

DRIVELINE/AXLES

Axle Hub & Differential (Service Information) - Sienna

FRONT AXLE HUB BOLT

COMPONENTS

ILLUSTRATION

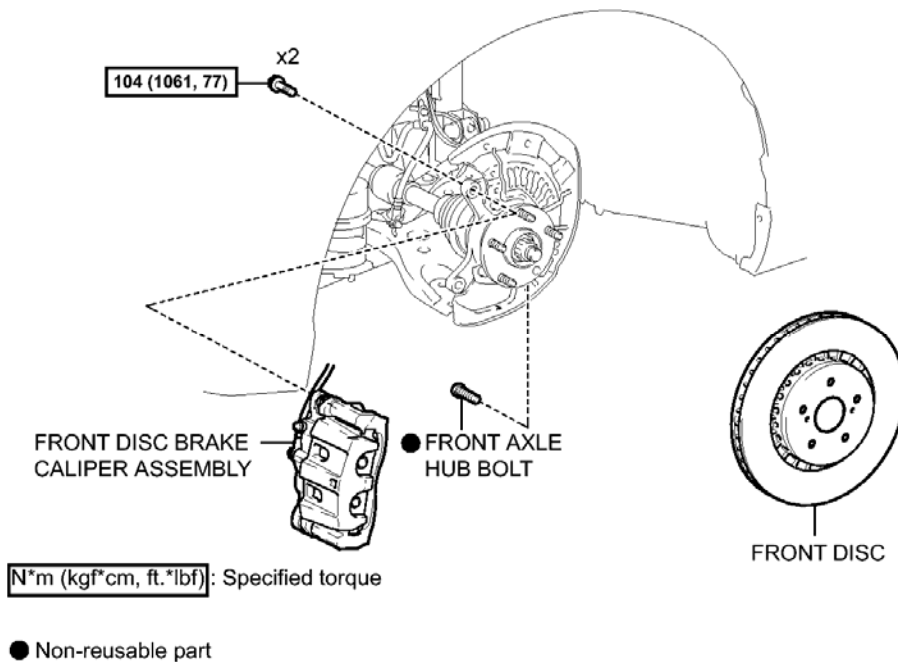


Fig. 1: Front Axle Hub Bolt Replacement Components With Torque Specifications
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

REPLACEMENT

REPLACEMENT

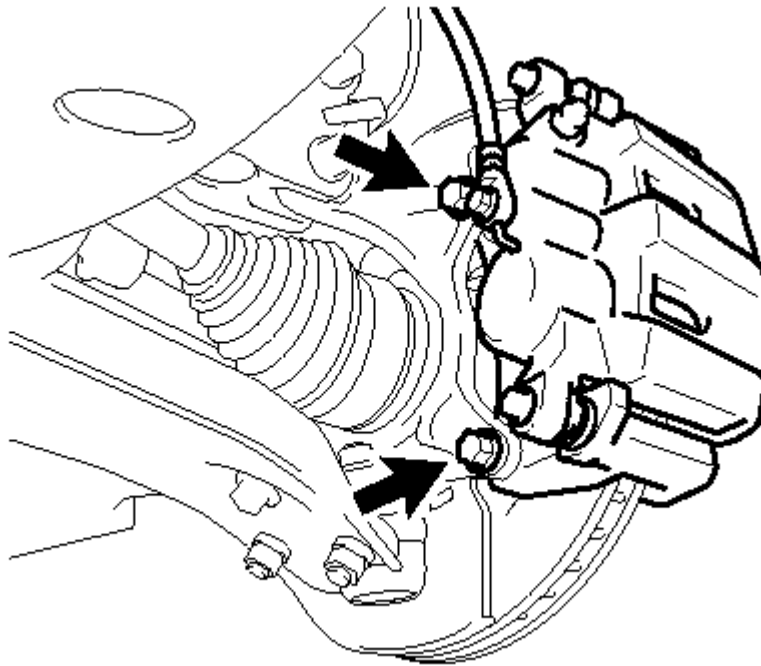
HINT:

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

1. REMOVE FRONT WHEEL

2. SEPARATE FRONT DISC BRAKE CALIPER ASSEMBLY

- a. Remove the 2 bolts and separate the front disc brake caliper assembly.

