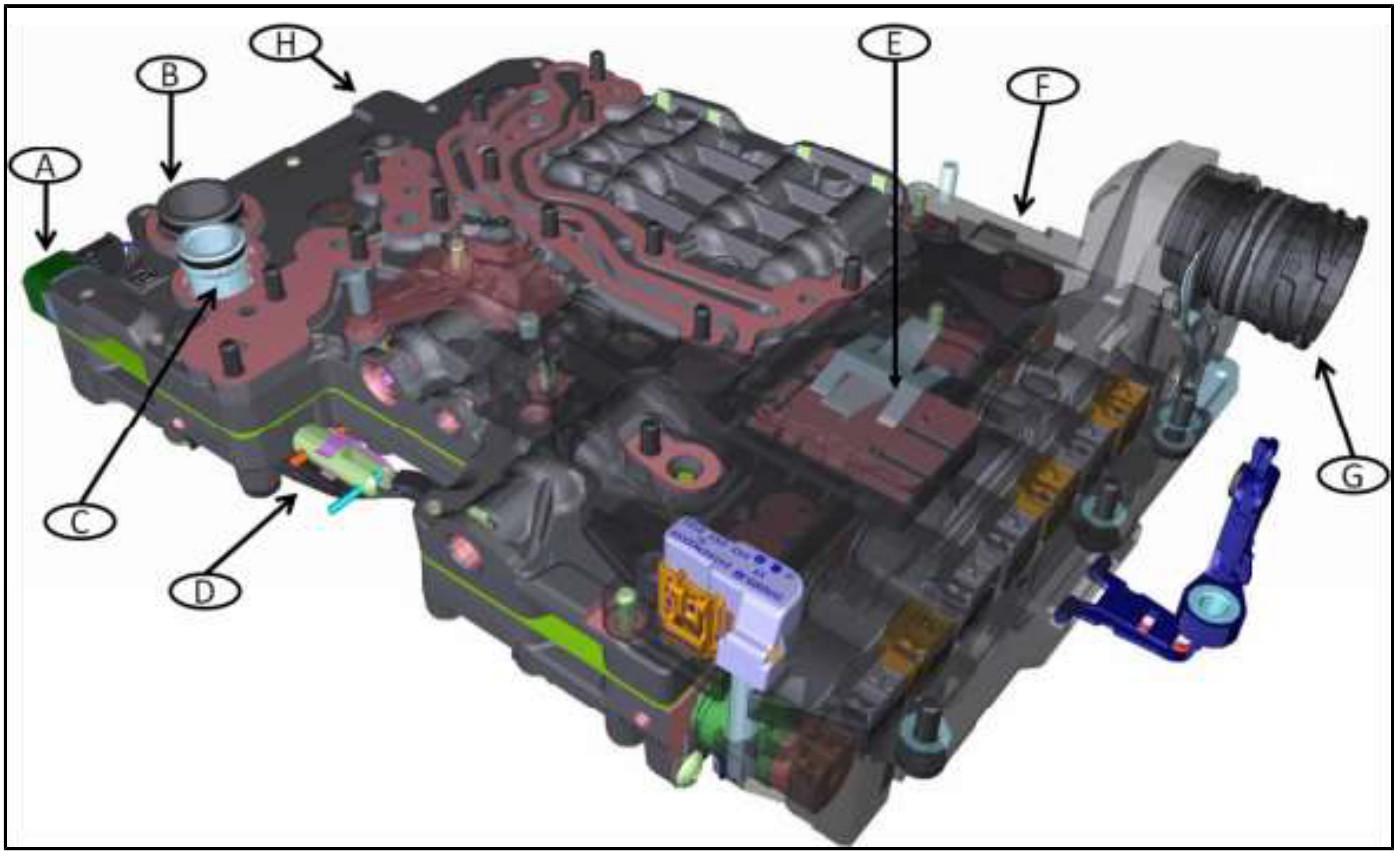
# DESCRIPTION AND OPERATION

## DESCRIPTION

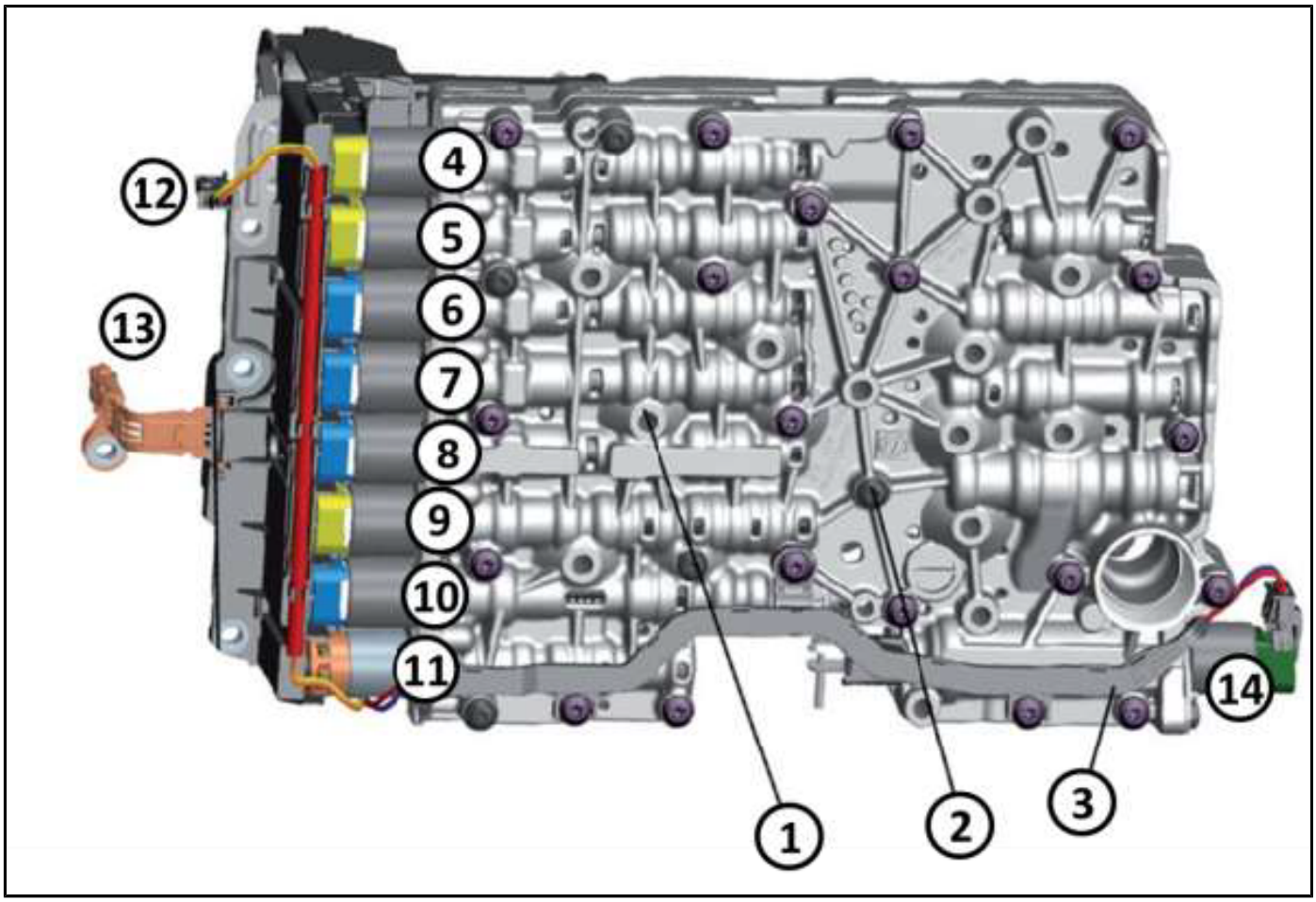
CAUTION: The Transmission Control Module (TCM), or Transmission Control Module Assembly (TCMA) is extremely sensitive to Electrostatic Discharge (ESD). Always use a ground strap and follow the ESD guidelines in ELECTROSTATIC DISCHARGE SENSITIVE DEVICES. Failure to follow these instructions may result in damage to the TCM/TCMA.

