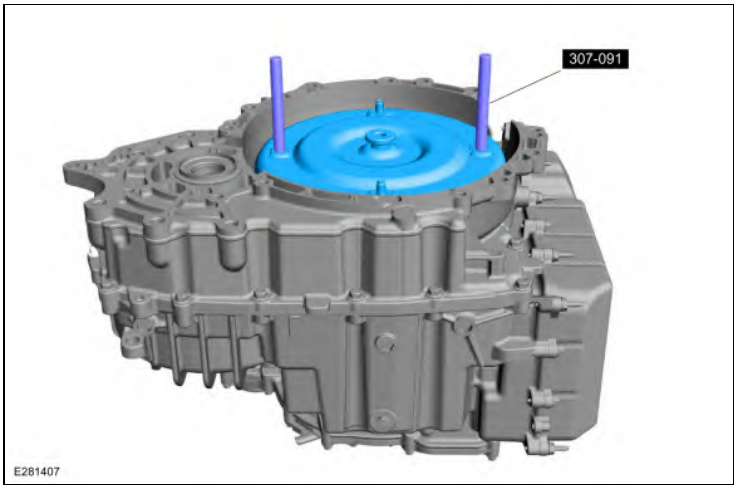
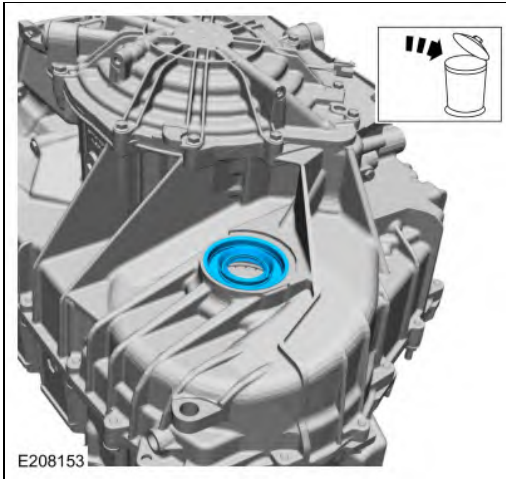


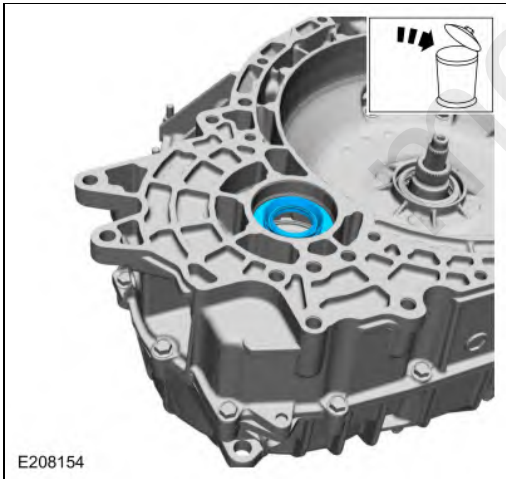


6. Remove and discard the halfshaft seal from the transmission case.

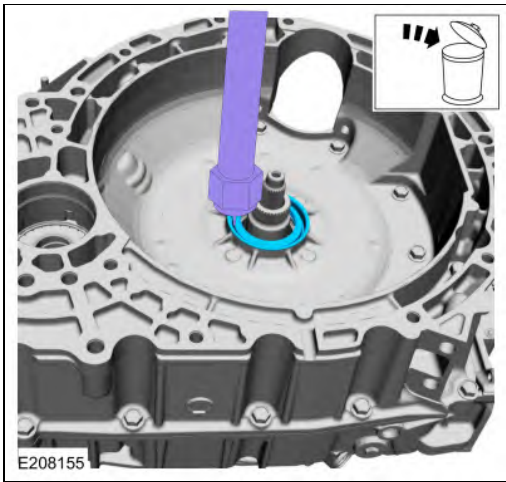


7. **NOTE:** *FWD vehicles*

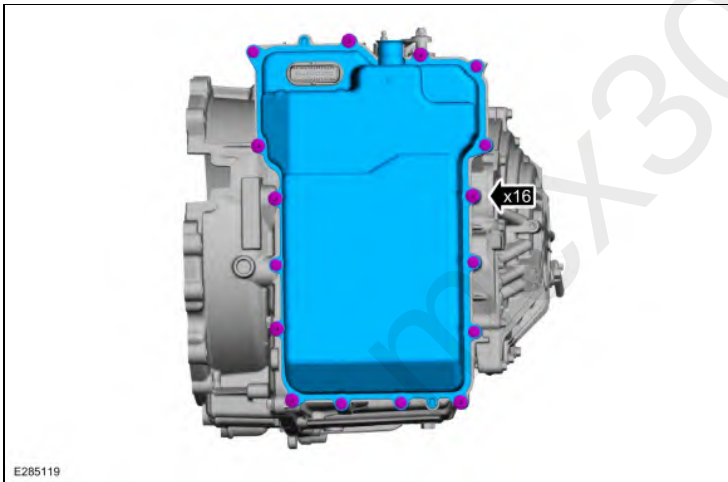
Remove and discard the halfshaft seal from the torque converter housing.



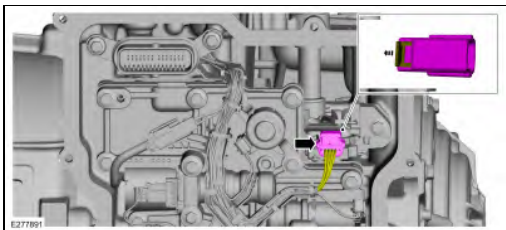
8. Remove and discard the torque converter hub seal from the torque converter housing.
Use the General Equipment: Puller



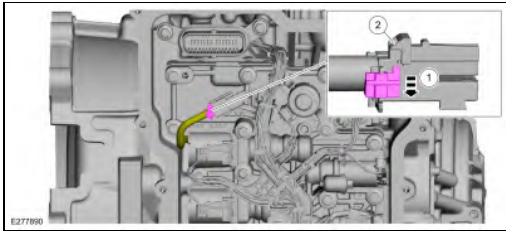
9. Remove the studbolts and the main control cover.



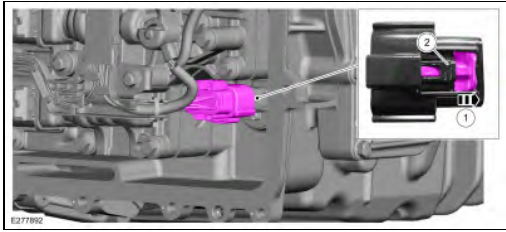
10. Unlock and disconnect the TR sensor.



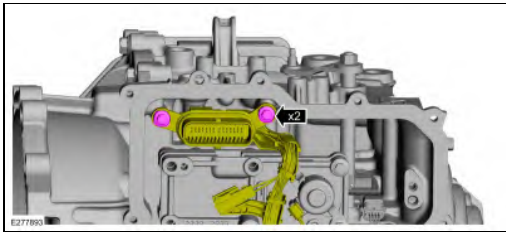
11. Unlock and disconnect the OSS sensor electrical connector.



12. Unlock and disconnect the bulkhead electrical connector.



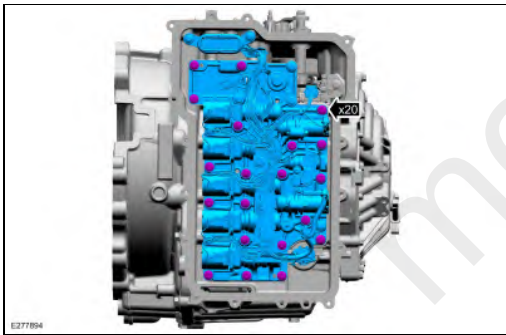
13. Remove the transmission wiring harness bolts.



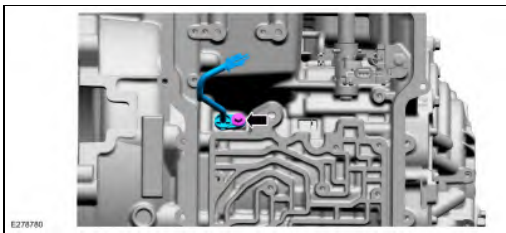
14. **NOTICE: Handle the main control with care or damage to the solenoid body may occur.**

NOTE: Note the location of the different length bolts for assembly.

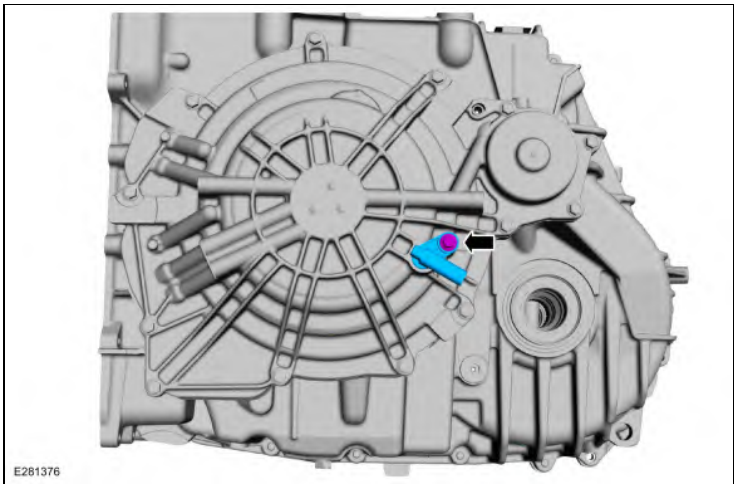
Remove the bolts and the main control.



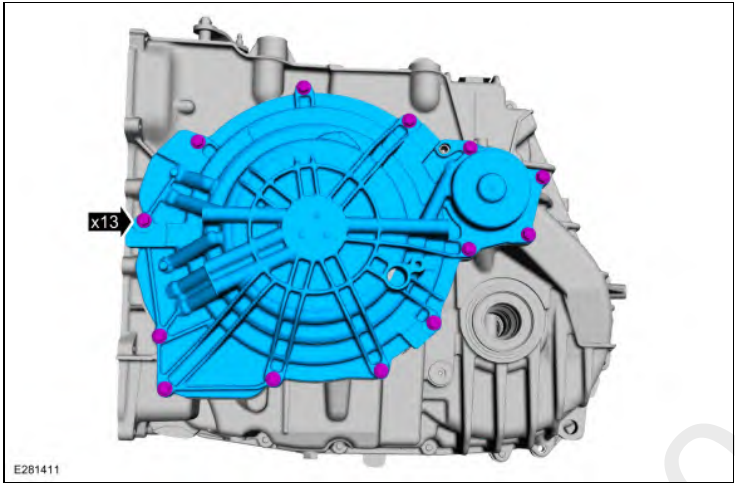
15. Remove the bolt and the OSS sensor.



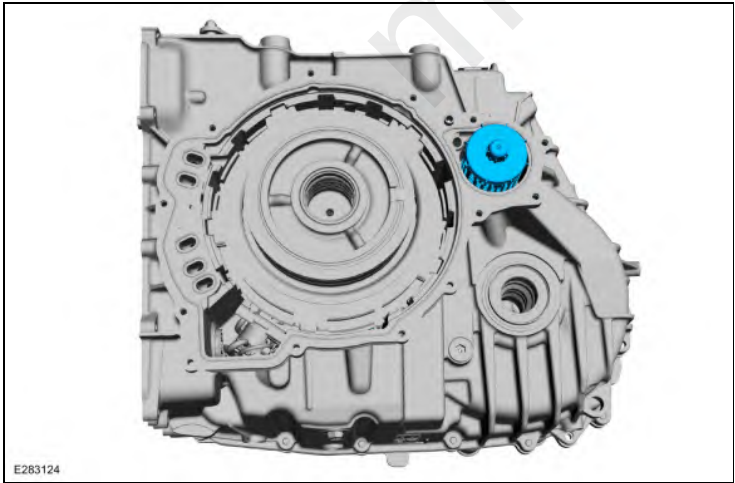
16. Remove the bolt and the TSS sensor.



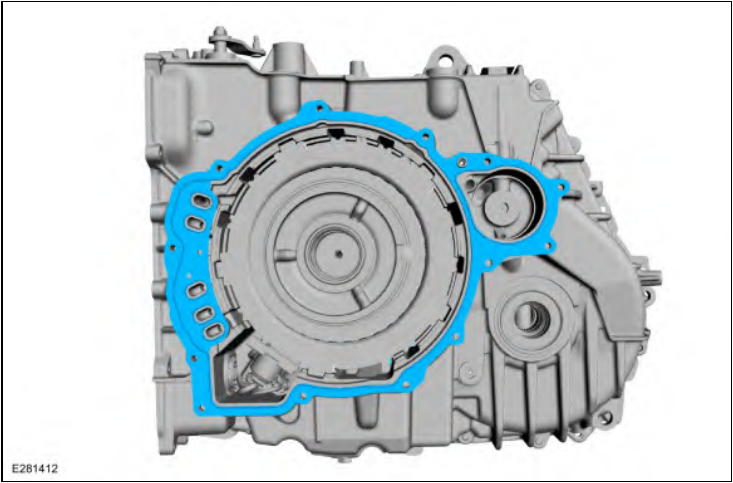
17. Remove the bolts and the cover assembly.



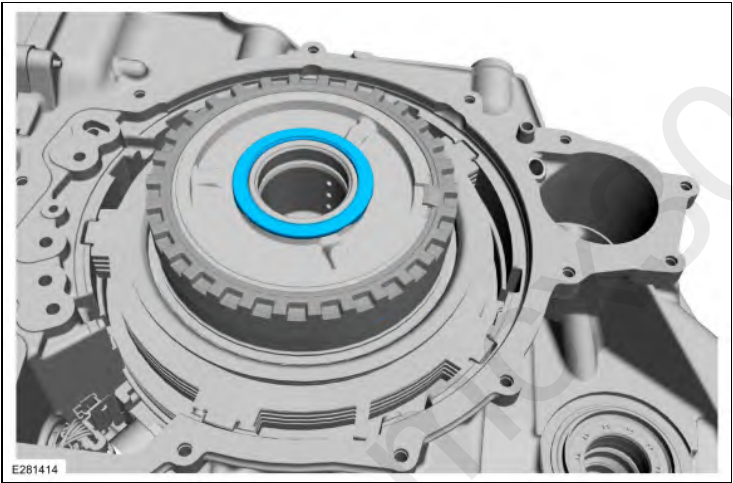
18. Remove the secondary fluid filter.



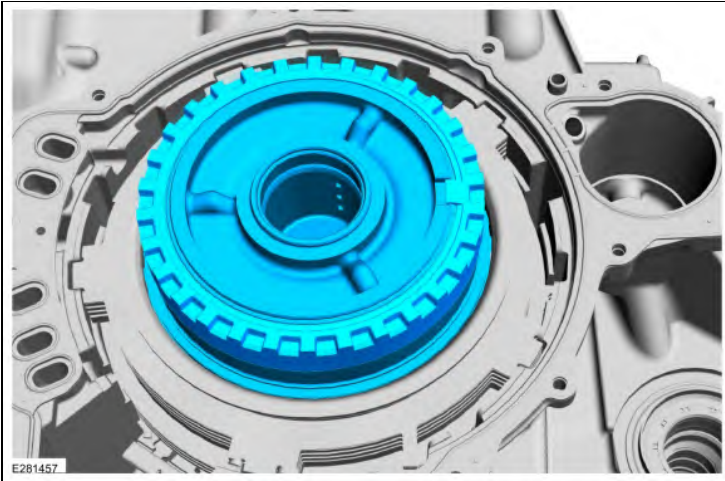
19. Remove the cover assembly gasket.



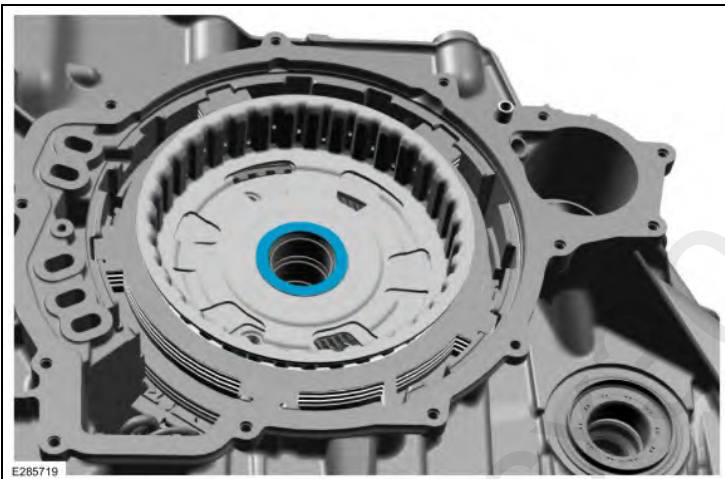
20. Remove the No. 1 thrust bearing.



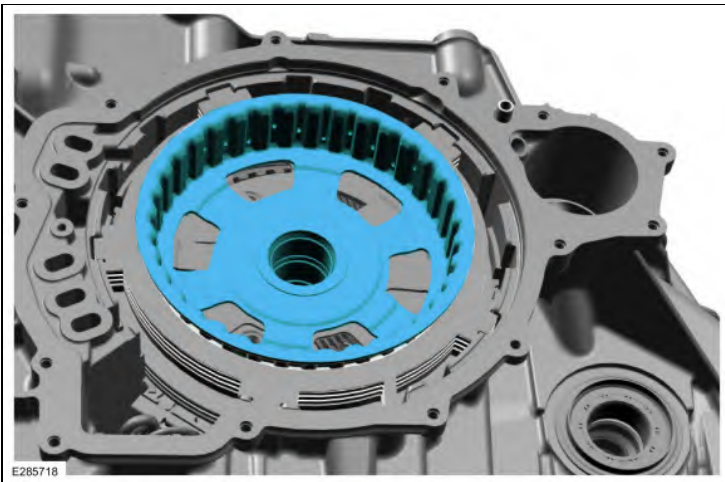
21. Remove the B (4, 6, R)/E (5, 6, 7, 8) clutch hub and turbine shaft assembly.



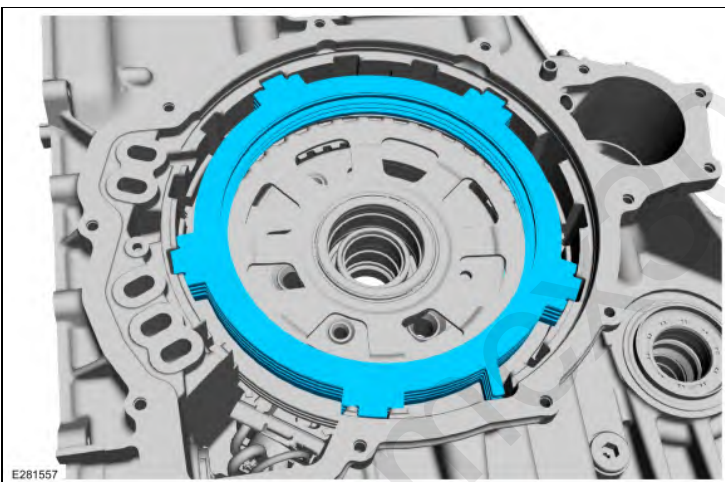
22. Remove the No. 3 thrust bearing.



23. Remove the intermediate clutch shell and sun gear assembly.



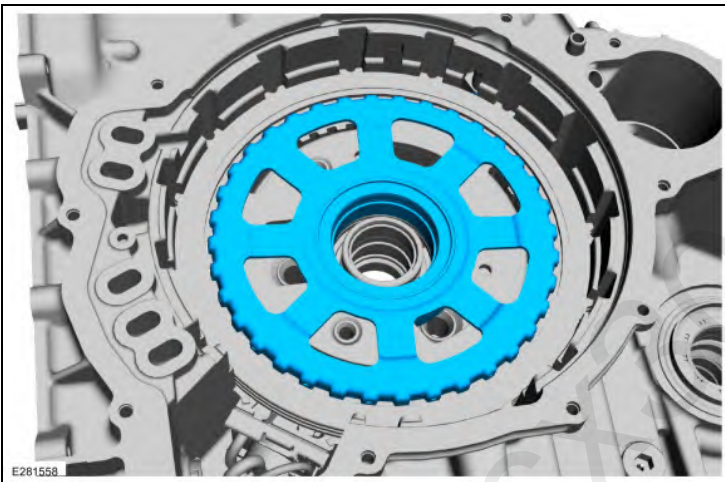
24. Remove the C (3, 7) clutch pack assembly.



