

Transmission - 6.7L Power Stroke Diesel

Special Tool(s) / General Equipment

 307-346	307-346 (T97T-7902-A) Retainer, Torque Converter TKIT-1998-LM (NavigatorR) TKIT-1997-F/FLM/LT
Floor Crane	
Adjustable Mounting Arm	
Transmission Jack	
Powertrain Jack	
Wooden Block	

Materials

Name	Specification
Motorcraft® Multi-Purpose Grease Spray XL-5-A	ESB-M1C93-B
Motorcraft® MERCON® ULV Automatic Transmission Fluid XT-12-QULV	WSS-M2C949-A, MERCON® ULV

Removal

All vehicles

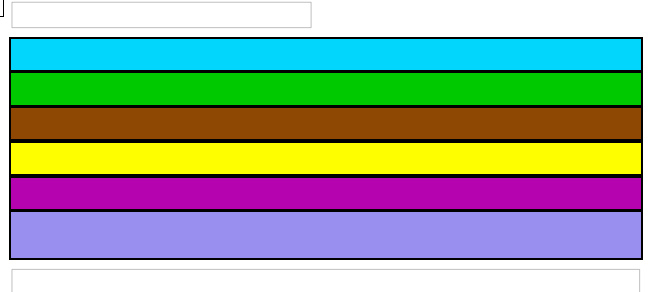
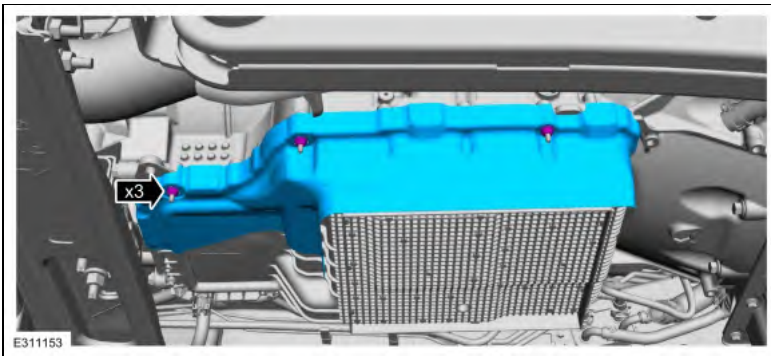
1. With the vehicle in NETURAL, position it on a hoist.
Refer to: Jacking and Lifting - Overview (100-02 Jacking and Lifting, Description and Operation).
2. Remove the following items:
 1. Refer to: Starter Motor (303-06B Starting System - 6.7L Power Stroke Diesel, Removal and Installation).
 2. Refer to: Exhaust Downpipe - Pickup (309-00B Exhaust System - 6.7L Power Stroke Diesel, Removal and Installation).

Four-Wheel Drive (4WD) vehicles

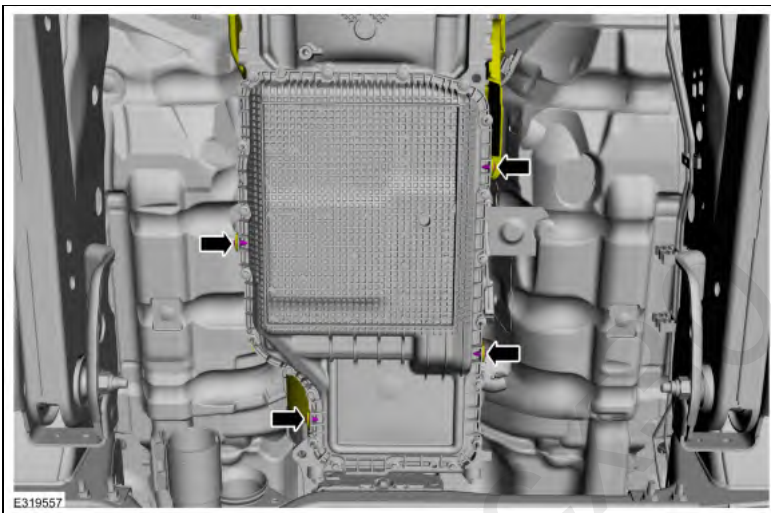
3. Remove the front driveshaft.
Refer to: Front Driveshaft (205-01 Driveshaft, Removal and Installation).

All vehicles

4.
 1. Remove and discard the transmission fluid cooler tube bolt.
 2. Remove the transmission fluid cooler bolts.
 3. Separate the transmission fluid cooler tubes from the transmission case.



7. Remove the retainers and position aside the NVH cover.

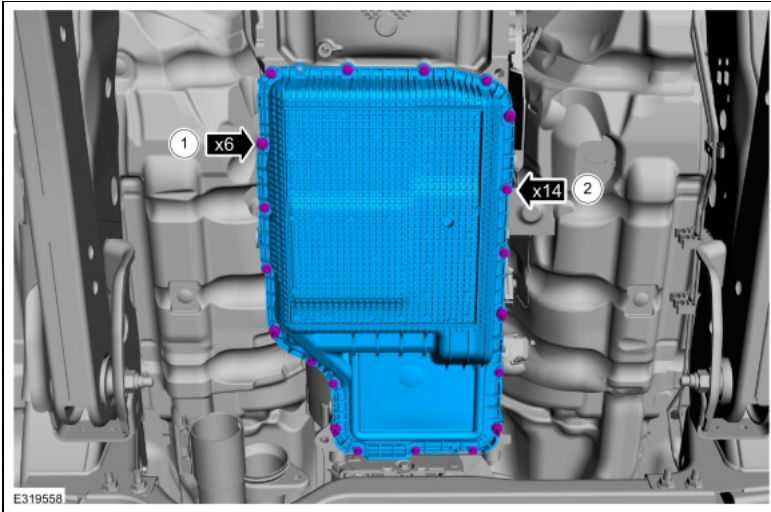


8. **NOTE:** If transmission disassembly or installation of a new transmission is necessary, drain the transmission fluid.

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

Remove the bolts, studbolts and the transmission fluid pan. Allow the transmission fluid to drain.

1. Studbolts
2. Bolts

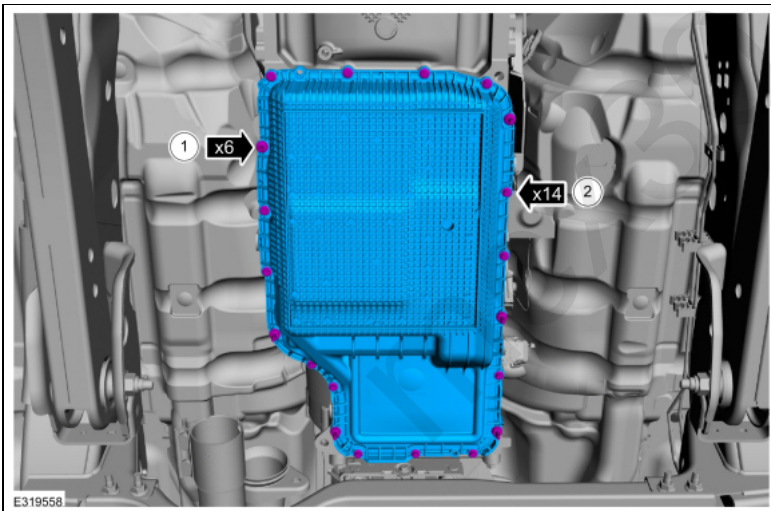


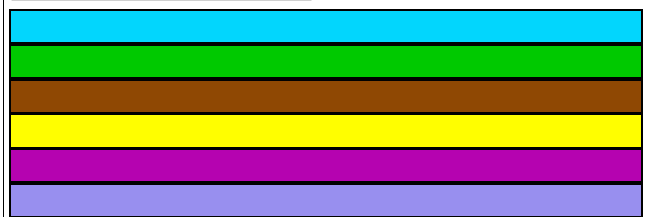


9. **NOTE:** *It is not necessary to torque transmission fluid pan bolts at this time.*

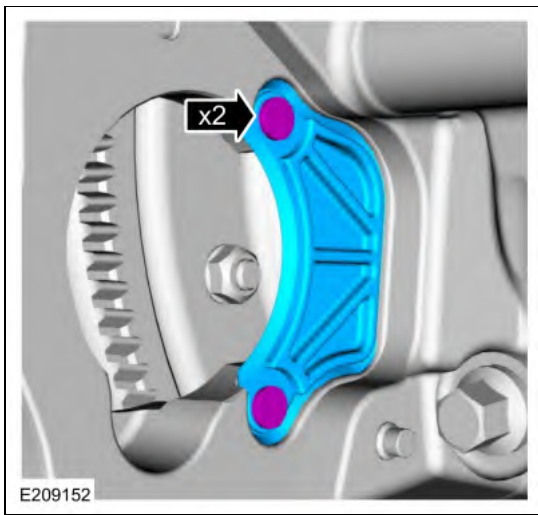
Install the transmission fluid pan and loosely install the studbolts and bolts in the correct location.

1. Studbolts
2. Bolts





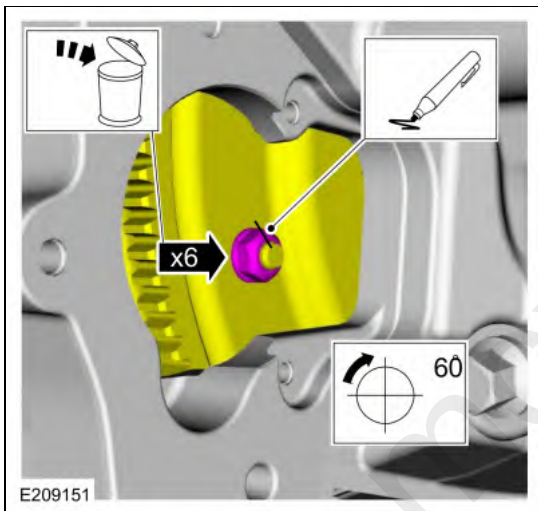
10. Remove the retainers and the access cover.



11. **NOTE:** Index-mark the end of one torque converter stud and the flexplate for installation.

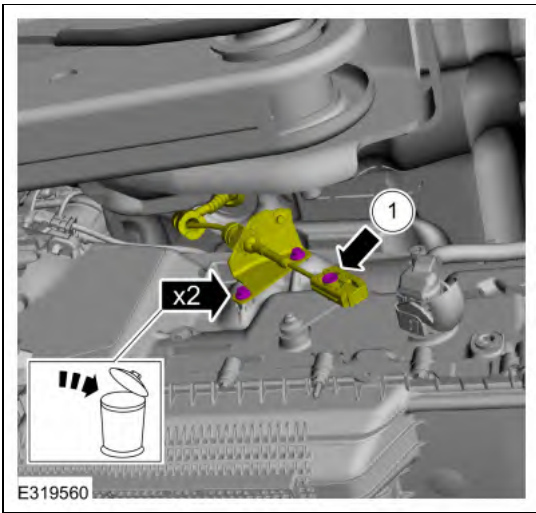
NOTE: Using the crankshaft pulley bolts, turn the engine clockwise.

Remove and discard the torque converter nuts (W715618).



12.

