

**2009 Toyota Highlander Limited**

2009 DRIVELINE/AXLES Drive Shaft - Highlander

**2009 DRIVELINE/AXLES****Drive Shaft - Highlander****DRIVE SHAFT SYSTEM****PRECAUTION****1. NOTICE OF REMOVING AND INSTALLING FRONT DRIVE SHAFT ASSEMBLY RH**

- a. When removing and installing the front drive shaft assembly RH in a 4WD vehicle, be sure to first drain all the transaxle oil and transfer oil. If removal and installation are carried out without draining these oils, the transfer oil will flow into the transaxle side. Extensive cleaning will be required if the two oils mix.

**PROBLEM SYMPTOMS TABLE**

Use the table below to help find the cause of the problem. Check each part. If necessary, replace these parts.

**2GR-FE****2GR-FE PROBLEM SYMPTOMS CHART**

| Symptom            | Suspected Area                | Refer to       |
|--------------------|-------------------------------|----------------|
| Front wheel shimmy | Front drive shaft (Worn)      | <u>REMOVAL</u> |
| Rear wheel shimmy  | Rear drive shaft (Worn) (4WD) | <u>REMOVAL</u> |

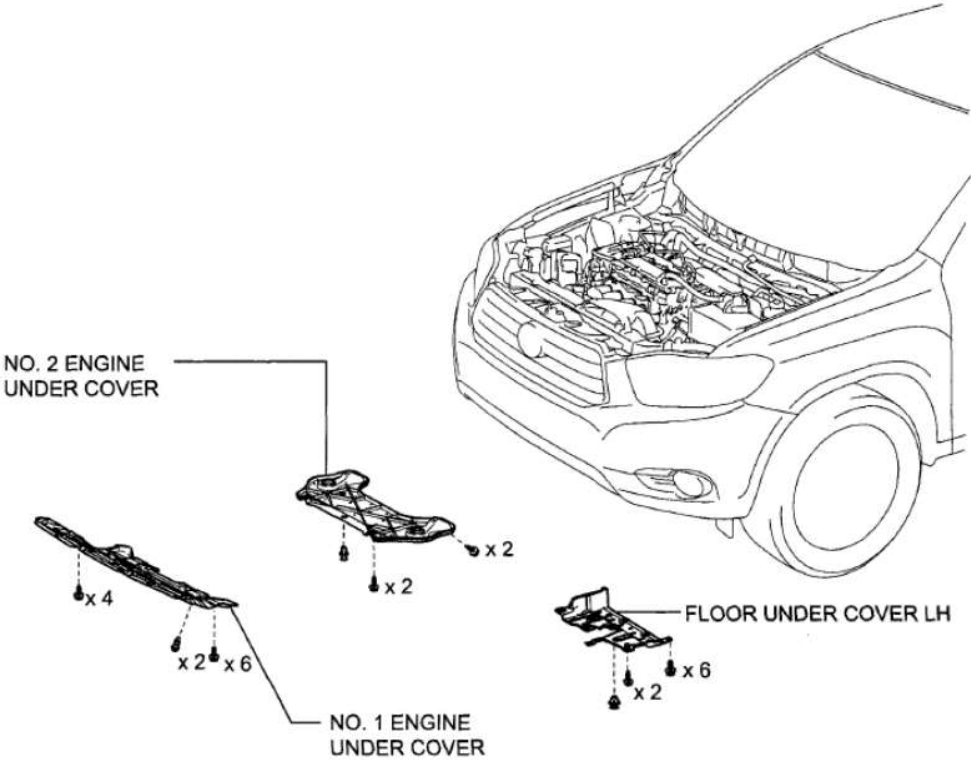
**1AR-FE****1AR-FE PROBLEM SYMPTOMS CHART**

| Symptom            | Suspected Area           | Refer to       |
|--------------------|--------------------------|----------------|
| Front wheel shimmy | Front drive shaft (Worn) | <u>REMOVAL</u> |

**FRONT DRIVE SHAFT (FOR 1AR-FE)****COMPONENTS**

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**Fig. 1: Identifying Front Drive Shaft Components With Torque Specification (For 1AR-FE) (1 Of 4)**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

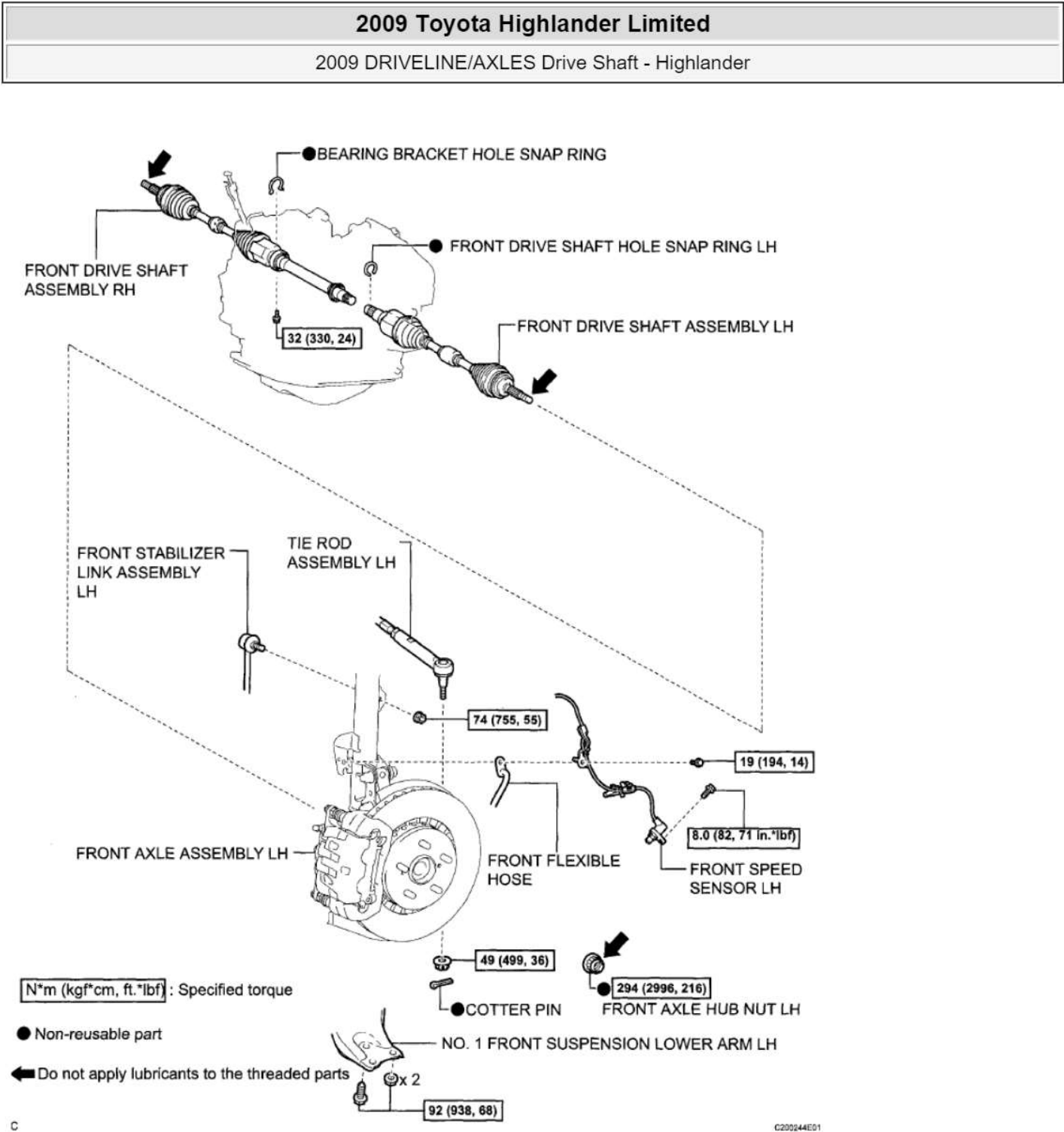
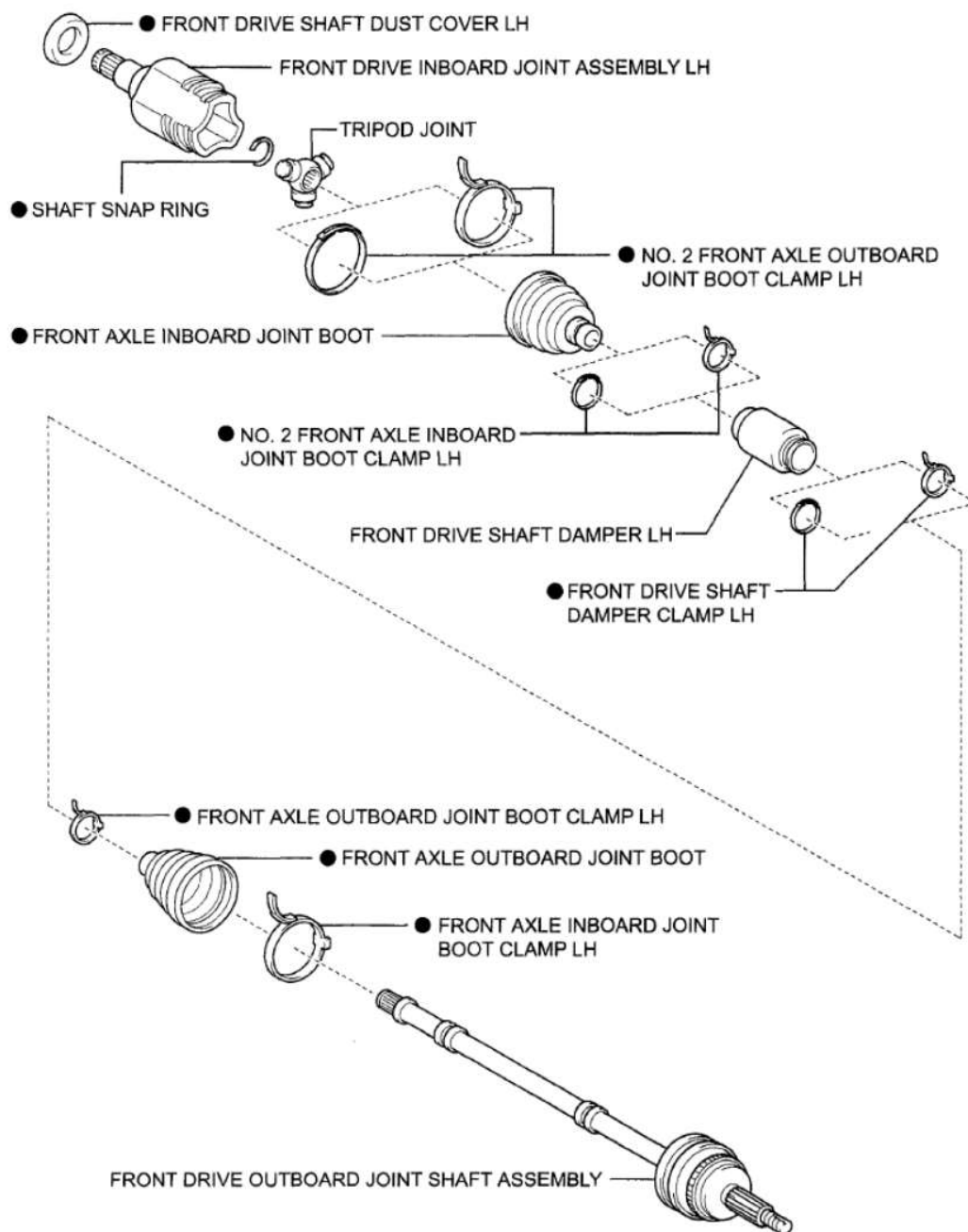


**Fig. 2: Identifying Front Drive Shaft Components With Torque Specification (For 1AR-FE) (2 Of 4)**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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for LH Side:



● Non-reusable part

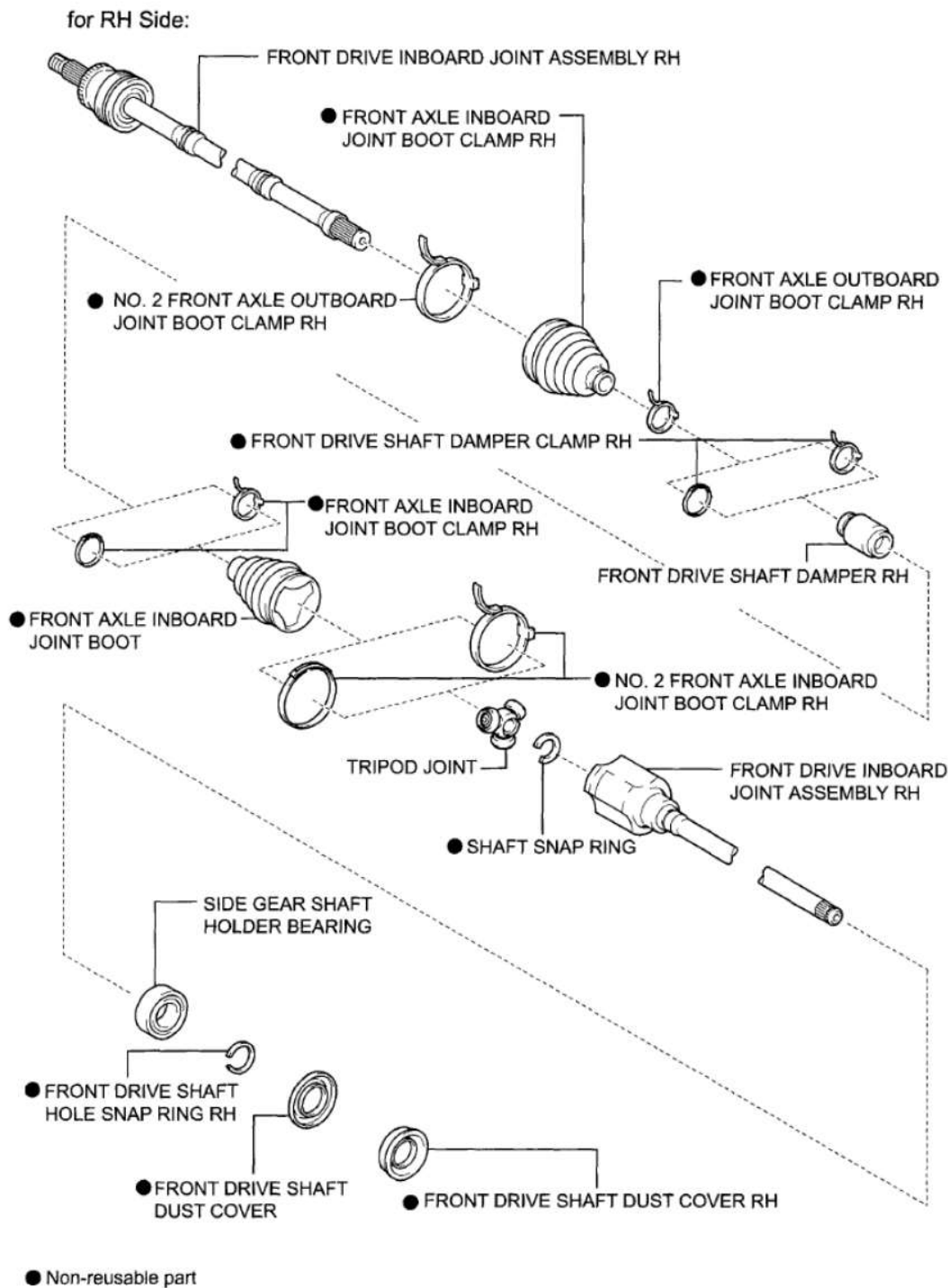
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**Fig. 3: Identifying Front Drive Shaft Components With Torque Specification (For 1AR-FE) (3 Of 4)**  
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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**Fig. 4: Identifying Front Drive Shaft Components With Torque Specification (For 1AR-FE) (4 Of 4)**  
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

## REMOVAL

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**HINT:**

- Use the same procedure for the RH side and LH side.
- The procedure listed below is for the LH side.

1. **REMOVE NO. 1 ENGINE UNDER COVER**
2. **REMOVE NO. 2 ENGINE UNDER COVER**
3. **REMOVE FLOOR UNDER COVER LH**
4. **DRAIN AUTOMATIC TRANSAXLE FLUID**

**HINT:**

(See **COMPONENTS** )

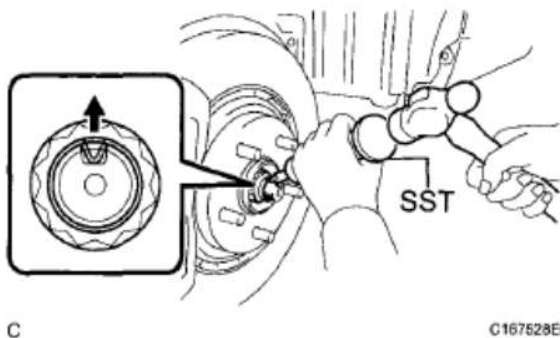
5. **REMOVE FRONT WHEELS**
6. **REMOVE FRONT AXLE HUB NUT LH**

- a. Using SST and a hammer, release the staked part of the front axle hub nut.

SST 09930-00010

**NOTE:** Loosen the staked part of the nut completely, otherwise the threads of the drive shaft may be damaged.

- b. While applying the brakes, remove the front axle hub nut.



C167528E01

**Fig. 5: Releasing Staked Part Of Front Axle Hub Nut**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

7. **SEPARATE FRONT STABILIZER LINK ASSEMBLY LH** (See **REMOVAL** )
8. **SEPARATE FRONT SPEED SENSOR LH** (See **REMOVAL** )
9. **SEPARATE TIE ROD ASSEMBLY LH** (See **REMOVAL** )
10. **SEPARATE NO. 1 FRONT SUSPENSION LOWER ARM LH** (See **REMOVAL** )
11. **SEPARATE FRONT AXLE ASSEMBLY LH** (See **REMOVAL** )

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**12. REMOVE FRONT DRIVE SHAFT ASSEMBLY LH**

- a. Using SST, remove the front drive shaft assembly LH.

SST 09520-01010, 09520-24010 (09520-32040)

**NOTE:**

- Be careful not to damage the drive shaft dust cover, boot, or oil seal.
- Be careful not to drop the drive shaft assembly.

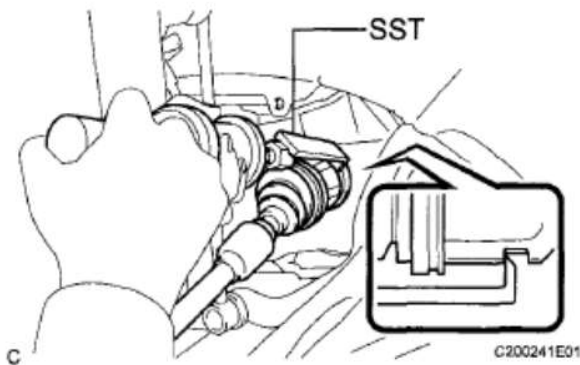


**Fig. 6: Removing Front Drive Shaft Assembly LH**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

**13. REMOVE FRONT DRIVE SHAFT ASSEMBLY RH**

- a. Remove the bearing bracket hole snap ring from the drive shaft bearing bracket.
- b. Remove the bolt and front drive shaft assembly RH from the drive shaft bearing bracket.

**NOTE:** Do not damage the boot or oil seal.

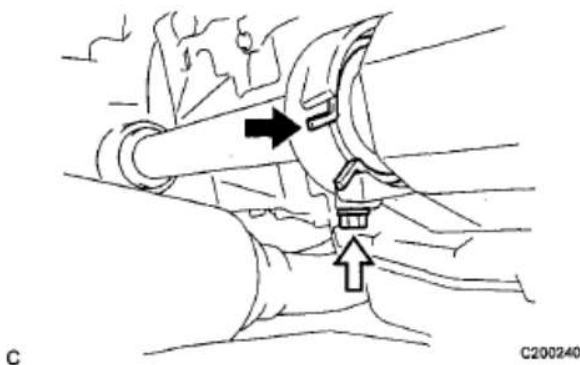


**Fig. 7: Locating Bearing Bracket Hole Snap Ring**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

**14. SECURE FRONT AXLE HUB SUB-ASSEMBLY LH**

- a. Using SST, secure the front axle hub bearing.

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SST 09608-16042 (09608-02021, 09608-02041)

**NOTE:** The hub bearing may be damaged if it is subjected to the vehicle's full weight, such as when moving the vehicle with the drive shaft removed. If it is necessary to place the vehicle's weight on the hub bearing, first support it with SST.

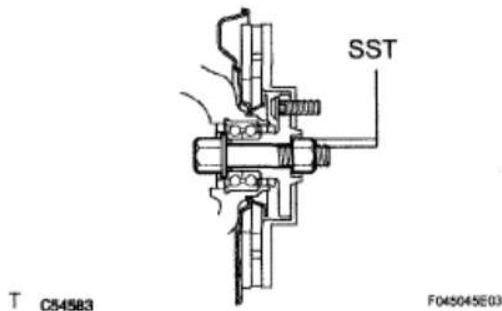


**Fig. 8: Securing Front Axle Hub Bearing**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

### DISASSEMBLY

#### 1. REMOVE FRONT DRIVE SHAFT HOLE SNAP RING LH

- Using a screwdriver, remove the front drive shaft hole snap ring LH from the front drive inboard joint assembly LH.

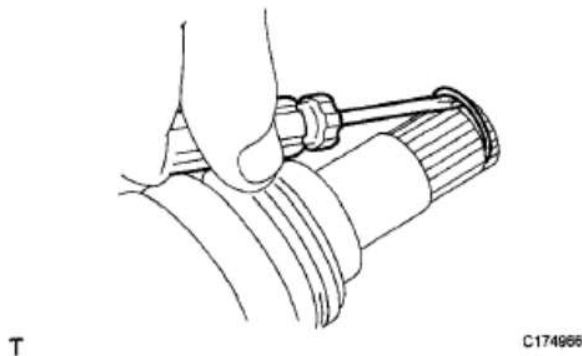


**Fig. 9: Removing Front Drive Shaft Hole Snap Ring LH From Front Drive Inboard Joint Assembly LH**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

#### 2. REMOVE NO. 2 FRONT AXLE INBOARD JOINT BOOT CLAMP LH

- for one touch type:
  - Using a screwdriver, remove the No. 2 front axle shaft boot clamp LH as shown in the illustration.

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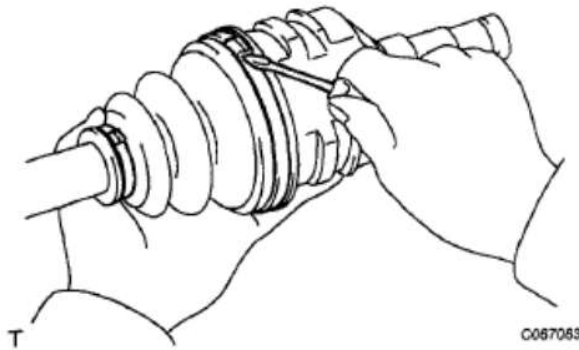


**Fig. 10: Removing No. 2 Front Axle Shaft Boot Clamp LH (One Touch Type)**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

b. for claw engagement type:

1. Using needle-nose pliers, disengage the 2 claws and remove the No. 2 front axle inboard joint boot clamp LH as shown in the illustration.

#### 3. REMOVE NO. 2 FRONT AXLE INBOARD JOINT BOOT CLAMP RH

HINT:

Perform the same procedure as for the LH side.