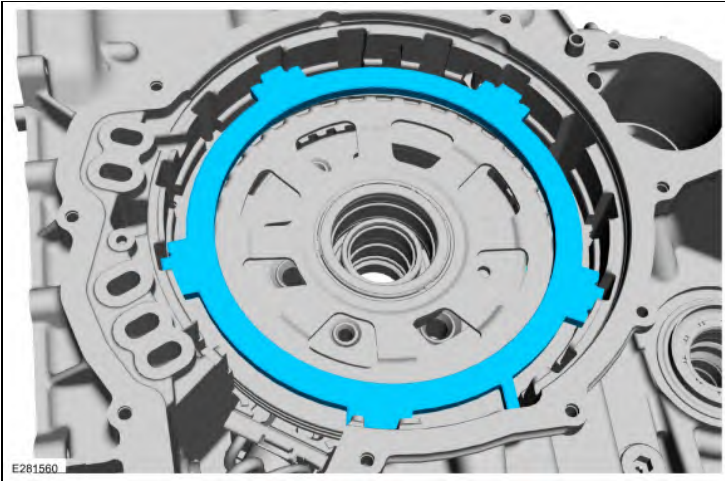
25. Remove the No. 4 thrust bearing.



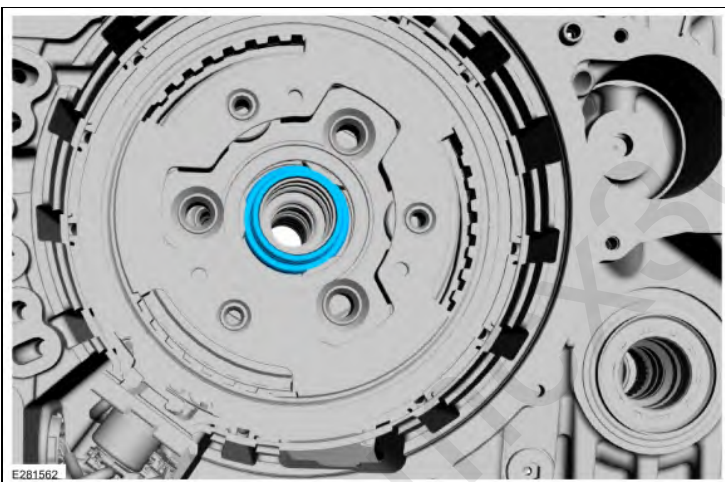
26. Remove the F (2, 8) clutch sun gear and shell assembly.



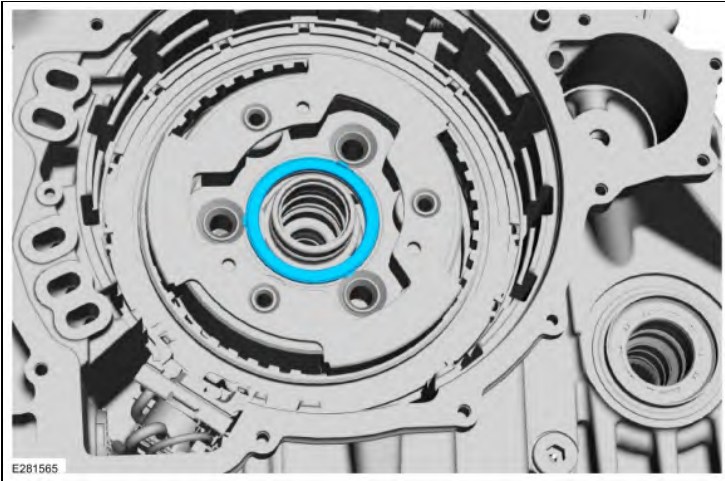
27. Remove the C (3, 7)/F (2, 8) clutch pressure plate.



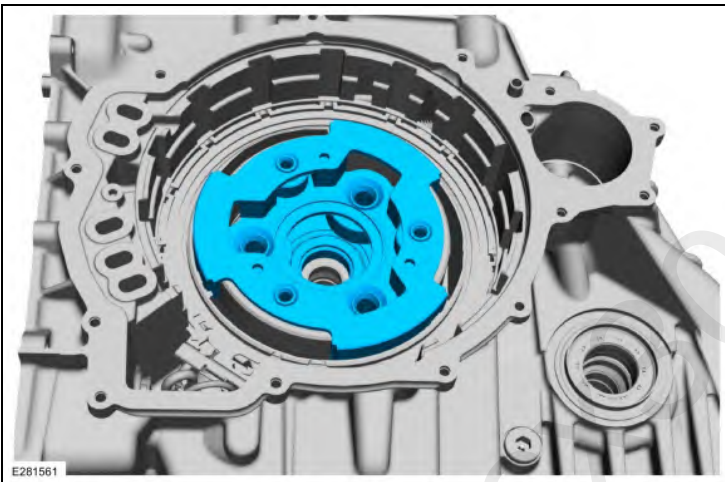
28. Remove the reaction/overdrive carrier sun gear.



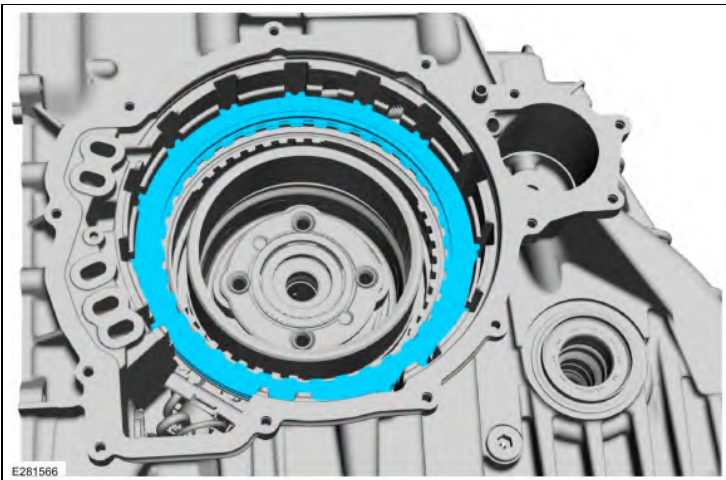
29. Remove the No. 5 thrust bearing.



30. Remove the reaction/overdrive planetary carrier assembly.

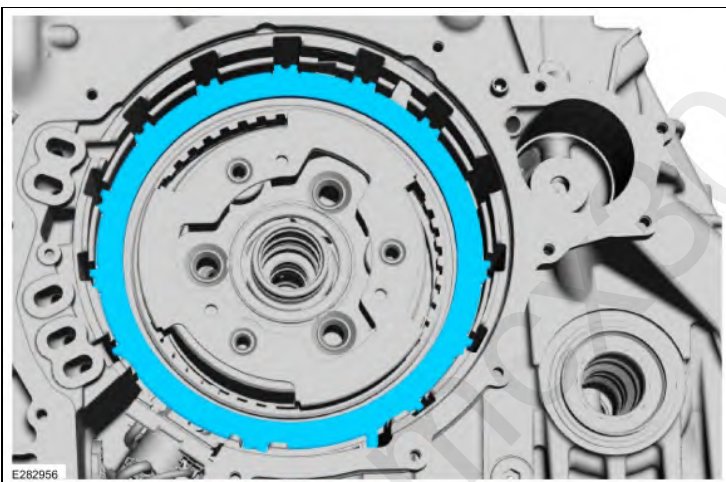


31. Remove the F (2, 8) clutch pack assembly.



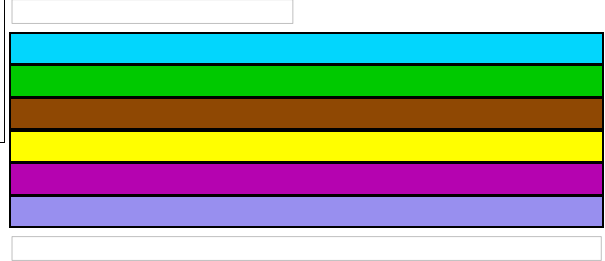
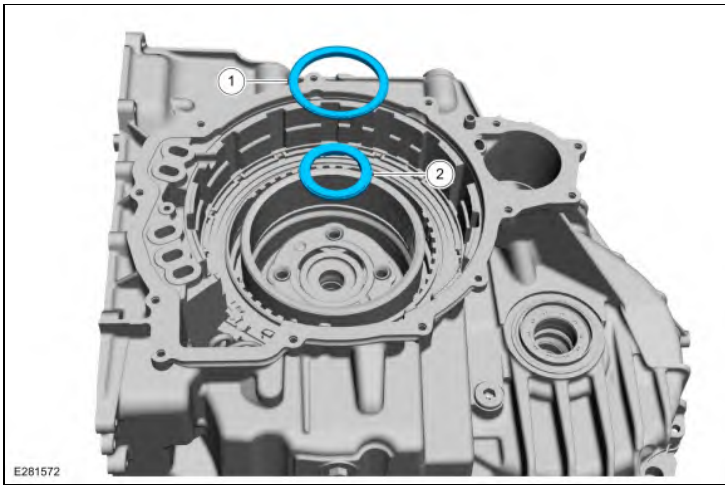
A horizontal bar chart consisting of six equally long bars stacked vertically. The bars are colored cyan, green, brown, yellow, magenta, and light blue from top to bottom. A faint watermark of a stylized 'S' is visible in the background.

32. Remove the F (2, 8) clutch reaction plate.

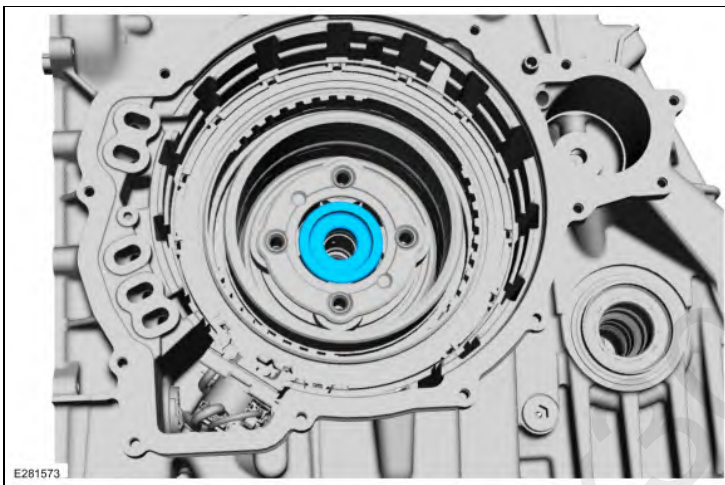


33. Remove the following items.

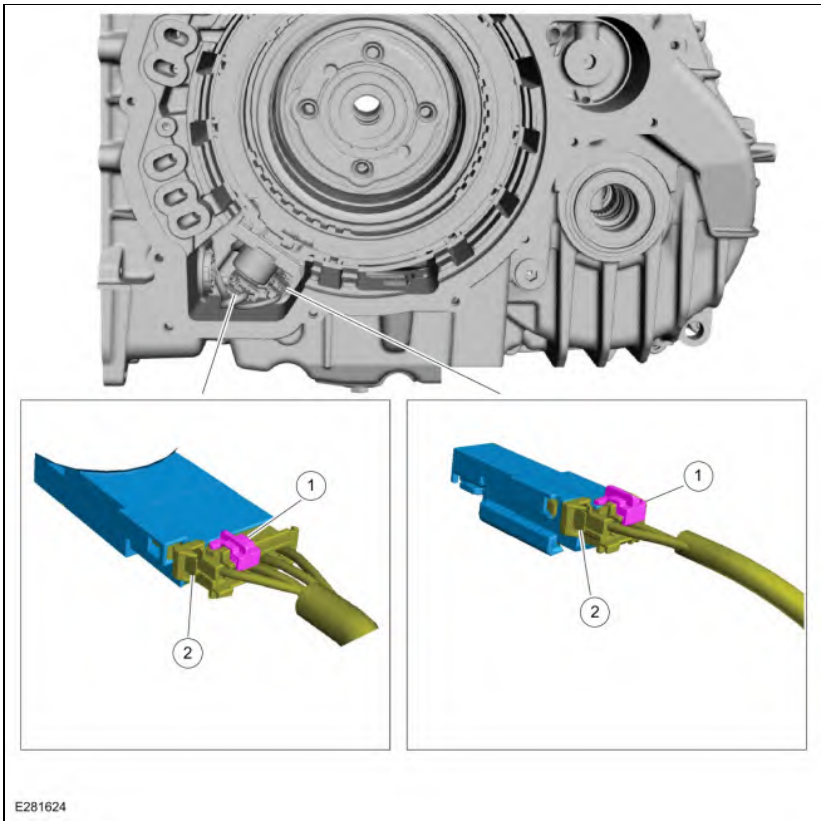
1. No. 7 thrust bearing
2. No. 8 thrust bearing



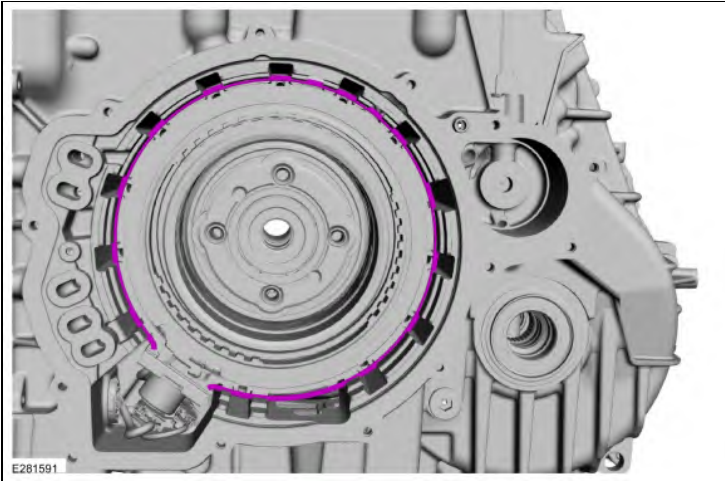
34. Remove the input sun gear.



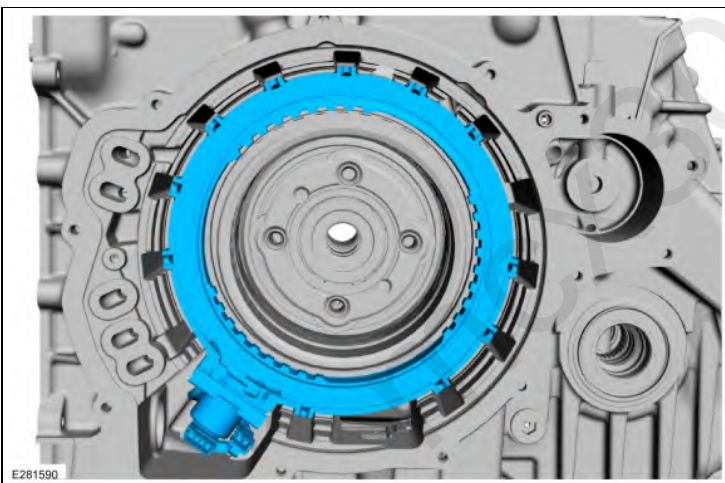
35. Unlock and disconnect the electronic Selectable One-Way Clutch (SOWC) and the Intermediate Speed Sensor (ISS) electrical connector.
1. Connector lock
 2. Connector release



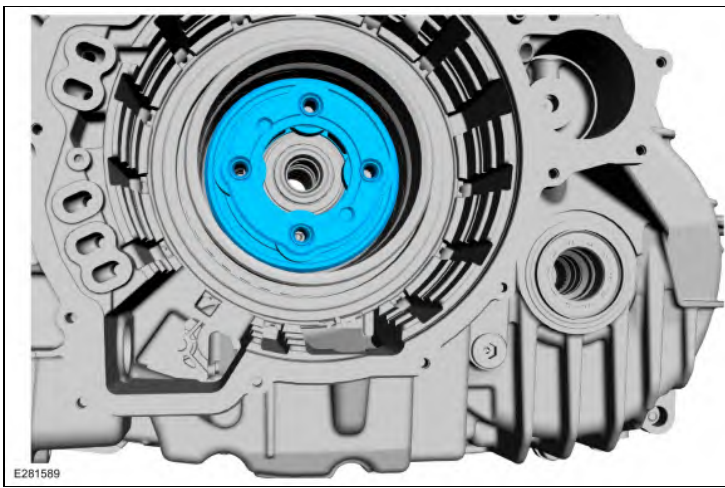
36. Remove the electronic Selectable One-Way Clutch (SOWC) snap ring.



37. Remove the electronic Selectable One-Way Clutch (SOWC) assembly.



38. Remove the input planetary carrier assembly.

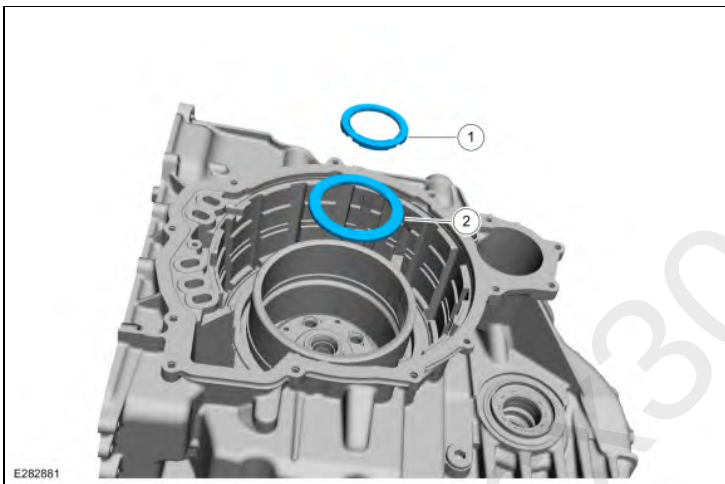


A horizontal bar chart consisting of six equally long bars stacked vertically. From top to bottom, the colors are cyan, green, brown, yellow, purple, and light blue. Each bar has a thin black outline.

39.

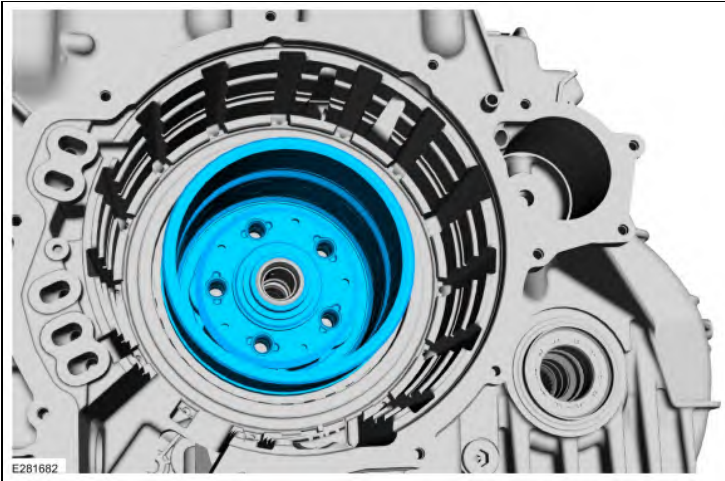
Remove the following items.

