

Main Control Valve Body

Special Tool(s) / General Equipment

|                                                                                           |                                                                                               |
|-------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|
| <br>17054 | 307-299<br>Alignment Pins, Valve Body<br>TKIT-1994-LMH/MH2<br>TKIT-1994-F<br>TKIT-1994-FLM/FM |
|-------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|

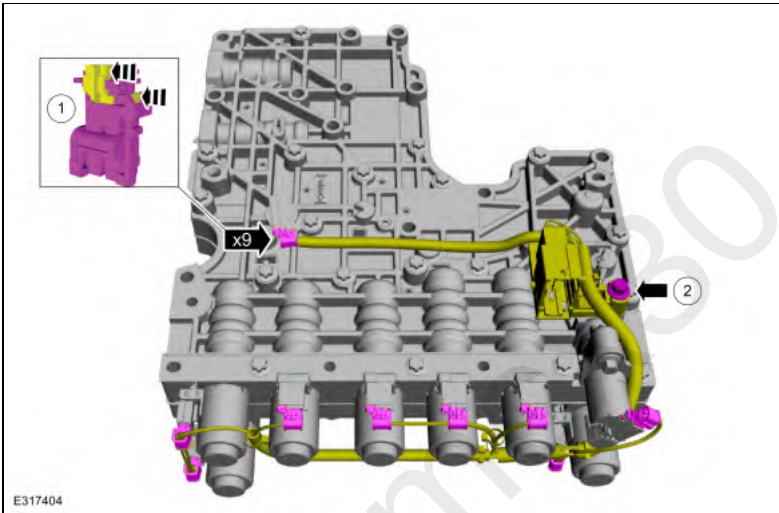
Materials

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

1. For solenoid and valve identification.  
Refer to: Main Control Valve Body (307-01B Automatic Transmission, Transfer Case and Power Transfer Unit - 10-Speed Automatic Transmission â€™ 10R140, Description and Operation).
2.  
Remove the internal wiring harness.

1. Slide the plastic lock to the unlock position. While pressing the plastic tab, disconnect the electrical connectors.

2. Remove internal wiring harness retaining bolt.



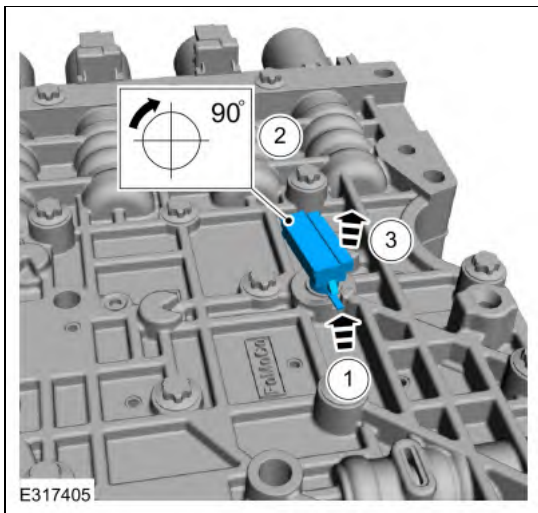
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3.  
Remove the TFT sensor.

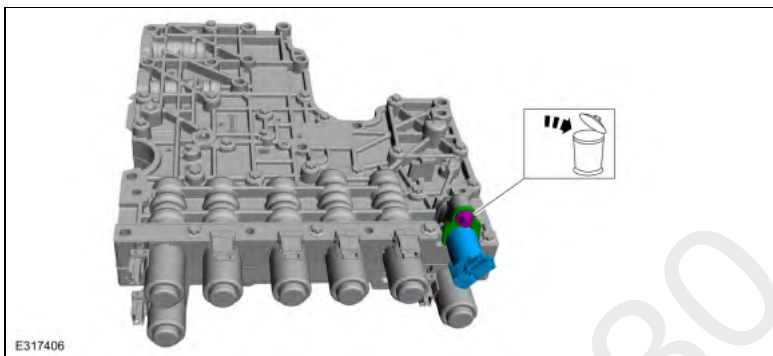
1. Lift plastic tab.

2. Rotate the TFT sensor clockwise.

3. Remove the TFT sensor.

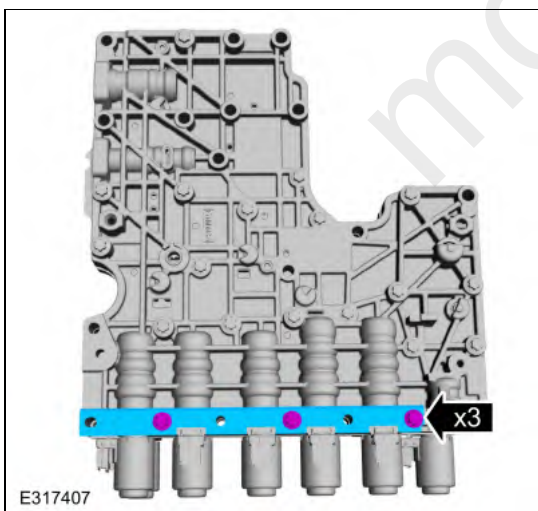


4. Remove and discard the bolt. Remove the solenoid retaining plate and the LPC solenoid.

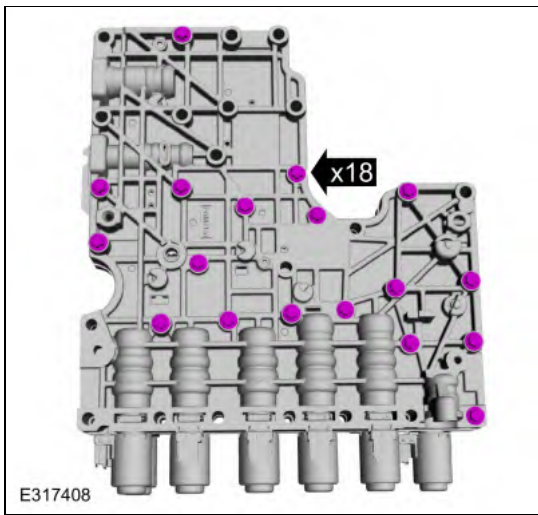


5. **NOTE:** Use a 10ep Torx Plus<sup>®</sup> socket to remove the bolts.