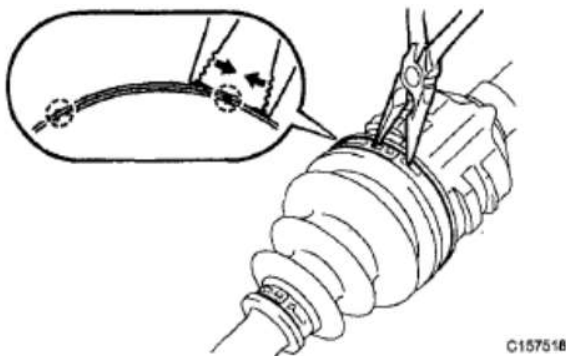


**Fig. 11: Removing No. 2 Front Axle Shaft Boot Clamp LH (Claw Engagement Type)**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

#### 4. REMOVE FRONT AXLE INBOARD JOINT BOOT CLAMP LH

a. for one touch type:

1. Using a screwdriver, remove the front axle inboard joint boot clamp LH as shown in the illustration.

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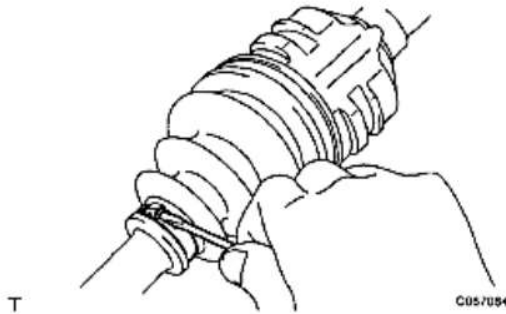


**Fig. 12: Removing Front Axle Inboard Joint Boot Clamp LH (One Touch Type)**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

b. for claw engagement type:

1. Using needle-nose pliers, disengage the 2 claws and remove the front axle inboard joint boot clamp LH as shown in the illustration.

#### 5. REMOVE FRONT AXLE INBOARD JOINT BOOT CLAMP RH

HINT:

Perform the same procedure as for the LH side.

#### 6. SEPARATE FRONT AXLE INBOARD JOINT BOOT

- a. Separate the inboard joint boot from the front drive inboard joint assembly.

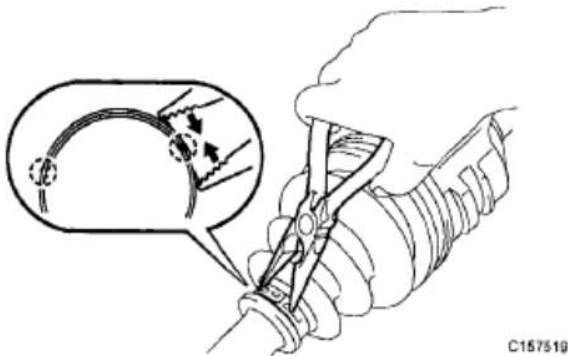


**Fig. 13: Removing Front Axle Inboard Joint Boot Clamp LH (Claw Engagement Type)**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

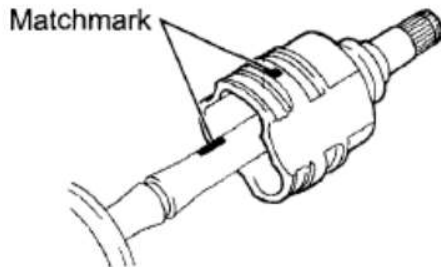
#### 7. REMOVE FRONT DRIVE INBOARD JOINT ASSEMBLY LH

- a. Remove any old grease from the front drive inboard joint assembly LH.
- b. Put matchmarks on the front drive inboard joint assembly LH and front drive outboard joint shaft assembly LH.

**NOTE:** Do not punch the marks.

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- c. Remove the front drive inboard joint assembly LH from the front drive outboard joint shaft assembly LH.
- d. Secure the front drive outboard joint shaft assembly LH in a vise using aluminum plates.



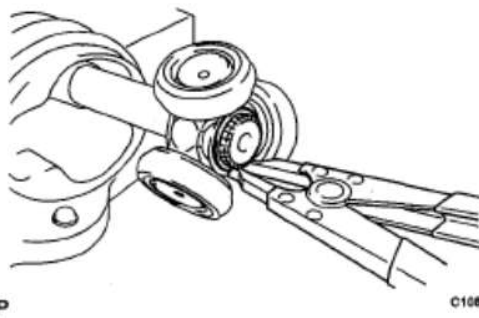
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**Fig. 14: Identifying Matchmarks On Front Drive Inboard Joint Assembly LH And Front Drive Outboard Joint Shaft Assembly LH**

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

**NOTE:** Do not overtighten the vise.

- e. Using a snap ring expander, remove the shaft snap ring.



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**Fig. 15: Removing Shaft Snap Ring**

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

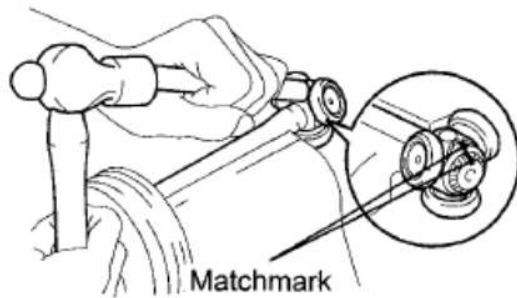
- f. Put matchmarks on the front drive outboard joint shaft assembly LH and tripod joint.

**NOTE:** Do not punch the marks.

- g. Using a brass bar and a hammer, tap out the tripod joint from the front drive outboard joint shaft assembly LH.

**NOTE:** Do not tap the rollers.

- h. Remove the inboard joint boot and inboard joint boot clamp.

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**Fig. 16: Identifying Matchmarks On Front Drive Outboard Joint Shaft Assembly LH And Tripod Joint**

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

**8. REMOVE FRONT DRIVE INBOARD JOINT ASSEMBLY RH**

HINT:

Perform the same procedure as for the LH side.

**9. REMOVE FRONT DRIVE SHAFT DAMPER CLAMP LH**

a. for one touch type:

1. Using a screwdriver, remove the front drive shaft damper clamp LH as shown in the illustration.

b. for claw engagement type:

1. Using needle-nose pliers, remove the front drive shaft damper clamp LH as shown in the illustration.

**10. REMOVE FRONT DRIVE SHAFT DAMPER CLAMP RH**

HINT:

Perform the same procedure as for the LH side.

**11. REMOVE FRONT DRIVE SHAFT DAMPER LH**

- a. Remove the front drive shaft damper LH from the front axle outboard joint shaft assembly LH.

**12. REMOVE FRONT DRIVE SHAFT DAMPER RH**

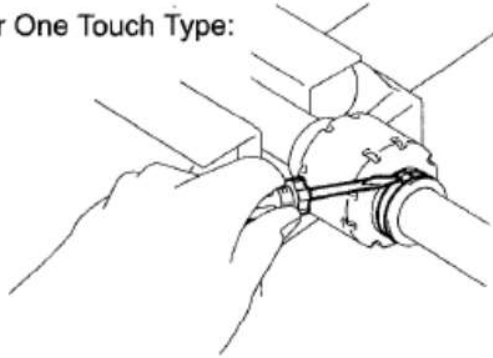
HINT:

Perform the same procedure as for the LH side.

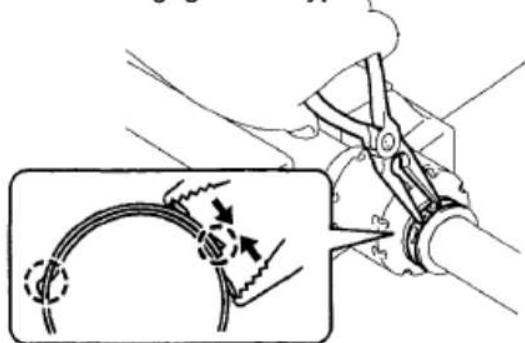
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for One Touch Type:



for Claw Engagement Type:



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**Fig. 17: Removing Front Drive Shaft Damper Clamp LH**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

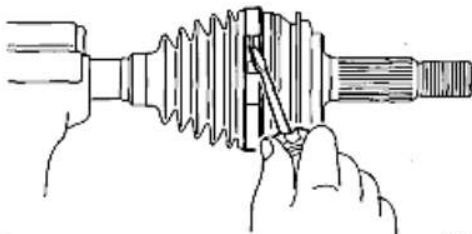
#### 13. REMOVE NO. 2 FRONT AXLE OUTBOARD JOINT BOOT CLAMP LH

- Using a screwdriver, remove the No. 2 front axle outboard joint boot clamp LH as shown in the illustration.

#### 14. REMOVE NO. 2 FRONT AXLE OUTBOARD JOINT BOOT CLAMP RH

HINT:

Perform the same procedure as for the LH side.



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**Fig. 18: Removing Front Axle Outboard Joint Boot Clamp Using Screw Driver**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

**2009 Toyota Highlander Limited****2009 DRIVELINE/AXLES Drive Shaft - Highlander****15. REMOVE FRONT AXLE OUTBOARD JOINT BOOT CLAMP LH**

- a. Using a screwdriver, remove the front axle outboard joint boot clamp LH as shown in the illustration.

**16. REMOVE FRONT AXLE OUTBOARD JOINT BOOT CLAMP RH**

HINT:

Perform the same procedure as for the LH side.

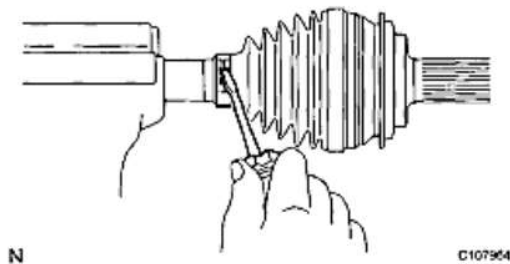


**Fig. 19: Removing Front Axle Outboard Joint Boot Clamp LH**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

**17. REMOVE FRONT AXLE OUTBOARD JOINT BOOT (for LH Side)**

- a. Remove the outboard joint boot from the front drive outboard joint shaft assembly LH.
- b. Remove the old grease from the front drive outboard joint shaft assembly LH.

**18. REMOVE FRONT AXLE OUTBOARD JOINT BOOT (for RH Side)**

HINT:

Perform the same procedure as for the LH side.

**19. REMOVE FRONT DRIVE SHAFT DUST COVER LH**

- a. Using SST and a press, press out the front drive shaft dust cover LH.

**SST 09950-00020**

**NOTE:** Be careful not to drop the front drive inboard joint assembly LH.

**20. REMOVE FRONT DRIVE SHAFT DUST COVER RH**

HINT:

Perform the same procedure as for the LH side.

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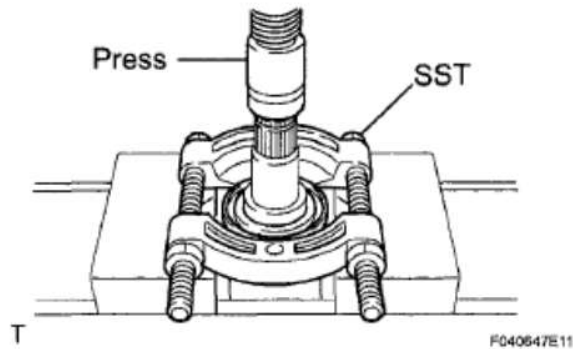


**Fig. 20: Pressing Out Front Drive Shaft Dust Cover LH**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

#### 21. REMOVE FRONT DRIVE SHAFT DUST COVER (for RH Side)

- Using SST and a press, press out the front drive shaft dust cover.

SST 09950-00020

**NOTE:** Be careful not to drop the front drive inboard joint assembly RH.

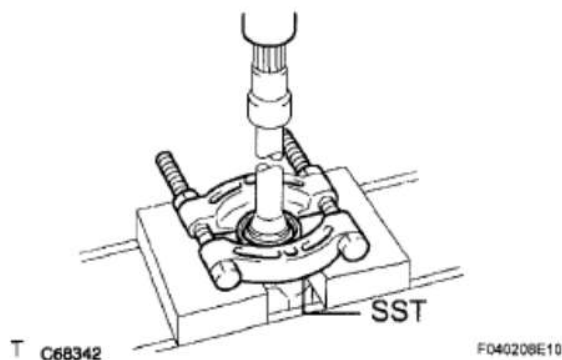


**Fig. 21: Pressing Out Front Drive Shaft Dust Cover**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

#### 22. REMOVE FRONT DRIVE SHAFT HOLE SNAP RING RH (for RH Side)

- Using a snap ring expander, remove the front drive shaft hole snap ring RH.

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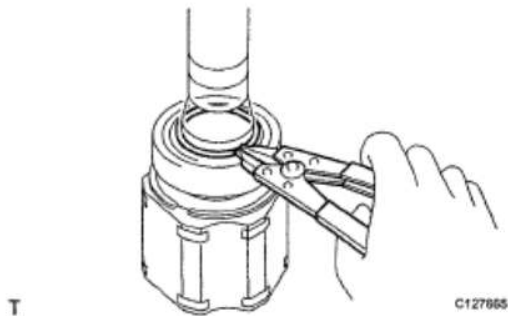


**Fig. 22: Removing Front Drive Shaft Hole Snap Ring RH**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

#### 23. REMOVE SIDE GEAR SHAFT HOLDER BEARING (for RH Side)

- a. Using SST and a press, press out the side gear shaft holder bearing.

**NOTE:** Be careful not to drop the front drive inboard joint assembly RH.

**SST 09527-10011**

- b. Remove the bearing bracket hole snap ring.

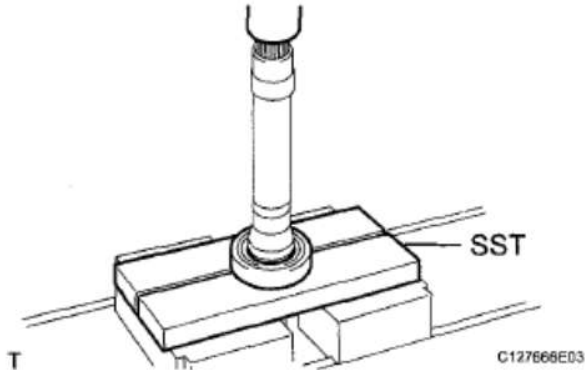


**Fig. 23: Pressing Out Side Gear Shaft Holder Bearing Using SST And Press**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

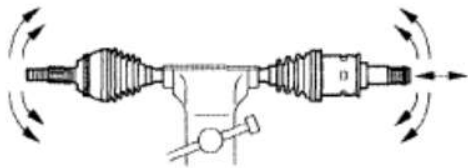
## INSPECTION

### 1. INSPECT FRONT DRIVE SHAFT ASSEMBLY

- a. Check that there is no excessive play in the outboard joint.
- b. Check that the inboard joint slides smoothly in the thrust direction.
- c. Check that there is no excessive play in the radial direction of the inboard joint.
- d. Check the boots for damage.

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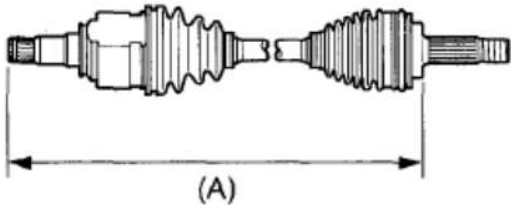
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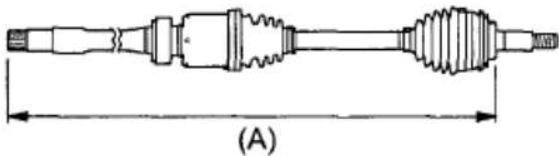
**Fig. 24: Inspecting Front Drive Shaft Assembly**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- e. Check whether the dimensions (A) of the front drive shaft assembly are within the following specifications.

LH:



RH:



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**Fig. 25: Identifying Dimensions Of Front Drive Shaft Assembly**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Dimension (A)

**DIMENSION REFERENCE**

| LH                                   | RH                                   |
|--------------------------------------|--------------------------------------|
| 596.6 to 606.6 mm (1.96 to 1.99 ft.) | 915.4 to 925.4 mm (3.01 to 3.03 ft.) |

**REASSEMBLY**

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#### 1. INSTALL SIDE GEAR SHAFT HOLDER BEARING (for RH Side)

- a. Install the bearing bracket hole snap ring.
- b. Using SST and a press, press in the side gear shaft holder bearing to the front drive inboard joint assembly RH.

SST 09527-10011, 09527-30010

**NOTE:** The bearing should be completely installed.

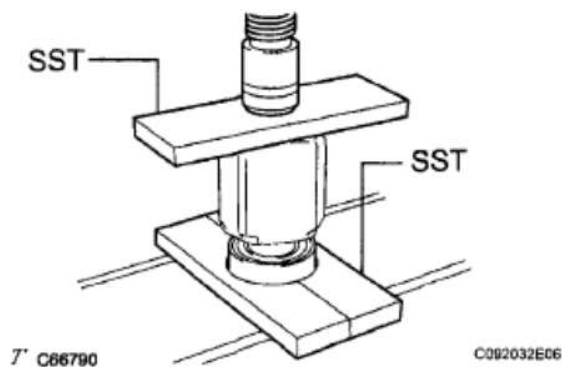


**Fig. 26: Pressing Side Gear Shaft Holder Bearing To Front Drive Inboard Joint Assembly RH**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

#### 2. INSTALL FRONT DRIVE SHAFT HOLE SNAP RING RH (for RH Side)

- a. Using a snap ring expander, install a new front drive shaft hole snap ring RH.

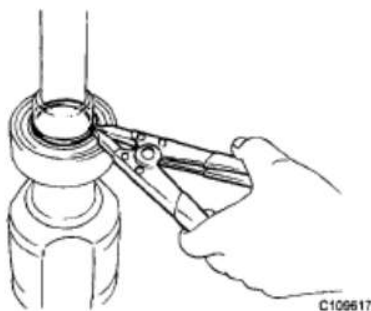


**Fig. 27: Installing Front Drive Shaft Hole Snap Ring RH**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

#### 3. INSTALL FRONT DRIVE SHAFT DUST COVER (for RH Side)

- a. Using SST and a press, install a new drive shaft dust cover until the distance from the tip of the center drive shaft to the drive shaft dust cover meets the specification, as shown in the illustration.

SST 09726-40010, 09527-10011

**Distance (A):**

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26.6 to 27.6 mm (1.0472 to 1.0866 in.)

**NOTE:** Be careful not to damage the dust cover.

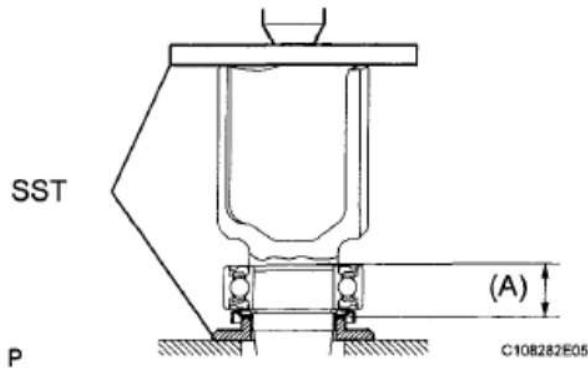


**Fig. 28: Identifying Distance Between Tip Of Center Drive Shaft And Drive Shaft Dust Cover**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

#### 4. INSTALL FRONT DRIVE SHAFT DUST COVER LH

- a. Using SST and a press, press in a new front drive shaft dust cover LH.

SST 09527-10011

**NOTE:**

- Install the dust cover in the correct direction.
- The dust cover should be installed completely.
- Be careful not to damage the dust cover.

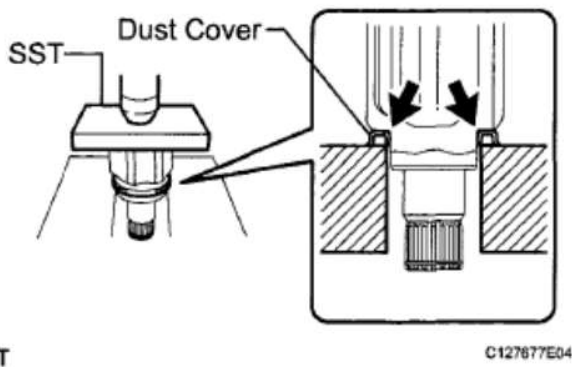


**Fig. 29: Installing Front Drive Shaft Dust Cover LH**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

#### 5. INSTALL FRONT DRIVE SHAFT HOLE SNAP RING LH

- a. Install a new front drive inboard joint hole snap ring LH.

#### 6. INSTALL FRONT DRIVE SHAFT DUST COVER RH

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- a. Using SST and a press, press in a new front drive shaft dust cover RH until the distance (A) from the tip of the center drive shaft to the drive shaft dust cover reaches the specification, as shown in the illustration.

**SST 09527-10011**

**Distance (A):**

**110.0 to 111.0 mm (4.3307 to 4.3700 in.)**

**NOTE:**

- The dust cover should be installed completely.
- Be careful not to damage the dust cover.

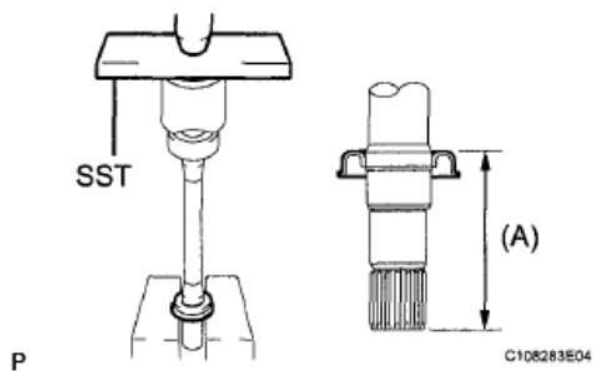


**Fig. 30: Identifying Distance Between Tip Of Center Drive Shaft And Drive Shaft Dust Cover**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

#### 7. INSTALL FRONT AXLE OUTBOARD JOINT BOOT (for LH Side)

- a. Before installing the boots, wrap the spline of the drive shaft with protective tape to prevent the boot from being damaged.

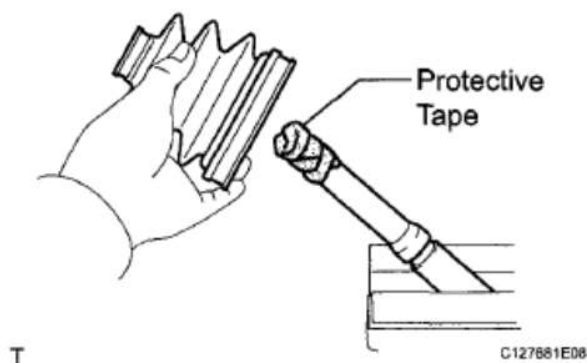


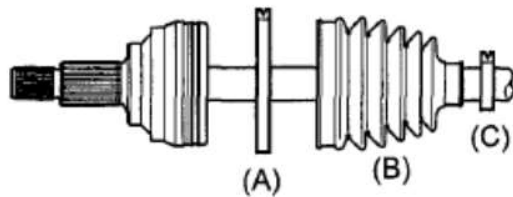
**Fig. 31: Wrapping Spline Of Drive Shaft With Protective Tape**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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- b. Install new parts to the outboard joint shaft assembly in the following order:
  1. No. 2 front axle outboard joint boot clamp LH (A)
  2. Outboard joint boot (B)
  3. Front axle outboard joint boot clamp LH (C)
- c. Pack the outboard joint shaft and boot with grease from the boot kit.