1. No. 9 thrust bearing
2. No. 10 thrust bearing

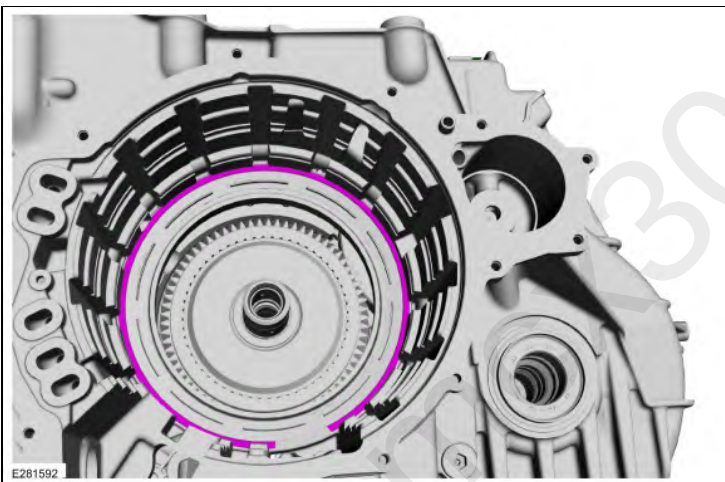


A horizontal bar chart with six colored segments: light blue, green, brown, yellow, purple, and light purple.

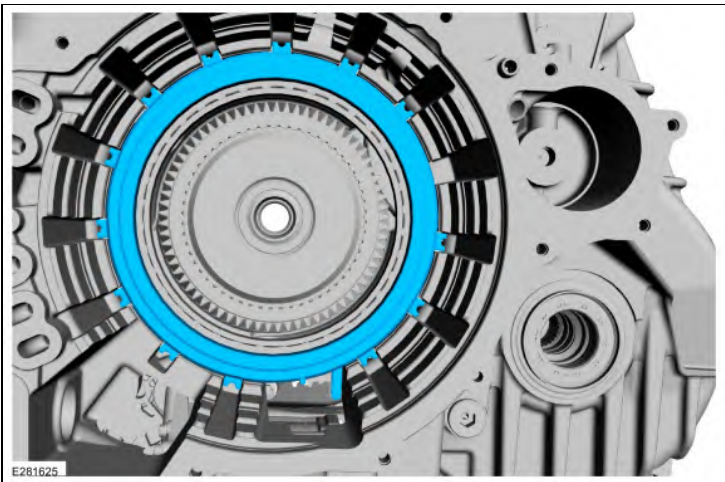
40. Remove the output planetary carrier assembly.



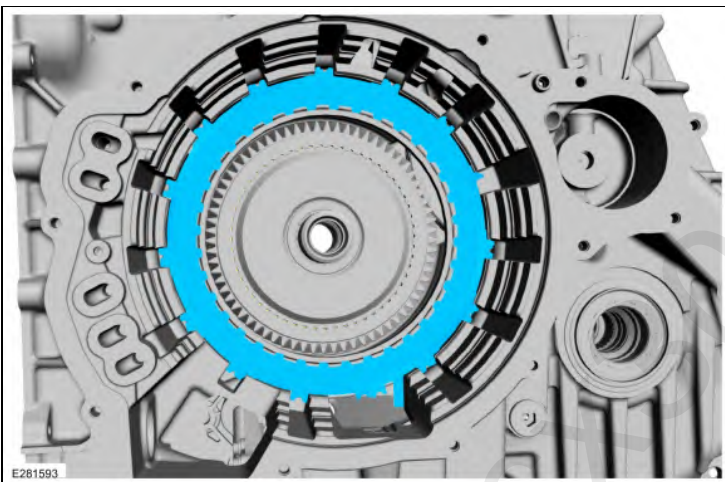
41. Remove the A (1, 2, 3, 4, 5) clutch snap ring.



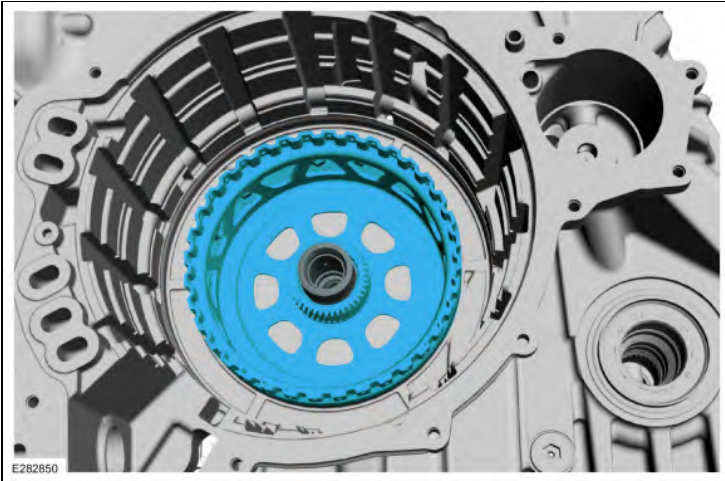
42. Remove the A (1, 2, 3, 4, 5) clutch pressure plate.



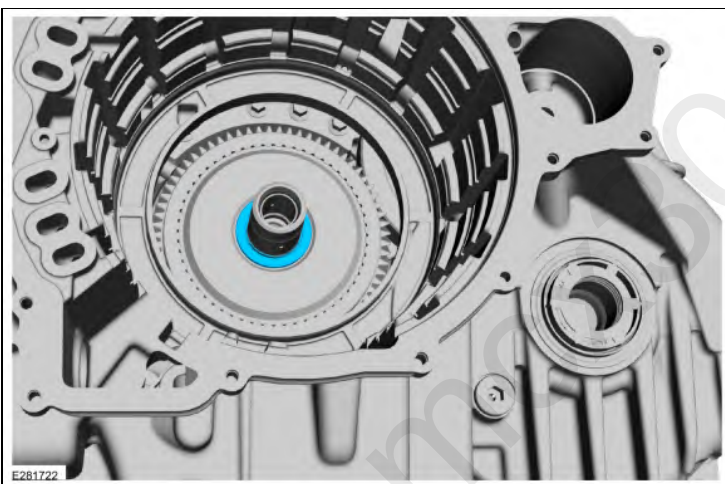
43. Remove the A (1, 2, 3, 4, 5) clutch pack assembly.



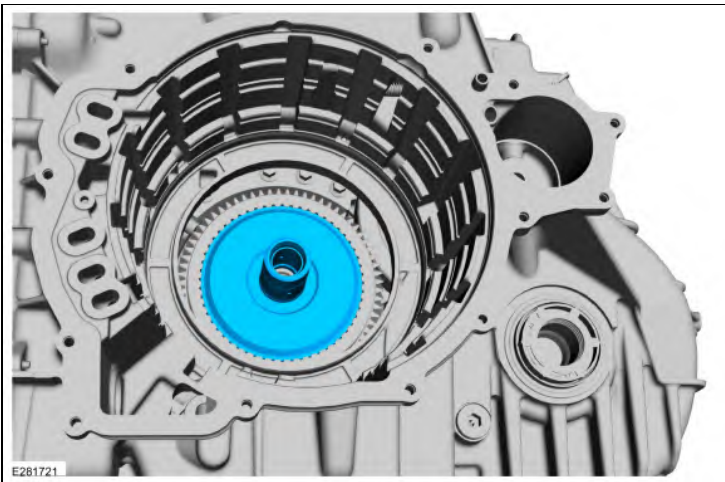
44. Remove the output sun gear and shell assembly.



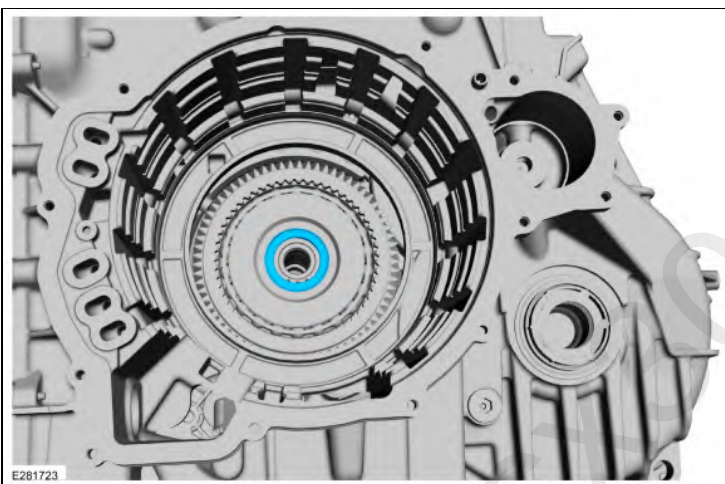
45. Remove the No. 12 thrust bearing.



46. Remove the output planetary carrier hub.

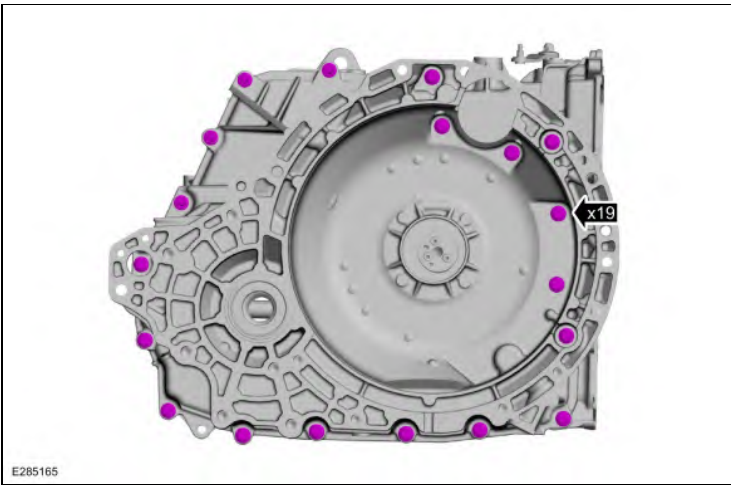


47. Remove the No. 13 thrust bearing.

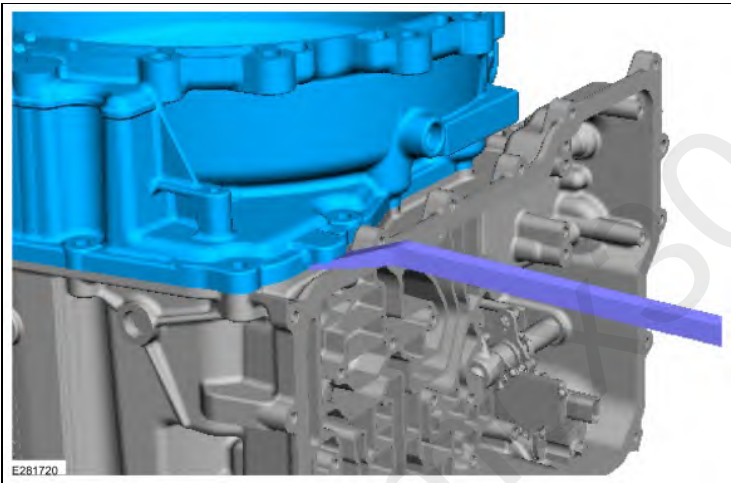


48. **NOTE:** Note the location of the studbolts for assembly.

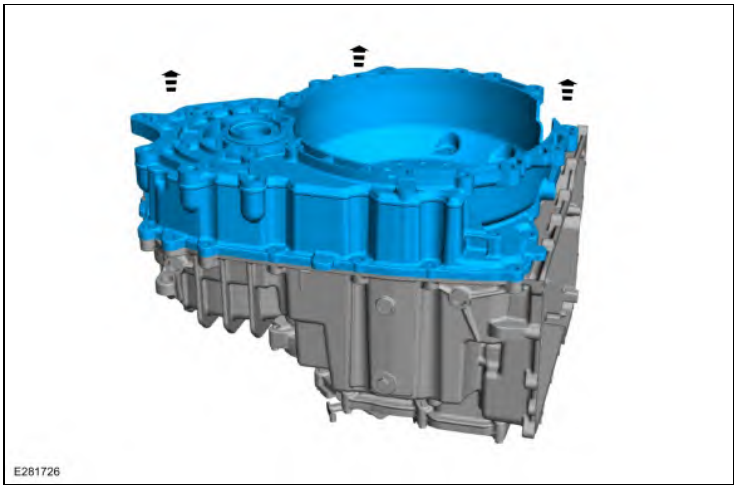
Remove the torque converter housing bolts.



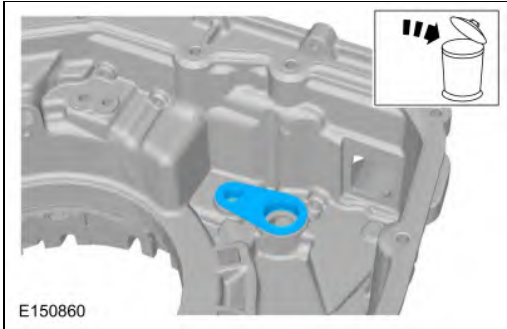
49. Pry the torque converter housing loose from the transmission case.



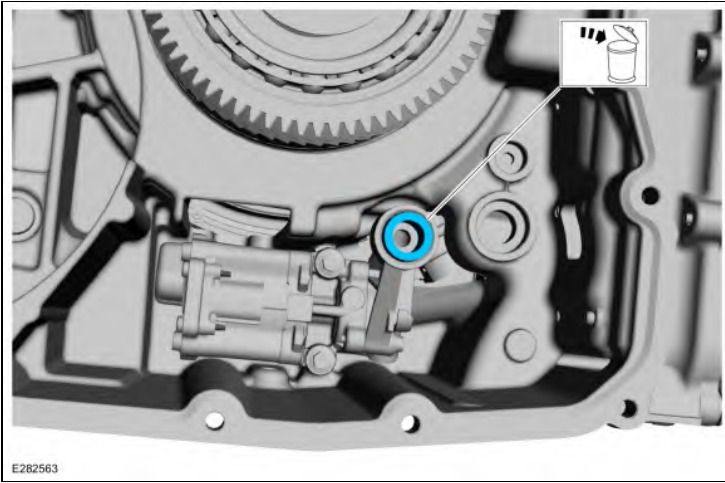
50. Remove the torque converter housing from the transmission case.



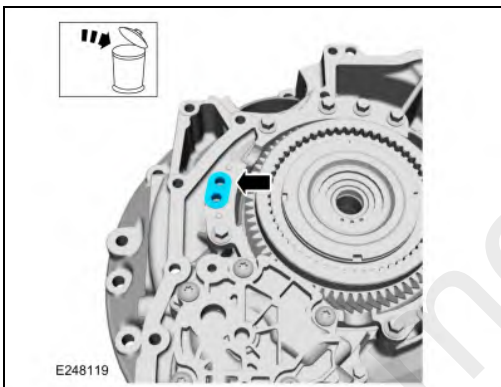
51. Remove and discard the pump-to-case seal.



52. Remove and discard the transmission fluid auxiliary pump to torque converter housing seal.

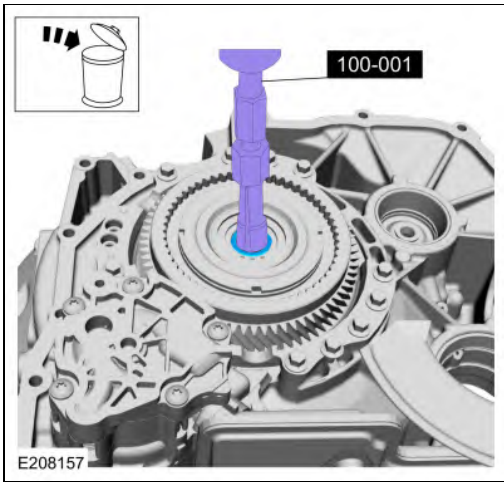


53. Remove and discard the stator support assembly seal.

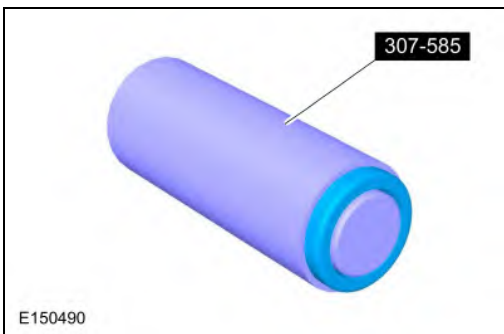


54. Remove and discard the input shaft seal.

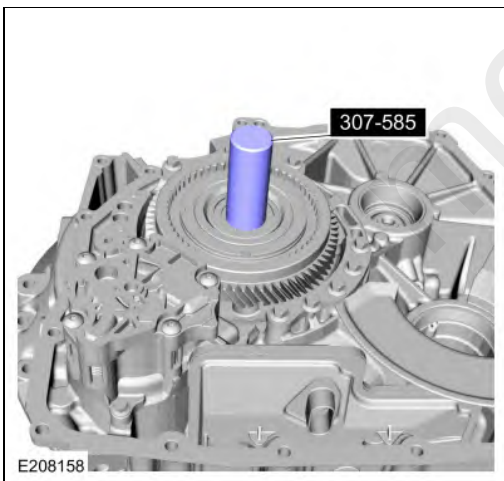
Use Special Service Tool: 100-001 (T50T-100-A) Slide Hammer. , 303-D020 (D80L-100-R) Collet, 7/8 to 1.



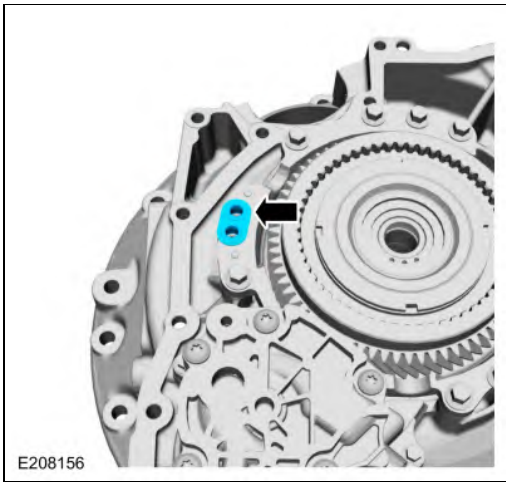
55. Install a new input shaft seal on the special tool.
Use Special Service Tool: 307-585 Support seal installer.



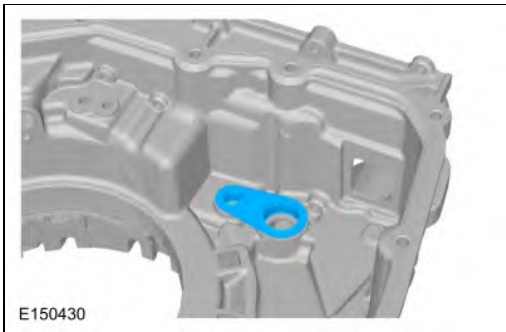
56. Using the special tool, install the input shaft seal.
Use Special Service Tool: 307-585 Support seal installer.



57. Install a new stator support assembly seal.

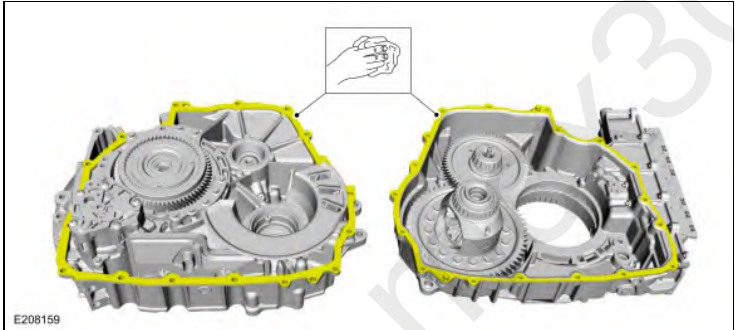


58. Install a new pump-to-case seal.



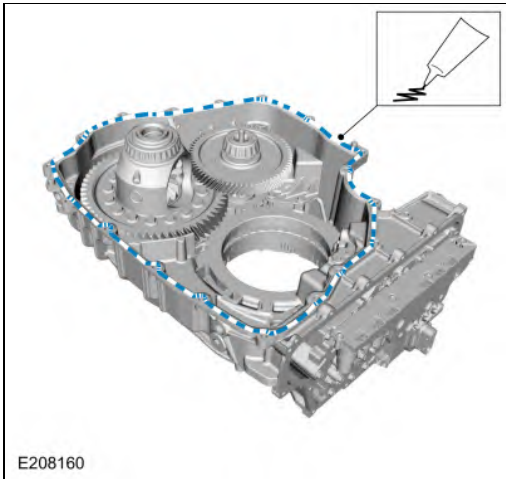
59. **NOTICE:** Do not use metal scrapers, wire brushes, power abrasive discs, or other abrasive means to clean sealing surfaces. These tools cause scratches and gouges which make leak paths.