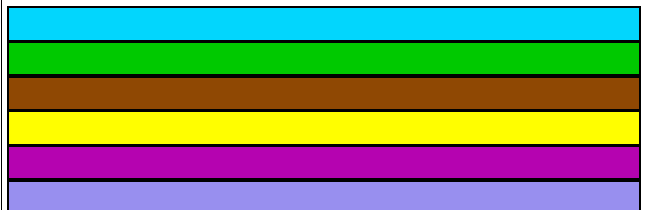
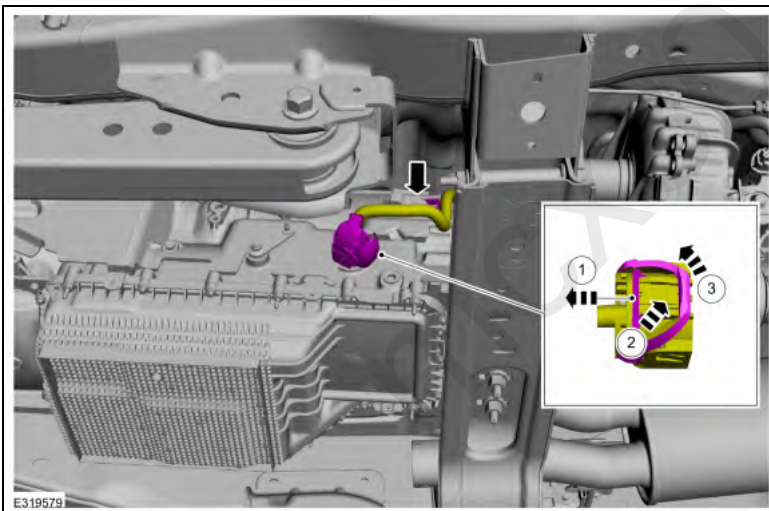
1. Disconnect the selector lever cable from the manual control lever.
2. Remove and discard the bolts (W714824) and position the selector lever cable and bracket aside.



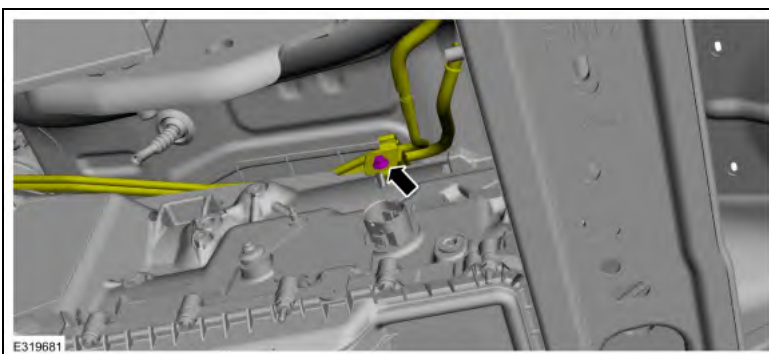
13. **NOTICE: Do not pull on the wire harness to disconnect/connect the connector or damage to the connector/wire harness will occur.**

Disconnect the electrical connector and the wiring harness retainer..

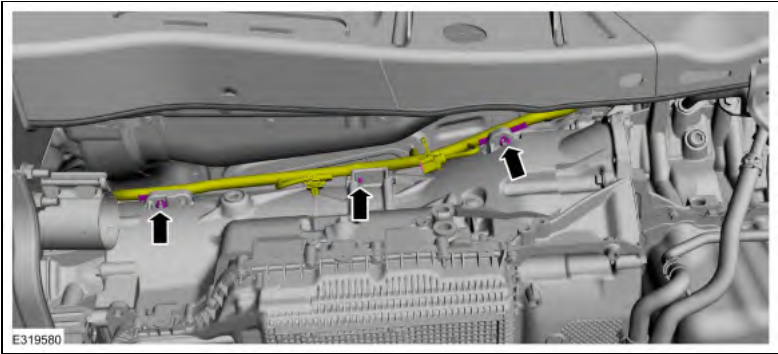
1. Slide the safety lock out.
2. Press the connector tab in.
3. Rotate the locking arm up and disconnect the transmission electrical connector.



14. Remove the fuel line bracket bolt.



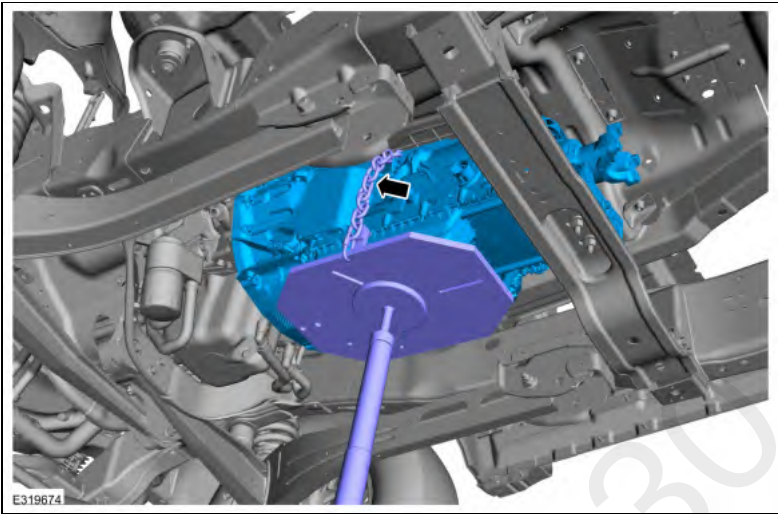
15. Disconnect the wiring harness retainers from the transmission case and position the wiring harness aside.



Rear Wheel Drive (RWD) vehicles

16. **NOTICE:** Secure the transmission to the transmission jack with a safety strap.

Using a high-lift transmission jack, support the transmission.
Use the General Equipment: Transmission Jack



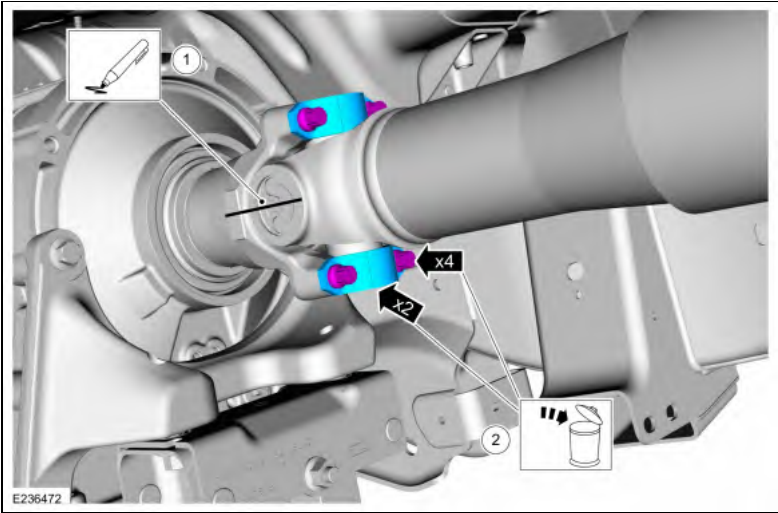
17. Remove the transmission support crossmember.
Refer to: Transmission Support Crossmember (502-02 Full Frame and Body Mounting, Removal and Installation).

Rear Wheel Drive (RWD) vehicles equipped with a slip yoke

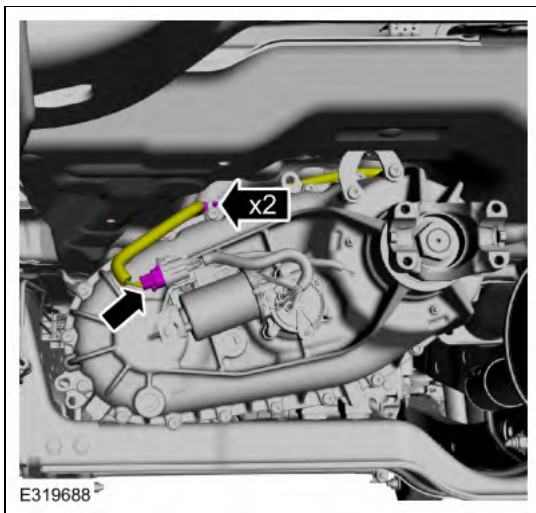
18. Remove the rear driveshaft.
Refer to: Rear Driveshaft (205-01 Driveshaft, Removal and Installation).

Rear Wheel Drive (RWD) vehicles equipped with a fixed yoke

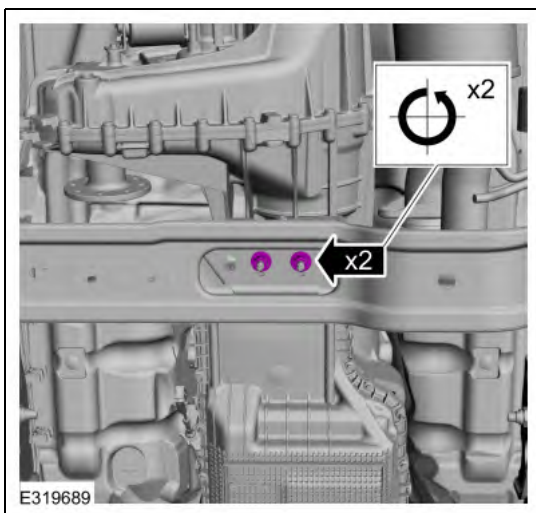
19. **NOTE:** It may be necessary to tap the driveshaft yoke with a plastic or rubber soft-faced hammer if a pry area is not present on the driveshaft side.
1. Index mark the rear driveshaft.
 2. Remove and discard the driveshaft to output shaft flange bolts and straps (4A254).



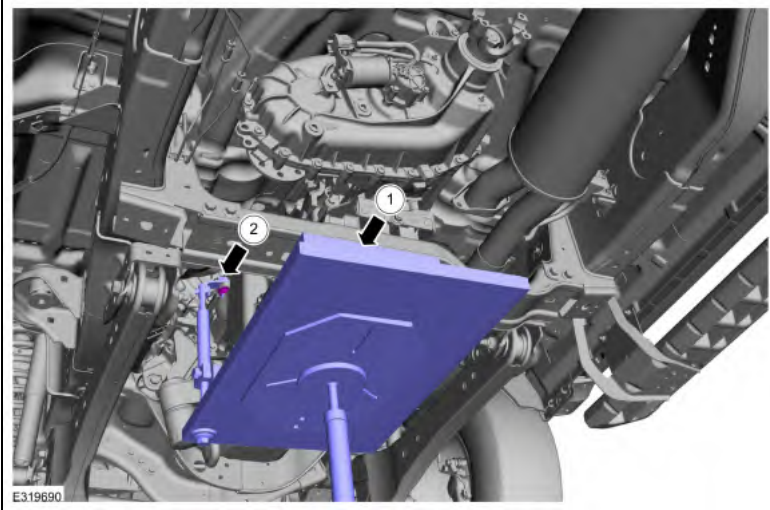
20. Remove and discard the center bearing mounting bolts from the center bearing bracket. Position aside and support the driveshaft.