Remove bolts and the shift solenoid retaining plate.

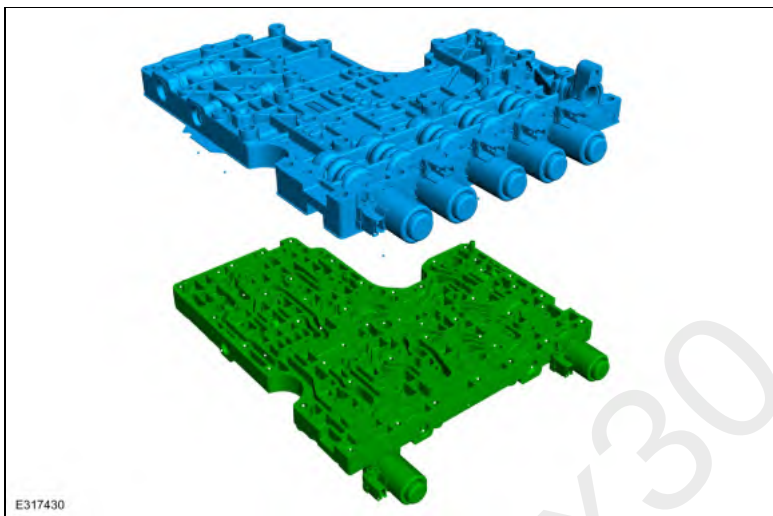


6. Remove the valve body bolts.



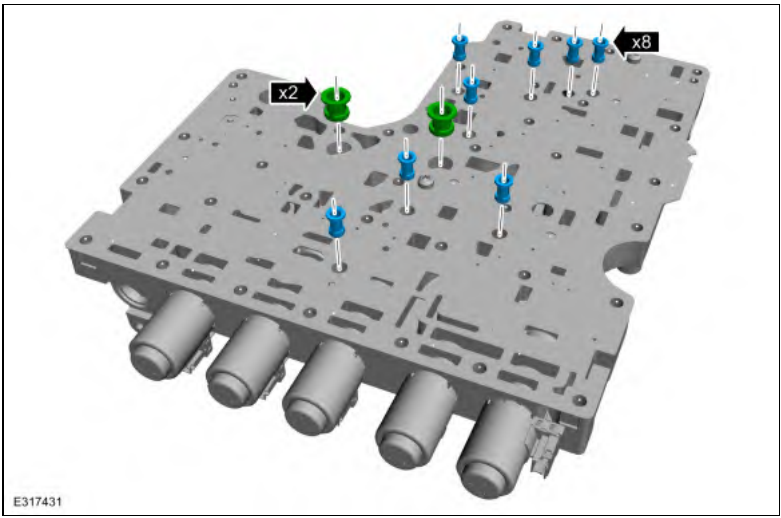
7. **NOTICE:** Many components and surfaces in the main control valve body are precision machined. Use care when handling the upper and lower valve body or damage can occur to the machined surfaces.

Separate the lower valve body from the upper valve body.

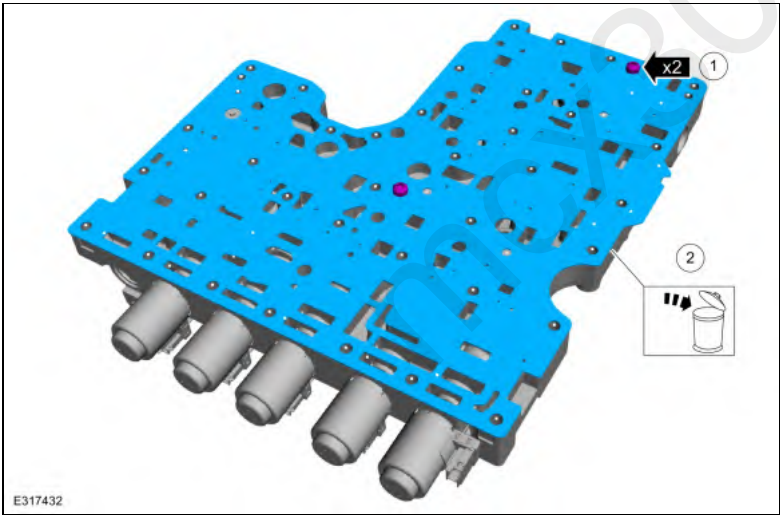


#### Lower Valve Body

8. Remove the separator plate filters.

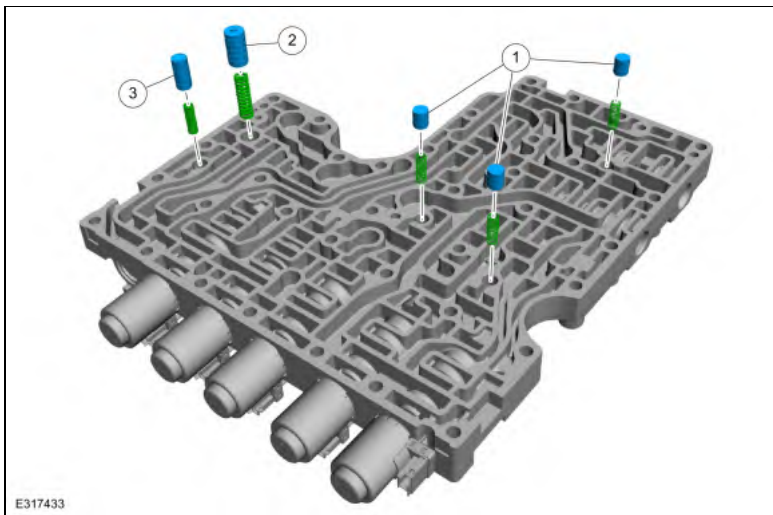


- 9.
1. Remove the valve body separator plate bolts.
  2. Remove and discard the valve body separator plate.



