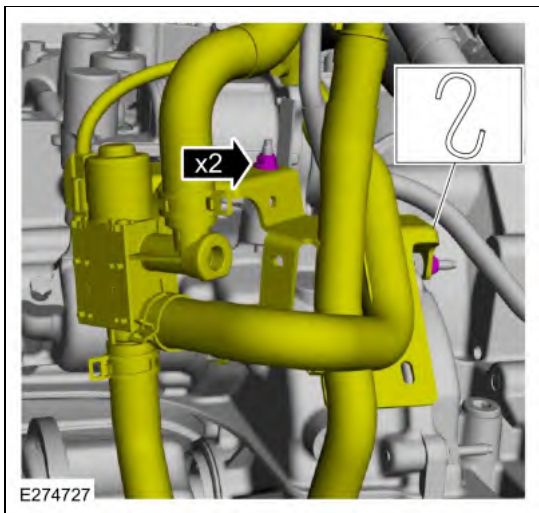
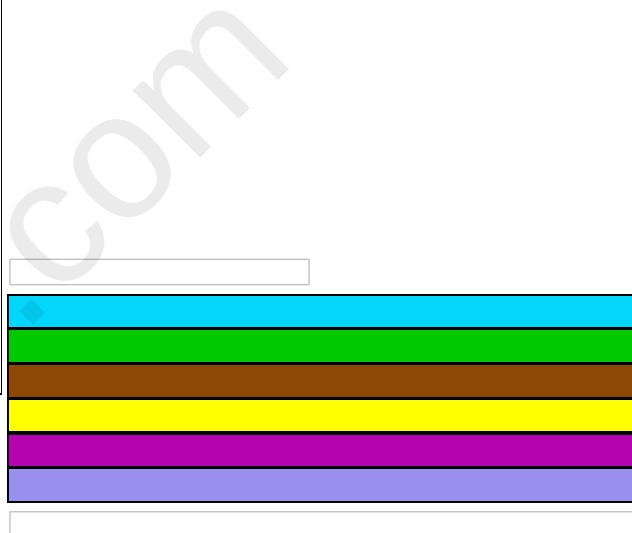
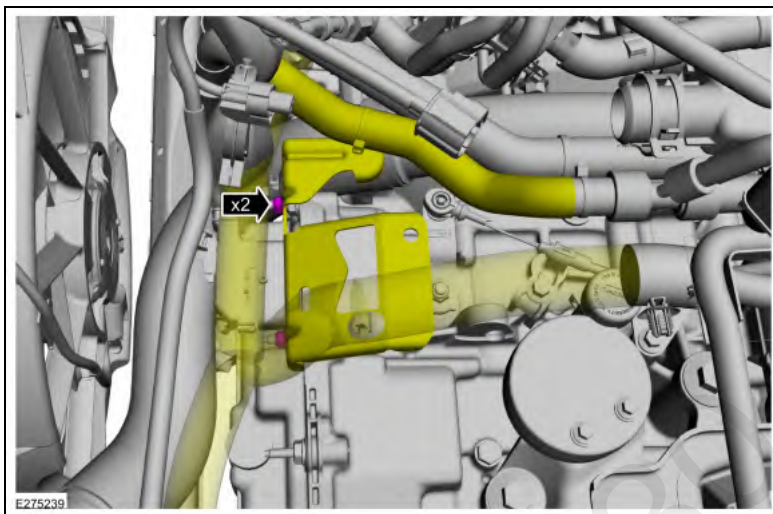
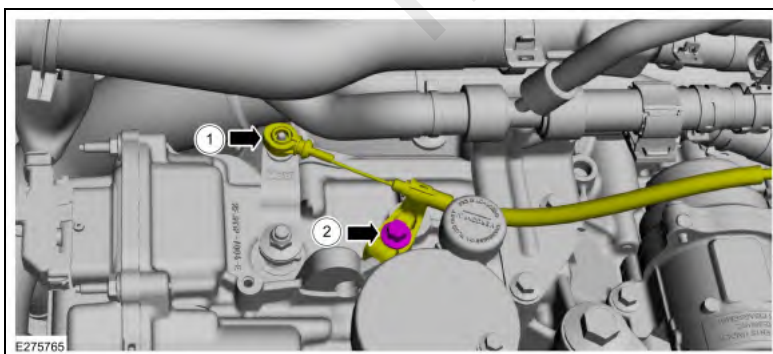




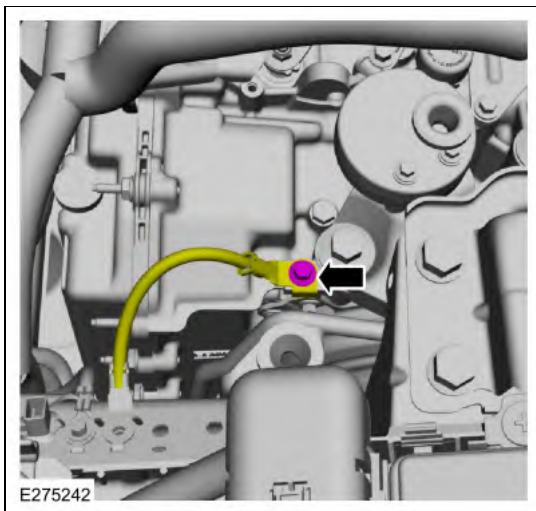
7. Remove nuts and position aside wiring harness.



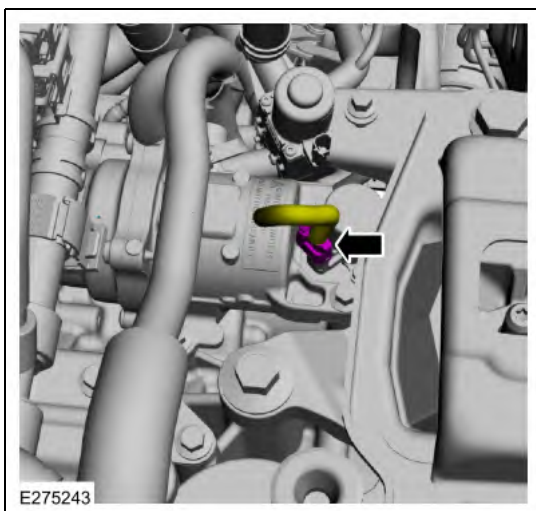
- 8.
1. Disconnect the manual park release cable from the manual control lever.
 2. Remove the bolt and position the manual park release cable aside.



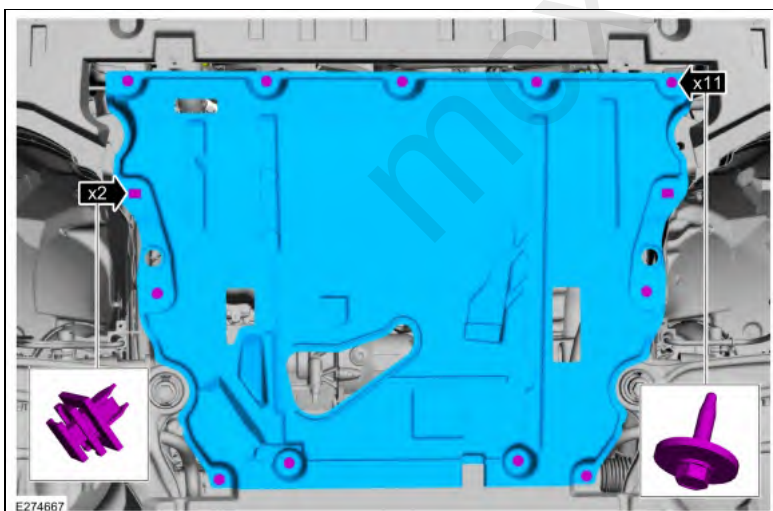
9. Remove the bolt and position aside the ground strap.



10. Disconnect the start-stop accumulator electrical connector.

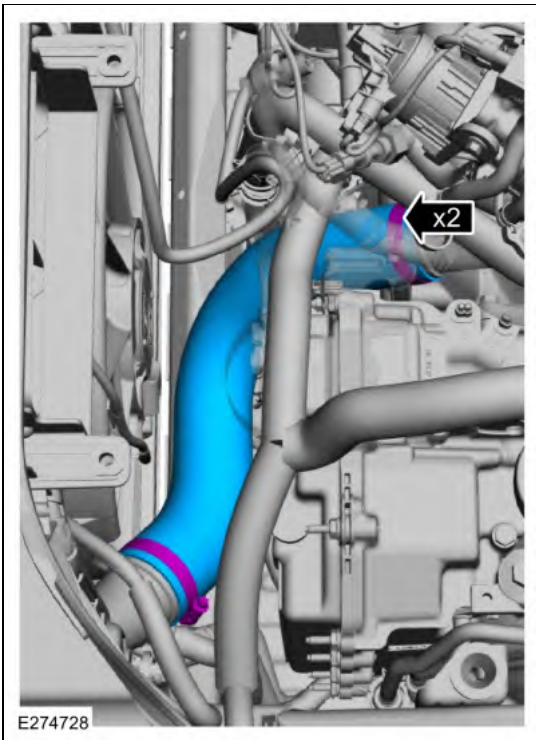


11. Remove the retainers and the underbody shield.

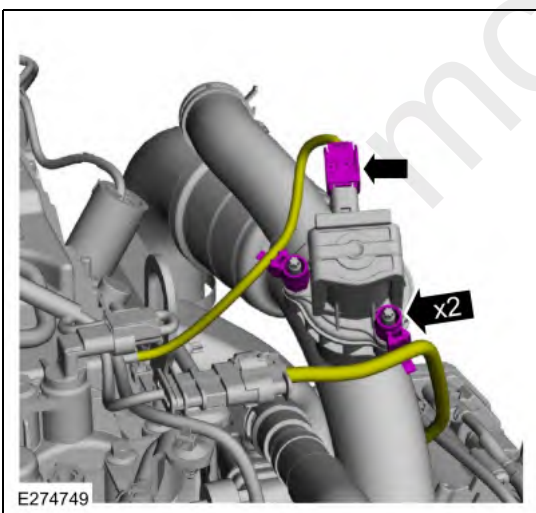


12. **NOTICE:** When removing any turbocharger air intake system components, make sure to cover any open ports to prevent debris from entering the system. The turbocharger compressor vanes can be damaged by even the smallest particles. All components need to be inspected and cleaned prior to installation or reassembly.

- Loosen the clamps and remove the CAC tube.
- Cover all open ports.

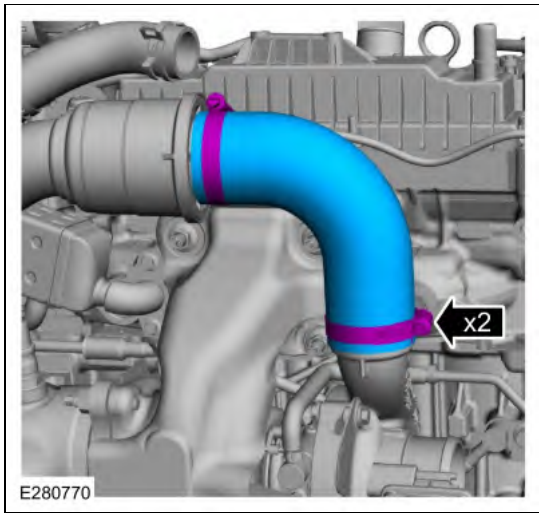


13. Disconnect the CAC tube bypass valve electrical connector and wire retainers.

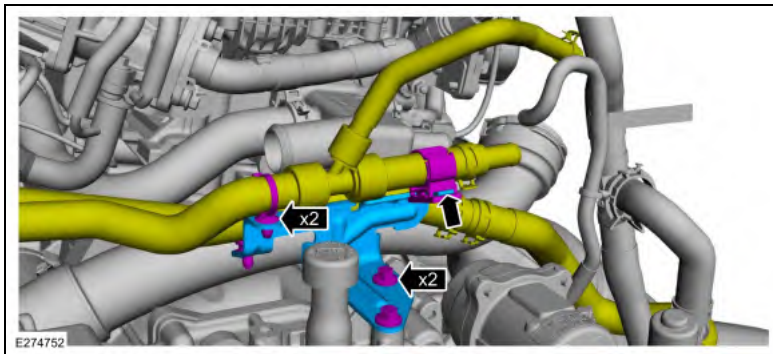


14. **NOTICE:** When removing any turbocharger air intake system components, make sure to cover any open ports to prevent debris from entering the system. The turbocharger compressor vanes can be damaged by even the smallest particles. All components need to be inspected and cleaned prior to installation or reassembly.

- Loosen the clamp and remove the CAC tube.
- Cover all open ports.

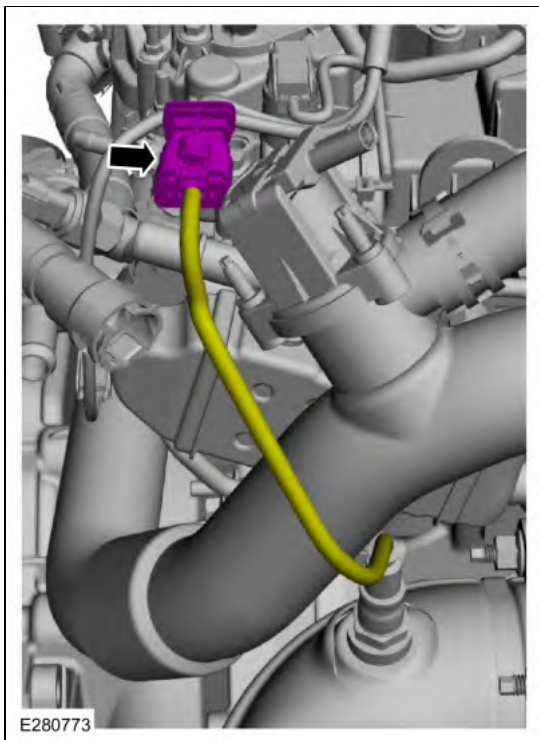


15. Remove the bolts, detach the retainers and remove the coolant hoses bracket.



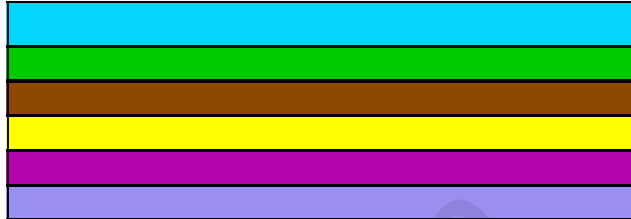
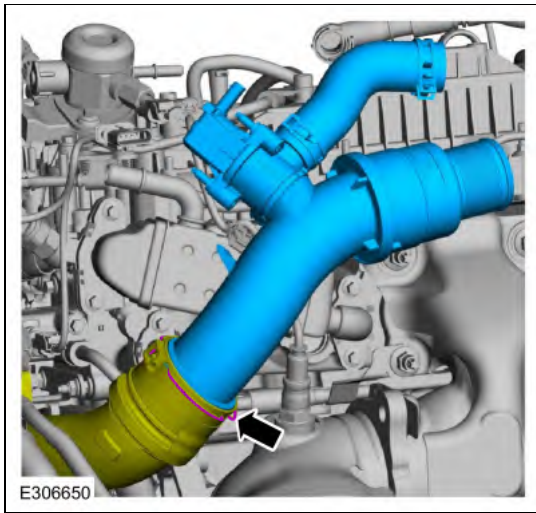
16. Disconnect the HO2S electrical connector.