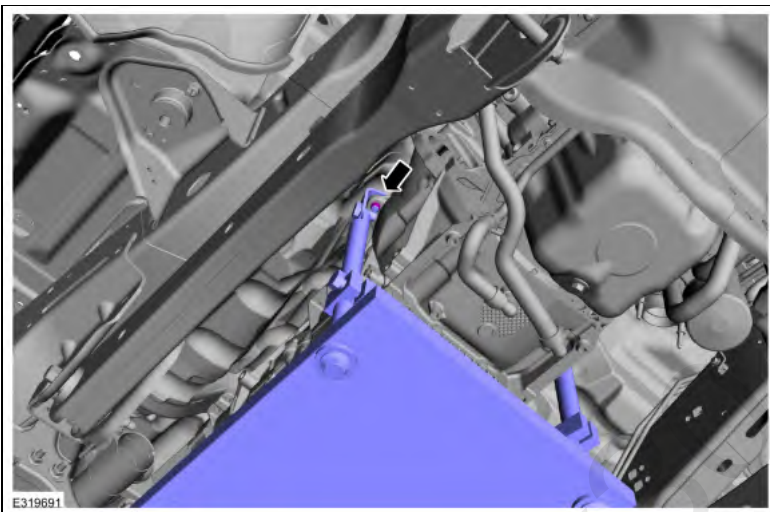
24. Loosen the transmission support insulator nuts.



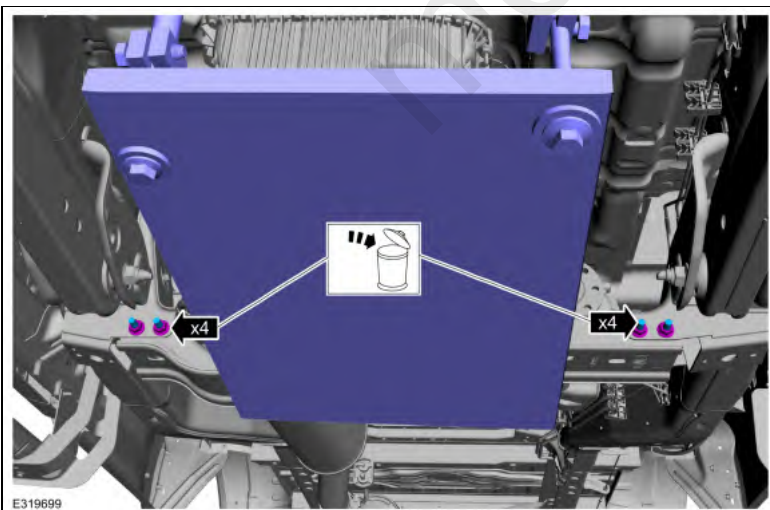
25. Position the powertrain jack under the transmission and the transmission support crossmember.
1. Place a block of wood under the transmission support crossmember.
 2. Attach the LH adjustable mounting arm to the transmission case.
- Use the General Equipment: Powertrain Jack
 Use the General Equipment: Wooden Block
 Use the General Equipment: Adjustable Mounting Arm



26. Attach the RH adjustable mounting arm to the transmission case.
Use the General Equipment: Adjustable Mounting Arm

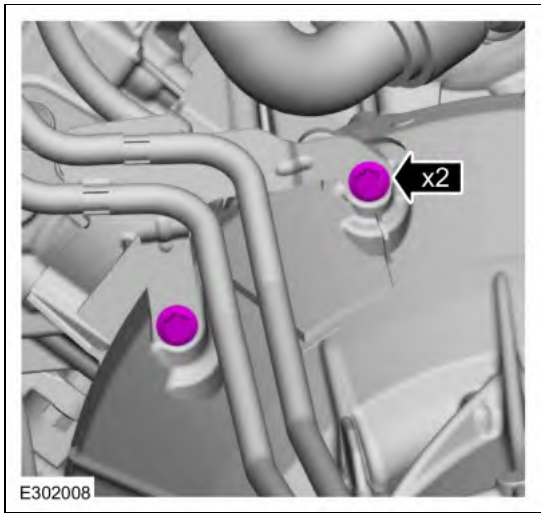


27. Remove and discard the transmission support crossmember nuts and bolts.



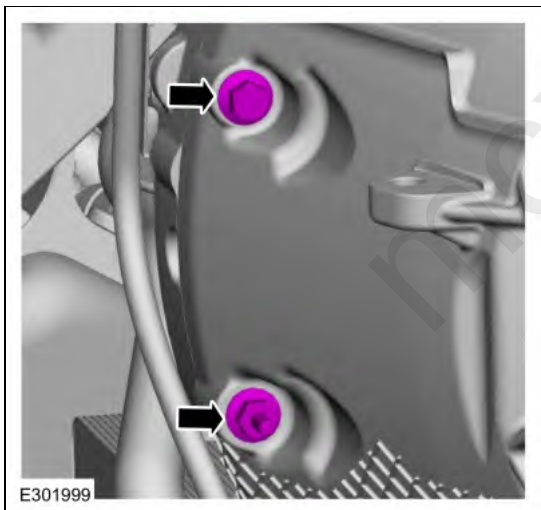
All vehicles

28. Remove the fuel tube bracket bolts from the transmission bellhousing.

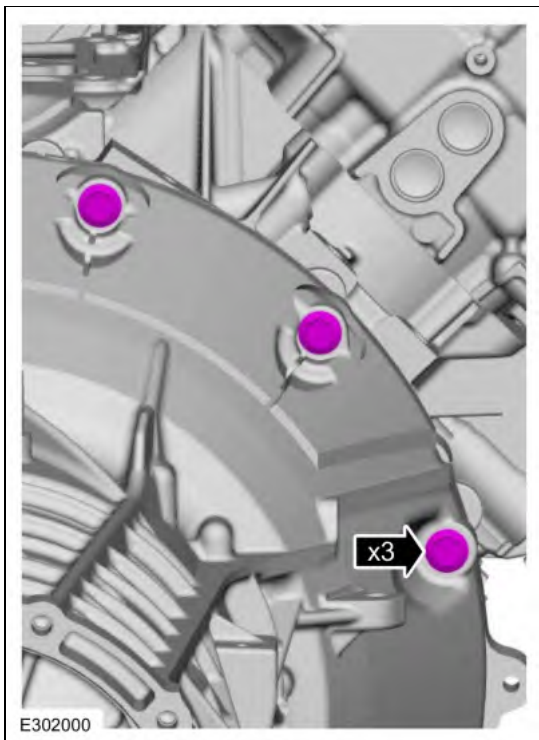


29. **NOTE:** *Mark the location of the stud bolt.*

Remove the LH side bellhousing stud bolt and the bolt.



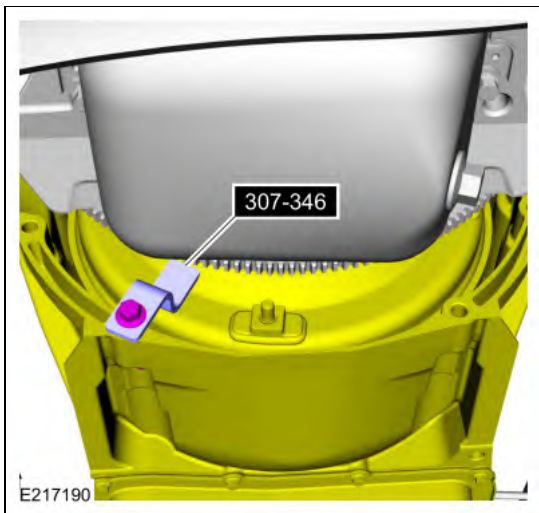
30. Remove the RH side bellhousing bolts.



31. **NOTE:** Mark the location of the stud bolt.
- Remove the stud bolt and the lower bellhousing bolts.



32. **NOTE:** Be sure to position the Torque Converter Retainer in the proper position to ensure the torque converter is held securely in place.
- Slide the transmission back enough to install the special tool.
- Install Special Service Tool: 307-346 (T97T-7902-A) Retainer, Torque Converter.

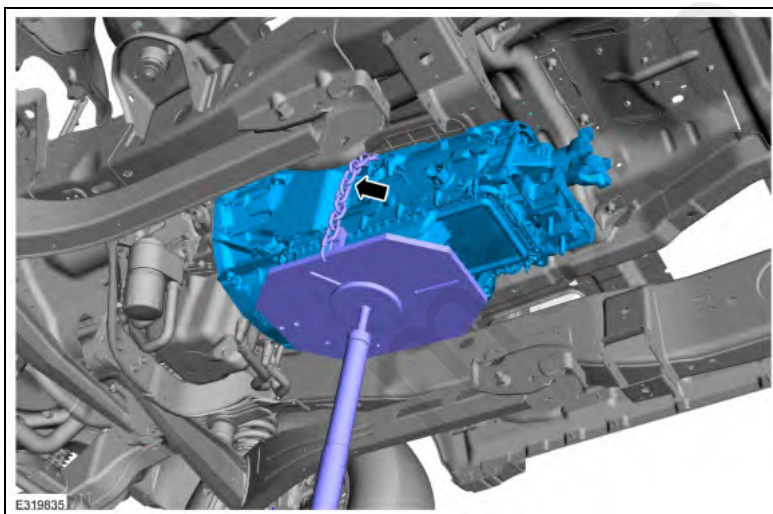


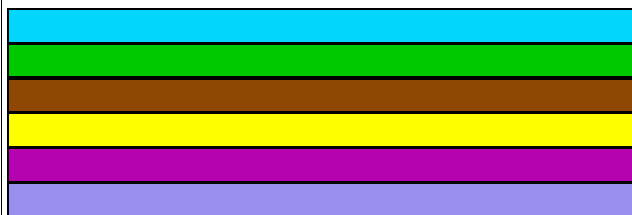


Rear Wheel Drive (RWD) vehicles

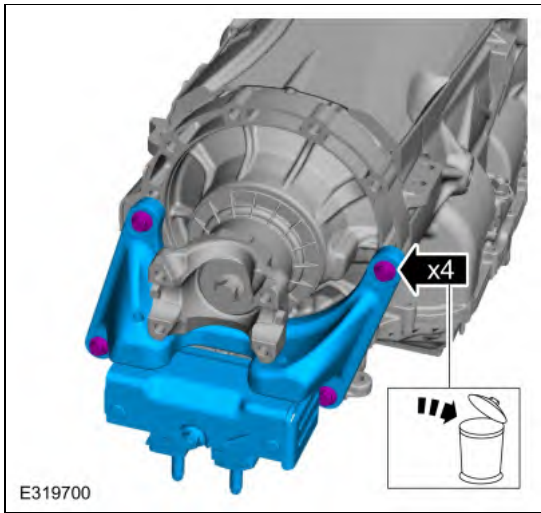
33. **NOTICE:** Secure the transmission to the transmission jack with a safety strap.

