

Abnormal Buzz/Groan Noise at 20 - 30 mph From Front Transfer Case

Service Category Drivetrain

Section Transfer/4wd/Awd

Market USA

Toyota Supports
 ASE Certification 

Applicability

YEAR(S)	MODEL(S)	ADDITIONAL INFORMATION
2019	RAV4	

REVISION NOTICE

July 29, 2020 Rev1:

- The entire bulletin has been updated.
- Any previous printed versions of this bulletin should be discarded.

SUPERSESION NOTICE

The information contained in this bulletin supersedes Service Bulletin No. T-SB-0065-19.

- Production Change Information section has been updated.
- Service Bulletin No. T-SB-0065-19 is obsolete and any printed versions should be discarded.

Introduction

Some 2019 model year RAV4 Adventure and Limited grade AWD vehicles may exhibit an abnormal buzz/groan noise from the front transfer case at 20 – 30 mph when accelerating from a stop and/or at 20 – 13 mph on deceleration after driving the vehicle for 15 – 20 minutes or more. This condition occurs with Normal drive mode selected during disconnect/connect timing of the AWD system. Follow the Repair Procedure in this bulletin to address this condition.

NOTE

This Service Bulletin ONLY applies to 2019 model year RAV4 Adventure and Limited grade vehicles with torque vectoring AWD system.

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Production Change Information

Production change information for hardware changes to front transfer case assembly **ONLY**. This bulletin applies to vehicles produced **BEFORE** the Production Change Effective VINs shown below.

MODEL	PLANT	DRIVETRAIN	PRODUCTION CHANGE EFFECTIVE VIN
RAV4	TMMC - C	AWD	2T3N1RFV#KC053454
			2T3J1RFV#KC053454
	TMMC - W		2T3N1RFV#KW080109
			2T3J1RFV#KW080109
	Takaoka		JTMN1RFV#KJ023026
	Shokki #1		JTMN1RFV#KD041318
	Shokki #2		JTMN1RFV#KD522367

Warranty Information

OP CODE	DESCRIPTION	TIME	OFF	T1	T2
TC1902	R & R Front Transfer Case Electro-magnetic Clutch Assembly	3.5	41406-42010	91	19
Combo A	Reprogram 4WD ECU	0.4			

APPLICABLE WARRANTY

- This repair is covered under the Toyota Powertrain Warranty. This warranty is in effect for 60 months or 60,000 miles, whichever occurs first, from the vehicle's in-service date.
- Warranty application is limited to occurrence of the specified condition described in this bulletin.

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Parts Information

PART NUMBER		PART NAME	QTY
PREVIOUS	NEW		
41406-42010	41406-42012	Electro-magnetic Clutch Assy	1
90301-99240		O-ring*	1
89630-42130 89630-42140	89630-42160	Computer Assy, 4WD	-
90430-18008	90430-A0003	Transaxle Refill/Overflow Plug Gasket*	2
90341-18035		Drain Plug	1
12157-10010		Front Transfer Case Refill/Drain Plug Gasket*	2
90311-35056		Passenger Front Axle Seal*	1
90177-22001	90080-17238	Nut, Lock*	1
90119-10461		Bolt, W/Washer*	1
90521-75002		Ring, Hole Snap*	1
00289-ATFWS		Automatic Transmission Fluid WS	4
08885-02606		Front Transfer Case Gear Oil (LX85 LSD Type)	1
00451-00001-LBL		Authorized Modifications Labels	1

*Nonreusable part.

NOTE

- The 4WD ECU should NOT be replaced as part of the Repair Procedure.
- Authorized Modifications Labels may be ordered in packages of 25 from the Materials Distribution Center (MDC) through *Dealer Daily – Parts – Dealer Support Materials Orders*.

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Required Tools & Equipment

REQUIRED TOOLS & MATERIAL	PART NUMBER	QUANTITY
Body Grease W	08887-02007	1
MP (Multi-purpose) Grease	–	As Needed

REQUIRED EQUIPMENT	SUPPLIER	PART NUMBER	QTY
Techstream ADVI*	ADE	TSADVUNIT	1
Techstream 2.0		TS2UNIT	
Techstream Lite		TSLITEPDLR01	
Techstream Lite (Green Cable)		TSLP2DLR01	
ChassisEAR™ (or equivalent)		JSP06608	1

*Essential SST.

NOTE

- Only ONE of the Techstream units listed above is required.
- Software version 15.00.028 or later is required.
- ChassisEAR™ and Additional Techstream units may be ordered by calling Approved Dealer Equipment (ADE) at 1-800-368-6787. Additional Techstream units may be ordered by calling Approved Dealer Equipment (ADE) at 1-800-368-6787.

SPECIAL SERVICE TOOLS (SST)	PART NUMBER	QTY
Battery Diagnostic Tool*	DCA-8000P T	1

* Essential SST.

NOTE

Additional SSTs may be ordered by calling 1-800-933-8335.

Calibration Information

GRADE	ECU	CALIBRATION ID	
		PREVIOUS	NEW
Adventure	4WD ECU	F15364209200	F15364212000
Limited		F15364210000	

Abnormal Buzz/Groan Noise at 20 - 30 mph From Front Transfer Case

Repair Procedure

1. Confirm the vehicle exhibits an abnormal buzz/groan noise from the front transfer case during one or both of the following conditions.
 - Driving at 20 – 30 mph when accelerating from a stop during AWD system disconnect timing.
 - Driving at 20 – 13 mph on deceleration during AWD system connect timing.

Refer to the buzz/groan noise example video link:

[Buzz/Groan Noise Example Video](#)

NOTE

- Use ChassisEAR™ to confirm the noise is coming from the front transfer case.
- Monitor the 4WD ECU Data List “Front and rear axle coupling position sensor status” to confirm the noise is occurring at AWD system disconnect and/or connect timing.

HINT

While driving above 20 mph, the system can be manually switched back and forth from disconnect to connect by switching drive mode from Normal to Sport.

