

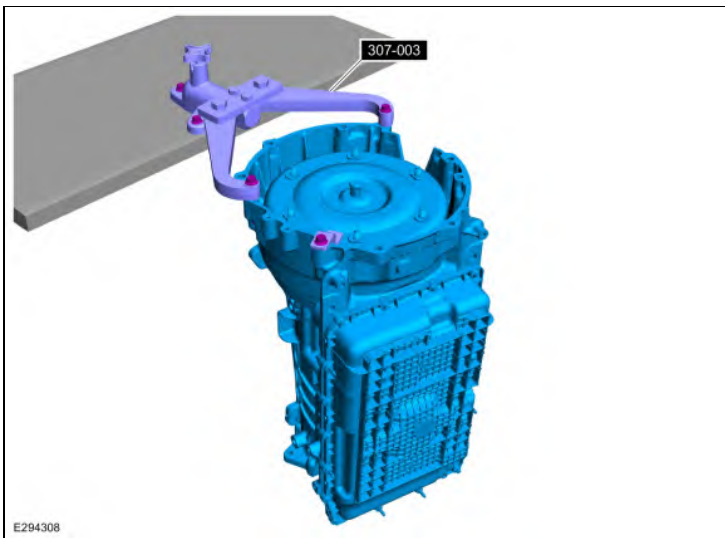
 E302631	307-785 Clutch spring compressor
 E302635	307-786 F7 Seal Installer/Sizer Input Shaft
 E302636	307-787 F8 Seal Installer/Sizer Input Shaft
 E302623	307-790 Endplay Check Gauge
 E302633	307-796 F2 Seal Guide, Installer & Sizer
 E302632	307-803 F1 Seal Guide, Installer & Sizer
 E302634	307-804 F9 Seal Guide, Installer & Sizer
Rubber Mallet	
Hydraulic Press	
Punch	
Wooden Block	
Magnet	

Materials

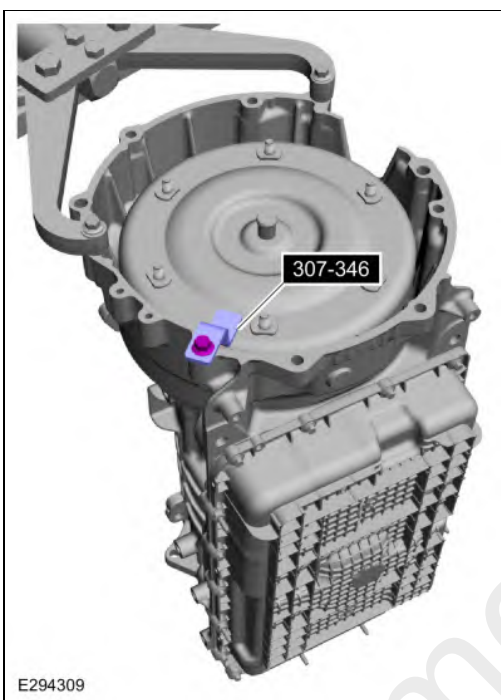
Name	Specification
Motorcraft® MERCON® ULV Automatic Transmission Fluid XT-12-QLV	WSS-M2C949-A, MERCON® ULV

All vehicles

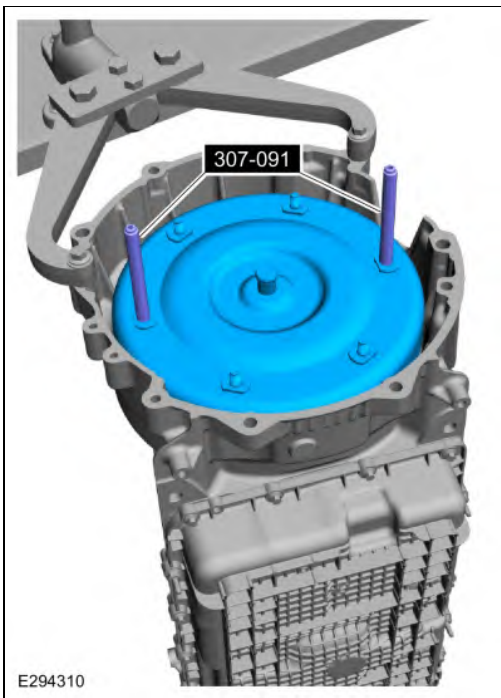
- Transmission overhaul includes the following:
 - Complete disassembly of the transmission
 - Cleaning and inspecting of all components
 - Replacement of all seals, gaskets, and one time use components. Use gasket kit -7153-
 - Complete assembly with clearances adjusted to specification
 - Replacement 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 (307-01B Automatic Transmission, Transfer Case and Power Transfer Unit - 10-Speed Automatic Transmission & 10R80, Description and Operation).
- Using the special tool, install the transmission on a bench.
Use Special Service Tool: 307-003 (T57L-500-B) Holding Fixture, Transmission.



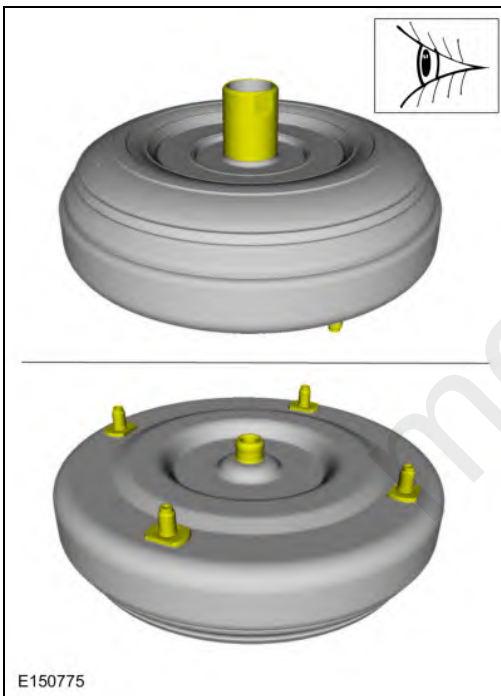
4. Remove the special tool.
Use Special Service Tool: 307-346 (T97T-7902-A) Retainer, Torque Converter.



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

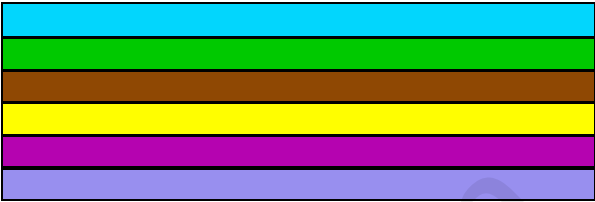
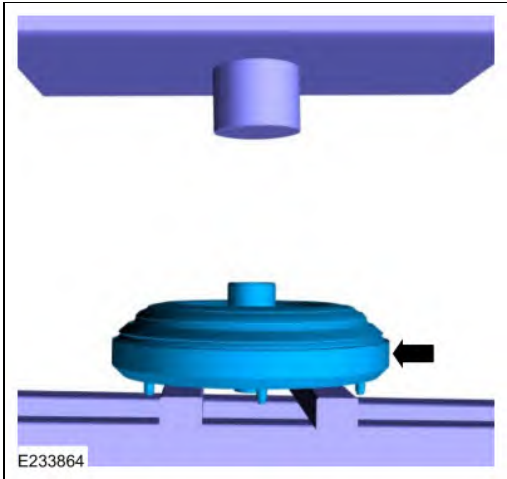


6. A new or remanufactured torque converter must be installed if one or more of the following statements are true:
- The sealing surface has a groove worn from the seal.
 - A torque converter malfunction has been determined based on complete diagnostic procedures.
 - The torque converter stud or studs, 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.

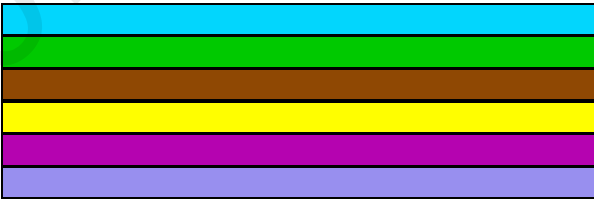
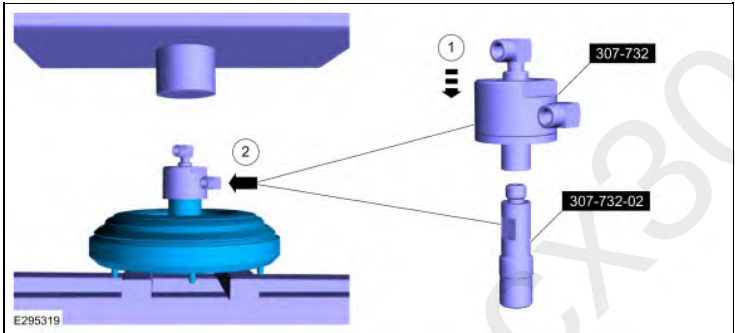


8. If equipment meeting the specifications above is not available, the torque converter must be flushed by hand. Go to Flush The Torque Converter By Hand steps later in this procedure.
9. Check and top off the transmission fluid level of the transmission cooling system heated flusher with transmission fluid.
10. Turn on the heater and allow the transmission fluid in the transmission cooling system heated flusher 15-30 minutes to heat up to 60Â°C (140Â°F) before using.

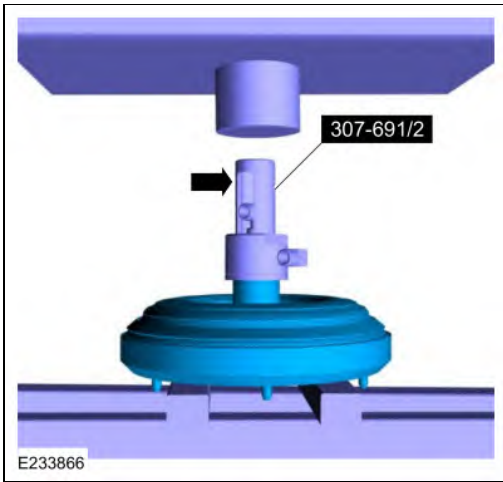
11. Place the torque converter in an arbor press. Support the torque converter on the mounting pads.



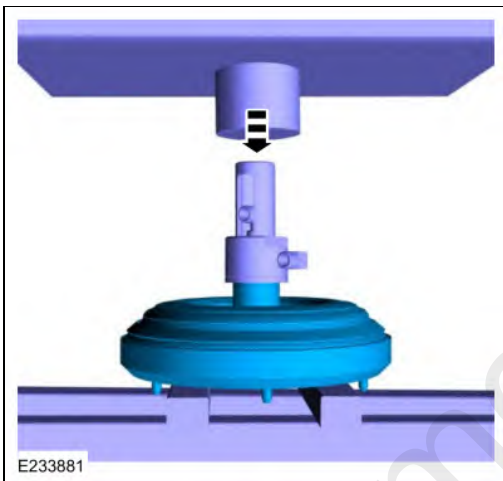
- 12.
1. Assemble the special tools.
Use Special Service Tool: 307-732 Tool Kit, Torque Converter Flusher. , 307-732-02 Adapter for 307-732 Converter flushing Mandrel.
 2. Install the special tools on the torque converter hub.



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



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



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



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

Forward flush the converter for 15 minutes.

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

20. **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.

21. 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.

22. Pour a small amount of transmission fluid from the torque converter onto an absorbent white tissue or through a paper filter.
23. 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.
24. Drain the remaining transmission fluid from the torque converter.
25. 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® ULV Automatic Transmission Fluid / XT-12-ULV (WSS-M2C949-A) (MERCON® ULV)

Material: Motorcraft® MERCON® ULV Automatic Transmission Fluid / XT-12-QULV (WSS-M2C949-A,) (MERCON® ULV)



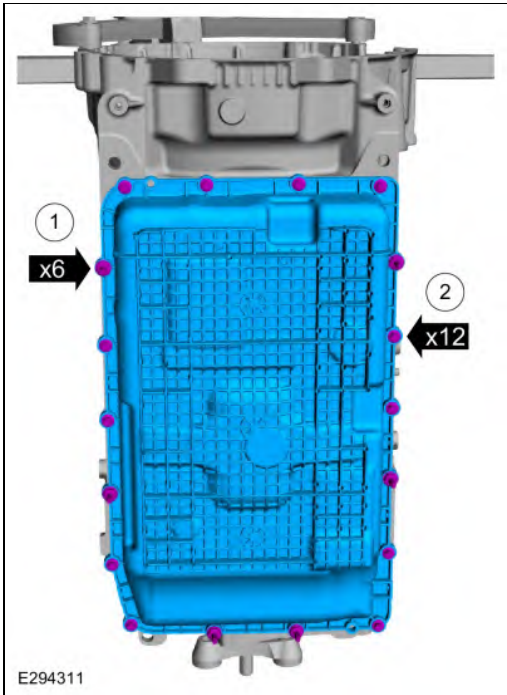
26. Thoroughly drain the transmission fluid.

All vehicles

27. **NOTE:** *Note the location of the studbolts and bolts for assembly.*

Remove the studbolts and bolts and the transmission fluid pan.

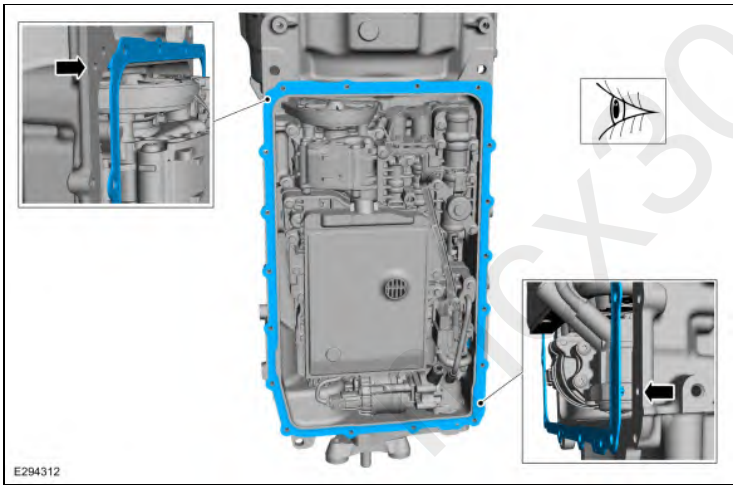
- 1. Studbolts
- 2. Bolts



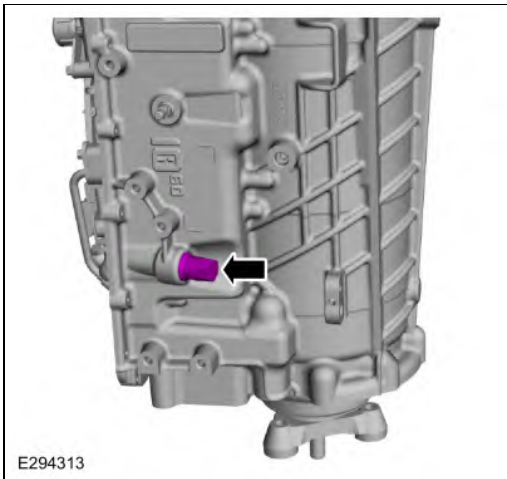
28. **NOTE:** The transmission fluid pan gasket can be reused if not damaged.

NOTE: Note the location of the alignment tabs.

Remove the transmission fluid pan gasket.

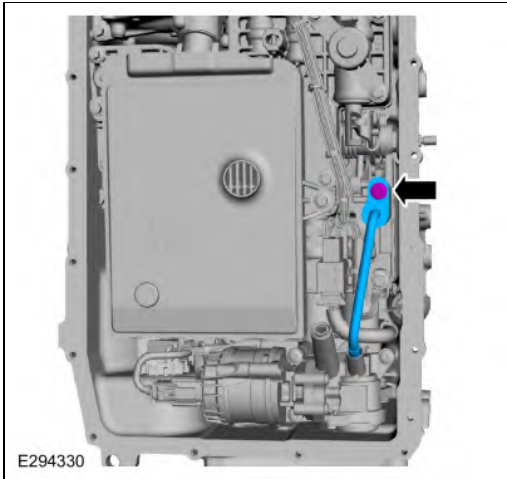


29. Remove the plug and transmission fluid level indicator assembly.

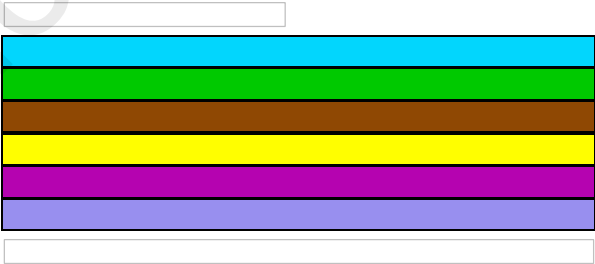
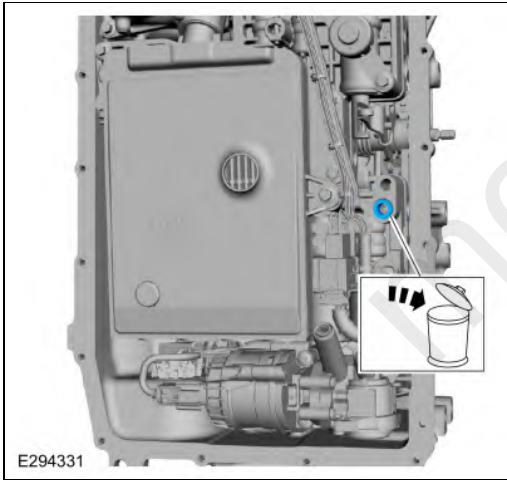


Auto-Start-Stop vehicles

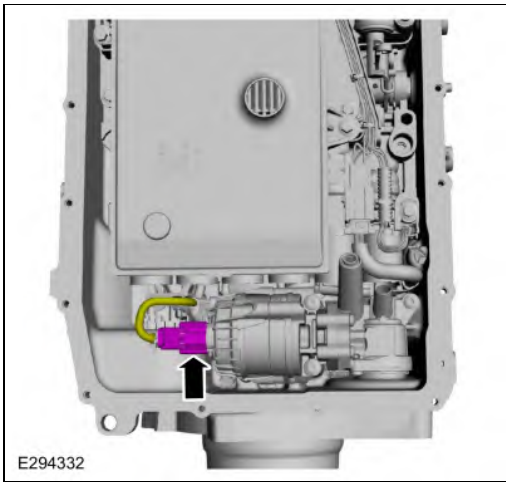
30. Remove the bolt and the transmission fluid auxiliary pump tube.



31. Remove and discard the transmission fluid auxiliary pump tube seal.

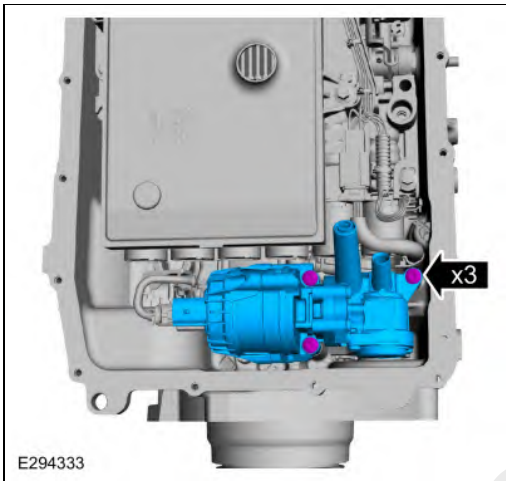


32. Disconnect the transmission fluid auxiliary pump electrical connector.



33. **NOTE:** If the transmission fluid was contaminated from a catastrophic failure, replace the transmission fluid auxiliary pump.

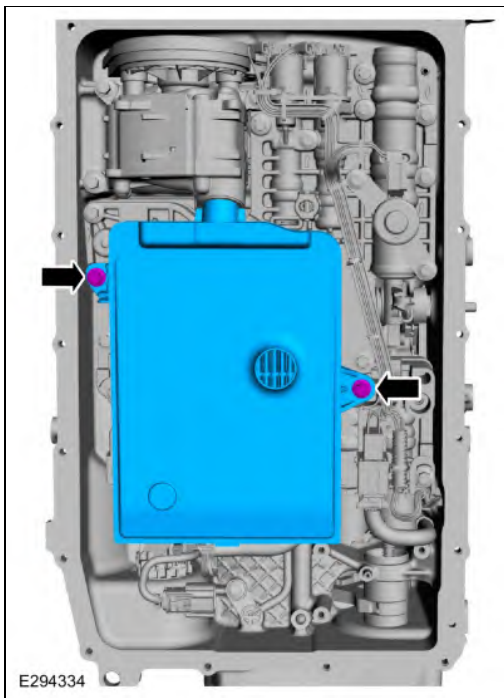
Remove the bolts and the transmission fluid auxiliary pump.



All vehicles

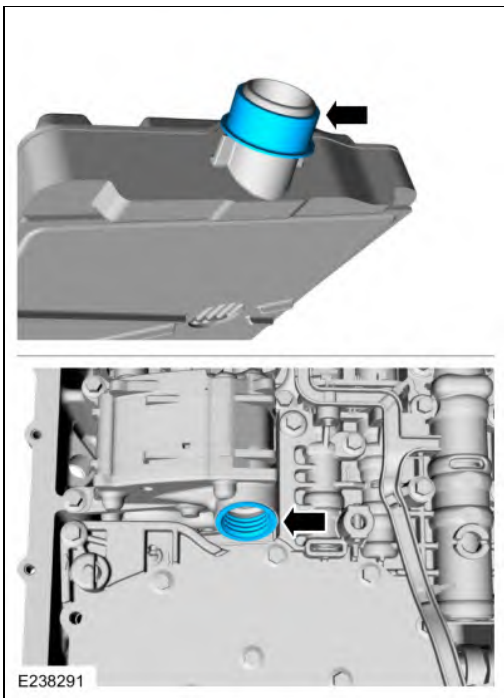
34. **NOTE:** The transmission fluid filter may be reused if no excessive contamination is indicated.

Remove the 71 mm and 20 mm bolts and the transmission fluid filter.

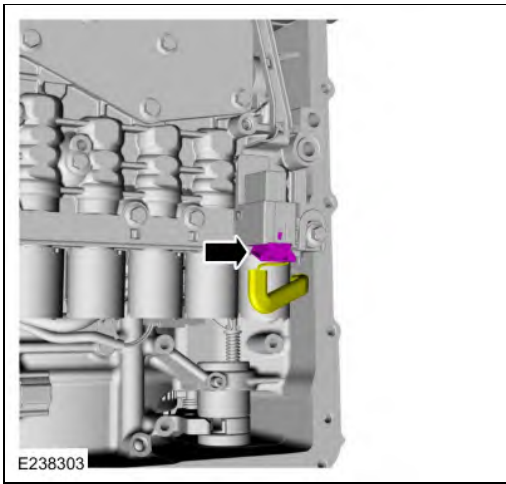


35. **NOTE:** The transmission fluid filter seal will either come off with the transmission fluid filter or it will be stuck in the pump.

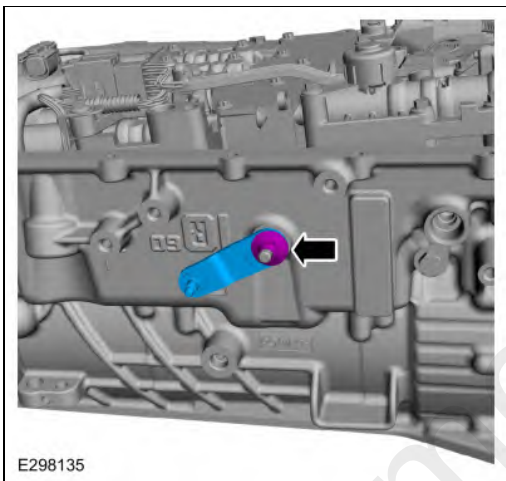
Remove the transmission fluid filter seal.



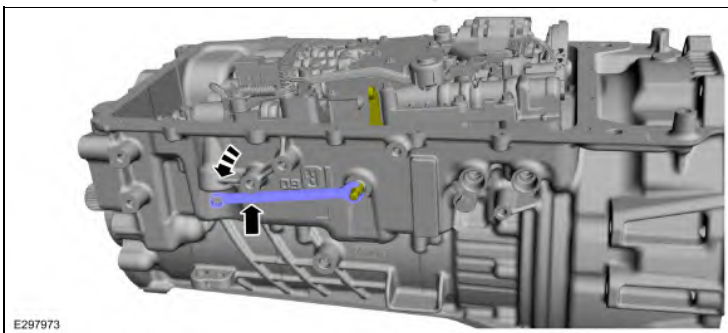
36. Disconnect the main control main electrical connector.



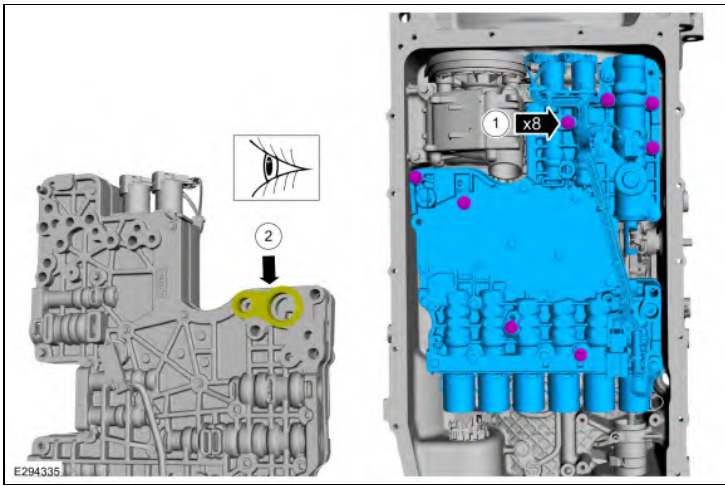
37. Remove the nut and the park override lever.



38. Rotate the manual shaft to the park override position.



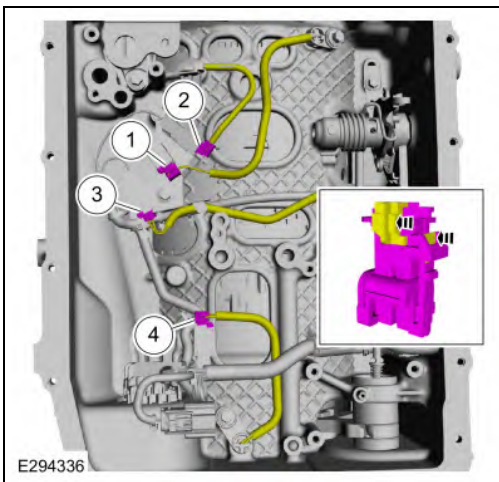
- 39.
1. Remove the 68 mm bolts and the main control assembly.
 2. Check to see if the main control-to-transmission fluid pump seal is attached to the main control.



40. Clean and inspect the main control for damage.
Refer to: Main Control Valve Body (307-01 Automatic Transmission) .

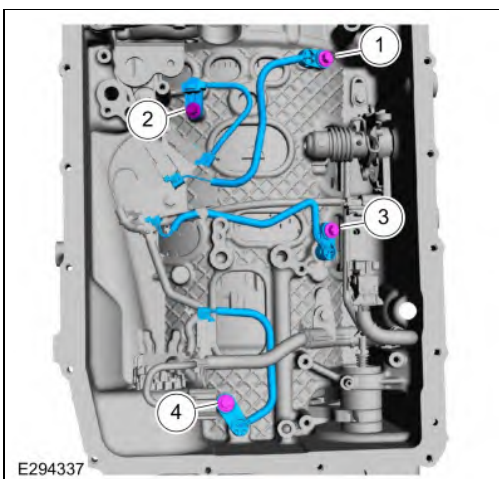
41. Unlock and disconnect the speed sensors.

1. Intermediate Speed Sensor A (ISSA)
2. TSS sensor
3. Intermediate Speed Sensor B (ISSB)
4. OSS sensor

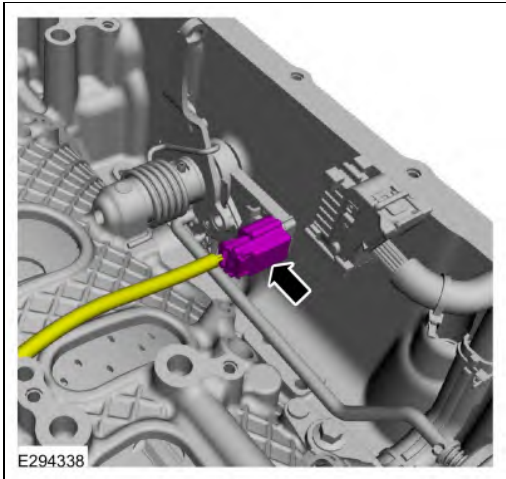


42. Remove the speed sensors.

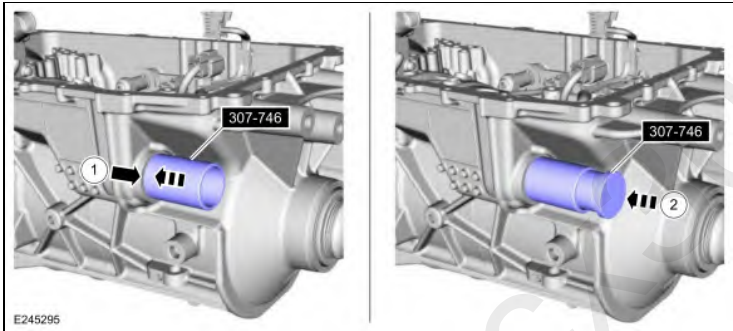
1. Intermediate Speed Sensor A (ISSA)
2. TSS sensor
3. Intermediate Speed Sensor B (ISSB)
4. OSS sensor



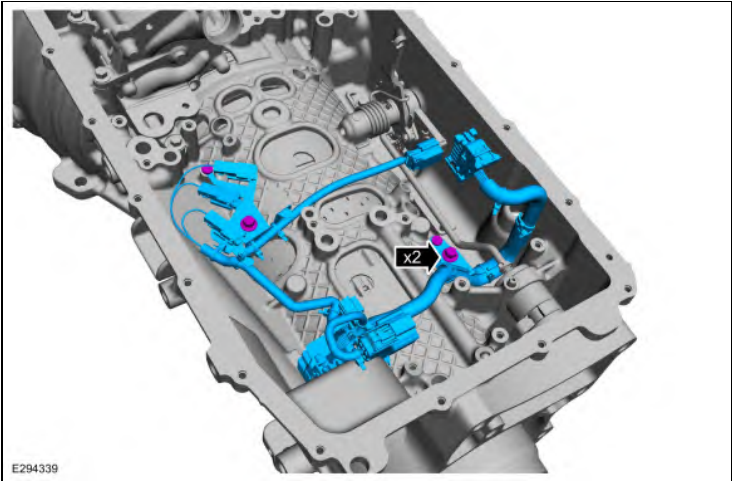
43. Disconnect the TR sensor electrical connector.



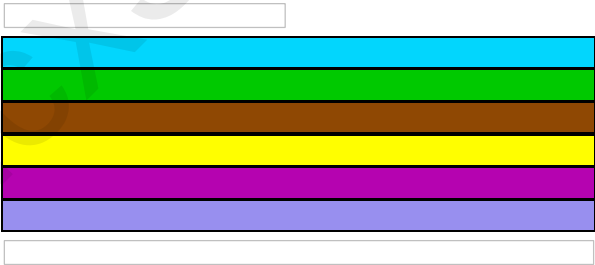
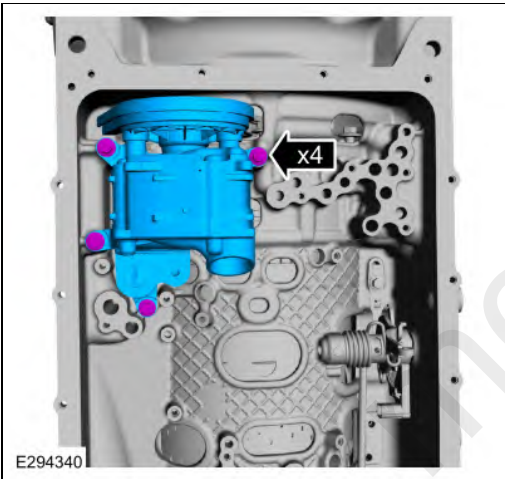
44. Using the special tool, disconnect the transmission internal wiring harness connector from the transmission case.
- Slide the special tool over the connector flush with the transmission case.
Use Special Service Tool: 307-746 Remover, Transmission Wiring Harness Connector.
 - Use the special tool to push the connector through the case.



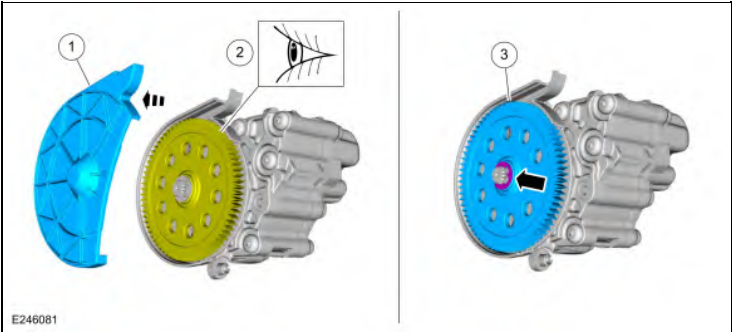
45. Remove the bolts and the transmission internal wiring harness.



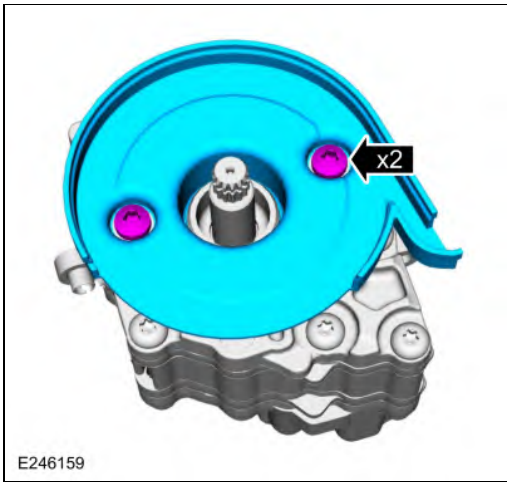
46. Remove the bolts and the transmission fluid pump.



- 47.
- 1. Remove the transmission fluid pump driven gear outer cover.
 - 2. Clean and inspect the transmission fluid pump driven gear.
 - 3. If replacing the transmission fluid pump driven gear or transmission fluid pump driven gear inner cover, remove the retaining ring and the transmission fluid pump driven gear.

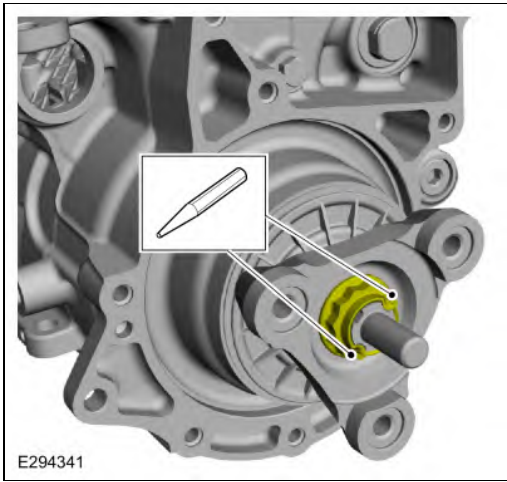


48. If necessary, remove the bolts and the transmission fluid pump driven gear inner cover.

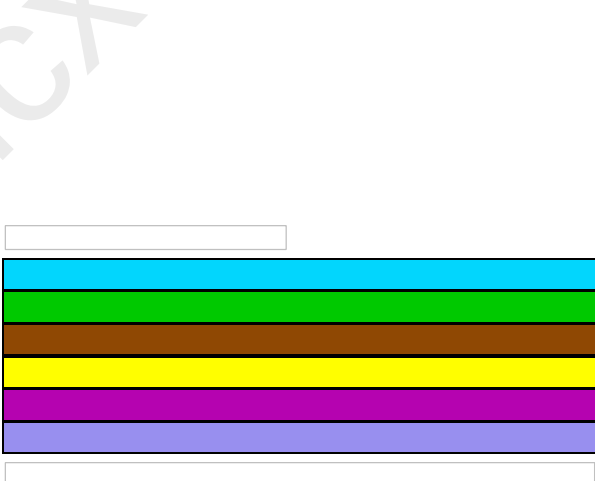
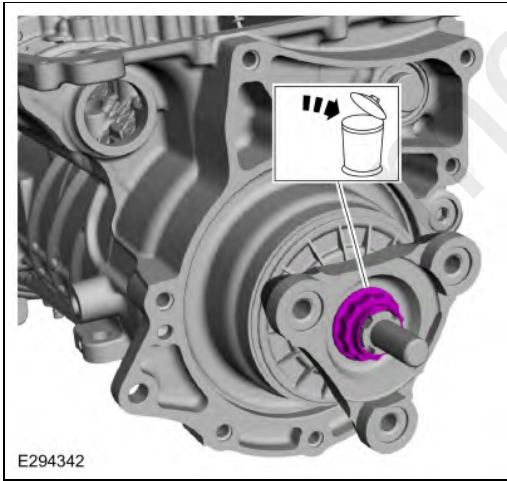


Rear Wheel Drive (RWD) vehicles

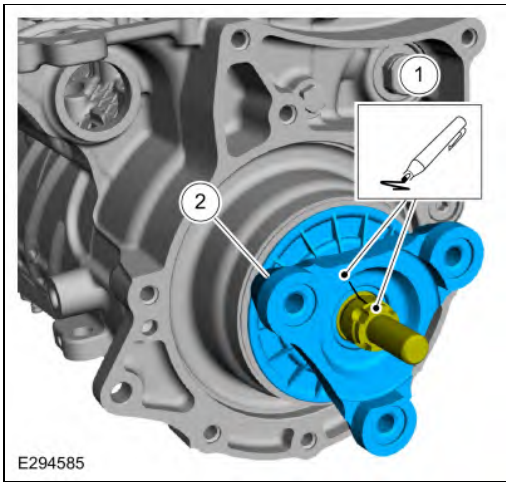
49. Remove the stakes from the output shaft flange retaining nut.
Use the General Equipment: Punch



50. Remove and discard the output shaft flange nut.

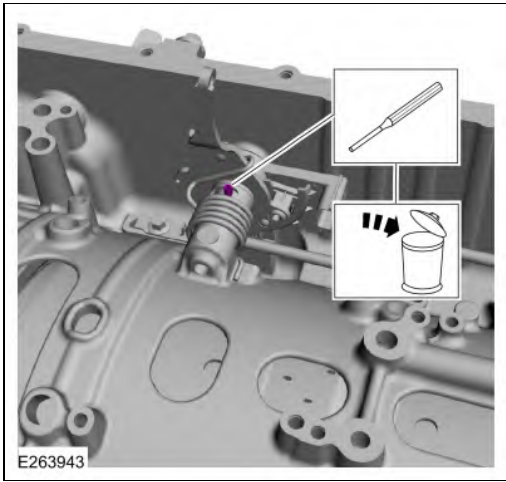


- 51.
1. Index mark the output shaft to the flange.
 2. Remove the output shaft flange.



