

2018 TRANSMISSION

Automatic Transmission - 9T65 (M3V) - Repair Instructions - On Vehicle - Traverse

REPAIR INSTRUCTIONS - ON VEHICLE

TRANSMISSION SERVICE FAST LEARN PROCEDURE

Diagnostic Instructions

- Perform the Diagnostic System Check prior to using this diagnostic procedure: [Diagnostic System Check - Vehicle](#)
- Review the description of Strategy Based Diagnosis: [Strategy Based Diagnosis](#)

Description

The learn procedure performs a series of individual clutch applications which allows the control module K71 to learn initial clutch apply pressures. The control module uses the learn values for clutch control and timing of shifts.

When to Perform the Procedure

NOTE: Failure to perform this procedure may result in poor system performance, DTCs being set, or customer dissatisfaction.

This procedure is required when the following component has been repaired, replaced, removed, or serviced:

- K71 Transmission Control Module
- T12 Automatic Transmission Assembly
- Any condition/repair related to the following: Shift Quality
- Calibration Update or Software Update
- Torque Converter Assembly
- Transmission - External/Internal Components

Conditions for Running the Procedure

Transmission Fluid Temperature = 75 to 85Â°C (167 to 185Â°F)

Reference Information

Scan Tool Reference

[Control Module References](#)

With Scan Tool

WARNING: [Parking Brake and Drive Wheels Warning](#)

1. Engine running.
2. Select: Module Diagnostics
3. Select: Transmission
4. Select: Configuration/Reset Functions
5. Select: Learn Functions
6. Select: Transmission Service Fast Learn
7. Follow the instructions on the scan tool.

Verify the scan tool procedure was successful.

- If the procedure was not successful

Refer to: Step 1

- Go to next step: If the procedure was successful

8. All OK.

Repair Instructions

Perform the Diagnostic Repair Verification after completing the repair: [Diagnostic Repair Verification](#)

WIRE TO WIRE REPAIR - AUTOMATIC TRANSMISSION

Special Tools

- EL-38125-10 Splice Sleeve Crimping Tool (non GMNA)
- J-38125-5A Ultra Torch Special Tool
- J-38125-8 Splice Sleeve Crimping Tool (GMNA)

For equivalent regional tools, refer to [Special Tools](#).

WARNING:

In order to reduce the risk of personal injury, loss of high voltage isolation to ground and higher system impedance, do not attempt to repair any HV wiring, connector, or terminal that is damaged. High voltage coaxial type cables are not repairable. Never attempt to repair a coaxial type cable. The entire cable/harness or component must be replaced. In order to maintain system integrity and personal safety, never attempt to repair any high voltage wiring, cables, or terminals. Performing this procedure on high voltage circuits may result in serious injury or death.

NOTE:

If the wiring harness internal to the transmission is damaged, the wiring harness must be replaced. The use of splice sleeves in an attempt to repair the internal transmission wires, connectors, or terminals could result in performance issues.

NOTE:

Do not splice wires in Door Harness Grommets.

NOTE:

The DuraSeal splice sleeves have the following 2 critical features:

- A special heat shrink sleeve environmentally seals the splice. The heat shrink sleeve contains a sealing adhesive inside.
- A cross hatched (knurled) core crimp provides the necessary low resistance contact integrity for these sensitive, low energy circuits.

Use only DuraSeal splice sleeves to form a one-to-one splice on all types of insulation except high voltage and specialty cables. Use DuraSeal splice sleeves where there are special requirements such as moisture sealing. Follow the instructions below in order to splice copper wire using DuraSeal splice sleeves.

Splice Sleeve Selection

Splice Sleeve Color	Crimp Tool Nest Color		Wire Gauge mm ² / (AWG)
	3 Crimp Nests	4 Crimp Nests	
Salmon (Yellow-Pink) 19300089	Red (1) or Red/Green (1)	Red (2)	0.22 - 0.8/(18 - 26)
Blue 19168447	Blue (2)	Blue (3)	1.0 - 2.0/(14 - 16)

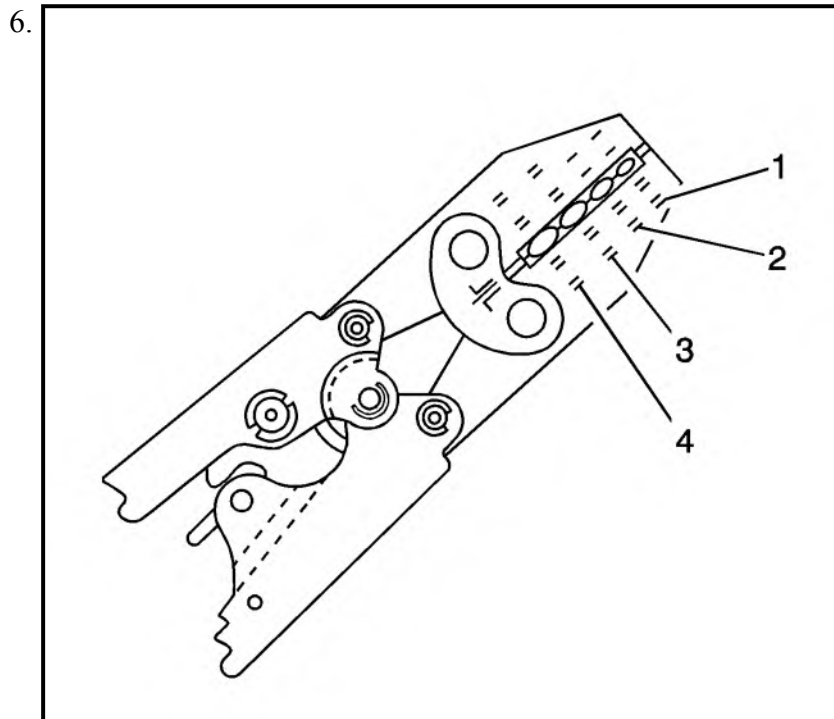
Splice Sleeve Color	Crimp Tool Nest Color		Wire Gauge mm ² / (AWG)
	3 Crimp Nests	4 Crimp Nests	
Yellow 19168448	Yellow (3)	Yellow (4)	3.0 - 5.0/(10 - 12)

NOTE: You must perform the following procedures in the listed order. Repeat the procedure if any wire strands are damaged. You must obtain a clean strip with all of the wire strands intact.

1. Open the harness by removing any tape:
 - Use a sewing seam ripper, available from sewing supply stores, in order to cut open the harness in order to avoid wire insulation damage.
 - Use the DuraSeal splice sleeves on all types of insulation except Tefzel and coaxial.
 - Do not use the crimp and DuraSeal splice sleeve to form a splice with more than 2 wires coming together.
2. Cut as little wire off the harness as possible. You may need the extra length of wire in order to change the location of a splice.

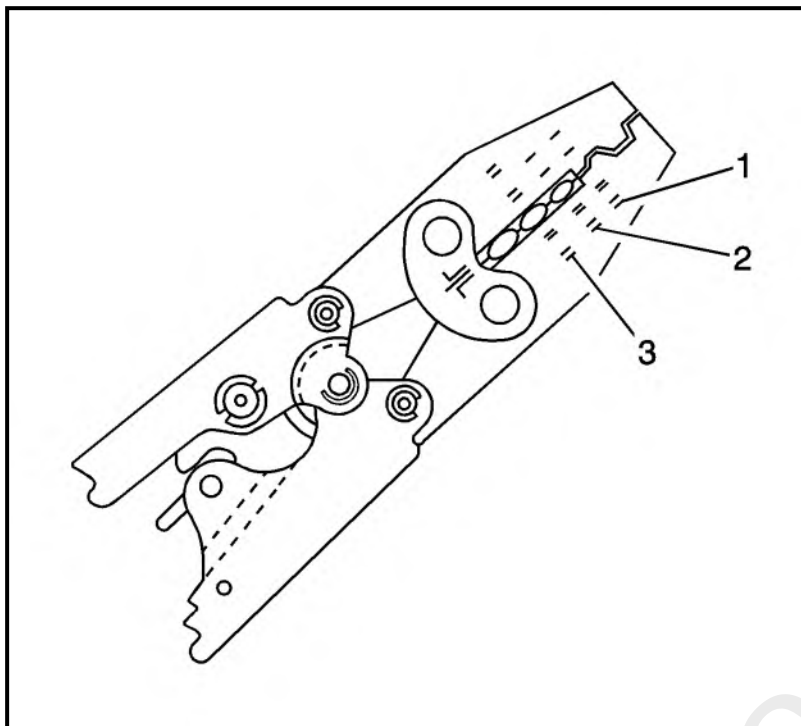
Adjust splice locations so that each splice is at least 40 mm (1.5 in) away from the other splices, harness branches, or connectors.

3. Strip the insulation:
 - When adding a length of wire to the existing harness, use the same size wire as the original wire.
 - Perform one of the following items in order to find the correct wire size:
 - Find the wire on the schematic and convert to regional wiring gauge size.
 - If you are unsure of the wire size, begin with the largest opening in the wire stripper and work down until achieving a clean strip of the insulation.
 - Strip approximately 5.0 mm (0.20 in) of insulation from each wire to be spliced.
 - Do not nick or cut any of the strands. Inspect the stripped wire for nicks or cut strands.
 - If the wire is damaged, repeat this procedure after removing the damaged section.
4. For high temperature wiring, slide a section of high temperature SCT1 shrink tubing down the length of wire to be spliced. Ensure that the shrink tubing will not interfere with the splice procedure.
5. Select the proper DuraSeal splice sleeve according to the wire size. Refer to the above table at the beginning of the repair procedure for the color coding of the DuraSeal splice sleeves and the crimp tool nests.



The **EL-38125-10** splice sleeve crimping tool has four crimp nests. The largest crimp nest (4) is used for crimping 10 and 12 gauge wires. The second largest crimp nest (3) is used for crimping 14 and 16 gauge wires. The third largest crimp nest (2) is used for crimping 18 and 20 gauge wires. The smallest crimp nest (1) is used for crimping 22 to 26 gauge wires. The crimp nests are referenced in the table (farther above) under the crimp tool nest color.

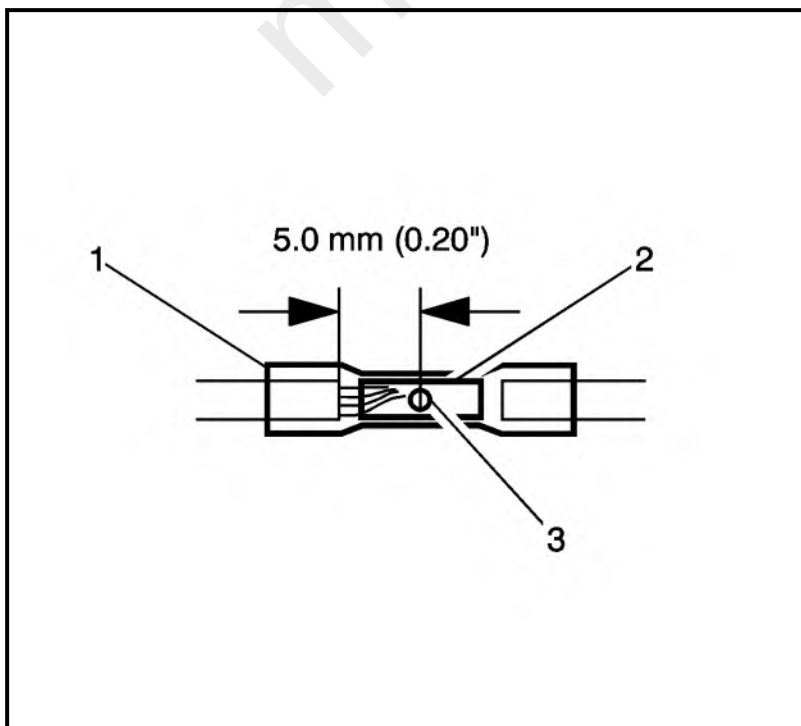
7.



The **J-38125-8** splice sleeve crimping tool has three crimp nests. The largest crimp nest (3) is used for crimping 10 and 12 gauge wires. The second largest crimp nest (2) is used for crimping 14 and 16 gauge wires. The smallest crimp nest (1) is used for crimping 18 to 20 gauge wires. The crimp nests are referenced in the table (farther above) under the crimp tool nest color.

8. Use the splice sleeve crimp tool in order to position the DuraSeal splice sleeve in the proper color nest of the splice sleeve crimp tool. For the four crimp nest tool, use the three largest crimp nests to crimp the splice sleeves. For the three crimp nest tool, use all three crimp nests to crimp the splice sleeves. Use the four and three crimp tool diagrams (above) and the table (farther above) to match the splice sleeve with the correct crimp nest. The crimp tool diagram callout numbers match the numbers in the table (under crimp tool nest color).

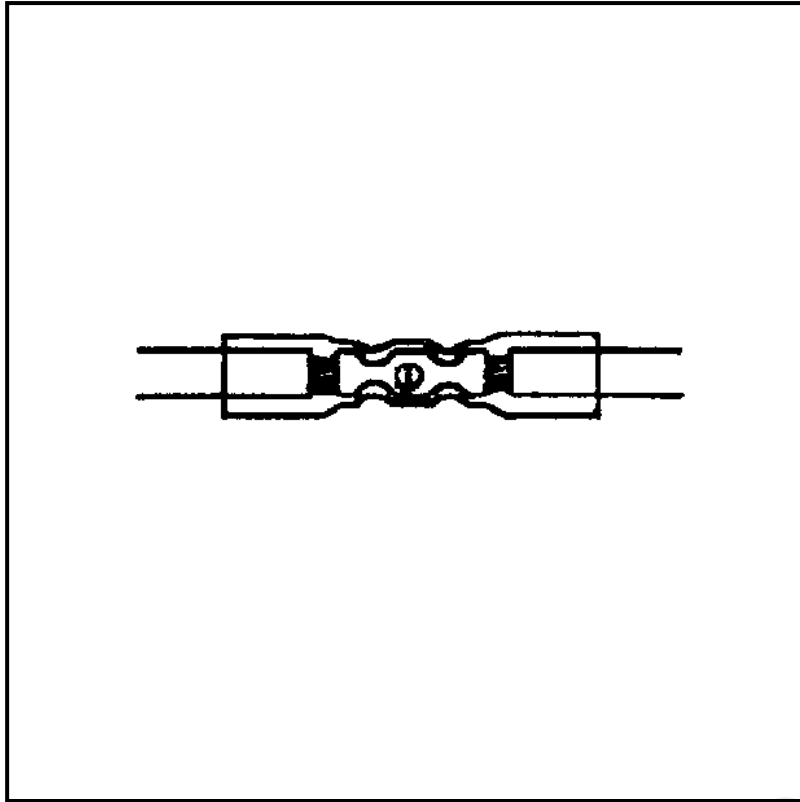
9.



Place the DuraSeal splice sleeve in the nest. Ensure that the crimp falls midway between the end of the barrel and the stop. The sleeve has a stop (3) in the middle of the barrel (2) in order to

prevent the wire (1) from going further. Close the hand crimper handles slightly in order to firmly hold the DuraSeal splice sleeve in the proper nest.

10.

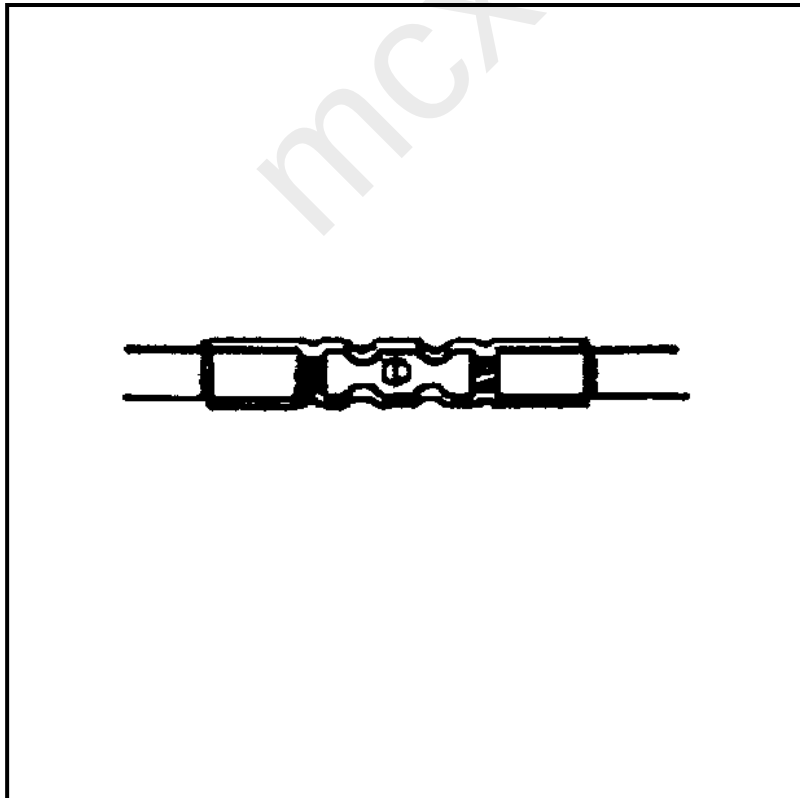


Insert the wire into the splice sleeve barrel until the wire hits the barrel stop. Refer to **Folded-Over Wire Repair** for splicing wires of 0.35 mm or less (22, 24, 26 gauge sizes) and for splicing wires of different gauges.

11. Tightly close the handles of the crimp tool until the crimper handles open when released.

The crimper handles will not open until you apply the proper amount of pressure to the DuraSeal splice sleeve. Repeat steps 4 and 6 for the opposite end of the splice.

12.



Using the heat torch, apply heat to the crimped area of the barrel.

13. Start in the middle and gradually move the heat barrel to the open ends of the tubing:

- The tubing will shrink completely as the heat is moved along the insulation.

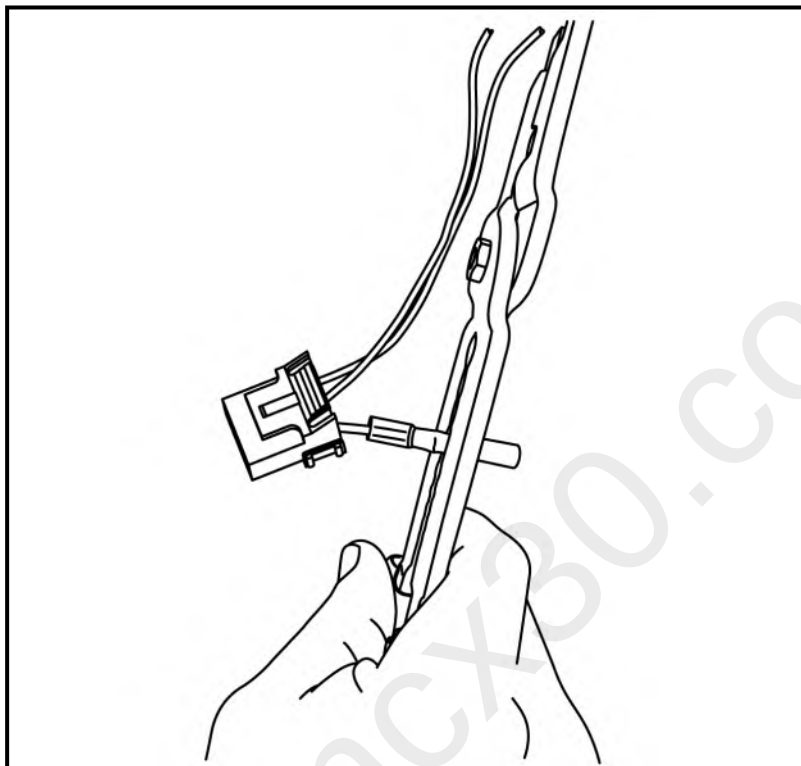
- A small amount of sealant will come out of the end of the tubing when sufficient shrinkage is achieved.

Weatherpack™ Wiring Repair

NOTE:

Some replacement pigtail connectors may be delivered without the terminated leads installed into the connector. For Weatherpack™ connectors, all terminated leads included in the package should to be installed into the connector. If the connector end view shows that a terminal is not occupied, the extra terminated lead(s) need to be installed and the end(s) sealed using a DuraSeal splice sleeve and taped back into the harness.

1. Insert the wire into the splice sleeve barrel until the wire hits the barrel stop. Refer to [Folded-Over Wire Repair](#) for splicing wires of 0.35 mm or less (22, 24, 26 gauge sizes) and for splicing wires of different gauges.



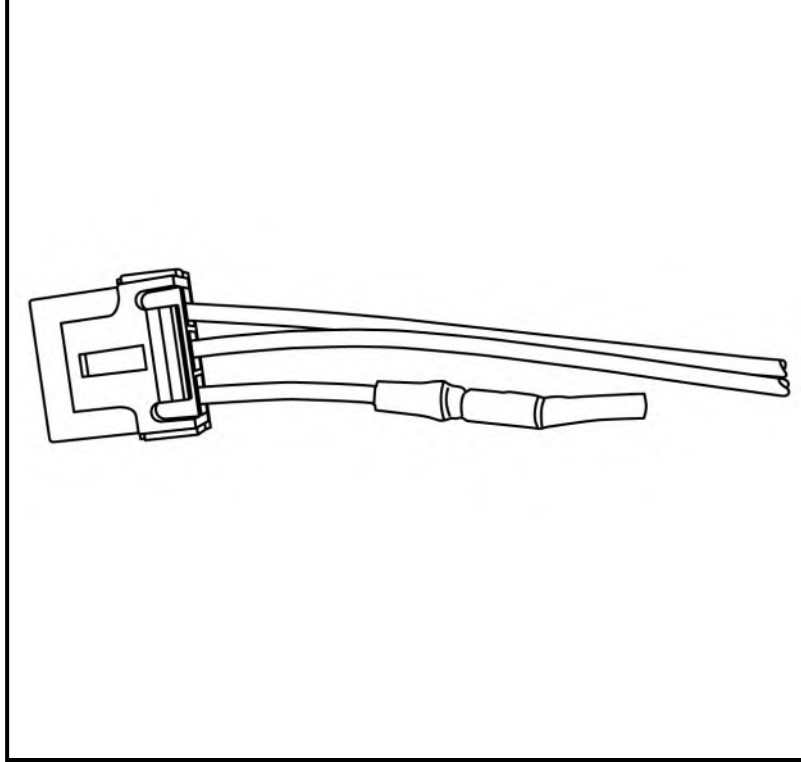
2. Tightly close the handles of the crimp tool until the crimper handles open when released.

The crimper handles will not open until you apply the proper amount of pressure to the DuraSeal splice sleeve. Holding the DuraSeal with one hand gently tug on the wire to ensure it is crimped in the DuraSeal.

3. Using the heat torch, apply heat to the crimped area of the barrel.

4.

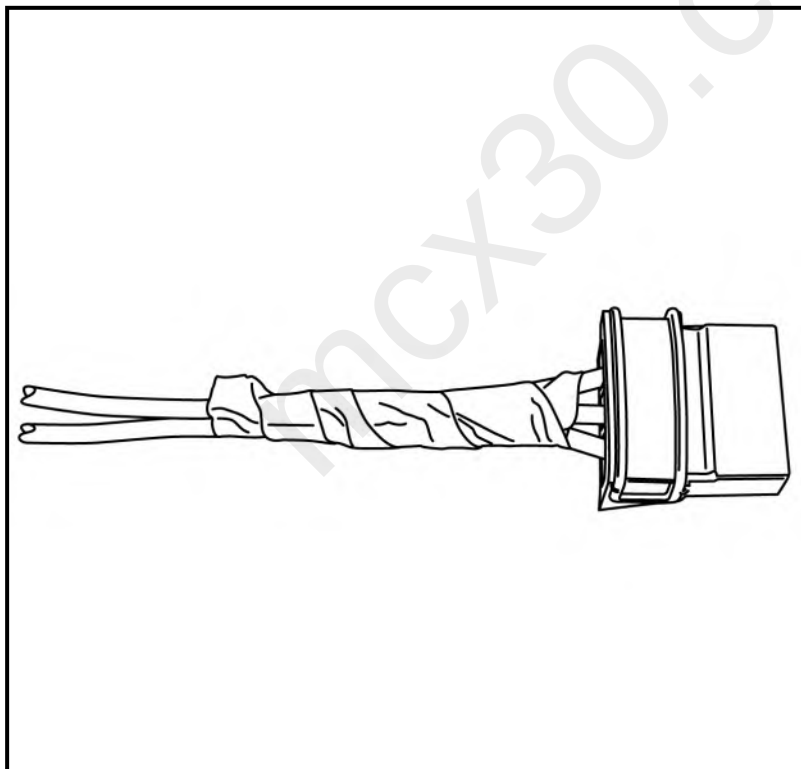




Start in the middle and gradually move the heat barrel to the open ends of the tubing:

- The tubing will shrink completely as the heat is moved along the insulation.
- A small amount of sealant will come out of the end of the tubing when sufficient shrinkage is achieved.

5.



Tape the extra terminated lead(s) back into the harness.

High Temperature Wiring Repairs

Use the following procedures to perform high temperature wiring repairs:

1. Center the high temperature SCT1 shrink tube over the DuraSeal splice sleeve.
2. Using the heat torch, apply heat to the high temperature heat shrink tubing.
3. Gradually move the heat from the center to the open end of the tubing:
 - The tubing will shrink completely as the heat is moved along the insulation.

- A small amount of sealant will come out of the end of the tubing when sufficient shrinkage is achieved.

4. Replace any reflective tape and clips that may have been removed during the repair.

CONNECTOR RECONNECTION - AUTOMATIC TRANSMISSION

Special Tools

EL-35616 Terminal Test Probe Kit

For equivalent regional tools, refer to [Special Tools](#).

When the condition is not currently present, but is indicated in DTC history, the cause may be intermittent. An intermittent may also be the cause when there is a customer complaint, but the symptom cannot be duplicated. Refer to the Symptom Table of the system that is suspect of causing the condition before trying to locate an intermittent condition.

Most intermittent conditions are caused by faulty electrical connections or wiring. Inspect for the following items:

- Loose, corroded, or painted terminal stud/fastener
- Wiring broken inside the insulation
- Poor connection between the male and female terminal at a connector
- A terminal not seated all the way into the connector body
- Poor terminal to wire connection - Some conditions which fall under this description are poor crimps, poor solder joints, crimping over the wire insulation rather than the wire itself, and corrosion in the wire to terminal contact area, etc.
- Pierced or damaged insulation can allow moisture to enter the wiring causing corrosion. The conductor can corrode inside the insulation, with little visible evidence. Look for swollen and stiff sections of wire in the suspect circuits.
- Wiring which has been pinched, cut, or its insulation rubbed through may cause an intermittent open or short as the bare area touches other wiring or parts of the vehicle.
- Wiring that comes in contact with hot or exhaust components
- Refer to [Inducing Intermittent Fault Conditions](#) in order to duplicate the conditions required, in order to verify the customer concern.
- Refer to [Testing for Electrical Intermittents](#) for test procedures to detect intermittent open, high resistance, short to ground, and short to voltage conditions.
- Refer to [Scan Tool Snapshot Procedure](#) for advanced intermittent diagnosis and Vehicle Data Recorder operation.

Testing for Terminal Fretting

Some intermittent conditions can be caused by wire terminal fretting corrosion. Fretting corrosion is a build-up of insulating, oxidized wear debris that can form when there is a small motion between electrical contacts. The oxidized wear debris can pile up enough at the electrical contact spots that the electrical resistance across the connection increases. Movement between the contacting surfaces as small as 10 to 100 microns can cause fretting. To put this in perspective, a sheet of paper is about 100 microns thick, so fretting motion is small and hard to see. Vibration and thermal expansion/contraction are the main sources that create fretting motion. Since vehicles vibrate and can experience large temperature swings, they are a good source for fretting motion. Tin, copper, nickel, and iron surfaces are all susceptible to fretting corrosion. Fretting corrosion can be difficult to see but it looks like small, dark smudges on the terminals contact surface.

To correct a fretting condition disconnect the suspect connector and add dielectric grease/lubricant (Nyogel 760G or equivalent, meeting GM specification 9986087) to both sides of the connector terminals. Then reconnect the connector and wipe away any excess lubricant. This will correct the additional terminal contact resistance due to the terminal fretting corrosion.

Testing for Proper Terminal Contact

It is important to test terminal contact at the component and any inline connectors before replacing a suspect component. Mating terminals must be inspected to ensure good terminal contact. A poor connection between the male and female terminal at a connector may be the result of contamination or deformation.

Contamination may be caused by the connector halves being improperly connected. A missing or damaged connector seal, damage to the connector itself, or exposing the terminals to moisture and dirt can also cause contamination. Contamination, usually in the underhood or underbody connectors, leads to terminal corrosion, causing an open circuit or intermittently open circuit.

Deformation is caused by probing the mating side of a connector terminal without the proper adapter. Always use the **EL-35616** kit when probing connectors. Other causes of terminal deformation are improperly joining the connector halves, or repeatedly separating and joining the connector halves. Deformation, usually to the female terminal contact tang, can result in poor terminal contact causing an open or intermittently open circuit.

Testing for Proper Terminal Contact in Bussed Electrical Centers

It is very important to use the correct test adapter when testing for proper terminal contact of fuses and relays in a bussed electrical center. Use the **EL-35616** kit to test for proper terminal contact. Failure to use the **EL-35616** kit can result in improper diagnosis of the bussed electrical center.

Follow the procedure below in order to test terminal contact:

1. Separate the connector halves.
2. Visually inspect the connector halves for contamination. Contamination may result in a white or green build-up within the connector body or between terminals. This causes high terminal resistance, intermittent contact, or an open circuit. An underhood or underbody connector that shows signs of contamination should be replaced in its entirety: terminals, seals, and connector body.
3. Using an equivalent male terminal/terminated lead, verify that the retention force is significantly different between a known good terminal and the suspect terminal. Replace the female terminal in question.

Flat Wire Connectors

There are no serviceable parts for flat wire connectors on the harness side or the component side.

Follow the procedure below in order to test terminal contact:

1. Remove the component in question.
2. Visually inspect each side of the connector for signs of contamination. Avoid touching either side of the connector as oil from your skin may be a source of contamination as well.
3. Visually inspect the terminal bearing surfaces of the flat wire circuits for splits, cracks, or other imperfections that could cause poor terminal contact. Visually inspect the component side connector to ensure that all of the terminals are uniform and free of damage or deformation.
4. Insert the appropriate adapter into the flat wire harness connector in order to test the circuit in question.

Control Module/Component Voltage and Grounds

Poor voltage or ground connections can cause widely varying symptoms.

- Test all control module voltage supply circuits. Many vehicles have multiple circuits supplying voltage to a control module. Other components in the system may have separate voltage supply circuits that may also need to be tested. Inspect connections at the module/component connectors, fuses, and any intermediate connections between the voltage source and the module/component. A test lamp or a DMM may indicate that voltage is present, but neither tests the ability of the circuit to carry sufficient current. Operate the component to test the ability of the circuit to carry sufficient current. Refer to [Circuit Testing](#) , and [Power Distribution Wiring Schematics](#) .
- Test all control module ground and system ground circuits. The control module may have multiple ground circuits. Other components in the system may have separate grounds that may also need to

be tested. Inspect grounds for clean and tight connections at the grounding point (screw or stud). Inspect the connections at the component and in splice packs, where applicable. Operate the component to test the ability of the circuit to carry sufficient current. Refer to [Circuit Testing](#) , and [Ground Distribution Wiring Schematics](#) .

Temperature Sensitivity

- An intermittent condition may occur when a component/connection reaches normal operating temperature. The condition may occur only when the component/connection is cold, or only when the component/connection is hot.
- Freeze Frame, Failure Records, Snapshot, or Vehicle Data Recorder data may help with this type of intermittent condition, where applicable.
- If the intermittent is related to heat, review the data for a relationship with the following:
 - High ambient temperatures
 - Underhood/engine generated heat
 - Circuit generated heat due to a poor connection, or high electrical load
 - Higher than normal load conditions, towing, etc.
- If the intermittent is related to cold, review the data for the following:
 - Low ambient temperatures - In extremely low temperatures, ice may form in a connection or component. Inspect for water intrusion.
 - The condition only occurs on a cold start.
 - The condition goes away when the vehicle warms up.
- Information from the customer may help to determine if the trouble follows a pattern that is temperature related.
- If temperature is suspected of causing an intermittent fault condition, attempt to duplicate the condition. Refer to [Inducing Intermittent Fault Conditions](#) in order to duplicate the conditions required.

Electromagnetic Interference and Electrical Noise

Some electrical components/circuits are sensitive to electromagnetic interference or other types of electrical noise. Inspect for the following conditions:

- A mis-routed harness that is too close to high voltage/high current devices such as secondary ignition components, motors, generator etc. - These components may induce electrical noise on a circuit that could interfere with normal circuit operation.
- Electrical system interference caused by a malfunctioning relay, or a control module driven solenoid or switch - These conditions can cause a sharp electrical surge. Normally, the condition will occur when the malfunctioning component is operating.
- Installation of non-factory or aftermarket add on accessories such as lights, 2-way radios, amplifiers, electric motors, remote starters, alarm systems, cell phones, etc. - These accessories may create interference in other circuits while operating and the interference would disappear when the accessory is not operating. Refer to [Checking Aftermarket Accessories](#) .
- Test for an open diode across the A/C compressor clutch and for other open diodes. Some relays may contain a clamping diode.
- The generator may be allowing AC noise into the electrical system.

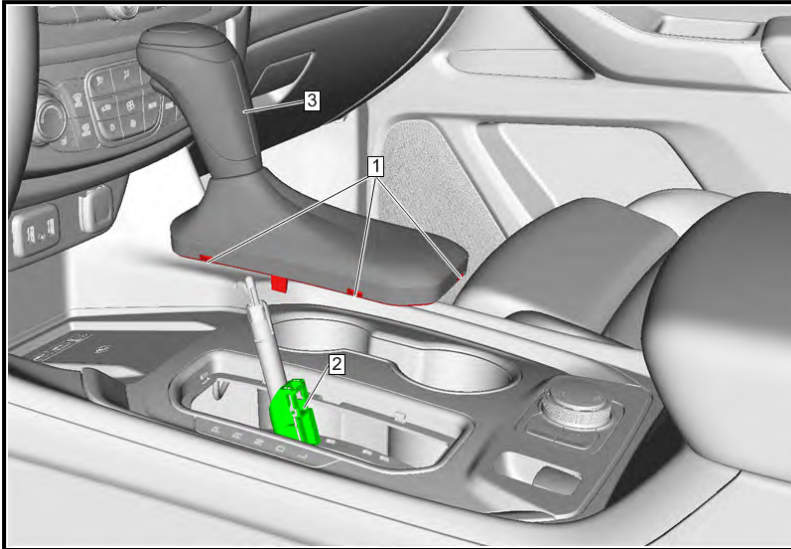
Incorrect Control Module

- There are only a few situations where reprogramming a control module is appropriate:
 - A new service control module is installed.
 - A control module from another vehicle is installed.
 - Revised software/calibration files have been released for this vehicle.

NOTE: **DO NOT re-program the control module with the SAME software/calibration files that are already present in the control module. This is not an effective repair for any type of concern.**

- Verify that the control module contains the correct software/calibration. If incorrect programming is found, reprogram the control module with the most current software/calibration. Refer to [Control Module References](#) for replacement, setup, and programming.

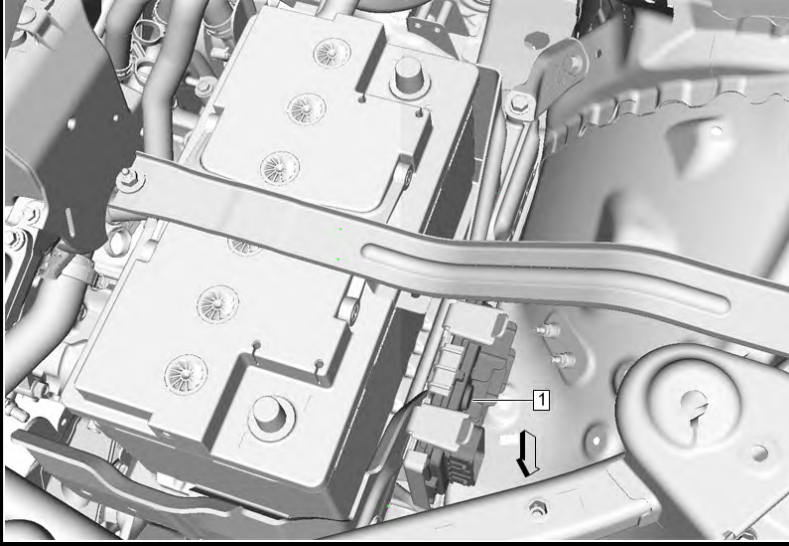
TRANSMISSION CONTROL LEVER KNOB REPLACEMENT



Callout	Component Name
1	Transmission Control Lever Knob Retaining Tabs [6x] Procedure Using a flat-bladed plastic trim tool, release the retainer securing the control lever boot.
2	Electrical Dock & Lock Connector NOTE: Do Not twist the transmission control lever knob. Procedure Lift the transmission control lever knob straight up to disconnect the electrical connector.
3	Transmission Control Lever Knob NOTE: • The control lever boot and knob are replaced as an assembly. • DO NOT TWIST the knob to remove, pull upward ONLY.

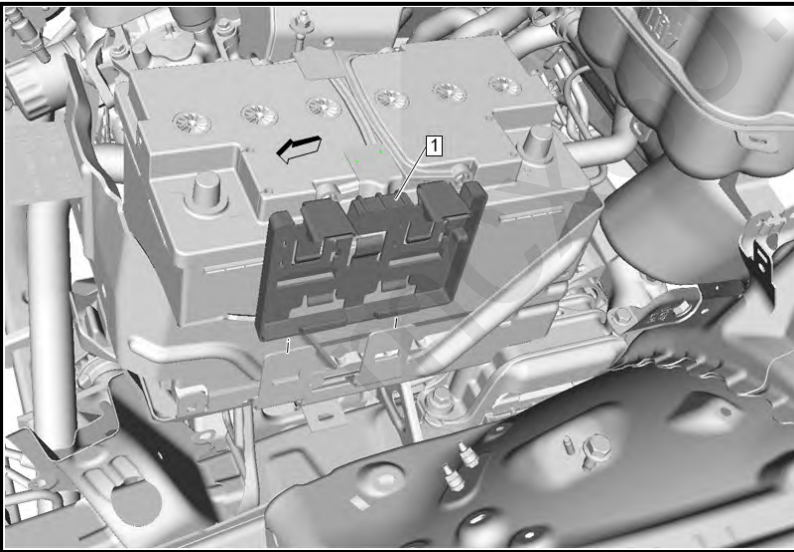
TRANSMISSION CONTROL MODULE REPLACEMENT





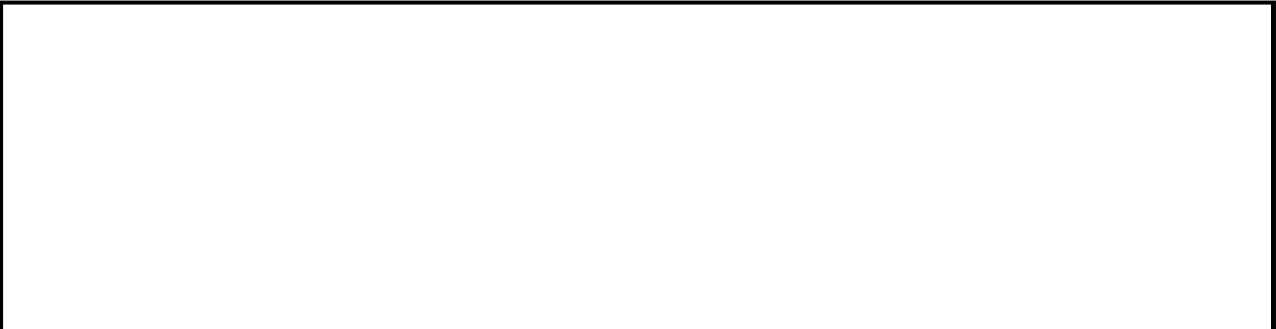
Callout	Component Name
1	Transmission Control Module Procedure 1. Disconnect the electrical connector. 2. Remove the module from the module bracket by releasing the retaining tabs. 3. Reprogram the transmission. Solenoid Valve Characterization Reprogramming

TRANSMISSION CONTROL MODULE BRACKET REPLACEMENT



Callout	Component Name
Preliminary Procedure Transmission Control Module Replacement	
1	Transmission Control Module Bracket

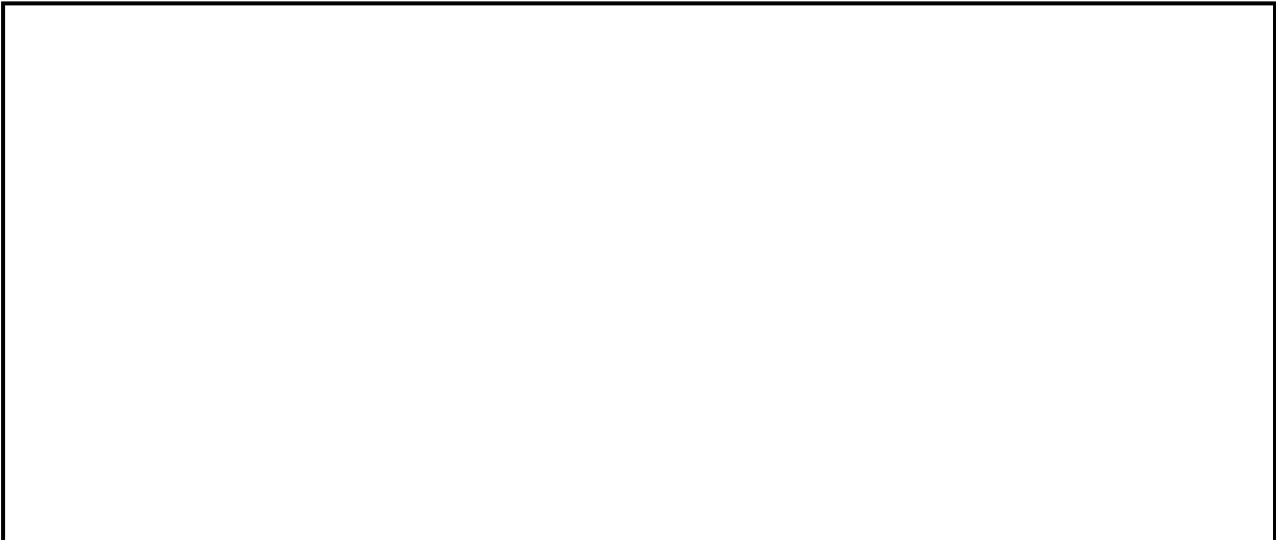
TRANSMISSION CONTROL REPLACEMENT

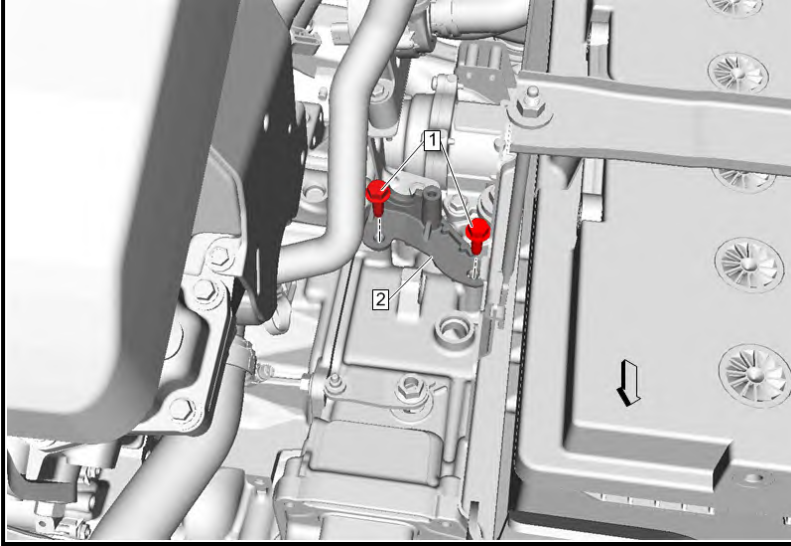




Callout	Component Name
Preliminary Procedure 1. Remove the front floor console cup holder plate. Front Floor Console Cup Holder Plate Replacement WARNING: After installing the transmission range selector shift cable, pull up and push down on ALL connections to verify that the connections are fully seated and properly engaged. Failure to perform this task can result in the vehicle not being able to shift into PARK causing potential vehicle damage and bodily injury. 2. Disconnect the range selector lever cable. Automatic Transmission Range Selector Lever Cable Replacement 3. Disconnect the transmission control electrical connectors.	
1	Transmission Control Fasteners [4x] CAUTION: Refer to Fastener Caution . Tighten 9 N.m (80 lb in).
2	Transmission Control

AUTOMATIC TRANSMISSION RANGE SELECTOR LEVER CABLE BRACKET REPLACEMENT





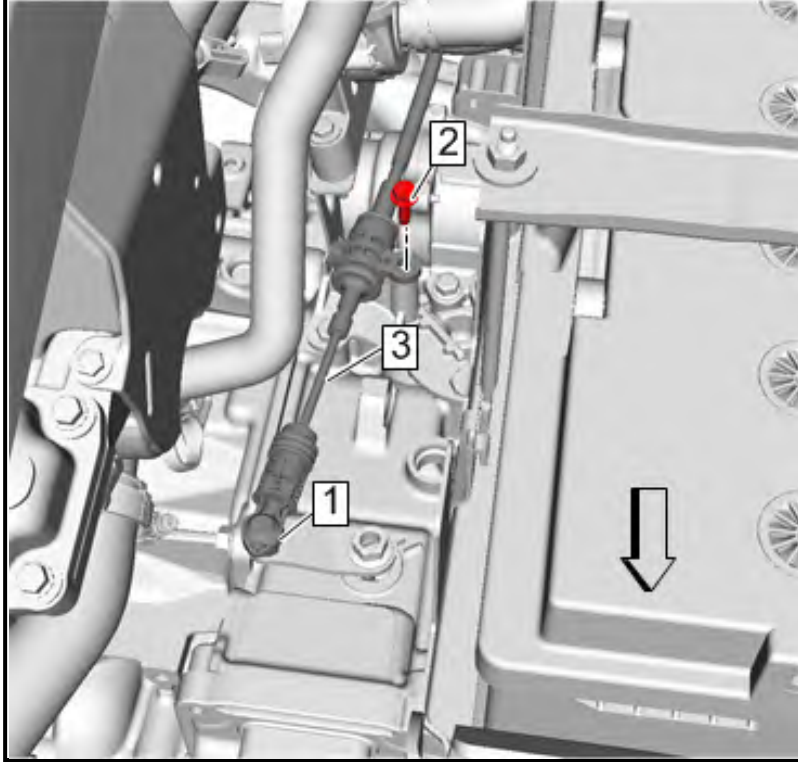
Callout	Component Name
Preliminary Procedures 1. Set the park brake and chock the wheels. 2. Remove the automatic transmission range selector lever cable from the bracket and position out of the way. Automatic Transmission Range Selector Lever Cable Replacement	
1	Transmission Range Selector Lever Cable Bracket Bolt [2x] CAUTION: Refer to Fastener Caution . Tighten 22 N.m (16 lb ft)
2	Transmission Range Selector Lever Cable Bracket Procedure Adjust the cable. Range Selector Lever Cable Adjustment

AUTOMATIC TRANSMISSION RANGE SELECTOR LEVER CABLE REPLACEMENT

Removal Procedure

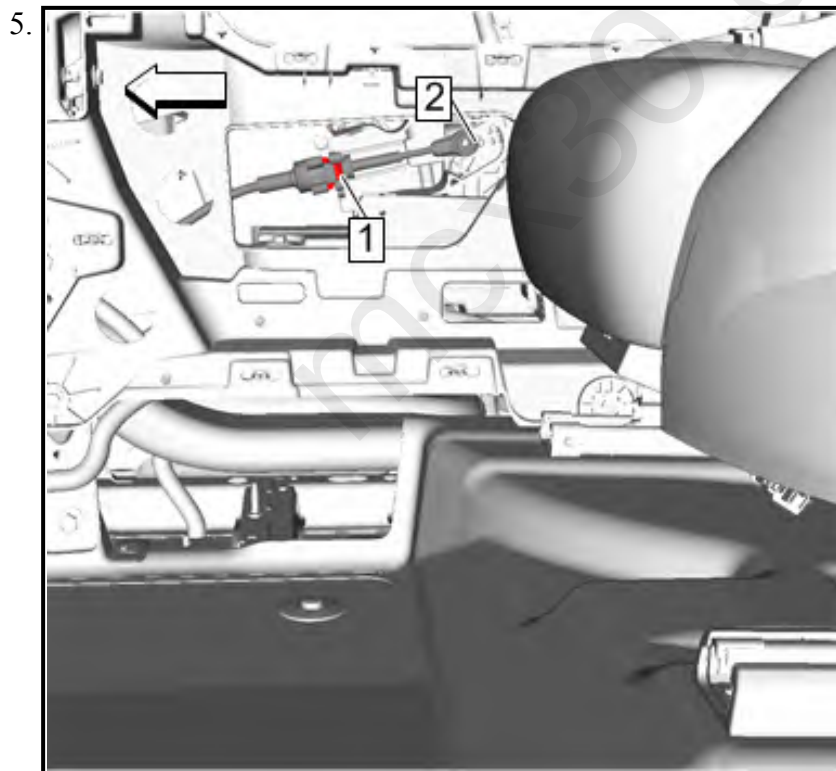
1. Set the park brake and chock the wheels.

