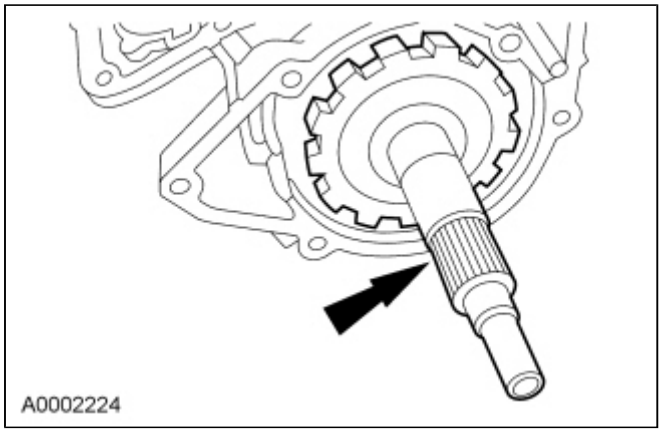
    Install the output shaft thrust washer (No. 11).
    - Coat the output shaft thrust washer with petroleum jelly.



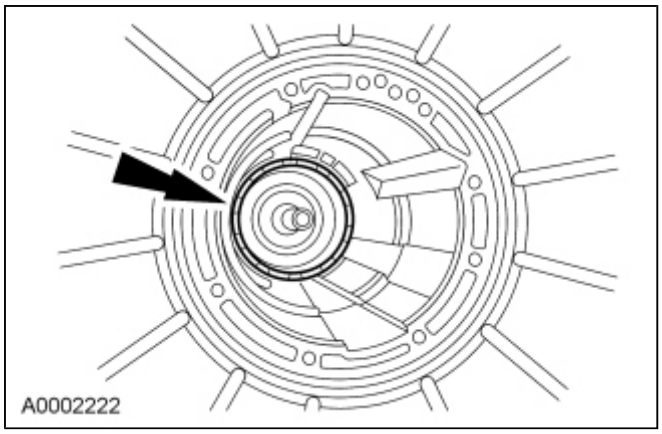
15. Install the park gear on the output shaft.



16. Install the output shaft and park gear.

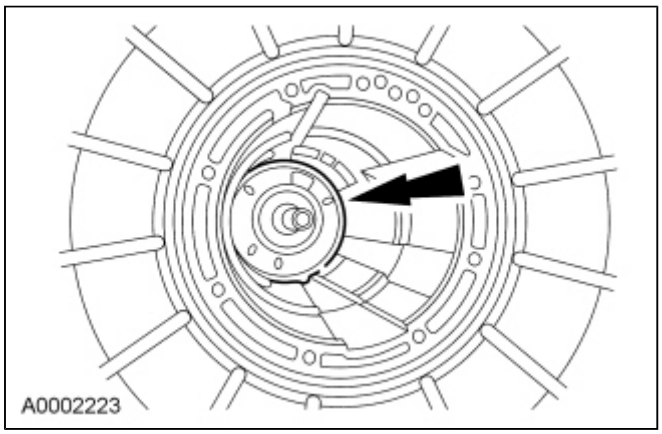


17. Install the low/reverse brake drum.
    - Rotate the low/reverse brake drum clockwise to install.



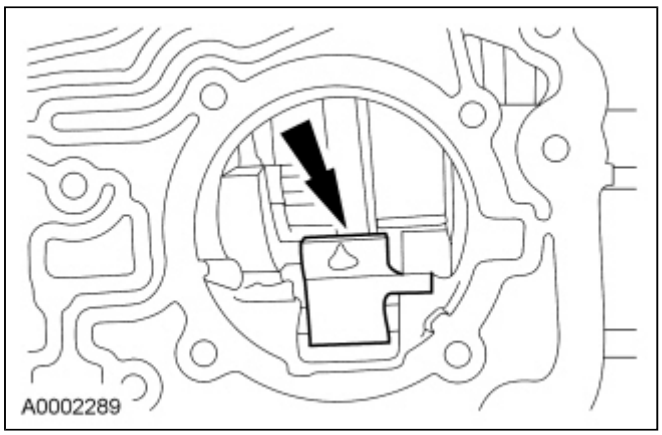
18. **NOTE:** Make sure band is resting on the 2 anchor pins in the case.

    Install the low/reverse band over the reverse drum.

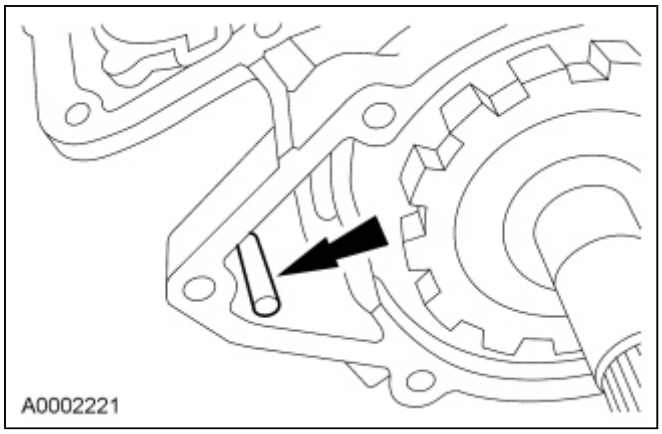


19. **NOTE:** The reverse band actuating lever must fit into the notches in the band.

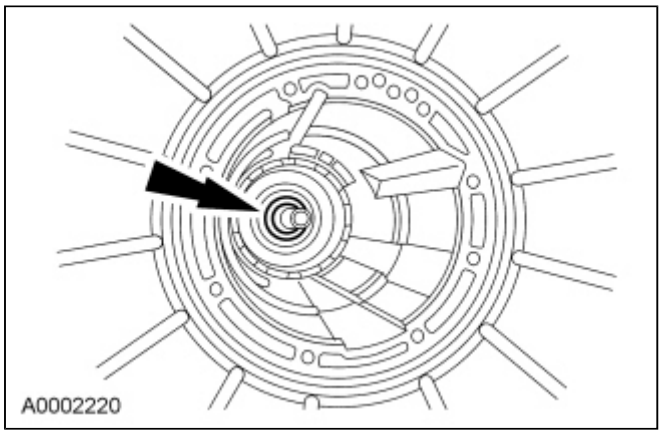
    Install the reverse band actuating lever into the reverse band.



20. Install the reverse band actuating lever shaft into the case and into the reverse band actuating lever.

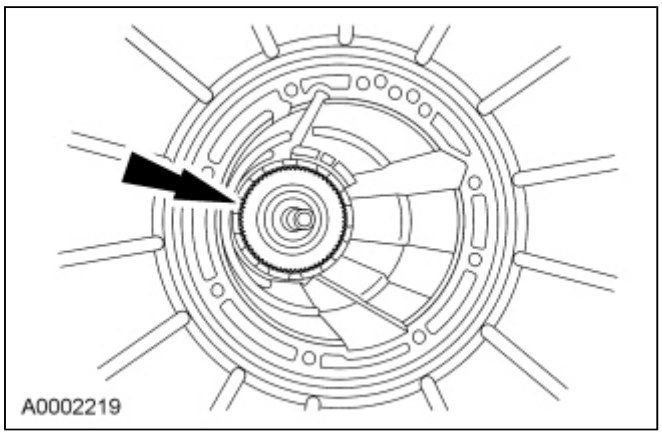


21. Install the No. 10 needle bearing into the case.



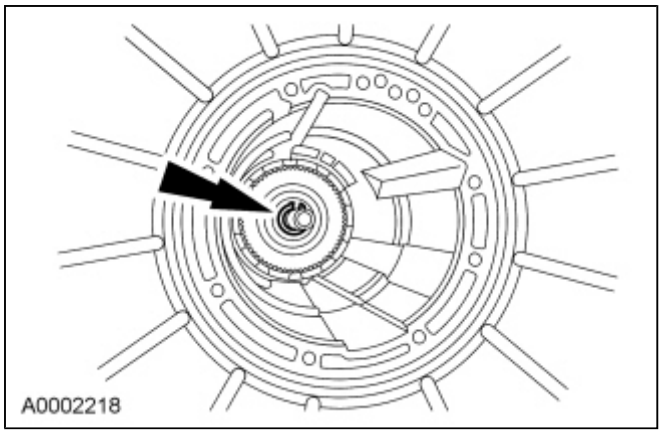
22. ***NOTICE:*** **Do not damage the seal against the case during assembly.**

    Install the output shaft ring gear, hub and seal.



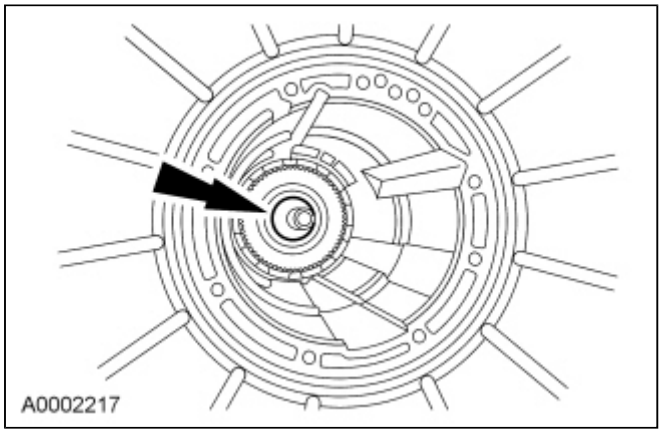
23. ***NOTICE:*** **Always install a new output shaft retaining ring, otherwise transmission damage can occur.**

    Install a new output shaft retaining ring.

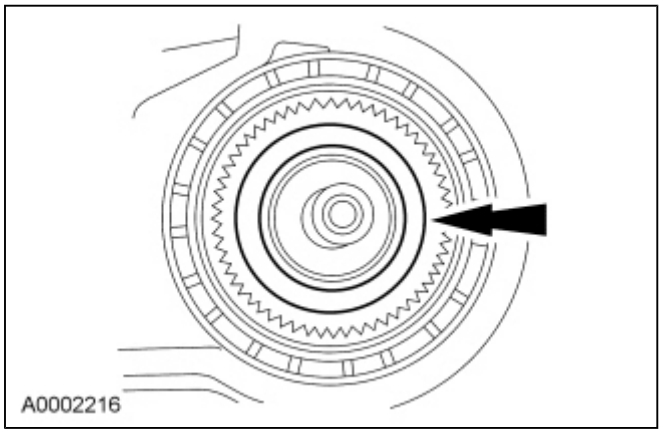


24. **NOTE:** Install the output shaft sleeve with the cone facing up. This sleeve will snap into place when correctly installed.

    Install the output shaft sleeve.

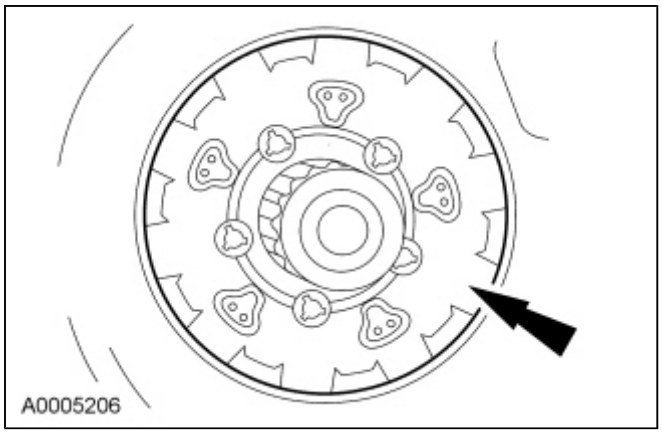


25. Install low/reverse planetary carrier needle bearing (No. 9) onto the output shaft ring gear and hub assembly.



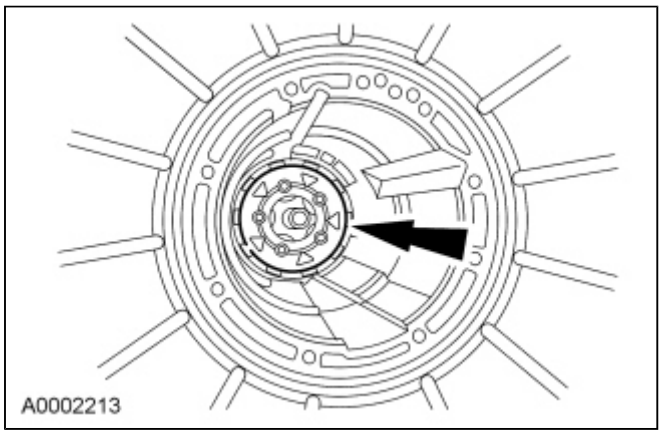
26. ***NOTICE:*** **Make sure the needle bearings stay in place or damage may occur.**

    Install the low/reverse planetary assembly.

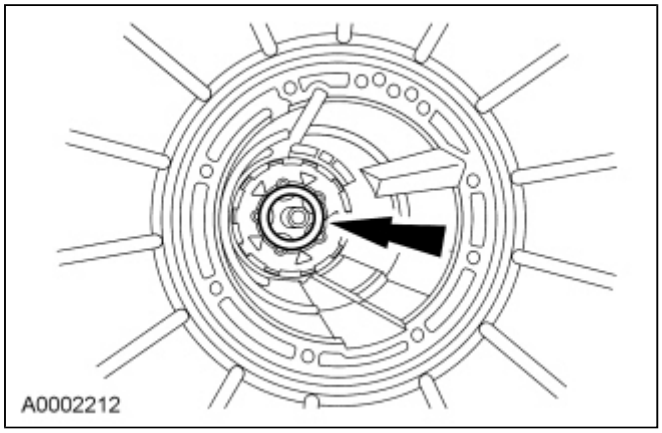


27. **NOTE:** The low/reverse brake drum must be pulled forward to install the low/reverse planet retaining ring.

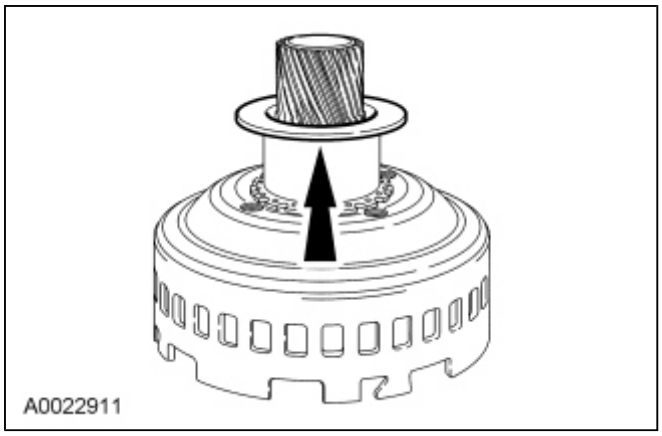
    Install the retaining ring.