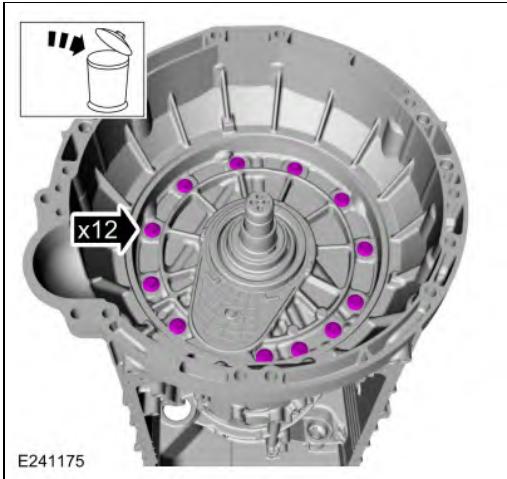
All vehicles

52. Using a punch, remove and discard the manual shaft-to-TR sensor roll pin.
 Use the General Equipment: Punch



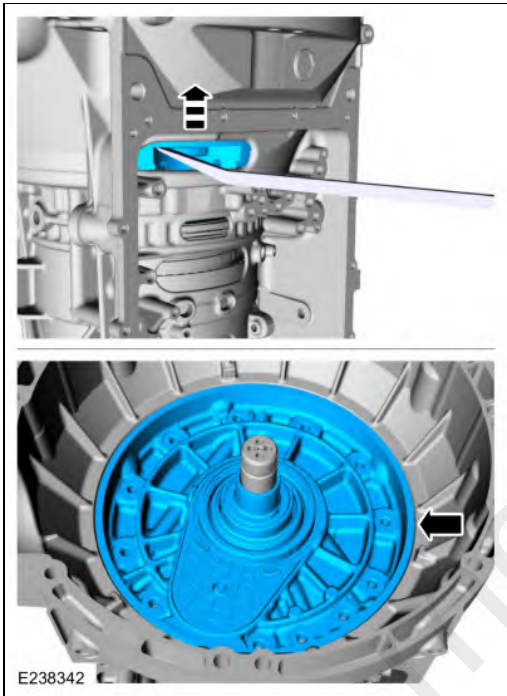
53. Release the tension from the park return spring.
- Slide the end of the park return spring off the transmission case.

57. Rotate the transmission to a vertical position. Remove and discard the front support assembly bolts.



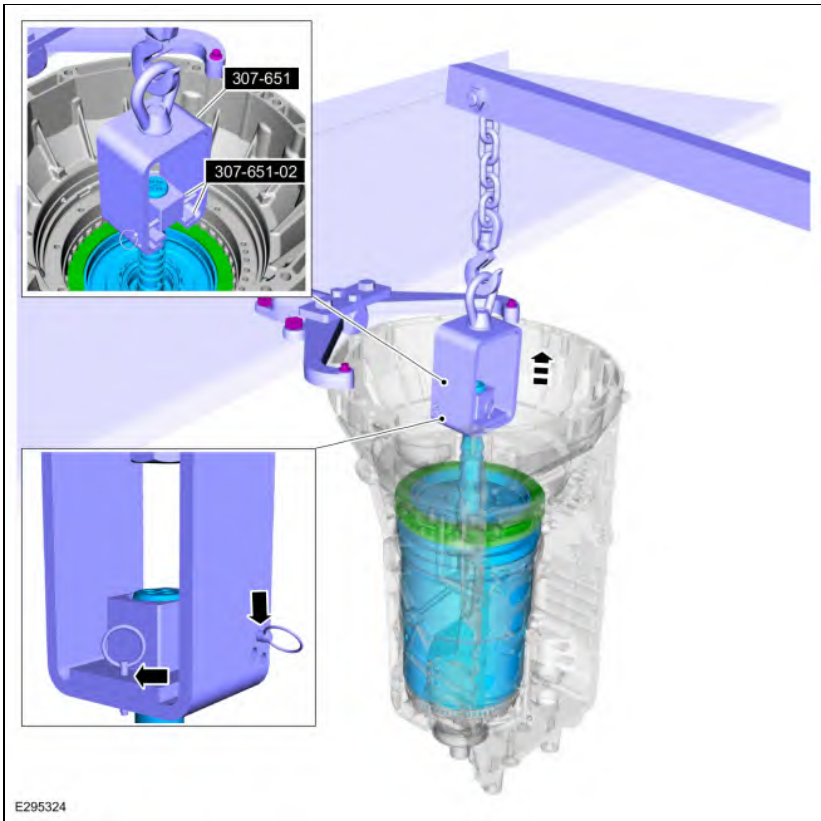
58. **NOTICE:** Be careful not to contact the transmission fluid pump drive gear, or damage to the gear can occur.

Using a prybar, pry the front support assembly out of the transmission case and remove the front support assembly.



59. Using the special tools and a floor crane, remove the clutch and planetary assembly.

Use Special Service Tool: 307-651 Bracket, Pump Remover/Installer. , 307-651-02 Lift fixture adapter for 307-651.



60. Remove the (T9) thrust bearing.



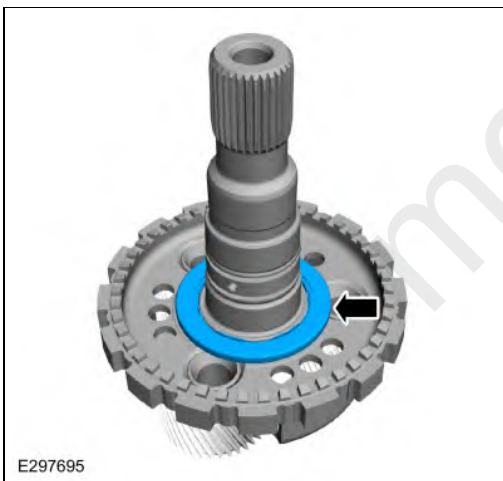
61. Remove the output shaft and planetary carrier No. 4 assembly.



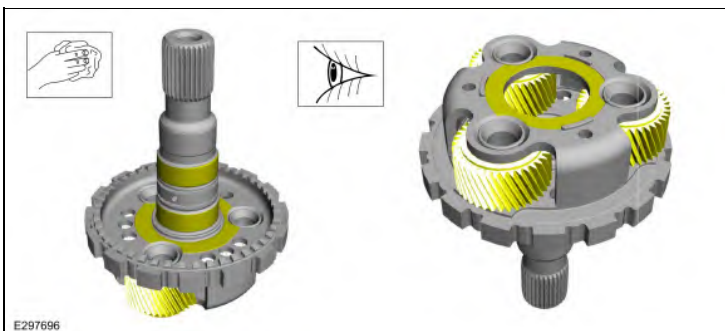
62. Remove and discard the output shaft seals.



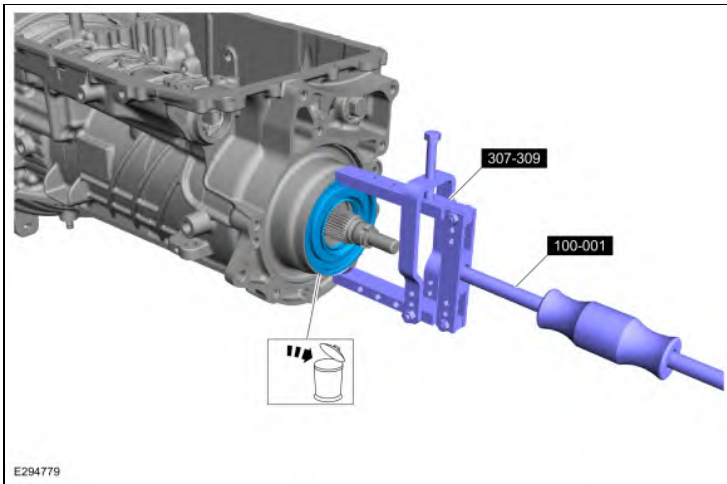
63. Remove the (T10) thrust bearing.



64. Clean and inspect the output shaft and planetary carrier No. 4 assembly.

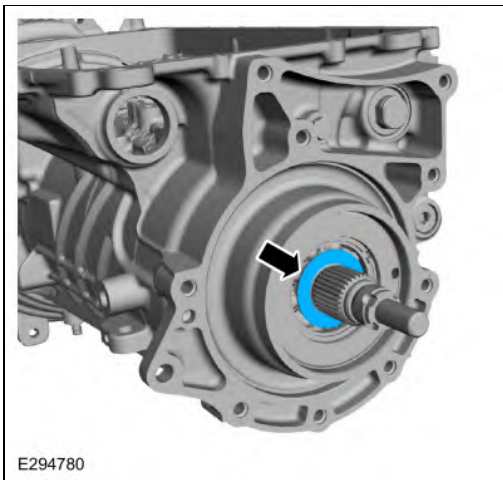


65. Using the special tools, remove and discard the output shaft seal.
Use Special Service Tool: 100-001 (T50T-100-A) Slide Hammer. , 307-309 Remover, Torque Converter Seal.



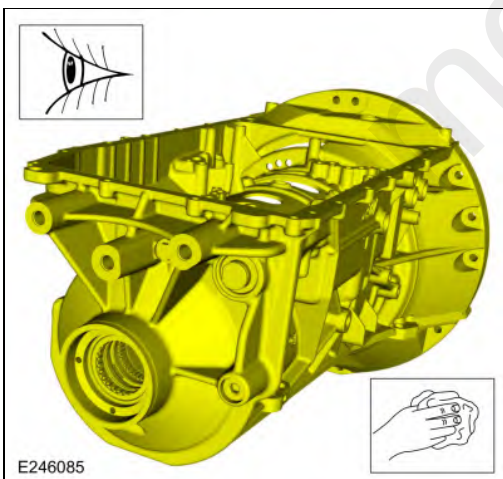
Rear Wheel Drive (RWD) vehicles

66. Remove the anti-ting washer.



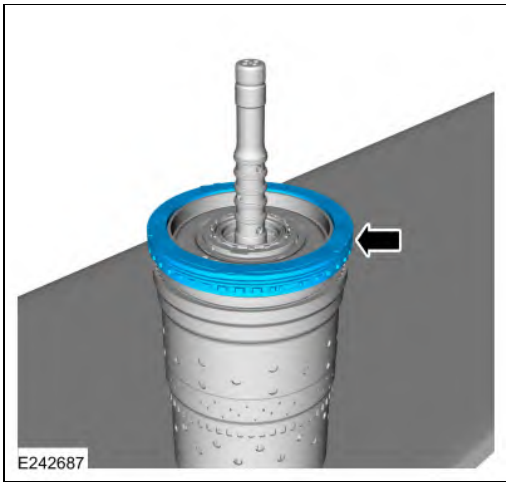
All vehicles

67. Clean and inspect the transmission case and bearings. Check for leaks from plugs and park pawl actuator rod sleeve. Repair or replace as necessary.
Refer to: Transmission Case (307-01B Automatic Transmission, Transfer Case and Power Transfer Unit - 10-Speed Automatic Transmission â€” 10R80, Disassembly).

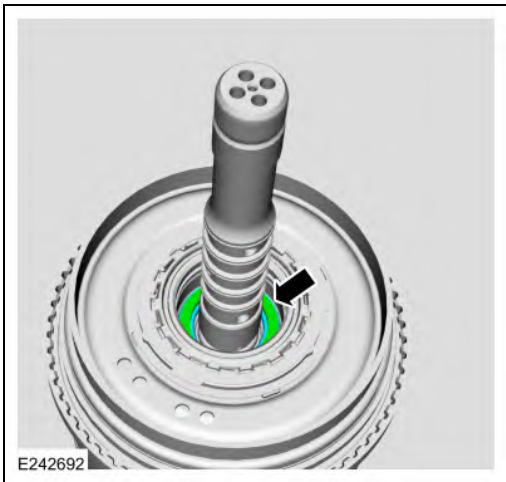


68. **NOTICE: If replacing A clutch separating springs, all separating springs must be replaced as a matching set or damage can occur.**

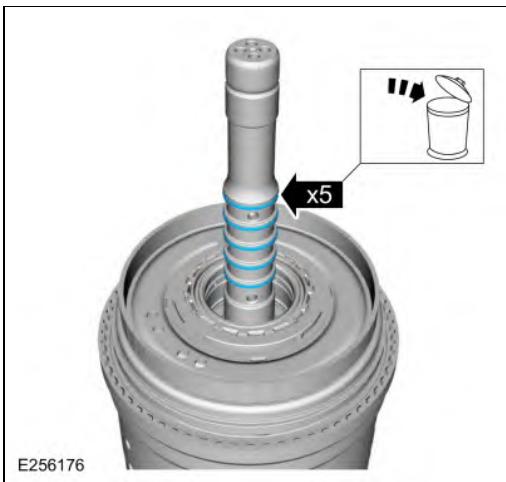
Remove the A clutch assembly. Inspect the clutch plates for excessive wear or damage. If the clutch plates are excessively worn or damaged replace as necessary. If the clutch plates are not excessively worn or damaged, they can be reused.



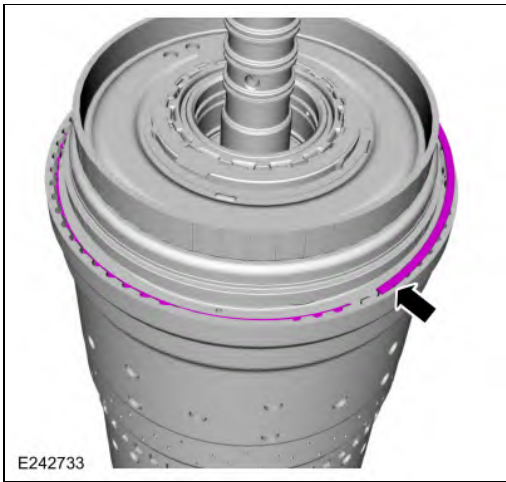
69. Using a magnet, remove the selective shim and the (T3) thrust bearing.
Use the General Equipment: Magnet



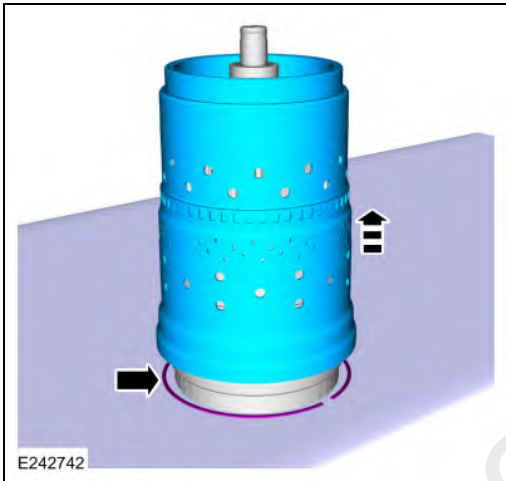
70. Remove and discard the input shaft front Teflon® seals.



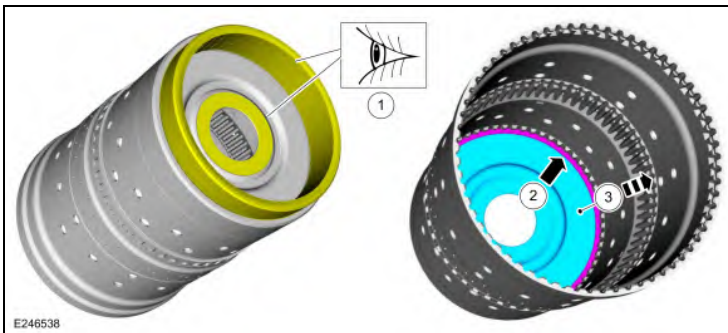
71. Remove one side of the No. 1 planetary carrier snap ring.



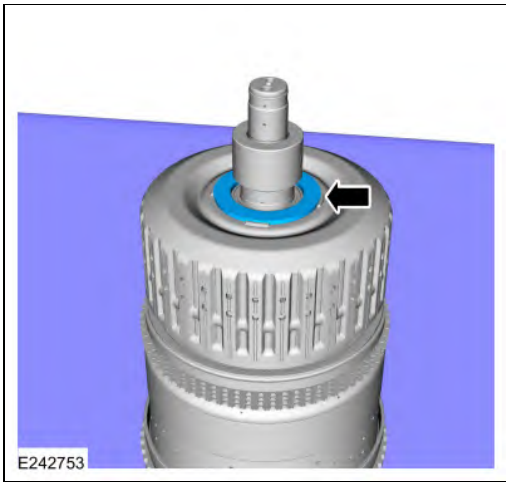
72. Flip the clutch and planetary assembly over with the input shaft through a hole in the bench. Remove the No. 1 planetary carrier snap ring and remove the clutch and planetary container cylinder.



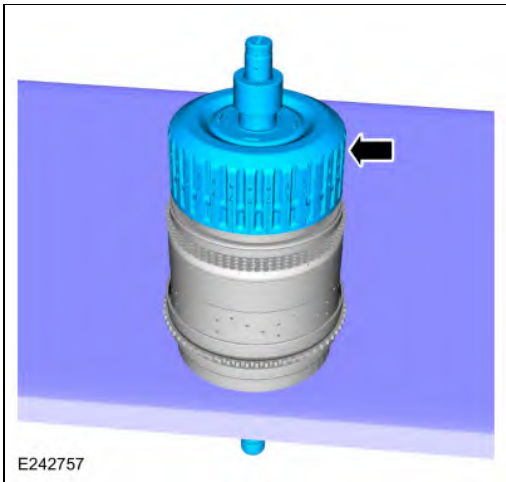
- 73.
1. Inspect the No. 4 ring gear.
 2. **NOTE:** Remove the ring gear when replacement is necessary.
If necessary, remove the ring gear snap ring.
 3. If necessary, remove the ring gear from the inside of the clutch and planetary container cylinder.



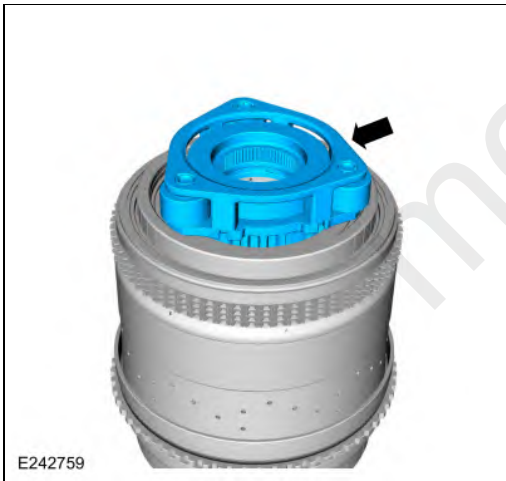
74. Remove the (T8) thrust bearing.



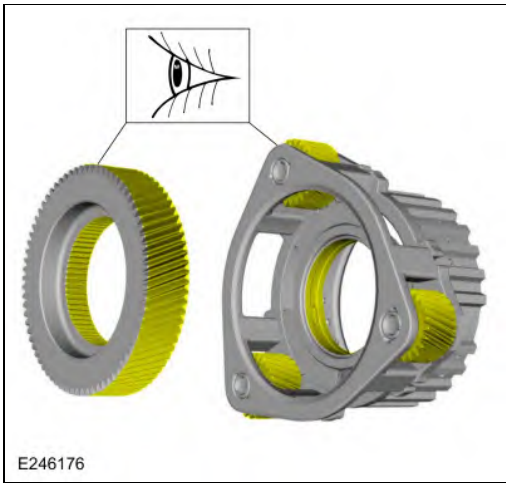
75. Remove the E clutch and input shaft assembly.



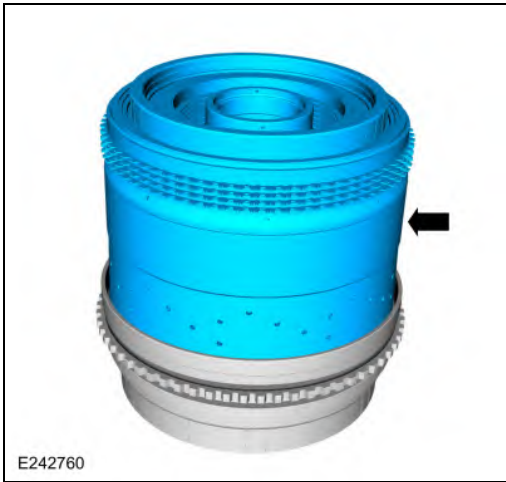
76. Remove the No. 3 planetary carrier and the No. 3 sun gear.



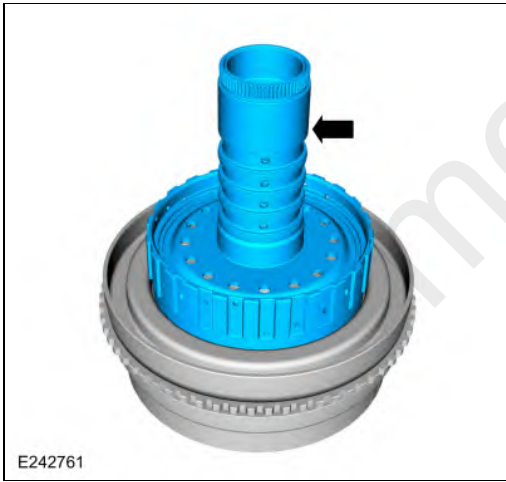
77. Inspect the No. 3 planetary carrier and the No. 3 sun gear.



78. Remove the CDF clutch assembly from the planetary carrier assembly.



79. Remove the No. 3 sun gear shaft and No. 2 ring gear assembly.



80. Inspect the No. 3 sun gear shaft and No. 2 ring gear assembly.

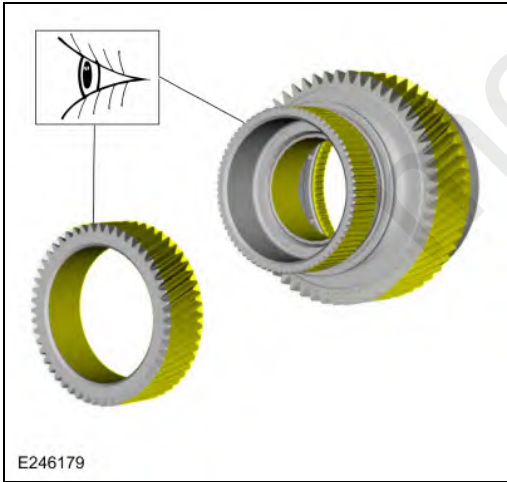
84. Remove the No. 2 sun gear.



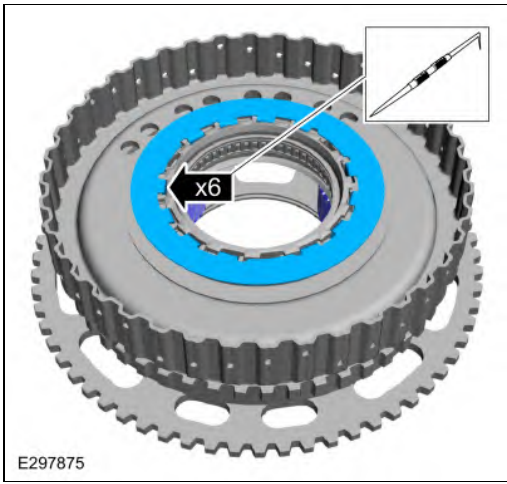
85. Remove the No. 1 sun gear.



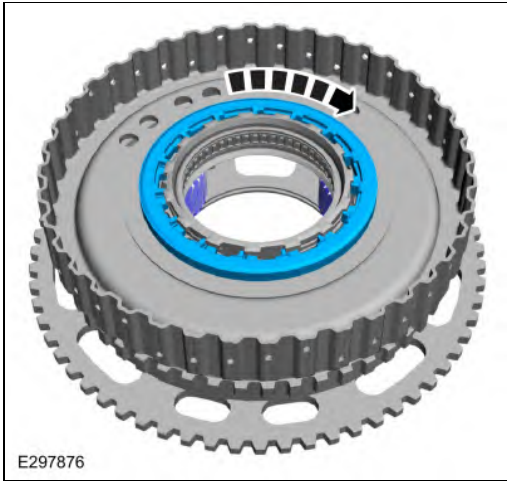
86. Inspect the No. 1 and No. 2 sun gears.



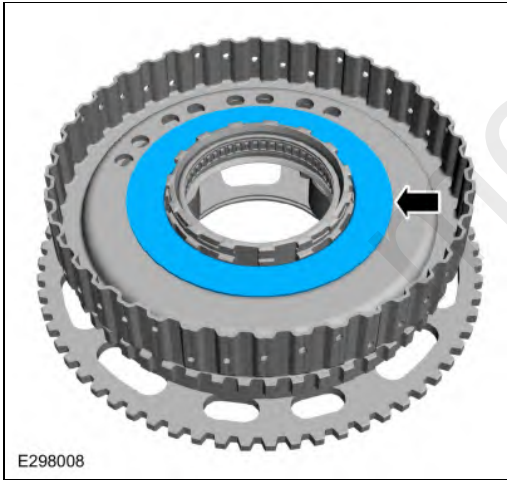
87. Gently pry up on the clips and remove the No. 1 bearing support locking ring.



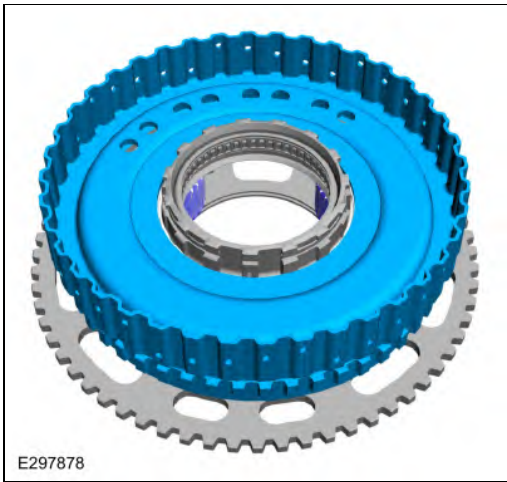
88. Rotate the No. 1 bearing support clockwise and remove the bearing support.



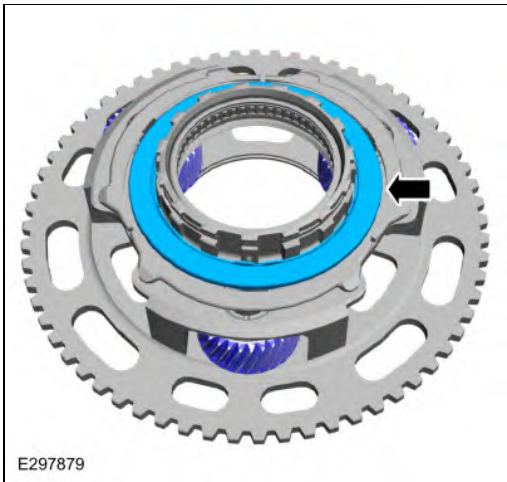
89. Remove the No. 1 ring gear bearing.



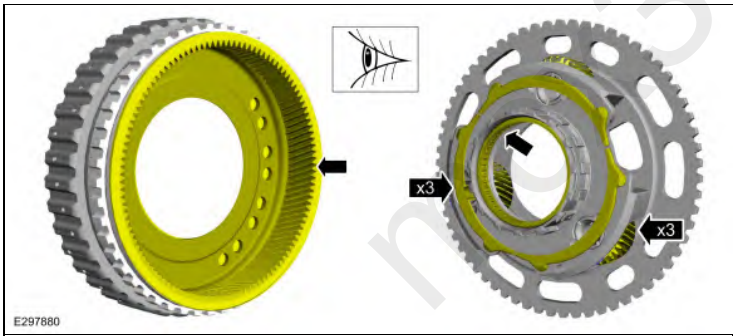
90. Remove the No. 1 ring gear.



91. Remove the ring gear No 1 bearing.



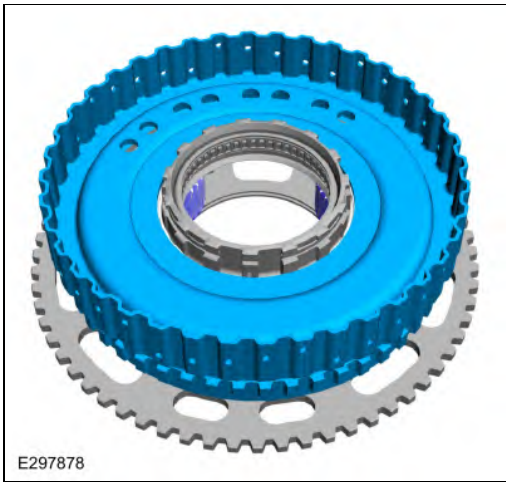
92. Inspect the No. 1 ring gear and the No. 1 planetary carrier, gears, bearing and fluid collectors.



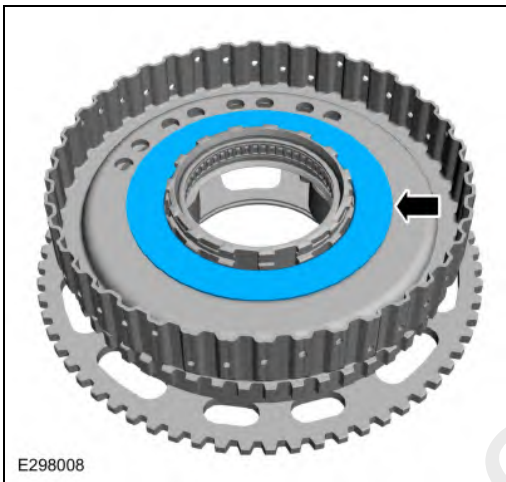
93. Install the ring gear No. 1 bearing with the flat side down.
1. Ring gear No. 1 bearing flat side



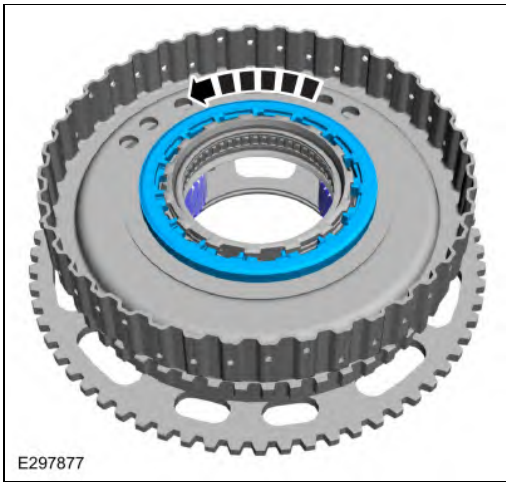
94. Install the No. 1 ring gear.



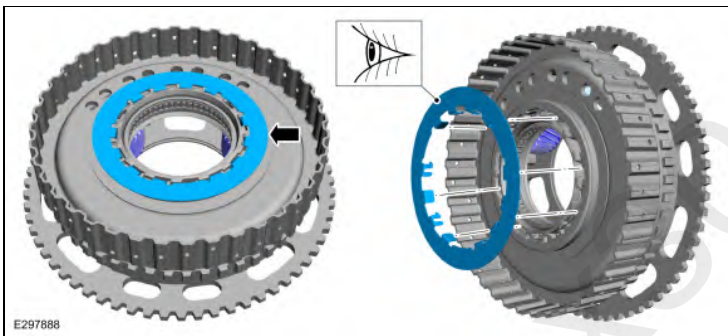
95. Install the No. 1 ring gear bearing.



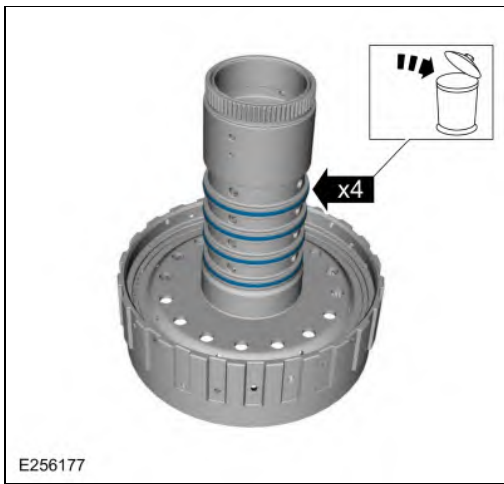
96. Install the ring gear No. 1 bearing support and rotate it counter clockwise to lock it.



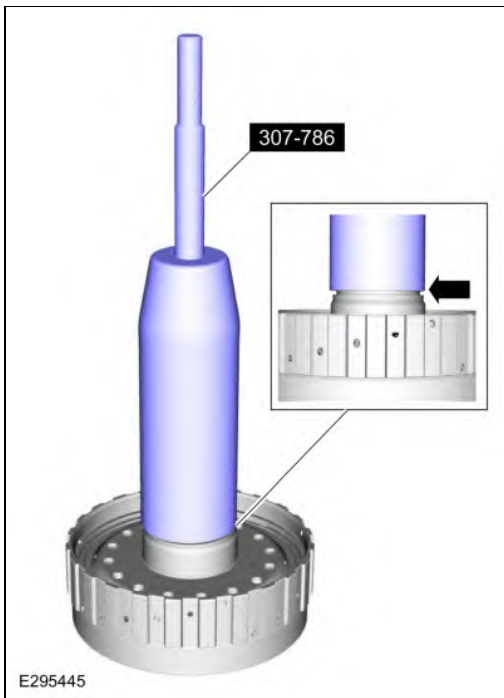
97. Align the tabs with the slots and install the No. 1 bearing support locking ring.



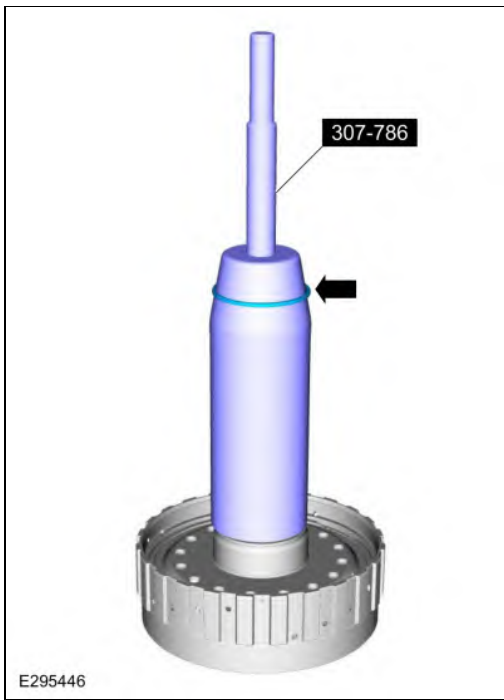
98. Remove and discard the sun gear No. 3 shaft Teflon® seals.



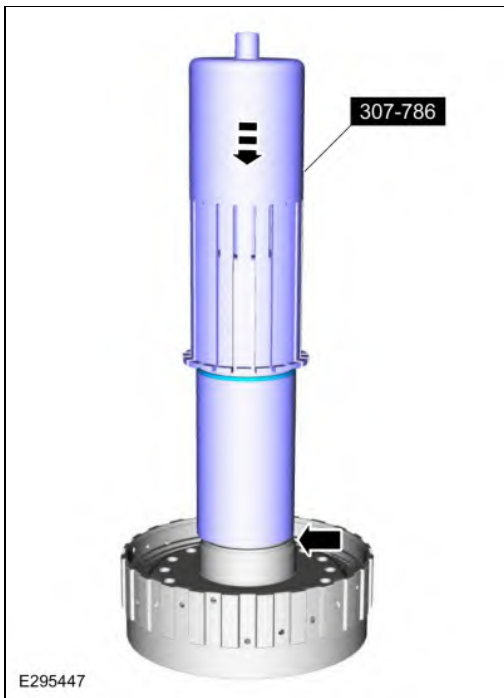
99. Install the special tool and adjust the special tool to align the bottom edge of the tool with the top edge of the bottom Teflon® seal groove.
Use Special Service Tool: 307-786 F7 Seal Installer/Sizer Input Shaft.



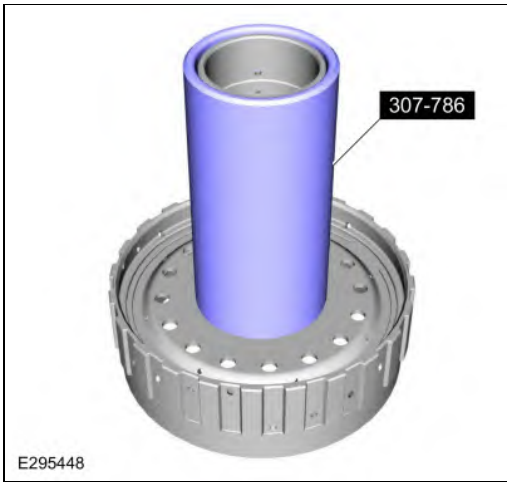
100. Install a new Teflon® seal on the special tool.
Use Special Service Tool: 307-786 F7 Seal Installer/Sizer Input Shaft.



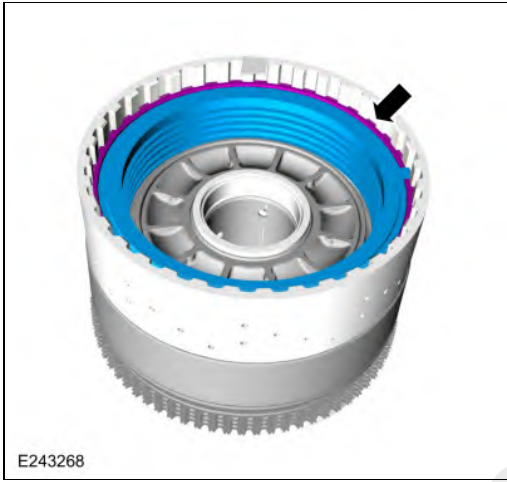
101. Using the top half of the special tool, slide the Teflon® seal into the groove. Remove the special tools and repeat the steps for the other 3 Teflon® seals.
Use Special Service Tool: 307-786 F7 Seal Installer/Sizer Input Shaft.



