TOYOTA
Technical Service Bulletin

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

November 20, 2019 Rev1:

- **The Introduction, Production Change Information, and Repair Procedure sections have been updated.**

Any previous printed versions of this bulletin 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 13 – 20 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.

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

Production Change Information

Production change information for hardware changes to front transfer case assembly **ONLY**.

MODEL	PLANT	DRIVETRAIN	PRODUCTION CHANGE EFFECTIVE VIN
RAV4	TMMC North	AWD	2T3J1RFV#4KC053454
	TMMC West		2T3N1RFV#1KW080109
	Takaoka		JTMD13FV#1KJ022931
	Shokki #1		JTMD13FV#30D041220
	Shokki #2		JTMD13FV#9LD522366

Warranty Information

OP CODE	DESCRIPTION	TIME	OFP	T1	T2
TC1902	R & R Front Transfer Case Electro-magnetic Clutch Assembly	3.5	41406-42010	91	19

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		
N/A	41406-42010	Electro-magnetic Clutch Assy	1
N/A	90301-99240	O-ring*	1
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		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

*Nonreusable part.

Required Tools & Equipment

REQUIRED EQUIPMENT	SUPPLIER	PART NUMBER	QTY
Techstream ADVi*	ADE	TSADVUNIT	1
Techstream 2.0		TS2UNIT	
Techstream Lite		TSLITEPDLR01	
Techstream Lite (Green Cable)		TSLP2DLR01	

*Essential SST.

NOTE

- Only ONE of the Techstream units listed above is required.
- Software version 14.20.019 or later is required.
- Additional Techstream units may be ordered by calling Approved Dealer Equipment (ADE) at 1-800-368-6787.

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

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

Repair Procedure

Diagnosis

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 13 – 20 mph on deceleration during AWD system connect timing

NOTE

- Use chassis ears 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.

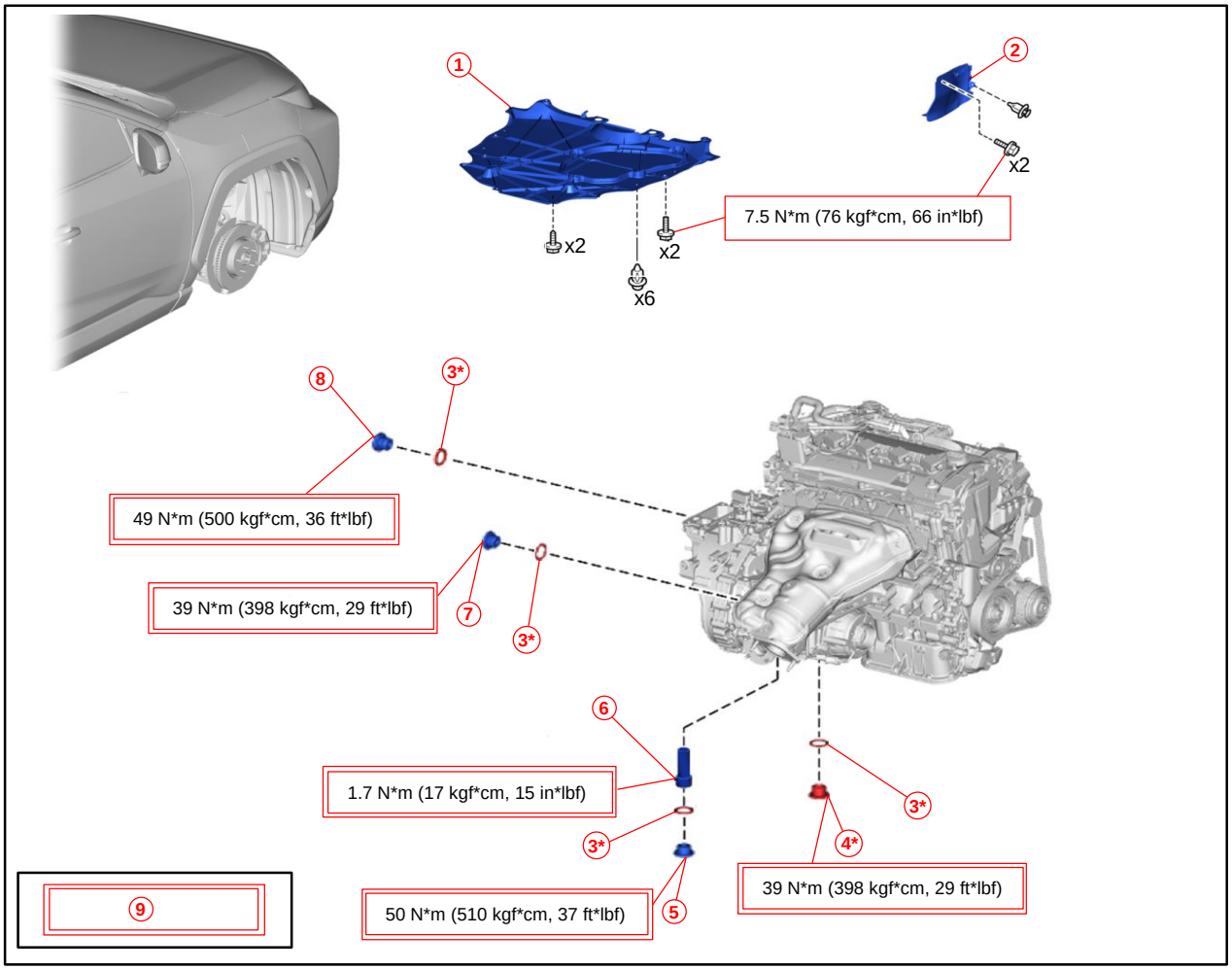
Does the vehicle exhibit an abnormal buzz/groan noise from the front transfer case during one or both conditions described above?