Using the high-lift transmission jack, remove the transmission.
Use the General Equipment: Transmission Jack



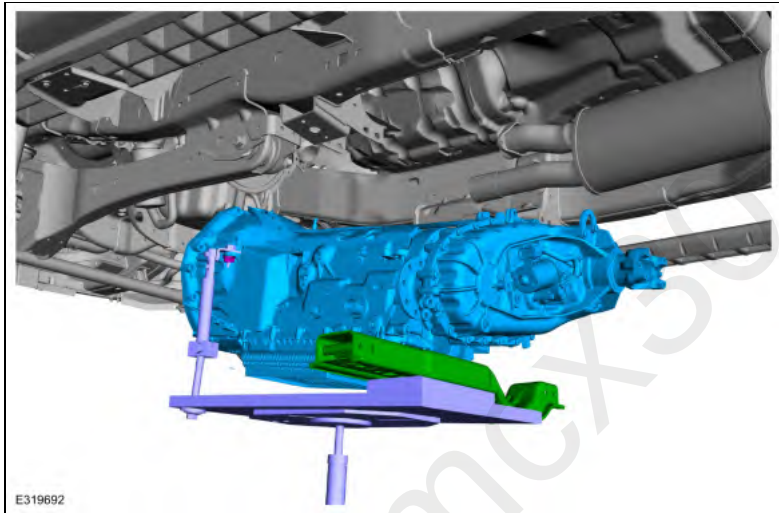


34. If the transmission is to be overhauled or if installing a new or re-manufactured transmission, remove and discard the bolts (N605804) and remove the transmission support insulator bracket.

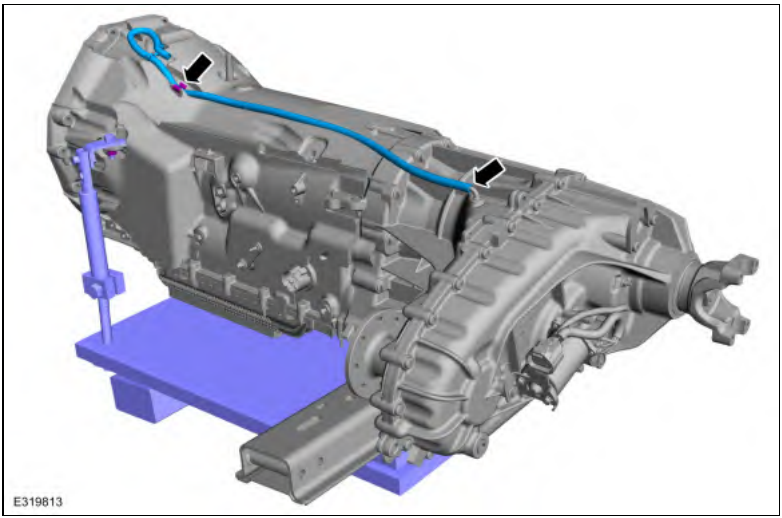


Four-Wheel Drive (4WD) vehicles

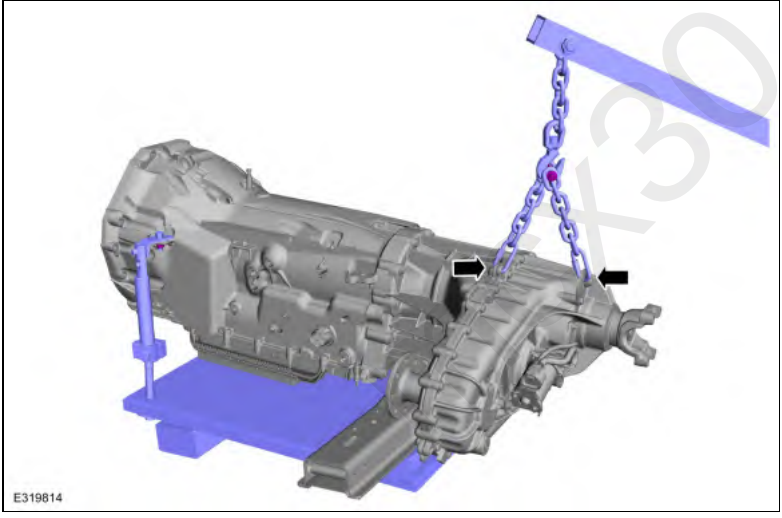
35. Using the powertrain jack, remove the transmission, transfer case and the transmission support crossmember.
 Use the General Equipment: Powertrain Jack



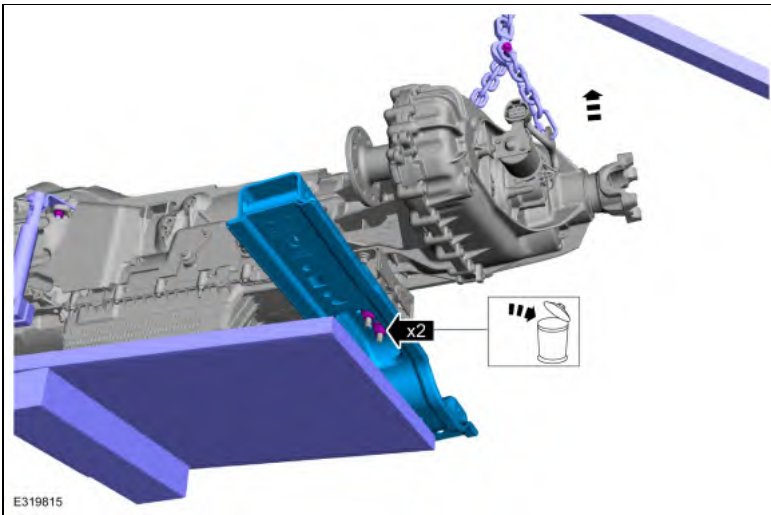
36. If the transmission is to be overhauled or if installing a new or re-manufactured transmission, remove the transfer case vent tube.



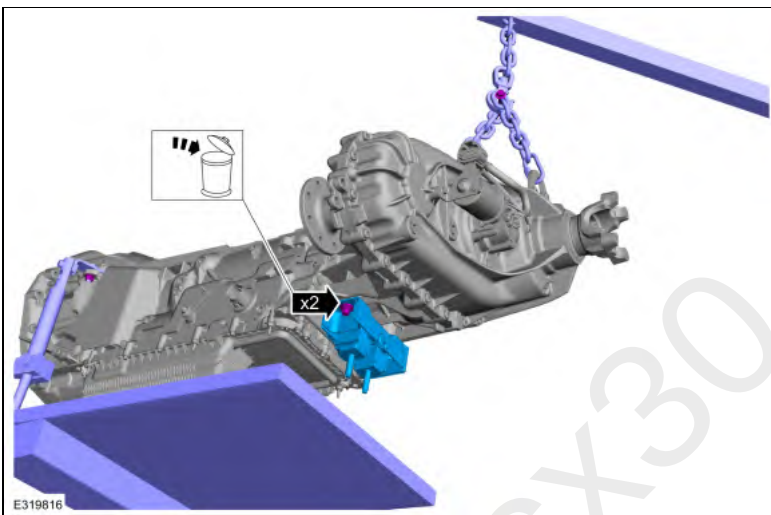
37. If the transmission is to be overhauled or if installing a new or re-manufactured transmission, attach the floor crane to the transfer case assembly.
Use the General Equipment: Floor Crane



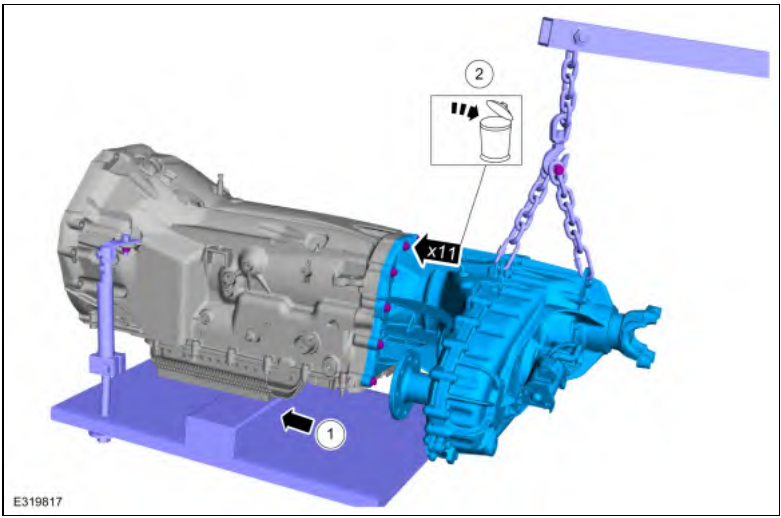
38. If the transmission is to be overhauled or if installing a new or re-manufactured transmission, use the floor crane to raise the transfer case assembly. Remove the transmission support crossmember and discard the nuts (W709771).
Use the General Equipment: Floor Crane



39. If the transmission is to be overhauled or if installing a new or re-manufactured transmission, remove the transmission support insulator and discard the bolts (391558).

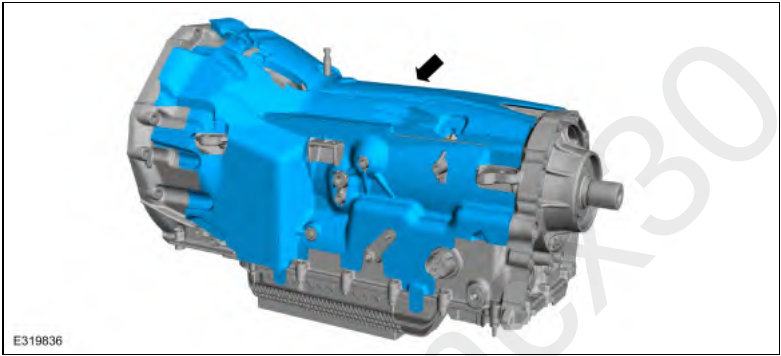


40. If the transmission is to be overhauled or if installing a new or re-manufactured transmission, remove the transfer case from the transmission.
1. Support the transmission with a wooden block.
Use the General Equipment: Wooden Block
 2. Remove and discard the bolts (N605804) and separate the transfer case from the transmission.
Use the General Equipment: Floor Crane



All vehicles

41. If the transmission is to be overhauled or if installing a new or re-manufactured transmission, remove the transmission NVH cover.



42. **NOTICE: Failure to flush the transmission fluid cooler can result in metallic contamination of the transmission.**

If installing a new, remanufactured or overhauled transmission, clean and backflush the transmission fluid cooler to prevent repeat repairs.

Refer to: Transmission Fluid Cooler - Backflushing and Cleaning (307-02B Transmission Cooling - 10-Speed Automatic Transmission â€™ 10R140, General Procedures).

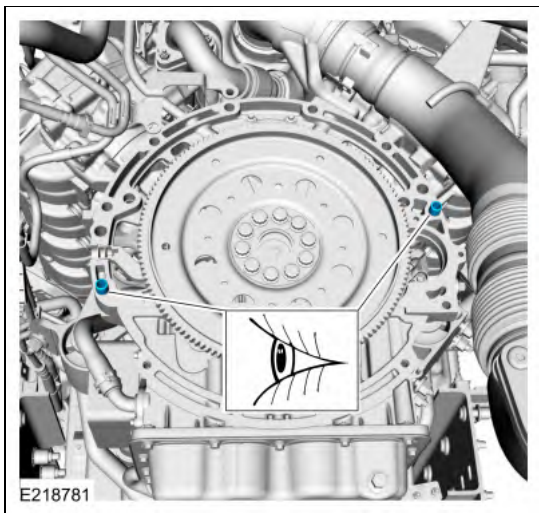
43. **NOTICE: Failure to clean the Power Take-Off (PTO) can result in metallic contamination of the transmission.**

For vehicles equipped with a PTO assembly, prior to installing the transmission, flush and clean the PTO assembly to remove any foreign material. Failure to remove foreign material from the PTO assembly may result in subsequent transmission concerns.

