## Rear Differential Coupling Growl Noise

## Service

Category Drivetrain
Section
Axle/Differential
Market USA

Applicability

| YEAR(S) | MODEL(S) | ADDITIONAL INFORMATION |
| :--- | :--- | :--- |
| $2006-2012$ | RAV4 | Drive Typess): 4WD <br> Transmission(s): 5AT, 4AT |

## Introduction

Some 2006-2012 model year 4WD RAV4 vehicles may exhibit a growl type noise from the rear differential coupling when driving as a result of contamination to the front bearing. Follow the procedure in this bulletin to address this condition.

## Production Change Information

This bulletin applies to vehicles produced BEFORE the Production Change Effective VINs shown below.

| MODEL | DRIVETRAIN | ENGINE | PLANT* | PRODUCTION CHANGE EFFECTIVE VIN** |
| :---: | :---: | :---: | :---: | :---: |
| RAV4 | 4WD | 2GR-FE | TMMC | 2T3\#K4DV\#CW086571 |
|  |  | 2AR-FE |  | 2T3\#F4DV\#CW249854 |
|  |  | 2GR-FE | Tahara | JTM\#K4DV\#C5109638 |
|  |  | 2AR-FE |  | JTM\#F4DV\#C5057661 |
|  |  | 2GR-FE | Shokki | JTM\#K4DV\#CD019399 |
|  |  | 2AR-FE |  | JTM\#F4DV\#CD045856 |

* Plant Code (11th digit): $\mathrm{W}=$ TMMC, $5=$ Tahara, $\mathrm{D}=$ Shokki.
** For detailed information on VINs, please reference the 2012 VIN Decoder Chart found on the Technical Information System (TIS), under Reference Information: Technician Group.


## Warranty Information

| OP CODE | DESCRIPTION | TIME | OFP | T1 | T2 |
| :---: | :---: | :---: | :---: | :---: | :---: |
| DL1300 | Inspect and Replace Rear Differential |  |  |  |  |
|  | Coupling Only | 2.0 | $41303-42020$ <br> $41303-42021$ | 91 | 99 |
|  | DL1301 | Inspect and Repair Rear Differential Coupling | 3.2 |  |  |

## Rear Differential Coupling Growl Noise

## Warranty Information (Continued)

## 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.

Parts Information

| PART NUMBER |  | PART NAME | QTY |
| :---: | :---: | :---: | :---: |
| PREVIOUS | NEW |  |  |
| 41302-42050 |  | Cover Sub-Assy | 1 |
| 90304-94005 |  | Dust Seal | 1 |
| 90179-08197 |  | Nut | 2 |
| 41252-42020 |  | Defl | 1 |
| 41252-42013 |  | Deflector | 1 |
| 12157-10010 |  | Drain/Fill Plug Gasket | 2 |
| $\begin{aligned} & 41303-42020 \\ & 41303-42021 \end{aligned}$ | 41303-42022 | Coupling Sub-Assy | 1 |

## NOTE

When ordering Deflector be sure to order the correct part number based on original deflector shape as shown below.

Figure 1. For This Deflector Type, Use P/N 41252-42020


Figure 2. For This Deflector Type, Use P/N 41252-42013


## Rear Differential Coupling Growl Noise

## Required Tools \& Equipment

| REQUIRED MATERIAL | QUANTITY |
| :---: | :---: |
| FIPG Sealant: Three Bond 1281, or Equivalent | As Needed |
| Gear Oil |  |
|  | $0.48-0.58$ U.S. qts, |
|  | $(0.40-0.48$ Imp. qts |

* For detailed information on Gear Oil, please reference the 2006-2009 MY Fluid Specifications / 2010-2013 MY Fluid Specifications charts found on TIS, under Reference Information: Technician Group.

| SPECIAL SERVICE TOOLS (SST) | PART NUMBER | QTY |
| :--- | :---: | :---: |
| Replacer Set 2** <br> (Replacer 89) | $\underline{09950-60020-01}$ | 1 |
| Crankshaft Rear Oil Seal Replacer** | $\underline{(09951-00890-01)}$ | 1 |
| Oil Seal and Bearing Replacer** | $\underline{09223-15030}$ | 1 |
| Handle Set** | $\underline{09518-36030-01}$ | 1 |
| Rear Axle Shaft Bearing Remover** | $\underline{09950-70010}$ | 1 |
| Universal Puller Set "B"** <br> (Hanger 150) <br> (Slide Arm) | $(09950-40011$ |  |
| (Claw No. 1) | $(09952-0401010)$ | 1 |
| (Hanger 200) | $(09955-04011)$ |  |
| (Holder) | $(09951-04020)$ |  |
| (Center Bolt 200) | $(099583-04011)$ |  |