← Outboard Joint Side



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**Fig. 32: Packing Outboard Joint Shaft And Boot With Grease**  
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

**Grease capacity:**

205 to 215 g (7.2 to 7.5 oz.)

#### 8. INSTALL FRONT AXLE OUTBOARD JOINT BOOT (for RH Side)

**HINT:**

Perform the same procedure as for the LH side.

#### 9. INSTALL NO. 2 FRONT AXLE OUTBOARD JOINT BOOT CLAMP LH

**CAUTION:** Wear protective gloves. Sharp areas on the parts may injure your hands.

- a. Install a new No. 2 front axle outboard joint boot clamp LH onto the outboard joint boot and temporarily fold back the lever.

**NOTE:**

- Set the lever into the guide groove correctly and install the clamp as far into the inside of the vehicle as possible.
- Check the band and the lever for any deformation before folding back the lever.

## 2009 Toyota Highlander Limited

2009 DRIVELINE/AXLES Drive Shaft - Highlander

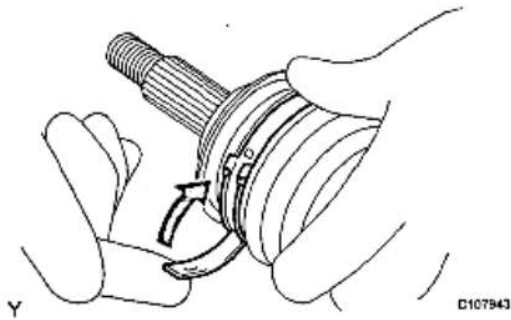


**Fig. 33: Installing Boot Clamp Onto Outboard Joint Boot**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- b. Lean your weight on your hand and roll the outboard joint forward while pressing the outboard joint against the work plane. Roll the outboard joint and fold the lever until a click sound can be heard.

**NOTE:**

- Make sure that the outboard joint is in direct contact with the work plane.
- Do not damage deflector.

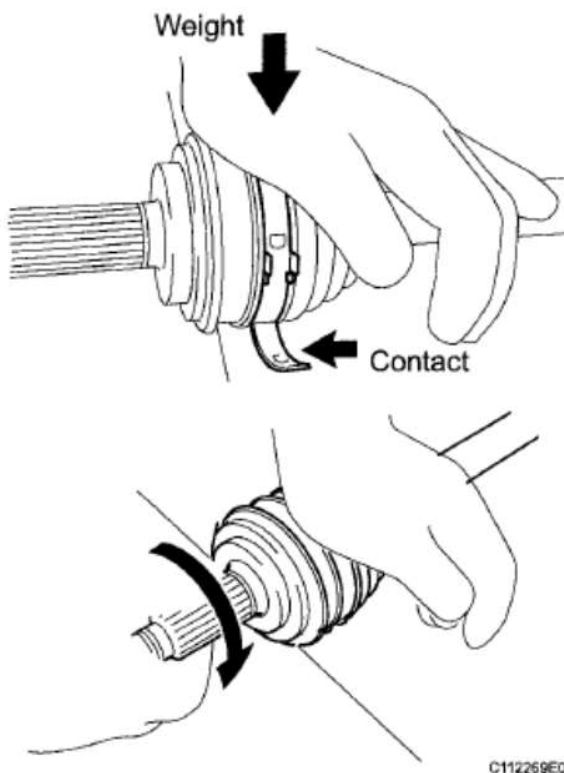


**Fig. 34: [Rolling Outboard Joint]**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

**2009 Toyota Highlander Limited**

## 2009 DRIVELINE/AXLES Drive Shaft - Highlander

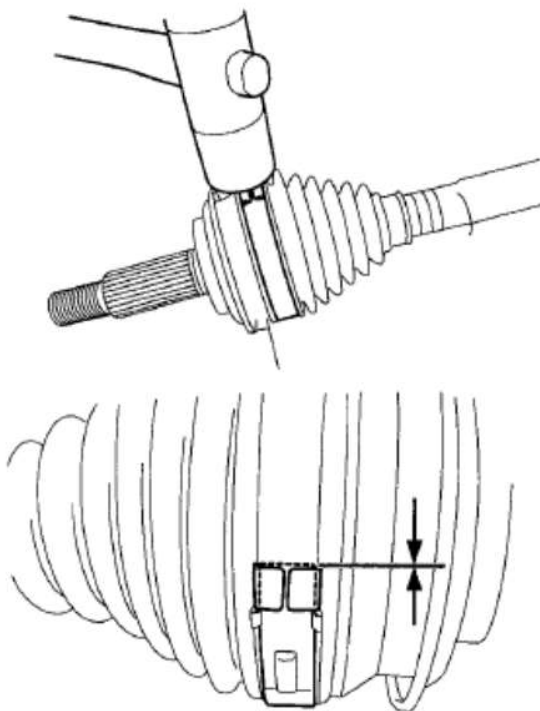
- c. Using a plastic hammer, tap the buckle to secure it while adjusting the clearance between the lever and the groove to make the clearance between the buckle edge and the lever end even.

**NOTE:** Do not damage the outboard joint boot.

**10. INSTALL NO. 2 FRONT AXLE OUTBOARD JOINT BOOT CLAMP RH**

HINT:

Perform the same procedure as for the LH side.



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**Fig. 35: Identifying Clearance Between Lever And Groove**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

**11. INSTALL FRONT AXLE OUTBOARD JOINT BOOT CLAMP LH**

**CAUTION:** Wear protective gloves. Sharp areas on the parts may injure your hands.

- a. Install a new front axle outboard joint boot clamp LH onto the outboard joint boot and temporarily fold back the lever.

**NOTE:** • Set the lever into the guide groove correctly.

## 2009 Toyota Highlander Limited

2009 DRIVELINE/AXLES Drive Shaft - Highlander

- Check the band and the lever for any deformation before folding back the lever.



**Fig. 36: Installing Front Axle Outboard Joint Boot Clamp LH Onto Outboard Joint Boot**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- Using water pump pliers, pinch the front axle outboard joint boot clamp LH to temporarily secure it.

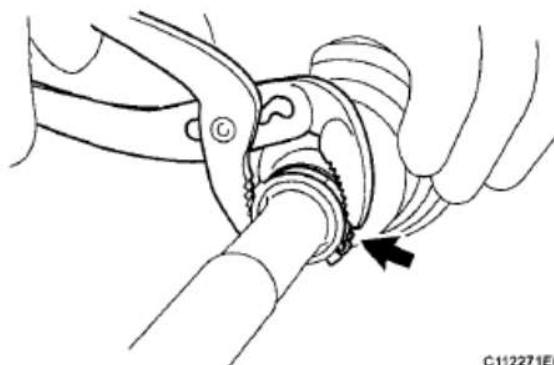
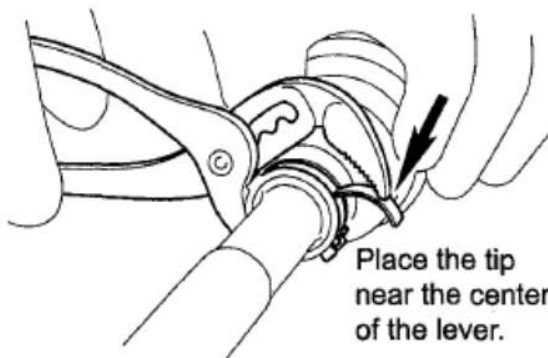


**Fig. 37: Pinching Front Axle Outboard Joint Boot Clamp LH**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- Using a plastic hammer, tap the buckle to secure it while adjusting the clearance between the lever and the groove to make the clearance between the buckle edge and the lever end even.

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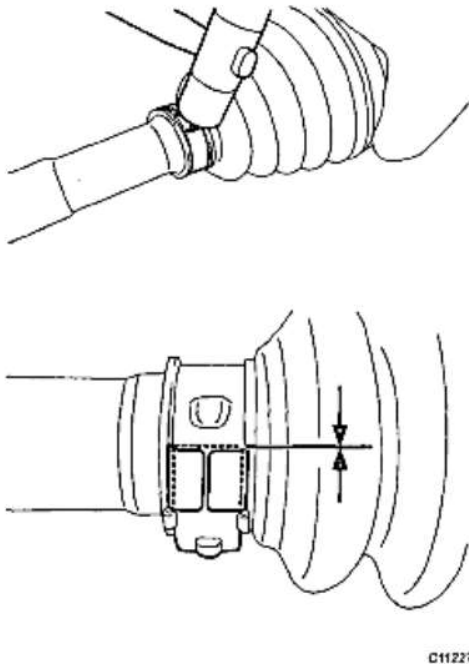
## 2009 DRIVELINE/AXLES Drive Shaft - Highlander

**NOTE:** Do not damage the outboard joint boot.

**12. INSTALL FRONT AXLE OUTBOARD JOINT BOOT CLAMP RH**

**HINT:**

Perform the same procedure as for the LH side.



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**Fig. 38: Tapping Buckle Using Plastic Hammer**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

**13. INSTALL FRONT DRIVE SHAFT DAMPER LH**

**NOTE:** Install the damper clamp to the outboard joint side.

- Install a new front drive shaft damper clamp LH and the front drive shaft damper LH to the front drive outboard joint shaft assembly LH.
- Set the distance as specified below.

**Distance (A):**

**233.9 to 237.9 mm (9.21 to 9.36 in.)**

**14. INSTALL FRONT DRIVE SHAFT DAMPER RH**

**HINT:**

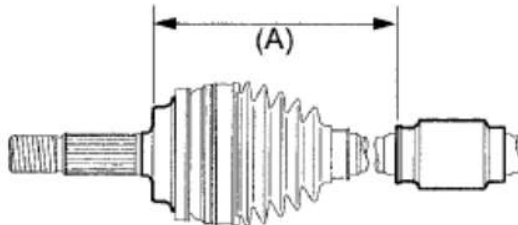
**2009 Toyota Highlander Limited**

## 2009 DRIVELINE/AXLES Drive Shaft - Highlander

Perform the same procedure as for the LH side.

**15. INSTALL FRONT DRIVE SHAFT DAMPER CLAMP LH**

- a. Hold the front drive outboard joint shaft assembly LH in a vise using aluminum plates.



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**Fig. 39: Identifying Drive Shaft Distance**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

**NOTE:** Do not overtighten the vise.

- b. Install the front drive shaft damper clamp LH to the front drive shaft damper.

**NOTE:** Be sure to install the clamp in the correct position.

- c. for one touch type:

1. Using a screwdriver, install the drive shaft damper clamp LH as shown in the illustration.

**NOTE:** Do not damage the outboard joint boot.

- d. for claw engagement type:

1. Using needle-nose pliers, install a new front drive shaft damper clamp LH as shown in the illustration.

**16. INSTALL FRONT DRIVE SHAFT DAMPER CLAMP RH**

HINT:

Perform the same procedure as for the LH side.

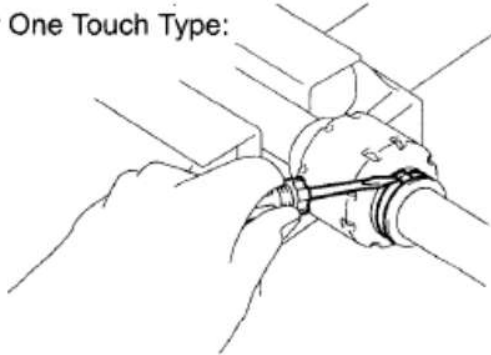
**17. INSTALL FRONT DRIVE INBOARD JOINT ASSEMBLY LH**

- a. Before installing the boot, wrap the spline of the front drive outboard joint assembly LH with protective tape to prevent the boot from being damaged.

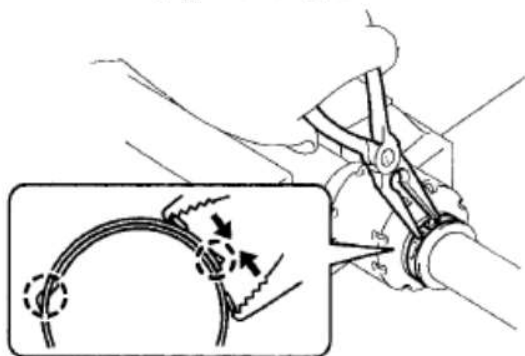
## 2009 Toyota Highlander Limited

### 2009 DRIVELINE/AXLES Drive Shaft - Highlander

for One Touch Type:



for Claw Engagement Type:



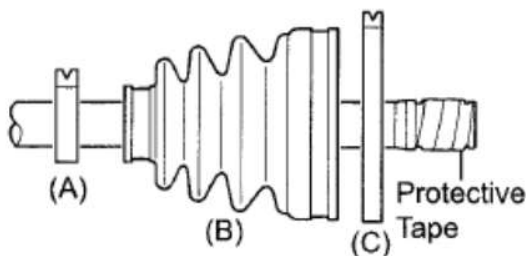
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**Fig. 40: Installing Front Drive Shaft Damper Clamp LH**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- b. Install new parts to the front drive outboard joint assembly LH in the following order for one touch type:
  1. Front axle inboard joint boot clamp LH (A)
  2. Inboard joint boot (B)
  3. No. 2 front axle inboard joint boot clamp LH (C)

← Outboard Joint Side



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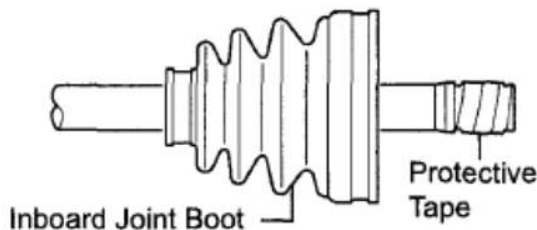
**Fig. 41: Identifying Front Axle Inboard Joint Boot Clamp LH, Inboard Joint Boot And No. 2 Front Axle Inboard Joint Boot Clamp LH**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

## 2009 Toyota Highlander Limited

### 2009 DRIVELINE/AXLES Drive Shaft - Highlander

- c. Install new parts to the front drive outboard joint assembly LH in the following order for claw engagement type:
  1. Inboard joint boot
- d. Place the beveled side of the tripod axial spline toward the outboard joint.

← Outboard Joint Side



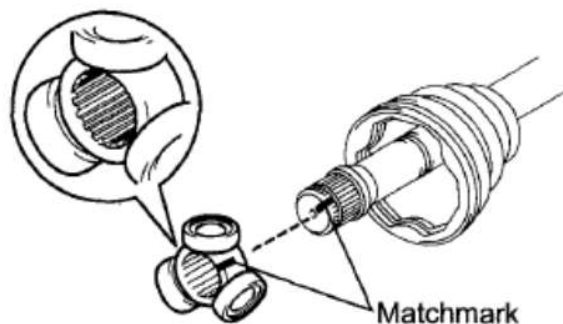
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**Fig. 42: Identifying Front Drive Outboard Joint Assembly LH**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- e. Align the matchmarks placed before removal.
- f. Using a brass bar and a hammer, tap the tripod joint onto the front axle outboard joint shaft assembly LH.

**NOTE:**

- Do not tap the roller portion.
- Be sure to install the tripod joint in the correct direction.
- Keep the tripod joint free of foreign matter.



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**Fig. 43: Aligning Matchmarks On Front Drive Joint Assembly**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- g. Using a snap ring expander, install a new shaft snap ring.
- h. Pack the inboard joint shaft and boot with grease from the boot kit.

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### 2009 DRIVELINE/AXLES Drive Shaft - Highlander

**Standard grease capacity:**

**175 to 185 g (6.2 to 6.5 oz.)**

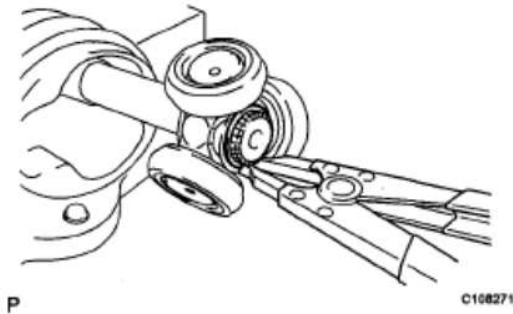


**Fig. 44: Installing Shaft Snap Ring**

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- i. Align the matchmarks, and install the front drive inboard joint assembly LH to the front drive outboard joint shaft assembly LH.

#### 18. INSTALL FRONT DRIVE INBOARD JOINT ASSEMBLY RH

**HINT:**

Perform the same procedure as for the LH side.

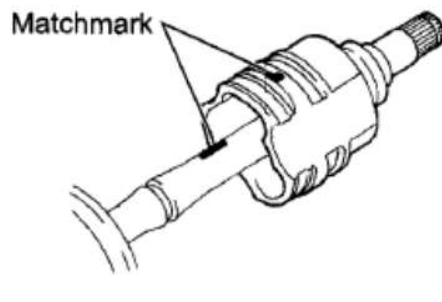


**Fig. 45: Identifying Matchmarks On Front Drive Inboard Joint Assembly LH And Front Drive Outboard Joint Shaft Assembly LH**

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

#### 19. INSTALL FRONT AXLE INBOARD JOINT BOOT

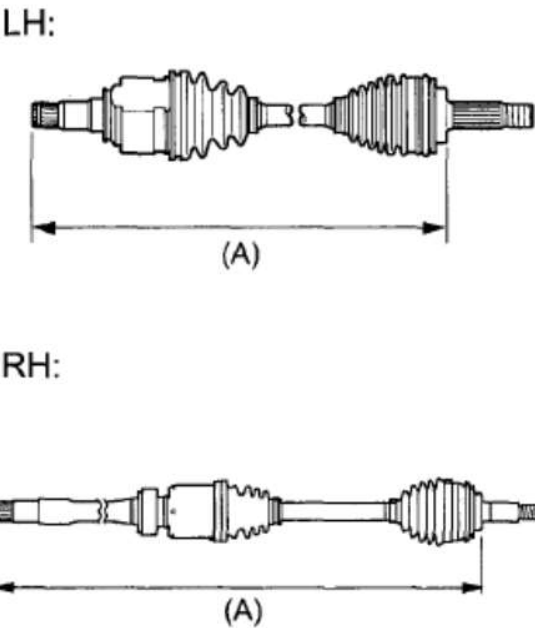
- a. Install the inboard joint boot into the grooves of the front drive inboard joint assembly.

**NOTE: Keep the grooves free of grease.**

- b. Check whether the dimensions (A) of the drive shaft are within the following specifications.

2009 Toyota Highlander Limited

2009 DRIVELINE/AXLES Drive Shaft - Highlander



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**Fig. 46: Identifying Dimensions Of Front Drive Shaft Assembly**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Dimension (A)

**DIMENSION REFERENCE**

| LH                                   | RH                                   |
|--------------------------------------|--------------------------------------|
| 596.6 to 606.6 mm (1.96 to 1.99 ft.) | 915.4 to 925.4 mm (3.01 to 3.03 ft.) |

20. **INSTALL FRONT AXLE INBOARD JOINT BOOT CLAMP LH**

**CAUTION:** Wear protective gloves. Sharp areas on the parts may injure your hands.

- a. for one touch type:
1. Install a new front axle inboard joint boot clamp LH onto the inboard joint boot and temporarily fold back the lever.

**NOTE:**

- Set the lever into the guide groove correctly and install the clamp as far into the inside of the vehicle as possible.
- Check the band and the lever for any deformation before folding back the lever.

## 2009 Toyota Highlander Limited

### 2009 DRIVELINE/AXLES Drive Shaft - Highlander



**Fig. 47: Installing Front Axle Outboard Joint Boot Clamp LH Onto Outboard Joint Boot**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- b. Using water pump pliers, pinch the front axle outboard joint boot clamp LH to the temporarily secure it.

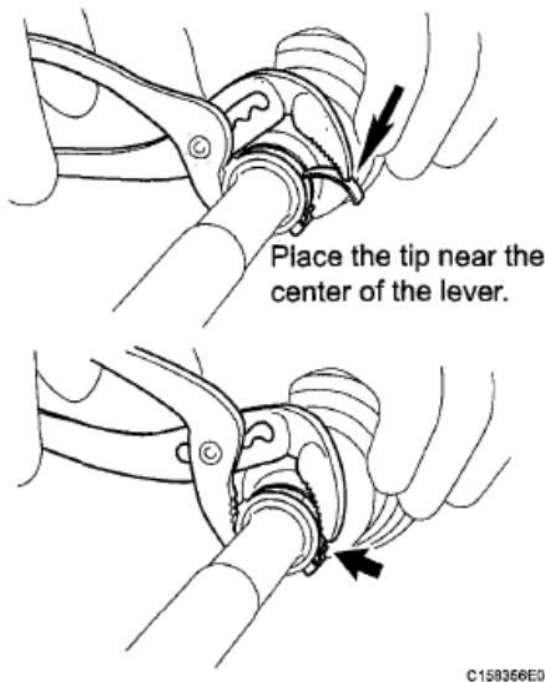


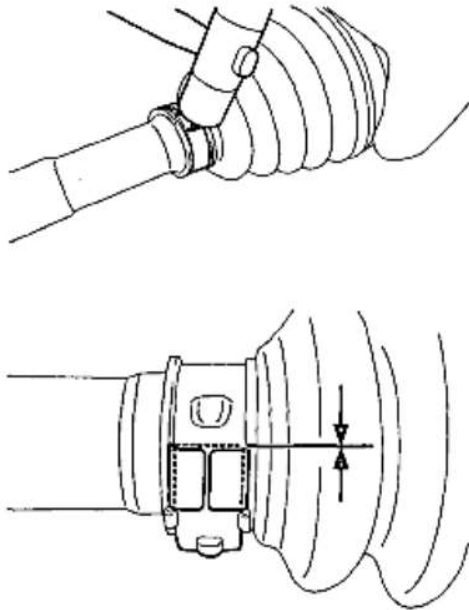
**Fig. 48: Pinching Front Axle Outboard Joint Boot Clamp LH**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- c. Using a plastic hammer, tap the buckle to secure it while adjusting the clearance between the lever and the groove to make the clearance between the buckle edge and the lever end even.

**NOTE:** Do not damage the inboard joint boot.

**2009 Toyota Highlander Limited**

## 2009 DRIVELINE/AXLES Drive Shaft - Highlander



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**Fig. 49: Tapping Buckle Using Plastic Hammer**

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

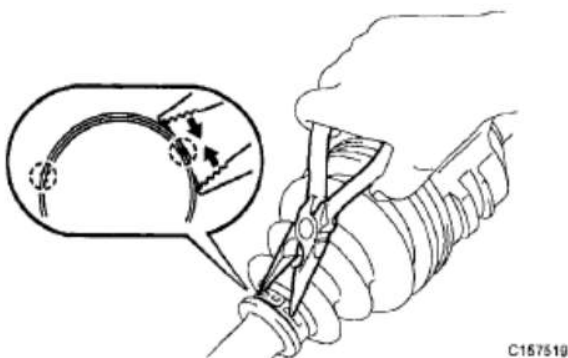
- d. for claw engagement type:
1. Using needle-nose pliers, install a new front axle inboard joint boot clamp LH as shown in the illustration.

**NOTE:** Be careful not to damage the boot.

**21. INSTALL FRONT AXLE INBOARD JOINT BOOT CLAMP RH**

HINT:

Perform the same procedure as for the LH side.