2.



Remove the automatic transmission range selector lever cable retaining bolt (2).

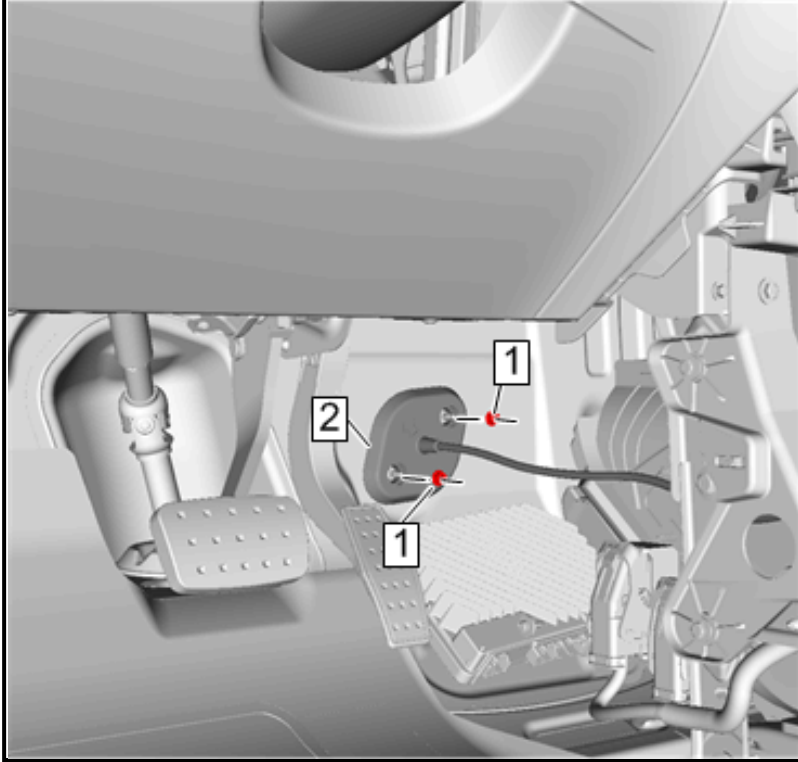
3. Disconnect the automatic transmission range selector lever cable terminal (1) from the transmission manual shift lever pin.
4. Remove the left front floor console extension panel. [Front Floor Console Extension Panel Replacement - Left Side](#)



Disconnect the automatic transmission range selector lever cable terminal (2) from the shift lever pin.

6. Release the automatic transmission range selector lever cable retainer (1) and remove the automatic transmission range selector cable from the transmission control lever base.



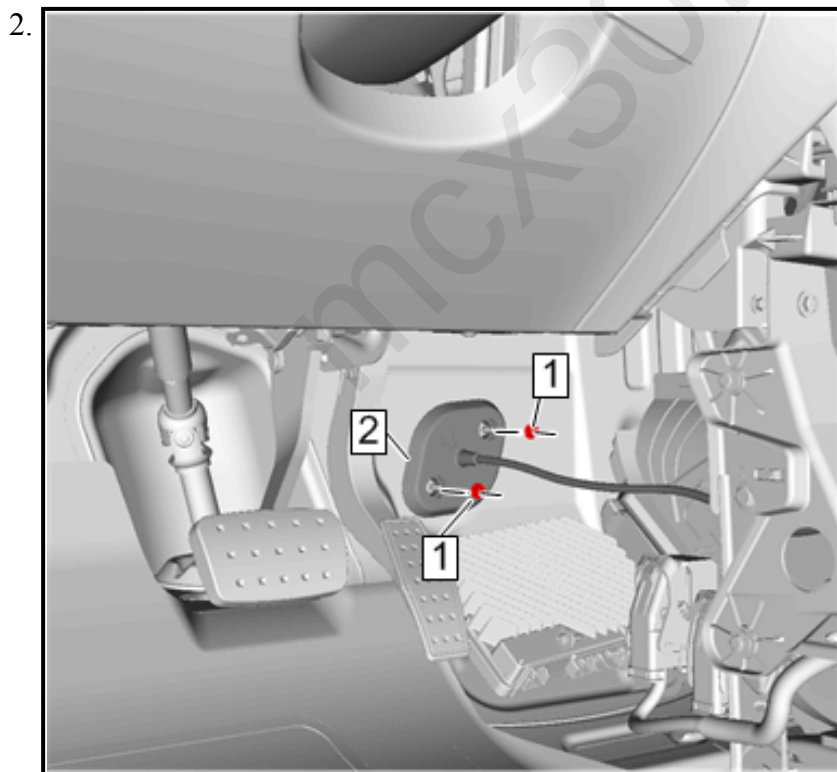


Remove the grommet fasteners (1) and the automatic transmission range selector lever cable grommet from the cowl panel.

8. Remove the automatic transmission range selector lever cable from the vehicle.

Installation Procedure

1. Install the automatic transmission range selector lever cable to the vehicle.

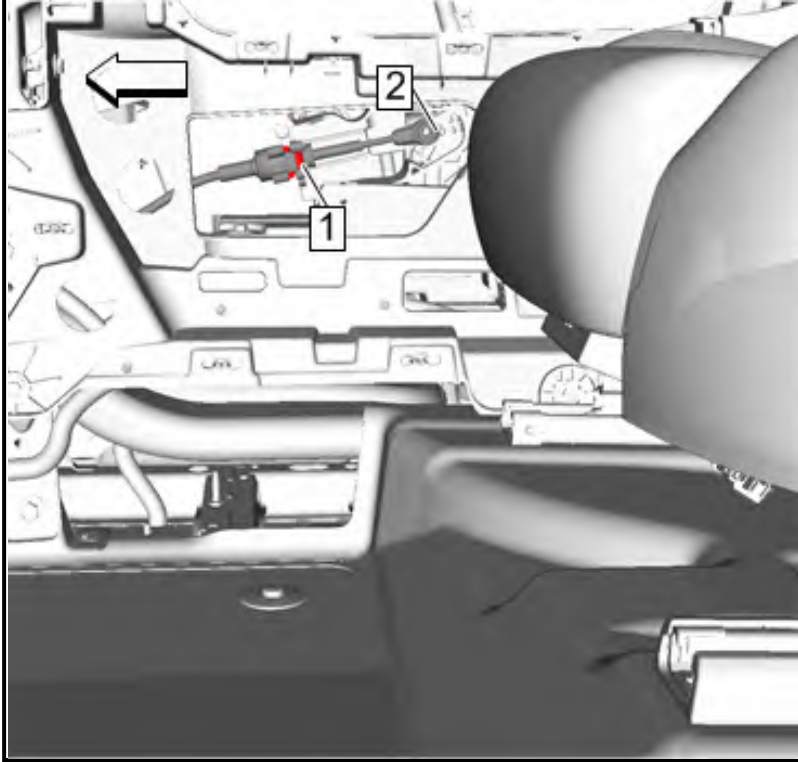


Install the automatic transmission range selector lever cable grommet (2) to the cowl panel.

CAUTION: Refer to [Fastener Caution](#) .

3. Install the grommet fasteners (1) and tighten to 9 N.m (80 lb in).

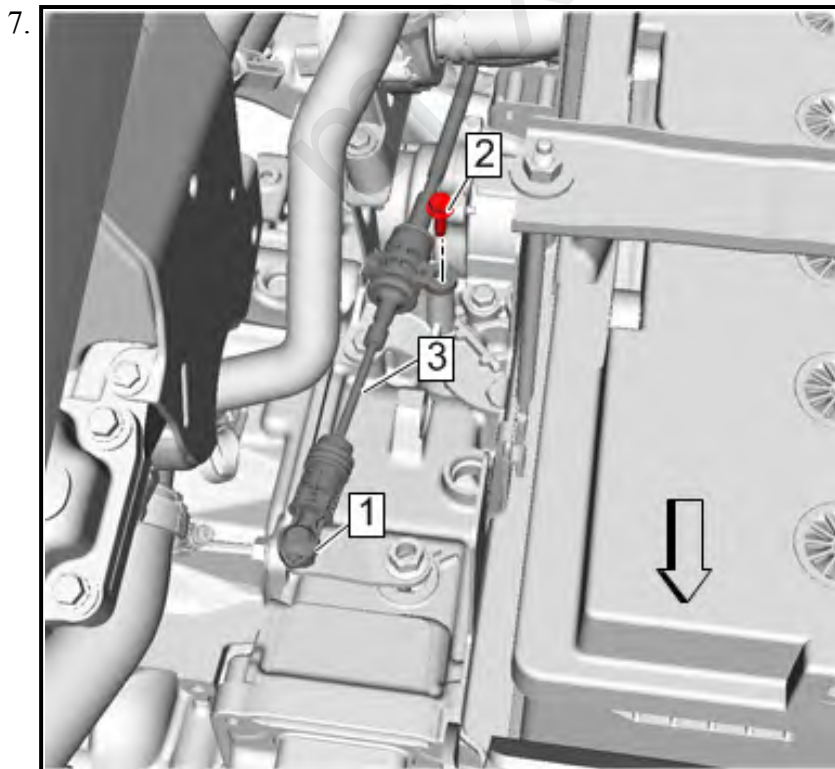




Install the automatic transmission range selector lever cable to the transmission control lever base. Insure the cable retainer (1) is fully secured to the transmission control lever base.

WARNING: After installing the transmission range selector shift cable, pull up and push down on ALL connections to verify that the connections are fully seated and properly engaged. Failure to perform this task can result in the vehicle not being able to shift into PARK causing potential vehicle damage and bodily injury.

5. Connect the automatic transmission range selector lever cable terminal (2) to the shift lever pin.
6. Install the left front floor console extension panel. [Front Floor Console Extension Panel Replacement - Left Side](#)



Install the automatic transmission range selector lever cable (3) to the cable bracket.

8. Connect the automatic transmission range selector lever cable terminal (1) to the transmission manual shift lever pin.

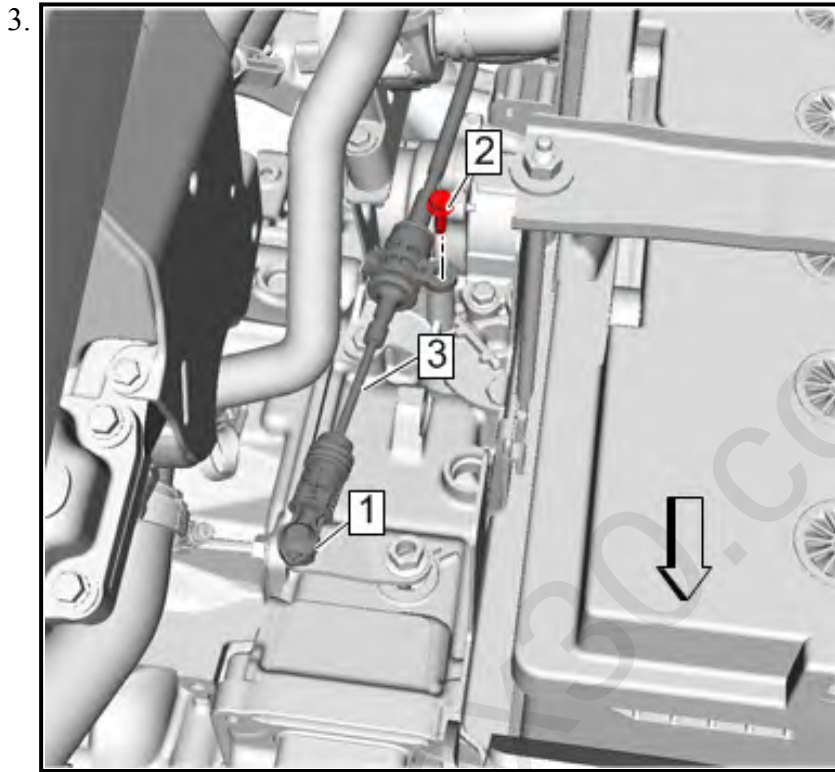
CAUTION: Refer to [Fastener Caution](#) .

9. Install the automatic transmission range selector lever cable retaining bolt (2) and tighten to 9 N.m (80 lb in)
10. Adjust the automatic transmission range selector lever cable. [Range Selector Lever Cable Adjustment](#)

AUTOMATIC TRANSMISSION RANGE SELECTOR LEVER CABLE LEVER REPLACEMENT

Removal Procedure

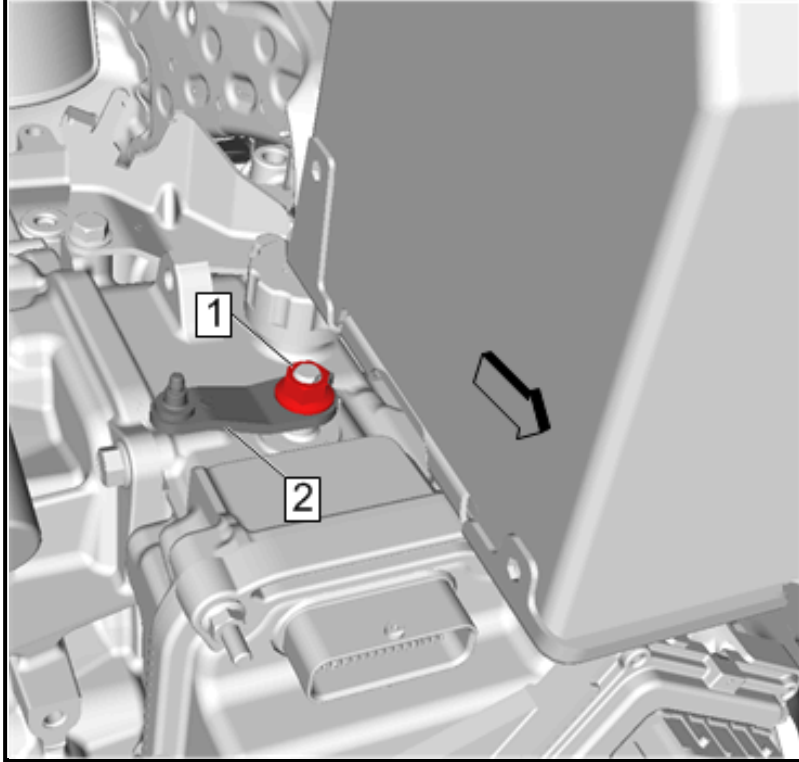
1. Set the park brake and chock the wheels.
2. Remove the engine control module bracket. [Engine Control Module Bracket Replacement](#)



Disconnect the automatic transmission range selector lever cable terminal (1) from the transmission manual shift lever pin.

4. Remove the retaining bolt (2) forward in order to release the automatic transmission range selector lever cable from the cable bracket.



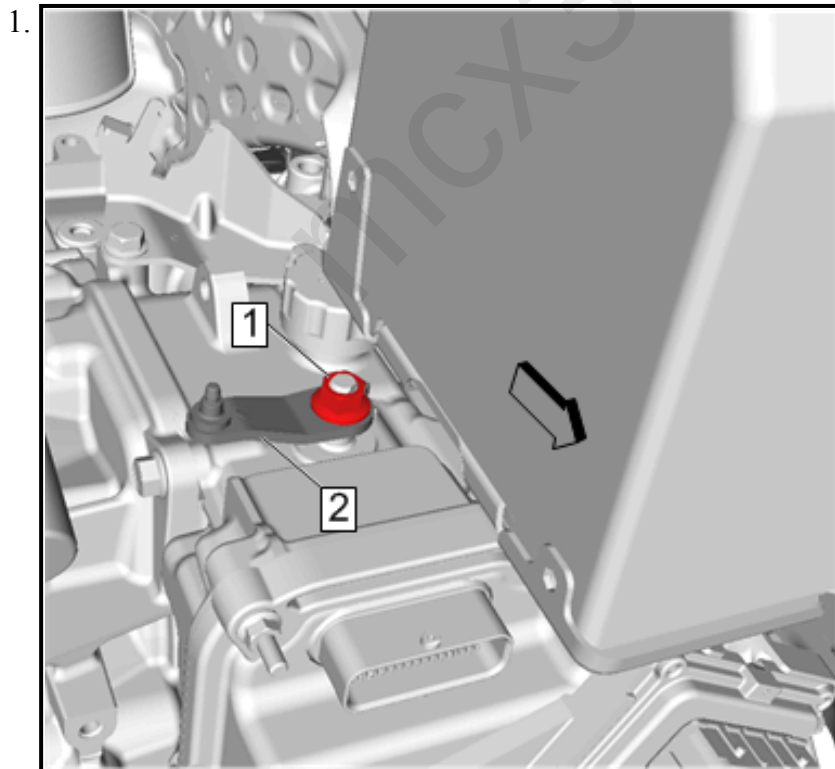


WARNING: Hold the transmission range selector lever while removing or installing the lever retaining nut. Failure to hold the lever can cause damage to the transmission internal park system components which could allow the vehicle to roll when placed in the park position.

Remove the automatic transmission range selector lever nut (1).

6. Remove the automatic transmission range selector lever (2).

Installation Procedure



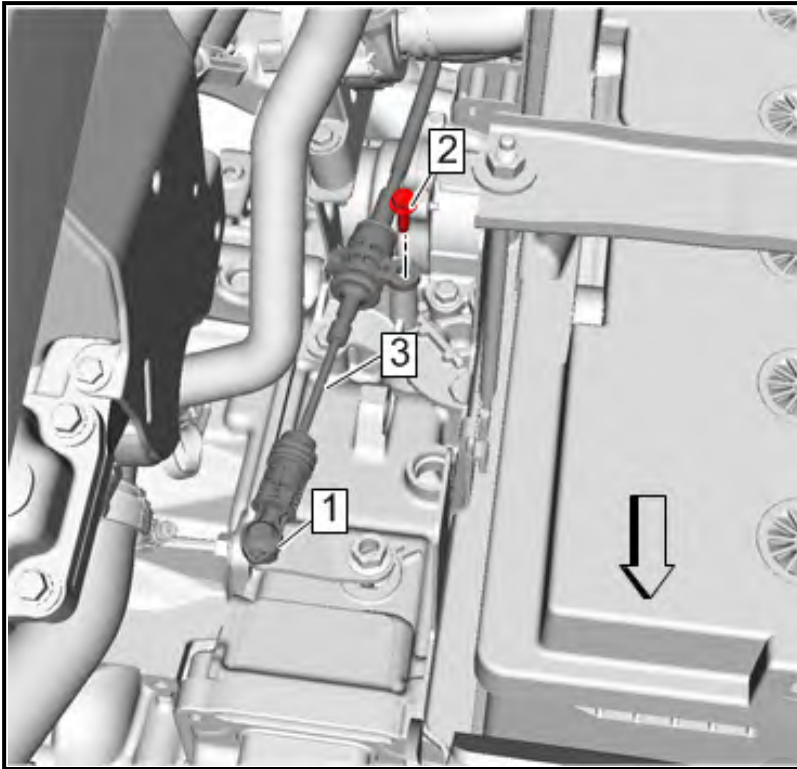
WARNING: Hold the transmission range selector lever while removing or installing the lever retaining nut. Failure to hold the lever can cause damage to the transmission internal park system components which could allow the vehicle to roll when placed in the park position.

Install the automatic transmission range selector lever (2).

CAUTION: Refer to [Fastener Caution](#).

2. Install the automatic transmission range selector lever nut (1) and tighten to 30 N.m (22 lb ft).

3.



Install the automatic transmission range selector lever cable (2) to the cable bracket.

4. Install the automatic transmission range selector lever cable retaining bolt (1) and tighten to 9 N.m (80 lb in).

WARNING: After installing the transmission range selector shift cable, pull up and push down on ALL connections to verify that the connections are fully seated and properly engaged. Failure to perform this task can result in the vehicle not being able to shift into PARK causing potential vehicle damage and bodily injury.

5. Connect the automatic transmission range selector lever cable terminal (1) to the transmission manual shift lever pin.

6. Install the engine control module bracket. [Engine Control Module Bracket Replacement](#)

RANGE SELECTOR LEVER CABLE ADJUSTMENT

1. Remove the engine control module bracket. [Engine Control Module Bracket Replacement](#)

NOTE: Adjust the automatic transmission range selector cable while the transmission and the gear selector are in the Park position only. Failure to do so may cause mis-adjustment.

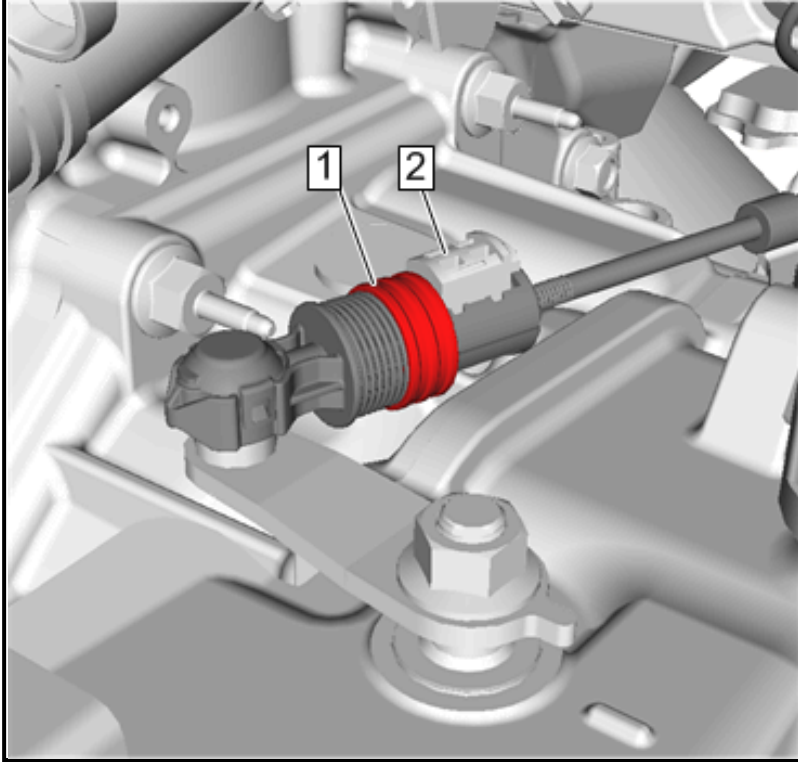
2. Set the park brake and chock the wheels.

3. Verify the transmission range select lever is in the park position.

4. Verify the transmission manual shift lever is in the park position.

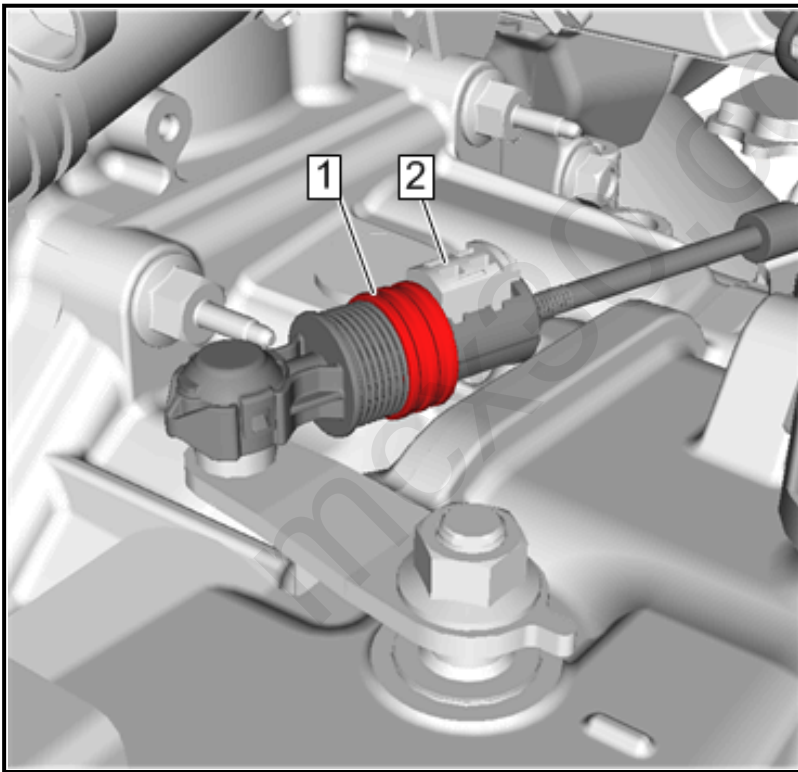
5.





Pull the retaining collar (1) forward, then release the range select cable adjuster clip (2).

6.



NOTE: It is not necessary to pull the retaining collar during this step, doing so may cause a cable mis-adjustment.

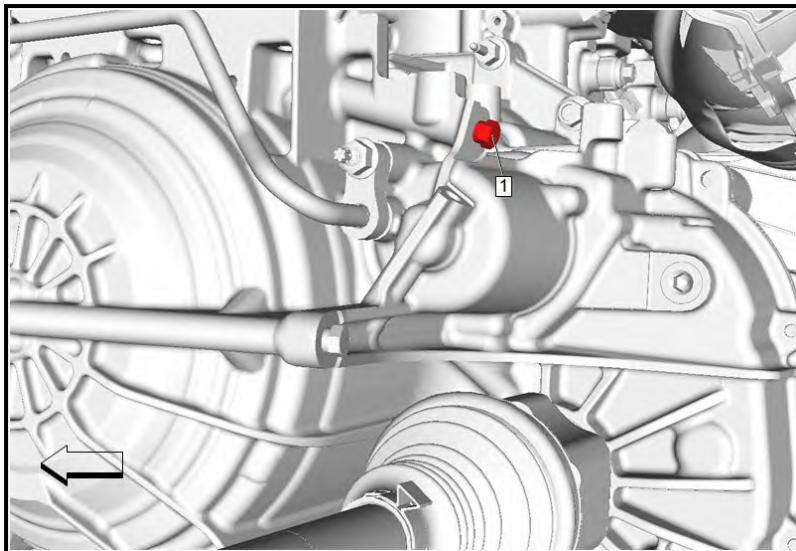
Depress the adjuster clip (2) locking the adjuster clip completely and confirm that the retaining collar (1) has fully actuated over the adjuster clip.

WARNING: After installing the transmission range selector shift cable, pull up and push down on ALL connections to verify that the connections are fully seated and properly engaged. Failure to perform this task can result in the vehicle not being able to shift into PARK causing potential vehicle damage and bodily injury.

7. Check the transmission range select lever in all gear selections for proper operation.

8. Install the engine control module bracket. [Engine Control Module Bracket Replacement](#)

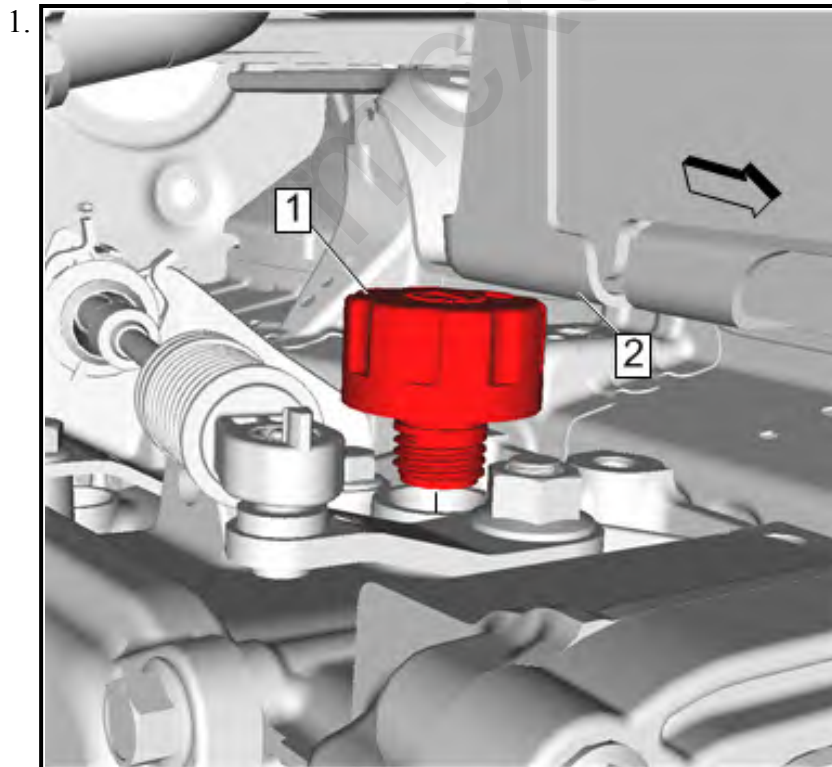
AUTOMATIC TRANSMISSION FLUID PRESSURE TEST HOLE PLUG REPLACEMENT



Callout	Component Name
Preliminary Procedure <u>Tire and Wheel Removal and Installation</u>	
1	Automatic Transmission Fluid Pressure Test Hole Plug CAUTION: Refer to <u>Component Fastener Tightening Caution</u> . Tighten 12 N.m (106 lb in)

TRANSMISSION FLUID FILLER CAP REPLACEMENT

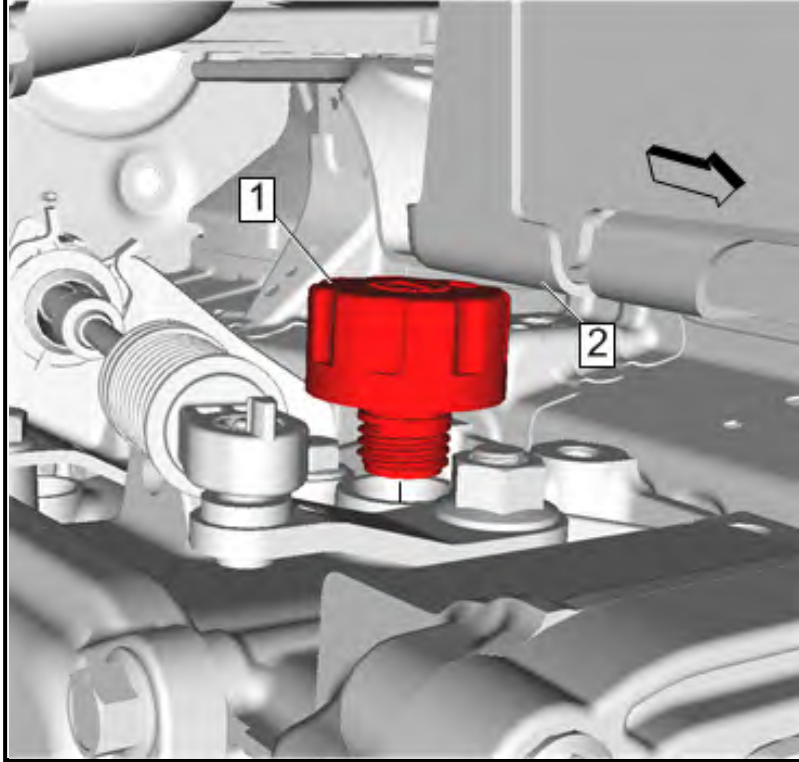
Removal Procedure



Remove the transmission fluid filler cap (1).

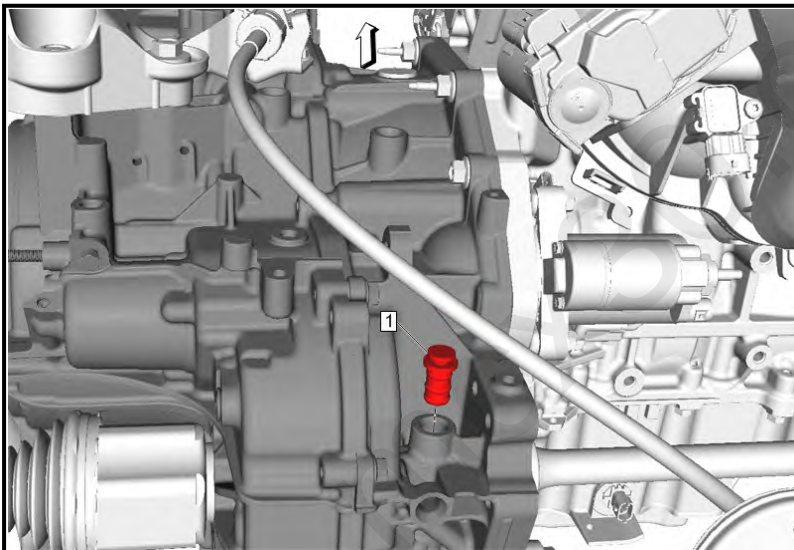
Installation Procedure





Install the transmission fluid filler cap (1).

TRANSMISSION FLUID FILLER TUBE PLUG REPLACEMENT

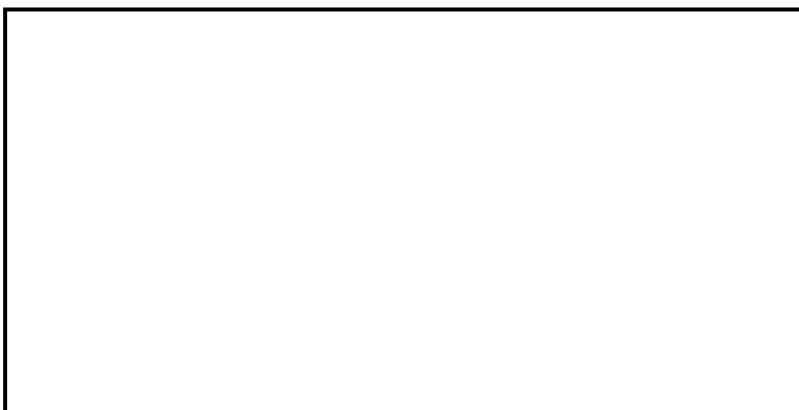


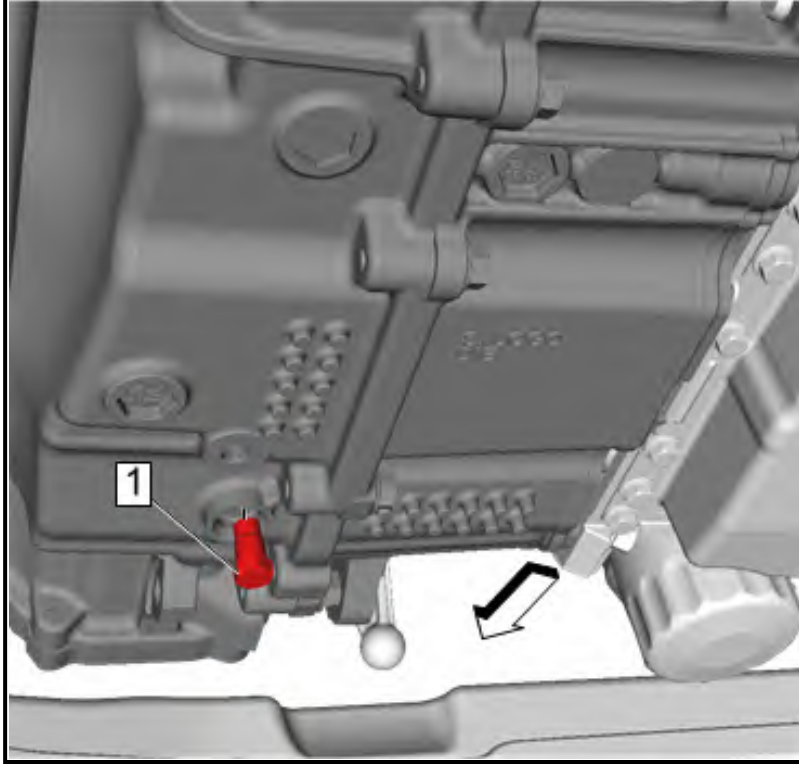
Callout	Component Name
Preliminary Procedure	
Raise and Support the vehicle. Lifting and Jacking the Vehicle	
1	Fluid Filler Tube Plug

AUTOMATIC TRANSMISSION FLUID PAN DRAIN PLUG REPLACEMENT

Removal Procedure

1.





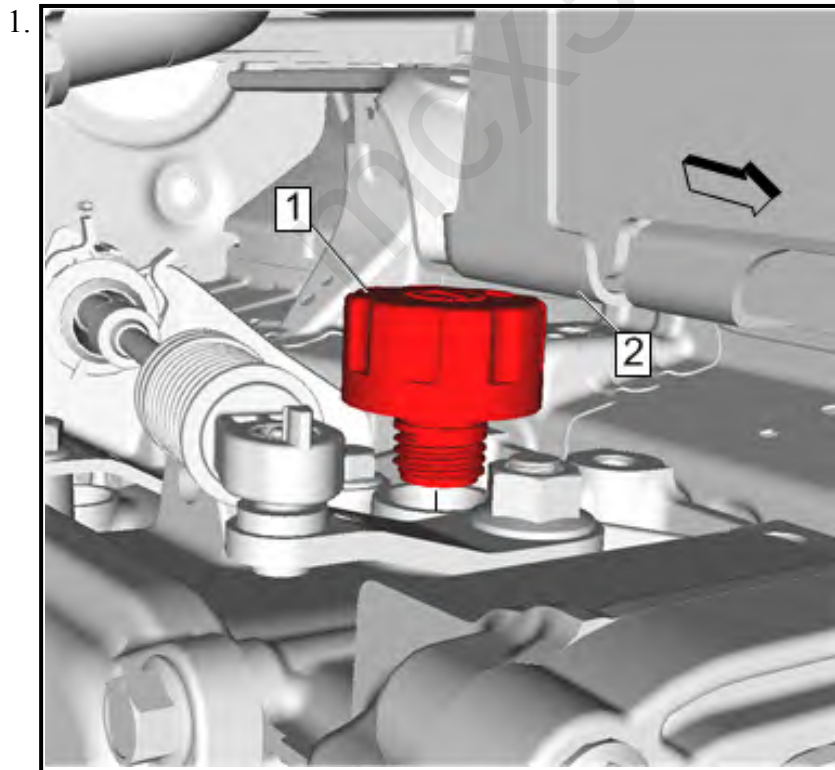
Raise and support the vehicle. [Lifting and Jacking the Vehicle](#) .

2. Remove the fluid pan drain plug (1).
3. Drain transmission fluid into a suitable container.

CAUTION: Refer to [Component Fastener Tightening Caution](#) .