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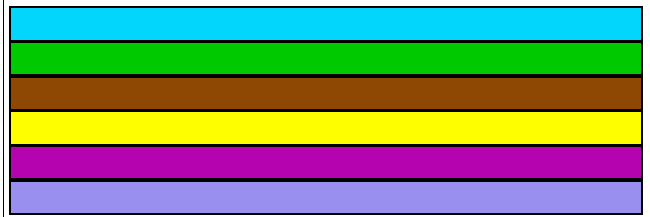
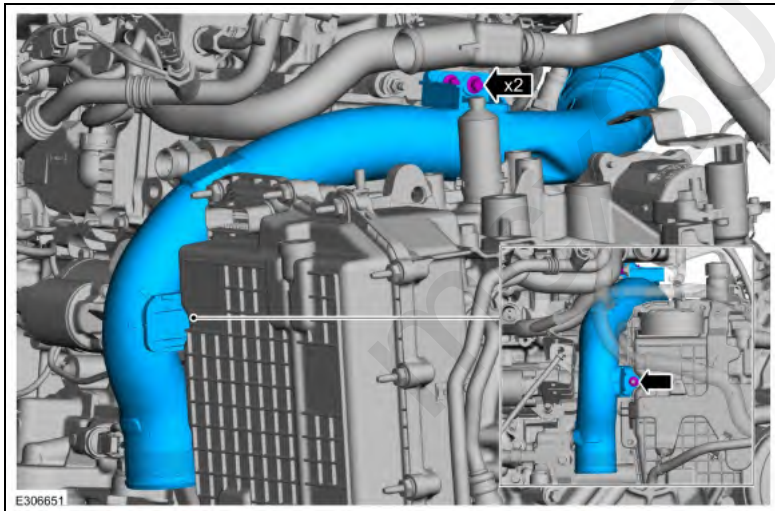
17. **NOTICE:** When removing any turbocharger air intake system components, make sure to cover any open ports to prevent debris from entering the system. The turbocharger compressor vanes can be damaged by even the smallest particles. All components need to be inspected and cleaned prior to installation or reassembly.

Release the clip and remove the CAC pipe.

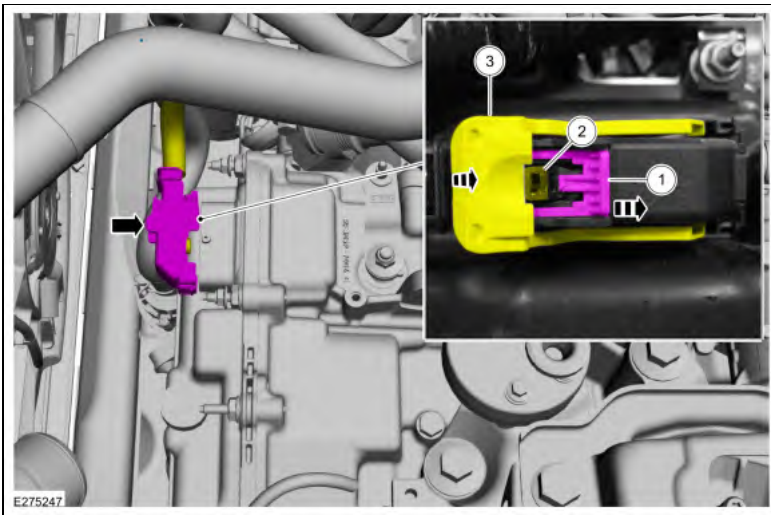


18. **NOTICE:** When removing any turbocharger air intake system components, make sure to cover any open ports to prevent debris from entering the system. The turbocharger compressor vanes can be damaged by even the smallest particles. All components need to be inspected and cleaned prior to installation or reassembly.

- Remove the nuts and the CAC tube.
- Cover all open ports.

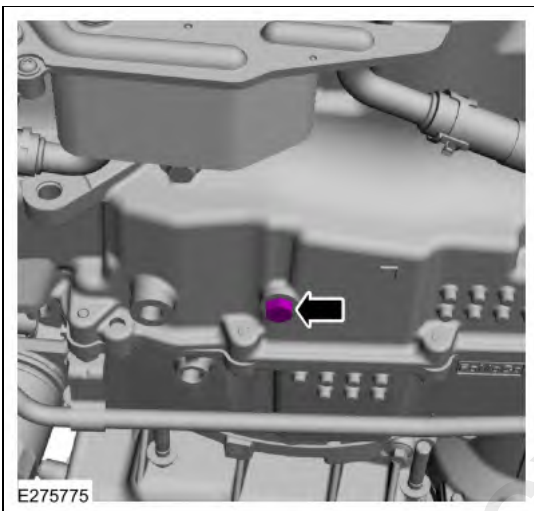


- 19.
- Disconnect transmission connector.
1. Slide the locking clip.
 2. Press the tab.
 3. While pressing the tab, rotate the connector latch.



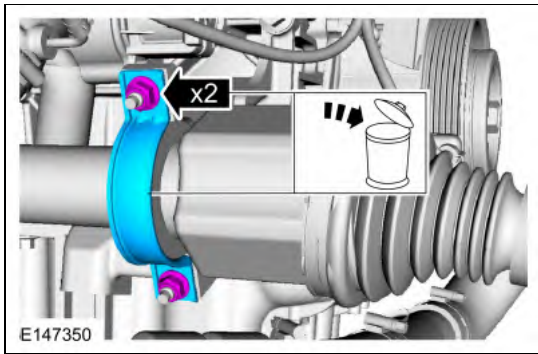
20. **NOTE:** If transmission disassembly or installation of a new transmission is necessary, drain the transmission fluid.

Drain the transmission fluid.
Torque: 106 lb.in (12 Nm)

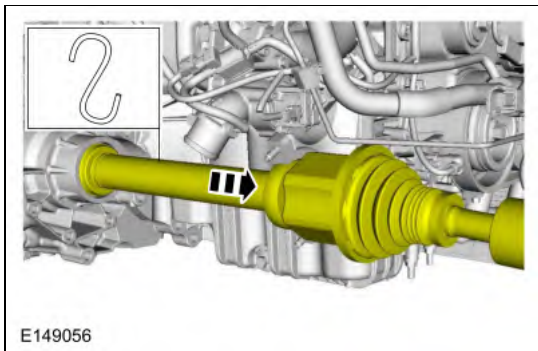


Vehicles with front wheel drive (FWD)

21. Remove the front subframe.
Refer to: Front Subframe (502-00 Uni-Body, Subframe and Mounting System, Removal and Installation).
22. Remove the LH halfshaft.
Refer to: Front Halfshaft LH (205-04 Front Drive Halfshafts, Removal and Installation).
23. Remove and discard the halfshaft retaining strap and nuts



24. Position the RH halfshaft aside and support with a length of mechanics wire.

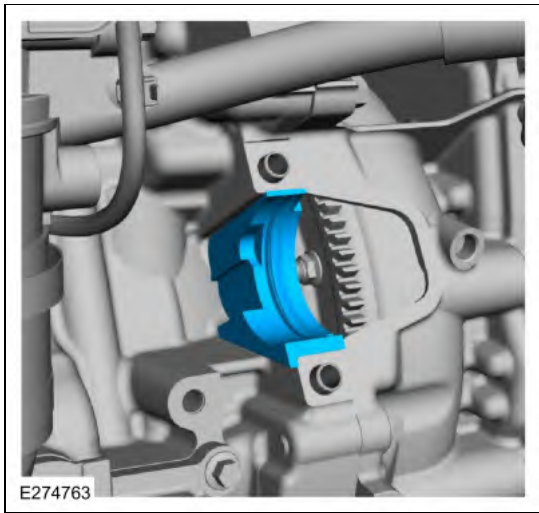


All wheel drive (AWD)

25. Remove the transfer case.
Refer to: Power Transfer Unit - Vehicles With: Power Transfer Unit Oil-to-Coolant Cooler (308-07B Power Transfer Unit - 2.0L EcoBoost (184kW/250PS) â€“ MI4, Removal).
Refer to: Power Transfer Unit - Vehicles Without: Power Transfer Unit Oil-to-Coolant Cooler (308-07B Power Transfer Unit - 2.0L EcoBoost (184kW/250PS) â€“ MI4, Removal).
26. Remove the LH halfshaft.
Refer to: Front Halfshaft LH (205-04 Front Drive Halfshafts, Removal and Installation).

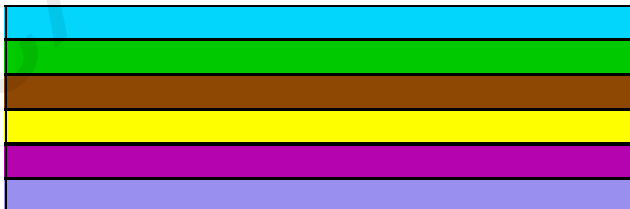
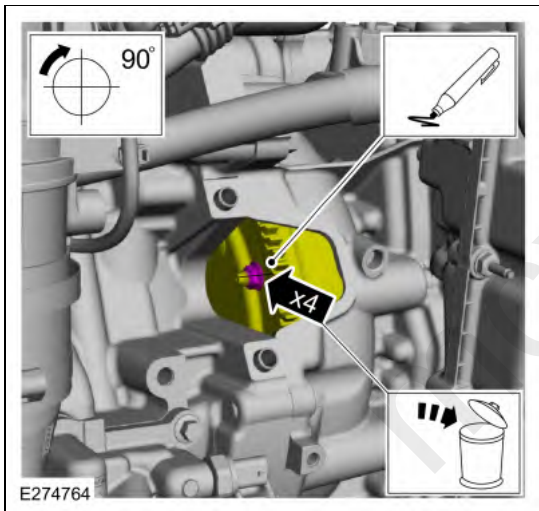
All vehicles

27. Remove the starter motor.
Refer to: Starter Motor (303-06A Starting System - 2.0L EcoBoost (184kW/250PS) â€“ MI4, Removal and Installation).
28. Remove the stater motor isolator.

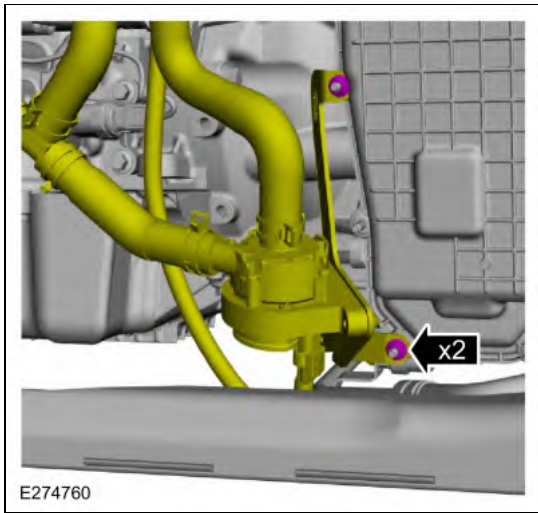


29. **NOTE:** Only rotate the crankshaft in a clockwise direction.

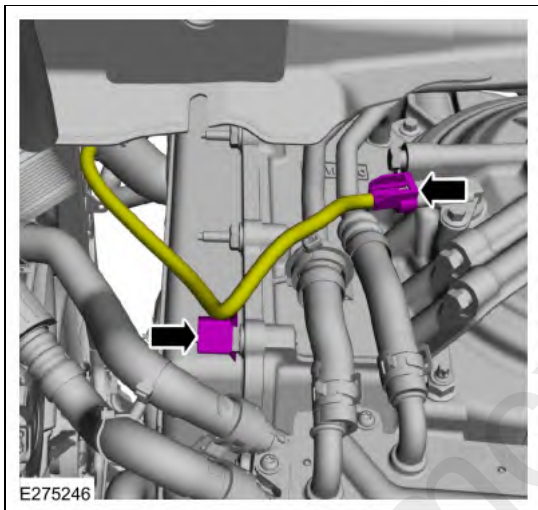
- Index mark one stud and the flexplate for assembly reference.
 - Remove and discard the torque converter nuts.
- Use the General Equipment: Magnetic Socket



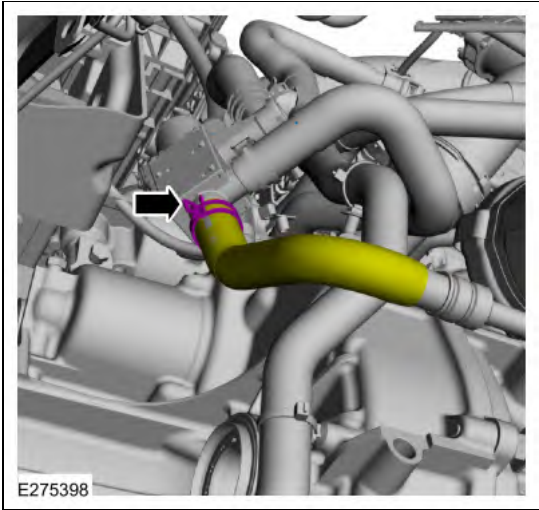
30. Remove the nuts and position aside the start/stop coolant pump.



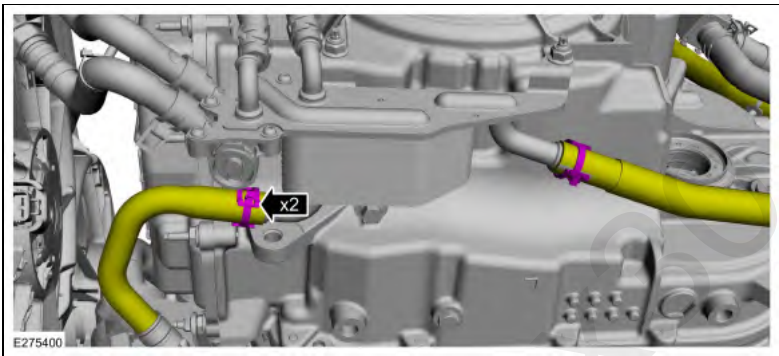
31. Disconnect the retainer and the turbine shaft speed sensor/intermediate speed sensor A (ISSA).



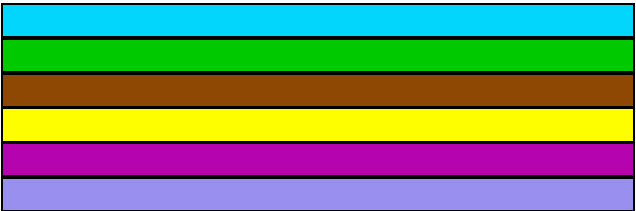
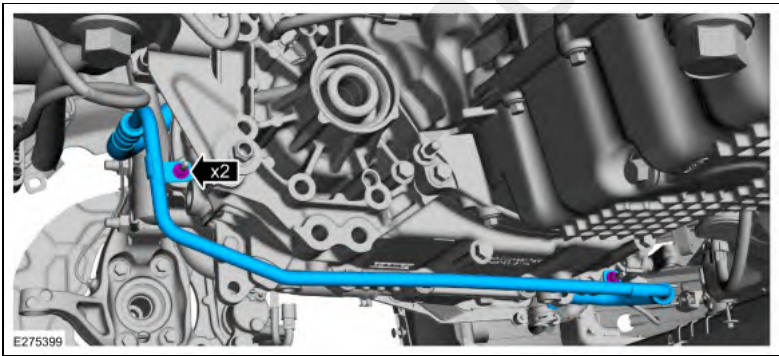
32. Drain the engine cooling system.
Refer to: Engine Cooling System Draining, Vacuum Filling and Bleeding (303-03A Engine Cooling - 2.0L EcoBoost (184kW/250PS) & MI4, General Procedures).
33. Disconnect the coolant hose from the coolant solenoid.