- **YES —** Review the Component Overview subsection (pgs. 5 and 6) and complete the Repair Procedure in this Service 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)

Component Overview (One of Two)



*Component to be replaced.

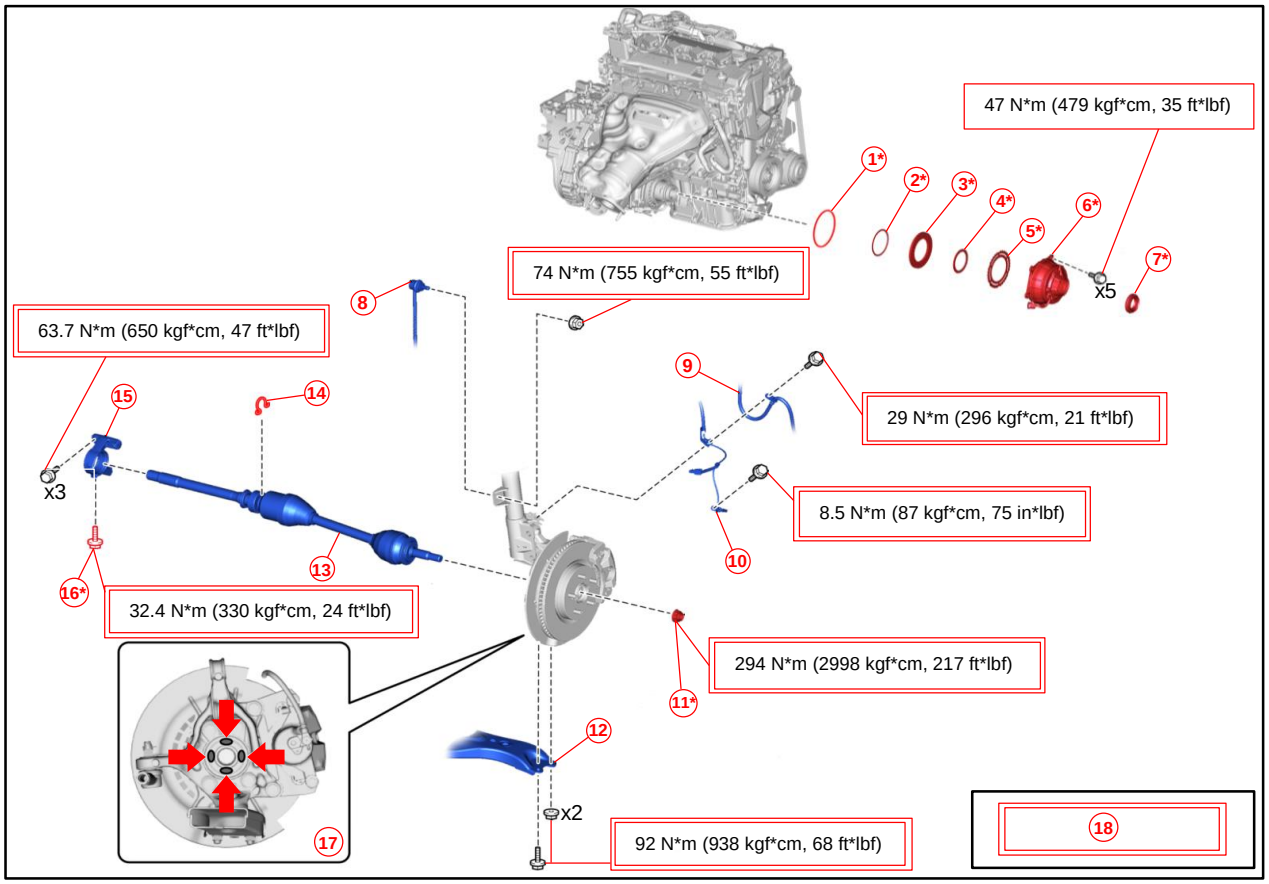
1	No. 2 Engine Under Cover Assembly
2	Front Fender Apron Seal RH
3	Gasket*
4	Transfer Drain Plug
5	Overflow Plug