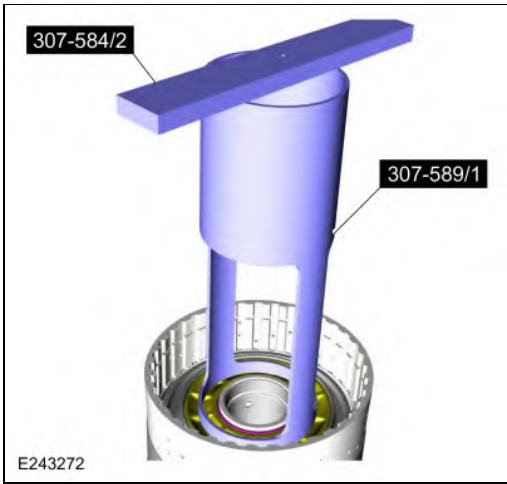
102. Install the special tool to size the 4 Teflon® seals. Allow the special tool to stay on the No 3 sun gear shaft for 5 minutes prior to final assembly.
Use Special Service Tool: 307-786 F7 Seal Installer/Sizer Input Shaft.



103. Remove the snap ring and the C clutch 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.



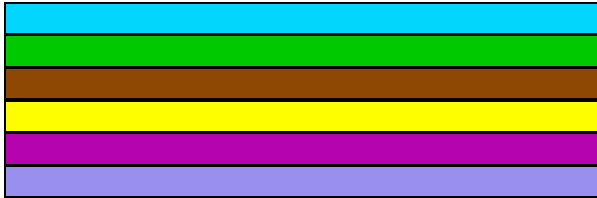
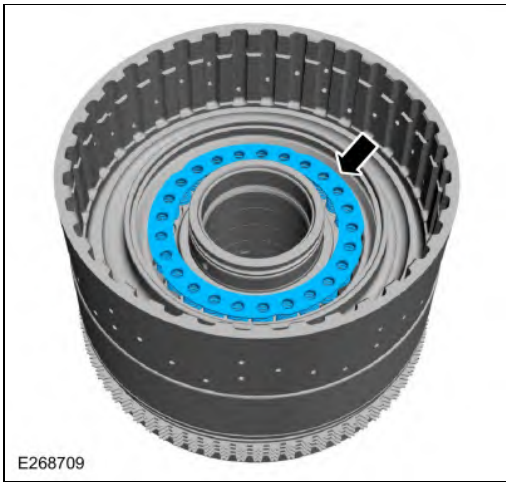
104. Using the special tools and a press, remove the C clutch balance dam retainer.
 Use Special Service Tool: 307-584 2-6 Spring Compressor. , 307-589 Overdrive clutch and balance piston service set.
 Use the General Equipment: Hydraulic Press



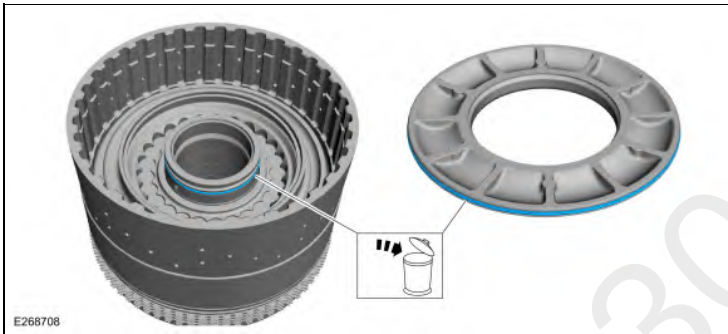
105. Remove the C clutch balance dam.



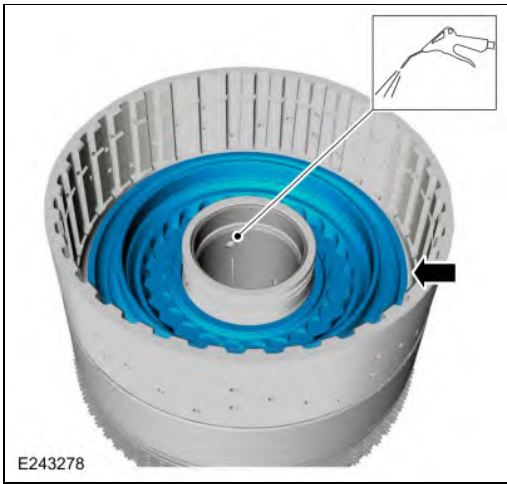
106. Remove the C clutch piston return spring.



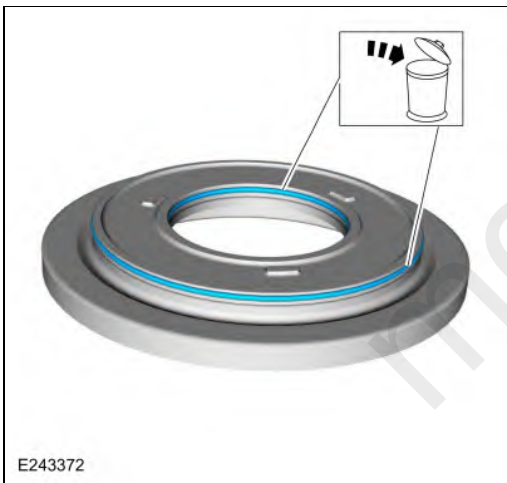
107. Remove and discard the C clutch balance dam inner and outer seals.



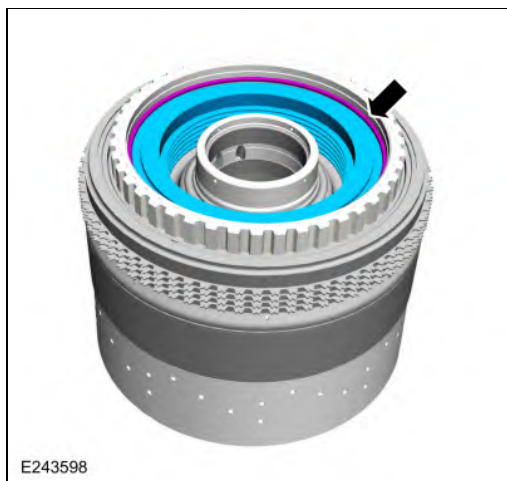
108. Remove the C clutch piston. Use compressed air into one oil passage hole while plugging the hole on the opposite side.



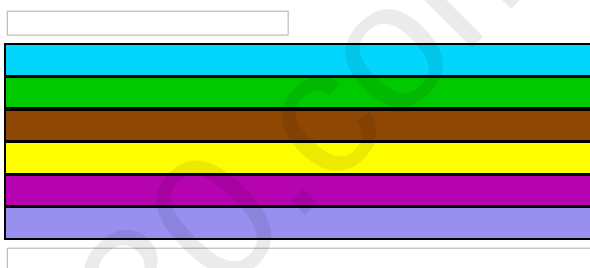
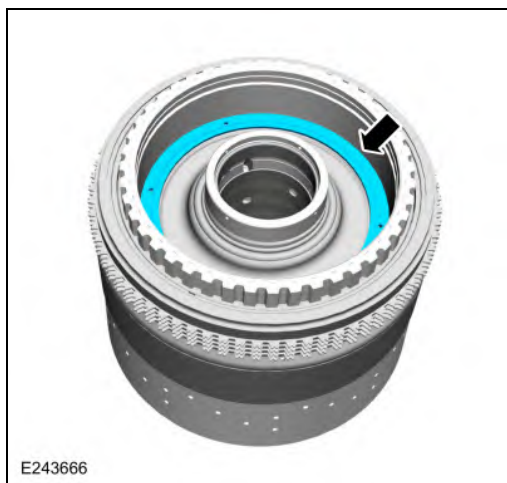
109. Remove and discard the C clutch piston inner and outer seals.



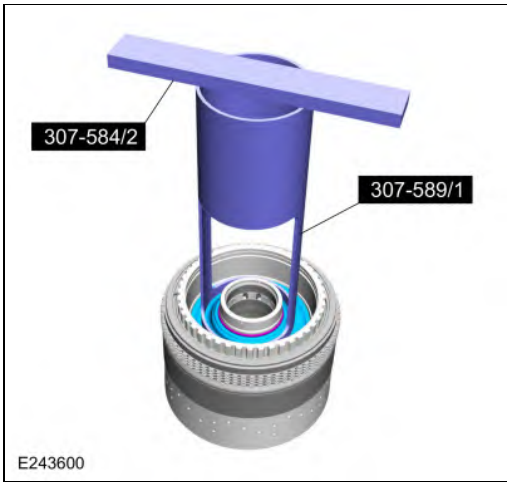
110. Remove the snap ring and the D clutch assembly. Inspect the clutch plates for excessive wear or damage. If the clutch plates are excessively worn or damaged replace as necessary. If the clutch plates are not excessively worn or damaged, they can be reused.



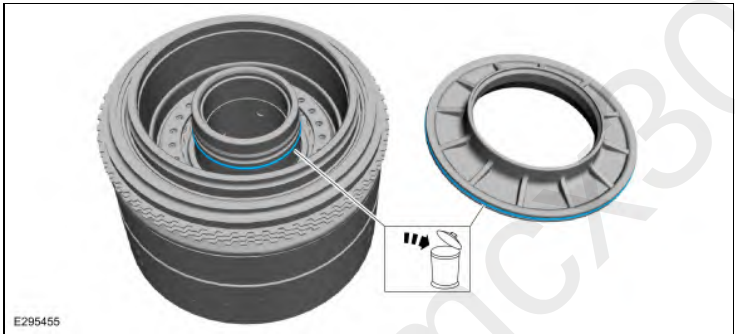
111. Remove the D clutch apply ring.



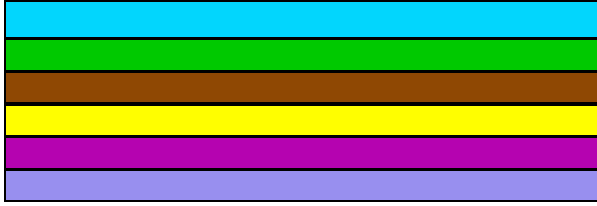
112. Using the special tools and a press, remove the D clutch balance dam retainer.
 Use Special Service Tool: 307-584 2-6 Spring Compressor. , 307-589 Overdrive clutch and balance piston service set.
 Use the General Equipment: Hydraulic Press



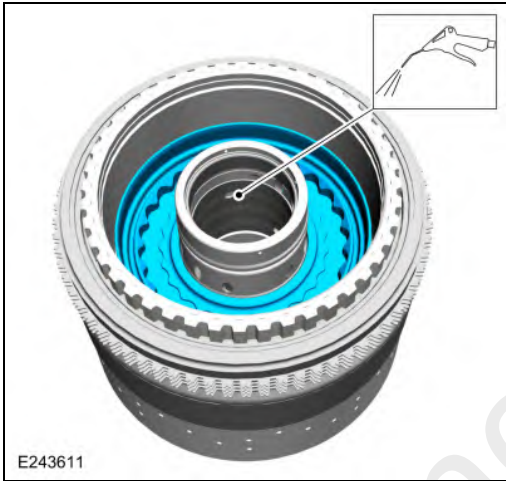
113. Remove and discard the D clutch balance dam inner and outer seals.



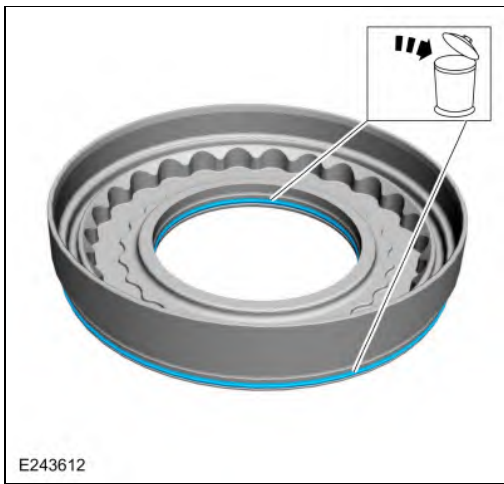
114. Remove the D clutch piston return spring.



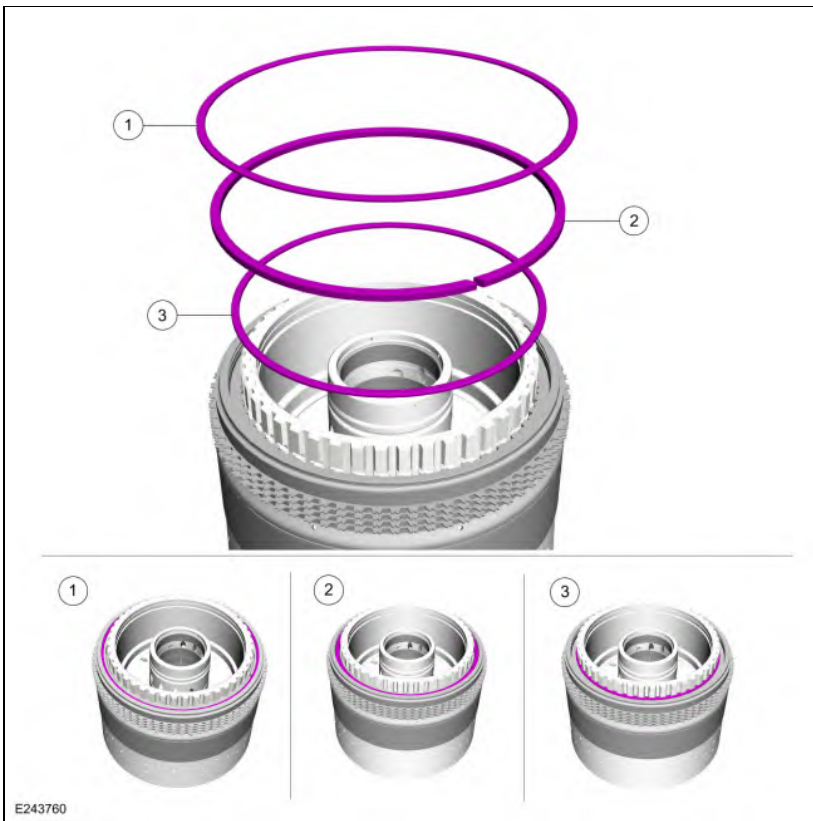
115. Remove the D clutch piston. Use compressed air into one oil passage hole while plugging the hole on the opposite side.



116. Remove and discard the D clutch piston inner and outer seals.



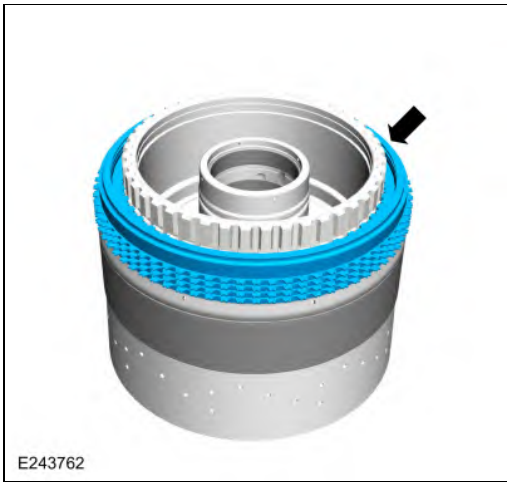
117. Remove the F clutch keeper snap ring, F clutch snap ring keeper and the F clutch snap ring.
1. F clutch keeper snap ring
 2. F clutch snap ring keeper
 3. F clutch snap ring



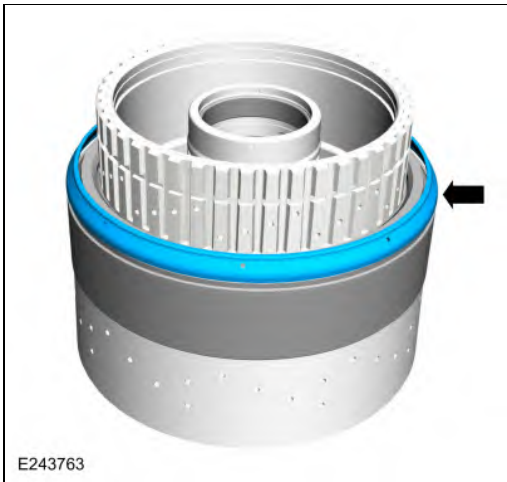
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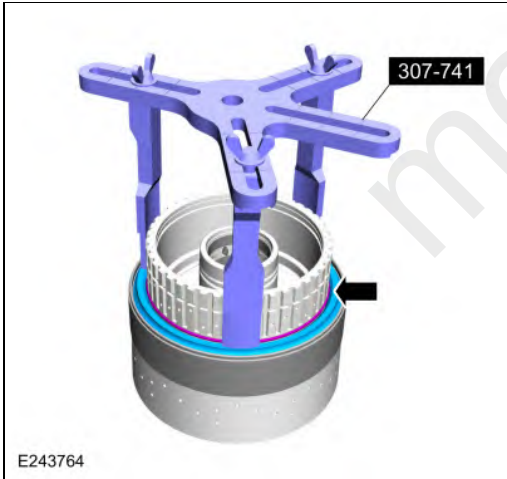
118. Remove the F clutch assembly. Inspect the clutch plates for excessive wear or damage. If the clutch plates are excessively worn or damaged replace as necessary. If the clutch plates are not excessively worn or damaged, they can be reused.



119. Remove the F clutch apply ring.



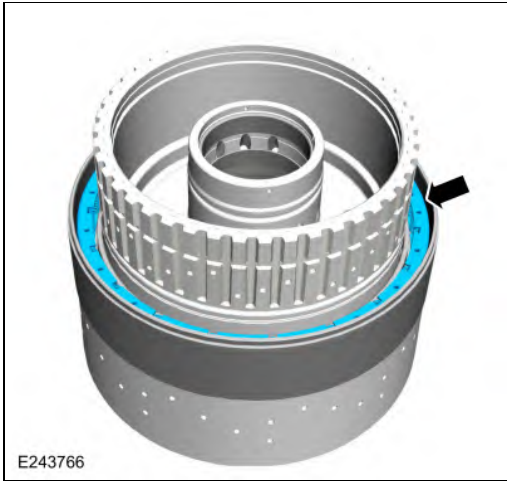
120. Using the special tools and a press, compress the F clutch balance dam and remove the retainer. Remove the F clutch balance dam.
Use Special Service Tool: 307-741 Spring Compressor, F Clutch.
Use the General Equipment: Hydraulic Press



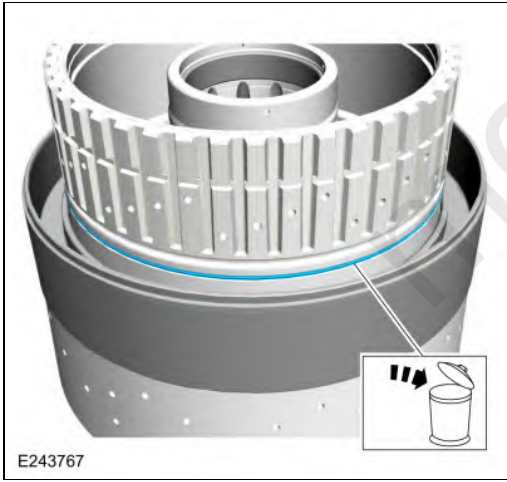
121. Remove and discard the F clutch balance dam outer seal.



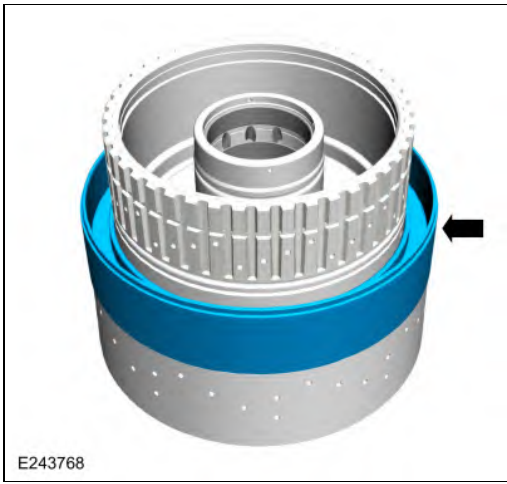
122. Remove the F clutch piston return spring.



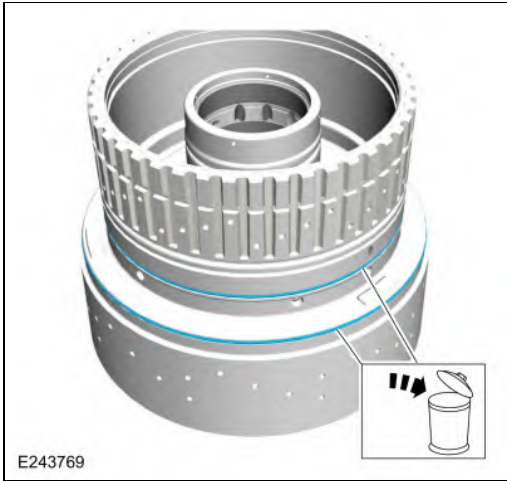
123. Remove and discard the F clutch balance dam inner seal.



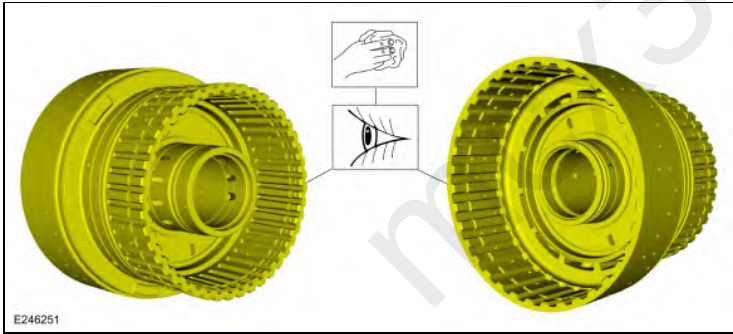
124. Remove the F clutch piston.



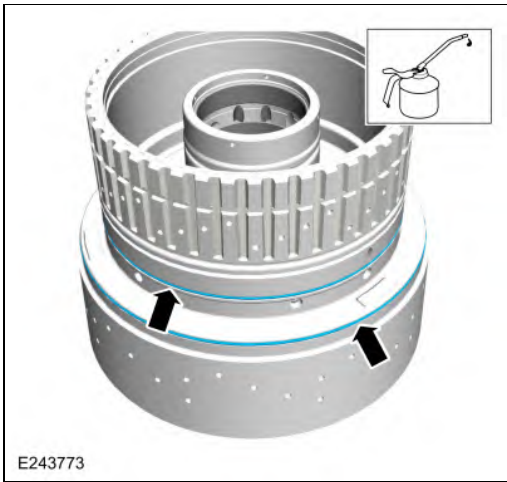
125. Remove and discard the F clutch piston seals.



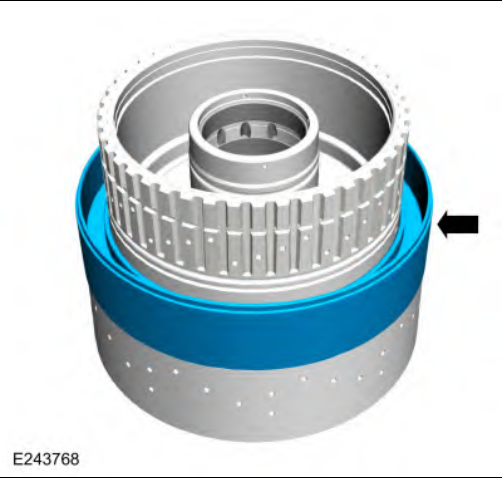
126. Clean and inspect the CDF clutch cylinder.



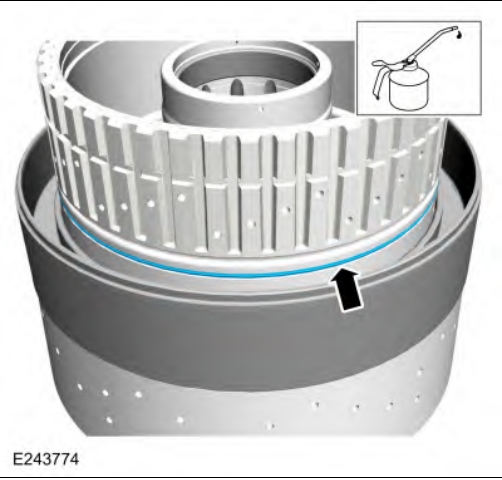
127. Install the new F clutch piston seals. Lubricate the seals with petroleum jelly.



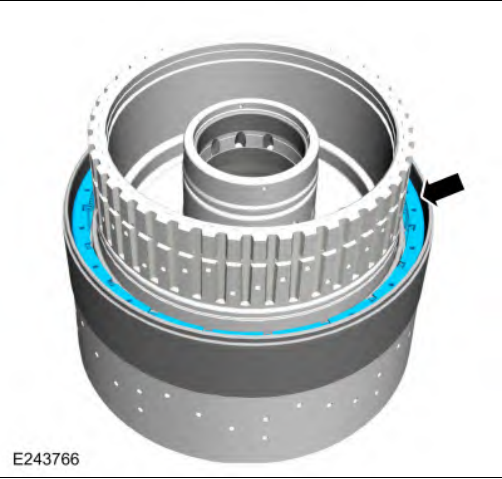
128. Install the F clutch piston.



129. Install the new F clutch balance dam inner seal. Lubricate the seal with petroleum jelly.



130. Install the F clutch piston return spring.

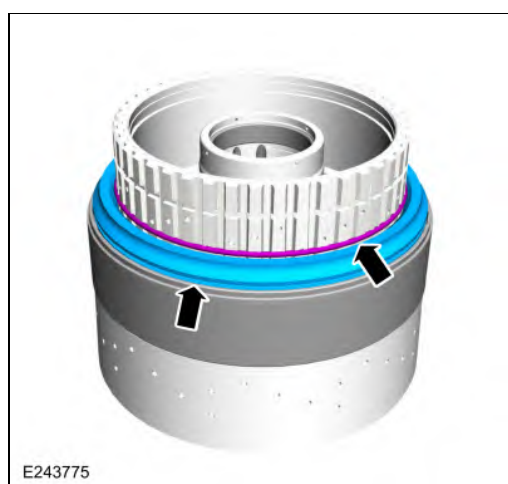


131. Install the new F clutch balance dam outer seal. Lubricate the seal with petroleum jelly.



132. **NOTE:** The F clutch balance dam retainer will not be in the groove at this time.

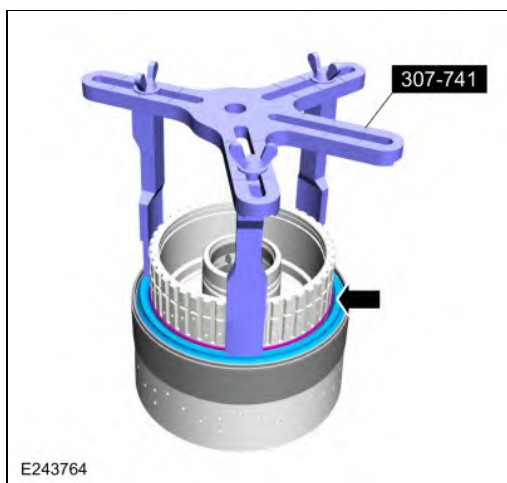
Install the F clutch balance dam and retainer on the CDF clutch cylinder.



133. Using the special tools and a press, compress the F clutch balance dam and install the retainer into the groove.

Use Special Service Tool: 307-741 Spring Compressor, F Clutch.

Use the General Equipment: Hydraulic Press



134.

Using the special tools and a press, press the apply ring onto the F clutch piston.

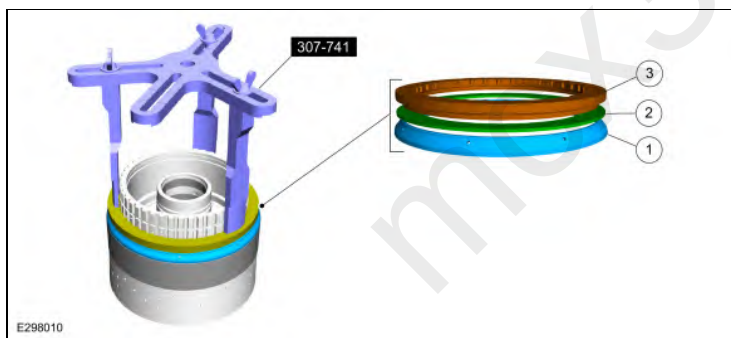
1. F clutch apply ring
2. Clutch steel plate

3. **NOTE:** Position the F clutch pressure plate upside-down onto the clutch steel plate.

F clutch pressure plate

Use Special Service Tool: 307-741 Spring Compressor, F Clutch.

Use the General Equipment: Hydraulic Press



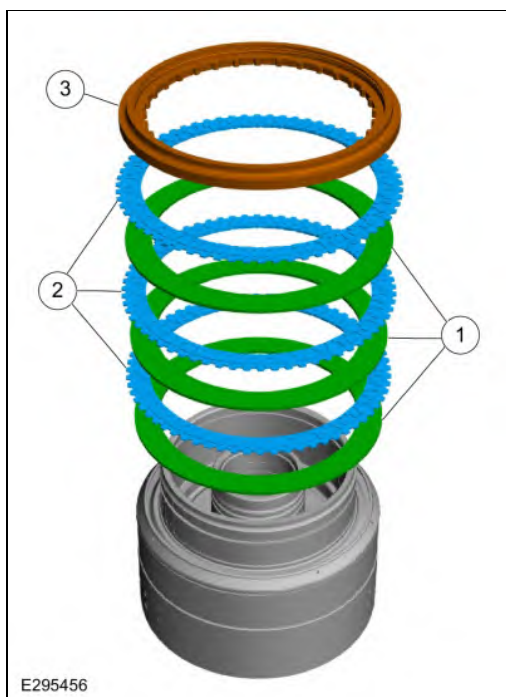
135. **NOTE:** Clutch plate quantity is model dependant based on engine displacement.

Soak the F clutch plates in clean transmission fluid. Install the F clutch assembly.

1. Steel plates
2. Friction plates

Material: Motorcraft® MERCON® ULV Automatic Transmission Fluid / XT-12-QULV (WSS-M2C949-A,) (MERCON® ULV)

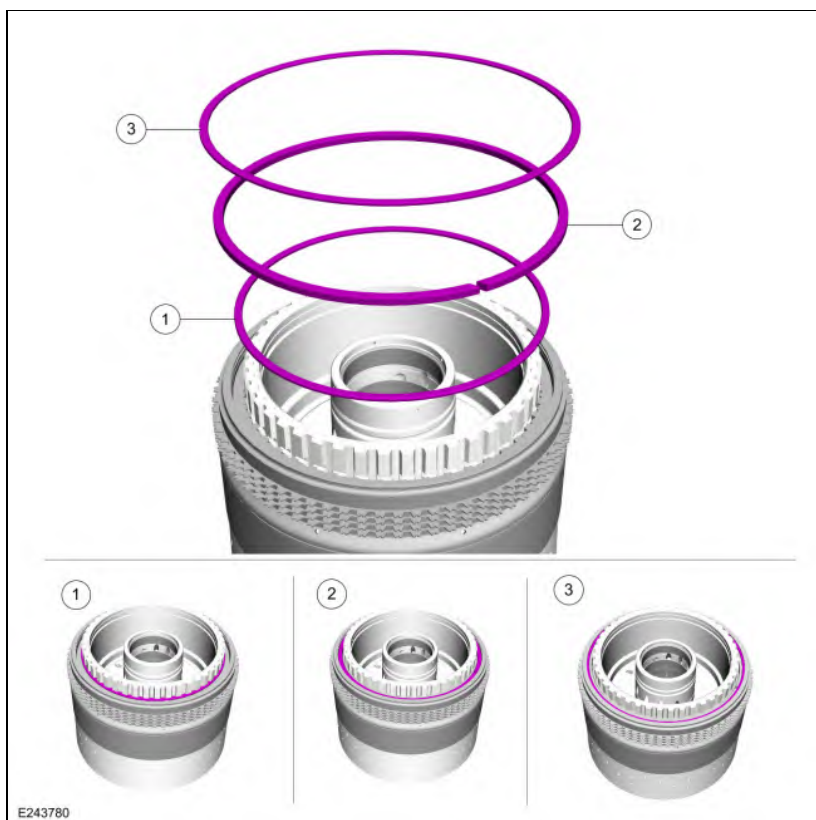
3. Pressure plate



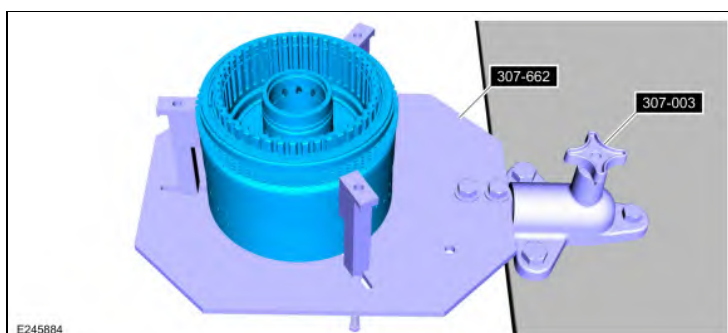
136. Install the F clutch snap ring, F clutch snap ring keeper and the F clutch keeper snap ring .

1. F clutch snap ring
2. F clutch snap ring keeper
3. F clutch keeper snap ring

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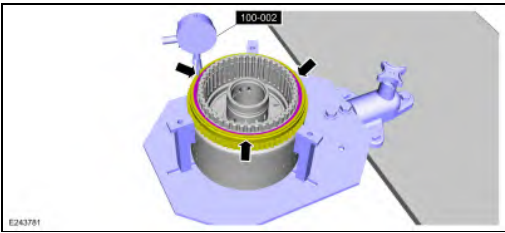


137. Assemble the special tools and position the CDF clutch cylinder with the F clutch facing up.
Use Special Service Tool: 307-662 Gauge, Clutch Pack Endplay. , 307-003 (T57L-500-B) Holding Fixture, Transmission.

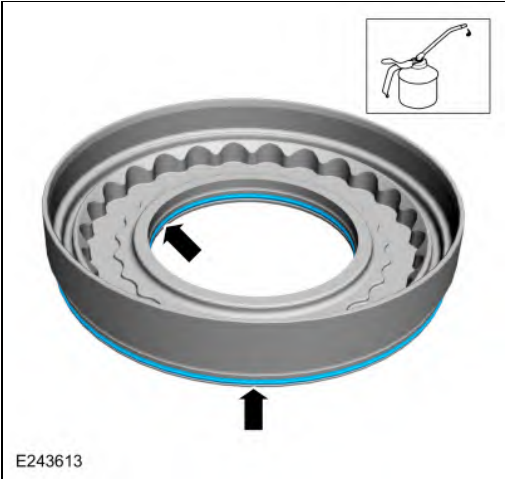


138. Using the special tool, measure the F clutch clearance. Position the plunger so it rests on the top surface of the pressure plate. Zero the dial indicator. Pull up on the pressure plate and measure and record the clutch clearance in 3 different places. Average the 3 recorded clutch clearance measurements and compare the measurement to the clutch clearance chart in specifications to determine the correct size snap ring. Install the correct F clutch snap ring.

Refer to: Specifications (307-01B Automatic Transmission, Transfer Case and Power Transfer Unit - 10-Speed Automatic Transmission 10R80, Specifications).
Use Special Service Tool: 100-002 (TOOL-4201-C) Holding Fixture with Dial Indicator Gauge.



139. Install the new D clutch piston inner and outer seals. Lubricate the seals with petroleum jelly.



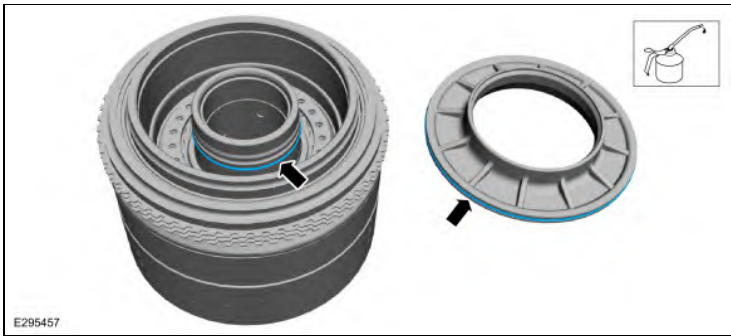
140. Install the D clutch piston.



141. Install the D clutch piston return spring.



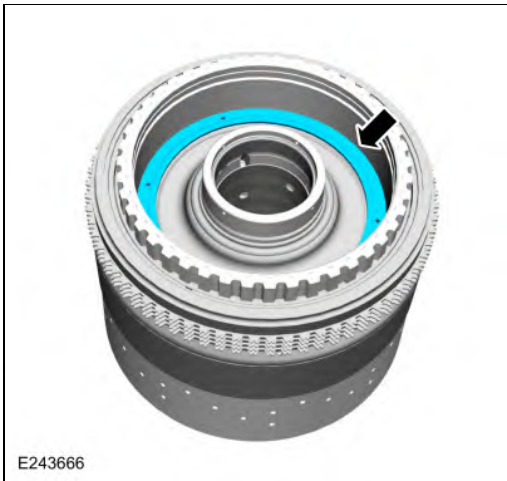
142. Install the new D clutch balance dam inner and outer seals. Lubricate the seals with petroleum jelly.



143. Using the special tools and a press, Install the D clutch balance dam and install the retainer.
 Use Special Service Tool: 307-584 2-6 Spring Compressor. , 307-589 Overdrive clutch and balance piston service set.
 Use the General Equipment: Hydraulic Press



144. Install the D clutch apply ring.

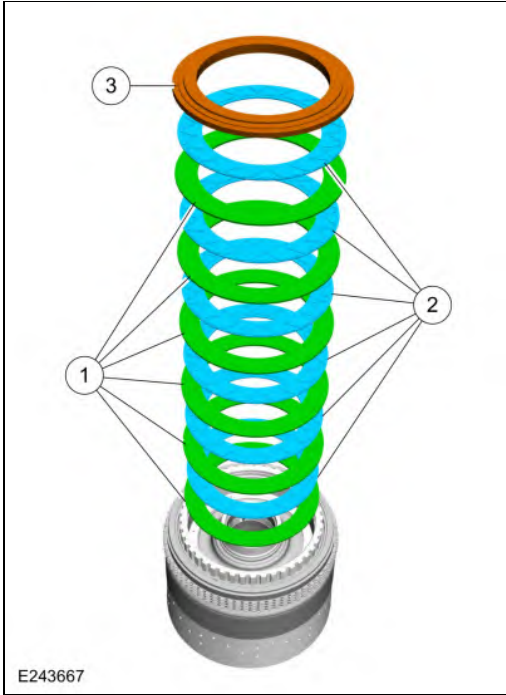


145. **NOTE:** Clutch plate quantity is model dependant based on engine displacement.

Soak the D clutch plates in clean transmission fluid. Install the D clutch assembly.

