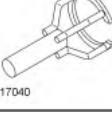
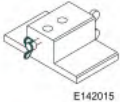
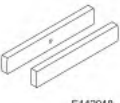


## Transmission

### Special Tool(s) / General Equipment

|                                                                                                |                                                                                                                       |
|------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|
| <br>E129694   | 100-001 (T50T-100-A)<br>Slide Hammer                                                                                  |
| <br>E139373   | 100-002 (TOOL-4201-C)<br>Holding Fixture with Dial Indicator Gauge                                                    |
| <br>E142000   | 204-029<br>Drawbar                                                                                                    |
| <br>E216593   | 205-199 (T83T-3132-A1)<br>Installer, Spindle/Axle Shaft<br>T83-4000-A<br>TKIT-1983-F<br>TKIT-1983-FLM<br>TKIT-1983-FX |
| <br>E234310  | 205-219 (T85L-1225-AH)<br>Remover, Axle Bearing<br>TKIT-1985-FH-2                                                     |
| <br>14046   | 205-256<br>Installer, Front Wheel Hub Seal<br>TKIT-1988-FESTIVA<br>T88C-1000-ST<br>TKIT-1988-TRACER                   |
| <br>E142003 | 205-276<br>Installer, Front Wheel Hub Seal<br>TKIT-1988-FH<br>TKIT-1988-FLMH                                          |
| <br>307-003 | 307-003 (T57L-500-B)<br>Holding Fixture, Transmission                                                                 |
| <br>17058   | 307-015<br>Compressor, Clutch Spring                                                                                  |
| <br>E142010 | 307-091<br>Handle, Torque Converter<br>TKIT-2009TC-F                                                                  |
| <br>17040   | 307-209<br>Compressor, Spring Washer<br>TKIT-2005U-LM1<br>TKIT-2-MEX<br>TKIT-2000-F/FM/FLM                            |
| <br>E142013 | 307-343<br>Retaining Ring Pliers<br>TKIT-1995-FH/FLMH<br>TKIT-1995-LMH/MH                                             |

|                                                                                             |                                                                                                                       |
|---------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|
|  E142014    | 307-525<br>Compressor, Clutch Spring<br>TKIT-2005D2-F                                                                 |
|  E142015   | 307-534<br>End Play Gauge, Transmission<br>TKIT-2005D2-F                                                              |
|  E142016   | 307-552<br>Compressor, Clutch Spring<br>TKIT-2005U-FLM<br>TKIT-2005U-LM<br>TKIT-2006U-FLM/LM<br>TKIT-2006UF/FM        |
|  E142017   | 307-553<br>Remover, Transmission Fluid Pump<br>TKIT-2005U-FLM<br>TKIT-2005U-LM<br>TKIT-2006U-FLM/LM<br>TKIT-2006UF/FM |
|  E142018   | 307-554<br>Gauge, D-Clutch Measurement<br>TKIT-2005U-FLM<br>TKIT-2005U-LM<br>TKIT-2006U-FLM/LM<br>TKIT-2006UF/FM      |
|  E142019   | 307-555<br>End Play Gauge, Clutch<br>TKIT-2005U-FLM<br>TKIT-2005U-LM<br>TKIT-2006U-FLM/LM<br>TKIT-2006UF/FM           |
|  E142020 | 307-556<br>Installer, Fluid Pump Seal<br>TKIT-2005U-FLM<br>TKIT-2005U-LM<br>TKIT-2006U-FLM/LM<br>TKIT-2006UF/FM       |
|  E142021 | 307-559<br>Installer, Shifter Fluid Seal<br>TKIT-2005U-FLM<br>TKIT-2005U-LM<br>TKIT-2006U-FLM/LM<br>TKIT-2006UF/FM    |
|  E142022 | 307-562<br>Remover, Needle Bearing<br>TKIT-2005U-FLM<br>TKIT-2005U-LM<br>TKIT-2006U-FLM/LM<br>TKIT-2006UF/FM          |
|  E142023 | 307-637<br>Installer, Rear Seal, 4x4<br>TKIT-2008ET-FLM<br>TKIT-2008ET-ROW                                            |
|  E239703 | 307-691<br>Tester, Torque Converter Leak                                                                              |
|  E181071 | 307-713<br>Installer, Roller Bearing<br>TKIT-2013B-FL<br>TKIT-2013B-ROW                                               |
|                                                                                             |                                                                                                                       |

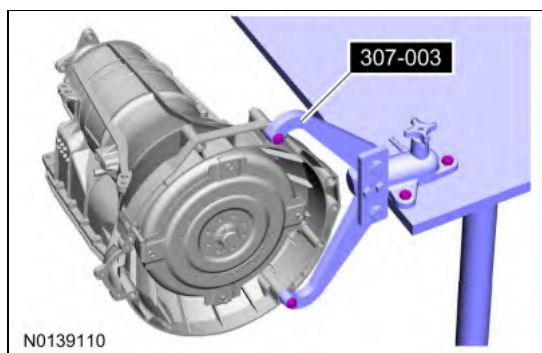
|                                                                                              |                                                                            |
|----------------------------------------------------------------------------------------------|----------------------------------------------------------------------------|
| <br>E181072  | 307-714<br>Installer, Needle Bearing<br>TKIT-2013B-FL<br>TKIT-2013B-ROW    |
| <br>E181073 | 307-715<br>Installer, Output Seal (4X2)<br>TKIT-2013B-FL<br>TKIT-2013B-ROW |
| <br>E181074 | 307-716<br>Installer, Teflon Seal<br>TKIT-2013B-FL<br>TKIT-2013B-ROW       |
| <br>E173280 | 307-717<br>Remover, Kostal Sleeve<br>TKIT-2013B-FL<br>TKIT-2013B-ROW       |
| <br>E233333 | 307-732<br>Tool Kit, Torque Converter Flusher                              |
| <br>308-375 | 308-375<br>Remover, Input Shaft Seal<br>TKIT-2005U-M<br>TKIT-1999-F/FLM/LT |
| Flat Headed Screw Driver                                                                     |                                                                            |
| Depth Gauge                                                                                  |                                                                            |
| Punch                                                                                        |                                                                            |

#### Materials

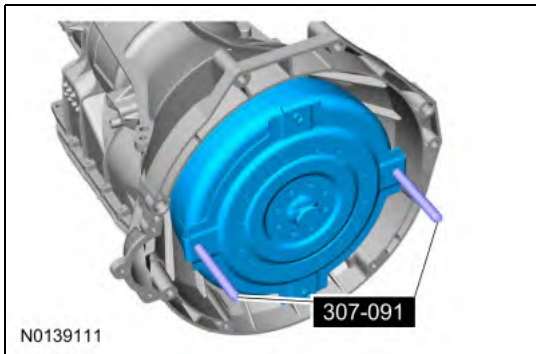
| Name                                                              | Specification               |
|-------------------------------------------------------------------|-----------------------------|
| Motorcraft® 6R ATF Additive F<br>XL-16                            | -                           |
| Motorcraft® MERCON® LV Automatic Transmission Fluid<br>XT-10-QLVC | WSS-M2C938-A<br>MERCON® LV, |

#### All vehicles

- Transmission overhaul includes the following:
  - Complete disassembly of the transmission
  - Cleaning and inspecting of all components
  - Replacement of all seals, gaskets, and one time use components. Use gasket kit -7153-
  - Complete assembly with clearances adjusted to specification
  - Replacement of any additional parts that may be required if worn or damaged
- For information on component views and base part numbers.  
Refer to: Transmission Description (307-01A Automatic Transmission, Transfer Case and Power Transfer Unit - 6-Speed Automatic Transmission & 6R100, Description and Operation).
- Install the special tool on the torque converter housing and install the transmission on a bench.  
Use Special Service Tool: 307-003 (T57L-500-B) Holding Fixture, Transmission.

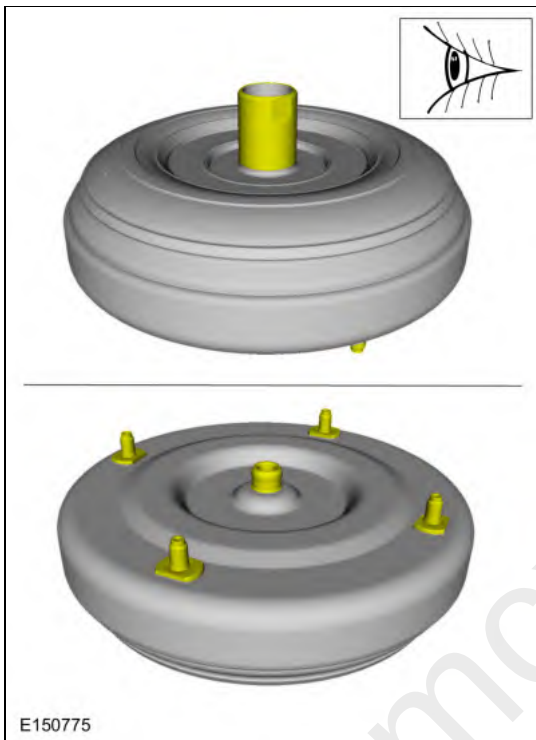


- Using the special tool, remove the torque converter.  
Use Special Service Tool: 307-091 Handle, Torque Converter.



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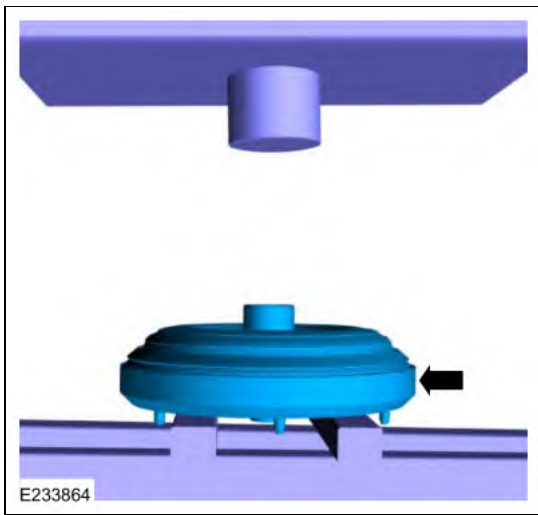
5. A new or remanufactured torque converter must be installed if one or more of the following statements are true:
- The sealing surface has a groove worn from the seal.
  - A torque converter malfunction has been determined based on complete diagnostic procedures.
  - The torque converter stud or studs, threaded pads, impeller hub or bushing are damaged.
  - The torque converter exhibits external discoloration (due to overheating).
  - There is evidence of water or antifreeze contamination.



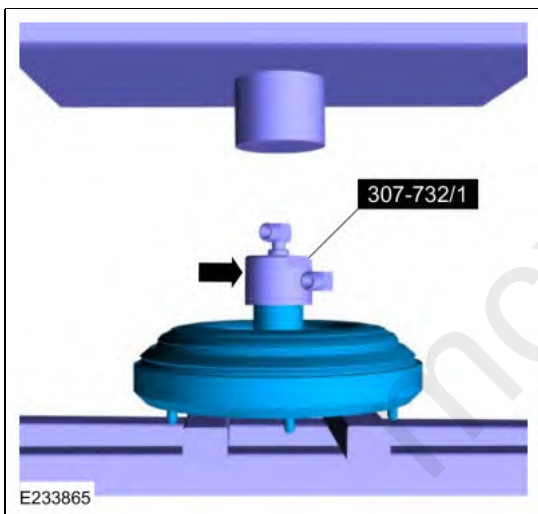
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**Flush The Torque Converter With The Transmission Cooling System Heated Flusher**

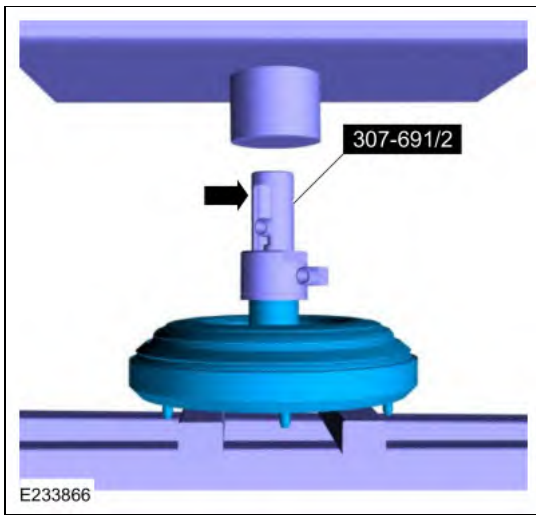
6. **NOTE:** Use transmission fluid specified for this transmission. Do not use any supplemental transmission fluid additives or cleaning agents. The use of these products could cause internal transmission components to fail, which will affect the operation of the transmission.
- The torque converter must be flushed every time the transmission is overhauled. It is mandatory that proper equipment and procedures be followed when flushing the torque converter. The flushing equipment used MUST:
- Maintain the transmission fluid at 140°F or above
  - Pulsate the transmission fluid during cleaning
  - Have a GPM flow meter
  - Have a filter with a rating of 100 micron or less
  - Have air purge capability before and after flushing
7. If equipment meeting the specifications above is not available, the torque converter must be flushed by hand. Go to Flush The Torque Converter By Hand steps later in this procedure.
8. Check and top off the transmission fluid level of the transmission cooling system heated flusher with transmission fluid.
9. Turn on the heater and allow the transmission fluid in the transmission cooling system heated flusher 15-30 minutes to heat up to 60°C (140°F) before using.
10. Place the torque converter in an arbor press. Support the torque converter on the mounting pads.



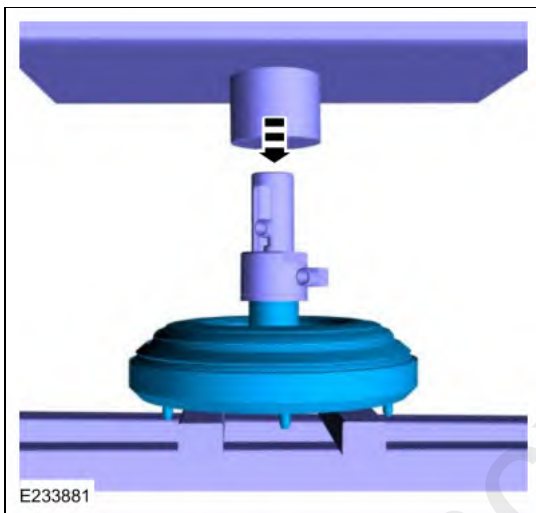
11. Using the special tools, assemble the correct turbine shaft simulator to the torque converter flush main hub and place it on the torque converter hub.  
Use Special Service Tool: 307-732 Tool Kit, Torque Converter Flusher.



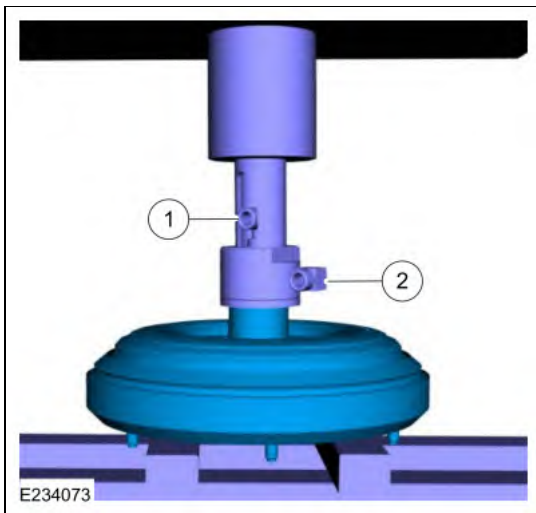
12. Using the special tool, install the slotted cap.  
Use Special Service Tool: 307-691 Tester, Torque Converter Leak.



13. Apply enough force from the press to seal the torque converter flush main hub to the torque converter hub.



14. Connect the flush machine to the main hub.
1. Red hose on top.
  2. Blue hose on bottom.



15. Follow the equipment instructions to purge transmission fluid from the torque converter prior to starting the flushing procedure.

16. **WARNING: The torque converter, adaptor 307-732, and the hoses will be hot.**

**NOTE:** Maintain visual contact with torque converter during the entire flush procedure. Immediately stop the flush machine if a leak develops. Repeat set up steps to reseat the tool to the converter hub and continue flushing.

Forward flush the converter for 15 minutes.

17. Monitor GPM flow meter periodically during the flush procedure. Flow rate above 2.0 gallons per minute is required to break up and dislodge any contamination trapped behind the TCC plate. Service flush machine filter(s) if flow rate drops below 2 GPM.

18. Follow the equipment instructions to purge the torque converter.

19. **WARNING: The torque converter, adaptor 307-732, and the hoses will be hot.**

Allow torque converter and equipment to cool for 30 minutes before handling.

20. Disconnect the hoses and remove the special tools.

#### Flush The Torque Converter By Hand

**NOTICE:** Do not use water-based cleaners or mineral spirits to clean or flush the torque converter or transmission damage will occur. Use only clean transmission fluid designated for the transmission and torque converter being serviced.

**NOTE:** Only flush the torque converter by hand when the transmission cooling system heated flusher is not available.

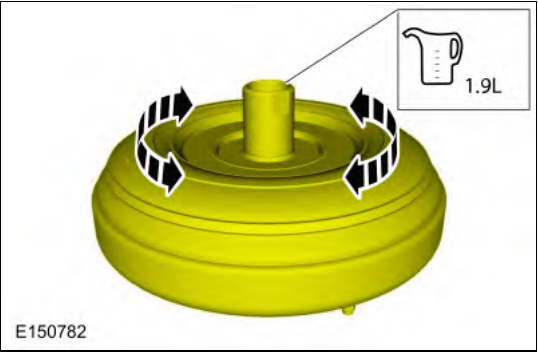
21. Pour a small amount of transmission fluid from the torque converter onto an absorbent white tissue or through a paper filter.

22. Examine the transmission fluid for contaminants. The transmission fluid must be free of metallic contaminants. If metallic contaminants are present, do not continue with hand flushing. The torque converter must be flushed with the transmission cooling system heated flusher.

23. Drain the remaining transmission fluid from the torque converter.

24. Using only the recommended transmission fluid, add 1.9L (2 qt) of clean transmission fluid into the converter and agitate by hand.

Material: Motorcraft® MERCON® LV Automatic Transmission Fluid / XT-10-QLVC (WSS-M2C938-A) (MERCON® LV, )



25. Thoroughly drain the transmission fluid.

All vehicles

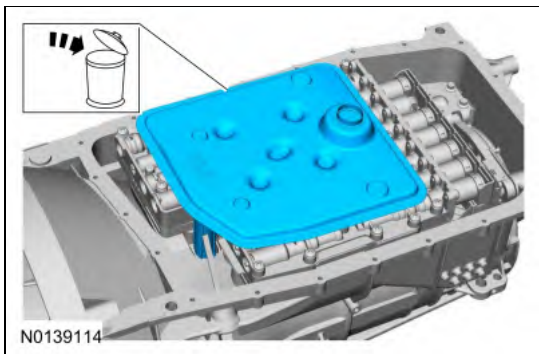
26. Remove the transmission fluid pan bolts and the transmission fluid pan.



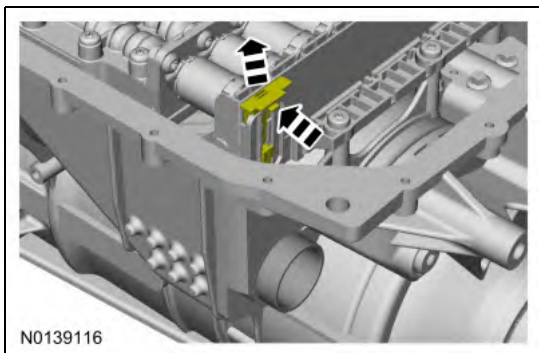
27. Remove the transmission fluid pan gasket.



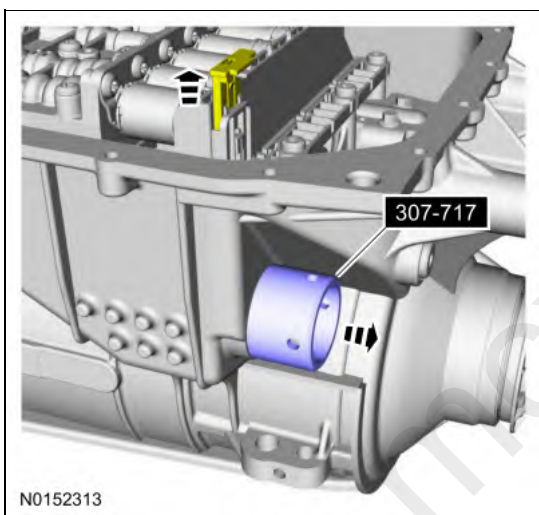
28. Remove and discard the transmission fluid filter.



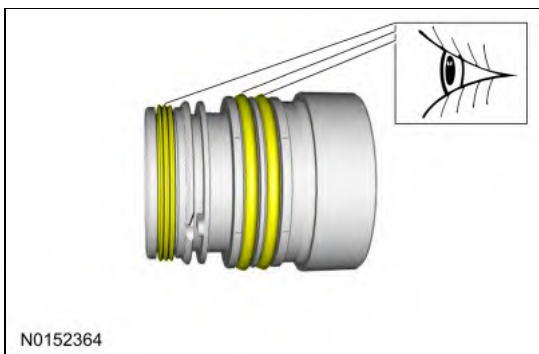
29. Press the release tab and lift up on the bulkhead electrical connector retainer to release the bulkhead electrical connector shell.



30. With the transmission bulkhead connector sleeve retainer released, use the special tool to pull the outer shell of the bulkhead connector sleeve out of the transmission.  
Use Special Service Tool: 307-717 Remover, Kostal Sleeve.



31. Inspect the bulkhead connector sleeve seals. If necessary, replace the seals.



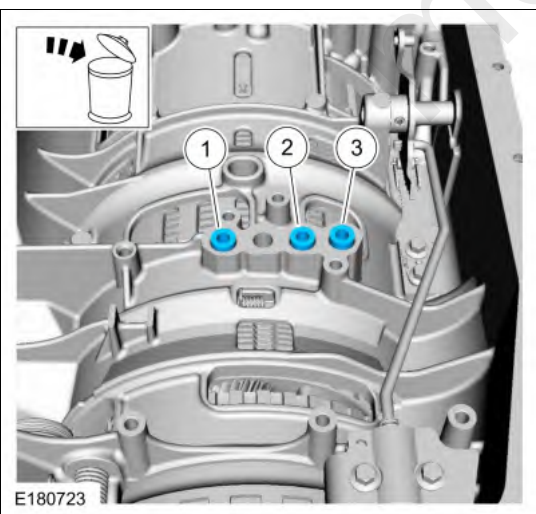
Refer to: Main Control Valve Body (307-01A Automatic Transmission, Transfer Case and Power Transfer Unit - 6-Speed Automatic Transmission â€“ 6R100, Overhaul).

N0139118

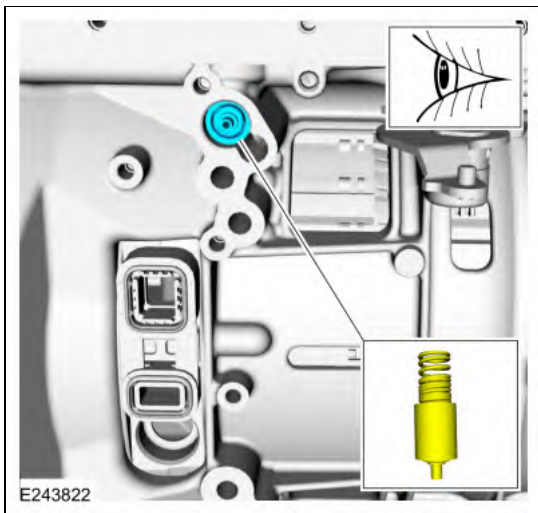
A horizontal bar chart with six bars of equal length, each a different color. The colors from top to bottom are: blue, green, brown, yellow, purple, and light blue. The bars are separated by thin white gaps.

1. Center support feed tube seal (7G199 Black)
2. Center support feed tube seal (7G087 Green or Orange)
3. Center support feed tube seal (7G084 Blue)

- Remove and discard the feed tubes.

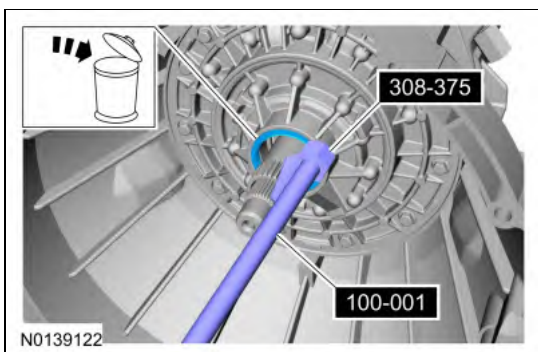


36. Remove the thermal bypass valve from the case. Inspect the thermal bypass valve for damage and discard the valve if damaged.



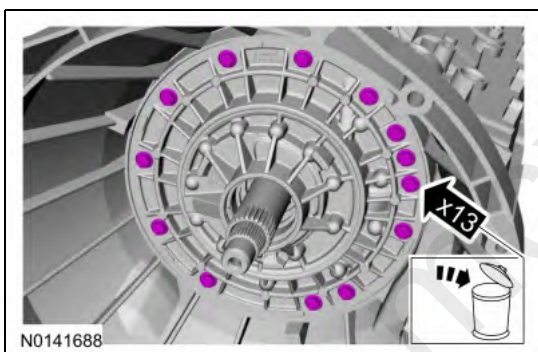
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37. Using the special tools, remove and discard the front pump seal.  
 Use Special Service Tool: 100-001 (T50T-100-A) Slide Hammer. , 308-375 Remover, Input Shaft Seal.



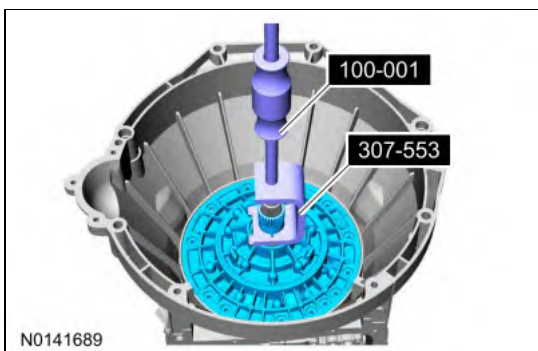
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38. Remove and discard the front pump-to-case bolts and washers.



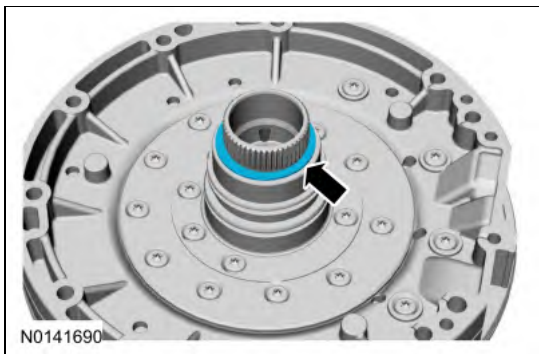
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39. Using the special tools, remove the pump.  
 Use Special Service Tool: 100-001 (T50T-100-A) Slide Hammer. , 307-553 Remover, Transmission Fluid Pump.

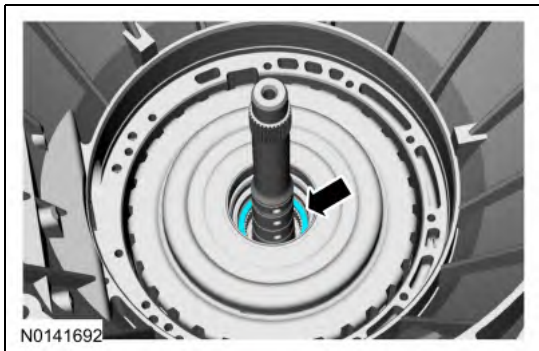


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40. **NOTE:** The selective shim may come out while removing the front pump.  
 Inspect the back of the front pump for the selective shim and remove if necessary.



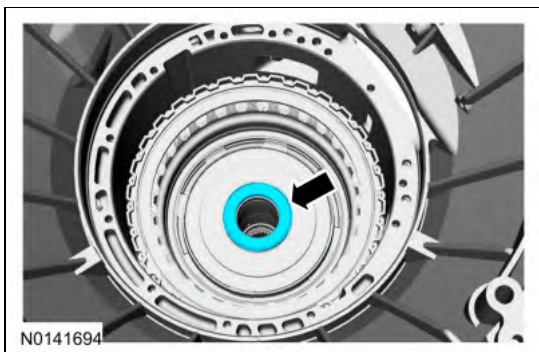
41. If the selective shim is not on the pump, using a magnet, remove it from the forward (A)/overdrive (E) clutch assembly.



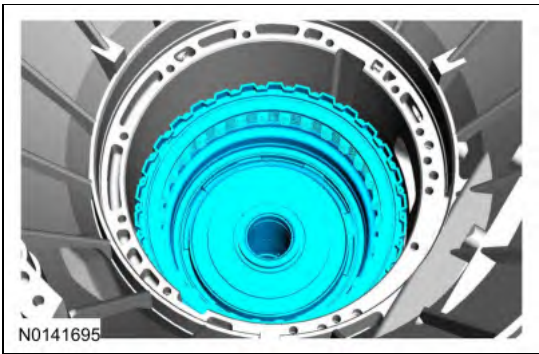
42. Remove the forward (A)/overdrive (E) clutch assembly.