4. Install the fluid pan drain plug (1) and tighten to 12 N.m (106 lb in).

Installation Procedure

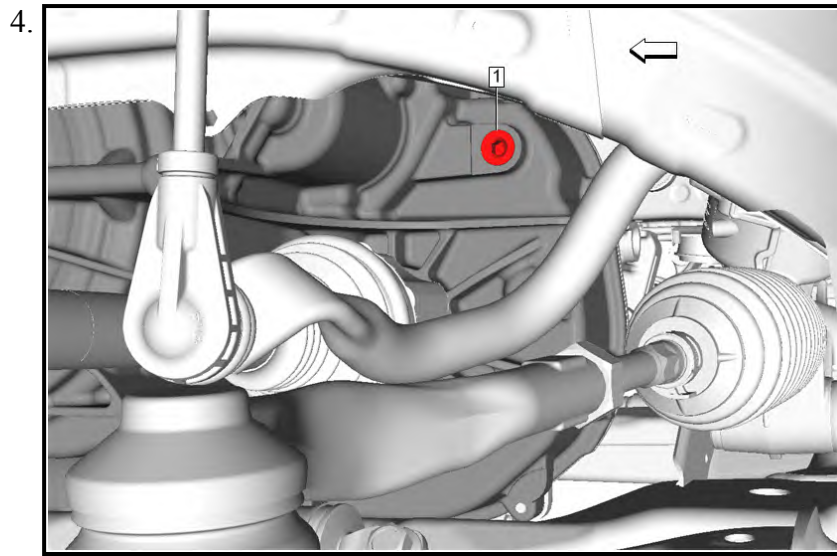


Lower the vehicle.

NOTE: If the transmission fluid filler cap cannot be accessed, proceed to Step 3 in this procedure.

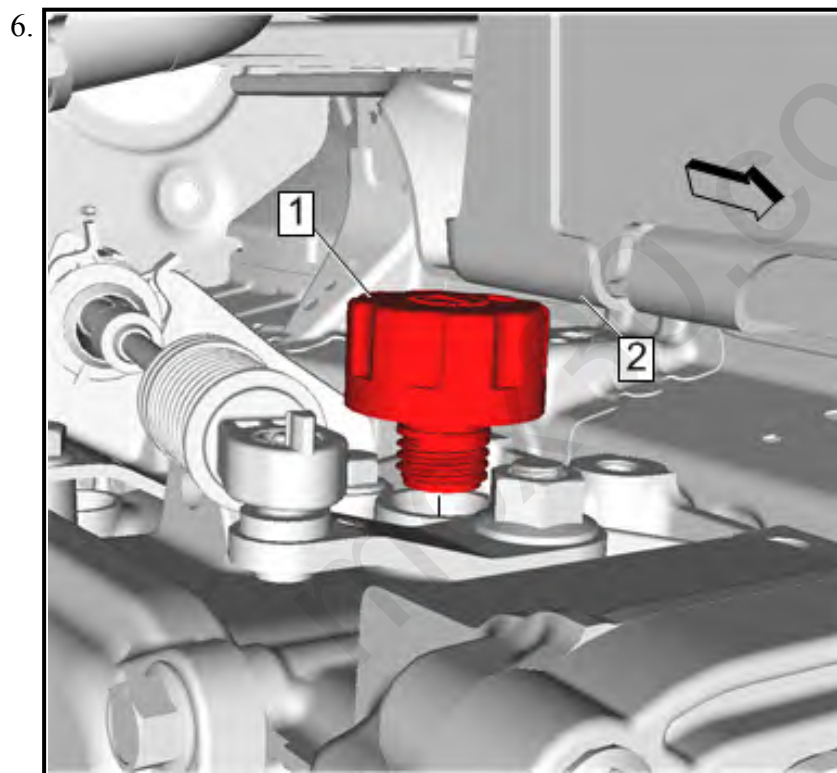
2. Remove the fluid fill cap (1), if accessible.

3. Remove the left front wheel and tire assembly. [Tire and Wheel Removal and Installation](#)



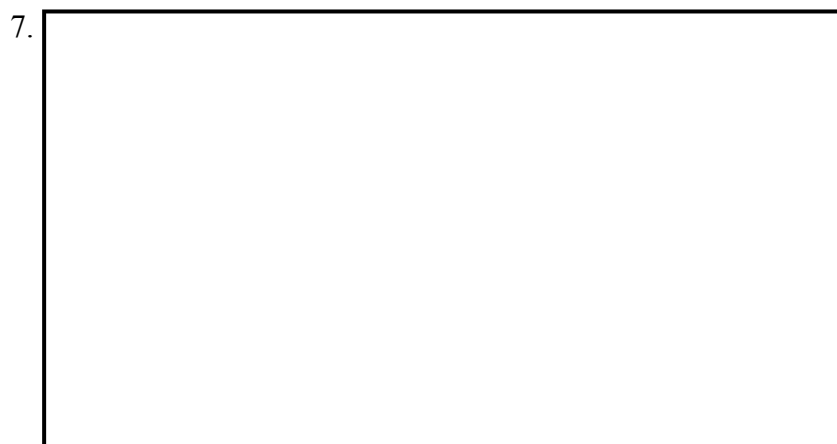
Remove the fluid filler plug (1) from the transmission.

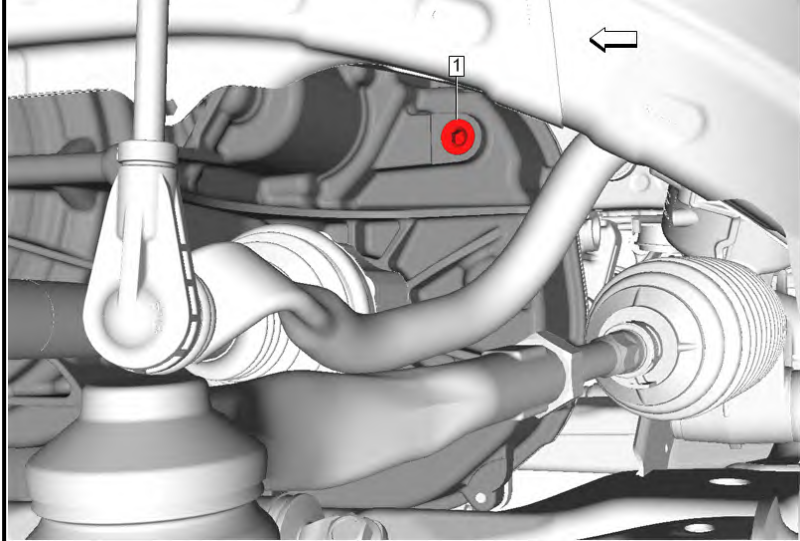
5. Fill the transmission to the proper level with the correct fluid. [Transmission Fluid Level and Condition Check](#) , and [Adhesives, Fluids, Lubricants, and Sealers](#) .



NOTE: If the transmission fluid filler cap cannot be accessed, proceed to step 7 in this procedure.

Install the fluid fill cap (1), if accessible.



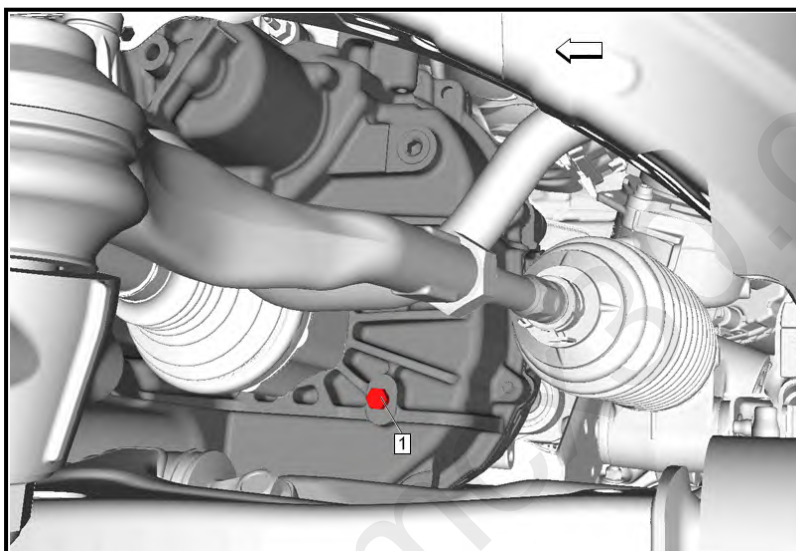


CAUTION: Refer to [Component Fastener Tightening Caution](#) .

Install the fluid filler plug (1) to the transmission and tighten to 40 N.m (30 lb ft).

8. Install the left front wheel and tire assembly. [Tire and Wheel Removal and Installation](#)

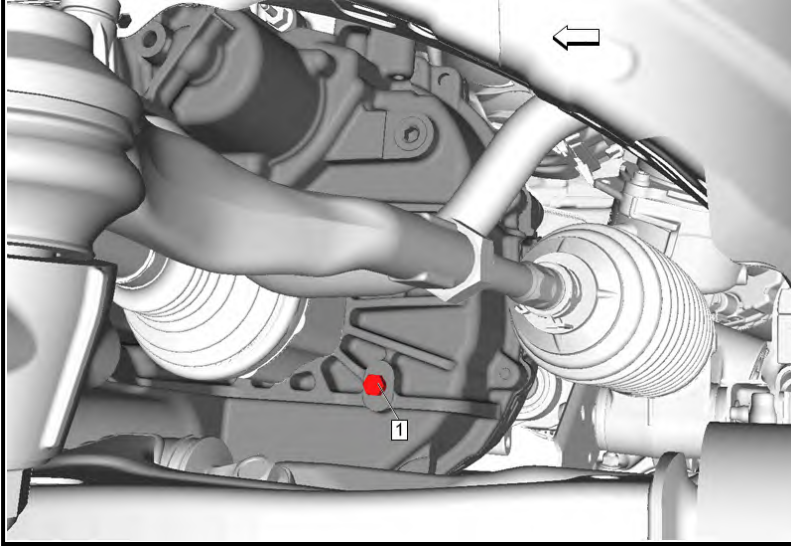
AUTOMATIC TRANSMISSION FLUID LEVEL HOLE PLUG REPLACEMENT



Callout	Component Name
Preliminary Procedure Tire and Wheel Removal and Installation	
1	Automatic Transmission Case Hole Plug CAUTION: Refer to Component Fastener Tightening Caution . Tighten 12 N.m (106 lb in)

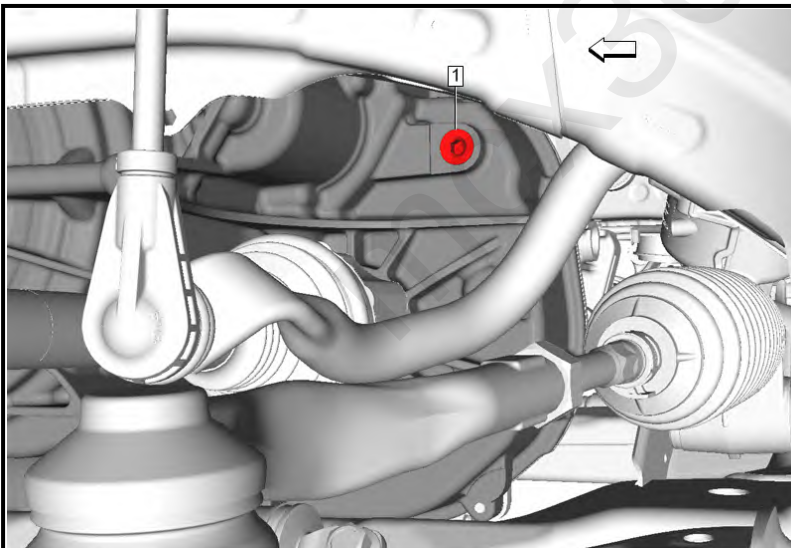
AUTOMATIC TRANSMISSION CASE HOLE PLUG REPLACEMENT (CASE HOLE PLUG)





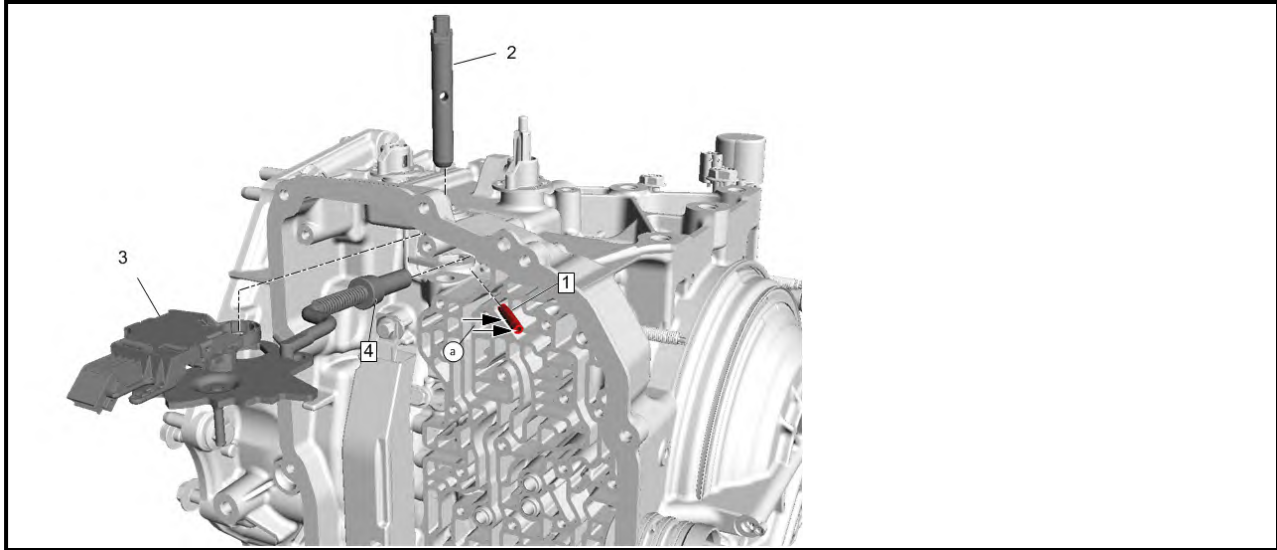
Callout	Component Name
Preliminary Procedure <u>Tire and Wheel Removal and Installation</u>	
1	Automatic Transmission Case Hole Plug CAUTION: Refer to <u>Component Fastener Tightening Caution</u> . Tighten 12 N.m (106 lb in)

AUTOMATIC TRANSMISSION CASE HOLE PLUG REPLACEMENT (AUXILIARY FLUID FILL PLUG)



Callout	Component Name
Preliminary Procedure <u>Tire and Wheel Removal and Installation</u>	
1	Fluid Filler Plug CAUTION: Refer to <u>Component Fastener Tightening Caution</u> . Tighten 40 N.m (30 lb ft)

MANUAL SHIFT DETENT LEVER SHAFT REPLACEMENT



Callout	Component Name
Preliminary Procedure <u>Control Valve Solenoid Body Replacement</u>	
1	Manual Shaft Detent Lever Hub Pin CAUTION: Refer to <u>Fastener Caution</u> . Procedure Install the manual shaft detent lever hub pin to correct height. NOTE: Install a NEW manual shaft detent lever hub pin. Specification 7.9 mm (0.38 in) (a)
2	Manual Shaft NOTE: Lubricate the shaft with ATF to prevent damage to the manual shift shaft seal during installation.
3	Manual Shaft Detent Lever Assembly
4	Park Pawl Actuator

MANUAL SHIFT SHAFT SEAL REPLACEMENT

Special Tool

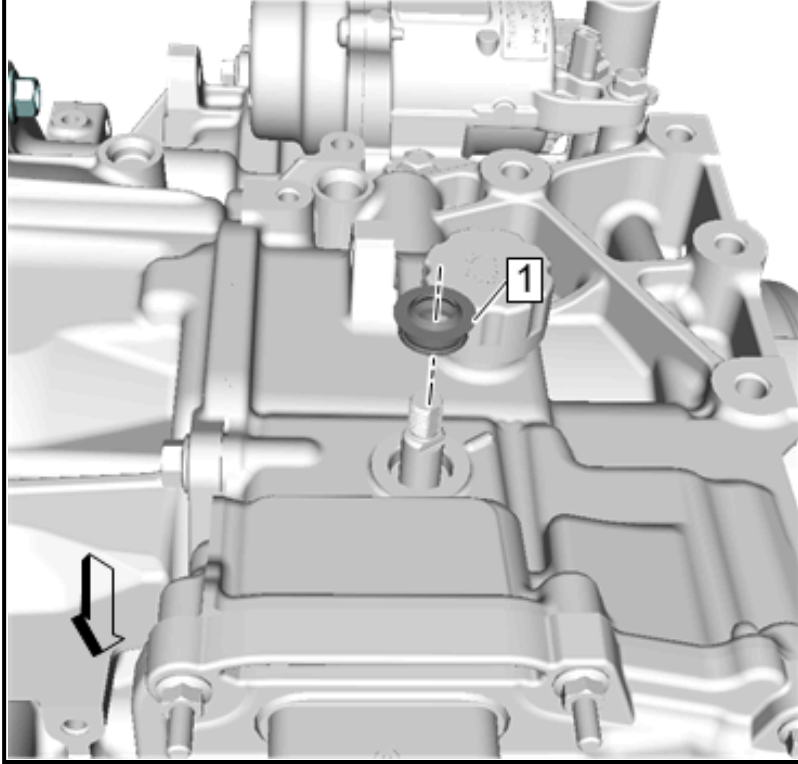
- DT-49101 Seal Installer

For equivalent regional tools, **Special Tools**

Removal Procedure

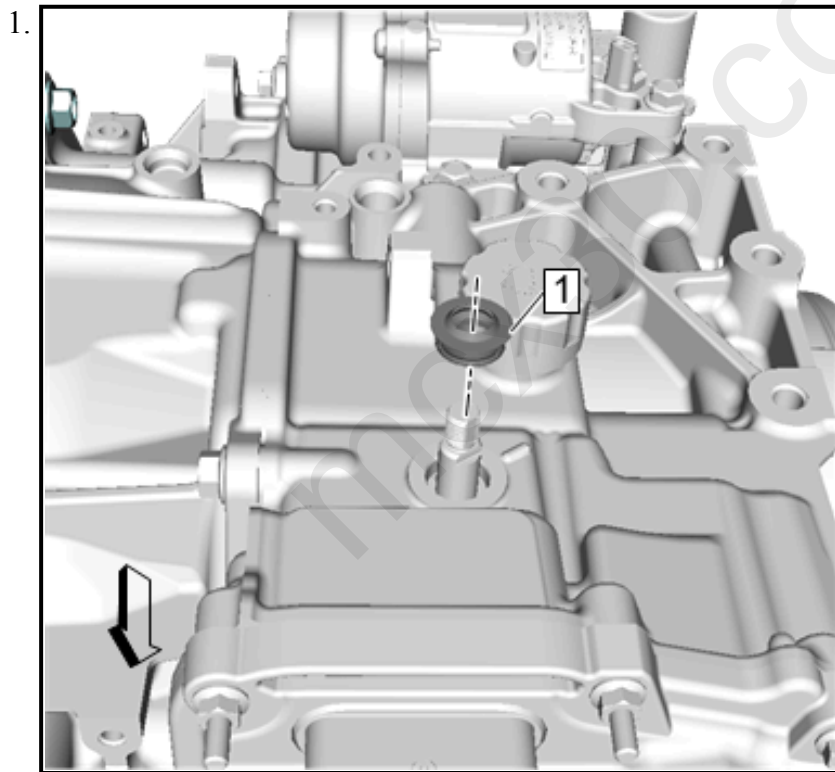
1. Remove the battery tray. **Battery Tray Replacement**
2. Remove the automatic transmission range selector lever cable lever. **Automatic Transmission Range Selector Lever Cable Lever Replacement**

3.



Remove the manual shaft seal (1) using a suitable tool.

Installation Procedure

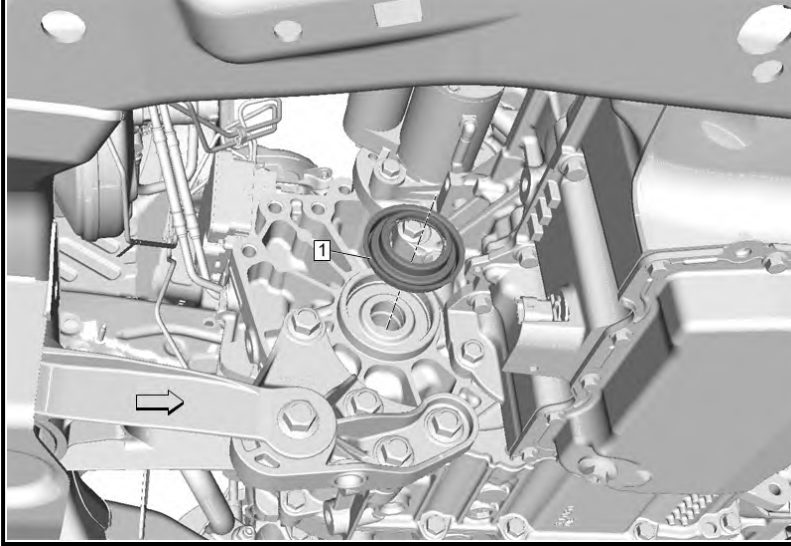


Install the manual shaft seal (1) using **DT-49101** seal installer.

2. Install the automatic transmission range selector lever cable lever. [Automatic Transmission Range Selector Lever Cable Lever Replacement](#)
3. Install the battery tray. [Battery Tray Replacement](#)

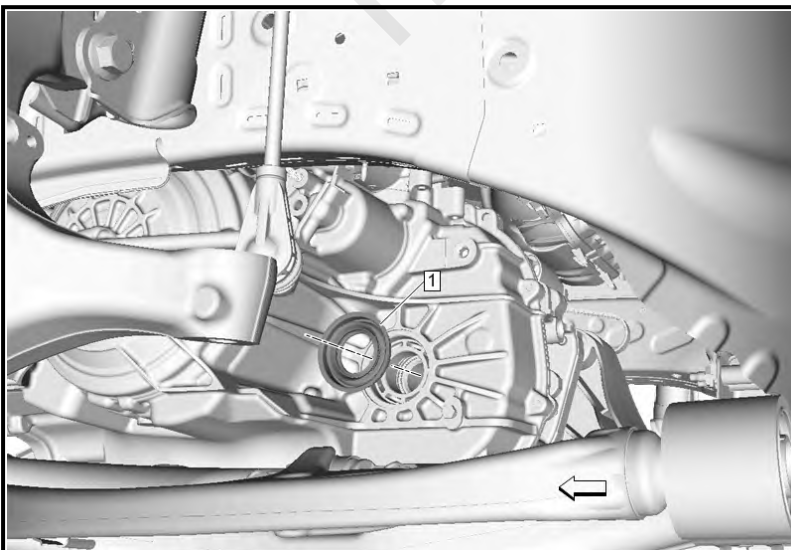
FRONT WHEEL DRIVE SHAFT OIL SEAL REPLACEMENT (RIGHT)





Callout	Component Name
Preliminary Procedure Front Wheel Drive Half Shaft Replacement - Right Side (AWD)	
1	Right Front Wheel Drive Shaft Oil Seal Procedure 1. For seal removal use GE-6125-1B slide hammer with DT-23129 universal seal remover. 2. For seal installation use GE-8092 driver handle with DT-47790 seal installer. Special Tools • DT-23129 Universal Seal Remover • DT-47790 Seal Installer • GE-6125-1B Slide Hammer • GE-8092 Driver Handle For equivalent regional tools, Special Tools .

FRONT WHEEL DRIVE SHAFT OIL SEAL REPLACEMENT (LEFT)



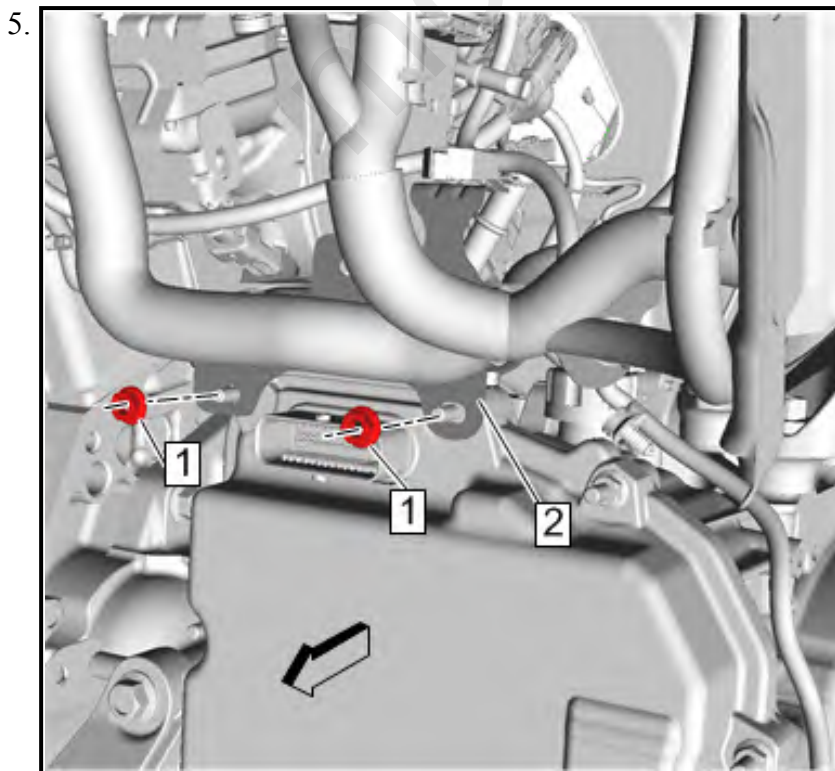
Callout	Component Name
Preliminary Procedure Front Wheel Drive Half Shaft Replacement - Left Side	

Callout	Component Name
1	Left Front Wheel Drive Shaft Oil Seal Procedure 1. For seal removal use GE-6125-1B slide hammer with DT-23129 universal seal remover. 2. For seal installation use GE-8092 driver handle with DT-47790 seal installer. Special Tools • DT-23129 Universal Seal Remover • DT-47790 Seal Installer • GE-6125-1B Slide Hammer • GE-8092 Driver Handle For equivalent regional tools, Special Tools

CONTROL VALVE BODY COVER REPLACEMENT

Removal Procedure

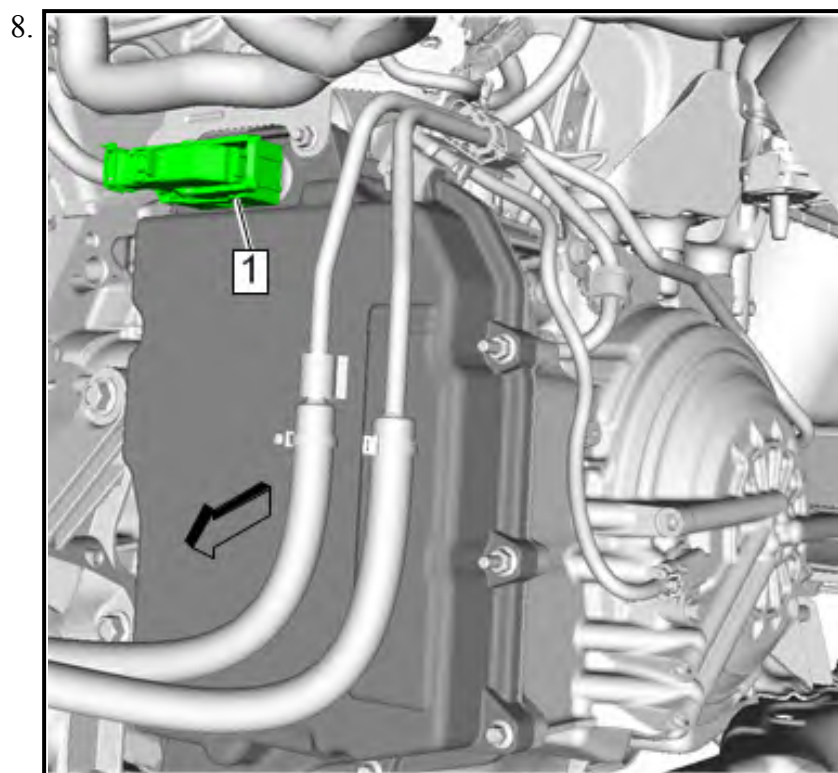
1. Disconnect the battery negative cable. [Battery Negative Cable Disconnection and Connection \(KL9\)](#)
2. Remove the charge air cooler outlet air hose. [Charge Air Cooler Outlet Air Hose Replacement](#)
3. Disconnect the transmission fluid cooler outlet pipe and the transmission fluid cooler inlet pipe from the transmission fluid cooler thermal bypass valve. [Transmission Fluid Cooler Inlet Pipe Replacement \(LFY with V08\)](#) [Transmission Fluid Cooler Inlet Pipe Replacement \(LFY without V08\)](#) [Transmission Fluid Cooler Inlet Pipe Replacement \(LTG\)](#) , and [Transmission Fluid Cooler Outlet Pipe Replacement \(LFY with V08\)](#) [Transmission Fluid Cooler Outlet Pipe Replacement \(LFY without V08\)](#) [Transmission Fluid Cooler Outlet Pipe Replacement \(LTG\)](#)
4. Unclip all related retainers and position the transmission fluid cooler outlet pipe and the transmission fluid cooler inlet pipe away from the Transmission.



Remove the electrical harness bracket nuts (1).

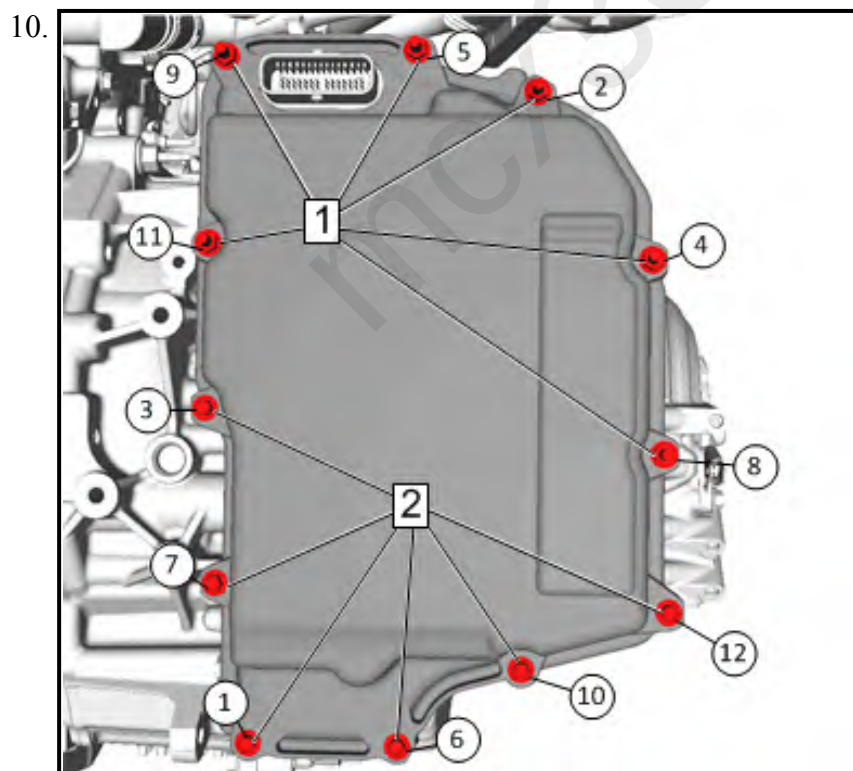
6. Remove the electrical harness bracket (2) from the control valve body cover and position out of the way.

7. Drain the transmission fluid. [Transmission Fluid Drain and Fill](#)



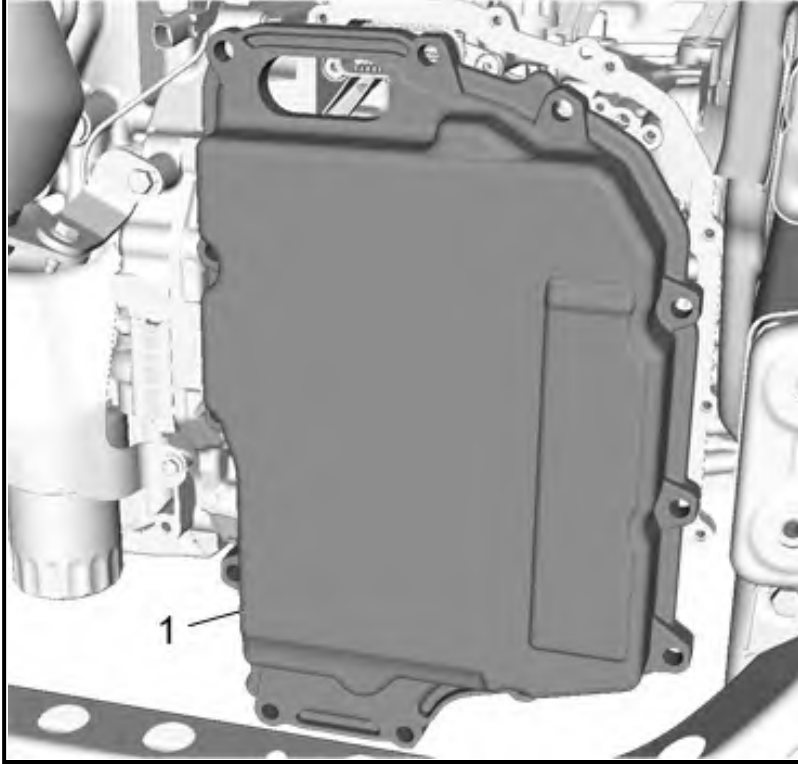
Disconnect the control valve body transmission control module electrical connector (1), then unclip the wiring harness from the cover.

9. Remove the body ground cable and wiring harness assembly mounting bolt at front of transmission and position ground cable and harness out of the way.



Remove the control valve body cover bolts (1, 2).



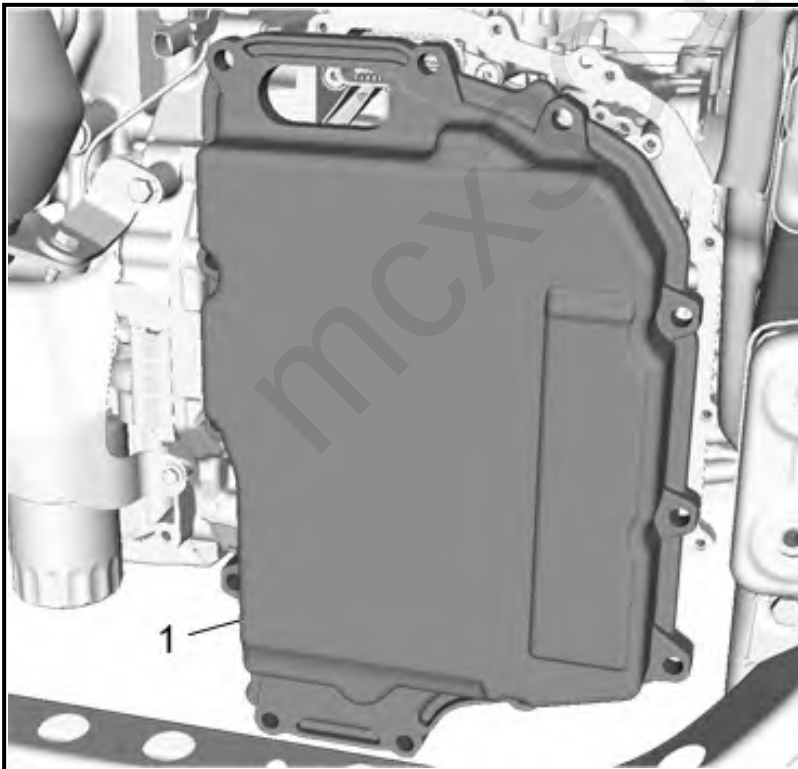


Remove the control valve body cover (1).

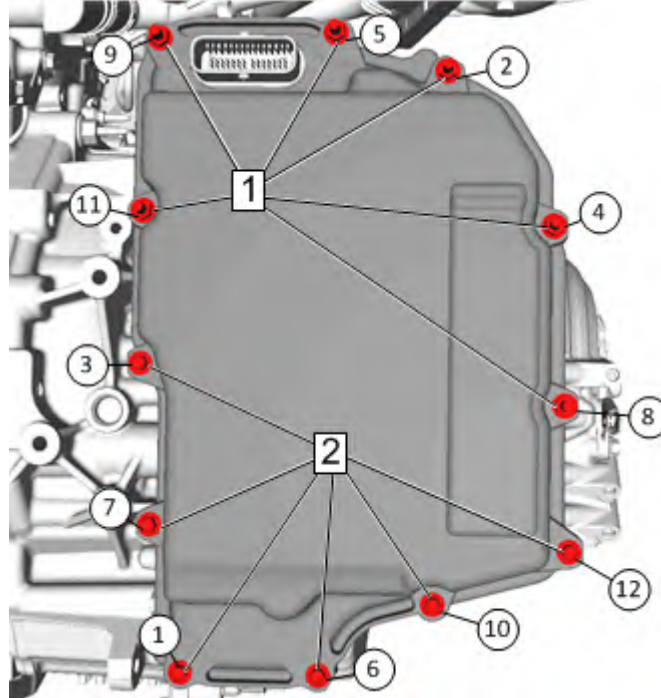
12. Clean the transmission case and control valve body cover gasket surfaces. Inspect and replace the gasket as necessary.

Installation Procedure

1.



Install the control valve body cover (1) and gasket.



2.

Fig. 1: Control Valve Body Cover Bolt Tightening Sequence
 Courtesy of GENERAL MOTORS COMPANY

NOTE: The number (1) bolts are stud bolts.

Hand start the control valve body cover bolts (1, 2).

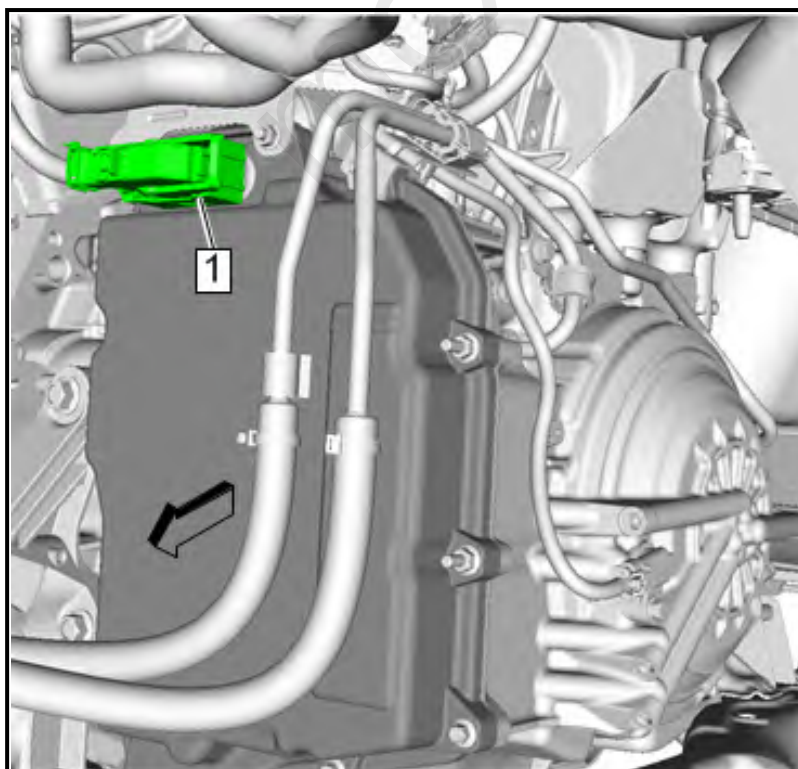
CAUTION: Refer to [Fastener Caution](#) .

NOTE: Install all control valve body cover bolts and stud bolts by hand then torque all bolts in sequence.

3. Install the control valve body cover bolts (1, 2), and tighten in sequence to 10 N.m (89 lb in).

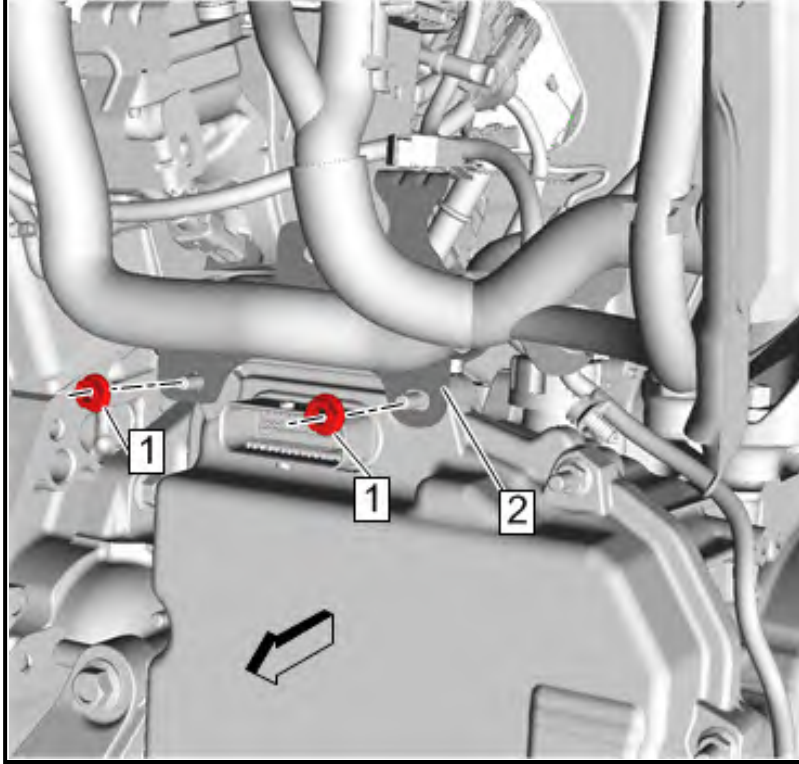
4. Install the body ground cable and wiring harness assembly to the front of transmission.

5.



Connect the control valve body transmission control module electrical connector (1), then clip the wiring harness to the cover.

6.



Install the electrical harness bracket (2) to the control valve body cover.

7. Install the electrical harness bracket nuts (1) and tighten to 9 N.m (80 lb in).
8. Connect the transmission fluid cooler outlet pipe and the transmission fluid cooler inlet pipe to the transmission fluid cooler thermal bypass valve. [Transmission Fluid Cooler Inlet Pipe Replacement \(LFY with V08\)](#), [Transmission Fluid Cooler Inlet Pipe Replacement \(LFY without V08\)](#), [Transmission Fluid Cooler Inlet Pipe Replacement \(LTG\)](#), and [Transmission Fluid Cooler Outlet Pipe Replacement \(LFY with V08\)](#), [Transmission Fluid Cooler Outlet Pipe Replacement \(LFY without V08\)](#), [Transmission Fluid Cooler Outlet Pipe Replacement \(LTG\)](#)
9. Clip all related retainers for the transmission fluid cooler outlet pipe and the transmission fluid cooler inlet pipe.
10. Install the charge air cooler outlet air hose. [Charge Air Cooler Outlet Air Hose Replacement](#)
11. Connect the battery negative cable. [Battery Negative Cable Disconnection and Connection \(KL9\)](#)
12. Fill the transmission with correct fluid. [Adhesives, Fluids, Lubricants, and Sealers](#)
13. Check transmission fluid level. [Transmission Fluid Level and Condition Check](#)
14. Check for leaks.