6	No. 1 Transmission Oil Filter Tube
7	Transfer Filler Plug
8	Refill Plug
9	Torque Specification

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

Repair Procedure (continued)

Component Overview (Two of Two)



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

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)
18	Torque Specification

NOTE

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

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

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"

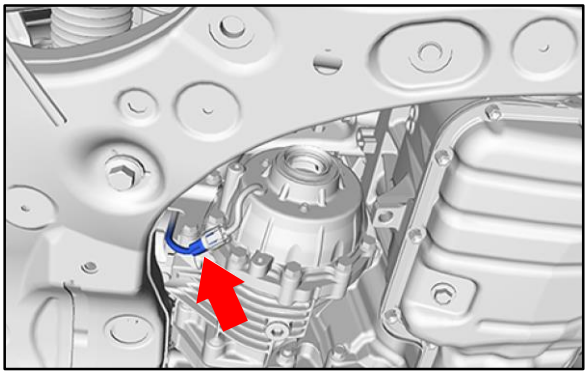
> **NOTICE**
>
> **Discard the old front transfer case assembly drain plug AFTER removal.**
> **Do NOT reuse the old drain plug.**

2. Remove the drive shaft bearing bracket.

3. Remove the transfer case electro-magnetic clutch.

   A. Disconnect the connector.

Figure 1.



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

Repair Procedure (continued)

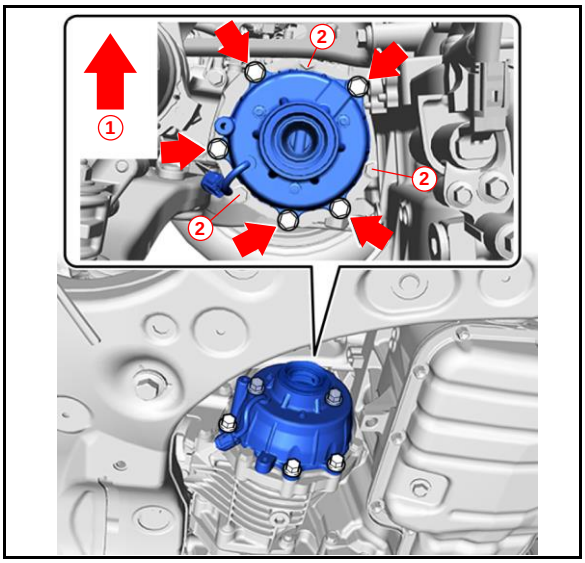
Front Transfer Case Electro-magnetic Clutch Assembly Removal (continued)

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 2.

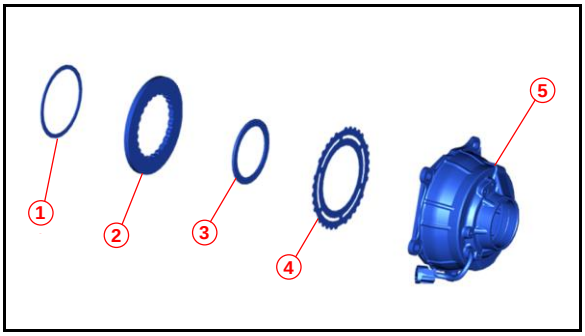


1	Vehicle Upward
2	Bolt (Do NOT Remove)

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 3.