The valve body includes the TCM, all solenoids and sensors, and can be referred to as the TCMA. The TCM is attached to the valve body between the transmission case and the valve body. If any component of the valve body **including the TCM** sensors or solenoids need replaced, the complete TCMA (valve body) must be replaced. For replacement of the TCMA (valve body) (Refer to 21 - Transmission and Transfer Case/Automatic/VALVE BODY/Removal and Installation).

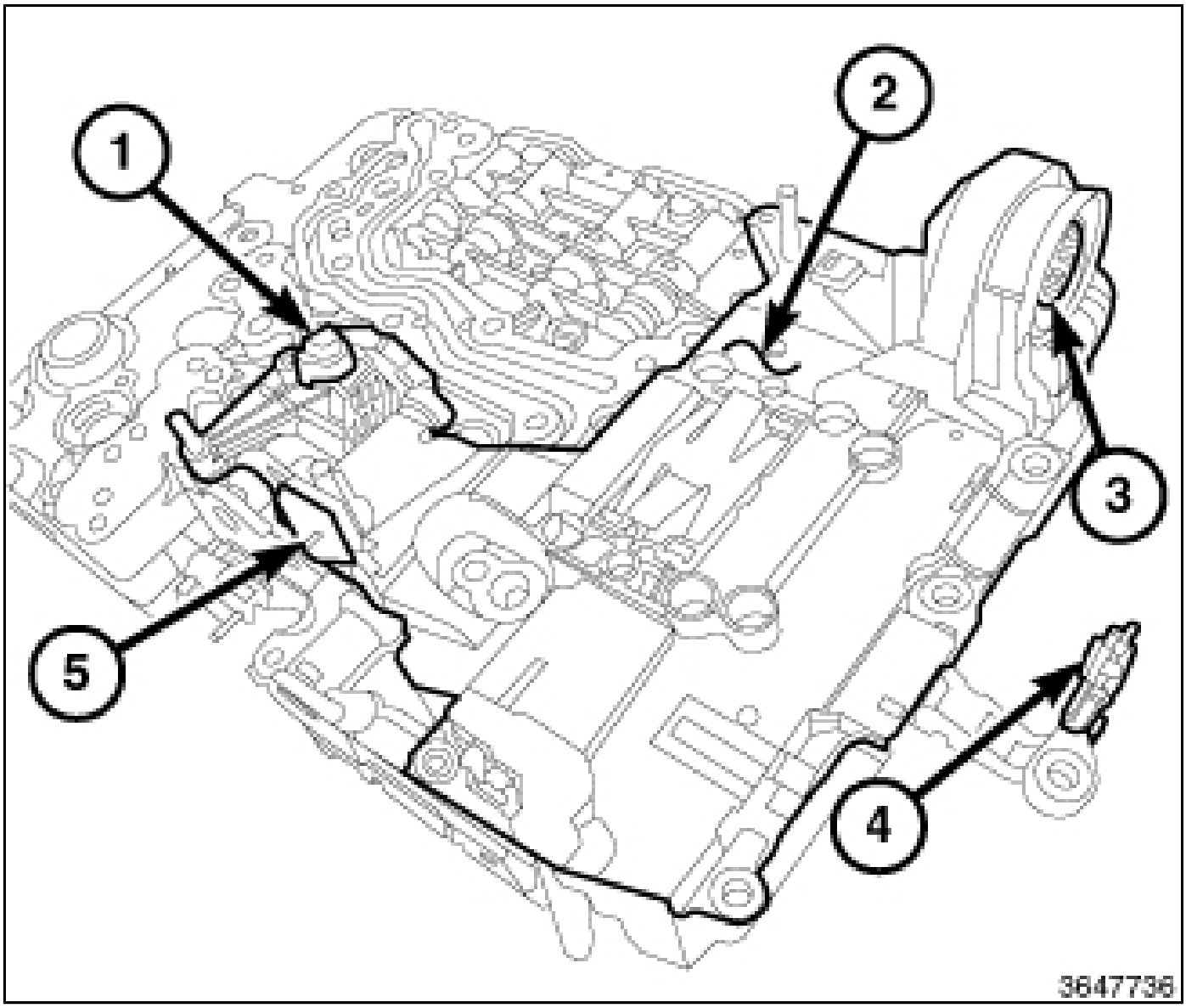



A - Parking lock electromagnet MV2
B - Automatic Transmission Fluid (ATF) pump intake connector
C - Outlet connectors to the ATF pump
D - Parking lock slider
E - Automatic transmission control module TCM
F - Transmission Control Module (TCM)
G - Vehicle wire harness connector
H - Hydraulic module

## OPERATION




1 - M6 Valve Body Bolt Hole
2- M5 Valve Body to Solenoid Body Bolt Hole
3 - Wiring Harness for Park Release Solenoid
4 - Solenoid A
5 - Solenoid B
6 - Solenoid D
7 - Solenoid E
8 - Solenoid C
9 - Torque Converter Clutch (TCC) Solenoid
10 - Line Pressure Solenoid
11 - Park Release Solenoid
12 - High Impulse Solenoid (HIS) Wire Harness Connector
13 - Output Shaft Speed (OSS) Sensor
14 - Park Hold Solenoid




1 - Input Speed Sensor (ISS)
2 - TCM (Includes Transmission Temperature Sensor)
3 - External Wire Harness Connector
4 - Output Speed Sensor (OSS)
5 - Park Position Sensor

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The valve body, which includes the TCM, controls the delivery and pressure of transmission fluid. The TCM is integrated into the valve body. The TCM regulates the amount of hydraulic pressure used to engage the clutches and the TCC, in addition to directing hydraulic pressure to engage or release any given clutch for any given required gear. The TCM will actuate the valves via solenoids based on the position of the shifter, transmission fluid temperature, engine operating conditions, traction conditions and driver demands. During a shift, the TCM will actuate the solenoids to match the gear ranges to the optimal torque range of the engine based on the position of the accelerator pedal, shifter and vehicle speed as determined by the PCM based on input from the Vehicle Speed Sensor (VSS) and Antilock Brake System (ABS) module.