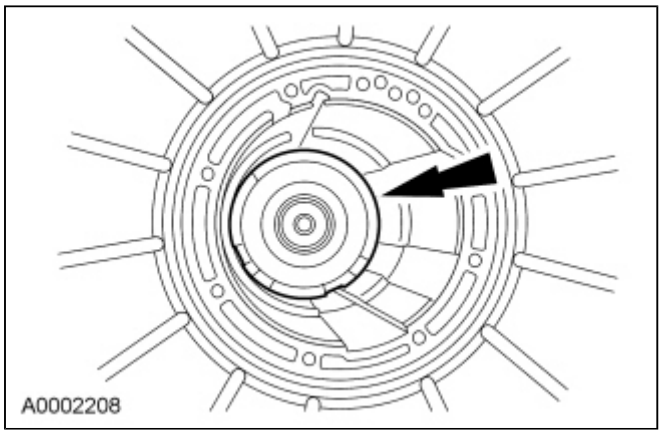
28. Install the No. 8 thrust bearing.



29. Install the spacer on the input shell, using petroleum jelly to hold it in place.

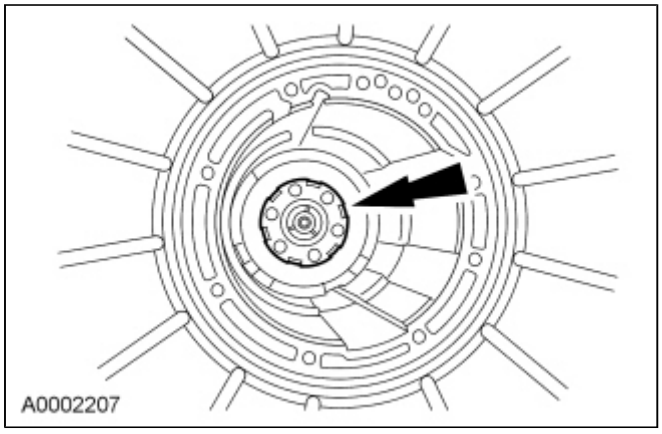


30. Install the input shell and sun gear assembly.

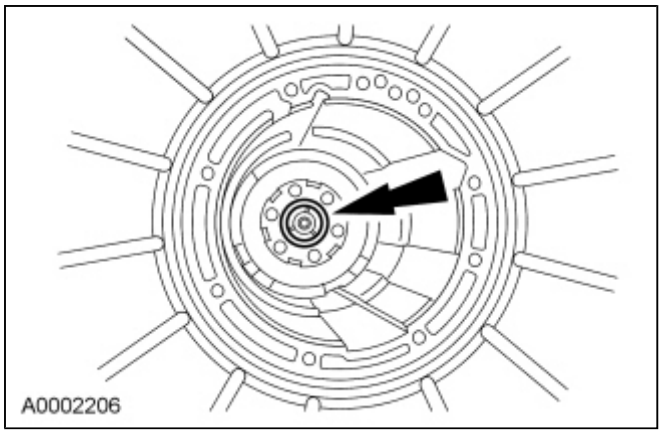


31. **NOTE:** The No. 13 bearing must be correctly seated in the forward planet assembly so the sun gear can be installed correctly.

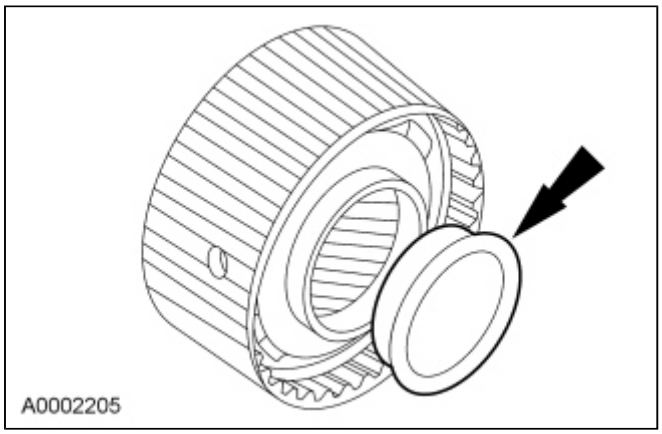
    Install the forward planetary assembly.



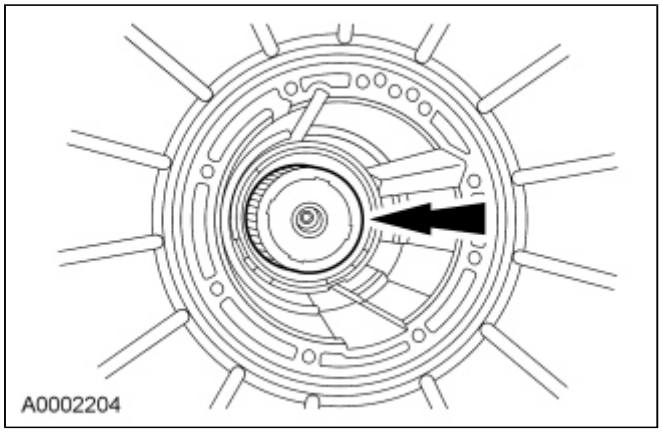
32. Install the No. 7 forward planet thrust bearing into the forward ring gear and hub assembly. Use petroleum jelly to hold the bearing in place.



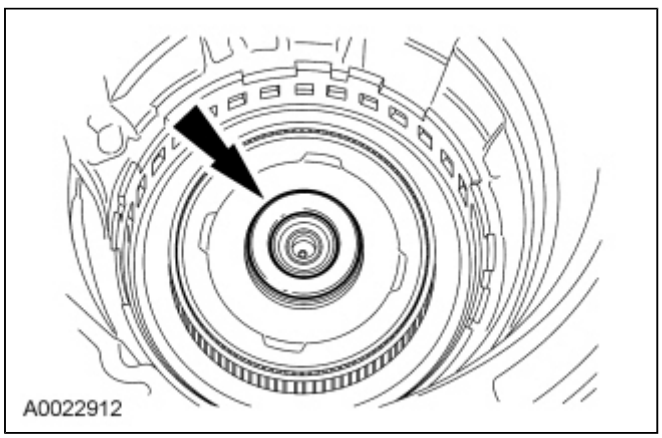
33. Install the No. 6B forward clutch thrust washer onto the forward ring gear hub.



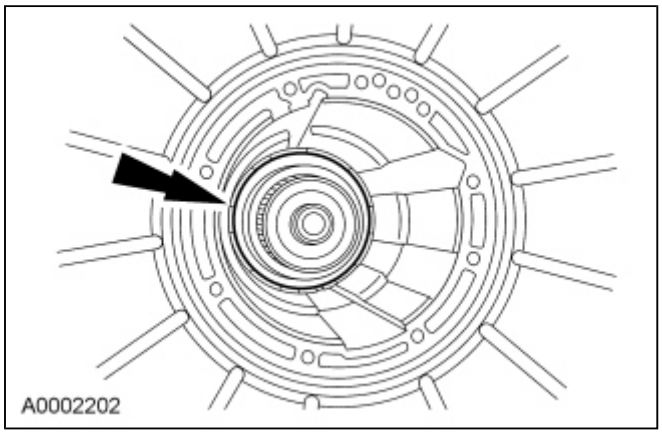
34. Install the forward ring gear and hub as an assembly.



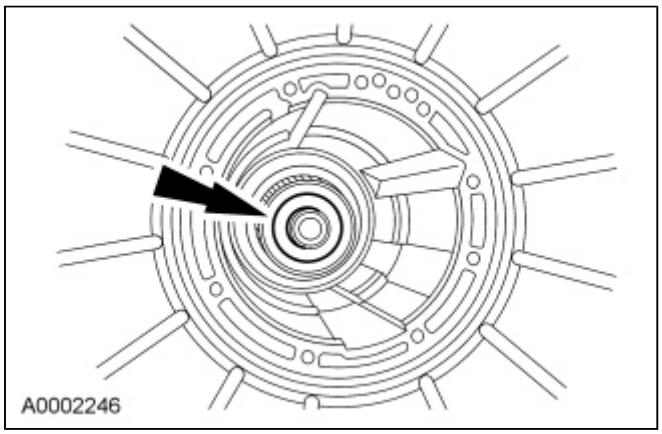
35. Install the No. 6A forward ring gear hub thrust bearing into the forward ring gear and hub.



36. Install the forward clutch cylinder.

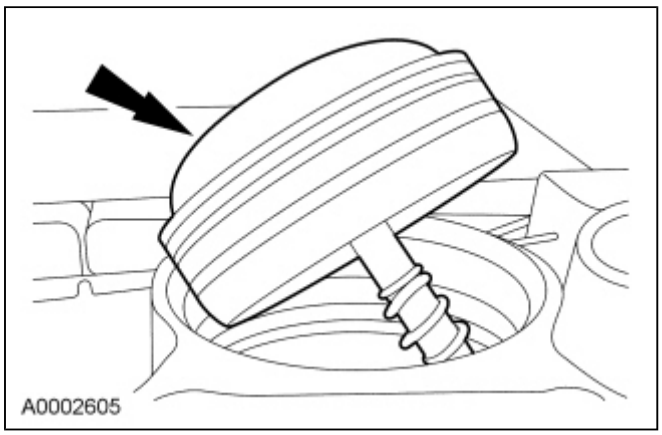


37. Install the No. 5 thrust bearing.

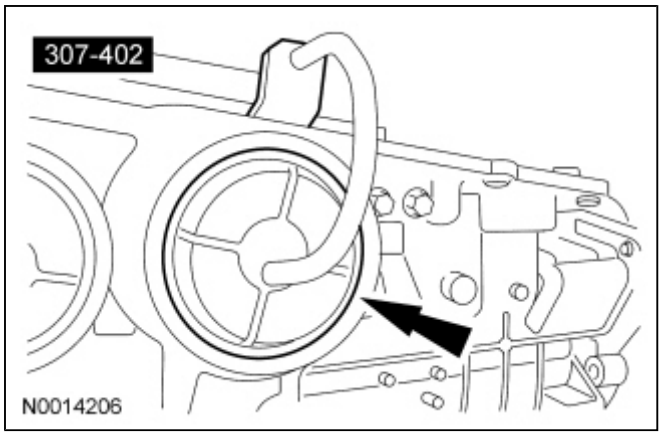


38. **NOTE:** Inspect the intermediate servo bore for excessive wear. Repair as required.

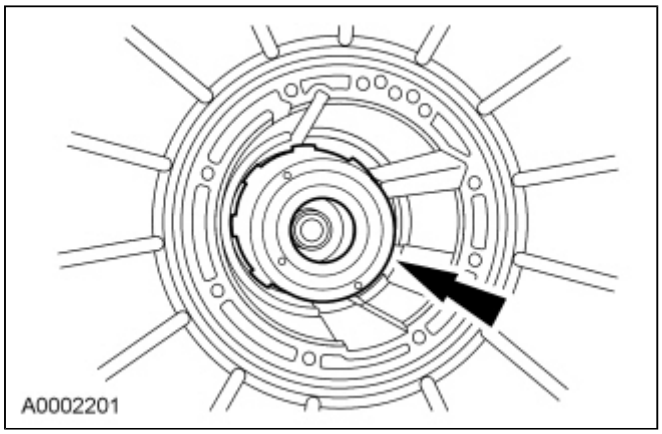
    Install the intermediate servo piston and spring.
    - Lubricate the servo bore with automatic transmission fluid.



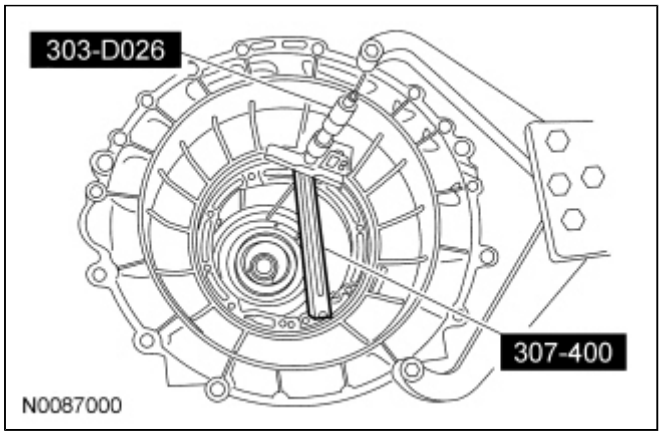
39. Using the Servo Cover Compressor, install the retaining ring.



40. Install the direct clutch drum.

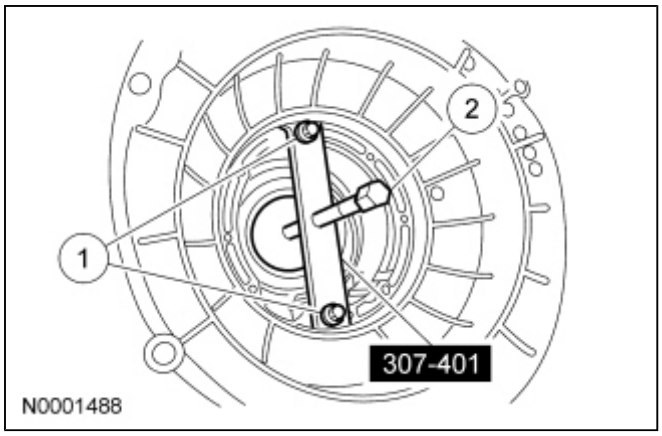


41. Using a Depth Micrometer with an 8-inch extension, measure from the top of the Gauge Bar to center support ledge in the case at 4 places 90 degrees apart.
    - Add the 4 measurements, divide by 4, and record as dimension A.