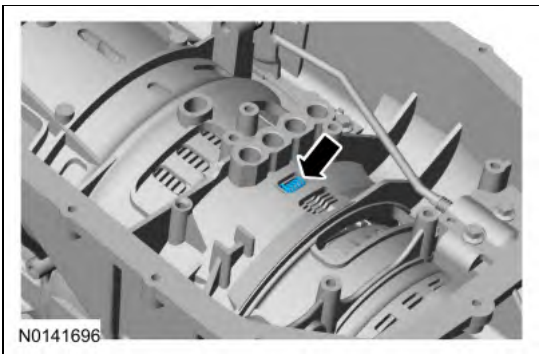
43. Remove the caged T5 roller bearing from the direct (B) clutch assembly.



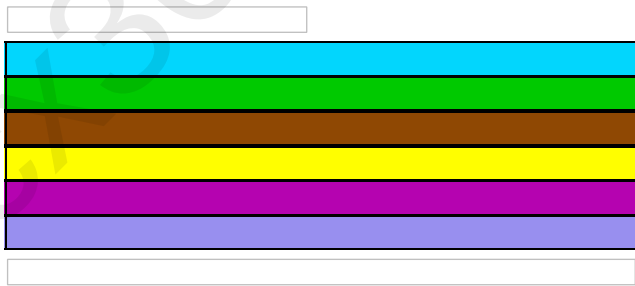
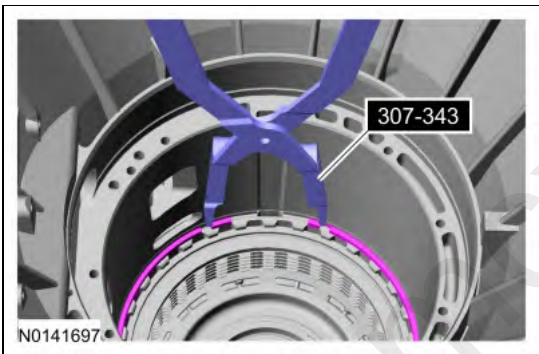
44. Remove the direct (B) clutch assembly.



45. Remove the bias spring.



46. Using the special tools, remove the center support snap ring.  
Use Special Service Tool: 307-343 Retaining Ring Pliers.



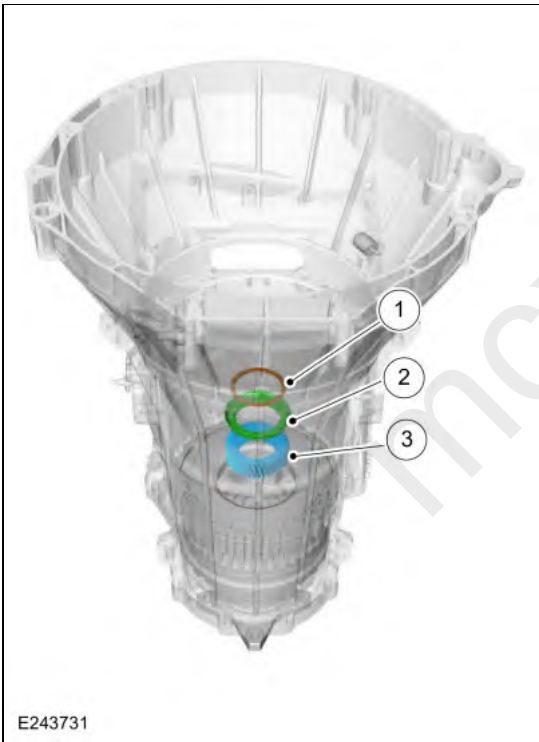
47. Remove the center support and T6 bearing.



48. **NOTE:** The selective shim might stick to the T7 thrust bearing during removal of the center support.

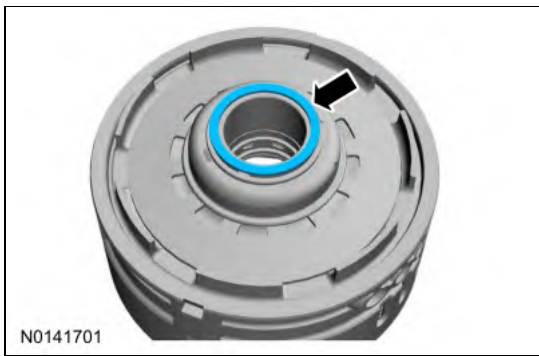
Remove the thrust gear shim, thrust bearing (T7) and sun gear No.2.

1. Thrust gear shim (select fit)
2. Thrust bearing (T7)
3. Sun gear No. 2



49. **NOTE:** The selective shim might stick to the back of the center support assembly during removal.

Remove the selective shim from the center support assembly.



50. **NOTICE:** Do not separate inner and outer races, lift the one-way clutch from the inside inner race.

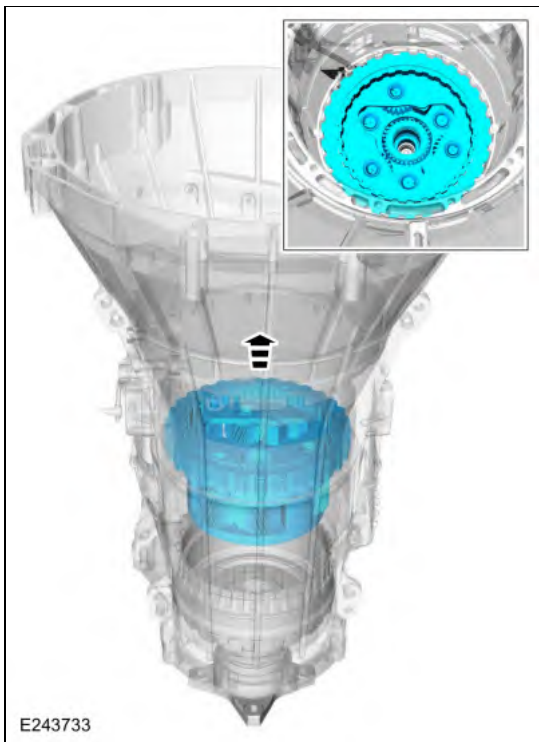
**NOTE:** When removing the one-way clutch, note the position for assembly.

Remove the one-way clutch.



51. **NOTE:** Some of the clutch plates may stay in the case when removing the planetary carrier and the low/reverse clutch pack. Remove any clutch plates from the transmission that were not removed with the carrier and keep the clutch plates together.

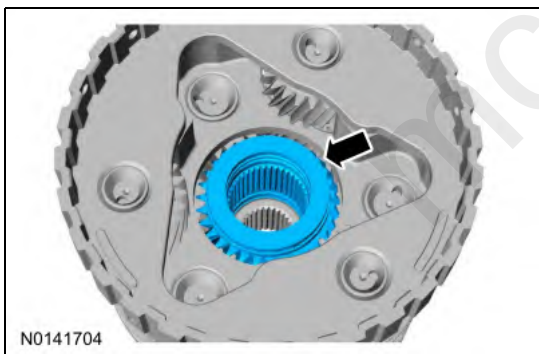
Remove the planetary carrier and the low/reverse clutch pack as an assembly. Inspect the clutch plates for excessive wear or damage. If the clutch plates are excessively worn or damaged replace as necessary. If the clutch plates are not excessively worn or damaged, they can be reused.



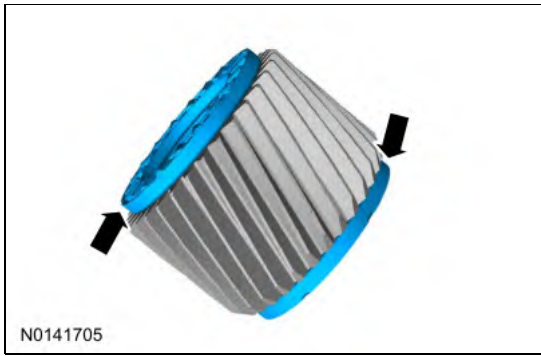
52. **NOTE:** Remove the bearings with the sun gear.

**NOTE:** When removing the sun gear, note that the tapered edge is facing up toward the torque converter housing.

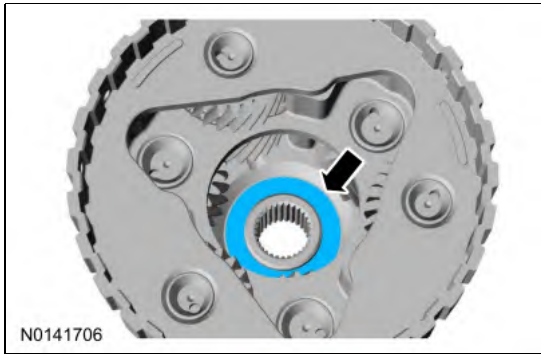
Remove the No. 3 sun gear.



53. Remove the top T8 and the bottom T9 roller bearings from the sun gear.



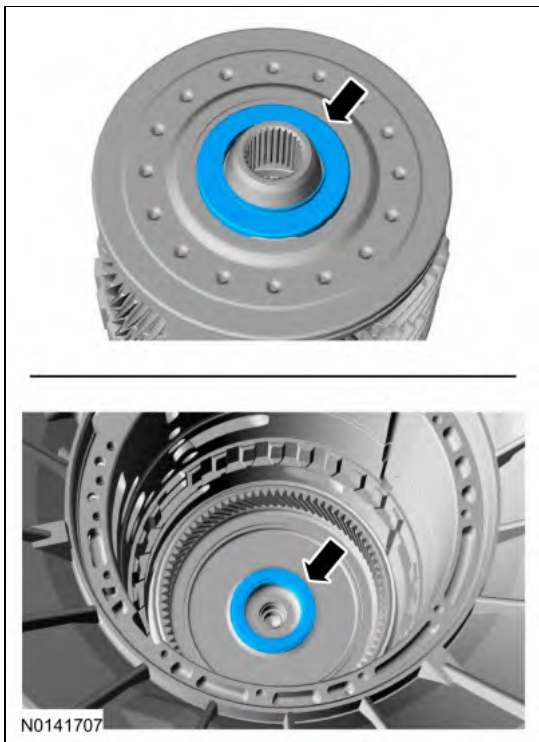
54. Remove the T9 roller bearing race from the bottom of the carrier.



55. **NOTE:** The T10 thrust bearing can stick to the planetary carrier.

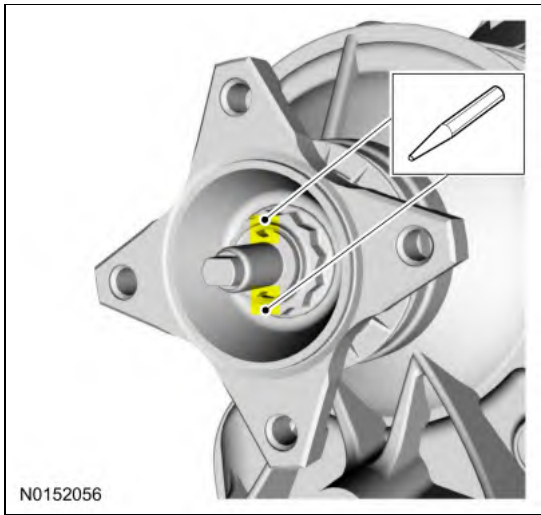
Remove the T10 thrust bearing.

mcx30.com



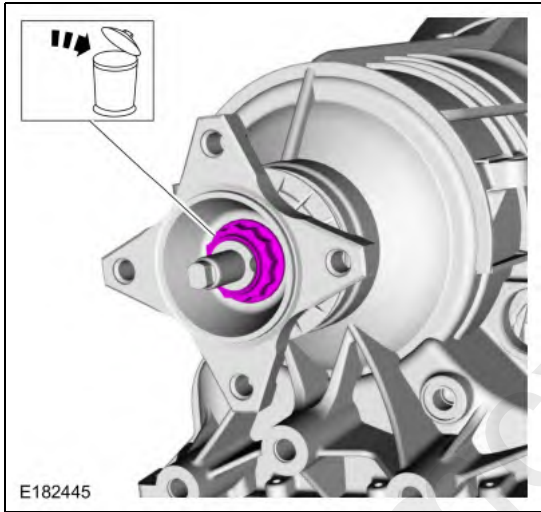
#### Rear Wheel Drive (RWD) vehicles

56. Remove the stakes from the output shaft flange retaining nut.  
Use the General Equipment: Punch

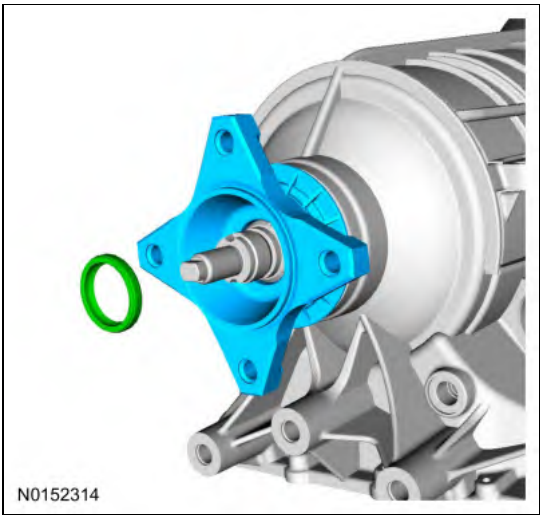


57. **NOTICE:** The output shaft flange retaining nut has been staked to prevent it from coming loose. Prior to removing the nut, remove the stake to prevent damage to the output shaft.

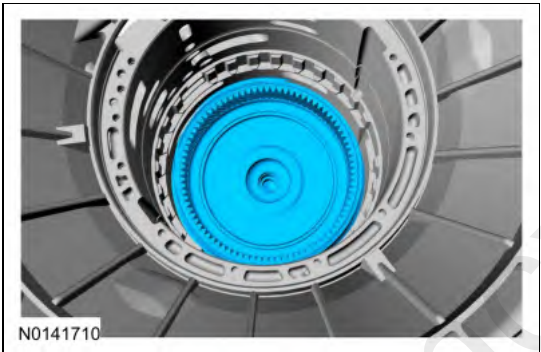
Place the manual control lever in the PARK position and remove and discard the output shaft flange retaining nut.



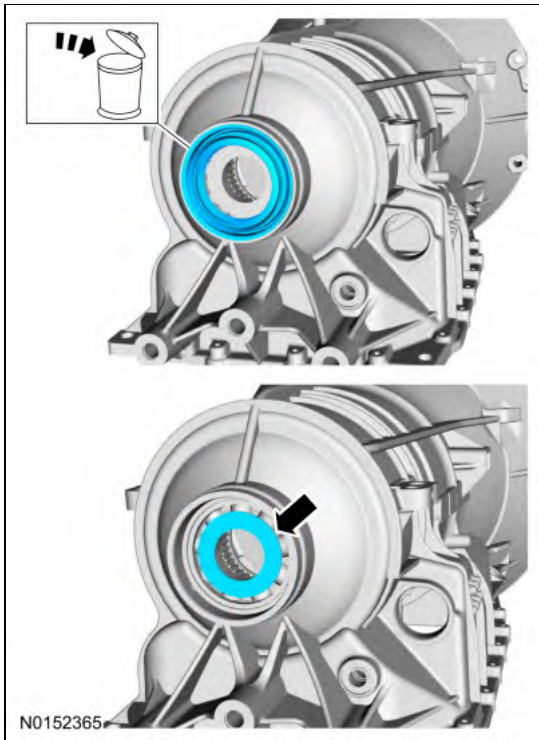
58. Remove the output shaft flange seal and flange.



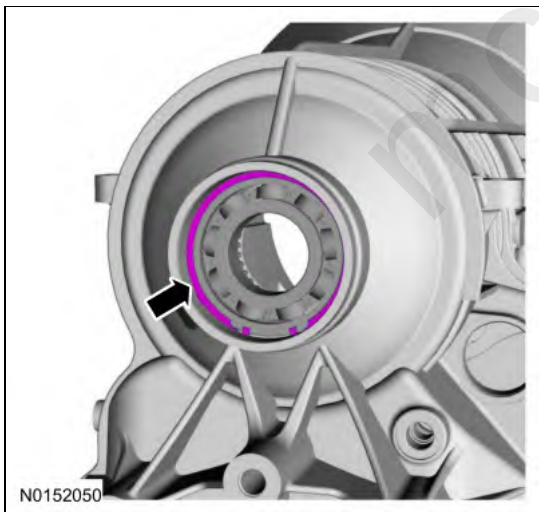
59. Remove the planetary carrier hub, output shaft assembly and T11 bearing.



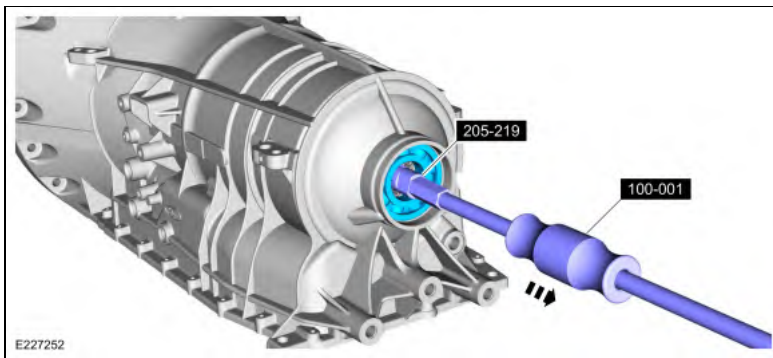
60. Remove and discard the output shaft seal and remove the slip plane washer.



61. Remove the output shaft ball bearing snap ring.

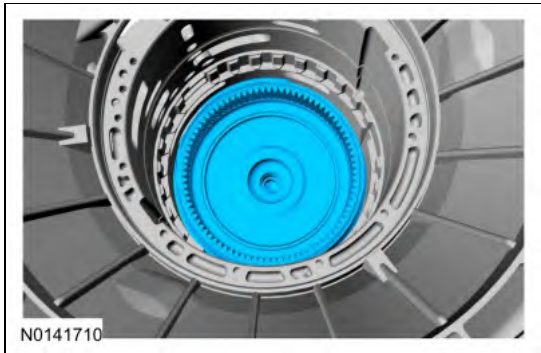


62. Using the special tools, remove the output shaft ball bearing.  
Use Special Service Tool: 100-001 (T50T-100-A) Slide Hammer, 205-219 (T85L-1225-AH) Remover, Axle Bearing.

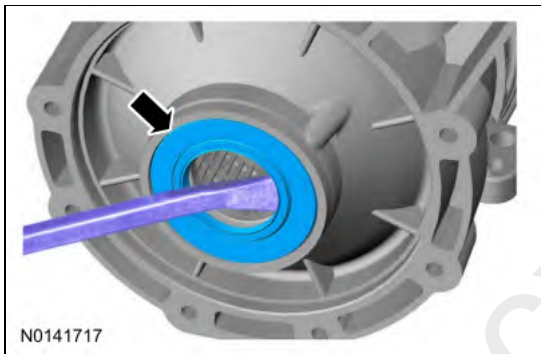


**Four-Wheel Drive (4WD) vehicles**

63. Remove the planetary carrier hub, output shaft assembly and T11 bearing.

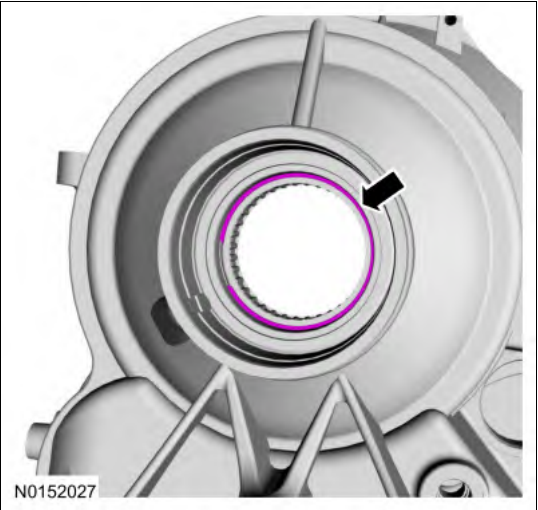


64. Remove and discard the output shaft seal .



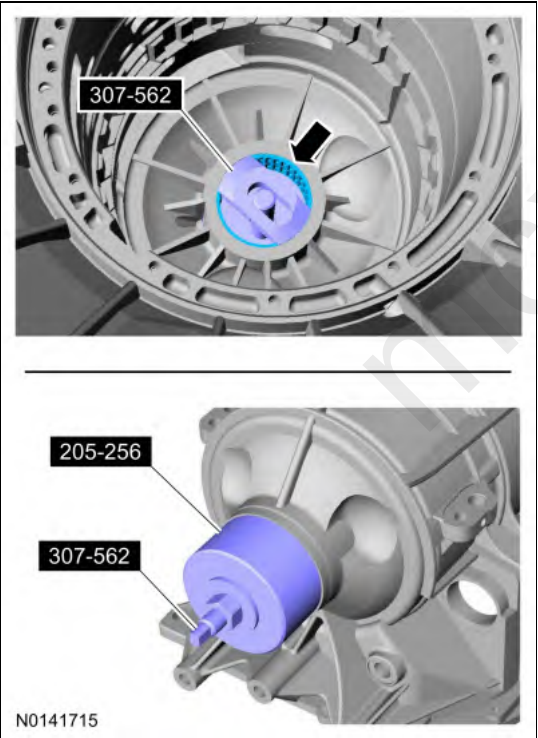
**All vehicles**

65. Remove the snap ring.



66. **NOTICE:** Use care when installing the Needle Bearing Remover. Look inside the transmission case to make sure that the Needle Bearing Remover contacts the bearing only and not the lip of the case, or damage to the case will occur.

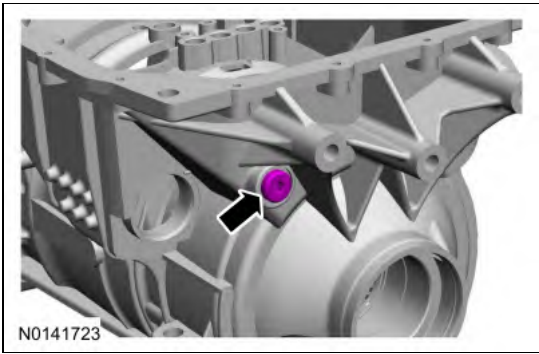
Install the special tools on the bearing and remove the bearing.  
Use Special Service Tool: 205-256 Installer, Front Wheel Hub Seal. , 307-562 Remover, Needle Bearing.



67. Disconnect the park pawl return spring. Remove and discard the park rod actuating plate bolts and remove the park rod actuating plate.

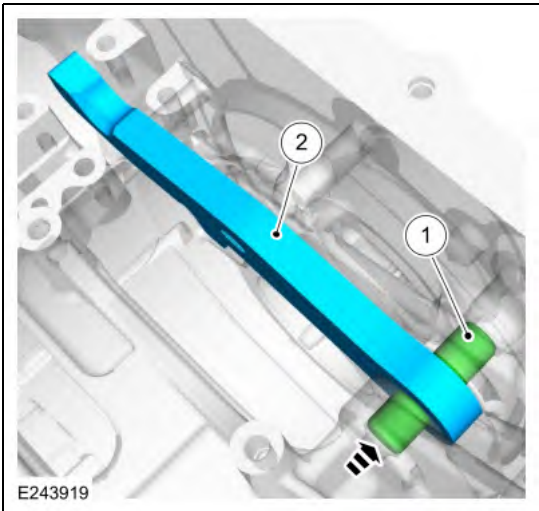


70. Remove the bolt from the back of the case to access to the park pawl pin.



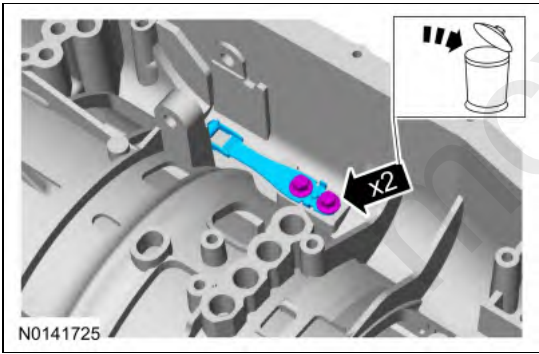
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- 71.
1. Push the park pawl pin out toward the back side of the case and remove the pin.
  2. Remove the park pawl.



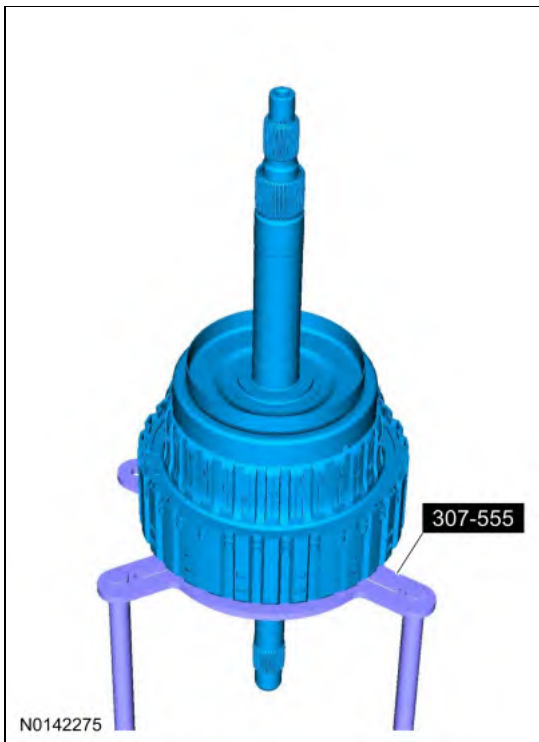
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72. Remove and discard the bolts and remove the park detent spring.



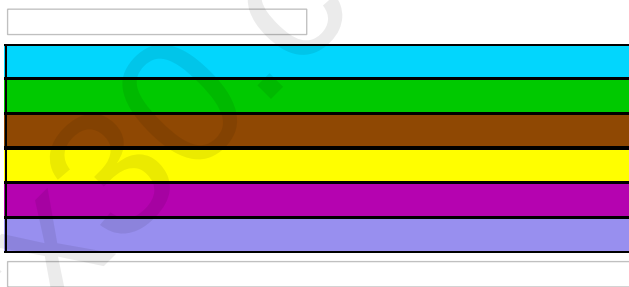
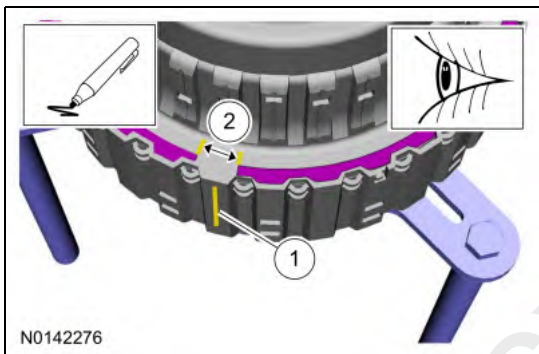
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73. Position the forward/overdrive clutch assembly in the special tool.  
Use Special Service Tool: 307-555 End Play Gauge, Clutch.



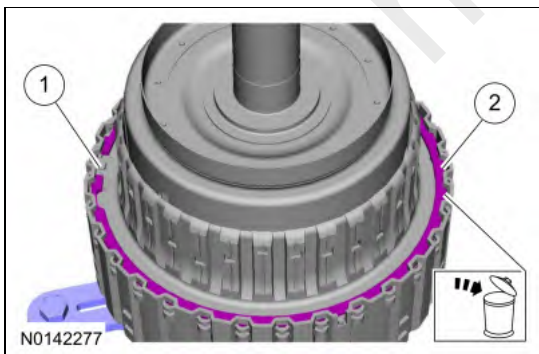
74.

1. Locate the snap ring gap.
2. Index-mark the direct clutch outer shell snap ring gap location to the side of the forward clutch hub using a paint marker.

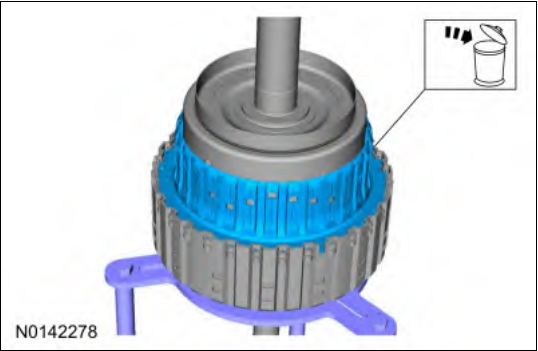


75.

1. Locate the snap ring gap.
2. Pry the snap ring out of the groove 180° from the snap ring gap and remove and discard the snap ring .

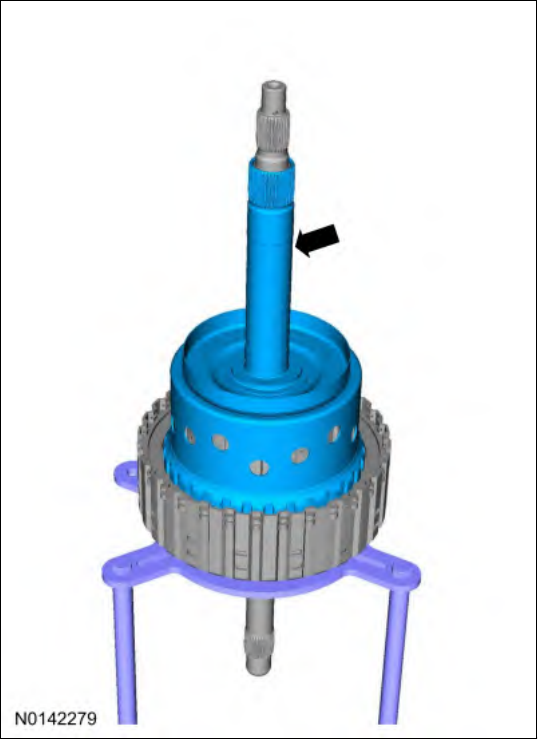


76. Remove and discard the direct clutch hub .



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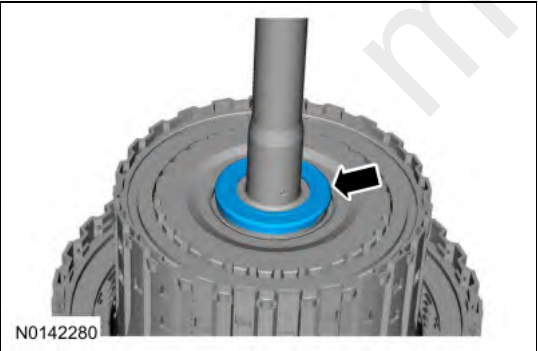
77. Remove the forward clutch and sun shaft assembly.