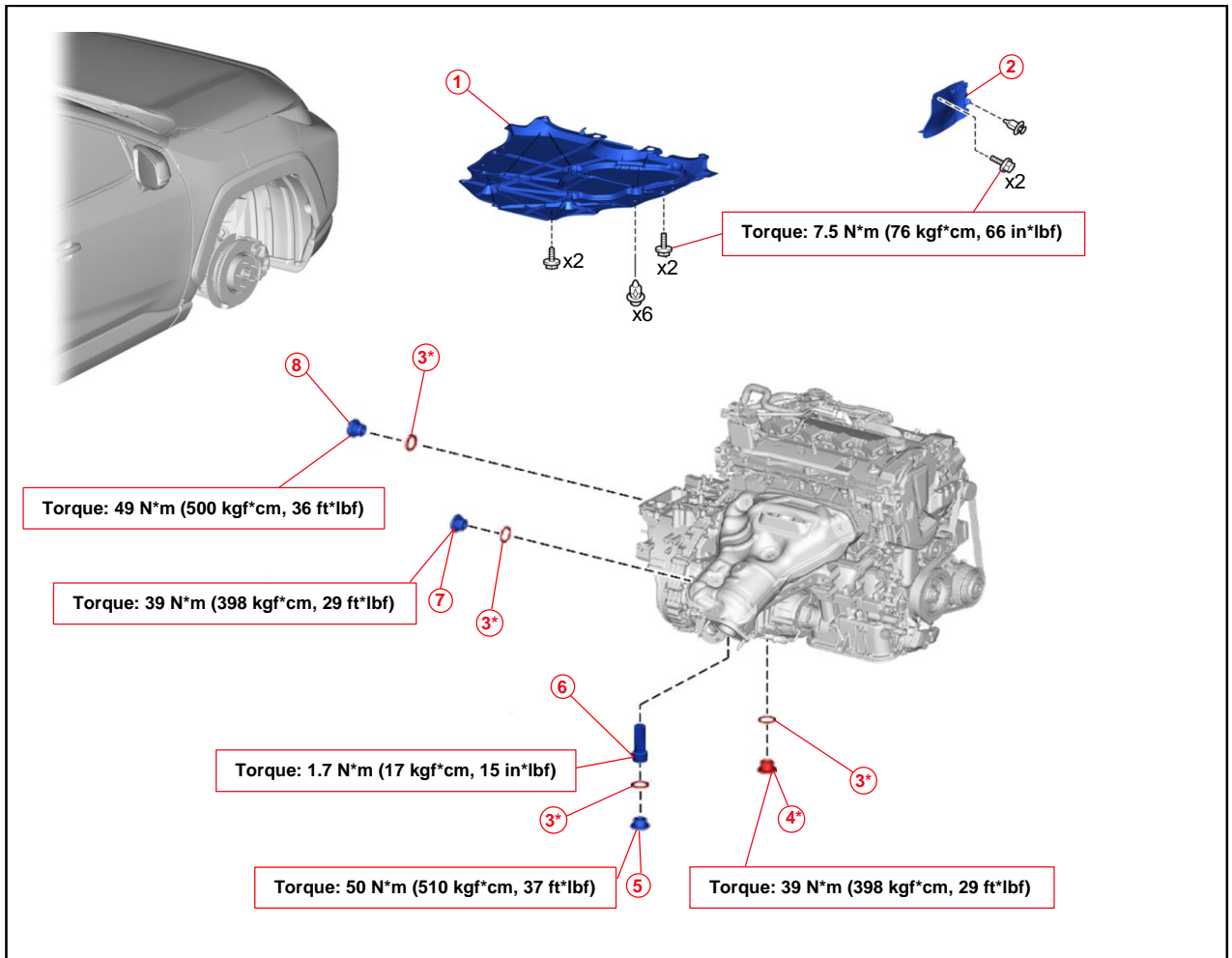
Does the vehicle exhibit an abnormal buzz/groan noise from the front transfer case during one or both conditions described above?

- **YES** — Review Figure 1 and Figure 2 (pgs. 6 and 7) and complete the rest of the Repair Procedure in this bulletin.
- **NO** — This bulletin does NOT apply. Continue diagnosis using the applicable Repair Manual.

Abnormal Buzz/Groan Noise at 20 - 30 mph From Front Transfer Case

Repair Procedure (continued)