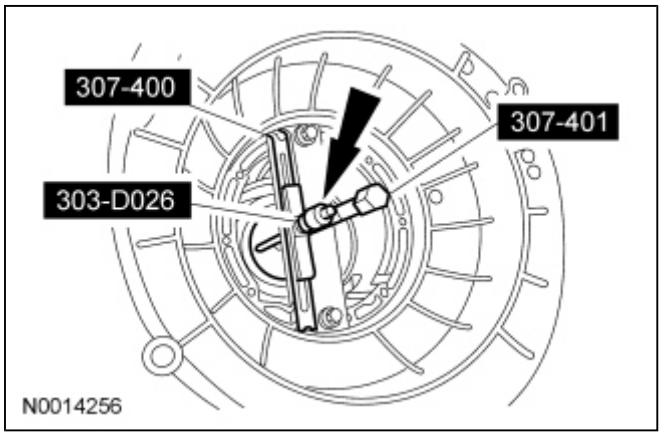
42. ***NOTICE:*** **The torque specifications are critical for this procedure. Failure to use the correct torque specifications may cause transmission damage.**

    Install the Cushion Spring Compressor.
    1. Install the Cushion Spring Compressor and the bolts using the 2 pump screw locations at approximately 6 o'clock and 12 o'clock positions.
        - Tighten to 15 Nm (133 lb-in).
    2. Tighten the center screw.
        - Tighten to 1.13 Nm (10 lb-in).



43. **NOTE:** Align the disc holes on Cushion Spring Compressor with the slot in Gauge Bar for correct measurement.

    Using the Depth Micrometer, measure the distance from the top of the Gauge Bar to the drum bearing surface through the hole in the disc and record as dimension B. Repeat the measurement 180 degrees on the opposite side of the Gauge Bar and record as dimension C.



44. Add dimension B to C, divide by 2, and record as dimension D.

45. Subtract A from D and record as dimension E.

46. Select bearing from the following chart, using dimension E.

Dimension E	Service Part Number (7D014)	Bearing Thickness	Identification (Notches)
1.69-1.87 mm (0.066-0.074 in)	XW4Z-CA	2.65-2.80 mm (0.104-0.110 in)	None
1.88-2.04 mm (0.073-0.080 in)	XW4X-DA	2.83-2.98 mm (0.111-0.116 in)	One
2.05-2.22 mm (0.081- 0.088 in)	XW4Z-EA	3.01-3.16 mm (0.118-0.124 in)	Two
2.23-2.43 mm (0.088-0.096 in)	XW4Z-FA	3.21-3.36 mm (0.126-0.132 in)	Three

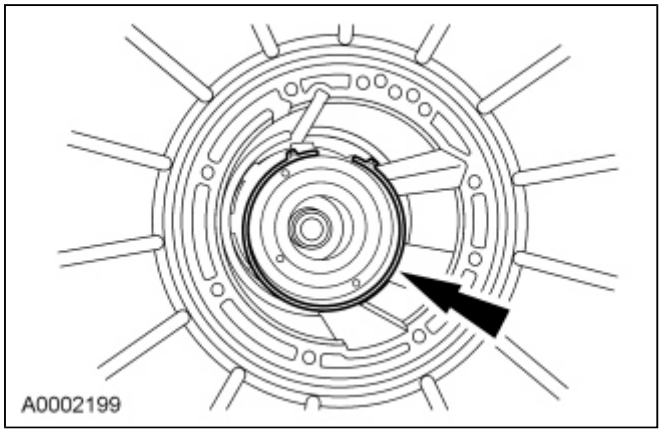
47. **NOTE:** Make sure that the intermediate band apply strut is aligned with the band notch.

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

    NOTE: The new intermediate band is dark in color. This is a normal condition of the band. Hairline cracks

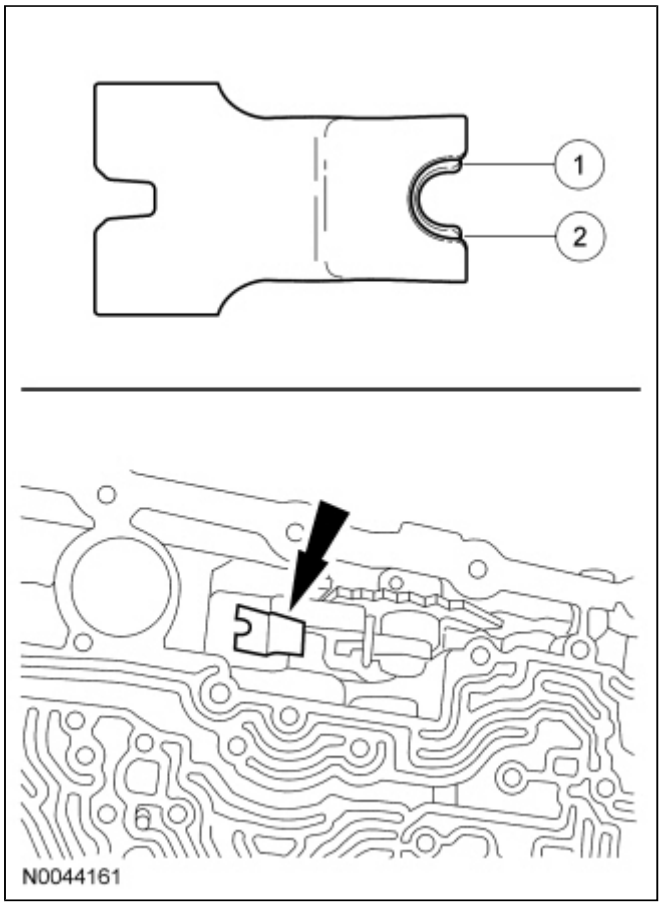
in the band are also considered normal. Do not install a new band based solely on the color.

Install the intermediate band.



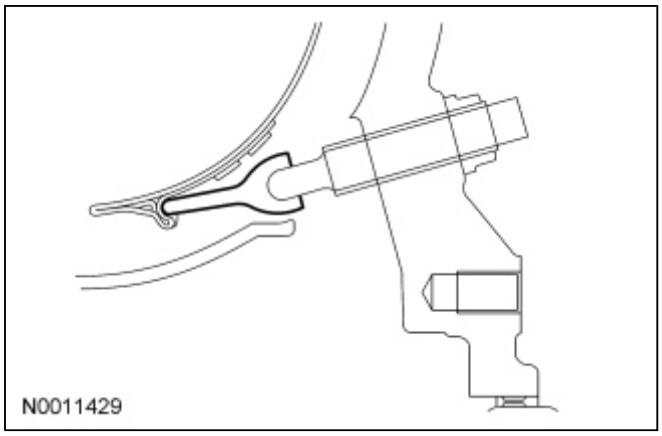
48. ***NOTICE:*** **To avoid a "fall-out" condition of the strut from the screw during assembly and function, the small U-shaped notch should be toward the band/case side and the large U-shaped notch toward the main control side.**

Install the intermediate band anchor strut.
1. Band/case side of the anchor (small U notch).
2. Main control side of the anchor (large U notch).

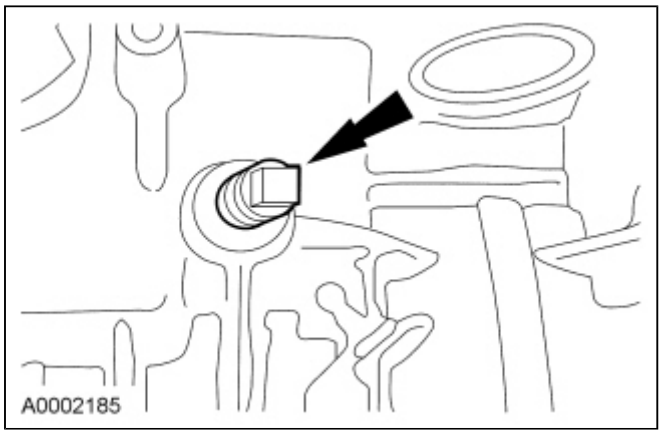


49. ***NOTICE:*** **If the strut is installed incorrectly, transmission damage will occur.**

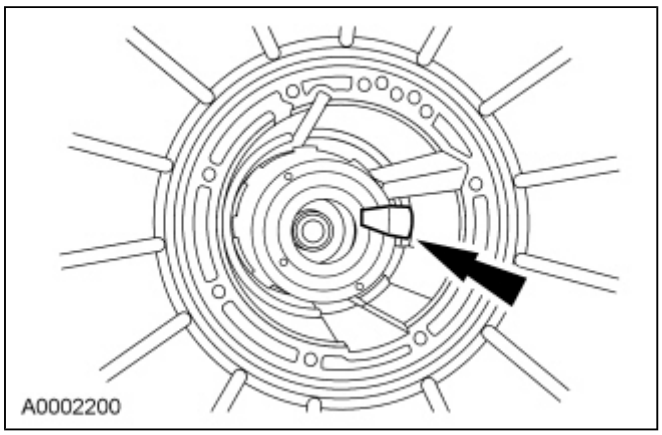
Check to make sure that the intermediate band anchor strut is installed in the correct orientation to the case and adjustment screw.



50. Loosely install the adjustment screw.

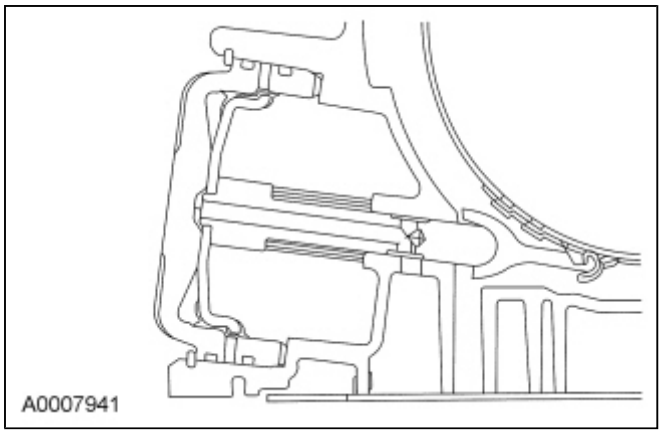


51. Install the intermediate band apply strut.

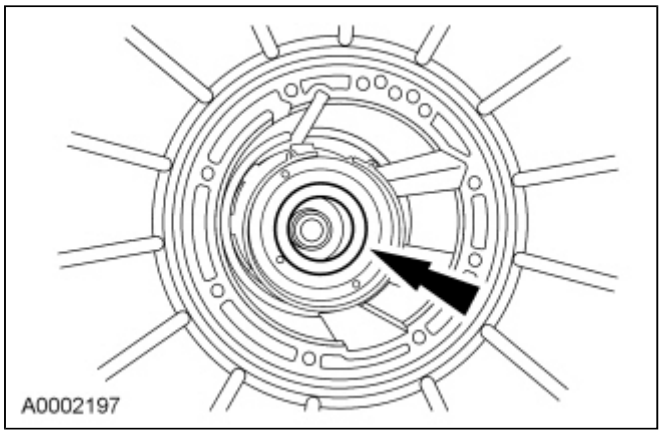


52. ***NOTICE:*** **If the strut is installed incorrectly, transmission damage will occur.**

    Check to make sure that the intermediate band apply strut is installed in the correct orientation to the case and piston rod.

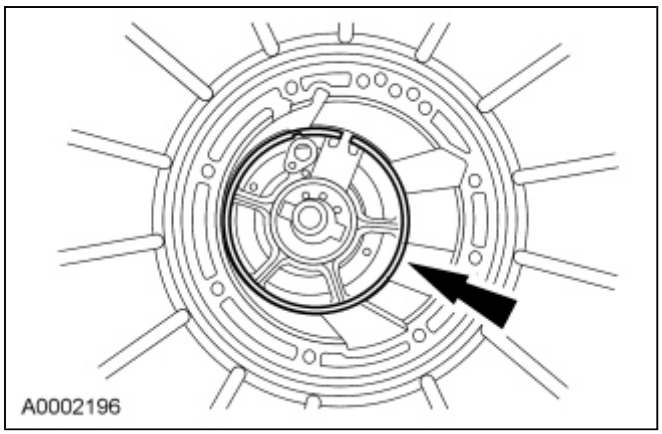


53. Install the selected No. 4 thrust washer on the direct clutch drum.
    - Coat the thrust washer with petroleum jelly.

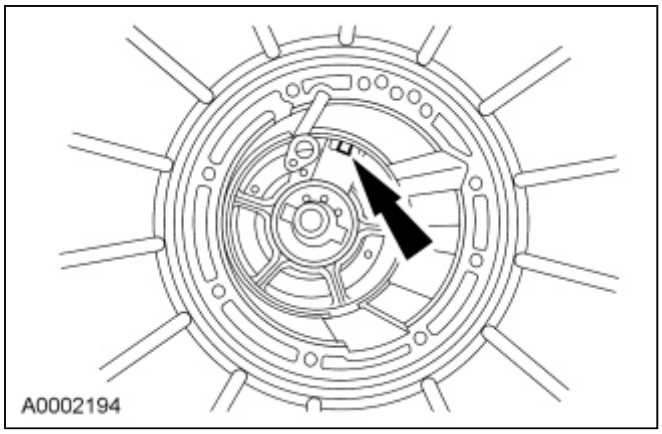


54. **NOTE:** Align the center support screw hole with correct case hole.

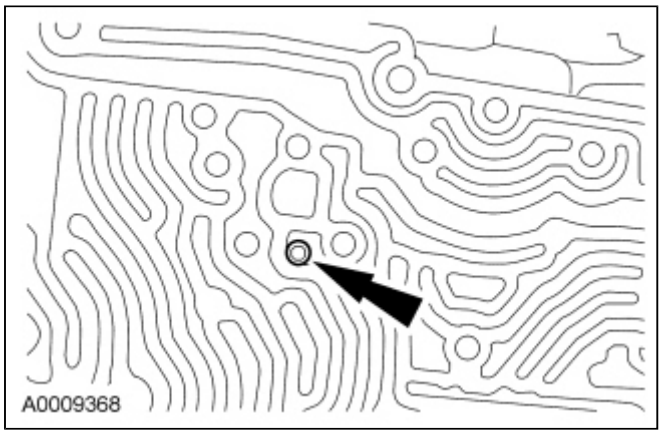
    Install the center support.