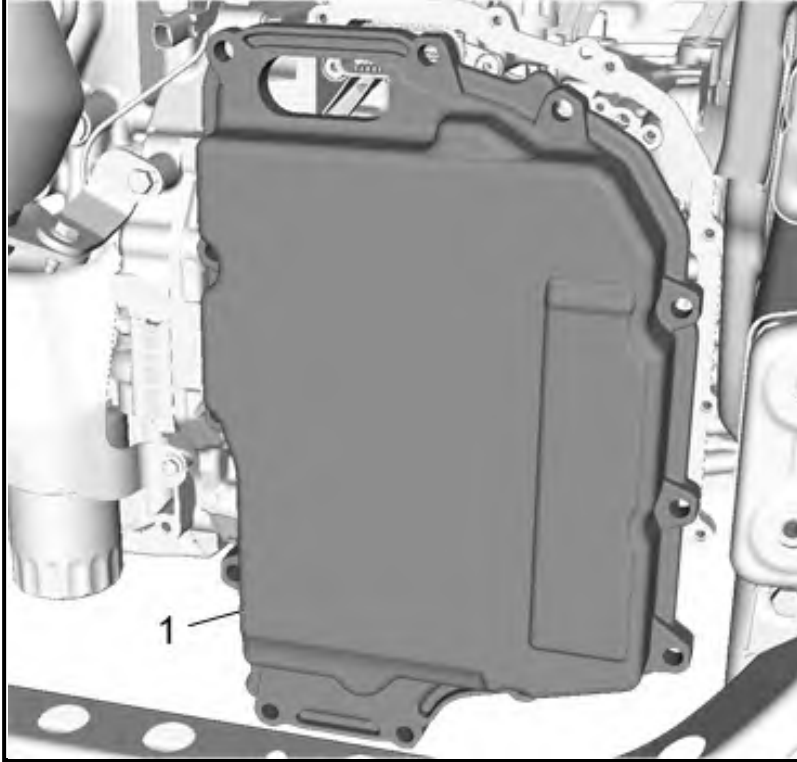
CONTROL VALVE BODY REPLACEMENT

Removal Procedure

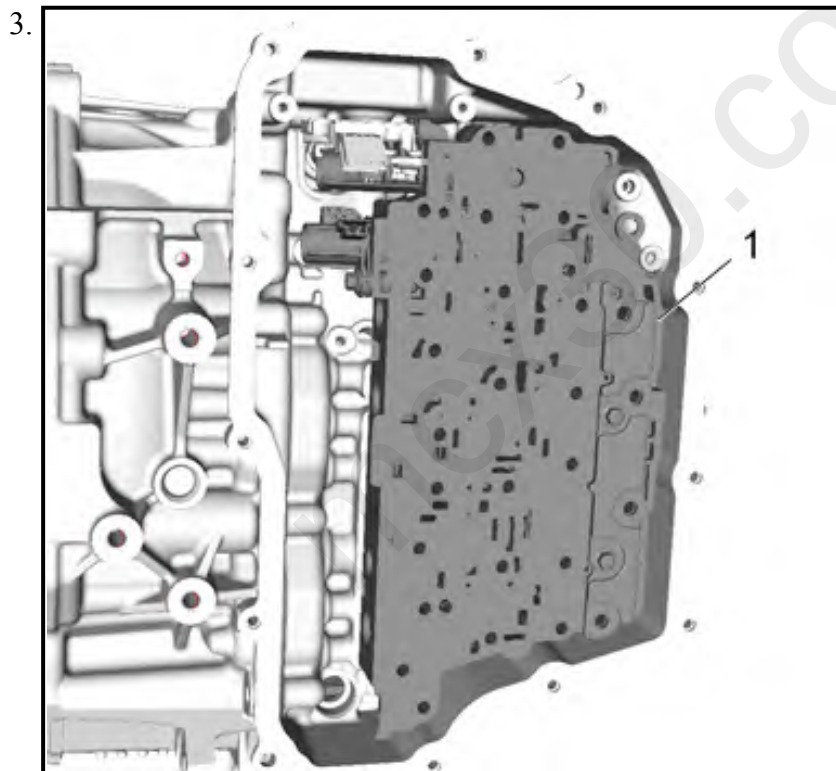
1. Remove the transmission. [Transmission Replacement \(Front Wheel Drive with LFY Engine\)](#), [Transmission Replacement \(All Wheel Drive\)](#), [Transmission Replacement \(Front Wheel Drive with LTG Engine\)](#)

2.





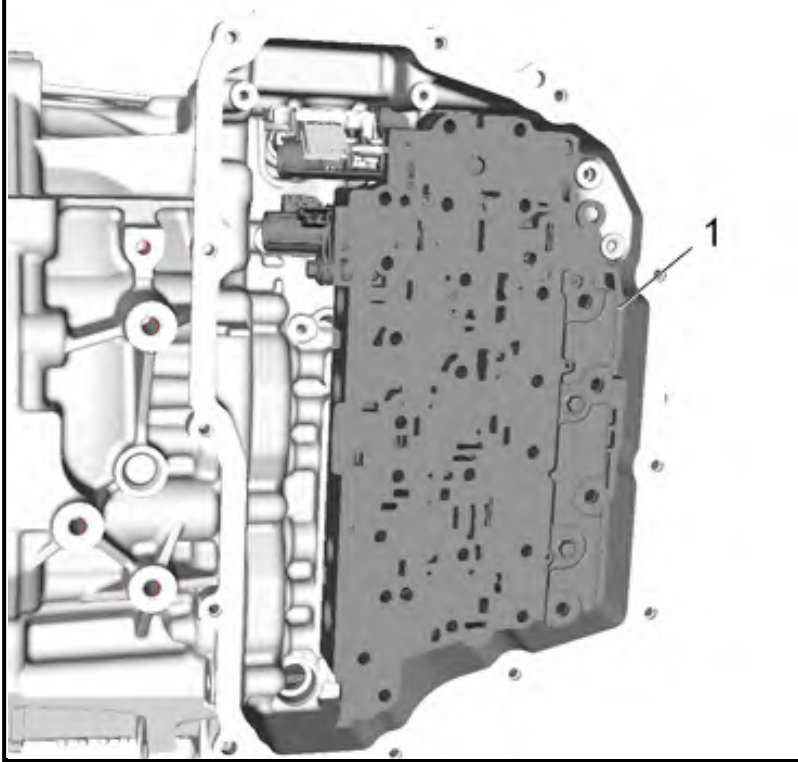
Remove the control valve body cover (1) from the transmission. [Control Valve Body Cover Replacement](#)



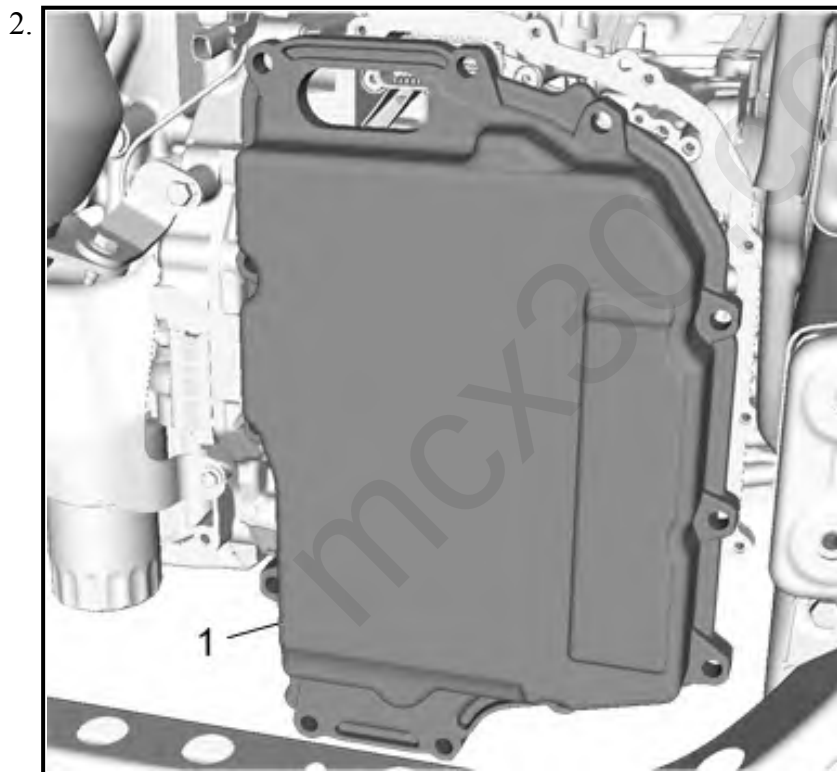
Remove the control valve body (1) from the transmission. [Control Valve Body Assembly Removal](#)

[Installation Procedure](#)





Install the control valve body (1) to the transmission. [Control Valve Body Assembly Installation](#)



Install the control valve body cover (1) to the transmission. [Control Valve Body Cover Replacement](#)

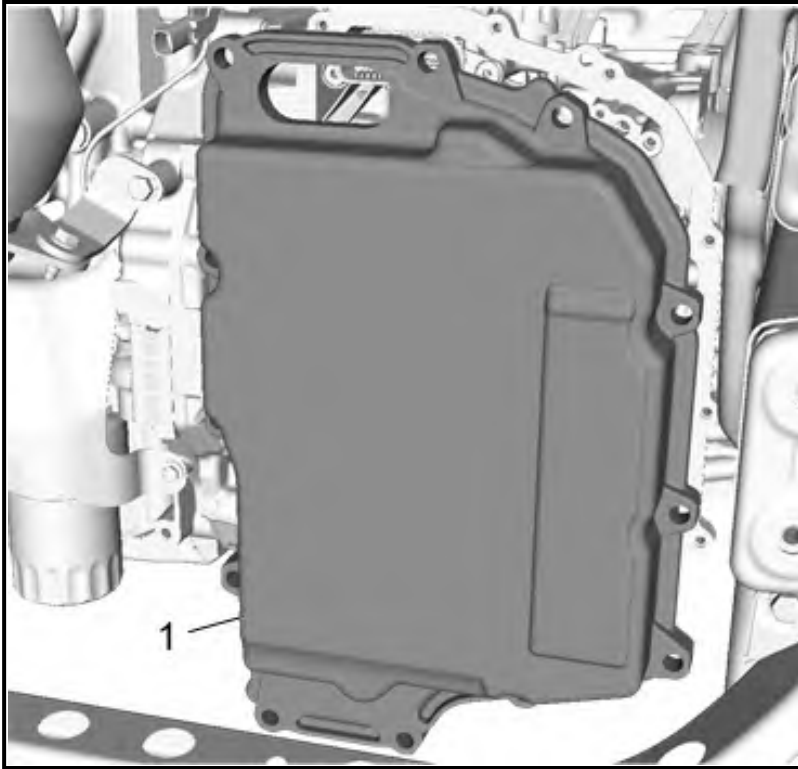
3. Install the transmission. [Transmission Replacement \(Front Wheel Drive with LFY Engine\)](#)[Transmission Replacement \(All Wheel Drive\)](#)[Transmission Replacement \(Front Wheel Drive with LTG Engine\)](#)
4. Reprogram the transmission. [Solenoid Valve Characterization Reprogramming](#)

CONTROL VALVE SOLENOID BODY REPLACEMENT

Removal Procedure

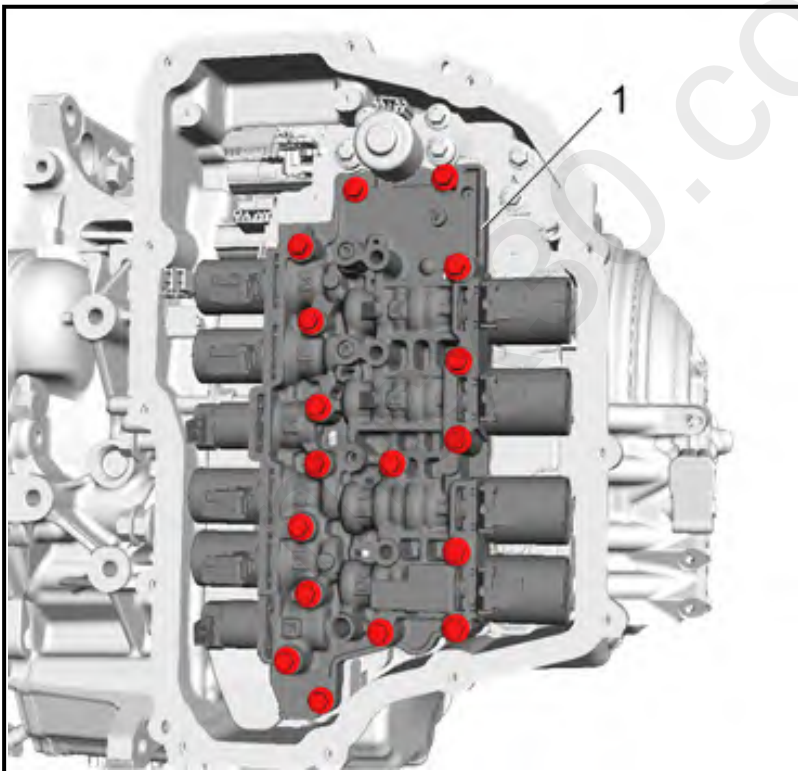
1. Remove the transmission. [Transmission Replacement \(Front Wheel Drive with LFY Engine\)](#)[Transmission Replacement \(All Wheel Drive\)](#)[Transmission Replacement \(Front Wheel Drive with LTG Engine\)](#)

2.



Remove the control valve body cover (1) from the transmission. [Control Valve Body Cover Replacement](#)

3.

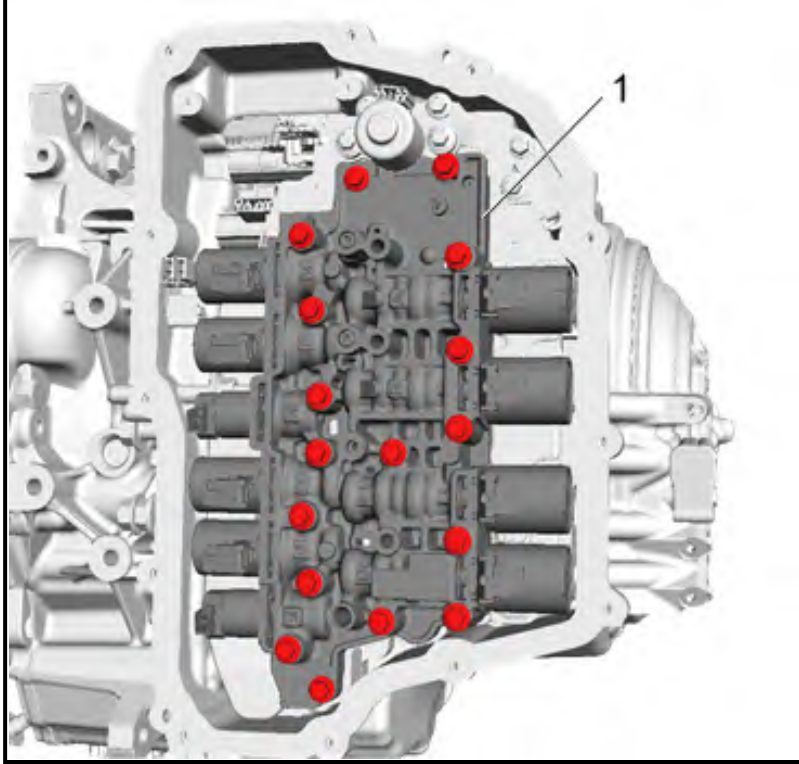


Remove the control valve solenoid body (1) from the transmission. [Control Valve Body Assembly Removal](#)

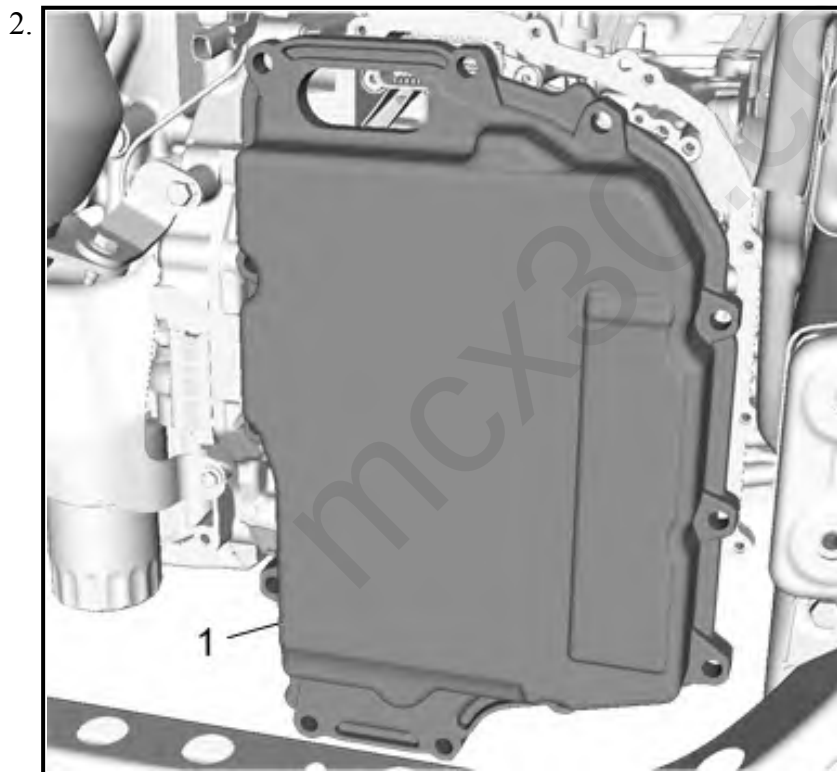
[Installation Procedure](#)

1.





Install the control valve solenoid body (1) to the transmission. [Control Valve Body Assembly Installation](#)



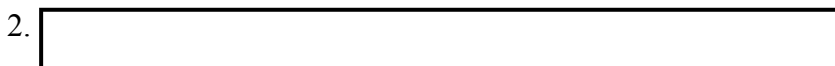
Install the control valve body cover (1) to the transmission. [Control Valve Body Cover Replacement](#)

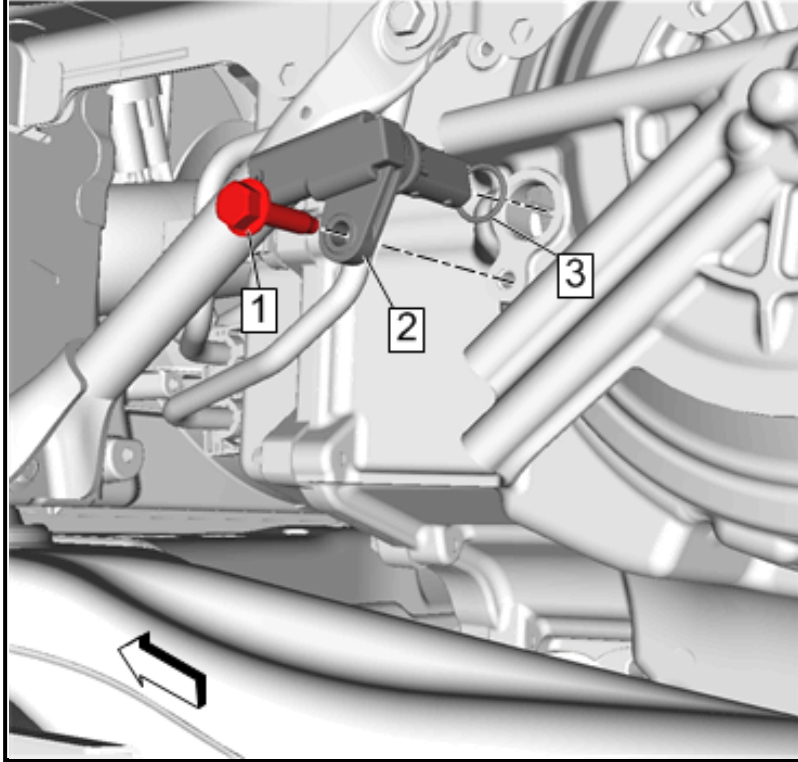
3. Install the transmission. [Transmission Replacement \(Front Wheel Drive with LFY Engine\)](#)[Transmission Replacement \(All Wheel Drive\)](#)[Transmission Replacement \(Front Wheel Drive with LTG Engine\)](#)
4. Reprogram the transmission. [Solenoid Valve Characterization Reprogramming](#)

AUTOMATIC TRANSMISSION INPUT SPEED SENSOR REPLACEMENT

Removal Procedure

1. Remove the left front wheel house liner. [Front Wheelhouse Liner Replacement](#) .





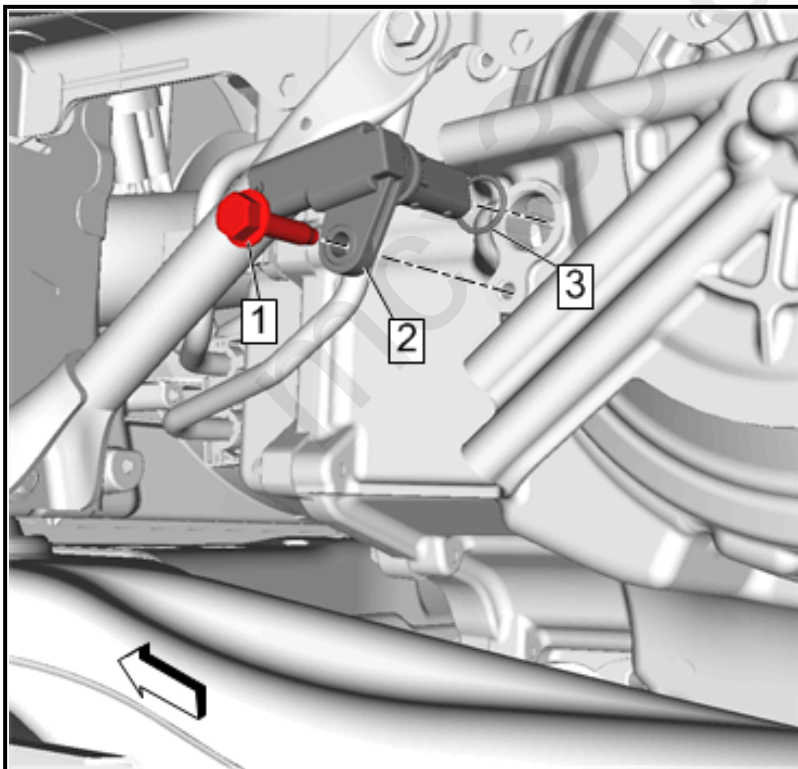
Remove the input speed sensor bolt (1).

3. Remove the input speed sensor (2).

4. Remove the input speed sensor seal (3).

Installation Procedure

1.



Install the input speed sensor seal (3).

2. Install the input speed sensor (2).

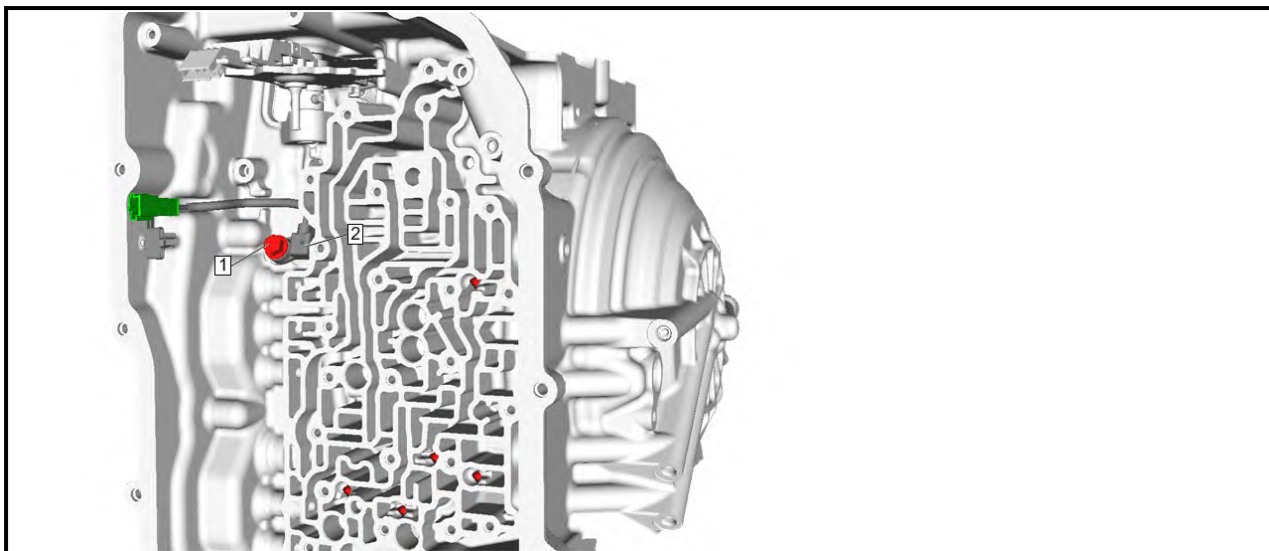
CAUTION: Refer to [Fastener Caution](#) .

3. Install the input speed sensor bolt (1) and tighten to 9 N.m (80 lb in).

4. Install the left front wheel house liner. [Front Wheelhouse Liner Replacement](#) .

5. Perform the transmission service fast learn procedure. [Transmission Service Fast Learn Procedure](#).

AUTOMATIC TRANSMISSION OUTPUT SPEED SENSOR REPLACEMENT



Callout	Component Name
Preliminary Procedures 1. Transmission Replacement (Front Wheel Drive with LFY Engine) Transmission Replacement (All Wheel Drive) Transmission Replacement (Front Wheel Drive with LTG Engine) 2. Control Valve Body Replacement	
Â	
1	Output Speed Sensor Bolt CAUTION: Refer to Fastener Caution . Tighten 9 N.m (80 lb in)
2	Output Speed Sensor Procedure Perform the transmission service fast learn procedure. Transmission Service Fast Learn Procedure .

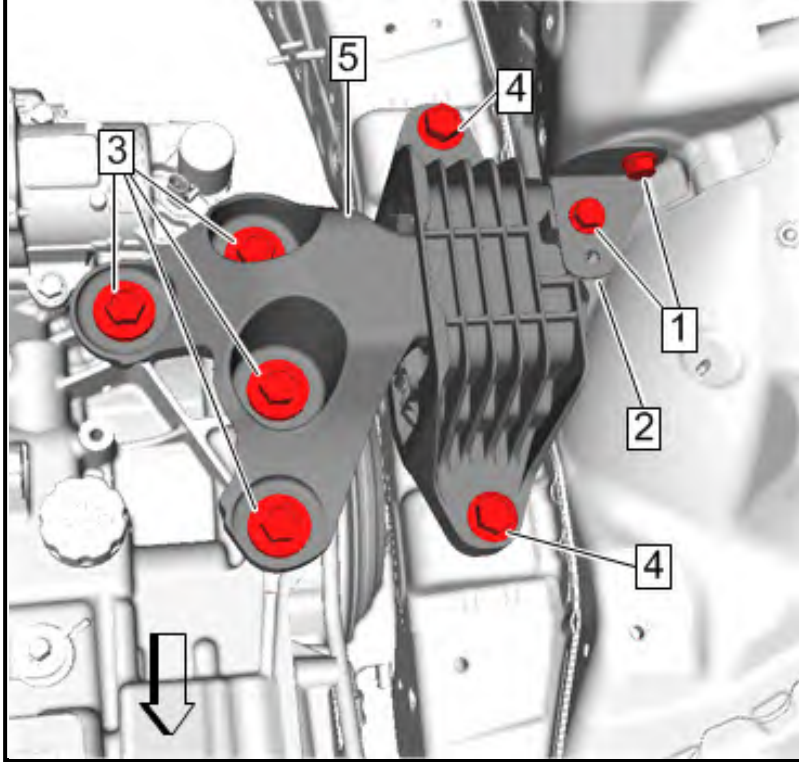
TRANSMISSION MOUNT REPLACEMENT (LEFT)

Removal Procedure

1. Install the engine support fixture. 2.0L - [Engine Support Fixture](#) , 3.6L - [Engine Support Fixture](#)
2. Remove the battery tray. [Battery Tray Replacement](#)

3.

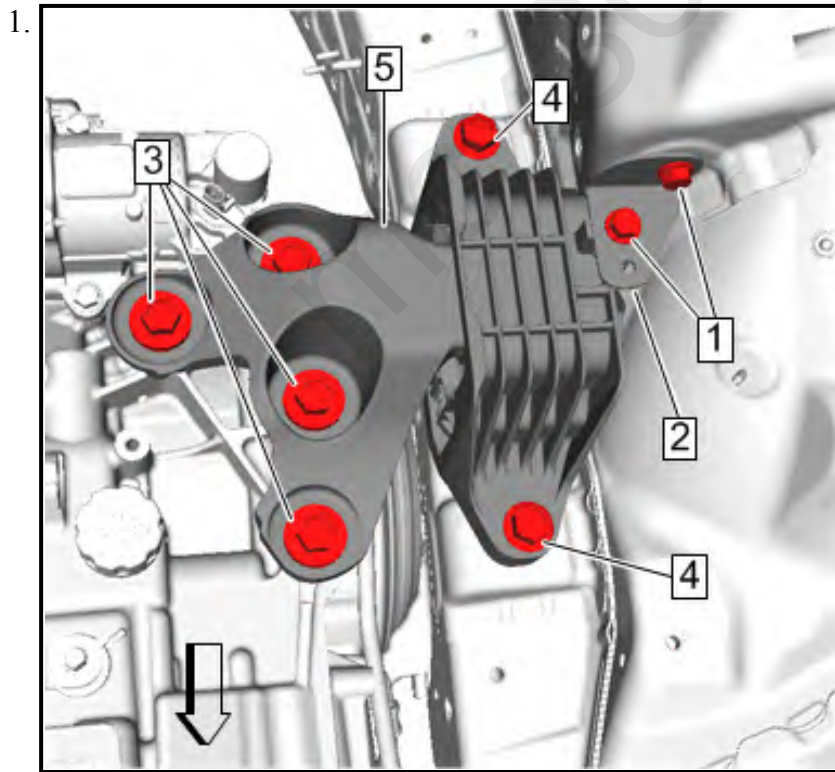




Engine Mount Brace Bolt (1) - Remove

4. Remove the transmission mount bracket (2) from the vehicle.
5. Transmission Mount Transmission Side Bolt (3) - Remove and DISCARD
6. Transmission Mount Bolt (4) - Remove
7. Remove the transmission mount (5) from the vehicle.

Installation Procedure



Install the left transmission mount (5) to the vehicle.

CAUTION: Refer to [Fastener Caution](#) .

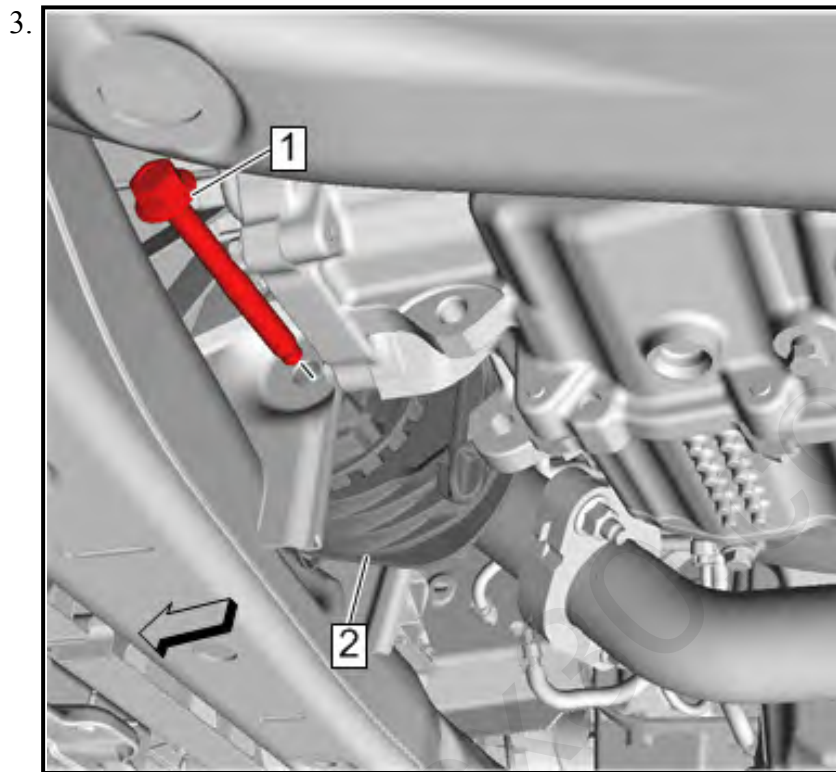
2. Transmission Mount Bolt (4) - Install and tighten [2x] 58 N.m (43 lb ft)
3. Transmission Mount Transmission Side Bolt (3) - Install and tighten [4x] 100 N.m (74 lb ft)
4. Position the transmission mount bracket (2) to the vehicle.

5. Engine Mount Brace Bolt (1) - Install and tighten [2x] 22 N.m (16 lb ft)
6. Remove the engine support fixture. 2.0L - [Engine Support Fixture](#) , 3.6L - [Engine Support Fixture](#)
7. Perform the powertrain mount balancing procedure. 2.0L - [Powertrain Mount Balancing](#) , 3.6L - [Powertrain Mount Balancing](#)
8. Install the battery tray. [Battery Tray Replacement](#)

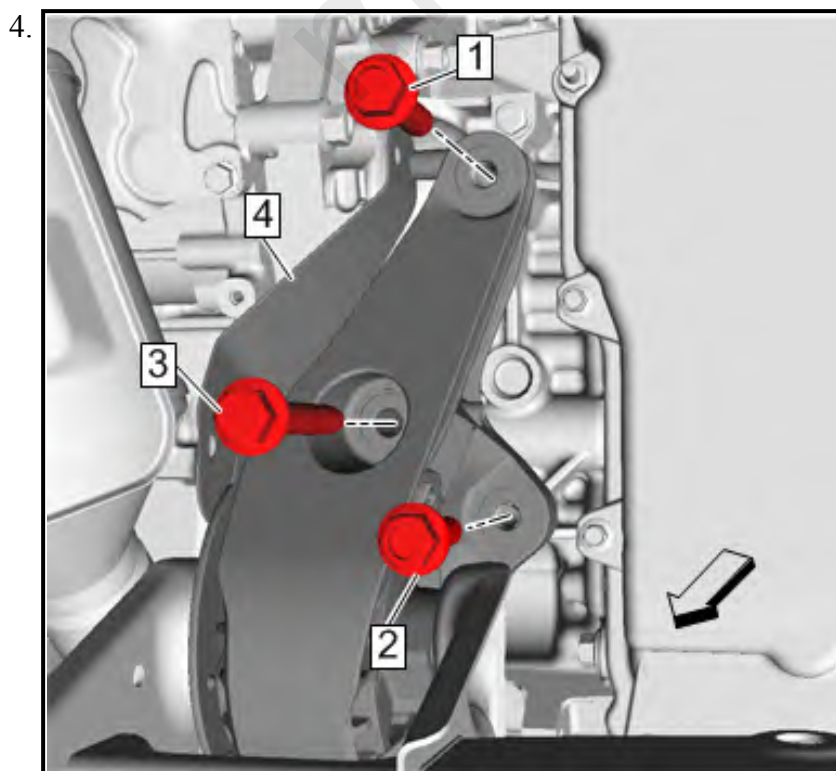
TRANSMISSION MOUNT REPLACEMENT (FRONT)

Removal Procedure

1. Raise and support the vehicle. [Lifting and Jacking the Vehicle](#)
2. Support the transmission with a suitable jack.



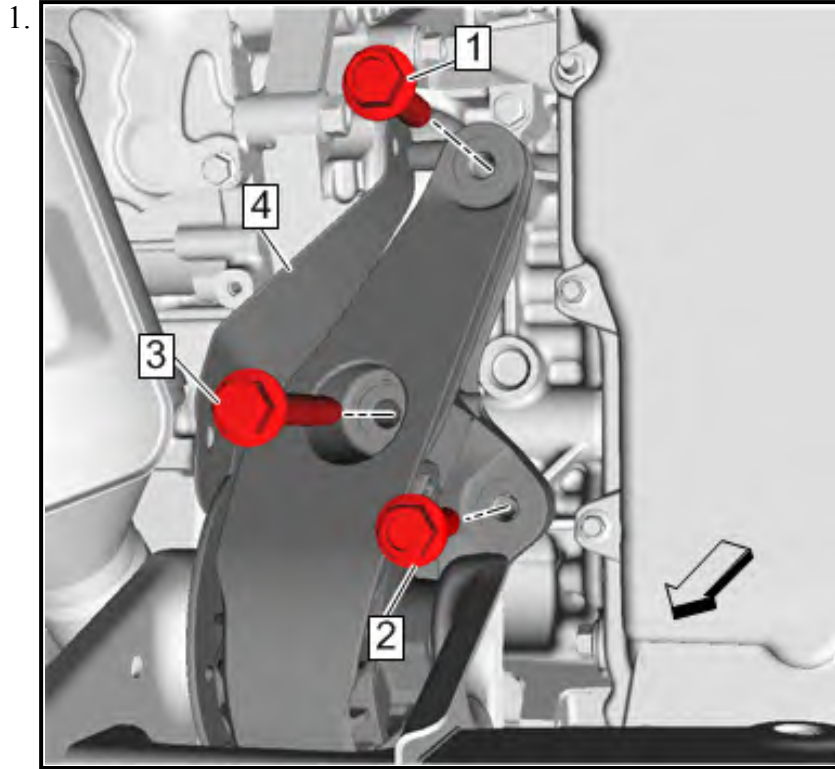
Remove the front transmission mount through bolt (1).



Remove the transmission mount to transmission bolts (1, 2, 3).

5. Remove the transmission mount (4) from the vehicle.

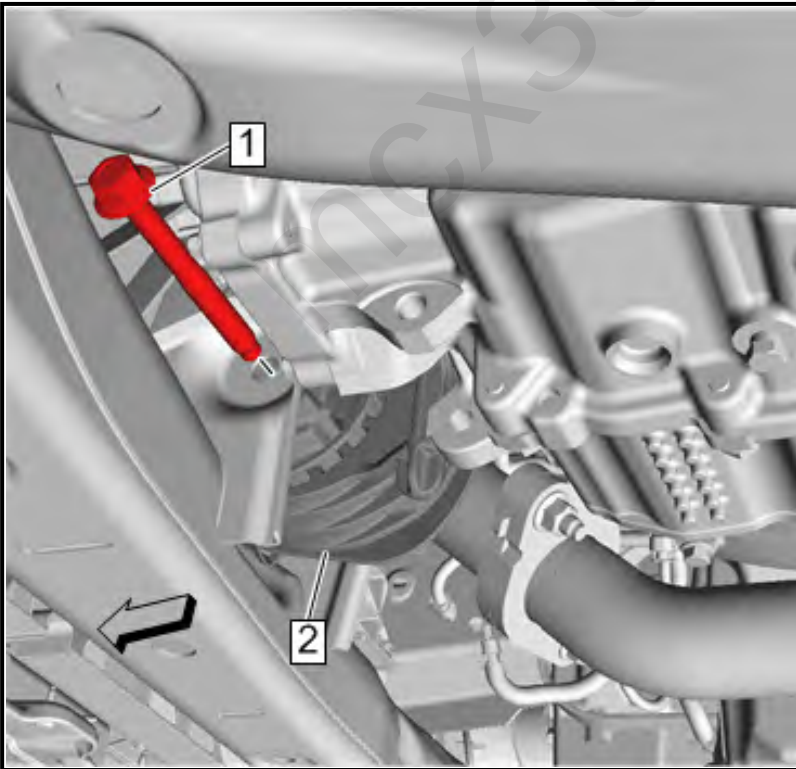
Installation Procedure



Install the transmission mount (4).

CAUTION: Refer to [Fastener Caution](#) .

2. Install the transmission mount bolts (1, 2, 3) and tighten to 58 N.m (43 lb ft).
- 3.



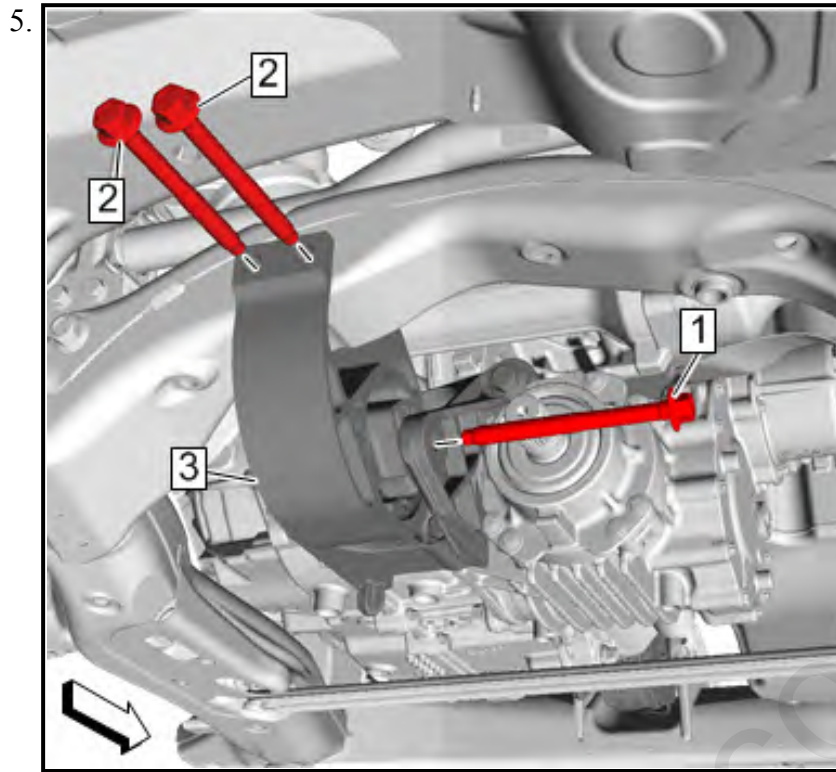
Install the transmission mount through bolt (1) and tighten to 100 N.m (74 lb ft).

4. Remove the jack from the transmission.
5. Lower the vehicle. [Lifting and Jacking the Vehicle](#)

TRANSMISSION MOUNT STRUT REPLACEMENT (ALL WHEEL DRIVE)

Removal Procedure

1. Raise and support the vehicle. [Lifting and Jacking the Vehicle](#) .
2. Prior to removing the mount, mark the mount fasteners to mount and mount to sub frame interfaces using spray paint or a marker for correct positioning during installation.
3. Remove the two piece propeller shaft. [Two-Piece Propeller Shaft Replacement](#) .
4. Using a suitable jack stand, support the rear of the powertrain.



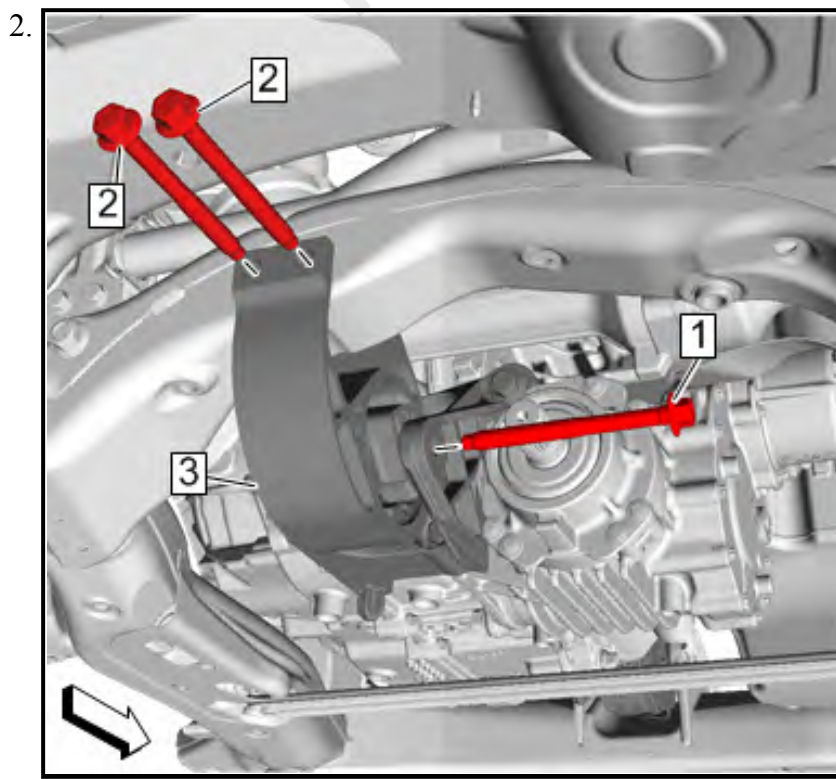
Remove the transmission mount to bracket through bolt (1).