Installation

All vehicles

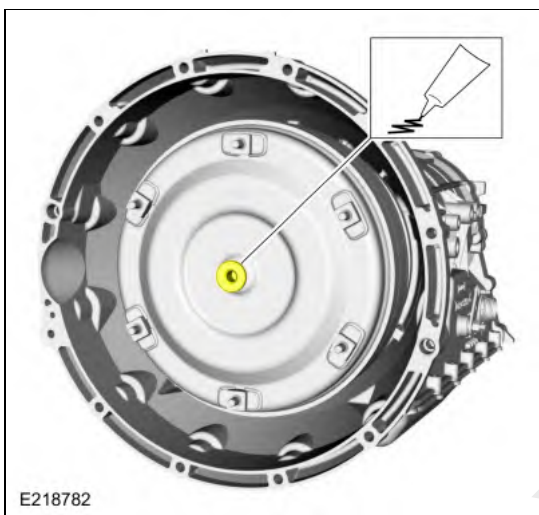
1. Inspect the back of the engine to be sure both dowel pins are in the engine. If the dowel pins are not in the engine, install new dowel pins as needed. If installing the same transmission that was removed, remove the dowel pins from the transmission and install them in the engine. Rotate the flexplate to align the 2 slots at the 6 o'clock position.



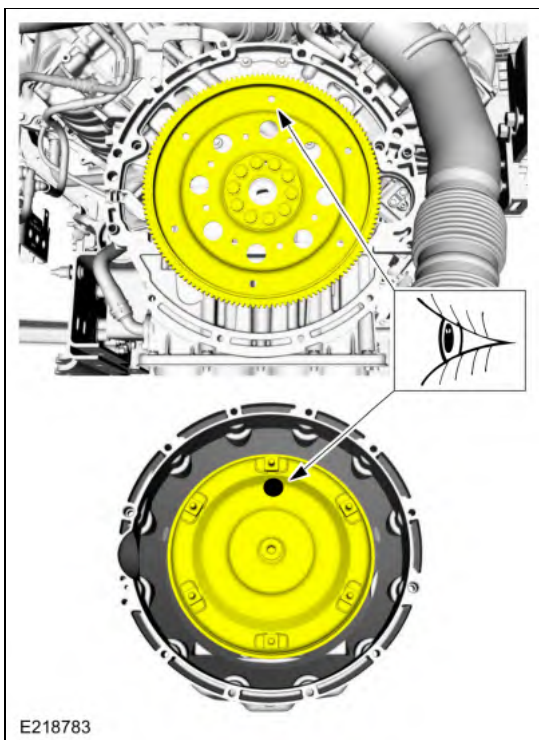
2. **NOTICE:** Prior to installation of the transmission, lubricate the torque converter pilot hub or damage to the torque converter or the engine crankshaft can occur.

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

Material: Motorcraft® Multi-Purpose Grease Spray / XL-5-A (ESB-M1C93-B)



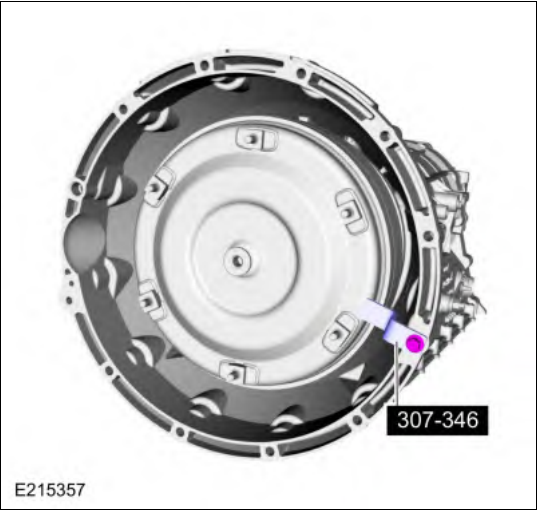
3. Align the paint dot on the torque converter in the 12 o'clock position.



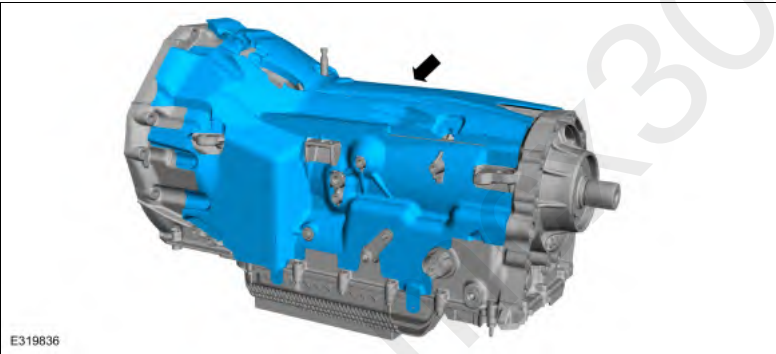
4. **NOTE:** Be sure to position the Torque Converter Retainer in the proper position to ensure the torque converter is held securely in place.

Install the special tool.

Install Special Service Tool: 307-346 (T97T-7902-A) Retainer, Torque Converter.

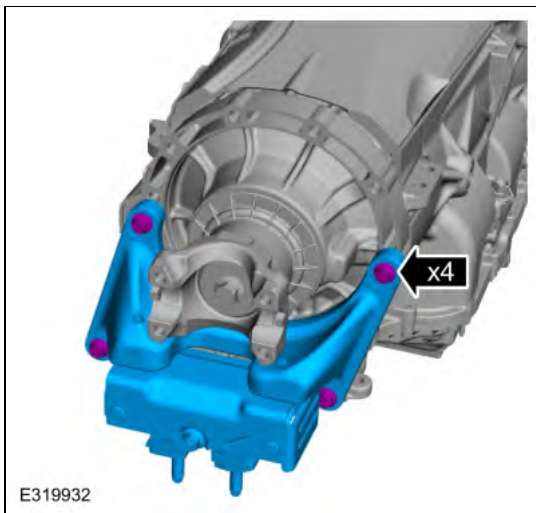


5. If removed, install the transmission NVH cover.



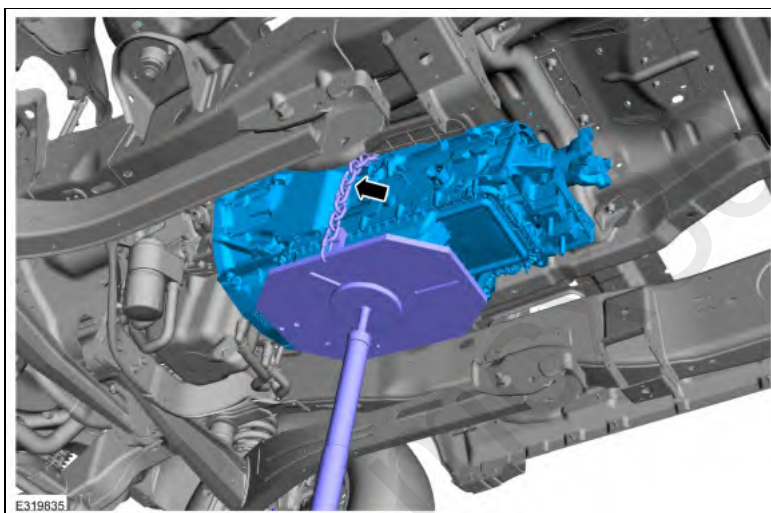
Rear Wheel Drive (RWD) vehicles

6. If removed, install the transmission support insulator bracket and new bolts.
Torque: 41 lb.ft (55 Nm)



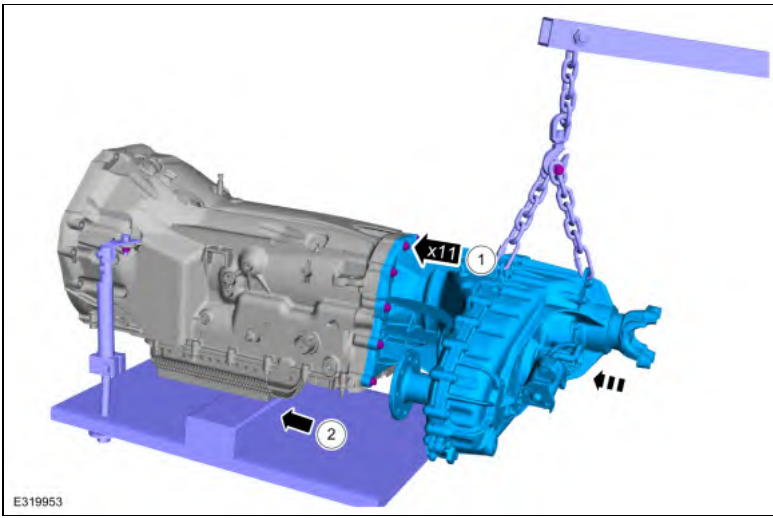
7. NOTICE: Secure the transmission to the transmission jack with a safety strap.

Using the high-lift transmission jack, position the transmission behind the engine.
Use the General Equipment: Transmission Jack

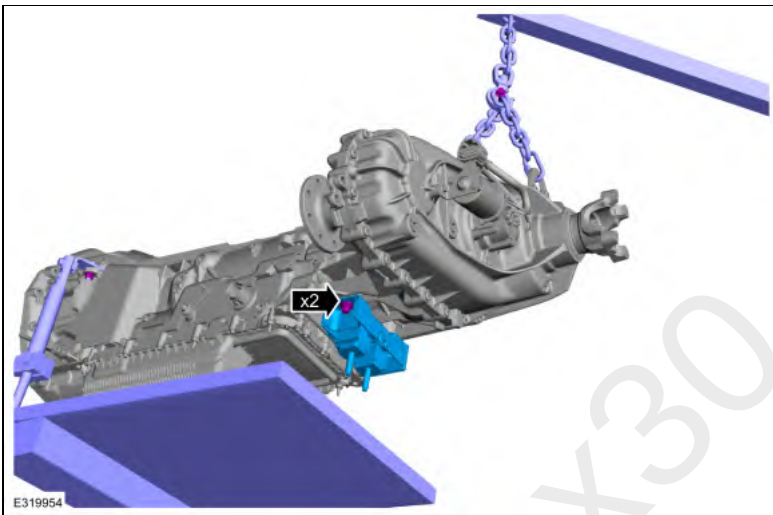


Four-Wheel Drive (4WD) vehicles

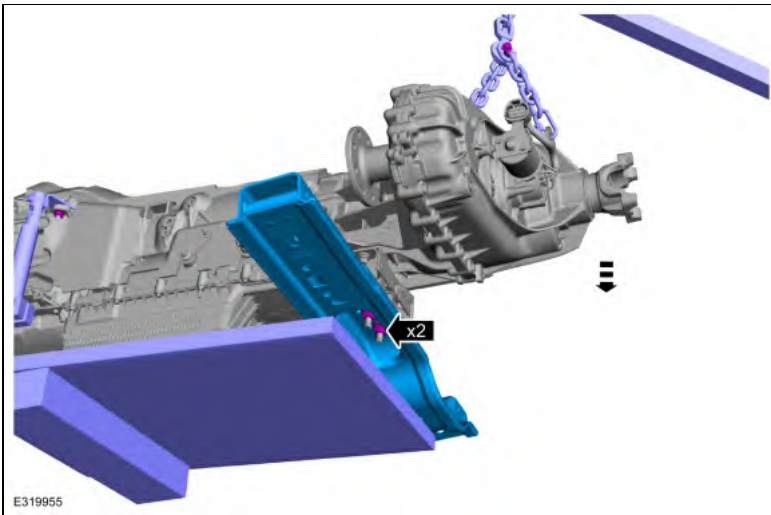
8. If removed, use the floor crane to install the transfer case and the new bolts.
 1. Install the new bolts in a crisscross pattern.
Use the General Equipment: Floor Crane
Torque: 41 lb.ft (55 Nm)
 2. Remove the wooden block.
Use the General Equipment: Wooden Block