Due to the complexity of the 8HP transmission control system, always refer to the transmission electrical/electronic diagnostics in this section when attempting to diagnose transmission problems.

If the TCMA is replaced, it **must** be programmed and a drive learn needs to be performed before returning the vehicle to the customer. (Refer to 28 - DTC-Based Diagnostics/MODULE, Transmission Control (TCM) - Standard Procedure) for programming and drive learn procedures.

**21 - Transmission and Transfer Case/Automatic - 8HP50/850RE/VALVE BODY/Removal and Installation**

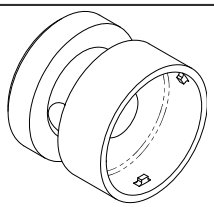
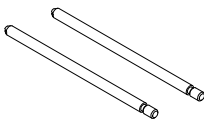
# REMOVAL AND INSTALLATION

**Labor Operations:** Click to hide the list of LOPs associated with this procedure

| Primary LOP | Related LOP | Description | Skill Level | Skill Category |
|---|---|---|---|---|
| 21550231 | - | Pan, Oil - Related Repairs - Remove and Install | 2 - Skilled | 2 |
| | 21FF0550 | Fluid, Transaxle/Transmission Drain and fill | 3 - Highly Skilled | - |
| | 21550251 | Pan, Oil - Related Repairs Sleeve, Connector | 3 - Highly Skilled | 2 |
| | 21550260 | Pan, Oil - Related Repairs Skid Plate Equipped | - | 2 |
| | 2195015B | Valve Body Valve body/Transmission Control Module Assembly - 8HP--(BUY) Auto - Includes TCM reprogram where applicable (3 - Highly Skilled) | 3 - Highly Skilled | 2 |
| | 2195015R | Valve Body Valve body/Transmission Control Module Assembly - 845RE/850RE Auto - Includes TCM reprogram where applicable (3 - Highly Skilled) | 3 - Highly Skilled | 2 |
| | 21960451 | Accumulator - oil volume - 8HP transmission (3 - Highly Skilled) | 3 - Highly Skilled | 2 |

**Special Tools:** Click to hide the list of tools used in this procedure

Click here to launch the form to order any tools you need.

| | |
|---|---|
|  | 10377 - Remover/Installer, Guide Sleeve |
|  | 10379 - Pins, Valve Body Alignment |

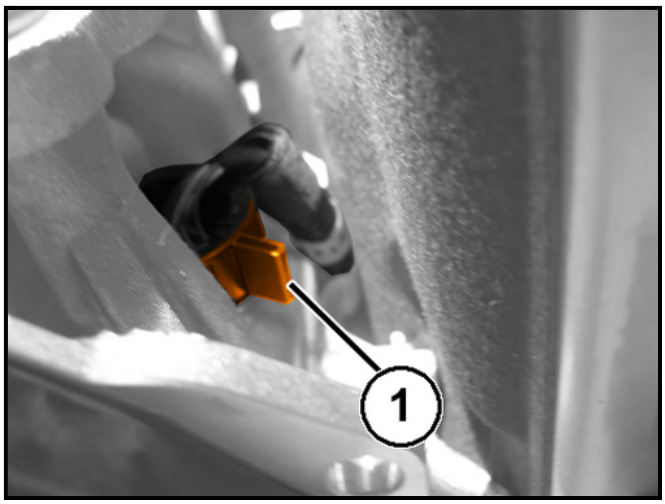
**REMOVAL**

**CAUTION:** **The Transmission Control Module (TCM), or Transmission Control Module Assembly (TCMA) is extremely sensitive to Electrostatic Discharge (ESD). Always use a ground strap and follow the ESD guidelines in ELECTROSTATIC DISCHARGE SENSITIVE DEVICES. Failure to follow these instructions may result in damage to the TCM/TCMA.**

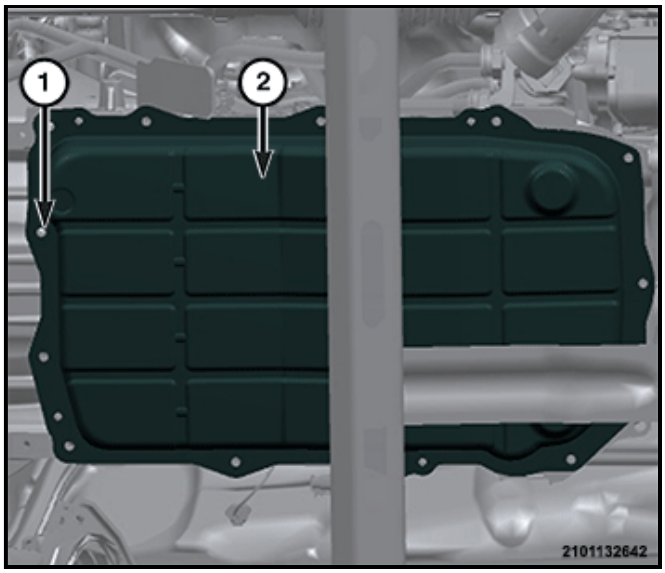
1. Disconnect and isolate the negative battery cable(s) (Refer to 08 - Electrical/Battery System/Standard Procedure) .
2. Raise and support the vehicle (Refer to 04 - Vehicle Quick Reference/Hoisting - Standard Procedure) .

3. Drain the transmission fluid into a clean container (Refer to 21 - Transmission and Transfer Case/Automatic/FLUID and FILTER/Standard Procedure) .

4. Disconnect the transmission solenoid wire harness connector by turning the locking mechanism lock (1) of the adapter plug counter-clockwise and slightly pulling the transmission solenoid wire harness connector.