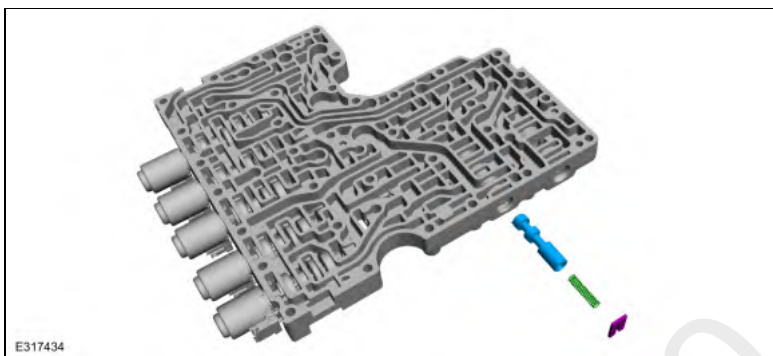
10. **NOTE:** *The orientation of the valves and springs.*

- Remove the following items:
1. Control bypass valve assemblies
  2. Accumulator valve assembly
  3. Control pressure regulator valve assembly



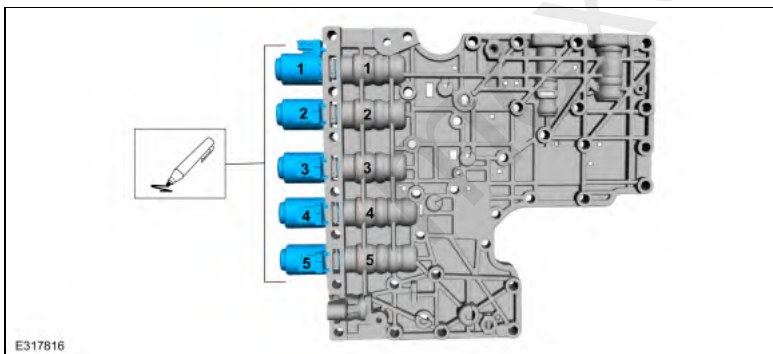
11. **NOTICE:** Note the location of the retaining clip, valve and valve spring for assembly. Failure to install the components in the correct location will result in harsh/soft or no shifts or damage to the transmission.

Remove the retaining clip, valve spring and valve from the valve body assembly.



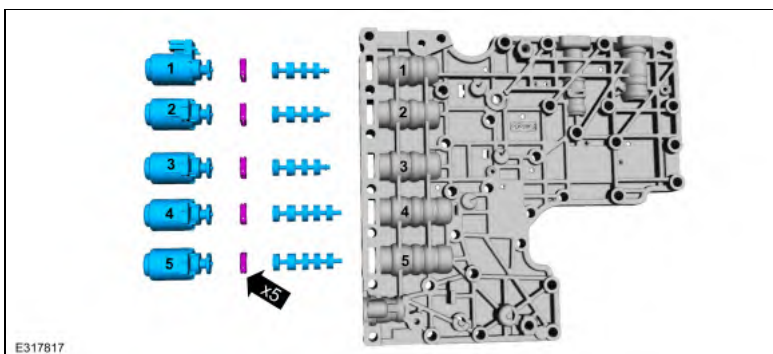
12. **NOTICE:** Solenoids and clutch control valves may visually appear the same but they are calibrated from the factory and are not all the same. Use care not to assemble the main control assembly incorrectly. Incorrect solenoid and clutch control valve installation results in poor transmission shift quality.

Number the solenoids 1 through 5 and number the main control solenoid ports 1 through 5 to correspond to the solenoids.



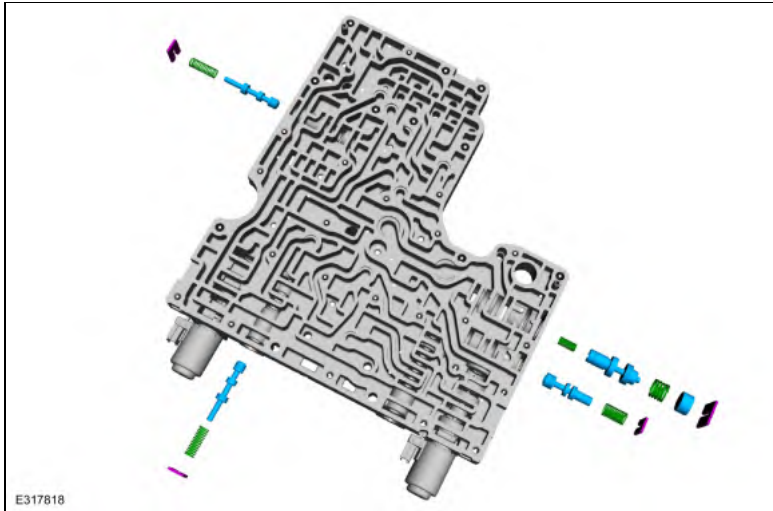
13. **NOTE:** Note the location of the clutch control valves and solenoids for assembly.

Remove the shift solenoid retainers, shift solenoids, and clutch control valves.