34. Disconnect the coolant hoses from the transmission fluid cooler.

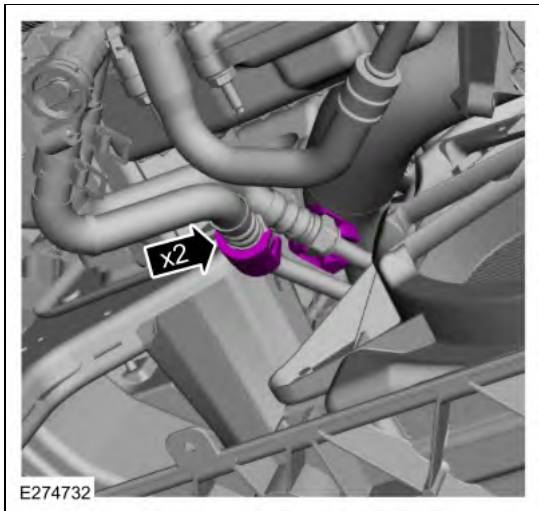


35. Remove the nuts and the transmission fluid cooler tube.

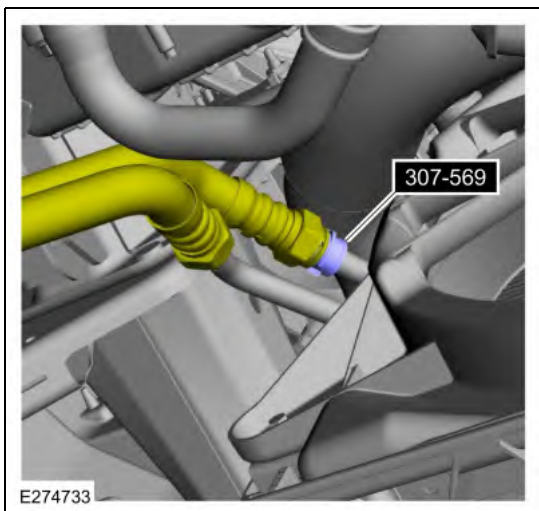


Vehicles With: Trailer Tow

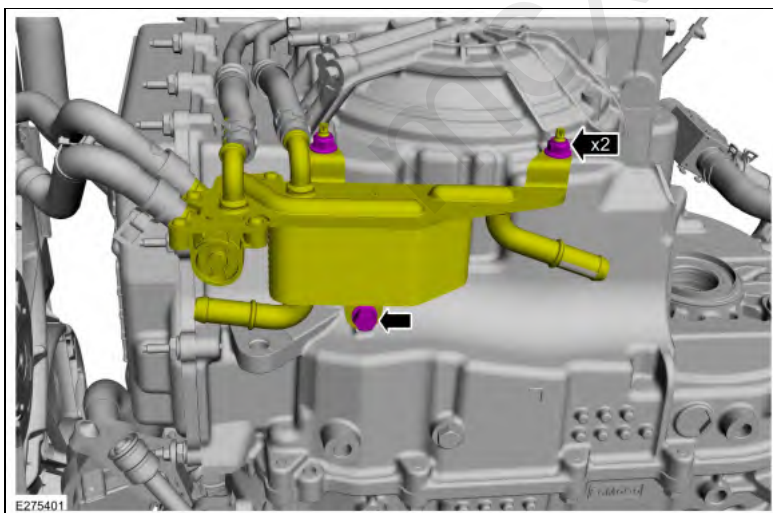
36. Remove the transmission fluid cooler tube secondary latches.



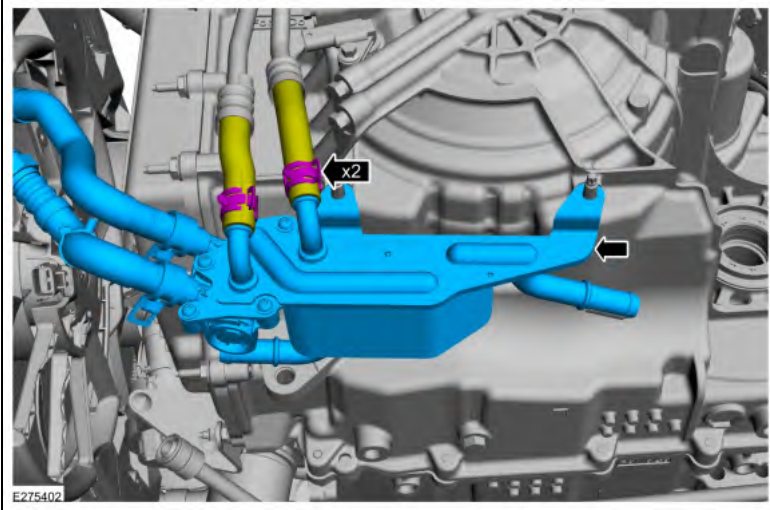
37. Using the special tool, disconnect the transmission fluid cooler tubes.
Use Special Service Tool: 307-569 Disconnect Tool TOC Line (1/2).



38. Remove the nuts and bolt from the transmission fluid warmer.

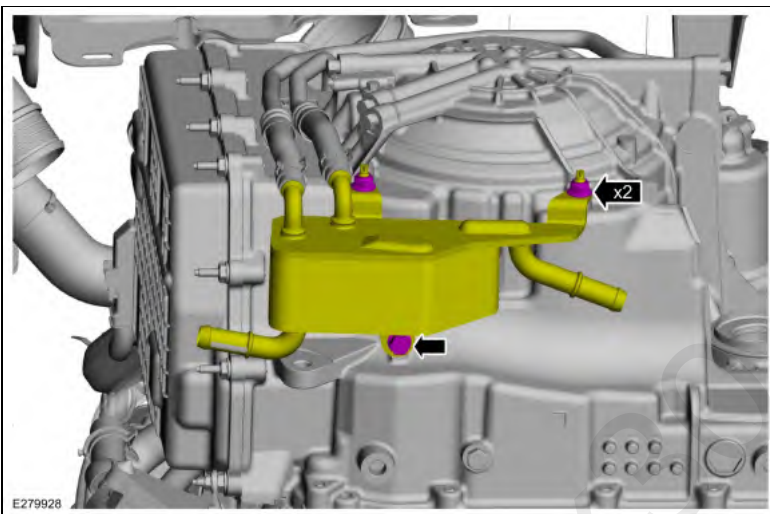


39. Disconnect the transmission fluid cooler tubes and remove the transmission fluid warmer.

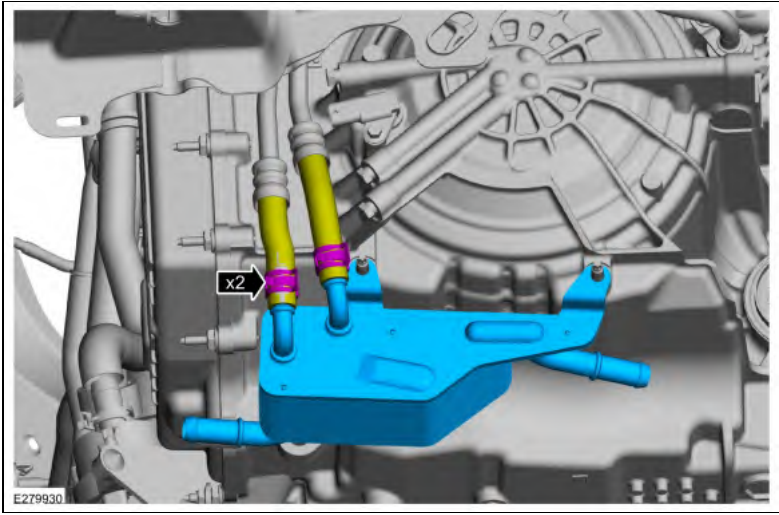


Vehicles Without: Trailer Tow

40. Remove the transmission fluid cooler nuts and bolt.

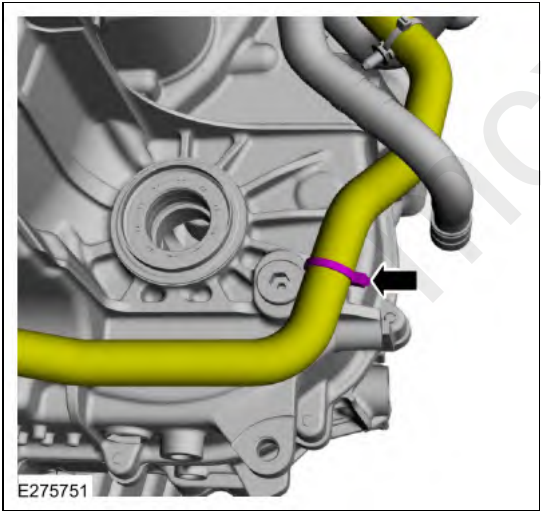


41. Disconnect the transmission fluid cooler tubes and remove the transmission fluid cooler.

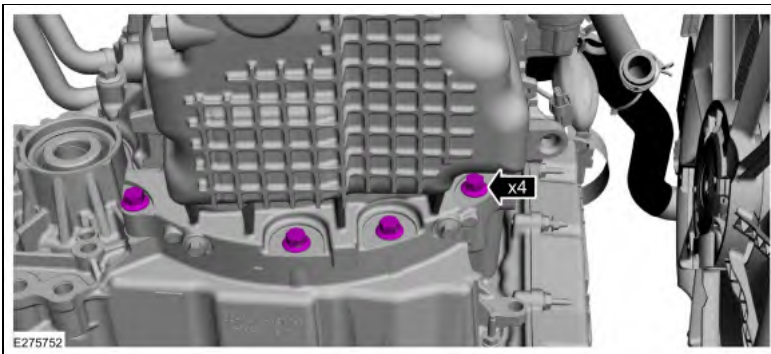


All vehicles

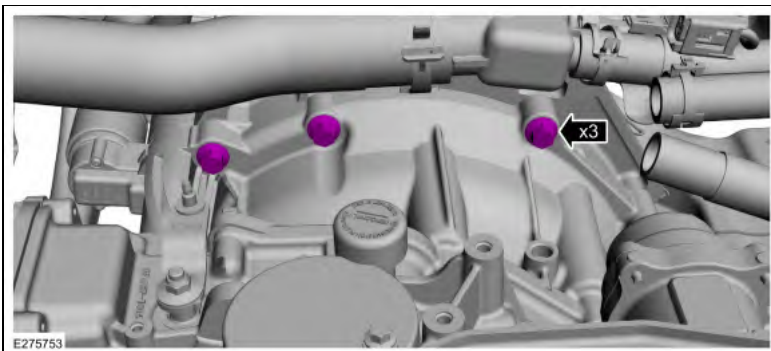
42. Disconnect the coolant hose from transmission.



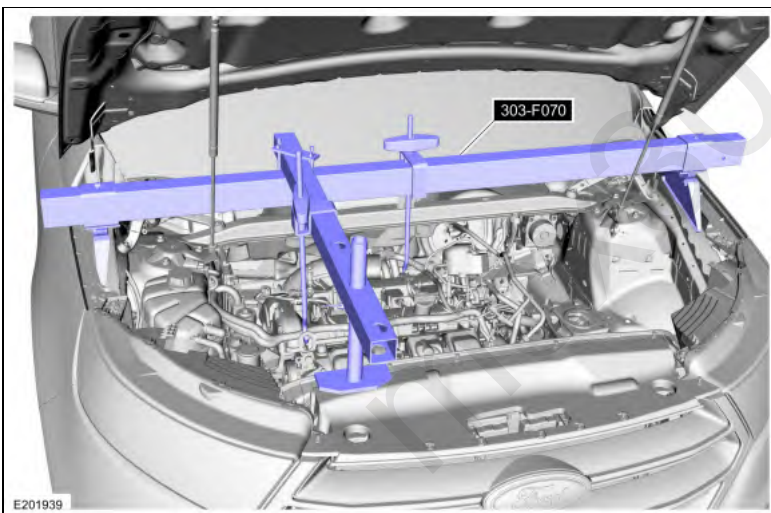
43. Remove the lower transmission-to-engine bolts.



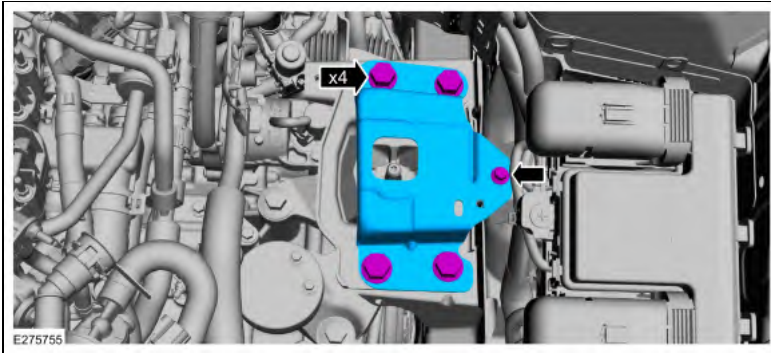
44. Remove the top transmission-to-engine bolts.



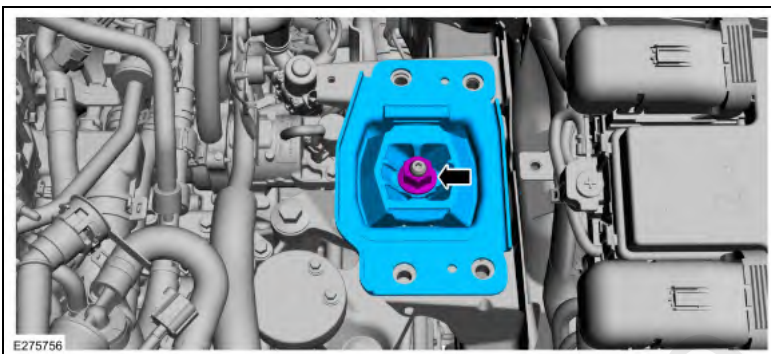
45. Using the special tools, support the engine.
Use Special Service Tool: 303-F070 Support Bar, Engine.



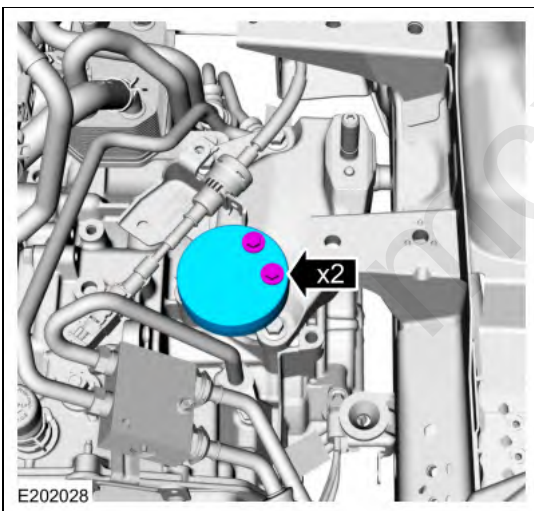
46. Remove the bolts and the transmission support insulator bracket.



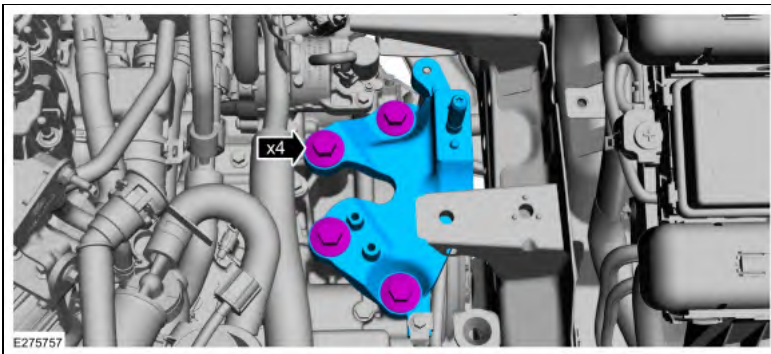
47. Remove the nut and the transmission support insulator.