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**Fig. 50: Installing Front Axle Inboard Joint Boot Clamp LH**

**2009 Toyota Highlander Limited**

2009 DRIVELINE/AXLES Drive Shaft - Highlander

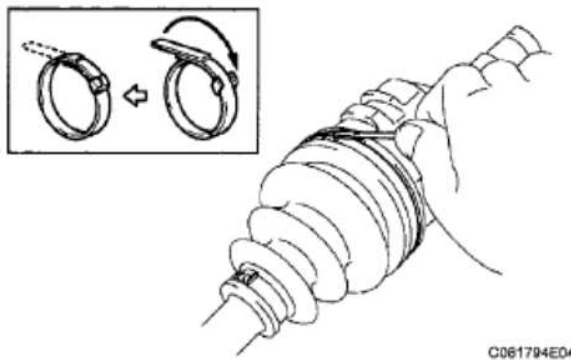
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

**22. INSTALL NO. 2 FRONT AXLE INBOARD JOINT BOOT CLAMP LH**

a. for one touch type:

1. Install a new No. 2 front axle inboard joint boot clamp LH onto the inboard joint boot.
2. Using a screwdriver, install a new No. 2 front axle inboard joint boot clamp LH as shown in the illustration.

**NOTE:** Do not damage the inboard joint boot.



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**Fig. 51: Installing No. 2 Front Axle Inboard Joint Boot Clamp LH (One Touch Type)**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

b. for claw engagement type:

1. Using needle-nose pliers, install a new No. 2 front axle inboard joint boot clamp LH as shown in the illustration.

**NOTE:** Be careful not to damage the boot.

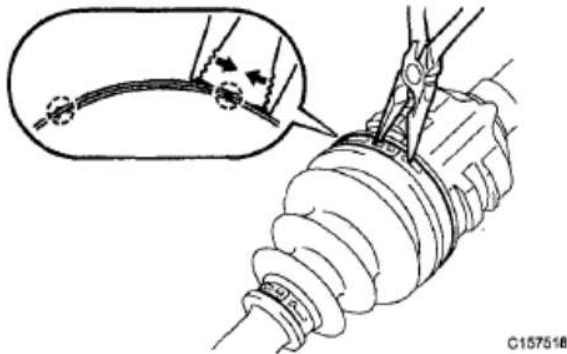
**23. INSTALL NO. 2 FRONT AXLE INBOARD JOINT BOOT CLAMP RH**

HINT:

Perform the same procedure as for the LH side.

## 2009 Toyota Highlander Limited

### 2009 DRIVELINE/AXLES Drive Shaft - Highlander



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**Fig. 52: Installing No. 2 Front Axle Inboard Joint Boot Clamp LH (Claw Engagement Type)**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

#### 24. INSPECT FRONT DRIVE SHAFT

HINT:

(See **INSPECTION**).

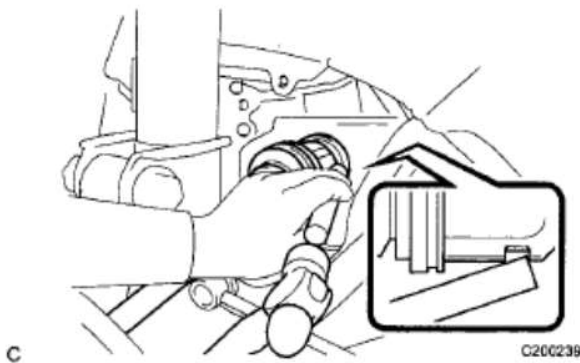
#### INSTALLATION

##### 1. INSTALL FRONT DRIVE SHAFT ASSEMBLY LH

- Align the shaft splines and install the drive shaft assembly LH with a brass bar and a hammer.

**NOTE:**

- Set the shaft snap ring with the opening facing down.
- Be careful not to damage the drive shaft dust cover, boot, or oil seal.
- Move the drive shaft assembly while keeping it level.



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**Fig. 53: Installing Drive Shaft Assembly LH With Brass Bar And Hammer**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

##### 2. INSTALL FRONT DRIVE SHAFT ASSEMBLY RH

- Install the front drive shaft assembly RH.

## 2009 Toyota Highlander Limited

### 2009 DRIVELINE/AXLES Drive Shaft - Highlander

- b. Install a new bearing bracket hole snap ring and bolt.

**Torque: 32 N\*m (330 kgf\*cm, 24 ft.\*lbf)**

**NOTE:**

- Do not damage the boot or oil seal.
- Move the drive shaft assembly while keeping it level.

3. **INSTALL FRONT AXLE ASSEMBLY LH** (See INSTALLATION )
4. **INSTALL NO. 1 FRONT SUSPENSION LOWER ARM LH** (See INSTALLATION )
5. **INSTALL TIE ROD ASSEMBLY LH** (See INSTALLATION )

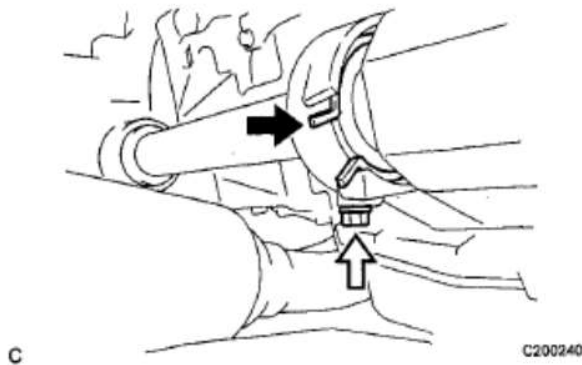


**Fig. 54: Locating Bearing Bracket Hole Snap Ring**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

6. **INSTALL FRONT SPEED SENSOR LH** (See INSTALLATION )
7. **INSTALL FRONT STABILIZER LINK ASSEMBLY LH** (See INSTALLATION )
8. **INSTALL FRONT AXLE HUB NUT LH**
  - a. Clean the threaded parts on the drive shaft and axle hub nut using a non-residue solvent.

**HINT:**

- Be sure to perform this work for a new drive shaft.
  - Keep the threaded parts free of oil and foreign objects.
- b. Using a socket wrench (30 mm), install a new axle hub nut.

**Torque: 294 N\*m (2996 kgf\*cm, 216 ft.\*lbf)**

- c. Using a chisel and hammer, stake the front axle hub nut.

9. **INSTALL FRONT WHEELS**

**Torque: 103 N\*m (1050 kgf\*cm, 76 ft.\*lbf)**

10. **ADD AUTOMATIC TRANSAXLE FLUID**

**2009 Toyota Highlander Limited**

## 2009 DRIVELINE/AXLES Drive Shaft - Highlander

HINT:

(See DISASSEMBLY ).

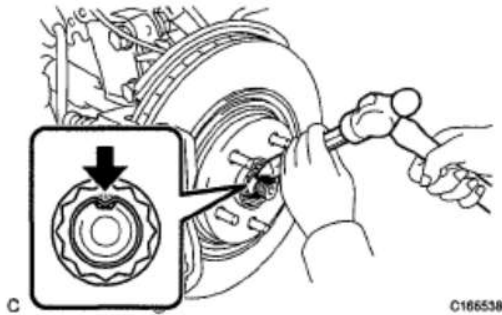
**11. INSTALL NO. 2 ENGINE UNDER COVER**

**Fig. 55: Staking Front Axle Hub Nut**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

**12. INSTALL NO. 1 ENGINE UNDER COVER****13. INSTALL FLOOR UNDER COVER LH****14. ADJUST FRONT WHEEL ALIGNMENT**

HINT:

(See FRONT WHEEL ALIGNMENT ).

**15. CHECK ABS SPEED SENSOR SIGNAL**

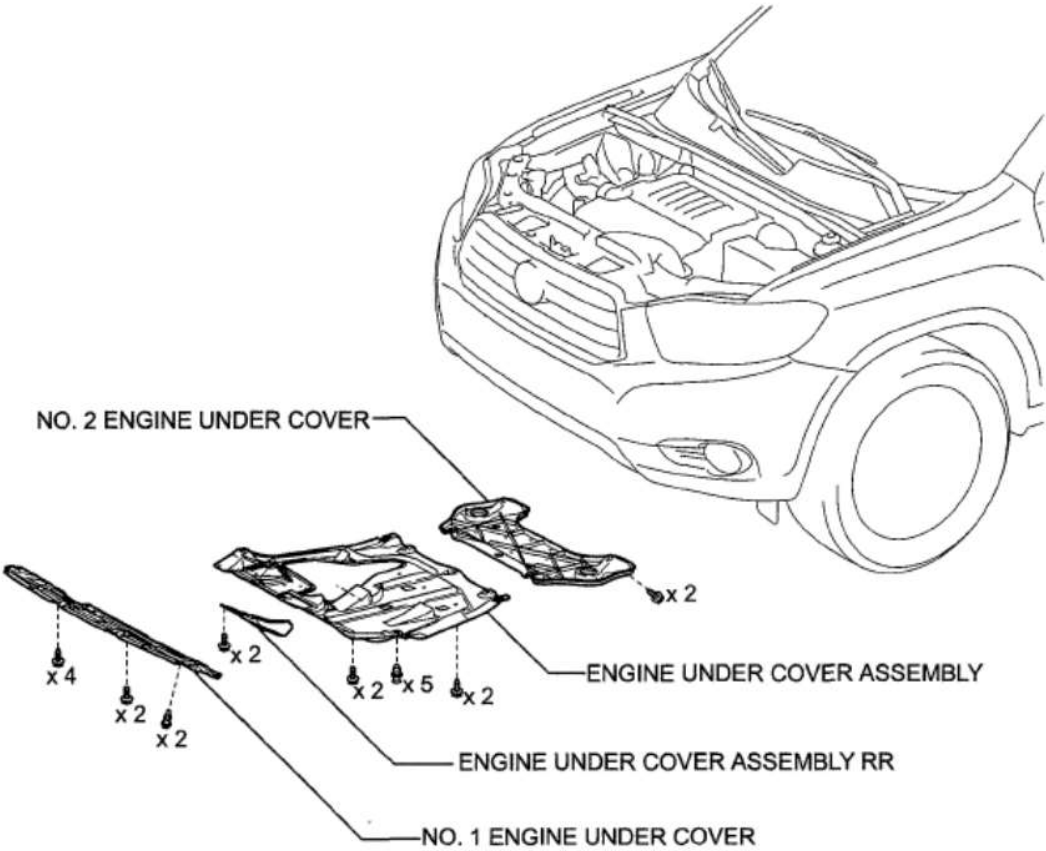
HINT:

(See TEST MODE PROCEDURE ).

**FRONT DRIVE SHAFT (FOR 2GR-FE)****COMPONENTS**

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2009 DRIVELINE/AXLES Drive Shaft - Highlander

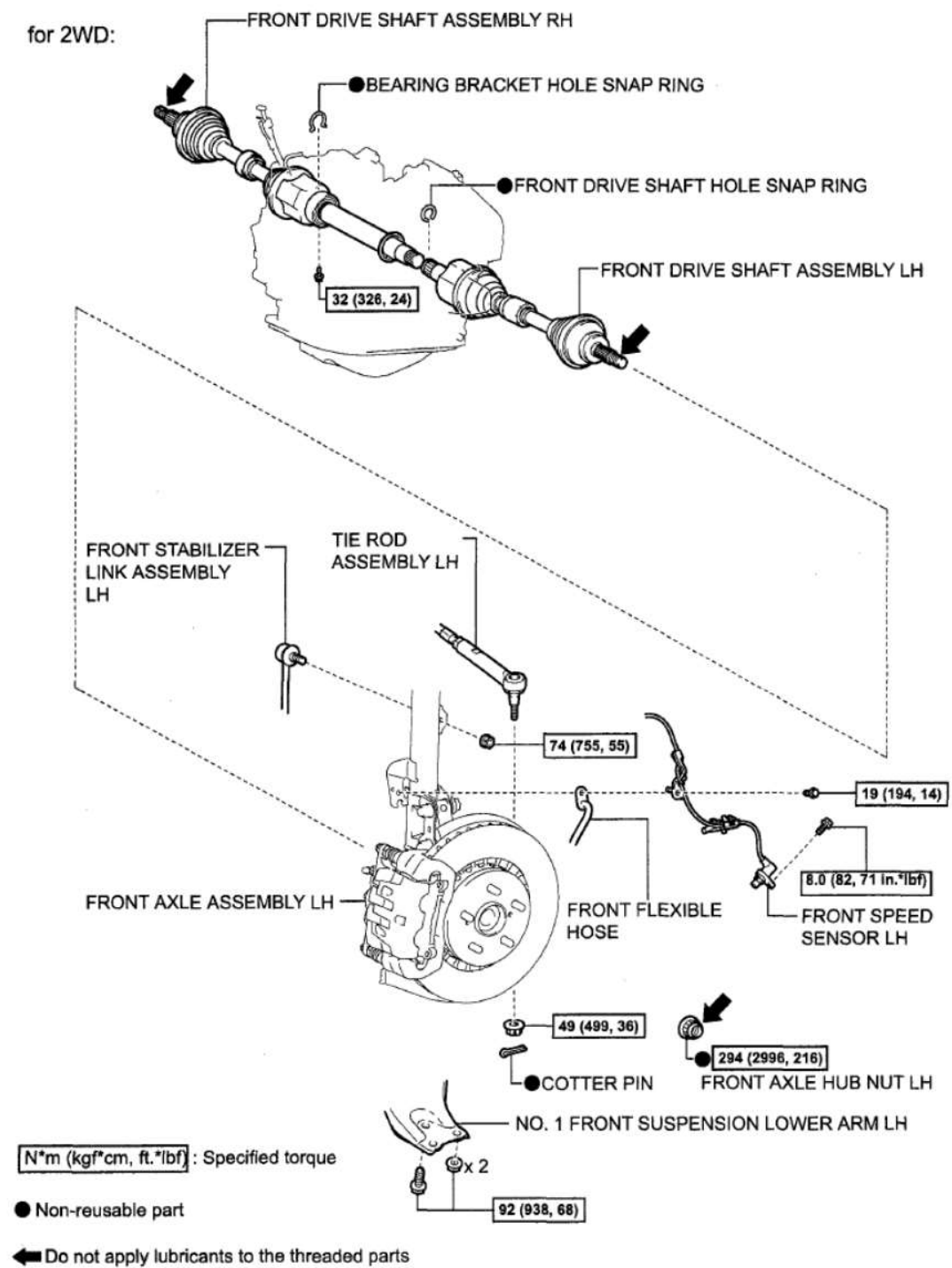


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**Fig. 56: Identifying Front Drive Shaft Components With Torque Specification (For 2GR-FE) (1 Of 6)**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

2009 Toyota Highlander Limited

2009 DRIVELINE/AXLES Drive Shaft - Highlander



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**Fig. 57: Identifying Front Drive Shaft Components With Torque Specification (For 2GR-FE) (2 Of 6)**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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2009 DRIVELINE/AXLES Drive Shaft - Highlander

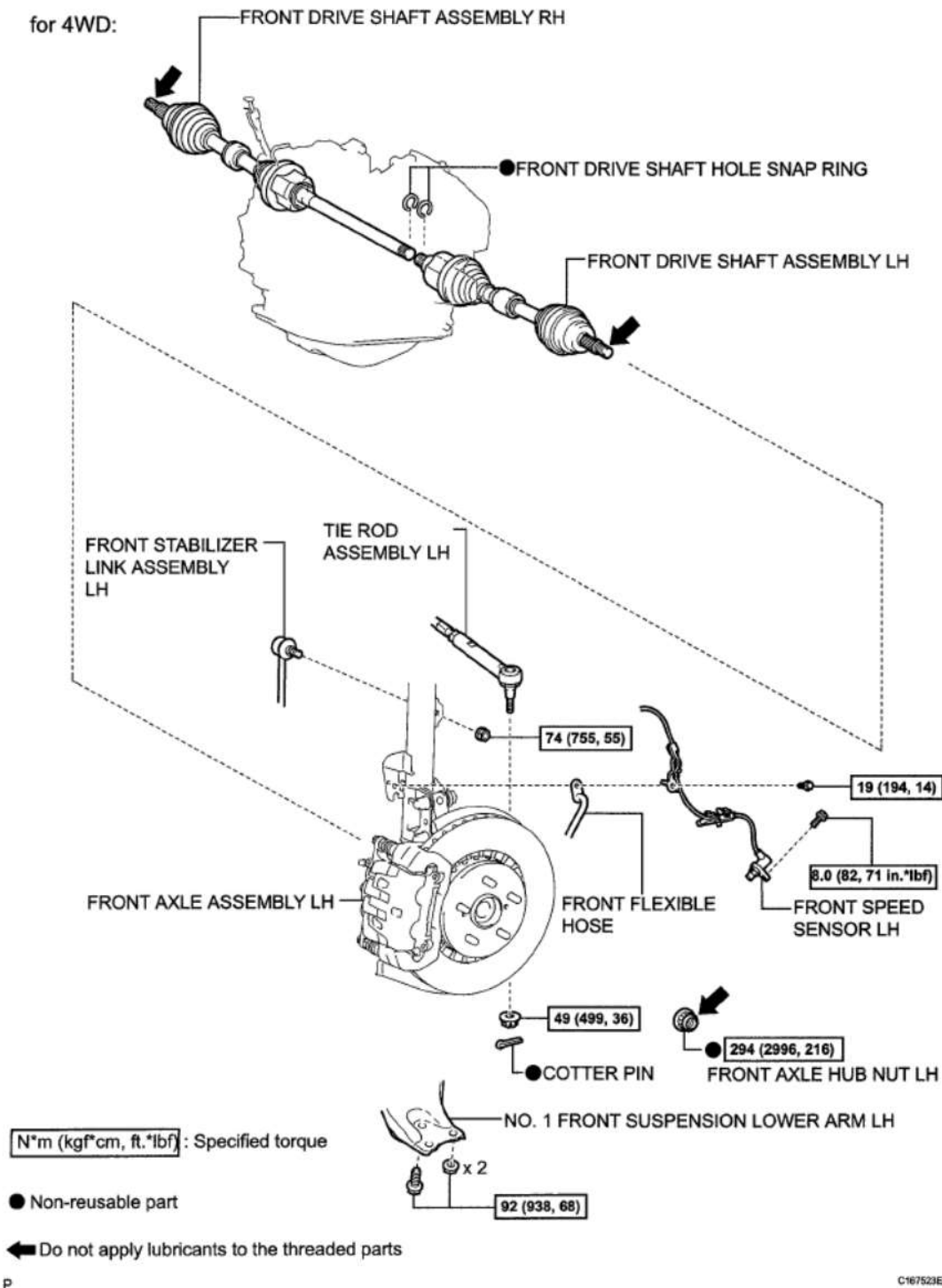
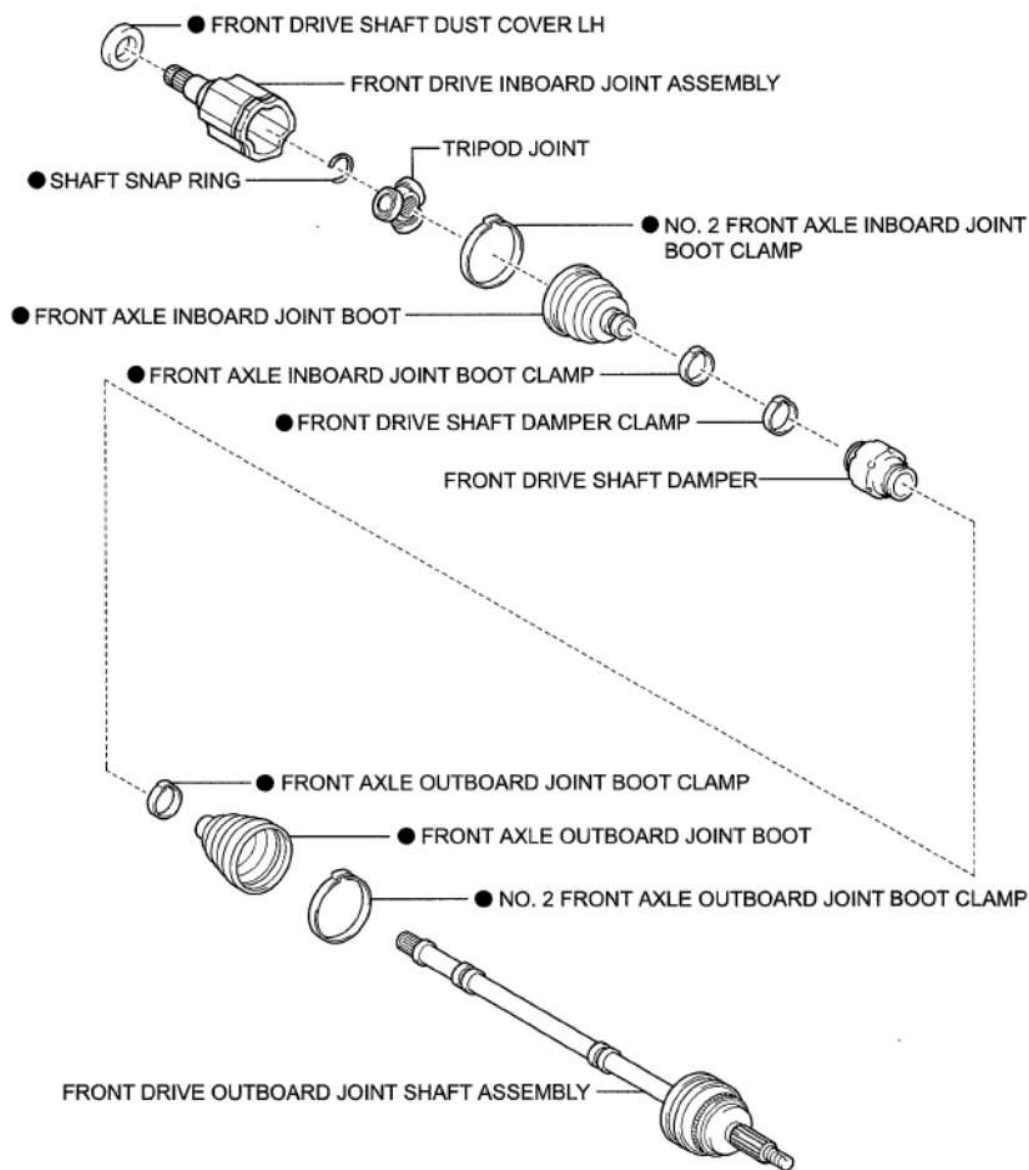


**Fig. 58: Identifying Front Drive Shaft Components With Torque Specification (For 2GR-FE) (3 Of 6)**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

## 2009 Toyota Highlander Limited

### 2009 DRIVELINE/AXLES Drive Shaft - Highlander

for LH Side:



● Non-reusable part

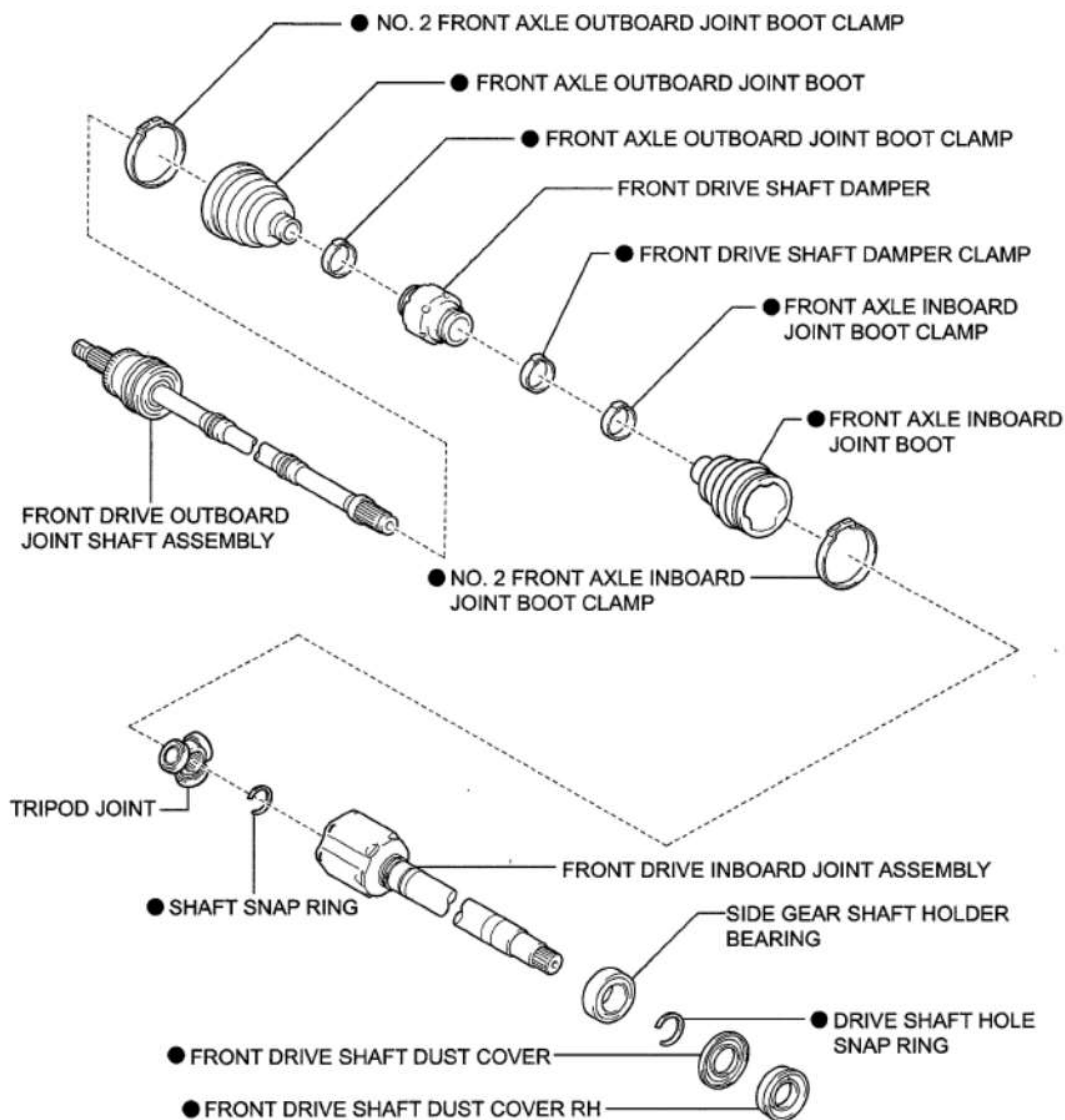
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**Fig. 59: Identifying Front Drive Shaft Components With Torque Specification (For 2GR-FE) (4 Of 6)**  
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

## 2009 Toyota Highlander Limited

### 2009 DRIVELINE/AXLES Drive Shaft - Highlander

for 2WD RH Side:



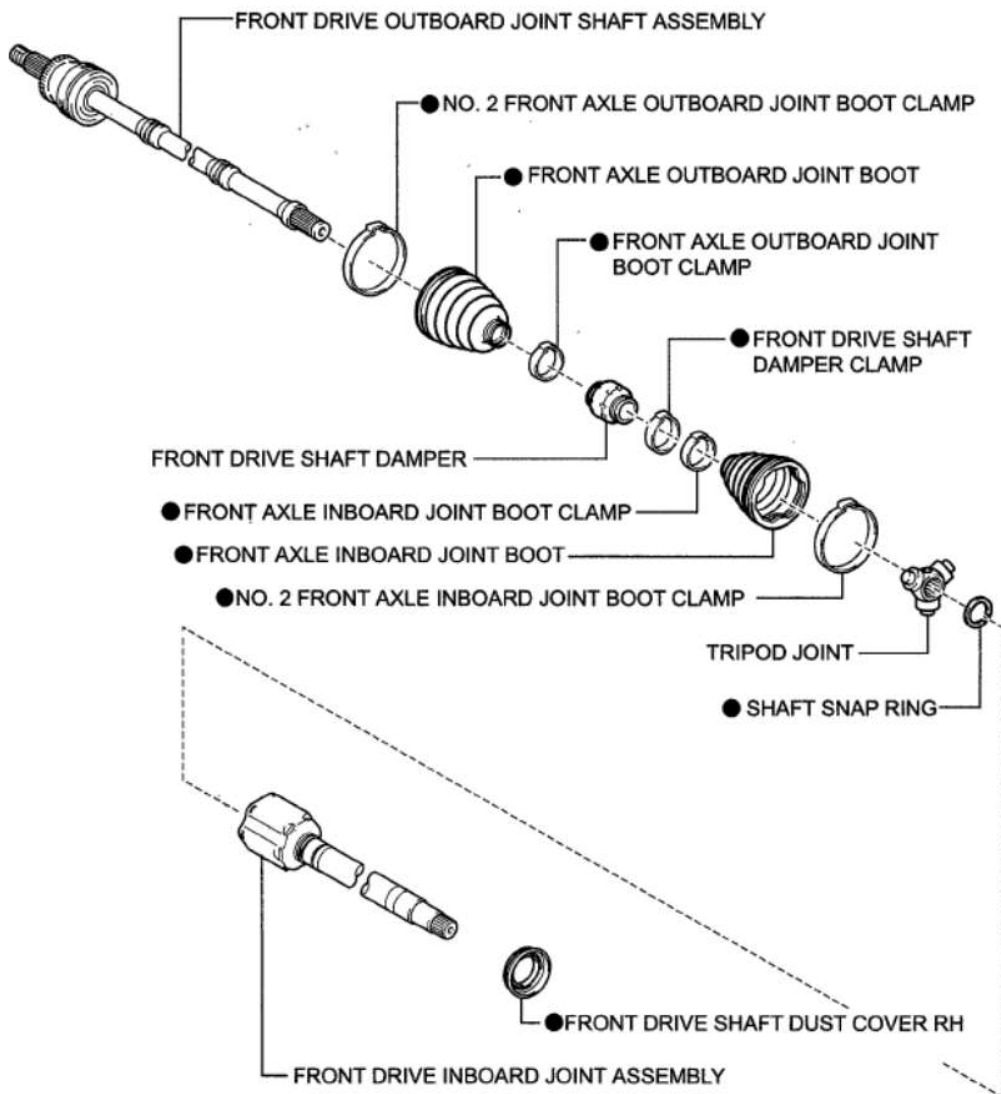
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**Fig. 60: Identifying Front Drive Shaft Components With Torque Specification (For 2GR-FE) (5 Of 6)**  
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

## 2009 Toyota Highlander Limited

### 2009 DRIVELINE/AXLES Drive Shaft - Highlander

for 4WD RH Side:



C171730E01

**Fig. 61: Identifying Front Drive Shaft Components With Torque Specification (For 2GR-FE) (6 Of 6)**  
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

## REMOVAL

### HINT:

- Use the same procedures for the RH side and LH side.
- The procedures listed below are for the LH side.

## 2009 Toyota Highlander Limited

### 2009 DRIVELINE/AXLES Drive Shaft - Highlander

1. **REMOVE ENGINE UNDER COVER ASSEMBLY** (See REASSEMBLY )
2. **REMOVE NO. 1 ENGINE UNDER COVER** (See REASSEMBLY )
3. **REMOVE NO. 2 ENGINE UNDER COVER** (See REASSEMBLY )
4. **DRAIN AUTOMATIC TRANSAXLE FLUID** (See REMOVAL )
5. **REMOVE NO. 1 TRANSFER CASE PLUG** (See DISASSEMBLY )
6. **REMOVE TRANSFER DRAIN PLUG** (See DISASSEMBLY )
7. **REMOVE FRONT WHEELS**
8. **REMOVE FRONT AXLE HUB NUT LH**
  - a. Using SST and a hammer, release the staked part of the front axle hub nut.

**SST 09930-00010**

**NOTE:** Loosen the staked part of the nut completely, otherwise the threads of the drive shaft may be damaged.

- b. While applying the brakes, remove the front axle hub nut.

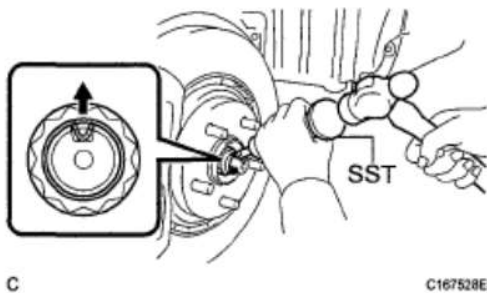


**Fig. 62: Releasing Staked Part Of Front Axle Hub Nut**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

9. **SEPARATE FRONT STABILIZER LINK ASSEMBLY LH** (See REMOVAL )
10. **SEPARATE FRONT SPEED SENSOR LH** (See REMOVAL )
11. **SEPARATE TIE ROD ASSEMBLY LH** (See REMOVAL )
12. **SEPARATE NO. 1 FRONT SUSPENSION LOWER ARM LH** (See REMOVAL )
13. **SEPARATE FRONT AXLE ASSEMBLY LH** (See REMOVAL )
14. **REMOVE FRONT DRIVE SHAFT ASSEMBLY LH**
  - a. Using SST, remove the front drive shaft assembly LH.

**SST 09520-01010, 09520-24010 (09520-32040)**

**NOTE:**

- Be careful not to damage the drive shaft dust cover, boot, or oil seal.
- Be careful not to drop the drive shaft assembly.

## 2009 Toyota Highlander Limited

### 2009 DRIVELINE/AXLES Drive Shaft - Highlander

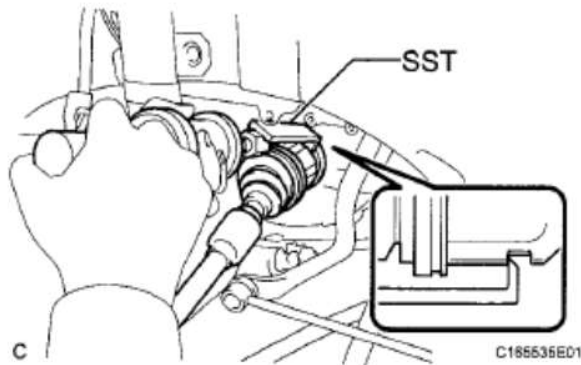


**Fig. 63: Removing Front Drive Shaft Assembly LH**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

#### 15. REMOVE FRONT DRIVE SHAFT ASSEMBLY RH (for 2WD)

- Remove the bearing bracket hole snap ring from the drive shaft bearing bracket.
- Remove the bolt and front drive shaft assembly RH from the drive shaft bearing bracket.

**NOTE:** Do not damage the boot or oil seal.

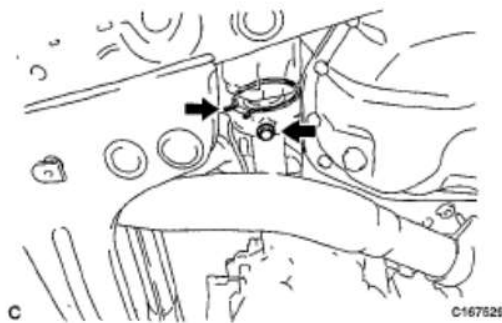


**Fig. 64: Locating Front Drive Shaft Assembly Bolt And Drive Shaft Bearing Bracket**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

#### 16. REMOVE FRONT DRIVE SHAFT ASSEMBLY RH (for 4WD)

**HINT:**

Perform the same procedure as for the LH side.

#### 17. SECURE FRONT AXLE HUB SUB-ASSEMBLY LH

- Using SST, secure the front axle hub bearing.

**SST 09608-16042 (09608-02021, 09608-02041)**

**NOTE:** The hub bearing may be damaged if it is subjected to the vehicle's full

## 2009 Toyota Highlander Limited

### 2009 DRIVELINE/AXLES Drive Shaft - Highlander

weight, such as when moving the vehicle with the drive shaft removed. If it is necessary to place the vehicle's weight on the hub bearing, first support it with SST.

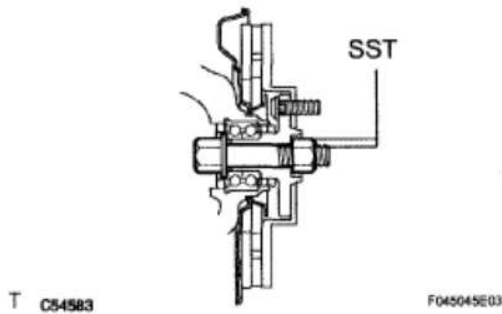


**Fig. 65: Securing Front Axle Hub Bearing**

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

#### DISASSEMBLY

##### 1. REMOVE FRONT DRIVE SHAFT HOLE SNAP RING

- Using a screwdriver, remove the front drive shaft hole snap ring.

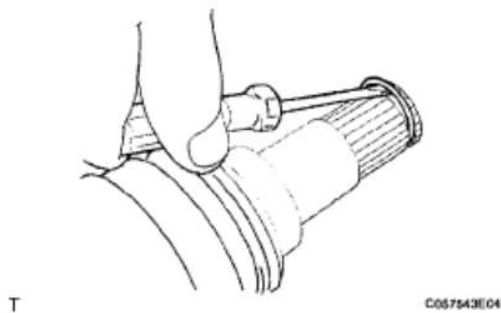


**Fig. 66: Removing Front Drive Shaft Hole Snap Ring**

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

##### 2. REMOVE NO. 2 FRONT AXLE INBOARD JOINT BOOT CLAMP

- Using pliers, remove the No. 2 front axle inboard joint boot clamp as shown in the illustration.

##### 3. REMOVE FRONT AXLE INBOARD JOINT BOOT CLAMP

- Remove the front axle inboard joint boot clamp.

#### HINT:

Perform the same procedures as for the No. 2 front axle inboard joint boot clamp.

## 2009 Toyota Highlander Limited

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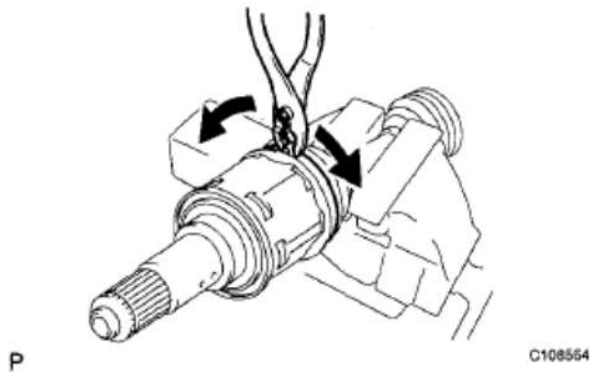


**Fig. 67: Removing No. 2 Front Axle Inboard Joint Boot Clamp**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

### 4. SEPARATE FRONT AXLE INBOARD JOINT BOOT

- Separate the front axle inboard joint boot from the inboard joint assembly.

### 5. REMOVE FRONT DRIVE INBOARD JOINT ASSEMBLY

- Remove the grease from the inboard joint assembly.
- Put matchmarks on the inboard joint assembly and outboard joint shaft.

**NOTE: Do not use a punch for the marks.**

- Remove the inboard joint assembly from the outboard joint shaft.

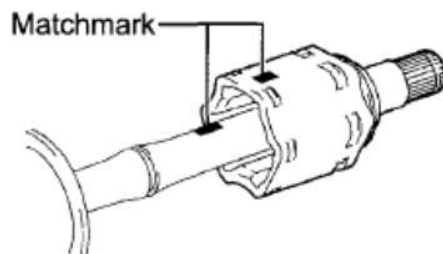


**Fig. 68: Identifying Matchmarks On Inboard Joint Assembly And Outboard Joint Shaft**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- Using a snap ring expander, remove the shaft snap ring.

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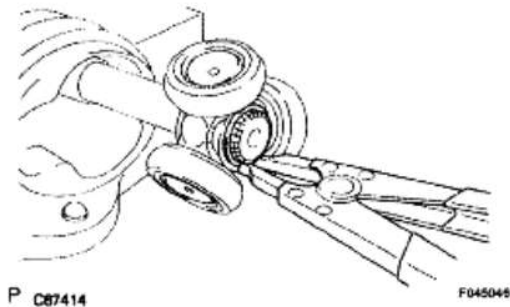


**Fig. 69: Removing Shaft Snap Ring**

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- e. Put matchmarks on the outboard joint shaft and tripod joint.

**NOTE:** Do not use a punch for the marks.

- f. Using a brass bar and a hammer, remove the tripod joint from the outboard joint shaft.

**NOTE:** Do not tap the roller.

#### 6. REMOVE FRONT AXLE INBOARD JOINT BOOT

- a. Remove the inboard joint boot from the outboard joint shaft.

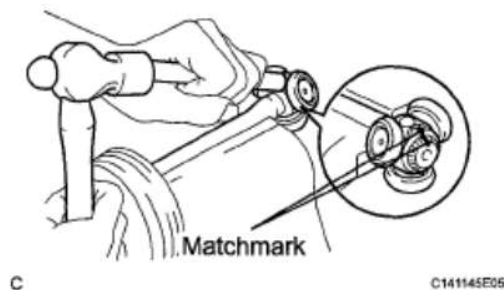


**Fig. 70: Removing Tripod Joint From Outboard Joint Shaft**

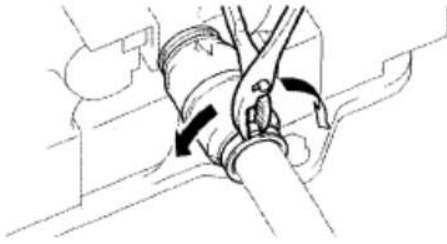
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

#### 7. REMOVE FRONT DRIVE SHAFT DAMPER

- a. Using pliers, remove the drive shaft damper clamp as shown in the illustration.
- b. Remove the drive shaft damper.

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**Fig. 71: Removing Front Drive Shaft Damper Clamp**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

#### 8. REMOVE NO. 2 FRONT AXLE OUTBOARD JOINT BOOT CLAMP

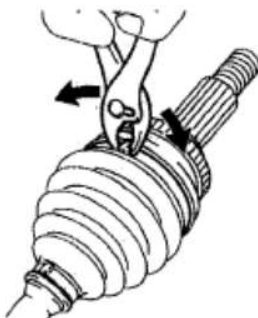
- Using pliers, remove the No. 2 front axle outboard joint boot clamp as shown in the illustration.

#### 9. REMOVE FRONT AXLE OUTBOARD JOINT BOOT CLAMP

- Remove the front axle outboard joint boot clamp.

HINT:

Perform the same procedures as for the No. 2 front axle outboard joint boot clamp.



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**Fig. 72: Removing No. 2 Front Axle Outboard Joint Boot Clamp**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

#### 10. REMOVE FRONT AXLE OUTBOARD JOINT BOOT

- Remove the outboard joint boot from the outboard joint shaft.
- Remove the grease from the outboard joint.

#### 11. REMOVE FRONT DRIVE SHAFT DUST COVER LH

- Using SST and a press, remove the drive shaft dust cover LH.

SST 09950-00020

**NOTE:** Be careful not to drop the inboard joint assembly.

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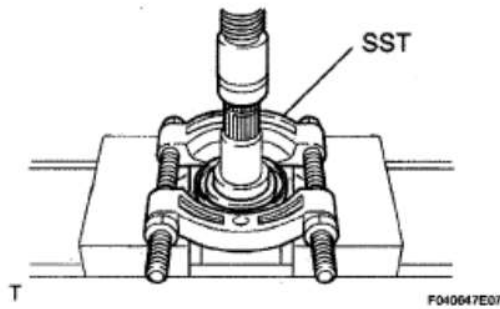


**Fig. 73: Pressing Drive Shaft Dust Cover LH**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

12. **REMOVE FRONT DRIVE SHAFT DUST COVER RH (for 2WD RH Side)**
  - a. Using a press, remove the drive shaft dust cover RH.
13. **REMOVE FRONT DRIVE SHAFT DUST COVER RH (for 4WD RH Side)**

**HINT:**

Perform the same procedure as for the LH side.

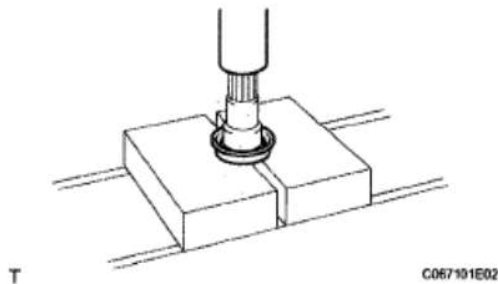


**Fig. 74: Removing Drive Shaft Dust Cover RH**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

14. **REMOVE FRONT DRIVE SHAFT DUST COVER (for 2WD RH Side)**
  - a. Using SST and a press, remove the drive shaft dust cover.

**SST 09950-00020**

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### 2009 DRIVELINE/AXLES Drive Shaft - Highlander

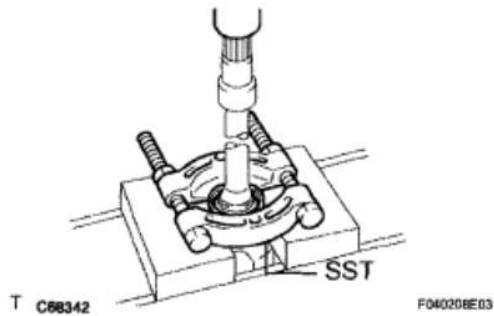


**Fig. 75: Removing Drive Shaft Dust Cover**

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

15. **REMOVE SIDE GEAR SHAFT HOLDER BEARING (for 2WD RH Side)**
  - a. Using a snap ring expander, remove the drive shaft hole snap ring.

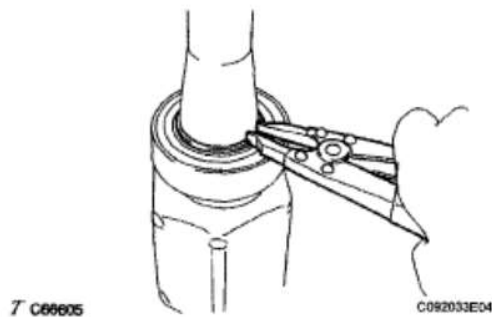


**Fig. 76: Removing Drive Shaft Hole Snap Ring**

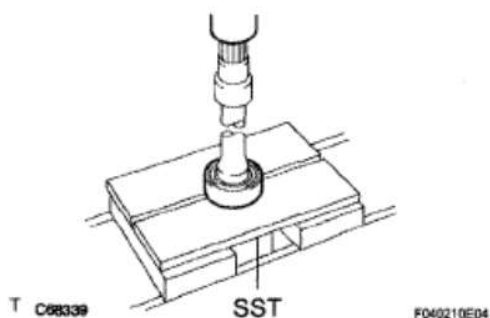
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- b. Using SST and a press, remove the bearing.

**SST 09527-10011**

- c. Remove the bearing bracket hole snap ring.