1. Steel plates
2. Friction plates
3. Pressure plate

Material: Motorcraft® MERCON® ULV Automatic Transmission Fluid / XT-12-QULV (WSS-M2C949-A,) (MERCON® ULV)



146. Install the D clutch snap ring.



147. Assemble the special tools and position the CDF clutch cylinder with the D clutch facing up.
Use Special Service Tool: 307-662 Gauge, Clutch Pack Endplay, , 307-003 (T57L-500-B) Holding Fixture, Transmission.



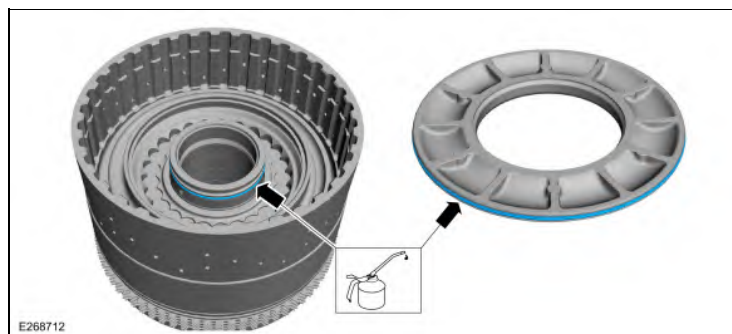
A horizontal bar chart with six colored segments: light blue, green, brown, yellow, purple, and light purple.



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151. Install the new C clutch balance dam seals. Lubricate the seals with petroleum jelly.



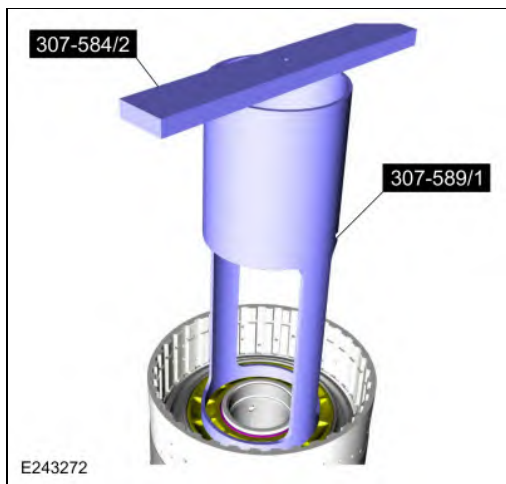
152. Install the C clutch piston return spring.



153. Install the C clutch balance dam.



154. Using the special tools and a press, compress the C clutch balance dam and install the retainer.
Use Special Service Tool: 307-584 2-6 Spring Compressor. , 307-589 Overdrive clutch and balance piston service set.
Use the General Equipment: Hydraulic Press

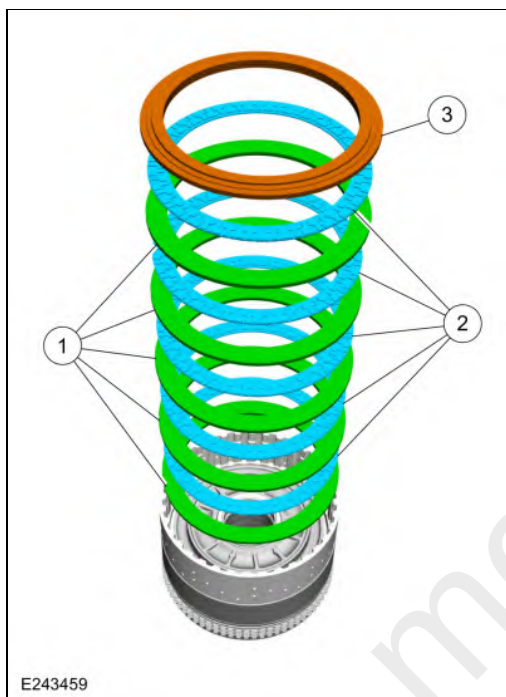


155. **NOTE:** Clutch plate quantity is model dependant based on engine displacement.

Soak the C clutch plates in clean transmission fluid. Install the C clutch assembly.

1. Steel plates
2. Friction plates
3. Pressure plate

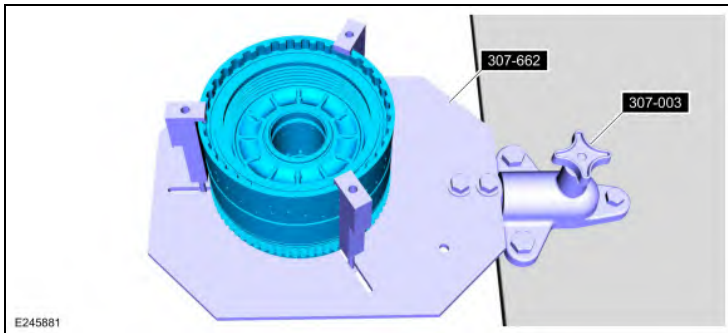
Material: Motorcraft® MERCON® ULV Automatic Transmission Fluid / XT-12-QULV (WSS-M2C949-A,) (MERCON® ULV)



156. Install the C clutch snap ring.

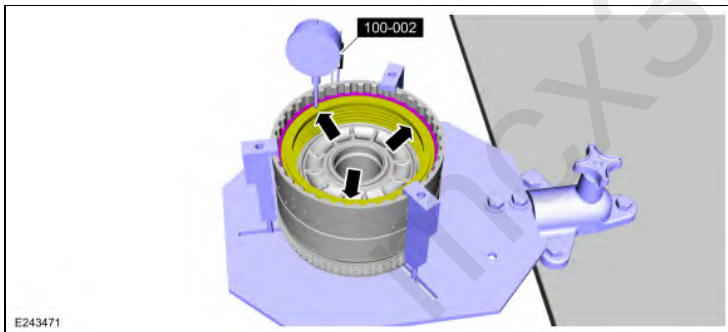


157. Assemble the special tools and position the CDF clutch cylinder with the C clutch facing up.
Use Special Service Tool: 307-662 Gauge, Clutch Pack Endplay, 307-003 (T57L-500-B) Holding Fixture, Transmission.



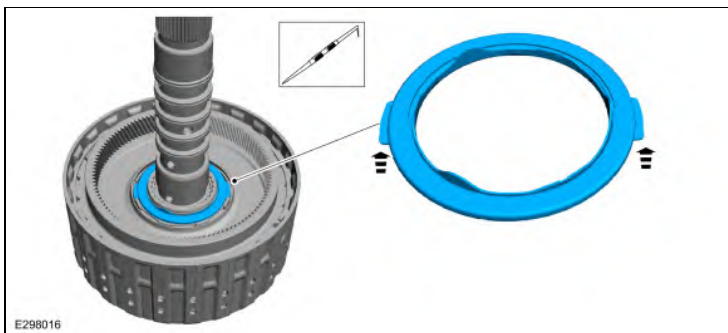
A horizontal bar chart with six colored segments: blue, green, brown, yellow, purple, and light blue.

158. Using the special tool, measure the C clutch clearance. Position the plunger so it rests on the top surface of the pressure plate. Zero the dial indicator. Pull up on the pressure plate and measure and record the clutch clearance in 3 different places. Average the 3 recorded clutch clearance measurements and compare the measurement to the clutch clearance chart in specifications to determine the correct size snap ring. Install the correct C clutch snap ring.
Refer to: Specifications (307-01B Automatic Transmission, Transfer Case and Power Transfer Unit - 10-Speed Automatic Transmission â€“ 10R80, Specifications).
Use Special Service Tool: 100-002 (TOOL-4201-C) Holding Fixture with Dial Indicator Gauge.



159. **NOTE:** Pry up from the 2 tabs to prevent the bearing from separating.

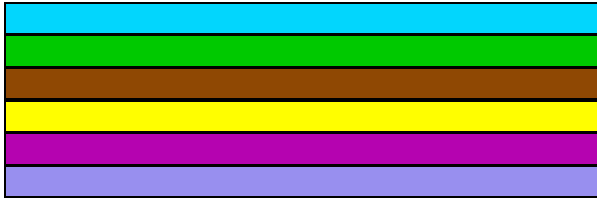
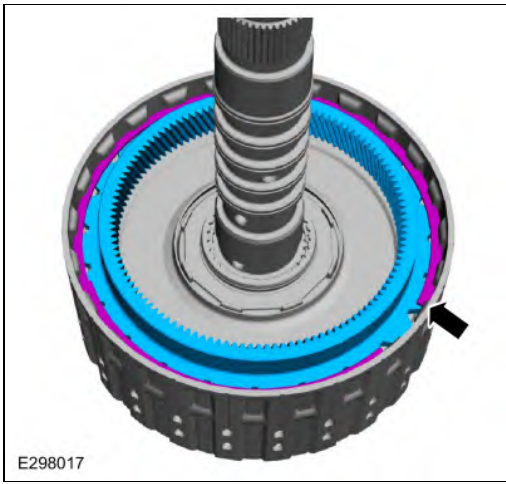
Remove the (T6) thrust bearing.



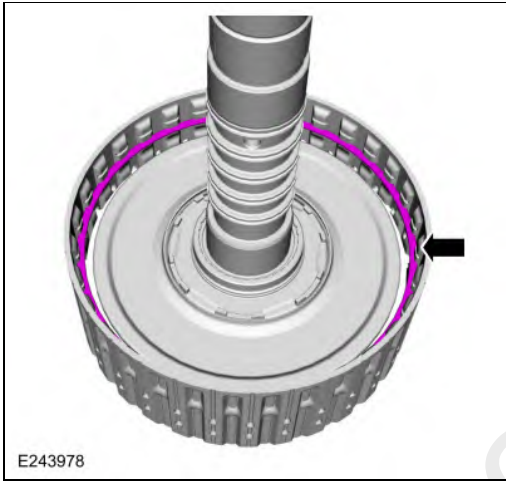
100%

0%

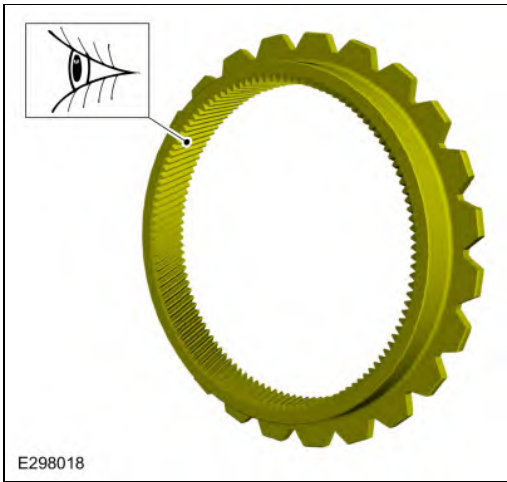
160. Remove the snap ring and the No. 3 ring gear.



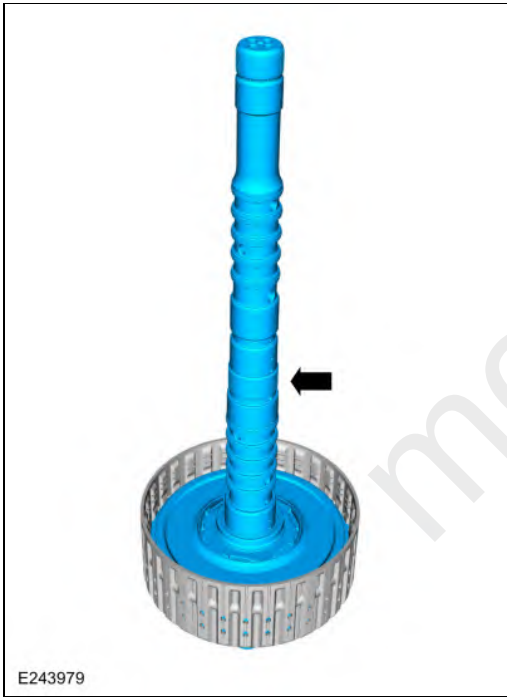
161. Remove the rear No. 3 ring gear snap ring.



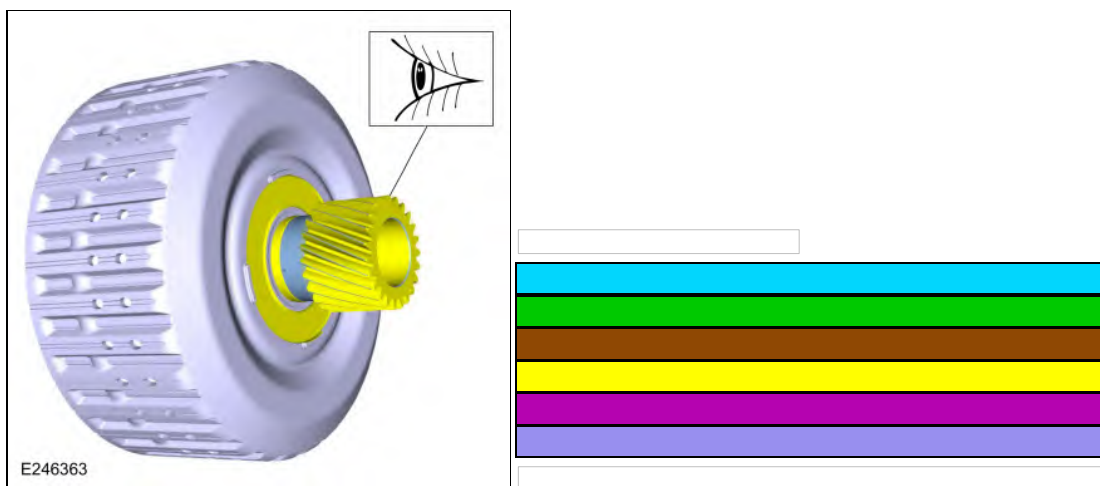
162. Inspect the No. 3 ring gear.



163. Remove the input shaft and the E clutch from No. 4 shell and sun gear.

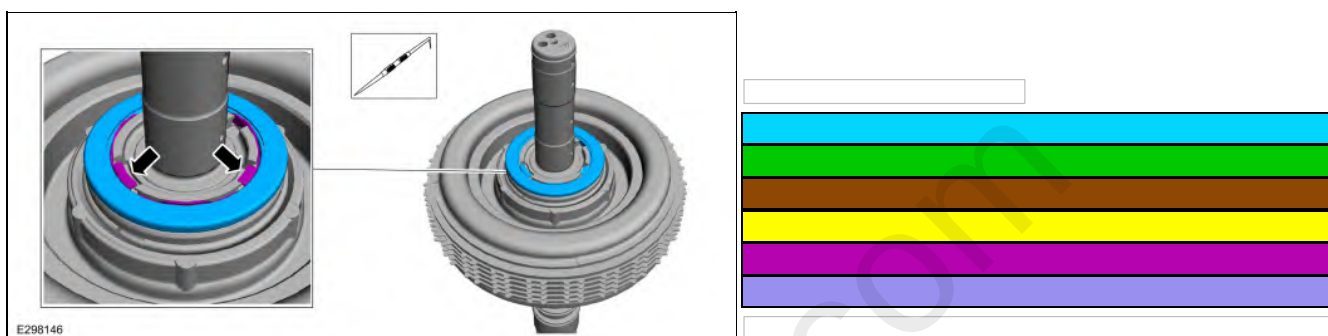


164. Inspect the No. 4 shell and sun gear.

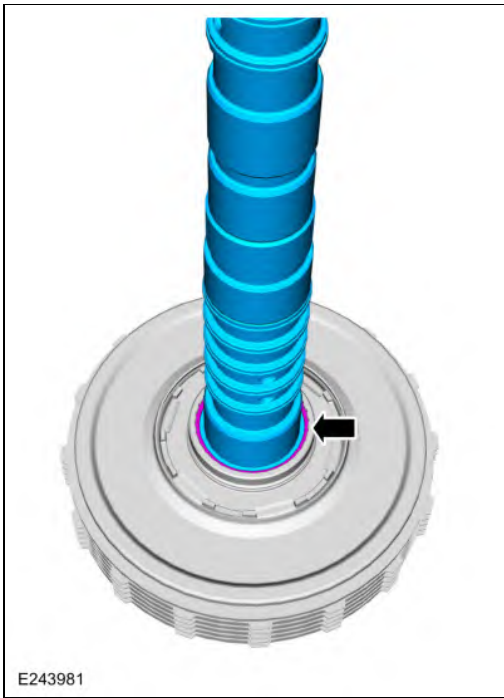


165. **NOTE:** Pry up from the 2 tabs to prevent the bearing from separating.

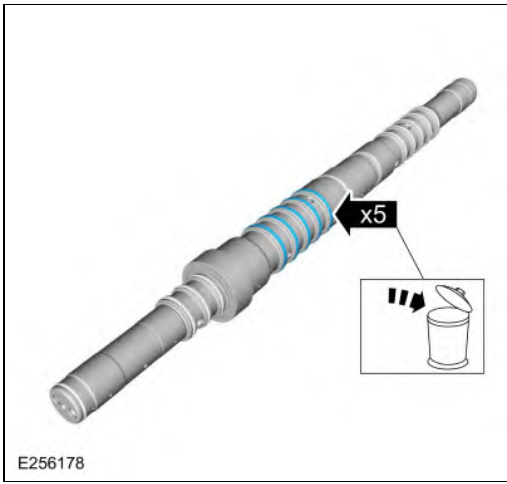
Remove the (T7) thrust bearing.



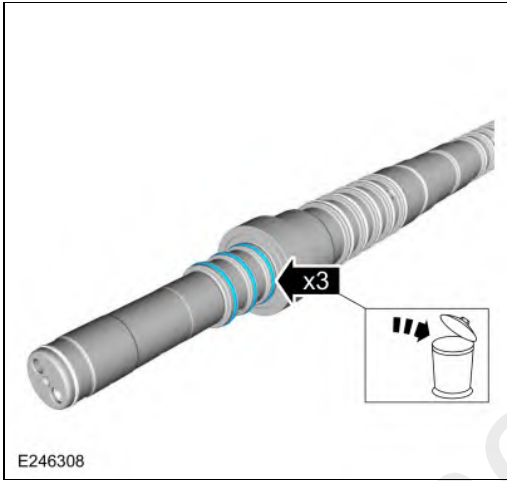
166. Remove the snap ring and remove the input shaft from the E clutch assembly.



167. Remove and discard the input shaft-to-sun gear No. 3 shaft Teflon® seals.



168. Remove and discard the input shaft O-ring seals.



169. Remove and discard the input shaft Teflon® seal.



170. Clean and inspect the input shaft.

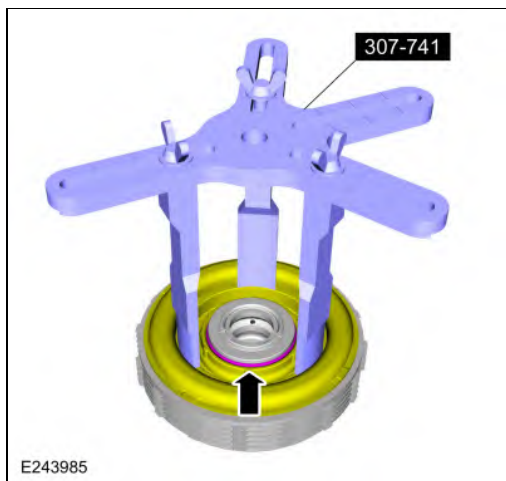


171. **NOTICE: Do not compress the balance dam too far or damage to the E clutch hub can occur. Only compress the E clutch hub far enough to remove the retainer.**

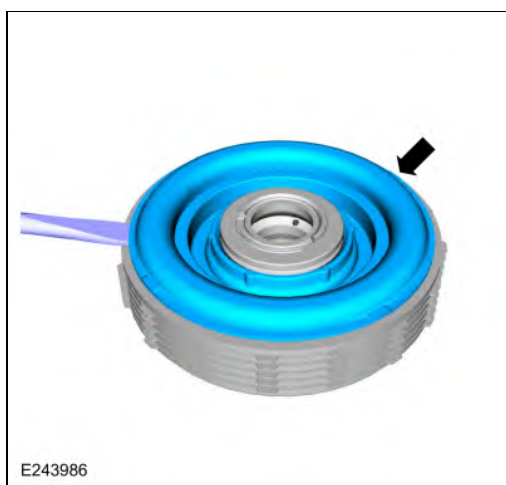
Using the special tool and a press, compress the E clutch balance dam and remove the retainer.

Use Special Service Tool: 307-741 Spring Compressor, F Clutch.

Use the General Equipment: Hydraulic Press

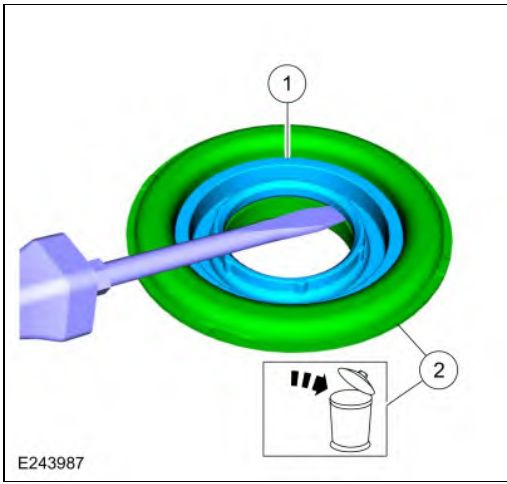


172. Pry the E clutch piston and balance dam upward and remove the piston and balance dam from the E clutch hub.



173. Remove the E clutch balance dam and discard the E clutch piston.

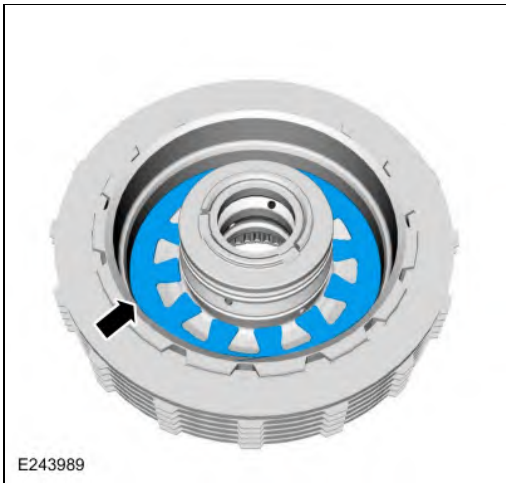
1. E clutch balance dam
2. E clutch piston



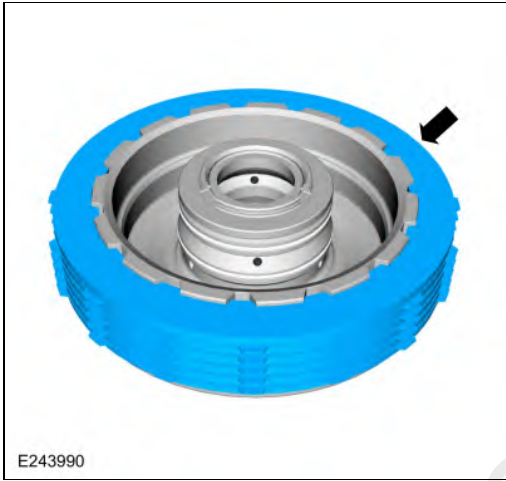
174. Remove and discard the E clutch balance dam outer seal.



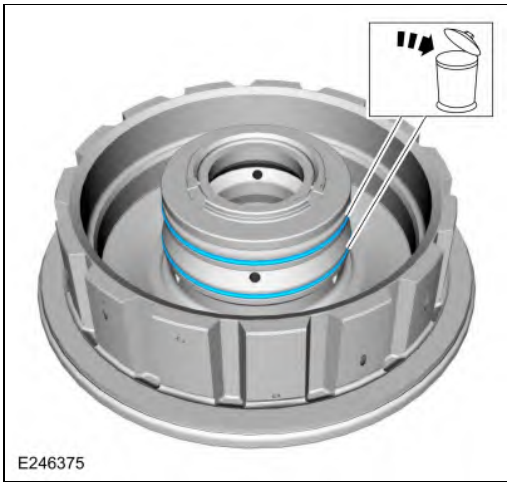
175. Remove the E clutch piston return spring.



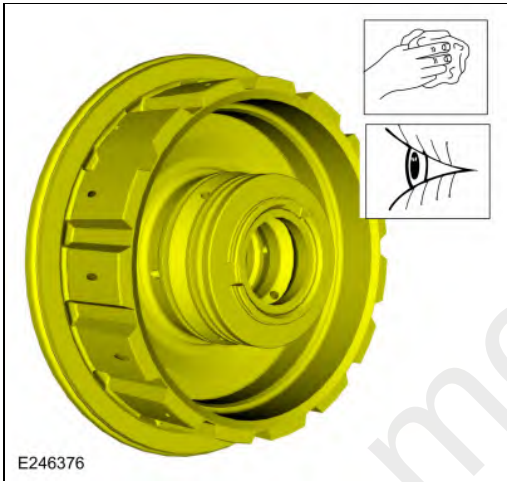
176. Remove the E clutch assembly. Inspect the clutch plates for excessive wear or damage. If the clutch plates are excessively worn or damaged replace as necessary. If the clutch plates are not excessively worn or damaged, they can be reused.



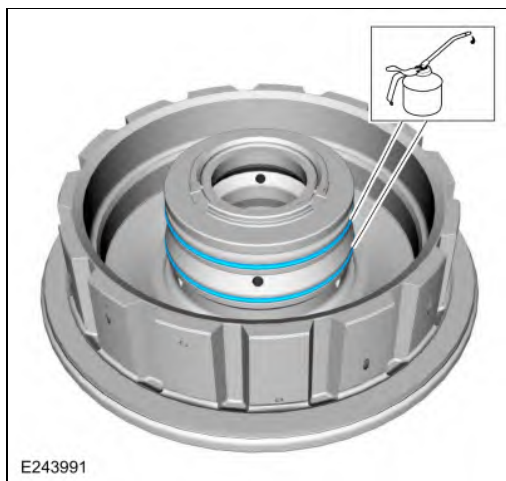
177. Remove and discard the E clutch piston and balance dam inner seals.



178. Clean and inspect the E clutch hub.



179. Install the new E clutch piston and balance dam inner seals. Lubricate the seals with petroleum jelly.



180. **NOTE:** Clutch plate quantity is model dependant based on engine displacement.

Soak the E clutch plates in clean transmission fluid. Install the E clutch assembly.

1. Pressure plate (select fit)
2. Friction plates

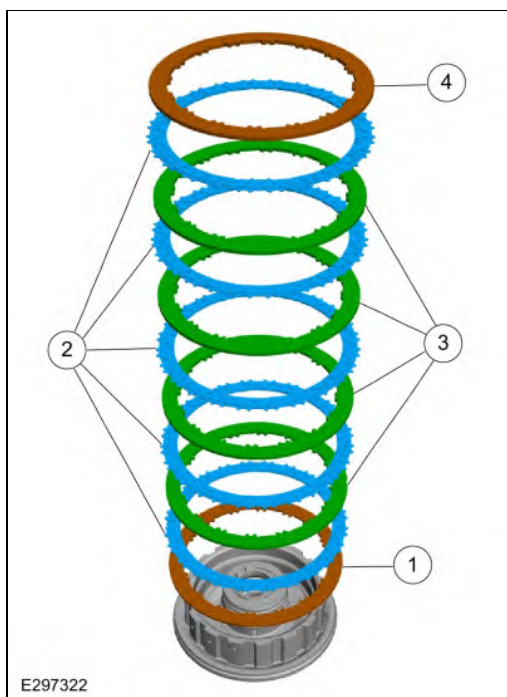
Material: Motorcraft® MERCON® ULV Automatic Transmission Fluid / XT-12-QULV (WSS-M2C949-A,) (MERCON® ULV)

3. **NOTE:** Align the inner splines of the steel plates with the pressure plate internal splines.

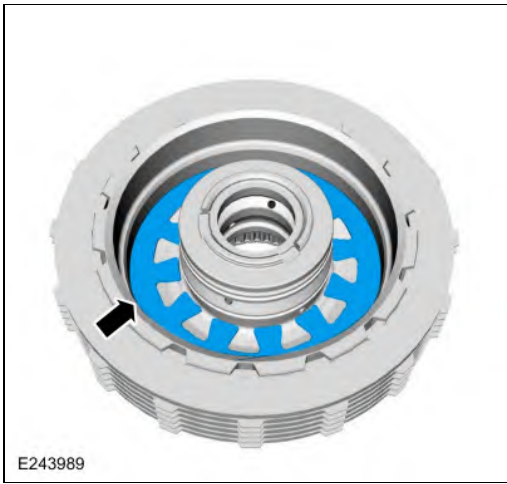
Steel plates

4. Apply plate (2.9-3.0)

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181. Install the E clutch piston return spring.

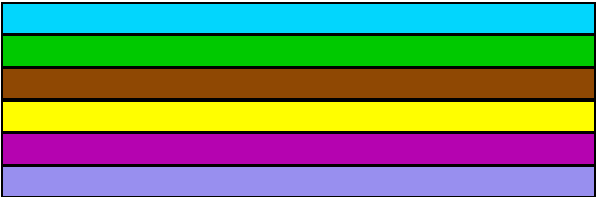
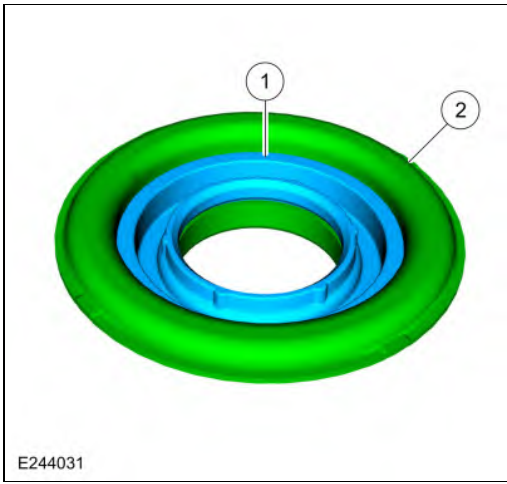


182. Install a new E clutch balance dam outer seal. Lubricate the seal with petroleum jelly.

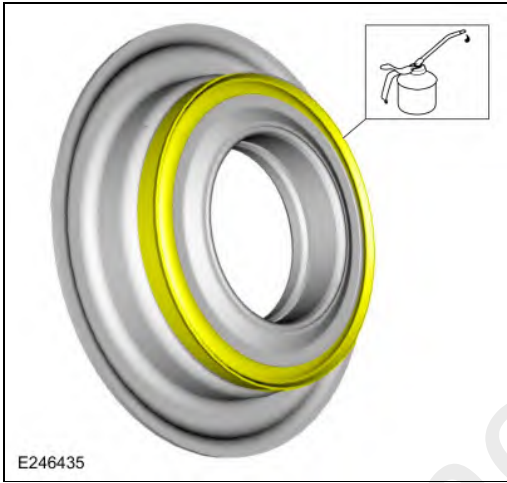


183. Install the E clutch balance dam in the new E clutch piston.

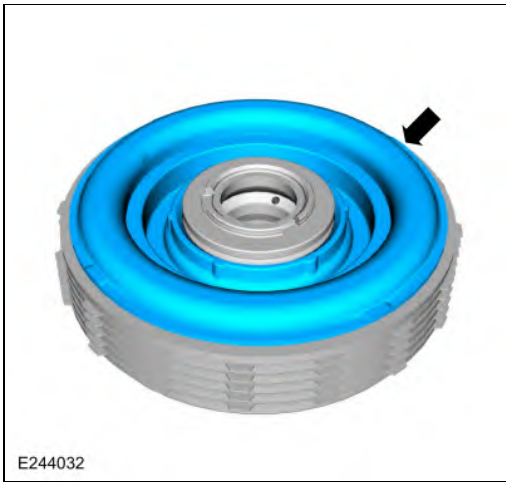
1. E clutch balance dam
2. E clutch piston



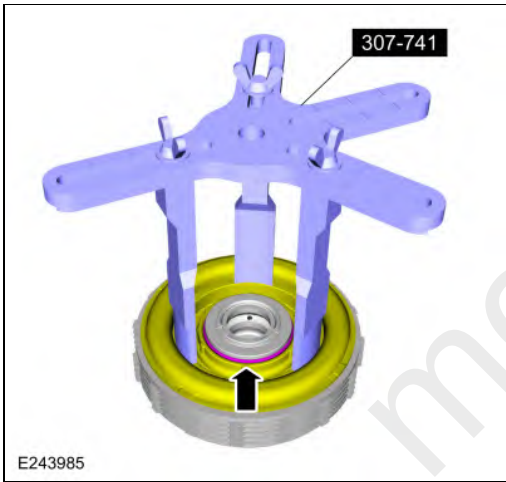
184. Lubricate the new E clutch piston seal with petroleum jelly.



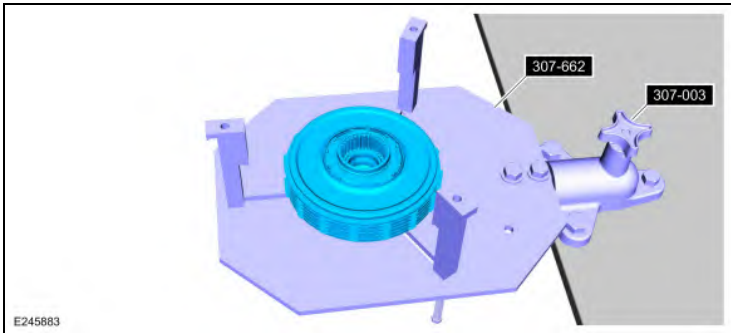
185. Install the new E clutch piston and balance dam in the E clutch hub.



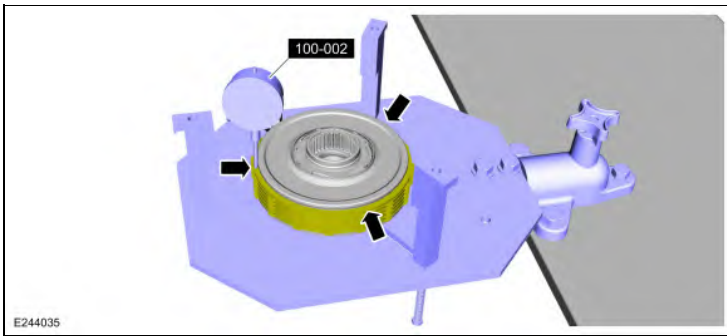
186. **NOTICE: Do not compress the balance dam too far or damage to the E clutch hub can occur. Only compress the E clutch hub far enough to install the retainer.**
- Using the special tool and a press, compress the E clutch balance dam and install the retainer.
 Use Special Service Tool: 307-741 Spring Compressor, F Clutch.
 Use the General Equipment: Hydraulic Press



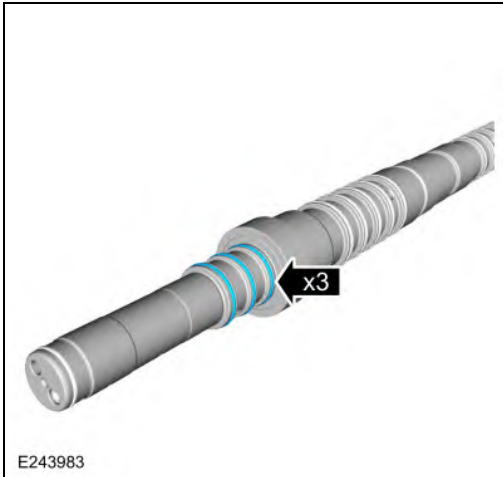
187. Assemble the special tools and position the E clutch assembly on the special tool.
 Use Special Service Tool: 307-662 Gauge, Clutch Pack Endplay. , 307-003 (T57L-500-B) Holding Fixture, Transmission.



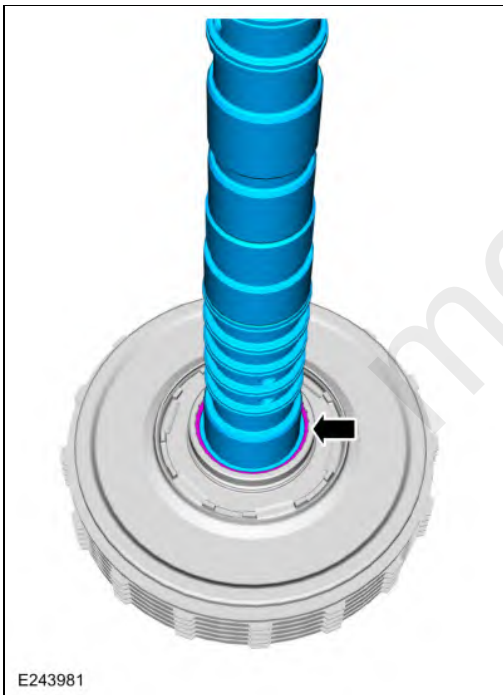
188. Using the special tool, measure the E clutch clearance. Position the plunger so it rests on the top surface of the pressure plate. Zero the dial indicator. Pull up on the pressure plate and measure and record the clutch clearance in 3 different places. Average the 3 recorded clutch clearance measurements and compare the measurement to the clutch clearance chart in specifications to determine the correct size pressure plate. Install the correct E clutch pressure plate.
 Refer to: Specifications (307-01B Automatic Transmission, Transfer Case and Power Transfer Unit - 10-Speed Automatic Transmission â€“ 10R80, Specifications).
 Use Special Service Tool: 100-002 (TOOL-4201-C) Holding Fixture with Dial Indicator Gauge.



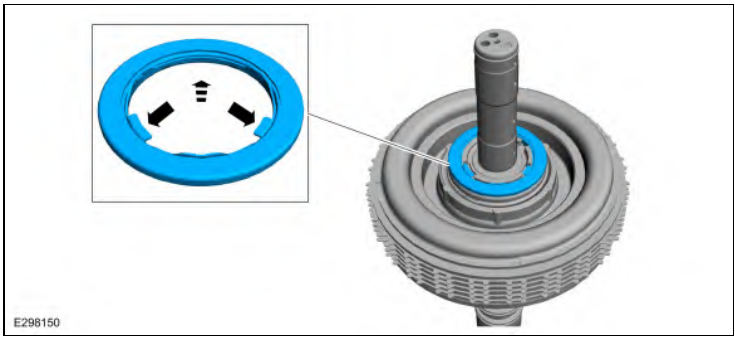
189. Install the new input shaft O-ring seals.