48. Remove the bolts and the transmission support insulator damper.



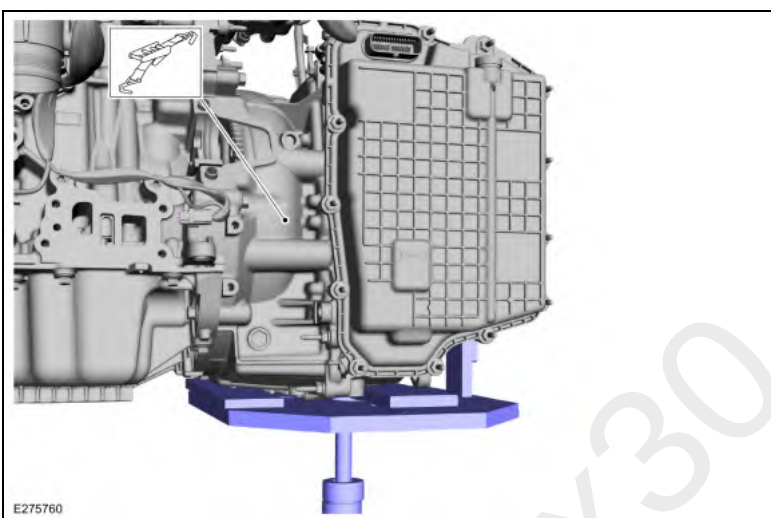
49. Remove the bolts and the transmission support insulator bracket.



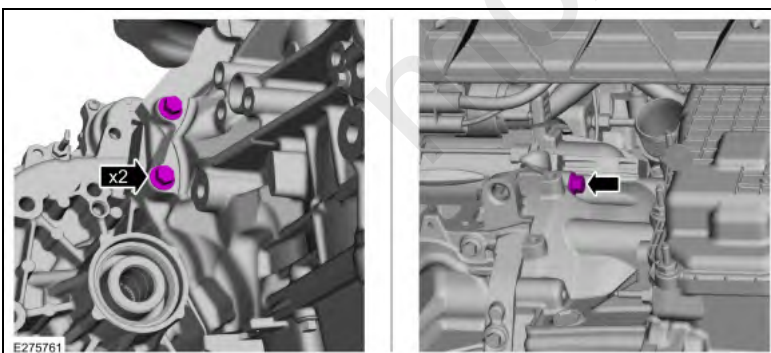
50. **NOTICE:** Secure the transmission to the transmission jack with a safety strap.

NOTICE: Make sure that no part of the wiring harness is trapped.

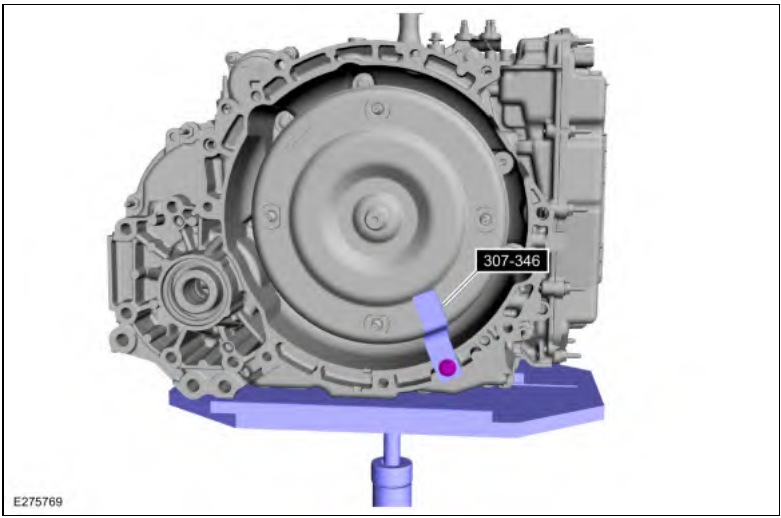
Support the transmission with a transmission jack.
 Use the General Equipment: Transmission Jack
 Use the General Equipment: Retaining Strap



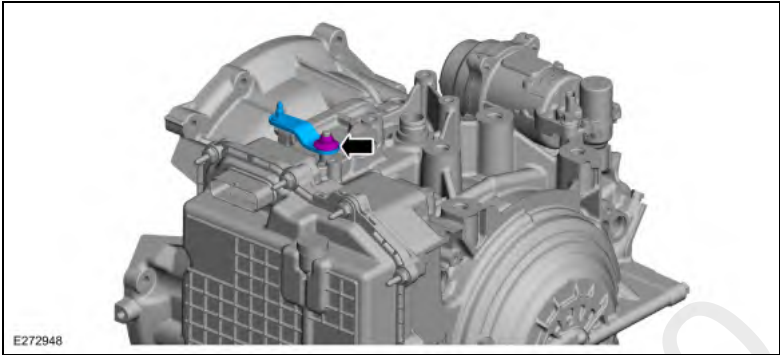
51. Remove the RH and LH transmission-to-engine bolts.



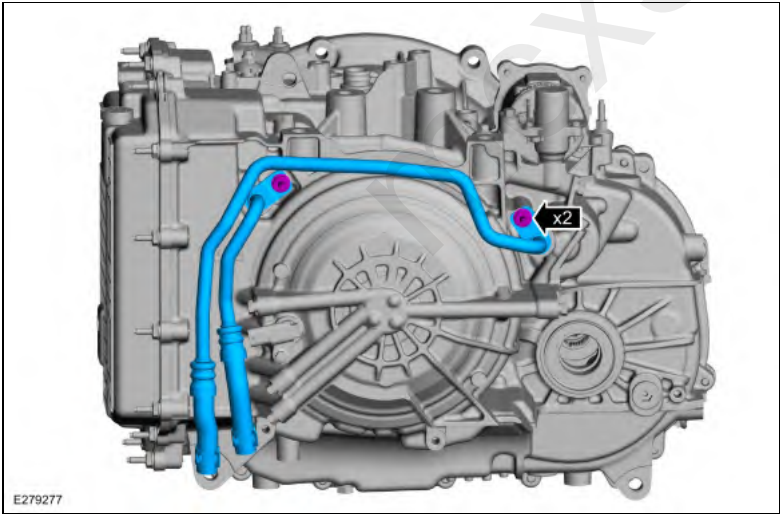
52. Slide the transmission back enough to install the special tool and remove the transmission from the vehicle.
 Use Special Service Tool: 307-346 (T97T-7902-A) Retainer, Torque Converter.



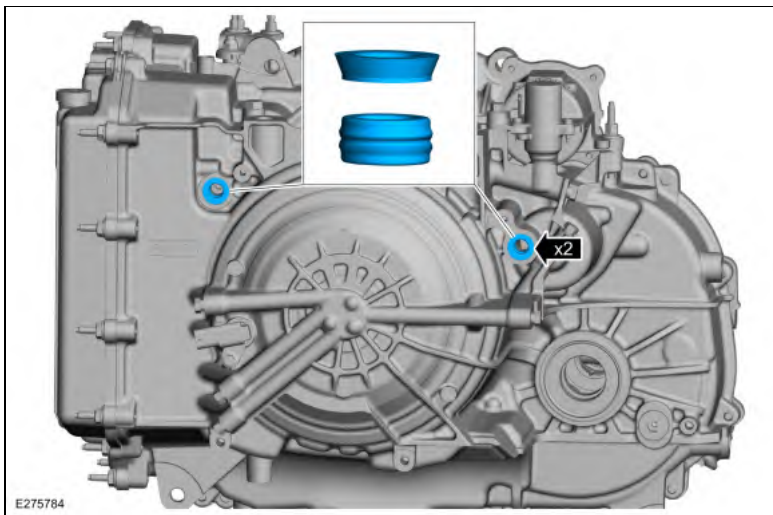
53. **NOTE:** If transmission disassembly or installation of a new transmission is necessary, remove the manual control lever.
Remove the nut and the manual control lever.



54. **NOTE:** If transmission disassembly or installation of a new transmission is necessary, remove the transmission fluid cooler tubes.
Remove the bolts and the transmission cooler tubes.



55. Inspect the transmission case to be sure that the transmission fluid cooler tube seals and backing rings were removed with the transmission fluid cooler tubes and are not stuck in the transmission case. If the transmission fluid cooler tube seals or backing rings are stuck in the transmission case, remove the seals and backing rings.



56. NOTICE: Failure to clean the transmission fluid cooler tubes can result in transmission failure.

If the transmission is to be overhauled or if installing a new or re-manufactured transmission, carryout the transmission fluid cooler backflushing and cleaning. Clean the transmission-mounted transmission fluid cooler tubes by hand.

Refer to: Transmission Fluid Cooler - Backflushing and Cleaning - Vehicles With: Trailer Tow (307-02A Transmission Cooling - 8-Speed Automatic Transmission 8F35/8F40, General Procedures).

Refer to: Transmission Fluid Cooler - Backflushing and Cleaning - Vehicles Without: Trailer Tow (307-02A Transmission Cooling - 8-Speed Automatic Transmission 8F35/8F40, General Procedures).

Installation

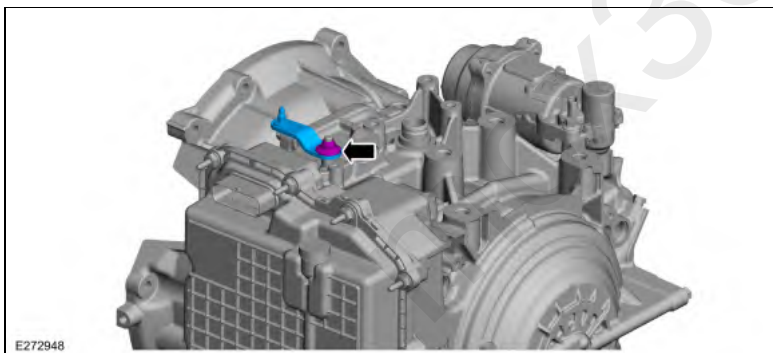
All vehicles

- 1. NOTICE: Make sure that when installing the manual control lever, it is fully seated onto the manual control lever shaft. Damage to the manual control lever shaft will occur and the manual lever will come loose.**

NOTICE: Make sure to hold the manual control lever while tightening the manual control lever nut or damage to the manual control lever and park components will occur.

Install the manual control lever and the nut.

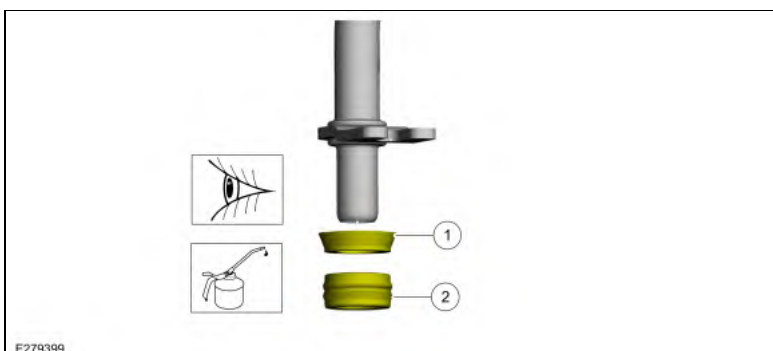
Torque: 177 lb.in (20 Nm)



- 2. Inspect and lubricate the band seals and backing rings.**

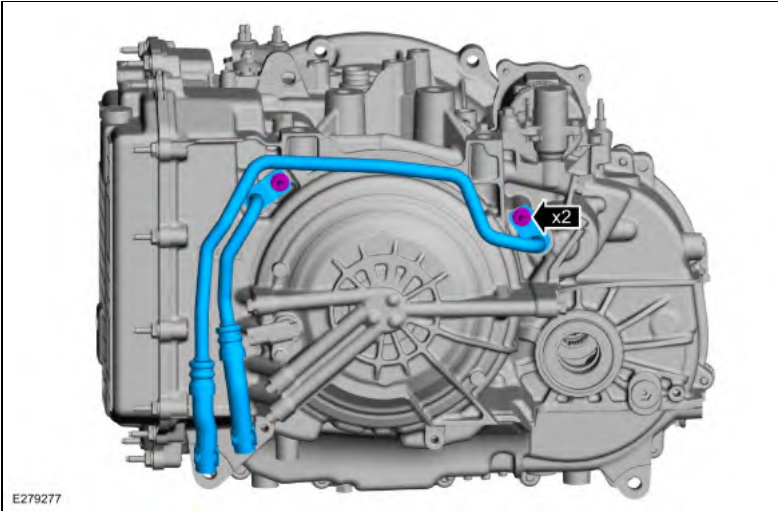
- Backing ring (7J324).
- Band seal (7D285).

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



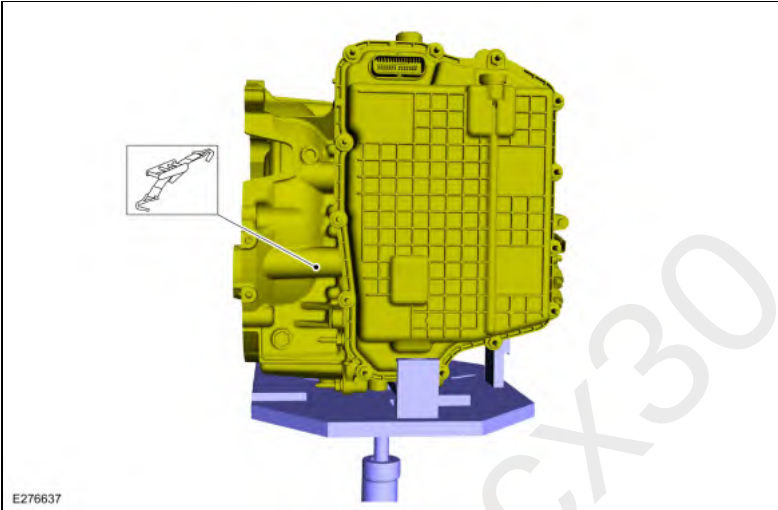
- 3. Install the transmission cooler tubes and the bolts.**

Torque: 97 lb.in (11 Nm)



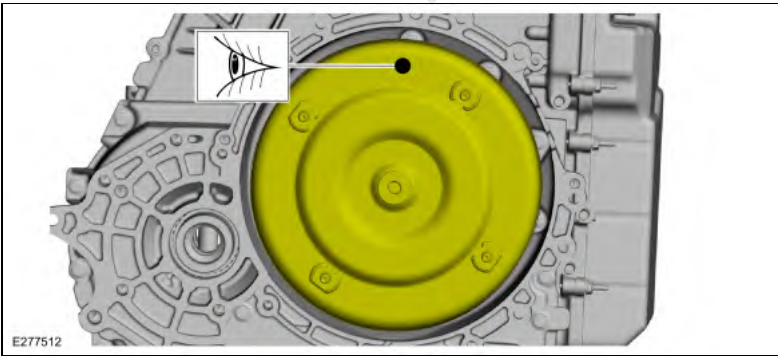
4. NOTICE: Secure the transmission to the transmission jack with a safety strap.

Using a transmission jack, support the transmission.
Use the General Equipment: Transmission Jack
Use the General Equipment: Retaining Strap

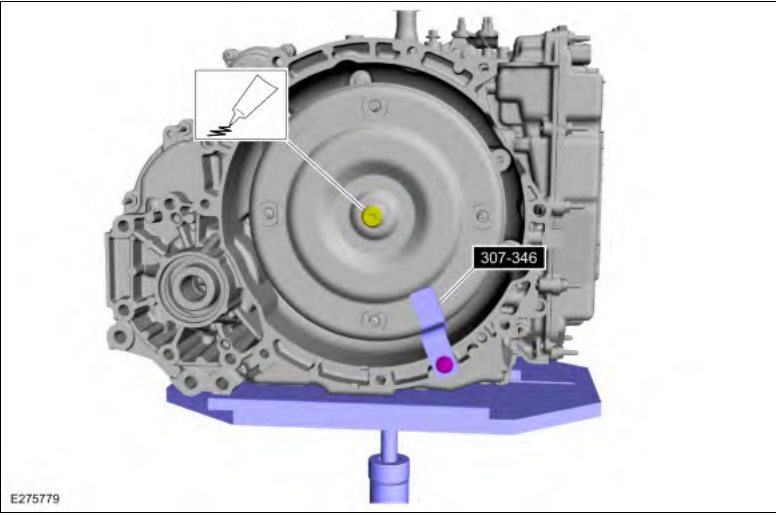


5. NOTICE: The Balance mark on the torque converter must be above the crankshaft centerline when the first torque converter nut is tightened.