**NOTE:** Be careful not to drop the inboard joint assembly.



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### 2009 DRIVELINE/AXLES Drive Shaft - Highlander

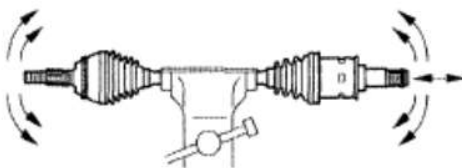
**Fig. 77: Removing Bearing**

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

#### INSPECTION

##### 1. INSPECT FRONT DRIVE SHAFT ASSEMBLY

- Check that there is no excessive play in the outboard joint.
- Check that the inboard joint slides smoothly in the thrust direction.
- Check that there is no excessive play in the radial direction of the inboard joint.
- Check the boots for damage.



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**Fig. 78: Inspecting Front Drive Shaft Assembly**

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

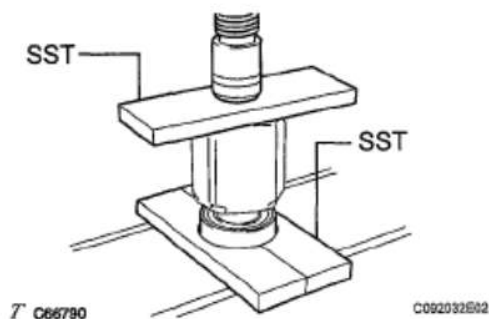
#### REASSEMBLY

##### 1. INSTALL SIDE GEAR SHAFT HOLDER BEARING (for 2WD RH Side)

- Install a new bearing bracket hole snap ring to the front drive shaft assembly RH.
- Using SST, install a new front drive shaft bearing.

SST 09527-10011, 09527-30010

**NOTE:** The bearing should be completely installed.



T C06790

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**Fig. 79: Installing Front Drive Shaft Bearing**

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- Using a snap ring expander, install a new drive shaft hole snap ring.

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### 2009 DRIVELINE/AXLES Drive Shaft - Highlander

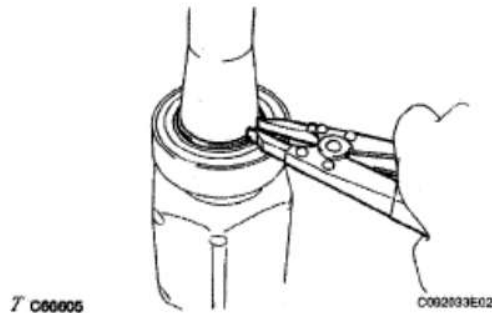


**Fig. 80: Installing Drive Shaft Hole Snap Ring**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

#### 2. INSTALL FRONT DRIVE SHAFT DUST COVER (for 2WD RH Side)

- Using SST and a press, install a new drive shaft dust cover.

**SST 09527-10011, 09726-40010**

**Distance:**

**26.6 to 27.6 mm (1.047 to 1.0866 in.)**

**NOTE:**

- The dust cover should be completely installed.
- Be careful not to damage the dust cover.

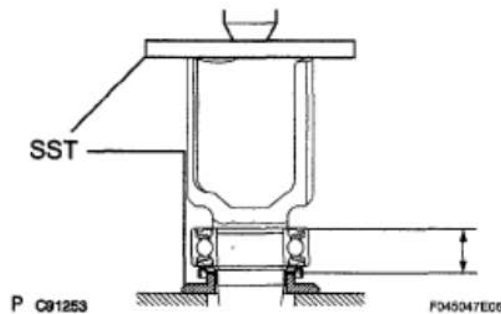


**Fig. 81: Installing Drive Shaft Dust Cover**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

#### 3. INSTALL FRONT DRIVE SHAFT DUST COVER RH (for 2WD RH Side)

- Using SST and a press, install a new drive shaft dust cover RH until distance (A) from the tip of the center drive shaft to the drive shaft dust cover RH meets the specification.

**SST 09527-10011**

**Distance (A):**

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### 2009 DRIVELINE/AXLES Drive Shaft - Highlander

110.0 to 111.0 mm (4.3307 to 4.3700 in.)

**NOTE:**

- The dust cover should be completely installed.
- Be careful not to damage the dust cover.

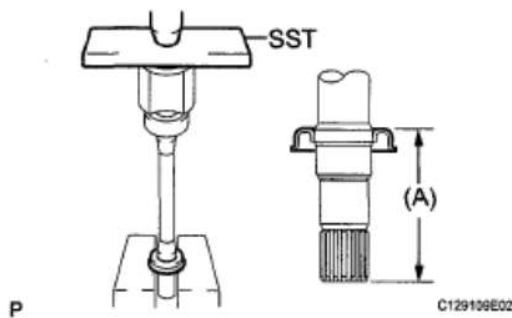


**Fig. 82: Installing Front Drive Shaft Dust Cover RH**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

#### 4. INSTALL FRONT DRIVE SHAFT DUST COVER LH

- Using SST and a press, install a new drive shaft dust cover LH.

SST 09527-10011

**NOTE:**

- The dust cover should be completely installed.
- Be careful not to damage the dust cover.

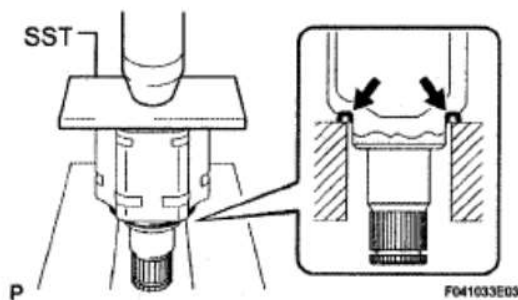


**Fig. 83: Installing Drive Shaft Dust Cover LH**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

#### 5. INSTALL FRONT DRIVE SHAFT DUST COVER RH (for 4WD RH Side)

**HINT:**

Perform the same procedure as for the LH side.

#### 6. INSTALL FRONT AXLE OUTBOARD JOINT BOOT

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#### HINT:

Before installing the boot, wrap the spline of the drive shaft with vinyl tape to prevent the boot from being damaged.

- a. Install new parts to the outboard joint shaft in the following order:
  1. No. 2 front axle outboard joint boot clamp
  2. Front axle outboard joint boot
  3. Front axle outboard joint boot clamp

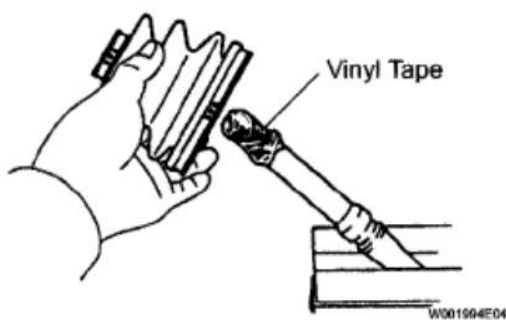


**Fig. 84: Installing Outboard Joint Boot To Drive Shaft**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- b. Pack the front drive outboard joint shaft and front axle outboard joint boot with grease.

#### Grease capacity

##### GREASE CAPACITY CHART

|     |                               |
|-----|-------------------------------|
| 2WD | 170 to 190 g (6.0 to 6.7 oz.) |
| 4WD | 100 to 120 g (3.5 to 4.2 oz.) |

#### 7. INSTALL FRONT AXLE OUTBOARD JOINT BOOT CLAMP

- a. Hold the drive shaft lightly in a vise between aluminum plates.

**NOTE:** Do not overtighten the vise.

- b. Install the front axle outboard joint boot clamp onto the front axle outboard joint boot.
- c. Place SST onto the front axle outboard joint boot clamp.

**SST 09521-24010**

- d. Tighten SST so that the front axle outboard joint boot clamp is pinched.

**NOTE:** Do not overtighten SST.

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### 2009 DRIVELINE/AXLES Drive Shaft - Highlander

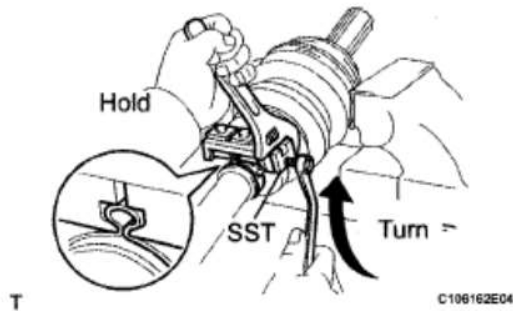


**Fig. 85: Tightening Outboard Joint Boot Clamp**

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- e. Using SST, measure the clearance of the front axle outboard joint boot clamp.

**SST 09240-00020**

**Clearance:**

**0.5 to 1.5 mm (0.0197 to 0.0591 in.)**

**NOTE:** If the measured value is greater than the specified value, retighten the clamp.

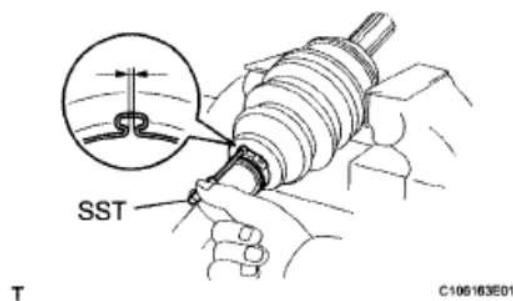


**Fig. 86: Measuring Clearance Of Outboard Joint Boot Clamp**

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

#### 8. INSTALL NO. 2 FRONT AXLE OUTBOARD JOINT BOOT CLAMP

- a. Install the No. 2 front axle outboard joint boot clamp onto the front axle outboard joint boot.
- b. Place SST onto the No. 2 front axle outboard joint boot clamp.

**SST 09521-24010**

- c. Tighten SST so that the No. 2 front axle outboard joint boot clamp is pinched.

**NOTE:** Do not overtighten SST.

## 2009 Toyota Highlander Limited

### 2009 DRIVELINE/AXLES Drive Shaft - Highlander

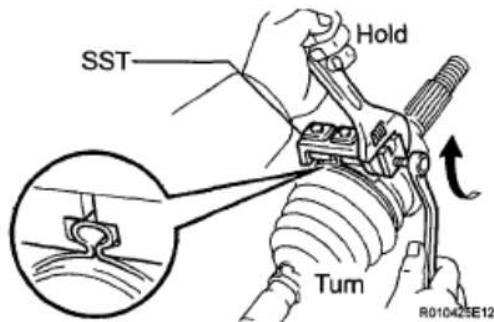


**Fig. 87: Tightening No. 2 Front Axle Outboard Joint Boot Clamp**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- d. Using SST, measure the clearance of the No. 2 front axle outboard joint boot clamp.

**SST 09240-00020**

**Clearance:**

**0.5 to 1.5 mm (0.0197 to 0.0591 in.)**

**NOTE:** If the measured value is greater than the specified value, retighten the clamp.

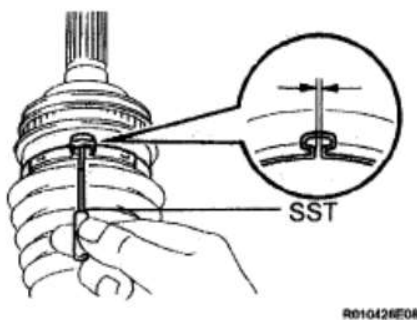


**Fig. 88: Measuring Clearance Of No. 2 Outboard Joint Boot Clamp**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

#### 9. INSTALL FRONT DRIVE SHAFT DAMPER

- Install the drive shaft damper to the drive shaft.
- Make sure that the damper is on the shaft groove.
- Set the distance as specified below.

**Distance**

#### **DISTANCE REFERENCE**

|  |    |                                        |
|--|----|----------------------------------------|
|  | LH | 228.0 to 232.0 mm (8.976 to 9.134 in.) |
|--|----|----------------------------------------|

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|     |    |                                        |
|-----|----|----------------------------------------|
| 2WD | RH | 231.0 to 235.0 mm (9.094 to 9.252 in.) |
| 4WD | LH | 226.9 to 230.9 mm (8.933 to 9.090 in.) |
|     | RH | 228.2 to 232.2 mm (8.984 to 9.142 in.) |

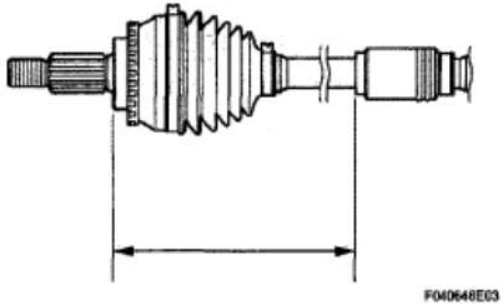


**Fig. 89: Identifying Front Drive Shaft Damper LH Distance**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- d. Install the drive shaft damper clamp onto the drive shaft damper.

**NOTE:** Be sure to install the clamp in the correct position.

- e. Place SST onto the drive shaft damper clamp.

**SST 09521-24010**

- f. Tighten SST so that the clamp is pinched.

**NOTE:** Do not overtighten SST.

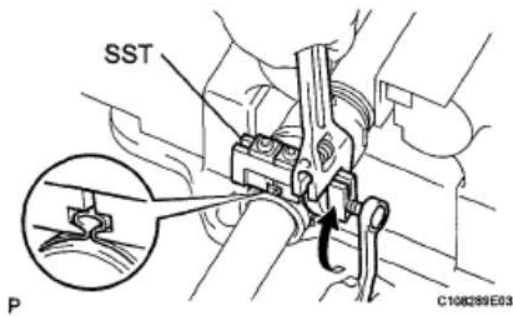


**Fig. 90: Tightening Front Drive Shaft Damper Clamp**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- g. Using SST, measure the clearance of the drive shaft damper clamp.

**SST 09240-00020**

## 2009 Toyota Highlander Limited

### 2009 DRIVELINE/AXLES Drive Shaft - Highlander

#### Clearance:

0.5 to 1.5 mm (0.0197 to 0.0591 in.)

**NOTE:** If the measured value is greater than the specified value, retighten the clamp.

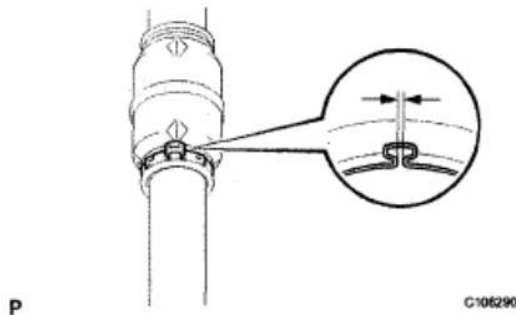


**Fig. 91: Measuring Clearance Of Drive Shaft Damper Clamp**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

#### 10. INSTALL FRONT DRIVE INBOARD JOINT ASSEMBLY

- Wrap the splines of the outboard joint shaft with vinyl tape to prevent the boot from being damaged.
- Install new parts to the front drive outboard joint shaft assembly in the following order:
  - Front axle inboard joint boot clamp
  - Front axle inboard joint boot
  - No. 2 front axle inboard joint boot clamp
- Place the beveled side of the tripod joint axial spline toward the front drive outboard joint shaft assembly.
- Align the matchmarks placed before removal.
- Using a brass bar and hammer, tap in the tripod joint to the front drive outboard joint shaft assembly.

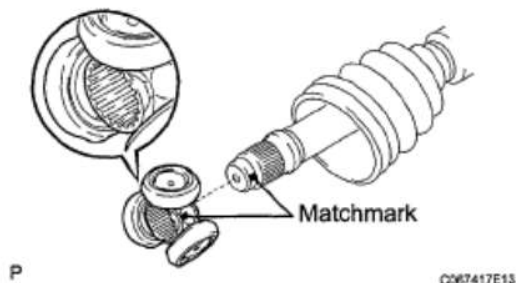


**Fig. 92: Identifying Matchmarks On Front Drive Inboard Joint Assembly**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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### 2009 DRIVELINE/AXLES Drive Shaft - Highlander

#### NOTE:

- Do not tap the roller.
- Be sure to install the tripod joint assembly in the correct direction.

- Using a snap ring expander, install a new shaft snap ring.
- Pack the front drive inboard joint assembly and front axle inboard boot with grease.

#### Grease capacity

#### GREASE CAPACITY REFERENCE

|     |                              |
|-----|------------------------------|
| 2WD | 155 to 175g (5.5 to 6.2 oz.) |
| 4WD | 106 to 126g (3.7 to 4.4 oz.) |

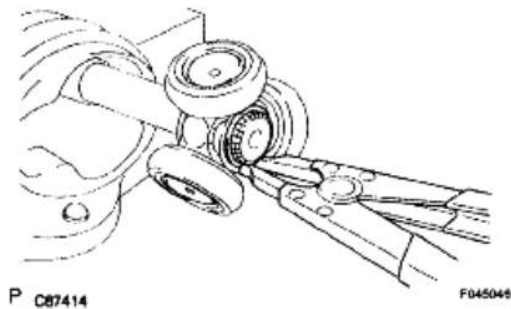


**Fig. 93: Installing Shaft Snap Ring**

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- Align the matchmarks and install the front drive inboard joint assembly to the front drive outboard joint shaft assembly.

#### 11. INSTALL FRONT AXLE INBOARD JOINT BOOT

- Install the front axle inboard joint boot to the front drive inboard joint assembly.

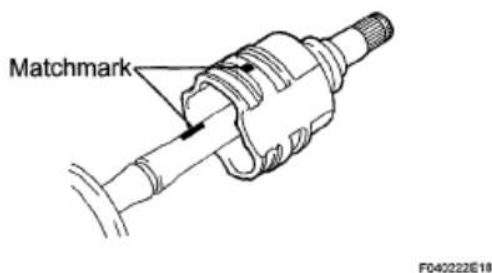


**Fig. 94: Identifying Matchmarks On Front Drive Inboard Joint Assembly And Front Drive Outboard Joint Shaft Assembly**

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- Check whether the drive shaft dimensions are within the following specifications.

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2009 DRIVELINE/AXLES Drive Shaft - Highlander

HINT:

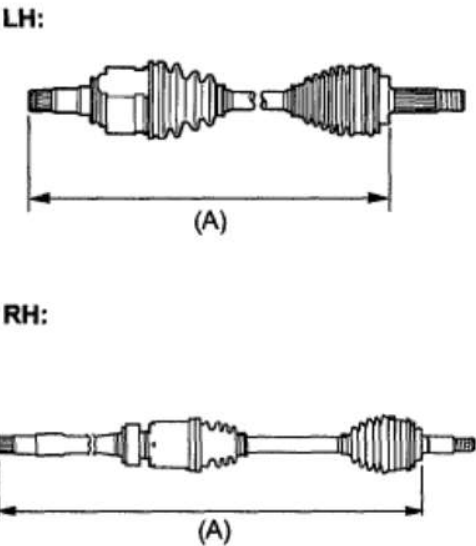
The following table shows dimension (A) of the drive shaft.

Dimension (A):

| DIMENSION REFERENCE |    |                                          |
|---------------------|----|------------------------------------------|
| 2WD                 | LH | 600.8 to 605.4 mm (23.66 to 23.83 in.)   |
|                     | RH | 920.06 to 924.66 mm (36.23 to 36.40 in.) |
| 4WD                 | LH | 576.14 to 580.74 mm (22.69 to 22.86 in.) |
|                     | RH | 950.64 to 955.24 mm (37.43 to 37.60 in.) |

12. INSTALL FRONT AXLE INBOARD JOINT BOOT CLAMP
- a. Hold the drive shaft lightly in a vise between aluminum plates.

NOTE: Do not overtighten the vise.



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**Fig. 95: Identifying Drive Shaft Dimensions**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- b. Secure the inboard joint boot clamp onto the boot.
- c. Place SST onto the inboard joint boot clamp.
- SST 09521-24010
- d. Tighten SST so that the front axle inboard joint boot clamp is pinched.

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### 2009 DRIVELINE/AXLES Drive Shaft - Highlander

**NOTE:** Do not overtighten SST.

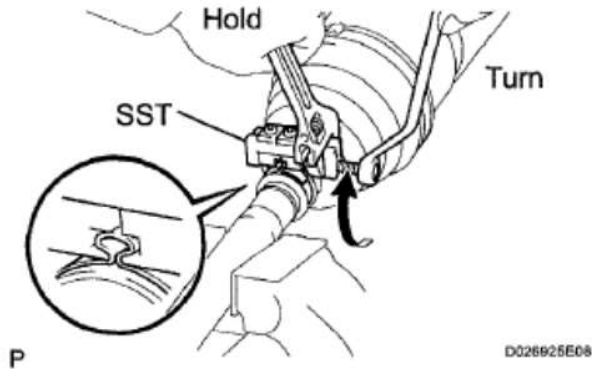


**Fig. 96: Tightening Front Axle Inboard Joint Boot Clamp**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- e. Using SST, measure the clearance of the front axle inboard joint boot clamp.

**SST 09240-00020**

**Clearance:**

**0.5 to 1.5 mm (0.0197 to 0.0591 in.)**

**NOTE:** If the measured value is greater than the specified value, retighten the clamp.

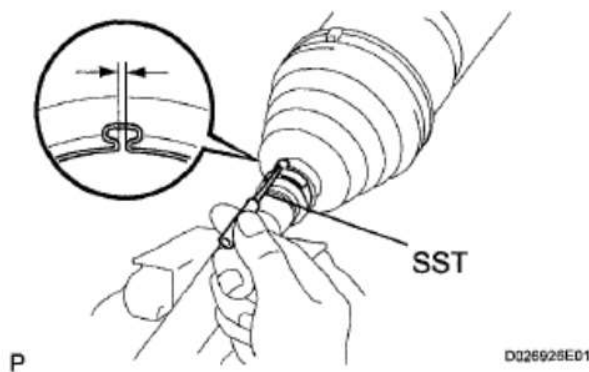


**Fig. 97: Measuring Clearance Of Front Axle Inboard Joint Boot Clamp**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

#### 13. INSTALL NO. 2 FRONT AXLE INBOARD JOINT BOOT CLAMP

- a. Hold the inboard joint shaft assembly in a vise between aluminium plates.

**NOTE:** Do not overtighten the vise.

**2009 Toyota Highlander Limited**

## 2009 DRIVELINE/AXLES Drive Shaft - Highlander

- b. Secure the No. 2 front axle inboard joint boot clamp onto the boot.
- c. Place SST onto the No. 2 front axle inboard joint boot clamp.

**SST 09521-24010**

- d. Tighten SST so that the No. 2 front axle inboard joint boot clamp is pinched.

**NOTE:** Do not overtighten SST.

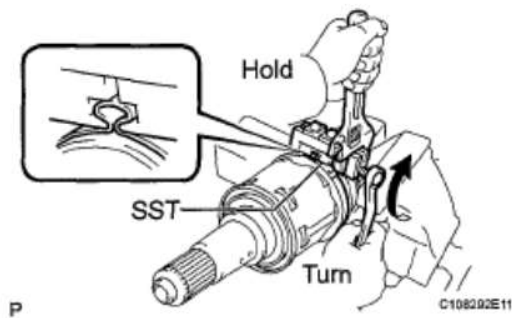


**Fig. 98: Placing SST Onto No. 2 Front Axle Inboard Joint Boot Clamp**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- e. Using SST, measure the clearance of the No. 2 front axle inboard joint boot clamp.

**SST 09240-00020****Clearance:****0.5 to 1.5 mm (0.0197 to 0.0591 in.)**

**NOTE:** If the measured value is greater than the specified value, retighten the clamp.

**14. INSTALL FRONT DRIVE SHAFT HOLE SNAP RING**

- a. Install a new front drive shaft hole snap ring.