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

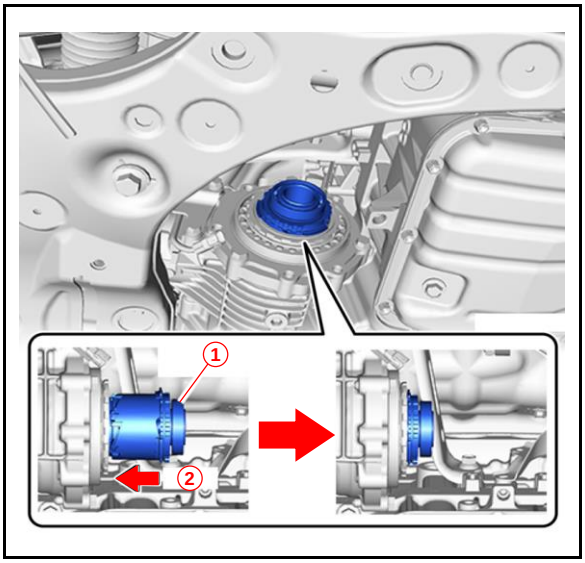
Repair Procedure (continued)

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 4.

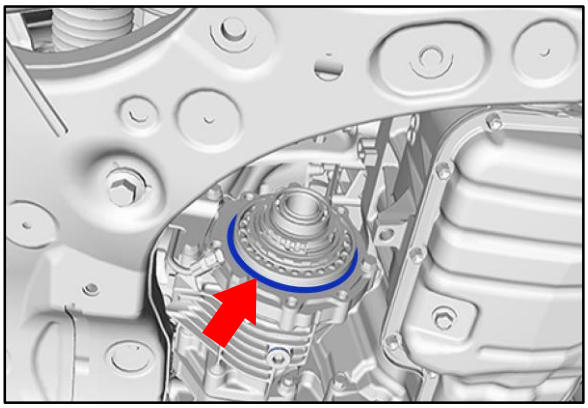


1	Shaft
2	Push

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 5.



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.

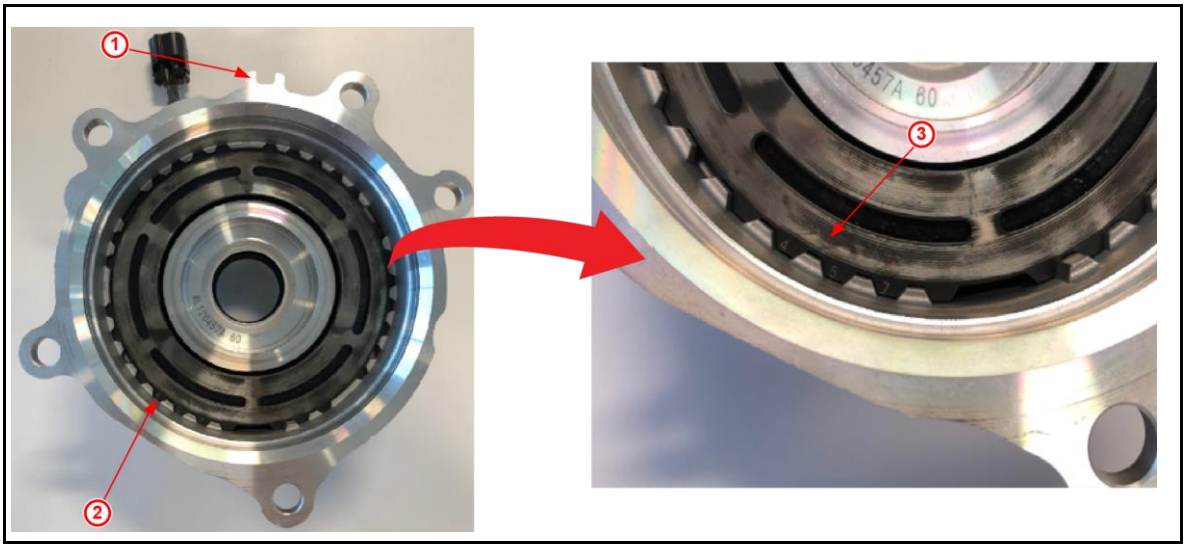
Key Points:

- 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 (no reason to handle outside of the cover).