NOTE: The nuts are reusable.

6. Remove and DISCARD the rear mount to drivetrain and front suspension cradle bolts (2).
7. Remove the transmission rear mount.

Installation Procedure

1. Using the outline made by the spray paint or marker, position the transmission mount to the drivetrain and front suspension cradle.



CAUTION: Refer to [Fastener Caution](#) .

CAUTION: Refer to [Torque-to-Yield Fastener Caution](#) .

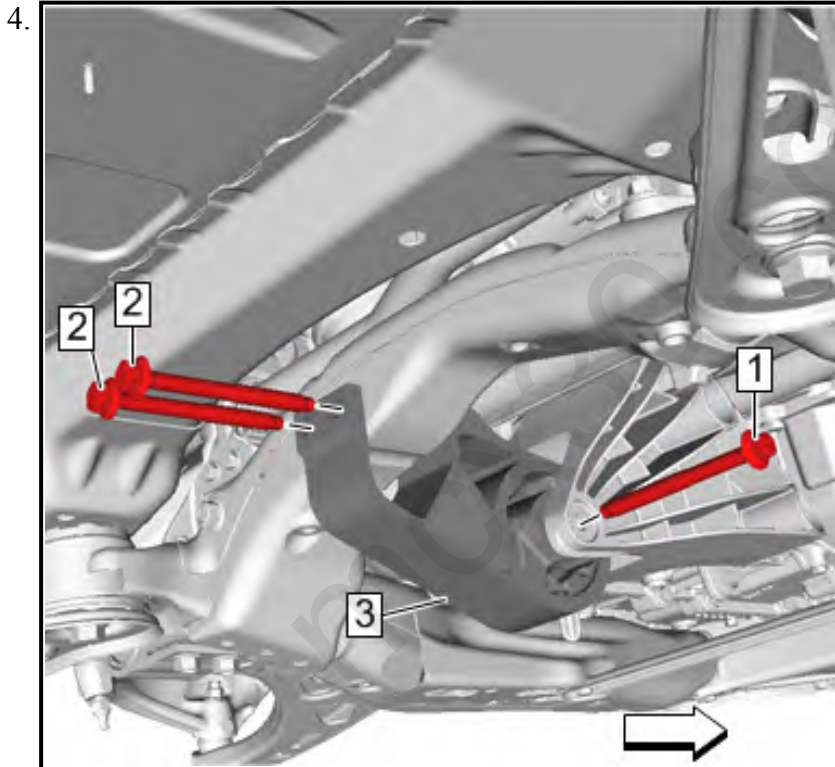
Install the NEW transmission rear mount bolts (2) and nuts and tighten the bolts to 100 N.m (74 lb ft) plus 95 to 105 degrees.

3. Install the transmission mount to bracket through bolt (1) and tighten to 100 N.m (74 lb ft).
4. Install the two piece propeller shaft. [Two-Piece Propeller Shaft Replacement](#) .
5. Remove the jack stand.
6. Lower the vehicle.

TRANSMISSION MOUNT STRUT REPLACEMENT (FRONT WHEEL DRIVE)

Removal Procedure

1. Raise and support the vehicle. [Lifting and Jacking the Vehicle](#) .
2. Prior to removing the mount, mark the mount fasteners to mount and mount to sub frame interfaces using spray paint or a marker for correct positioning during installation.
3. Using a suitable jack stand, support the rear of the powertrain.



Remove the transmission mount to bracket through bolt (1).

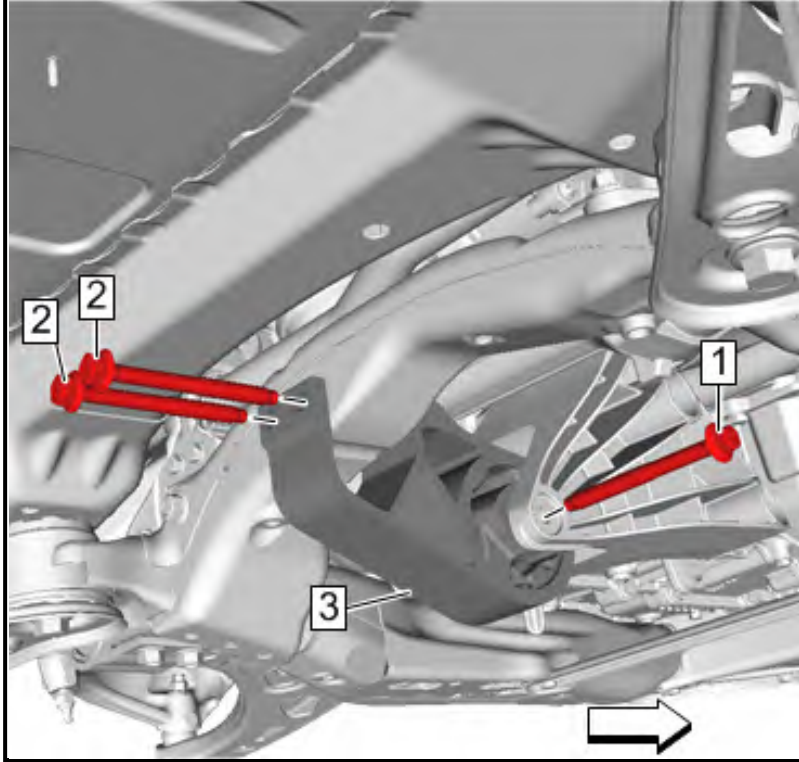
NOTE: The nuts are reusable.

5. Remove and DISCARD the rear mount to drivetrain and front suspension cradle bolts (2).
6. Remove the transmission rear mount (3).

Installation Procedure

1. Using the outline made by the spray paint or marker, position the transmission mount to the drivetrain and front suspension cradle.





CAUTION: Refer to [Fastener Caution](#) .

CAUTION: Refer to [Torque-to-Yield Fastener Warning](#) .

Install the NEW transmission rear mount bolts (2) and nuts and tighten the bolts to 100 N.m (74 lb ft) plus 95 to 105 degrees.

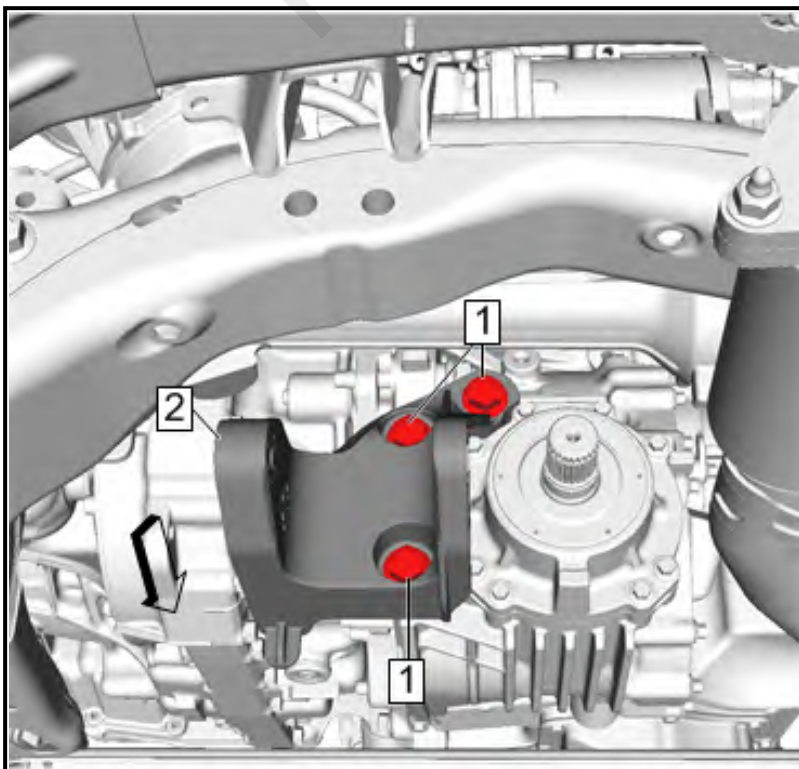
3. Install the transmission mount to bracket through bolt (1) and tighten to 100 N.m (74 lb ft).
4. Remove the jack stand.
5. Lower the vehicle.

TRANSMISSION MOUNT STRUT BRACKET REPLACEMENT (ALL WHEEL DRIVE)

Removal Procedure

1. Remove the transmission mount strut. [Transmission Mount Strut Replacement \(All Wheel Drive\)](#).

2.

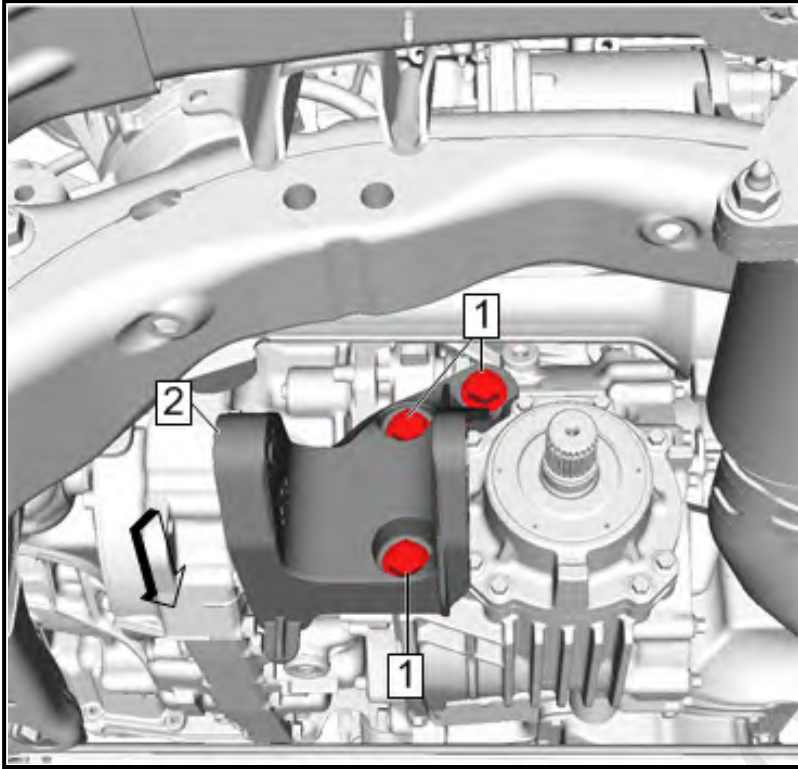


Remove and DISCARD the three transmission mount bracket to transmission bolts (1).

3. Remove the transmission mount bracket (2) from the transmission.

Installation Procedure

1.



Position the transmission mount bracket (2) to the transmission.

CAUTION: Refer to [Fastener Caution](#) .

CAUTION: Refer to [Torque-to-Yield Fastener Caution](#) .

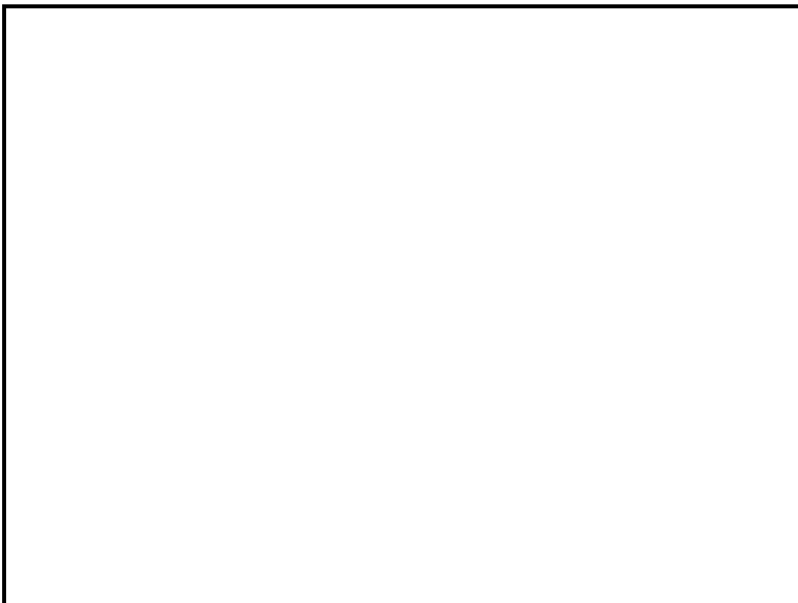
2. Install the three NEW transmission mount bracket to transmission bolts (1) and tighten to 100 N.m (74 lb ft) plus 45 to 60 degrees.
3. Install the transmission mount strut. [Transmission Mount Strut Replacement \(All Wheel Drive\)](#).

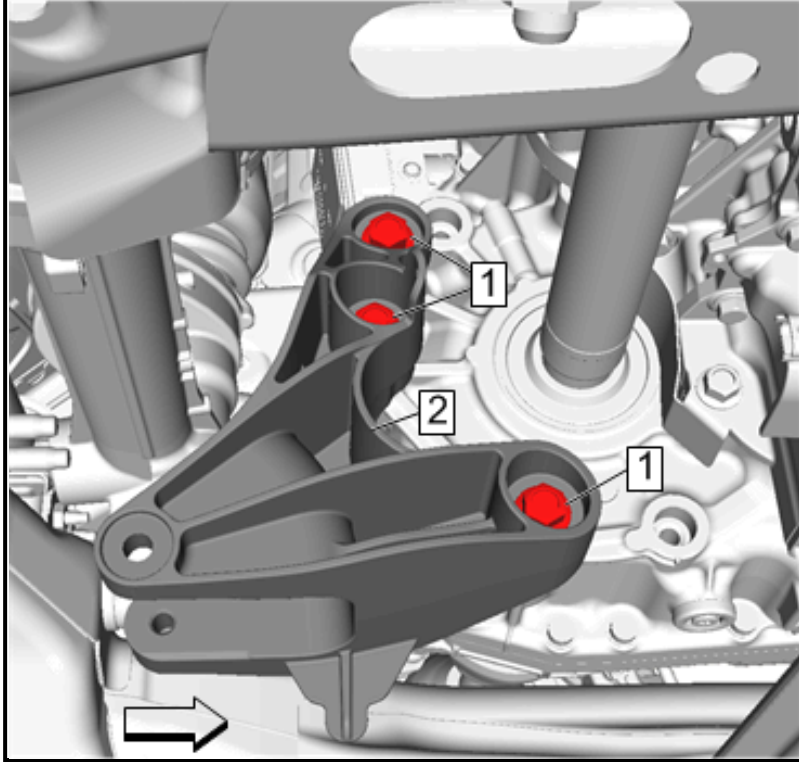
TRANSMISSION MOUNT STRUT BRACKET REPLACEMENT (FRONT WHEEL DRIVE)

Removal Procedure

1. Remove the transmission mount strut. [Transmission Mount Strut Replacement \(Front Wheel Drive\)](#).

2.



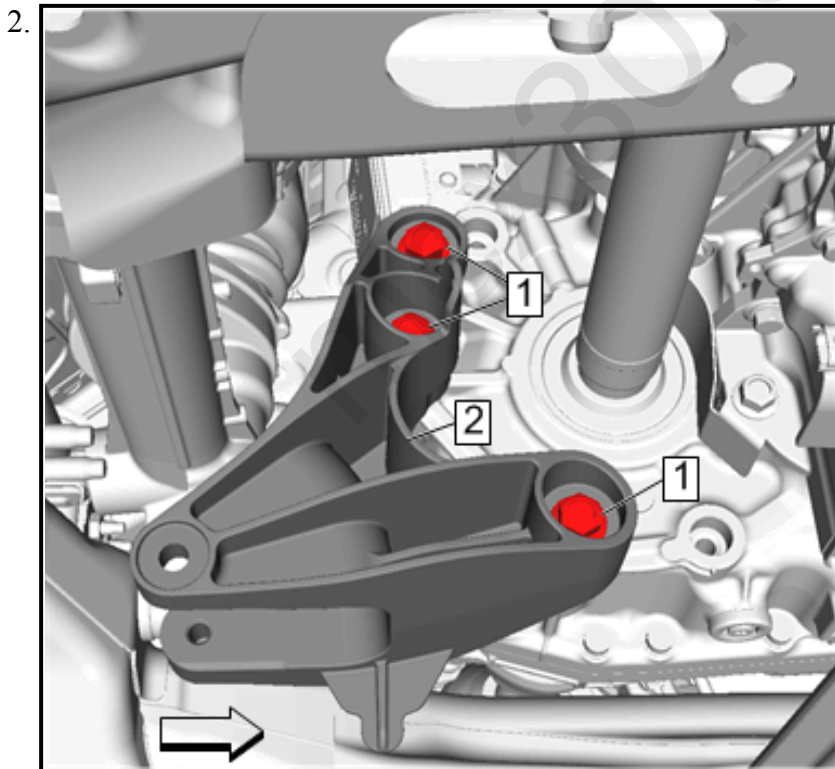


Remove and DISCARD the three transmission mount bracket to transmission bolts (1).

3. Remove the transmission mount bracket (2) from the transmission.

Installation Procedure

1. Position the transmission mount bracket (2) to the transmission.



CAUTION: Refer to [Fastener Caution](#) .

CAUTION: Refer to [Torque-to-Yield Fastener Warning](#) .

Install the three NEW transmission mount bracket to transmission bolts (1) and tighten to 100 N.m (74 lb ft) plus 45 to 60 degrees.

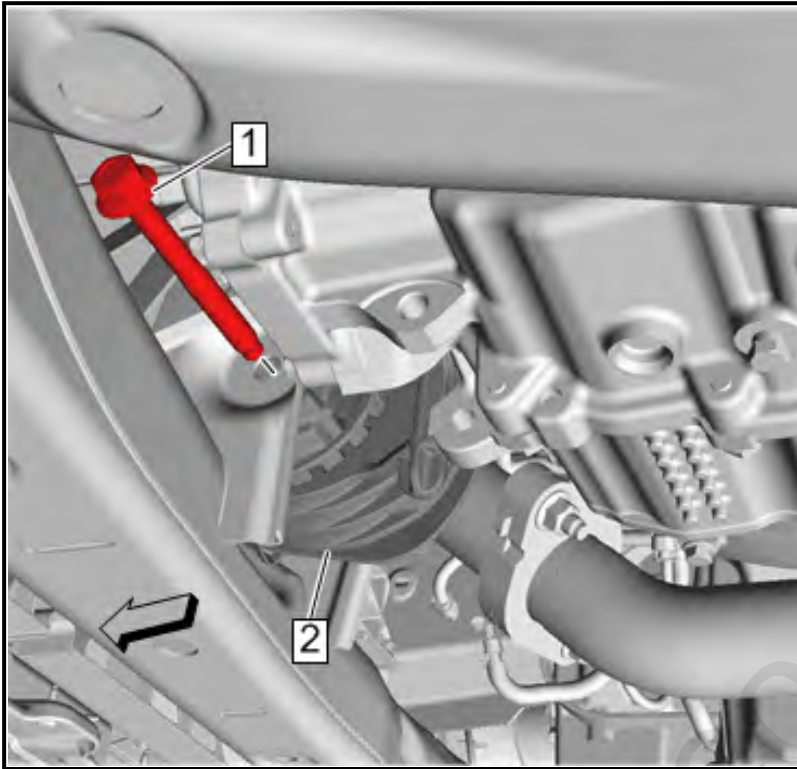
3. Install the transmission mount strut. [Transmission Mount Strut Replacement \(Front Wheel Drive\)](#).

TRANSMISSION FRONT MOUNT REPLACEMENT

Removal Procedure

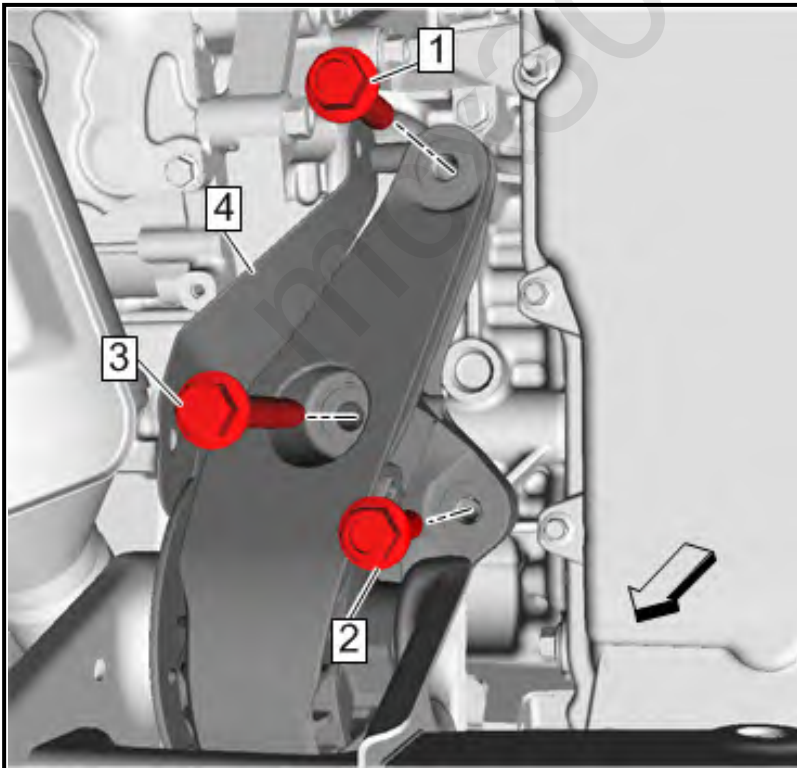
1. Raise and support the vehicle. [Lifting and Jacking the Vehicle](#)
2. Support the transmission with a suitable jack.

3.



Remove the front transmission mount through bolt (1).

4.



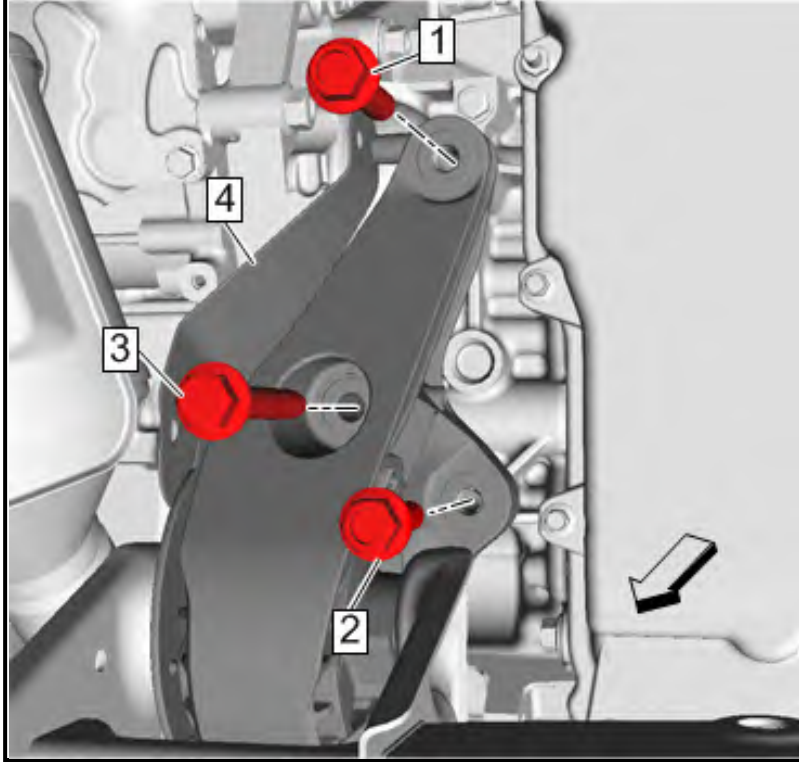
Remove the transmission mount to transmission bolts (1, 2, 3).

5. Remove the transmission mount (4) from the vehicle.

Installation Procedure

1.



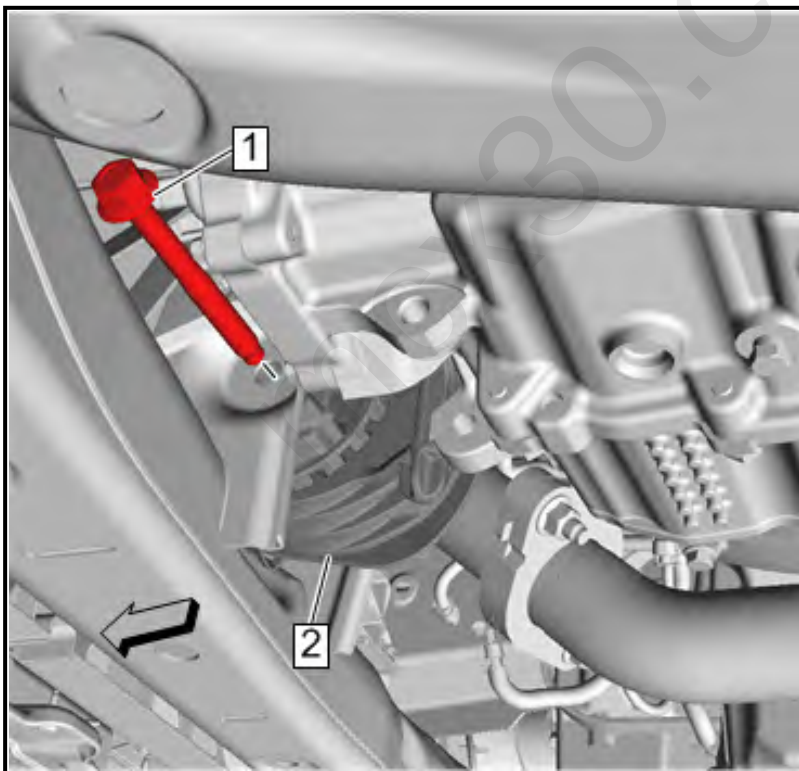


Install the transmission mount (4).

CAUTION: Refer to [Fastener Caution](#) .

2. Install the transmission mount bolts (1, 2, 3) and tighten to 58 N.m (43 lb ft).

3.



Install the transmission mount through bolt (1) and tighten to 100 N.m (74 lb ft).

4. Remove the jack from the transmission.

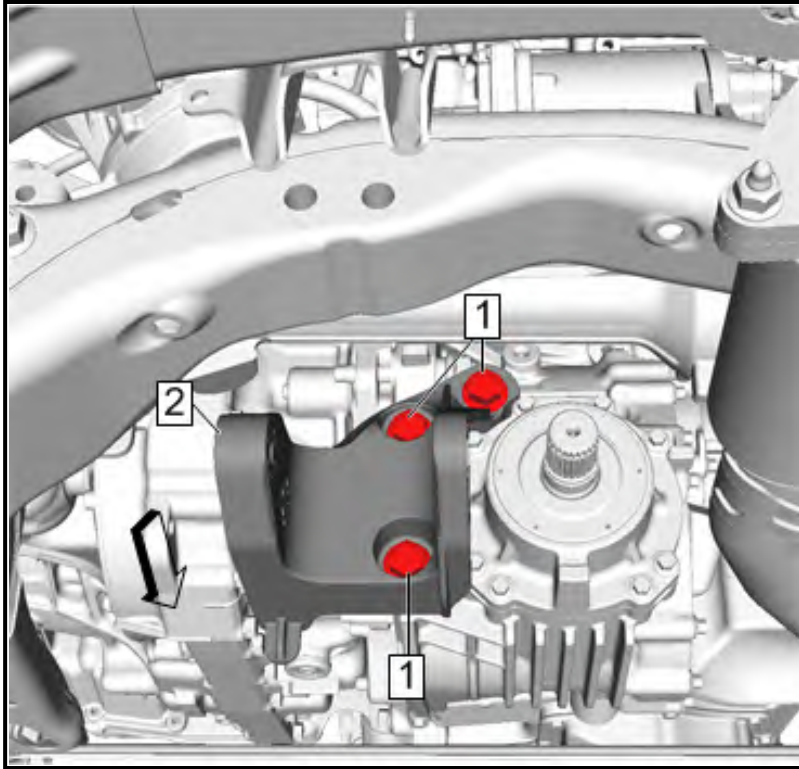
5. Lower the vehicle. [Lifting and Jacking the Vehicle](#)

TRANSMISSION REAR MOUNT BRACKET REPLACEMENT (ALL WHEEL DRIVE)

Removal Procedure

1. Remove the transmission mount strut. [Transmission Mount Strut Replacement \(All Wheel Drive\)](#)

2.

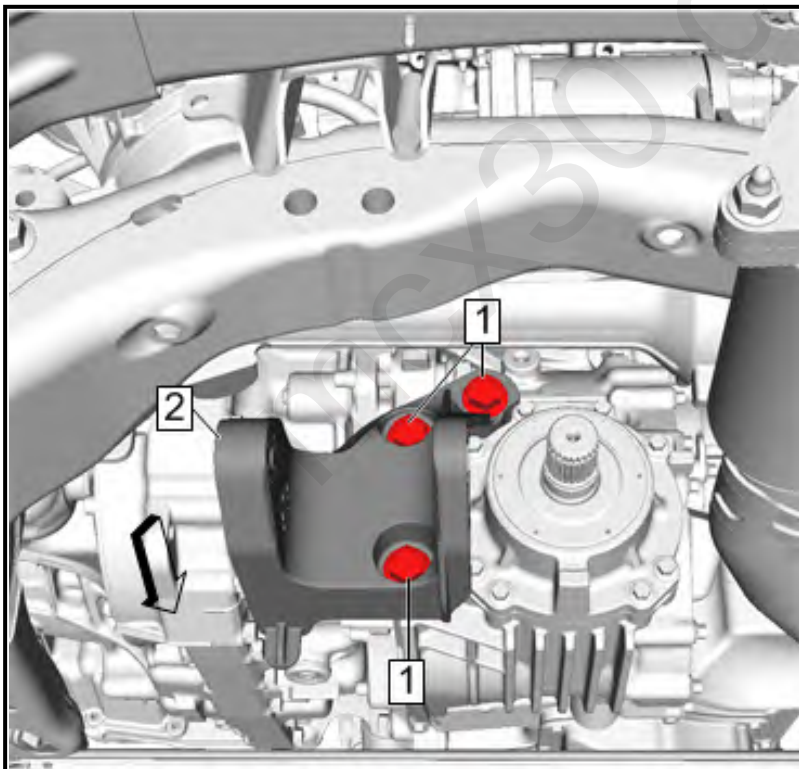


Remove and DISCARD the three transmission mount bracket to transmission bolts (1).

3. Remove the transmission mount bracket (2) from the transmission.

Installation Procedure

1.



Position the transmission mount bracket (2) to the transmission.

CAUTION: Refer to [Fastener Caution](#) .

CAUTION: Refer to [Torque-to-Yield Fastener Caution](#) .

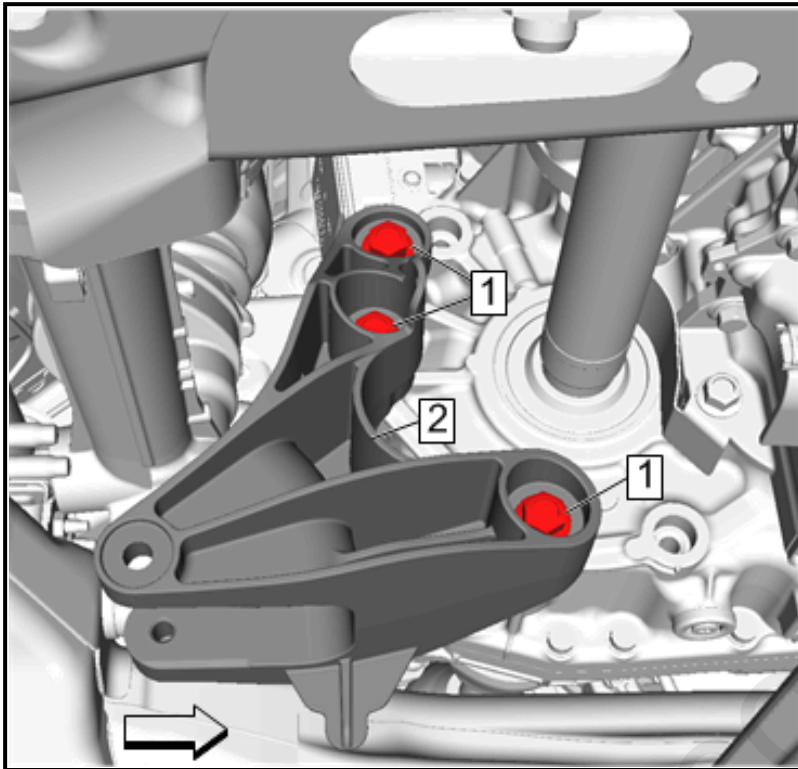
2. Install the three NEW transmission mount bracket to transmission bolts (1) and tighten to 100 N.m (74 lb ft) plus 45 to 60 degrees.

3. Install the transmission mount strut. [Transmission Mount Strut Replacement \(All Wheel Drive\)](#).

TRANSMISSION REAR MOUNT BRACKET REPLACEMENT (FRONT WHEEL DRIVE)

Removal Procedure

1. Remove the transmission mount strut. [Transmission Mount Strut Replacement \(Front Wheel Drive\)](#).
- 2.

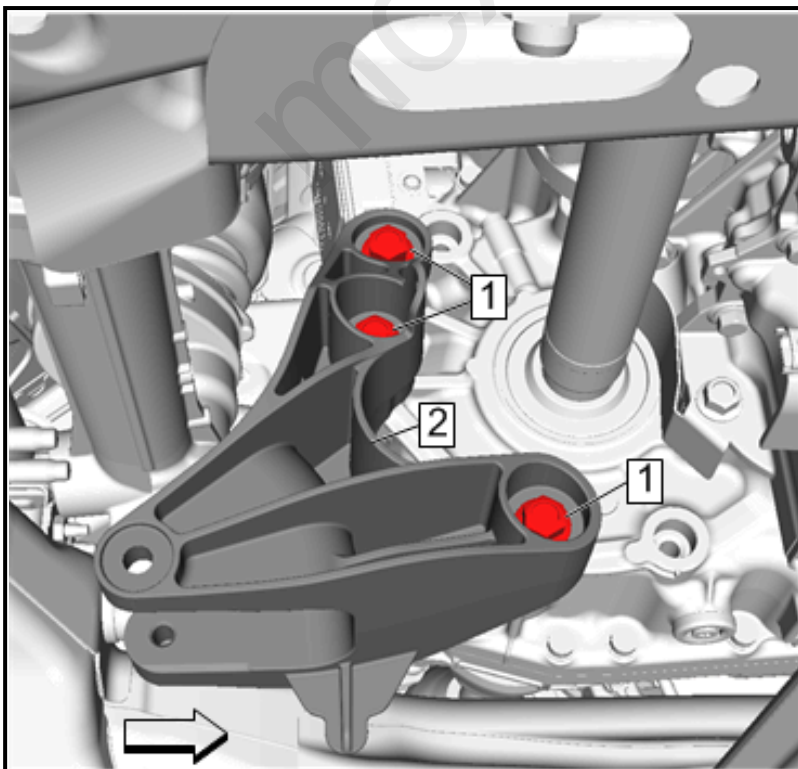


Remove and DISCARD the three transmission mount bracket to transmission bolts (1).

3. Remove the transmission mount bracket (2) from the transmission.

Installation Procedure

1. Position the transmission mount bracket (2) to the transmission.
- 2.



CAUTION: Refer to [Fastener Caution](#) .

CAUTION: Refer to [Torque-to-Yield Fastener Warning](#) .

Install the three NEW transmission mount bracket to transmission bolts (1) and tighten to 100 N.m (74 lb ft) plus 45 to 60 degrees.

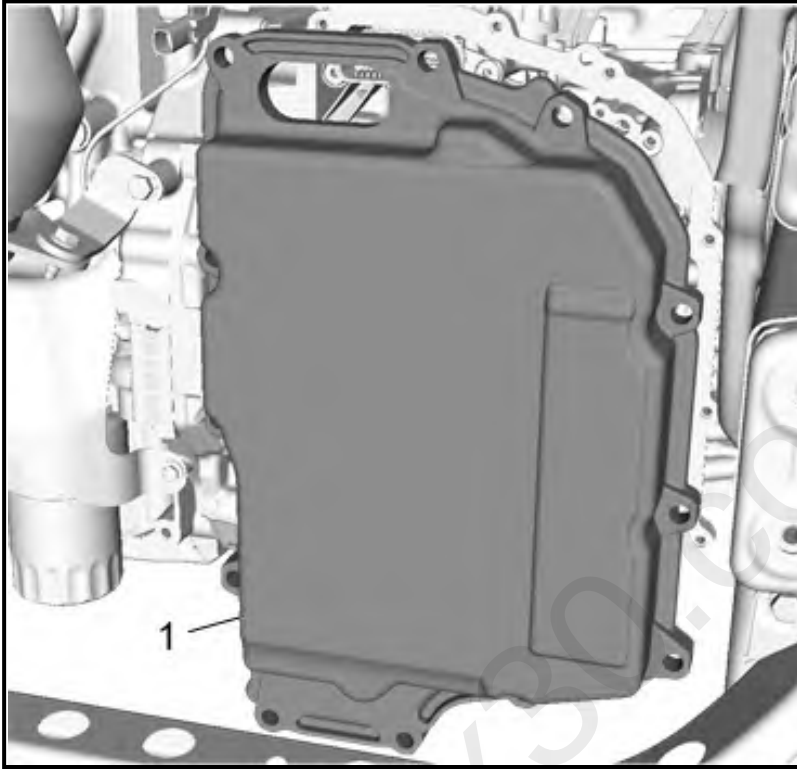
3. Install the transmission mount strut. [Transmission Mount Strut Replacement \(Front Wheel Drive\)](#)

FLUID TRANSFER PIPE REPLACEMENT

Removal Procedure

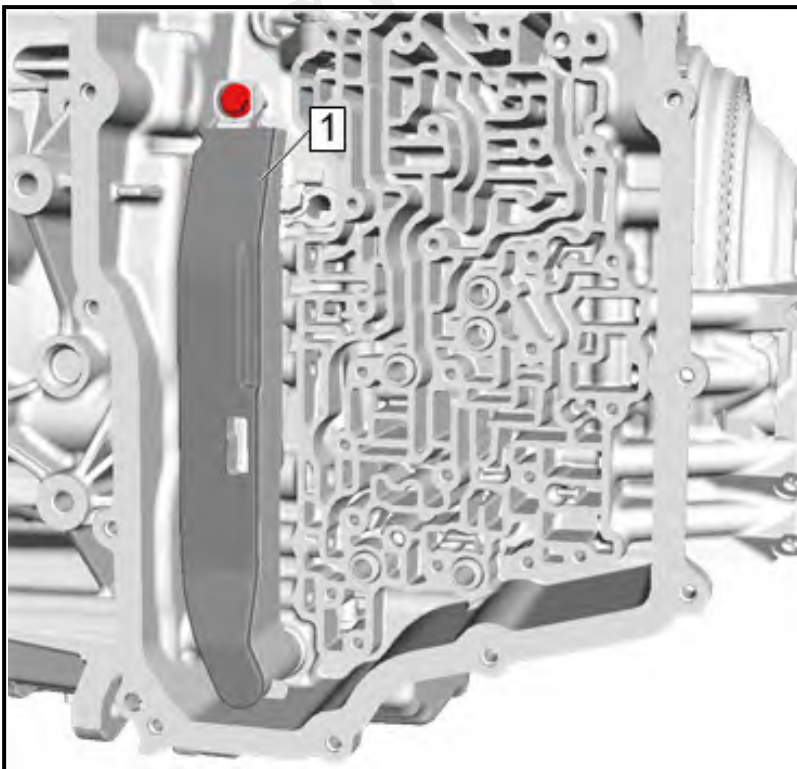
1. Remove the transmission. [Transmission Replacement \(Front Wheel Drive with LFY Engine\)](#)[Transmission Replacement \(All Wheel Drive\)](#)[Transmission Replacement \(Front Wheel Drive with LTG Engine\)](#)

2.



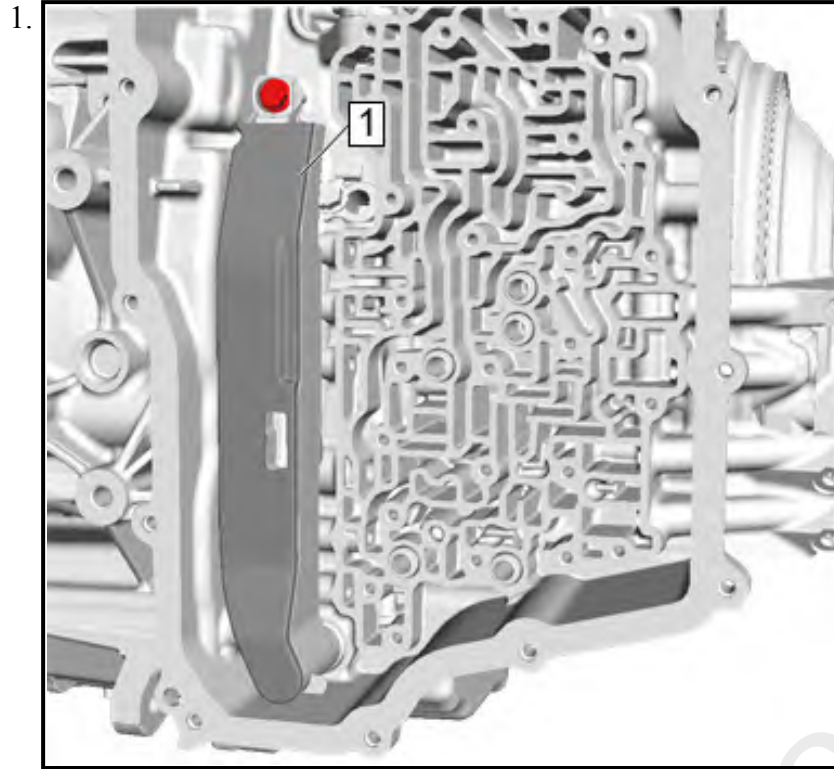
Remove the control valve body cover (1) from the transmission. [Control Valve Body Cover Replacement](#)

3.