Figure 1. Component Overview 1 of 2



1	No. 2 Engine Under Cover Assembly
2	Front Fender Apron Seal RH
3	Gasket*
4	Transfer Drain Plug

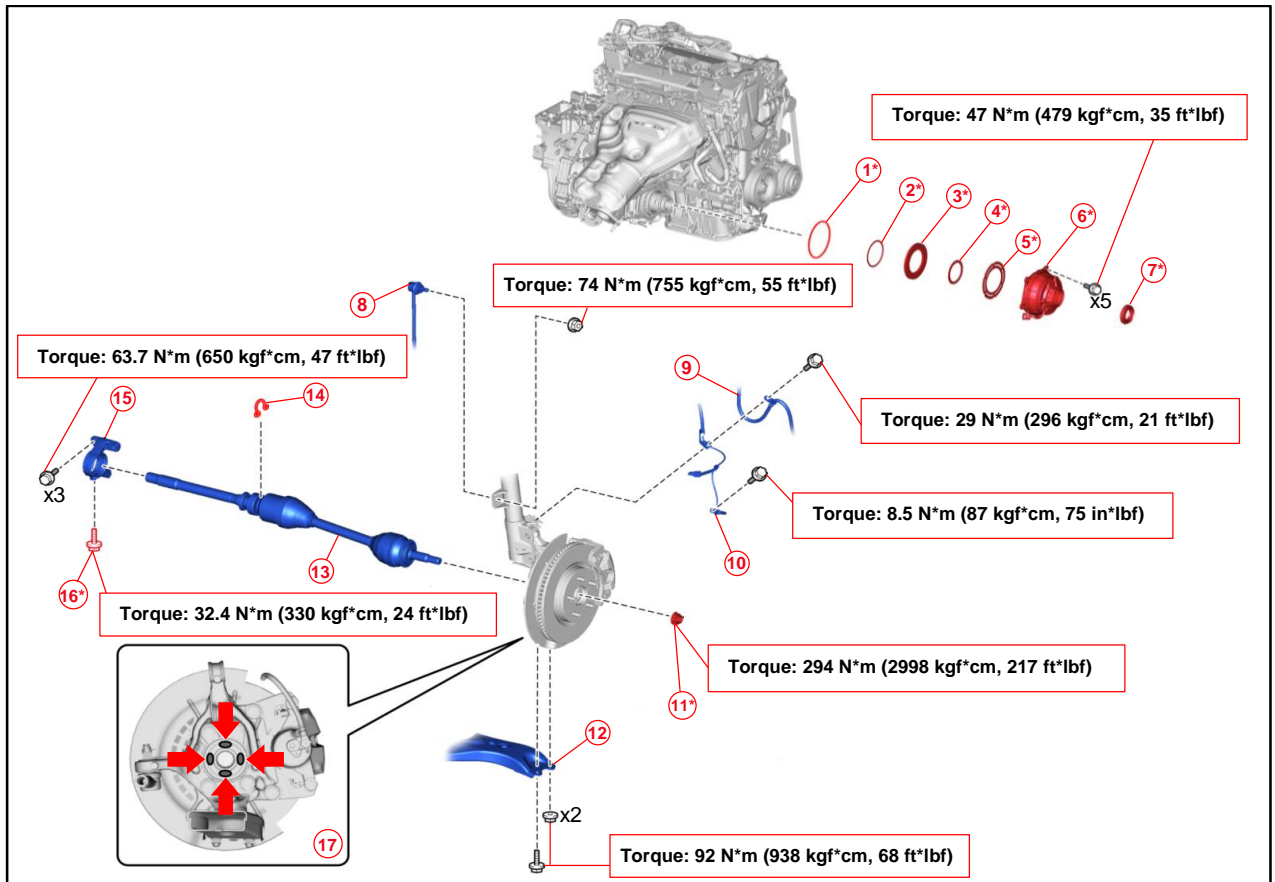
5	Overflow Plug
6	No. 1 Transmission Oil Filter Tube
7	Transfer Filler Plug
8	Refill Plug

*Component to be replaced.

Abnormal Buzz/Groan Noise at 20 - 30 mph From Front Transfer Case

Repair Procedure (continued)

Figure 2. Component Overview 2 of 2



1	O-ring
2	Shim*
3	Armature Plate*
4	Thrust Roller Bearing*
5	Outer Plate*
6	Cover*
7	Front Transfer Case Oil Seal (MP Grease)
8	Front Stabilizer Link Assembly RH
9	Front Flexible Hose

10	Front Speed Sensor RH
11	Front Axle Shaft Nut RH (Do not Apply Lubricant to Threaded Parts)
12	Front Lower No. 1 Suspension Arm Assembly RH
13	Front Drive Shaft Assembly RH
14	Drive Shaft Bearing Bracket Hole Snap Ring
15	Drive Shaft Bearing Bracket
16	Bolt
17	Toyota Body Grease W (Application Area)

*Component to be replaced. (Component is part of the front transfer case electro-magnetic clutch assembly.)

NOTE

Tighten torque for major areas involving basic vehicle performance, such as moving, turning, and stopping.

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Repair Procedure (continued)

Front Transfer Case Electro-magnetic Clutch Assembly Removal

1. Remove the front drive shaft assembly RH.

NOTE

Make sure to drain ALL automatic transaxle fluid and transfer oil BEFORE drive shaft removal to prevent the two oils from mixing.

Refer to TIS, applicable model and model year Repair Manual:

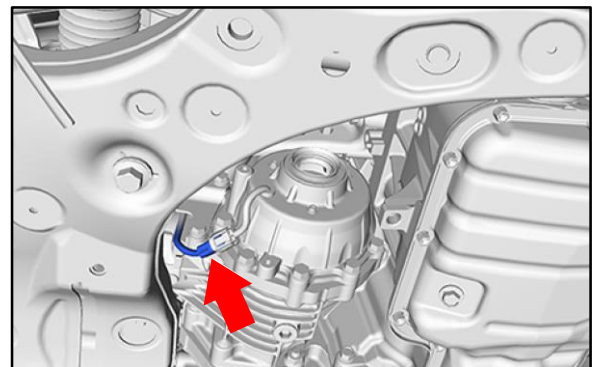
- 2019 RAV4:
Drivetrain – Drive Shaft/Propeller Shaft – [“Drive Shaft / Propeller Shaft: Front Drive Shaft Assembly \(for AWD\): Removal”](#)

NOTICE

Discard the old front transfer case assembly drain plug AFTER removal.
Do NOT reuse the old drain plug.

2. Remove the drive shaft bearing bracket.
3. Remove the transfer case electro-magnetic clutch.
 - A. Disconnect the connector.

Figure 3.



Abnormal Buzz/Groan Noise at 20 - 30 mph From Front Transfer Case

Repair Procedure (continued)

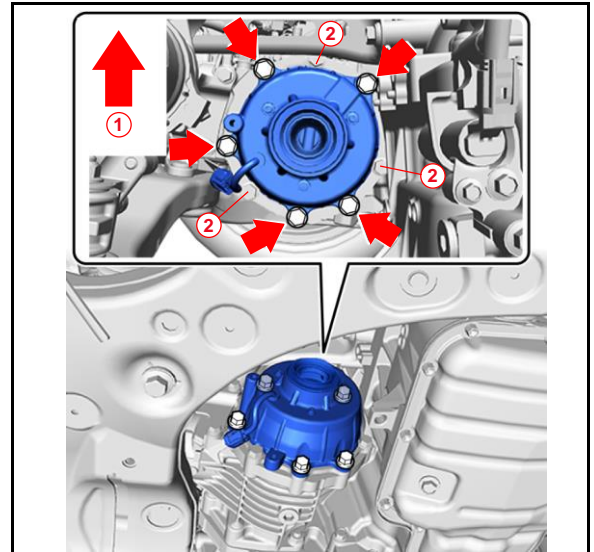
Front Transfer Case Electro-magnetic Clutch Assembly Removal (continued)

- B. Remove the five bolts and electro-magnetic clutch assembly cover.
Do NOT remove the three bolts attaching the ring gear assembly housing to the transfer case.