55. Install the center support locknut and cage.



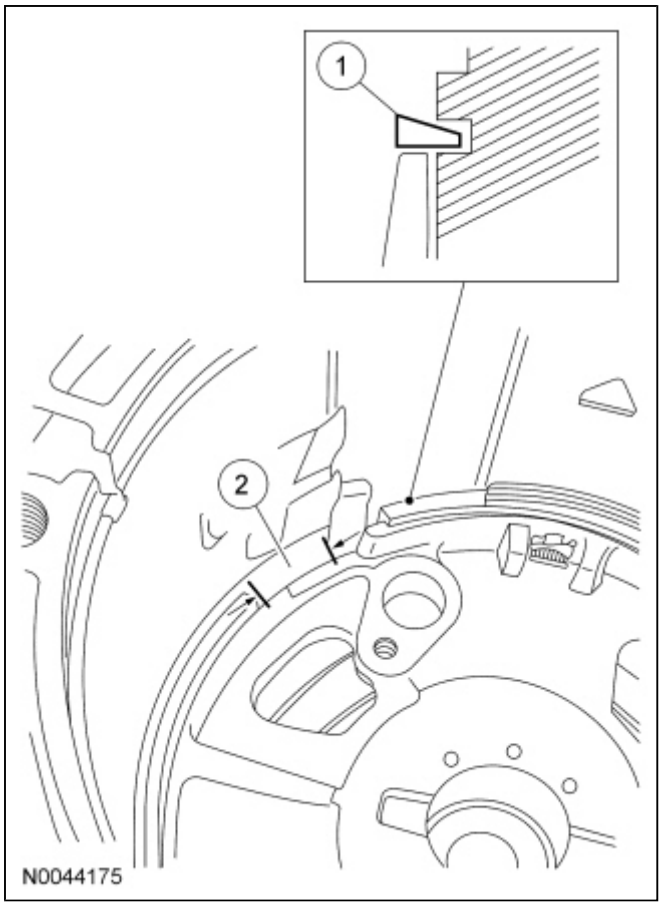
56. Loosely install the screw.



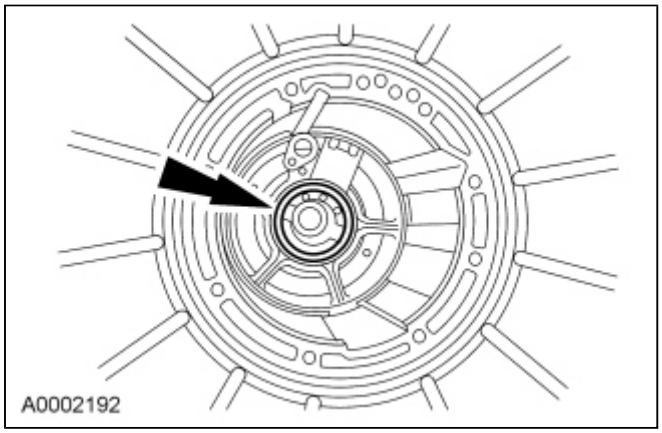
57. ***NOTICE:*** **Install the center support retaining ring with the tapered side facing up or damage may occur.**

    NOTICE: **Make sure the notch opening is not obstructed by the center support retaining ring or damage may occur.**

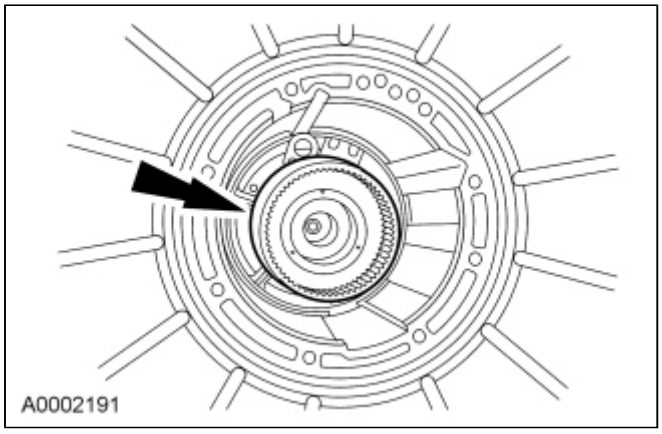
    Install the center support retaining ring.
    1. Make sure the center support retaining ring is installed with the tapered side facing up.
    2. Make sure the opening of the center support retaining ring is positioned correctly.



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



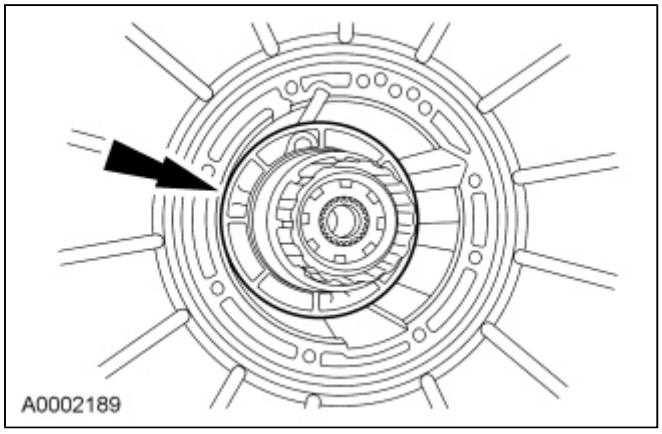
59. Install the O/D ring gear, O/D OWC and center shaft assembly.



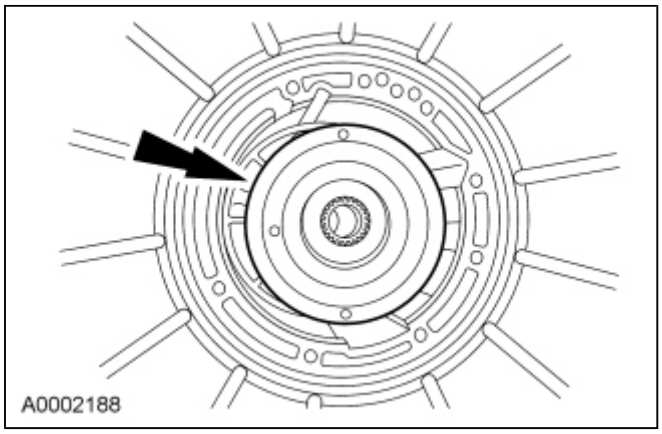
60. ***NOTICE:*** **Do not bend the trigger wheel. Make sure that the No. 2 thrust bearing is in this**

assembly.

Install the planetary gear O/D carrier.

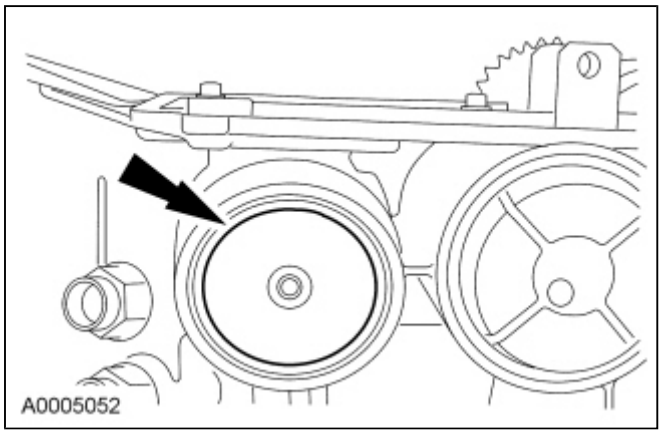


61. Install the O/D brake drum and coast clutch drum assembly.

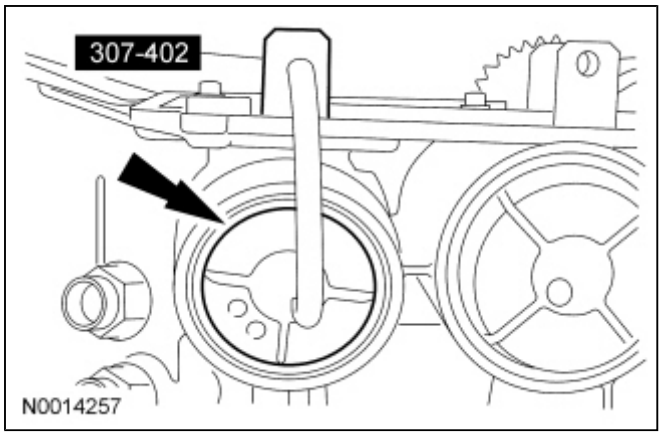


62. **NOTE:** Inspect the O/D servo bore for excessive wear. Repair as required.

    Install the O/D band servo piston and spring.
    - Lubricate the servo bore with automatic transmission fluid.



63. Using the Servo Cover Compressor, install the retaining ring.

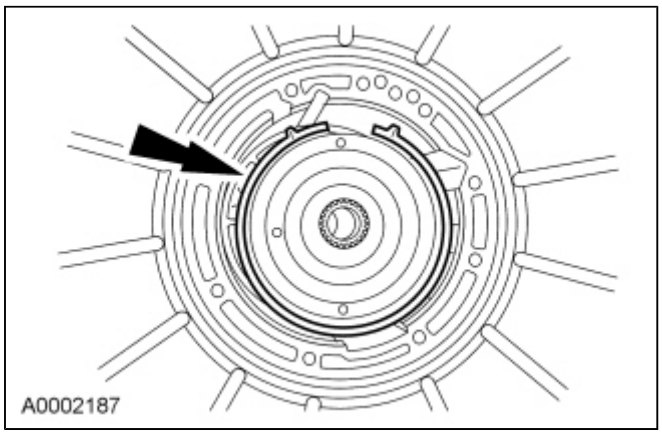


64. **NOTE:** If the O/D band is reused, it must be installed in the same position as when removed.

    NOTE: Make sure that the O/D band apply strut is aligned with the band notch.

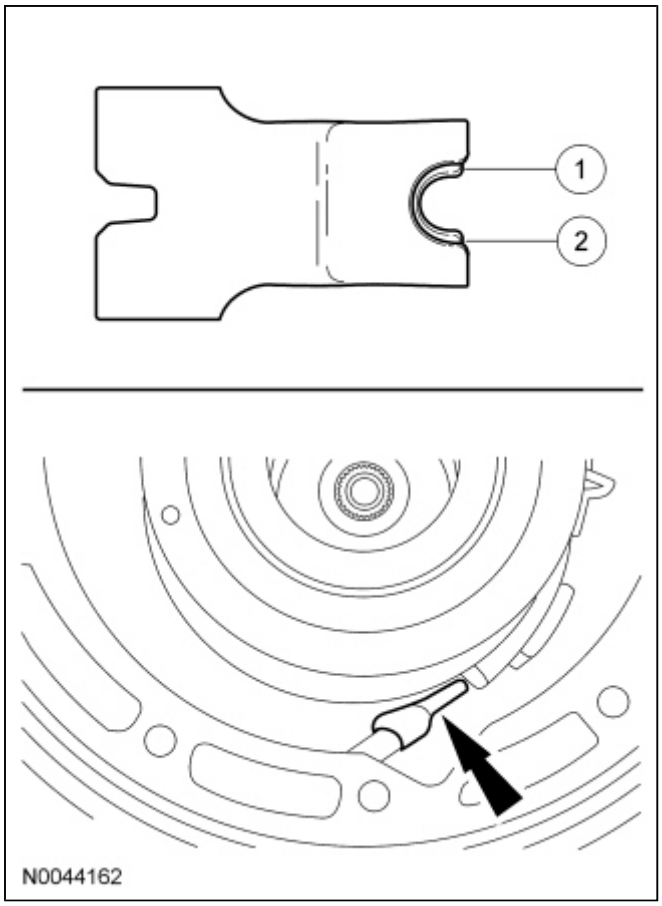
    NOTE: The new O/D band is dark in color. This is a normal condition of the band. Hairline cracks in the band are also considered normal. Do not install a new band based solely on the color.

    Install the O/D band.



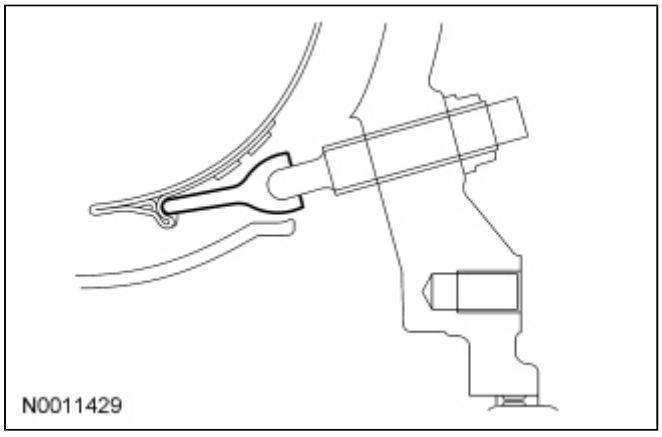
65. ***NOTICE:*** **To avoid a fall-out condition of the strut from the screw during assembly and function, the small U-shaped notch should be toward the band/case side and the large U-shaped notch toward the main control side.**

    Install the O/D band anchor strut.
    1. Band/case side of the anchor (small U notch).
    2. Main control side of the anchor (large U notch).

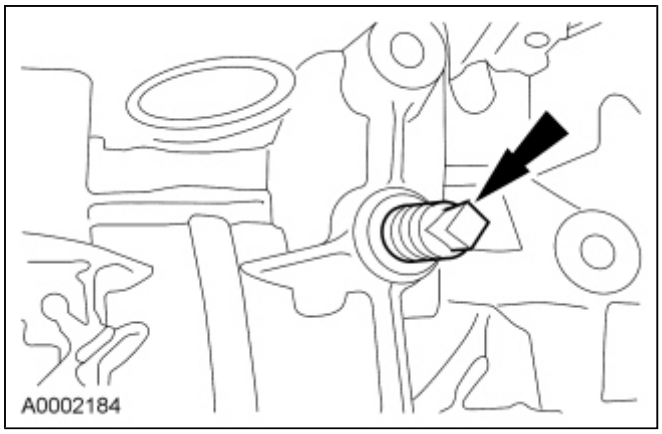


66. ***NOTICE:*** **If the strut is installed incorrectly, transmission damage will occur.**

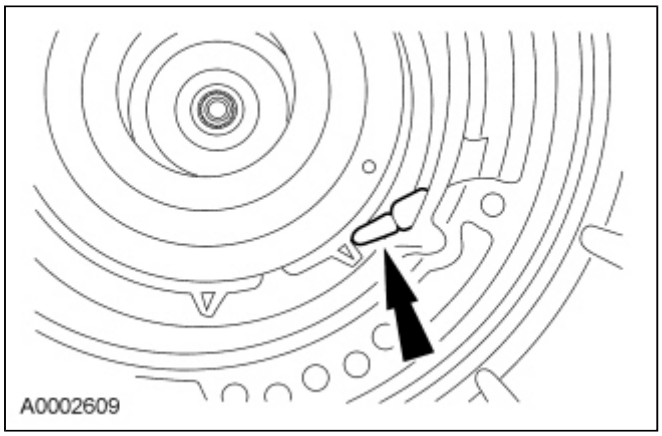
    Check to make sure that the intermediate band anchor strut is installed in the correct orientation to the case and adjustment screw.