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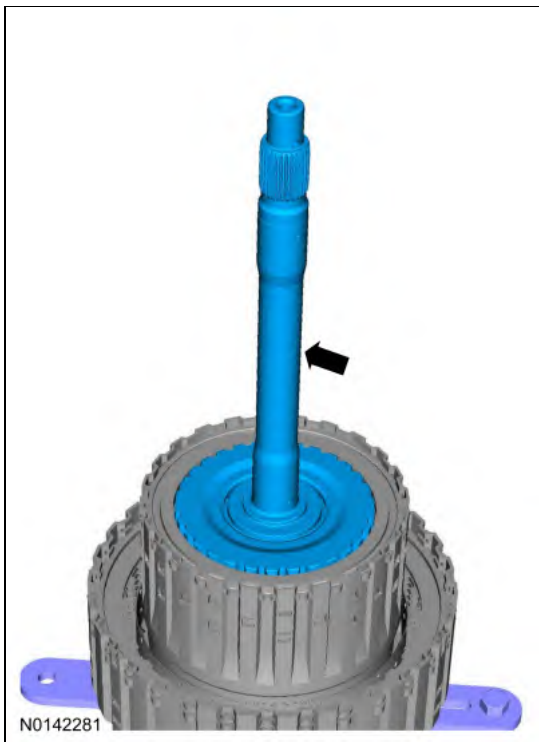
78. **NOTE:** The bearing may stick in the forward clutch drum.

Remove the intermediate shaft T4 thrust bearing.

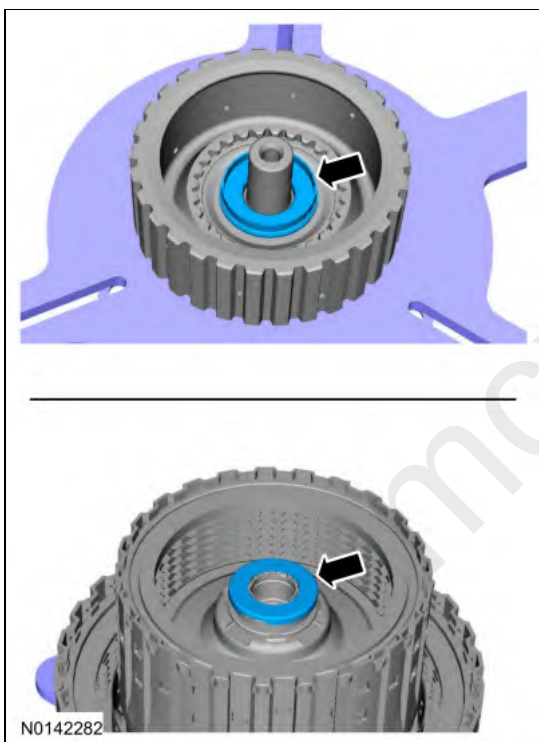


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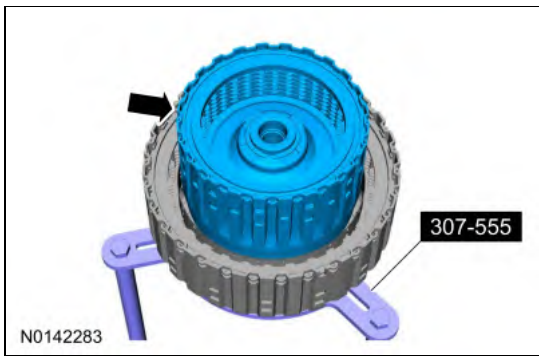
79. Remove the intermediate shaft assembly.



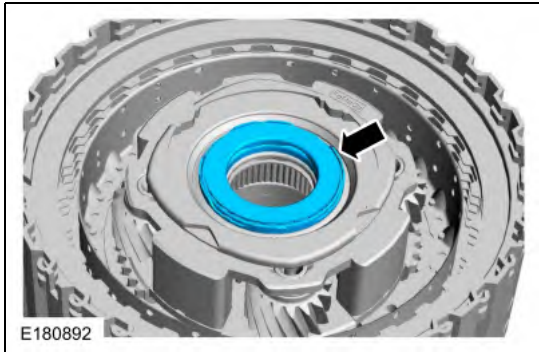
80. If the T3 thrust bearing stuck to the intermediate shaft assembly, remove it from the intermediate shaft assembly. If the T3 thrust bearing is on the overdrive clutch, remove it from the overdrive clutch assembly.



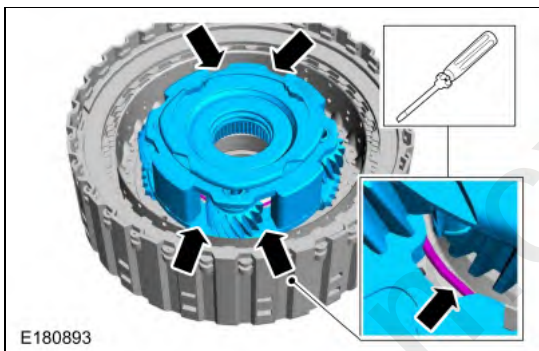
81. Remove the overdrive clutch pack from the forward clutch pack.



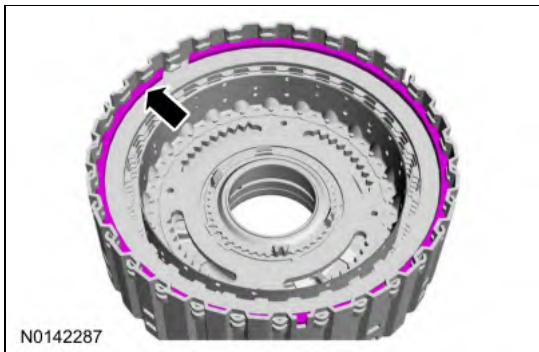
82. If the T2 thrust bearing is on the forward clutch assembly, remove it from the forward clutch assembly.



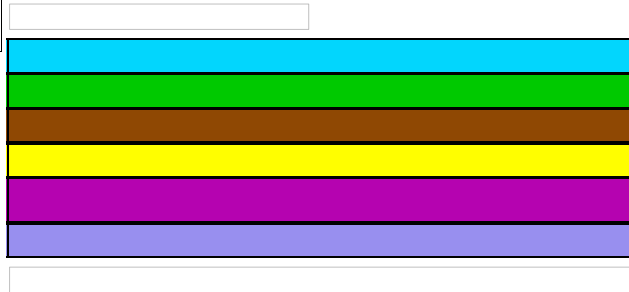
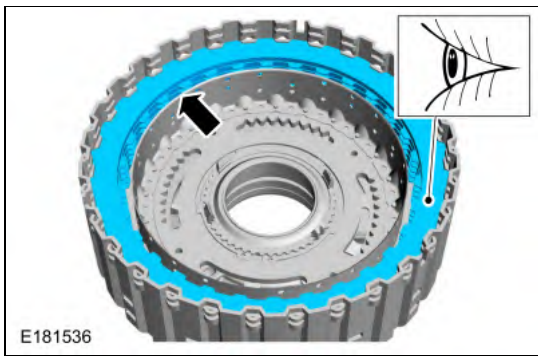
83. Remove the front planetary carrier and sun gear from the forward clutch assembly. Use a small screwdriver or a pick inserted into the front planetary assembly, push on the retaining ring in 4 places while lifting up on the front planetary assembly. Use the General Equipment: Flat Headed Screw Driver



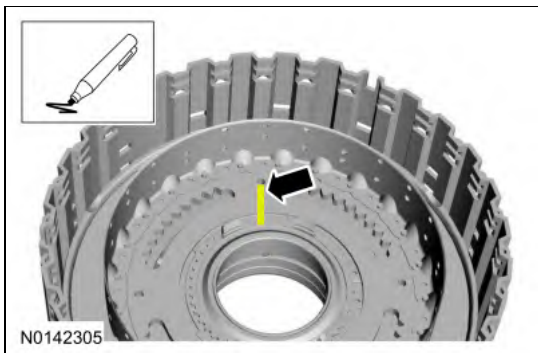
84. Remove the forward clutch pack snap ring.



85. Remove the forward clutch steel and friction plates. Inspect the clutch plates for excessive wear or damage. If the clutch plates are excessively worn or damaged replace as necessary. If the clutch plates are not excessively worn or damaged, they can be reused.

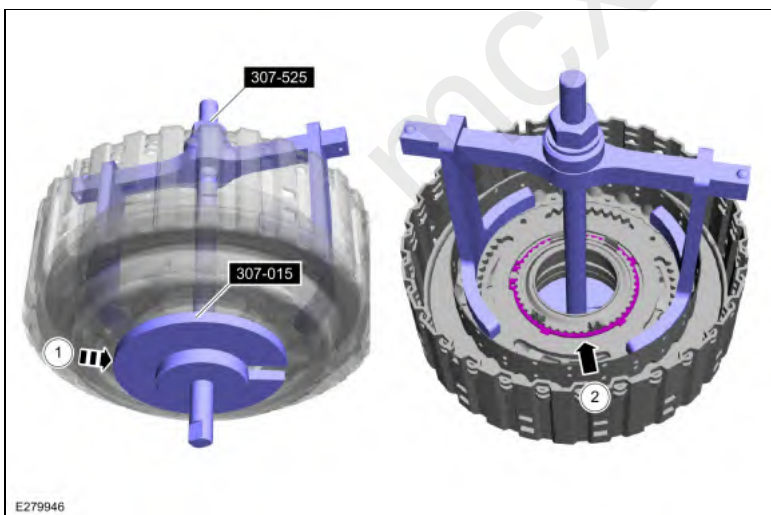


86. For correct alignment during assembly, make an identifying mark on the balance dam and the center part of the housing.

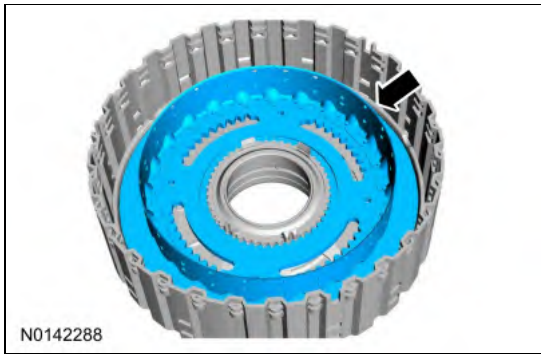


87.

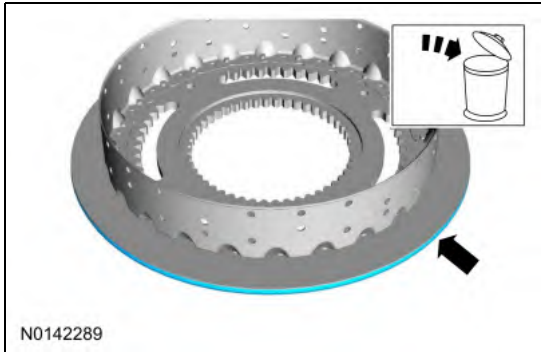
1. Assemble the special tools on the forward clutch cylinder.  
Use Special Service Tool: 307-525 Compressor, Clutch Spring , 307-015 Compressor, Clutch Spring.
2. Using the special tool, slightly collapse the balance dam to access to the retaining ring and remove the retaining ring.



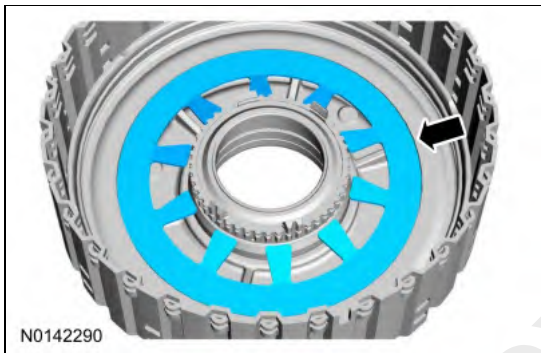
88. Remove the balance dam.



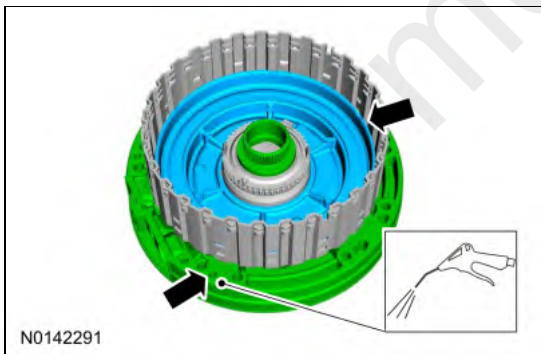
89. Remove and discard the O-ring seal from the balance dam.



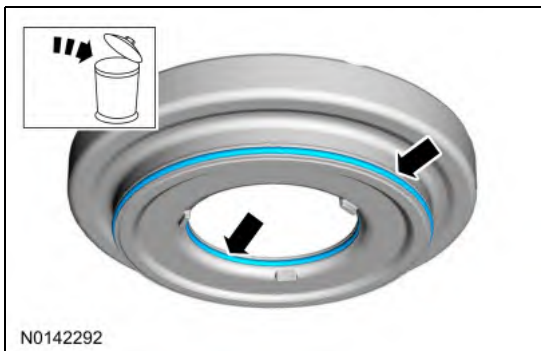
90. Remove the forward clutch return spring.



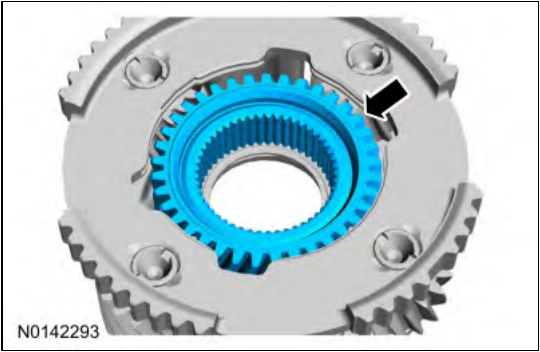
91. Install the forward clutch on the front pump to remove the forward clutch piston. Apply a small amount of shop air to remove the piston.



92. Remove and discard the inner and outer piston O-ring seals .

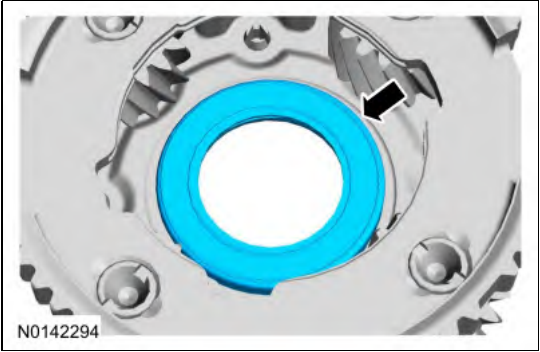


93. Remove the sun gear from the planetary carrier.

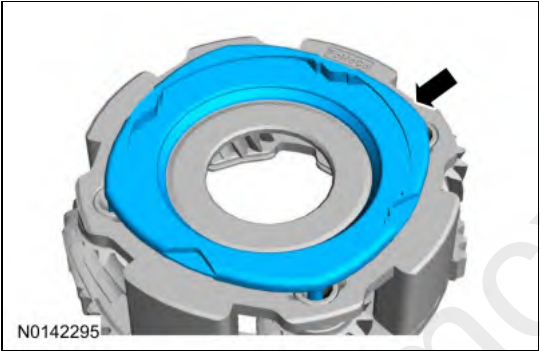


94. **NOTE:** The T1 thrust bearing may have stuck to the sun gear when it was removed.

Remove the T1 bearing from the planetary carrier.



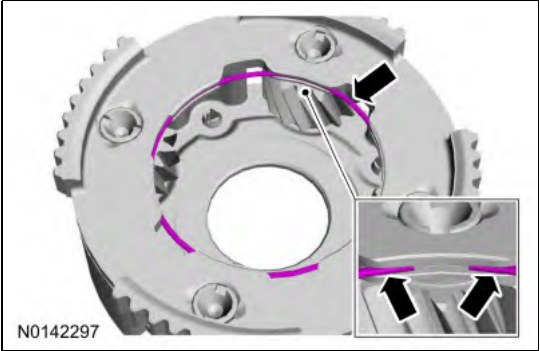
95. Remove the transmission fluid collector plate from the front planetary carrier.



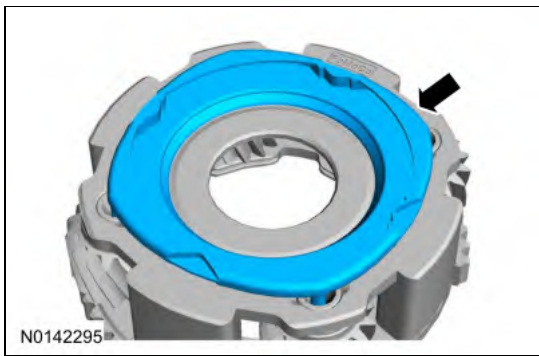
96. Clean and inspect the components of the forward clutch assembly for damage and install new components as necessary.

97. **NOTE:** If a new planetary assembly is being installed, the new planetary assembly may not come with the snap ring installed.

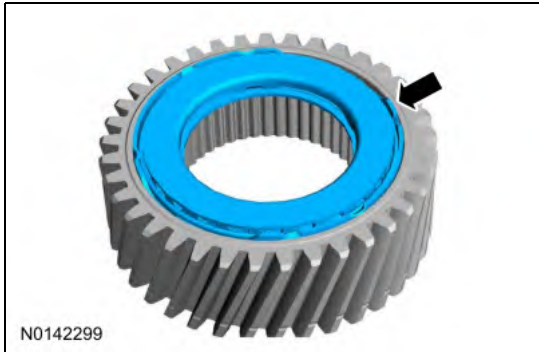
Install the planetary assembly snap ring, if necessary. Make sure the planetary snap ring is oriented correctly.



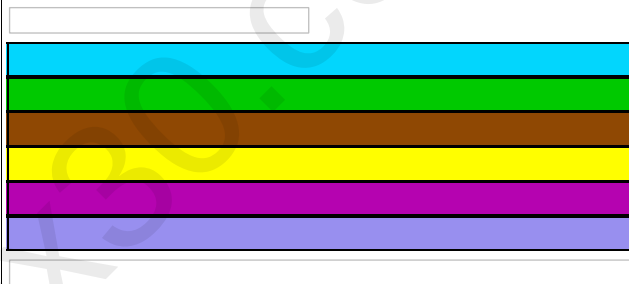
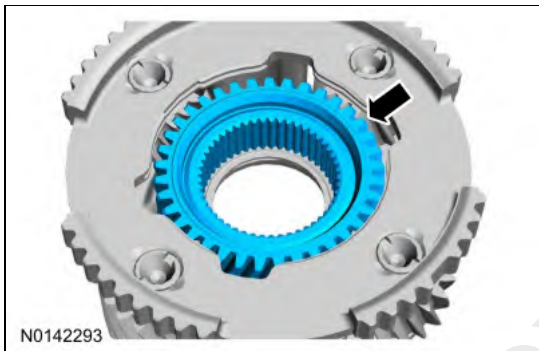
98. Install the transmission fluid collector plate on the front planetary carrier.



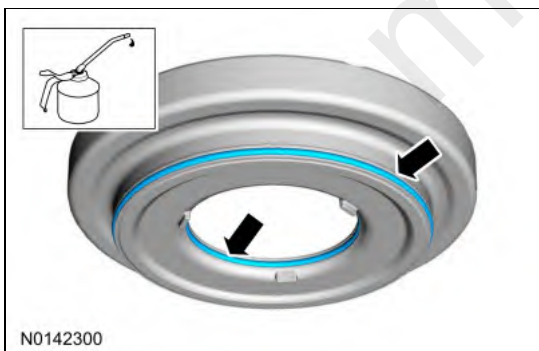
99. Install the T1 bearing onto the sun gear.



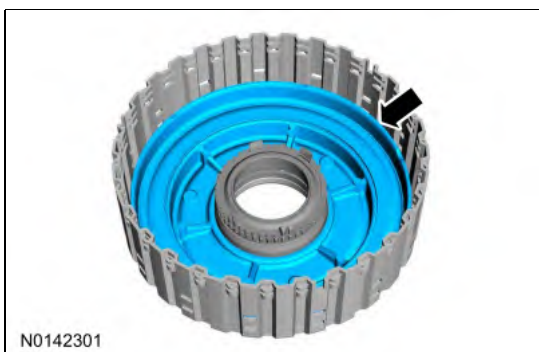
100. Install the sun gear into the planet assembly with the T1 bearing facing down and the recessed part of the gear up.



101. Install new O-ring seals onto the forward clutch piston. Lightly coat the O-ring seal with clean transmission fluid.  
*Material: Motorcraft® MERCON® LV Automatic Transmission Fluid / XT-10-QLVC (WSS-M2C938-A) (MERCON® LV, )*



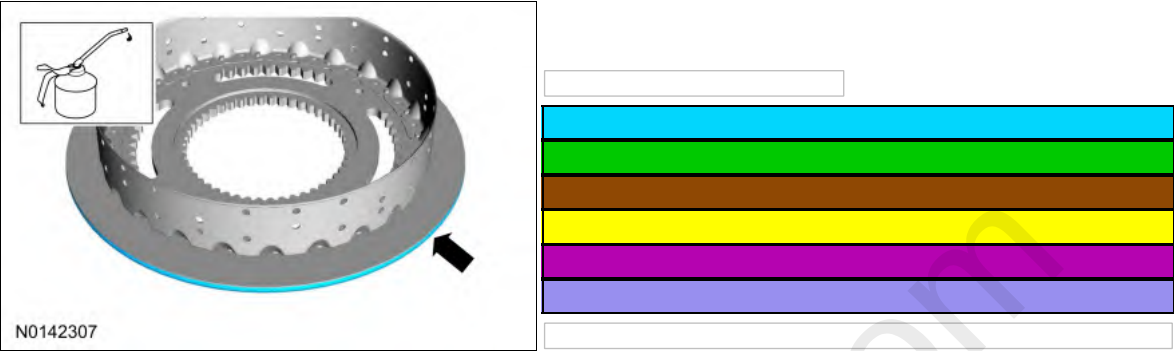
102. Install the forward clutch piston into the forward clutch drum.



103. Install the forward clutch return spring.



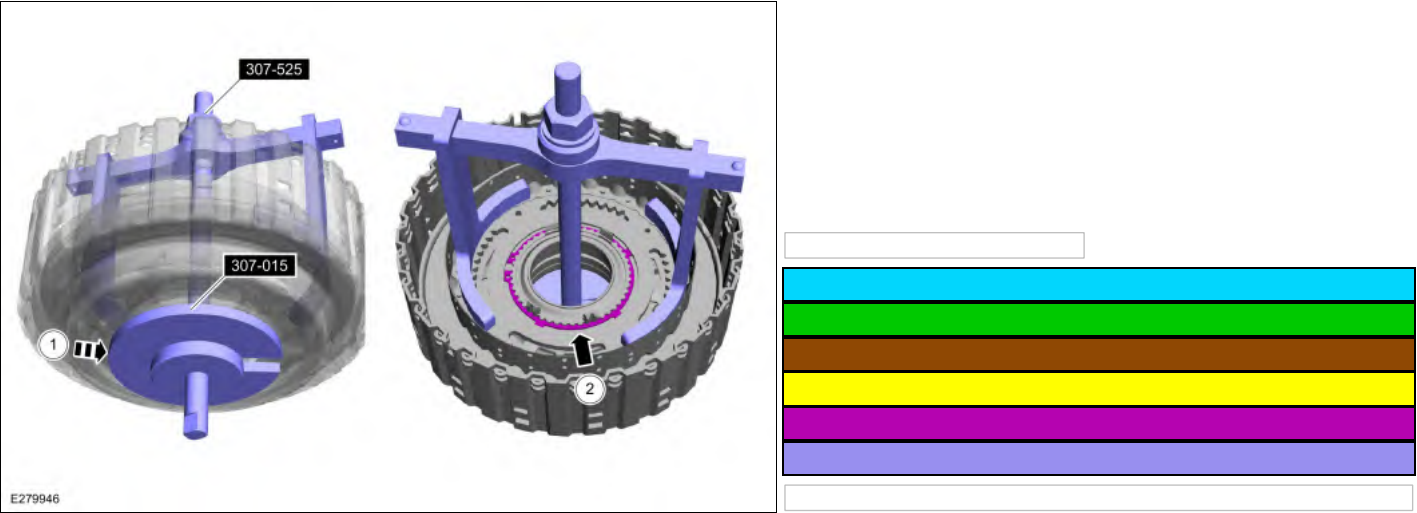
104. Install a new O-ring seal onto the forward clutch balance dam. Lightly coat the O-ring seal with clean transmission fluid.  
Material: Motorcraft® MERCON® LV Automatic Transmission Fluid / XT-10-QLVC (WSS-M2C938-A) (MERCON® LV, )



105. Align the marks made during disassembly and install the balance dam into the forward clutch drum.

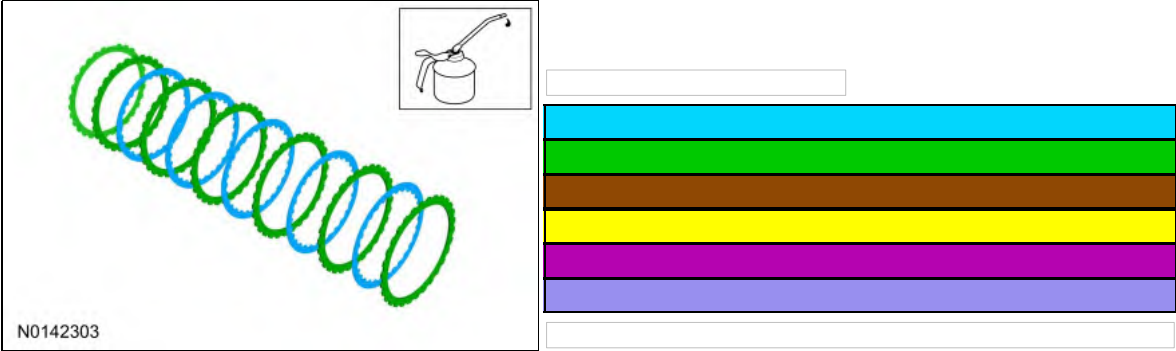


- 106.
1. Assemble the special tools on the forward clutch cylinder.  
Use Special Service Tool: 307-525 Compressor, Clutch Spring , 307-015 Compressor, Clutch Spring.
  2. **NOTE:** Prior to releasing the special tool, make sure that the snap ring is fully seated.  
Using the special tool, slightly collapse the balance dam and install the retaining ring.

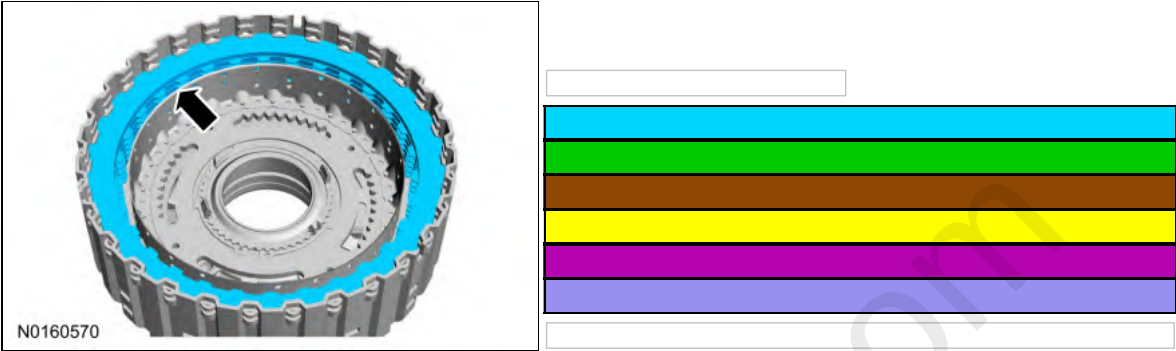


107. **NOTE:** Friction and steel plate quantity will vary based on engine displacement.

Soak the forward clutch plates in clean transmission fluid. For friction and steel plate quantity, refer to the Clutch Plate Quantity Chart.  
Refer to: Specifications (307-01A Automatic Transmission, Transfer Case and Power Transfer Unit - 6-Speed Automatic Transmission 6R100, Specifications).  
Material: Motorcraft® MERCON® LV Automatic Transmission Fluid / XT-10-QLVC (WSS-M2C938-A) (MERCON® LV, )



108. Install the forward clutch plates, starting with the wave spring then a steel plate and alternating between friction and steel plates.