Make sure that the mating faces are clean and free of foreign material.
Refer to: RTV Sealing Surface Cleaning and Preparation (303-00 Engine System - General Information, General Procedures).

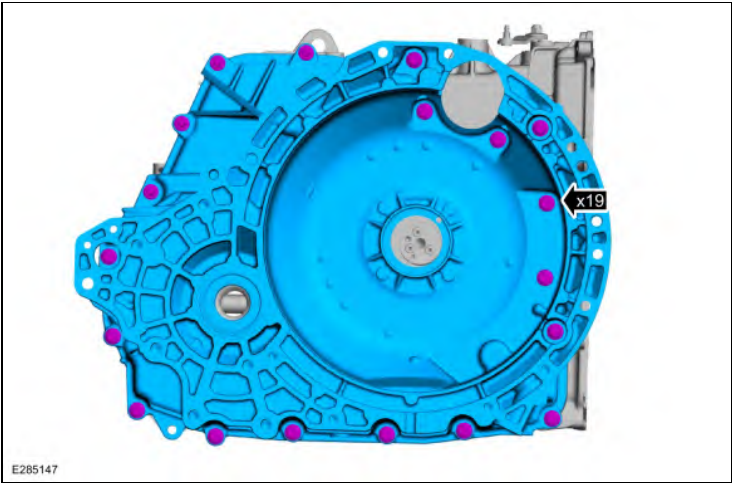


60. **NOTE:** Make sure the sealing surface of both the transmission case and the torque converter housing are clean, dry and free of oil or the silicone will not seal the transmission case.

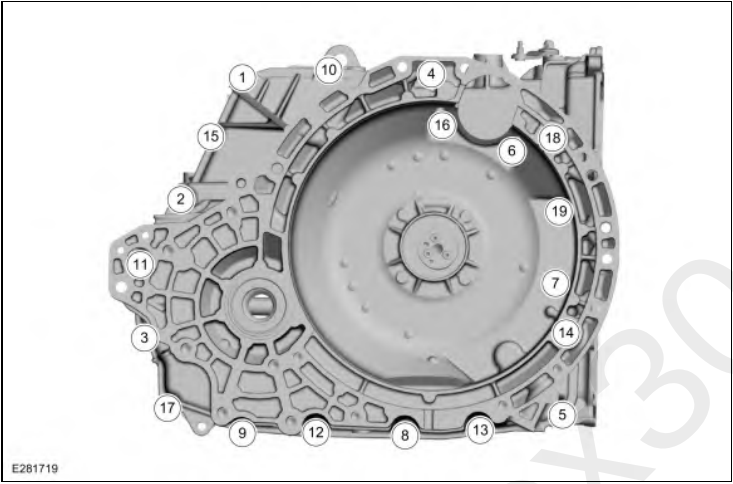
Apply a bead of silicone sealant to the machined surface of the transmission case.
Material: Motorcraft® Ultra Silicone Sealant / TA-29



61. **NOTE:** *Hand tighten the bolts only.*
- Install the torque converter housing on top of the transmission case and install the bolts.



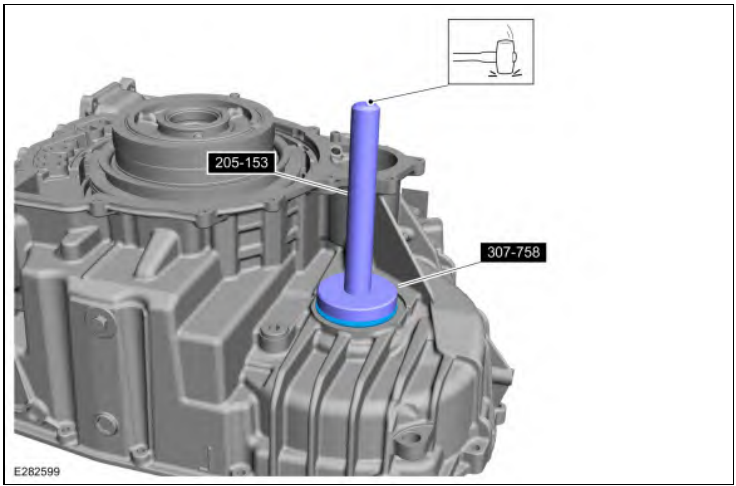
62. **NOTE:** *Install the studbolts in the correct location as noted during disassembly.*
- Tighten the bolts in the sequence shown.
Torque: 24 lb.ft (32 Nm)



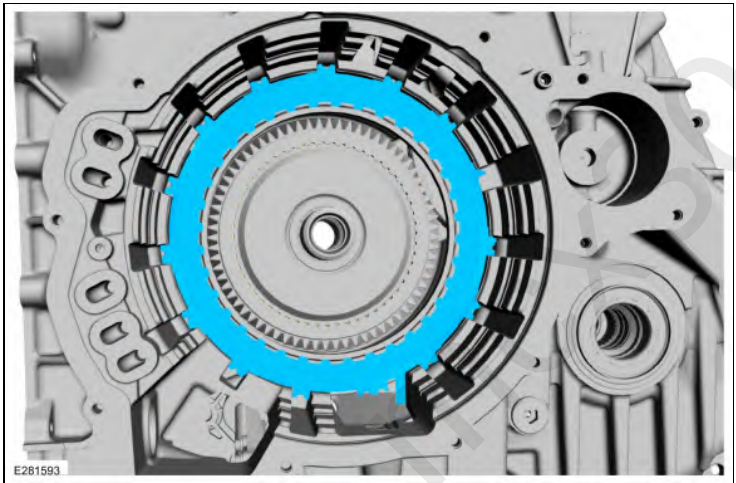
63. Install a new halfshaft seal on special tool.
Use Special Service Tool: 205-153 (T80T-4000-W) Handle, , 307-758 Installer, Axle Seal -FWD.



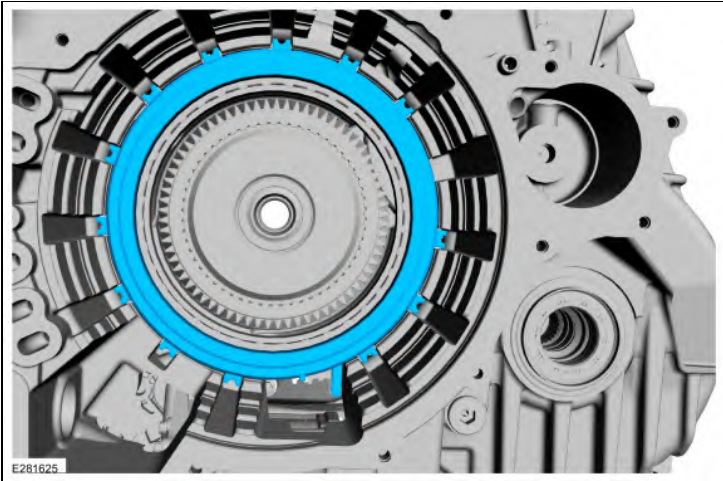
64. Using the special tool, install the halfshaft seal in the transmission case (1177).
Use Special Service Tool: 205-153 (T80T-4000-W) Handle, , 307-758 Installer, Axle Seal -FWD.



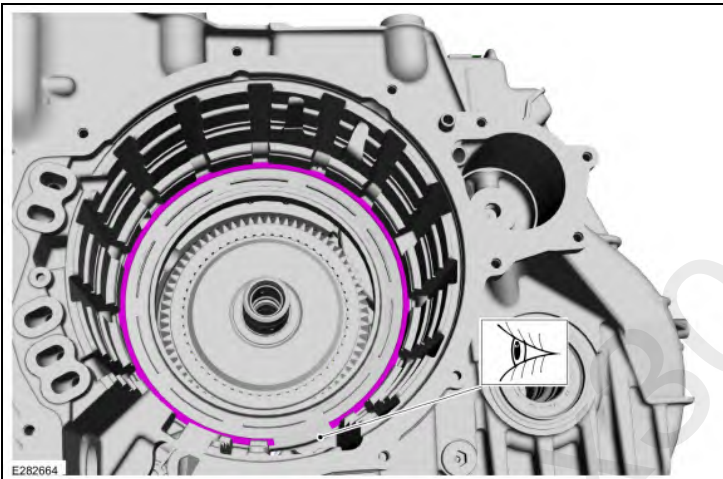
65. Install the A (1, 2, 3, 4, 5) clutch pack without the seperator springs.



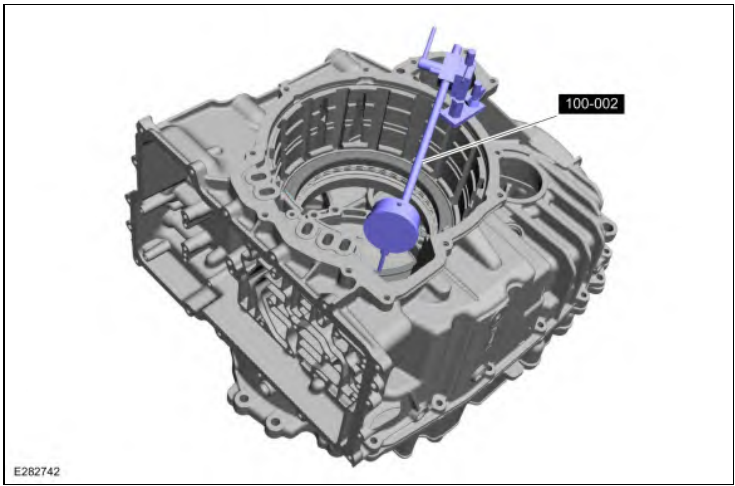
66. Install the A (1, 2, 3, 4, 5) clutch pack pressure plate.



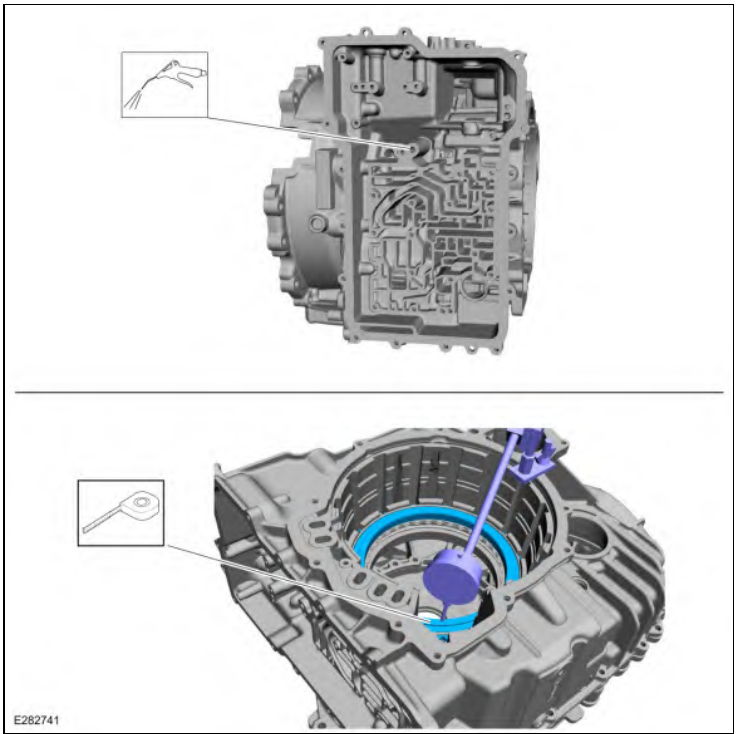
67. Install the A (1, 2, 3, 4, 5) clutch snap ring with the gap at approximately the 5:30 position.



68. Install the special tool on the transmission case and position plunger on the A (1, 2, 3, 4, 5) clutch pressure plate.
Use Special Service Tool: 100-002 (TOOL-4201-C) Holding Fixture with Dial Indicator Gauge.



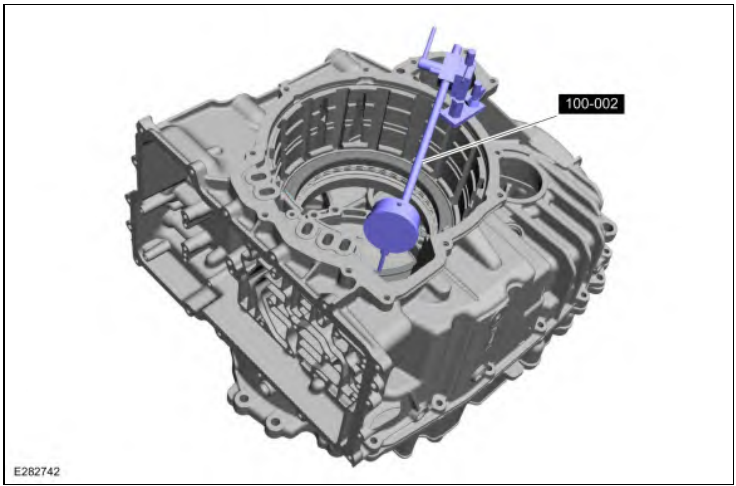
69. Apply 483 kPa (70 psi) of air pressure to the A (1, 2, 3, 4, 5) clutch piston port while recording the clutch pack clearance on the dial indicator. Measure and record in three places for an average reading. The clearance should be between 0.39 mm (0.015 in) and 1.82 mm (0.071 in). If the clearance is out of range, check the A (1, 2, 3, 4, 5) clutch pack for correct installation. If the A (1, 2, 3, 4, 5) clutch pack is correctly installed, install a new A (1, 2, 3, 4, 5) clutch pack.
Use Special Service Tool: 100-002 (TOOL-4201-C) Holding Fixture with Dial Indicator Gauge.



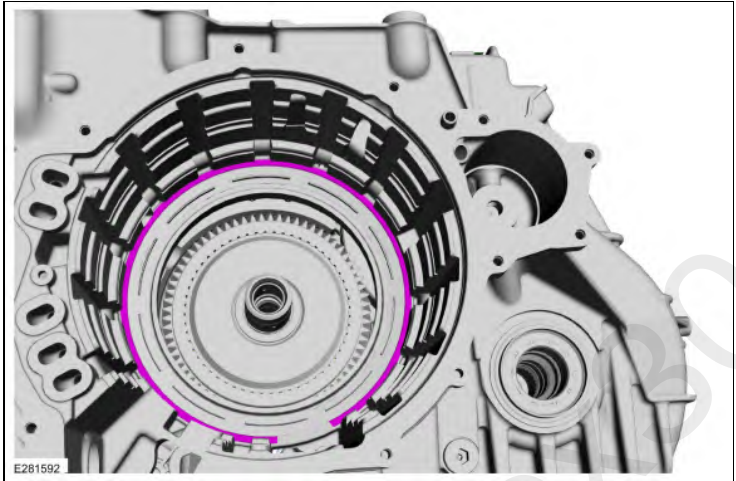
mcx30.com



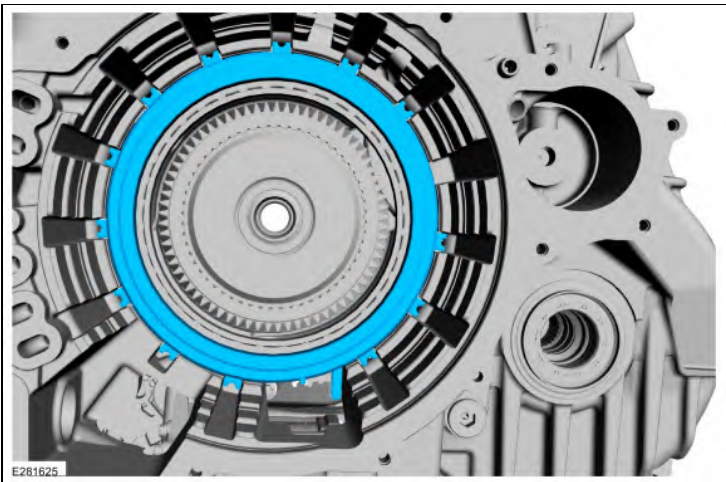
70. Remove the special tool.
Use Special Service Tool: 100-002 (TOOL-4201-C) Holding Fixture with Dial Indicator Gauge.



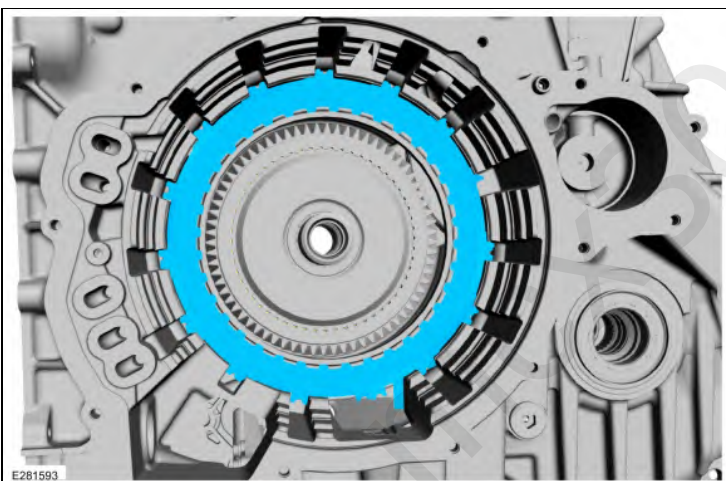
71. Remove the A (1, 2, 3, 4, 5) clutch pressure plate snap ring.