67. Loosely install the adjustment screw.

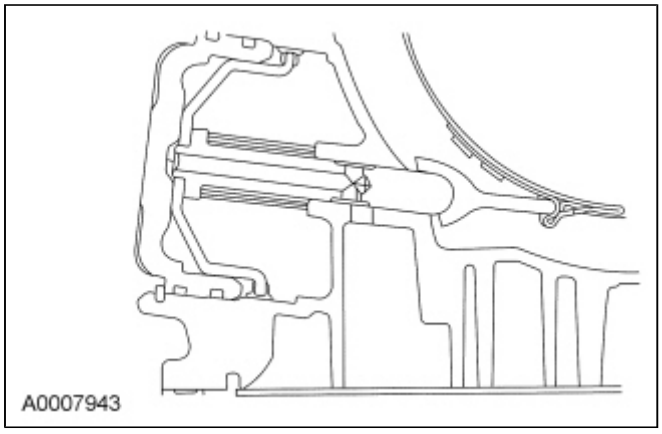


68. Install the O/D apply strut.



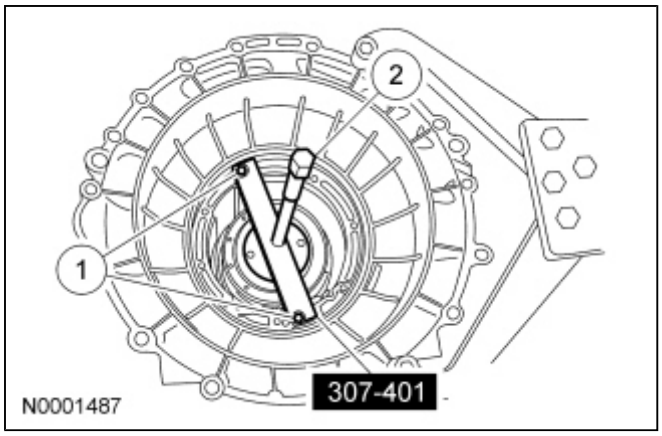
69. ***NOTICE:*** **If the strut is installed incorrectly, transmission damage will occur.**

    Check to make sure that the O/D band apply strut is installed in the correct orientation to the case and piston rod.



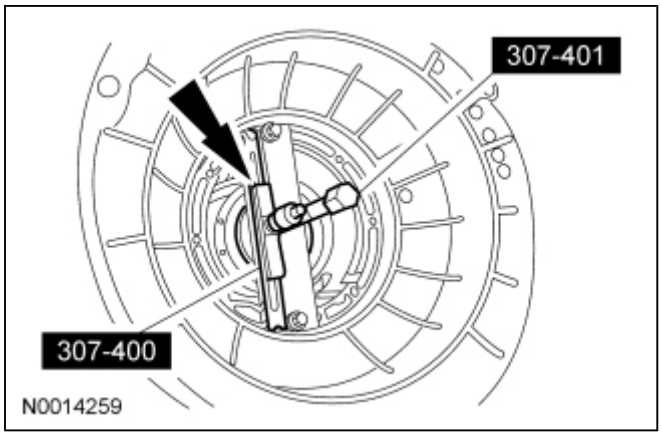
70. ***NOTICE:*** **The torque specifications are critical for this procedure. Failure to use the correct torque specifications may cause transmission damage.**

    Install the Cushion Spring Compressor.
    1. Install the Cushion Spring Compressor and the bolts using the 2 pump screw locations at approximately 6 o'clock and 12 o'clock positions.
        - Tighten to 15 Nm (133 lb-in).
    2. Tighten the center screw.
        - Tighten to 1 Nm (9 lb-in).



71. **NOTE:** Align the disc holes on Cushion Spring Compressor with the slot in Gauge Bar for correct measurement.

    Measure the distance from the top of the Gauge Bar to the drum bearing surface through the hole in the disc and record as dimension A. Repeat the measurement 180 degrees on the opposite side of the Gauge Bar and record as dimension B.



72. Add dimension A to B, divide by 2 and record as dimension C.

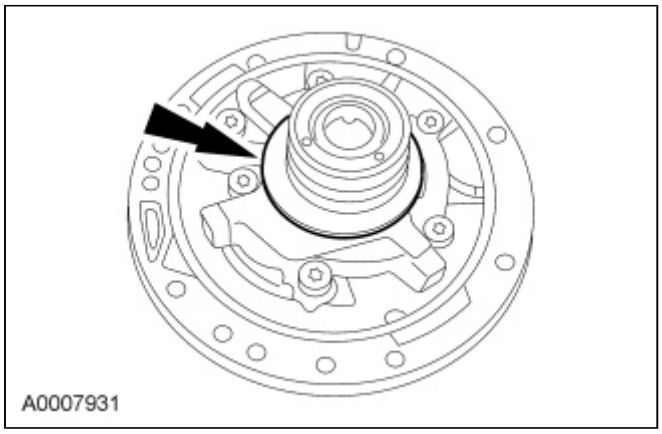
73. Subtract the thickness of the gauge bar 17.78 mm (0.70 in) from dimension C and record as dimension D.

74. Select the No. 1 thrust bearing from the following chart using dimension D.

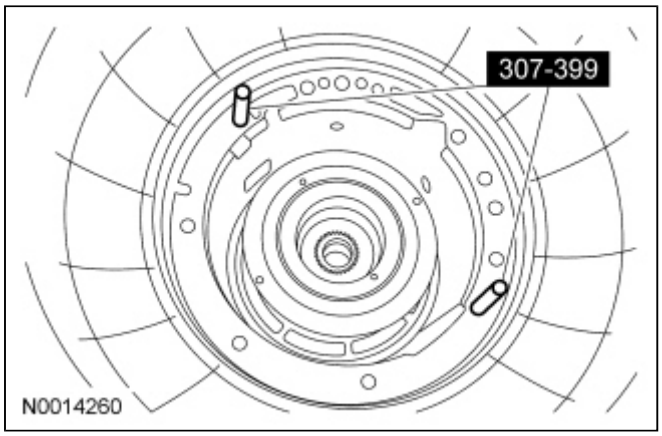
Dimension D	Service Part Number (7D014)	Bearing Thickness	Identification (Color/ID)
38.05-38.13 mm (1.498-1.501 in)	F7TZ-TA	1.55-1.60 mm (0.061-0.063 in)	White
38.14-38.28 mm (1.50-1.51 in)	F7TZ-MA	1.75-1.80 mm (0.069-0.071 in)	Green
38.29-38.42 mm (1.507-1.513 in)	F7TZ-NA	1.85-1.90 mm (0.073-0.075 in)	Red
38.43-38.61 mm (1.51-1.52 in)	F7TZ-RA	2.05-2.10 mm (0.081-0.083 in)	Black
38.62-38.74 mm	F7TZ-SA	2.15-2.20 mm	Yellow

(1.52-1.53 in)		(0.095-0.097 in)	

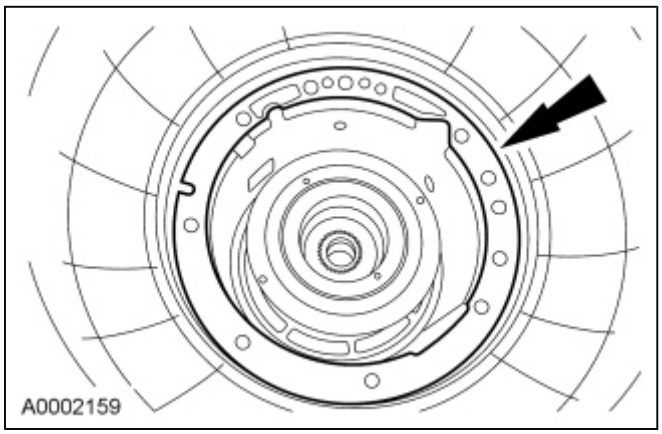
75. Install the selected No. 1 fluid pump input thrust washer.
    - Coat the fluid pump input thrust washer with petroleum jelly.



76. Install the Transmission Fluid Pump Alignment Pins into the transmission case.

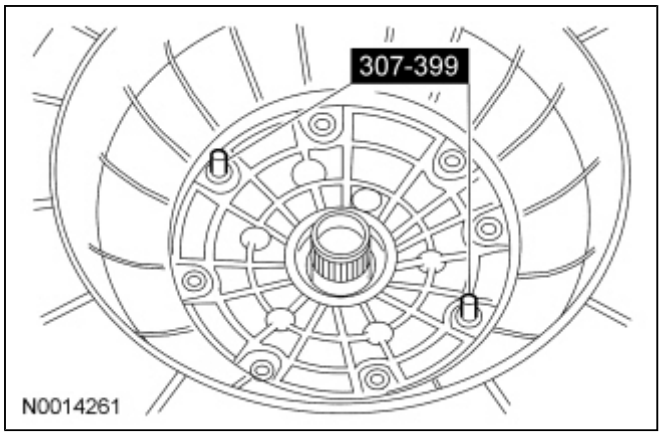


77. Install the pump gasket.



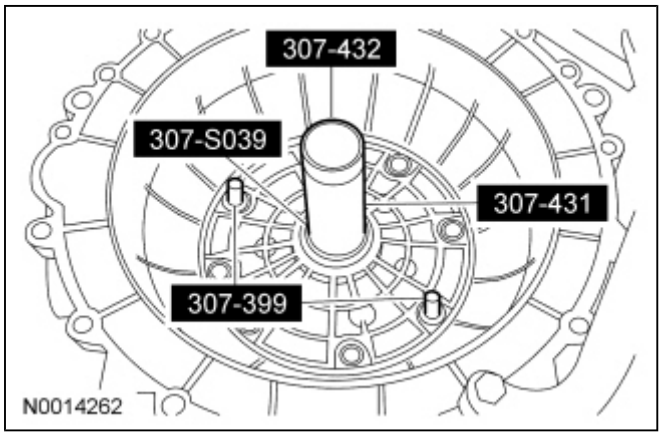
78. ***NOTICE:*** **Make sure that the fluid pump inlet thrust washer (No. 1), selective thrust washer, fluid pump gasket and the fluid pump-to-case O-ring seal remain in the correct position throughout this step or damage may occur.**

    Install the fluid pump.

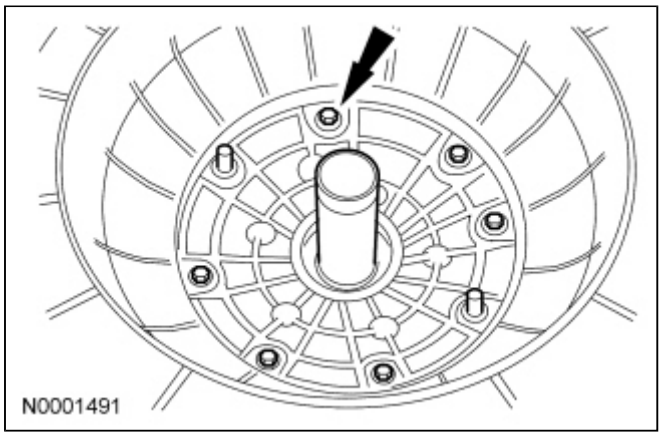


79. ***NOTICE:*** **The Fluid Pump Alignment Set, Transmission Fluid Pump Alignment Pins and the Transmission Fluid Pump Alignment Gauge must be used to correctly align the pump with the adapter plate to reduce gear noise, bushing failure and leakage.**

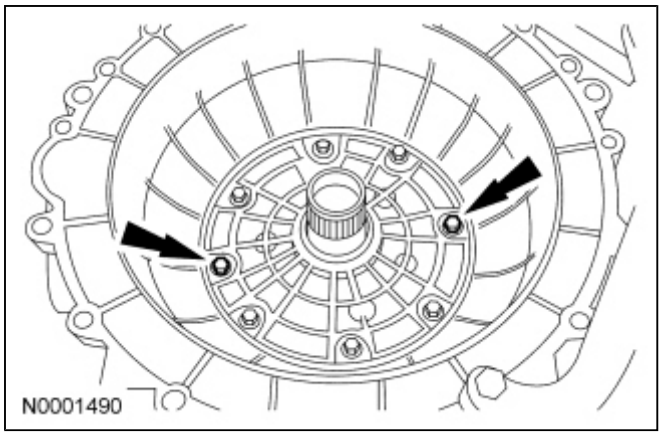
    Using the Fluid Pump Alignment Set, Transmission Fluid Pump Alignment Pins and the Transmission Fluid Pump Alignment Gauge, align the fluid pump to the adapter plate.



80. Install the fluid pump housing screws. Tighten the screws in a star pattern.
    - Tighten to 25 Nm (18 lb-ft).



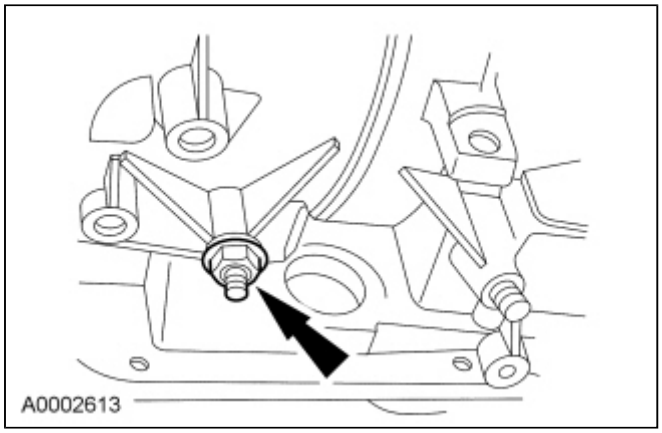
81. Remove the Fluid Pump Alignment Set, Transmission Fluid Pump Alignment Pins and the Transmission Fluid Pump Alignment Gauge and install the 2 remaining screws.
    - Tighten to 25 Nm (18 lb-ft).