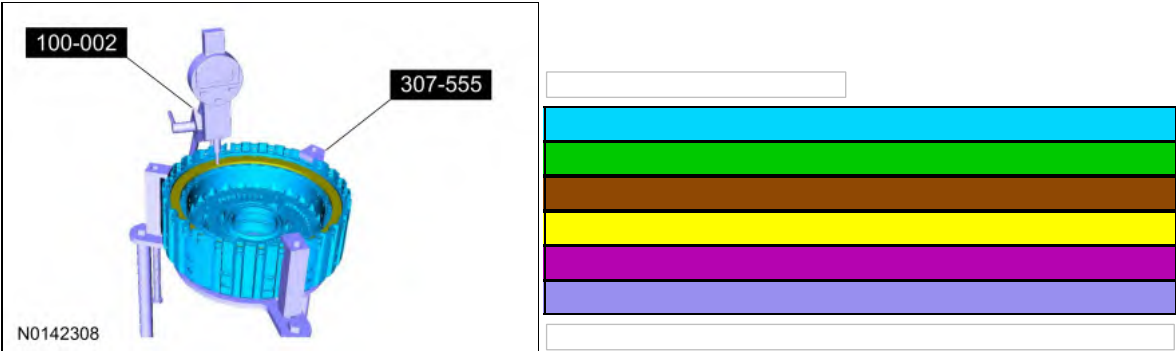


109. Install the forward clutch plate snap ring.

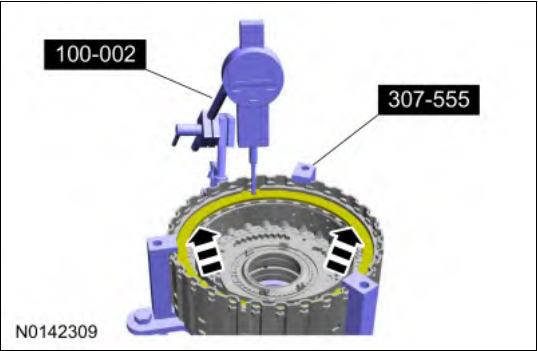


110. **NOTE:** All forward clutch plates, friction and steel are of a wave-type design.

Install the forward clutch assembly on the Clutch End Play Gauge and install the dial indicator gauge. Position the plunger so it fits into the snap ring gap.  
Use Special Service Tool: 100-002 (TOOL-4201-C) Holding Fixture with Dial Indicator Gauge. , 307-555 End Play Gauge, Clutch.



111. With the dial indicator gauge set at zero, lift up on the steel pressure plate so it is against the select fit snap ring. Record this reading as reading A.  
Use Special Service Tool: 100-002 (TOOL-4201-C) Holding Fixture with Dial Indicator Gauge. , 307-555 End Play Gauge, Clutch.



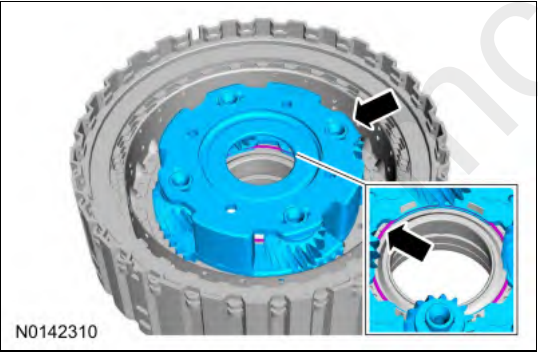
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112. Rotate the forward clutch assembly 180 degrees from the opening of the snap ring, take a second reading and record this reading as reading B.

| Description                                       | Reading |
|---------------------------------------------------|---------|
| Reading A                                         |         |
| Reading B                                         |         |
| Average reading A and B for a total end clearance |         |

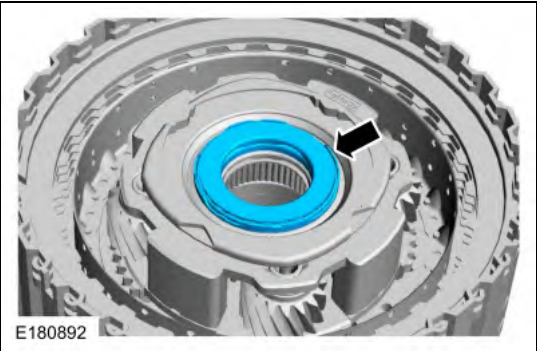
113. **NOTE:** If the end clearance is not within specification, install a new snap ring until the correct specification is achieved.
- 0.71-1.10 mm (0.028-0.043 in)
  - If the free pack end clearance between the bottom of the snap ring and the top of the pressure plate is high, re-measure using a thicker select fit snap ring. If the free pack end clearance between the bottom of the snap ring and the top of the pressure plate is low, re-measure using a thinner select fit snap ring.

114. Install the sun gear and planetary gearset into the forward clutch drum. Make sure it snaps and locks in place.



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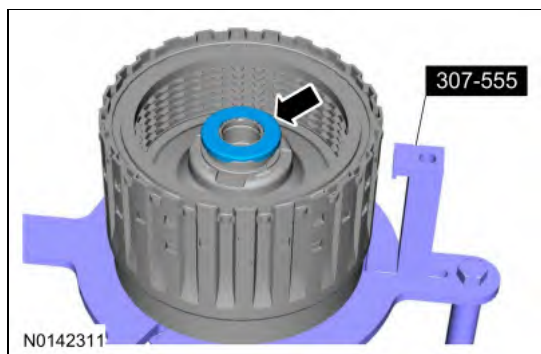
115. Install the T2 thrust bearing.



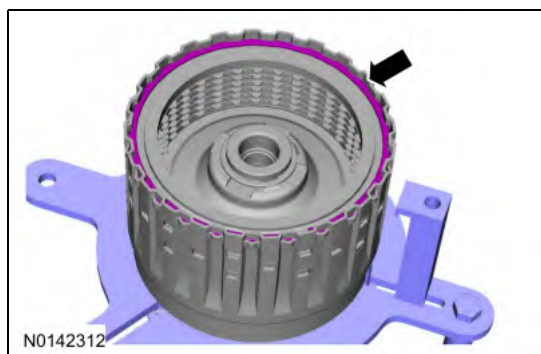
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116. Position the overdrive clutch assembly into the special tool and remove the T3 thrust bearing.

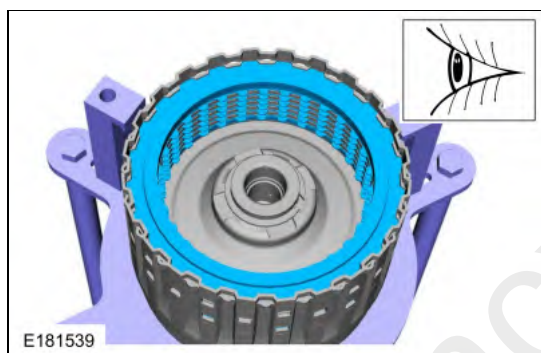
Use Special Service Tool: 307-555 End Play Gauge, Clutch.



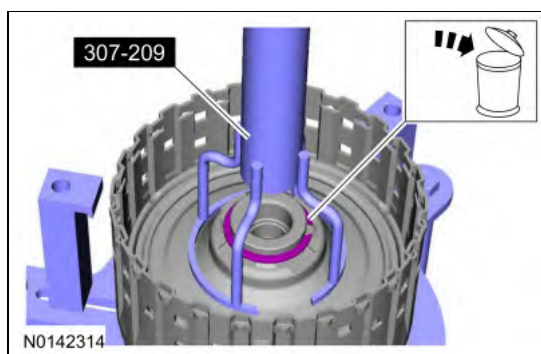
117. Remove the overdrive clutch pack snap ring.



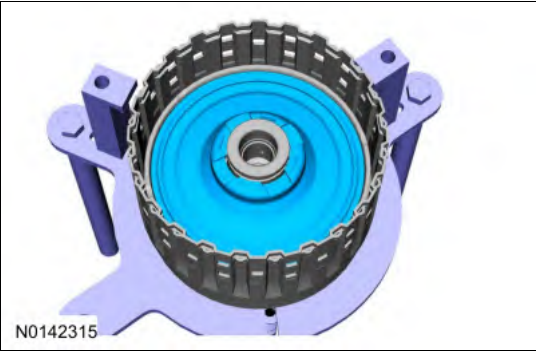
118. Remove the overdrive clutch pack. Inspect the clutch plates for excessive wear or damage. If the clutch plates are excessively worn or damaged replace as necessary. If the clutch plates are not excessively worn or damaged, they can be reused.



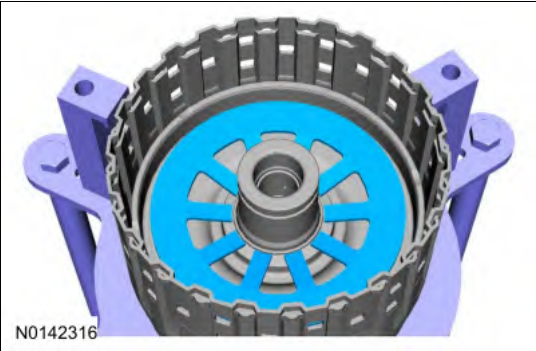
119. Using the special tool and a press, remove and discard the overdrive clutch balance piston retaining ring. Use Special Service Tool: 307-209 Compressor, Spring Washer.



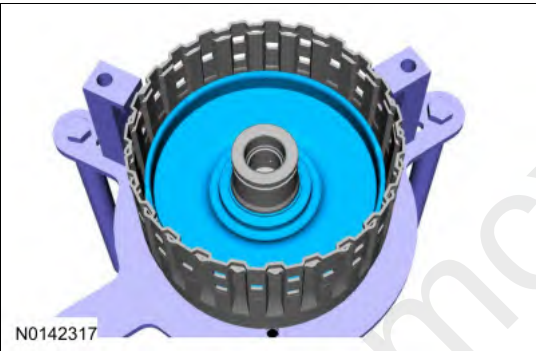
120. Remove the overdrive clutch balance piston.



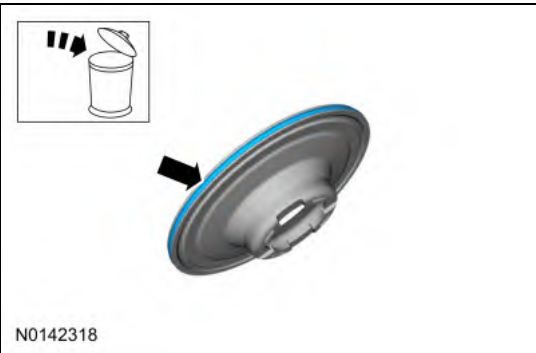
121. Remove the overdrive clutch return spring.



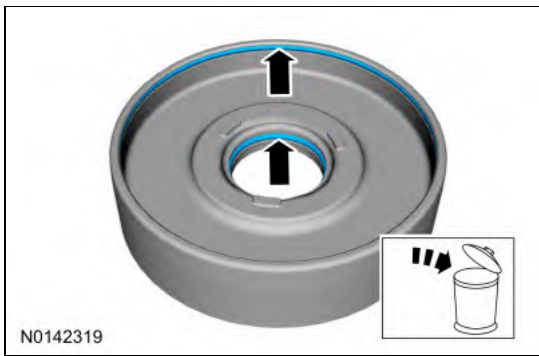
122. Remove the overdrive clutch apply piston.



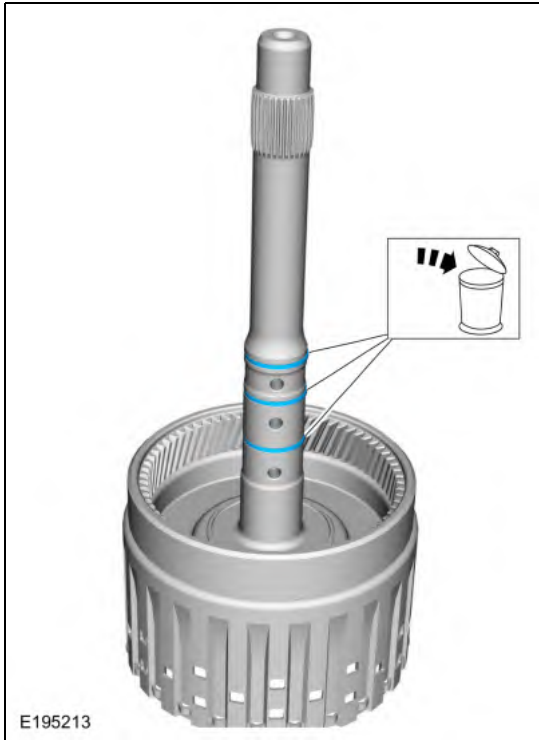
123. Remove and discard the overdrive clutch balance piston O-ring seal .



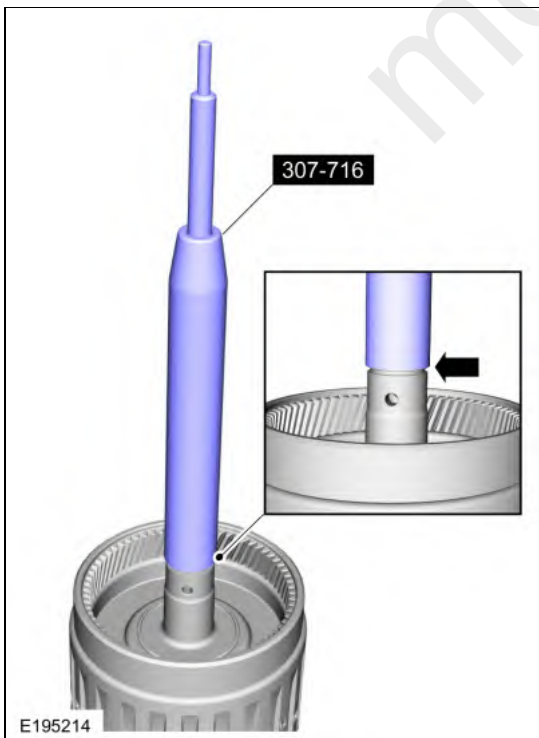
124. Remove and discard the O-ring seals from the clutch apply piston.



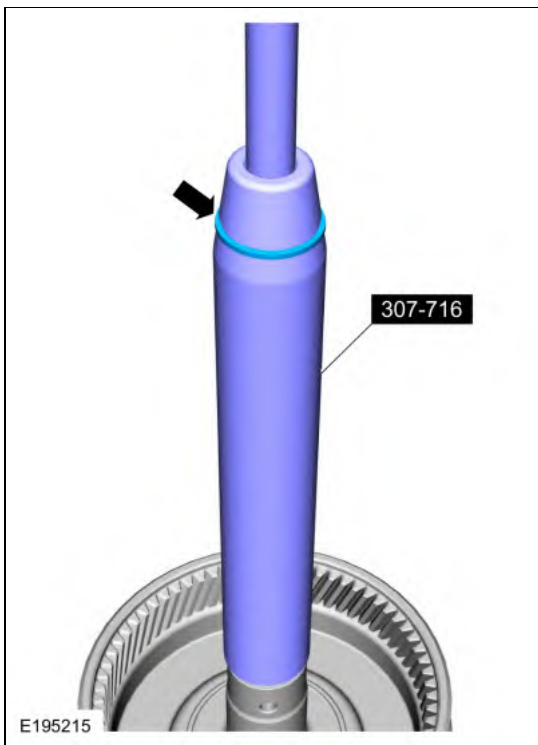
125. Remove and discard the Teflon® seals .



126. Install the special tool and adjust the special tool to align the bottom edge of the tool with the top edge of the bottom Teflon® seal groove.  
Use Special Service Tool: 307-716 Installer, Teflon Seal.



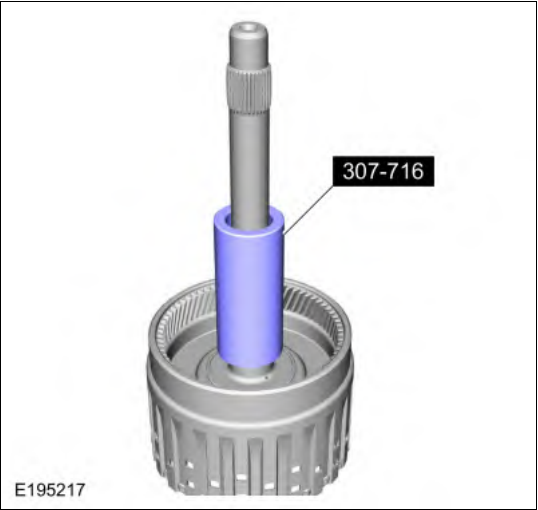
127. Install a new Teflon® seal on the special tool.  
Use Special Service Tool: 307-716 Installer, Teflon Seal.



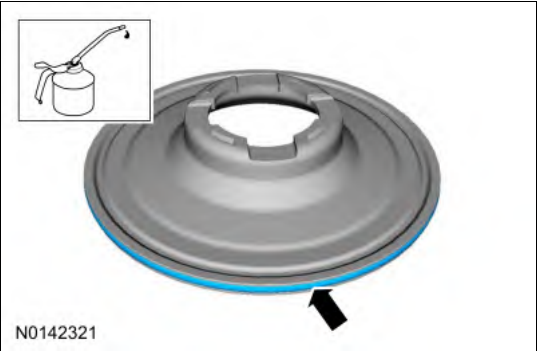
128. Using the top half of the special tool, slide the Teflon® seal into the groove. Remove the special tools and repeat the steps for the other 2 Teflon® seals.  
Use Special Service Tool: 307-716 Installer, Teflon Seal.



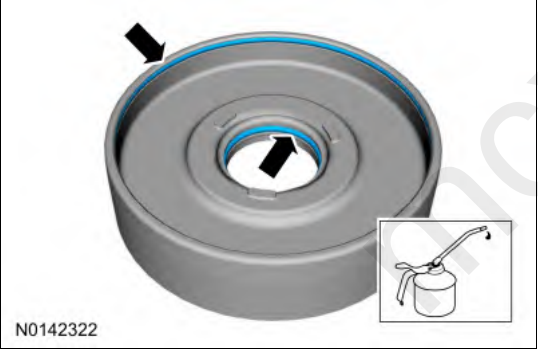
129. Install the special tool to size the 3 Teflon® seals.  
Use Special Service Tool: 307-716 Installer, Teflon Seal.



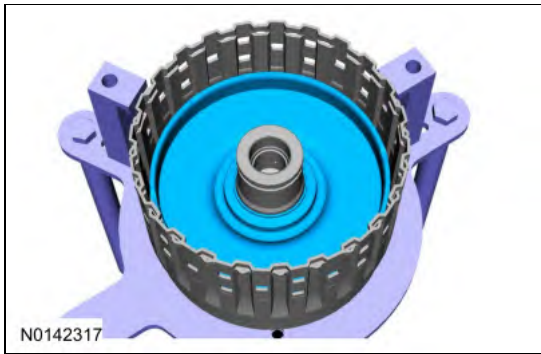
130. Install a new outer O-ring seal on the overdrive clutch balance piston. Lightly coat the O-ring seal with clean transmission fluid.  
*Material:* Motorcraft® MERCON® LV Automatic Transmission Fluid / XT-10-QLVC (WSS-M2C938-A) (MERCON® LV, )



131. Install a new outer O-ring seal on the overdrive clutch balance piston. Lightly coat the O-ring seals with clean transmission fluid.  
*Material:* Motorcraft® MERCON® LV Automatic Transmission Fluid / XT-10-QLVC (WSS-M2C938-A) (MERCON® LV, )

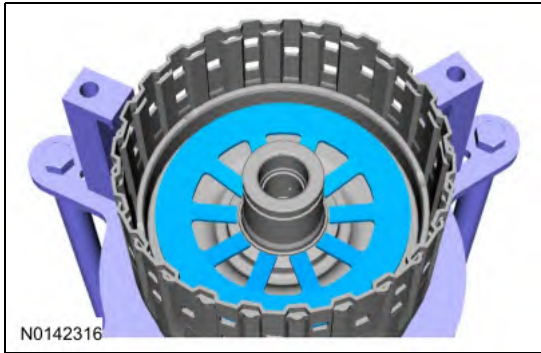


132. Install the overdrive clutch apply piston into the drum with the O-ring seals and the 3 pads facing down.



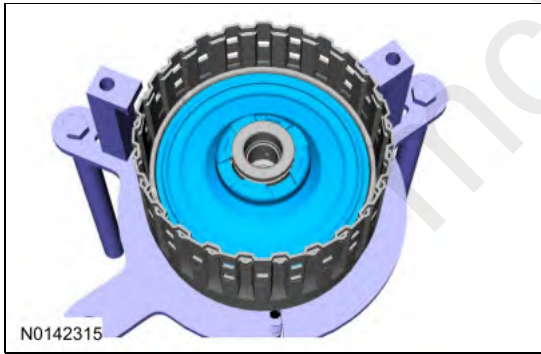
133. **NOTE:** *The fingers on the return spring are facing down toward the piston.*

Install the overdrive clutch return spring.

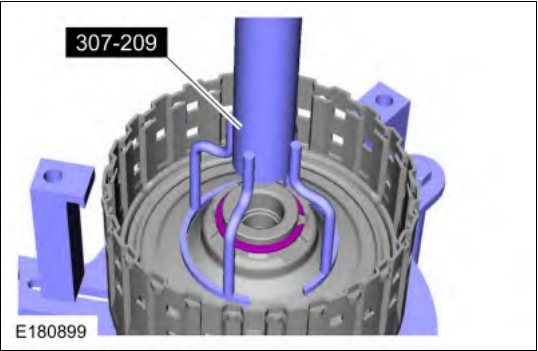


134. **NOTE:** *The cone shape of the balance piston must face up when installed correctly.*

Install the overdrive clutch balance piston.



135. Using the special tool and a press, install the balance piston retaining ring.  
Use Special Service Tool: 307-209 Compressor, Spring Washer.

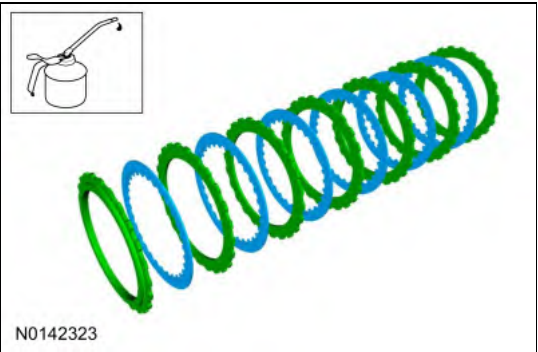


136. **NOTE:** Friction and steel plate quantity will vary based on engine displacement.

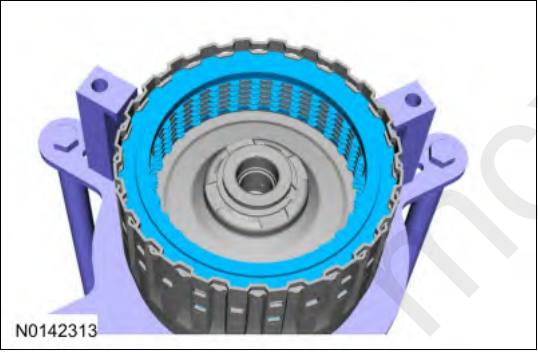
Soak the overdrive clutch in clean transmission fluid. For friction and steel plate quantity, refer to the Clutch Plate Quantity Chart.

Refer to: Specifications (307-01A Automatic Transmission, Transfer Case and Power Transfer Unit - 6-Speed Automatic Transmission 6R100, Specifications).

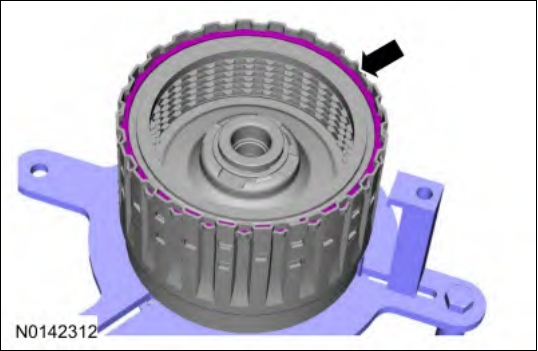
Material: Motorcraft® MERCON® LV Automatic Transmission Fluid / XT-10-QLVC (WSS-M2C938-A) (MERCON® LV, )



137. Install the overdrive clutch plates, starting with a steel plate and alternating between friction and steel plates and ending with the pressure plate on the top.

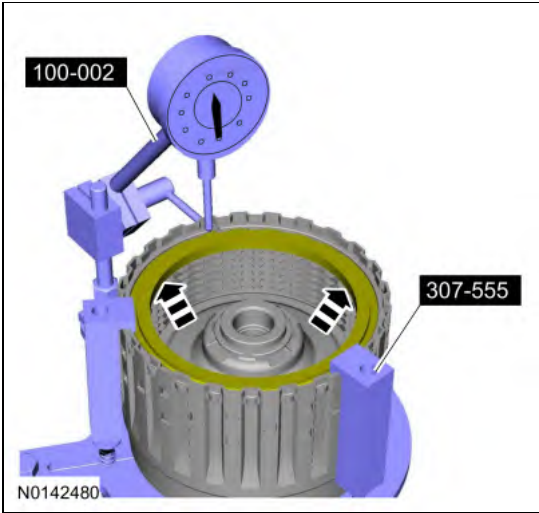


138. Install the overdrive clutch pack snap ring.



139. Install the overdrive assembly on the Clutch End Play Gauge and install the dial indicator gauge. Position the plunger so it fits into the opening of the snap ring. With the

dial indicator set at zero, lift up on the steel pressure plate so it is against the select fit snap ring. Record this reading as reading A.  
Use Special Service Tool: 100-002 (TOOL-4201-C) Holding Fixture with Dial Indicator Gauge. , 307-555 End Play Gauge, Clutch.



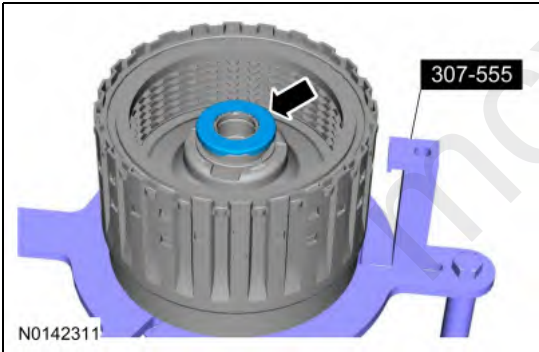
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140. Rotate the overdrive clutch assembly 180 degrees from the opening of the snap ring, take a second reading and record this reading as reading B.

| Description                                       | Reading |
|---------------------------------------------------|---------|
| Reading A                                         |         |
| Reading B                                         |         |
| Average reading A and B for a total end clearance |         |

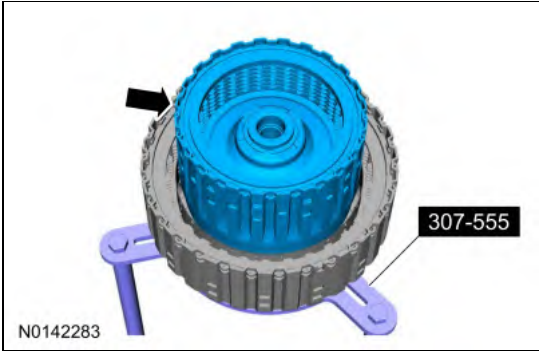
141.
- 0.5-0.9 mm (0.019-0.035 in)
  - If the free pack end clearance between the bottom of the snap ring and the top of the pressure plate is high, re-measure using a thicker select fit snap ring. If the free pack end clearance between the bottom of the snap ring and the top of the pressure plate is low, re-measure using a thinner select fit snap ring.

142. Install the T3 thrust bearing.



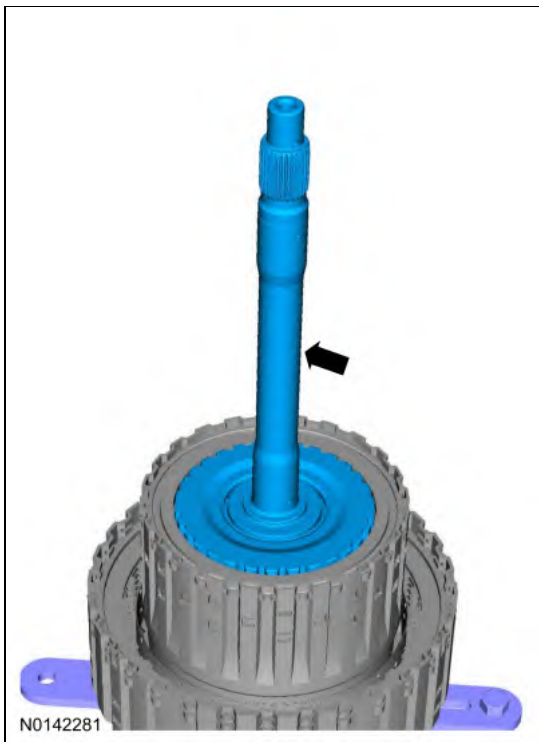
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143. Position the forward clutch assembly in the special tool and install the overdrive clutch pack onto the forward clutch and planetary gear set.  
Use Special Service Tool: 307-555 End Play Gauge, Clutch.



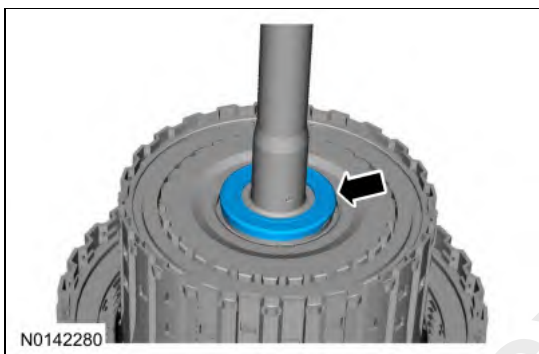
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144. Install the intermediate shaft assembly.