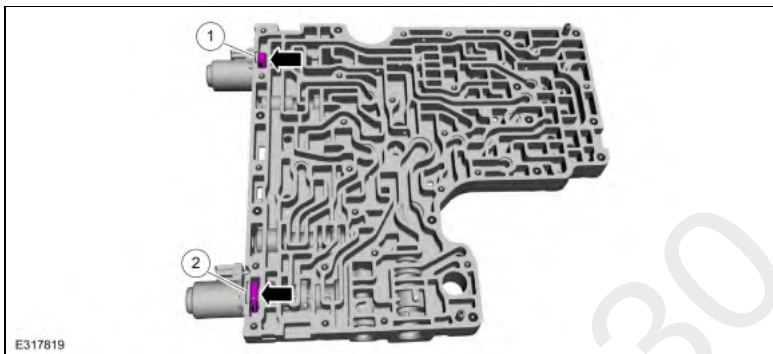


14. **NOTICE:** Note the location of the retaining clips, caps, valves and valve springs for assembly. Failure to install the components in the correct location will result in harsh/soft or no shifts or damage to the transmission.

Remove the retaining clips, cap, valves and valve springs from each bore of the valve body assembly.

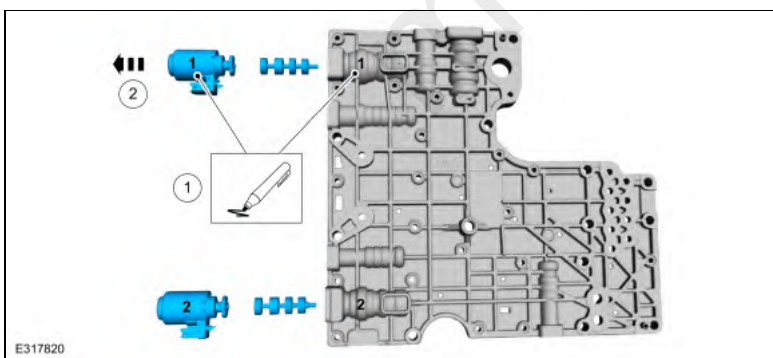


- 15.
1. Remove the small shift solenoid retainer.
  2. Remove the large shift solenoid retainer.



16. **NOTICE:** Solenoids and clutch control valves may visually appear the same but they are calibrated from the factory and are not all the same. Use care not to assemble the main control assembly incorrectly. Incorrect solenoid and clutch control valve installation results in poor transmission shift quality.

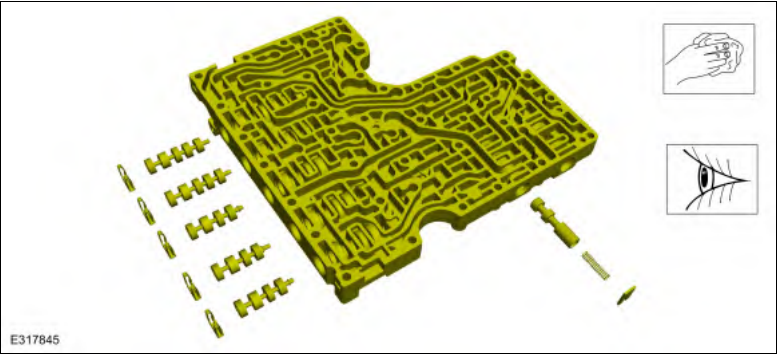
1. Number the solenoids and number the main control solenoid ports to correspond to the solenoids.
2. Remove the shift solenoids and the clutch control valves.



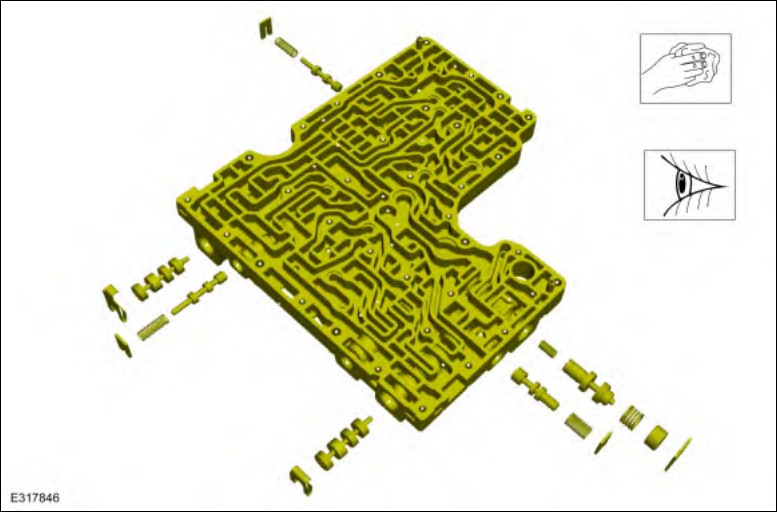
#### Upper and Lower Valve Body

17. **NOTICE:** Many components and surfaces in the main control valve body are precision machined. Use care when cleaning the lower valve body or damage can occur to the machined surfaces.

Clean and inspect the lower valve body for damage. Inspect the passages and valves for damage and clean any excessive debris. Install a new component if necessary.

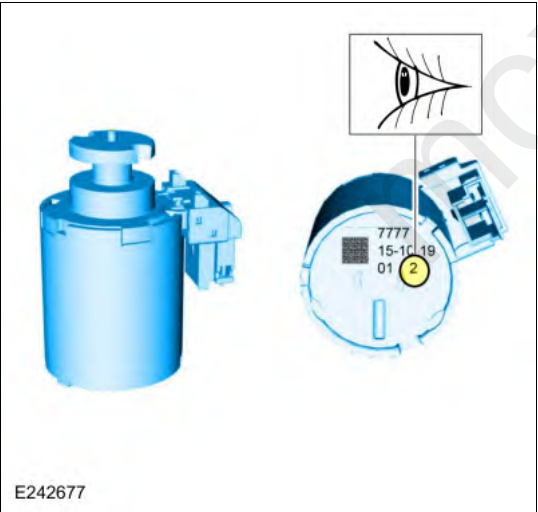


18. Clean and inspect the upper valve body for damage. Inspect the passages and valves for damage and clean any excessive debris. Install a new component if necessary.