82. ***NOTICE:*** **Do not allow Overdrive (O/D) band adjustment screw to back out. Band strut may fall out of position.**

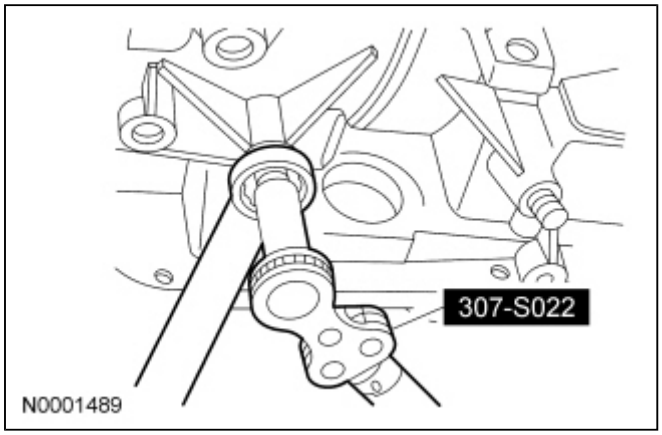
    NOTE: Install, but do not tighten, a new locknut on the band adjustment screw. Apply petroleum jelly to the locknut seal.

    Install a new locknut on the band adjustment screw.

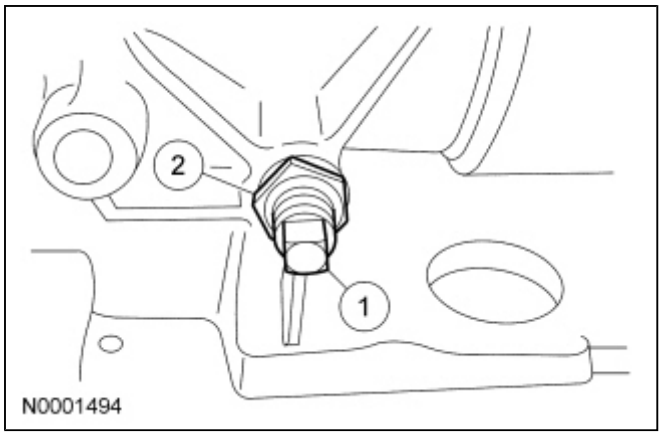


83. ***NOTICE:*** **The Overdrive (O/D) servo must be installed prior to band adjustment or damage may occur.**

    Using the Transmission Band Adjustment Set, tighten the O/D band adjustment screw in 2 stages.
    - Stage 1: Tighten to 14 Nm (124 lb-in).
    - Stage 2: Back off the screw exactly 1.5 turns and hold that position.



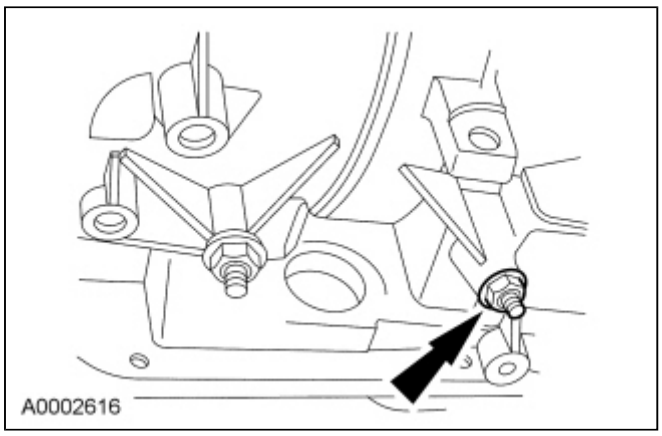
84. Tighten the O/D band locknut.
    1. Hold the O/D band adjustment screw stationary.
    2. Tighten the O/D band locknut.
        - Tighten to 54 Nm (40 lb-ft).



85. ***NOTICE:*** **Do not allow the intermediate band adjusting screw to back out. Band strut could fall out of position.**

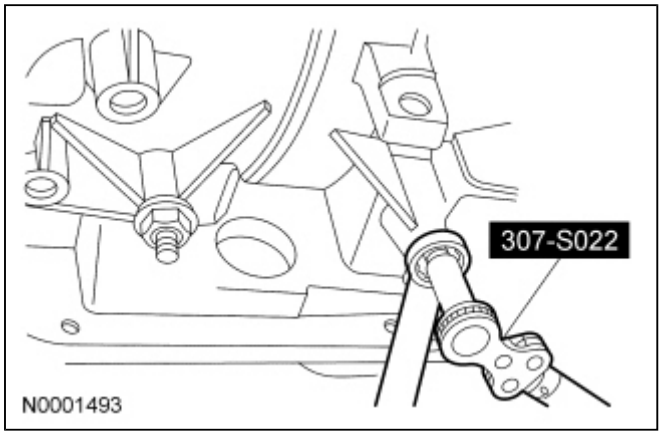
    NOTE: Install, but do not tighten, a new locknut on the band adjustment screw. Apply petroleum jelly to the locknut seal.

    Install a new nut on the band adjustment screw.

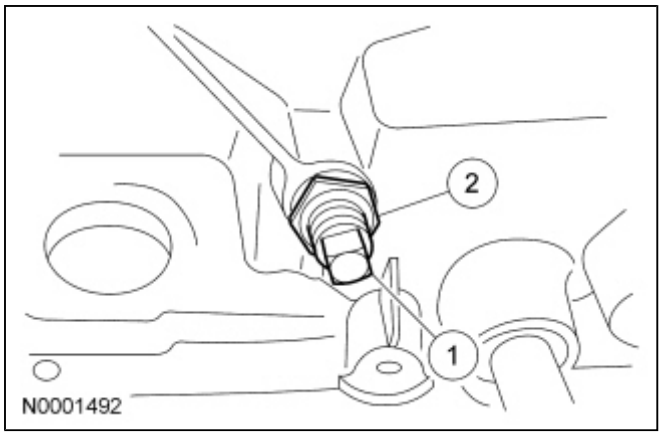


86. ***NOTICE:*** **The intermediate servo must be installed prior to band adjustment or damage may occur.**

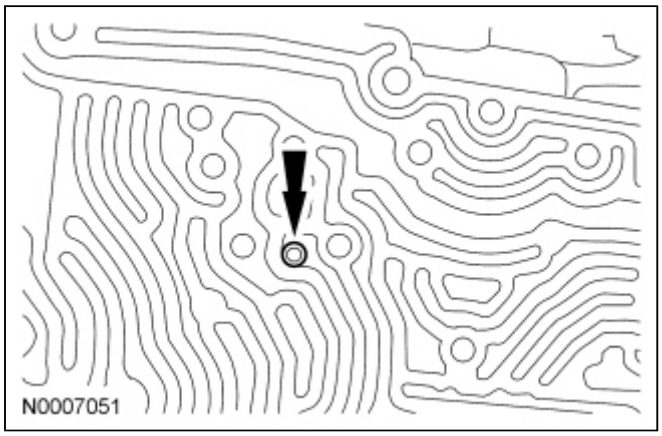
    Using the Transmission Band Adjustment Set, tighten the intermediate band adjustment screw in 2 stages.
    - Stage 1: Tighten to 14 Nm (124 lb-in).
    - Stage 2: Back off the screw exactly 1.5 turns and hold that position.



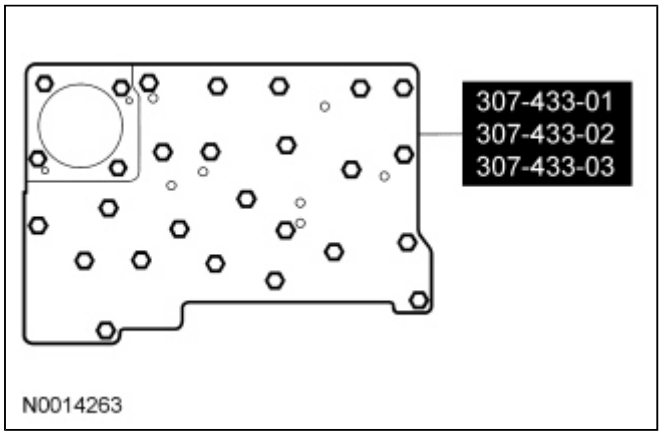
87. Tighten the intermediate band locknut.
    1. Hold the intermediate band adjustment screw stationary.
    2. Tighten the intermediate band locknut.
        - Tighten to 54 Nm (40 lb-ft).



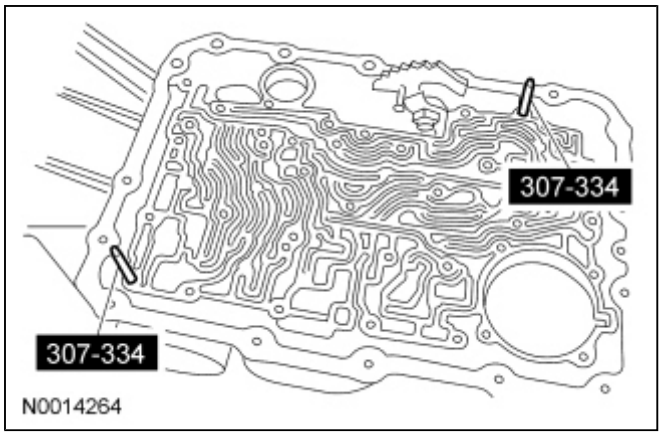
88. Tighten the center support screw.
    - Tighten to 11 Nm (97 lb-in).



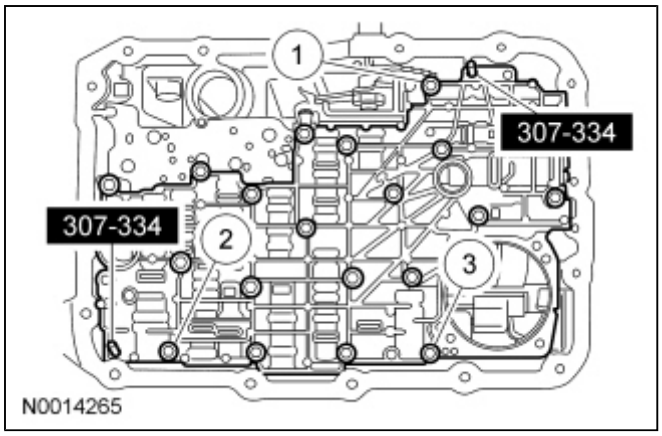
89. Using the Transmission Air Test Plate and Gaskets, carry out the Air Pressure Test procedure. For additional information, refer to Special Testing Procedures in this section.



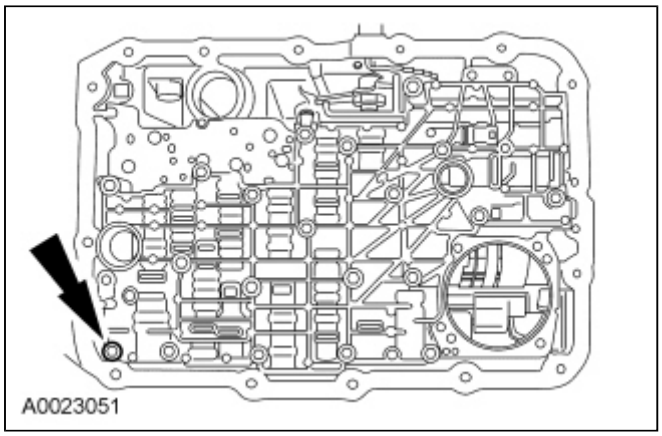
90. Install the Valve Body Aligners into the transmission case.



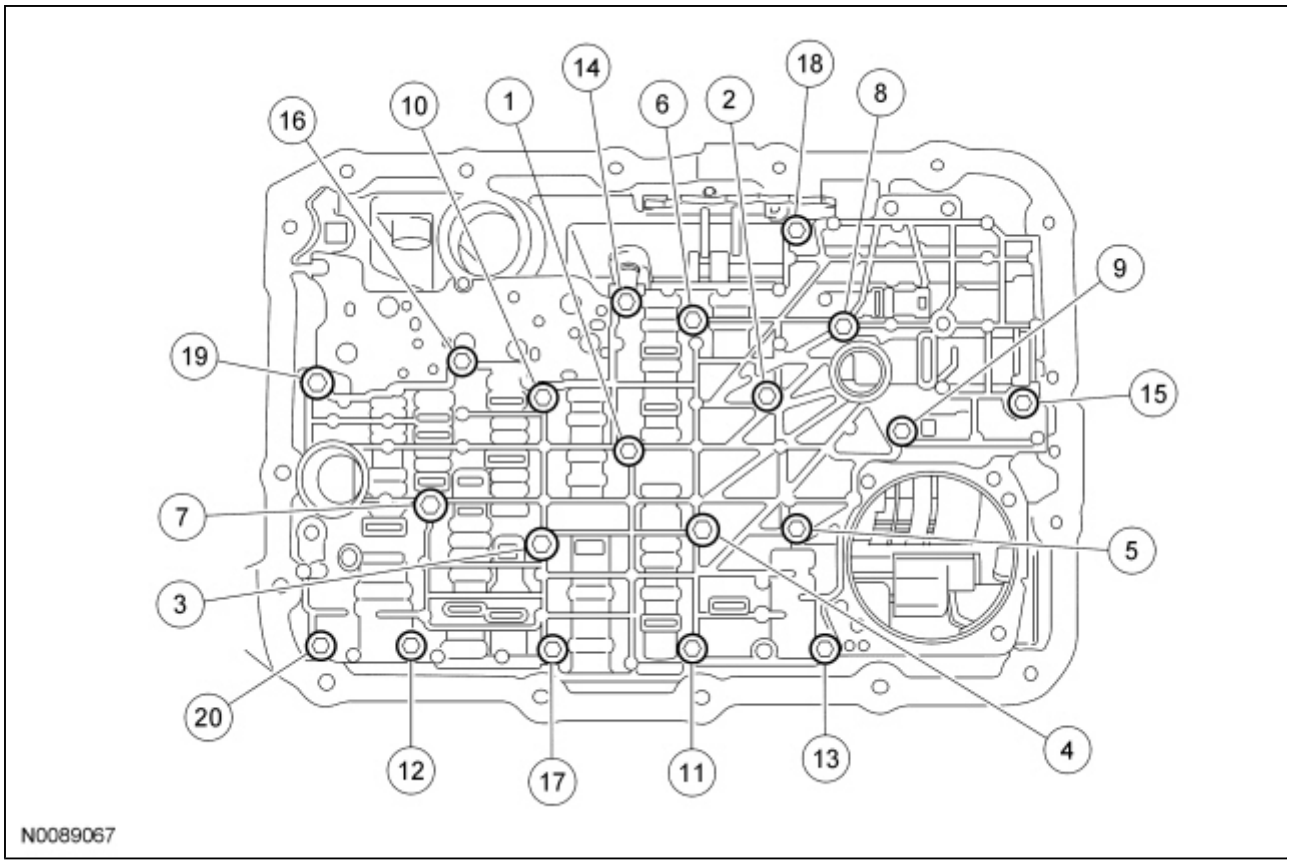
91. Using the Valve Body Aligners, install the main control valve body and loosely install the screws.
    1. Install the short screw.
    2. Install the screw with the larger head.
    3. Install the remaining screws.