** Essential SST.
NOTE
Additional SSTs may be ordered by calling 1-800-933-8335.

| REQUIRED EQUIPMENT | SUPPLIER | PART NUMBER | QTY |
| :--- | :---: | :---: | :---: |
| ChassisEAR ${ }^{\text {TM }}$ (or equivalent) | ADE | JSPSM06606 <br> (JS Products) | 1 |

## NOTE

- A mechanic's stethoscope or similar tool may be used in place of ChassisEAR ${ }^{T M}$.
- ChassisEAR ${ }^{\text {TM }}$ may be ordered by calling Approved Dealer Equipment (ADE) at 1-800-368-6787.


## Rear Differential Coupling Growl Noise

## Repair Procedure Overview

- Confirm the condition.
- Remove rear differential coupling.
- Inspect rear differential coupling assembly.
- Replace or rebuild rear differential coupling assembly.
- Confirm repair.


## Repair Procedure

1. Confirm the condition.

Is there a growl type noise coming from the rear of the vehicle when driving?

- YES - Continue to step 2.
- NO - This bulletin does NOT apply. Continue diagnosis using the applicable Repair Manual.

2. Install ChassisEAR ${ }^{T M}$ and test drive, or use a stethoscope with the vehicle on a lift and confirm the noise is loudest from the rear differential coupling assembly.

Is the noise loudest from the rear differential coupling?

- YES - Continue to step 3.
- NO - This bulletin does NOT apply. Continue diagnosis using the applicable Repair Manual.

3. Remove the rear differential coupling.
A. Drain rear differential fluid.

Drain Plug Torque: $39 \mathbf{N}^{\star} \mathrm{m}\left(398 \mathrm{kgf}^{\star} \mathrm{cm}, 29 \mathrm{ft}^{\star} \mathrm{lbf}\right)$
B. Remove the rear propeller shaft.

Refer to the Technical Information System (TIS), applicable model and model year Repair Manual:

- 2006 / 2007 / 2008 / 2009 / 2010 / 2011 / 2012 RAV4:

Drivetrain - Drive Shaft/Propeller Shaft - "Propeller Shaft: Propeller Shaft Assembly: Removal"

## Rear Differential Coupling Growl Noise

## Repair Procedure (Continued)

C. Remove the 4 stud bolts.

Using a double nut configuration, with new nuts, remove the 4 studs from the rear differential coupling.

## HINT

Use a wooden or plastic hammer/mallet handle to protect the stud threads and hold the coupling when loosening the stud bolts. Once the stud bolt is removed, loosely thread the stud bolt back into the coupling to allow for removal of the other stud bolts.

Figure 3.


Figure 4.

D. Support the rear differential with a floor jack.
E. Remove the 4 bolts from the rear differential No. 1 and No. 2 supports to allow clearance to remove the differential coupling.

Figure 5.

F. Remove the 4 bolts and differential coupling assembly.

## Rear Differential Coupling Growl Noise

## Repair Procedure (Continued)

4. Inspect the rear differential coupling assembly.

## NOTE

Use the following criteria to determine if the rear differential coupling will be rebuilt or replaced.

If the rear differential coupling body assembly shows any of the issues noted below, the rear differential coupling assembly CANNOT be rebuilt and must be replaced as an assembly.

Based on Figures $6-10$ below, can the rear differential coupling be rebuilt?

- YES - Continue to step 6 . Remove the rear differential coupling cover assembly.
- NO - Continue to step 5. Replace the rear differential coupling assembly.

Figure 6. Damage Where Propeller Shaft Contacts Coupling Body


Figure 8. Rust/Corrosion on Inside of Coupling Body


Figure 7. Excessive Rust/Corrosion Buildup on Top of Coupling Body


Figure 9. Excessive Rust/Corrosion Buildup on Edge of Coupling Body


## Rear Differential Coupling Growl Noise

Repair Procedure (Continued)
Figure 10. Rear Differential Coupler Body Is Dark in Color

5. Replace the rear differential coupling assembly.
A. Install the coupling shim (use same shim from disassembly).
B. Install the coupling conical spring washer to the rear differential carrier.

Figure 11.


[^0]
## Rear Differential Coupling Growl Noise

## Repair Procedure (Continued)

C. Clean the rear differential coupling and rear differential seal surfaces, then apply seal packing in a continuous line, $2-3 \mathrm{~mm}$ ( $0.08-0.12 \mathrm{in}$.) in diameter, to the rear differential coupling.
FIPG Sealant: Three Bond 1281, or equivalent
NOTE
Install the rear differential coupling within 3 minutes of applying seal packing.