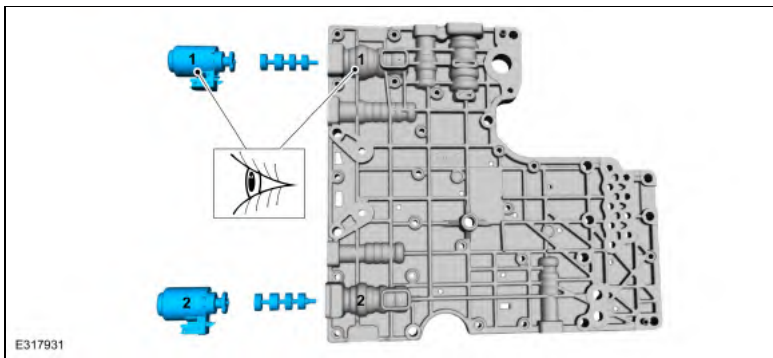


Upper Valve Body

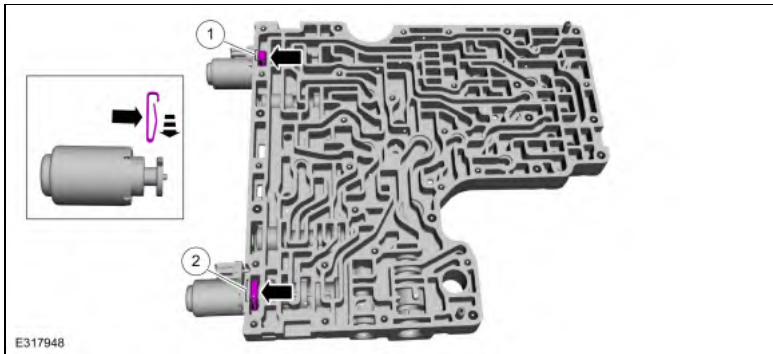
19. **NOTICE:** Solenoids are calibrated from the factory and are not all the same. To replace a solenoid, match the band number with the original solenoid or harsh shifts or damage to the transmission can occur.
- If new solenoids are needed, identify the solenoid band number.



20. **NOTICE:** Failure to install the components in the correct location will result in harsh/soft or no shifts or damage to the transmission.
- Install the clutch control valves, and the shift solenoids in the corresponding marked location.

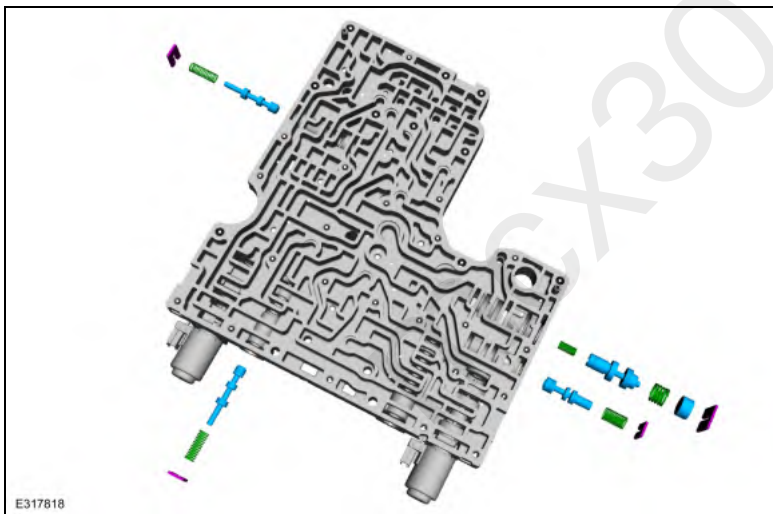


21. Install the shift solenoid retainers with the flat side towards the solenoids.
1. Install the small shift solenoid retainer.
  2. Install the large shift solenoid retainer.



22. **NOTICE:** Failure to install the components in the correct location will result in harsh/soft or no shifts or damage to the transmission.

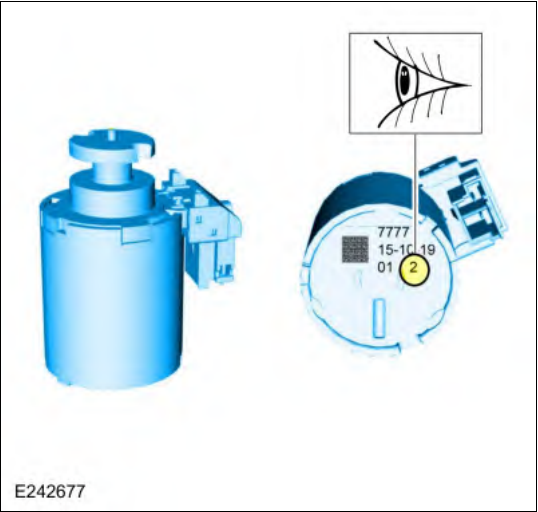
Install the valves, valve springs, caps and the retaining clips into the correct valve body valve bore.



### Lower Valve Body

23. **NOTICE:** Solenoids are calibrated from the factory and are not all the same. To replace a solenoid, match the band number with the original solenoid or harsh shifts or damage to the transmission can occur.