Figure 6.



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**

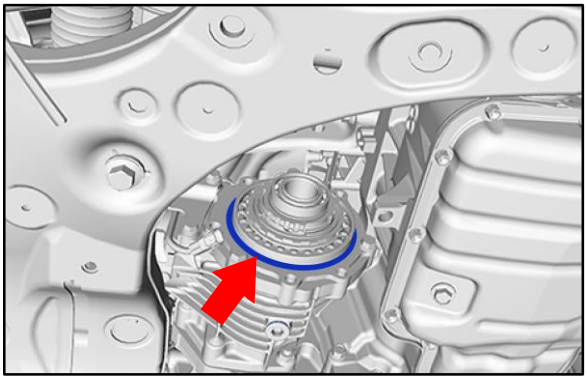
Abnormal Buzz/Groan Noise at 20 – 30 mph From Front Transfer Case

Repair Procedure (continued)

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

B. Install the NEW O-ring.

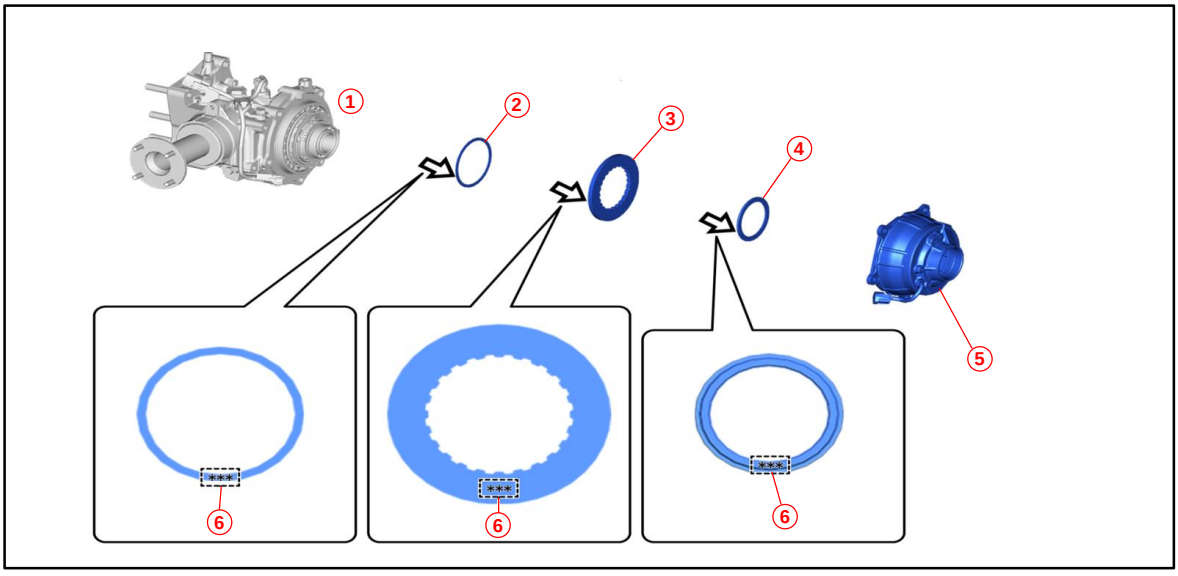
Figure 7.



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 repair. Ensure engraved markings are NOT visible when installing these three components.

Figure 8.



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)

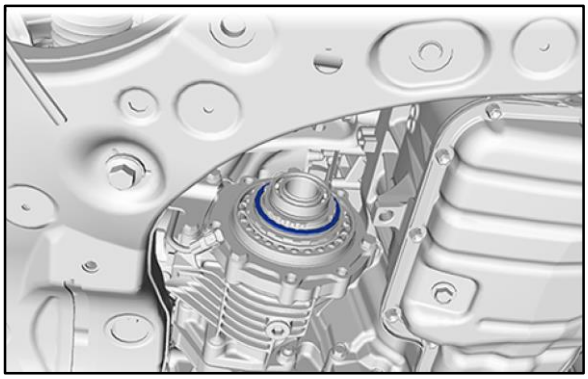
Front Transfer Case Electro-magnetic Clutch Assembly Installation (continued)

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 9.