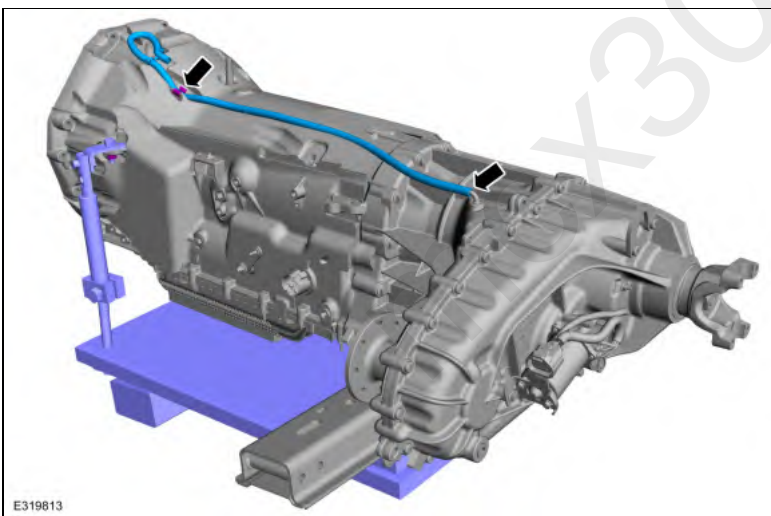
9. If removed, install the transmission support insulator and the new bolts.
Torque: 76 lb.ft (103 Nm)



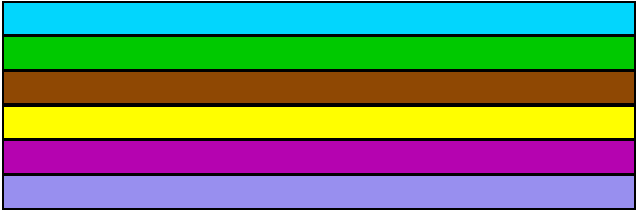
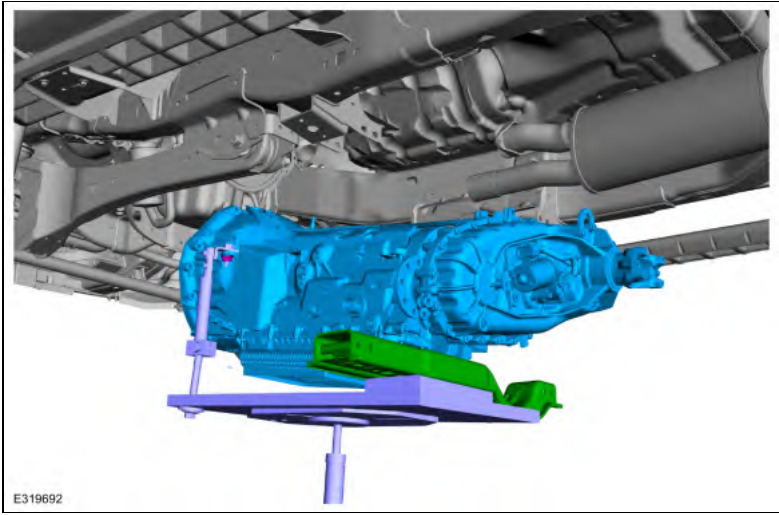
10. If removed, install the transmission support crossmember and loosely install the new nuts.
 Use the General Equipment: Floor Crane



11. If removed, install the transfer case vent tube.

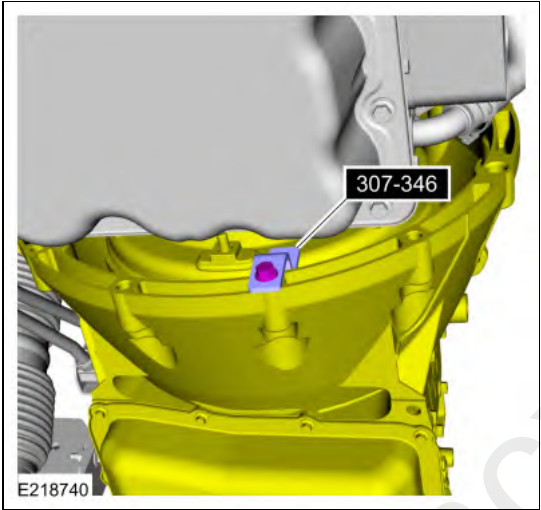


12. Using the powertrain jack, position the transmission, transfer case and the transmission support crossmember behind the engine.
Use the General Equipment: Powertrain Jack

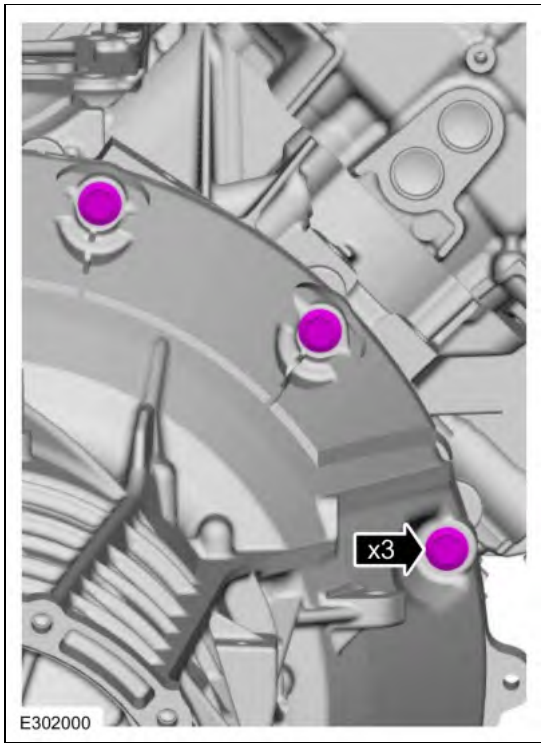


All vehicles

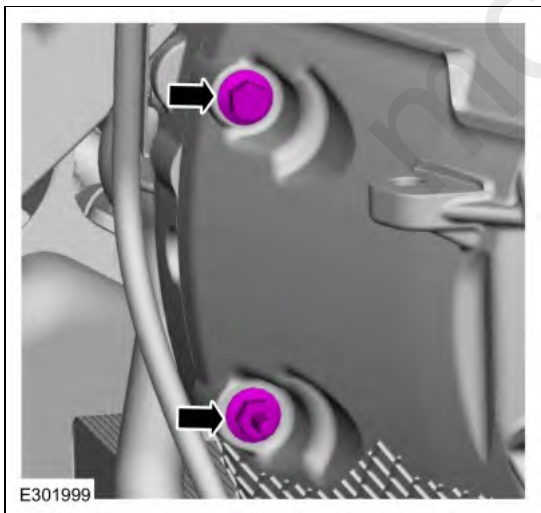
13. Remove the special tool.
Remove Special Service Tool: 307-346 (T97T-7902-A) Retainer, Torque Converter.



14. Install the RH bellhousing bolts.
Torque: 46 lb.ft (63 Nm)



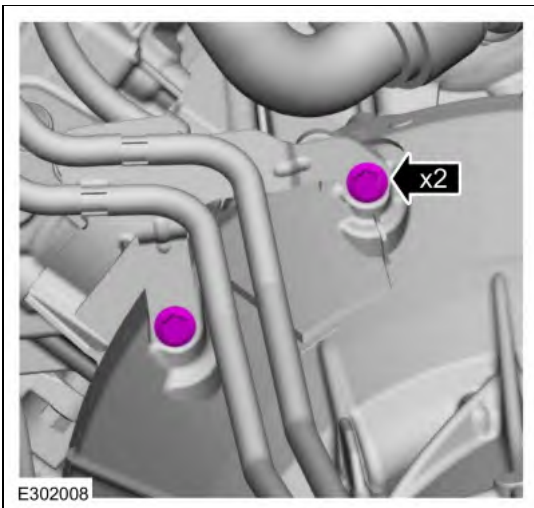
15. Install the LH bellhousing stud bolt and the bolt.
Torque: 46 lb.ft (63 Nm)



16. Install the lower engine bellhousing bolts and the stud bolt.
Torque: 46 lb.ft (63 Nm)

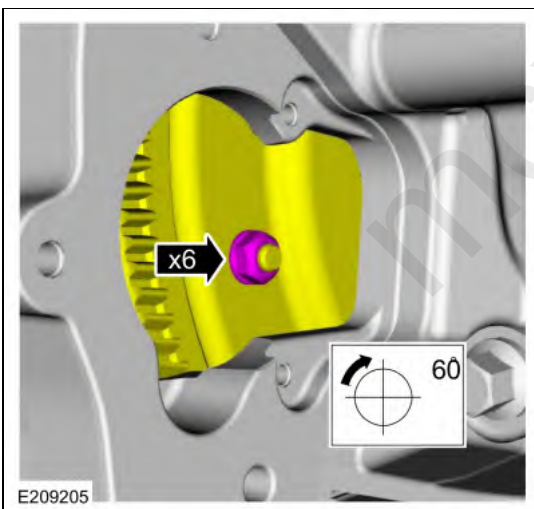


17. Install the fuel tube bracket bolts to the transmission bellhousing.
Torque: 46 lb.ft (63 Nm)

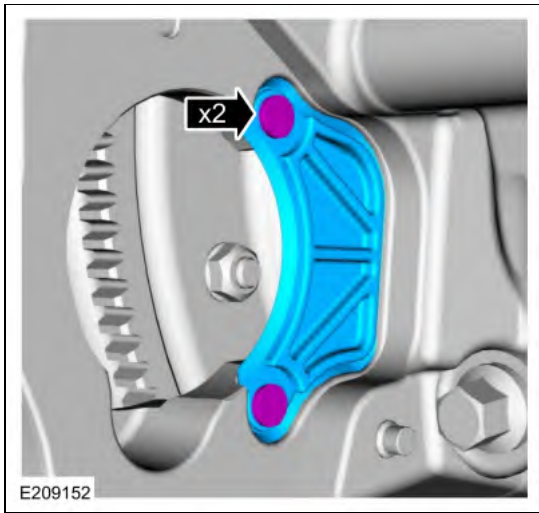


18. **NOTE:** Using the crankshaft pulley bolts, turn the engine clockwise.