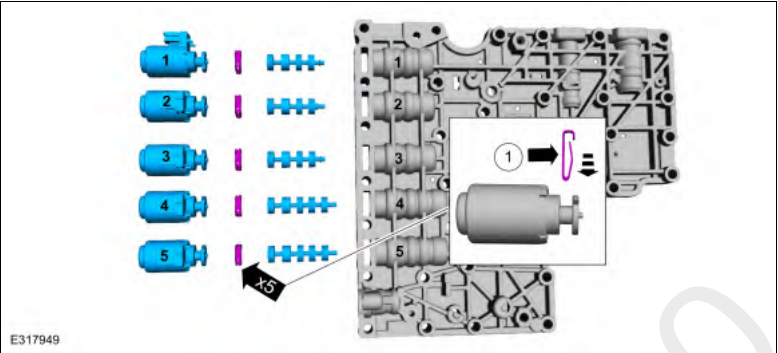
If new solenoids are needed, identify the solenoid band number.



24. **NOTICE:** Failure to install the components in the correct location will result in harsh/soft or no shifts or damage to the transmission.

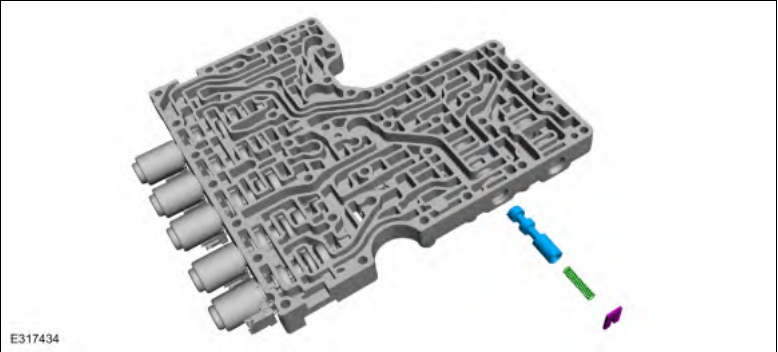
Install the clutch control valves, and the shift solenoids in the corresponding marked location. Install the shift solenoid retainers with the flat side towards the solenoids.

- 1. Retainer flat side



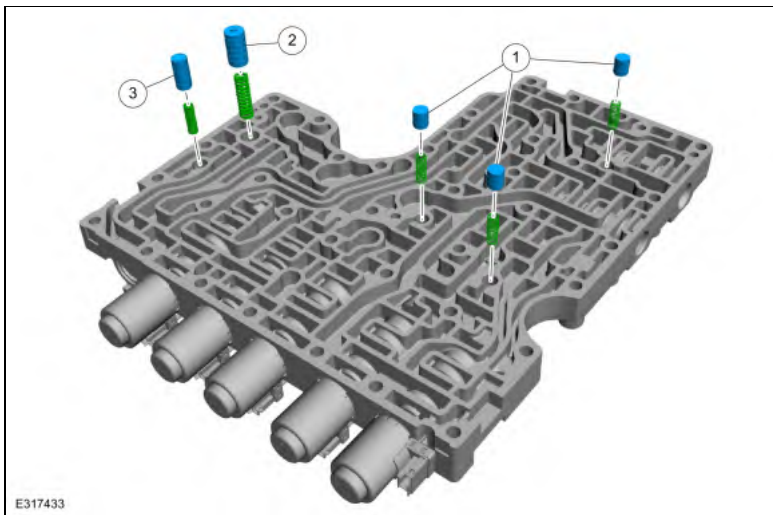
25. **NOTICE:** Failure to install the components in the correct location will result in harsh/soft or no shifts or damage to the transmission.

Install the valve, valve springs and the retaining clips into the correct valve body valve bore.

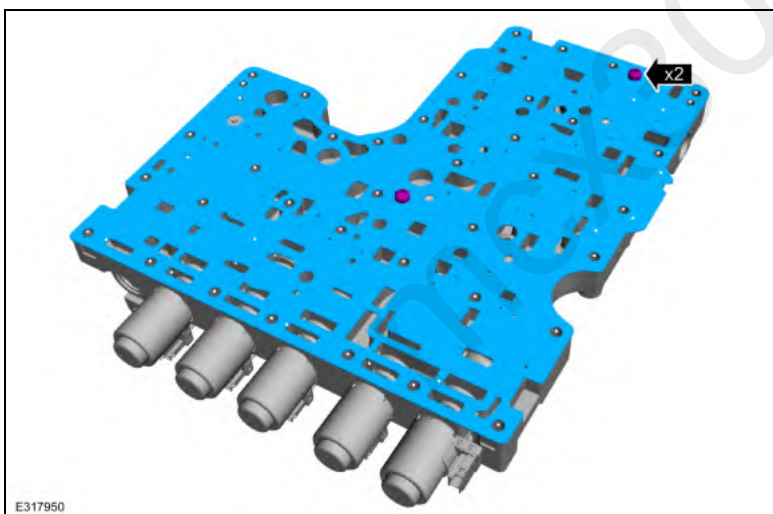


26. **NOTE:** The orientation of the valves and springs.