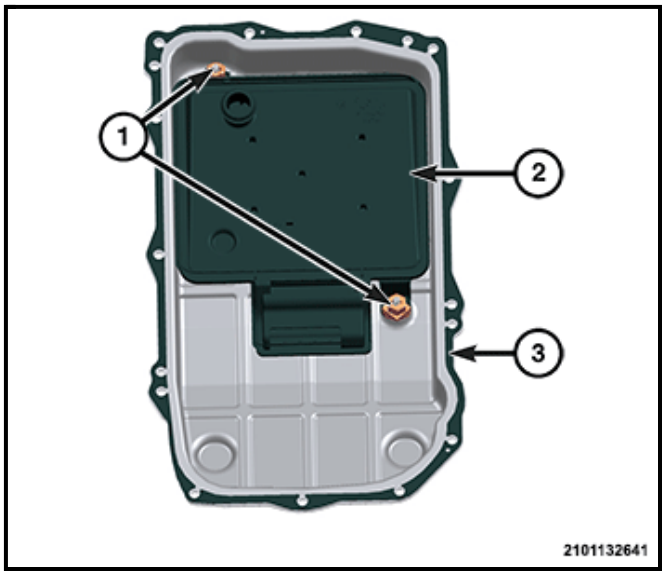



5. Remove the transmission fluid pan bolts (1) and remove the transmission fluid pan (2).



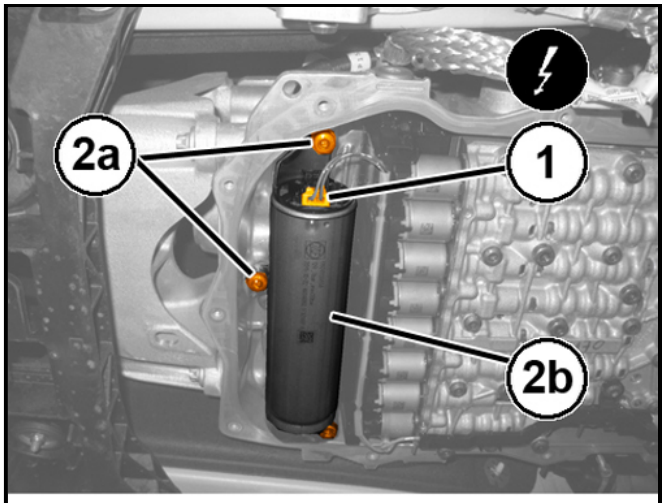

**NOTE:**
**Inspect the gasket for reuse. If the seal is cut or torn, replace the gasket.**

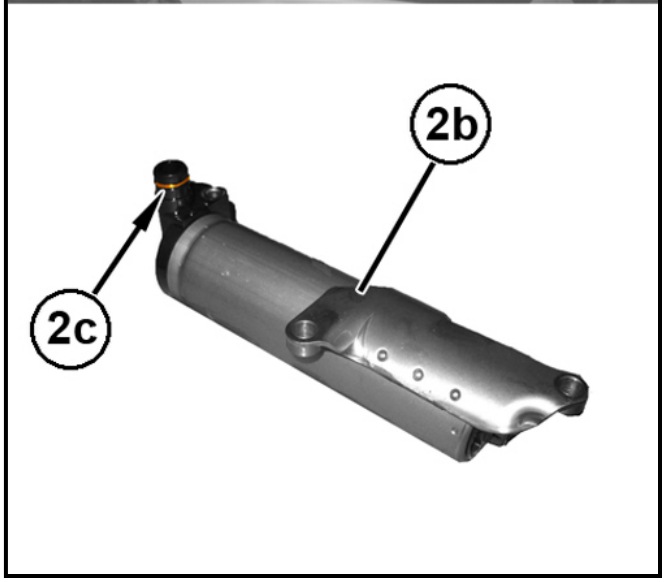
6. Remove the transmission fluid filter nuts (1), remove the transmission fluid filter (2) and gasket (3).




7. If equipped, disconnect the Hydraulic Impulse Oil Storage (HIS) connector (1).

8. If equipped, remove three bolts (2a) and the HIS accumulator (2b).

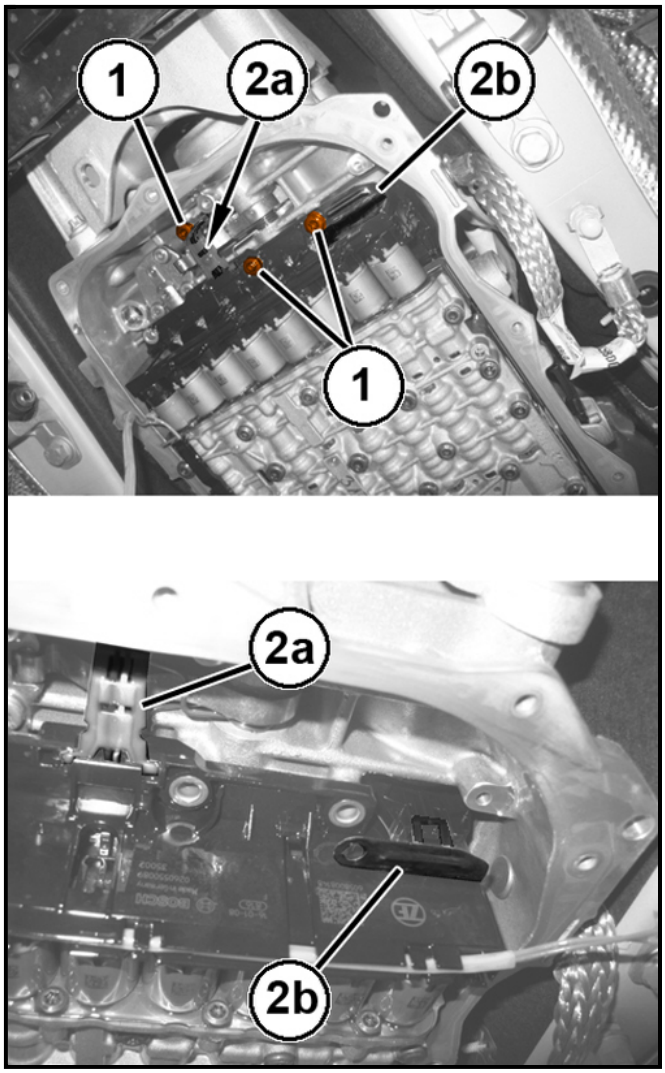


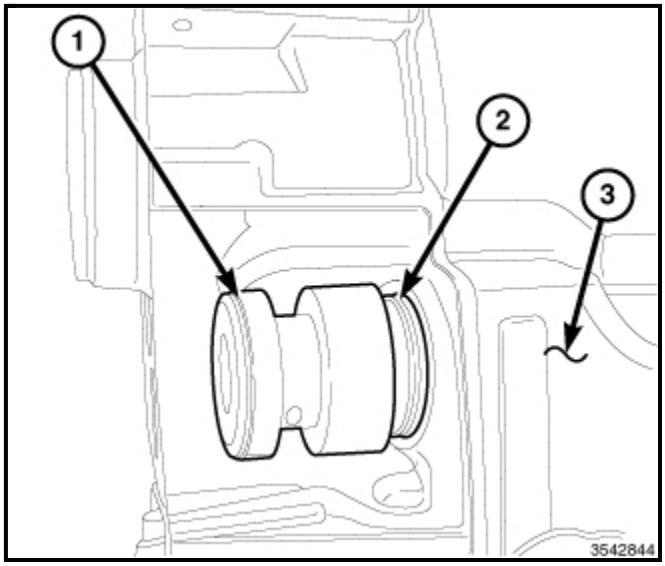

9. Remove the valve body assembly end retainer bolts (1).

10. Lift the electrical connector lock (2b) to release the internal harness end from inside the transmission for valve body assembly removal.