## 2009 Toyota Highlander Limited

### 2009 DRIVELINE/AXLES Drive Shaft - Highlander

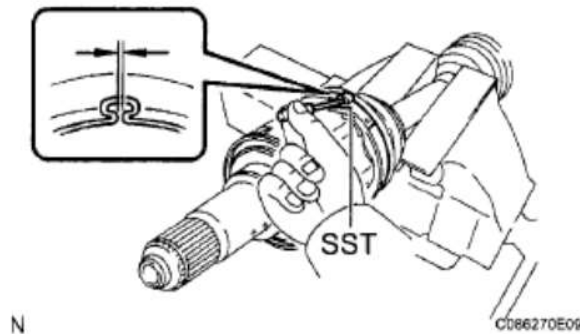


**Fig. 99: Measuring Clearance Of No. 2 Front Axle Inboard Joint Boot Clamp**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

#### 15. INSPECT FRONT DRIVE SHAFT ASSEMBLY LH (See INSPECTION)

#### INSTALLATION

##### 1. INSTALL FRONT DRIVE SHAFT ASSEMBLY LH

- Align the shaft splines and install the drive shaft assembly LH with a brass bar and hammer.

#### NOTE:

- Set the shaft snap ring with the opening facing down.
- Be careful not to damage the drive shaft dust cover, boot, or oil seal.
- Move the drive shaft assembly while keeping it level.

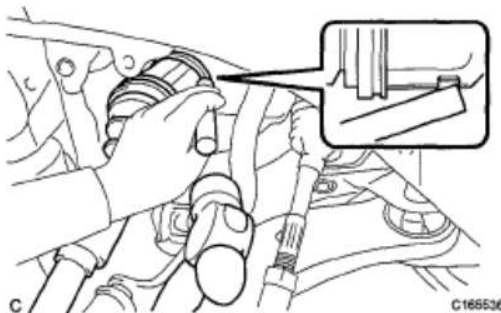


**Fig. 100: Installing Drive Shaft Assembly LH Using Brass Bar And Hammer**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

##### 2. INSTALL FRONT DRIVE SHAFT ASSEMBLY RH (for 2WD)

- Install the front drive shaft assembly RH.
- Install a new bearing bracket hole snap ring and bolt.

**Torque: 32 N\*m (326 kgf\*cm, 24 ft.\*lbf)**

#### NOTE:

- Do not damage the boot or oil seal.

## 2009 Toyota Highlander Limited

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- Move the drive shaft assembly while keeping it level.

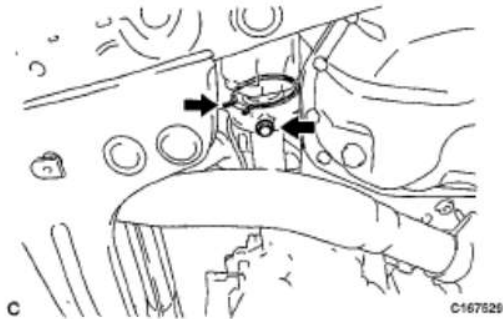


**Fig. 101: Locating Front Drive Shaft Assembly Bolt And Drive Shaft Bearing Bracket**  
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

#### 3. INSTALL FRONT DRIVE SHAFT ASSEMBLY RH (for 4WD)

HINT:

Perform the same procedure as for the LH side.

4. **INSTALL FRONT AXLE ASSEMBLY LH** (See INSTALLATION )
5. **INSTALL NO. 1 FRONT SUSPENSION LOWER ARM LH** (See INSTALLATION )
6. **INSTALL TIE ROD ASSEMBLY LH** (See INSTALLATION )
7. **INSTALL FRONT SPEED SENSOR LH** (See INSTALLATION )
8. **INSTALL FRONT STABILIZER LINK ASSEMBLY LH** (See INSTALLATION )
9. **INSTALL FRONT AXLE HUB NUT LH**
  - a. Clean the threaded parts on the drive shaft and axle hub nut using a non-residue solvent.

HINT:

- Be sure to perform this work for a new drive shaft.
  - Keep the threaded parts free of oil and foreign objects.
- b. Using a socket wrench (30 mm), install a new axle hub nut.

**Torque: 294 N\*m (2996 kgf\*cm, 216 ft.\*lbf)**

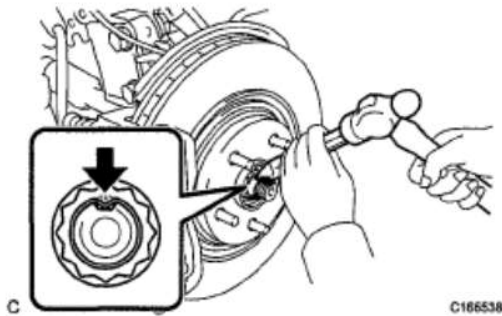
- c. Using a chisel and hammer, stake the front axle hub nut.

#### 10. INSTALL FRONT WHEELS

**Torque: 103 N\*m (1050 kgf\*cm, 76 ft.\*lbf)**

**2009 Toyota Highlander Limited**

## 2009 DRIVELINE/AXLES Drive Shaft - Highlander

**Fig. 102: Staking Front Axle Hub Nut**

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

11. **ADD AUTOMATIC TRANSAXLE FLUID**
12. **CHECK AUTOMATIC TRANSAXLE FLUID** (See **AUTOMATIC TRANSAXLE FLUID** )
13. **INSTALL TRANSFER DRAIN PLUG** (for 4WD) (See **INSTALLATION** )
14. **INSTALL NO. 1 TRANSFER CASE PLUG** (for 4WD) (See **INSTALLATION** )
15. **CHECK TRANSFER OIL** (for 4WD) (See **TRANSFER OIL** )
16. **INSTALL NO. 2 ENGINE UNDER COVER** (See **INSTALLATION** )
17. **INSTALL NO. 1 ENGINE UNDER COVER** (See **INSTALLATION** )
18. **INSTALL ENGINE UNDER COVER ASSEMBLY** (See **INSTALLATION** )
19. **ADJUST FRONT WHEEL ALIGNMENT**

HINT:

(See **FRONT WHEEL ALIGNMENT** )

20. **CHECK ABS SPEED SENSOR SIGNAL**

HINT:

(See **TEST MODE PROCEDURE** )**REAR DRIVE SHAFT (FOR 4WD)****COMPONENTS**

## 2009 Toyota Highlander Limited

### 2009 DRIVELINE/AXLES Drive Shaft - Highlander

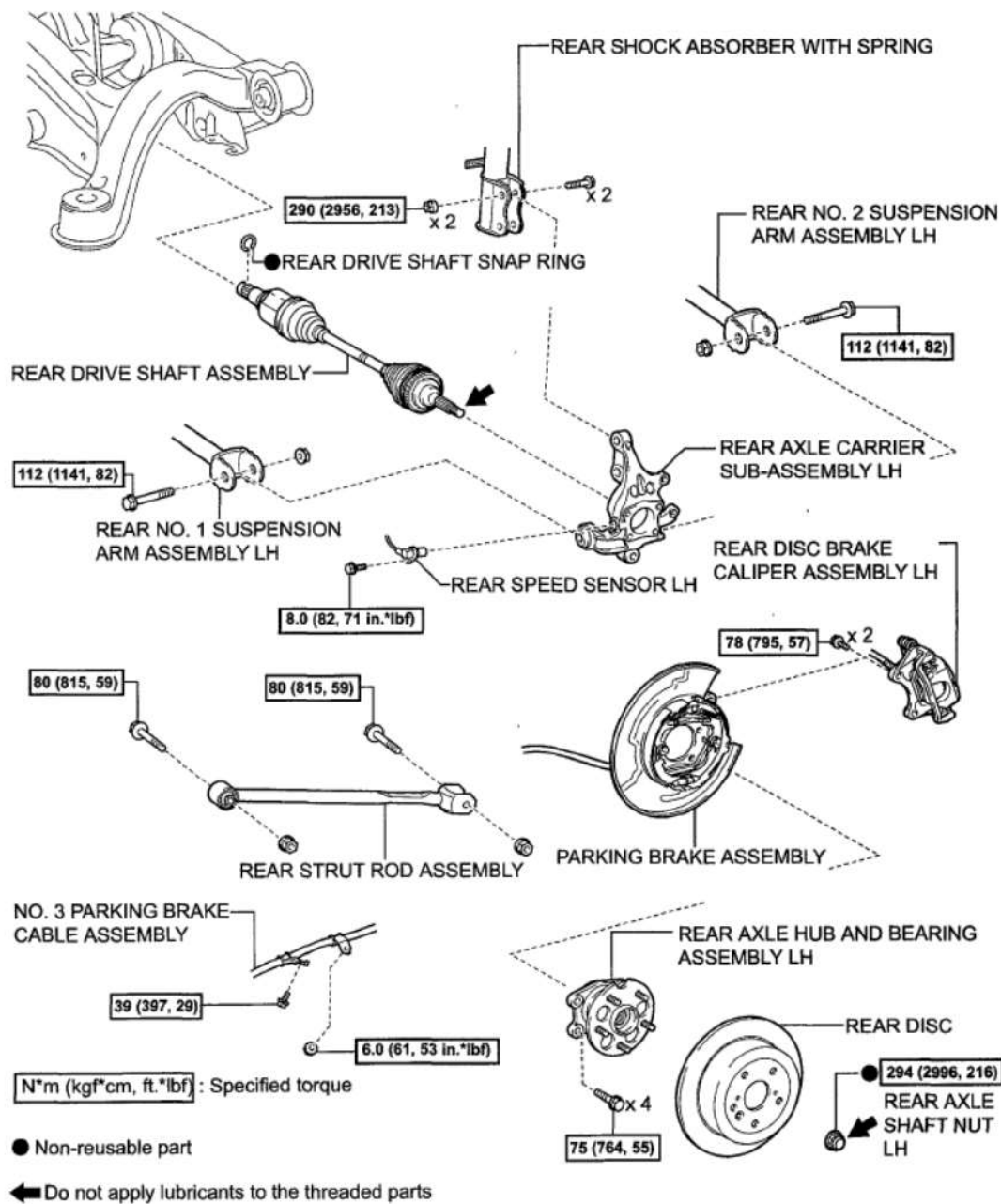
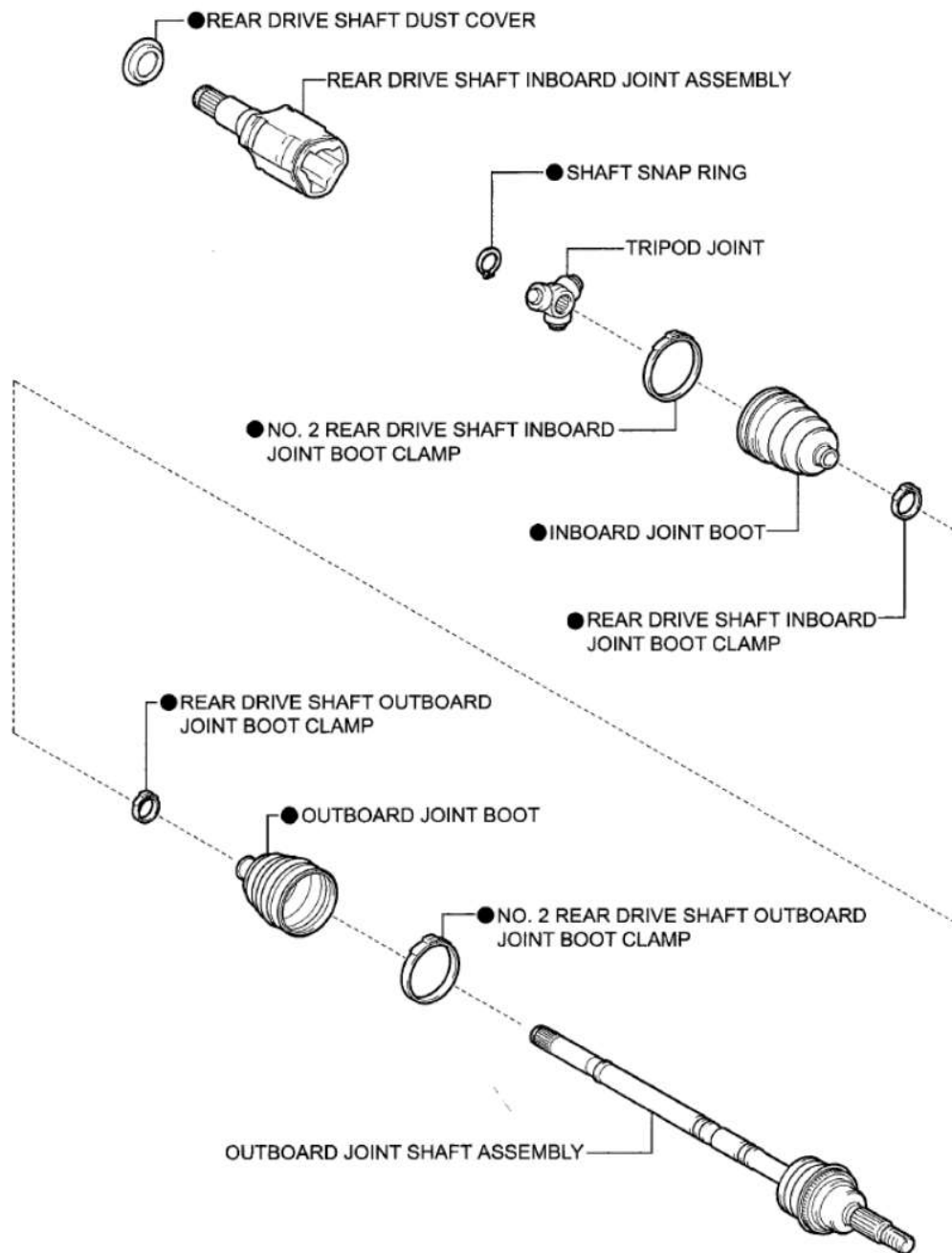


**Fig. 103: Identifying Rear Drive Shaft Components With Torque Specification (For 4WD) (1 Of 2)**  
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

## 2009 Toyota Highlander Limited

### 2009 DRIVELINE/AXLES Drive Shaft - Highlander



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**Fig. 104: Identifying Rear Drive Shaft Components With Torque Specification (For 4WD) (2 Of 2)**  
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

## REMOVAL

HINT:

## 2009 Toyota Highlander Limited

### 2009 DRIVELINE/AXLES Drive Shaft - Highlander

- Use the same procedures for the RH side and LH side.
- The procedures listed below are for the LH side.

1. **REMOVE REAR WHEEL**
2. **REMOVE REAR DIFFERENTIAL FILLER PLUG** (See REMOVAL )
3. **REMOVE REAR DIFFERENTIAL DRAIN PLUG** (See REMOVAL )
4. **SEPARATE REAR SPEED SENSOR LH** (See REMOVAL )
5. **REMOVE REAR AXLE SHAFT NUT LH**
  - a. Using SST and a hammer, release the staked part of the rear axle shaft nut.

**SST 09930-00010**

**NOTE:** Loosen the staked part of the nut completely, otherwise the threads of the drive shaft may be damaged.

- b. While applying the brakes, remove the rear axle shaft nut.

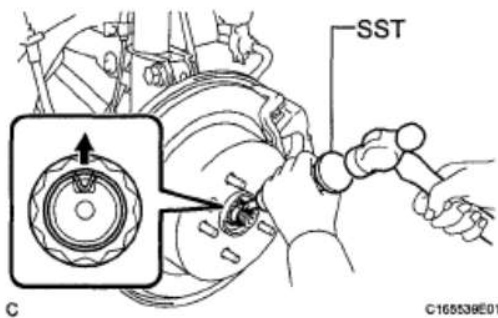


**Fig. 105: Removing Rear Axle Shaft Nut LH**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

6. **SEPARATE REAR DISC BRAKE CALIPER ASSEMBLY LH** (See REPLACEMENT )
7. **REMOVE REAR DISC** (See INSPECTION )
8. **SEPARATE REAR AXLE HUB AND BEARING ASSEMBLY LH** (See REMOVAL )
9. **SEPARATE NO. 3 PARKING BRAKE CABLE ASSEMBLY** (See INSTALLATION )
10. **REMOVE REAR STRUT ROD ASSEMBLY** (See INSTALLATION )
11. **SEPARATE REAR AXLE CARRIER SUB-ASSEMBLY LH** (See INSTALLATION )
12. **REMOVE REAR DRIVE SHAFT ASSEMBLY**
  - a. Using SST, remove the rear drive shaft assembly as shown in the illustration.

**SST 09520-01010, 09520-24010 (09520-32040)**

**NOTE:** Remove the rear drive shaft assembly while keeping it level.

## 2009 Toyota Highlander Limited

### 2009 DRIVELINE/AXLES Drive Shaft - Highlander

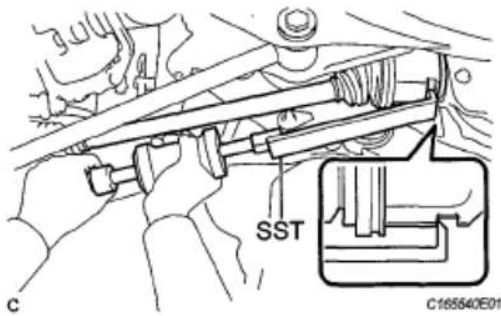


**Fig. 106: Removing Rear Drive Shaft Assembly**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

#### DISASSEMBLY

##### 1. REMOVE REAR DRIVE SHAFT SNAP RING

- Using a screwdriver, remove the rear drive shaft snap ring.

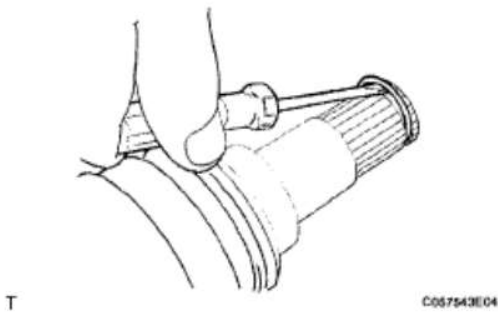


**Fig. 107: Removing Rear Drive Shaft Snap Ring**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

##### 2. REMOVE REAR DRIVE SHAFT INBOARD JOINT BOOT CLAMP

- Using pliers, remove the rear drive shaft inboard joint boot clamp as shown in the illustration.

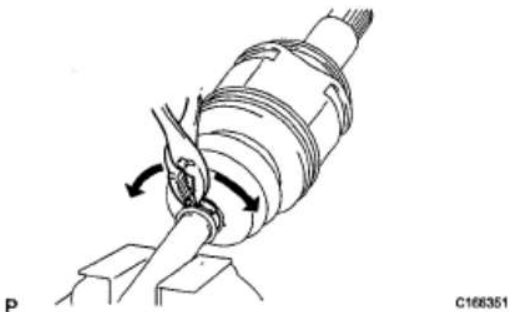


**Fig. 108: Removing Rear Drive Shaft Inboard Joint Boot Clamp**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

## 2009 Toyota Highlander Limited

### 2009 DRIVELINE/AXLES Drive Shaft - Highlander

#### 3. REMOVE NO. 2 REAR DRIVE SHAFT INBOARD JOINT BOOT CLAMP

- Using pliers, remove the No. 2 rear drive shaft inboard joint boot clamp as shown in the illustration.

#### 4. SEPARATE INBOARD JOINT BOOT

- Separate the rear drive shaft inboard joint boot from the inboard joint assembly.

#### 5. REMOVE REAR DRIVE SHAFT INBOARD JOINT ASSEMBLY

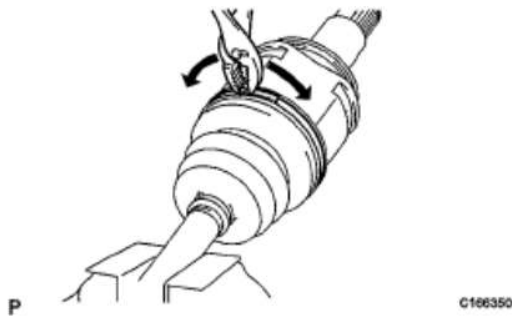


**Fig. 109: Removing No. 2 Rear Drive Shaft Inboard Joint Boot Clamp**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- Remove the grease from the inboard joint assembly.
- Put matchmarks on the rear drive shaft inboard joint assembly and rear drive shaft outboard joint shaft assembly.

**NOTE:** Do not use a punch for the marks.

- Remove the rear drive shaft inboard joint assembly from the rear drive shaft outboard joint shaft assembly.

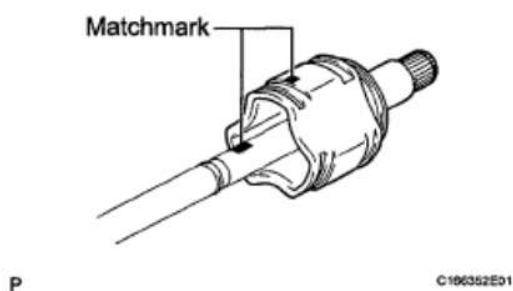


**Fig. 110: Identifying Matchmarks On Rear Drive Shaft Inboard Joint Assembly And Rear Drive Shaft Outboard Joint Shaft Assembly**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- Using a snap ring expander, remove the snap ring.

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### 2009 DRIVELINE/AXLES Drive Shaft - Highlander

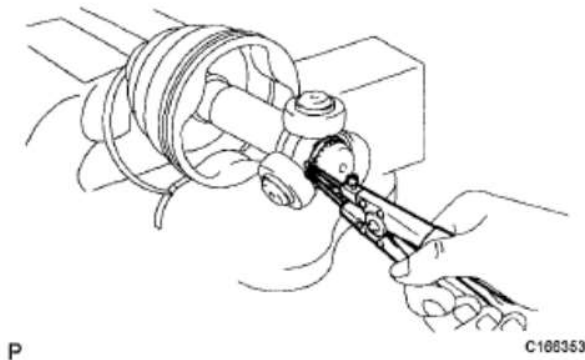


**Fig. 111: Removing Snap Ring**

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- e. Put matchmarks on the rear drive shaft outboard joint shaft assembly and tripod joint.

**NOTE:** Do not use a punch for the marks.

- f. Using a brass bar and hammer, remove the tripod joint from the outboard joint shaft assembly.

**NOTE:** Do not tap the roller.

- g. Remove the inboard joint boot, rear drive shaft inboard joint boot clamp and No. 2 rear drive shaft inboard joint boot clamp.

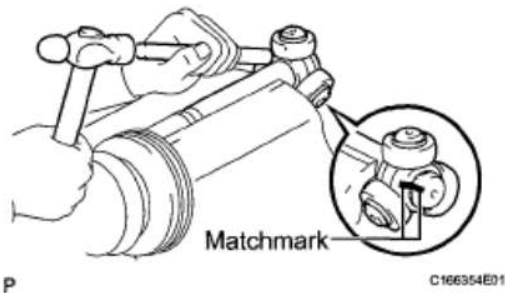


**Fig. 112: Identifying Matchmarks On Rear Drive Shaft Outboard Joint Shaft Assembly And Tripod Joint**

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

#### 6. REMOVE REAR DRIVE SHAFT OUTBOARD JOINT BOOT CLAMP

- a. Using pliers, remove the rear drive shaft outboard joint boot clamp as shown in the illustration.