Position the balance mark (paint dot, sticker, or laser etch) near the 12 O’clock position. Then rotate the converter to position the nearest converter stud at the starter opening.



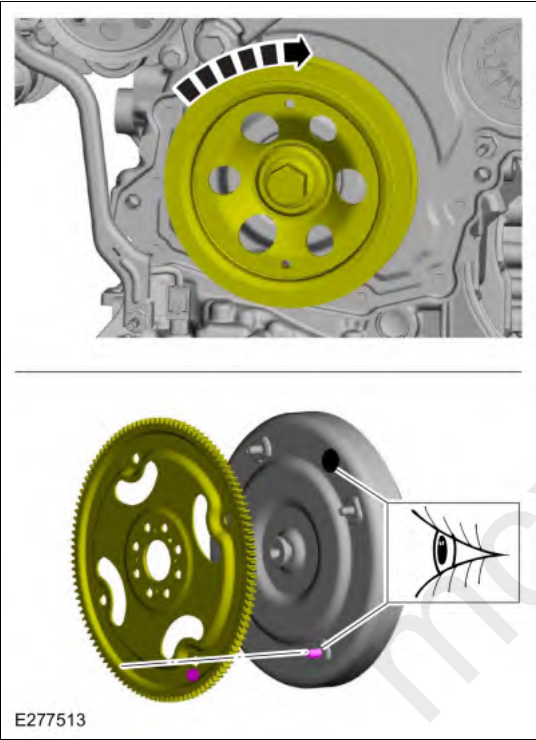
6. Install the special tool. Lubricate the torque converter pilot hub with Multi-Purpose Grease.
Use Special Service Tool: 307-346 (T97T-7902-A) Retainer, Torque Converter.
Material: Motorcraft® Multi-Purpose Grease Spray / XL-5-A (ESB-M1C93-B)



7. **NOTICE:** The Balance mark on the torque converter must be above the crankshaft centerline when the first torque converter nut is tightened.

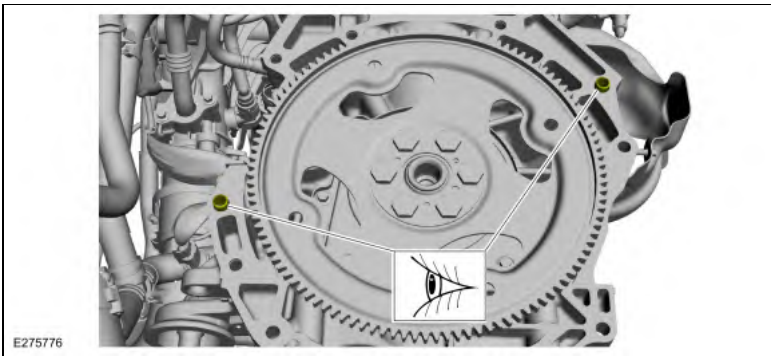
NOTE: This step is only necessary if installing the original torque converter.

Rotate crankshaft clockwise to align the index marks made during removal.

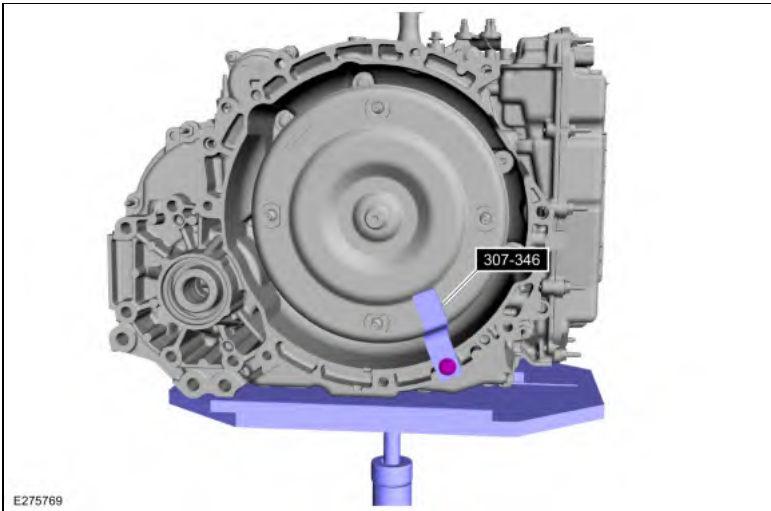


8. **NOTICE:** If the transmission is not positioned on the dowel pins, damage to the transmission may occur.

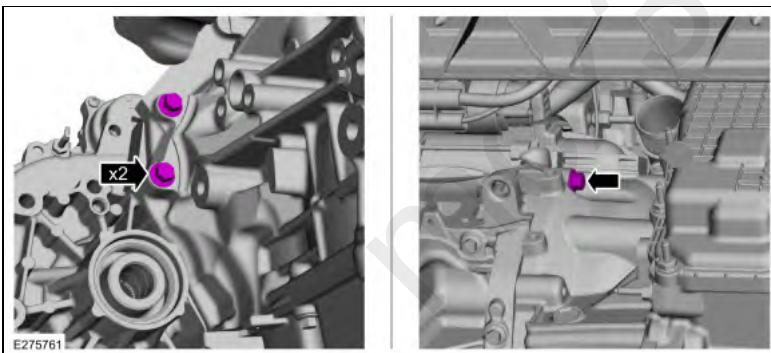
If the dowel pins were pulled out of the engine block during removal, install new dowel pins in the engine block.



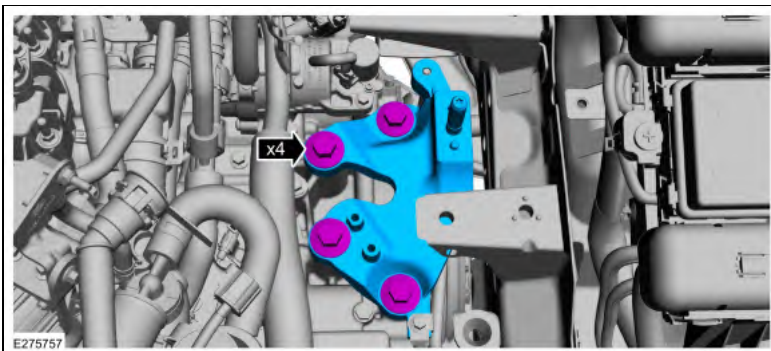
9. Position the transmission behind the engine and remove the special tool.
Use Special Service Tool: 307-346 (T97T-7902-A) Retainer, Torque Converter.



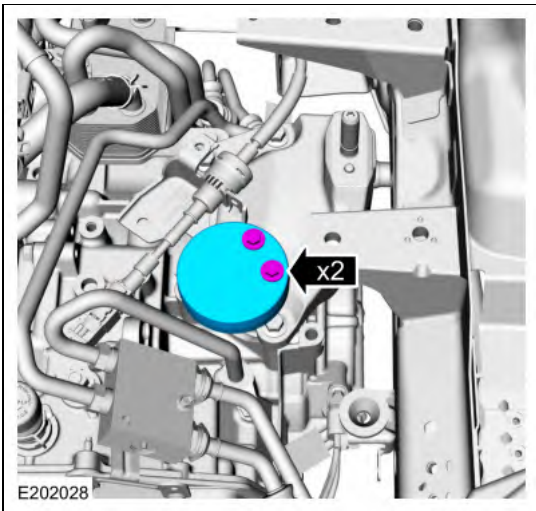
10. Position the transmission on the dowel pins and install the RH and LH transmission-to-engine bolts.
Torque: 35 lb.ft (48 Nm)



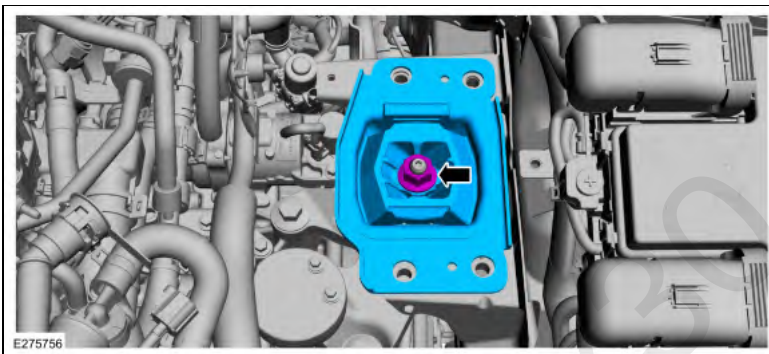
11. Install the transmission support insulator bracket and the bolts.
Torque: 129 lb.ft (175 Nm)



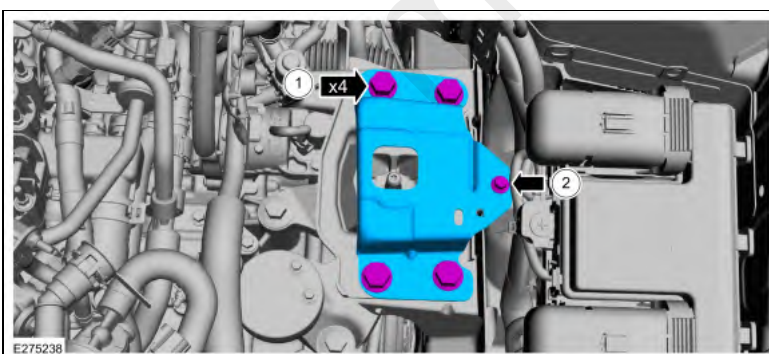
12. Install the transmission support insulator damper and the bolts.
Torque: 80 lb.in (9 Nm)



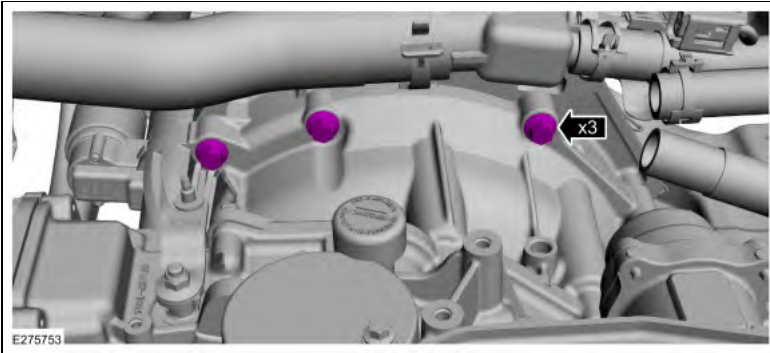
13. Install the transmission support insulator and the nut.
Torque: 98 lb.ft (133 Nm)



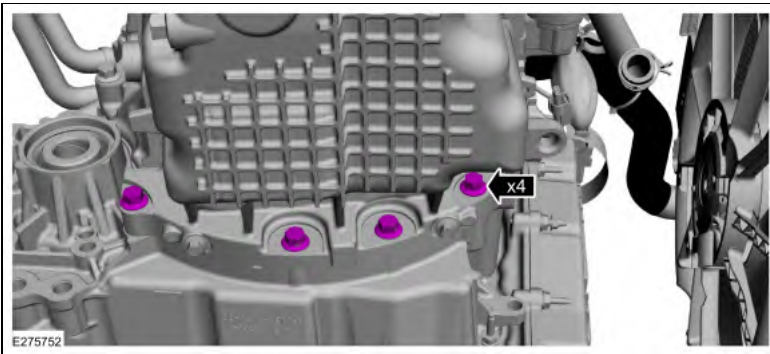
14. Install the transmission support insulator bracket and the bolts.
Torque:
 1: 66 lb.ft (90 Nm)
 2: 97 lb.in (11 Nm)



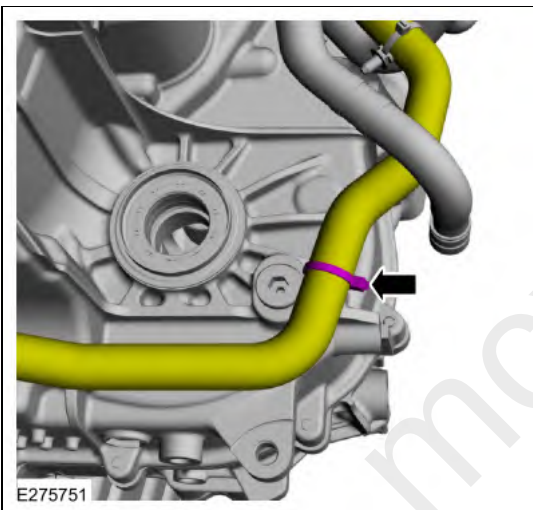
15. Install the top transmission-to-engine bolts.
Torque: 35 lb.ft (48 Nm)



16. Install the lower transmission-to-engine bolts.
Torque: 35 lb.ft (48 Nm)

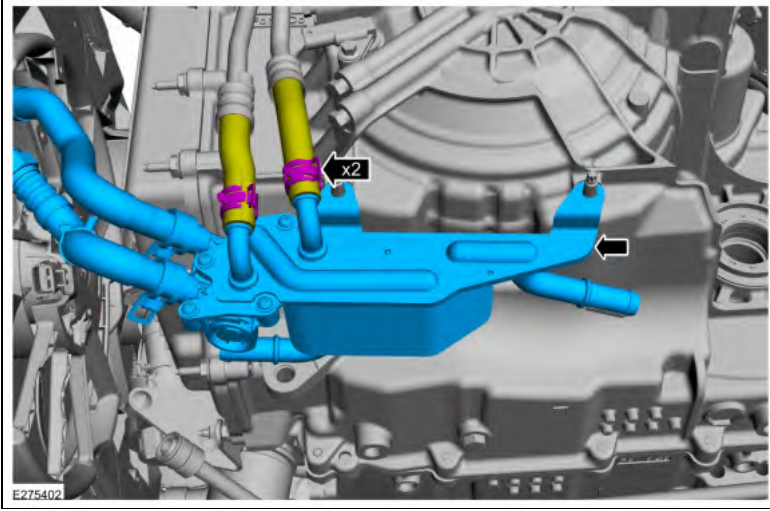


17. Connect the coolant hose to the transmission.

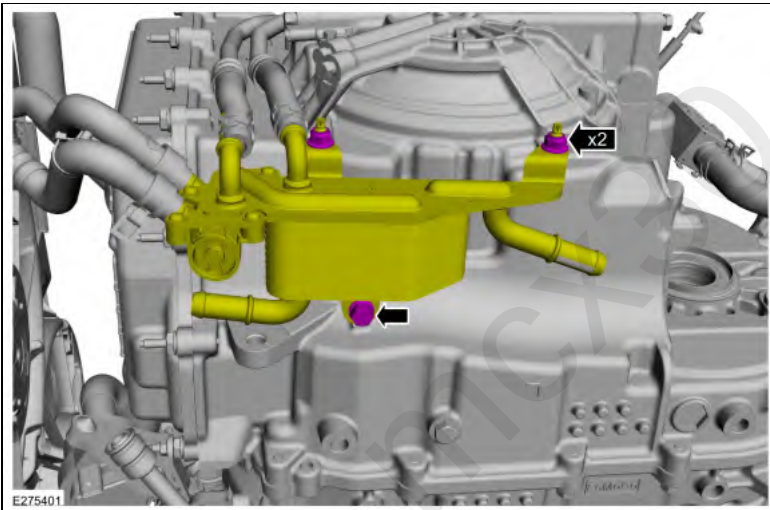


Vehicles With: Trailer Tow

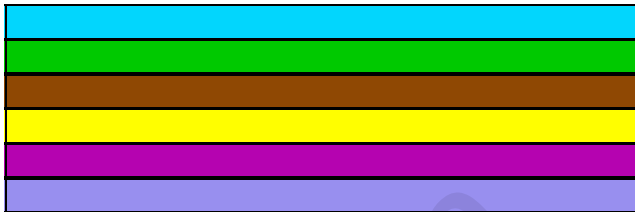
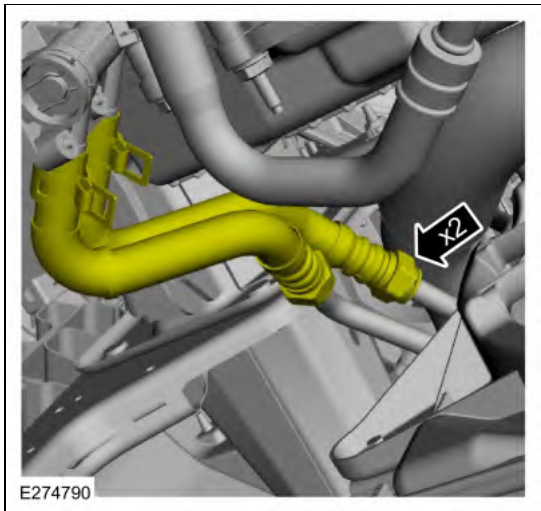
18. Install the transmission fluid warmer and connect the transmission fluid cooler tubes.