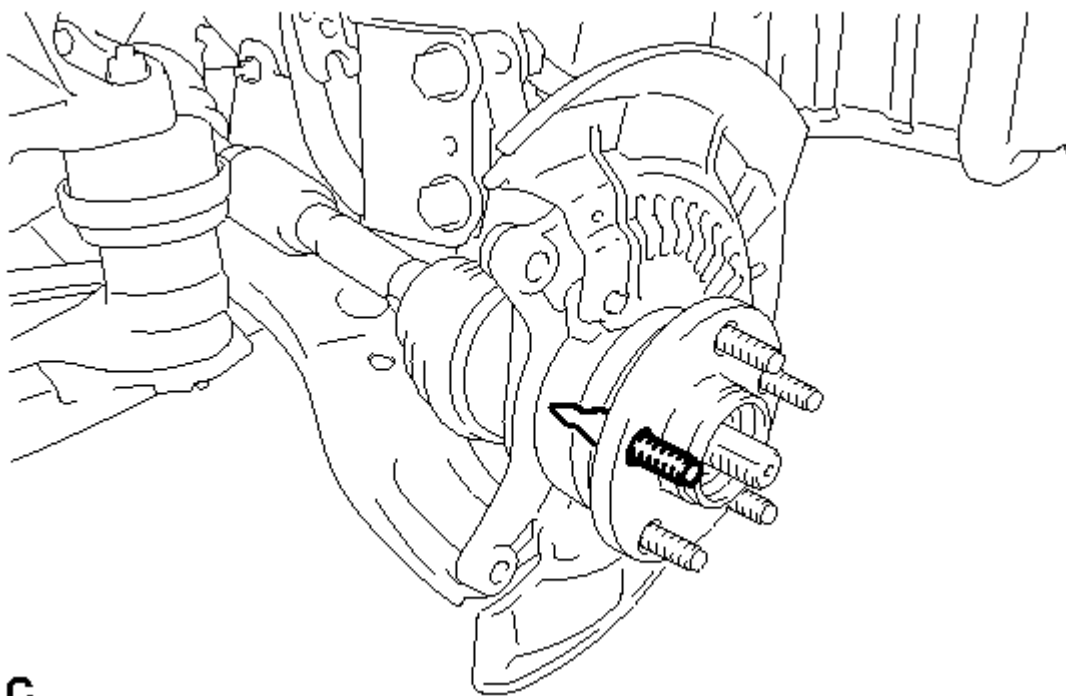


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Fig. 2: Identifying Front Disc Brake Caliper Assembly Bolts
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

NOTE: Use wire or an equivalent tool to keep the front disc brake caliper assembly from hanging down by the flexible hose.

3. **REMOVE FRONT DISC** . Refer to **REMOVAL - Step 14**
4. **REMOVE FRONT AXLE HUB BOLT**
 - a. Position the front axle hub bolt to be removed as shown in the illustration.