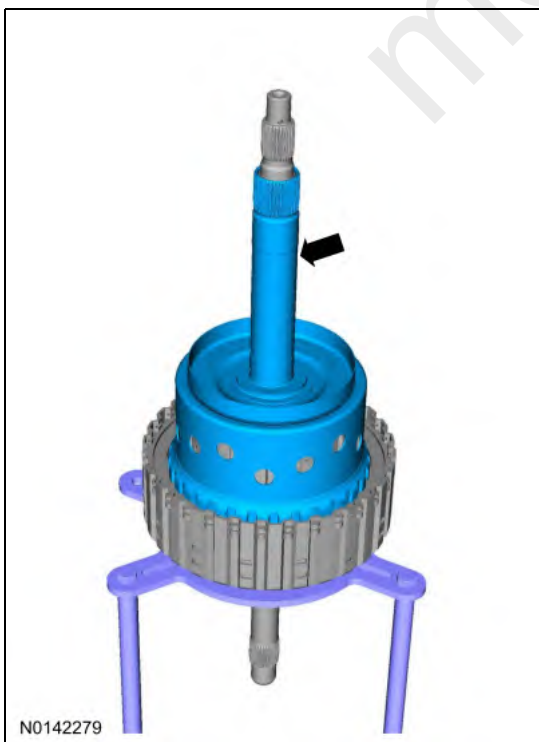


145. **NOTE:** *Inspect and install new thrust bearings as required.*

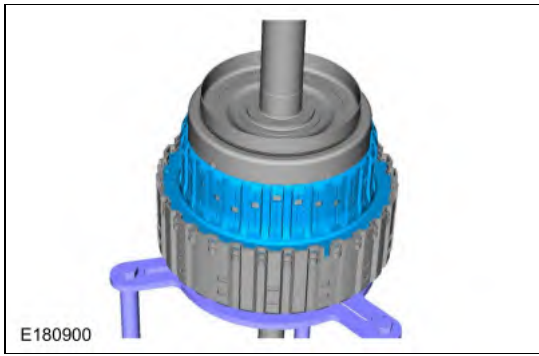
Install the T4 intermediate shaft bearing.



146. Install the forward clutch hub and sun shaft assembly.

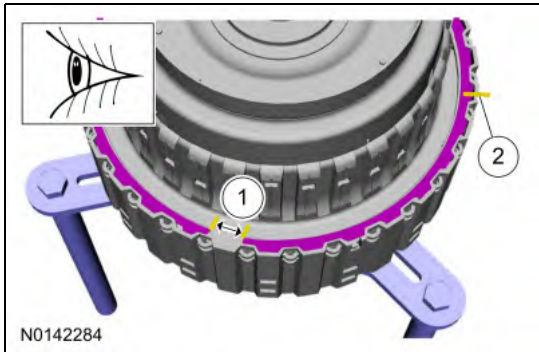


147. Install a new direct clutch hub.

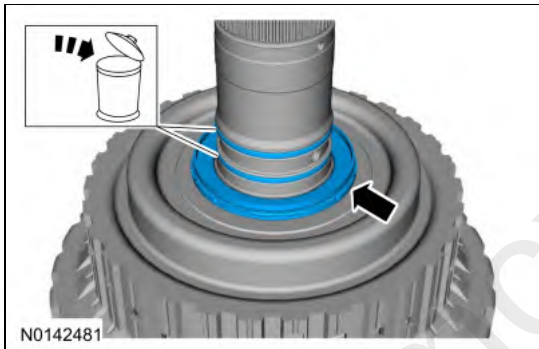


148. **NOTICE:** Do not install the snap ring on the forward clutch hub with the snap ring gap in the same position as the original snap ring or damage to the transmission can occur.

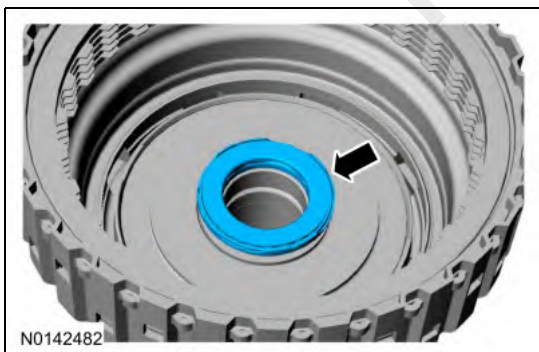
1. Install the snap ring with the snap ring gap approximately 120° away from the mark made on the forward clutch hub during disassembly.
2. Index mark from original snap ring gap location.



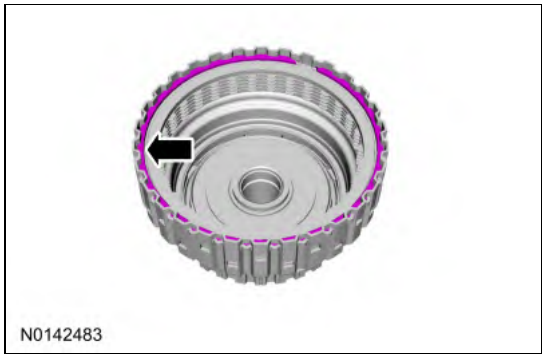
149. Remove and discard the 2 scarf cut seals and remove the roller bearing.



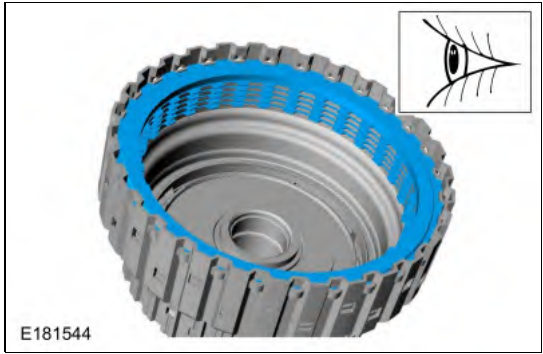
150. Remove the T5 thrust bearing.



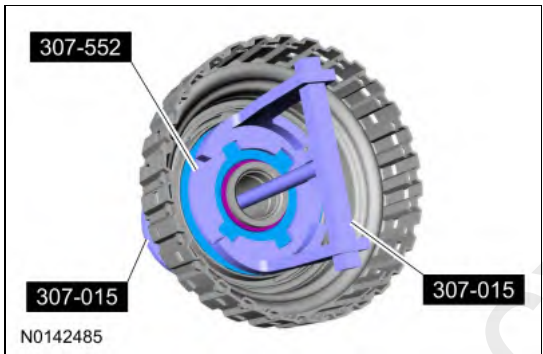
151. Remove the direct clutch snap ring.



152. Remove the direct clutch steel and friction plates. Inspect the clutch plates for excessive wear or damage. If the clutch plates are excessively worn or damaged replace as necessary. If the clutch plates are not excessively worn or damaged, they can be reused.



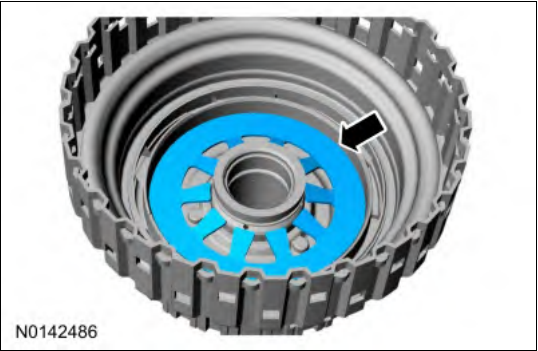
153. Install the special tools and remove the direct clutch balance piston snap ring.  
Use Special Service Tool: 307-015 Compressor, Clutch Spring, , 307-552 Compressor, Clutch Spring.



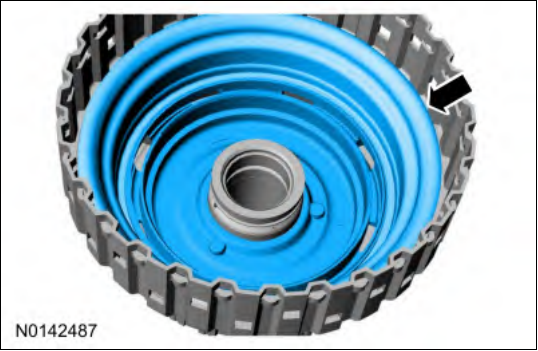
154. Remove the balance piston.



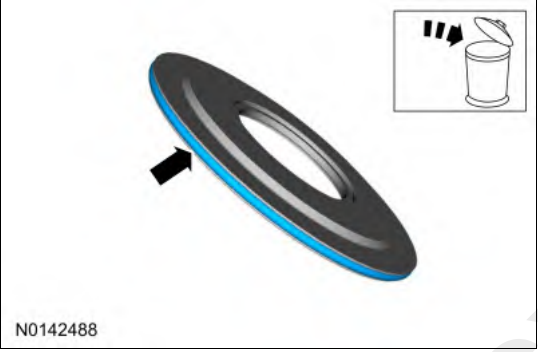
155. Remove the direct clutch return spring.



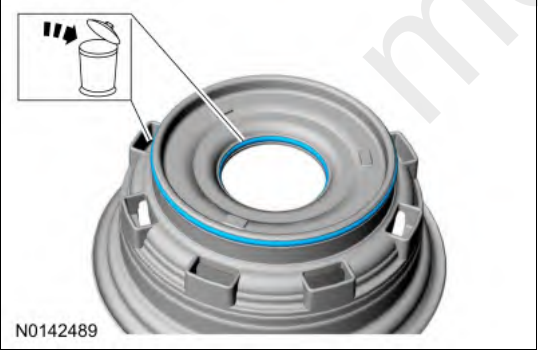
156. Remove the direct clutch piston.



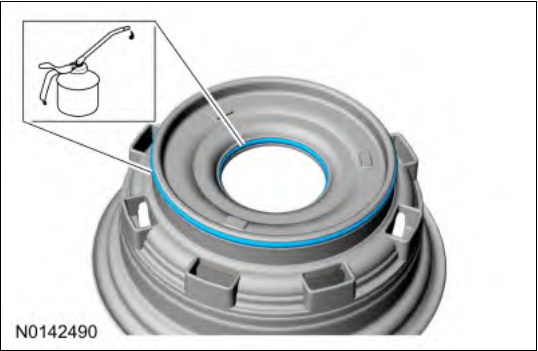
157. Remove and discard the outer O-ring seal from the balance piston.



158. Remove and discard the O-ring seals from the apply piston.

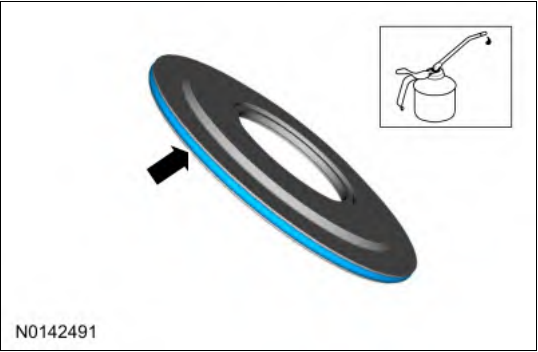


159. Inspect the components of the direct clutch for damage. If damage is indicated, install new components as necessary.
160. Install new O-ring seals on the apply piston. Lightly coat the O-ring seals with clean transmission fluid.  
*Material:* Motorcraft® MERCON® LV Automatic Transmission Fluid / XT-10-QLVC (WSS-M2C938-A) (MERCON® LV, )



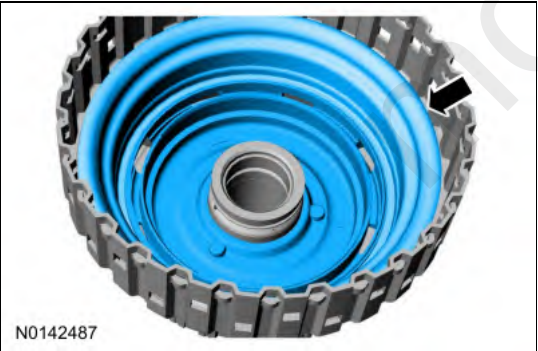
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161. Install a new O-ring seal on the balance piston. Lightly coat the O-ring seal with clean transmission fluid.  
Material: Motorcraft® MERCON® LV Automatic Transmission Fluid / XT-10-QLVC (WSS-M2C938-A) (MERCON® LV, )



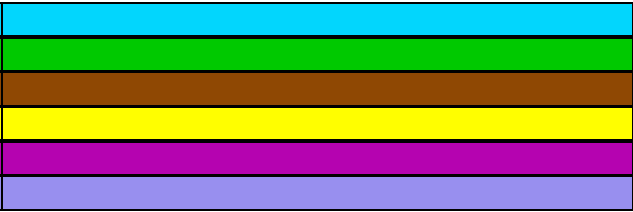
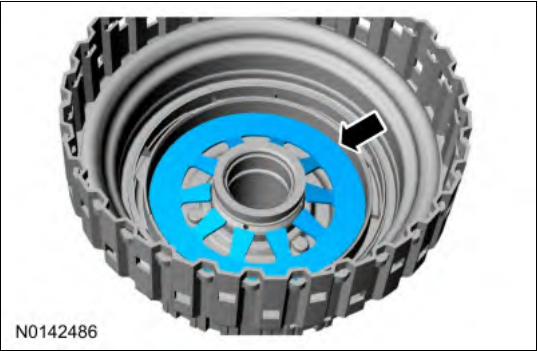
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162. Install the direct clutch piston.

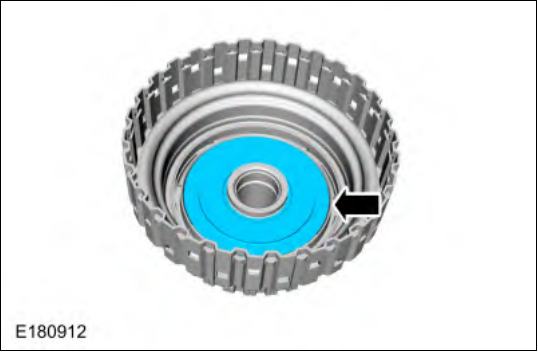


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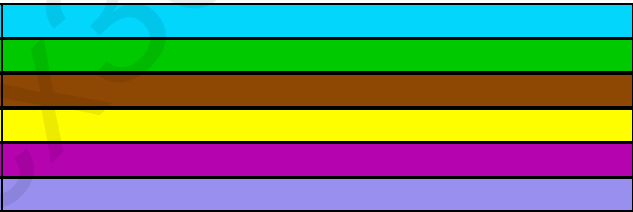
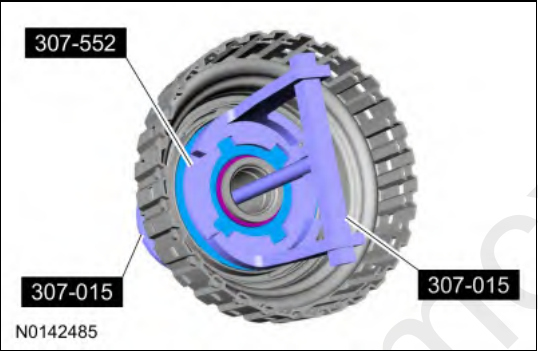
163. Install the direct clutch return spring.



164. Install the balance piston.

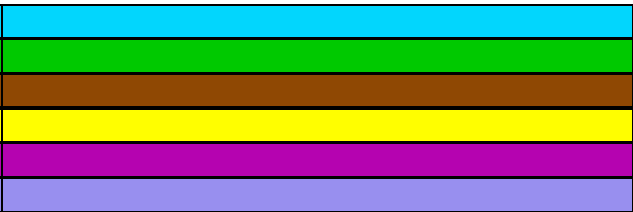
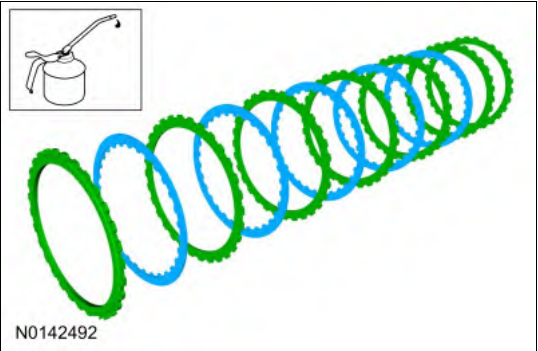


165. Install the special tools the direct clutch assembly and install a the balance piston snap ring.  
Use Special Service Tool: 307-015 Compressor, Clutch Spring , 307-552 Compressor, Clutch Spring.

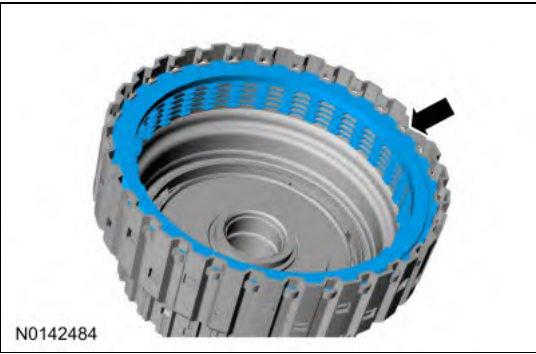


166. **NOTE:** Friction and steel plate quantity will vary based on engine displacement.

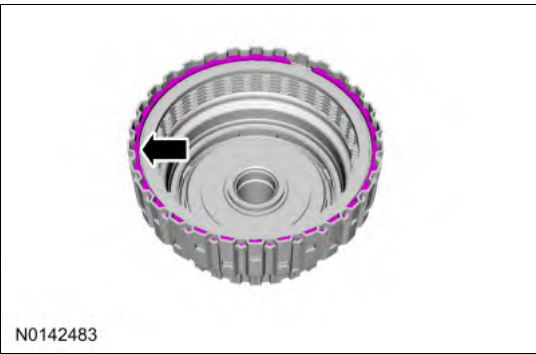
Soak the direct clutch in clean transmission fluid. For friction and steel plate quantity, refer to the Clutch Plate Quantity Chart.  
Refer to: Specifications (307-01A Automatic Transmission, Transfer Case and Power Transfer Unit - 6-Speed Automatic Transmission 6R100, Specifications).  
Material: Motorcraft® MERCON® LV Automatic Transmission Fluid / XT-10-QLVC (WSS-M2C938-A) (MERCON® LV, )



167. Install the direct clutch plates, starting with the wave spring then a steel plate and alternating between steel and friction plates, and ending with the pressure plate on the top.

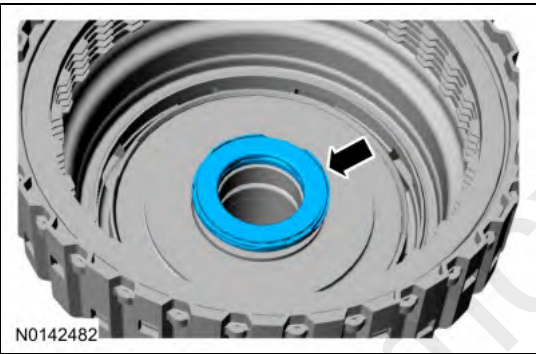


168. Install the direct clutch snap ring.



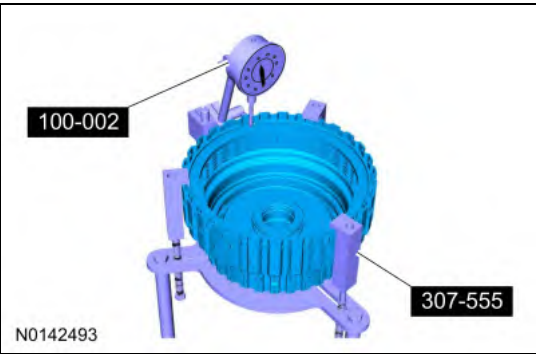
169. **NOTE:** Inspect the thrust bearing for damage and install a new thrust bearing if damage is found.

Install the T5 thrust bearing.

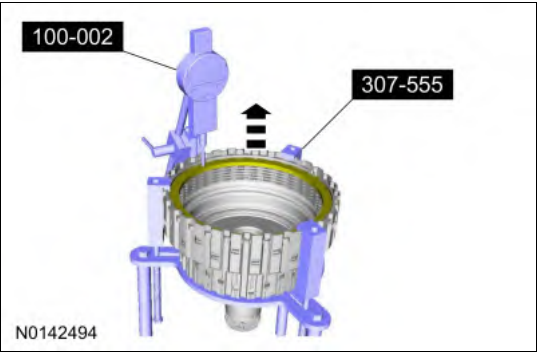


170. **NOTE:** All direct clutch plates, friction and steel are of a wave-type design.

Install the direct clutch assembly on the Clutch End Play Gauge and install the dial indicator gauge. Position the plunger so it fits into the opening of the snap ring. Use Special Service Tool: 100-002 (TOOL-4201-C) Holding Fixture with Dial Indicator Gauge. , 307-555 End Play Gauge, Clutch.



171. With the dial indicator set at zero, lift up on the steel pressure plate so it is against the select fit snap ring. Record this reading as reading A. Use Special Service Tool: 100-002 (TOOL-4201-C) Holding Fixture with Dial Indicator Gauge. , 307-555 End Play Gauge, Clutch.



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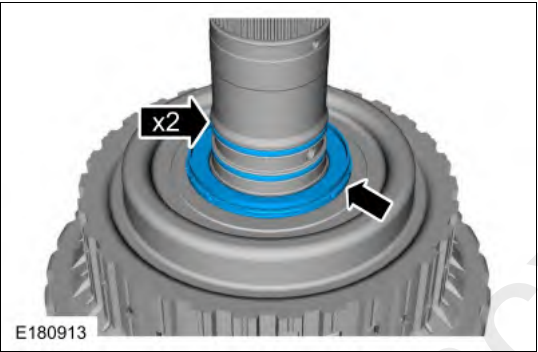
172. Rotate the direct clutch assembly 180° from the opening of the snap ring, take a second reading and record this reading as reading B.

| Description                                       | Reading |
|---------------------------------------------------|---------|
| Reading A                                         |         |
| Reading B                                         |         |
| Average reading A and B for a total end clearance |         |

173. **NOTE:** If the final measurement is not within specification, install a new snap ring until the correct specification is achieved.

- 0.5-1.3 mm (0.019-0.051 in)
- If the free pack end clearance between the bottom of the snap ring and the top of the pressure plate is high, re-measure using a thicker select fit snap ring. If the free pack end clearance between the bottom of the snap ring and the top of the pressure plate is low, re-measure using a thinner select fit snap ring.

174. Install 2 new scarf cut seals and the roller bearing.

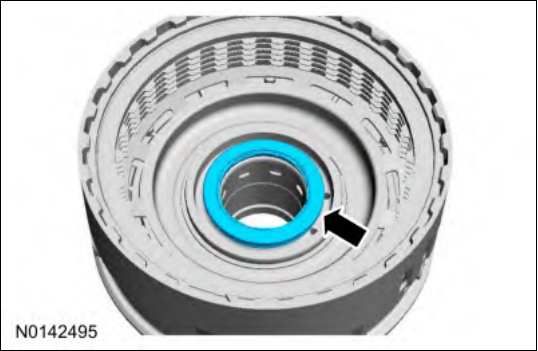


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**NOTICE:** The intermediate clutch plate quantity is model dependent on engine size. Failure to install the correct clutch plate quantity will result in transmission failure.

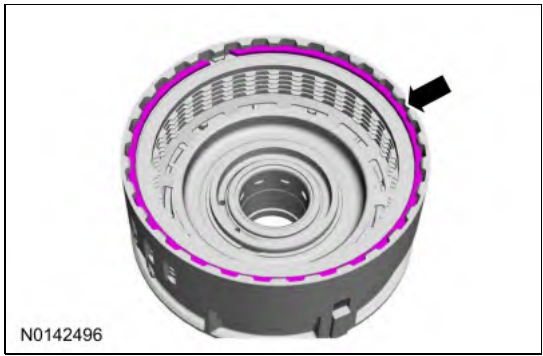
**NOTICE:** The intermediate clutch piston is model dependent on engine size due to the different quantity of intermediate clutch plates. If installing a new intermediate clutch piston, check to make sure the height of the new piston is the same as the original piston. Failure to install the correct piston will result in transmission failure.

175. Remove the T6 thrust bearing.

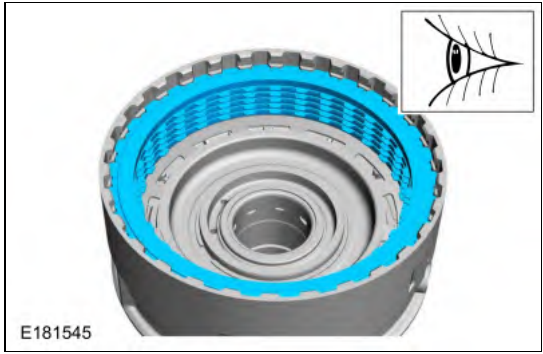


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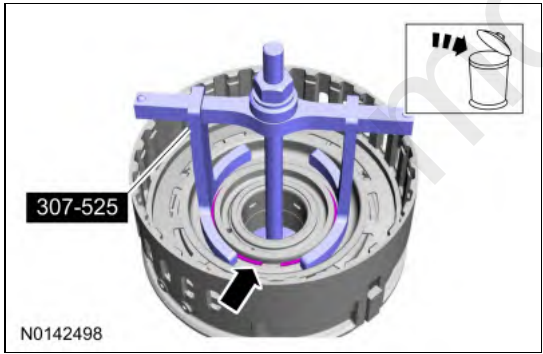
176. Remove the intermediate clutch plate snap ring.



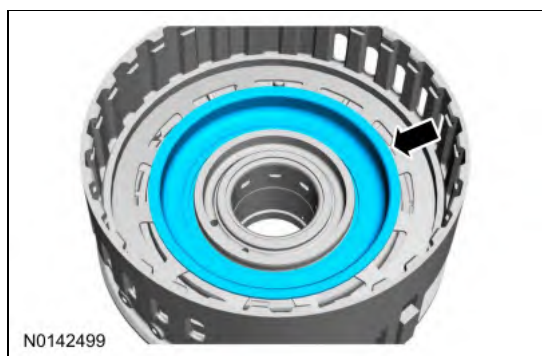
177. Remove the intermediate clutch plates. Inspect the clutch plates for excessive wear or damage. If the clutch plates are excessively worn or damaged replace as necessary. If the clutch plates are not excessively worn or damaged, they can be reused.



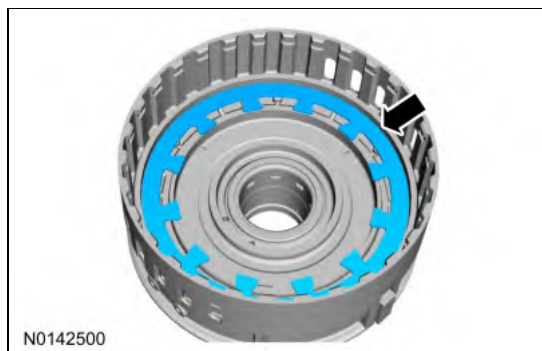
178. Using the special tool, remove and discard the intermediate clutch return spring retainer .  
Use Special Service Tool: 307-525 Compressor, Clutch Spring.



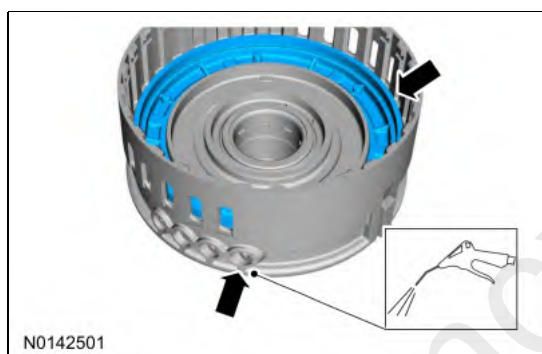
179. Remove the intermediate clutch return spring top plate.



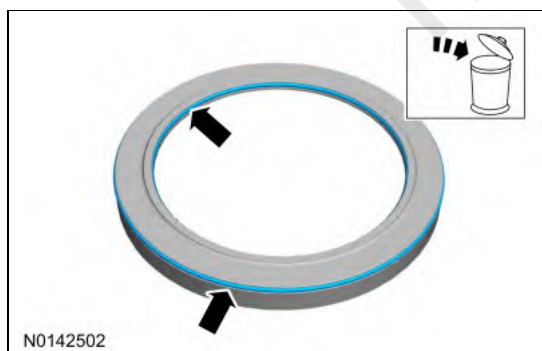
180. Remove the intermediate clutch return spring.



181. Applying a slight amount of air to the port, remove the intermediate clutch piston.

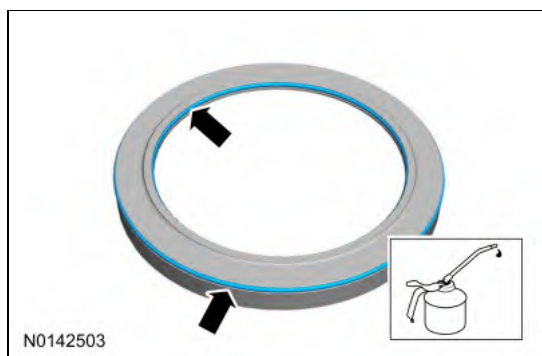


182. Remove and discard the inner and outer intermediate clutch piston O-ring seals .



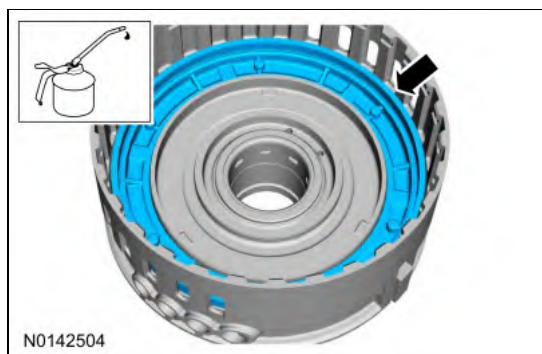
183. Install the inner and outer intermediate clutch piston O-ring seals.