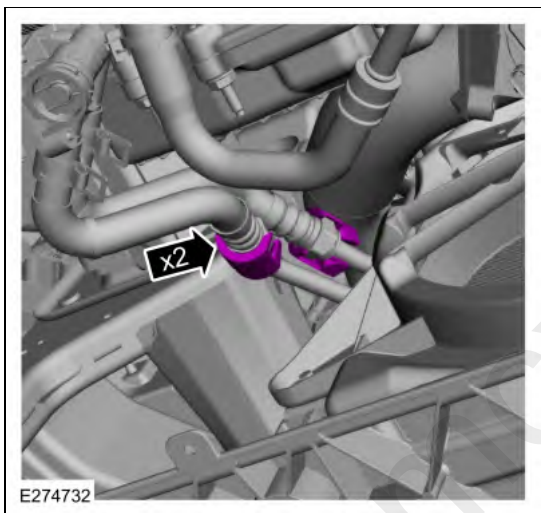
19. Install the transmission fluid warmer nuts.
- Torque:*
- Nuts: 124 lb.in (14 Nm)
 - Bolt: 124 lb.in (14 Nm)



20. Connect the transmission fluid cooler tubes.

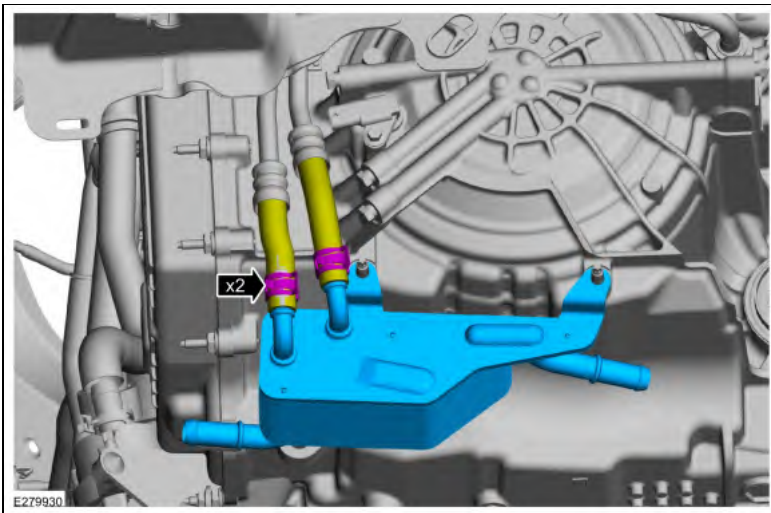


21. Install the transmission fluid cooler tube secondary latches.



Vehicles Without: Trailer Tow

22. Install the transmission fluid cooler and connect the transmission fluid cooler tubes.



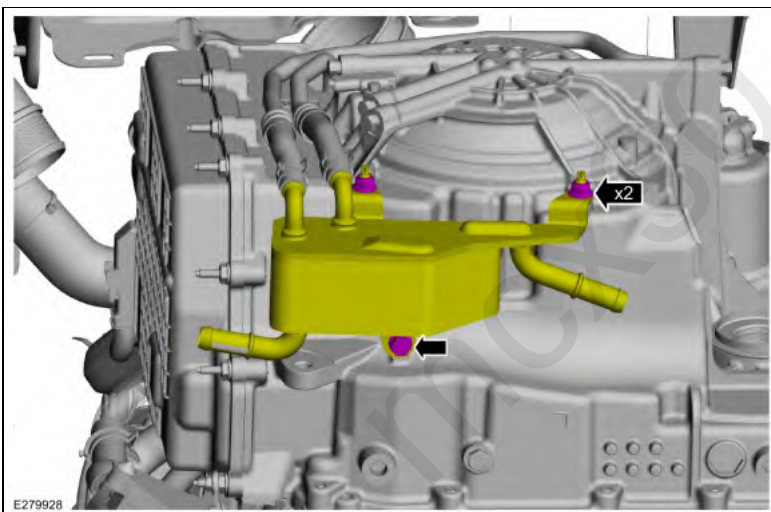


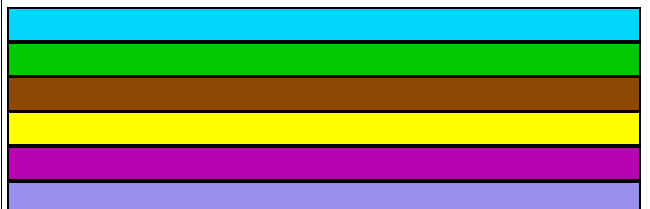
23. Install the transmission fluid cooler nuts.

Torque:

Nuts: 133 lb.in (15 Nm)

Bolt: 133 lb.in (15 Nm)

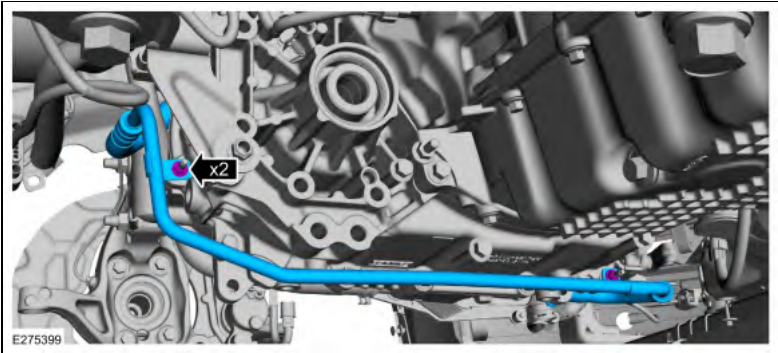




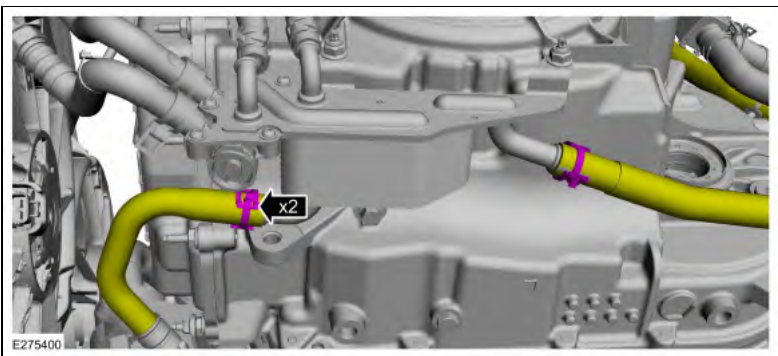
All vehicles

24. Install the transmission fluid cooler tube and the nuts.

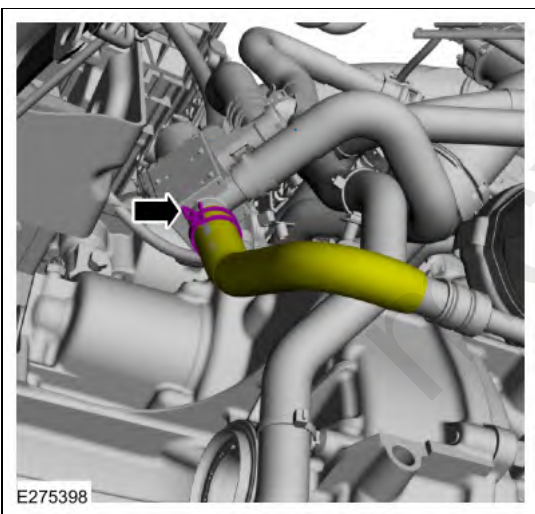
Torque: 106 lb.in (12 Nm)



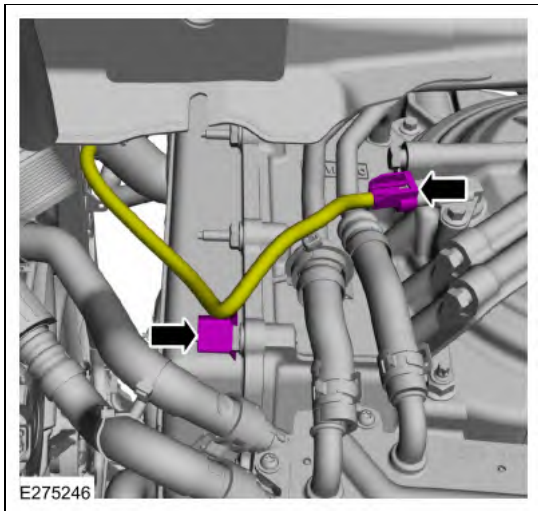
25. Connect the coolant hoses to the transmission fluid cooler.



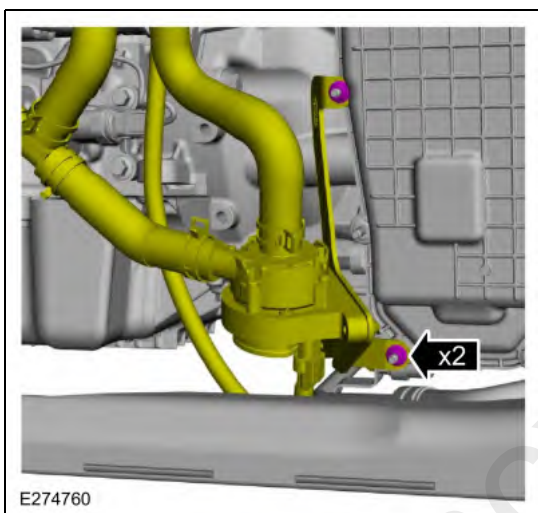
26. Connect the coolant hose to the coolant solenoid.



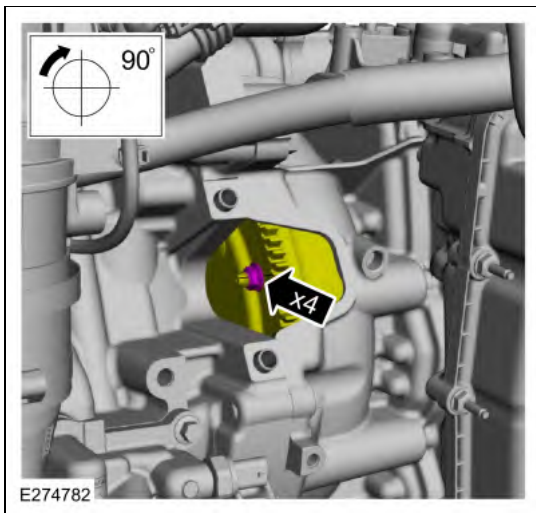
27. Connect the turbine shaft speed sensor/intermediate speed sensor A (ISSA) electrical connector and install the wiring harness retainer.



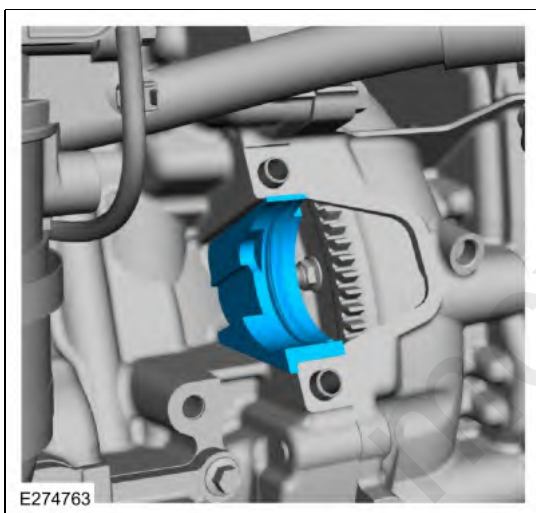
28. Position back the start/stop coolant pump and install the nuts.
Torque: 80 lb.in (9 Nm)



29. **NOTE:** Only rotate the crankshaft in a clockwise direction.
Install the new torque converter nuts.
Torque: 35 lb.ft (48 Nm)



30. Install the stator motor isolator.



31. Install the stator motor.

Refer to: Starter Motor (303-06A Starting System - 2.0L EcoBoost (184kW/250PS) â€“ MI4, Removal and Installation).

All wheel drive (AWD)

32. Install the LH halfshaft.

Refer to: Front Halfshaft LH (205-04 Front Drive Halfshafts, Removal and Installation).

33. Install the transfer case.

Refer to: Power Transfer Unit - Vehicles With: Power Transfer Unit Oil-to-Coolant Cooler (308-07B Power Transfer Unit - 2.0L EcoBoost (184kW/250PS) â€“ MI4, Installation).

Refer to: Power Transfer Unit - Vehicles Without: Power Transfer Unit Oil-to-Coolant Cooler (308-07B Power Transfer Unit - 2.0L EcoBoost (184kW/250PS) â€“ MI4, Installation).

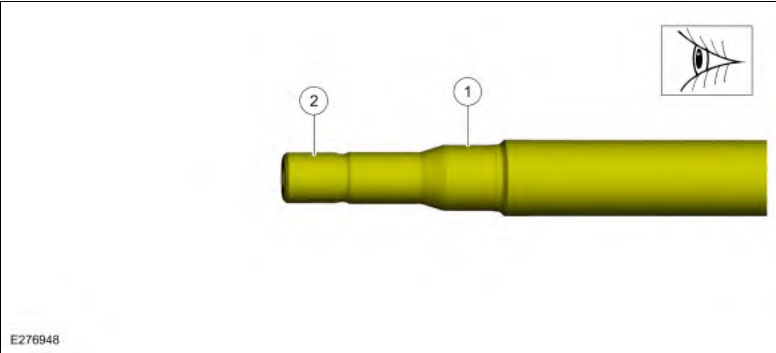
Vehicles with front wheel drive (FWD)

34. Install the LH halfshaft.

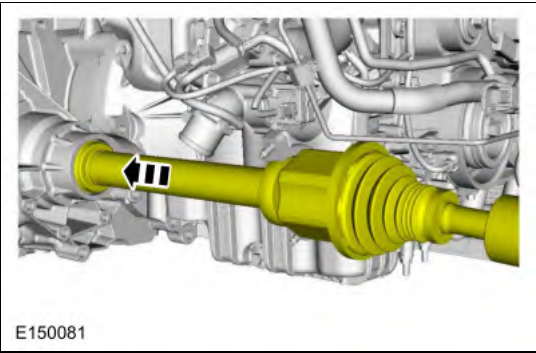
Refer to: Front Halfshaft LH (205-04 Front Drive Halfshafts, Removal and Installation).

35.

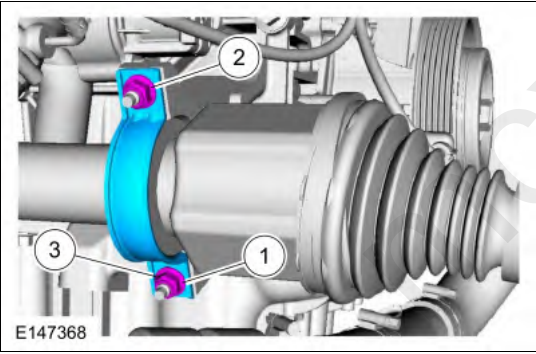
1. Inspect the RH halfshaft seal surface.
2. Inspect the differential side gear splines.