72. Remove the A (1, 2, 3, 4, 5) clutch pressure plate.

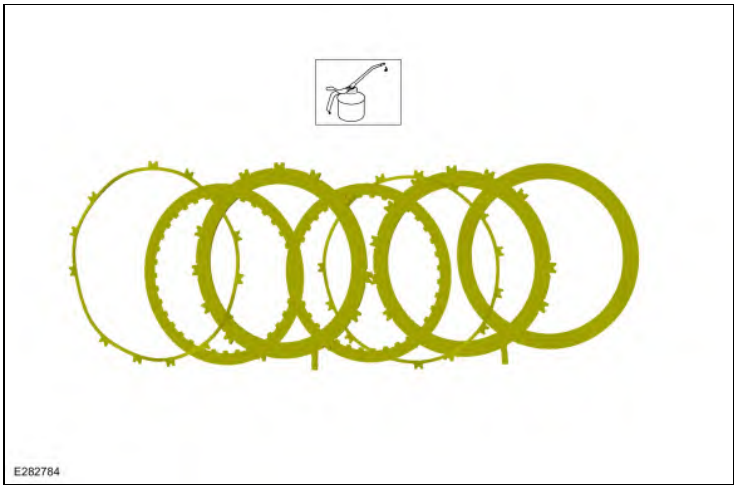


73. Remove the A (1, 2, 3, 4, 5) clutch pack.

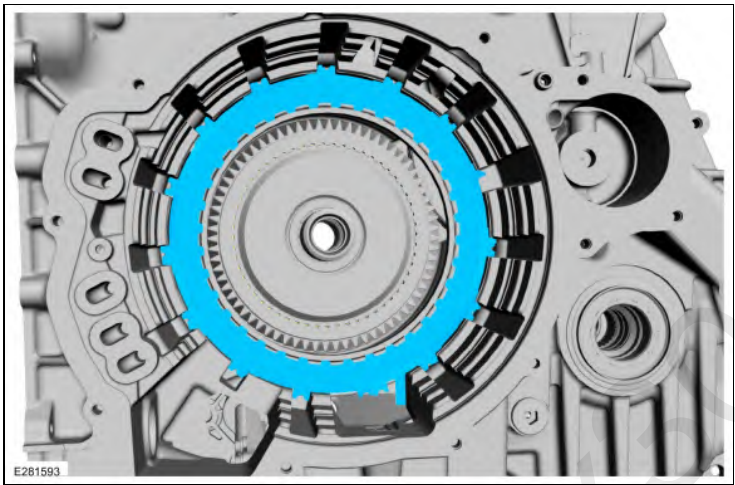


74. Soak the A (1, 2, 3, 4, 5) clutch assembly in transmission fluid.

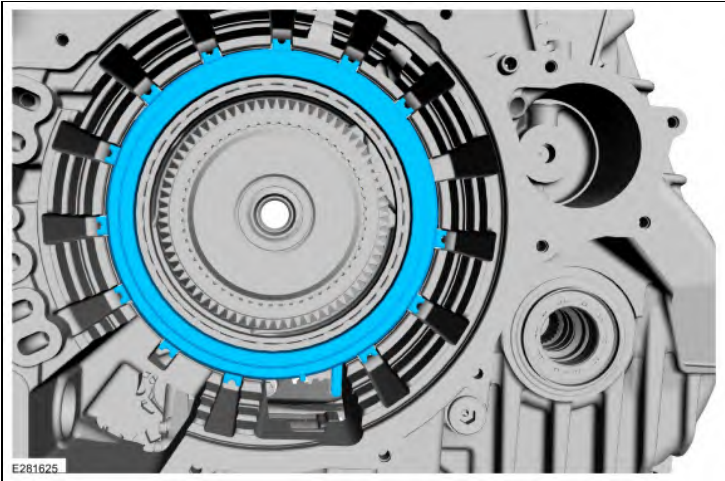
Material: Motorcraft® MERCON® ULV Automatic Transmission Fluid / XT-12-QULV (WSS-M2C949-A,) (MERCON® ULV)



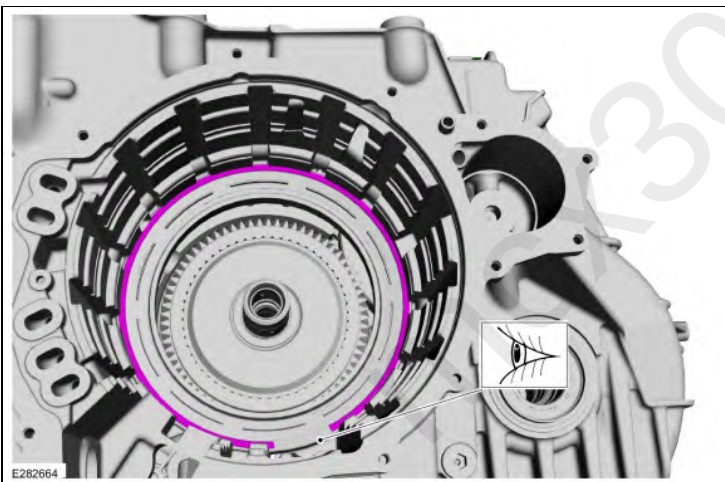
75. Install the A (1, 2, 3, 4, 5) clutch pack without the seperator springs.



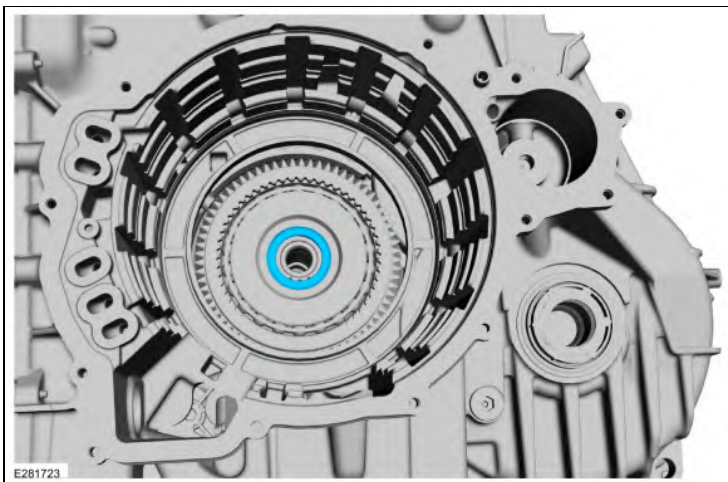
76. Install the A (1, 2, 3, 4, 5) clutch pack pressure plate.



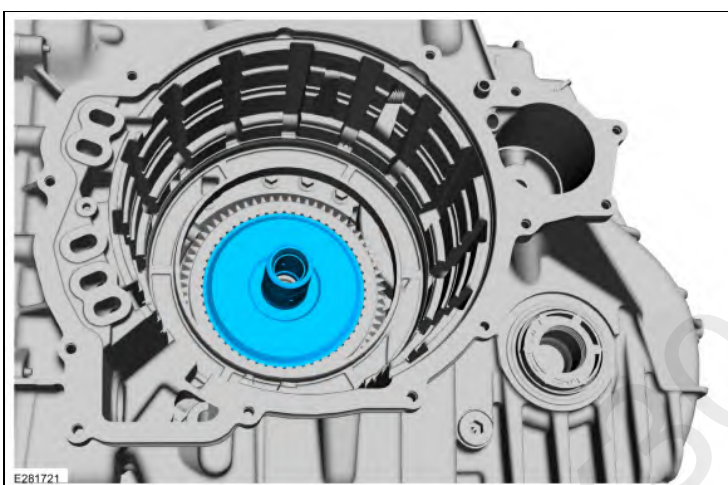
77. Install the A (1, 2, 3, 4, 5) clutch snap ring with the gap at approximately the 5:30 position.



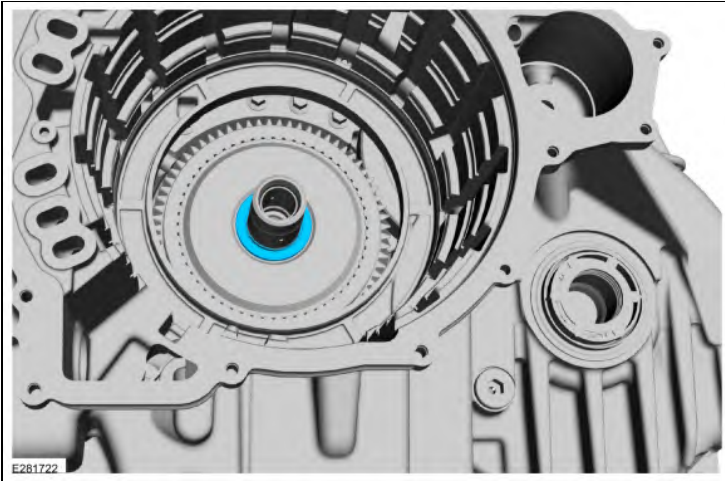
78. Install the No. 13 thrust bearing.



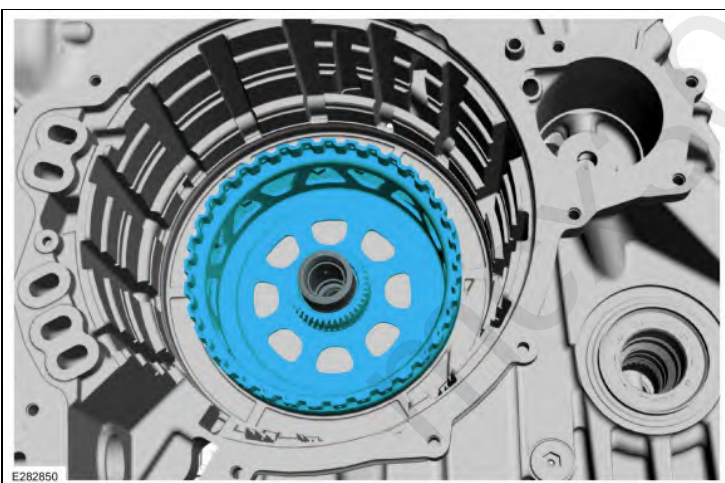
79. Install the output carrier hub.



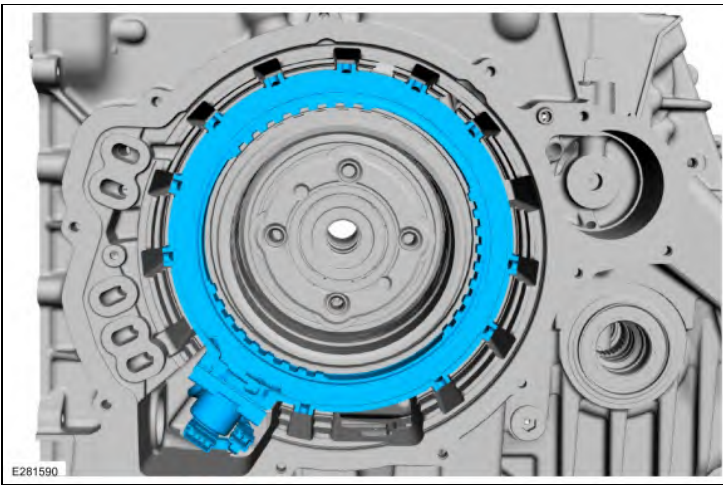
80. Install the No. 12 thrust bearing.



81. Install the output sun gear and shell assembly.

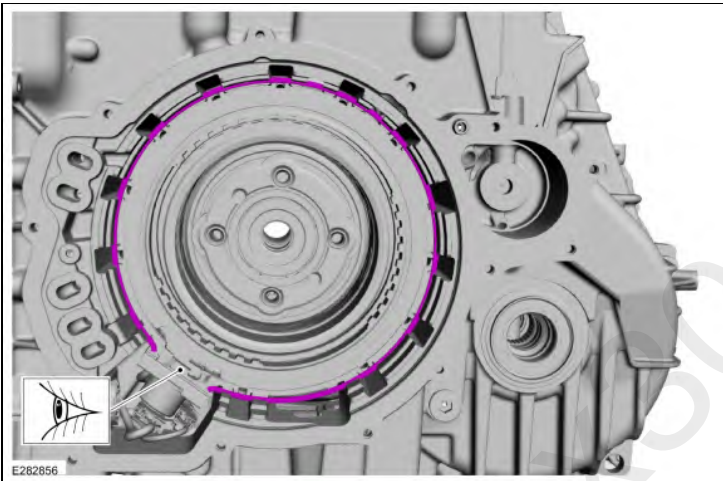


82. Install the electronic Selectable One-Way Clutch (SOWC).

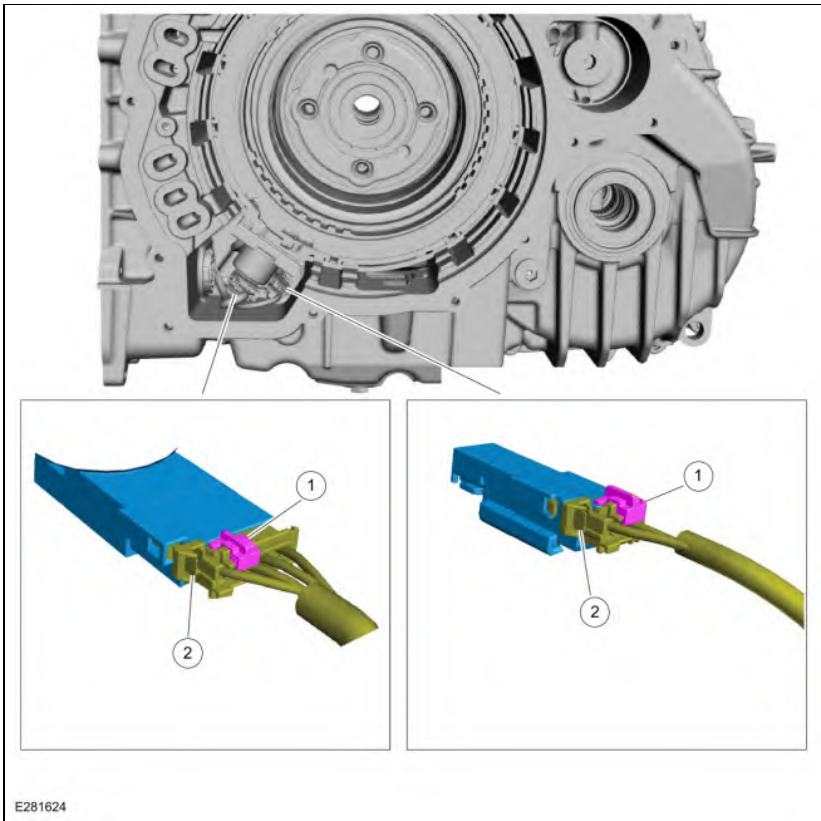


83. **NOTE:** The snap ring gap should be at the 7 o'clock position.

Install the electronic Selectable One-Way Clutch (SOWC) snap ring.

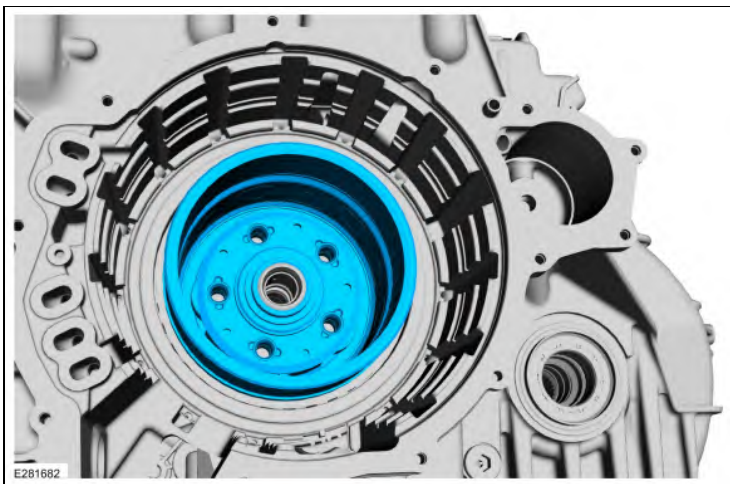


- 84.
- Connect and lock the electronic Selectable One-Way Clutch (SOWC) and the Intermediate Speed Sensor (ISS) electrical connector.
1. Connector lock
 2. Connector release

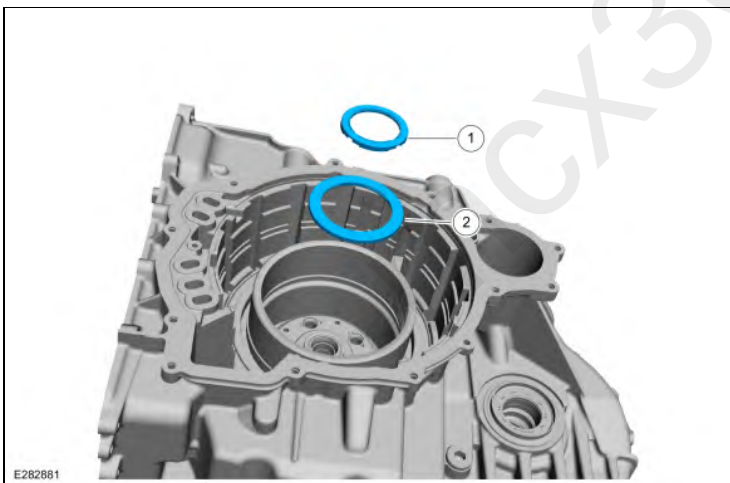


85. Install the output planetary carrier assembly.

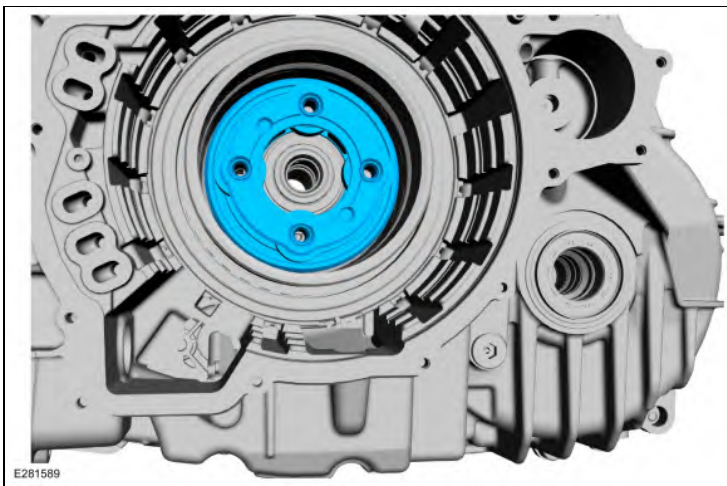




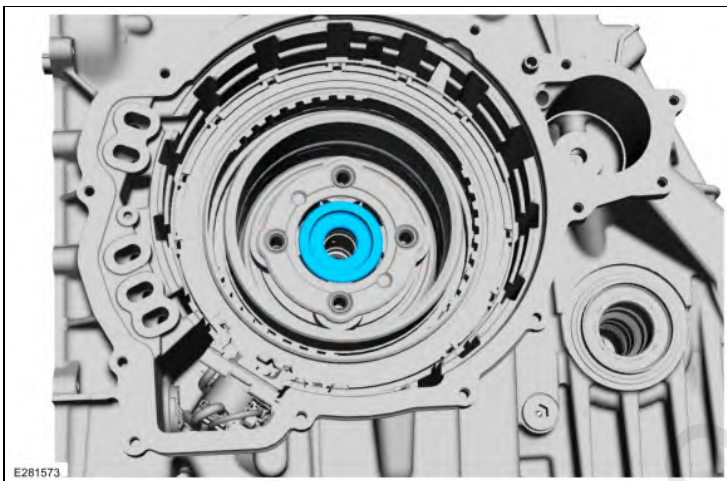
86. Install the following items.
1. No. 9 thrust bearing
 2. No. 10 thrust bearing



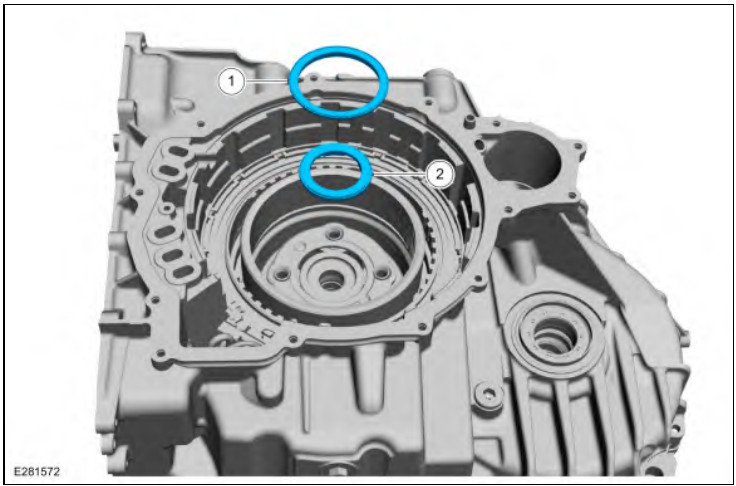
87. Install the input planetary carrier assembly.



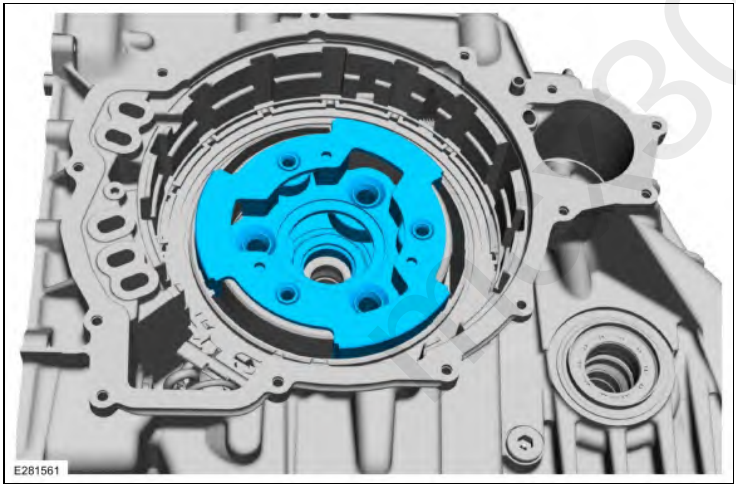
88. Install the input sun gear.