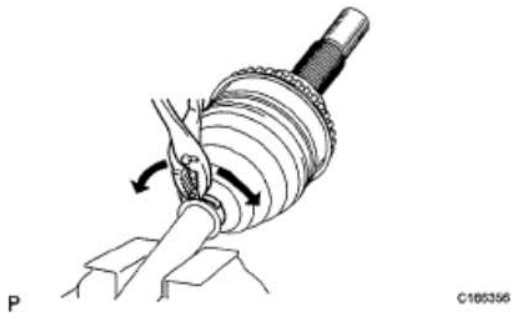
**2009 Toyota Highlander Limited****2009 DRIVELINE/AXLES Drive Shaft - Highlander**

**Fig. 113: Removing Rear Drive Shaft Outboard Joint Boot Clamp**

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

**7. REMOVE NO. 2 REAR DRIVE SHAFT OUTBOARD JOINT BOOT CLAMP**

- a. Using pliers, remove the No. 2 rear drive shaft outboard joint boot clamp as shown in the illustration.

**8. REMOVE OUTBOARD JOINT BOOT**

- a. Remove the outboard joint boot from the outboard joint shaft assembly.
- b. Remove the old grease from the rear drive outboard joint shaft assembly.

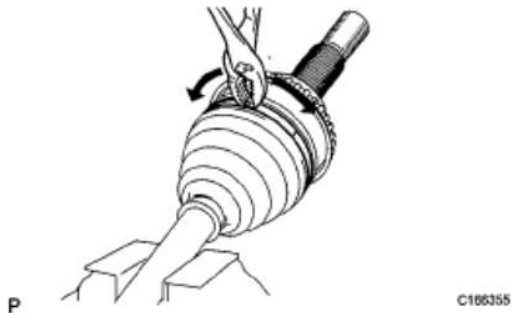


**Fig. 114: Removing No. 2 Rear Drive Shaft Outboard Joint Boot Clamp**

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

**NOTE:** Do not disassemble the outboard joint.

**9. REMOVE REAR DRIVE SHAFT DUST COVER**

- a. Using SST and a press, remove the rear drive shaft dust cover.

**SST 09950-00020**

**NOTE:** Be careful not to drop the rear drive shaft inboard joint assembly. Do not overtighten SST.

## 2009 Toyota Highlander Limited

### 2009 DRIVELINE/AXLES Drive Shaft - Highlander

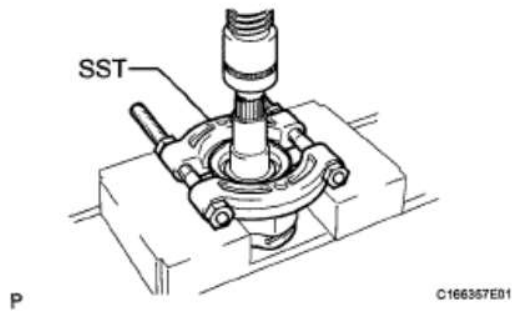


**Fig. 115: Removing Rear Drive Shaft Dust Cover**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

### INSPECTION

#### 1. INSPECT REAR DRIVE SHAFT ASSEMBLY

- Check that there is no remarkable play in the radial direction of the outboard joint.
- Check that the inboard joint slides smoothly in the thrust direction.
- Check that there is no remarkable play in the radial direction of the inboard joint.
- Check the boots for damage.

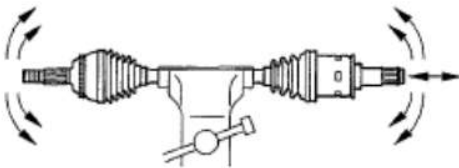


**Fig. 116: Inspecting Rear Drive Shaft Assembly**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

### REASSEMBLY

#### 1. INSTALL REAR DRIVE SHAFT DUST COVER

- Using SST and a steel plate, install a new rear drive shaft dust cover.

**SST 09527-21011**

#### NOTE:

- The rear drive shaft dust cover should be completely installed.
- Be careful not to damage the rear drive shaft dust cover.

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### 2009 DRIVELINE/AXLES Drive Shaft - Highlander

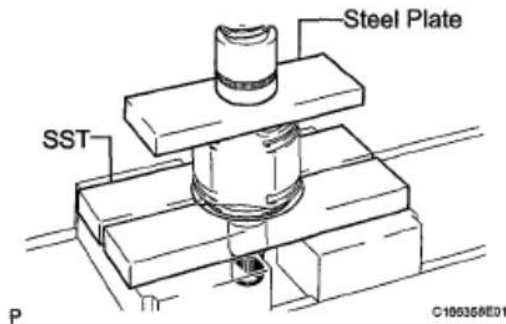


**Fig. 117: Installing Rear Drive Shaft Dust Cover**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

## 2. INSTALL OUTBOARD JOINT BOOT

### HINT:

Before installing the boot, wrap the splines of the drive shaft with vinyl tape to prevent the boot from being damaged.

- a. Install new parts to the outboard joint shaft in the following order:
  1. Rear drive shaft outboard joint boot clamp
  2. Outboard joint boot
  3. No. 2 rear drive shaft outboard joint boot clamp
- b. Pack the outboard joint shaft assembly and outboard joint boot with grease from the boot kit.

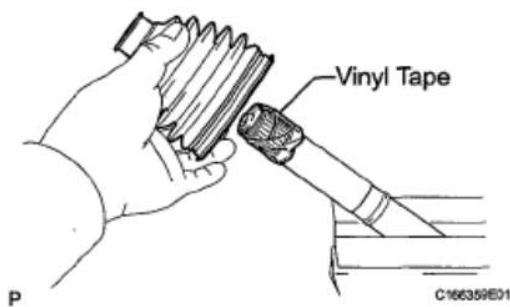


**Fig. 118: Wrapping Splines Of Drive Shaft With Vinyl Tape**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

### Grease capacity:

95 to 105 g (3.4 to 3.7 oz.)

## 3. INSTALL REAR DRIVE SHAFT OUTBOARD JOINT BOOT CLAMP

- a. Hold the rear drive shaft in a vise with aluminum plates in between.
- b. Secure the rear drive shaft outboard joint boot clamp onto the boot.

## 2009 Toyota Highlander Limited

### 2009 DRIVELINE/AXLES Drive Shaft - Highlander

- c. Place SST onto the rear drive shaft outboard joint boot clamp.

**SST 09521-24010**

- d. Tighten SST so that the rear drive shaft outboard joint boot clamp is pinched.

**NOTE: Do not overtighten SST.**

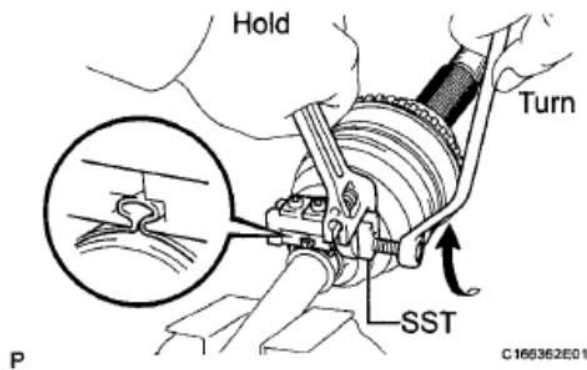


**Fig. 119: Tightening Rear Drive Shaft Outboard Joint Boot Clamp**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- e. Using SST, inspect the clearance of the rear drive shaft outboard joint boot clamp.

**SST 09240-00020**

**Clearance:**

**0.5 to 1.5 mm (0.0197 to 0.0591 in.)**

**NOTE: If the measured value exceeds the specified value, retighten the clamp.**

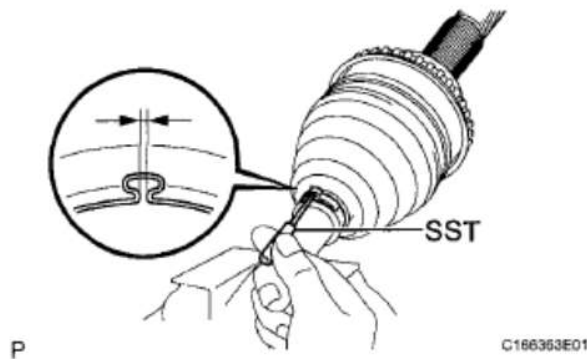


**Fig. 120: Measuring Clearance Of Rear Drive Shaft Outboard Joint Boot Clamp**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

## 2009 Toyota Highlander Limited

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#### 4. INSTALL NO. 2 REAR DRIVE SHAFT INBOARD JOINT BOOT CLAMP

- Hold the front drive shaft in a vise between aluminum plates.
- Secure the outboard joint boot clamp onto the boot.
- Place SST onto the No. 2 rear drive shaft outboard joint boot clamp.

**SST 09521-24010**

- Tighten SST so that the No. 2 rear drive shaft outboard joint boot clamp is pinched.

**NOTE:** Do not overtighten SST.

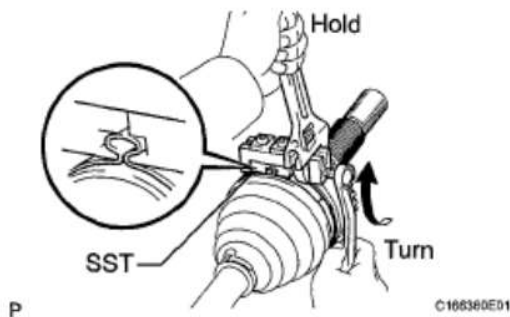


**Fig. 121: Tightening No. 2 Rear Drive Shaft Outboard Joint Boot Clamp**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

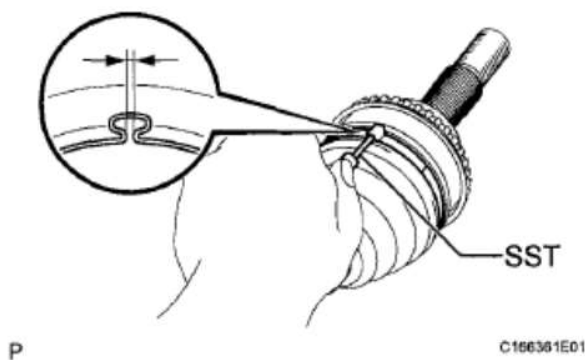
- Using SST, inspect the clearance of the No. 2 rear drive shaft outboard joint boot clamp.

**SST 09240-00020**

**Clearance:**

**0.5 to 1.5 mm (0.0197 to 0.0591 in.)**

**NOTE:** If the measured value exceeds the specified value, retighten the clamp.



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### 2009 DRIVELINE/AXLES Drive Shaft - Highlander

**Fig. 122: Measuring Clearance Of No. 2 Rear Drive Shaft Outboard Joint Boot Clamp**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

#### 5. INSTALL REAR DRIVE SHAFT INBOARD JOINT ASSEMBLY

- a. Wrap the splines of the outboard joint shaft with vinyl tape to prevent the boot from being damaged.
- b. Install new parts to the outboard joint shaft in the following order:
  1. No. 2 rear drive shaft inboard joint boot clamp
  2. Inboard joint boot
  3. Rear drive shaft inboard joint boot clamp
- c. Place the beveled side of the tripod joint axial spline toward the outboard joint shaft assembly.
- d. Align the matchmarks placed before removal.

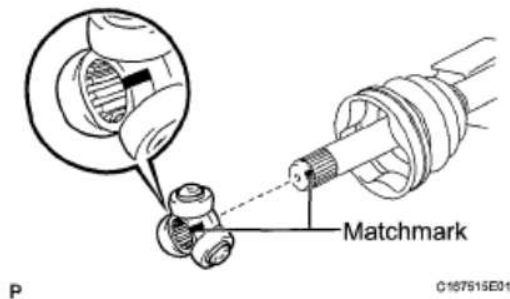


**Fig. 123: Identifying Matchmarks On Outboard Joint Shaft Assembly**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- e. Using a brass bar and hammer, tap in the tripod joint onto the outboard joint shaft assembly.

**NOTE:**

- Do not tap the rollers.
- Be sure to install the tripod joint in the correct direction.

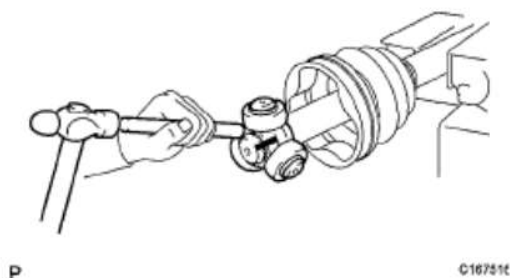


**Fig. 124: Tapping Tripod Joint Onto Outboard Joint Shaft Assembly**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- f. Using a snap ring expander, install a new shaft snap ring.
- g. Pack the outboard joint shaft and boot with grease.

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### 2009 DRIVELINE/AXLES Drive Shaft - Highlander

#### Grease capacity:

125.5 to 135.5 g (4.4 to 4.7 oz.)

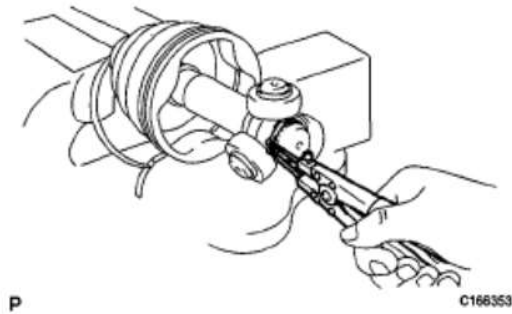


**Fig. 125: Installing Shaft Snap Ring**

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- h. Align the matchmarks, and install the inboard joint assembly to the outboard joint shaft assembly.

#### 6. INSTALL INBOARD JOINT BOOT

- a. Install the inboard joint boot to the outboard joint shaft.

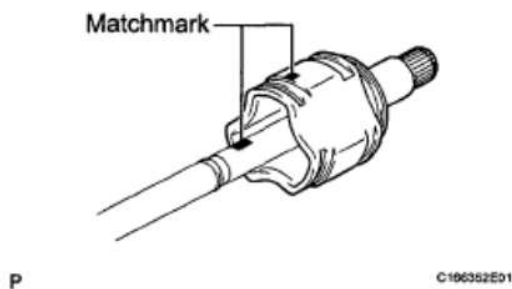


**Fig. 126: Identifying Matchmarks On Inboard Joint Assembly And Outboard Joint Shaft Assembly**

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- b. Check whether the drive shaft dimensions are within the following specifications.

#### HINT:

The following table shows dimension (A) of the drive shaft.

#### Dimension (A):

754.7 to 764.6 mm (29.71 to 30.10 in.)

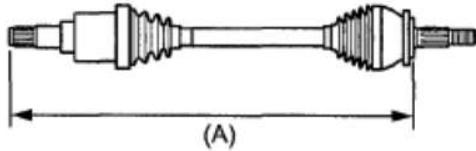
#### 7. INSPECT REAR DRIVE SHAFT INBOARD JOINT BOOT CLAMP

- a. Hold the rear drive shaft in a vise with aluminum plates in between.

## 2009 Toyota Highlander Limited

### 2009 DRIVELINE/AXLES Drive Shaft - Highlander

- b. Secure the rear drive shaft inboard joint boot clamp onto the boot.



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**Fig. 127: Identifying Drive Shaft Dimensions**

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- c. Place SST onto the rear drive shaft inboard joint boot clamp.

**SST 09521-24010**

- d. Tighten SST so that the rear drive shaft inboard joint boot clamp is pinched.

**NOTE: Do not overtighten SST.**

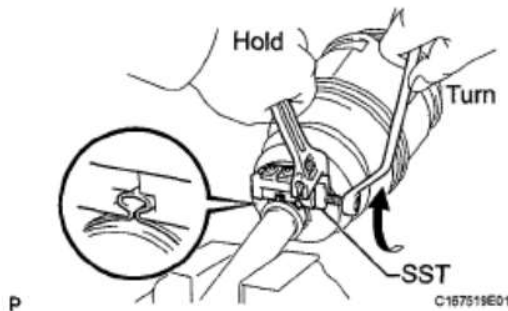


**Fig. 128: Tightening Rear Drive Shaft Inboard Joint Boot Clamp**

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- e. Using SST, inspect the clearance of the rear drive shaft inboard joint boot clamp.

**SST 09240-00020**

**Clearance:**

**0.5 to 1.5 mm (0.0197 to 0.0591 in.)**

**NOTE: If the measured value exceeds the specified value, retighten the clamp.**

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### 2009 DRIVELINE/AXLES Drive Shaft - Highlander

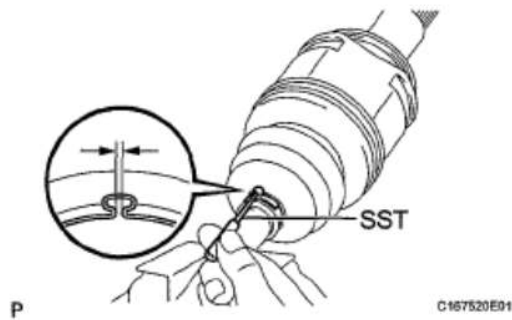


**Fig. 129: Measuring Clearance Of Rear Drive Shaft Inboard Joint Boot Clamp**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

#### 8. INSTALL NO. 2 REAR DRIVE SHAFT INBOARD JOINT BOOT CLAMP

- Hold the rear drive shaft in a vise with aluminum plates in between.
- Secure the No. 2 rear drive shaft inboard joint boot clamp onto the boot.
- Place SST onto the No. 2 rear drive shaft inboard joint boot clamp.

**SST 09521-24010**

- Tighten SST so that the rear drive shaft inboard joint boot clamp is pinched.

**NOTE: Do not overtighten SST.**

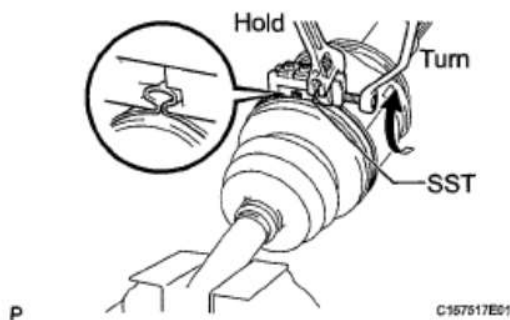


**Fig. 130: Tightening Rear Drive Shaft Inboard Joint Boot Clamp**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- Using SST, inspect the clearance of the inboard joint boot clamp.

**SST 09240-00020**

**Clearance:**

**0.5 to 1.5 mm (0.0197 to 0.0591 in.)**

**NOTE: If the measured value exceeds the specified value, retighten the clamp.**

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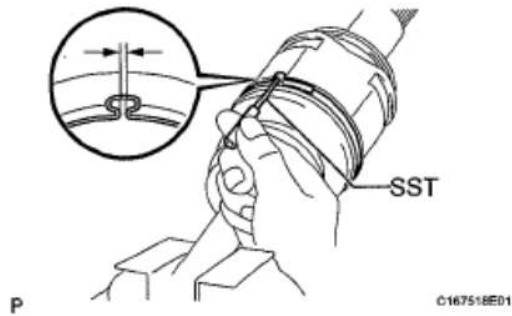


**Fig. 131: Measuring Clearance Of Inboard Joint Boot Clamp**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

9. **INSTALL REAR DRIVE SHAFT SNAP RING**
  - a. Install a new rear drive shaft snap ring.
10. **INSPECT REAR DRIVE SHAFT ASSEMBLY** (See INSPECTION)

#### INSTALLATION

1. **INSTALL REAR DRIVE SHAFT ASSEMBLY**
  - a. Align the shaft splines and install the rear drive shaft assembly with a brass bar and hammer.

#### NOTE:

- Set the snap ring with the opening facing downward.
- Be careful not to damage the oil seal, boot, or dust cover.
- Install the drive shaft assembly while keeping it level.

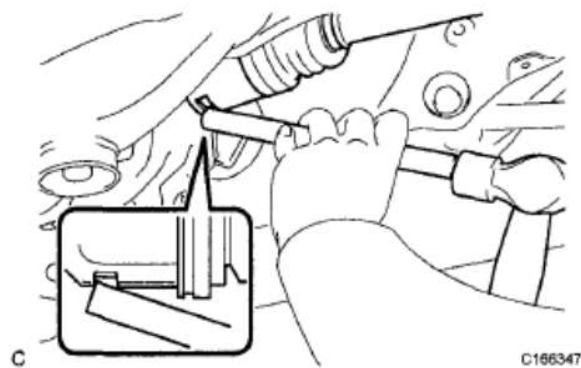


**Fig. 132: Installing Rear Drive Shaft Assembly Using Brass Bar And Hammer**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

2. **INSTALL REAR AXLE CARRIER SUB-ASSEMBLY LH** (See INSTALLATION )
3. **TEMPORARILY INSTALL REAR STRUT ROD ASSEMBLY** (See INSTALLATION )
4. **INSTALL REAR AXLE HUB AND BEARING ASSEMBLY LH** (See INSTALLATION )
5. **INSTALL REAR DISC** (See REASSEMBLY )

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6. **INSTALL REAR DISC BRAKE CALIPER ASSEMBLY LH** (See REPLACEMENT )
7. **INSTALL REAR SPEED SENSOR LH** (See INSTALLATION )
8. **STABILIZE SUSPENSION** (See INSTALLATION )
9. **FULLY TIGHTEN REAR NO. 2 SUSPENSION ARM ASSEMBLY LH** (See INSTALLATION )
10. **FULLY TIGHTEN REAR NO. 1 SUSPENSION ARM ASSEMBLY LH** (See INSTALLATION )
11. **FULLY TIGHTEN REAR STRUT ROD ASSEMBLY** (See INSTALLATION )
12. **INSTALL NO. 3 PARKING BRAKE CABLE ASSEMBLY** (See INSTALLATION )
13. **INSTALL REAR AXLE SHAFT NUT LH**
  - a. Clean the threaded parts on the drive shaft and axle hub nut using a non-residue solvent.

**NOTE:**

- Be sure to perform this work for a new drive shaft.
- Keep the threaded parts free of oil and foreign objects.

- b. Install a new rear axle shaft nut.

**Torque: 294 N\*m (2996 kgf\*cm, 216 ft.\*lbf)**

- c. Using a chisel and hammer, stake the rear axle shaft nut.

14. **INSTALL REAR DIFFERENTIAL DRAIN PLUG** (See INSTALLATION )
15. **ADD DIFFERENTIAL OIL** (See INSTALLATION )
16. **INSPECT DIFFERENTIAL OIL** (See DIFFERENTIAL OIL )
17. **INSTALL REAR DIFFERENTIAL FILLER PLUG** (See INSTALLATION )

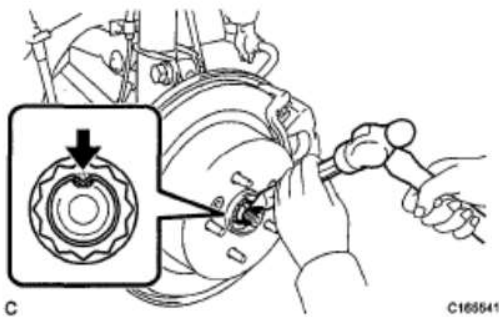


**Fig. 133: Staking Rear Axle Shaft Nut**

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

18. **INSTALL REAR WHEEL**

**Torque: 103 N\*m (1050 kgf\*cm, 76 ft.\*lbf)**

19. **INSPECT AND ADJUST REAR WHEEL ALIGNMENT**

**HINT:**

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(See **REAR WHEEL ALIGNMENT** )

**20. CHECK ABS SPEED SENSOR SIGNAL**

HINT:

(See **TEST MODE PROCEDURE** )