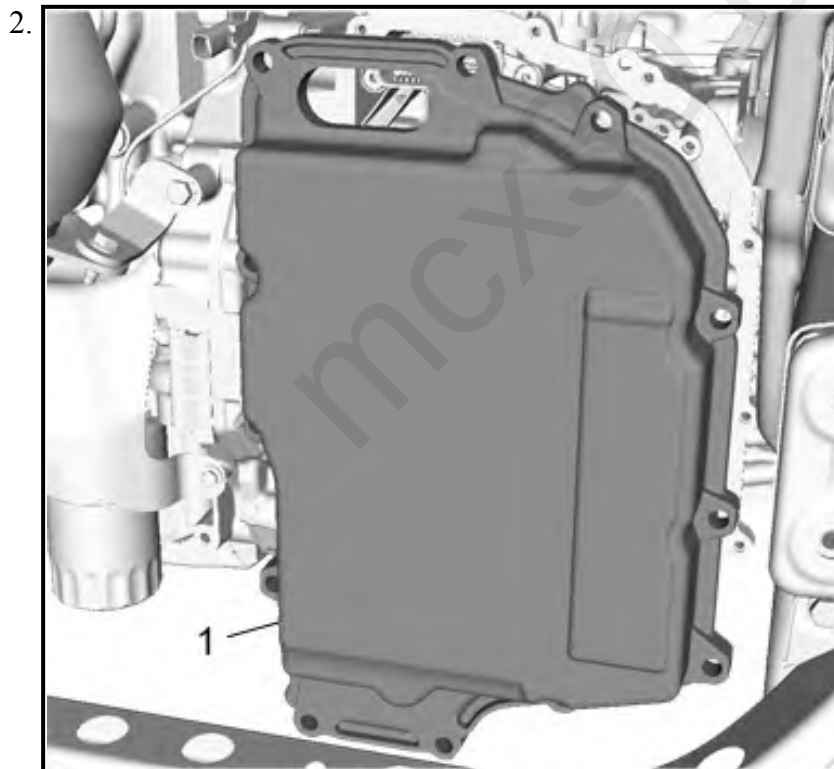


Remove the fluid transfer pipe (1) from the transmission. [Control Valve Body Assembly Removal](#)

Installation Procedure



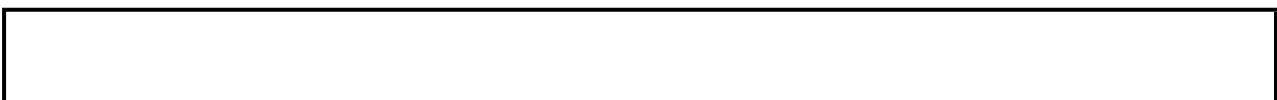
Install the fluid transfer pipe (1) to the transmission. [Control Valve Body Assembly Installation](#)

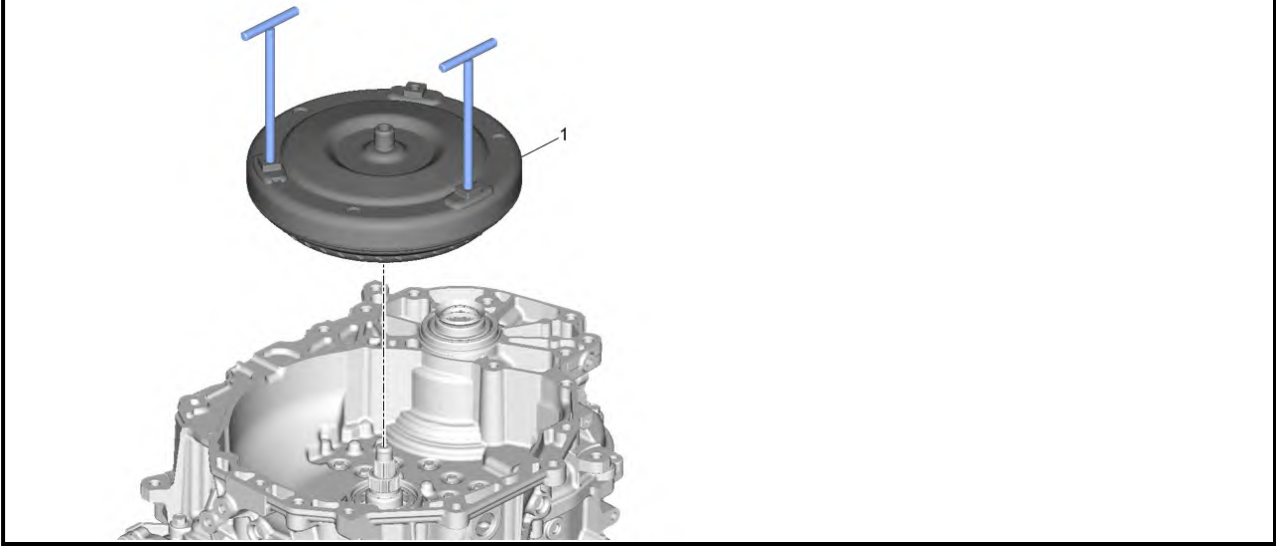


Install the control valve body cover (1) to the transmission. [Control Valve Body Cover Replacement](#)

3. Install the transmission. [Transmission Replacement \(Front Wheel Drive with LFY Engine\)](#)[Transmission Replacement \(All Wheel Drive\)](#)[Transmission Replacement \(Front Wheel Drive with LTG Engine\)](#)

TORQUE CONVERTER REPLACEMENT

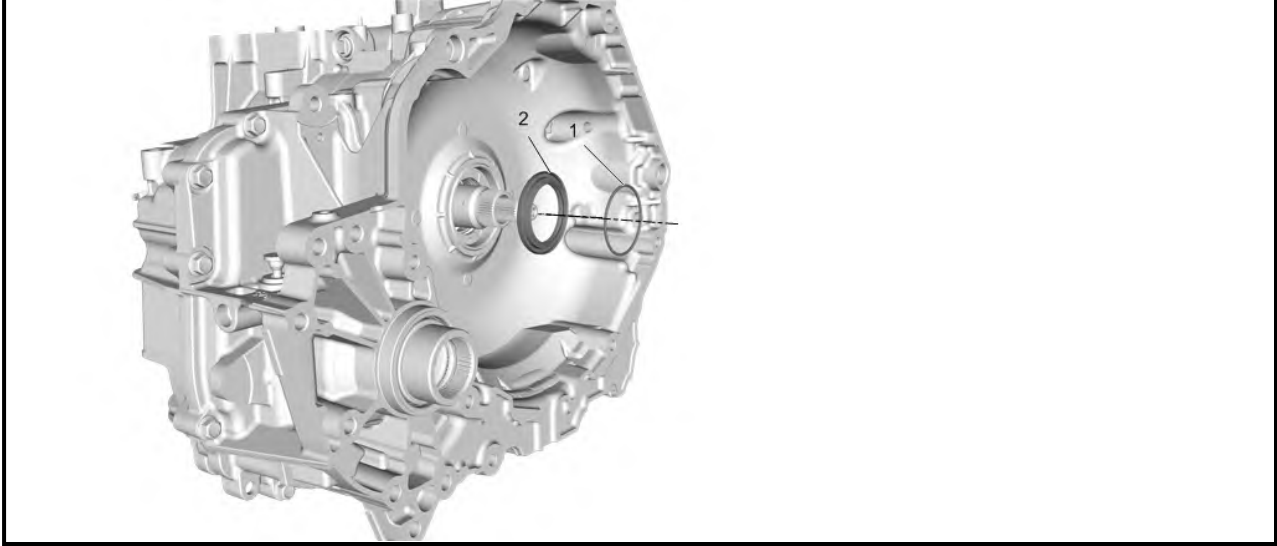




Callout	Component Name
Preliminary Procedures <u>1. Transmission Replacement (Front Wheel Drive with LFY Engine)Transmission Replacement (All Wheel Drive)Transmission Replacement (Front Wheel Drive with LTG Engine).</u> - Position the transmission assembly so the torque converter is facing up.	
1	Torque Converter Assembly CAUTION: Only install the lift assist handles until it stops. Do not tighten. Over tightening the lift assist handles can cause damage to the torque converter. CAUTION: Lower the torque converter straight down. Failure to lower the torque converter straight down could damage the torque converter clutch lip seal inside the torque converter clutch assembly. CAUTION: Failure to raise the torque dampener assembly straight up could damage the torque dampener clutch lip seal inside the torque dampener clutch assembly. Special Tools DT-46409 Torque Converter Lifting Handles For equivalent regional tools, refer to Special Tools .

TORQUE CONVERTER FLUID SEAL REPLACEMENT



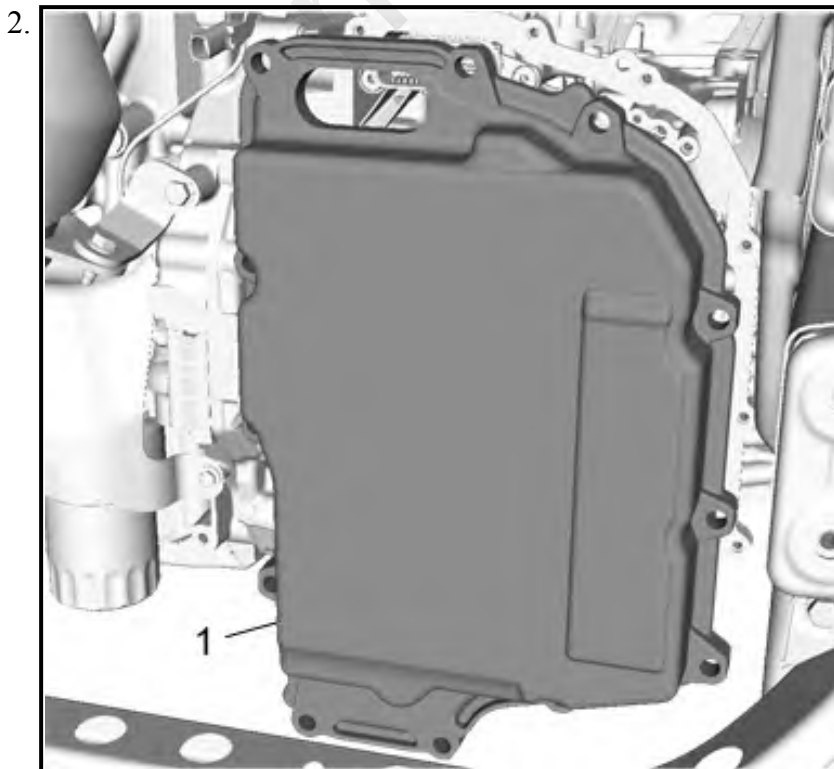


Callout	Component Name
Preliminary Procedure <u>Torque Converter Replacement.</u>	
1	Torque Converter Fluid Seal Retainer
2	Torque Converter Fluid Seal Special Tools • DT-6125-1B Slide Hammer • J-29162 Seal Installer • EN-23129 Universal Seal Remover For equivalent regional tools, refer to <u>Special Tools</u> .

AUTOMATIC TRANSMISSION WIRING HARNESS REPLACEMENT

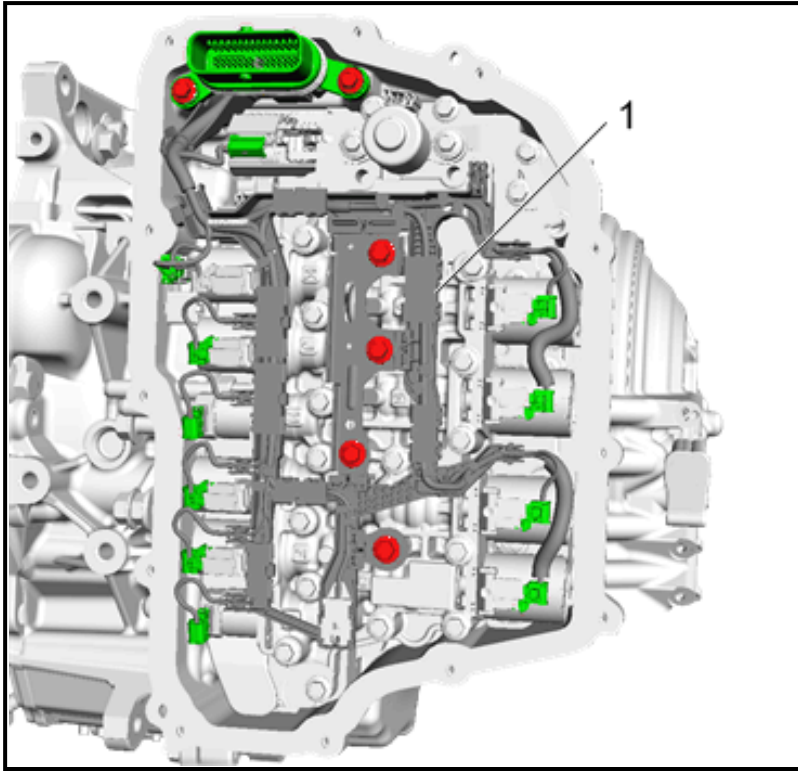
Removal Procedure

1. Remove the transmission. **Transmission Replacement (Front Wheel Drive with LFY Engine)****Transmission Replacement (All Wheel Drive)****Transmission Replacement (Front Wheel Drive with LTG Engine)**



Remove the control valve body cover (1) from the transmission. [Control Valve Body Cover Replacement](#)

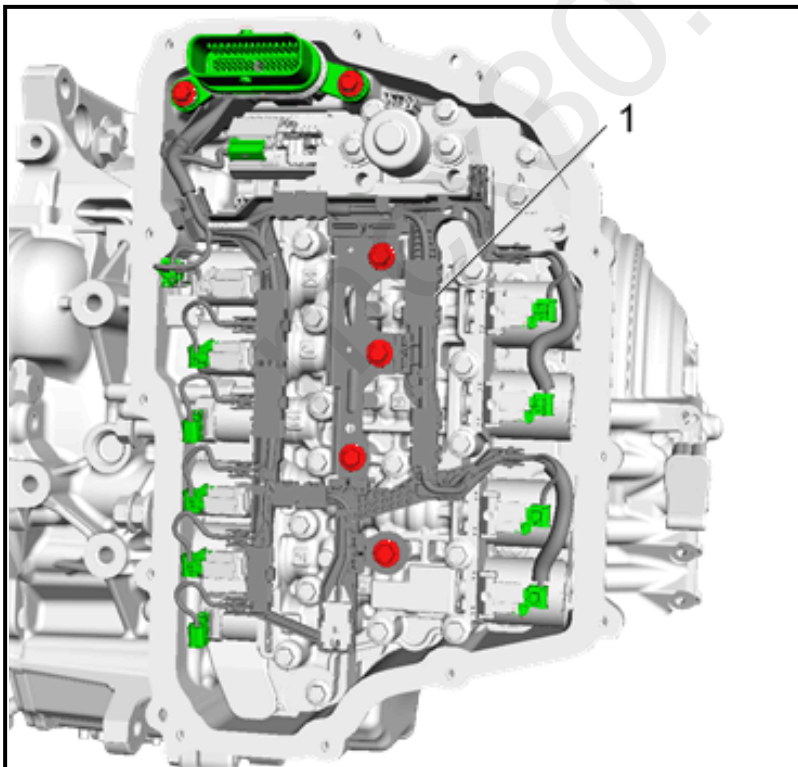
3.



Remove the automatic transmission wiring harness (1) from the transmission. [Control Valve Body Assembly Removal](#)

Installation Procedure

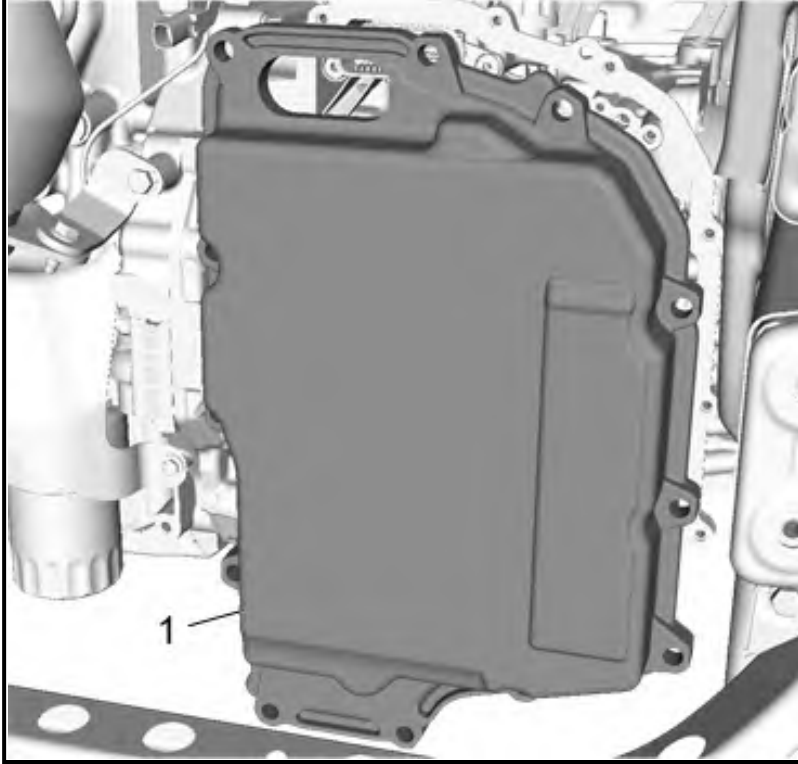
1.



Install the automatic transmission wiring harness (1) to the transmission. [Control Valve Body Assembly Installation](#)

2.





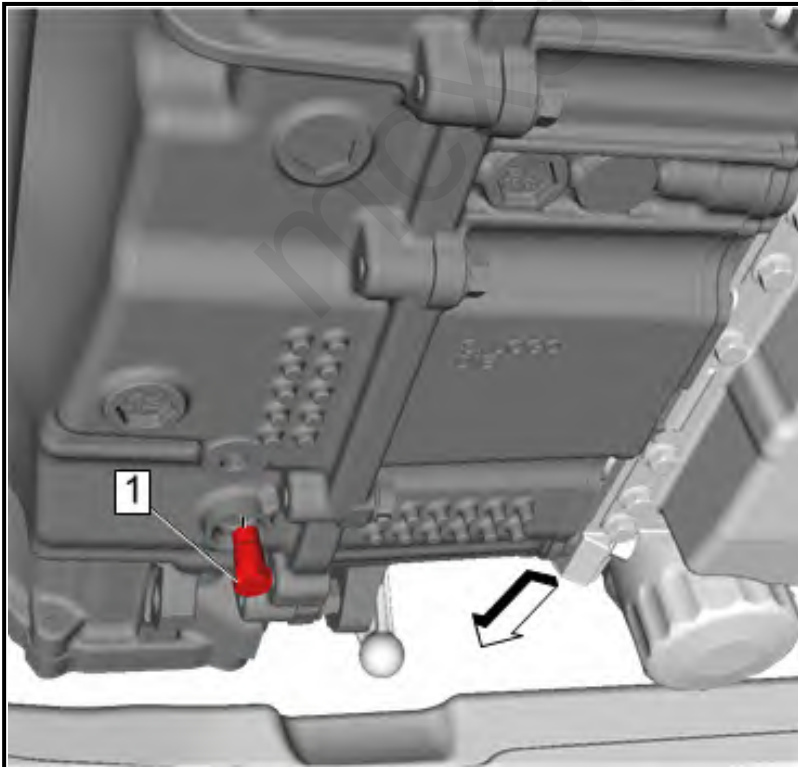
Install the control valve body cover (1) to the transmission. [Control Valve Body Cover Replacement](#)

3. Install the transmission. [Transmission Replacement \(Front Wheel Drive with LFY Engine\)](#)[Transmission Replacement \(All Wheel Drive\)](#)[Transmission Replacement \(Front Wheel Drive with LTG Engine\)](#)

TRANSMISSION FLUID DRAIN AND FILL

Removal Procedure

1.



Raise and support the vehicle. [Lifting and Jacking the Vehicle](#) .

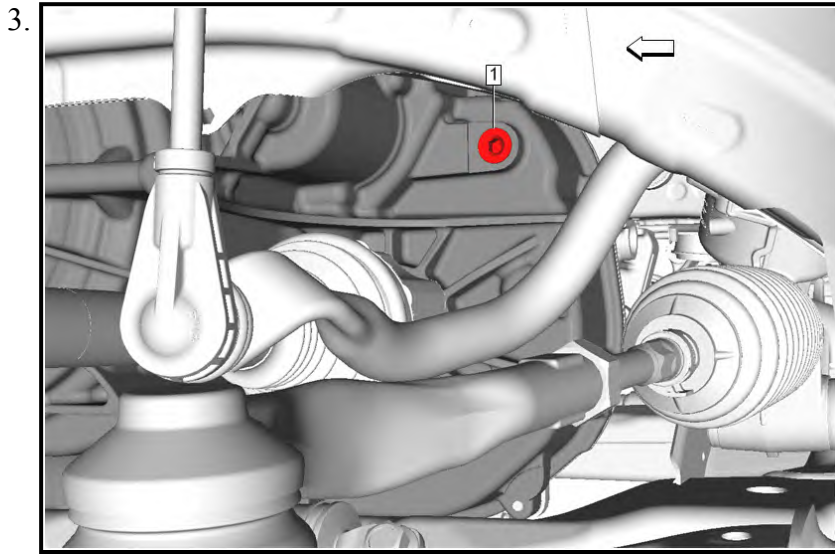
2. Remove the fluid drain plug (1).
3. Drain transmission fluid into a suitable container.

CAUTION: Refer to [Component Fastener Tightening Caution](#) .

4. Install the fluid drain plug (1) and tighten to 12 N.m (106 lb in).

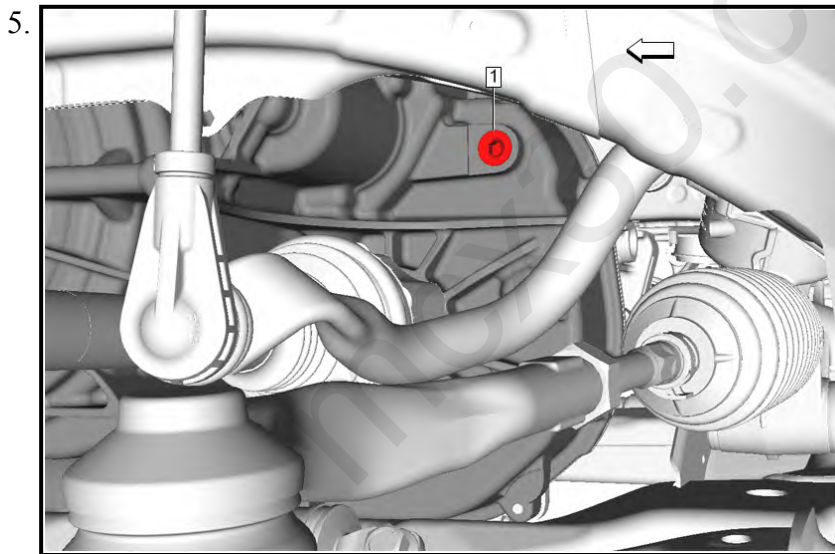
Installation Procedure

1. Lower the vehicle.
2. Remove the left front wheel and tire assembly. [Tire and Wheel Removal and Installation](#)



Remove the fluid filler plug (1) from the transmission.

4. Fill the transmission to the proper level with the correct fluid. [Transmission Fluid Level and Condition Check](#), and [Adhesives, Fluids, Lubricants, and Sealers](#).



CAUTION: Refer to [Component Fastener Tightening Caution](#).

Install the fluid filler plug (1) to the transmission and tighten to 40 N.m (30 lb ft).

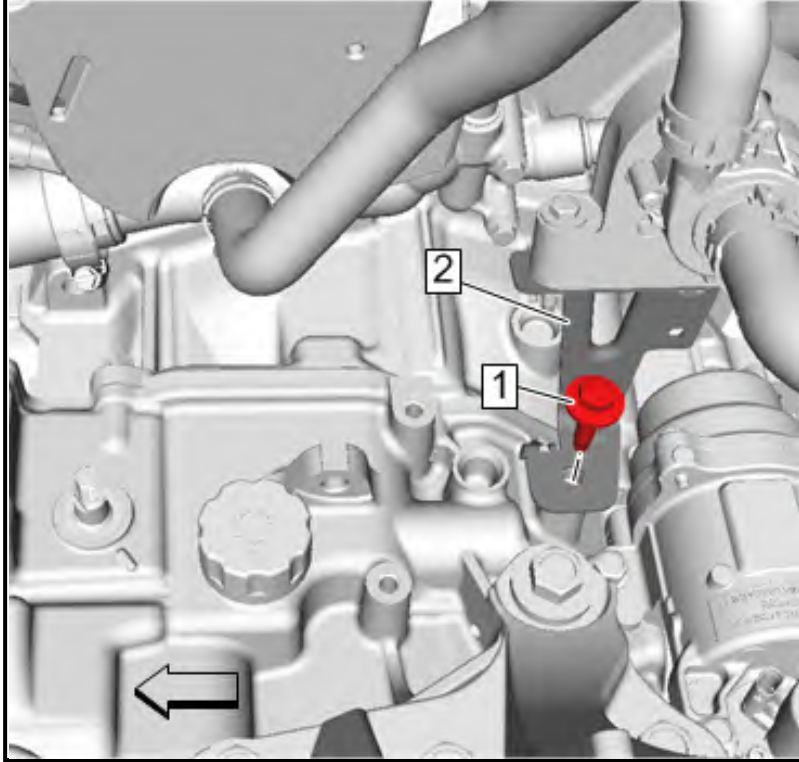
6. Install the left front wheel and tire assembly. [Tire and Wheel Removal and Installation](#)

TRANSMISSION REPLACEMENT (FRONT WHEEL DRIVE WITH LFY ENGINE)

Removal Procedure

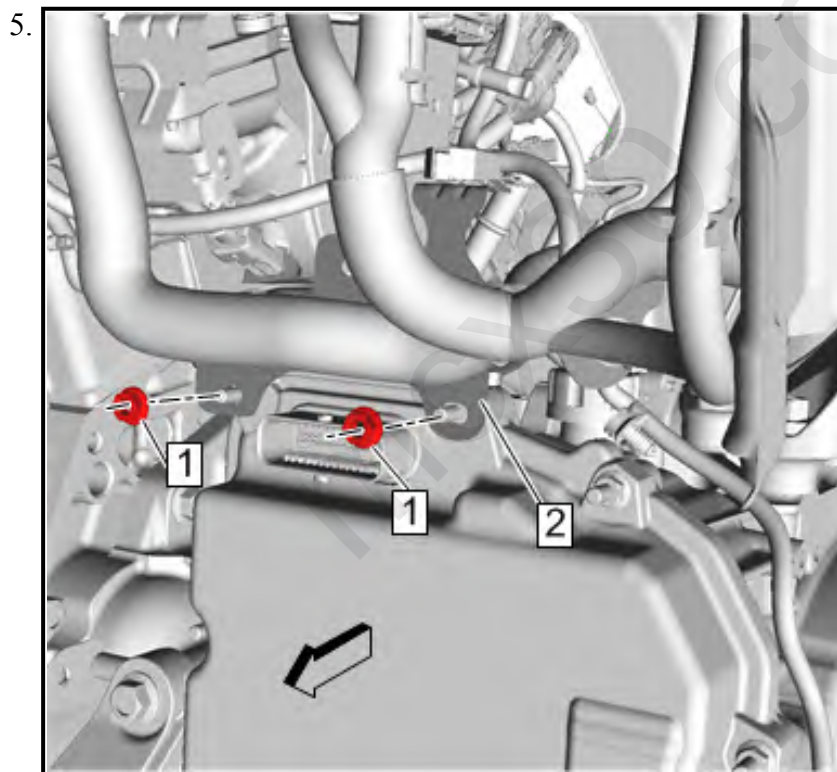
1. Disconnect the battery negative cable. [Battery Negative Cable Disconnection and Connection \(KL9\)](#)
2. Disconnect the transmission range select lever cable from the transmission. [Automatic Transmission Range Selector Lever Cable Replacement](#)





Remove the heater water auxiliary pump bolt (1).

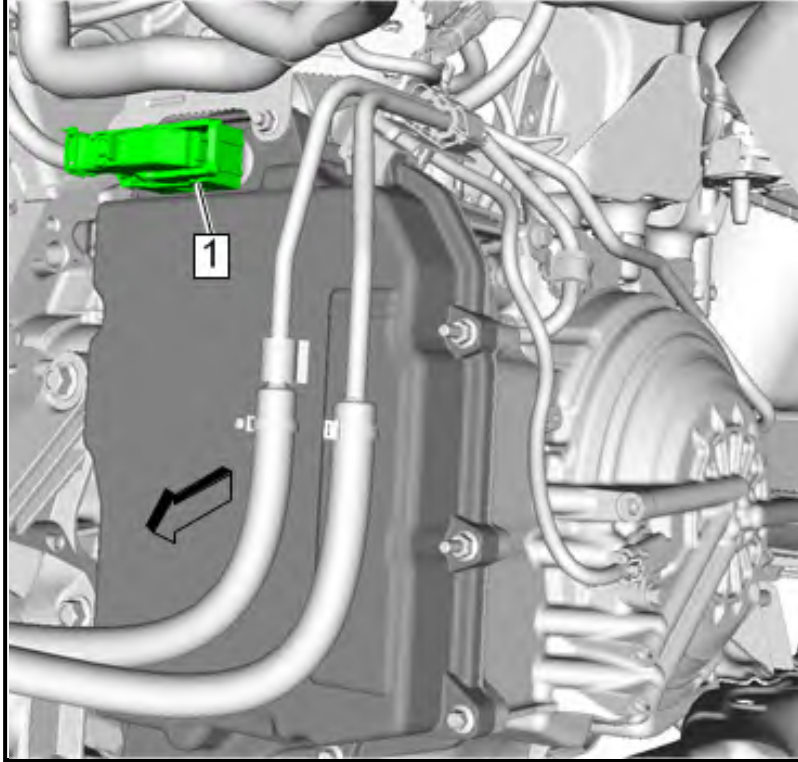
4. Position the heater water auxiliary pump (2) out of the way.



Remove the electrical harness bracket nuts (1).

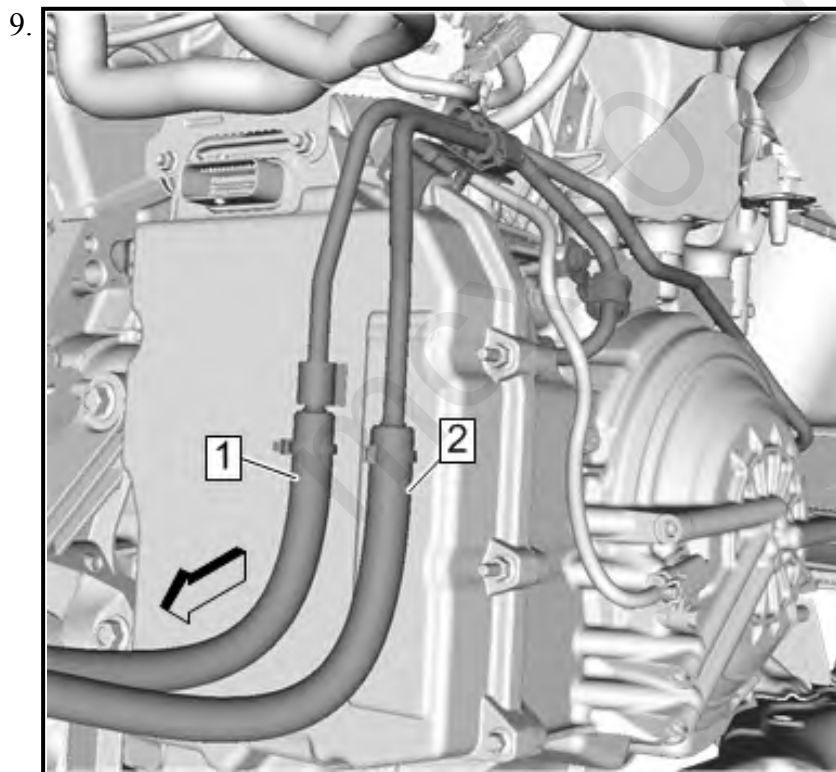
6. Remove the electrical harness bracket (2) from the control valve body cover and position out of the way.





Disconnect the control valve body transmission control module electrical connector (1), then unclip the wiring harness from the cover.

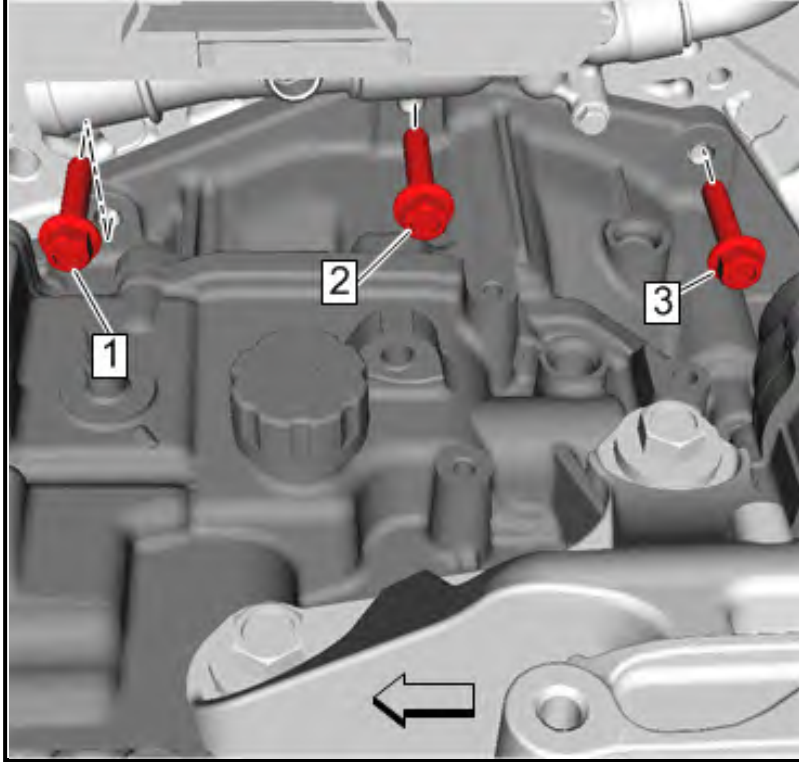
8. Drain the transmission fluid. [Transmission Fluid Drain and Fill](#)



Disconnect the transmission fluid cooler outlet pipe (1, 2) from the transmission. [Transmission Fluid Cooler Pipe Replacement \(with V08\)](#)

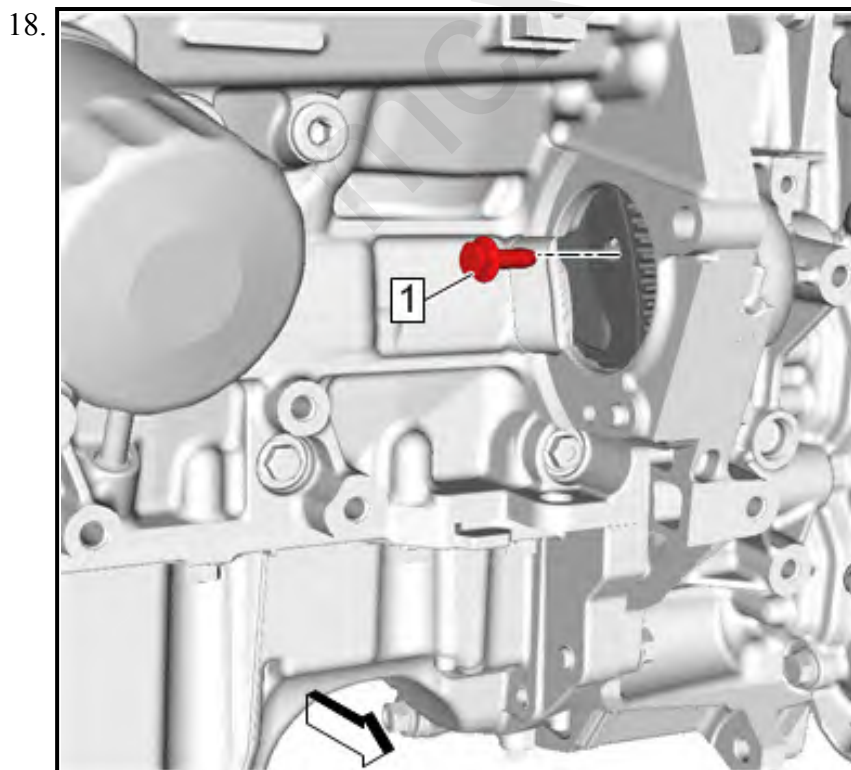
10. Plug and/or cap the pipes and the transmission to prevent contamination.
11. Remove the body ground cable and wiring harness assembly mounting bolt at front of transmission and position ground cable and harness out of the way.
- 12.





Remove the upper transmission to engine bolts (1, 2, 3).

13. Remove the drivetrain and front suspension cradle. [Drivetrain and Front Suspension Cradle Removal and Installation \(Front Wheel Drive\)](#)
14. Disconnect the wheel drive shafts from the transmission. [Front Wheel Drive Half Shaft Replacement - Left Side](#) and [Front Wheel Drive Shaft Replacement - Right Side \(LFY with FWD\)](#)
15. Remove the transmission mount strut bracket from the transmission. [Transmission Mount Strut Bracket Replacement \(Front Wheel Drive\)](#)
16. Remove the starter. [Starter Replacement \(LFY\)](#)
17. Mark the relationship of the flex plate to the torque converter for reassembly.

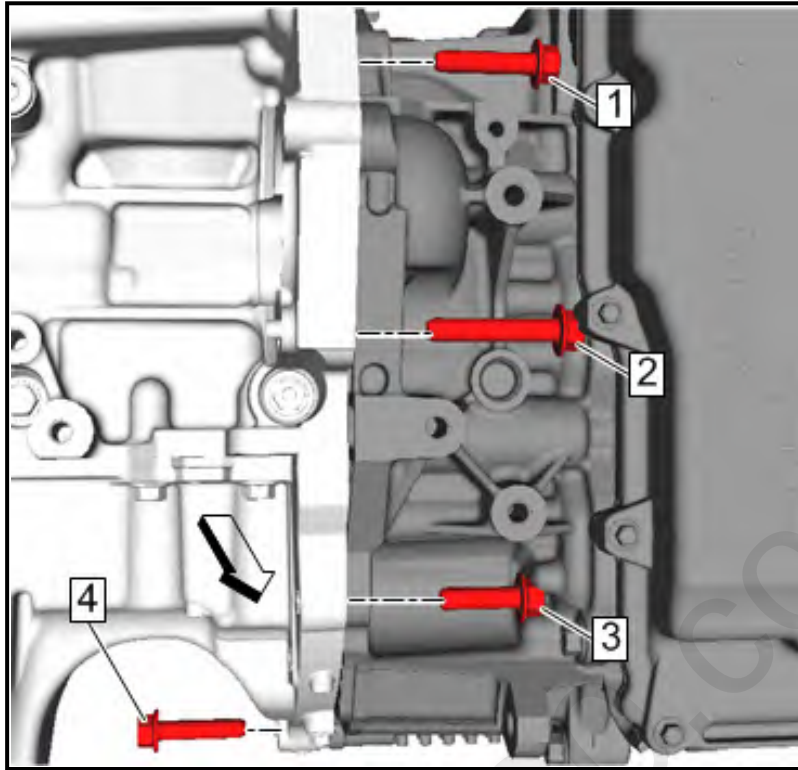


Remove the torque converter to flex plate bolts (1).

19. Lower the vehicle.
20. Install the engine support fixture. [Engine Support Fixture](#)

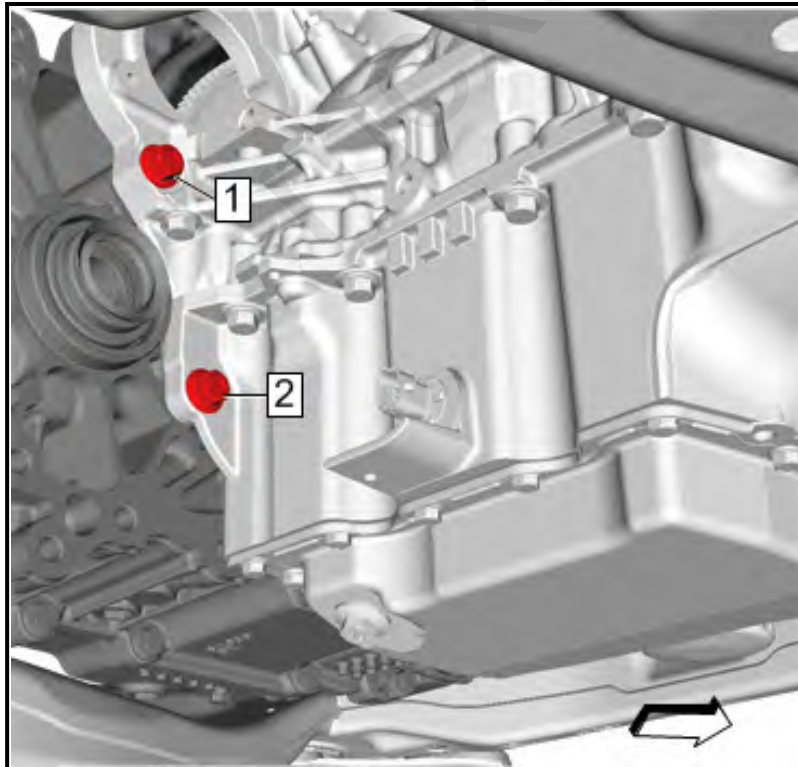
21. Remove the left transmission mount to transmission bolts. [Transmission Mount Replacement \(Left\)](#)
22. Remove the front transmission mount to transmission bolts. [Transmission Mount Replacement \(Front\)](#)[Transmission Front Mount Replacement](#)
23. Lower the transmission side with the support fixture to allow clearance for removal.
24. Unclip the engine wiring harness from the transmission.
25. Raise the vehicle.
26. Use a transmission jack in order to support the transmission.

27.



Remove the front transmission to engine bolts (1, 2, 3, 4).

28.



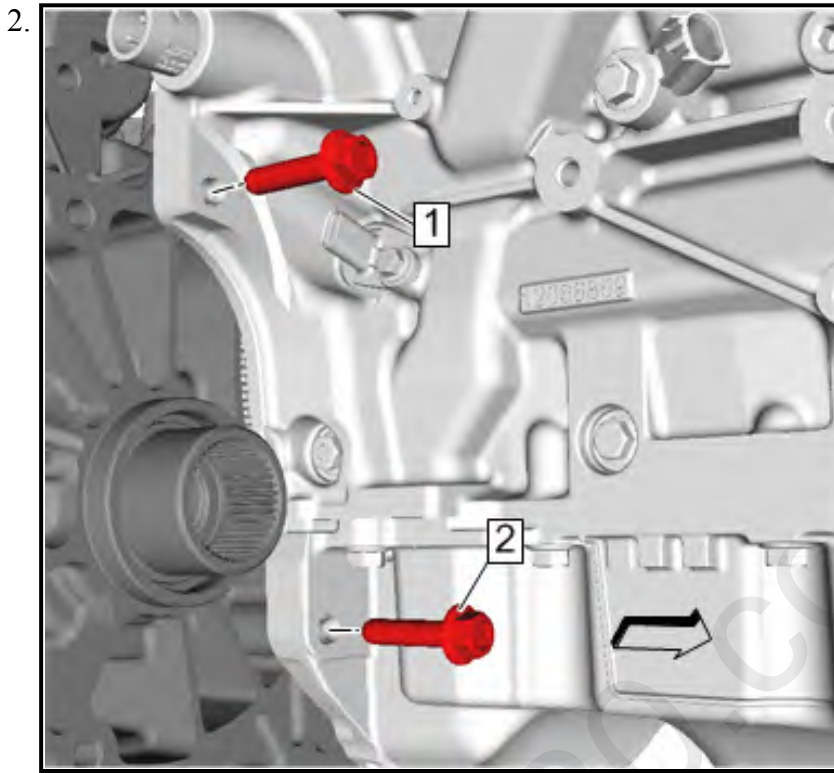
Remove the lower transmission fasteners (1, 2).

NOTE: Ensure the torque converter remains securely in place on the transmission input shaft while separating and removing the transmission.