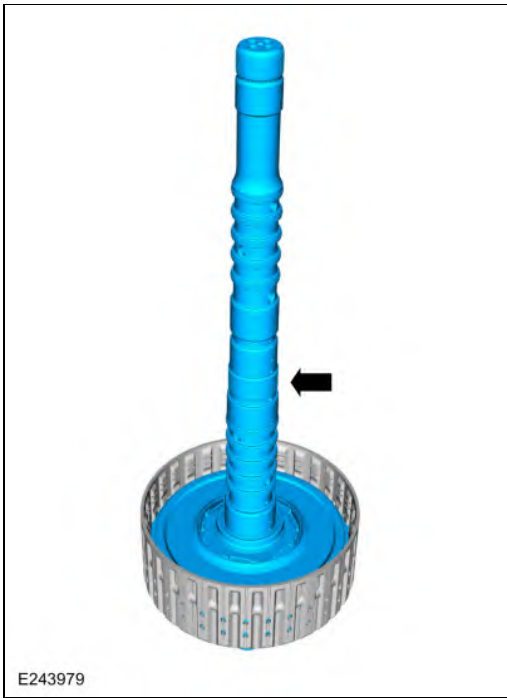
190. Install the input shaft in the E clutch and install the snap ring.



191. Install the (T7) thrust bearing onto the E clutch with the tab locators up. Snap the bearing into place.



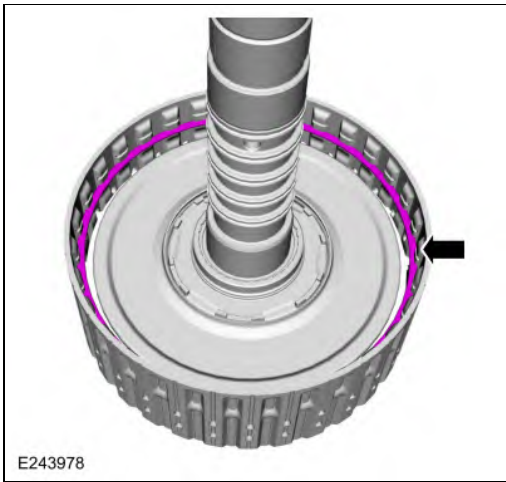
192. **NOTE:** Align the outer splines on the friction plates.
Install the input shaft and the E clutch into the No. 4 shell and sun gear.



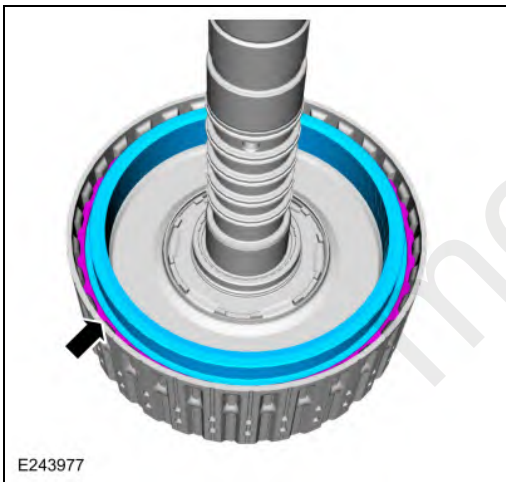
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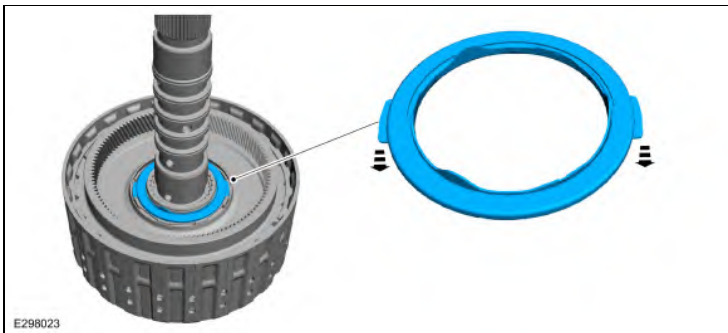
193. Install the lower rear No. 3 ring gear snap ring.



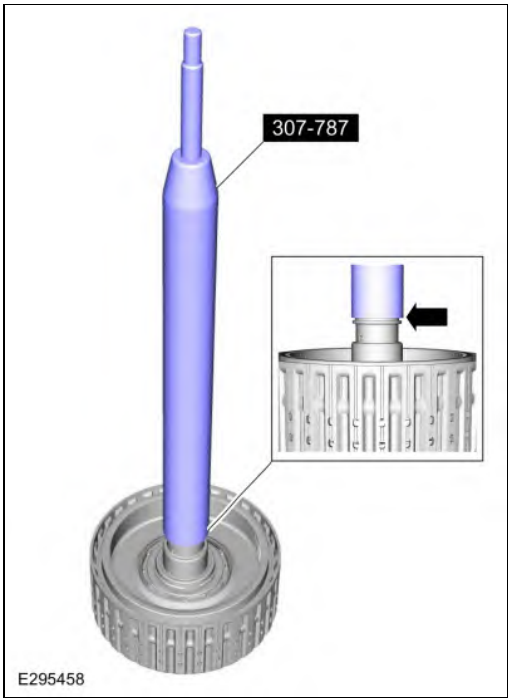
194. Install the No. 3 ring gear and the snap ring. Align the snap ring gap 180° from the bottom snap ring gap.



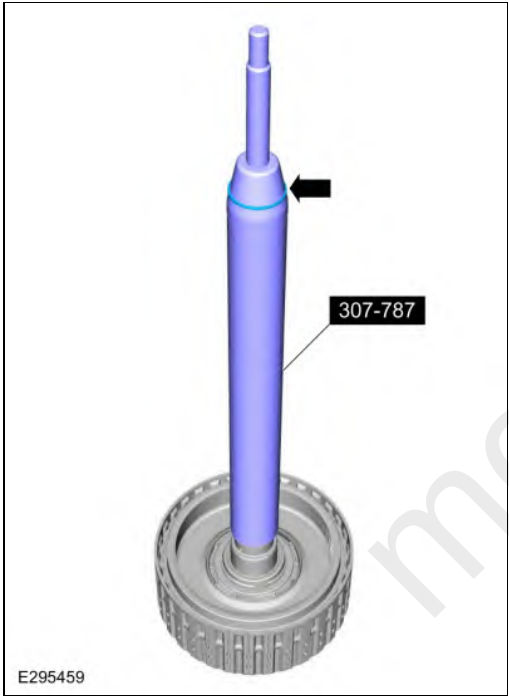
195. Install the (T6) thrust bearing onto the E clutch with the tab locators down. Snap the bearing into place.



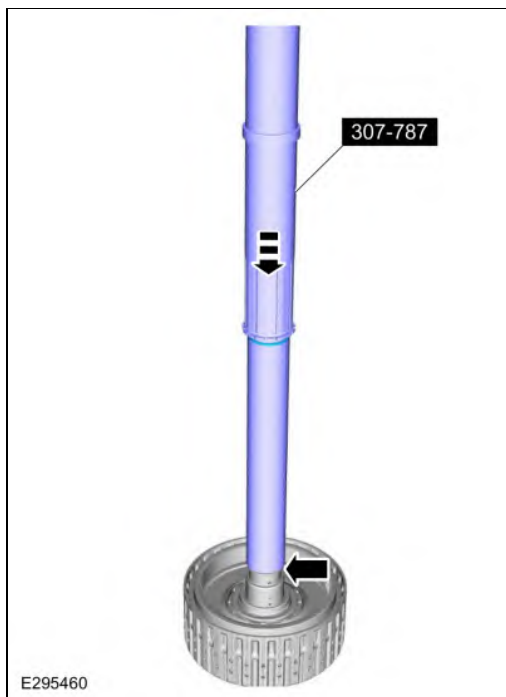
196. Install the special tool and adjust the special tool to align the bottom edge of the tool with the top edge of the bottom Teflon® seal groove. Use Special Service Tool: 307-787 F8 Seal Installer/Sizer Input Shaft.



197. Install a new Teflon® seal on the special tool.
Use Special Service Tool: 307-787 F8 Seal Installer/Sizer Input Shaft.



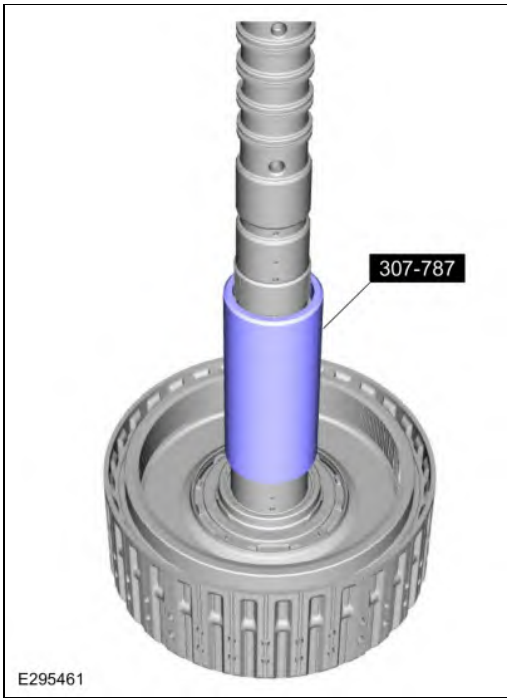
198. Using the top half of the special tool, slide the Teflon® seal into the groove. Remove the special tools and repeat the steps for the other 4 Teflon® seals.
Use Special Service Tool: 307-787 F8 Seal Installer/Sizer Input Shaft.



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199. Install the special tool to size the 5 Teflon® seals. Allow the special tool to stay on the input shaft for 5 minutes prior to final assembly.
Use Special Service Tool: 307-787 F8 Seal Installer/Sizer Input Shaft.



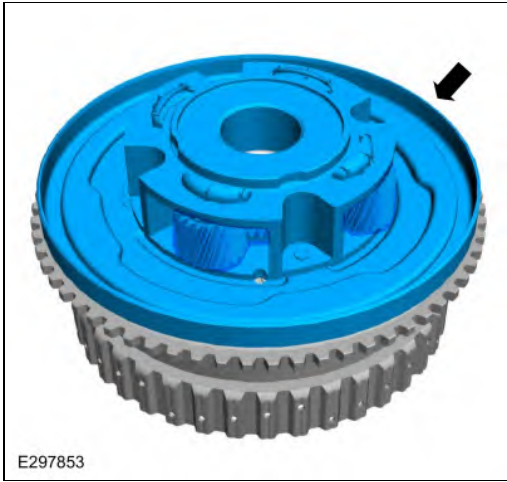
200. Install the No. 1 sun gear in the No. 1 planetary carrier.



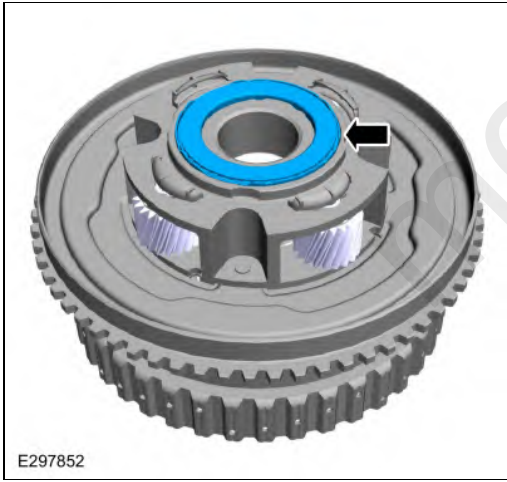
201. Install the No. 2 sun gear.



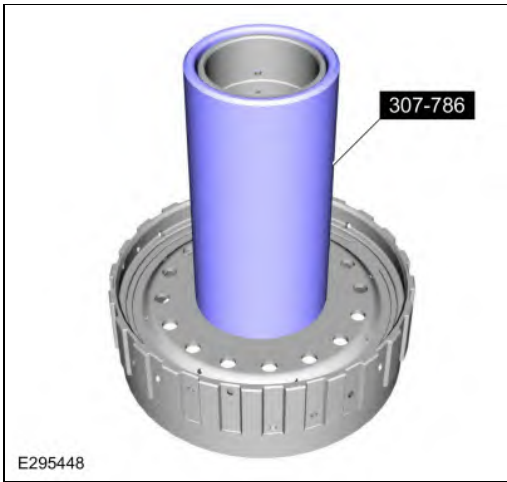
202. Install the No. 2 planetary carrier.



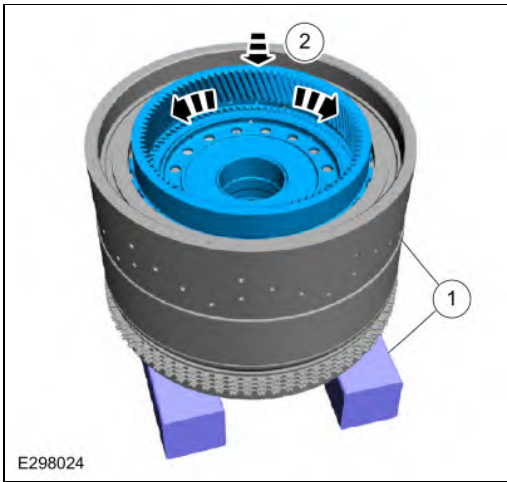
203. Install the (T5) bearing.



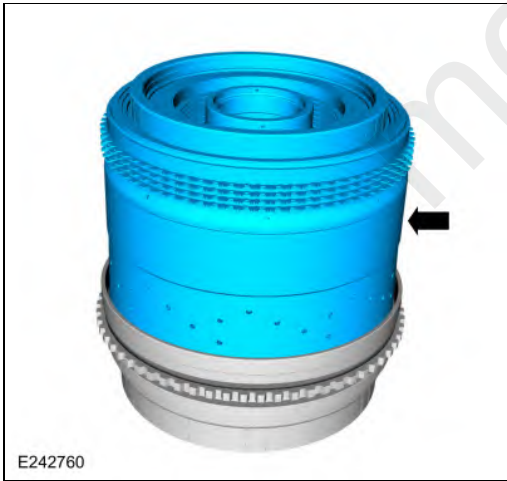
204. Remove Special Service Tool: 307-786 F7 Seal Installer/Sizer Input Shaft.



- 205.
- Install the No. 3 sun gear shaft into the CDF clutch assembly.
1. Position the CDF clutch assembly on 2 blocks of wood.
Use the General Equipment: Wooden Block
 2. Rotate the No. 3 sun gear shaft back and forth to install.



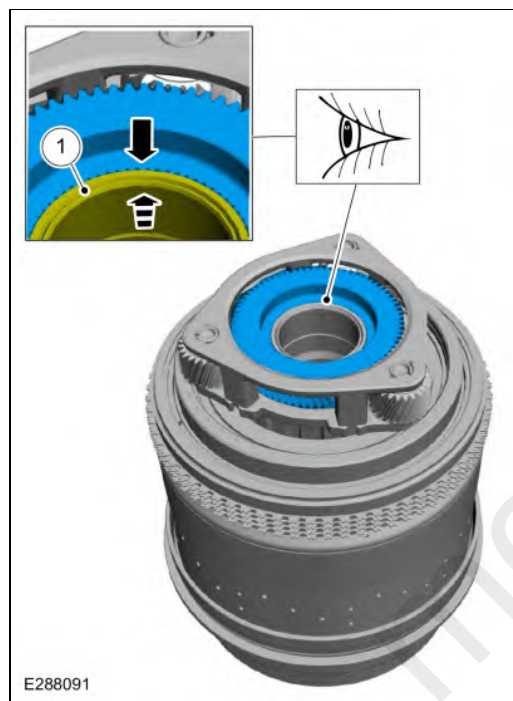
206. While holding the sun gear No. 3 shaft, flip the CDF clutch assembly over and install it on to the No. 2 planetary carrier.



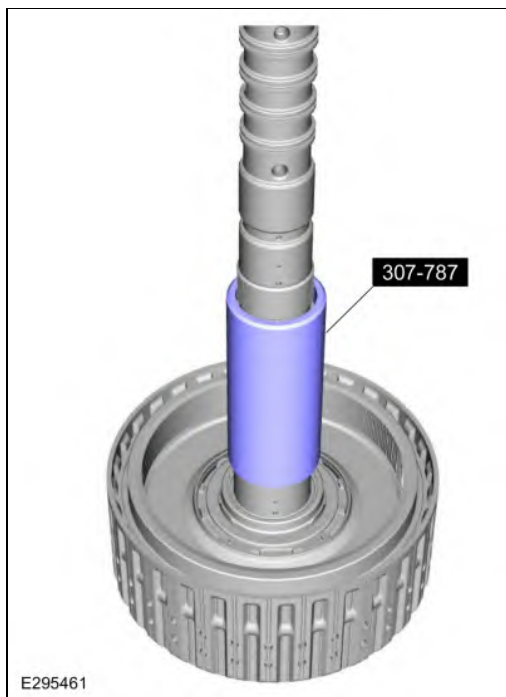


1. **NOTE:** The No. 3 sun gear shaft splines will be flush with the No. 3 sun gear splines when correctly installed.

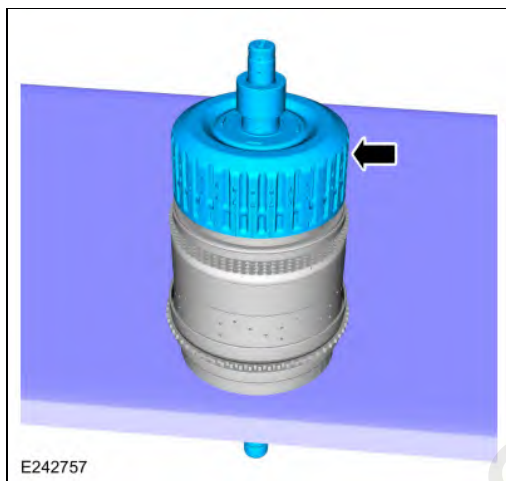
Check the No. 3 sun gear shaft for correct installation.



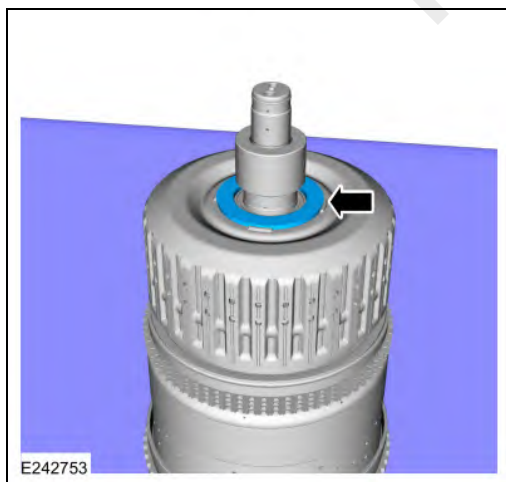
209. Remove Special Service Tool: 307-787 F8 Seal Installer/Sizer Input Shaft.



210. Install the E clutch and input shaft assembly.



211. Install the (T8) thrust bearing.



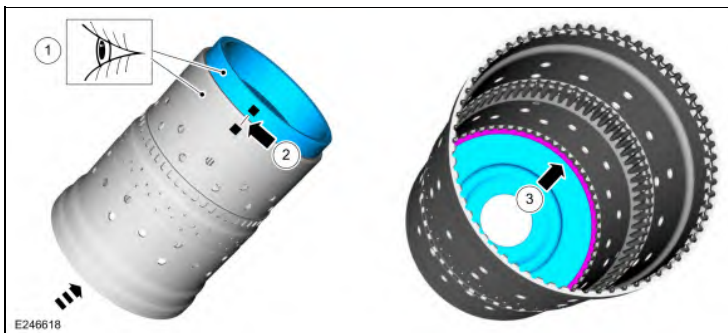
212.

1. **NOTE:** Some early build transmissions are not equipped with lazer applied ink marks.

If the No. 4 ring gear was removed, inspect the ring gear and the clutch and planetary container cylinder for lazer applied ink marks.

2. **NOTICE:** If ink marks are present the marks must be aligned or a transmission vibration can occur.

- If ink marks are present align the marks and install the No. 4 ring gear on the clutch and planetary container cylinder.
3. Install the No. 4 ring gear snap ring.



213.

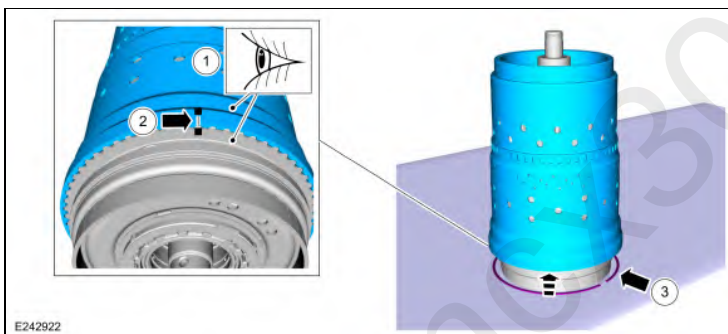
1. **NOTE:** Some early build transmissions are not equipped with lazer applied ink marks.

Inspect the No. 1 planetary carrier and the clutch and planetary container cylinder for lazer applied ink marks.

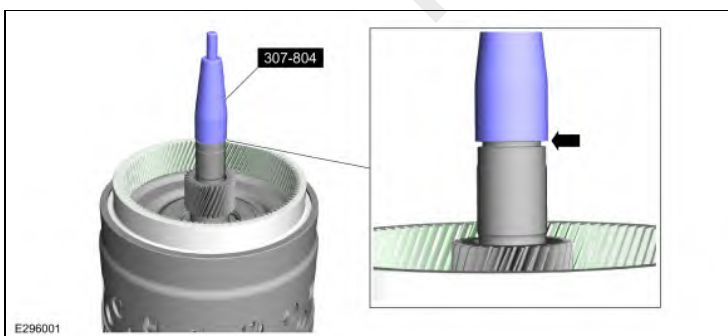
2. **NOTICE:** If ink marks are present the marks must be aligned or a transmission vibration can occur.

If ink marks are present align the marks and install the clutch and planetary container cylinder onto the No. 1 planetary carrier and install the snap ring. Make sure the snap ring is seated.

3. Install the No. 1 planetary carrier snap ring. Make sure the snap ring is seated.

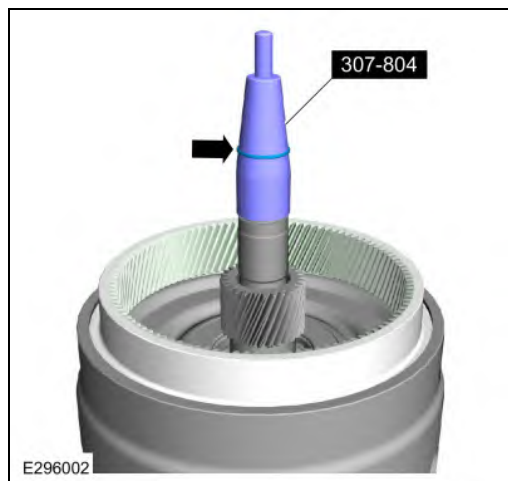


214. Install the special tool to the top edge of the Teflon® seal groove.
Use Special Service Tool: 307-804 F9 Seal Guide, Installer & Sizer.



215. Install a new Teflon® seal on the special tool.

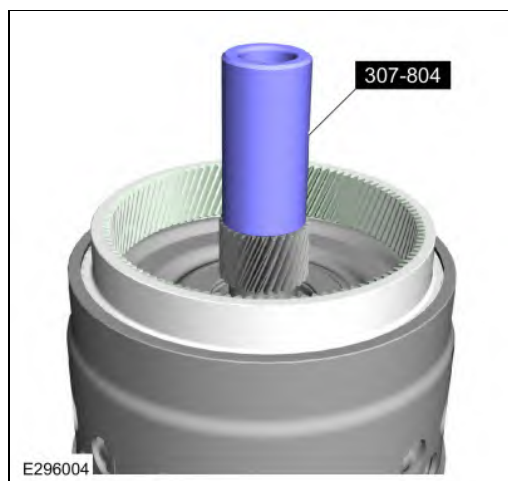
Use Special Service Tool: 307-804 F9 Seal Guide, Installer & Sizer.



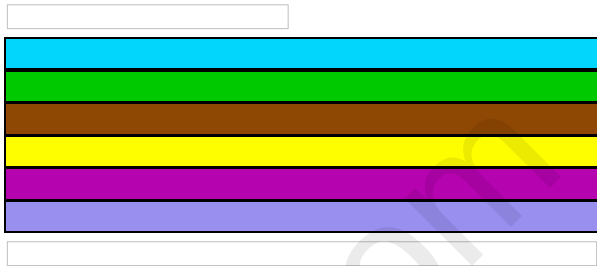
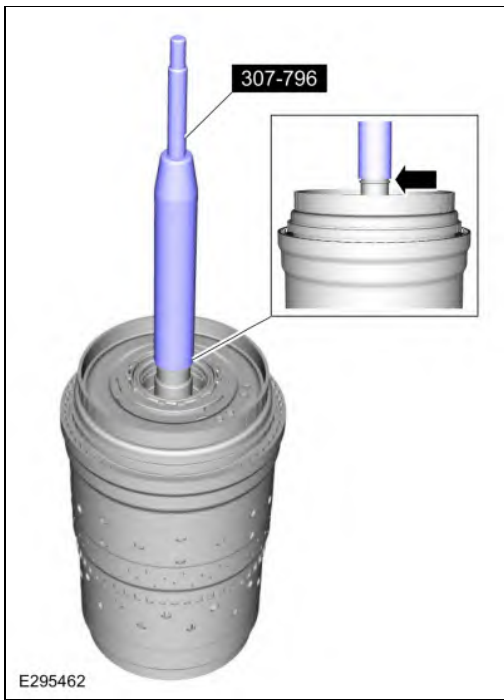
216. Using the top half of the special tool, slide the Teflon® seal into the groove.
Use Special Service Tool: 307-804 F9 Seal Guide, Installer & Sizer.



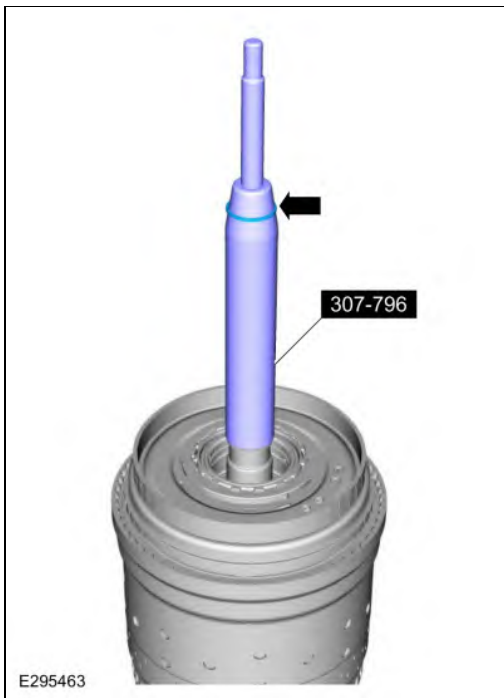
217. Using the special tool, size the Teflon® seal.
Use Special Service Tool: 307-804 F9 Seal Guide, Installer & Sizer.



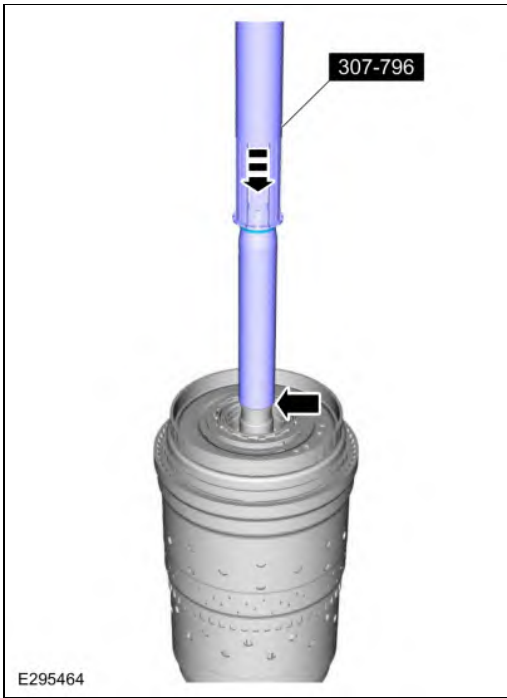
218. Install the special tool and adjust the special tool to align the bottom edge of the tool with the top edge of the bottom Teflon® seal groove.
Use Special Service Tool: 307-796 F2 Seal Guide, Installer & Sizer.



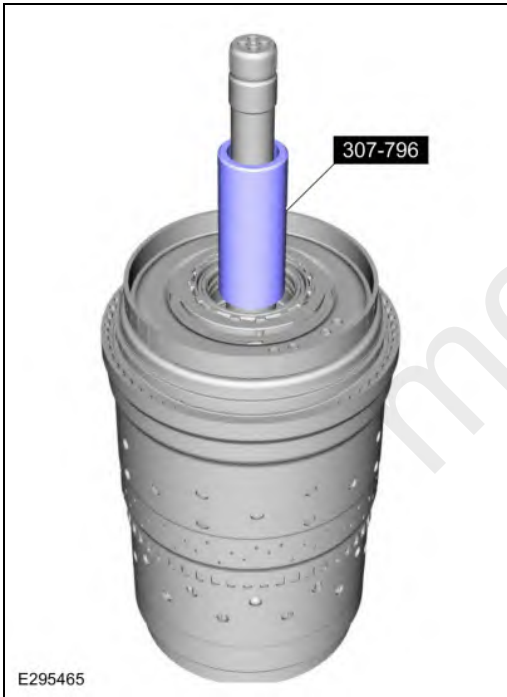
219. Install a new Teflon® seal on the special tool.
Use Special Service Tool: 307-796 F2 Seal Guide, Installer & Sizer.



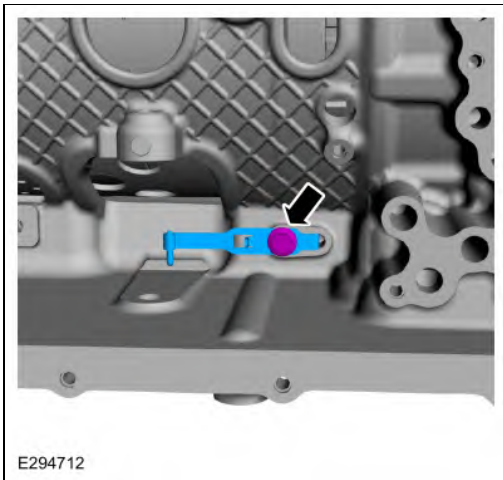
220. Using the top half of the special tool, slide the Teflon® seal into the groove. Remove the special tools and repeat the steps for the other 4 Teflon® seals.
Use Special Service Tool: 307-796 F2 Seal Guide, Installer & Sizer.



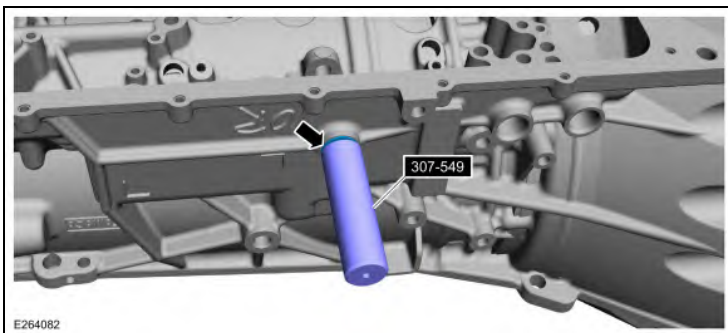
221. Install the special tool to size the 5 Teflon® seals.
Use Special Service Tool: 307-796 F2 Seal Guide, Installer & Sizer.



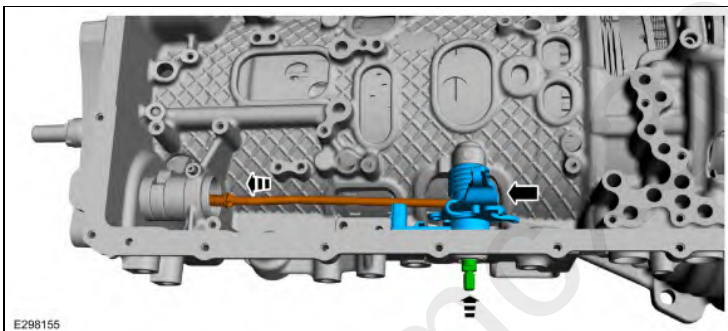
222. Install the TR sensor detent spring and loosely install the bolt.



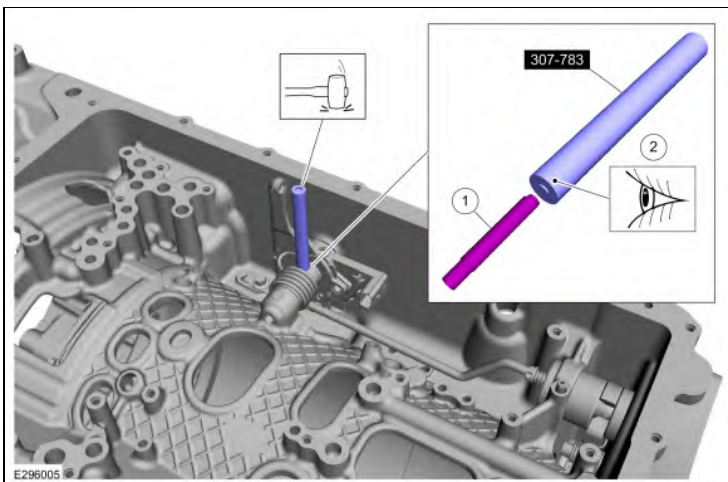
223. Using the special tool install the new manual shaft seal in the transmission case.
Use Special Service Tool: 307-549 Installer, Shift Shaft Fluid Seal.



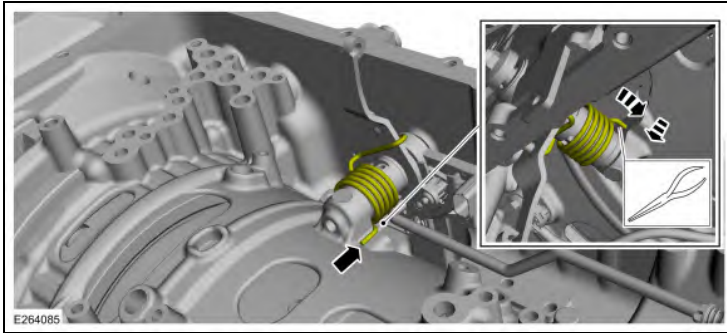
224. Slide the manual shaft into the TR sensor.



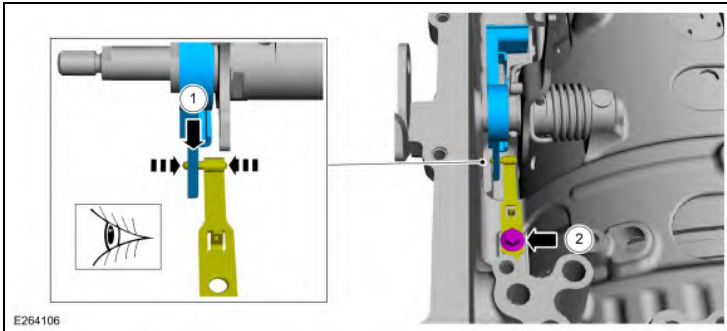
225. Using the dimpled end of the special tool, install the new manual shaft-to-TR sensor roll pin flush with the shaft.
1. New roll pin
 2. Dimpled end of special tool
- Use Special Service Tool: 307-783 Installer, Roll Pin.
Use the General Equipment: Rubber Mallet



226. Slide the end of the park return spring onto the transmission case.

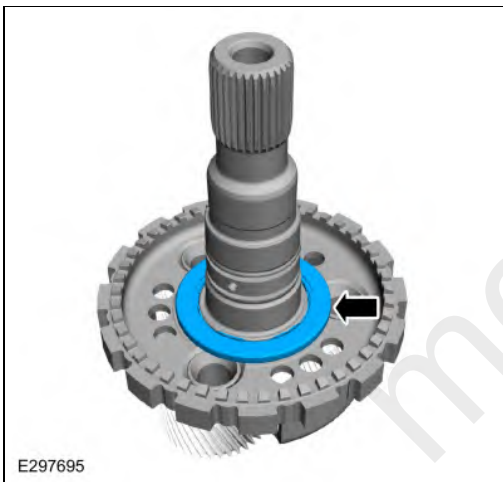


- 227.
1. Align the detent spring in the center of the TR sensor.
 2. Torque: 97 lb.in (11 Nm)

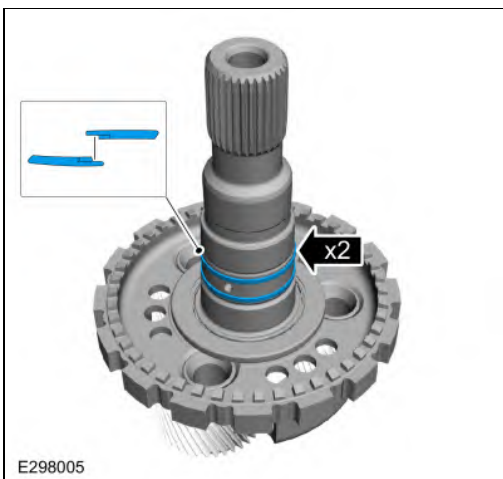


228. **NOTE:** A audible click should be heard when the (T10) thrust bearing is correctly installed.

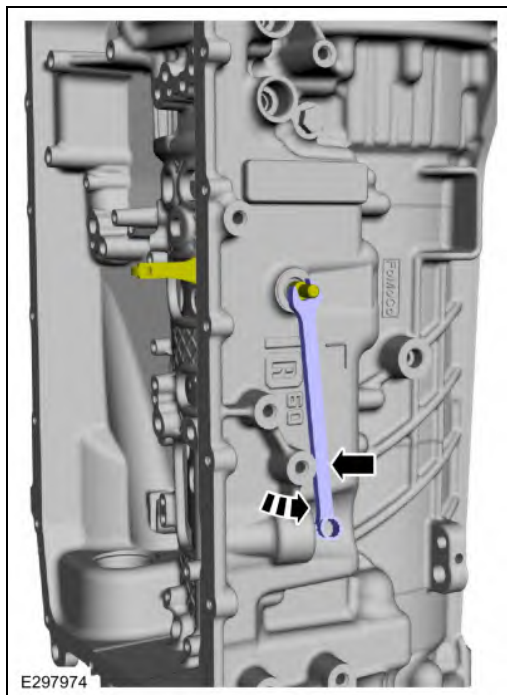
Install the (T10) thrust bearing on the output shaft.