36. **NOTE:** *If the transmission has been replaced or overhauled, the halfshaft seals do not need to be replaced.*
- Install a new RH halfshaft seal.
Refer to: Halfshaft Seal RH (307-01A Automatic Transmission - 8-Speed Automatic Transmission â€” 8F35/8F40, Removal and Installation).
37. Install the RH halfshaft assembly.



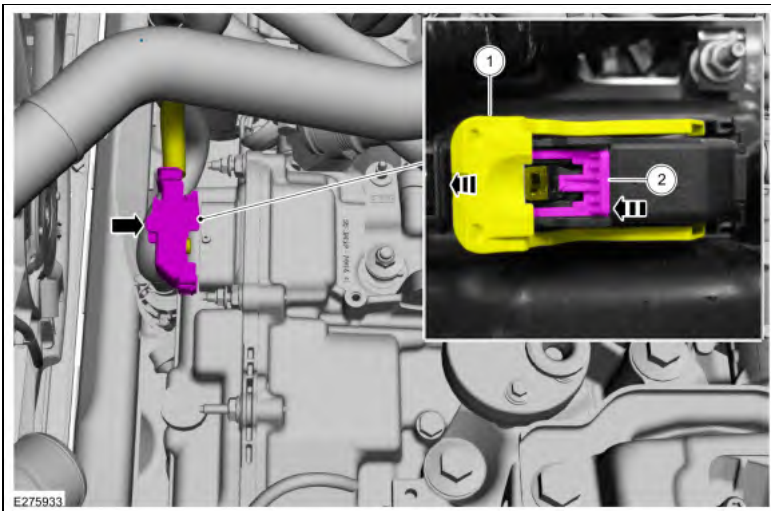
38. Install the new halfshaft retaining strap and the new halfshaft retaining strap nuts.
- Torque:*
- Stage 1: 44 lb.in (5 Nm)
 - Stage 2: 18 lb.ft (25 Nm)
 - Stage 3: 18 lb.ft (25 Nm)



39. Install the front subframe.
Refer to: Front Subframe (502-00 Uni-Body, Subframe and Mounting System, Removal and Installation).

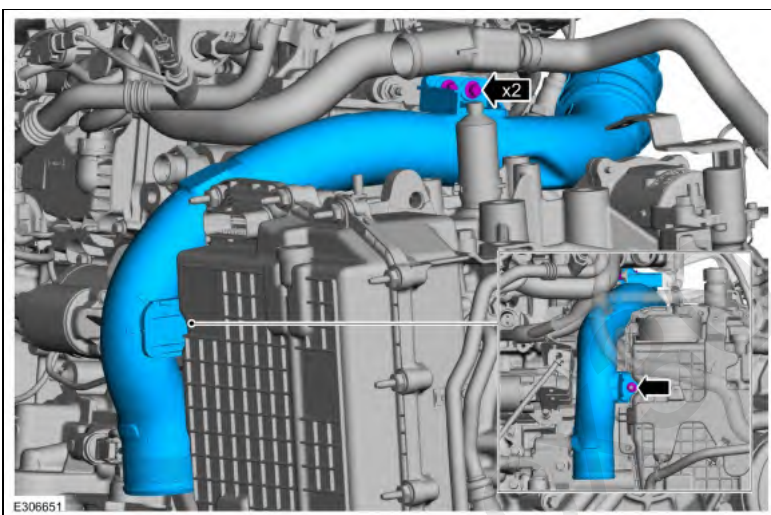
All vehicles

- 40.
- Connect the transmission connector.
- 1. Rotate the connector latch until it locks in place.
 - 2. Slide the locking clip back to its original position.



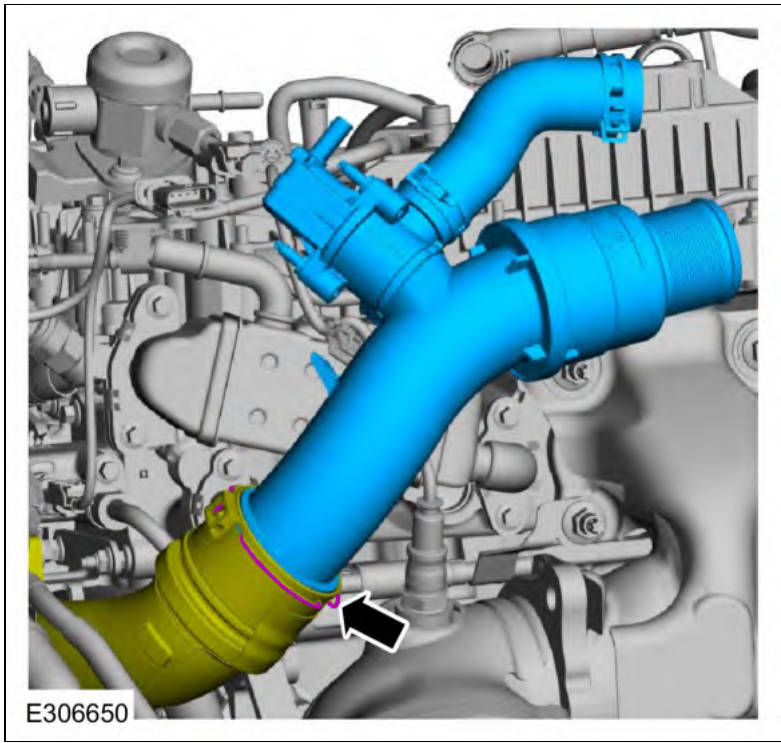
41. **NOTICE:** When removing any turbocharger air intake system components, make sure to cover any open ports to prevent debris from entering the system. The turbocharger compressor vanes can be damaged by even the smallest particles. All components need to be inspected and cleaned prior to installation or reassembly.

- Uncover, clean and inspect all open ports.
 - Install the CAC tube and the nuts.
- Torque: 97 lb.in (11 Nm)*

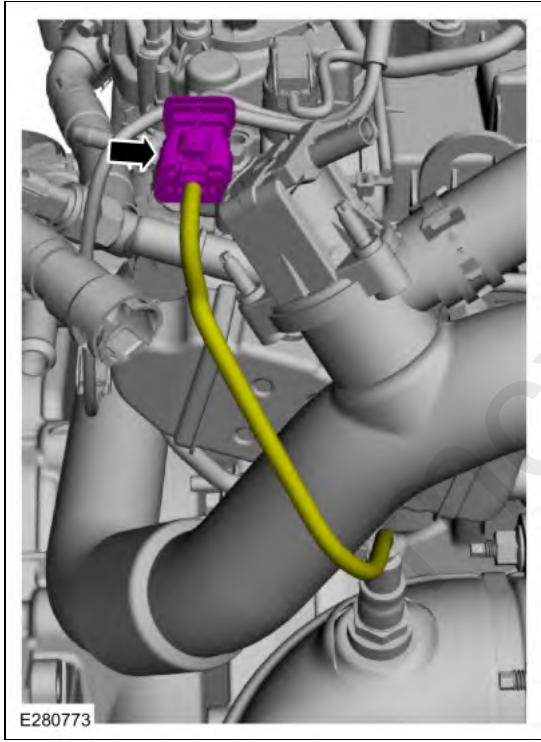


42. **NOTICE:** When removing any turbocharger air intake system components, make sure to cover any open ports to prevent debris from entering the system. The turbocharger compressor vanes can be damaged by even the smallest particles. All components need to be inspected and cleaned prior to installation or reassembly.

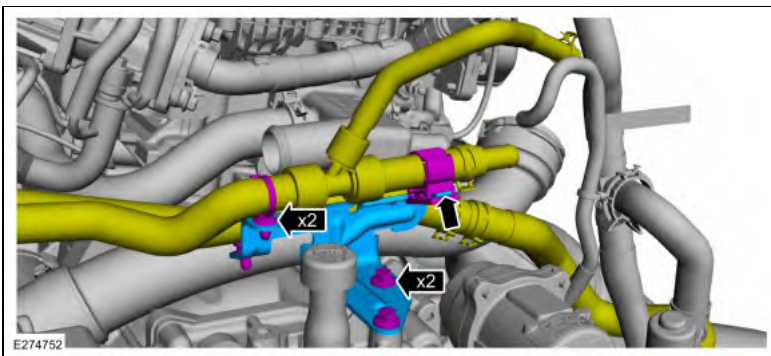
- Uncover, clean and inspect all open ports.
- Install the CAC pipe.



43. Connect the HO2S electrical connector.



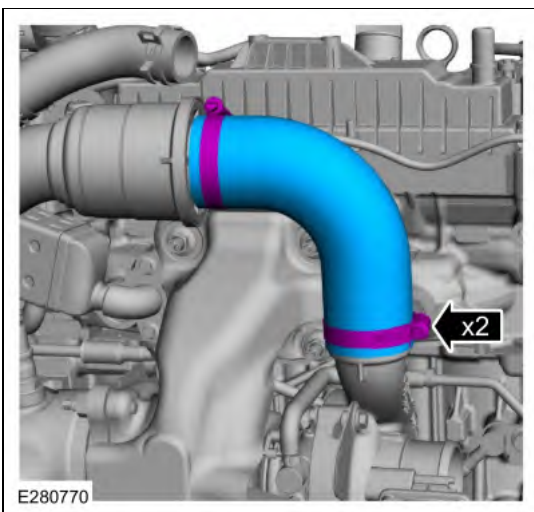
44. Install the coolant hoses bracket, bolts and attach the retainers.
Torque: 106 lb.in (12 Nm)



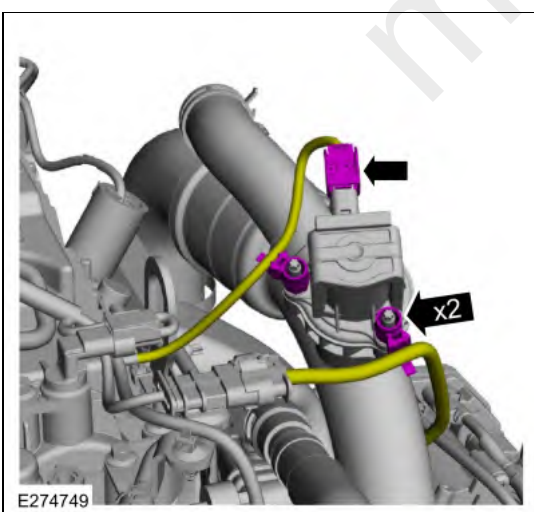
45. **NOTICE:** When removing any turbocharger air intake system components, make sure to cover any open ports to prevent debris from entering the system. The turbocharger compressor vanes can be damaged by even the smallest particles. All components need to be inspected and cleaned prior to installation or reassembly.

Uncover, clean and inspect all open ports.

- Install the CAC tube and tighten the clamps.
Torque: 53 lb.in (6 Nm)

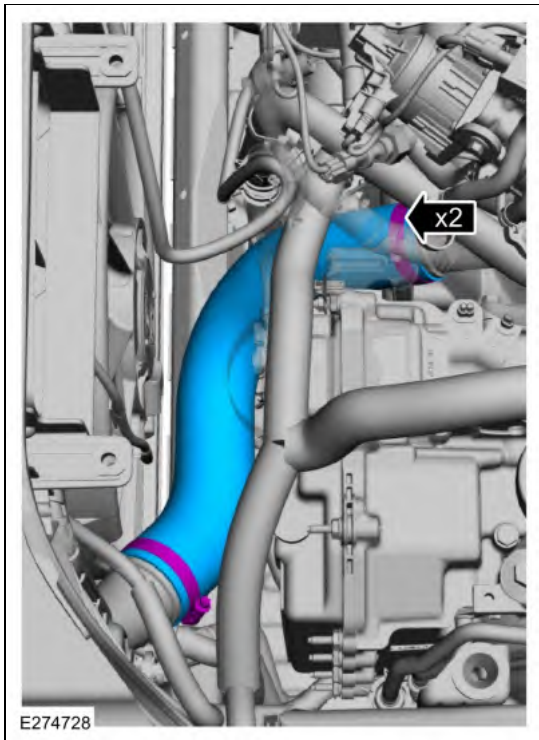


46. Connect the CAC tube bypass valve electrical connector and wire retainers.

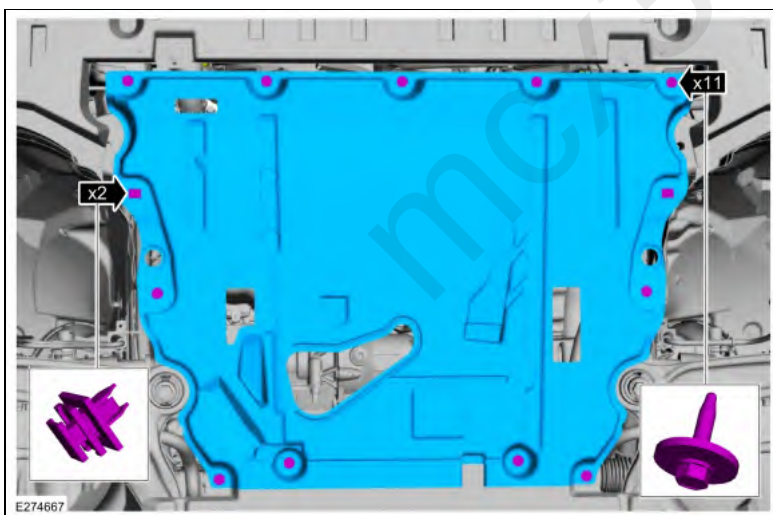


47. **NOTICE:** When removing any turbocharger air intake system components, make sure to cover any open ports to prevent debris from entering the system. The turbocharger compressor vanes can be damaged by even the smallest particles. All components need to be inspected and cleaned prior to installation or reassembly.

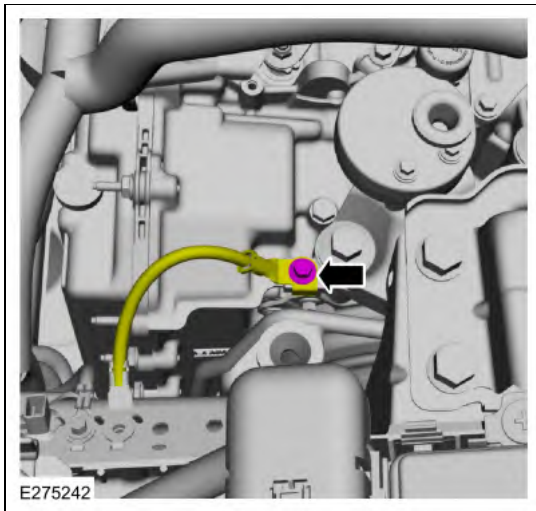
- Uncover, clean and inspect all open ports.
- Install the CAC tube and tighten the clamps.
Torque: 39 lb.ft (53 Nm)



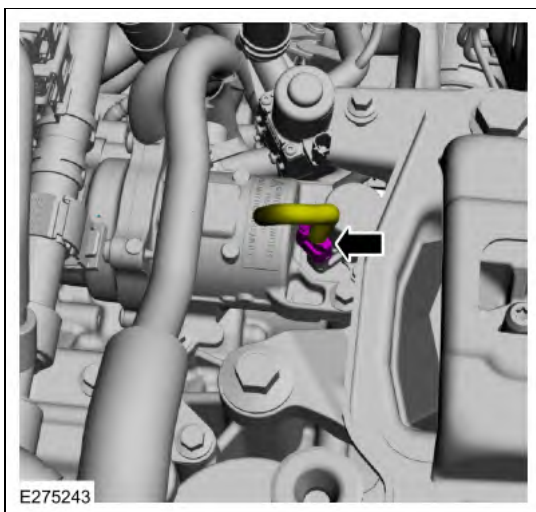
48. Install the underbody shields and the retainers.