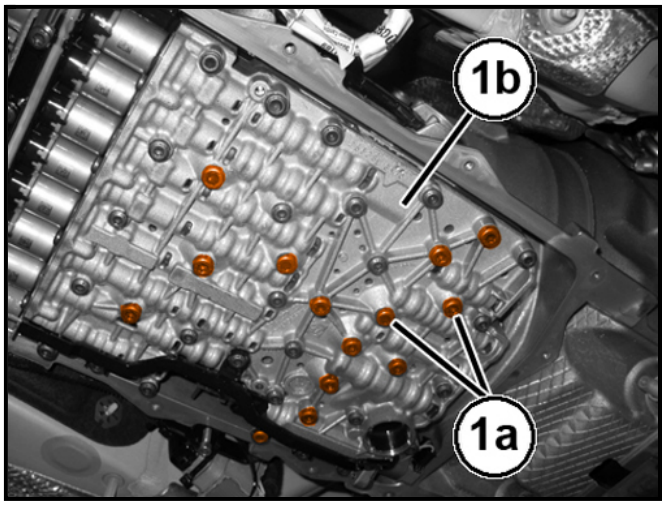
11. Remove the Output Speed Sensor (OSS) bolt (1) and pull the OSS (2a) loose from the case.



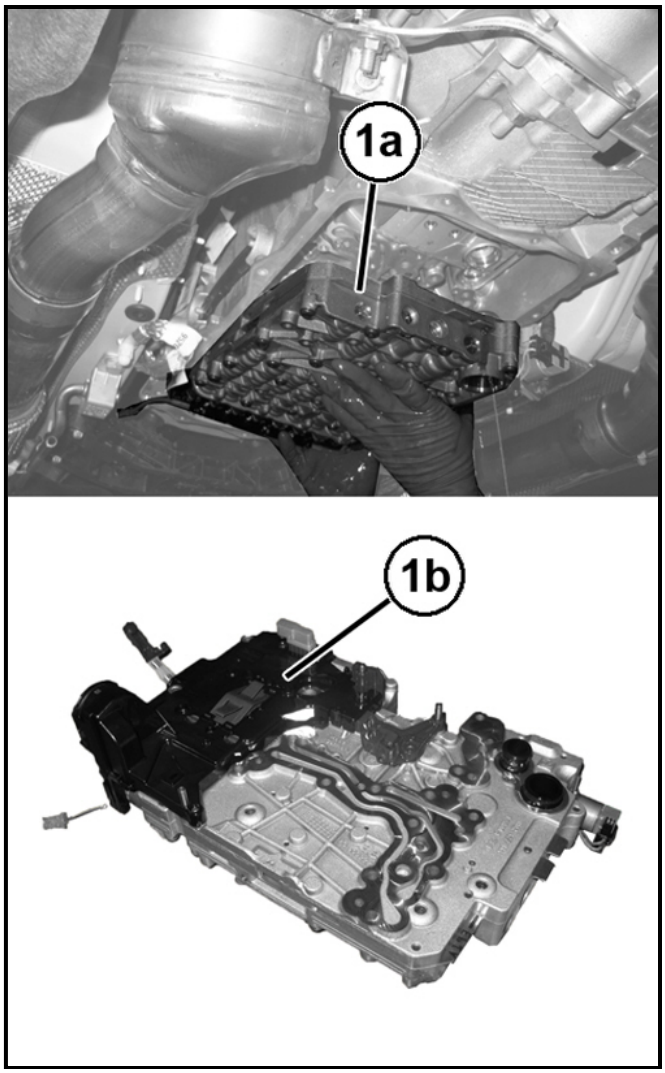

12. Using Remover/Installer, Guide Sleeve 10377 (1) carefully pull the electrical harness insulator (2) straight out from the transmission case (3).



13. Remove the valve body assembly (1b) bolts (1a).




14. Carefully lower the valve body assembly (1a) from the transmission.

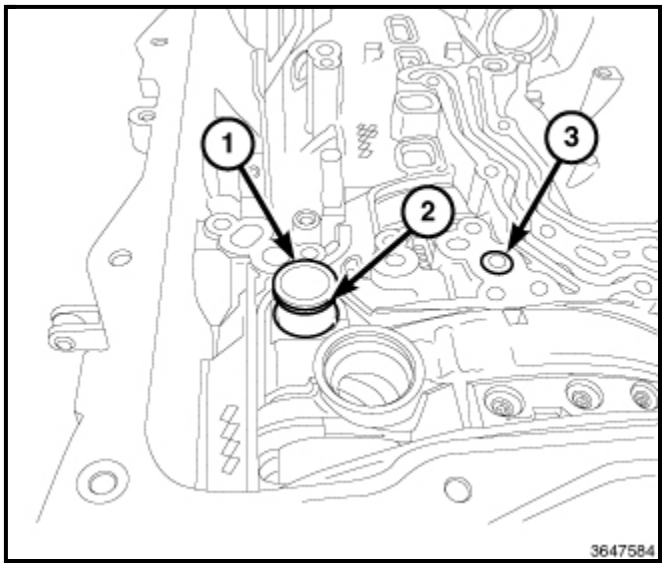



**NOTE:**

**The fluid port may remain in the valve body upon removal, remove and discard the O-rings.**

15. Remove the fluid transfer port (1) from the transmission.

16. Remove and **DISCARD** the O-ring (2) and seal (3).

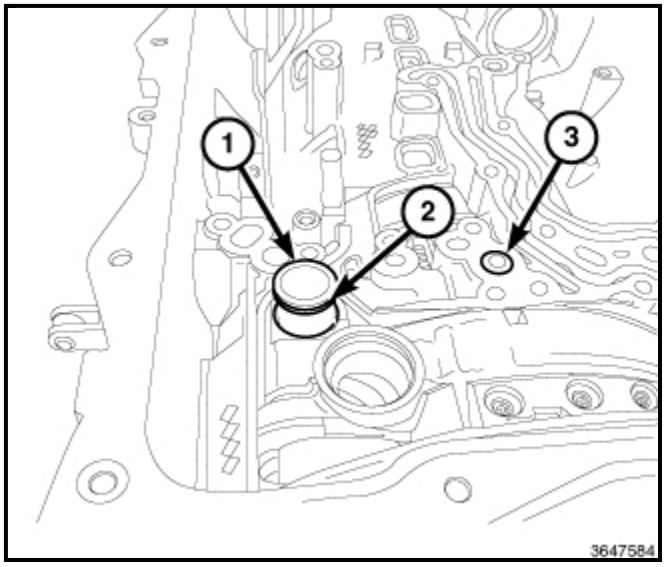



## INSTALLATION

**CAUTION:**

**The Transmission Control Module (TCM), or Transmission Control Module Assembly (TCMA) is extremely sensitive to Electrostatic Discharge (ESD). Always use a ground strap and follow the ESD guidelines in ELECTROSTATIC DISCHARGE SENSITIVE DEVICES. Failure to follow these instructions may result in damage to the TCM/TCMA.**