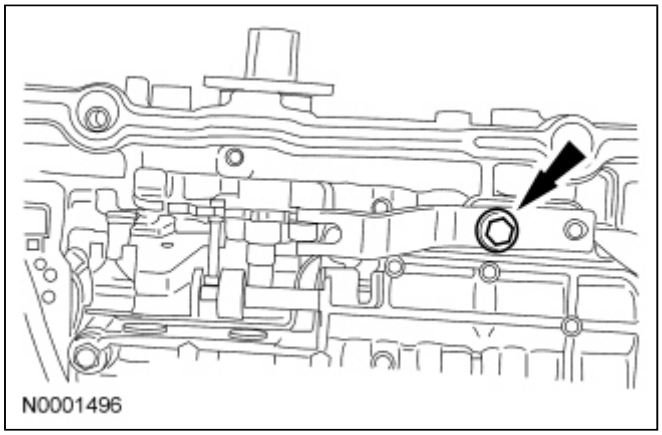
92. Remove the Valve Body Aligners and loosely install one screw.



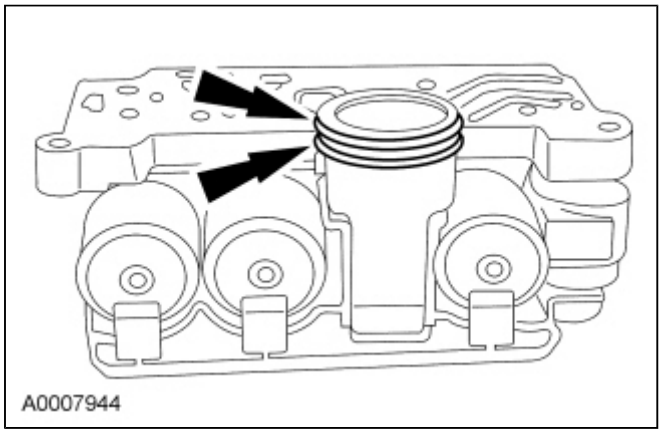
93. Tighten the screws in the sequence shown.
    - Tighten to 10 Nm (89 lb-in).



94. With the manual lever in the NEUTRAL position, install the manual valve detent spring.
    - Tighten to 10 Nm (89 lb-in).



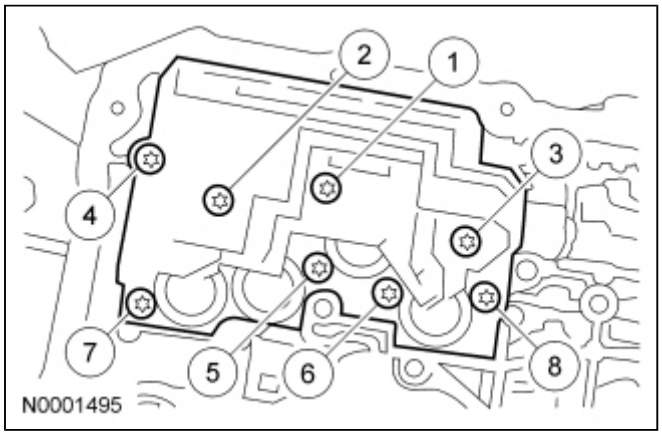
95. Install new O-ring seals on the solenoid body connector. Lubricate the O-ring seals with automatic transmission fluid.



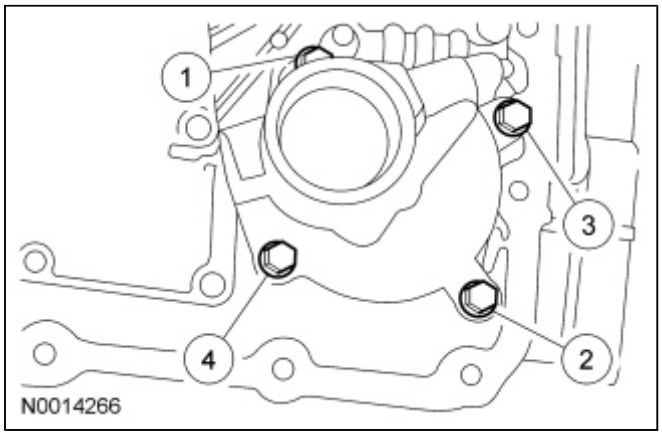
96. ***NOTICE:*** **Inspect the transmission case bore to make sure it is free of foreign material and not damaged. If damaged, a transmission leak may occur.**

Install the solenoid body. Tighten the screws in the sequence shown.

- Tighten to 8 Nm (71 lb-in).



97. Install the reverse servo. Tighten the bolts in the sequence shown in 2 stages.
    - Stage 1: Tighten to 5 Nm (44 lb-in).
    - Stage 2: Tighten to 11 Nm (97 lb-in).

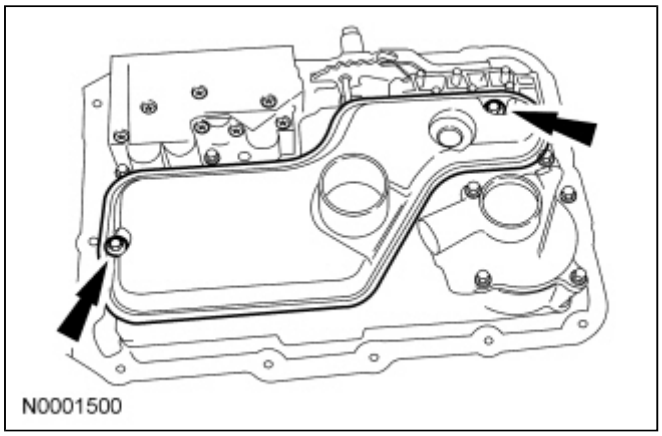


98. ***NOTICE:*** **Lubricate the transmission fluid pan filter seals with automatic transmission fluid or they may be damaged.**

NOTE: Make sure that the transmission fluid pan filter seals are correctly seated on the filter.

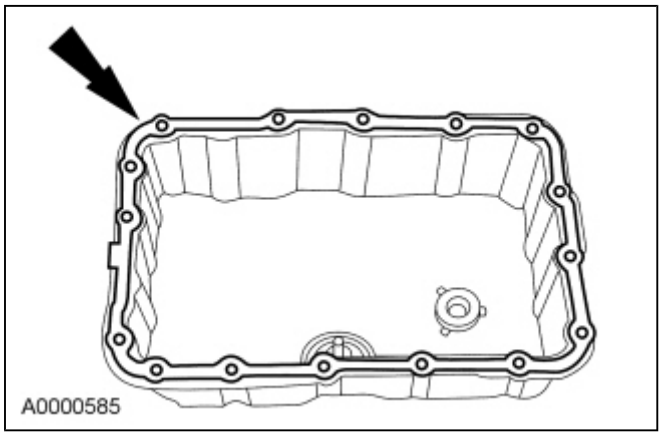
Lubricate the transmission fluid pan filter seals and install the transmission fluid pan filter.

- Tighten to 10 Nm (89 lb-in).

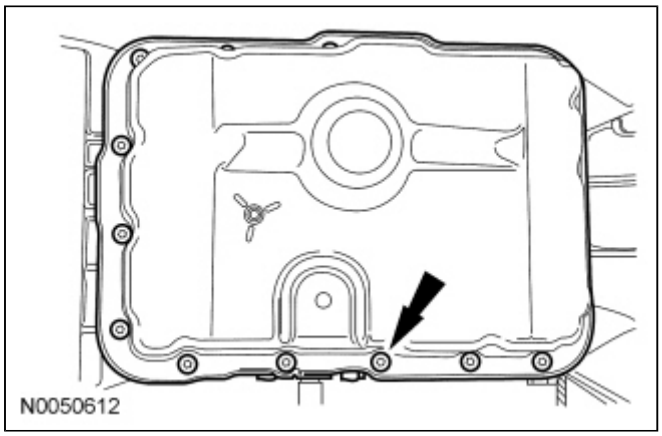


99. **NOTE:** The transmission fluid pan gasket is reusable. Clean and inspect for damage. If not damaged, the transmission fluid pan gasket should be reused.

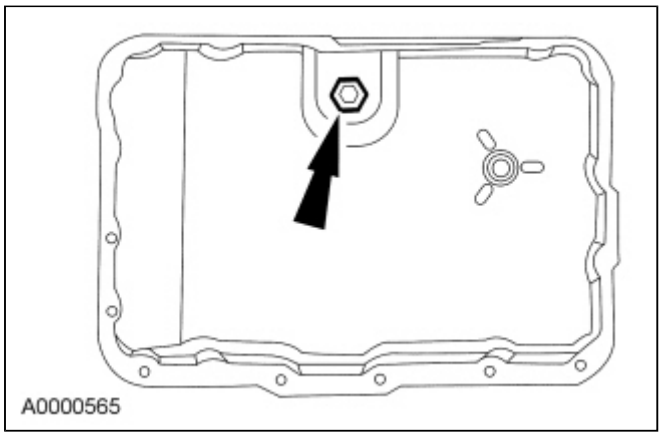
    Install the transmission fluid pan gasket on the transmission fluid pan.



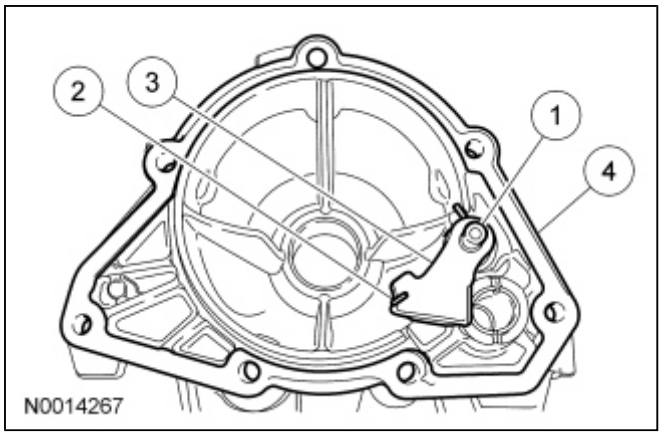
100. Install the transmission fluid pan and tighten the screws in a crisscross sequence.
    - Tighten to 11 Nm (97 lb-in).



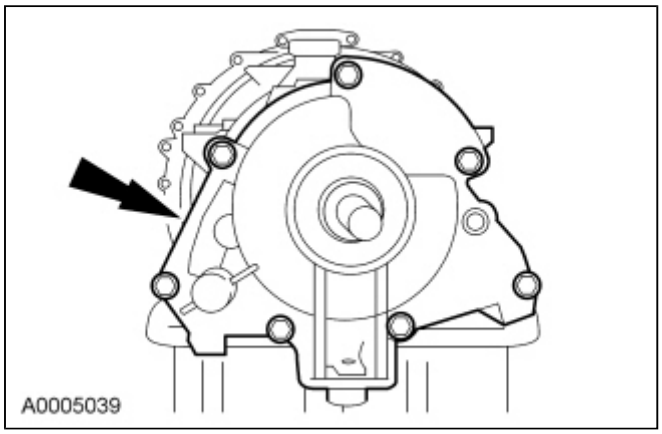
101. Install the drain plug.
    - Install a new gasket onto the drain plug assembly.
    - Tighten to 26 Nm (19 lb-ft).



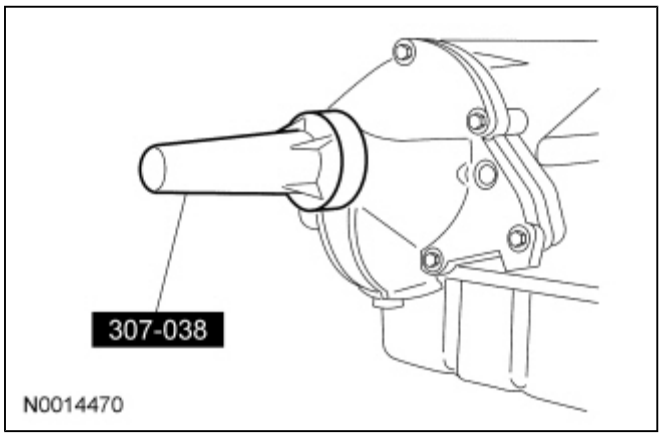
102. Install the parking pawl assembly and gasket.
    1. Install the parking pawl shaft.
    2. Install the parking pawl return spring.
    3. Install the parking pawl.
    4. Install a new gasket.



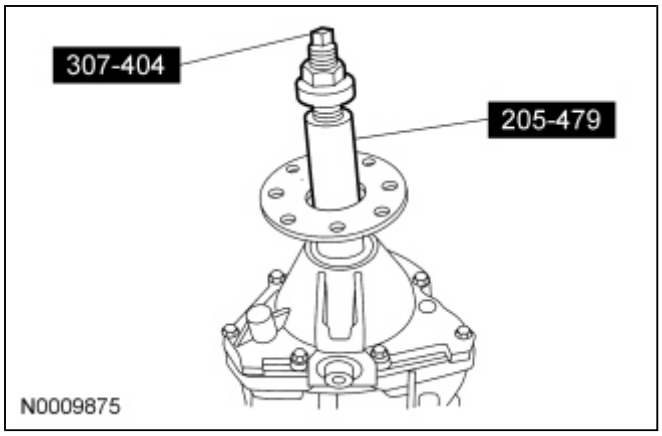
103. Install the extension housing.
    - Tighten to 30 Nm (22 lb-ft).