*Material: Motorcraft® MERCON® LV Automatic Transmission Fluid / XT-10-QLVC (WSS-M2C938-A) (MERCON® LV, )*

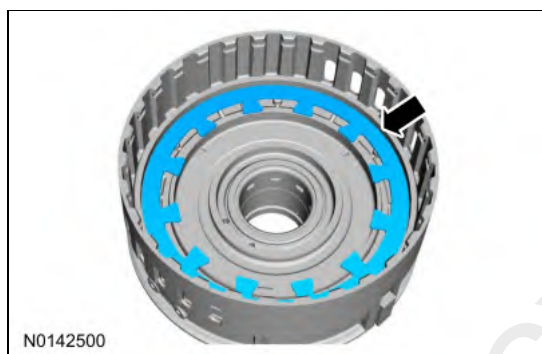


184. Lightly coat the O-ring seals in clean automatic transmission fluid and install the intermediate clutch piston.

Material: Motorcraft® MERCON® LV Automatic Transmission Fluid / XT-10-QLVC (WSS-M2C938-A) (MERCON® LV, )



185. Install the intermediate clutch return spring.

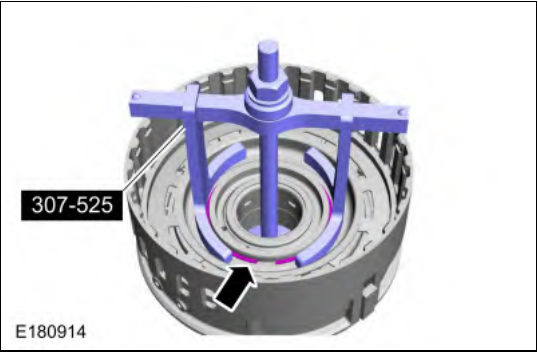


186. Install the intermediate clutch return spring top plate.



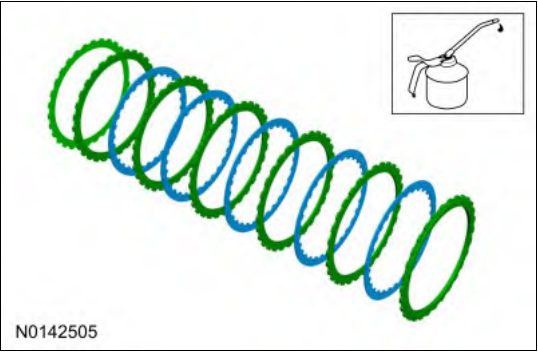
187. Using the special tool, install a new intermediate clutch return spring retainer.

Use Special Service Tool: 307-525 Compressor, Clutch Spring.



188. **NOTE:** Friction and steel plate quantity will vary based on engine displacement.

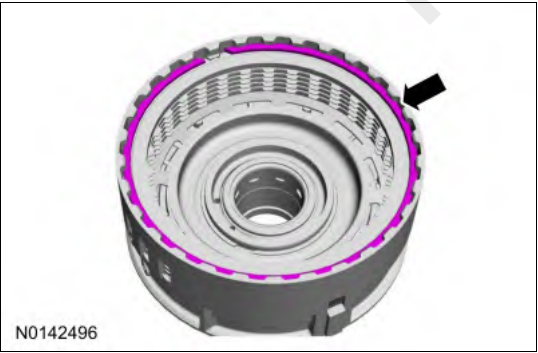
Soak the intermediate clutch plates in clean automatic transmission fluid. For friction and steel plate quantity, refer to the Clutch Plate Quantity Chart. Refer to: Specifications (307-01A Automatic Transmission, Transfer Case and Power Transfer Unit - 6-Speed Automatic Transmission 6R100, Specifications).  
Material: Motorcraft® MERCON® LV Automatic Transmission Fluid / XT-10-QLVC (WSS-M2C938-A) (MERCON® LV, )



189. Install the intermediate clutch plates, starting with the wave spring then a steel plate and alternating between friction and steel plates, and ending with the pressure plate.

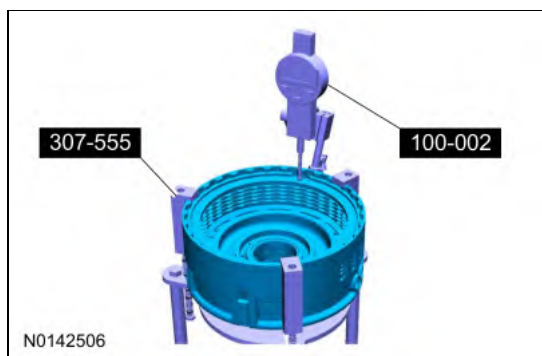


190. Install the intermediate clutch plate snap ring.



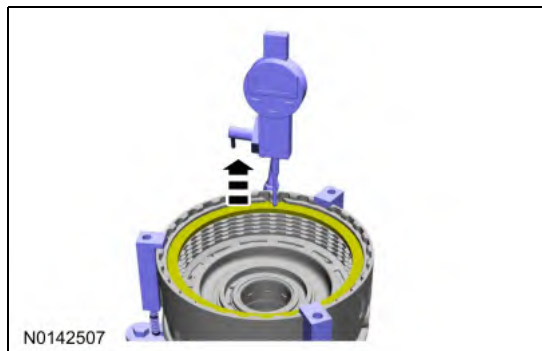
191. **NOTE:** All intermediate clutch plates, friction and steel are of a wave-type design.

Install the intermediate clutch assembly on the Clutch End Play Gauge and install the dial indicator gauge. Position the plunger so it fits into the opening of the snap ring. Use Special Service Tool: 100-002 (TOOL-4201-C) Holding Fixture with Dial Indicator Gauge. , 307-555 End Play Gauge, Clutch.

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192. With the dial indicator set at zero, lift up on the steel pressure plate so it is against the select fit snap ring. Record this reading as reading A.

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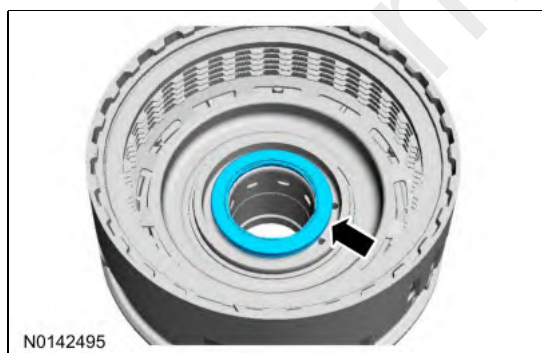
193. Rotate the intermediate clutch assembly 180° from the opening of the snap ring, take a second reading and record this reading as reading B.

| Description                                       | Reading |
|---------------------------------------------------|---------|
| Reading A                                         |         |
| Reading B                                         |         |
| Average reading A and B for a total end clearance |         |

194. **NOTE:** If the final measurement is not within specification, install a new snap ring until the correct specification is achieved.

- 0.7-1.1 mm (0.027-0.043 in)
- If the free pack end clearance between the bottom of the snap ring and the top of the pressure plate is high, re-measure using a thicker select fit snap ring. If the free pack end clearance between the bottom of the snap ring and the top of the pressure plate is low, re-measure using a thinner select fit snap ring.

195. Install the T6 thrust bearing.

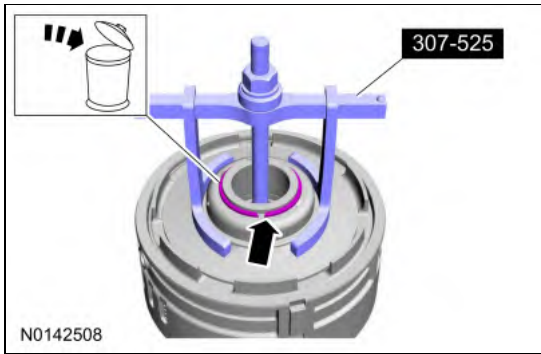

  

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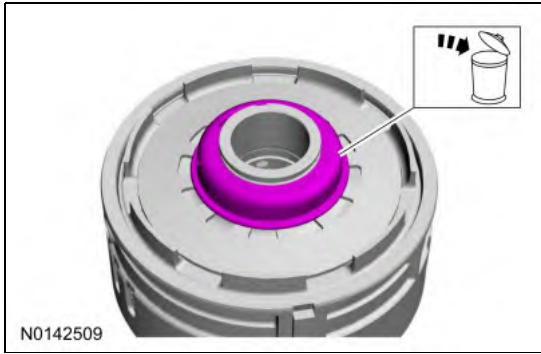
**NOTICE:** The low/reverse clutch plate quantity is model dependent on engine size. Failure to install the correct clutch plate quantity will result in transmission failure.

**NOTE:** The low/reverse clutch plates are installed in the case during the transmission assembly procedure.

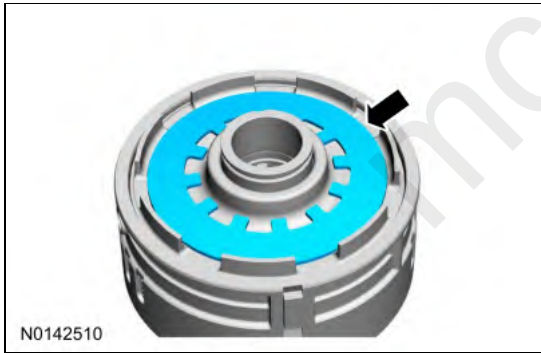
196. Using the special tool, remove and discard the low/reverse clutch return spring retainer .  
Use Special Service Tool: 307-525 Compressor, Clutch Spring.



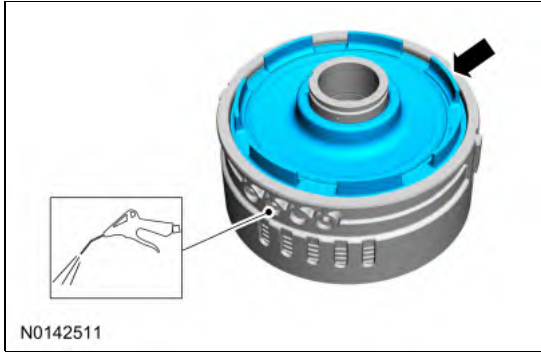
197. Remove and discard the low/reverse clutch return spring retainer .



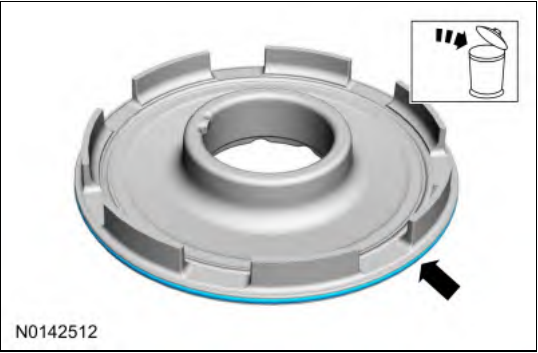
198. Remove the low/reverse clutch return spring.



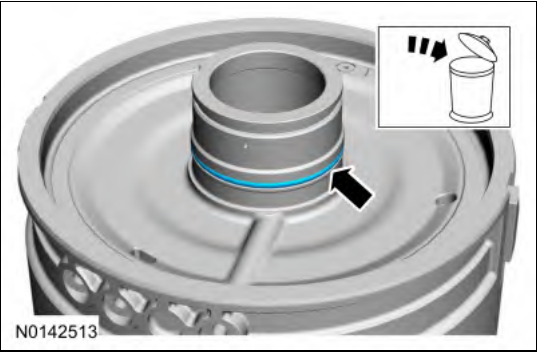
199. Apply a slight amount of air to the port, remove the low/reverse clutch piston from the low/reverse clutch drum.



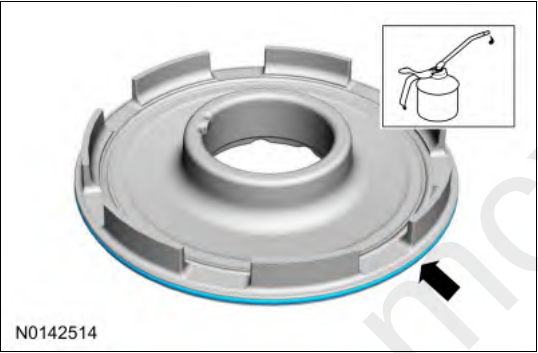
200. Remove and discard the low/reverse outer piston O-ring seal .



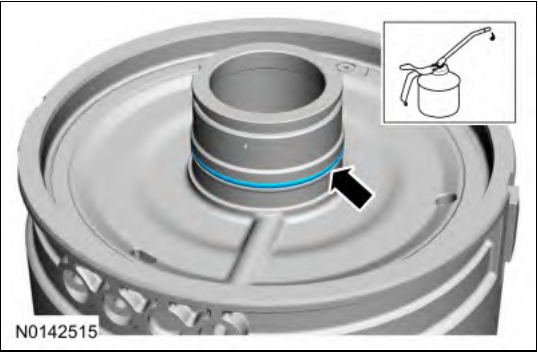
201. Remove and discard the low/reverse drum O-ring seal.



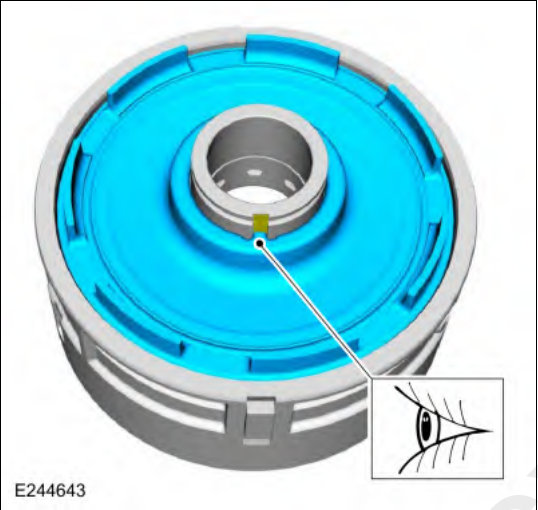
202. Install new low/reverse outer piston O-ring seal.  
*Material:* Motorcraft® MERCON® LV Automatic Transmission Fluid / XT-10-QLVC (WSS-M2C938-A) (MERCON® LV, )



203. Install a new low/reverse drum inner O-ring seal.  
*Material:* Motorcraft® MERCON® LV Automatic Transmission Fluid / XT-10-QLVC (WSS-M2C938-A) (MERCON® LV, )



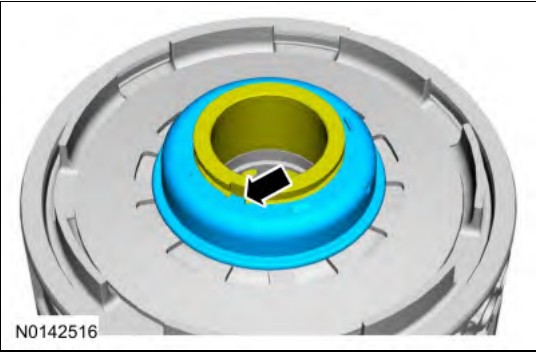
204. Align the alignment tab on the piston with the groove in the center support and install the low/reverse piston.



205. Install the low/reverse clutch return spring.

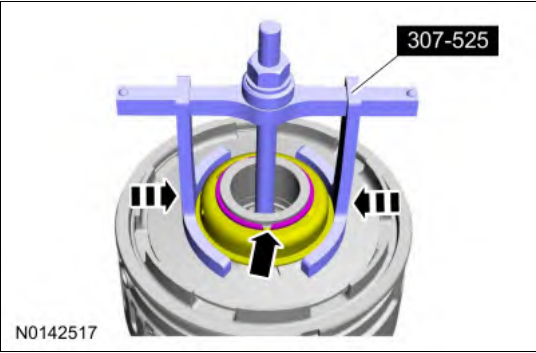


206. Install a new low/reverse clutch return spring retainer. Align the alignment tab on the retainer with the groove in the center support and install the low/reverse piston return spring retainer.



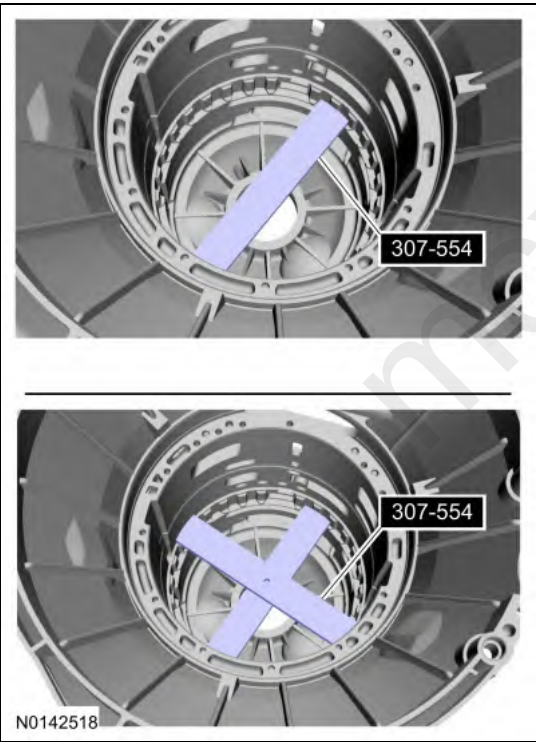
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207. Using the special tool, compress the low/reverse clutch return spring and install the retaining ring.  
Use Special Service Tool: 307-525 Compressor, Clutch Spring.



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208. **NOTE:** All low/reverse clutch plates, friction and steel are of a wave-type design.  
Install the special tool into the case.  
Use Special Service Tool: 307-554 Gauge, D-Clutch Measurement.

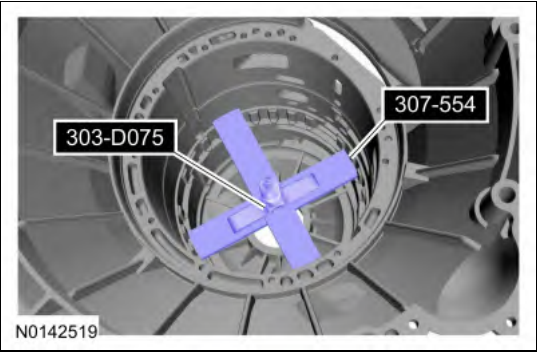


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209. With the special tool positioned in the case, use the depth gauge to measure the case stop depth.

| Description                                                                                                                                                   | Reading |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
| Measure the distance from the top of the upper gauge bar to the top of the lower gauge bar. Record this reading as the case measurement. Record as reading A. |         |

Use Special Service Tool: 307-554 Gauge, D-Clutch Measurement.  
Use the General Equipment: Depth Gauge

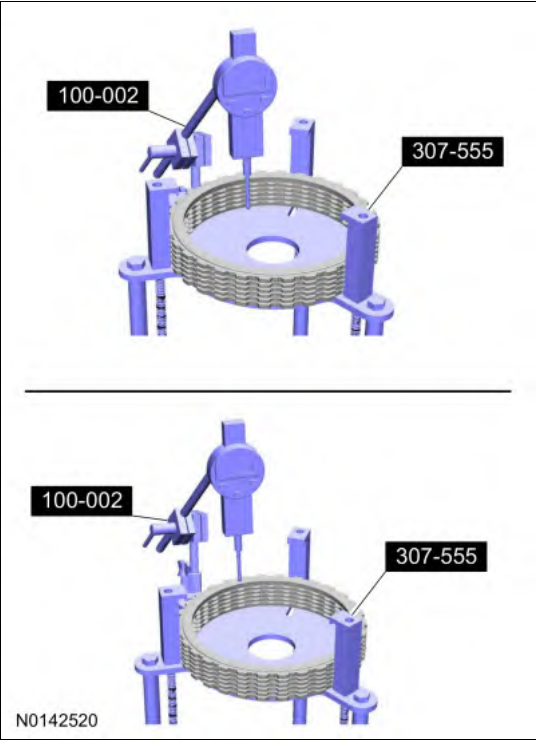


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210. Measure the clutch pack height.

| Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Reading |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
| Place the low/reverse clutch pack on the Clutch End Play Gauge with the wave spring down and the pressure plate on top. Place the plunger of the dial indicator on the pressure plate. Slide the clutch to the side so the plunger of the dial indicator is touching the gauge plate of Clutch End Play Gauge. Zero out the dial indicator. Carefully lift the plunger enough to slide the clutch pack under the plunger to take a reading. Record this reading. Rotate the clutch pack 180 degrees and take a second reading. Average the readings. Record this as B. |         |

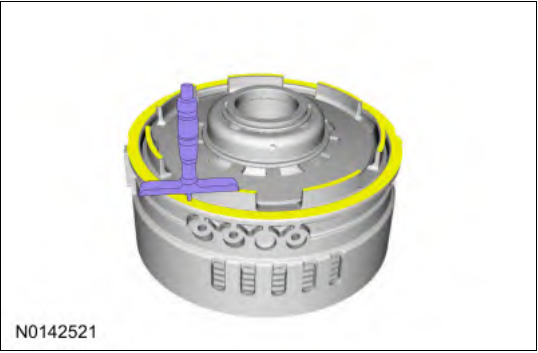
Use Special Service Tool: 100-002 (TOOL-4201-C) Holding Fixture with Dial Indicator Gauge. , 307-555 End Play Gauge, Clutch.



211. Using a depth gauge, measure the piston to center support shoulder height.

| Description                                                                                                                                                                                     | Reading |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
| Measure the piston to center support shoulder height. Record this measurement. Rotate the center support 180 degrees and record this measurement. Average the 2 measurements. Record this as C. |         |

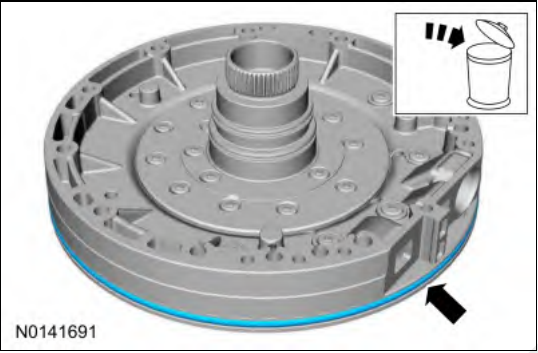
Use the General Equipment: Depth Gauge



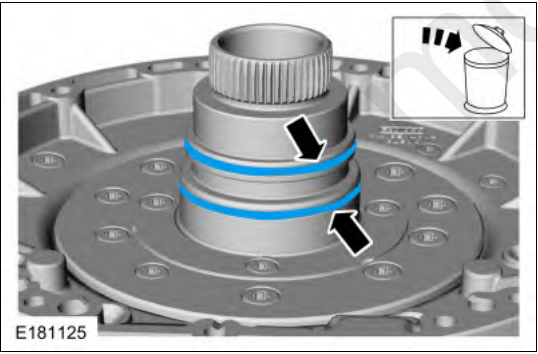
212. Calculate the end clearance. Compare the end clearance to the specification. If the end clearance is out of specification, select the next thinner or thicker plate as required and repeat the steps to measure the clutch height.

| Description                                        | Reading                     |
|----------------------------------------------------|-----------------------------|
| Subtract B and C from A to determine end clearance |                             |
| Total C measurement                                |                             |
| End clearance specification                        | 1.0-1.6 mm (0.039-0.062 in) |

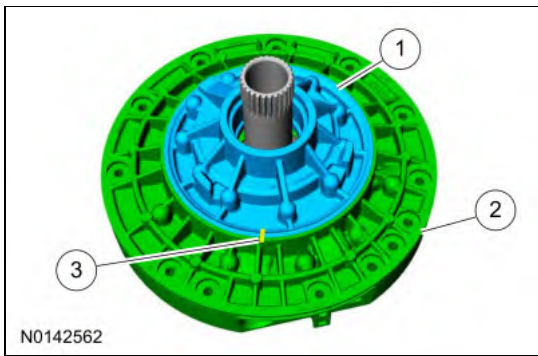
213. Remove and discard the front pump O-ring seal .



214. Remove and discard the front pump seal rings .

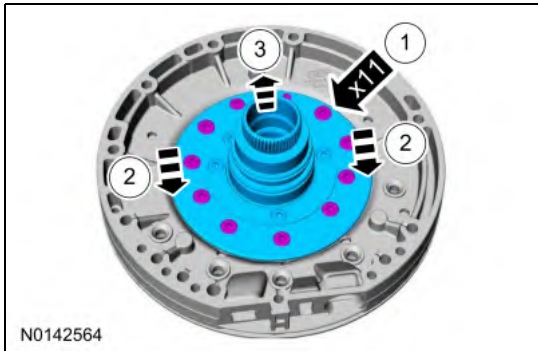


- 215.
- 1. Pump body
  - 2. Pump plate assembly
  - 3. Index-mark the pump body to the pump plate assembly.

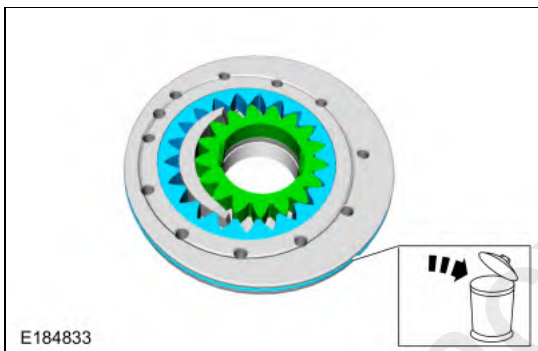


216.

1. Loosen the pump plate assembly-to-pump body bolts.
2. Push down on the loose pump plate assembly-to-pump body bolts to remove the pump body from the pump plate assembly.
3. Remove the bolts and the pump body.



217. Remove and discard the pump body outer seal and remove the fluid pump gears.

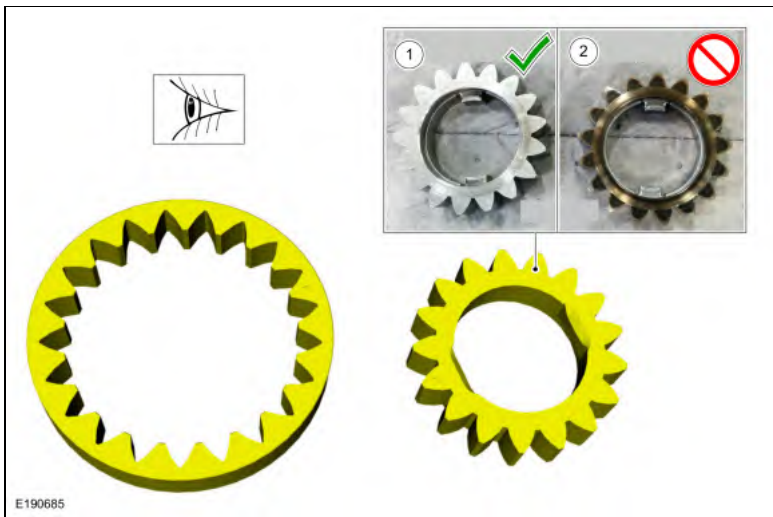


218. **NOTE:** Clean all pump components in solvent and dry the parts with compressed air. Inspect the pump gears, faces, gear teeth and mating surfaces for damage or scoring. Install a new pump if necessary.

1. **NOTE:** Some pump internal wear mark or light scratches is normal.

Acceptable wear.

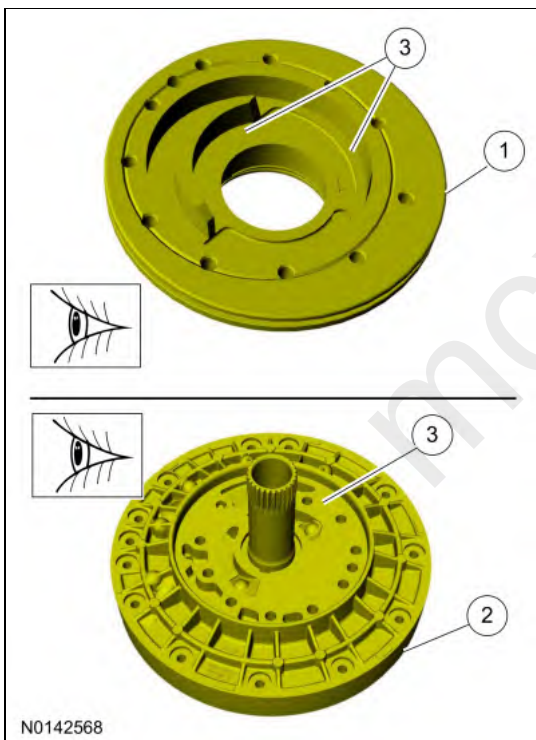
2. If the gears are burned, discolored or scored or if the teeth are damaged, install a new pump.



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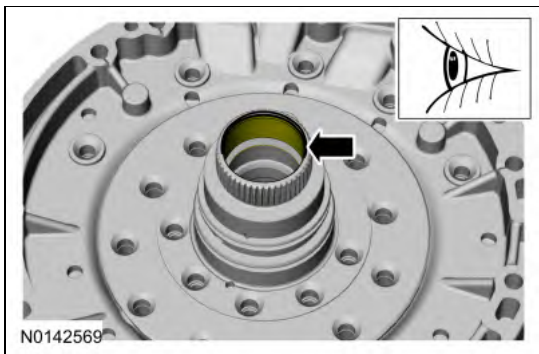
219.