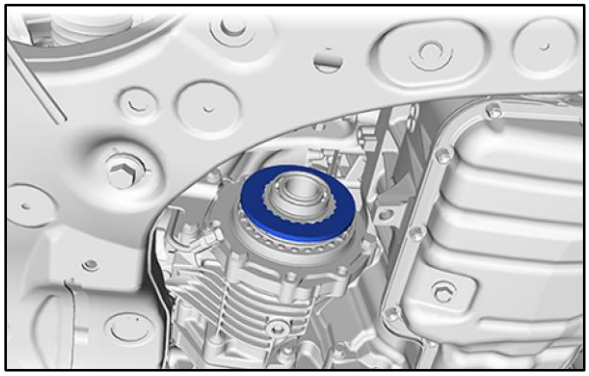


D. Install the NEW armature plate to the front transfer case with its engraved mark surface facing the vehicle inner side (automatic transaxle side).

NOTE

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

Figure 10.



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 11.

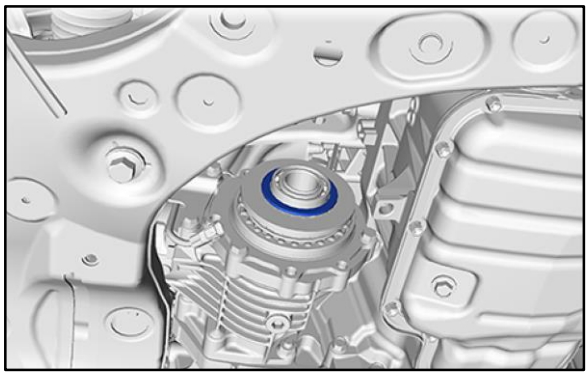
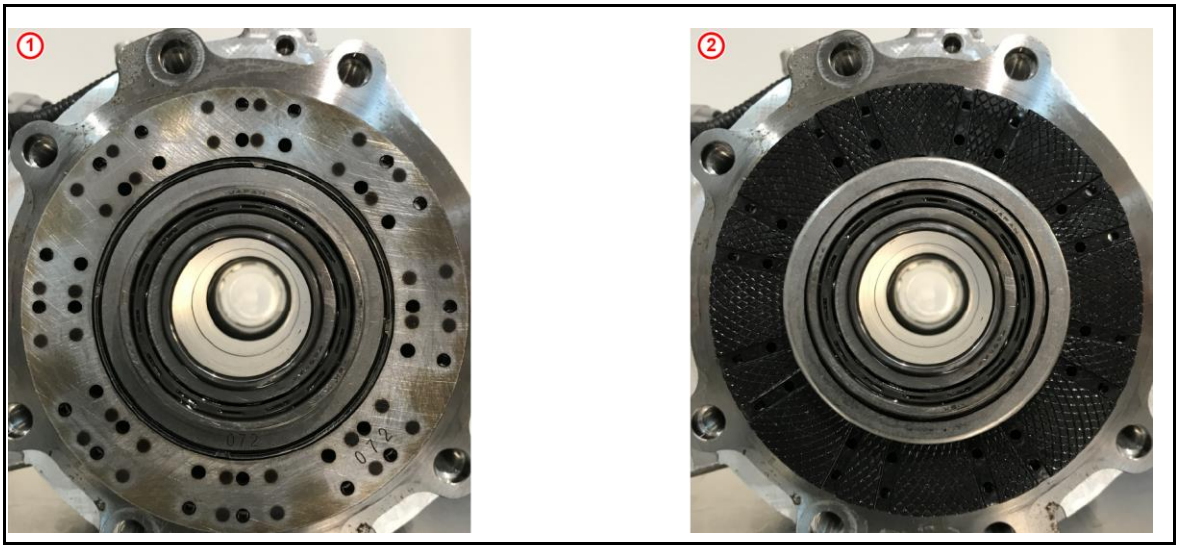


Figure 12. No Good vs OK Condition



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.