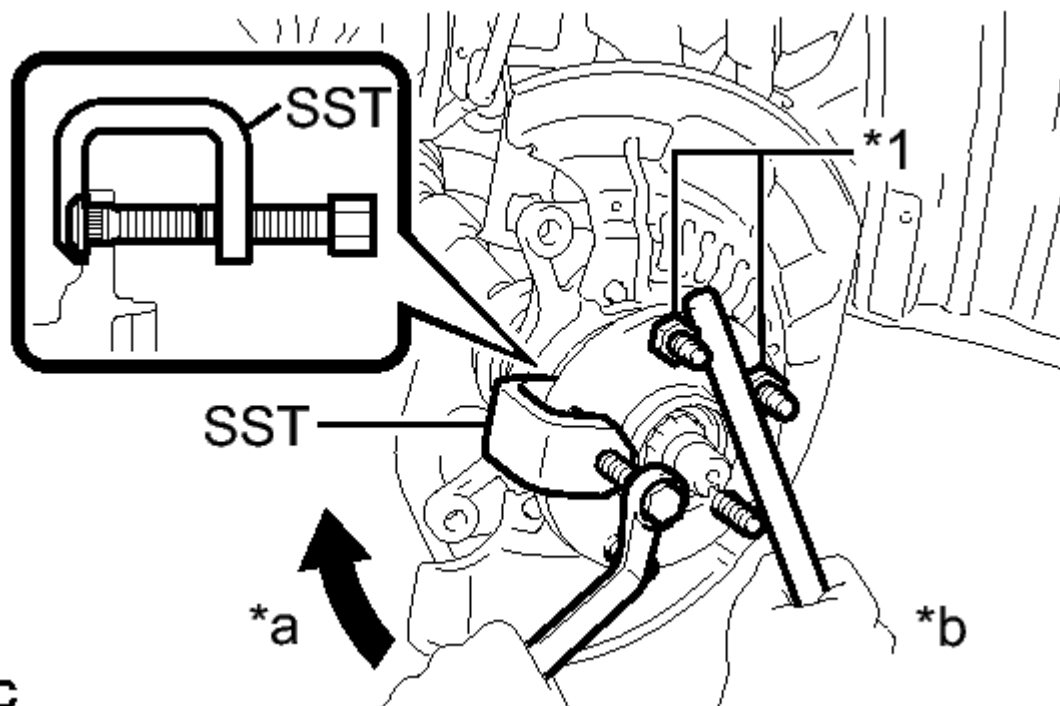


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Fig. 3: Identifying Front Axle Hub Bolt

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

- b. Temporarily install the 2 nuts to the front axle hub bolt as shown in the illustration.



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Fig. 4: Removing Front Axle Hub Bolt Using SST

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

Recommended service nut

Thread diameter: 12.0 mm (0.472 in.)

Thread pitch: 1.5 mm (0.0591 in.)

NOTE: **Install the nuts to prevent damage to the front axle hub bolts.**

- c. Using SST and a brass bar or an equivalent tool to hold the front axle hub, remove the front axle hub bolt.

- SST: 09628-10011

TEXT IN ILLUSTRATION

*1	Nut
*a	Turn
*b	Hold

5. INSTALL FRONT AXLE HUB BOLT

- a. Position a new front axle hub bolt to be installed as shown in the illustration.