Figure 12.


| 1 | Seal Packing |
| :--- | :--- |
| 2 | $2-3 \mathrm{~mm}$ |

D. Install the coupling to the rear differential with 4 bolts.

Torque: $19.6 \mathrm{~N}^{\star} \mathrm{m}\left(200 \mathrm{kgf}^{\star} \mathrm{cm}, 14 \mathrm{ft}^{\star} \mathrm{lbf}\right)$
E. Install the 4 bolts from the rear differential No. 1 and No. 2 supports.
Torque: $55 \mathrm{~N}^{\star} \mathrm{m}\left(561 \mathrm{kgf}^{\star} \mathrm{cm}, 41 \mathrm{ft} \mathrm{f}^{\star} \mathrm{bf}\right.$ )

Figure 13.

F. Using a double nut configuration, install 4 stud bolts to the rear differential coupling.
G. Fill rear differential assembly with oil.

Torque: $39 \mathrm{~N}^{\star} \mathrm{m}\left(398 \mathrm{kgf}^{\star} \mathrm{cm}, 29 \mathrm{ft}^{\star} \mathrm{lbf}\right)$

## NOTICE

Be sure to clean off any oil that may have dripped onto the exhaust pipe during the oil fill procedure.

## Rear Differential Coupling Growl Noise

## Repair Procedure (Continued)

H. Install the rear propeller shaft.

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

- 2006 / 2007 / 2008 / 2009 / 2010 / 2011 / 2012 RAV4:

Drivetrain - Drive Shaft/Propeller Shaft - "Propeller Shaft: Propeller Shaft Assembly: Installation"
I. Test drive the vehicle and confirm the repair.
6. Remove the rear differential coupling cover and bearing assembly.
A. Using a hydraulic press and the SST, place the

Figure 14. rear differential coupling on the SST with only the cover in contact with the SST.
SST: 09527-10011-01


| 1 | Rear Differential Coupling Cover |
| :--- | :--- |
| 2 | Rear Differential Coupling Body |

## Rear Differential Coupling Growl Noise

## Repair Procedure (Continued)

B. Using the SSTs, slowly press the rear differential coupling body out of the cover assembly.
SST: 09951-00890-01
SST: 09950-70010

## CAUTION

Take care to support the rear differential coupling body as it is pressed out.
C. If the bearing assembly stays on the rear differential coupling body, use the SSTs to remove the bearing.
SST: 09950-40011 (09951-04010, 09952-04010, 09955-04011, 09951-04020, 09958-04011, 09953-04030)
SST: 09951-00890-01

## NOTE

If the bearing stayed inside the rear differential cover, proceed to step 7.

Figure 15.


| 1 | SST 09950-70010 |
| :--- | :--- |
| 2 | SST 09951-00890-01 |
| 3 | Rear Differential Coupling Cover |

Figure 16.


| 1 | SST 09950-40011 |
| :--- | :--- |
| 2 | Bearing |
| 3 | Rear Differential Coupling Body Assembly |
| 4 | SST 09951-00890-01 |

## Rear Differential Coupling Growl Noise

## Repair Procedure (Continued)

7. Inspect the rear differential coupling body bearing press surface.
A. If there is rust or corrosion from the yellow line or above, the coupling CAN be rebuilt.
B. If there is rust or corrosion below the yellow line, the coupling CANNOT be rebuilt. Replace the rear differential coupling assembly. Go to step 5.

See Figures 18 and 19 for general guidelines.

## HINT

Some coupling bodies may have a slightly shorter bearing press surface, but all coupling bodies will have a machined center line (Red) that can be used to find the Yellow line.

Figure 17.


| 1 | Yellow Line $=$ Approximate Center Line Between <br> Red Line and Top of Coupling Body |
| :---: | :--- |
| 2 | Red Line $=$ Approximate Center Line of Bearing <br> Press Surface (Machined Line) |
| 3 | Bearing Press Surface |

Rear Differential Coupling Growl Noise

## Repair Procedure (Continued)

Figure 18. Examples of Coupling Bodies that Are OK to Rebuild


Figure 19. Examples of Coupling Bodies that CANNOT Be Rebuilt


## Rear Differential Coupling Growl Noise

## Repair Procedure (Continued)

C. Based on the inspection criteria, can the rear differential coupling be rebuilt?

- YES - Continue to step 8. Begin the rebuild process.
- NO - Go to step 5 (page 7). Replace the rear differential coupling assembly.