NOTE

Gently remove the cover to prevent the disconnect shaft from being pulled out with the electro-magnetic clutch assembly.

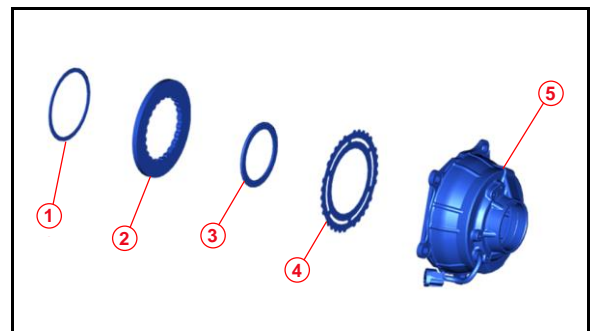
Figure 4.



1	Vehicle Upward
2	Bolt (Do not Remove)

- C. Remove the shim, armature plate, thrust roller bearing, outer plate, and cover.
D. Mark and store the five removed components in a container for removed components to avoid reinstalling them in error.

Figure 5.



1	Shim
2	Armature Plate
3	Thrust Roller Bearing
4	Outer Plate
5	Cover

Abnormal Buzz/Groan Noise at 20 - 30 mph From Front Transfer Case

Repair Procedure (continued)

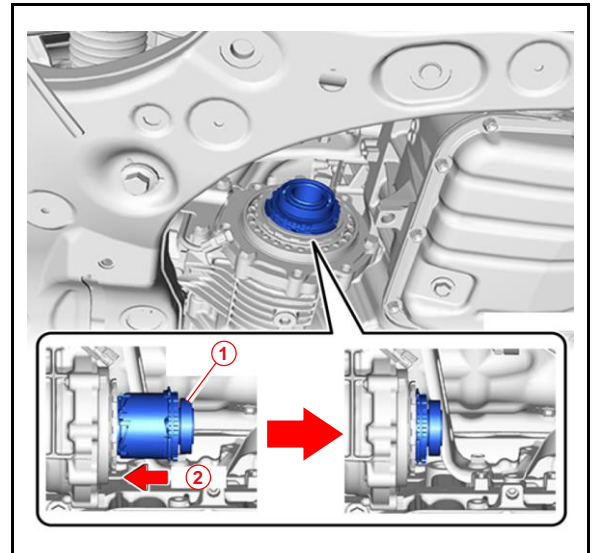
Front Transfer Case Electro-magnetic Clutch Assembly Removal (continued)

- E. If the disconnect shaft is pulled out together with the electro-magnetic clutch cover, push it toward the vehicle inner side (automatic transaxle side).

NOTE

Make sure to push the disconnect shaft back to its original position to ensure proper installation of the NEW electro-magnetic clutch.

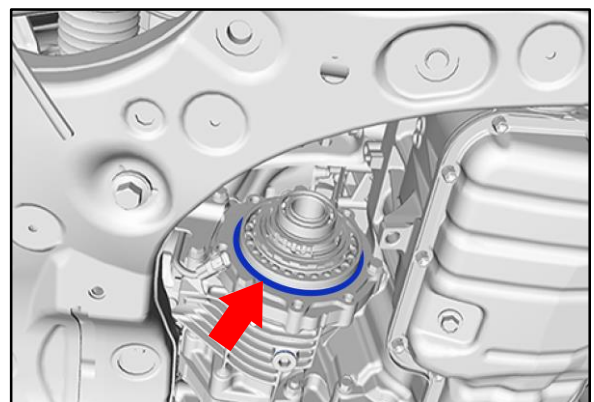
Figure 6.



1	Shaft
2	Push

- F. Remove the O-ring.
- G. Destroy the removed O-ring and store it in a container for removed components to avoid reinstalling it in error.

Figure 7.



Abnormal Buzz/Groan Noise at 20 - 30 mph From Front Transfer Case

Repair Procedure (continued)

Front Transfer Case Electro-magnetic Clutch Assembly Installation

1. Install the NEW front transfer case electro-magnetic clutch.
 - A. Make sure the outer plate is securely installed to the NEW front transfer case electro-magnetic clutch cover.