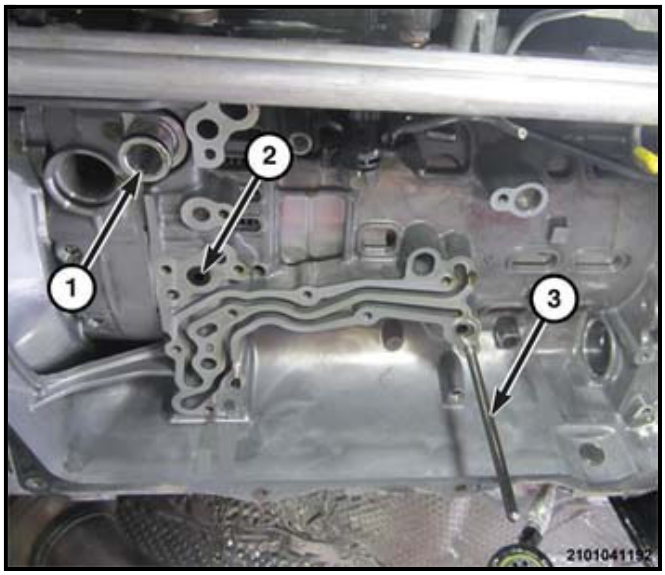
1. Install the fluid port (1) with **NEW** O-rings (2) and seal (3) to the valve body.



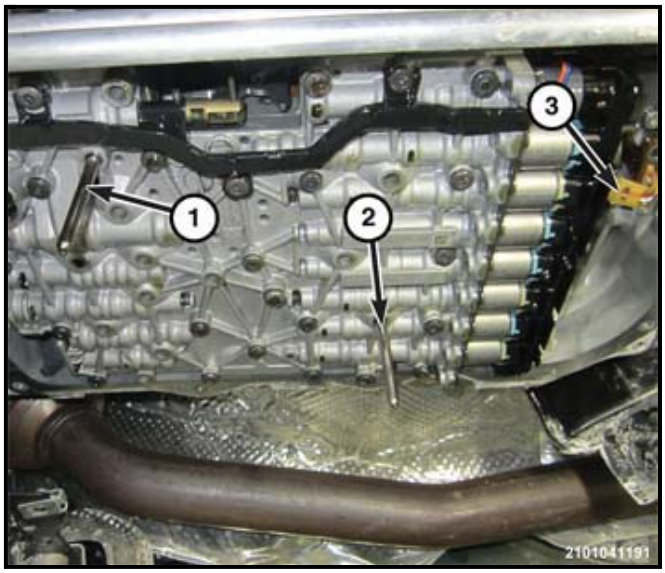

2. Install one of the valve body Pins, Valve Body Alignment 10379 (3) in the rear of the transmission as shown as a guide.

**NOTE: Make sure the speed sensor at the rear of the valve body does get caught between the valve body and the transmission case when positioning the valve body to the case.**

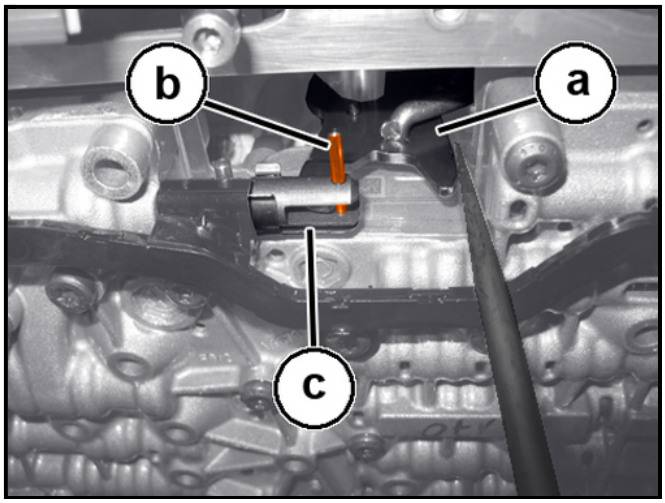
3. Carefully guide the front of the valve body over the cradle while aligning the rear of the valve body with the alignment pin.




4. Install the front alignment pin (1).

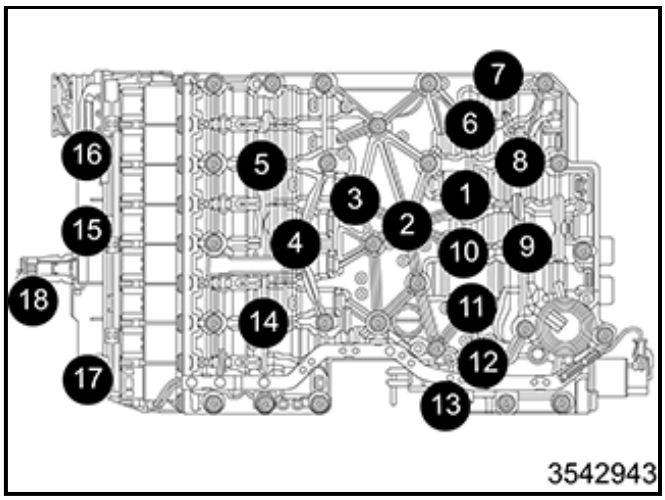



5. When installing the valve body assembly, press the park lever (a) to align (b) in the park control solenoid valve (c).



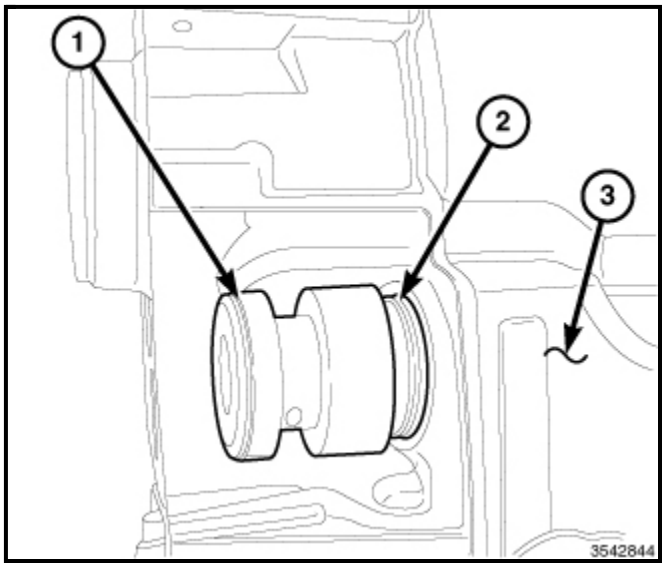
6. Use an appropriate tool on one of the alignment pins to assist in holding the valve body in position while installing the remaining fasteners.