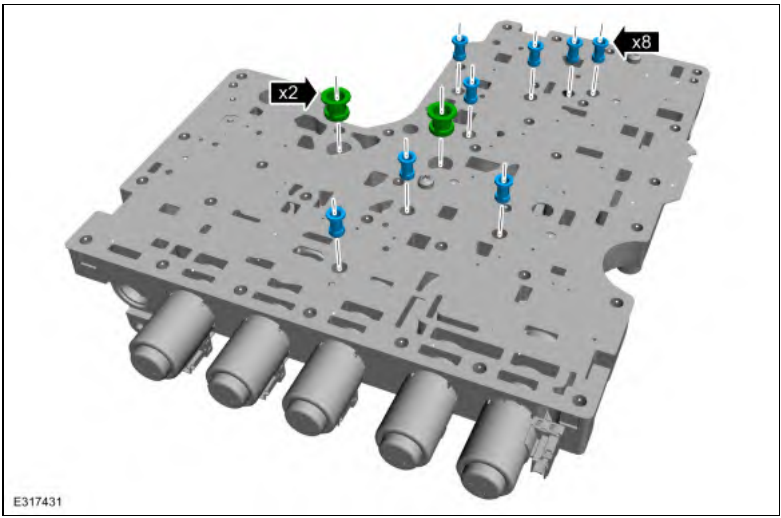
- Install the following items:
- 1. Control bypass valve assemblies
  - 2. Accumulator valve assembly
  - 3. Control pressure regulator valve assembly



27. Using the special tools align the new valve body separator plate onto the lower valve body and install the bolts.  
 Use Special Service Tool: 307-299 Alignment Pins, Valve Body.  
*Torque: 62 lb.in (7 Nm)*

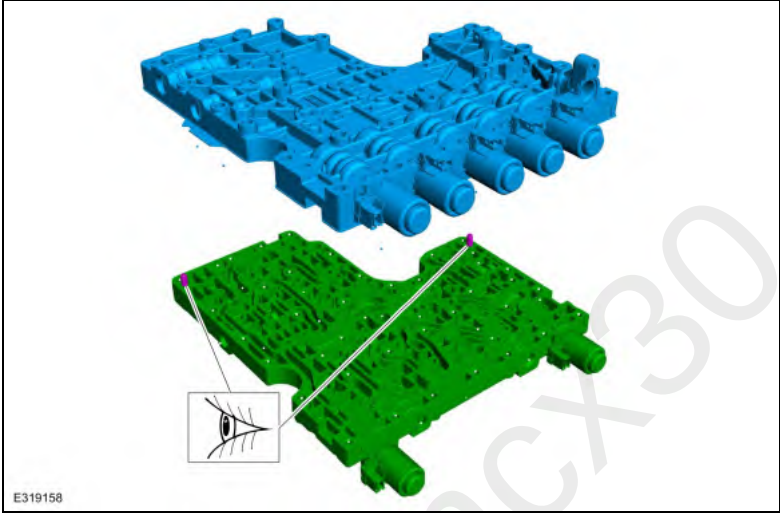


28. Install the separator plate filters.

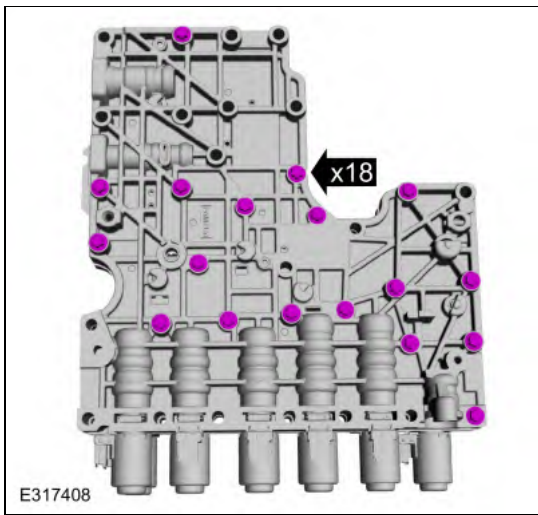


Upper and Lower Valve Body

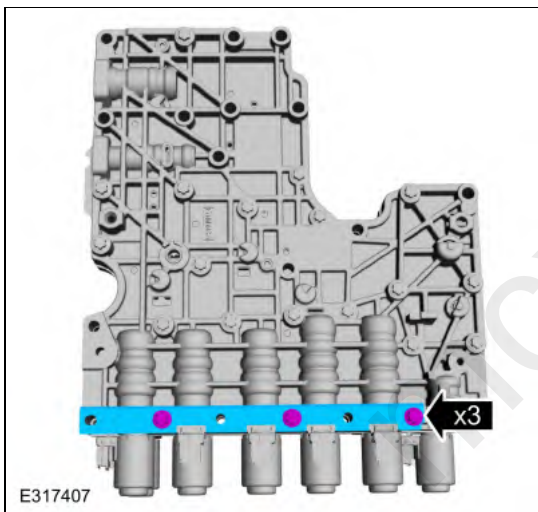
29. Align the guide pins on the upper valve body with the alignment holes in the lower valve body.



30. **NOTE:** Use a 10ep Torx Plus<sup>®</sup> socket to install the bolts.  
Loosely install the valve body bolts.