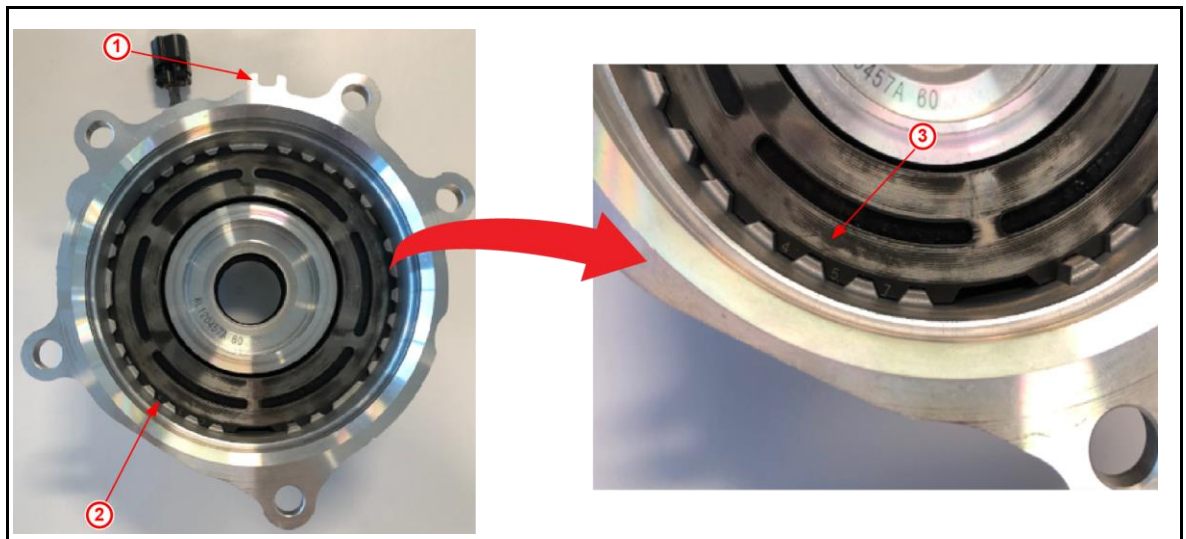
NOTE

- Do NOT exchange ANY component of the NEW front transfer case electro-magnetic clutch, in which shim adjustment has been made, with ANY other kit component.
- Do NOT disassemble the outer plate from the cover of the NEW electro-magnetic clutch.

Key Points:

- Engraved markings **MUST** be visible.
When installed, engraved markings (numbers) will face inward toward the front transfer case/transaxle.
- Outer plate is clocked correctly out of the box as NEW part (it is important to NOT remove the outer plate from the EMC cover).
The reason for NOT removing the outer plate is because it can be easily bent/damaged (there is no reason to handle outside of the cover).

Figure 8.



1	Engraved Markings Clocked Near 180° From This Notch
2	Engraved Markings: Correct Position Right Out of the Box as New Part
3	Engraved Markings

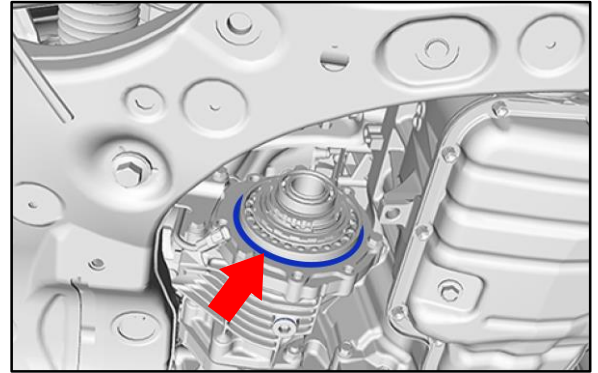
Abnormal Buzz/Groan Noise at 20 - 30 mph From Front Transfer Case

Repair Procedure (continued)

Front Transfer Case Electro-magnetic Clutch Assembly Installation (continued)

B. Install the NEW O-ring.

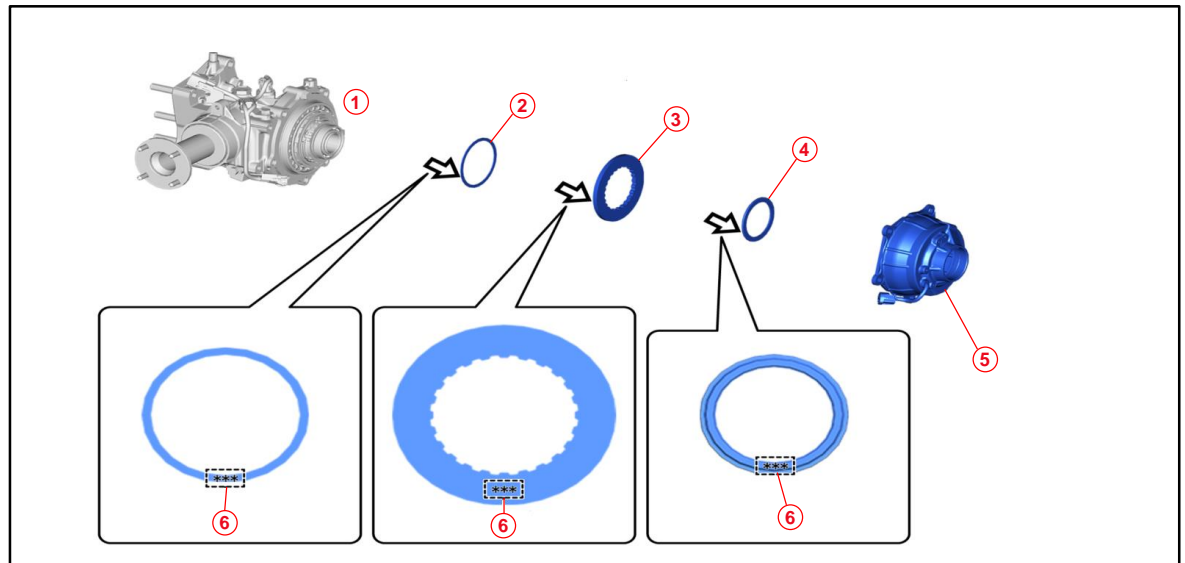
Figure 9.



NOTE

A NEW shim, armature plate, and thrust roller bearing MUST be installed to the front transfer case with the engraved mark surfaces facing the vehicle inner side (automatic transaxle side). If engraved markings are visible AFTER installation of either shim, armature, and/or needle bearing, the customer may experience the same buzz/groan noise concern AFTER the repair. Ensure the engraved markings are NOT visible when installing these three components.

Figure 10.



1	Engraved Marks Facing Toward Vehicle Inner Side (Automatic Transaxle Side)
2	Shim
3	Armature Plate

4	Thrust Roller Bearing
5	Cover With Outer Plate
6	Engraved Mark

Abnormal Buzz/Groan Noise at 20 - 30 mph From Front Transfer Case

Repair Procedure (continued)

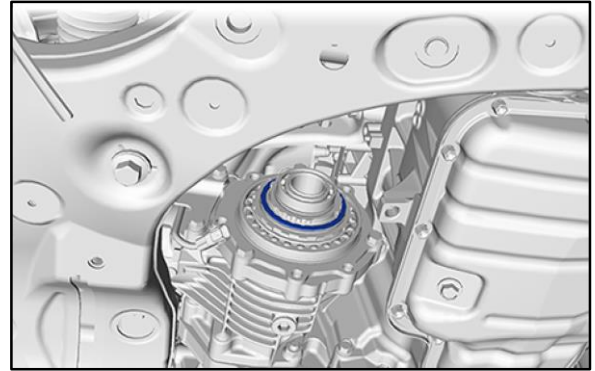
Front Transfer Case Electro-magnetic Clutch Assembly Installation (continued)

- C. Install the NEW shim to the front transfer case with its engraved mark surface facing the vehicle inner side (automatic transaxle side).