8. Rebuild the rear differential coupling.
A. Clean the coupling body assembly, prior to assembly, to remove any loose debris.
B. Set the new coupling cover onto the coupling body and place the coupling body onto the SST. SST: 09527-10011-01

## NOTICE

- Be sure the SST is supporting the coupling body, NOT the coupling cover.
- Be sure coupling is sitting level on SST 09527-10011-01.

Figure 20.


| 1 | Coupling Body |
| :---: | :--- |
| 2 | New Coupling Cover with Bearing |
| 3 | SST |

Figure 21.


| 1 | Coupling Body |
| :---: | :--- |
| 2 | Coupling Cover |
| 3 | SST |

## Rear Differential Coupling Growl Noise

## Repair Procedure (Continued)

C. Using a press and the SSTs, slowly press the new coupling cover with the bearing onto the coupling body.
SST: 09527-10011-01
SST: 09223-15030
SST: 09950-70010
Press the bearing and cover assembly onto the coupling body until the bearing is fully seated against the coupling body.

## NOTE

Be sure the coupling body is level before pressing on the coupling cover with the bearing.

Figure 22.


| 1 | SST 09950-70010 |
| ---: | :--- |
| 2 | SST 09223-15030 |
| 3 | Coupling Cover Assembly |
| 4 | Coupling Body Assembly |
| 5 | SST 09527-10011-01 |

## Rear Differential Coupling Growl Noise

## Repair Procedure (Continued)

D. Install the dust seal.
(1) Place the dust seal onto the coupling assembly as level as possible, and with the lip facing up as seen in Figure 23.

## NOTICE

- Take caution NOT to touch the lip of the seal, or contaminate the lip with debris.
- Be sure the SST is supporting the coupling body, NOT the coupling cover.
- Be sure coupling is sitting level on SST 09527-10011-01.

Figure 23.


| 1 | Dust Seal |
| :---: | :--- |
| 2 | Coupling Cover |
| 3 | Coupling Body |

Figure 24.


| 1 | Coupling Body |
| :---: | :--- |
| 2 | Coupling Cover |
| 3 | SST |

## Rear Differential Coupling Growl Noise

Repair Procedure (Continued)
(2) Place the SSTs onto the dust seal flat surface.

SST: 09518-36030-01
SST: 09950-70010
NOTICE
Be sure that SST 09518-36030-01 is clean of debris that can contaminate the lip seal. Confirm the lip of the dust seal is NOT pinched and goes on the inside of the SST.

Figure 25.


| 1 | SST 09950-70010 |
| :--- | :--- |
| 2 | SST 09518-36030-01 |


| 3 | Coupling |
| :--- | :--- |
| 4 | Dust Seal |

## Rear Differential Coupling Growl Noise

## Repair Procedure (Continued)

(3) Slowly press the new dust seal into position until the edge of the seal ring is flush with the coupling cover.

## NOTICE

- Ensure the coupling body is in contact with SST 09527-10011-01, NOT the coupling cover, before pressing on the dust seal.
- Be sure coupling is sitting level on SST 09527-10011-01.

Figure 26.


| 1 | Coupling Body |
| :---: | :--- |
| 2 | Dust Seal |
| 3 | Coupling Cover |

Figure 27.


| 1 | Coupling Body |
| :---: | :--- |
| 2 | Coupling Cover |
| 3 | SST |

Rear Differential Coupling Growl Noise

Repair Procedure (Continued)
E. Install the deflector.

## NOTE

Confirm the correct deflector is installed based on original deflector shape.

Figure 28. Use P/N 41252-42020


Figure 29. Use P/N 41252-42013

(1) Set the deflector onto the dust seal so that it is level.

NOTICE
Be sure the SST is supporting the coupling body, NOT the coupling cover.

Figure 30.


| 1 | Coupling Body |
| :---: | :--- |
| 2 | Deflector |
| 3 | Coupling Cover |

Figure 31.


| 1 | Coupling Body |
| :---: | :--- |
| 2 | Coupling Cover |
| 3 | SST |

## Rear Differential Coupling Growl Noise

## Repair Procedure (Continued)

(2) Using the SSTs, slowly press the deflector onto the coupling assembly. The deflector should be even with the coupling body.

## SST: 09950-70010

SST: 09518-36030-01

## NOTICE

Ensure the coupling body is in contact with SST 09527-10011-01, NOT the coupling cover, before pressing on the deflector.

Figure 32.


| 1 | SST 09950-70010 |
| :--- | :--- |
| 2 | SST 09518-36030-01 |


| 3 | Deflector |
| :---: | :--- |
| 4 | Coupling Body |

F. Go back to step 5 (page 7) to reinstall the differential coupling assembly.


[^0]:    1 Transmission Coupling Conical Spring Washer