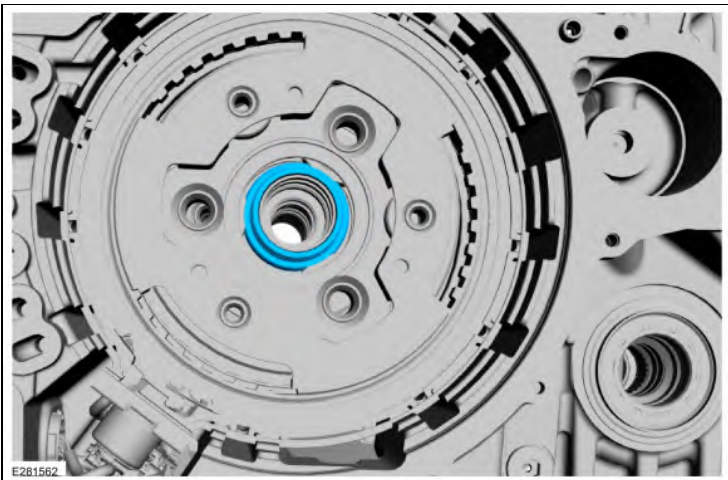
- 89.
- Install the following items.
1. No. 7 thrust bearing
 2. No. 8 thrust bearing



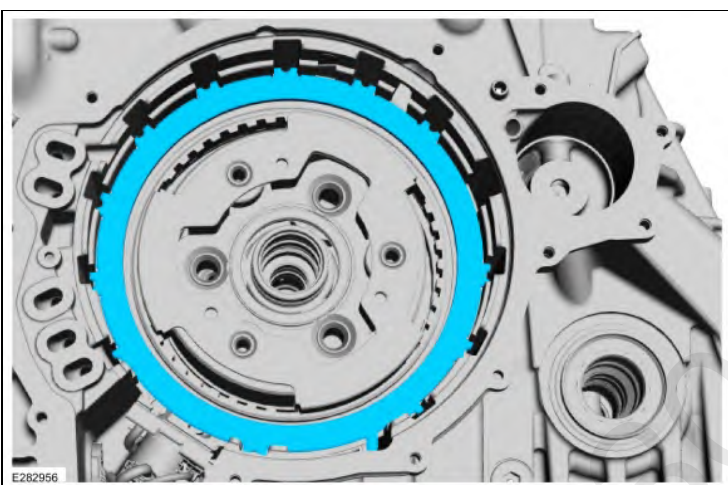
90. Install the reaction planetary carrier assembly.



91. Install the reaction/overdrive sun gear.



92. Install the F (2, 8) clutch reaction plate.



93. **NOTE:** The F (2, 8) clutch wave plate and separator plate are temporarily reversely installed to measure the F (2, 8) clutch clearance.

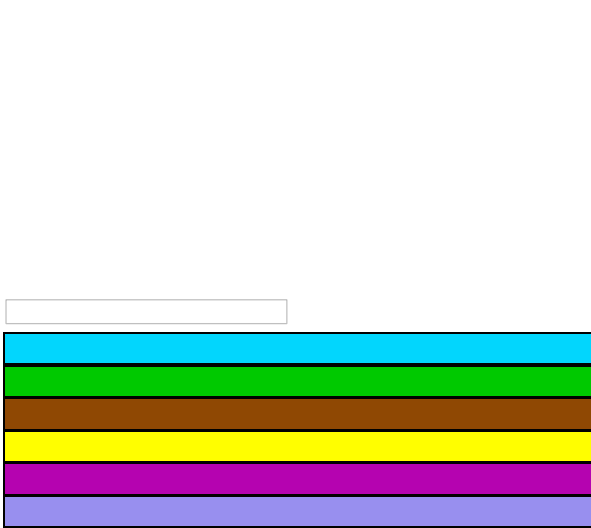
Install the F (2, 8) clutch assembly with the wave plate and the separator plate reversed.

1. Wave plate
2. Separator plate



- Distance from the transmission case deck surface to the F (2, 8) clutch top plate.

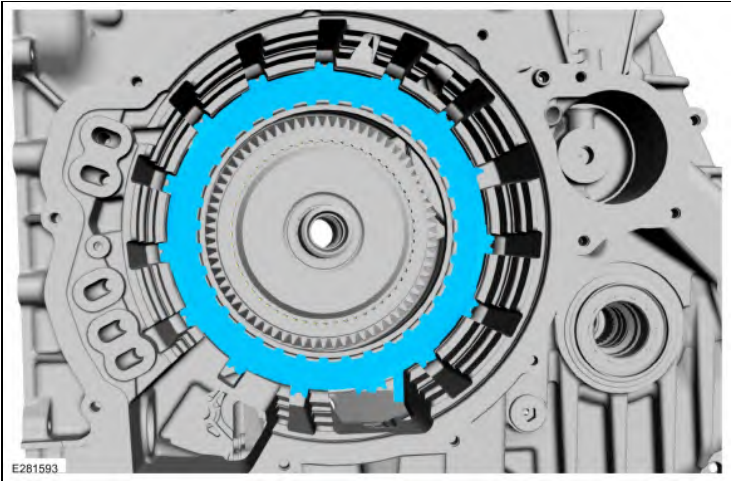


- Distance from the F (2, 8) clutch piston to the cover assembly deck surface.
- 
- A diagram showing a vertical axis on the left and a horizontal axis at the bottom. A white rectangular box is positioned on the horizontal axis. Above this box, there are six horizontal bars of equal length, stacked vertically. From top to bottom, the colors of the bars are: cyan, green, brown, yellow, magenta, and light blue.

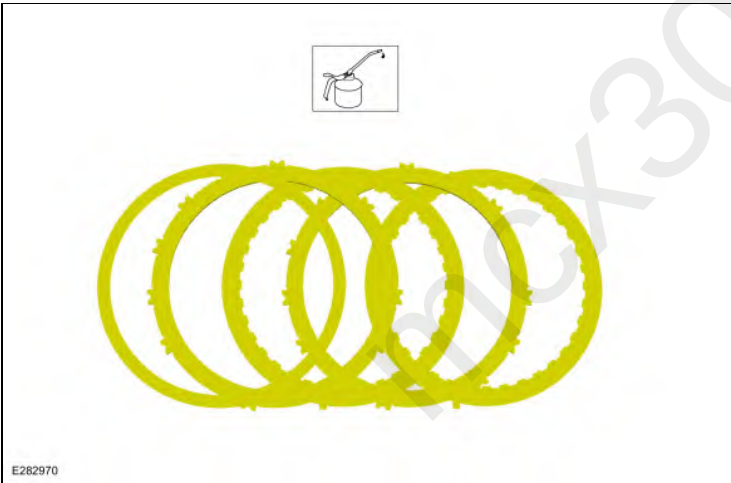
96. Subtract measurement B from measurement A and add 1.6 mm (0.062 in), to compensate for the thickness of the gasket, to get the F (2, 8) clutch clearance. The clearance should be between 0.80 mm (0.031 in) and 2.31 mm (0.090 in). If the clearance is out of range, check the F (2, 8) clutch pack for correct installation. If the F (2, 8) clutch pack is correctly installed, install a new F (2, 8) clutch pack.

Description	Reading
Measurement A	
Measurement B	
Subtract measurement B from measurement A and add 1.6 mm (0.062 in), check to see if it is within range of 0.80 mm (0.031 in) and 2.31 mm (0.090 in)	

97. Remove the F (2, 8) clutch assembly.

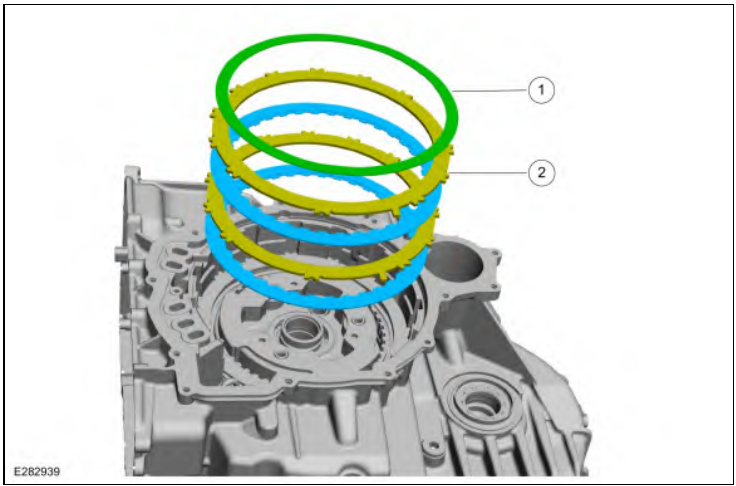


98. Soak the F (2, 8) clutch assembly in transmission fluid.
Material: Motorcraft® MERCON® ULV Automatic Transmission Fluid / XT-12-QULV (WSS-M2C949-A,) (MERCON® ULV)

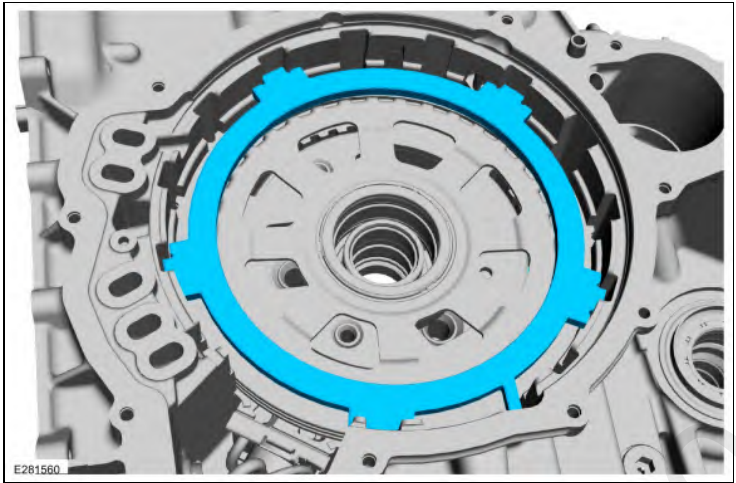


99. **NOTE:** When the F (2, 8) clutch is correctly installed, the wave plate is on top.

- Install the F (2, 8) clutch assembly.
1. Wave plate
 2. Separator plate

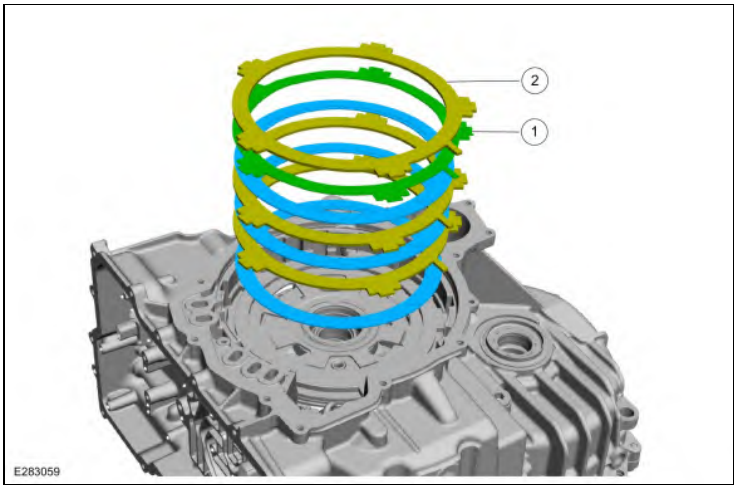


100. Install the C (3, 7)/F (2, 8) clutch pressure plate.

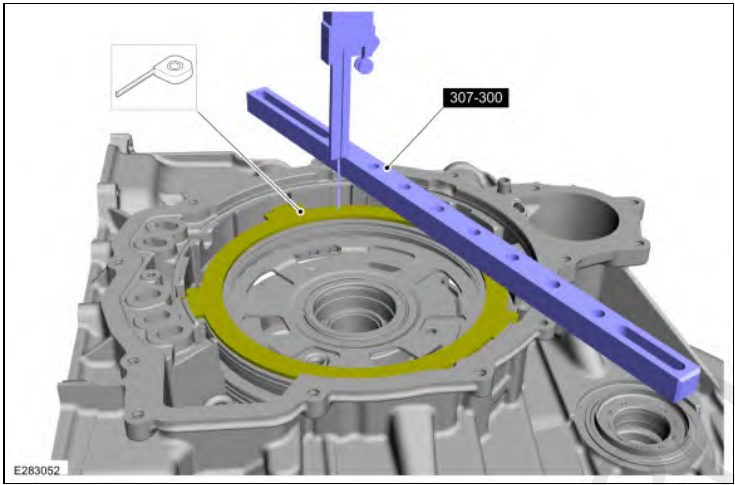


101. **NOTE:** The C (3, 7) clutch wave plate and separator plate are temporarily reversely installed to measure the C (3, 7) clutch clearance.

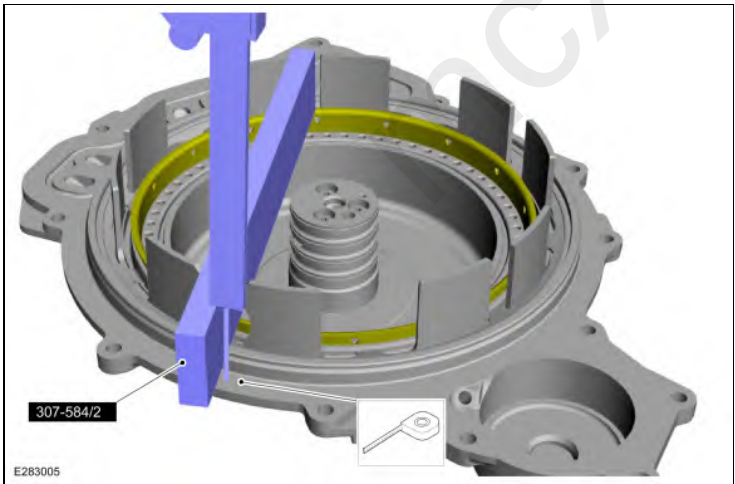
- Install the C (3, 7) clutch assembly with the wave plate and the separator plate reversed.
1. Wave plate
 2. Separator plate



102. Using the special tool and a depth gauge, measure and record as measurement A, the distance from the transmission case deck surface to the C (3, 7) clutch top plate.
 Use Special Service Tool: 307-300 Gauge Bar, Shim Selection.
 Use the General Equipment: Caliper Gauge



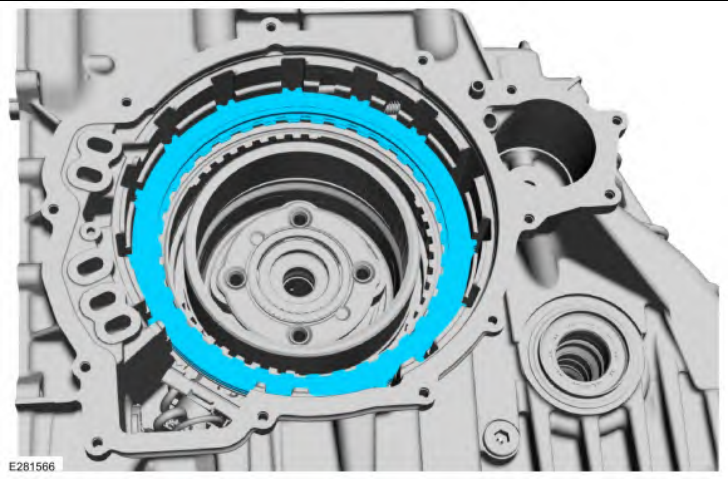
103. Using the special tool and a depth gauge, measure and record as measurement B, the distance from the C (3, 7) clutch piston to the cover assembly deck surface.
 Use Special Service Tool: 307-300 Gauge Bar, Shim Selection.
 Use the General Equipment: Caliper Gauge



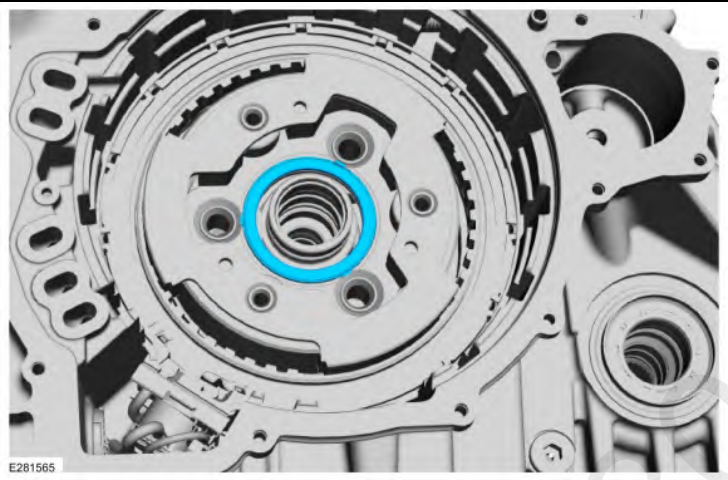
104. Subtract measurement B from measurement A and add 1.6 mm (0.062 in), to compensate for the thickness of the gasket, to get the C (3, 7) clutch clearance. The clearance should be between 0.70 mm (0.027 in) and 1.90 mm (0.074 in). If the clearance is out of range, check the C (3, 7) clutch pack for correct installation. If the C (3, 7) clutch pack is correctly installed, install a new C (3, 7) clutch pack.

Description	Reading
Measurement A	
Measurement B	
Subtract measurement B from measurement A and add 1.6 mm (0.062 in), check to see if it is within range of 0.70 mm (0.027 in) and 1.90 mm (0.074 in)	

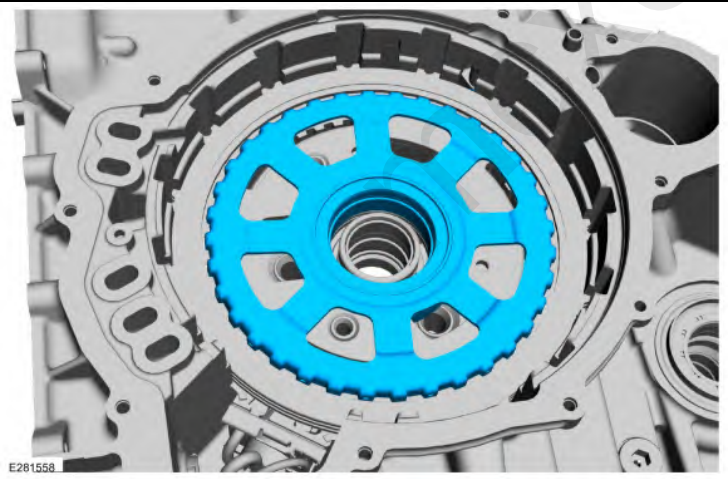
105. Remove the C (3, 7) clutch assembly.



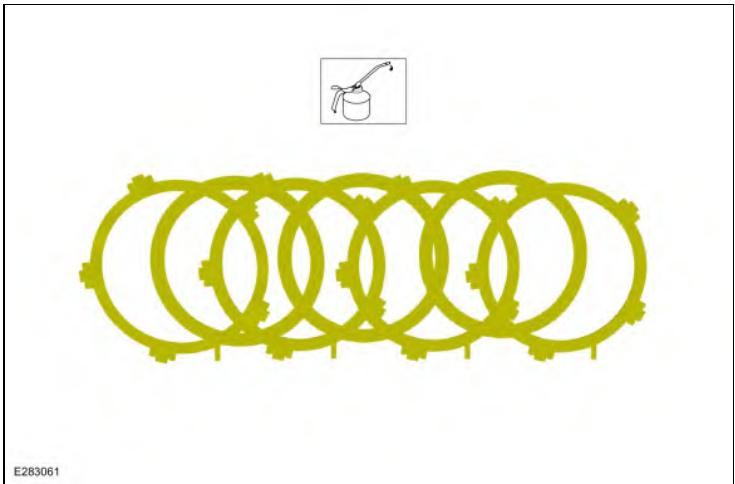
106. Install the No. 5 thrust bearing.