29. Separate the transmission from the engine.
30. Lower the transmission with the transmission jack far enough to remove the transmission.
31. Transfer components as necessary.
32. Flush and flow test the transmission oil cooler and lines. [Transmission Fluid Cooler Flow Test and Flushing](#)

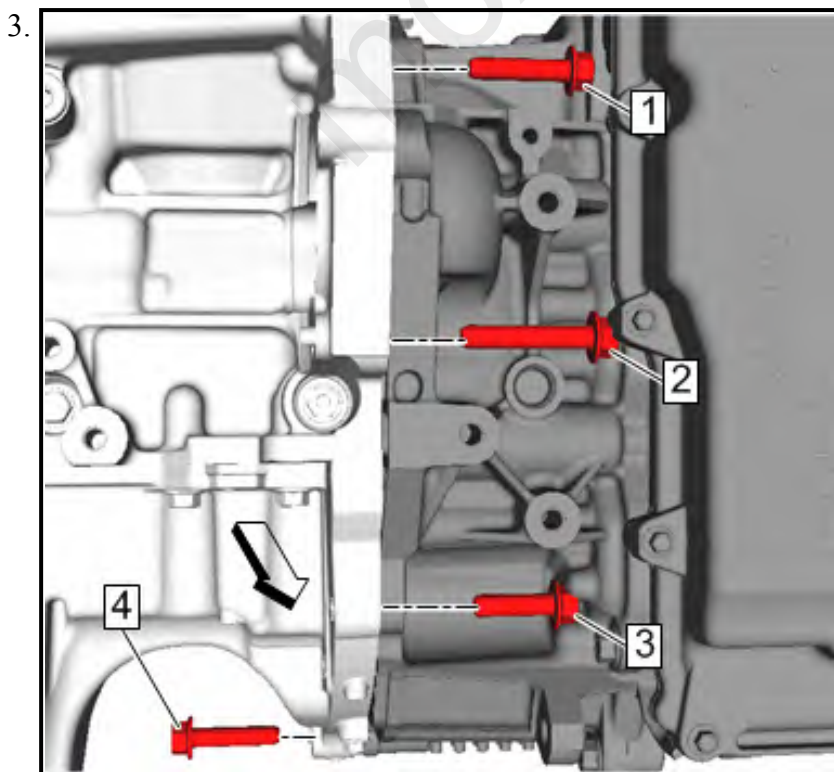
Installation Procedure

1. Raise the transmission with the transmission jack and position the transmission to the engine.



CAUTION: Refer to [Fastener Caution](#) .

Install the rear transmission bolts (1, 2) and tighten to 58 N.m (43 lb ft).

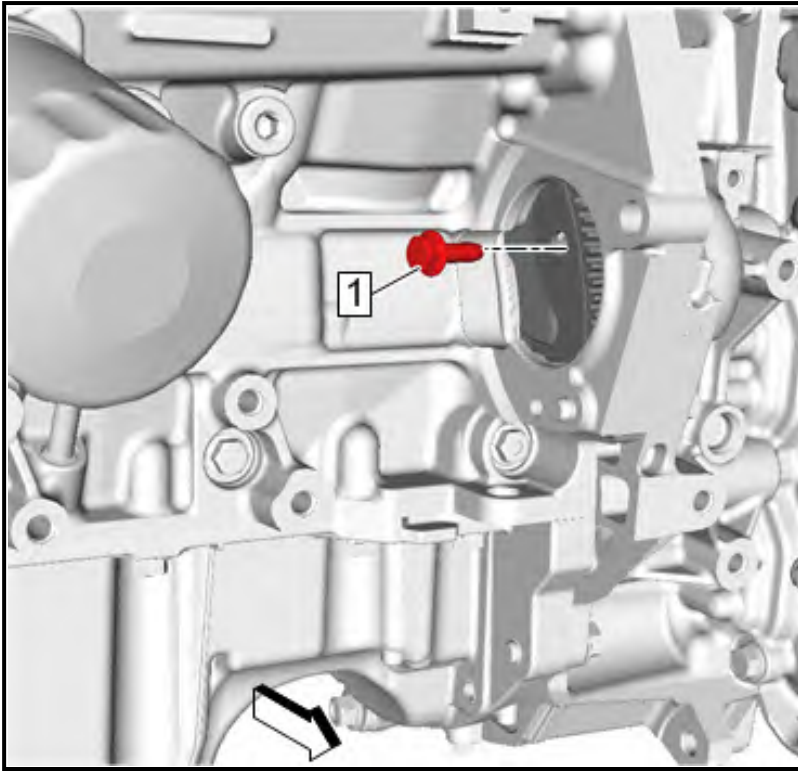


Install the front transmission to engine bolt (1, 2, 3, 4) and tighten to 58 N.m (43 lb ft).

4. Remove the transmission jack.

5. Align the mark of the flex plate to the mark on the torque converter for reassembly.

6.



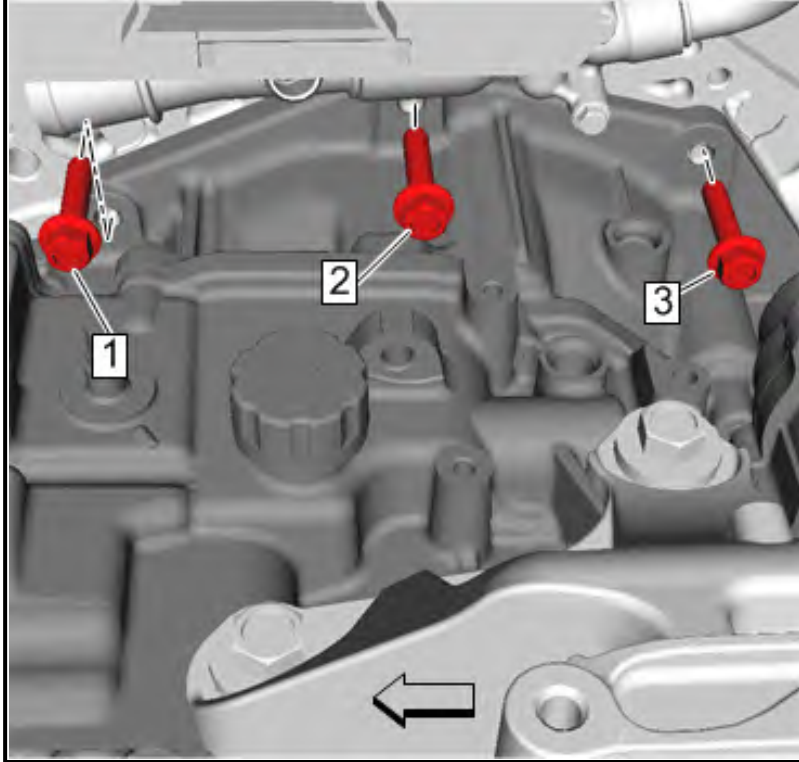
NOTE: If reusing the torque converter bolts, clean the threads and apply threadlocker to the threads prior to installation. [Adhesives, Fluids, Lubricants, and Sealers](#)

Install the torque converter to flex plate bolts (1) and tighten to 60 N.m (44 lb ft),

7. Install the starter. [Starter Replacement \(LFY\)](#)
8. Install the left transmission mount to the transmission. [Transmission Mount Replacement \(Left\)](#)
9. Install the front transmission mount to transmission bolts. [Transmission Mount Replacement \(Front\)](#)[Transmission Front Mount Replacement](#)
10. Install the wheel drive shafts to the transmission. [Front Wheel Drive Half Shaft Replacement - Left Side](#) and [Front Wheel Drive Shaft Replacement - Right Side \(LFY with FWD\)](#)
11. Install the drivetrain and front suspension cradle. [Drivetrain and Front Suspension Cradle Removal and Installation \(Front Wheel Drive\)](#)
12. Install the transmission mount strut bracket to the transmission. [Transmission Mount Strut Bracket Replacement \(Front Wheel Drive\)](#)
13. Remove the engine support fixture. [Engine Support Fixture](#)

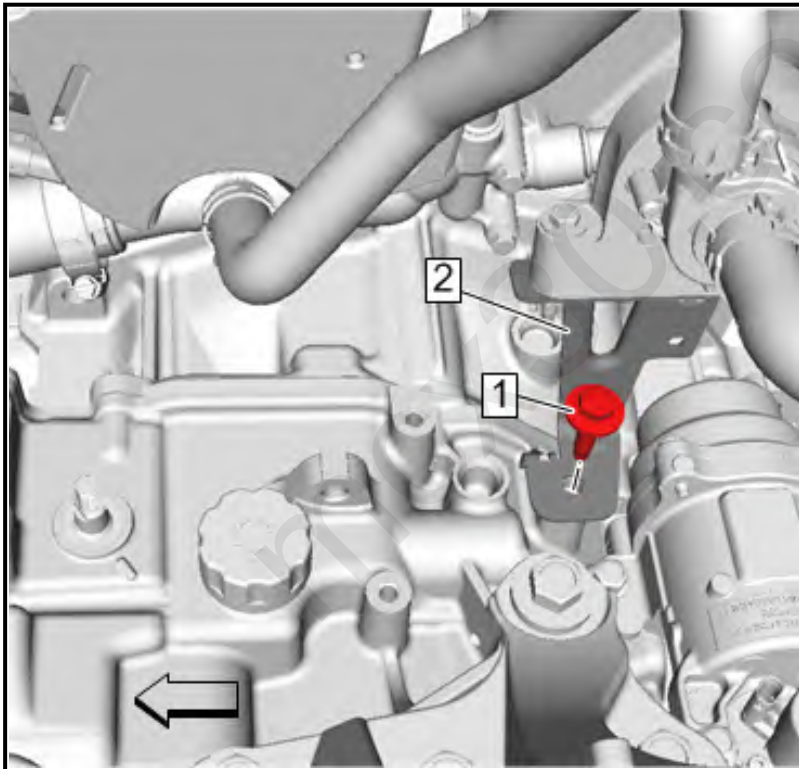
14.





Install the upper transmission to engine bolts (1, 2, 3) and tighten to 58 N.m (43 lb ft).

15.



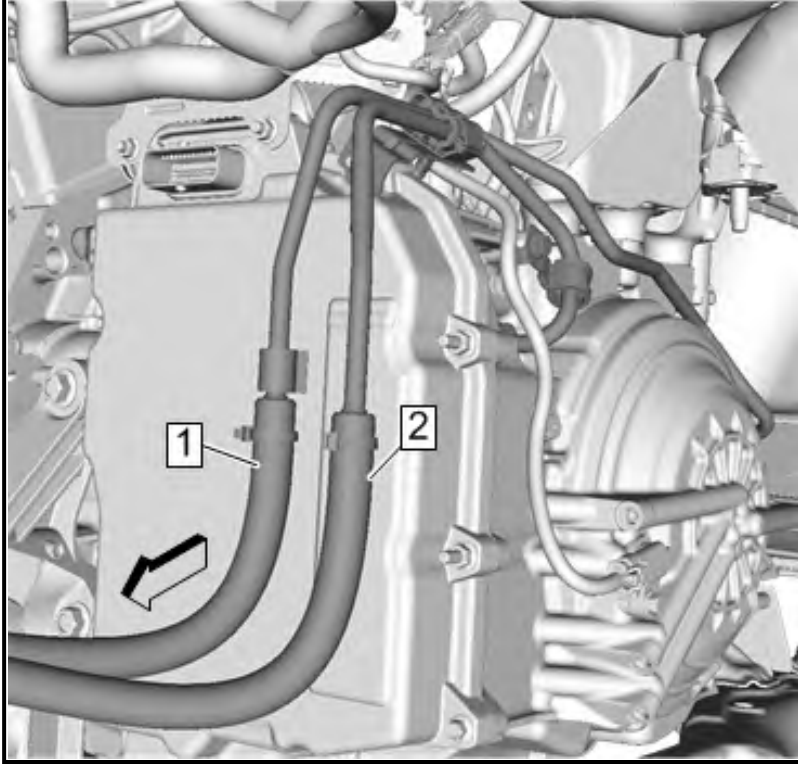
Position the heater water auxiliary pump (2) to it's original position.

16. Install the heater water auxiliary pump bolt (1) and tighten to 22 N.m (16 lb ft).

17. Install the body ground cable and wiring harness assembly to the front of transmission.

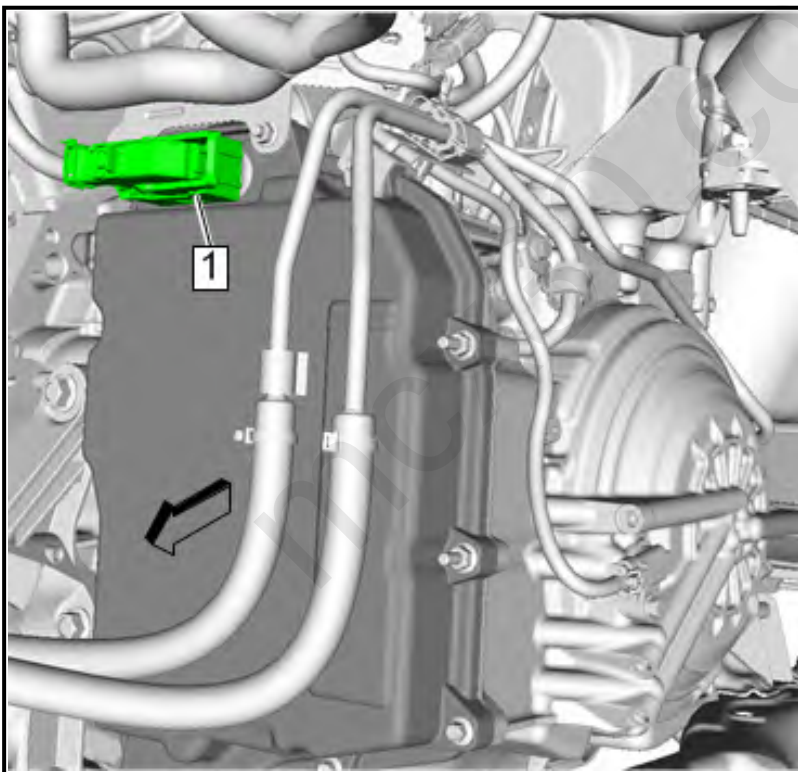
18.





Connect the transmission fluid cooler outlet pipe (1, 2) to the transmission. [Transmission Fluid Cooler Pipe Replacement \(with V08\)](#)

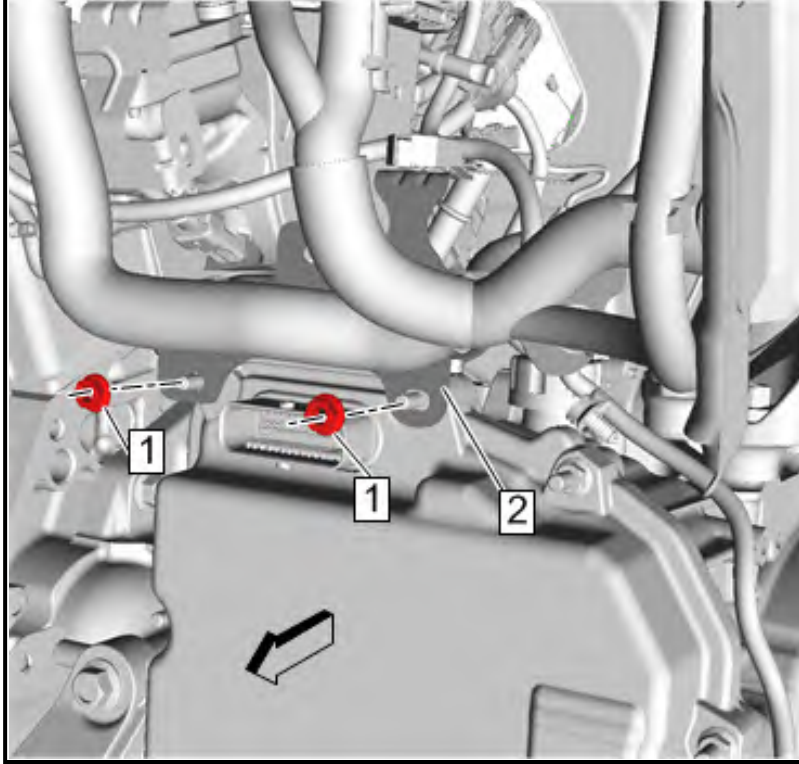
19.



Connect the control valve body transmission control module electrical connector (1), then clip the wiring harness to the cover.

20.





Install the electrical harness bracket (2) to the control valve body cover.

21. Install the electrical harness bracket nuts (1) and tighten to 9 N.m (80 lb in).
22. Connect the battery negative cable. [Battery Negative Cable Disconnection and Connection \(KL9\)](#)
23. Clip the engine wiring harness to the transmission.
24. Install the transmission range select lever cable to the transmission. [Automatic Transmission Range Selector Lever Cable Replacement](#)
25. Fill the transmission with correct fluid. [Adhesives, Fluids, Lubricants, and Sealers](#)
26. Check transmission fluid level. [Transmission Fluid Level and Condition Check](#)
27. Adjust the automatic transmission range selector lever cable. [Range Selector Lever Cable Adjustment](#)
28. If a NEW TCM has been installed into the vehicle, the NEW module needs to be reprogrammed. [Service Programming System \(SPS\)](#).

NOTE:

The Transmission Adaptive Values Learn procedure must be performed when one of the following repairs have been made to the vehicle. Failure to perform the procedure after one of the following repairs may result in poor transmission performance, as well as transmission DTCs being set:

- Transmission internal service/overhaul
- Valve body repair or replacement
- Control solenoid valve assembly replacement
- TCM software/calibration update
- Any service in response to a shift quality concern

- 29.
30. Reprogram the transmission. [Solenoid Valve Characterization Reprogramming](#)
31. Road test the vehicle.

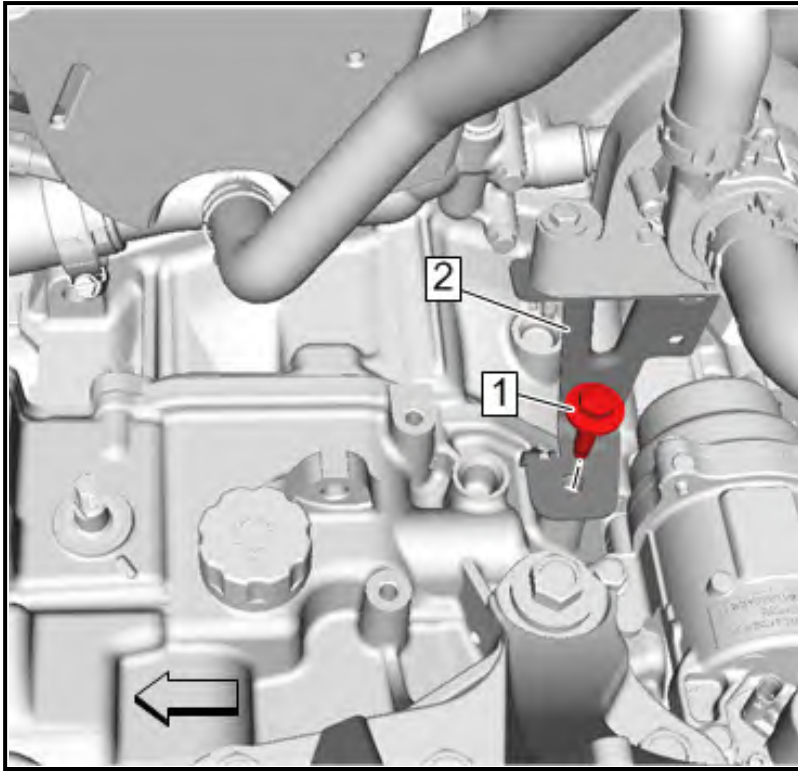
TRANSMISSION REPLACEMENT (ALL WHEEL DRIVE)

Removal Procedure

1. Disconnect the battery negative cable. [Battery Negative Cable Disconnection and Connection \(KL9\)](#)

2. Disconnect the transmission range select lever cable from the transmission. [Automatic Transmission Range Selector Lever Cable Replacement](#)

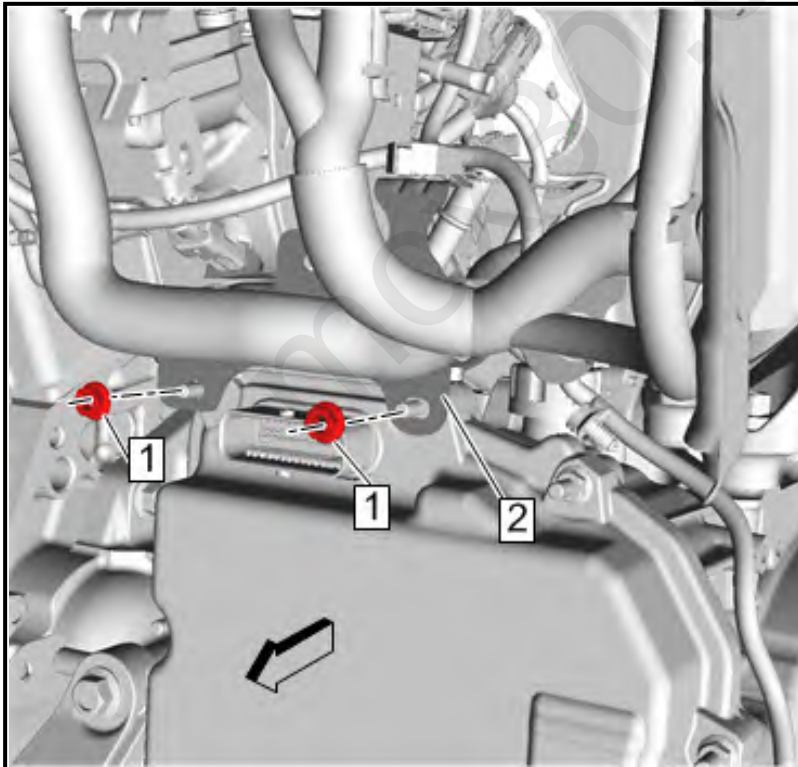
3.



Remove the heater water auxiliary pump bolt (1).

4. Position the heater water auxiliary pump (2) out of the way.

5.

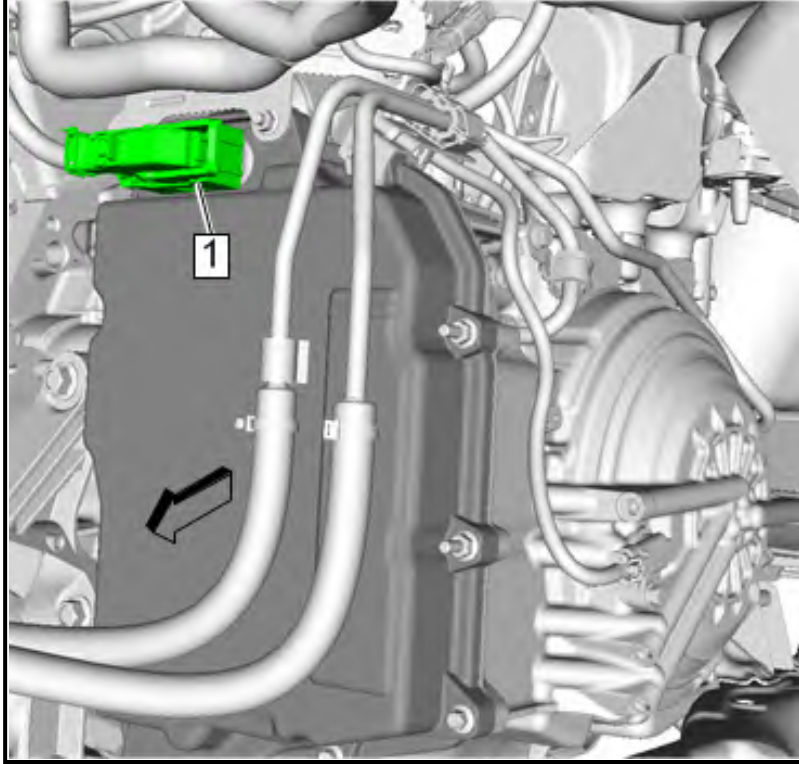


Remove the electrical harness bracket nuts (1).

6. Remove the electrical harness bracket (2) from the control valve body cover and position out of the way.

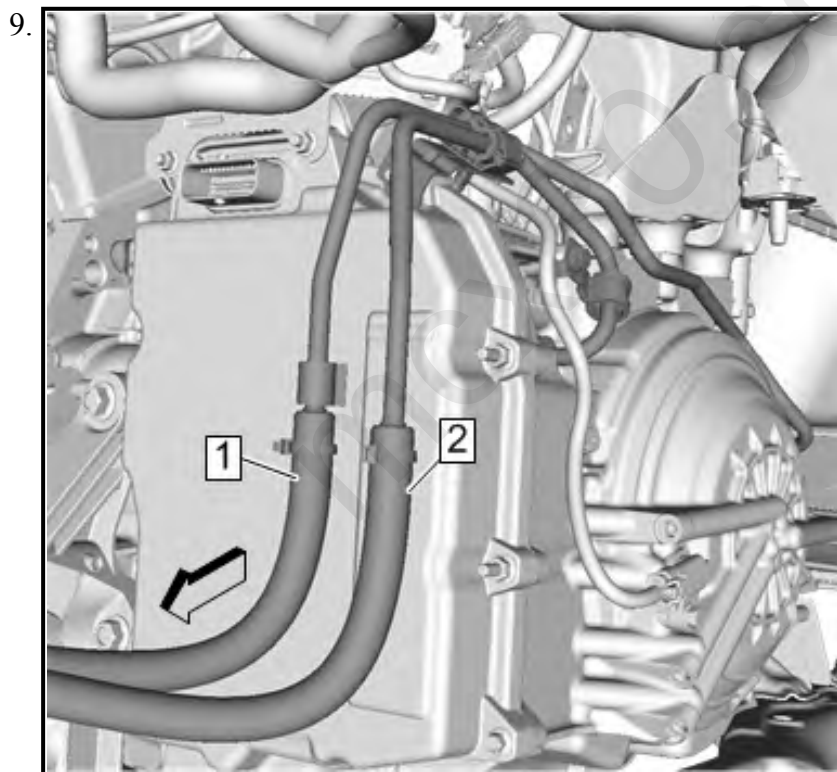
7.





Disconnect the control valve body transmission control module electrical connector (1), then unclip the wiring harness from the cover.

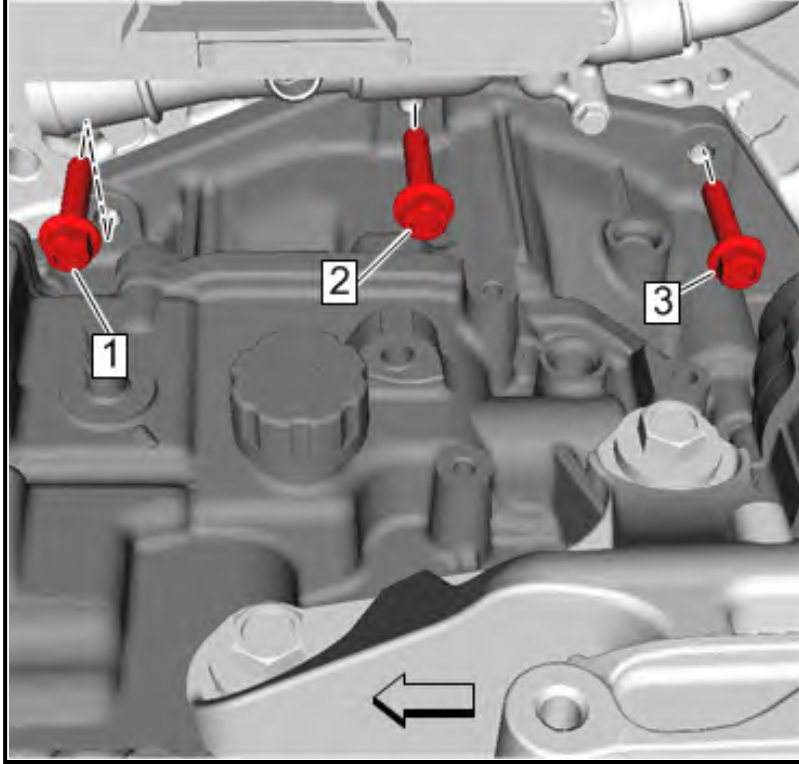
8. Drain the transmission fluid. [Transmission Fluid Drain and Fill](#)



Disconnect the transmission fluid cooler outlet pipe (1, 2) from the transmission. [Transmission Fluid Cooler Pipe Replacement \(with V08\)](#)

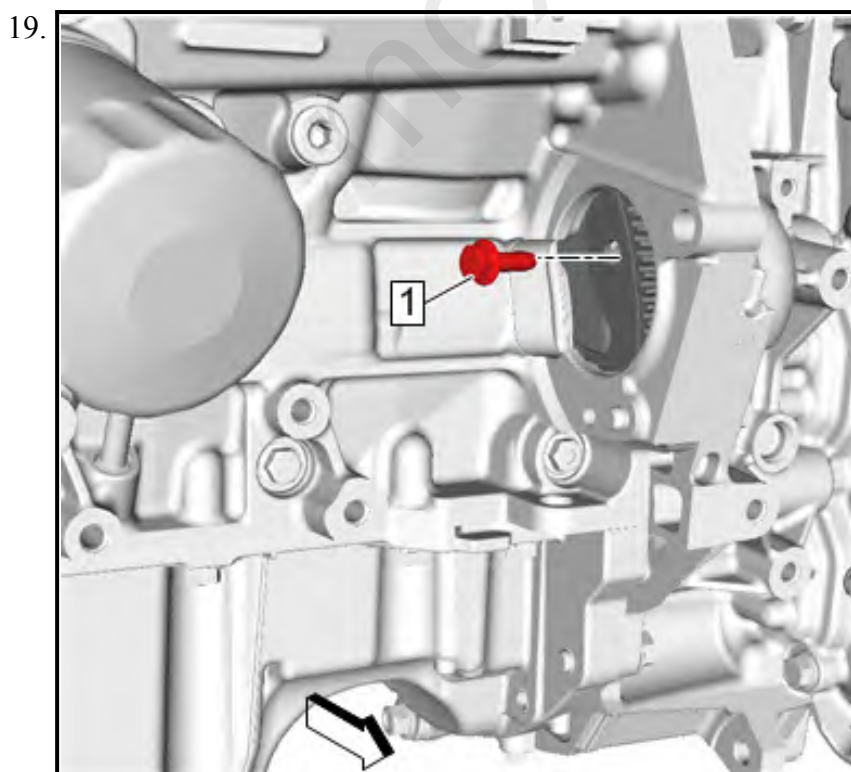
10. Plug and/or cap the pipes and the transmission to prevent contamination.
11. Remove the body ground cable and wiring harness assembly mounting bolt at front of transmission and position ground cable and harness out of the way.





Remove the upper transmission to engine bolts (1, 2, 3).

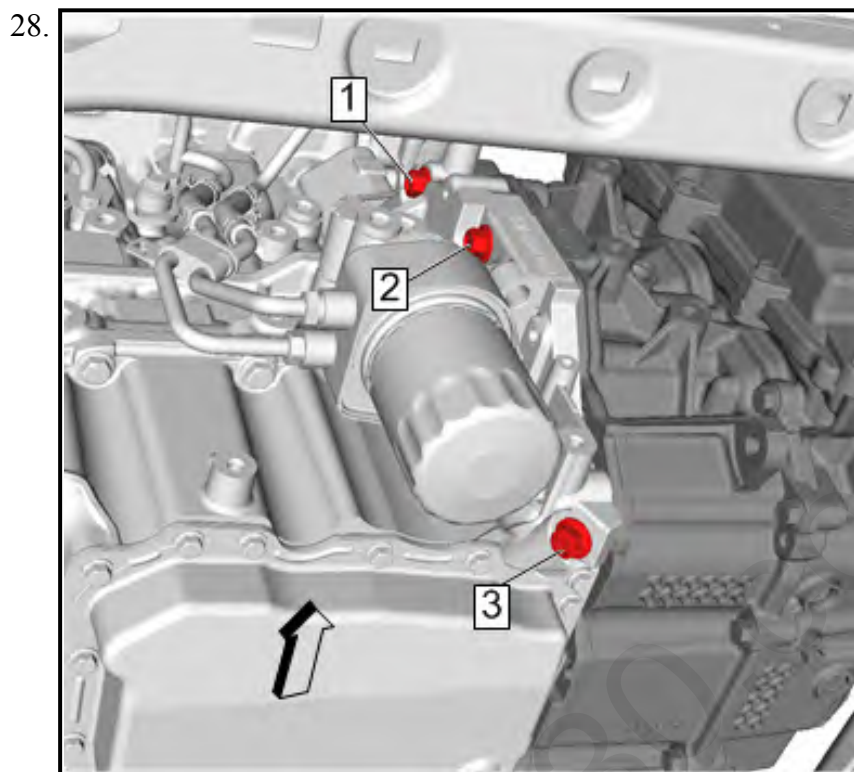
13. Remove the drivetrain and front suspension cradle. [Drivetrain and Front Suspension Cradle Removal and Installation \(All Wheel Drive\)](#).
14. Disconnect the wheel drive shaft from the transmission. [Front Wheel Drive Half Shaft Replacement - Left Side Front Wheel Drive Half Shaft Replacement - Right Side \(AWD\)](#).
15. Remove the power transfer unit from the vehicle. [Power Transfer Unit Case Replacement](#).
16. Remove the transmission mount strut bracket from the transmission. [Transmission Mount Strut Bracket Replacement \(All Wheel Drive\)](#).
17. Remove the starter. [Starter Replacement \(LTG - All Wheel Drive\)](#) [Starter Replacement \(LFY\)](#).
18. Mark the relationship of the flex plate to the torque converter for reassembly.



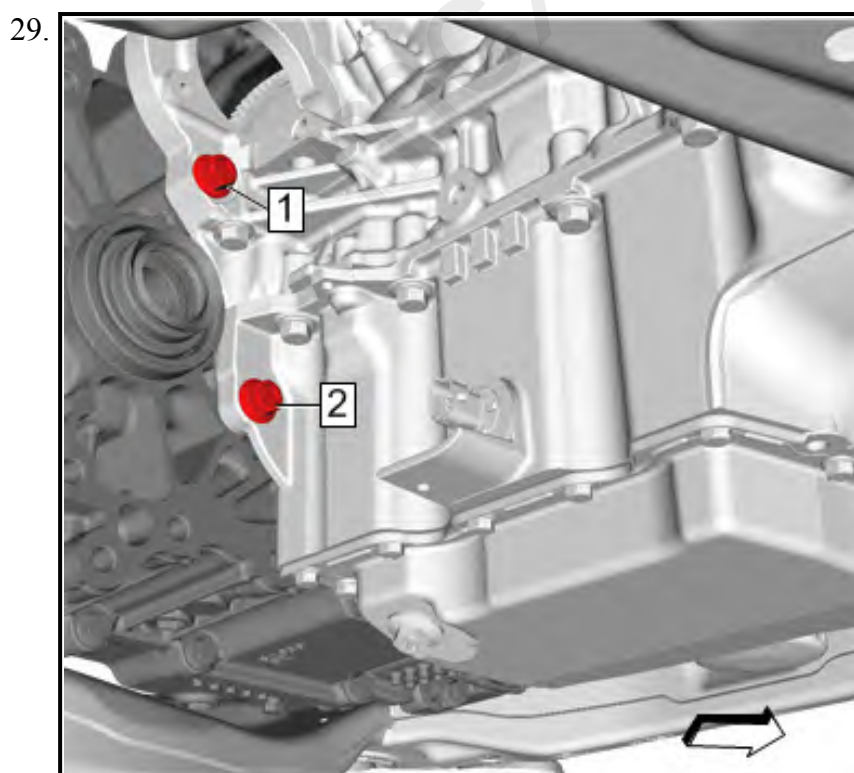
Remove the torque converter to flex plate bolts (1).

20. Lower the vehicle.

21. Install the engine support fixture. [Engine Support Fixture](#)
22. Remove the left transmission mount to transmission bolts. [Transmission Mount Replacement \(Left\)](#)
23. Remove the front transmission mount to transmission bolts. [Transmission Mount Replacement \(Front\)](#)[Transmission Front Mount Replacement](#)
24. Lower the transmission side with the support fixture to allow clearance for removal.
25. Unclip the engine wiring harness from the transmission.
26. Raise the vehicle.
27. Use a transmission jack in order to support the transmission.



Remove the front transmission to engine bolts (1, 2, 3).



Remove the lower transmission fasteners (1, 2).

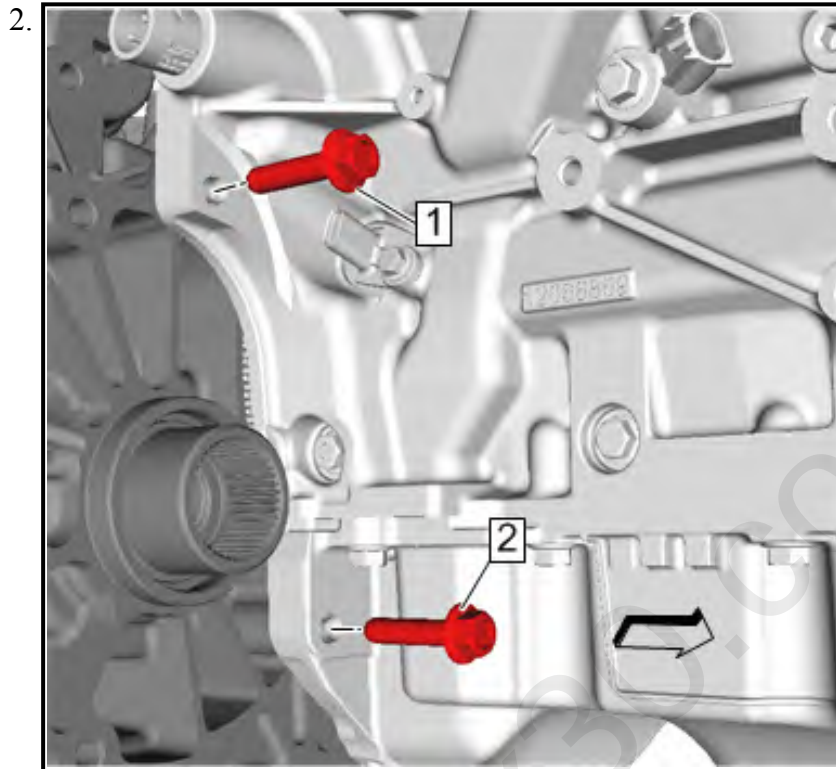
NOTE: Ensure the torque converter remains securely in place on the transmission input shaft while separating and removing the

transmission.

30. Separate the transmission from the engine.
31. Lower the transmission with the transmission jack far enough to remove the transmission.
32. Transfer components as necessary.
33. Flush and flow test the transmission oil cooler and lines. [Transmission Fluid Cooler Flow Test and Flushing](#)

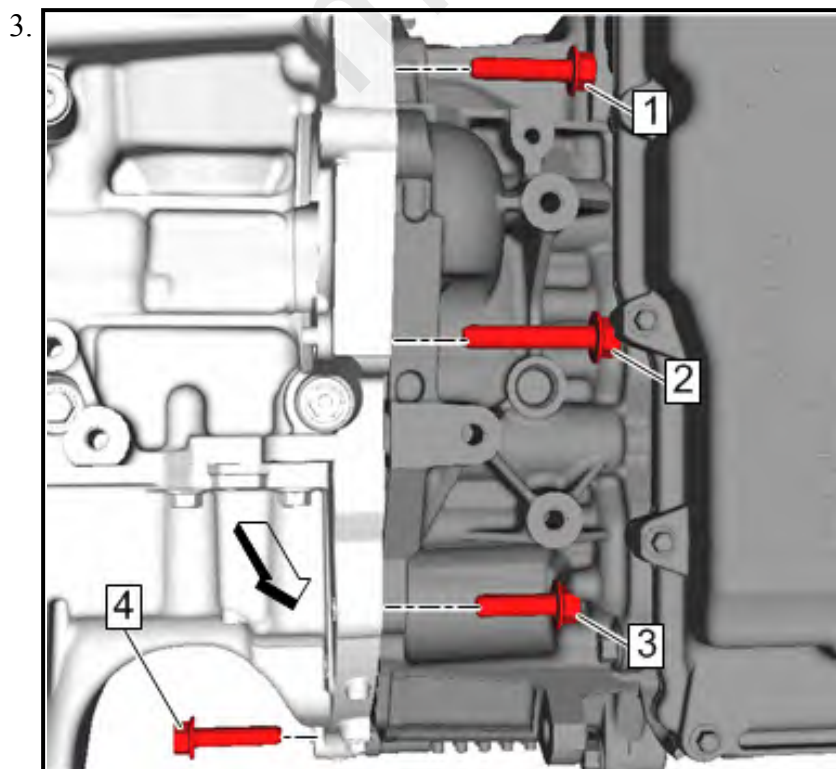
Installation Procedure

1. Raise the transmission with the transmission jack and position the transmission to the engine.



CAUTION: Refer to [Fastener Caution](#) .

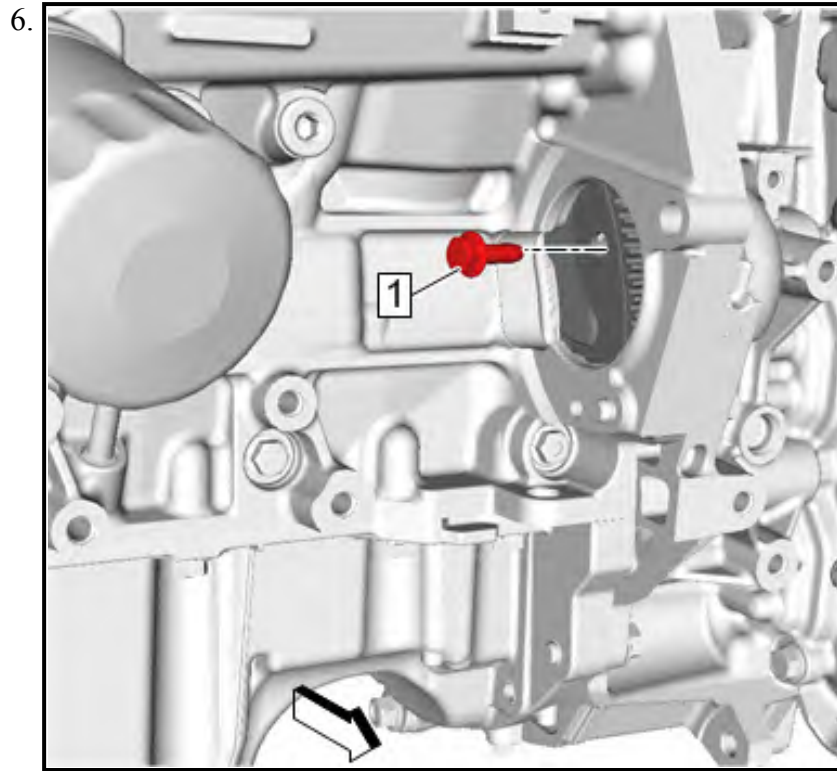
Install the rear transmission bolts (1, 2) and tighten to 58 N.m (43 lb ft).



Install the front transmission to engine bolt (2, 3, 4) and tighten to 58 N.m (43 lb ft).