7. Install the valve body assembly retaining bolts not including 16-18 and hand tighten.



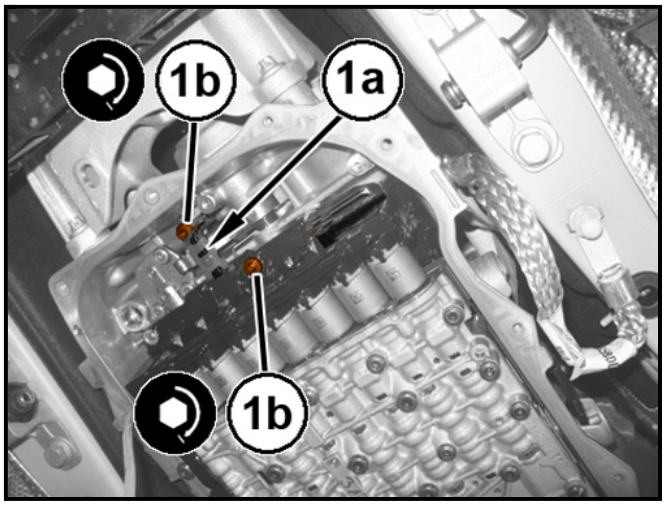

8. Remove the pins and install the remaining bolts.

9. Using Remover/Installer, Guide Sleeve 10377 (1) carefully install the electrical harness insulator (2) to the transmission case (3).

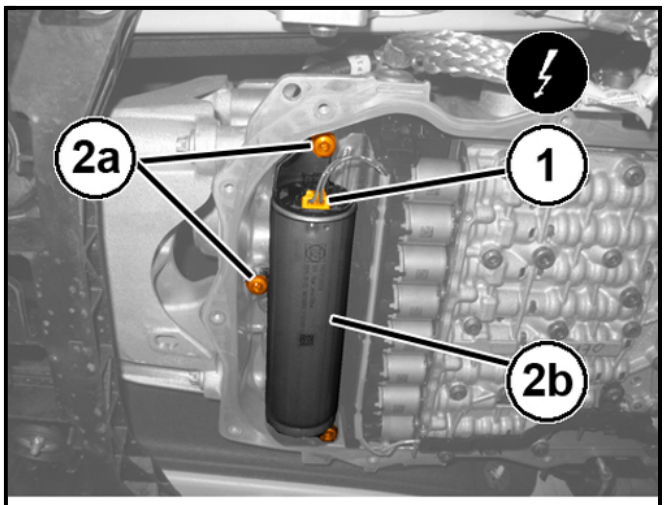



10. Lock the electrical connector lock (2) to the internal harness end.

11. Install the OSS (1a) in the case install the OSS bolt (1b) and tighten to the proper (Torque Specifications) .

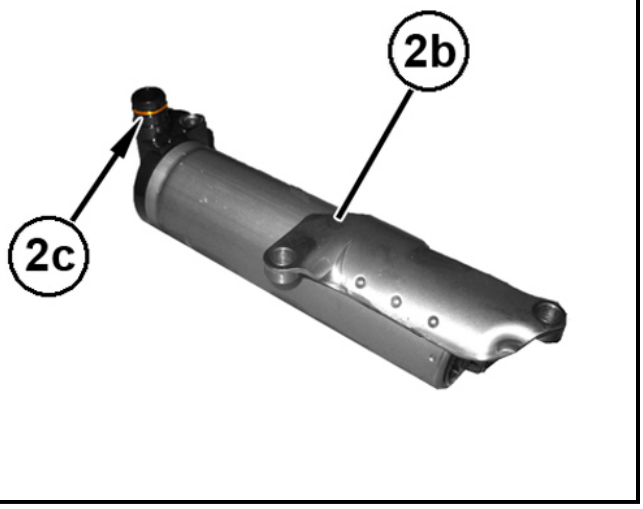



12. If equipped, install the HIS accumulator (2b).

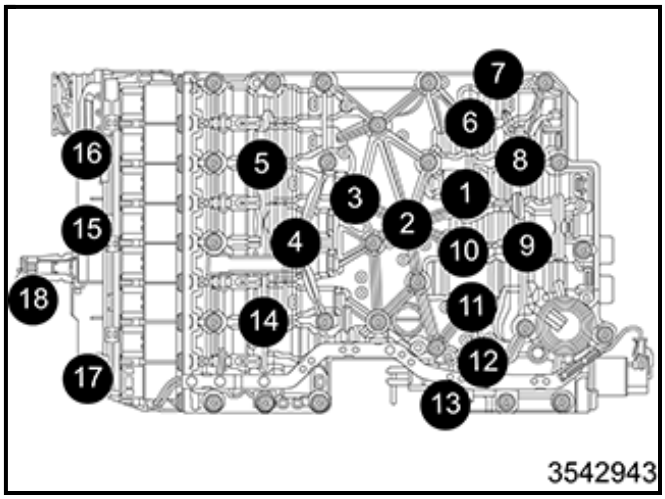



13. Tighten the bolts (2a) to the proper (Torque Specifications) .

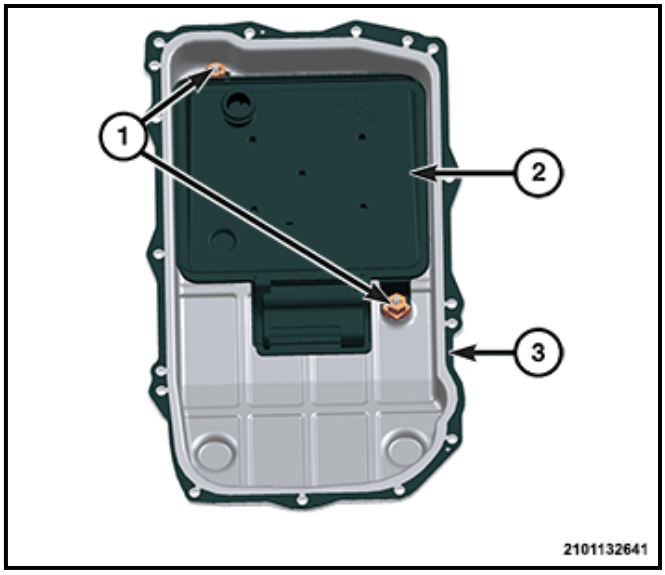
14. Connect the HIS wire harness connector (1).