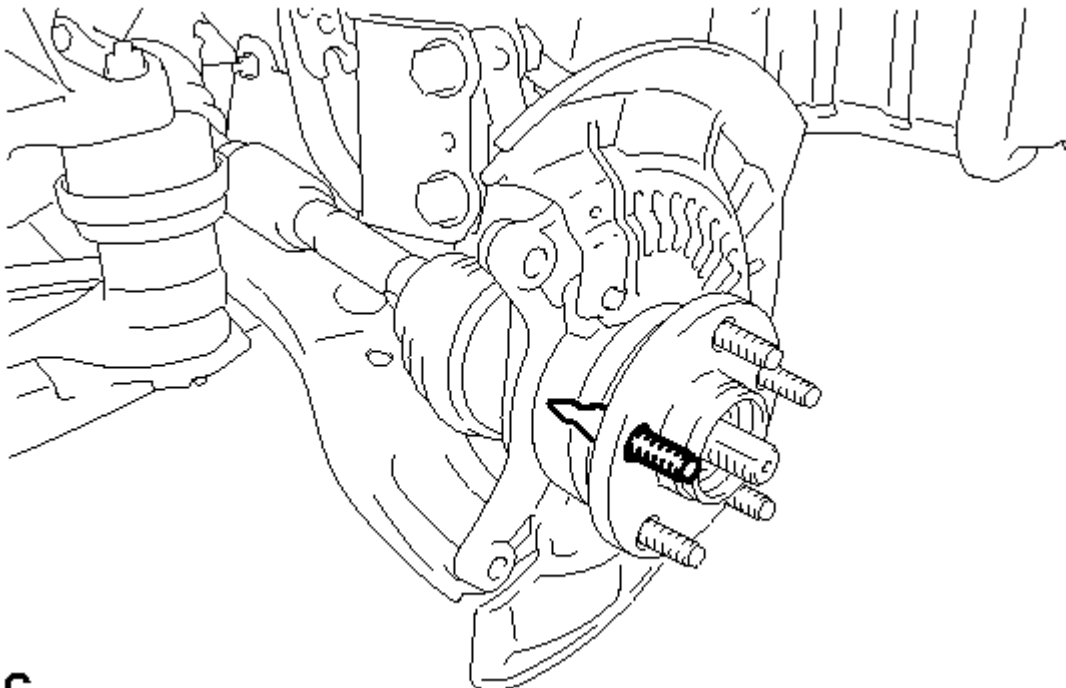


Fig. 5: Identifying Front Axle Hub Bolt
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- b. Temporarily install the new front axle hub bolt to the front axle hub.
- c. Install a washer and nut to the new front axle hub bolt as shown in the illustration.

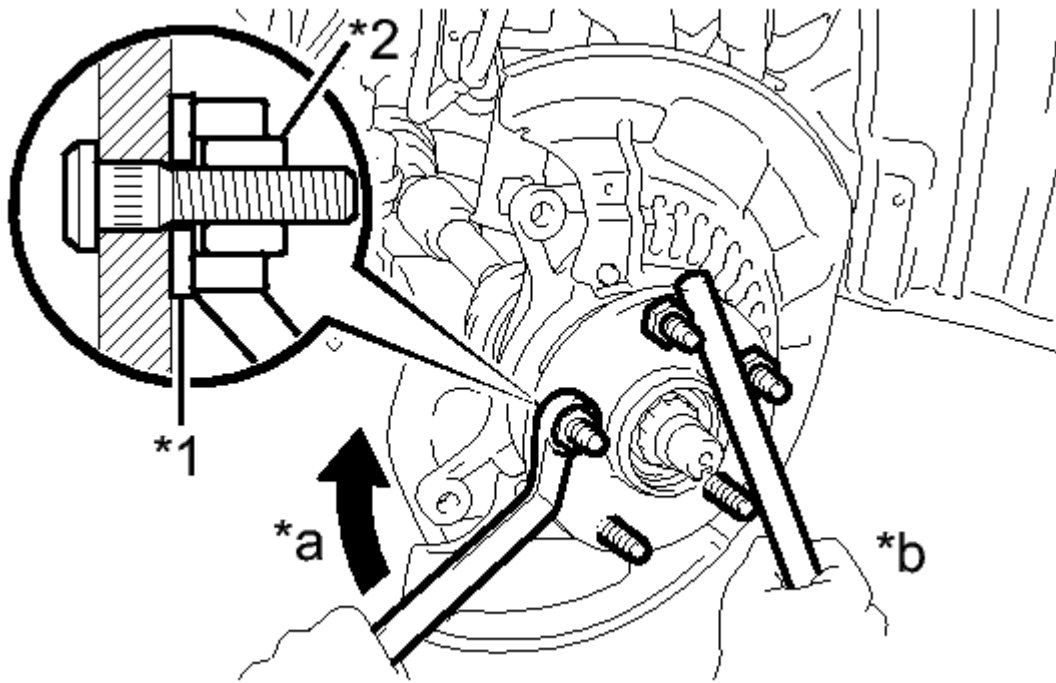


Fig. 6: Installing Front Axle Hub Bolt

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

TEXT IN ILLUSTRATION

*1	Washer
*2	Nut
*a	Turn
*b	Hold

Recommended service nut

Thread diameter: 12.0 mm (0.472 in.)

Thread pitch: 1.5 mm (0.0591 in.)

HINT:

The thickness of the washer is preferably 5 mm (0.197 in.) or more.

- d. Using a brass bar or equivalent, hold the hub and turn the nut until the bottom surface of the hub bolt head touches the axle hub.

NOTE:

- Install the nuts to prevent damage to the front axle hub bolts.
- Do not damage the threads of the front axle hub bolts.

HINT:

Use a feeler gauge to check for gaps between the hub bolt head and hub surface.

- e. Remove the 3 nuts and washer from the 3 front axle hub bolts.