Install the new torque converter nuts.
Torque: 41 lb.ft (55 Nm)

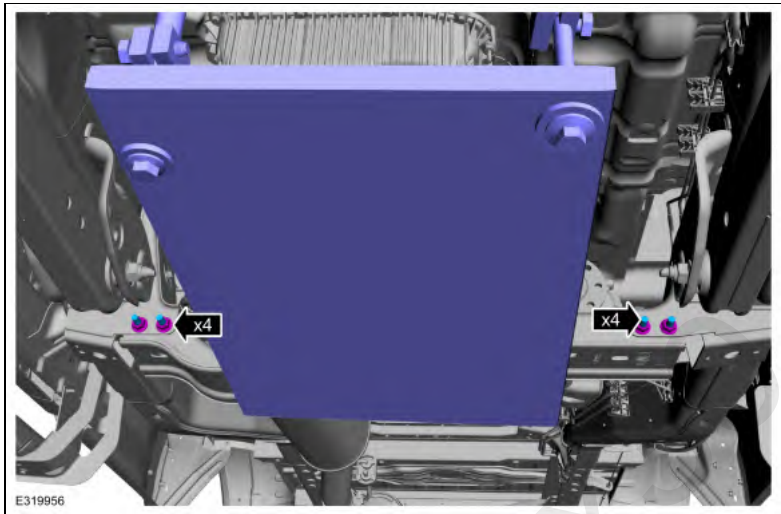


19. Install the access cover and the retainers.

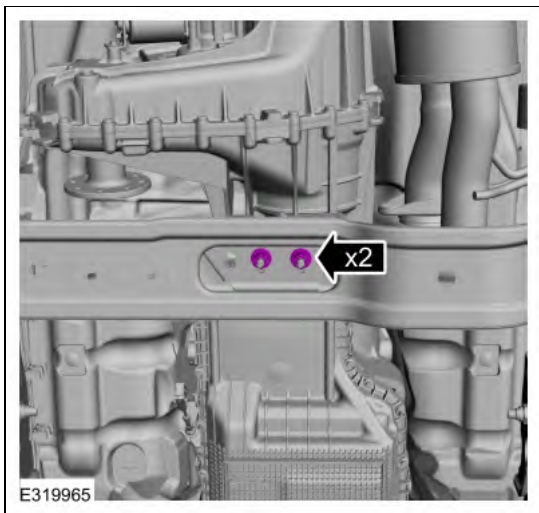


Four-Wheel Drive (4WD) vehicles

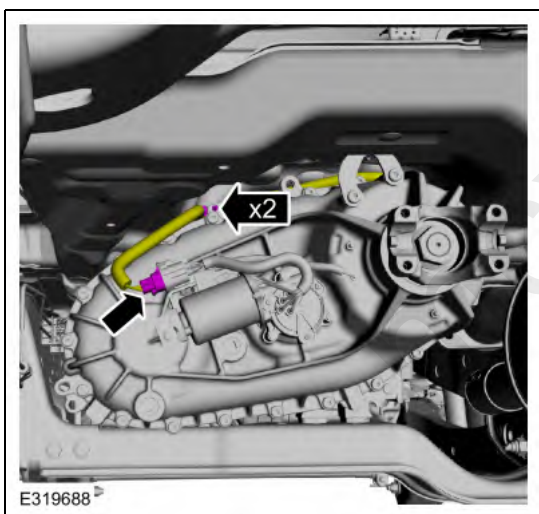
20. Install the transmission support crossmember and the new nuts and bolts.
Torque: 81 lb.ft (110 Nm)



21. Tighten the new transmission support insulator nuts.
Torque: 85 lb.ft (115 Nm)

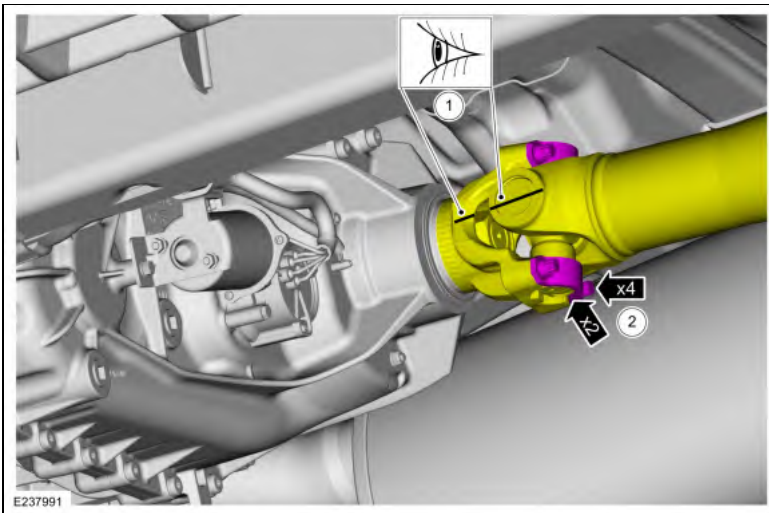


22. Connect the transfer case electrical connector and the wiring harness retainers.



Four-Wheel Drive (4WD) vehicles equipped with a fixed yoke

23. Connect the rear driveshaft.
1. Align the index marks and connect driveshaft and U-joint flange.
 2. Install the new U-joint straps and new U-joint strap bolts.
Torque: 46 lb.ft (63 Nm)



Four-Wheel Drive (4WD) vehicles equipped with a slip yoke

24. Install the rear driveshaft.
Refer to: Rear Driveshaft (205-01 Driveshaft, Removal and Installation).

Rear Wheel Drive (RWD) vehicles

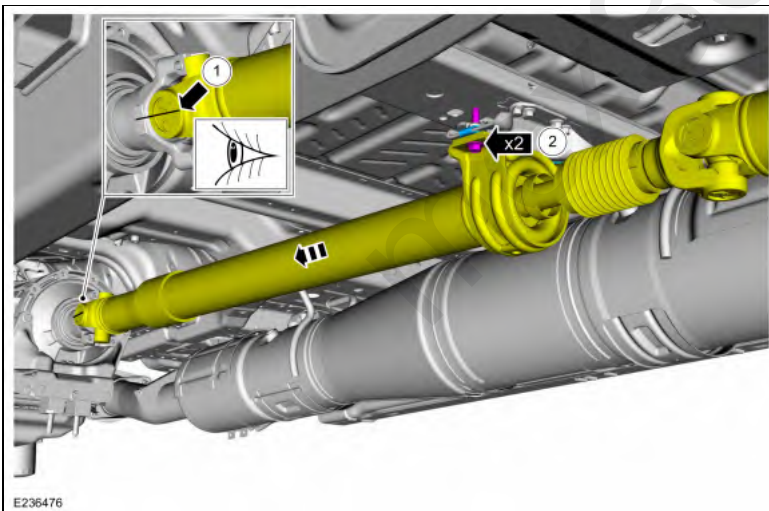
25. Install the Transmission Support Crossmember.
Refer to: Transmission Support Crossmember (502-02 Full Frame and Body Mounting, Removal and Installation).

Rear Wheel Drive (RWD) vehicles equipped with a slip yoke

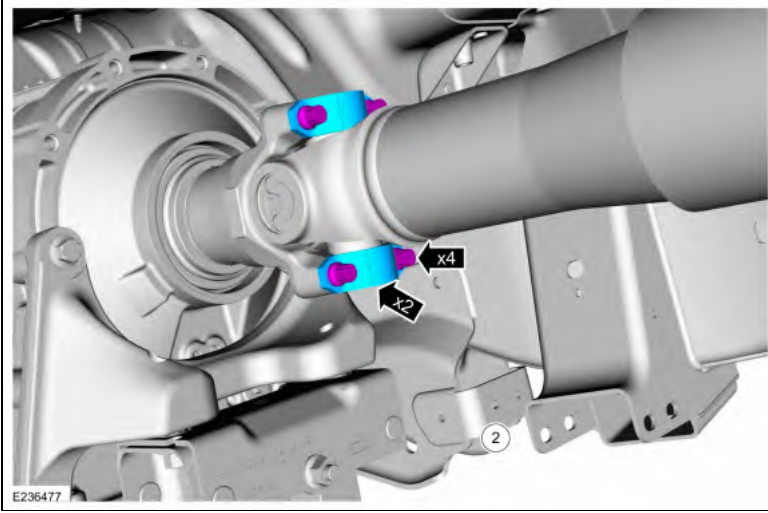
26. Install the rear driveshaft.
Refer to: Rear Driveshaft (205-01 Driveshaft, Removal and Installation).

Rear Wheel Drive (RWD) vehicles equipped with a fixed yoke

27.
 1. Position the driveshaft on the flange, align the driveshaft flange yoke index mark made during removal.
 2. Install the new center bearing mounting bolts.
Torque: 52 lb.ft (70 Nm)

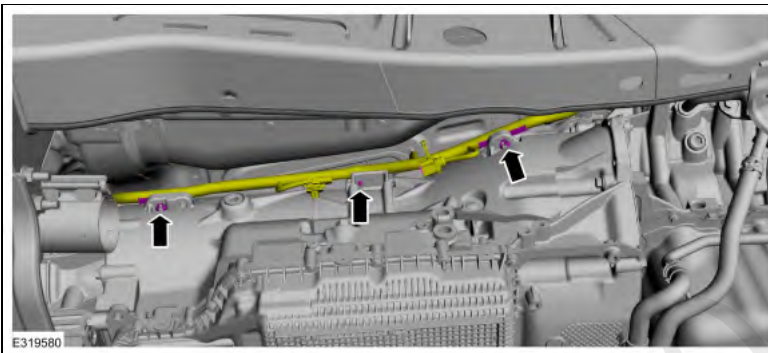


28. Install the new bearing straps (4A254) and the new bolts.
Torque: 46 lb.ft (63 Nm)

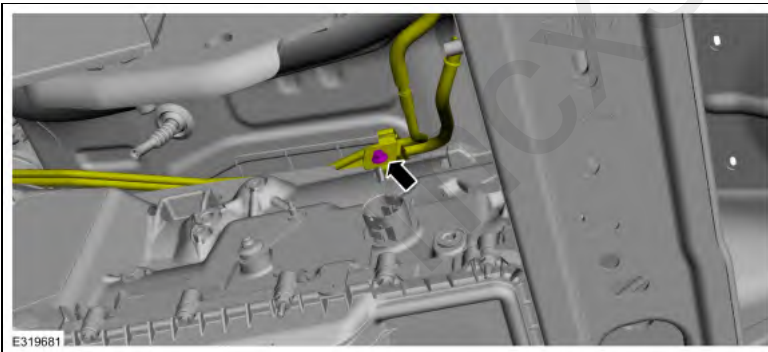


All vehicles

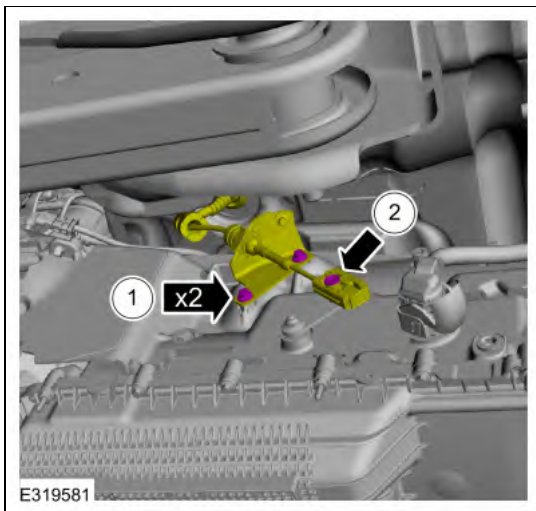
29. Position the wiring harness and attach the wiring harness retainers on the transmission case.