NOTE

AFTER proper installation, the engraved mark should NOT be visible.

Figure 11.

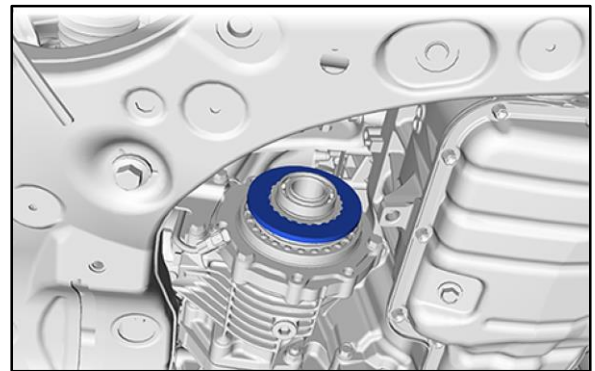


- D. Install the NEW armature plate to the front transfer case with its engraved mark surface facing the vehicle inner side (automatic transaxle side).

NOTE

AFTER proper installation, the engraved mark should NOT be visible.

Figure 12.



Abnormal Buzz/Groan Noise at 20 - 30 mph From Front Transfer Case

Repair Procedure (continued)

Front Transfer Case Electro-magnetic Clutch Assembly Installation (continued)

- E. Install the NEW thrust roller bearing to the front transfer case with its engraved mark surface facing the vehicle inner side (automatic transaxle side).

NOTE

AFTER proper installation, the engraved mark should NOT be visible.

Figure 13.

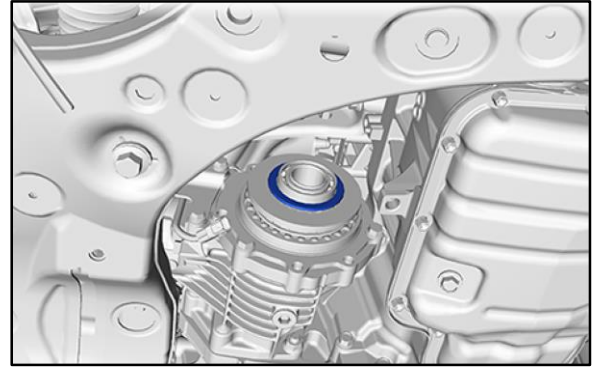
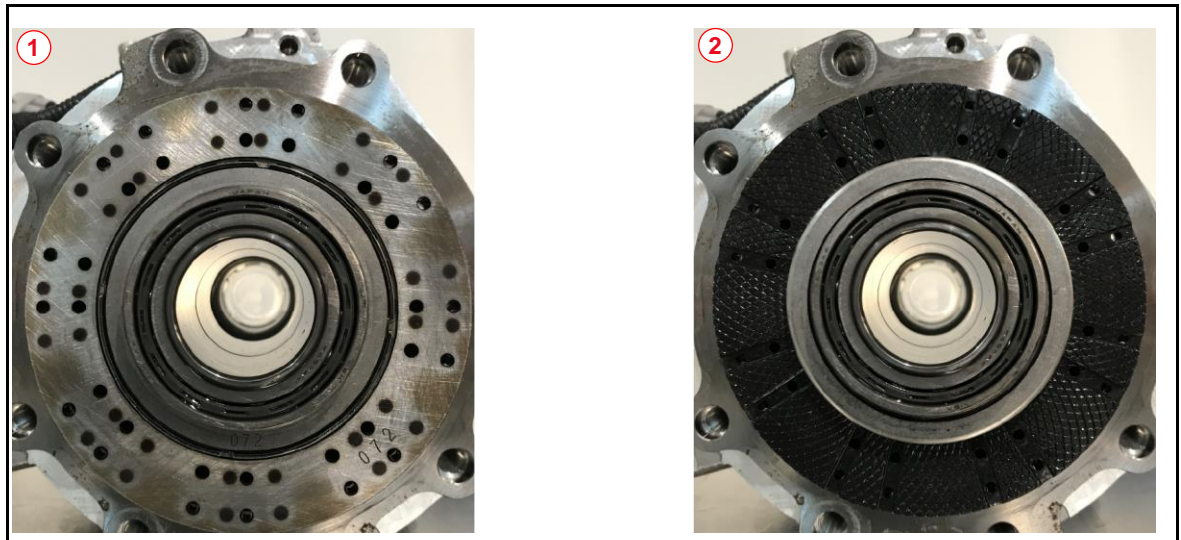


Figure 14. No Good vs OK Condition



1	No Good Condition
2	OK Condition

Abnormal Buzz/Groan Noise at 20 - 30 mph From Front Transfer Case

Repair Procedure (continued)

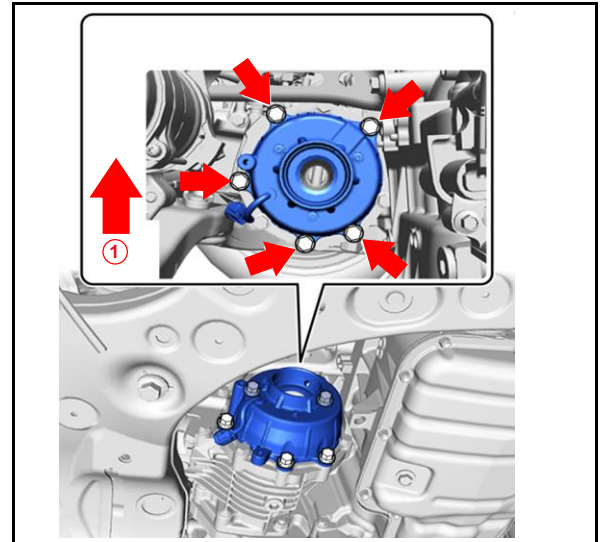
Front Transfer Case Electro-magnetic Clutch Assembly Installation (continued)

- F. Clean the surface where the NEW front transfer case electro-magnetic clutch cover will be installed.
- G. Temporarily install the NEW front transfer case electro-magnetic clutch cover together with the outer plate to the front transfer case with the five bolts.