NOTE: **Do not damage the threads of the hub bolt.**

6. INSTALL FRONT DISC . Refer to INSTALLATION - Step 1

7. INSTALL FRONT DISC BRAKE CALIPER ASSEMBLY

- a. Install the front disc brake caliper assembly to the steering knuckle with the 2 bolts.

Torque: 104 N*m (1061 kgf*cm, 77 ft.*lbf)

NOTE: **Do not twist the brake hose when installing the front disc brake caliper assembly.**

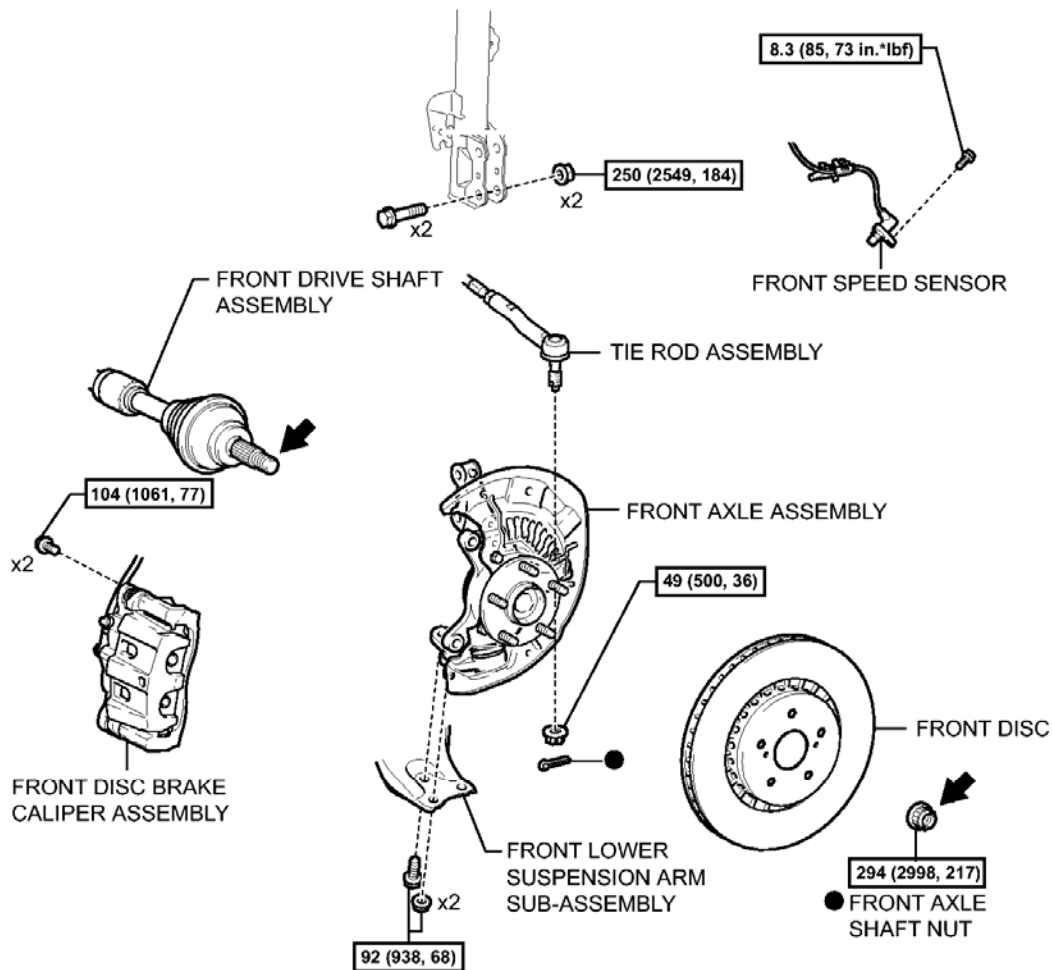
8. INSTALL FRONT WHEEL

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

FRONT AXLE HUB

COMPONENTS

ILLUSTRATION



N*m (kgf*cm, ft.*lbf): Specified torque

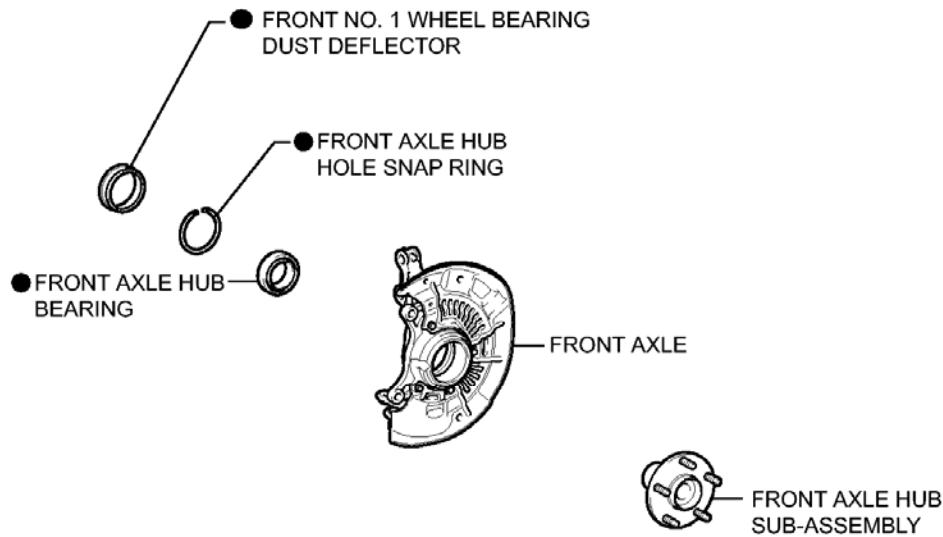