107. Install the F (2, 8) clutch sun gear and shell assembly.

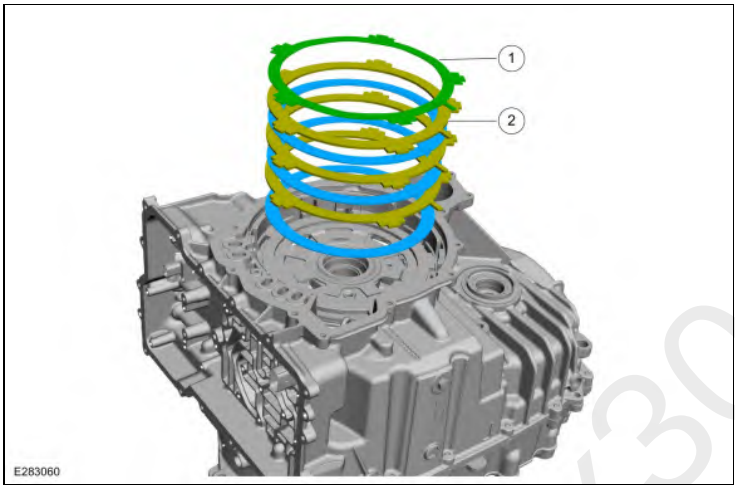


108. Soak the C (3, 7) clutch in transmission fluid.
Material: Motorcraft® MERCON® ULV Automatic Transmission Fluid / XT-12-QULV (WSS-M2C949-A,) (MERCON® ULV)

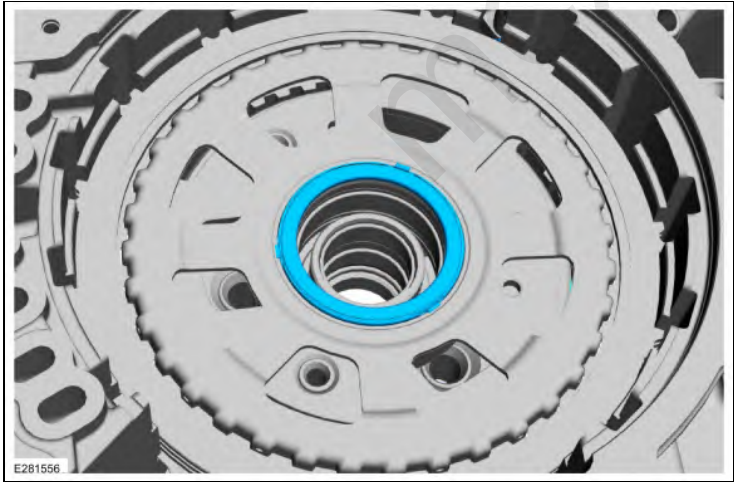


109. **NOTE:** When the C (3, 7) clutch is correctly installed, the wave plate is on top.

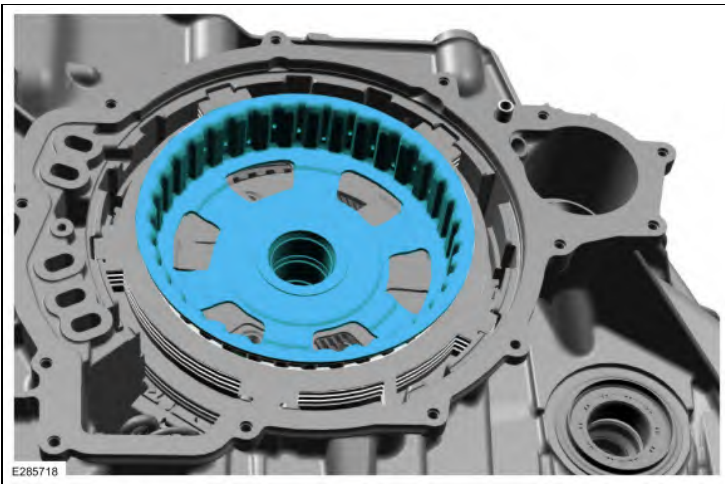
- Install the C (3, 7) clutch pack assembly.
1. Wave plate
 2. Separator plate



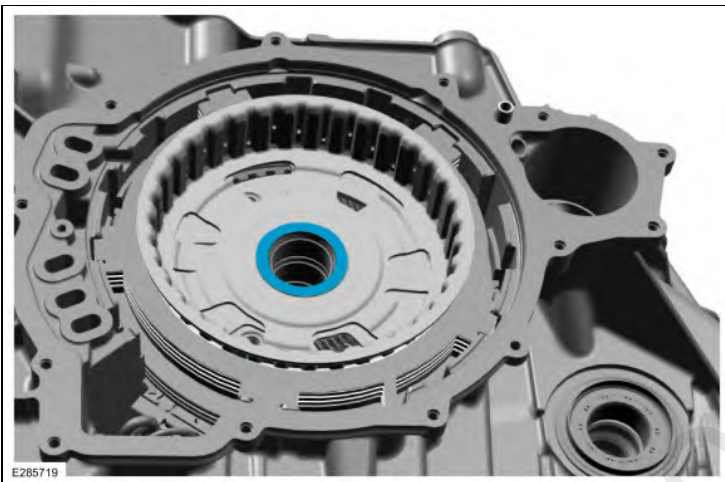
110. Install the No. 4 thrust bearing.



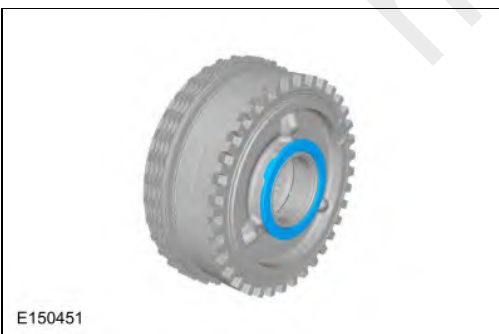
111. Install the B (4, 6, R)/C (3, 7) clutch hub.



112. Install the No. 3 thrust bearing.



113. Material: Petroleum Jelly
Using petroleum jelly, install the No. 1 thrust bearing on the B (4, 6, R)/E (5, 6, 7, 8) clutch hub.

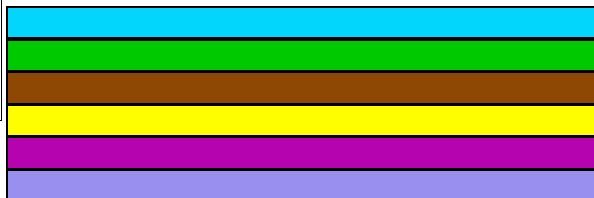
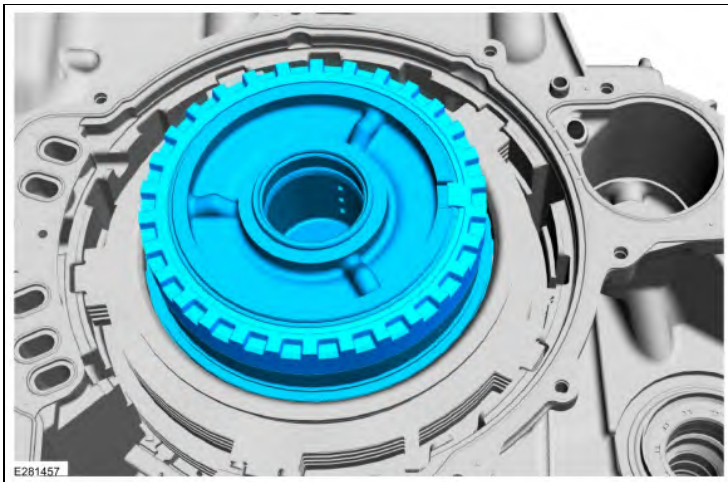


114. Position the B (4, 6, R)/E (5, 6, 7, 8) clutch hub and turbine shaft assembly in the cover assembly, install the dial indicator gauge plunger on the E (5, 6, 7, 8) clutch pressure plate. Apply 483 kPa (70 psi) of air pressure to the E (5, 6, 7, 8) clutch piston port while recording the clutch pack clearance on the dial indicator. The clearance should be between 0.39 mm (0.015 in) and 1.82 mm (0.072 in). If the clearance is out of range, check the E (5, 6, 7, 8) clutch pack for correct installation. If the E (5, 6, 7, 8) clutch pack is correctly installed, install a new E (5, 6, 7, 8) clutch pack.

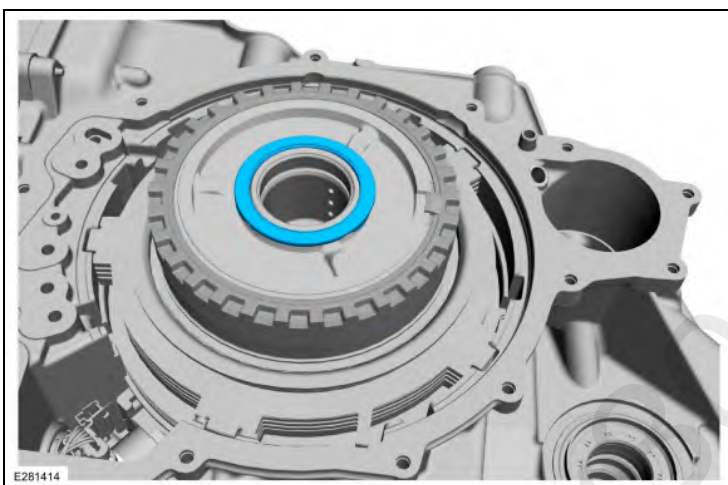


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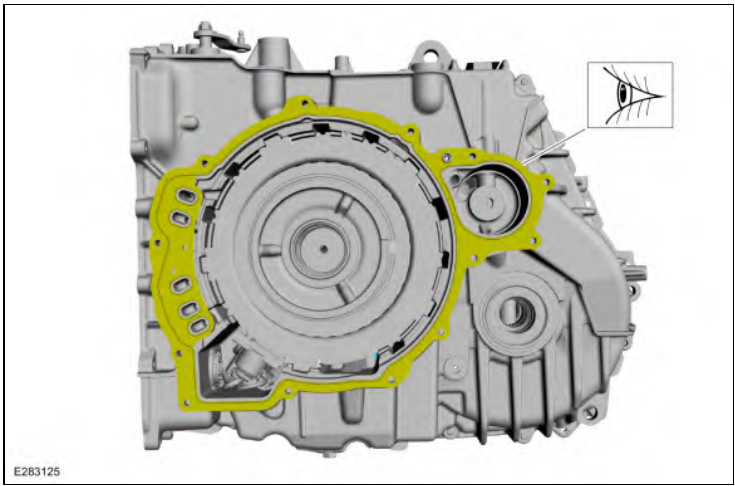
116. Install the B (4, 6, R)/E (5, 6, 7, 8) clutch hub and turbine shaft assembly.



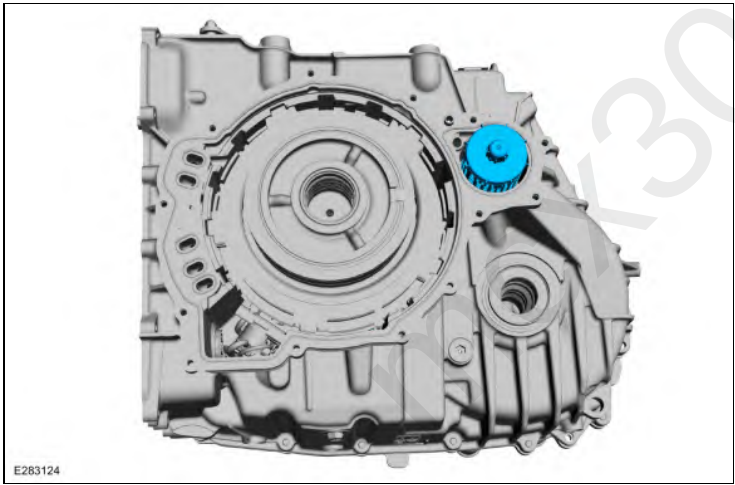
117. Install the No. 1 thrust bearing.



118. Inspect the cover assembly gasket for damage and install new if necessary (7B343).

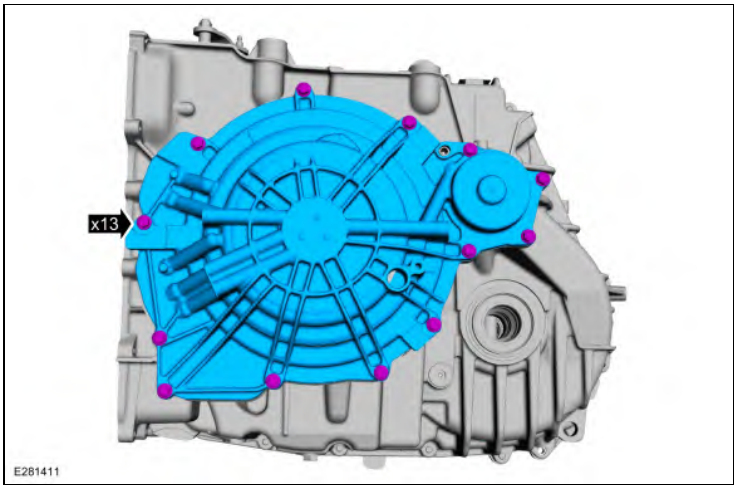


119. Install the secondary fluid filter (7B301).

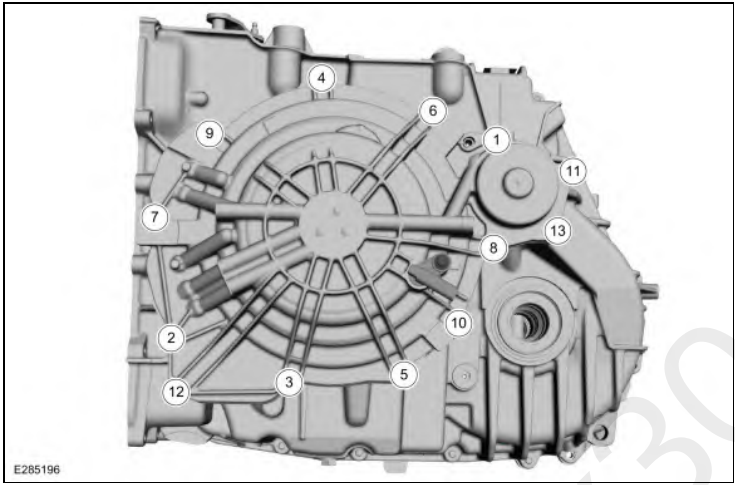


120. **NOTE:** *Install the bolts hand tight.*

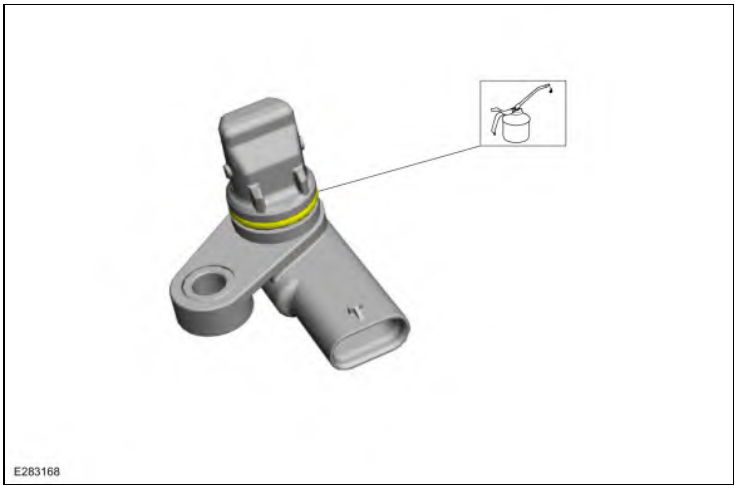
Install the cover assembly and bolts.



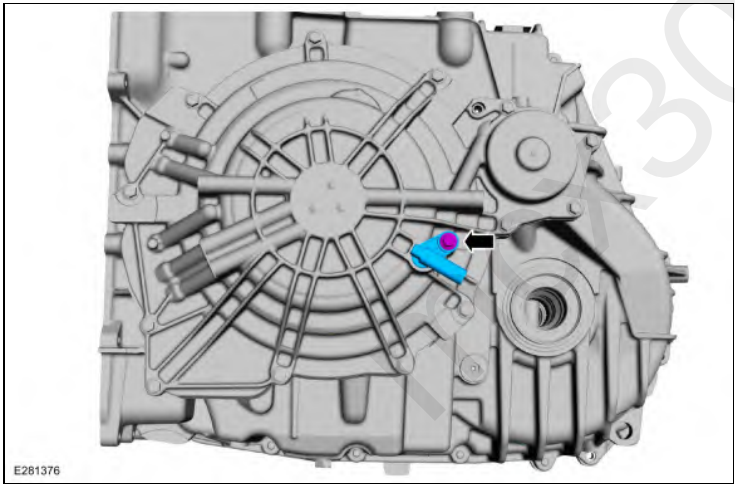
121. Tighten the bolts in the sequence shown.
Torque: 124 lb.in (14 Nm)



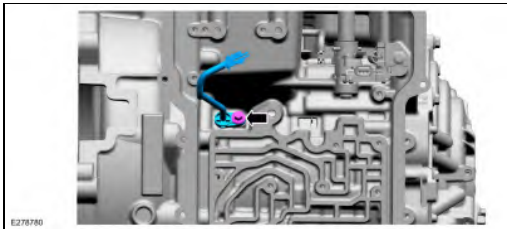
122. Material: Petroleum Jelly
Lubricate the TSS sensor O-ring with petroleum jelly.



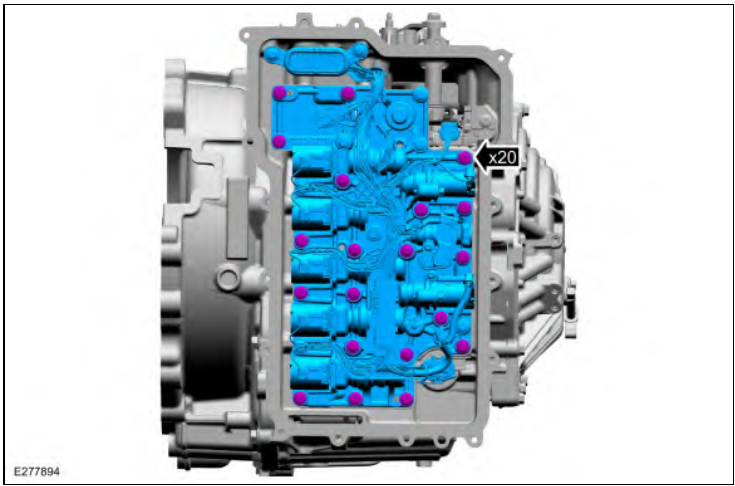
123. Install the TSS sensor and bolt.
Torque: 80 lb.in (9 Nm)



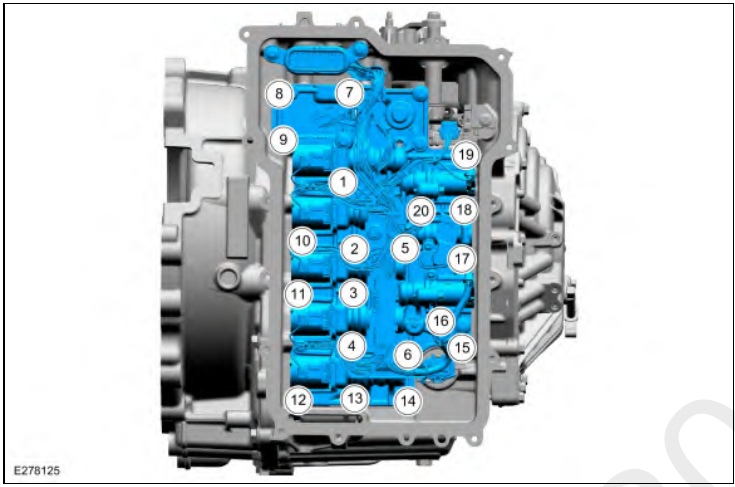
124. Install the OSS sensor and bolt.
Torque: 97 lb.in (11 Nm)



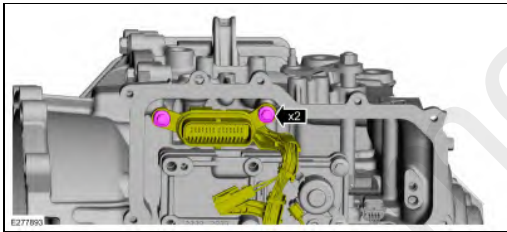
125. **NOTE:** Note the location of the short and long main control valve body bolts. Install the bolts hand tight.
Install the main control valve body, the transmission wiring harness and the main control valve body bolts.