NOTE

- Do NOT disassemble the outer plate from the front NEW front transfer case electro-magnetic clutch.
- Install the cover straight to prevent the outer plate from moving out of place.
- Temporarily install the cover together with the outer plate by tightening the five bolts by hand. There will be clearance of approximately 1 mm between the front transfer case and the cover BEFORE fully tightening the bolts to specified torque.

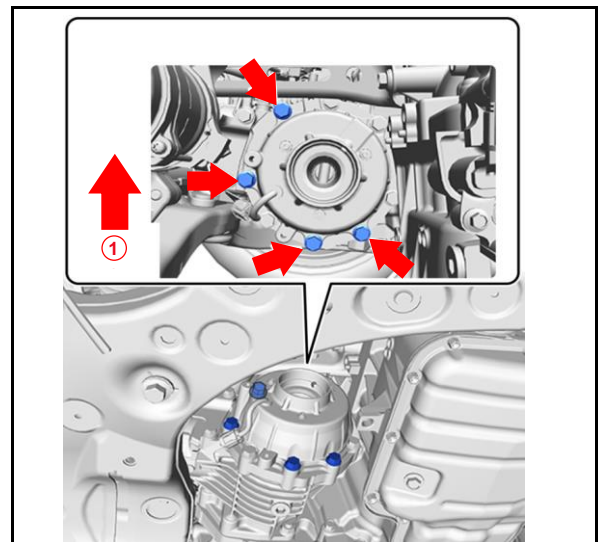
Figure 15.



1 Vehicle Upward

- H. Tighten the four bolts.
Torque: 47 N*m (479 kgf*cm, 35 ft*lbf)

Figure 16.



1 Vehicle Upward

Abnormal Buzz/Groan Noise at 20 - 30 mph From Front Transfer Case

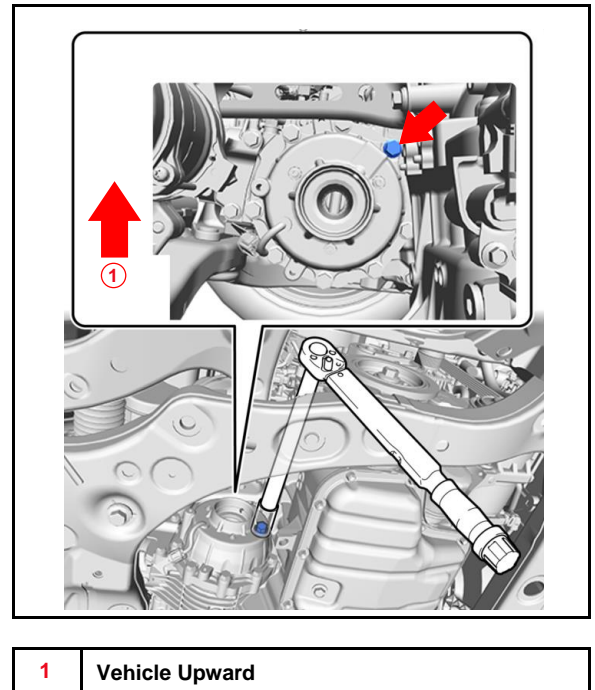
Repair Procedure (continued)

Front Transfer Case Electro-magnetic Clutch Assembly Installation (continued)

- I. Using a 14-mm socket wrench with extensions, tighten the remaining cover bolt.

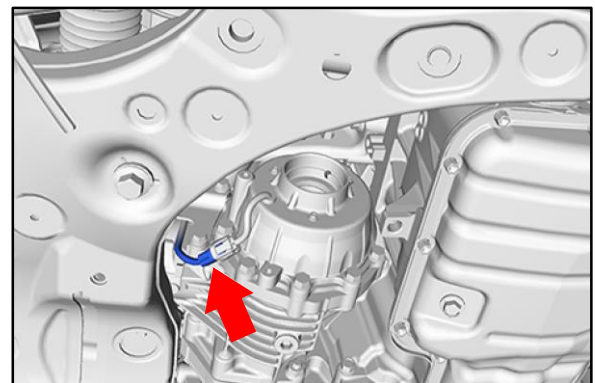
Torque: 47 N*m (479 kgf*cm, 35 ft*lbf)

Figure 17.



- J. Connect the connector.

Figure 18.



2. Install the NEW front transfer case oil seal RH.
3. Reinstall the drive shaft bearing bracket.
Torque: 63.7 N*m (650 kgf*cm, 47 ft*lbf)

Abnormal Buzz/Groan Noise at 20 - 30 mph From Front Transfer Case

Repair Procedure (continued)

Front Transfer Case Electro-magnetic Clutch Assembly Installation (continued)

4. Reinstall the front drive shaft assembly RH.
Refer to TIS, applicable model and model year Repair Manual:
 - 2019 RAV4:
Drivetrain – Drive Shaft/Propeller Shaft – [“Drive Shaft / Propeller Shaft: Front Drive Shaft Assembly \(for AWD\): Installation”](#)

5. Add automatic transaxle fluid.
Refer to TIS, applicable model and model year Repair Manual:
 - 2019 RAV4:
Drivetrain – Automatic Transmission/Transaxle – [“UB80E \(Automatic Transmission / Transaxle\): Automatic Transaxle Fluid: Adjustment”](#)