● Non-reusable part

➡ Do not apply lubricants to the threaded parts

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Fig. 7: Front Axle Hub Replacement Components With Torque Specifications (1 Of 2)
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

ILLUSTRATION



N*m (kgf*cm, ft.*lbf): Specified torque

● Non-reusable part

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Fig. 8: Front Axle Hub Replacement Components With Torque Specifications (2 Of 2)
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

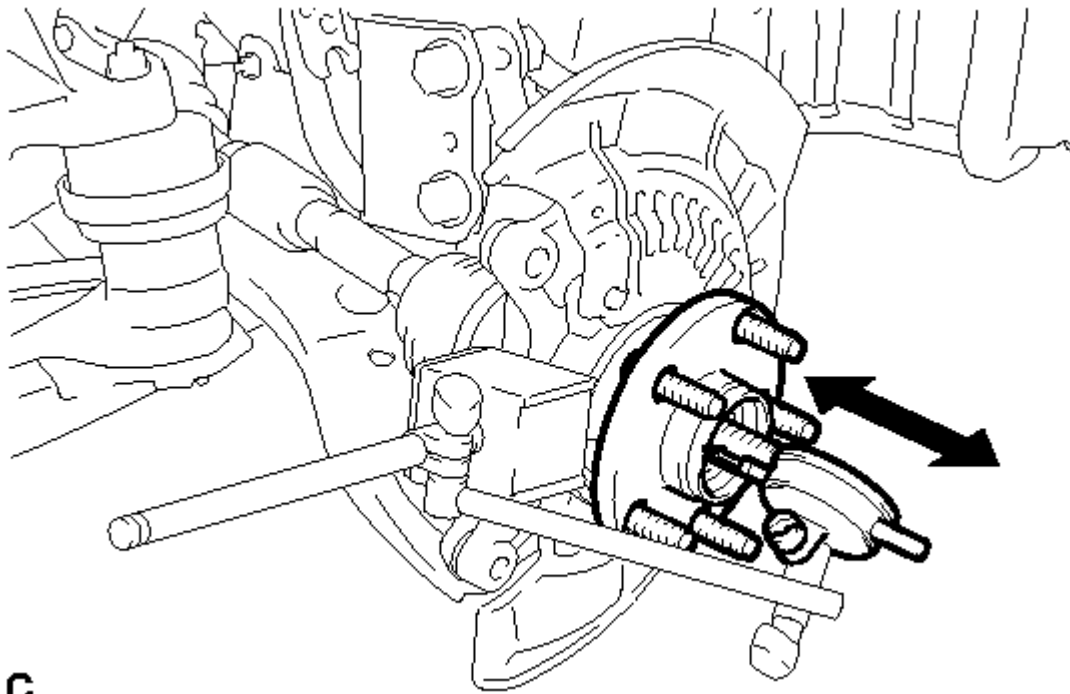
ON-VEHICLE INSPECTION

ON-VEHICLE INSPECTION

HINT:

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

1. **REMOVE FRONT WHEEL**
2. **SEPARATE FRONT DISC BRAKE CALIPER ASSEMBLY** See step 2
3. **REMOVE FRONT DISC** . Refer to **REMOVAL - Step 14**
4. **INSPECT FRONT AXLE HUB BEARING LOOSENESS**
 - a. Using a dial indicator, check for looseness near the center of the front axle hub.



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Fig. 9: Checking Front Axle Hub Bearing Looseness
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Maximum looseness

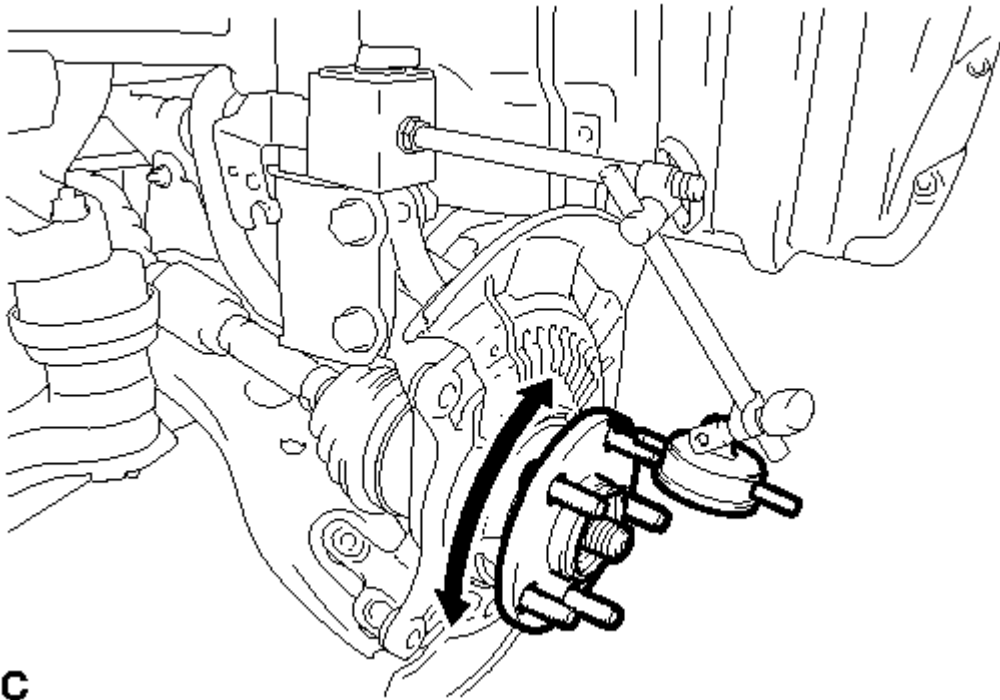
0.05 mm (0.00196 in.)

NOTE: **Ensure that the dial gauge is set at right angles to the measurement surface.**

If the looseness exceeds the maximum, replace the front axle hub bearing.

5. INSPECT FRONT AXLE HUB RUNOUT

- a. Using a dial indicator, check for runout on the surface of the axle hub outside the hub bolt.



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Fig. 10: Measuring Front Axle Hub Runout

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

Maximum runout

0.05 mm (0.00196 in.)

NOTE: **Ensure that the dial gauge is set at right angles to the measurement surface.**

If the runout exceeds the maximum, replace the front axle hub sub-assembly.