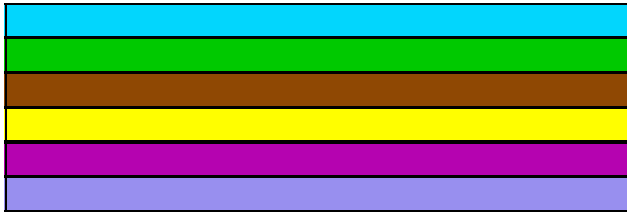
- Inspect the pump body for damage or scoring.
- Inspect the pump plate assembly for damage or scoring.
- Inspect the pump gear thrust surfaces for damage or scoring.
- Install a new pump if necessary.



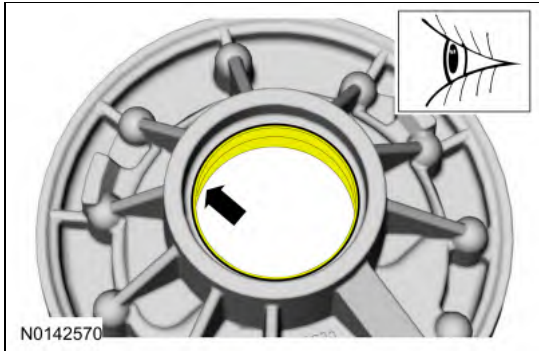
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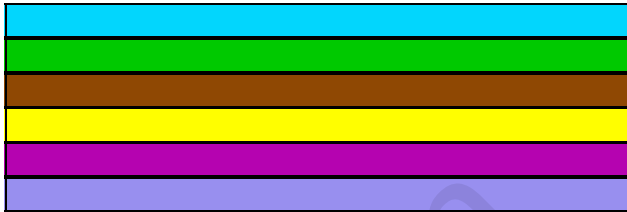
220. Inspect the input shaft bushing for damage or scoring. If the bushing is damaged, install a new pump.






221. Inspect the torque converter hub bushing for damage or scoring. If the bushing is damaged, install a new pump.

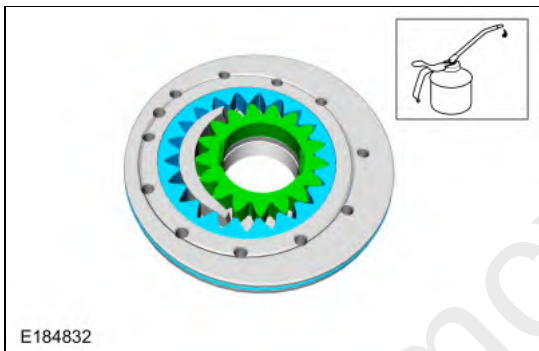





222. **NOTE:** Prior to installation, lightly lubricate the pump gears with clean automatic transmission fluid.

Install the pump gears with the dot facing the pump plate assembly and install a new pump body outer seal. Lubricate the pump gears and the seal with clean automatic transmission fluid.

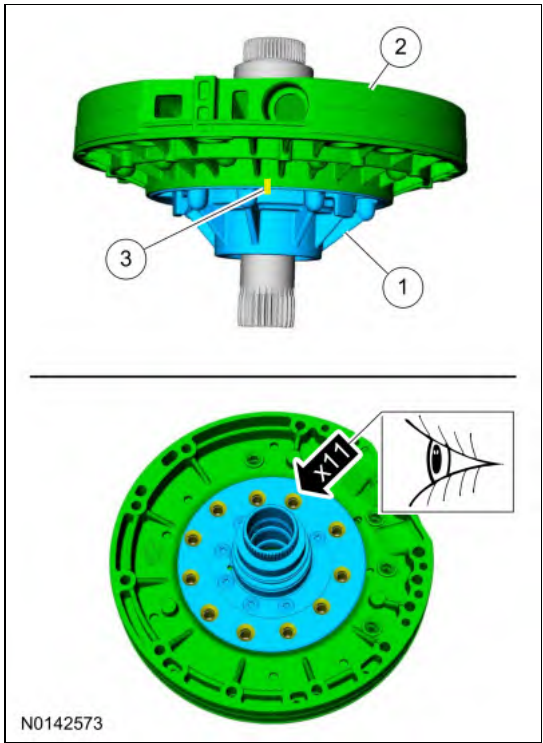
Material: Motorcraft® MERCON® LV Automatic Transmission Fluid / XT-10-QLVC (WSS-M2C938-A) (MERCON® LV, )



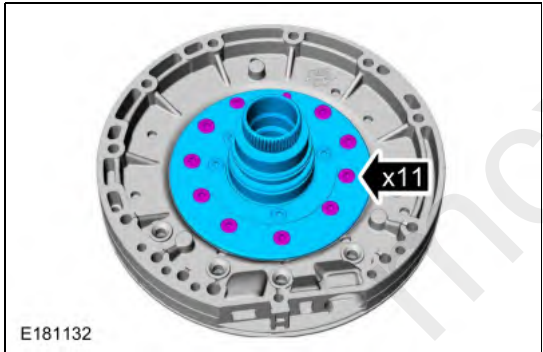



223.

1. Pump body
2. Pump plate assembly
3. Align the marks made during disassembly to correctly assemble the pump. Press the pump body into the pump plate assembly.
  - Visually inspect the pump body-to-pump plate assembly bolt holes to be sure that the pump body and pump plate are correctly aligned.

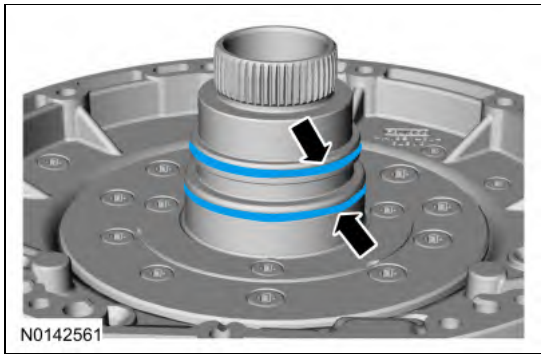


224. Install the pump plate assembly-to-front pump body bolts.  
*Torque: 133 lb.in (15 Nm)*

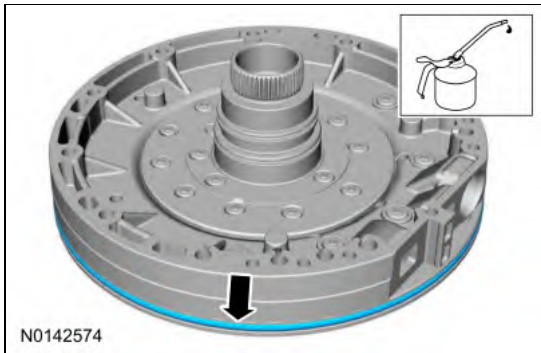


225. **NOTICE: Make sure that the seal ends of each seal ring are hooked together or fluid leakage can occur.**

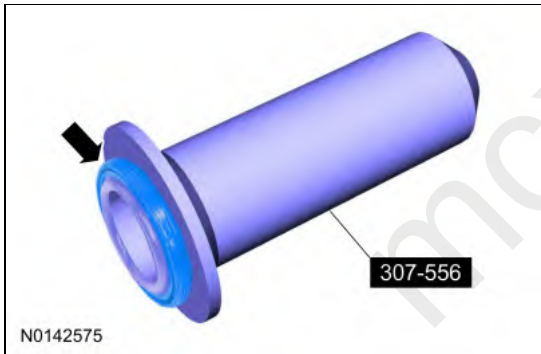
Install the front pump seal rings onto the stator support. Make sure the seals are fully seated in the stator support seal grooves and the seal ends are oriented 180 degrees apart.



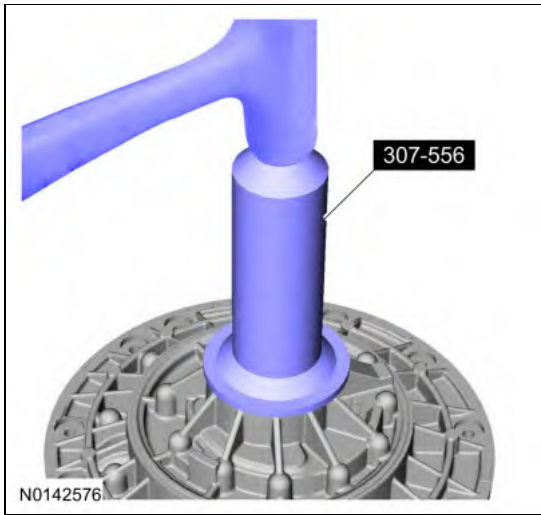
226. Install the pump outer diameter front pump O-ring seal.  
 Material: Motorcraft® MERCON® LV Automatic Transmission Fluid / XT-10-QLVC (WSS-M2C938-A) (MERCON® LV, )



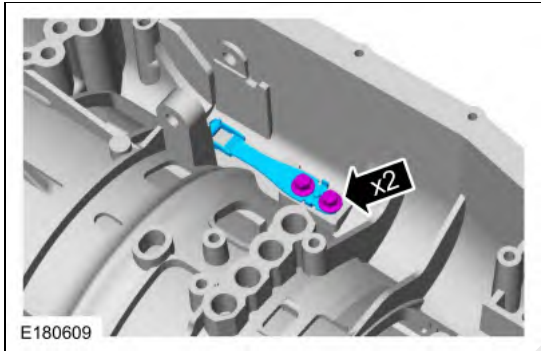
227. Install a new front pump seal on the special tool.  
 Use Special Service Tool: 307-556 Installer, Fluid Pump Seal.



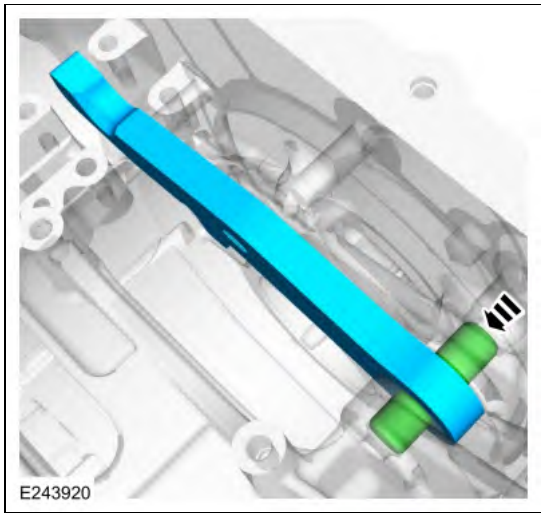
228. Using the special tool, install the front pump seal.  
 Use Special Service Tool: 307-556 Installer, Fluid Pump Seal.



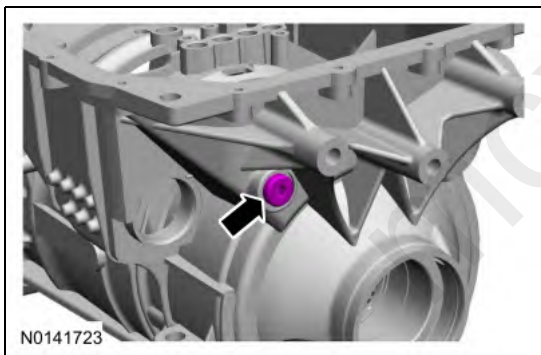
229. Install the park detent spring and the bolts.  
*Torque: 106 lb.in (12 Nm)*



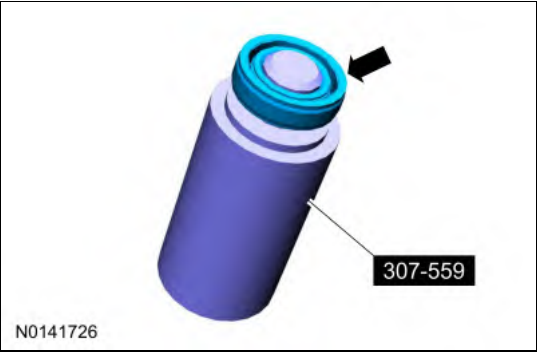
230. Position the park pawl and into the case and install the park pawl pin.



231. Position the park pawl and spring into the case and install the park pawl pin.  
*Torque: 17 lb.ft (23 Nm)*

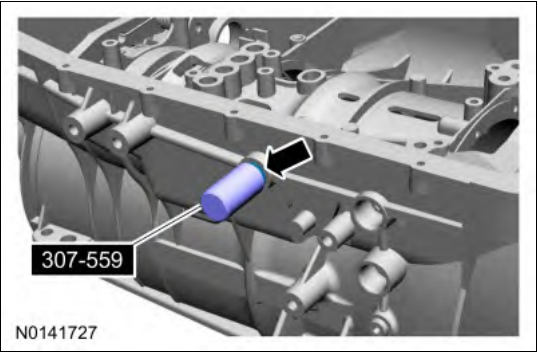


232. Install a new manual control lever shaft seal on the special tool.  
 Use Special Service Tool: 307-559 Installer, Shifter Fluid Seal.



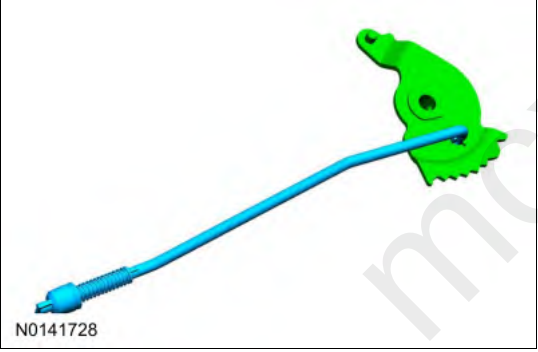
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233. Using the special tool, install the manual control lever shaft seal.  
Use Special Service Tool: 307-559 Installer, Shifter Fluid Seal.



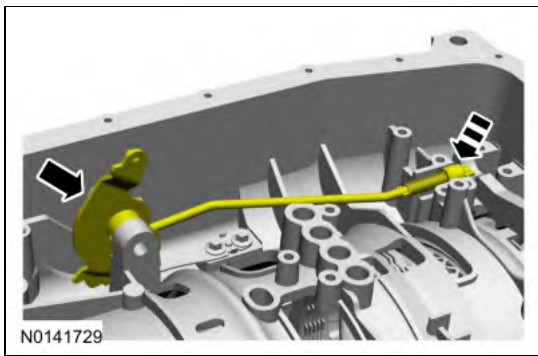
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234. Assemble the manual control lever detent plate assembly and park pawl actuator rod.

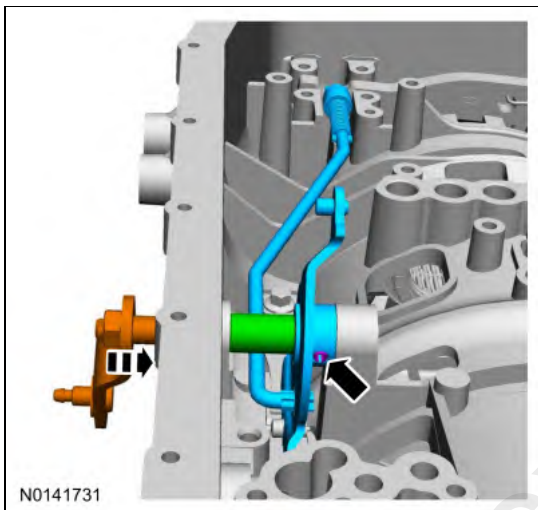


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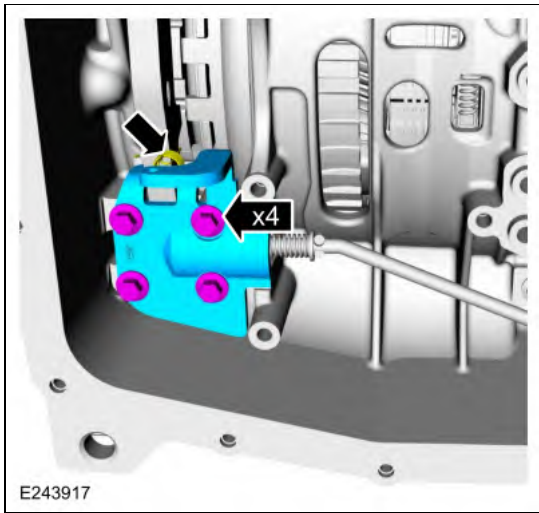
235. Position the manual valve detent lever and park pawl actuator rod assembly in the transmission case.



236. Position the manual control lever spacer in place and slide the manual control lever shaft into the case and the manual lever detent plate. Align the roll pin hole in the manual control lever detent plate with the roll pin hole in the manual control lever shaft and install a new roll pin.

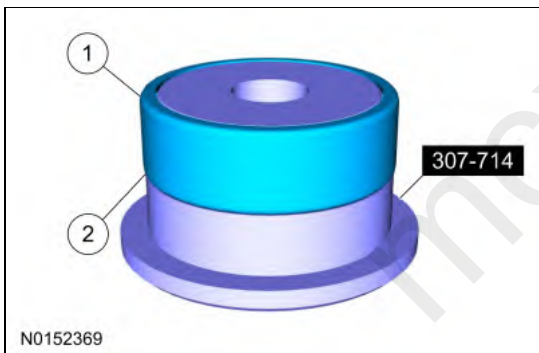


237. Install the park rod actuating plate and the bolts. And connect the park pawl return spring .  
Torque: 106 lb.in (12 Nm)



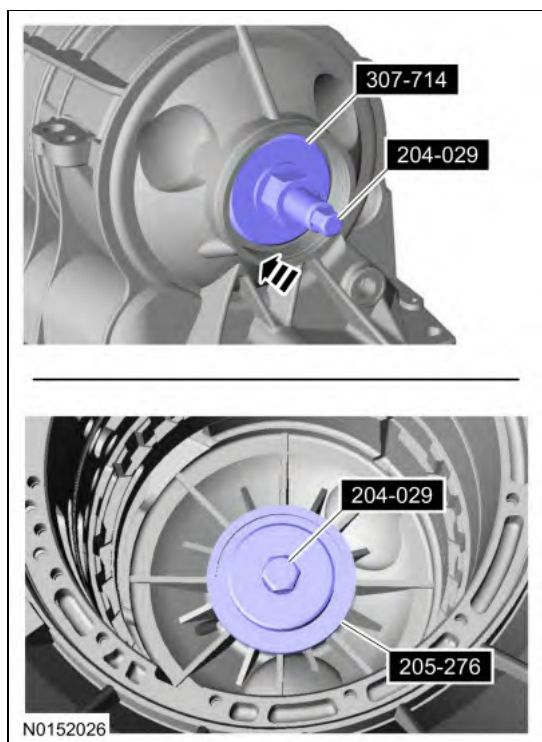
238.

- Install the needle bearing on the special tool so that the rounded end faces up.
  - Flat bearing surface (snap ring side) facing down.
- Use Special Service Tool: 307-714 Installer, Needle Bearing.

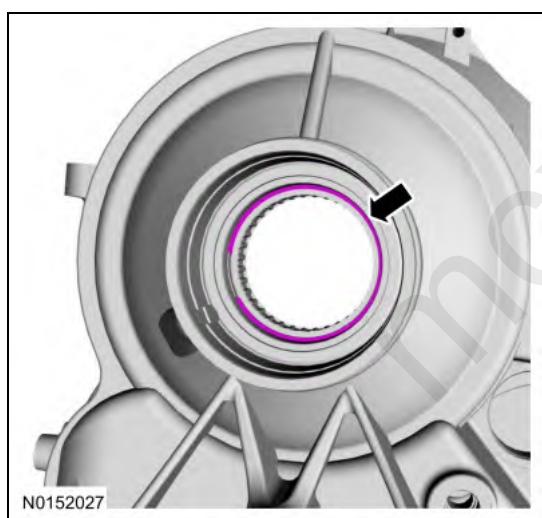


239. Assemble the special tools and install the bearing in the transmission case.

Use Special Service Tool: 204-029 Drawbar , 205-276 Installer, Front Wheel Hub Seal. , 307-714 Installer, Needle Bearing.

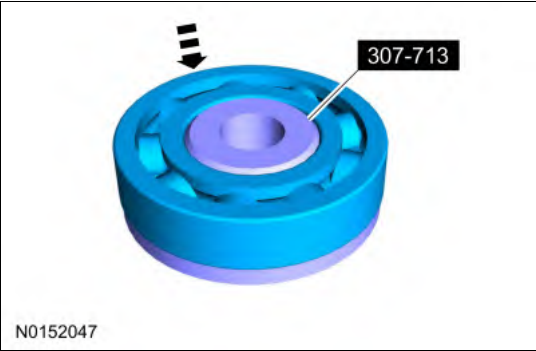


240. Install the snap ring

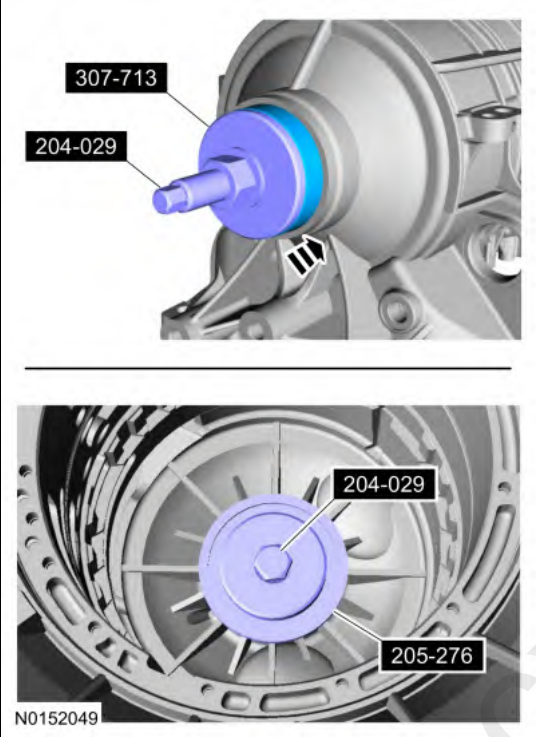


#### Rear Wheel Drive (RWD) vehicles

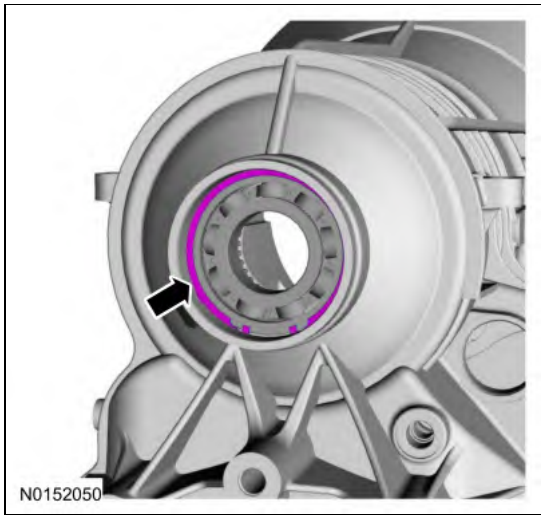
241. Install the bearing on the special tool.  
Use Special Service Tool: 307-713 Installer, Roller Bearing.



242. Assemble the special tools and install the bearing in the transmission case.  
Use Special Service Tool: 204-029 Drawbar , 205-276 Installer, Front Wheel Hub Seal , 307-713 Installer, Roller Bearing.

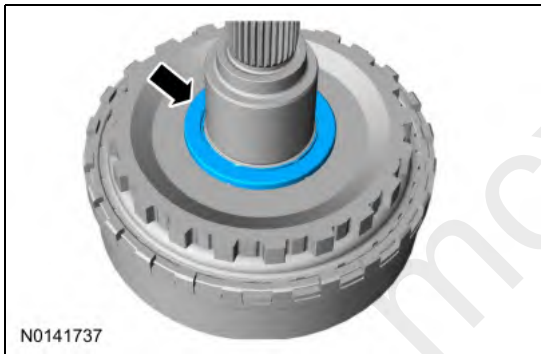


243. Install the snap ring

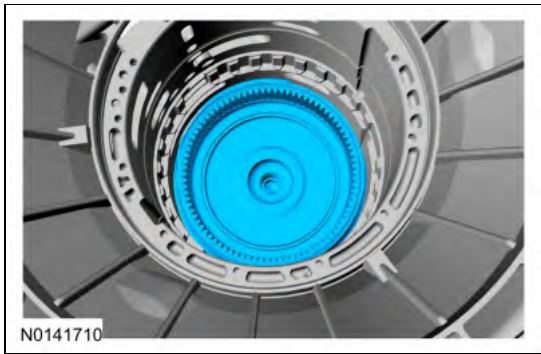


**All vehicles**

244. Install the T11 bearing, on the planetary ring gear and output shaft assembly.

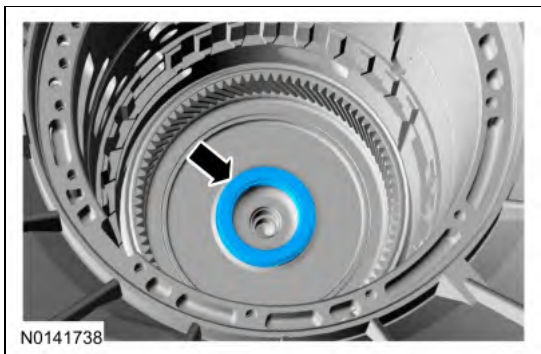


245. Install the rear planetary ring gear and output shaft assembly.



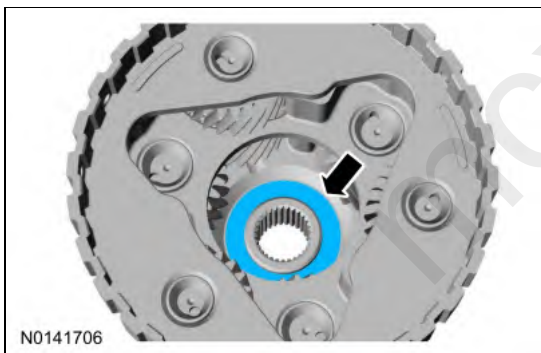


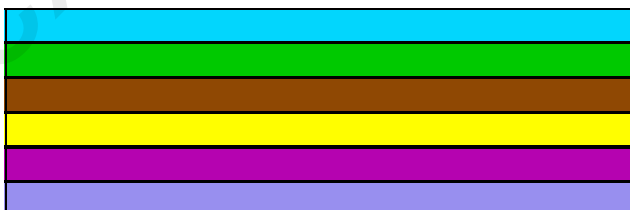

246. Install the T10 thrust bearing on the output shaft assembly.



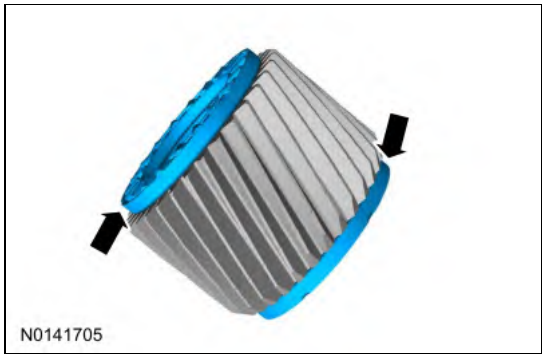



247. Install the T9 roller bearing race into the bottom of the carrier.



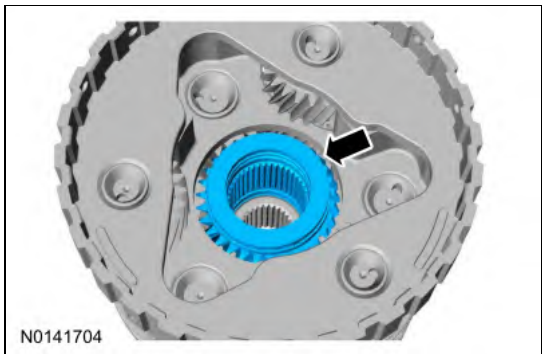



248. Install the top T8 and the bottom T9 roller bearings onto the sun gear.



249. **NOTE:** When installing the sun gear, make sure that the **TAPERED EDGE** is facing **UP** toward the torque converter housing.

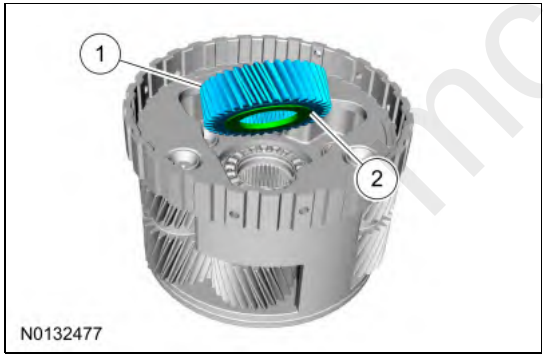
Install the sun gear into the planetary assembly.



250. **NOTE:** Be sure the bearing race is installed in the sun gear.

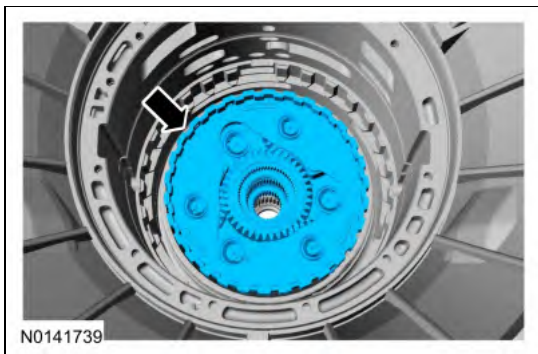
1. low/reverse sun gear
2. bearing race

- Install the low/reverse sun gear and bearing race into the planetary carrier with the race side facing down.