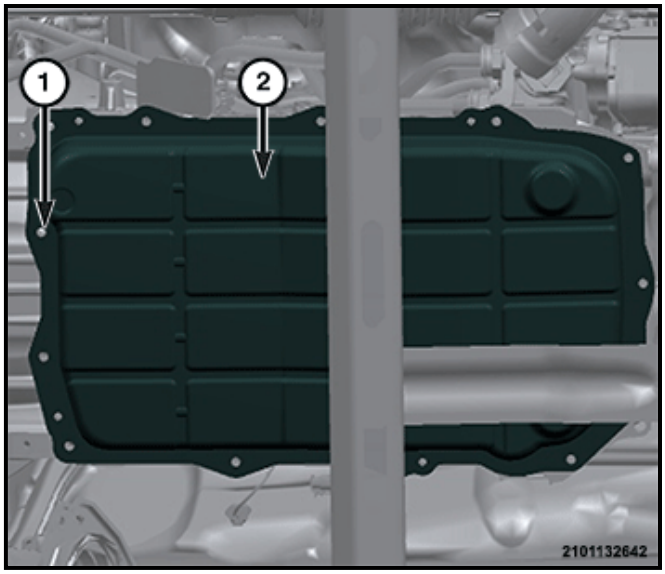

15. Tighten the valve body fasteners 1–18 in the sequence shown to proper (Torque Specifications) .



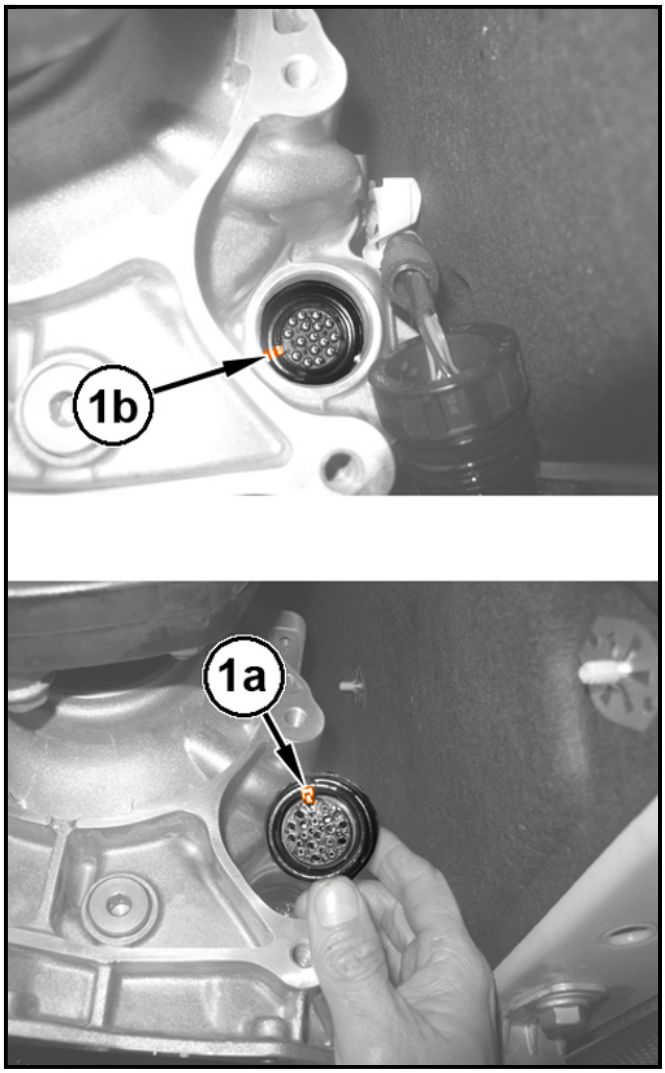

16. Install the transmission fluid filter (2), the transmission fluid filter nuts (1) and gasket (3).



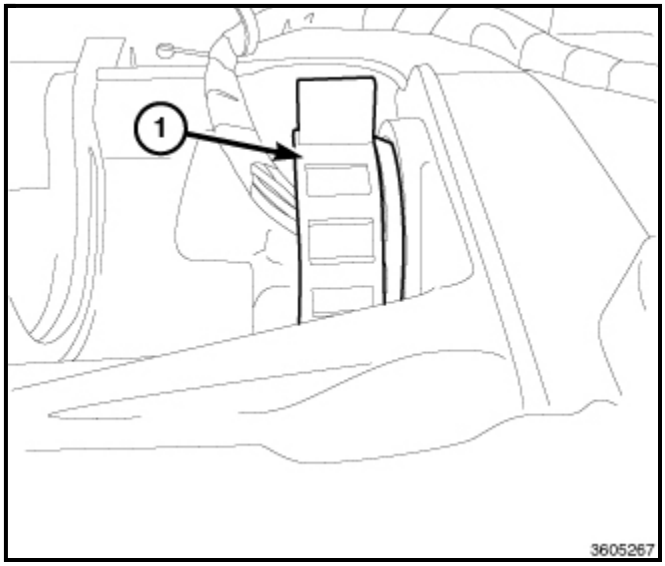

17. Install the transmission fluid pan bolts (1) and tighten to the proper (Torque Specifications) using the sequence given.



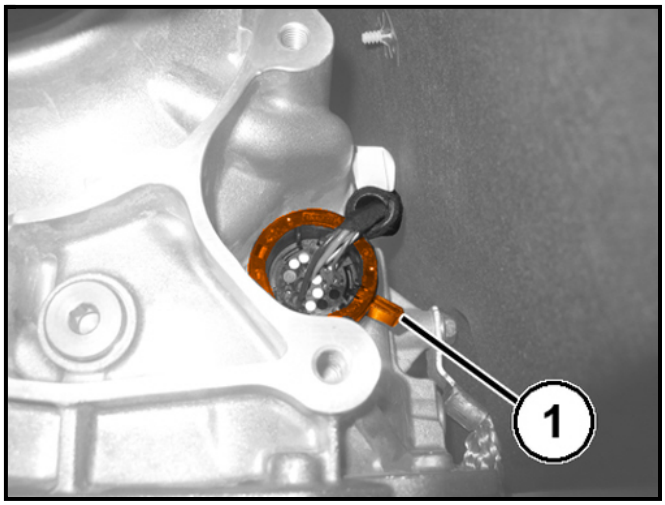
18. Install the transmission wire harness connector (1a) back in the transmission case in the correct position (1b).




19. Connect the plug connector (1).



20. Turn the harness plug locking mechanism (1) clockwise and lock in place.




21. Connect the negative battery cable(s) (Refer to 08 - Electrical/Battery System/Standard Procedure) .

22. Perform the TRANSMISSION FILL AFTER SERVICE procedure (Refer to 21 - Transmission and Transfer Case/Automatic/FLUID and FILTER/Standard Procedure) .

23. If the valve body is replaced, program the TCM (Refer to 08 - Electrical/8E - Electronic Control Modules/MODULE, Transmission Control/Module Programming) .

24. Perform the TRANSMISSION VERIFICATION TEST (Refer to 28 - DTC-Based Diagnostics/MODULE, Transmission Control (TCM) - Standard Procedure).