229. Install new seals on the output shaft.



230. Rotate the manual shaft to the park override position.



231. Install the output shaft and planetary carrier assembly No. 4.



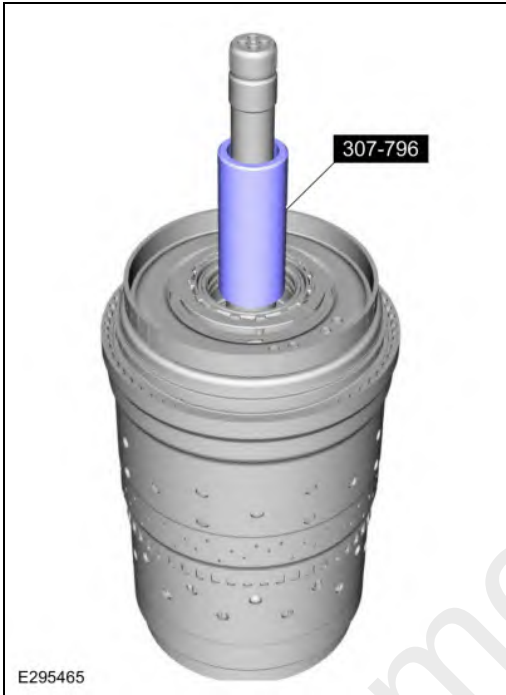
232. Install the (T9) thrust bearing.



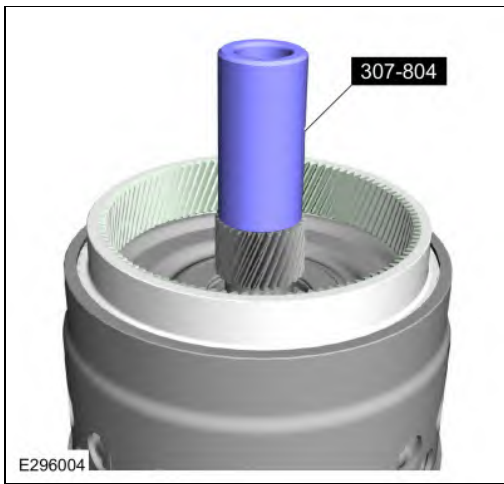
233. Lubricate the output shaft bushing with petroleum jelly.



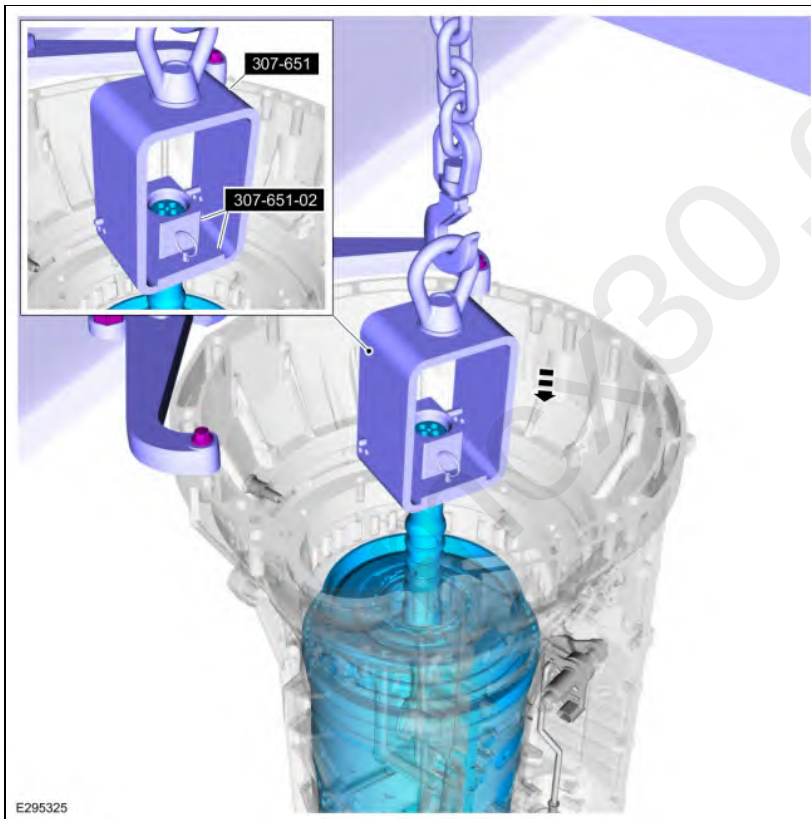
234. Remove Special Service Tool: 307-796 F2 Seal Guide, Installer & Sizer.



235. Remove Special Service Tool: 307-804 F9 Seal Guide, Installer & Sizer.

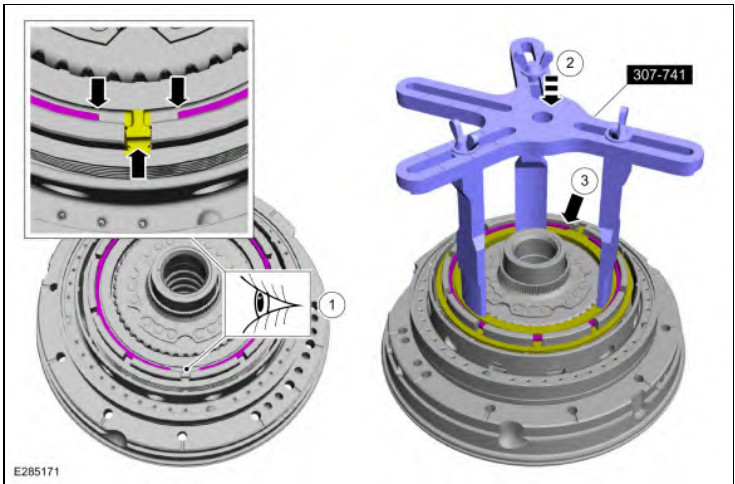


236. Using the special tools and a floor crane, install the clutch and planetary assembly.
 Use Special Service Tool: 307-651 Bracket, Pump Remover/Installer. , 307-651-02 Lift fixture adapter for 307-651.

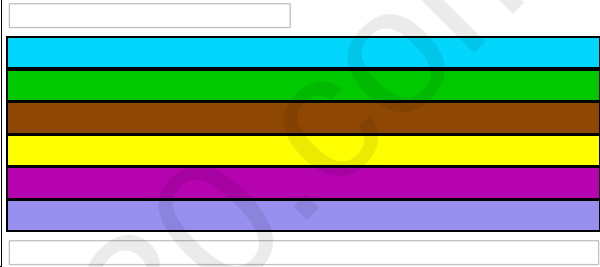
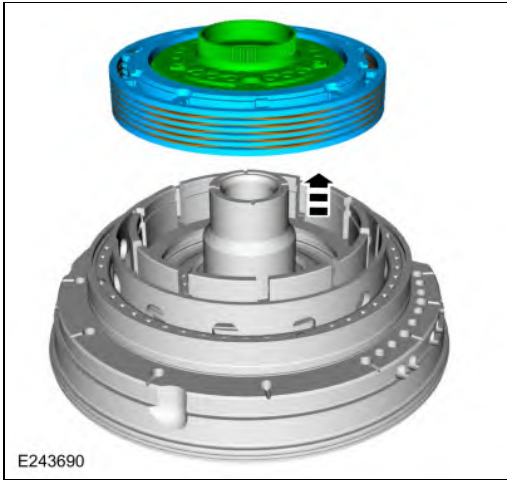


237. Using the special tool, remove the B clutch snap ring.

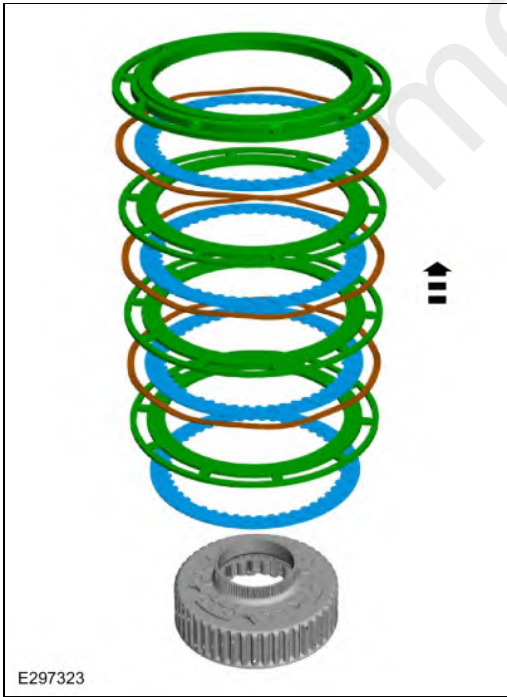
- NOTE:** The B clutch snap ring ends are positioned in the opening of the B clutch pressure plate with a raised notch.
 Note the position of the B clutch snap ring ends for assembly.
- Using the special tools and a press, compress the B clutch assembly.
 Use Special Service Tool: 307-741 Spring Compressor, F Clutch.
 Use the General Equipment: Hydraulic Press
- Remove the B clutch snap ring.



238. **NOTICE:** Remove the One-Way Clutch (OWC) and B clutch assembly gently, as the One-Way Clutch (OWC) rollers and springs could become dislodged.
Gently remove the One-Way Clutch (OWC) and B clutch assembly.

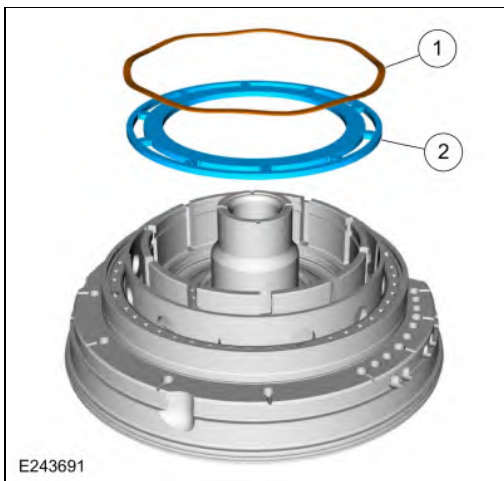


239. **NOTICE:** If replacing B clutch separating springs, all separating springs must be replaced as a matching set or damage can occur.
Remove the B clutch assembly from the One-Way Clutch (OWC). Inspect the clutch plates for excessive wear or damage. If the clutch plates are excessively worn or damaged replace as necessary. If the clutch plates are not excessively worn or damaged, they can be reused.



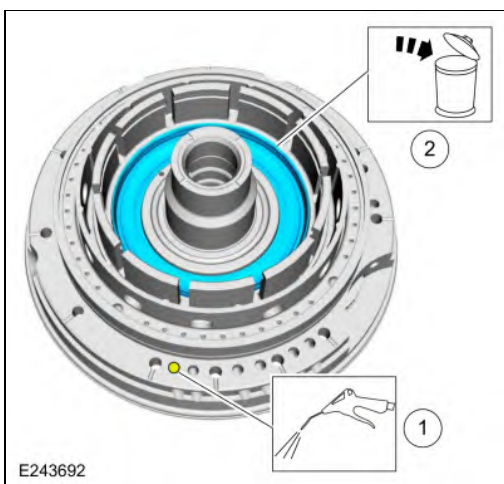
240. Remove the B clutch apply plate and the one remaining B clutch separating spring.

1. B clutch separating spring
2. B clutch apply plate



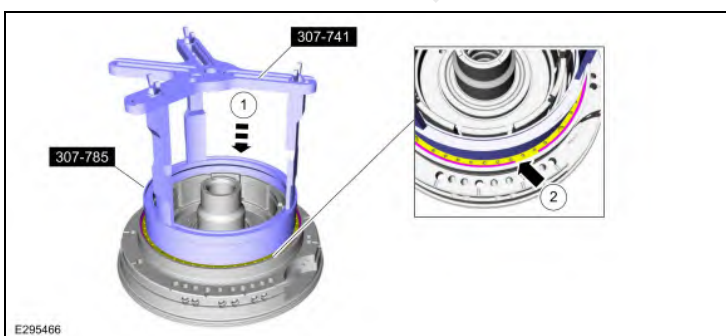
241.

1. Use compressed air into the oil passage hole.
2. Remove and discard the B clutch piston.

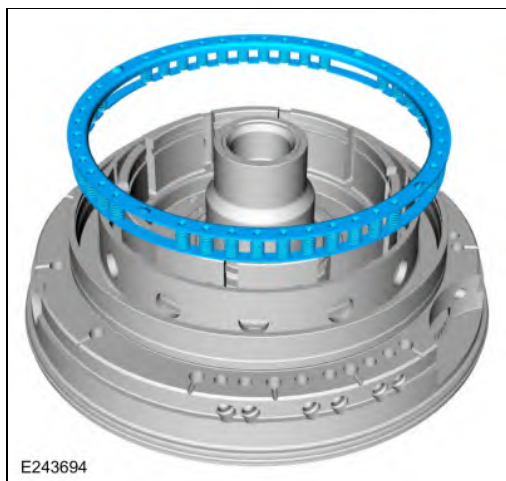


242.

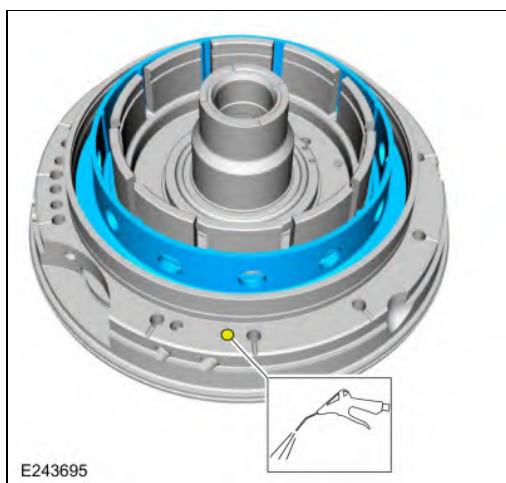
1. Using the special tools and a press, compress the A clutch piston return spring.
Use Special Service Tool: 307-741 Spring Compressor, F Clutch, 307-785 Clutch spring compressor.
Use the General Equipment: Hydraulic Press
2. Remove the A clutch piston return spring snap ring.



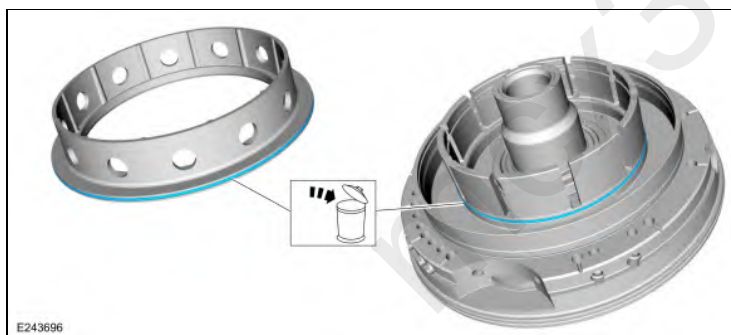
243. Remove the A clutch piston return spring.



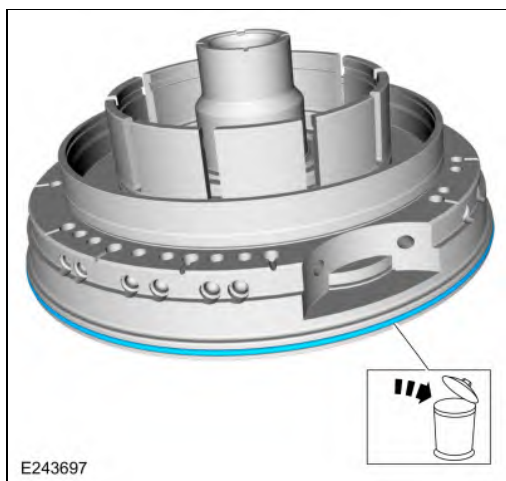
244. Use compressed air into the oil passage hole and remove the A clutch piston.



245. Remove and discard the A clutch piston outer seal and the A clutch piston inner seal.



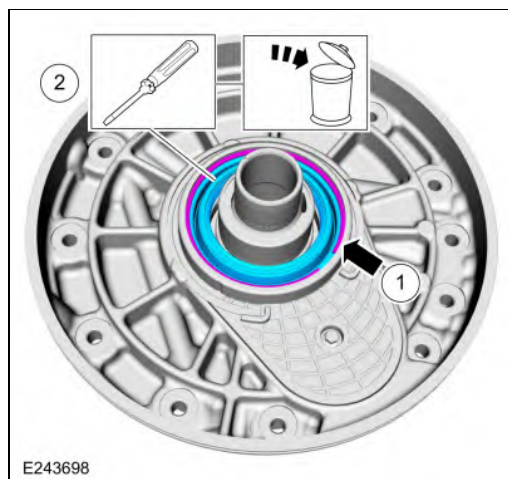
246. Remove and discard the front support-to-case seal.



247.
1. Remove the torque converter hub seal snap ring.

2. **NOTE:** When removing the torque converter hub seal use care not to scratch the front support cover sealing surface.

Remove and discard the torque converter hub seal.

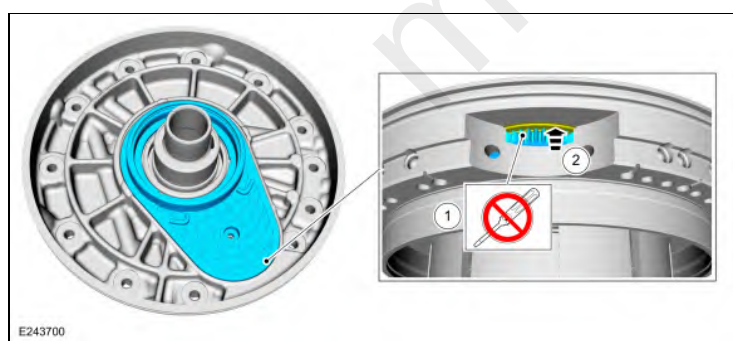


248. Remove the front support cover bolt and the front support cover snap ring.



249.

1. **NOTICE:** Do not pry on the transmission fluid pump drive gear to remove the front support cover or damage to the transmission fluid pump drive gear can occur.
2. Push up on the back of the front support cover and remove the front support cover from the front support.



250. Remove the transmission fluid pump drive gear.

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- E243703

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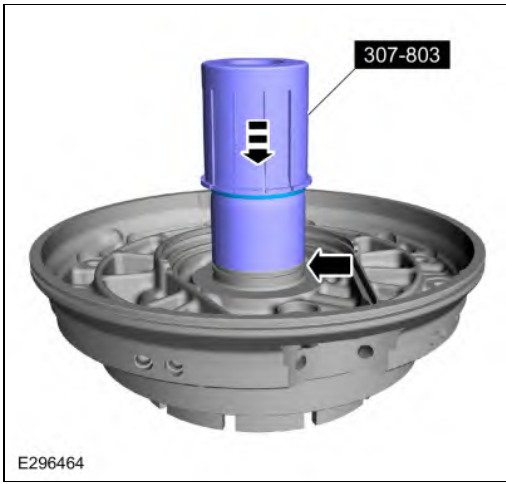
256. Install the special tool.
Use Special Service Tool: 307-803 F1 Seal Guide, Installer & Sizer.



257. Install a new Teflon® seal on the special tool.
Use Special Service Tool: 307-803 F1 Seal Guide, Installer & Sizer.



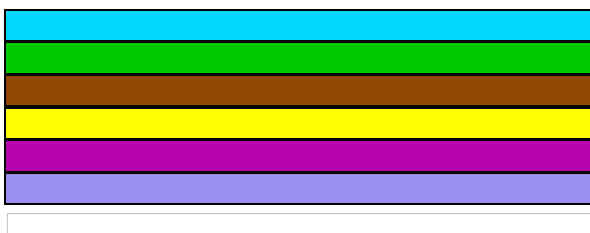
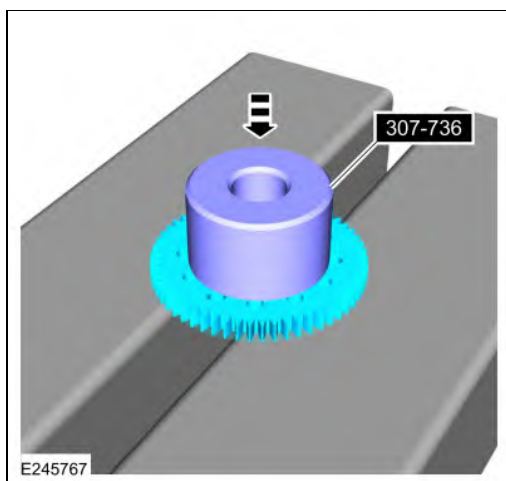
258. Using the top half of the special tool, slide the Teflon® seal into the groove.
Use Special Service Tool: 307-803 F1 Seal Guide, Installer & Sizer.



259. Install the special tool to size the Teflon® seal.
Use Special Service Tool: 307-803 F1 Seal Guide, Installer & Sizer.

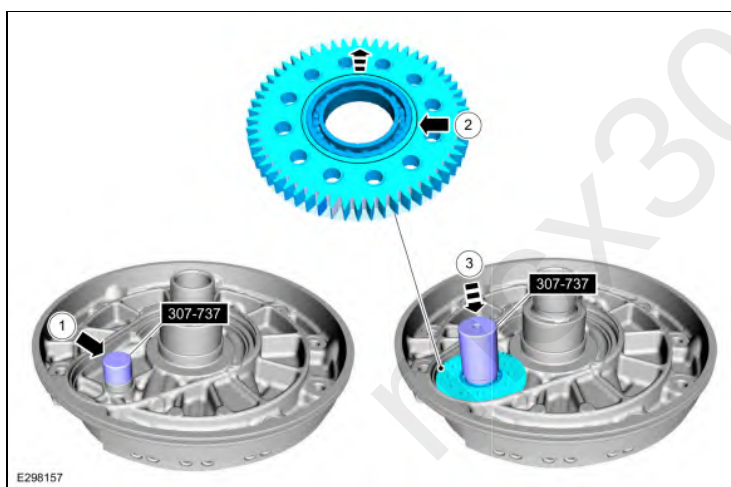


260. If removed, using the special tool and a press, install the new transmission fluid pump idler gear bearing.
Use Special Service Tool: 307-736 Installer, Pump Drive Gear Bearing.
Use the General Equipment: Hydraulic Press

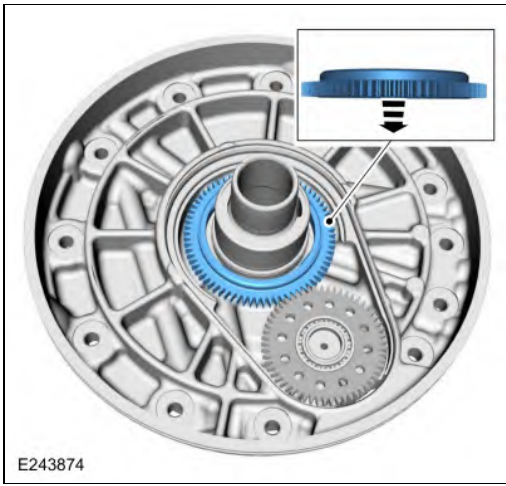


261.

1. Position the special tool on the front support.
Use Special Service Tool: 307-737 Press Tool, Oil Pump Drive Idler Gear.
2. **NOTE:** Install the transmission fluid pump idler gear with the grooved side up.
3. Using the special tools and a press, install the transmission fluid pump idler gear and bearing.
Use the General Equipment: Hydraulic Press



262. Install the transmission fluid pump drive gear with the flat side down.



263. Install the front support cover by pressing down evenly by hand.

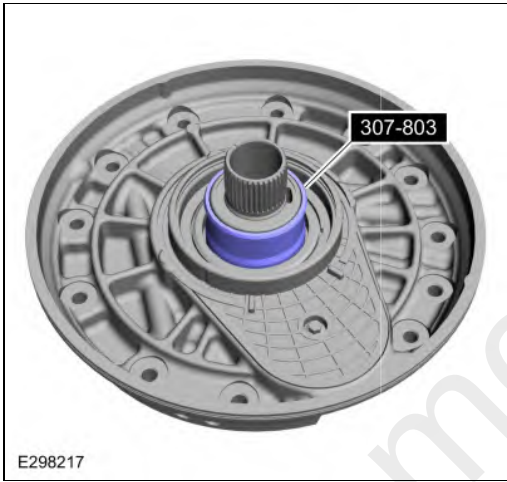


264. **NOTE:** The front support cover snap ring ends are spaced evenly in the cover alignment features.

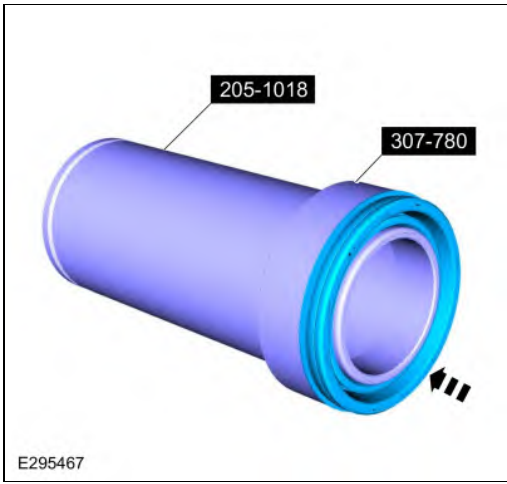
Install the front support cover bolt and the front support cover snap ring.
Torque: 62 lb.in (7 Nm)



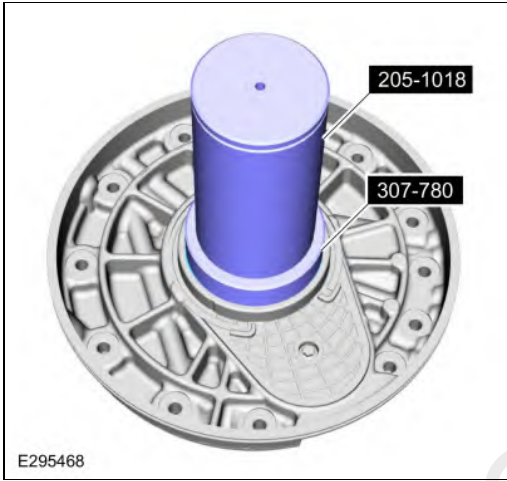
265. Remove Special Service Tool: 307-803 F1 Seal Guide, Installer & Sizer.



266. Install the new torque converter hub seal on the special tools.
Use Special Service Tool: 205-1018 Installation Tube. , 307-780 Converter Seal installer.



267. Using the special tools, install the new torque converter hub seal.
Use Special Service Tool: 205-1018 Installation Tube. , 307-780 Converter Seal installer.



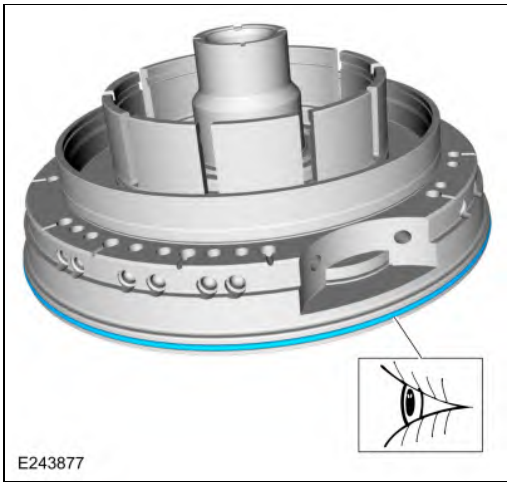
268. Install the torque converter hub seal snap ring.



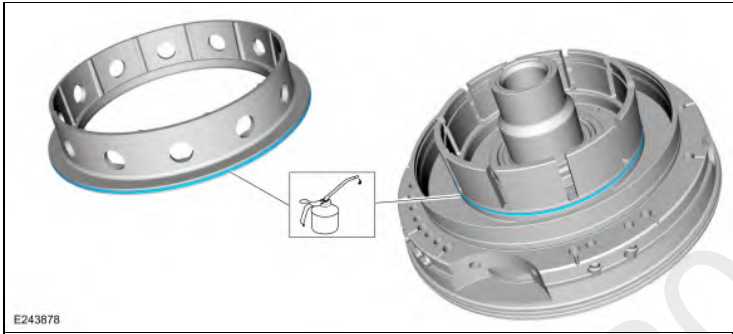
269. Install the special tool.
Use Special Service Tool: 307-803 F1 Seal Guide, Installer & Sizer.



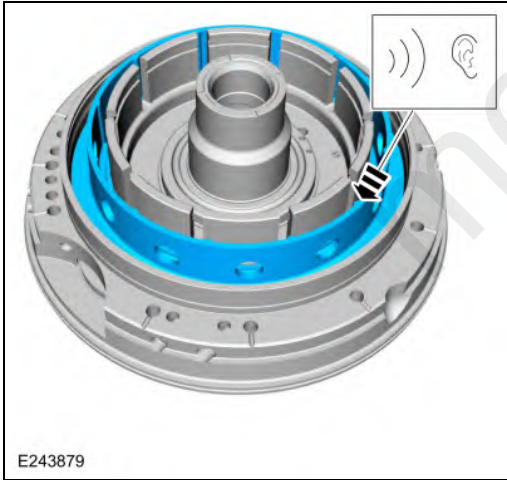
270. Install the new front support-to-case seal with the seal color visible from the outside.



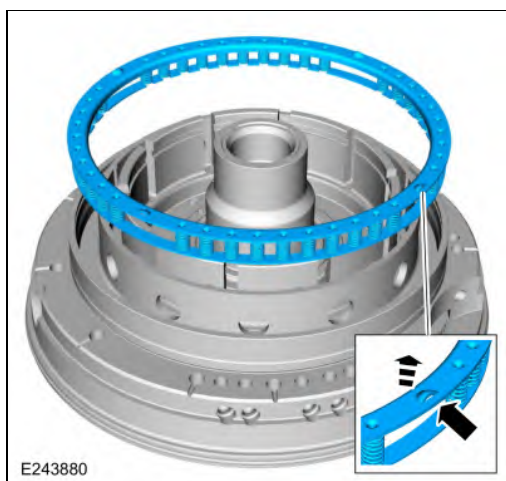
271. Install the new A clutch piston outer seal and the new A clutch piston inner seal. Lubricate the A clutch piston seals with petroleum jelly.



272. Install the A clutch piston by pushing down on the piston until an audible click is heard.



273. Install the A clutch piston return spring with the retaining tabs facing upward.

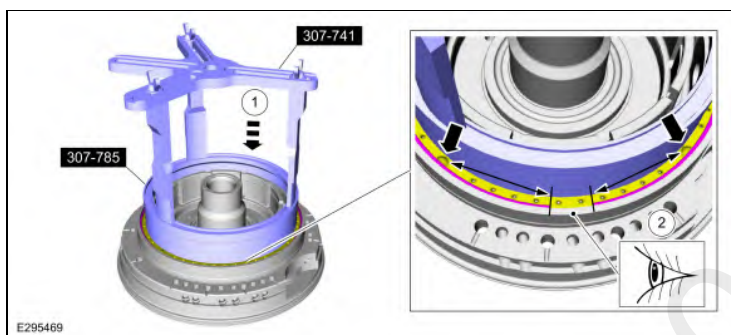


274.

1. Using the special tools and a press, compress the A clutch piston return spring.
Use Special Service Tool: 307-741 Spring Compressor, F Clutch. , 307-785 Clutch spring compressor.
Use the General Equipment: Hydraulic Press

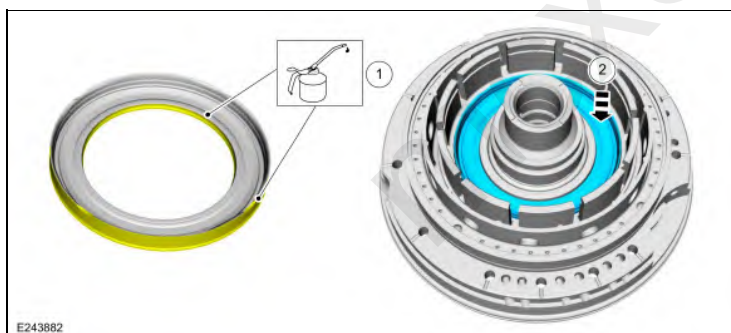
2. **NOTE:** Be sure snap ring ends are not located on the A clutch piston return spring retaining tabs.

Install the A clutch piston return spring snap ring ends in the center of the return spring retaining tabs.

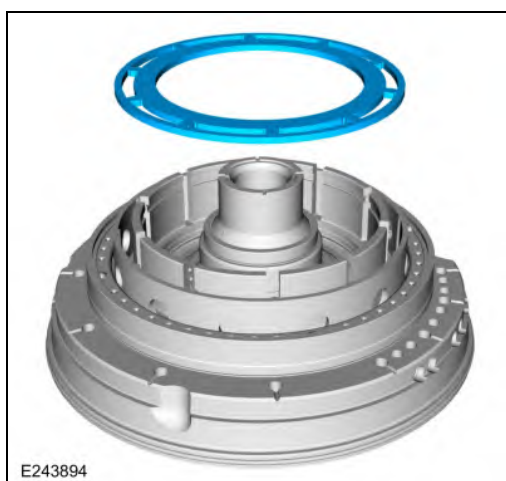


275.

1. Lubricate the B clutch piston seals with petroleum jelly.
2. Install the new B clutch piston.

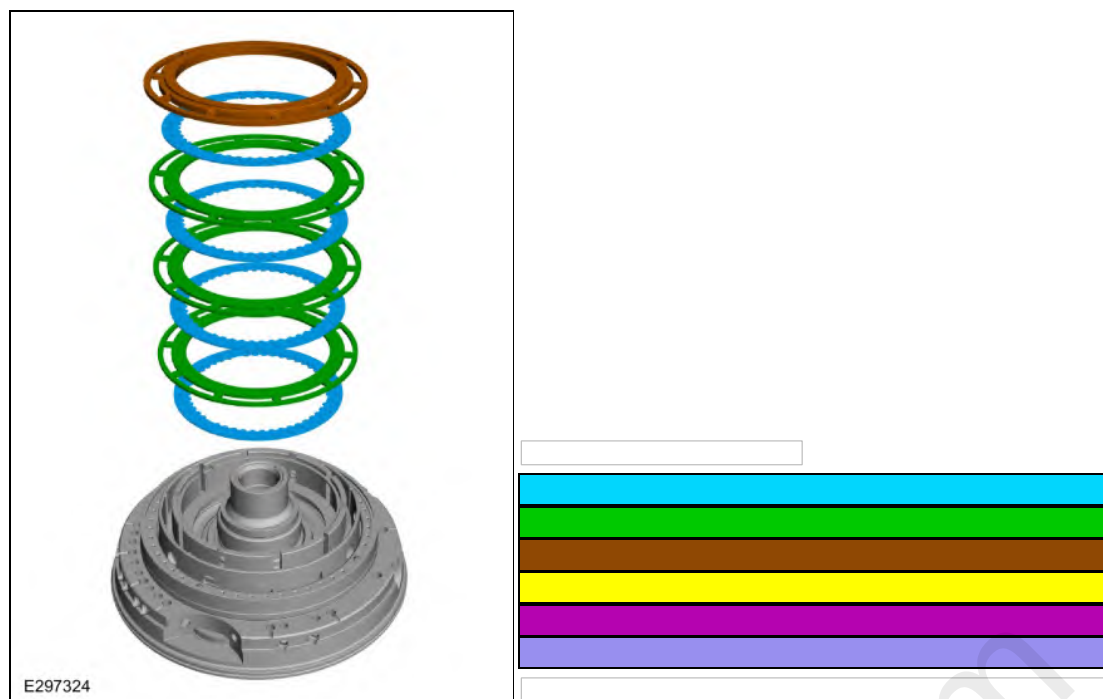


276. Install the B clutch apply plate.



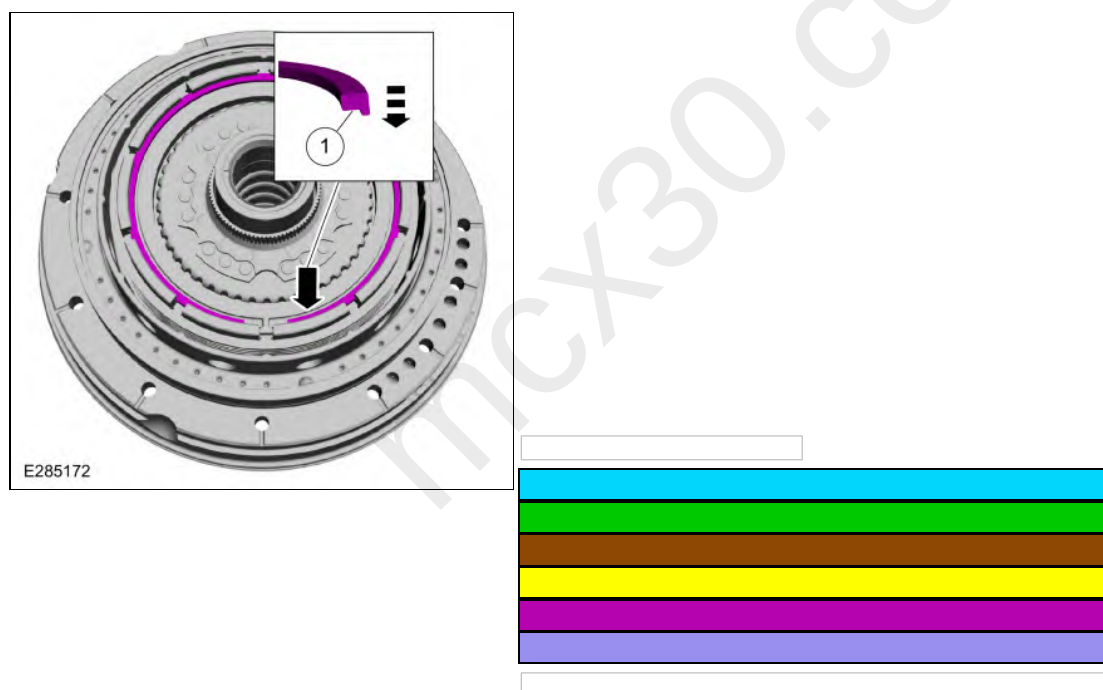
277. **NOTE:** The B clutch separating springs are not installed when measuring the B clutch clearance.

Temporarily install the B clutch friction plates, B clutch steel plates and the B clutch pressure plate to measure the B clutch clearance.