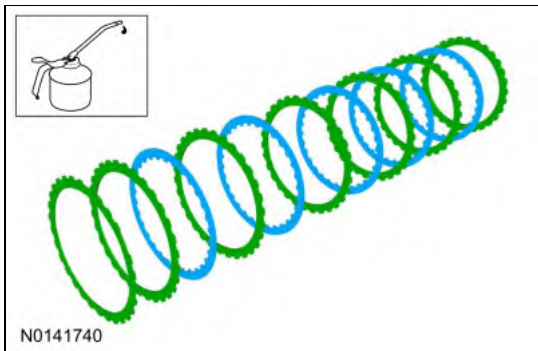
251. **NOTE:** Place the manual control lever in **PARK** when installing the rear planetary gearset to hold the rear ring gear stationary.

Install the planetary carrier.

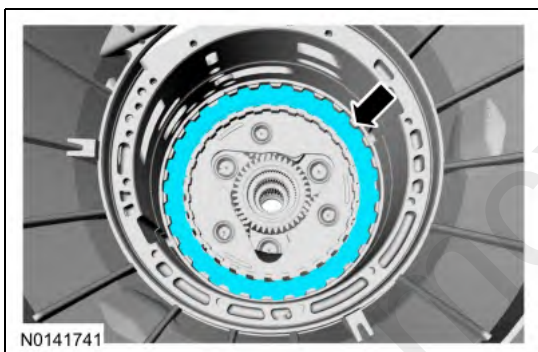


252. **NOTE:** Friction and steel plate quantity are model dependent and vary based on engine displacement.

Soak the low/reverse clutch plates in clean automatic transmission fluid. For friction and steel plate quantity, refer to the Clutch Plate Quantity Chart. Refer to: Specifications (307-01A Automatic Transmission, Transfer Case and Power Transfer Unit - 6-Speed Automatic Transmission 6R100, Specifications).  
Material: Motorcraft® MERCON® LV Automatic Transmission Fluid / XT-10-QLVC (WSS-M2C938-A) (MERCON® LV, )

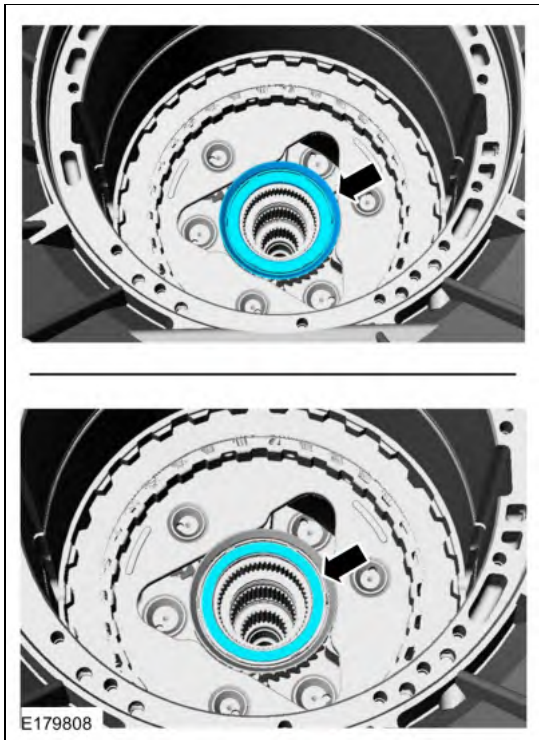


253. Install the low/reverse clutch plates, starting with the pressure plate and alternating between the friction and steel plates and ending with the wave spring plate on the top.



254. **NOTE:** Inspect the T7 thrust bearing and selective shim for damage or scoring.

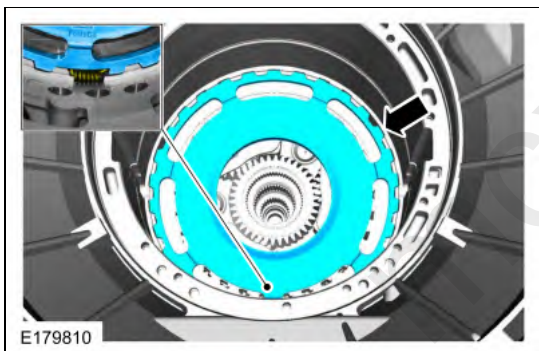
Install the T7 thrust bearing and the selective shim.



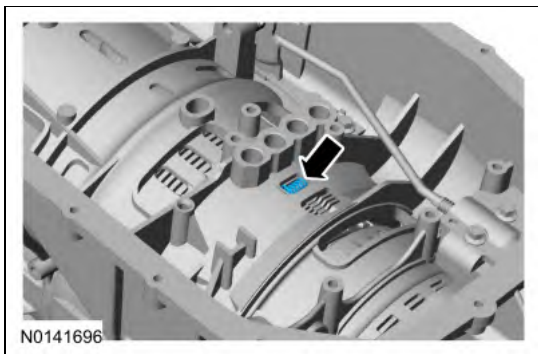
255. **NOTICE:** Do not separate inner and outer races, lift the one-way clutch from the inside inner race.

**NOTE:** Align the one-way clutch in the transmission case so the bias spring fits into the transmission case.

Install the one-way clutch clocked so that the bias spring can engage the one-way clutch and the case.



256. Install the bias spring



257. **NOTE:** Make sure the center support feed holes are lined up with the feed holes in the case.

Install the center support into the case.



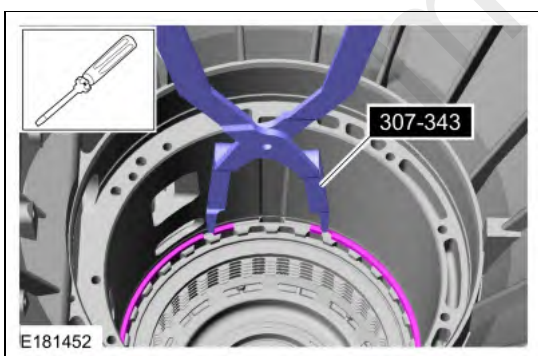
258. **NOTICE:** Install the snap ring with the beveled surface facing up and the snap ring gap in the 3 o'clock or the 9 o'clock position.

**NOTE:** Rotate the case to a horizontal position.

Using the special tool, install the center support snap ring. Using a tool, make sure the snap ring is fully seated.

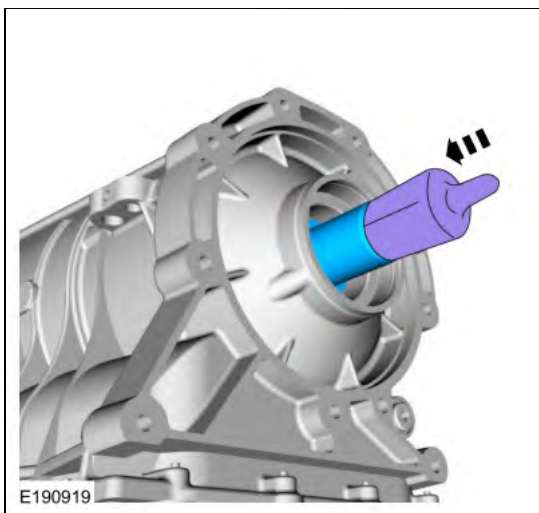
Use Special Service Tool: 307-343 Retaining Ring Pliers.

Use the General Equipment: Flat Headed Screw Driver

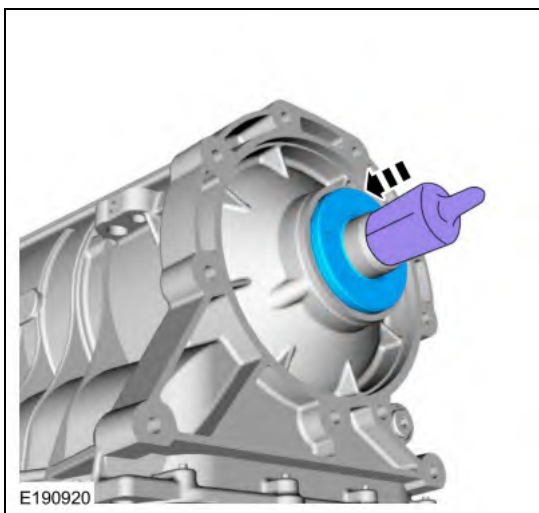


#### Four-Wheel Drive (4WD) vehicles

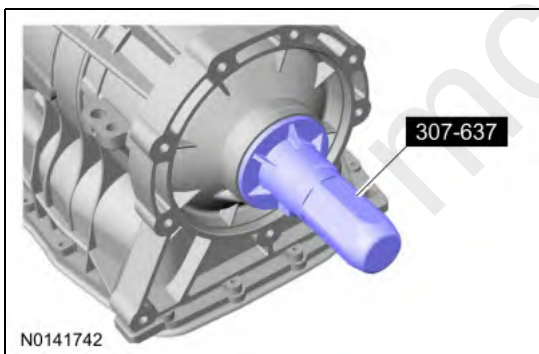
259. Install the seal protector provided with the new output shaft seal on the output shaft.



260. Slide the output shaft seal over the output shaft seal protector onto the output shaft. Remove the output shaft seal protector.



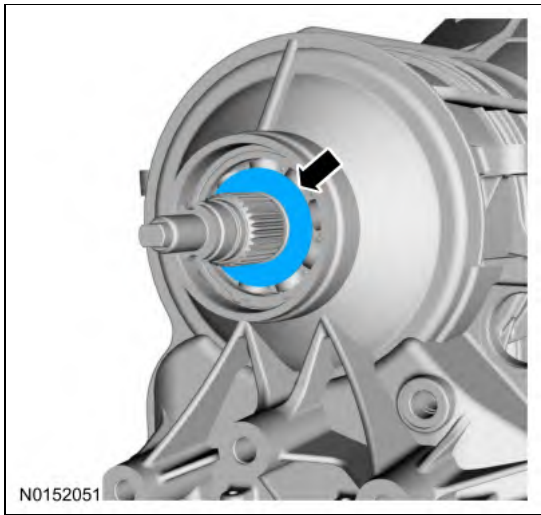
261. Using the special tool, install the output shaft seal.  
Use Special Service Tool: 307-637 Installer, Rear Seal, 4x4.



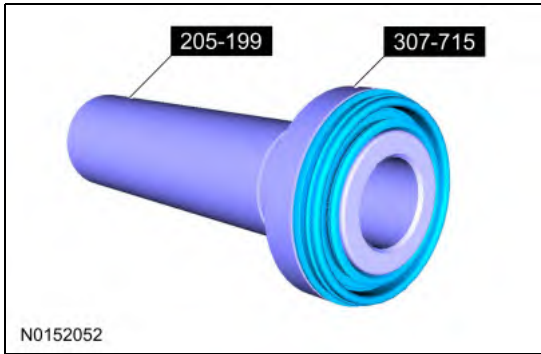
#### Rear Wheel Drive (RWD) vehicles

262. **NOTE:** Rotate the case to a vertical position.

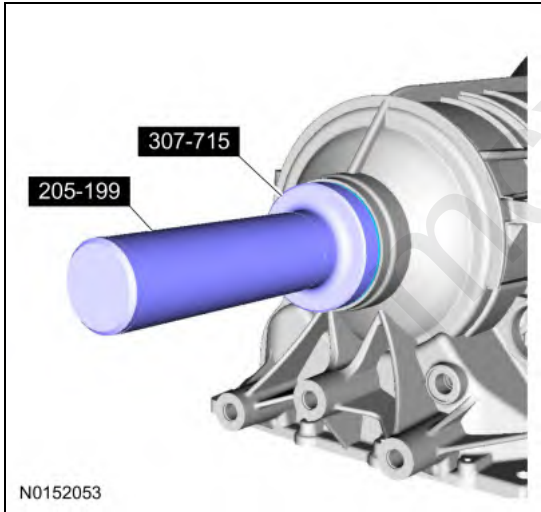
Install the slip plane washer.



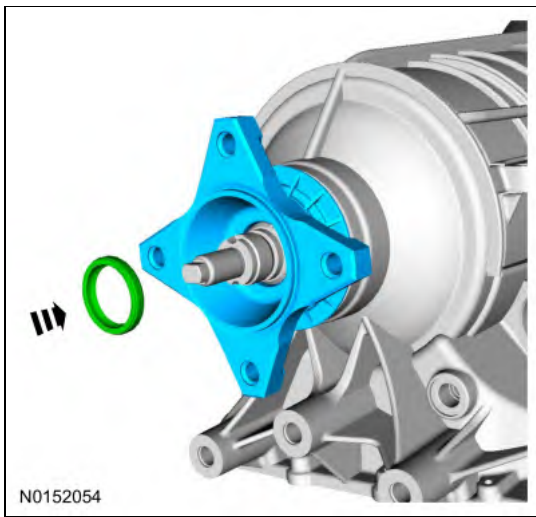
263. Position a new output shaft seal on the special tool.  
 Use Special Service Tool: 205-199 (T83T-3132-A1) Installer, Spindle/Axle Shaft. , 307-715 Installer, Output Seal (4X2).



264. Using the special tools, install the output shaft seal.  
 Use Special Service Tool: 205-199 (T83T-3132-A1) Installer, Spindle/Axle Shaft. , 307-715 Installer, Output Seal (4X2).

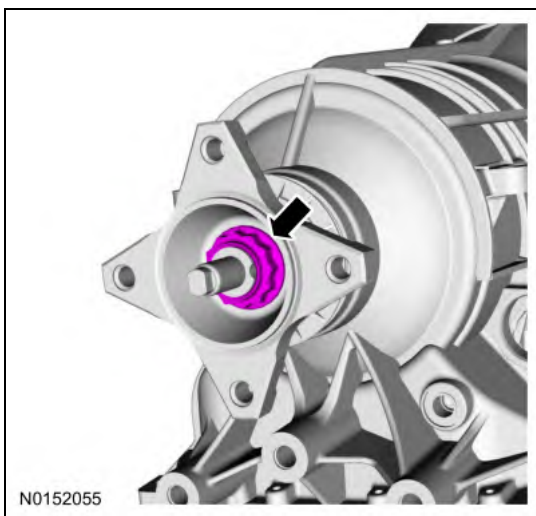


265. Install the output shaft flange and the output shaft flange seal.



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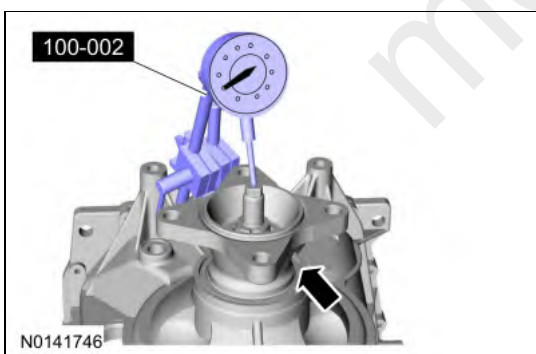
266. Loosely install a new output shaft flange retaining nut.



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267. **NOTE:** Loosely install the flange nut or an inaccurate reading may be recorded.

Install the special tool on the transmission case and position the plunger on the output shaft flange.  
Use Special Service Tool: 100-002 (TOOL-4201-C) Holding Fixture with Dial Indicator Gauge.



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268. **NOTE:** Loosely install the flange nut or an inaccurate reading may be recorded.

Lift up on the output shaft flange and record the reading. The reading should be within 0.6-0.9 mm (0.024-0.035 in). If the reading is not within specification, install a different (either thinner or thicker) rear planetary gearset selective shim.  
Use Special Service Tool: 100-002 (TOOL-4201-C) Holding Fixture with Dial Indicator Gauge.



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100-002

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- Diagram illustrating the installation of the pressure gauge (100-002) onto the engine block. The gauge is connected to the pressure port on the engine block.

273. **NOTE:** Rotate the transmission in the vertical position with the torque converter housing facing up.

N0141751

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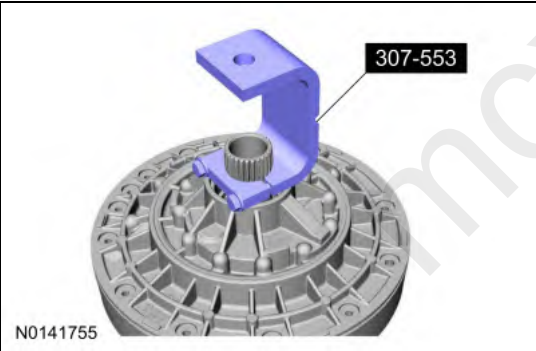
276. Install the forward/overdrive clutch assembly.



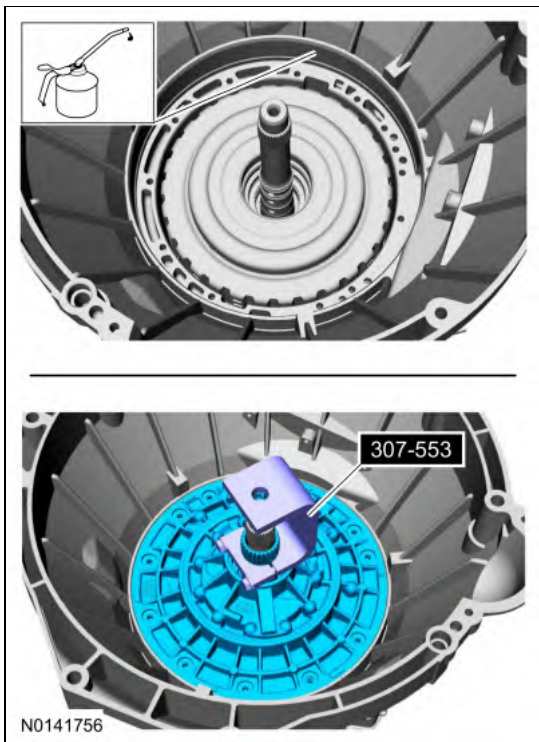
277. Install the selective shim.



278. Install the special tool on the front pump.  
Use Special Service Tool: 307-553 Remover, Transmission Fluid Pump.

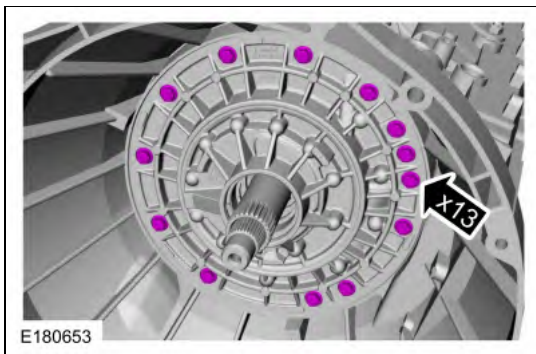


279. Lubricate the transmission case pump bore with petroleum jelly. Using the special tool, position the pump assembly in the case and rotate the pump to insert the pump splines into the front planetary sun gear. Rotate the pump to align the pump-to-case bolts and push the pump into the case.  
Use Special Service Tool: 307-553 Remover, Transmission Fluid Pump.

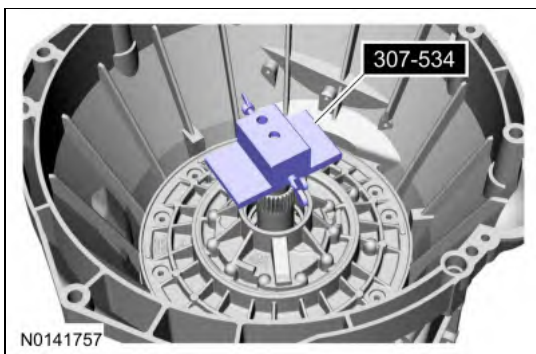


280. **NOTICE:** Failure to replace the fasteners will result in transmission fluid leakage.

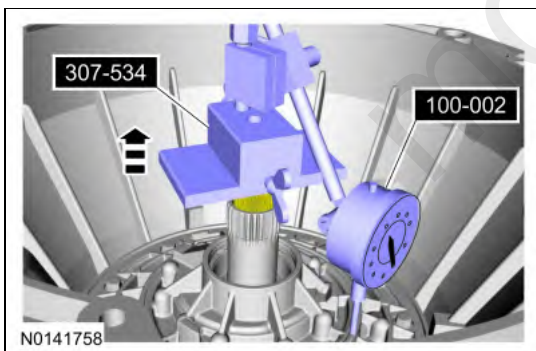
Install new front pump-to-case bolts and washers. Tighten in a crisscross pattern.  
*Torque:* 89 lb.in (10 Nm)



281. Install the special tool on the input shaft.  
Use Special Service Tool: 307-534 End Play Gauge, Transmission.

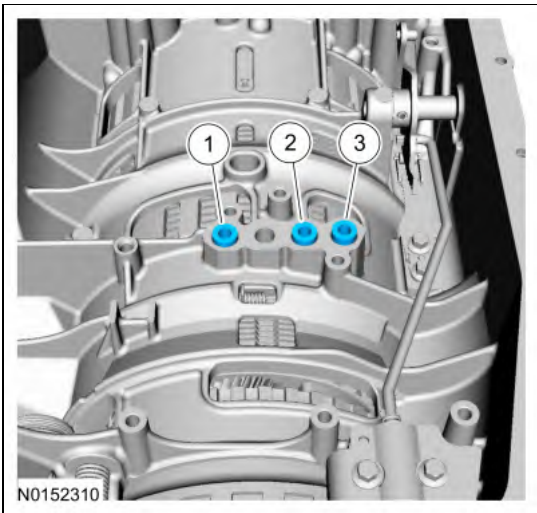


282. Install the special tools. Push down on the Transmission End Play Gauge and zero the dial indicator. Lift up on the Transmission End Play Gauge and record the measurement on the dial indicator. The specification should be between 0.2-0.4 mm. If the Measurement is not within specification, remove the pump and install a new selective shim.
- Use Special Service Tool: 100-002 (TOOL-4201-C) Holding Fixture with Dial Indicator Gauge, , 307-534 End Play Gauge, Transmission.

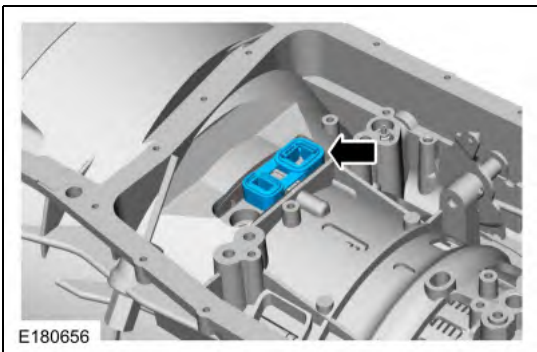


283. **NOTE:** The green (7G087) center support feed tube seal may be replaced with an orange (7G087) center support feed tube seal.

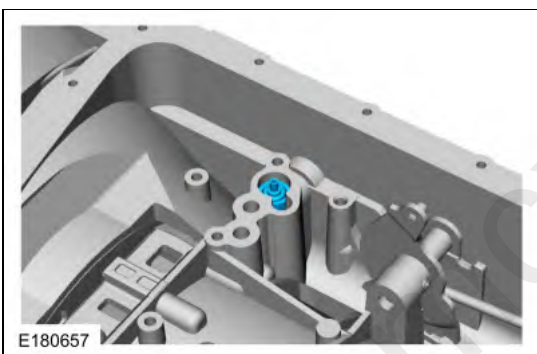
1. Install a new center support feed tube seal (7G199 Black).
2. Install a new center support feed tube seal (7G087 Green or Orange).
3. Install a new center support feed tube seal (7G084 Blue).



284. Install a new front pump adapter seal.

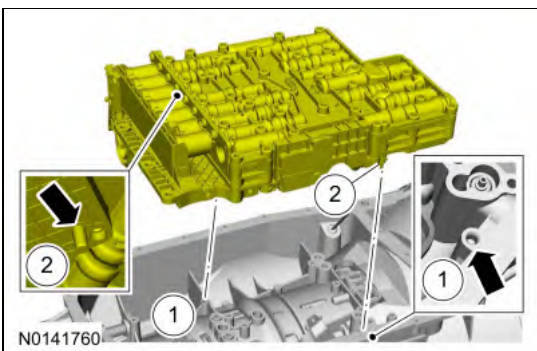


285. Install the thermal bypass valve into the case.



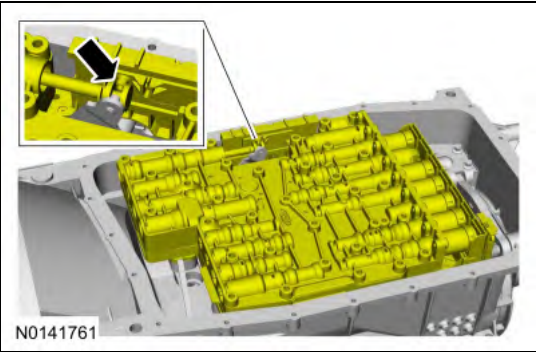
286.

1. Alignment holes
2. Guide pins

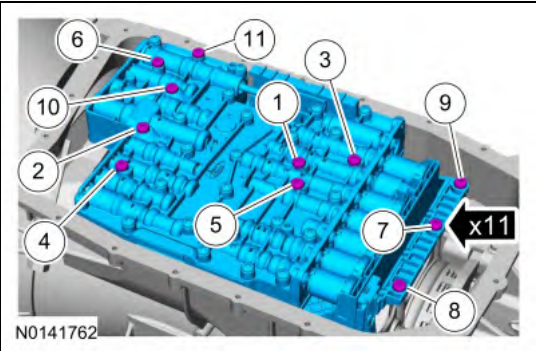


287. **NOTE:** The main control assembly will not lay flush on the case, this is a normal condition with the rubber feed tubes, the bolts will pull the main control assembly down.

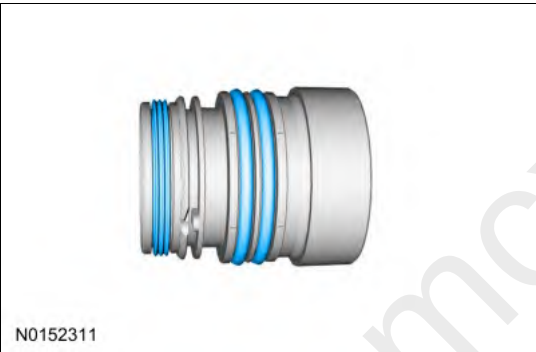
Slightly lift the main control assembly and align the manual valve in the manual valve linkage and position the main control in place.



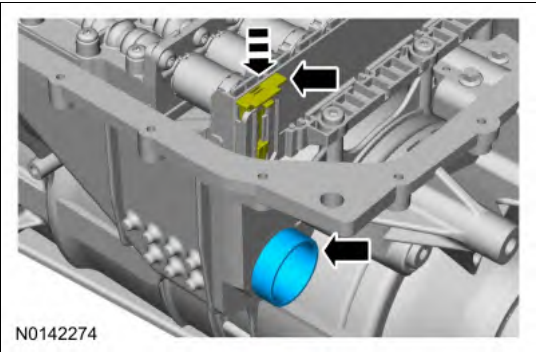
288. Install the main control assembly bolts and tighten in the sequence shown.  
Torque: 71 lb.in (8 Nm)



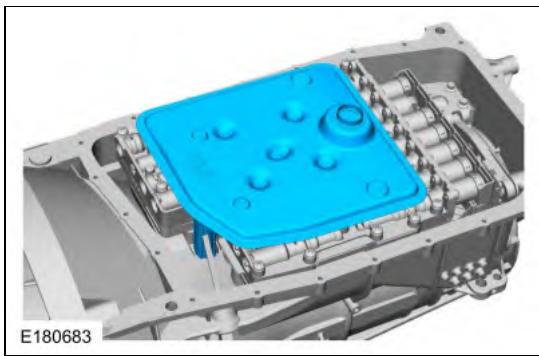
289. If removed, install the bulkhead connector sleeve seals.



290. With the release tab up and unlocked, push the outer shell of the bulkhead electrical connector into the transmission. Make sure the bulkhead connector is fully seated into the molded leadframe. Press down on the tab and lock the outer shell of the bulkhead electrical connector in place. Make sure the locking tab is securely locked.



291. Install a new transmission fluid filter.



292. **NOTE:** *The fluid pan gasket can be reused if not damaged.*

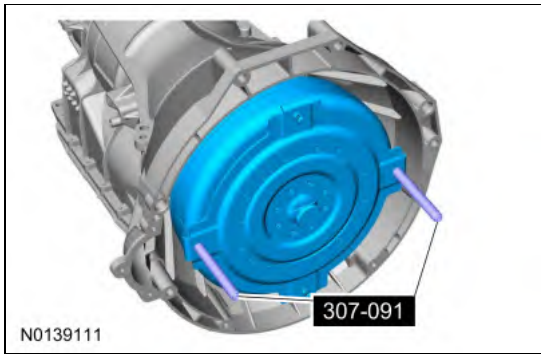
Install the transmission fluid pan gasket.



293. Install the transmission fluid pan and transmission fluid pan bolts. Tighten in a crisscross pattern.  
Torque: 80 lb.in (9 Nm)



294. Using the special tool, install the torque converter.  
Use Special Service Tool: 307-091 Handle, Torque Converter.



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295. **NOTICE:** Only 9-10 ml of the "Additive F" part of Motorcraft® 6R ATF Additive F (XL-16) should be used after the overdrive frictions are replaced. Too much "Additive F" in the fluid can result in converter clutch slip issues.

**NOTE:** The Motorcraft® 6R ATF Additive F (XL-16) contains two syringes. The "Additive F" syringe is used only if the overdrive frictions are replaced. The "Additive T" syringe contains a tracer that is not used.

If the Overdrive clutch FRICTIONS were replaced, add 9-10 ml of the "Additive F" part of Motorcraft® 6R ATF Additive F (XL-16) to the transmission.  
Material: Motorcraft® 6R ATF Additive F / XL-16

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