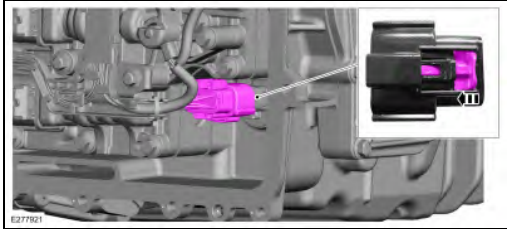
126. Tighten the main control valve body bolts in the sequence shown.
Torque: 89 lb.in (10 Nm)



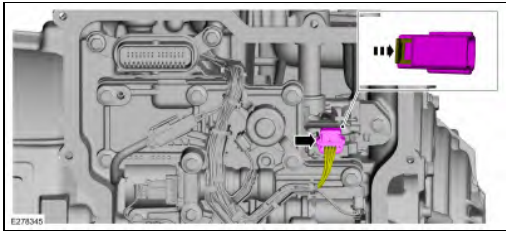
127. Install the transmission wiring harness bolts.
Torque: 71 lb.in (8 Nm)



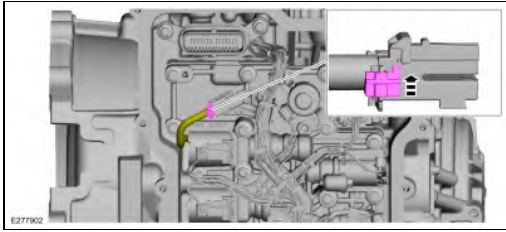
128. Connect and lock the bulkhead electrical connector.



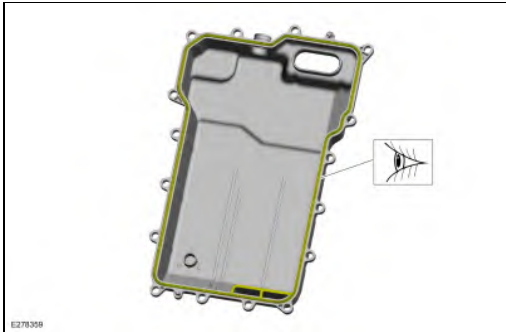
129. Connect and lock the TR sensor electrical connector.



130. Connect and lock the OSS sensor electrical connectors.

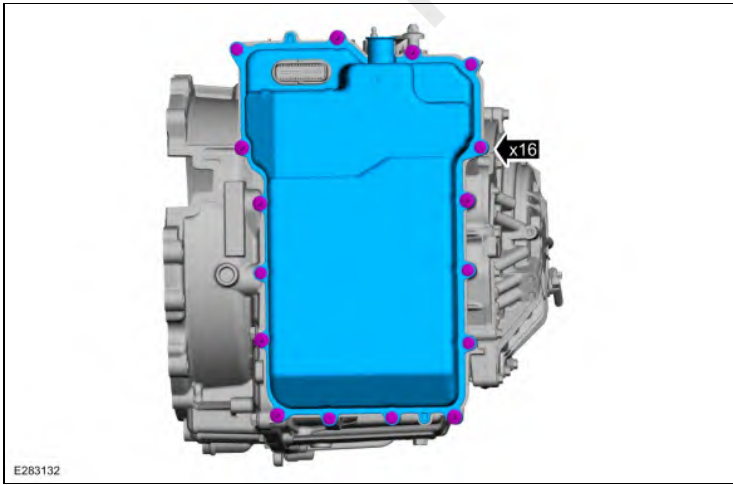


131. Inspect the main control cover seal for damage and install new if necessary (7F396).

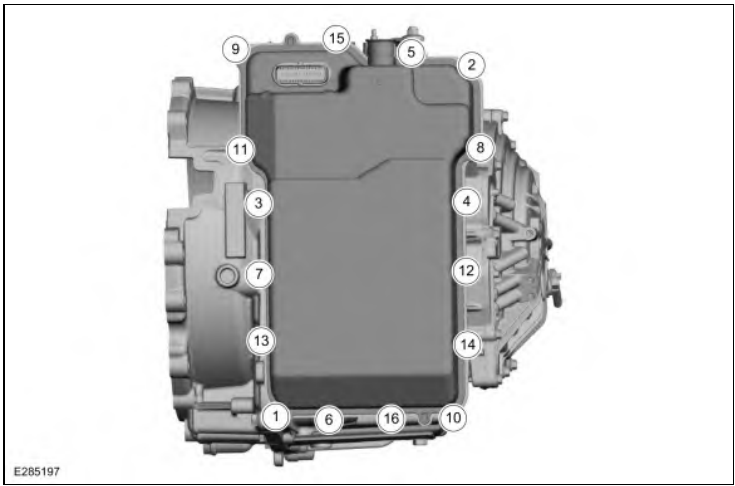


132. **NOTE:** Install the studbolts hand tight.

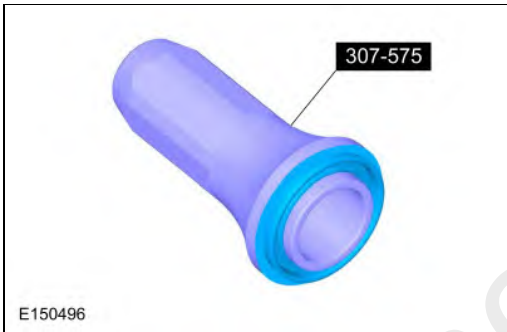
Install the main control cover and studbolts.



133. Tighten the main control cover studbolts in the sequence shown.
Torque: 106 lb.in (12 Nm)



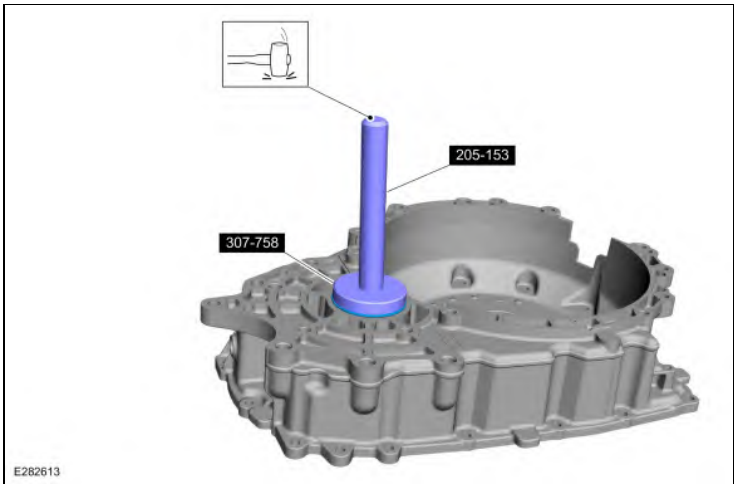
134. Install a new torque converter hub seal on the special tool.
Use Special Service Tool: 307-575 Converter Seal Installer.



135. Using the special tool, install the torque converter hub seal in the torque converter housing (7F401).
Use Special Service Tool: 307-575 Converter Seal Installer.

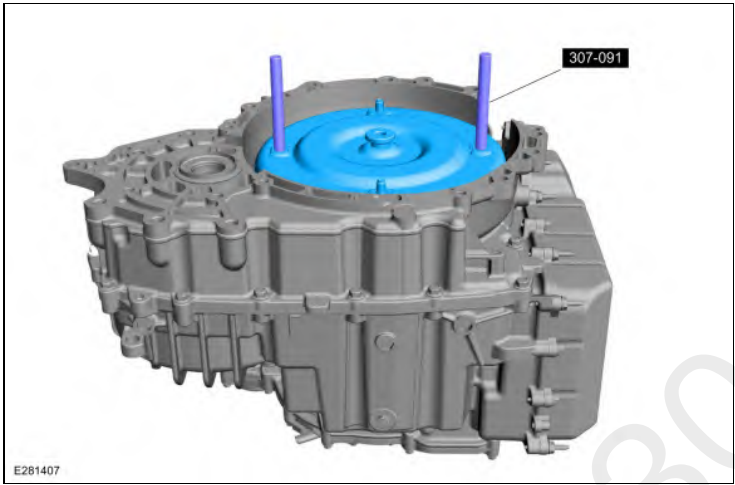


136. Using the special tool, install the RH halfshaft seal in the torque converter housing
Use Special Service Tool: 307-758 Installer, Axle Seal -FWD. , 205-153 (T80T-4000-W) Handle.

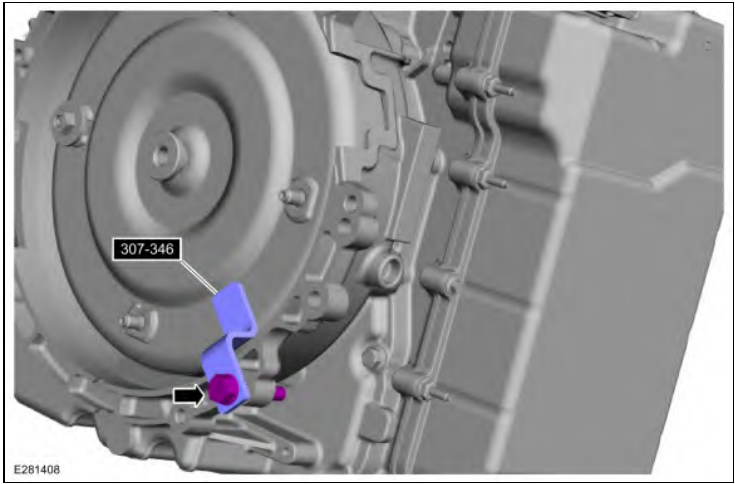


137. **NOTICE:** The torque converter is heavy. Be careful not to drop it or damage will result.

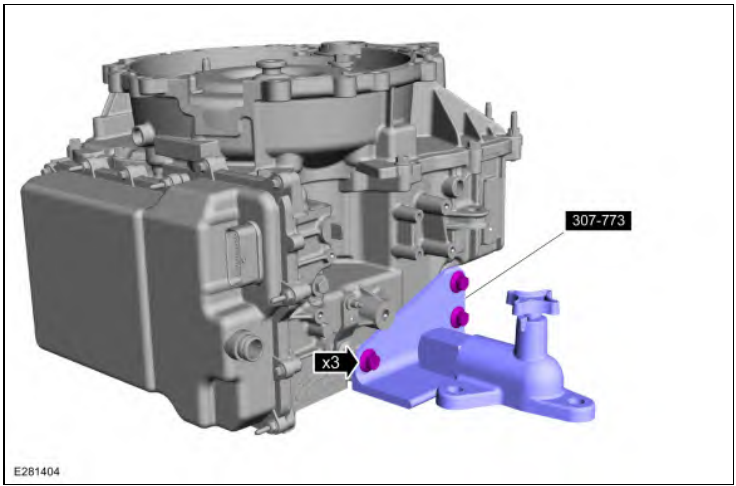
Using the special tool, install the torque converter into the transmission.
Use Special Service Tool: 307-091 Handle, Torque Converter.



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



139. Remove the transmission from the bench-mounted holding fixture and the special tool.
Use Special Service Tool: 307-773 Bench Mount Fixture.



140. Install the transmission.
Refer to: Transmission (307-01B Automatic Transmission - 8-Speed Automatic Transmission 8F57, Removal and Installation).

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Transmission Fluid Drain and Refill

Special Tool(s) / General Equipment

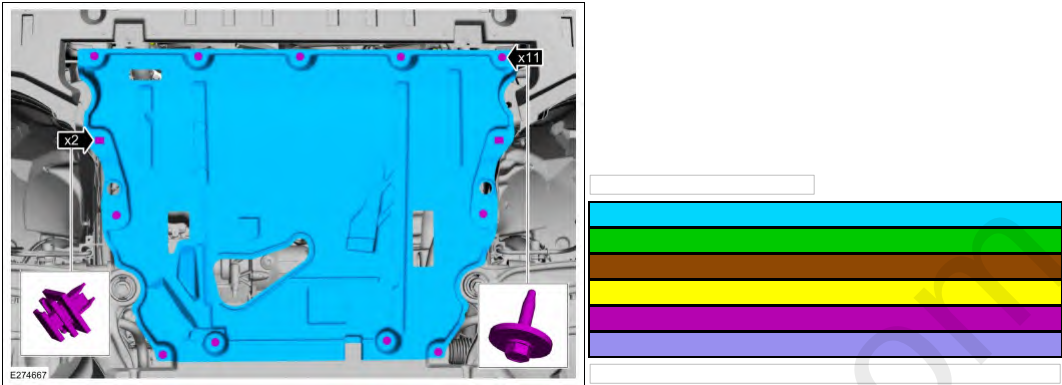
Funnel

Materials

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

Draining

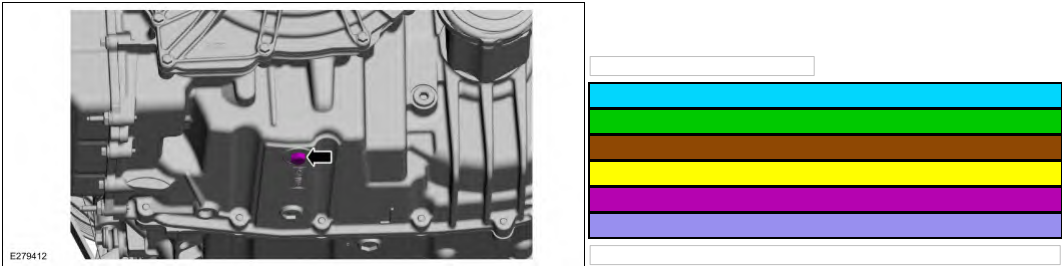
1. With the vehicle in NEUTRAL, position the vehicle on a hoist.
Refer to: Jacking and Lifting - Overview (100-02 Jacking and Lifting, Description and Operation).
2. Remove the retainers and the underbody shield.



3. **NOTE:** Be prepared to collect escaping fluid.
- NOTE:** If an internal problem is suspected, drain the transmission fluid through a paper filter. A small amount of metal or friction particles may be found from normal wear. If an excessive amount of metal or friction material is present, the transmission will need to be overhauled.
- Remove the transmission fluid drain plug and drain the transmission fluid.



4. Install the transmission fluid drain plug.
Torque: 124 lb.in (14 Nm)



Filling

1. Remove the air cleaner.
Refer to: Air Cleaner (303-12A Intake Air Distribution and Filtering - 2.0L EcoBoost (184kW/250PS) â€” M14, Removal and Installation).
2. **NOTICE:** The following fluid amounts listed below are for initial fill only. The transmission fluid must be even with the oil leveling plug hole and the transmission must be at normal operating temperature 85-93Â°C (185-200Â°F) or transmission damage can occur.

Remove the transmission vent cap and fill with transmission fluid.

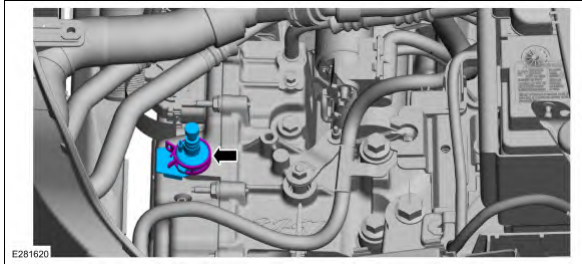
1. Transmission overhaul (includes main control and torque converter drain)

Volume: 6.34 qt (6 L)

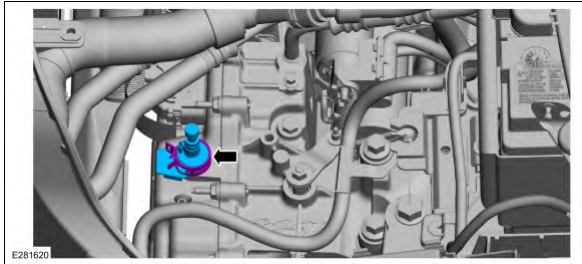
2. Main control overhaul or replace (with out transmission overhaul)

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

Volume: 5.28 qt (5 L)



3. Install the transmission vent.



4. Install the air cleaner.

Refer to: Air Cleaner (303-12A Intake Air Distribution and Filtering - 2.0L EcoBoost (184kW/250PS) â€” MI4, Removal and Installation).

5. Connect the diagnostic scan tool to the vehicle. Monitor the TFT PID.

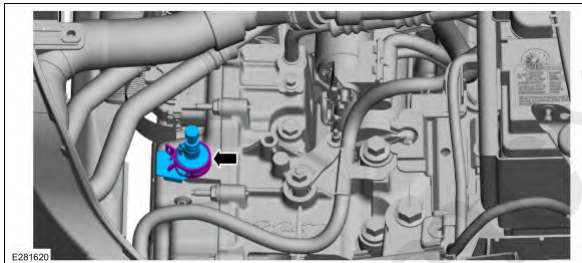
NOTE: If necessary, drive the vehicle until the transmission is at normal operating temperature 85-93Â° C (185-200Â° F).

6. With the engine running in PARK on a level surface make sure the transmission is at normal operating temperature 85-93Â° C (185-200Â° F).

7. Remove the air cleaner.

Refer to: Air Cleaner (303-12A Intake Air Distribution and Filtering - 2.0L EcoBoost (184kW/250PS) â€” MI4, Removal and Installation).

8. Remove the transmission vent.



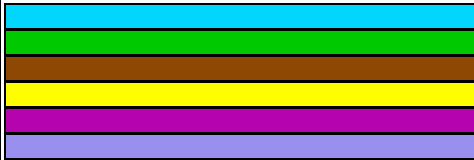
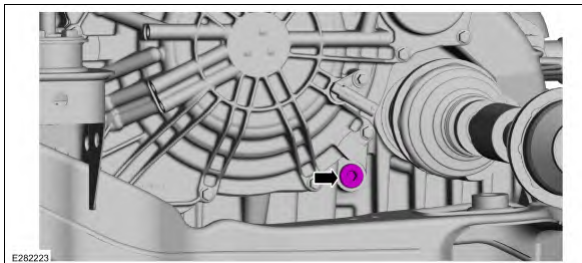
9. Install the air cleaner.

Refer to: Air Cleaner (303-12A Intake Air Distribution and Filtering - 2.0L EcoBoost (184kW/250PS) â€” MI4, Removal and Installation).

10. With the engine running in PARK on a level surface make sure the transmission is at normal temperature 85-93Â° C (185-200Â° F).

11. With foot on the brake, slowly select each gear position, stopping in each position and allowing the transmission to engage.

12. With the engine running in PARK, remove the oil leveling plug.



13. Add clean transmission fluid in increments of 0.25L (0.5 pt) until the transmission fluid is running down the transmission case.

Use the General Equipment: Funnel

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