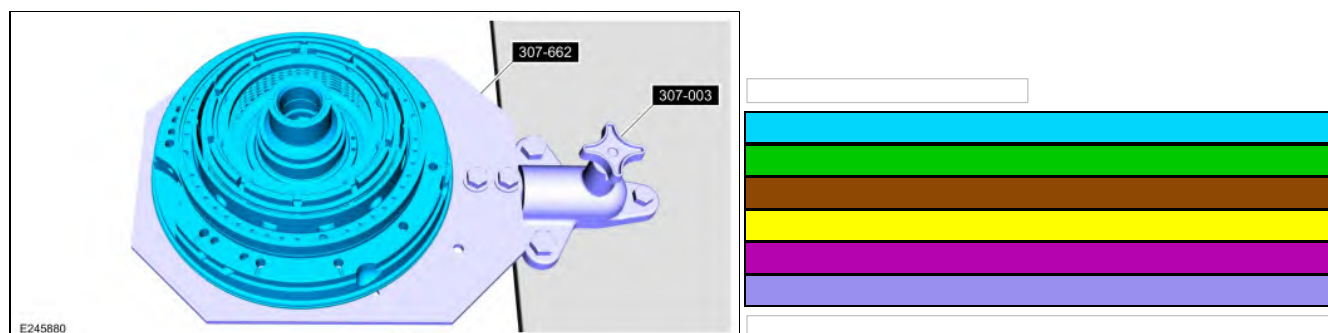


278. Install the B clutch snap ring with the grooved side down.

1. B clutch snap ring grooved side

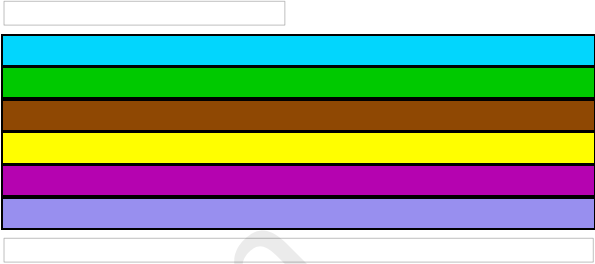
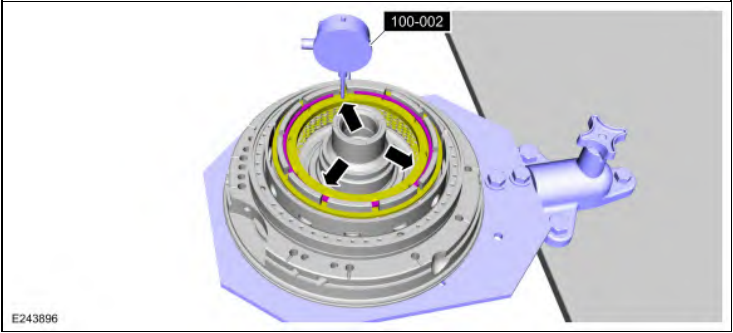


279. Assemble the special tools and position the front support assembly on the special tool.
Use Special Service Tool: 307-662 Gauge, Clutch Pack Endplay. , 307-003 (T57L-500-B) Holding Fixture, Transmission.

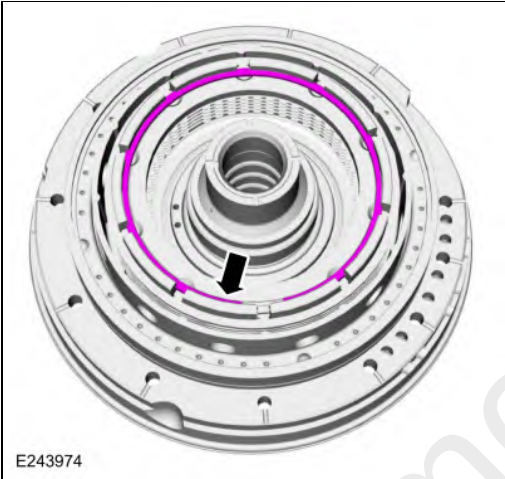


280. Using the special tool, measure the B clutch clearance. Position the plunger so it rests on the top surface of the pressure plate. Gently push down on the pressure plate to zero the dial

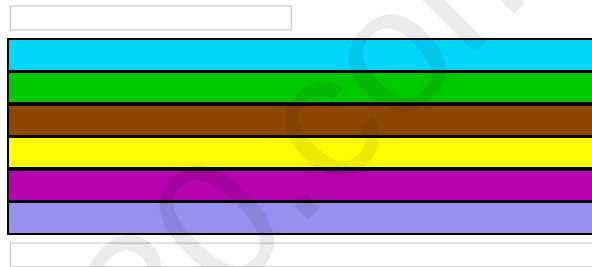
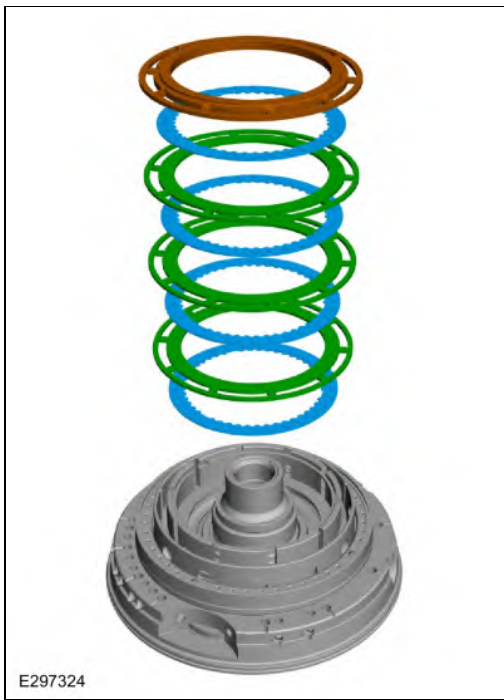
indicator. Pull up on the pressure plate and measure and record the clutch clearance in 3 different places. Average the 3 recorded clutch clearance measurements and compare the measurement to the clutch clearance chart in specifications to determine the correct size snap ring. Install the correct B clutch snap ring.
Refer to: Specifications (307-01B Automatic Transmission, Transfer Case and Power Transfer Unit - 10-Speed Automatic Transmission â€“ 10R80, Specifications).
Use Special Service Tool: 100-002 (TOOL-4201-C) Holding Fixture with Dial Indicator Gauge.



281. Remove the B clutch snap ring.

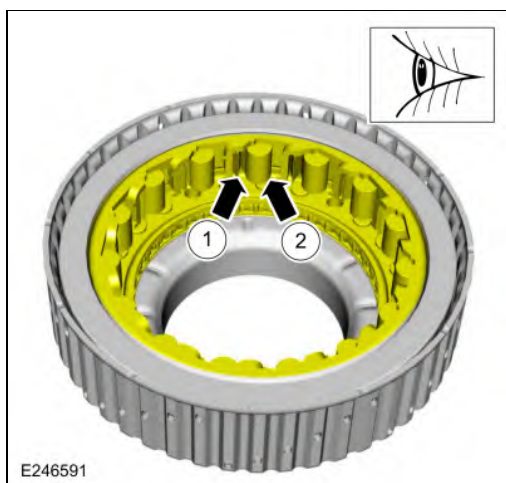


282. Remove the B clutch assembly.



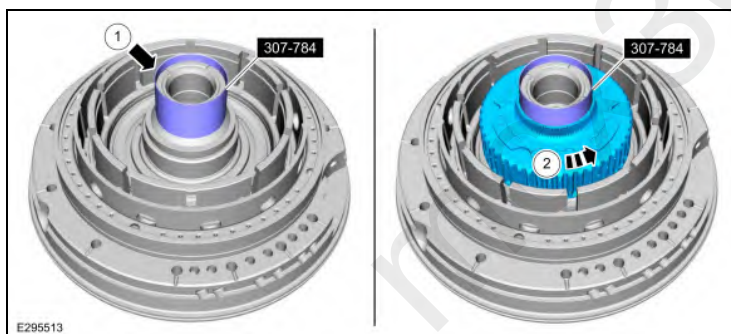
283. Verify that all the One-Way Clutch (OWC) rollers and springs are seated.

1. Springs
2. Rollers



284. **NOTE:** The One-Way Clutch (OWC) hub should rotate counter-clockwise freely when installed correctly.

1. Position the special tool on the front support.
Use Special Service Tool: 307-784 One way clutch alignment tool.
2. With a counter-clockwise rotation gently install the One-Way Clutch (OWC) onto the front support.

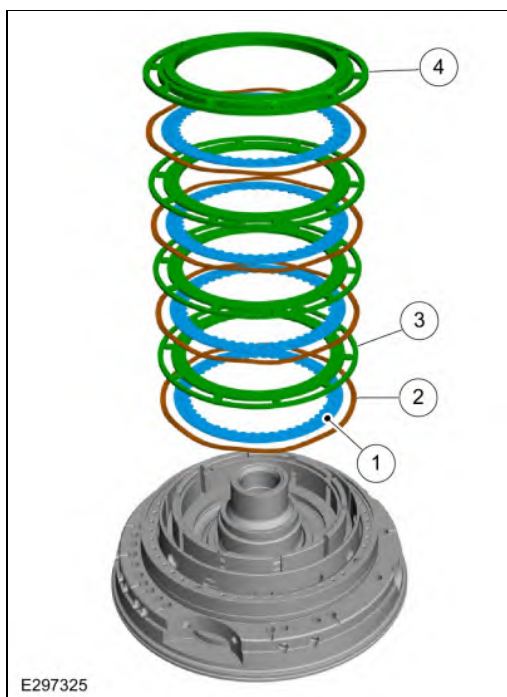


285. **NOTICE:** If replacing B clutch separating springs, all separating springs must be replaced as a matching set or damage can occur.

NOTE: Clutch plate quantity is model dependant based on engine displacement.

Soak the B clutch plates in clean transmission fluid. With the B clutch apply plate installed, correctly install the B clutch plates and springs.

1. B clutch friction plates
Material: Motorcraft® MERCON® ULV Automatic Transmission Fluid / XT-12-QULV (WSS-M2C949-A,) (MERCON® ULV)
2. B clutch separating springs
3. B clutch steel plates
4. B clutch pressure plate

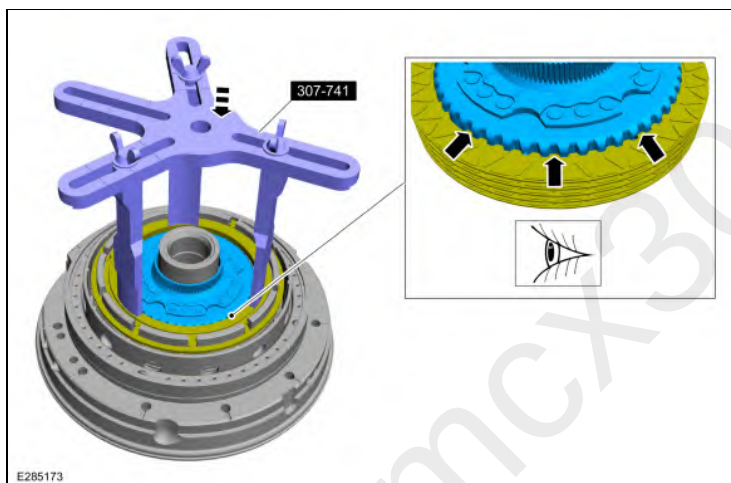


286. **NOTICE:** Be sure to align the top B clutch friction to the One-Way Clutch (OWC) hub or damage can occur.

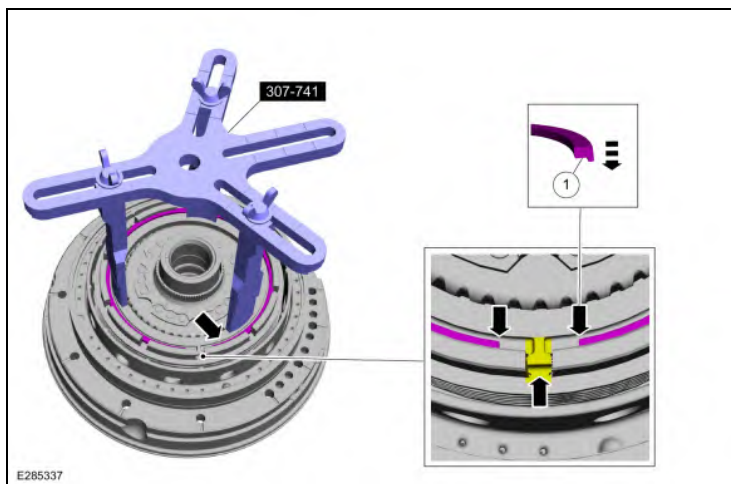
Use the special tools to compress the B clutch assembly.

Use Special Service Tool: 307-741 Spring Compressor, F Clutch.

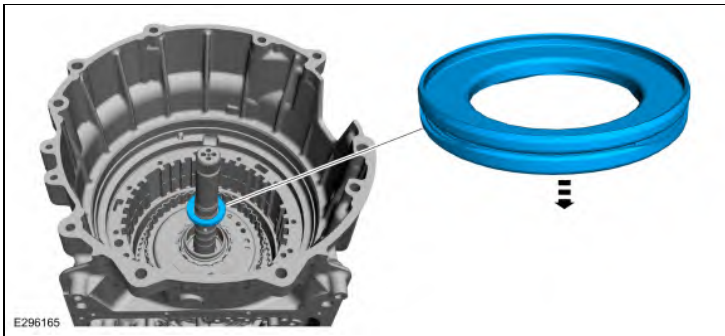
Use the General Equipment: Hydraulic Press



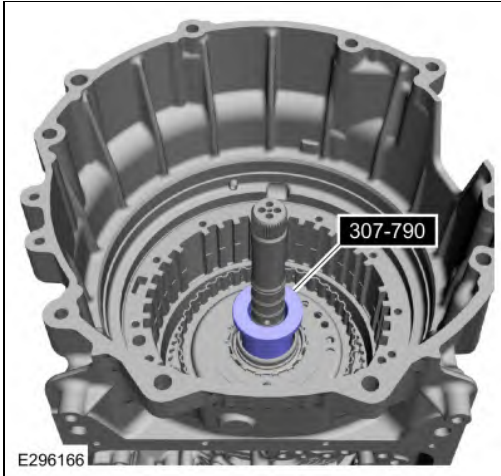
287. Install the B clutch snap ring in the correct location with the grooved side down.
1. B clutch snap ring grooved side



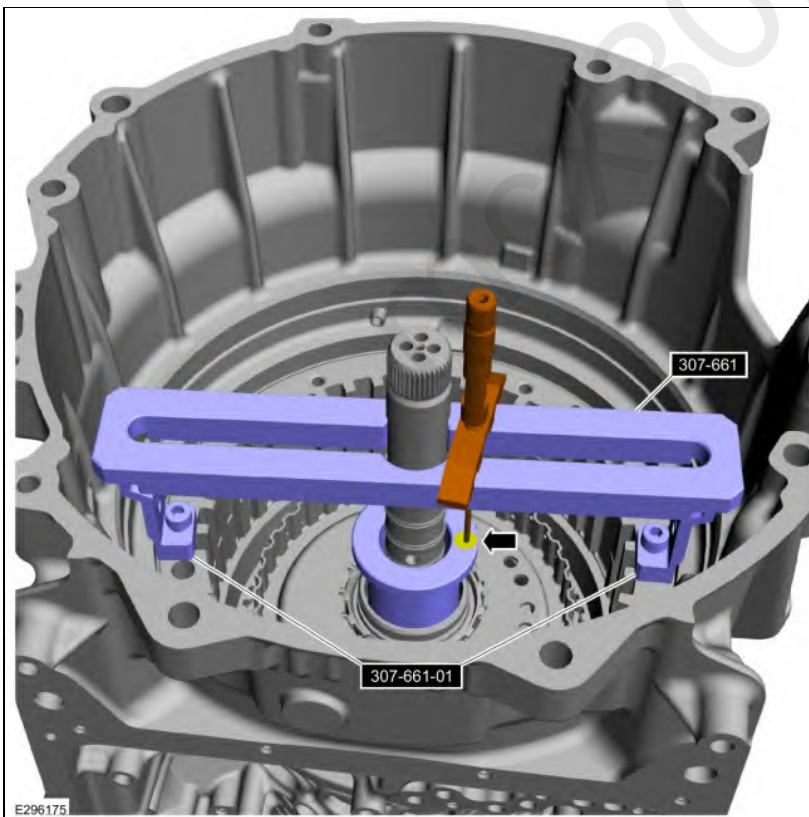
288. Install the (T3) thrust bearing.



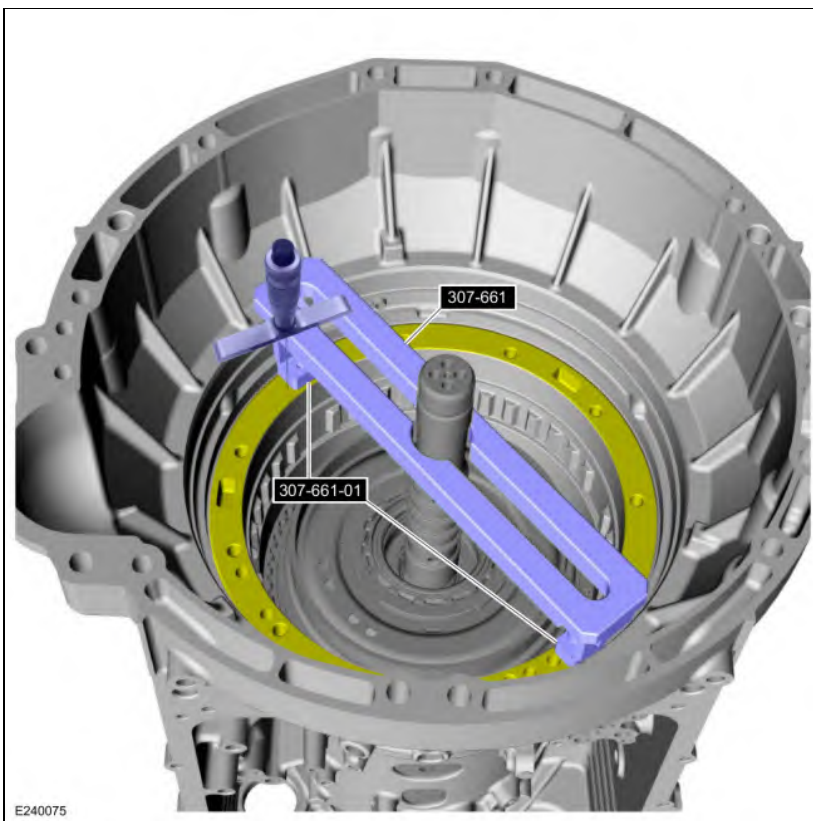
289. Install the special tool.
Use Special Service Tool: 307-790 Endplay Check Gauge.



290. Using the special tools and a depth gauge, measure the distance from the top of the special tool to the top of the (T3) thrust bearing special tool in 2 different places. Average the measurements. Record this as measurement A.
Use Special Service Tool: 307-661 Gauge, End Play. , 307-661-01 Spacers/Plate, Clearance Gage.

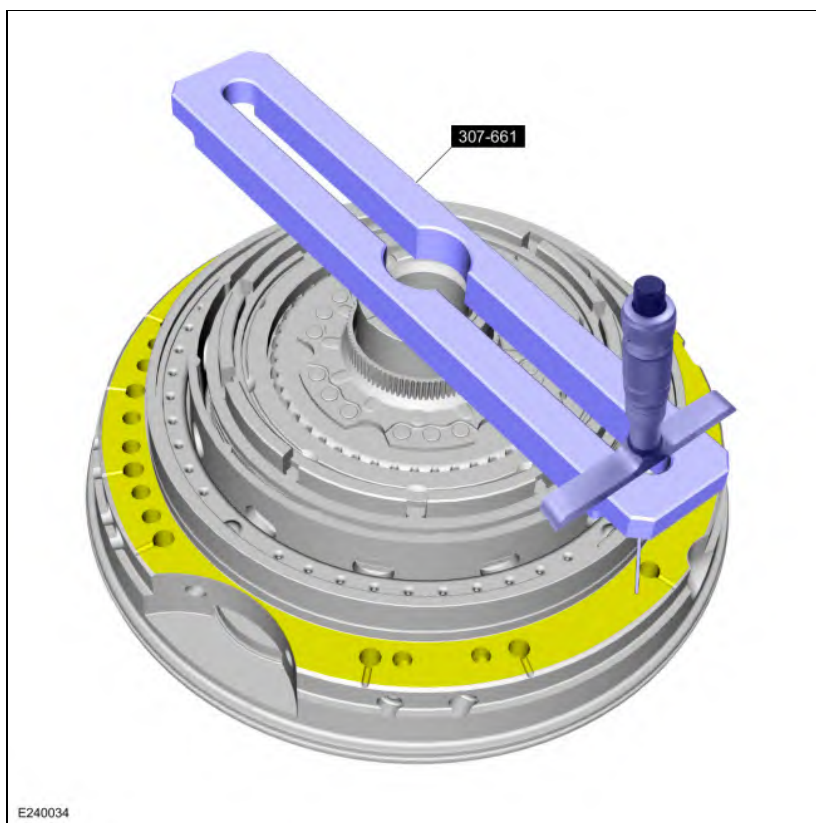


291. Using the special tools and a depth gauge, measure the distance from the top of the special tool to front support mating surface in 2 different places. Average the measurements. Record this as measurement B.
Use Special Service Tool: 307-661 Gauge, End Play. , 307-661-01 Spacers/Plate, Clearance Gage.



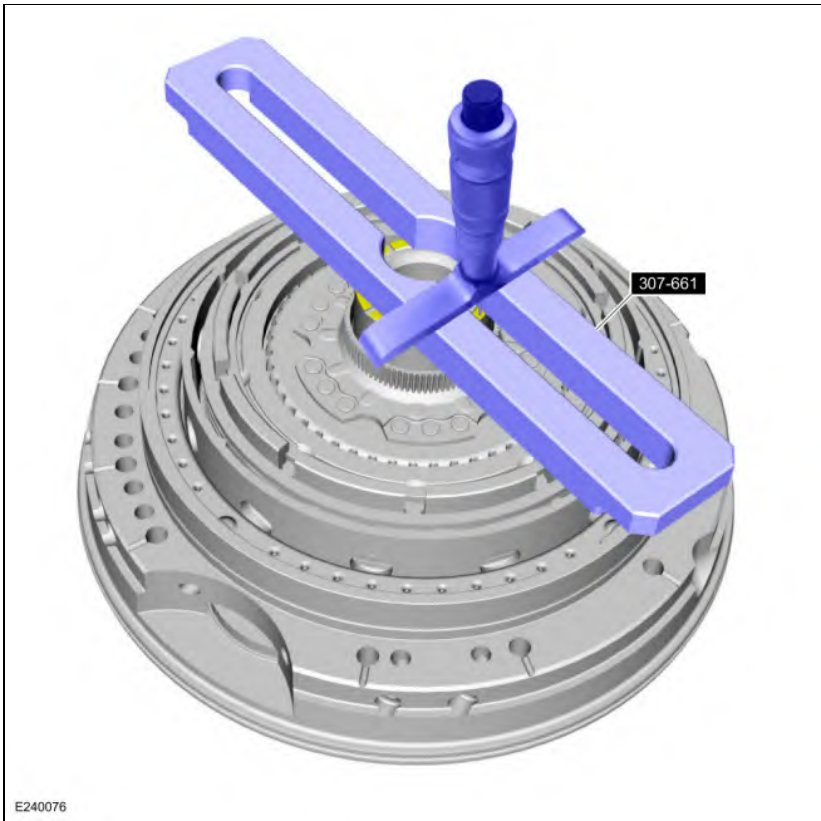
292. Using the special tool and a depth gauge, measure the distance from the top of the special tool to the transmission deck mating surface in 2 different places. Average the measurements. Record this measurement as measurement D.

Use Special Service Tool: 307-661 Gauge, End Play.



293. Using the special tool and a depth gauge, measure the distance from the top of the special tool to (T3) thrust bearing surface in 2 different places. Average the measurements. Record this as measurement E.
 Use Special Service Tool: 307-661 Gauge, End Play.

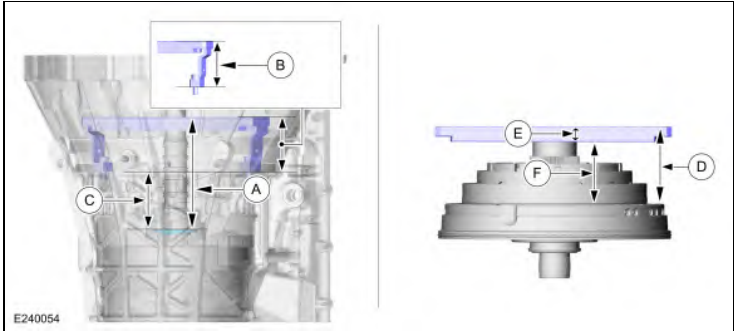
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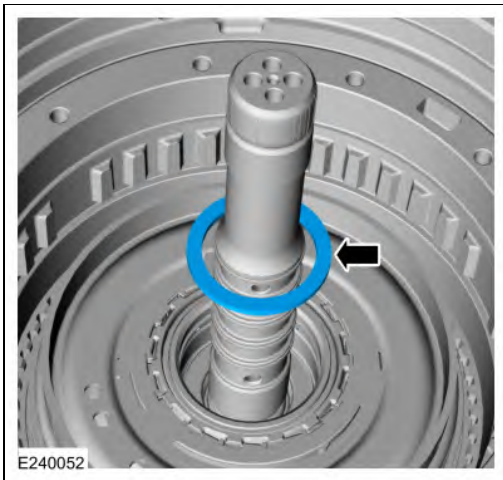
294. **NOTE:** Recorded measurements B and E are included to compensate for the difference in height of the special tool.

Calculate the correct shim thickness. Subtract measurement B from measurement A and record this as measurement C. Subtract measurement E from measurement D and record this as measurement F. Subtract measurement F from measurement C to get the clearance between the front support and the (T3) thrust bearing. Using the Selective Fit Shim Charts in specifications, select the correct shim.

Refer to: Specifications (307-01B Automatic Transmission, Transfer Case and Power Transfer Unit - 10-Speed Automatic Transmission “10R80, Specifications).



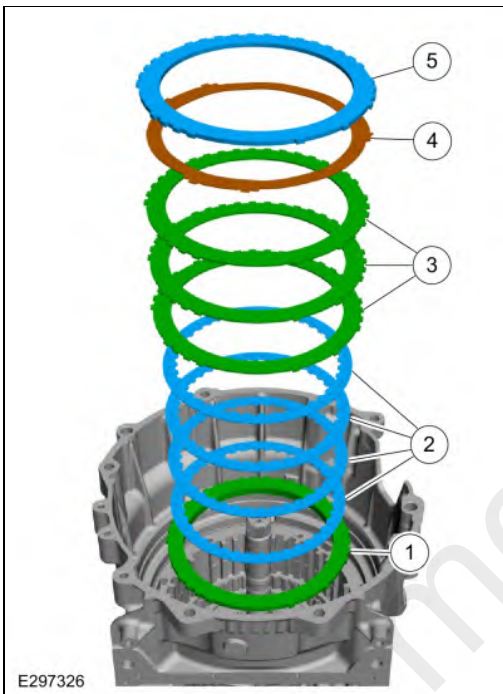
295. Install the selective shim.



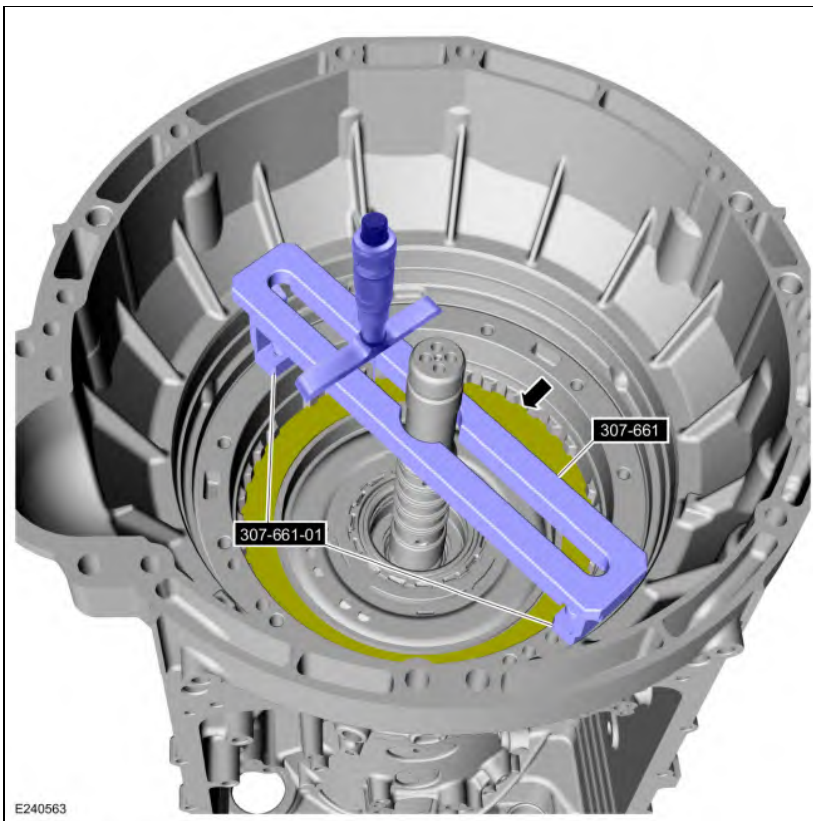
296. **NOTE:** The A clutch separating springs are not installed when measuring the A clutch clearance.

Temporarily install the A clutch into the transmission out of order to measure the A clutch clearance.

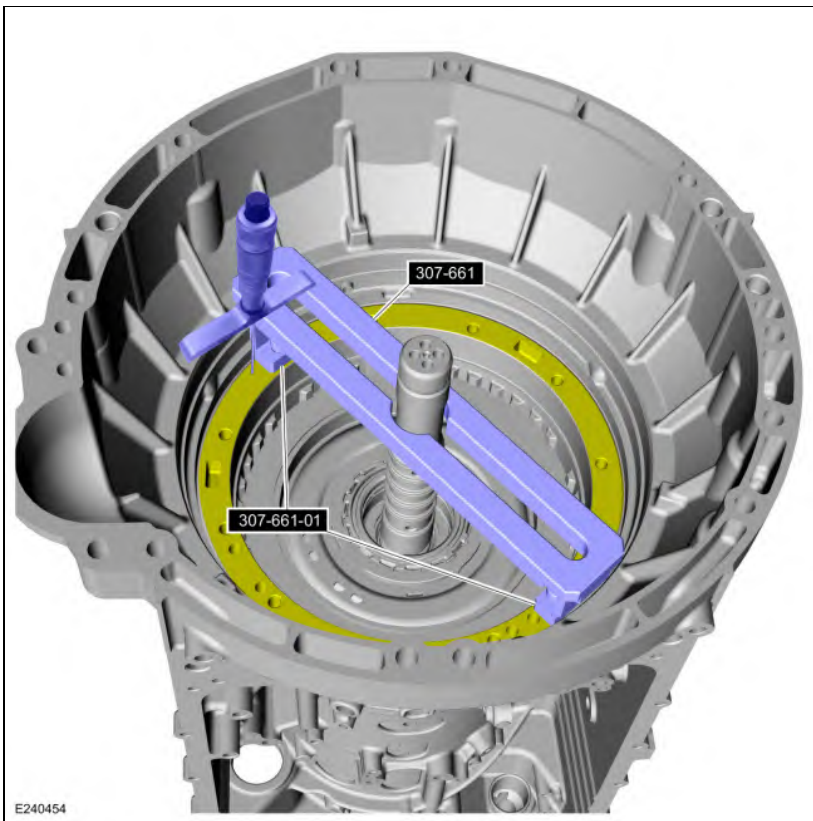
1. Install the pressure plate.
2. Install the friction plates.
3. Install the steel plates.
4. Install the wave spring.
5. Install the apply plate.



297. Using the special tools and a depth gauge, measure the distance from the top of the special tool to the top of the A clutch apply plate in 2 different places. Average the measurements. Record this as measurement A.
Use Special Service Tool: 307-661 Gauge, End Play. , 307-661-01 Spacers/Plate, Clearance Gage.

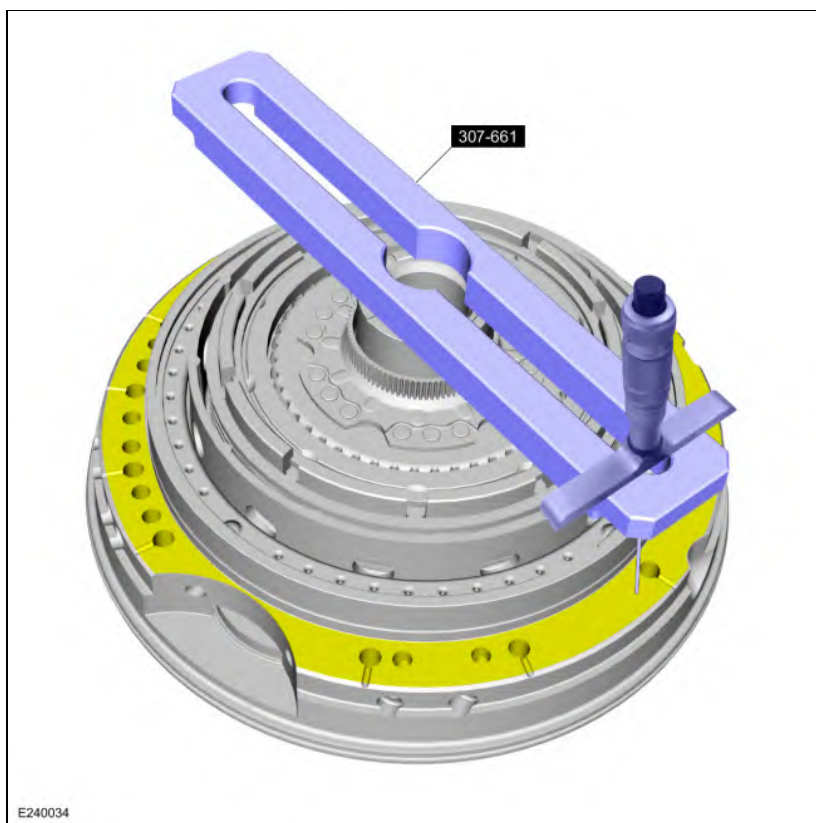


298. Using the special tools and a depth gauge, measure the distance from the top of the special tool to the front support mating surface in 2 different places. Average the measurements. Record this as measurement B.
 Use Special Service Tool: 307-661 Gauge, End Play. , 307-661-01 Spacers/Plate, Clearance Gage.

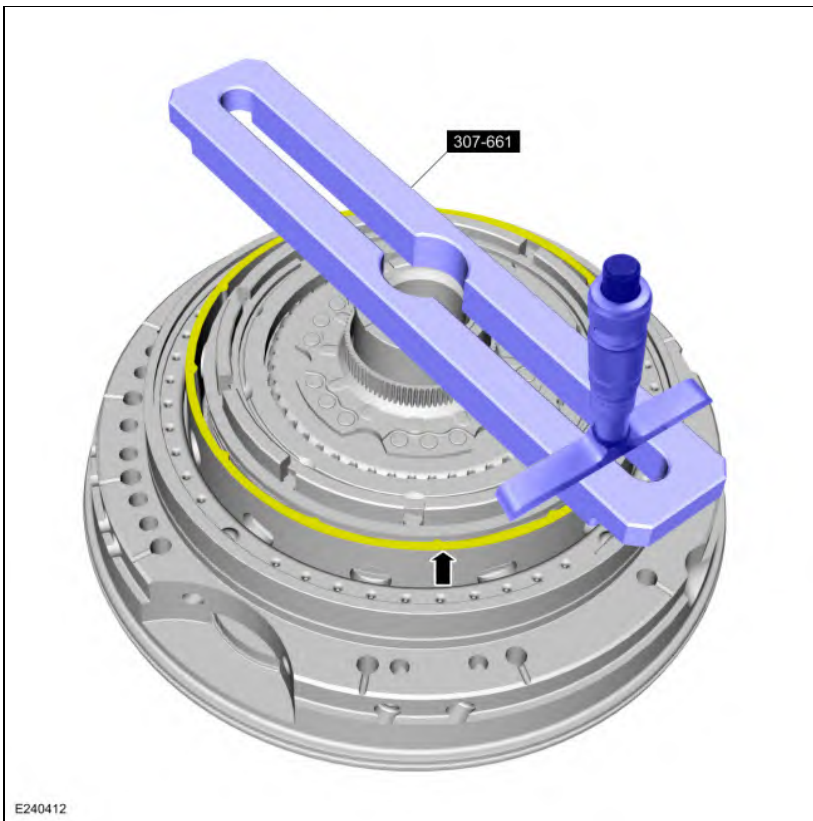


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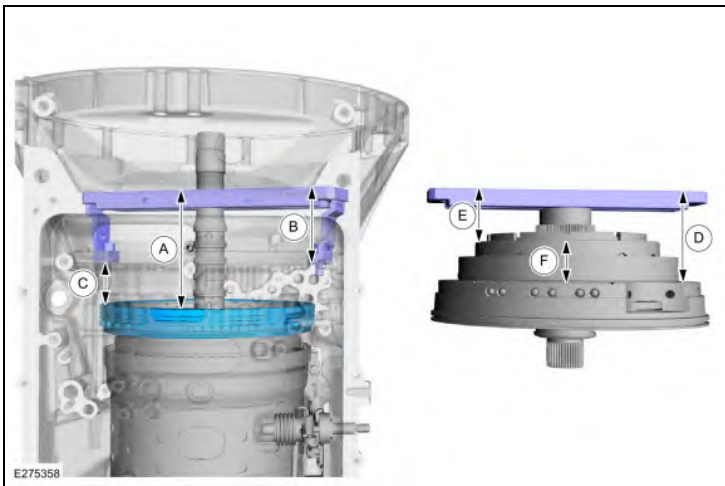
299. Using the special tool and a depth gauge, measure the distance from the top of the special tool to the transmission deck mating surface in 2 different places. Average the measurements. Record this as measurement D.
Use Special Service Tool: 307-661 Gauge, End Play.



300. Using the special tool and a depth gauge, measure the distance from the top of the special tool to the A clutch piston surface in 2 different places. Average the measurements. Record this as measurement E.
Use Special Service Tool: 307-661 Gauge, End Play.



301. Subtract measurement B from measurement A and record this as measurement C. Subtract measurement E from measurement D and record this as measurement F. Subtract measurement F from measurement C to get the A clutch clearance. Compare the A clutch clearance to the clutch specifications chart. If the A clutch clearance is not within the specification range select the correct A clutch apply plate.
- Refer to: Specifications (307-01B Automatic Transmission, Transfer Case and Power Transfer Unit - 10-Speed Automatic Transmission 10R80, Specifications).