30. Install the fuel line bracket bolt.
Torque: 26 lb.ft (35 Nm)



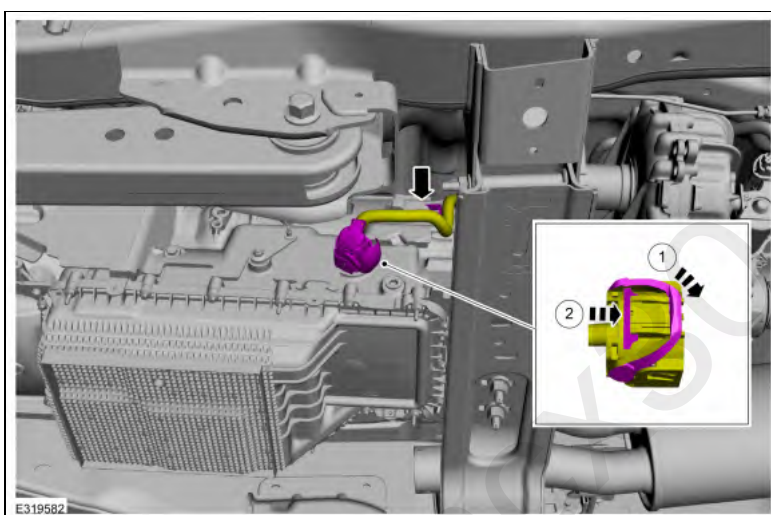
31.
 1. Position the selector lever cable bracket and install the new bolts.
Torque: 35 lb.ft (48 Nm)
 2. Connect the selector lever cable to the manual control lever.



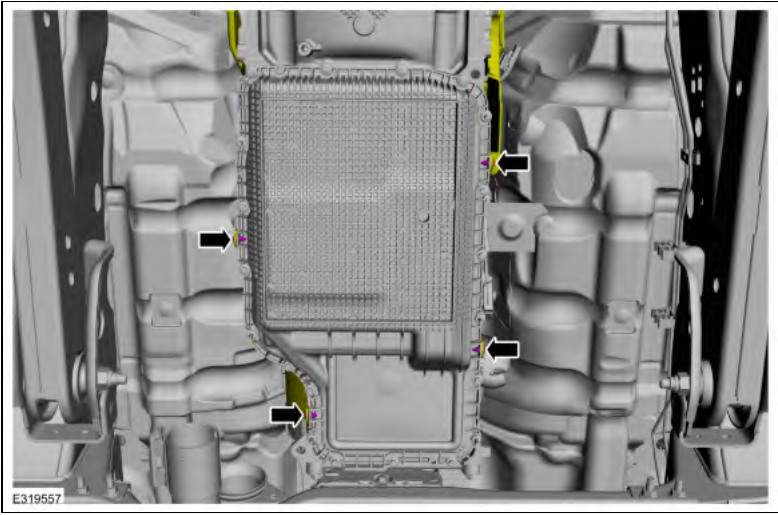
32.

Connect the transmission electrical connector and attach the wiring harness retainer.

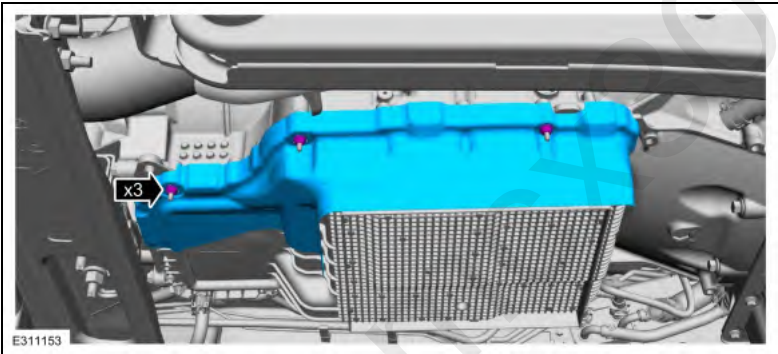
1. Rotate the locking arm down and connect the transmission electrical connector.
2. Slide the safety lock in.



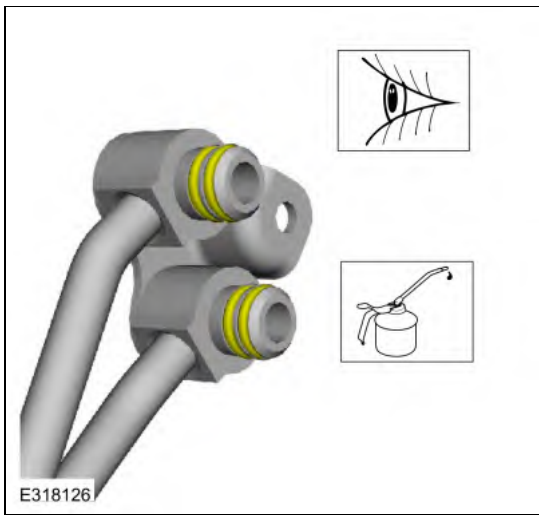
33. Install the NVH cover retainers.



34. Install the heat shield and the nuts.
Torque: 80 lb.in (9 Nm)



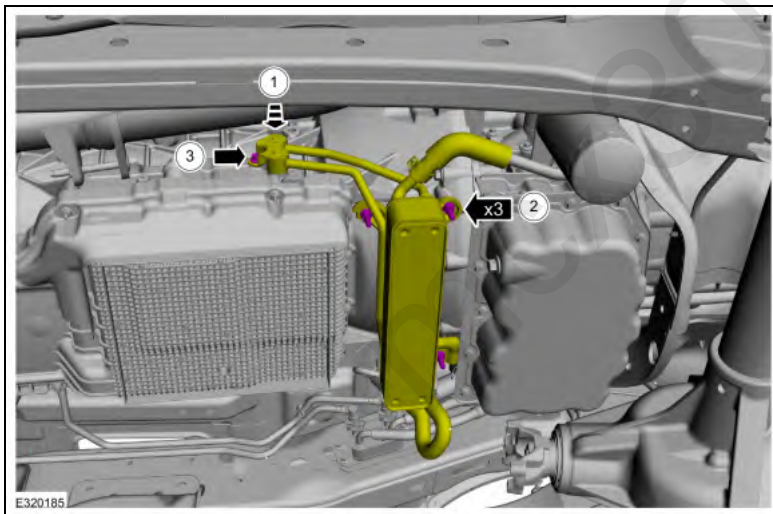
35. Inspect the transmission fluid cooler O-ring seals and install new O-ring seals if necessary. Lubricate the O-ring seals.
Material: Motorcraft® MERCON® ULV Automatic Transmission Fluid / XT-12-QULV (WSS-M2C949-A,) (MERCON® ULV)

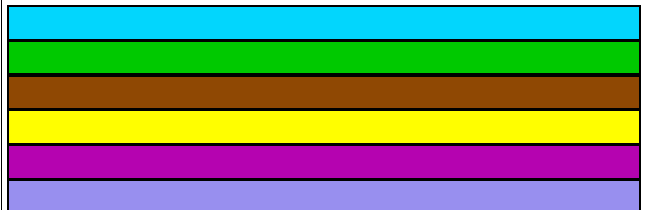




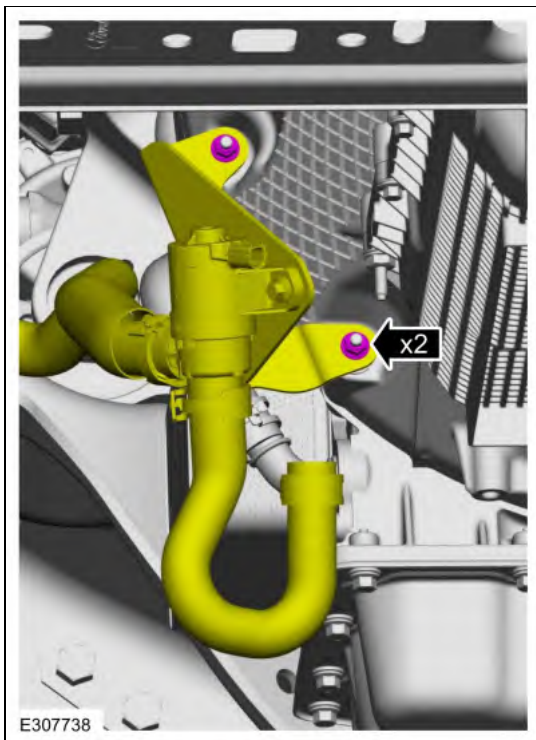
36.

1. Connect the transmission fluid cooler tubes to the transmission case.
2. Install the transmission fluid cooler bolts.
Torque: 177 lb.in (20 Nm)
3. Install the new transmission fluid cooler tube bolt.
Torque: 177 lb.in (20 Nm)





37. Position back the valve and install the nuts.
Torque: 106 lb.in (12 Nm)



Four-Wheel Drive (4WD) vehicles

38. Install the front driveshaft.
Refer to: Front Driveshaft (205-01 Driveshaft, Removal and Installation).
39. Check the transfer case fluid level.
Refer to: Transfer Case Draining and Filling (308-07B Transfer Case, General Procedures).

All vehicles

40. Install the following items:
 1. Refer to: Exhaust Downpipe - Pickup (309-00B Exhaust System - 6.7L Power Stroke Diesel, Removal and Installation).
 2. Refer to: Starter Motor (303-06B Starting System - 6.7L Power Stroke Diesel, Removal and Installation).
41. Adjust the selector lever cable.
Refer to: Selector Lever Cable Adjustment (307-05B Automatic Transmission External Controls - 10-Speed Automatic Transmission â€“ 10R140, General Procedures).
42. **NOTE:** *If transmission was drained, fill the transmission with clean transmission fluid.*
Fill the transmission with clean transmission fluid.
Refer to: Transmission Fluid Drain and Refill (307-01B Automatic Transmission, Transfer Case and Power Transfer Unit - 10-Speed Automatic Transmission â€“ 10R140, General Procedures).
43. If a new main control was installed, the solenoid body strategy will need to be updated.
Refer to: Transmission Strategy Download (307-01 Automatic Transmission, Transfer Case and Power Transfer Unit) .