31. Install the shift solenoid retaining plate and loosely install the bolts.

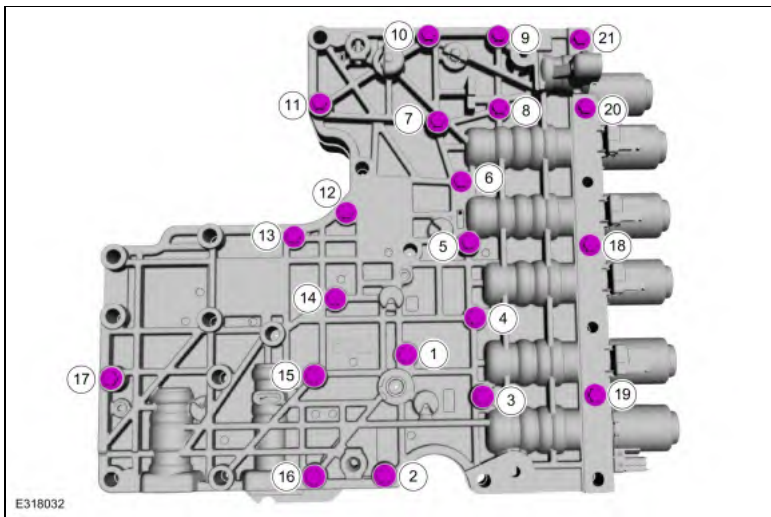


32. Tighten the bolts in the sequence shown.

*Torque:*

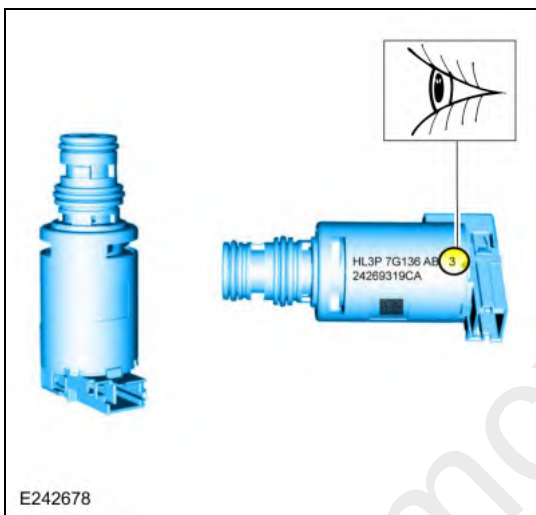
Stage 1: 62 lb.in (7 Nm)

Stage 2: 97 lb.in (11 Nm)



33. **NOTICE:** Solenoids are calibrated from the factory and are not all the same. To replace the solenoid, match the replacement solenoid band number with the original solenoid or harsh shifts or damage to the transmission can occur.

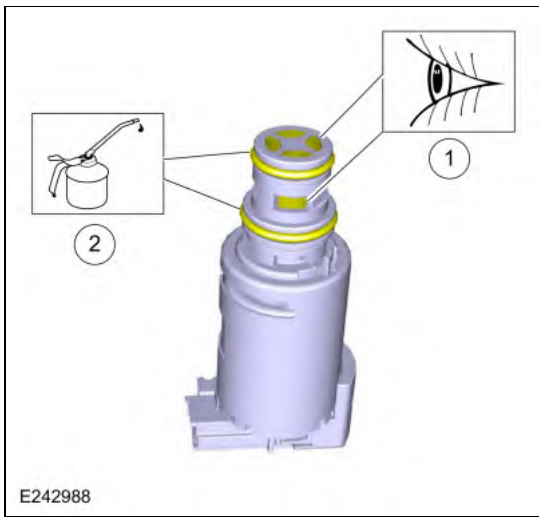
If a new solenoid is needed, identify the solenoid band number.



34.

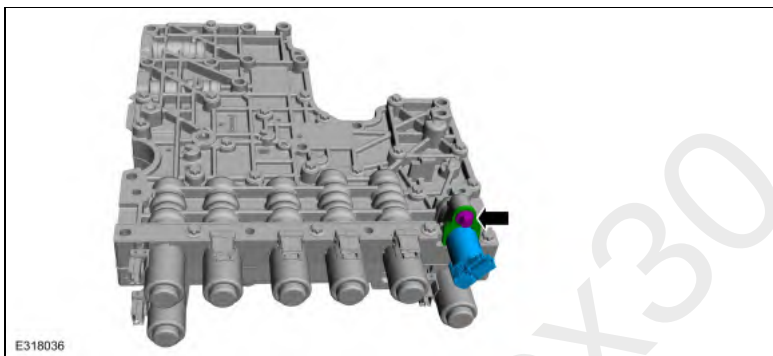
1. Inspect the solenoid screens for debris that may restrict fluid flow
2. Lubricate the solenoid O-ring seals.

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



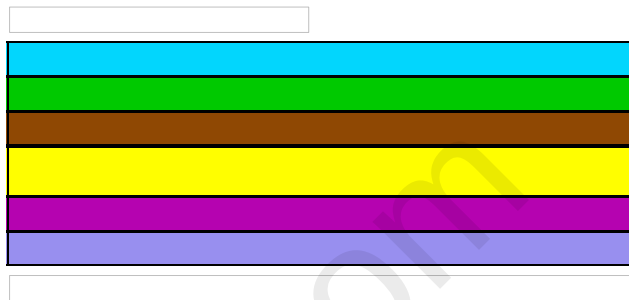
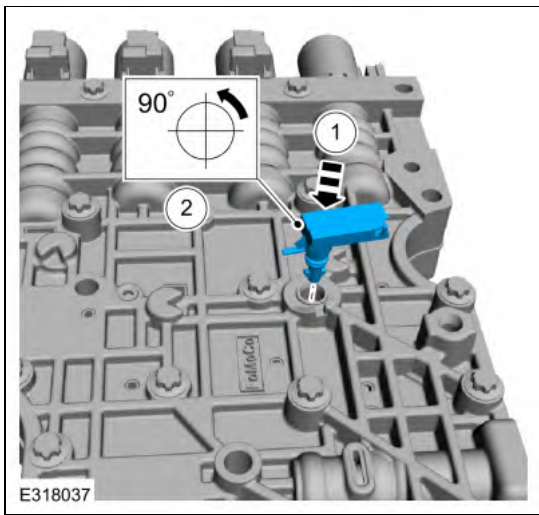
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35. Install the LPC solenoid, solenoid retaining plate and the new bolt.  
*Torque: 97 lb.in (11 Nm)*



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36. Install the TFT sensor.
1. Position the TFT sensor in the main control valve body.
  2. Rotate the TFT sensor counter clockwise until the plastic tab locks into place.



37.

1. Install the internal wiring harness and bolt.  
*Torque: 97 lb.in (11 Nm)*
2. Connect the internal wiring harness electrical connectors and slide the plastic locks to the locked position.