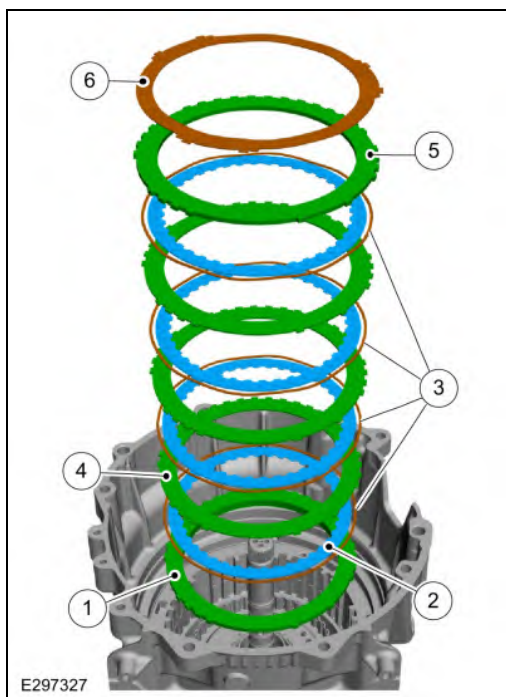
302. **NOTICE:** If replacing A clutch separating springs, all separating springs must be replaced as a matching set or damage can occur.

NOTE: Clutch plate quantity is model dependant based on engine displacement.

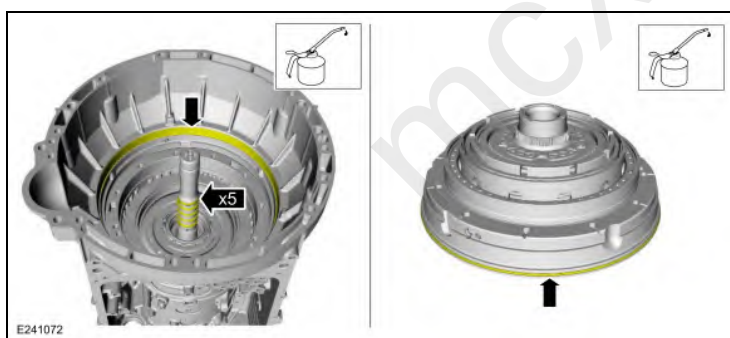
Soak the A clutch plates in clean transmission fluid. Install the A clutch assembly.

1. Pressure plate
2. Friction plates
3. Separator springs
4. Steel plates
5. Apply plate (select fit)
6. Wave spring

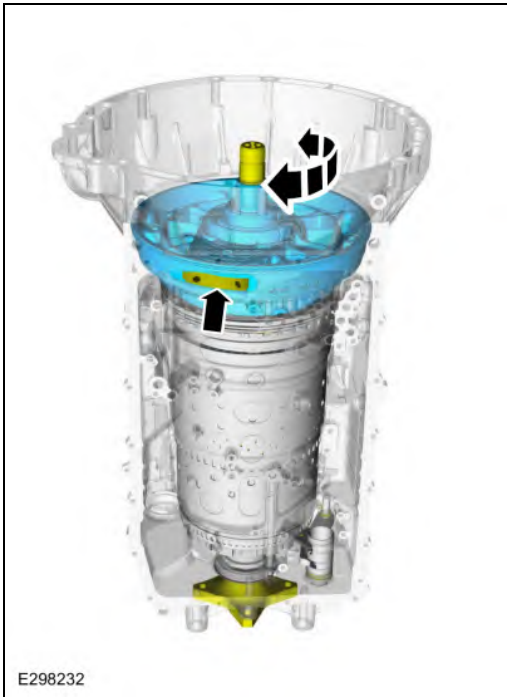
Material: Motorcraft® MERCON® ULV Automatic Transmission Fluid / XT-12-QLV (WSS-M2C949-A,) (MERCON® ULV)



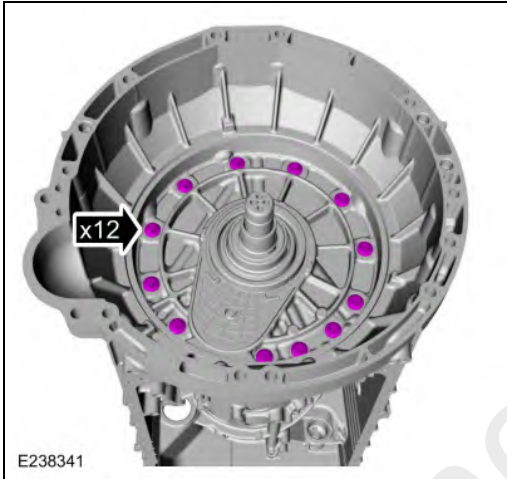
303. Lubricate the transmission case-to-front support sealing surface, the Teflon seals and the front support O-ring with petroleum jelly.



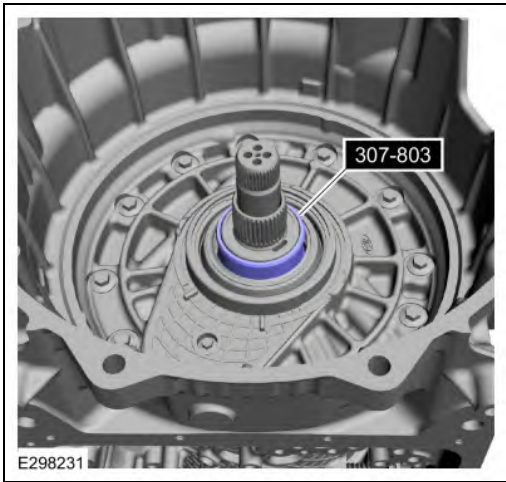
304. Install the front support into the transmission case. Align the pump gear to the pump drive gear pocket area. Rotate the input shaft to align the one-way clutch splines with the No. 1 sun gear.



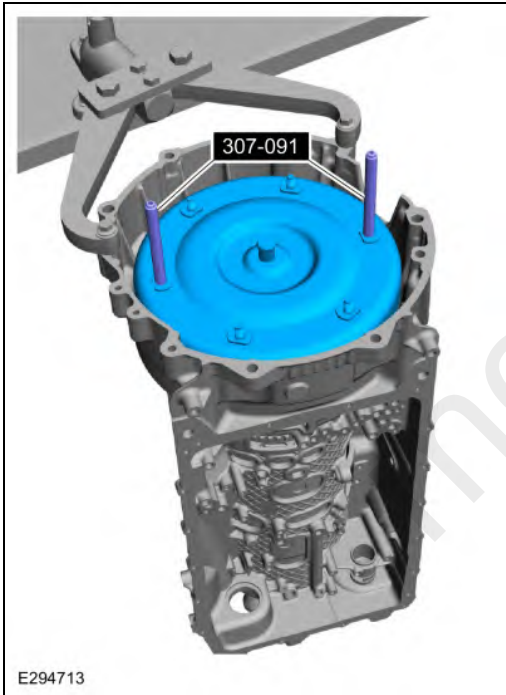
305. Install the new front support bolts. Tighten the bolts in a crisscross pattern.
Torque: 20 lb.ft (27 Nm)



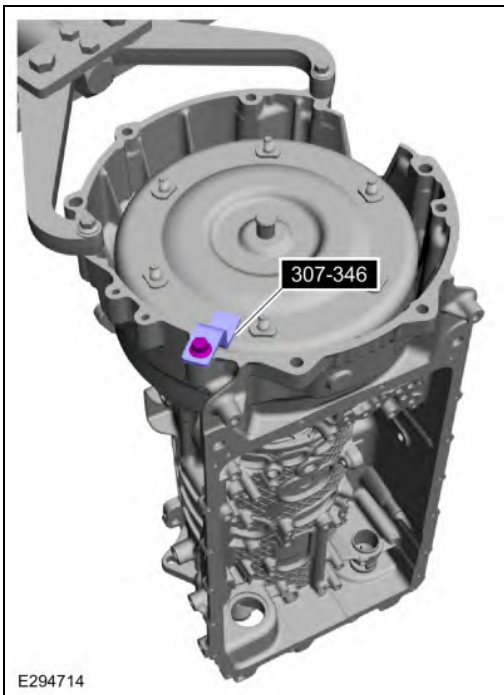
306. Remove Special Service Tool: 307-803 F1 Seal Guide, Installer & Sizer.



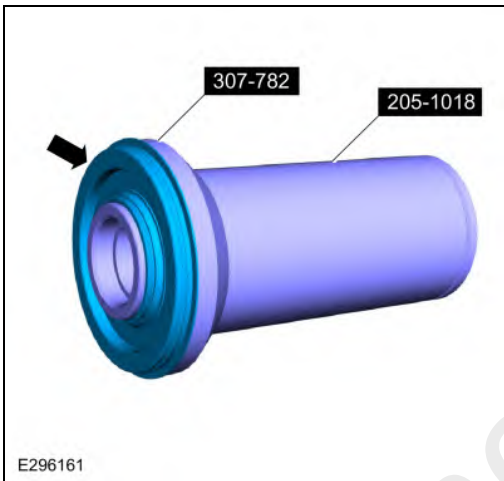
307. Using the special tool, install the torque converter.
 Use Special Service Tool: 307-091 Handle, Torque Converter.



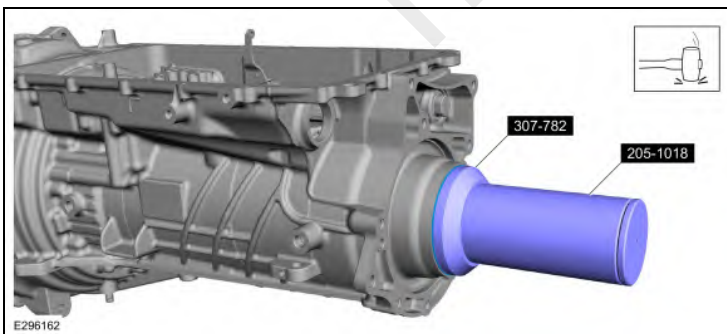
308. Install the special tool to hold the torque converter.
 Use Special Service Tool: 307-346 (T97T-7902-A) Retainer, Torque Converter.



309. Position a new output shaft seal on the special tools.
Use Special Service Tool: 205-1018 Installation Tube. , 307-782 Installer, Output Shaft Seal.

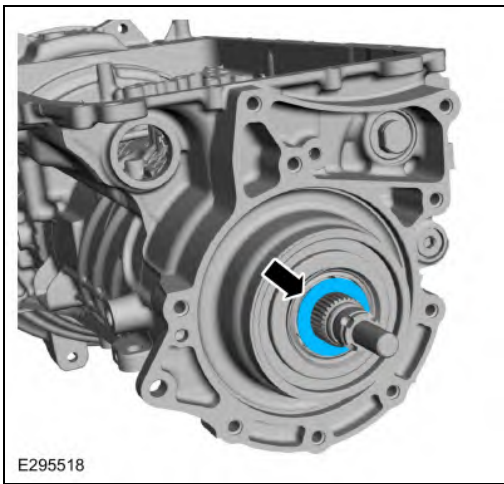


310. Using the special tools, install the new output shaft seal.
Use Special Service Tool: 205-1018 Installation Tube. , 307-782 Installer, Output Shaft Seal.



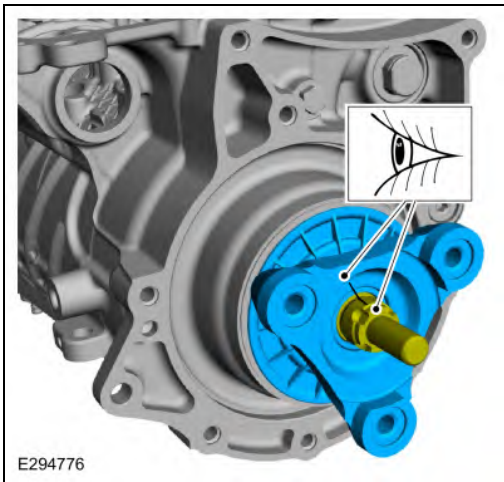
Rear Wheel Drive (RWD) vehicles

311. Install the anti-ting washer.

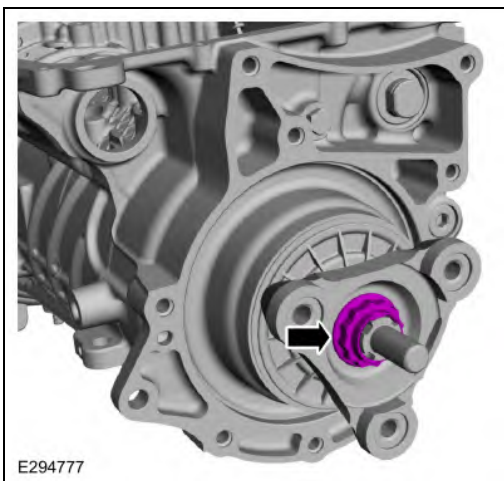


312. **NOTE:** If the output shaft or output shaft flange are replaced with new parts, align lazer applied ink marks.

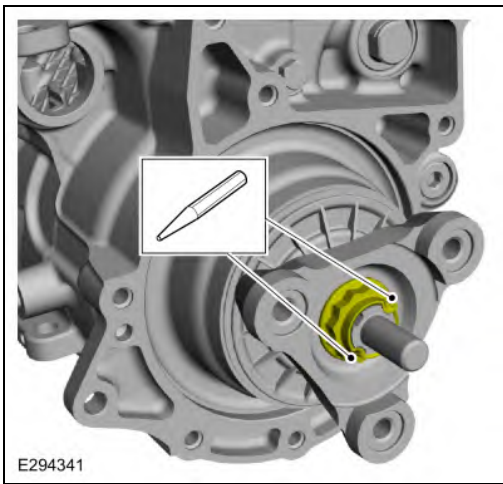
Align the index marks made during removal.



313. Install the new output shaft flange retaining nut.
Torque: 59 lb.ft (80 Nm)



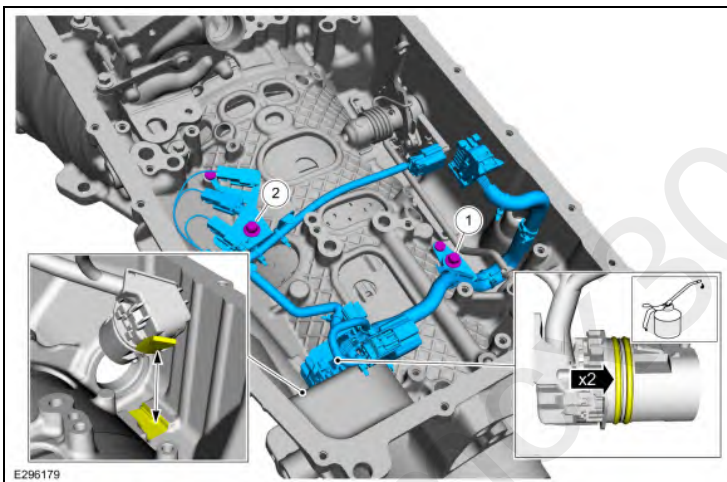
314. After installing the new output shaft flange retaining nut, stake the slots to prevent it from coming loose.
Use the General Equipment: Punch



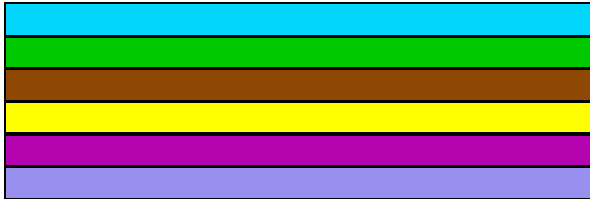
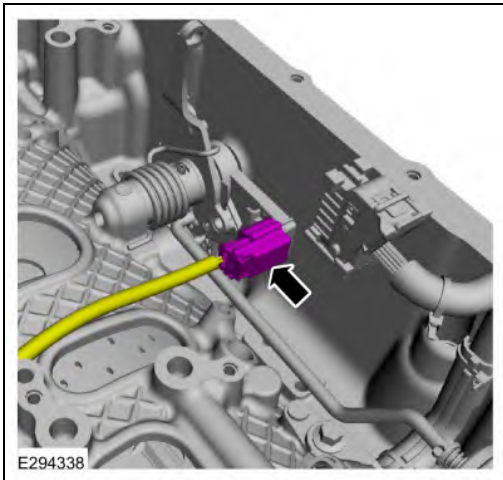
All vehicles

315. Install the wiring harness. Lubricate the O-ring seals with petroleum jelly. Align the tab on the electrical connector with the indentation in the transmission case and install the main electrical connector in the transmission case. Align the wiring harness and install the bolts.

1. Torque: 97 lb.in (11 Nm)
2. Torque: 106 lb.in (12 Nm)

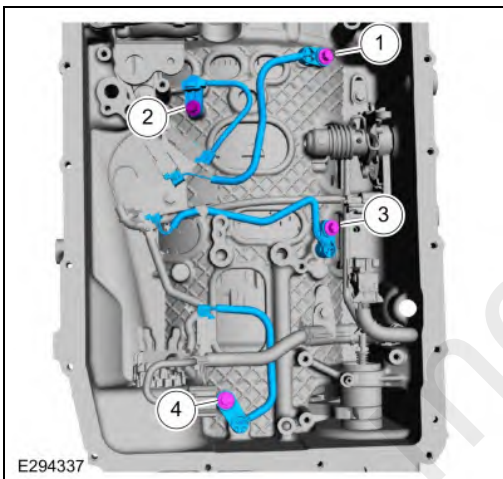


316. Support the opposite side of the TR sensor and connect the electrical connector.



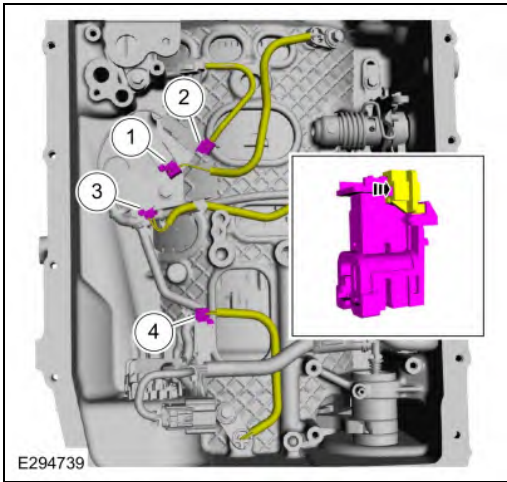
317. Install the speed sensors.

1. Intermediate Speed Sensor A (ISSA)
 2. TSS sensor
 3. Intermediate Speed Sensor B (ISSB)
 4. OSS sensor
- Torque: 62 lb.in (7 Nm)

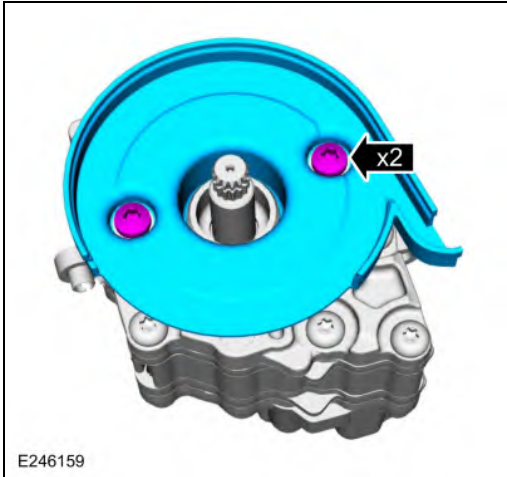


318. Connect and lock the speed sensors.

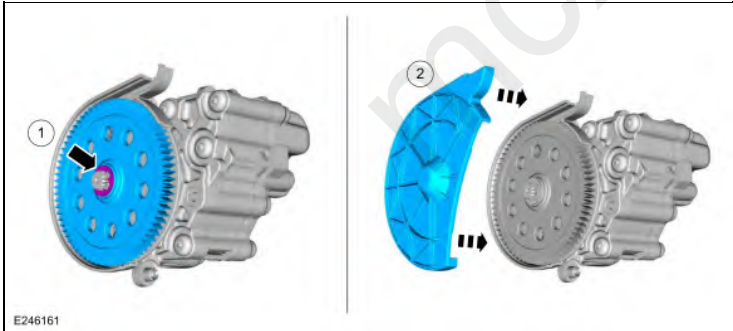
1. Intermediate Speed Sensor A (ISSA)
2. TSS sensor
3. Intermediate Speed Sensor B (ISSB)
4. OSS sensor



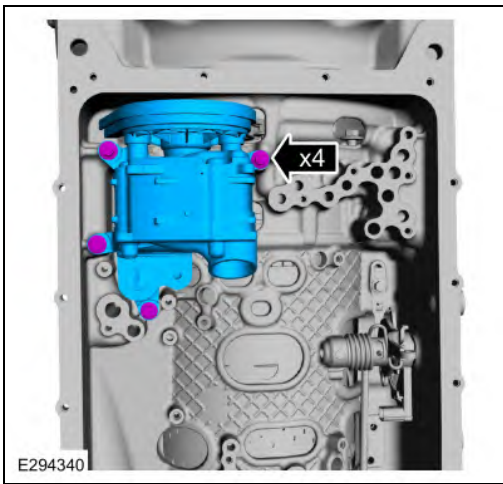
319. If removed, install the transmission fluid pump driven gear inner cover and the bolts.
Torque: 115 lb.in (13 Nm)



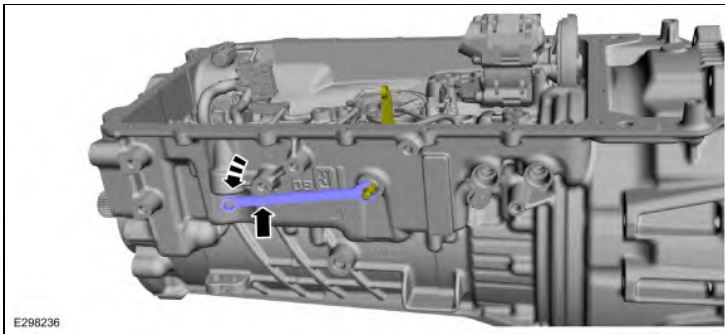
320.
 1. If removed, install the transmission fluid pump driven gear and the retaining ring.
 2. Install the transmission fluid pump driven gear outer cover.



321. Install the transmission fluid pump and the bolts.
Torque: 71 lb.in (8 Nm)



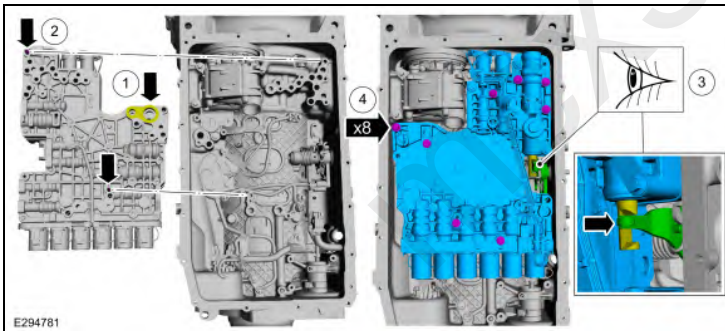
322. Rotate the manual shaft to the park override position.



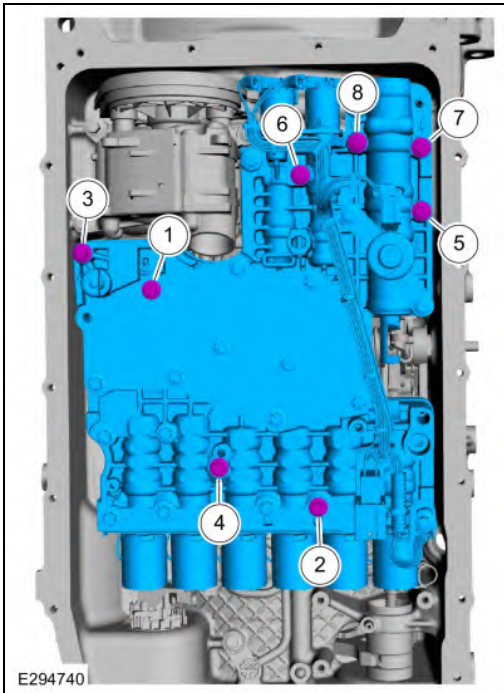
323. **NOTICE:** Only install 68 mm length bolts or the transmission clutch and planetary container can be damaged and result in transmission failure.

Loosely install the main control valve body.

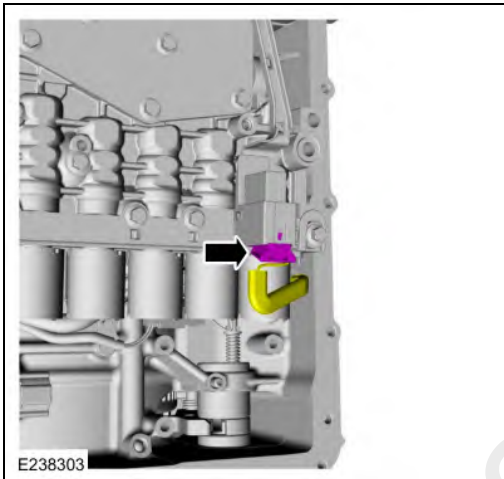
1. **NOTE:** Be sure the main control-to-case seal is attached to the main control.
2. Align the guide pins on the main control valve body with the alignment holes in the transmission case.
3. Align the TR sensor with the park pawl lock valve.
4. Loosely install the 68 mm length main control-to-transmission case bolts.



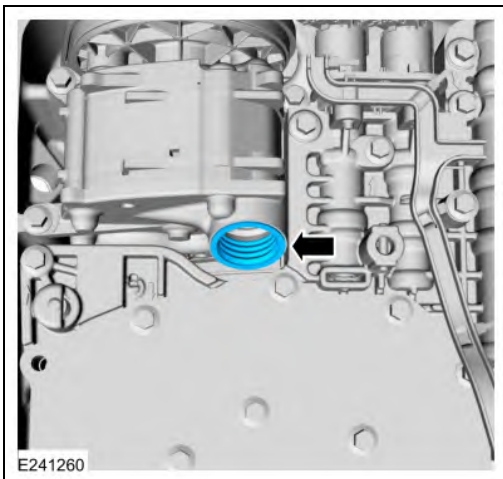
324. Tighten the bolts in the sequence shown.
Torque: 89 lb.in (10 Nm)



325. Connect the main control electrical connector.



326. Install the filter seal in the pump.

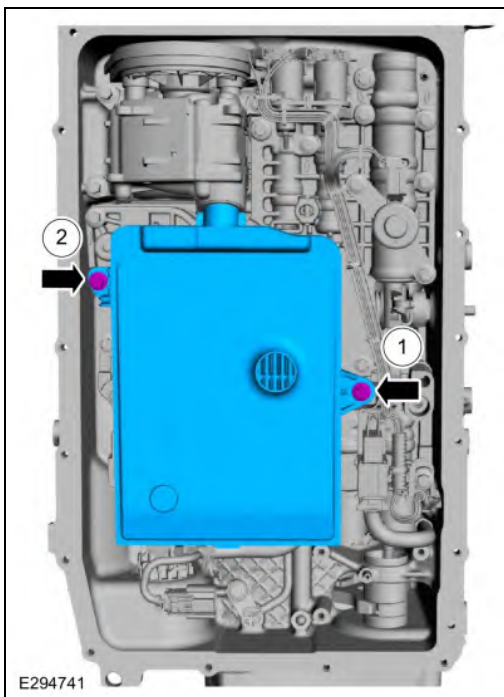


327. **NOTICE:** If the bolts are installed in the wrong locations, transmission damage will occur.

NOTE: The transmission fluid filter may be reused if no excessive contamination is indicated.

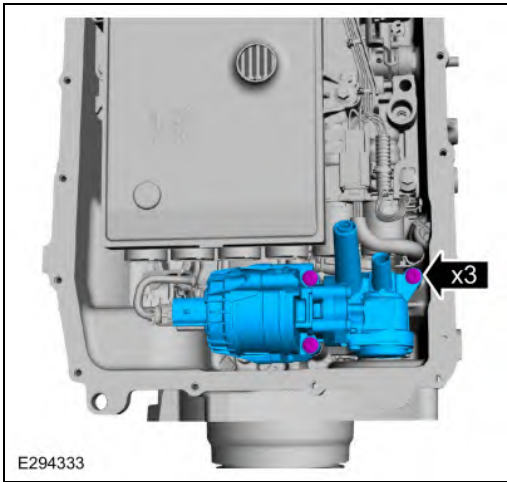
Install the filter and the bolts in the correct locations.

1. Short bolt 20 mm
2. Long bolt 71 mm
 - Torque: 93 lb.in (10.5 Nm)



Auto-Start-Stop vehicles

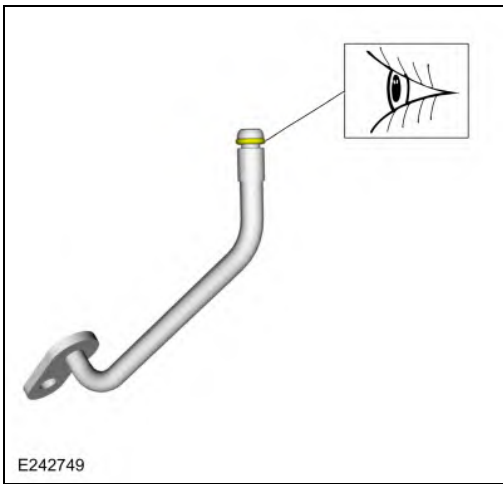
328. **NOTE:** *If the transmission fluid was contaminated from a catastrophic failure, replace the transmission fluid auxiliary pump.*
- Install the transmission fluid auxiliary pump and loosely install the bolts.



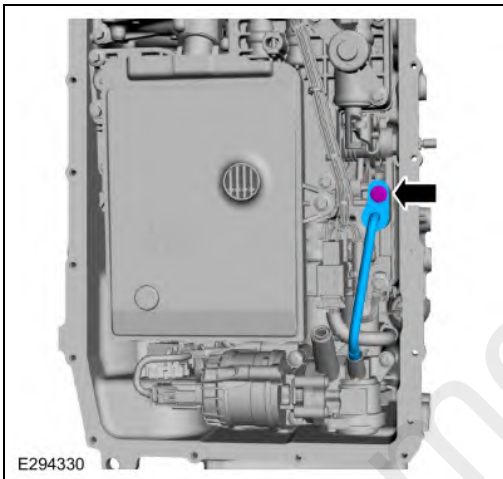
329. Install the new transmission fluid auxiliary pump tube seal.



330. Inspect the transmission fluid auxiliary pump tube O-ring.

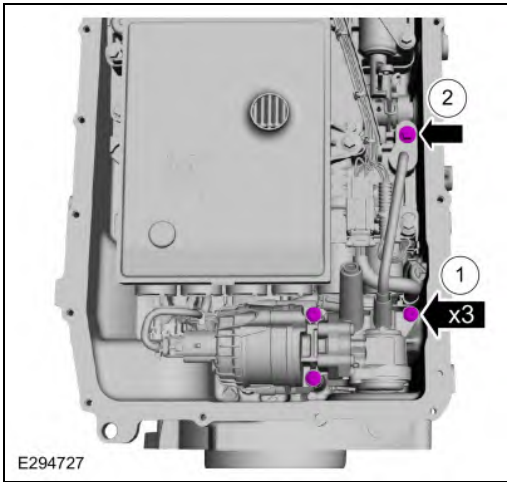


331. Install the transmission fluid auxiliary pump tube and loosely install the bolt.

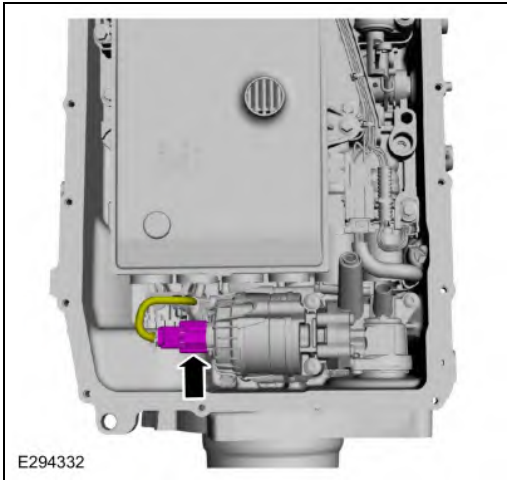


332.

1. Transmission fluid auxiliary pump bolts
Torque: 97 lb.in (11 Nm)
2. Transmission fluid auxiliary pump tube bolt
Torque: 106 lb.in (12 Nm)



333. Connect the transmission fluid auxiliary pump electrical connector.



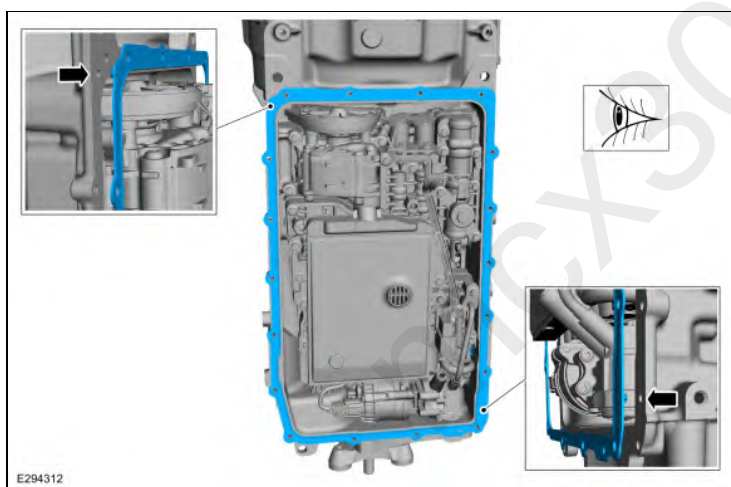
All vehicles

334. Clean and inspect the magnets and the retainers.



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

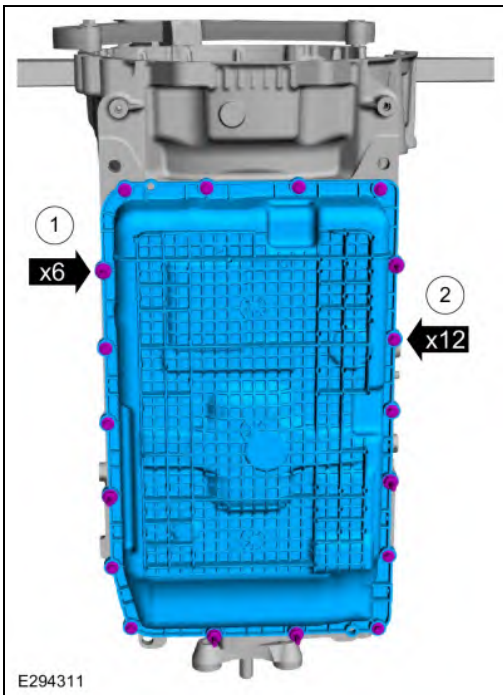
Align the tabs in the noted location and install the transmission fluid pan gasket.



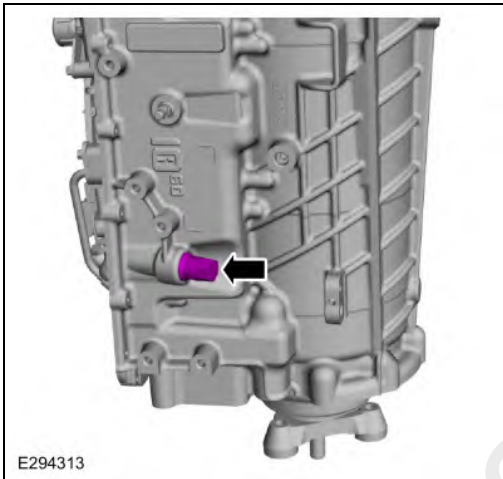
336. **NOTE:** Install the studbolts and bolts in the correct locations noted during removal.

Install the transmission fluid pan and loosely install the studbolts and bolts.

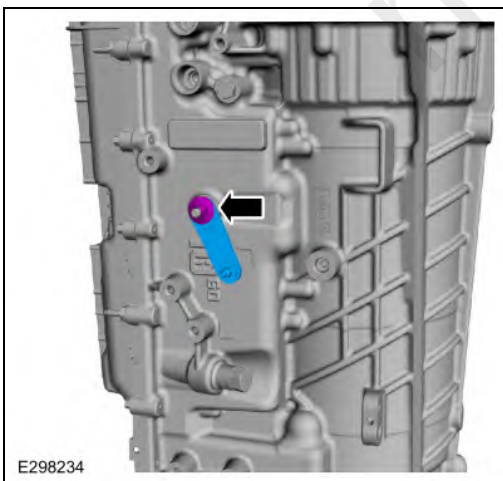
1. Tighten the studbolts in a crisscross pattern.
Torque: 106 lb.in (12 Nm)
2. Tighten the bolts in a crisscross pattern.
Torque: 89 lb.in (10 Nm)



337. Install the transmission fluid level indicator and plug assembly.



338. Install the park override lever and the nut.
Torque: 106 lb.in (12 Nm)

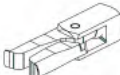


Disassembly

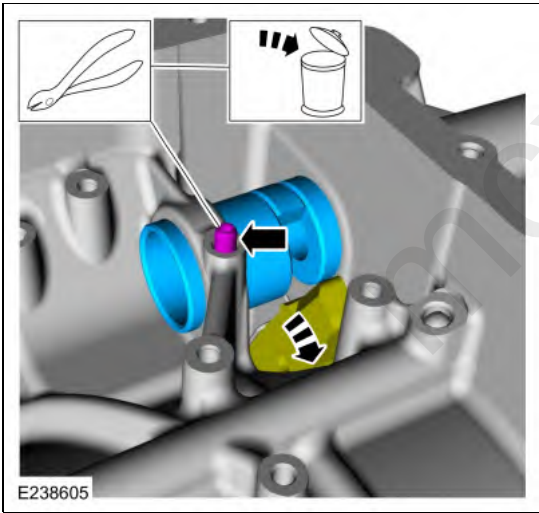
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Transmission Case

Special Tool(s) / General Equipment

 E129694	100-001 (T50T-100-A) Slide Hammer
 E131850	204-594 Forcing screw
 14046	205-256 Installer, Front Wheel Hub Seal TKIT-1988-FESTIVA T88C-1000-ST TKIT-1988-TRACER
 E142012	307-318 Remover, Stator Bearing TKIT-1994-FMH/FLMH TKIT-1994-LMH/MH TKIT-1994-FH
 E302627	307-781 Needle bearing remover/installer

1. Remove and discard the park pawl actuator rod sleeve roll pin (7G100), move the park pawl out of the park pawl actuator rod sleeve and remove the park pawl actuator rod sleeve.



2. Remove and discard the park pawl actuator rod sleeve seals (2D330).