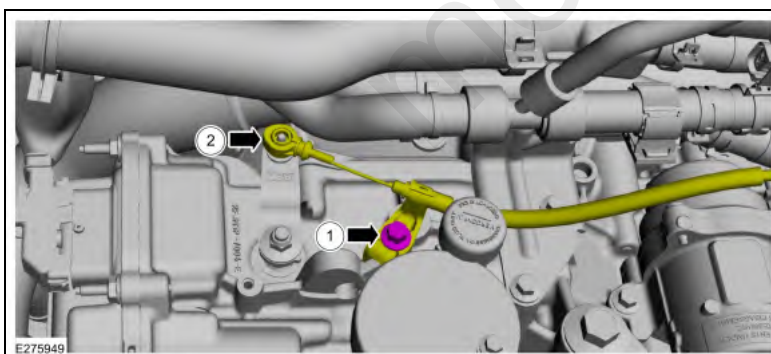
49. Position back the ground strap and install the bolt.
Torque: 97 lb.in (11 Nm)



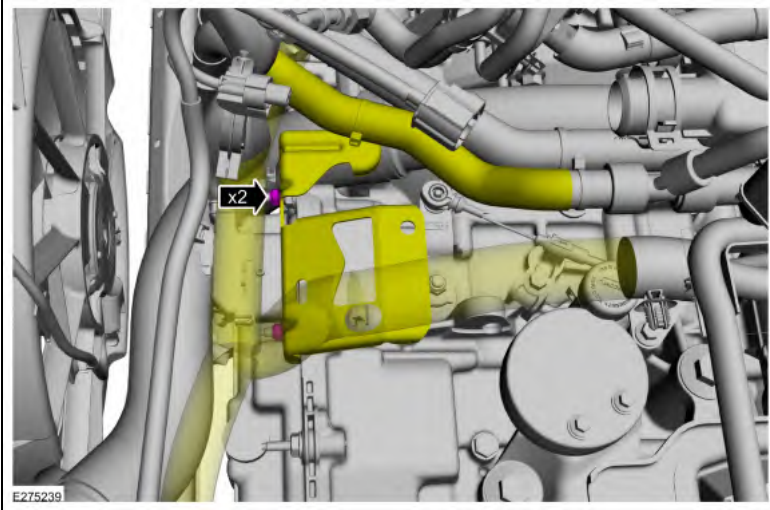
50. Connect the start-stop accumulator electrical connector.



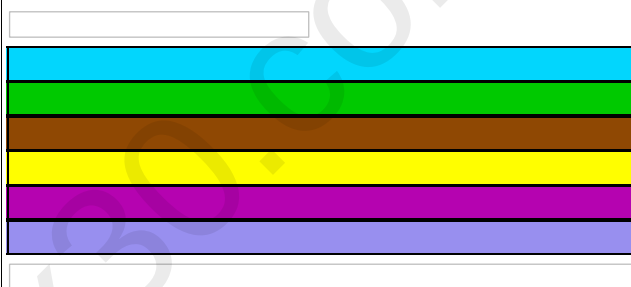
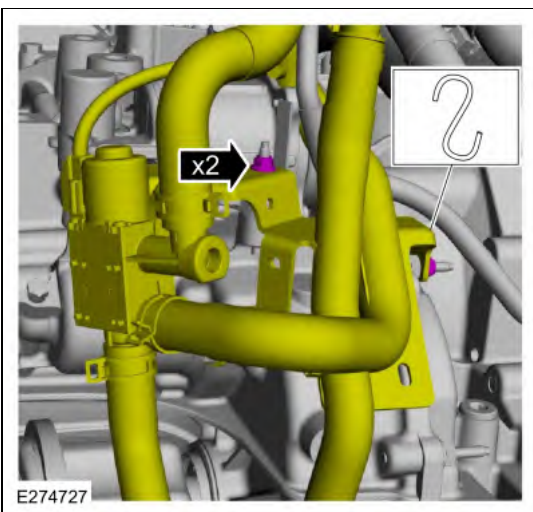
- 51.
1. Position back the manual park release cable and install the bolt.
Torque: 177 lb.in (20 Nm)
 2. Connect the manual park release cable to the manual control lever.



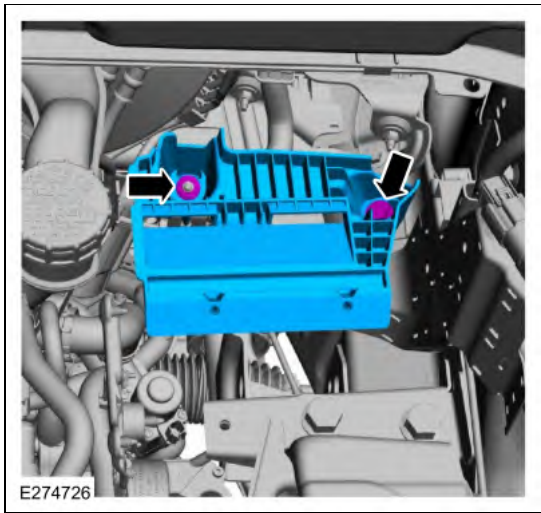
52. Position back the wiring harness and install the nuts.
Torque: 80 lb.in (9 Nm)



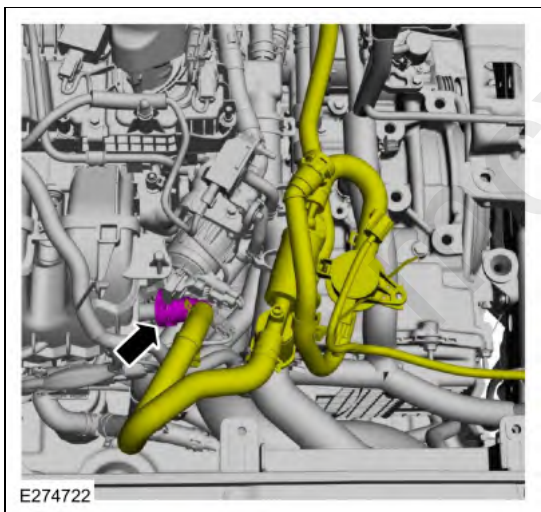
53. Remove the hook and position back the coolant valve and hoses, install the nuts.
Torque: 106 lb.in (12 Nm)



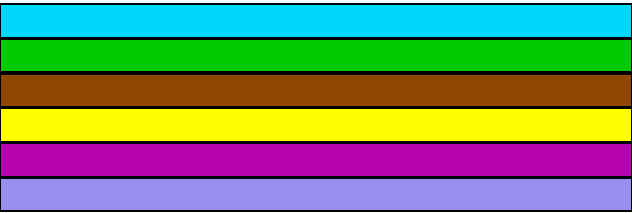
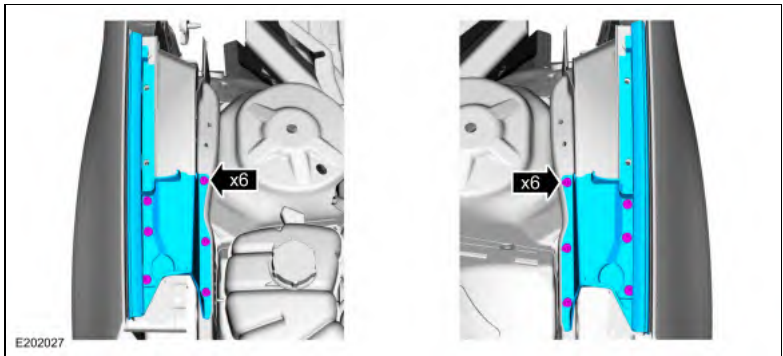
54. Install the battery tray support bracket, nut and bolt.
Torque: 177 lb.in (20 Nm)



55. Position and connect the brake vacuum tube assembly.



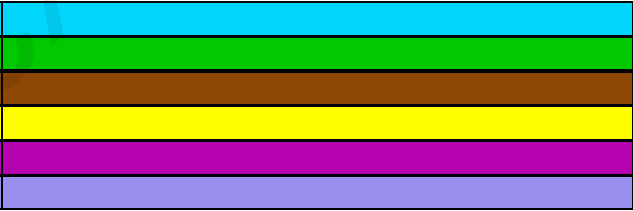
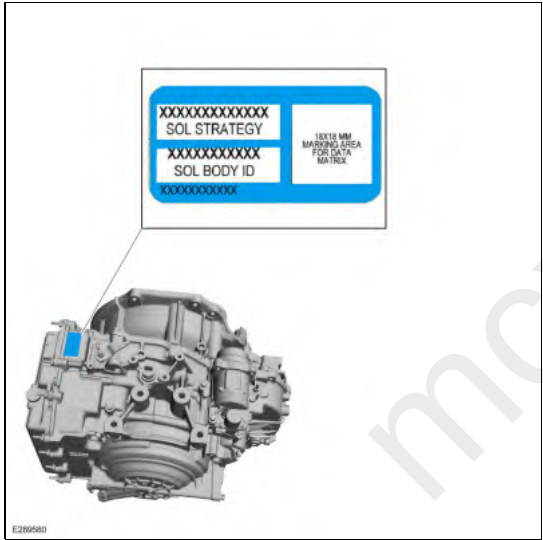
56. Install the RH and LH cowl filler panels and the retainers.



57. Install the following items:
1. Refer to: Air Cleaner Outlet Pipe (303-12A Intake Air Distribution and Filtering - 2.0L EcoBoost (184kW/250PS) – MI4, Removal and Installation).

2. Refer to: Battery Tray (414-01 Battery, Mounting and Cables, Removal and Installation).

3. Refer to: Cowl Panel (501-02 Front End Body Panels, Removal and Installation).
58. Fill the engine cooling system
- Refer to: Engine Cooling System Draining, Vacuum Filling and Bleeding (303-03B Engine Cooling - 2.7L EcoBoost (238kW/324PS), General Procedures).
59. Fill the transmission with transmission fluid.
- Refer to: Transmission Fluid Drain and Refill (307-01A Automatic Transmission - 8-Speed Automatic Transmission – 8F35/8F40, General Procedures).
60. After completing the repairs, perform the Misfire Monitor Neutral Profile Correction procedure using a diagnostic scan tool.
61. If a new main control valve body is installed, the solenoid body strategy must be updated.
- Refer to: Transmission Strategy Download (307-01A Automatic Transmission - 8-Speed Automatic Transmission – 8F35/8F40, General Procedures).
62. If a new main control valve body is installed, install a new solenoid body identification tag.



Transmission Fluid Temperature (TFT) Sensor

Materials

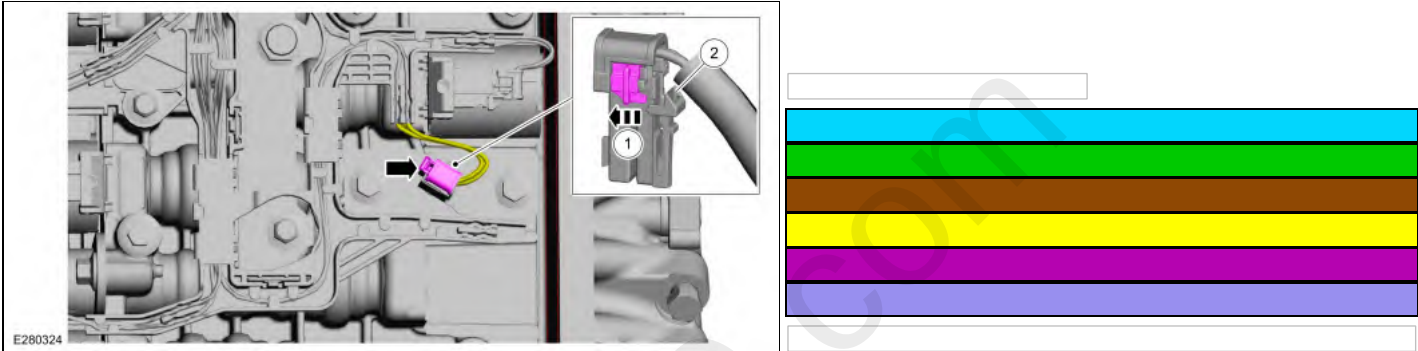
Name	Specification
Motorcraft® MERCON® ULV Automatic Transmission Fluid XT-12-QLV	WSS-M2C949-A, MERCON® ULV

Removal

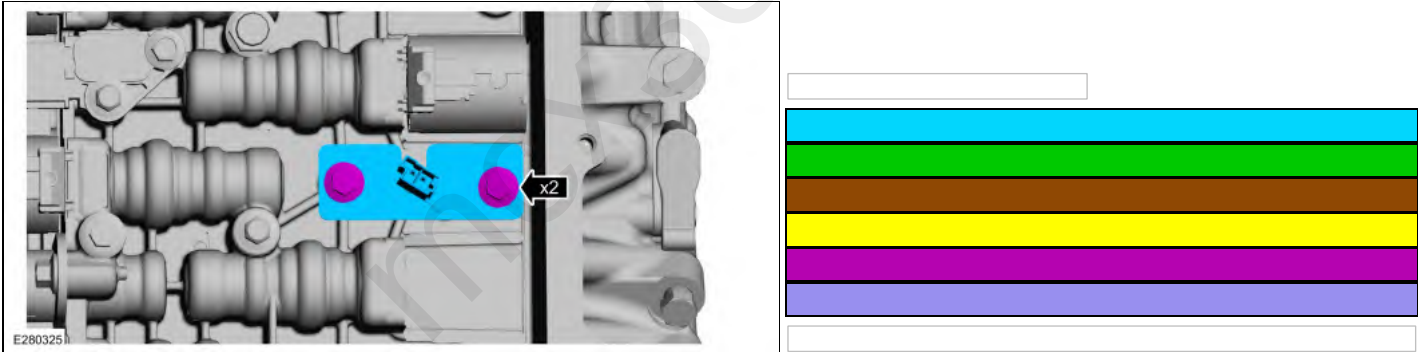
1. Remove the main control cover.
Refer to: Main Control Cover (307-01A Automatic Transmission - 8-Speed Automatic Transmission â€™ 8F35/8F40, Removal and Installation).
2. Disconnect the TFT sensor.

1. Slide the locking tab.

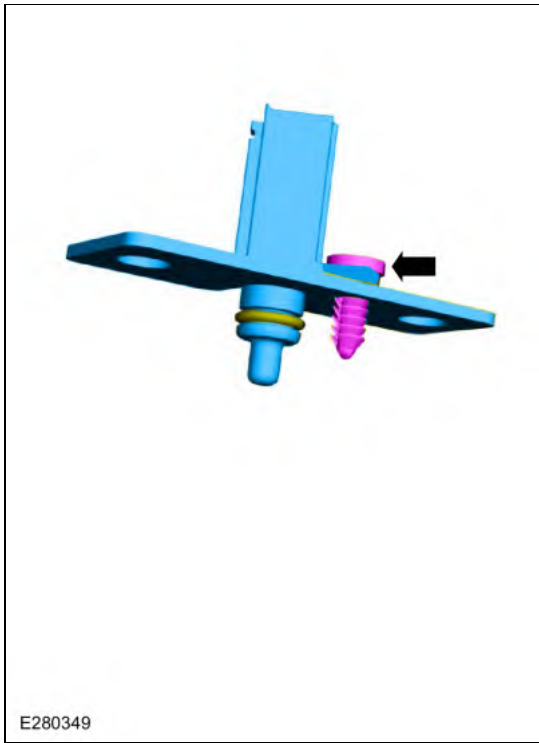
2. While pressing the tab disconnect the OSS electrical connector.



3. Remove the bolts and the TFT sensor.



4. Remove the pushpin and remove the TFT sensor from the retaining plate.



Installation

1. Lubricate TFT sensor O-ring with clean transmission fluid and install the pushpin.

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