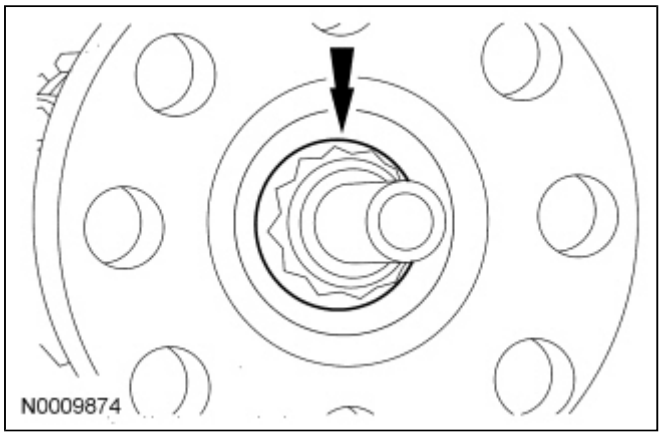
104. Using the Transmission Extension Housing Fluid Seal Installer, install the extension housing seal.



105. Using the Drive Pinion Flange Installer and Output Shaft Flange Installer, install the output shaft flange.

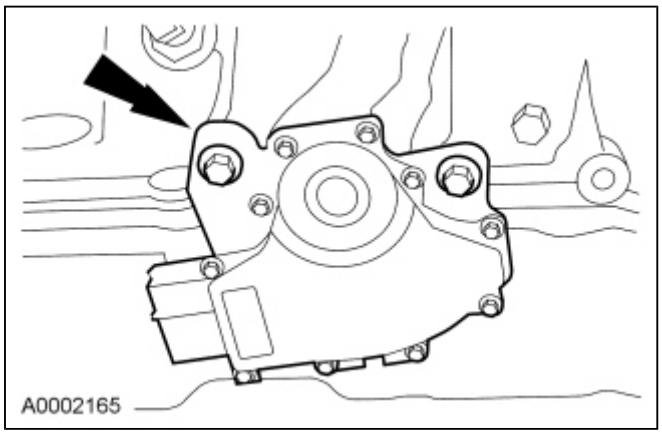


106. Install a new output shaft flange nut.
    - Tighten to 130 Nm (96 lb-ft).



107. ***NOTICE:*** **The Transmission Range (TR) sensor must fit flush against the boss on the case to prevent damage to the sensor.**

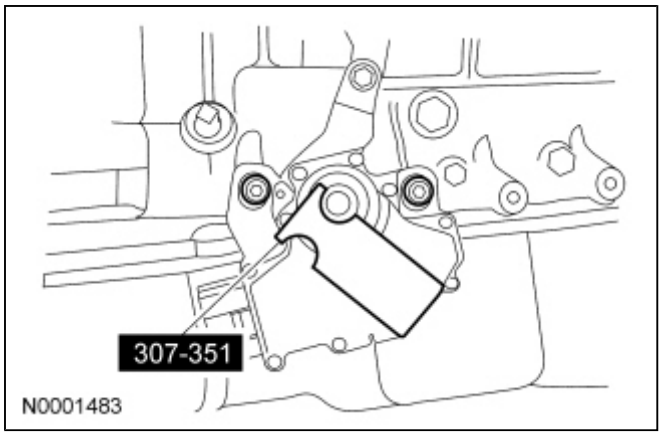
    Install the TR sensor and loosely install the screws.



108. ***NOTICE:*** **Tightening one screw before tightening the other may cause the sensor to bind or become damaged.**

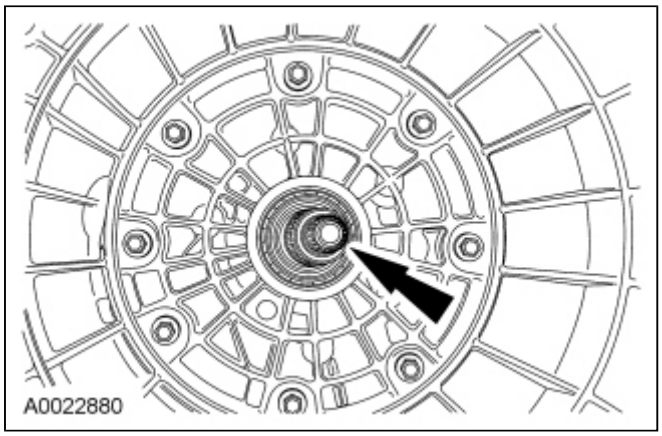
    NOTE: The manual lever must be in the NEUTRAL position.

    Using the TR Sensor Alignment Gauge, align the TR sensor and tighten the screws in an alternating sequence.
    - Tighten 8 Nm (71 lb-in).

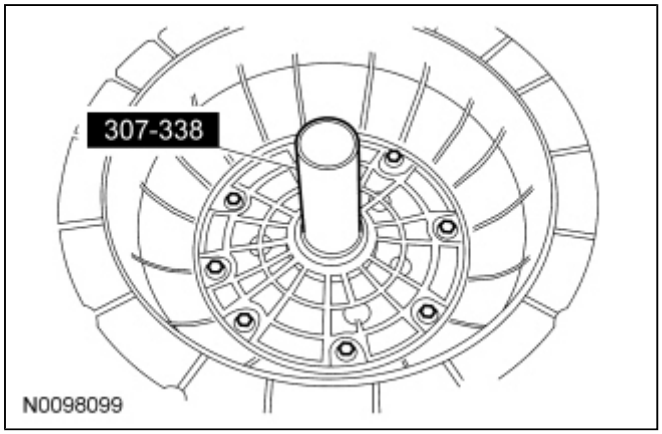


109. ***NOTICE:*** **The splines of the input shaft are not the same length on both ends. The shaft end with the shorter splines goes into the fluid pump or damage may occur.**

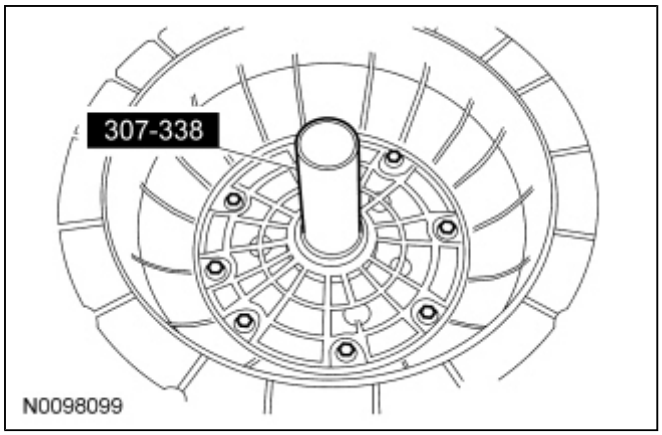
    Install the input shaft.



110. Using the Piston Seal Sizer, make sure that the front fluid pump seal assembly is fully seated.



111. Remove the Piston Seal Sizer.

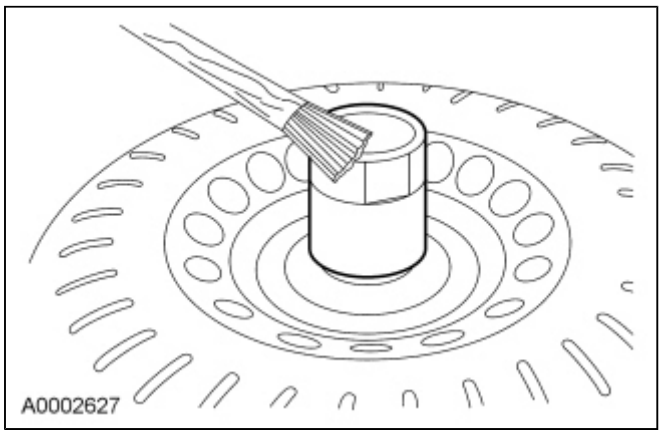


112. ***NOTICE:*** **Do not damage the fluid pump gear O-ring seal when installing torque converter.**

NOTICE: **Make sure the converter hub is fully engaged in the pump support and gear and rotates freely. Do not damage the hub seal.**

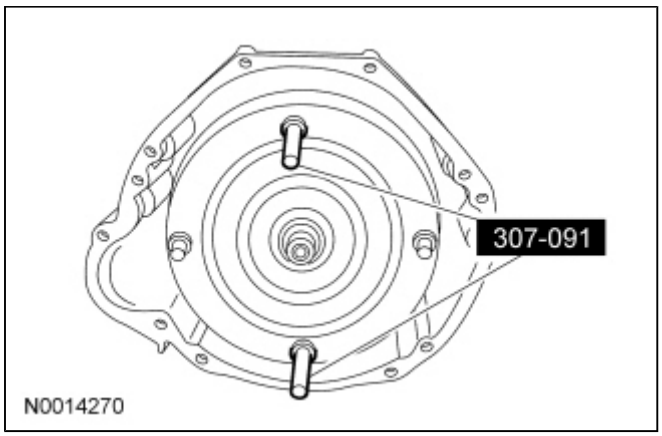
NOTICE: **If the torque converter slides out, the hub seal may be damaged.**

Lubricate the converter hub with automatic transmission fluid.

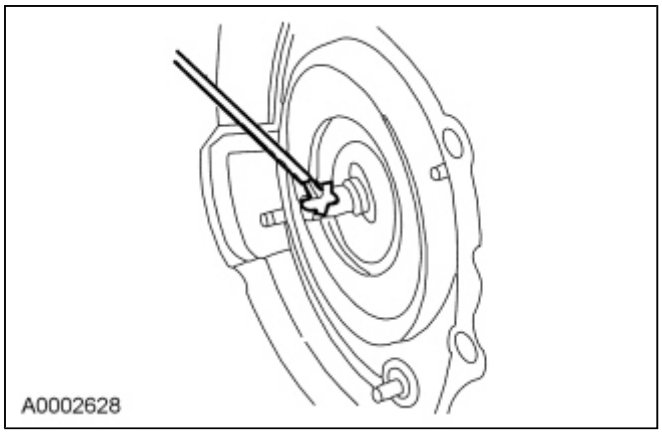


113. **WARNING: Secure the torque converter in the transmission during removal or installation. The torque converter is heavy and may result in injury if it falls out of the transmission. Failure to follow this instruction may result in serious personal injury.**

Using the Torque Converter Handles, install the torque converter by pushing and rotating.



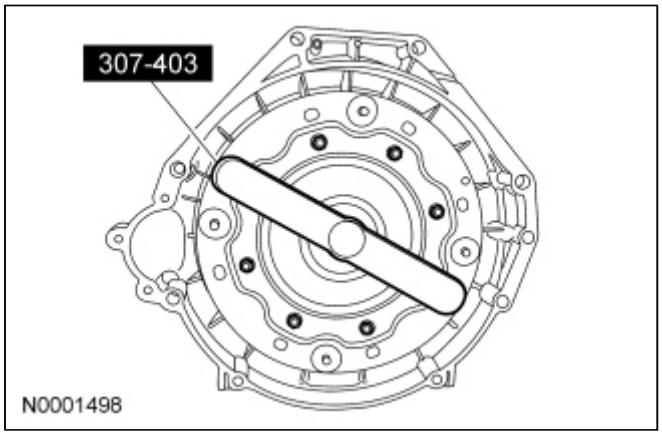
114. Lubricate the torque converter pilot hub with multi-purpose grease.



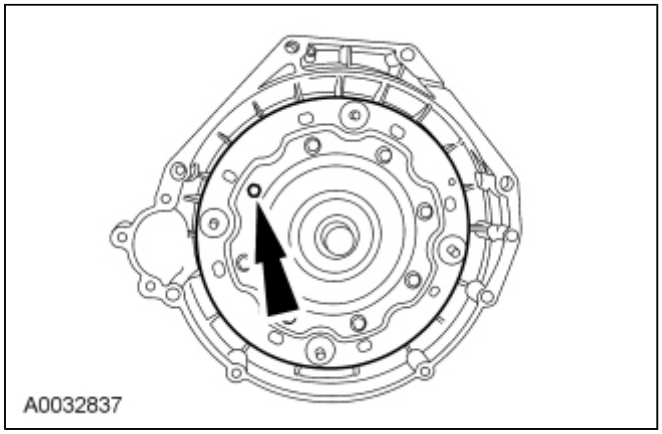
115. ***NOTICE:*** **The Flex Plate Aligner must be used to correctly align the adapter plate to the converter or transmission damage may occur. In order to correctly install the Flex Plate Aligner, it must be installed using 1 round and 1 oblong hole. Using 2 oblong holes will cause damage to the transmission.**

    NOTE: Position the adapter plate on the torque converter and identify the position of the orange or green paint daub on the converter face.

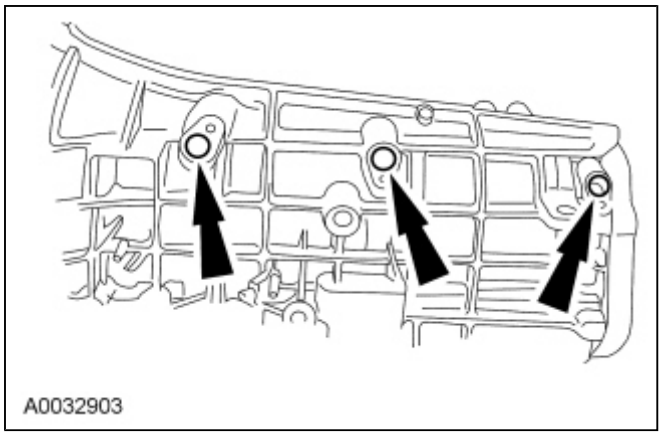
    If the vehicle is equipped, use the Flex Plate Aligner to install the torque converter flexplate adapter assembly and 8 nuts.
    - Tighten to 44 Nm (32 lb-ft).



116. Remove the Flex Plate Aligner and install the remaining torque converter flexplate adapter nuts.
    - Tighten to 44 Nm (32 lb-ft).



117. Using one of the speed sensor holes, fill the transmission with 8.5L (9 qt) of automatic transmission fluid.



118. **NOTE:** Inspect O-ring seals for damage. Install new O-ring seals if damaged. Lubricate the O-ring seals with petroleum jelly to prevent damage to the O-ring seals.

Install the sensors.

- Tighten to 14 Nm (124 lb-in).