6. Install the NEW front transfer case assembly drain plug.

7. Add transfer oil.
Refer to TIS, applicable model and model year Repair Manual:
 - 2019 RAV4:
General – Maintenance – [“Maintenance: GF2A Transfer Oil: Replacement”](#)

8. Reinstall the front under cover and front wheel RH.

Abnormal Buzz/Groan Noise at 20 - 30 mph From Front Transfer Case

Repair Procedure (continued)

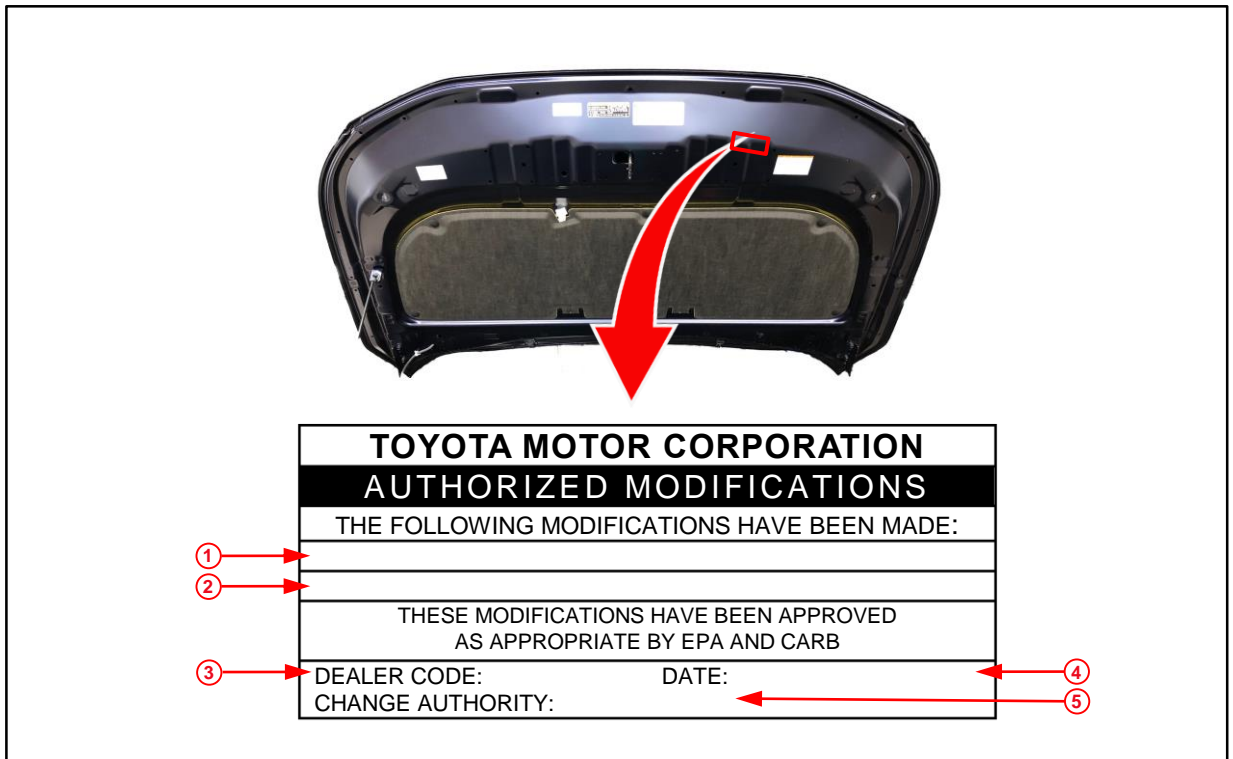
Front Transfer Case Electro-magnetic Clutch Assembly Installation (continued)

9. Use Techstream to confirm if the 4WD ECU calibration has been updated and check for the Authorized Modifications Label affixed to the vehicle in the location shown below.

Is the calibration ID listed in Techstream and on the label the latest 4WD ECU calibration?

- **YES** — Go to step 12.
- **NO** — Continue to step 10.

Figure 19. Location of Authorized Modifications Label on 2019 RAV4



1	Replacement ECM (PCM) Part Number (e.g., 89630-42160)
2	New Calibration ID (e.g., F15364212000)
3	Dealer Code

4	Date Completed
5	This SB Number

Abnormal Buzz/Groan Noise at 20 - 30 mph From Front Transfer Case

Repair Procedure (continued)

Front Transfer Case Electro-magnetic Clutch Assembly Installation (continued)

10. Flash reprogram the 4WD ECU.

NOTE

- The battery diagnostic tool **MUST** be used in Power Supply Mode to maintain battery voltage at 13.5V while flash reprogramming the vehicle.
- For details on how to use the battery diagnostic station, refer to the [DCA-8000 Instruction Manual](#) located at *TIS – Diagnostics – Tools & Equipment – Battery Diagnostics*.

Follow the procedures outlined in Service Bulletin [T-SB-0134-16](#), *Techstream ECU Flash Reprogramming Procedure*, and flash the 4WD ECU with the NEW calibration file update.

11. Prepare and install the Authorized Modifications Label.

A. Using a permanent marker, enter the following information on the label:

- 4WD ECU part number [*Refer to the **Parts Information** section for the **NEW PART NUMBER***]
- Calibration ID(s) [*Refer to the **Calibration Information** section for the **NEW CALIBRATION ID***]
- Dealer Code
- Repair Date
- Change Authority [***This bulletin number***]

B. Install the Authorized Modifications Label onto the vehicle at the location shown in Figure 19. The Authorized Modifications Label is available through the MDC, P/N 00451-00001-LBL.

12. Using Techstream, check for and clear ANY DTCs.

13. Inspect and adjust front wheel alignment.

Refer to TIS, applicable model and model year Repair Manual:

- 2019 RAV4:
Suspension – Alignment/Handling Diagnosis – [“Alignment / Handling Diagnosis: Front Wheel Alignment: Adjustment”](#)

14. Test-drive the vehicle and confirm the condition no longer exists.