4. Remove the transmission jack.

5. Align the mark of the flex plate to the mark on the torque converter for reassembly.



NOTE: If reusing the torque converter bolts, clean the threads and apply threadlocker to the threads prior to installation. [Adhesives, Fluids, Lubricants, and Sealers](#)

Install the torque converter to flex plate bolts (1) and tighten to 60 N.m (44 lb ft),

7. Install the starter. [Starter Replacement \(LTG - All Wheel Drive\)](#) [Starter Replacement \(LFY\)](#)

8. Using the engine support fixture raise the powertrain into place.

9. Install the left transmission mount to the transmission. [Transmission Mount Replacement \(Left\)](#)

10. Install the front transmission mount to transmission bolts. [Transmission Mount Replacement \(Front\)](#) [Transmission Front Mount Replacement](#)

11. Install the wheel drive shaft to the transmission. [Front Wheel Drive Half Shaft Replacement - Left Side](#) [Front Wheel Drive Half Shaft Replacement - Right Side \(AWD\)](#)

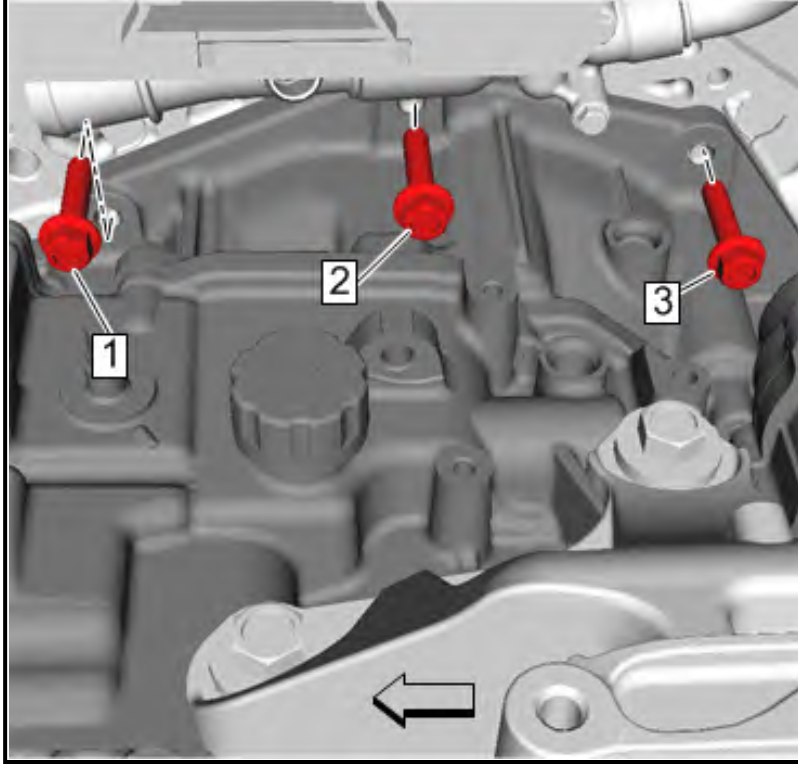
12. Install the power transfer unit. [Power Transfer Unit Case Replacement](#)

13. Install the drivetrain and front suspension cradle. [Drivetrain and Front Suspension Cradle Removal and Installation \(All Wheel Drive\)](#)

14. Install the transmission mount strut bracket to the transmission. [Transmission Mount Strut Bracket Replacement \(All Wheel Drive\)](#)

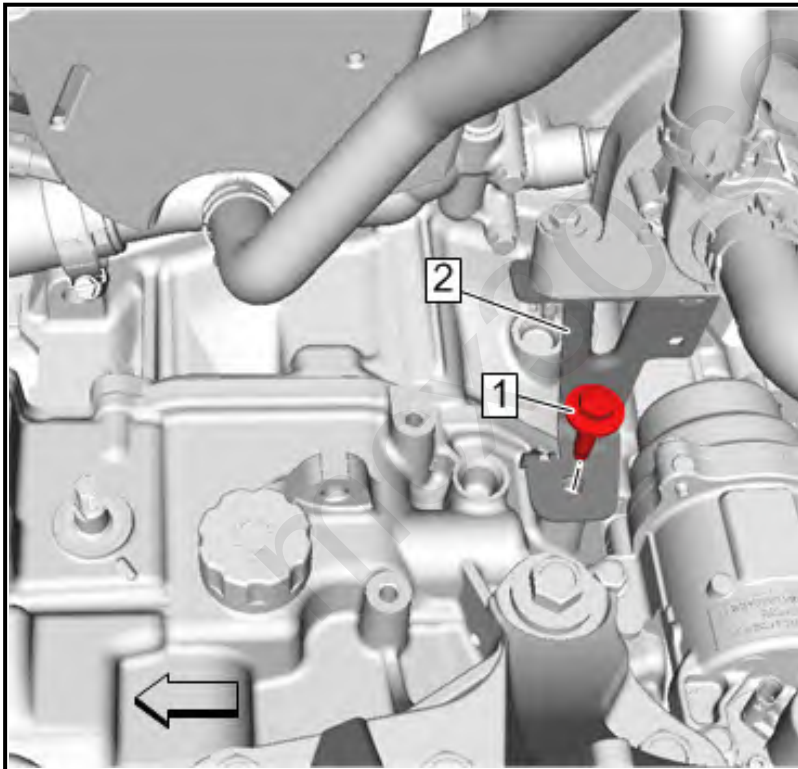
15. Remove the engine support fixture. [Engine Support Fixture](#)





Install the upper transmission to engine bolts (1, 2, 3) and tighten to 58 N.m (43 lb ft).

17.



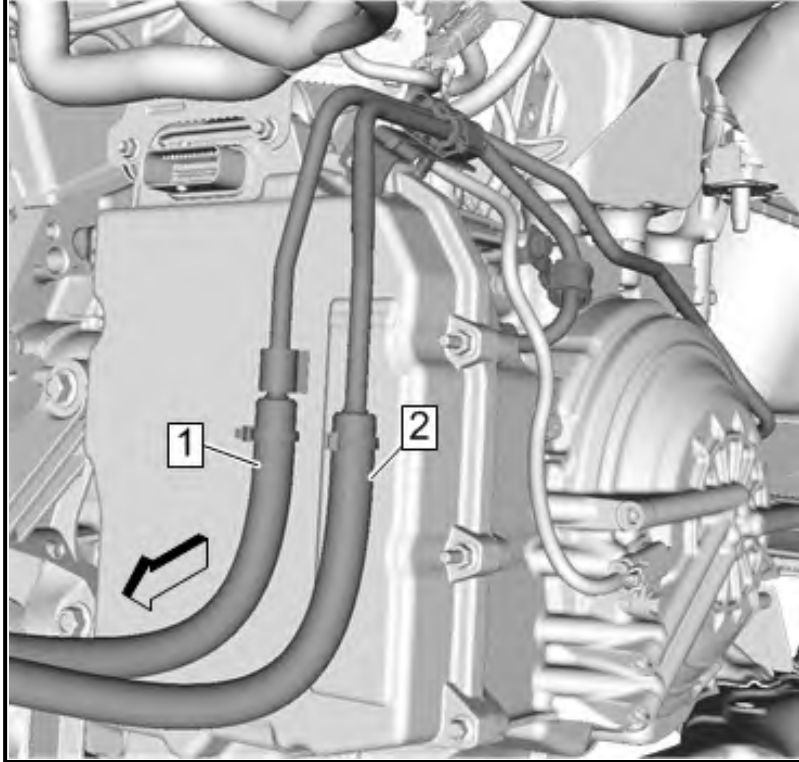
Position the heater water auxiliary pump (2) to its original position.

18. Install the heater water auxiliary pump bolt (1) and tighten to 22 N.m (16 lb ft).

19. Install the body ground cable and wiring harness assembly to the front of transmission.

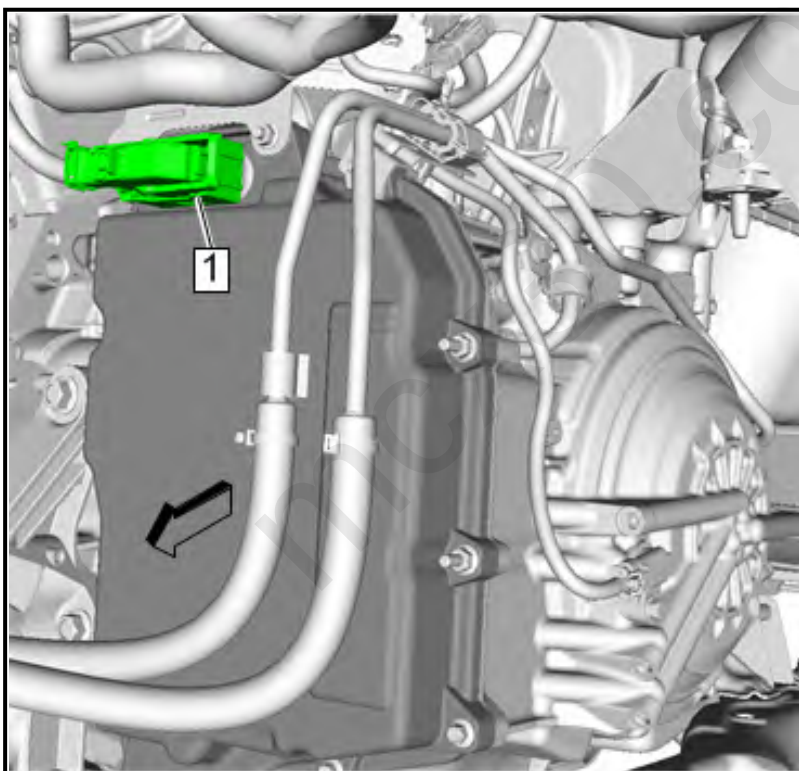
20.





Connect the transmission fluid cooler outlet pipe (1, 2) to the transmission. [Transmission Fluid Cooler Pipe Replacement \(with V08\)](#)

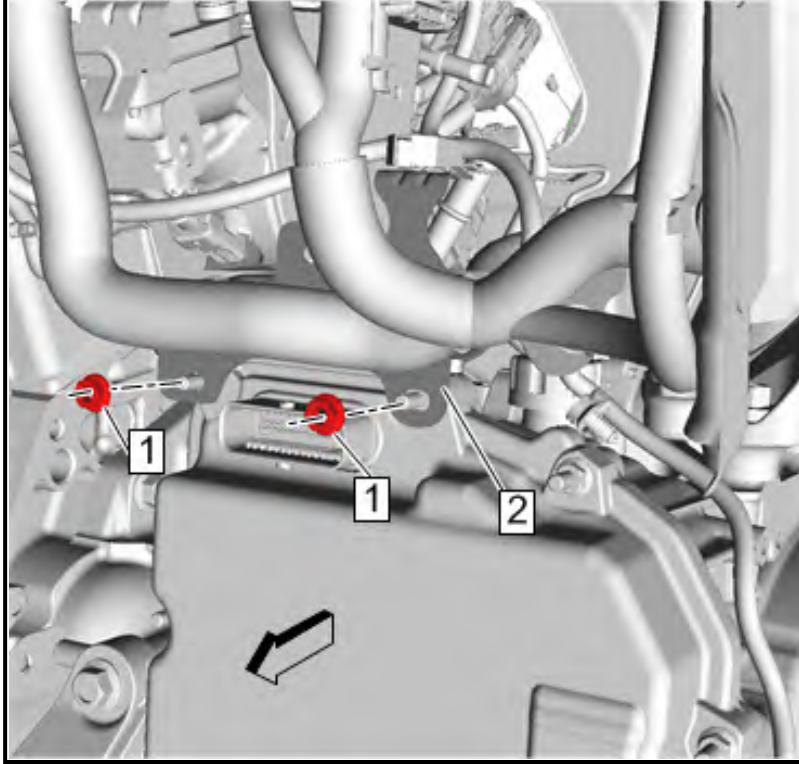
21.



Connect the control valve body transmission control module electrical connector (1), then clip the wiring harness to the cover.

22.





Install the electrical harness bracket (2) to the control valve body cover.

23. Install the electrical harness bracket nuts (1) and tighten to 9 N.m (80 lb in).
24. Connect the battery negative cable. [Battery Negative Cable Disconnection and Connection \(KL9\)](#)
25. Clip the engine wiring harness to the transmission.
26. Install the transmission range select lever cable to the transmission. [Automatic Transmission Range Selector Lever Cable Replacement](#)
27. Fill the transmission with correct fluid. [Adhesives, Fluids, Lubricants, and Sealers](#)
28. Check transmission fluid level. [Transmission Fluid Level and Condition Check](#)
29. Adjust the automatic transmission range selector lever cable. [Range Selector Lever Cable Adjustment](#)
30. If a NEW TCM has been installed into the vehicle, the NEW module needs to be reprogrammed. [Service Programming System \(SPS\)](#)
31. Reprogram the transmission. [Solenoid Valve Characterization Reprogramming](#)
32. Road test the vehicle.

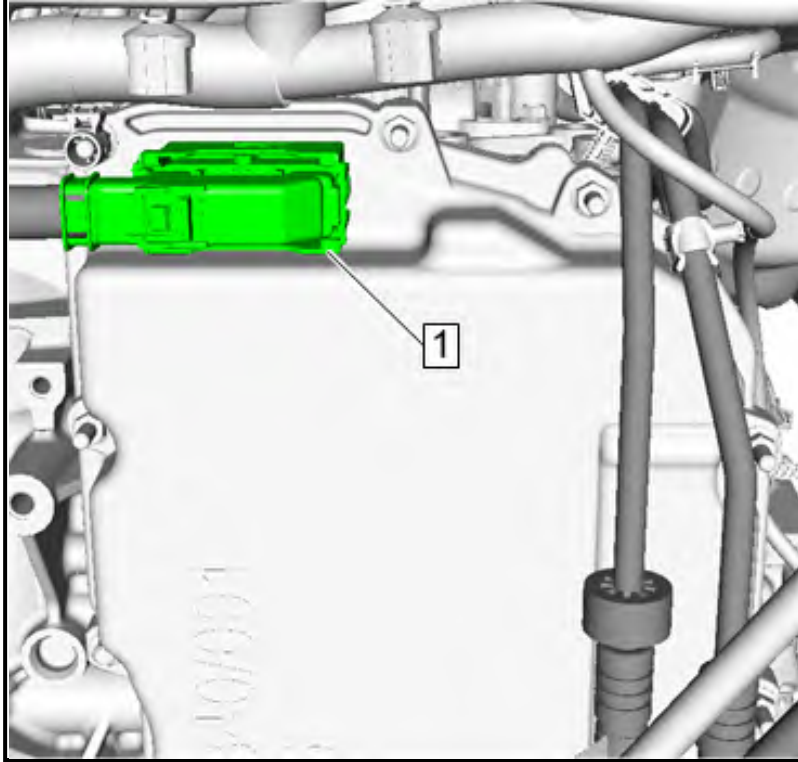
TRANSMISSION REPLACEMENT (FRONT WHEEL DRIVE WITH LTG ENGINE)

Removal Procedure

1. Remove the charge air cooler outlet pipe. [Charge Air Cooler Outlet Air Hose Replacement](#)
2. Disconnect the transmission range select lever cable from the transmission. [Automatic Transmission Range Selector Lever Cable Replacement](#)

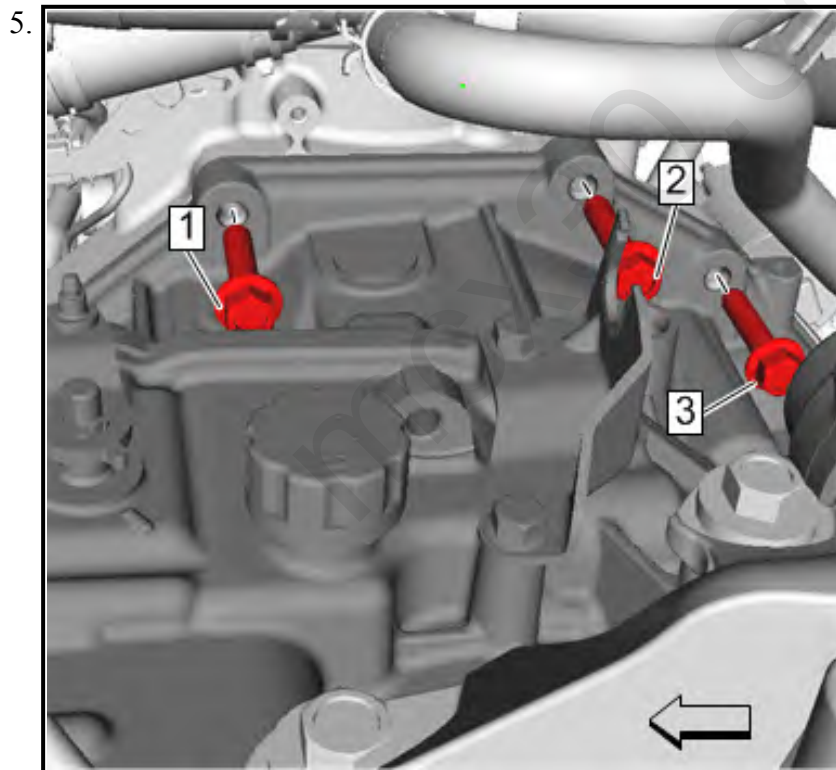
3.





Disconnect the control valve body transmission control module electrical connector (1), then unclip the wiring harness from the cover.

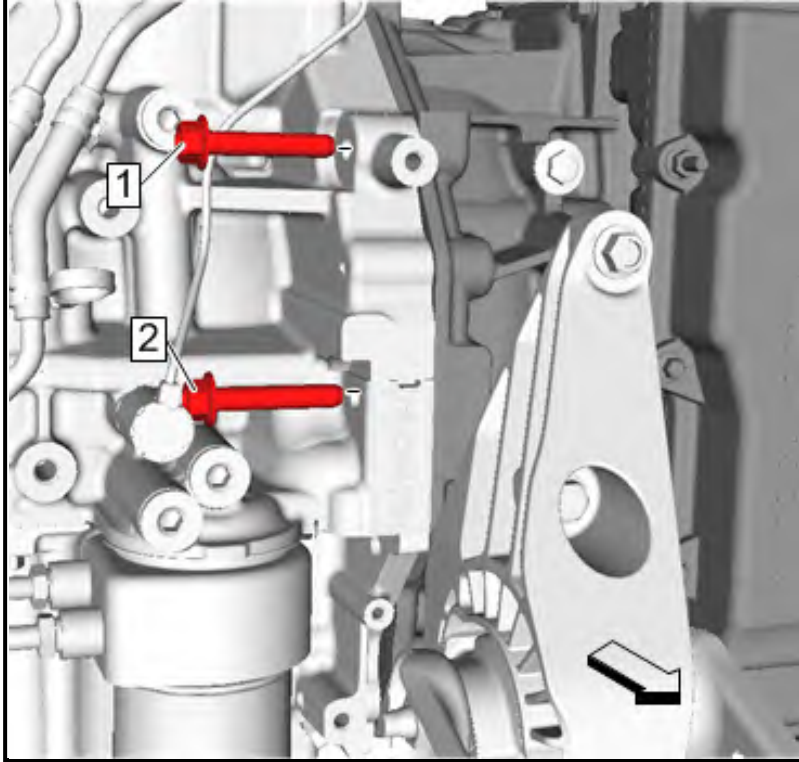
4. Install the engine support fixture. [Engine Support Fixture](#)



Remove the upper transmission to engine bolts (1, 2, 3).

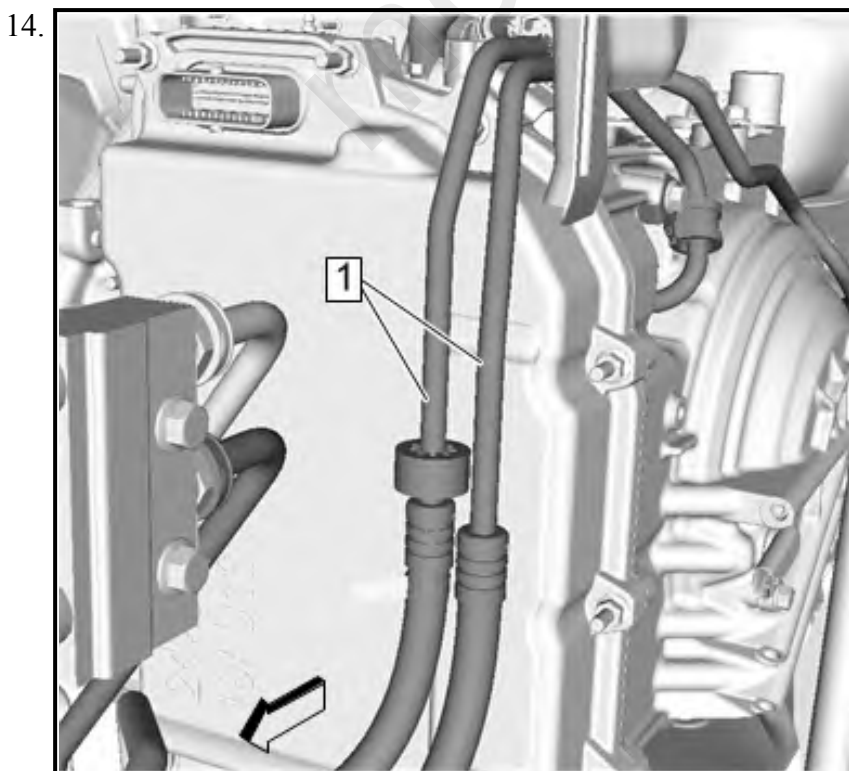
6. Remove the oil pump flow control valve heat shield from the engine. [Oil Pump Flow Control Valve Heat Shield Replacement](#)





Remove the front upper transmission to engine bolts (1, 2).

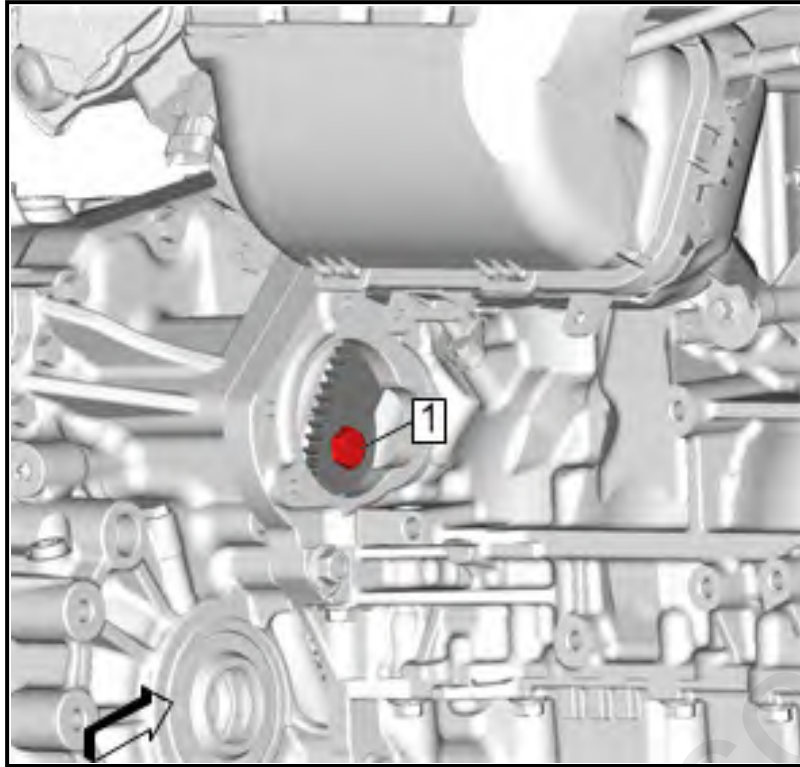
8. Remove the drivetrain and front suspension cradle. [Drivetrain and Front Suspension Cradle Removal and Installation \(Front Wheel Drive\)](#)
9. Remove the auxiliary water pump from the rear of the transmission, then position out of the way. [Auxiliary Water Pump Replacement \(LTG\)](#)
10. Drain the transmission fluid. [Transmission Fluid Drain and Fill](#)
11. Disconnect the wheel drive shaft from the transmission. [Front Wheel Drive Half Shaft Replacement - Left Side](#)
12. Remove the front wheel drive shaft. [Front Wheel Drive Shaft Replacement - Right Side \(LTG with FWD\)](#)
13. Remove the rear transmission mount from the transmission. [Transmission Mount Strut Replacement \(Front Wheel Drive\)](#)



Disconnect and reposition the transmission fluid cooler inlet and outlet pipes (1) from the transmission. [Transmission Fluid Cooler Inlet Pipe Replacement \(LTG\)](#) and [Transmission](#)

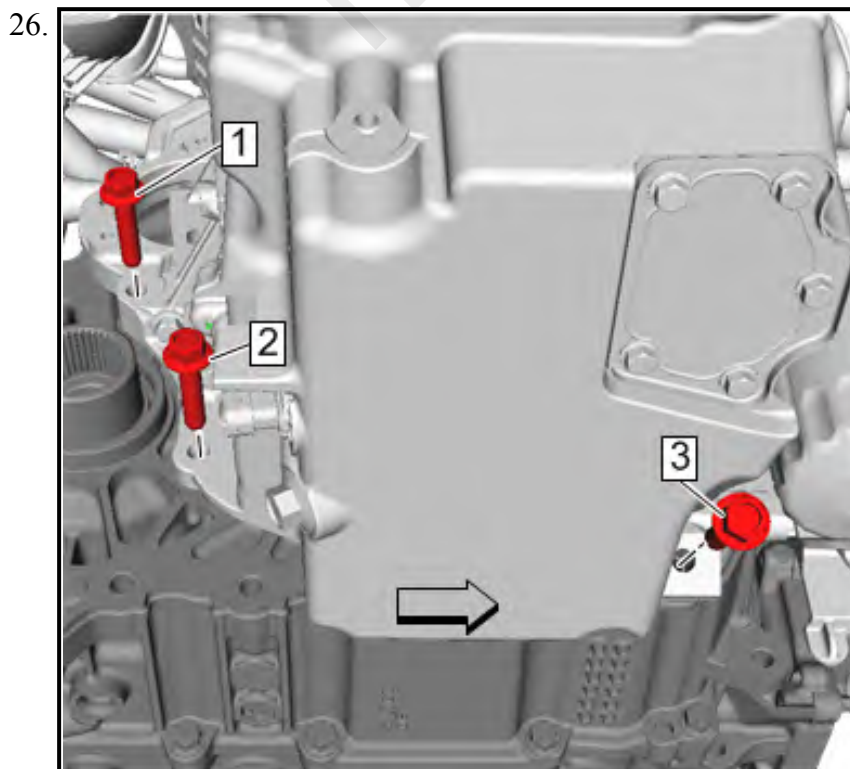
Fluid Cooler Outlet Pipe Replacement (LTG)

15. Plug and/or cap the hose and transmission to prevent contamination.
16. Remove the starter. [Starter Replacement \(LTG - Front Wheel Drive\)](#)
17. Mark the relationship of the flexplate to the torque converter for reassembly.
- 18.



Remove the torque converter to flexplate bolts (1).

19. Lower the vehicle.
20. Remove the left transmission mount. [Transmission Mount Replacement \(Left\)](#)
21. Remove the front transmission mount. [Transmission Mount Replacement \(Front\)](#)
22. Lower the transmission side with the support fixture to allow clearance for removal.
23. Unclip the engine wiring harness from the transmission.
24. Raise the vehicle.
25. Use a transmission jack in order to support the transmission.



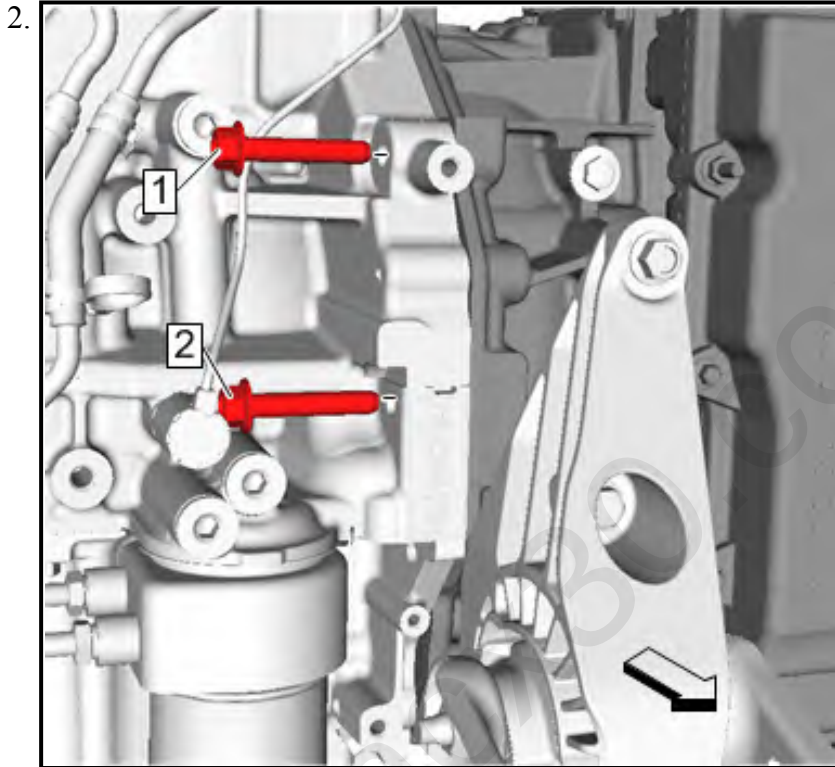
Remove the rear and bottom transmission bolts (1, 2, 3).

NOTE: Ensure the torque converter remains securely in place on the transmission input shaft while separating and removing the transmission.

27. Separate the transmission from the engine.
28. Lower the transmission with the transmission jack far enough to remove the transmission.
29. Transfer components as necessary.
30. Flush and flow test the transmission oil cooler and lines. [Transmission Fluid Cooler Flow Test and Flushing](#)

Installation Procedure

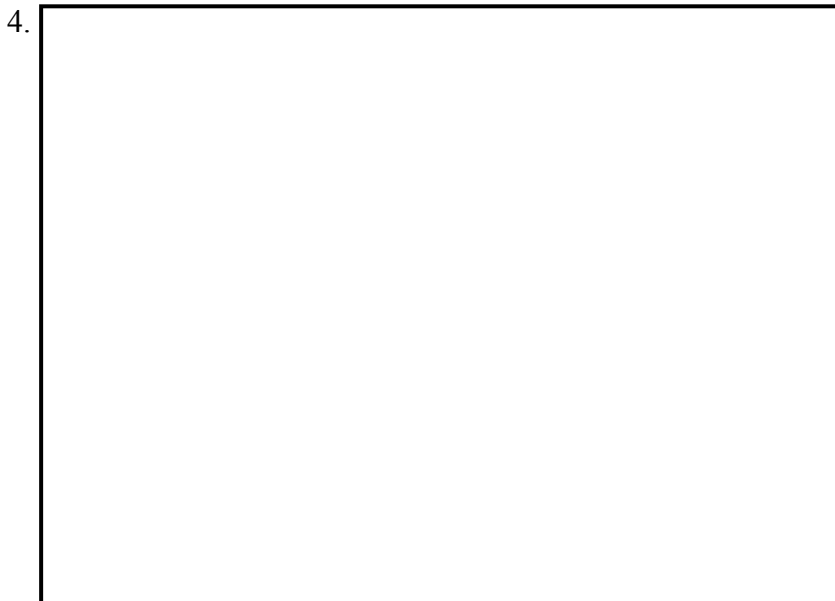
1. Raise the transmission with the transmission jack and position the transmission to the engine.

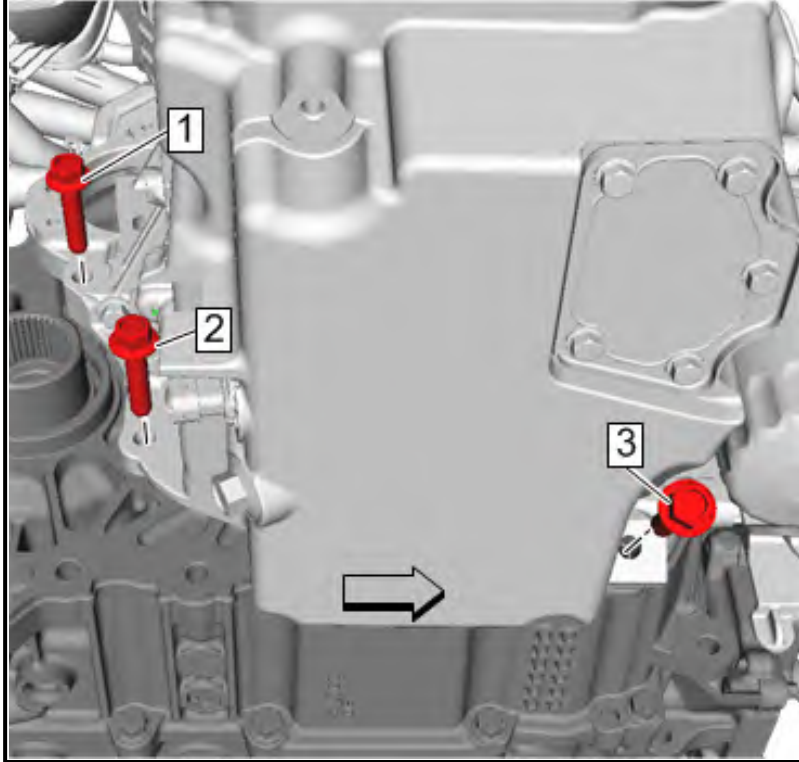


CAUTION: Refer to [Fastener Caution](#) .

Install the front transmission bolts (1, 2) and tighten to 58 N.m (43 lb ft).

3. Install the oil pump flow control valve heat shield to the engine. [Oil Pump Flow Control Valve Heat Shield Replacement](#)

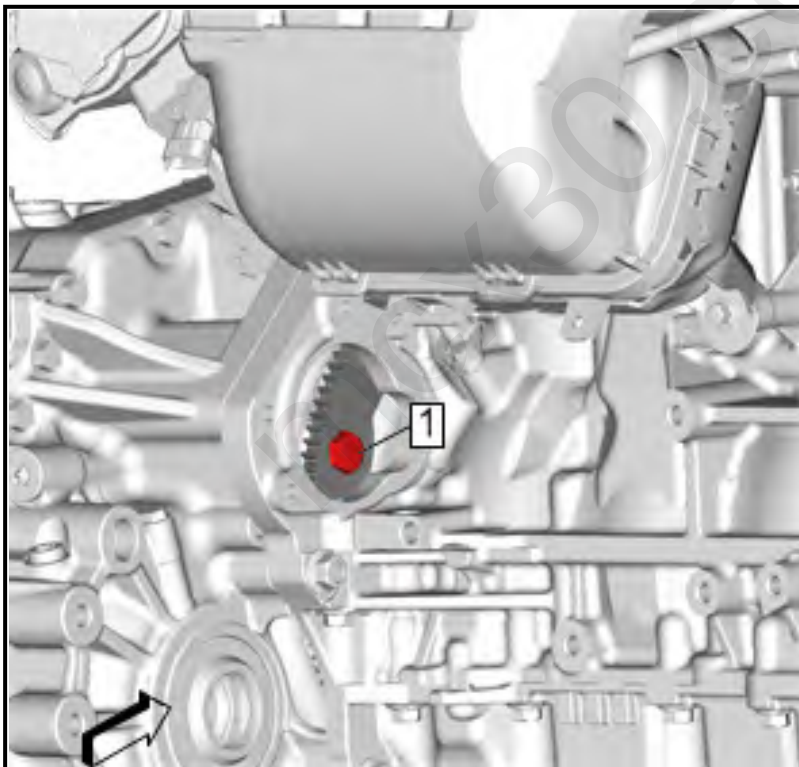




Install the rear and bottom transmission to engine bolts (1, 2, 3) and tighten to 58 N.m (43 lb ft).

5. Remove the transmission jack.
6. Align the mark of the flexplate to the mark on the torque converter for reassembly.

7.

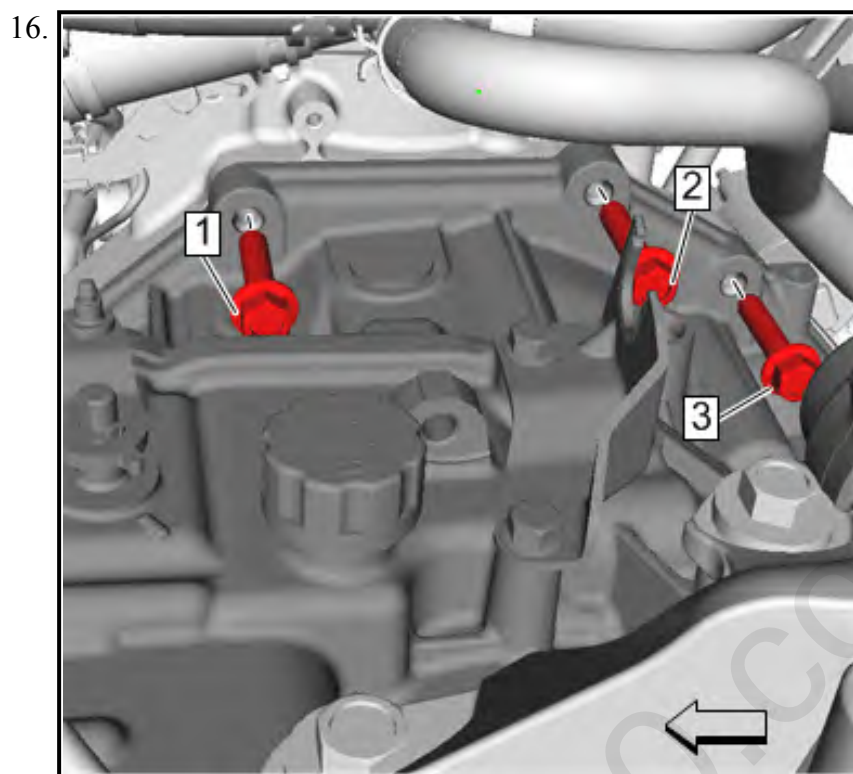


NOTE: If reusing the torque converter bolts, clean the threads and apply threadlocker to the threads prior to installation. [Adhesives, Fluids, Lubricants, and Sealers](#)

Install the torque converter to flexplate bolts (1) and tighten to 60 N.m (44 lb ft).

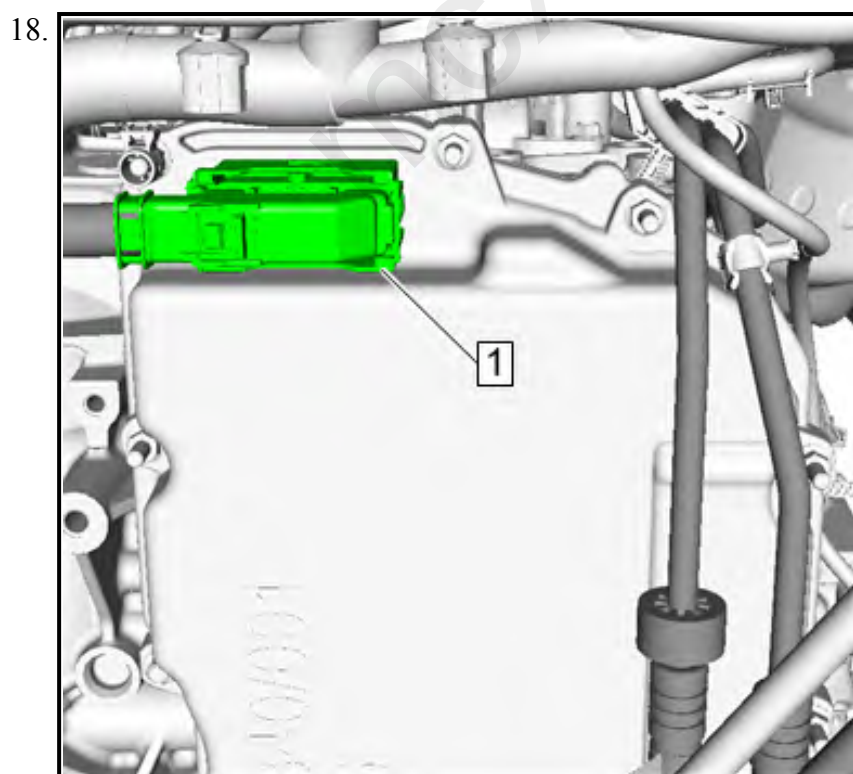
8. Install the starter. [Starter Replacement \(LTG - Front Wheel Drive\)](#)
9. Install the left transmission mount. [Transmission Mount Replacement \(Left\)](#)
10. Install the front transmission mount. [Transmission Mount Replacement \(Front\)](#)
11. Install the wheel drive shaft to the transmission. [Front Wheel Drive Half Shaft Replacement - Left Side](#)

12. Install the front wheel drive shaft. [Front Wheel Drive Shaft Replacement - Right Side \(LTG with FWD\)](#)
13. Install the auxiliary water pump to the rear of the transmission. [Auxiliary Water Pump Replacement \(LTG\)](#)
14. Install the drivetrain and front suspension cradle. [Drivetrain and Front Suspension Cradle Removal and Installation \(Front Wheel Drive\)](#)
15. Install the rear transmission mount strut to the transmission. [Transmission Mount Strut Replacement \(Front Wheel Drive\)](#)



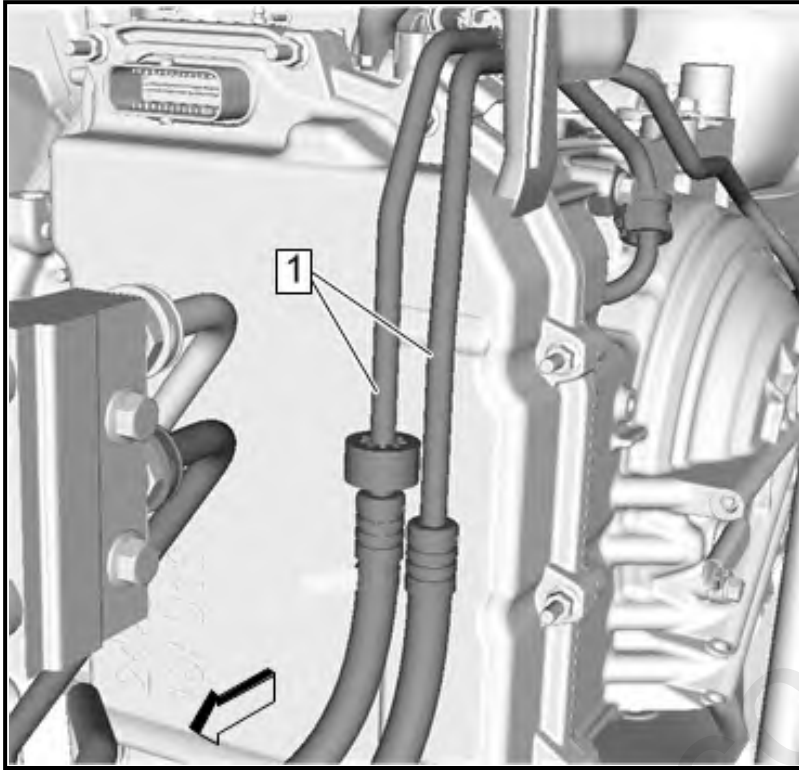
Install the upper transmission to engine bolts (1, 2, 3) and tighten to 58 N.m (43 lb ft).

17. Remove the engine support fixture. [Engine Support Fixture](#)



Connect the control valve body transmission control module electrical connector (1), then clip the wiring harness from the cover.

19. Install the transmission range select lever cable to the transmission. [Automatic Transmission Range Selector Lever Cable Replacement](#)
20. Adjust the automatic transmission range selector lever cable. [Range Selector Lever Cable Adjustment](#)
21. Clip the engine wiring harness to the transmission.
- 22.



Connect and reposition the transmission fluid cooler inlet and outlet pipes (1) to the transmission. [Transmission Fluid Cooler Inlet Pipe Replacement \(LTG\)](#) and [Transmission Fluid Cooler Outlet Pipe Replacement \(LTG\)](#).

23. Fill the transmission with fluid. [Transmission Fluid Drain and Fill](#)
24. Clip the engine wiring harness to the transmission.
25. Install the charge air cooler outlet pipe. [Charge Air Cooler Outlet Air Hose Replacement](#)
26. If a NEW TCM has been installed into the vehicle, the NEW module needs to be reprogrammed. [Service Programming System \(SPS\)](#).

NOTE: The Transmission Adaptive Values Learn procedure must be performed when one of the following repairs have been made to the vehicle. Failure to perform the procedure after one of the following repairs may result in poor transmission performance, as well as transmission DTCs being set:

- Transmission internal service/overhaul
- Valve body repair or replacement
- Control solenoid valve assembly replacement
- TCM software/calibration update
- Any service in response to a shift quality concern

27. Perform the solenoid valve characterization reprogramming procedure. [Solenoid Valve Characterization Reprogramming](#)
 28. Road test the vehicle.
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