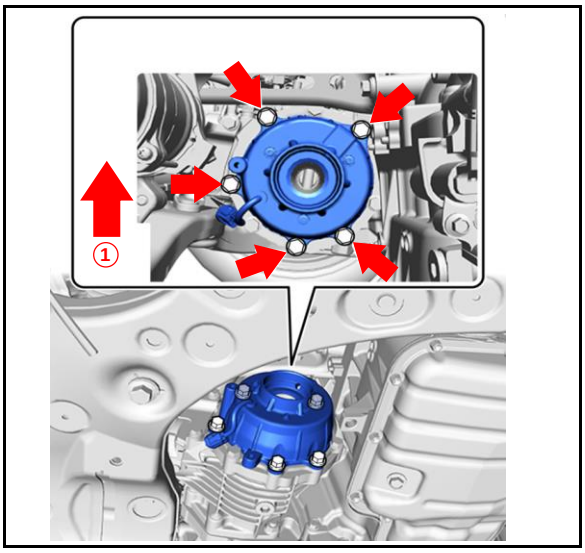
NOTE

- 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.

H. Tighten the four bolts.

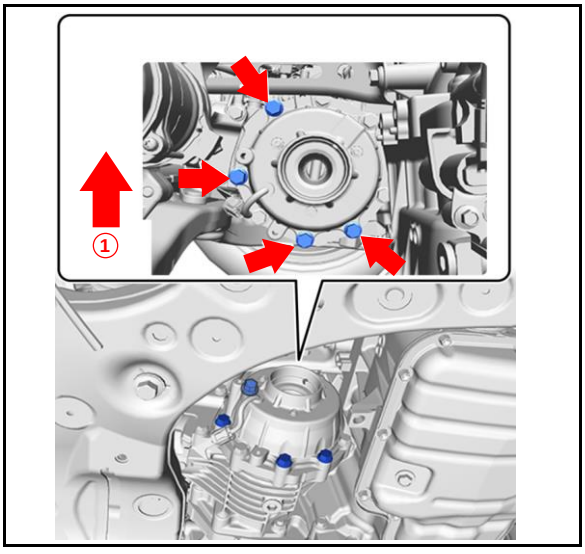
Torque: 47 N*m (479 kgf*cm, 35 ft*lbf)

Figure 13.



1	Vehicle Upward

Figure 14.



1	Vehicle Upward

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

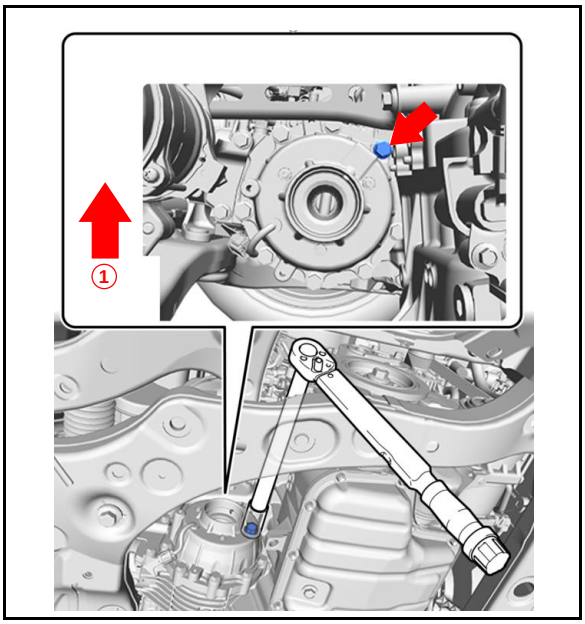
Repair Procedure (continued)

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)

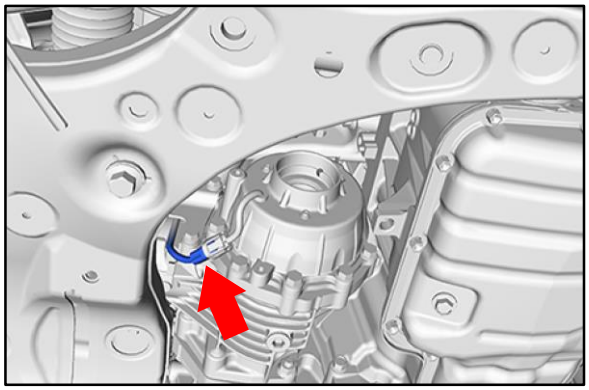
Figure 15.



1	Vehicle Upward

J. Connect the connector.

Figure 16.



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.

9. Check and clear DTCs.

10. 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"

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