6. **INSTALL FRONT DISC** . Refer to **INSTALLATION - Step 1**
7. **INSTALL FRONT DISC BRAKE CALIPER ASSEMBLY** See step 7
8. **INSTALL FRONT WHEEL**

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

REMOVAL

REMOVAL

HINT:

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

1. **REMOVE FRONT WHEEL**
2. **REMOVE FRONT AXLE SHAFT NUT (for 2GR-FE)** . Refer to **REMOVAL - Step 6**
3. **REMOVE FRONT AXLE SHAFT NUT (for 1AR-FE)** . Refer to **REMOVAL - Step 3**
4. **SEPARATE FRONT SPEED SENSOR**
 - a. Remove the bolt and resin clamp, and separate the front speed sensor.

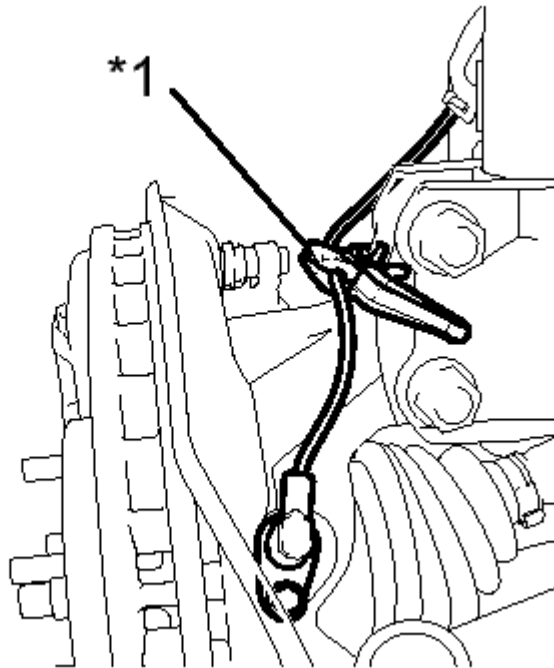
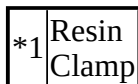


Fig. 11: Identifying Front Speed Sensor & Fasteners
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

TEXT IN ILLUSTRATION

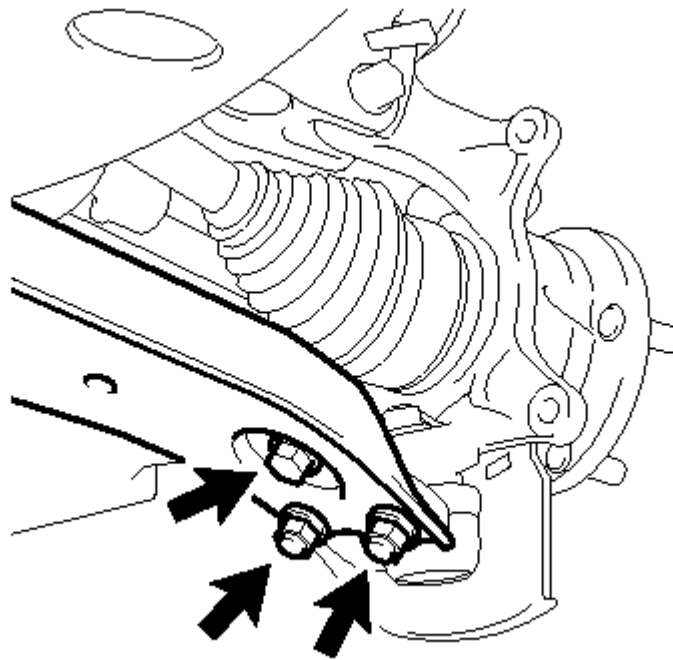


NOTE:

- Prevent foreign matter from attaching to the front speed sensor tip.
- Clean the speed sensor installation hole and the contact surfaces every time the front speed sensor is removed.

5. **SEPARATE FRONT DISC BRAKE CALIPER ASSEMBLY** See step 2
6. **REMOVE FRONT DISC** . Refer to **REMOVAL - Step 14**
7. **SEPARATE TIE ROD ASSEMBLY (for 2GR-FE)** . Refer to **REMOVAL - Step 9**
8. **SEPARATE TIE ROD ASSEMBLY (for 1AR-FE)** . Refer to **REMOVAL - Step 6**
9. **SEPARATE FRONT LOWER SUSPENSION ARM SUB-ASSEMBLY**
 - a. Remove the bolt and 2 nuts, and separate the front lower suspension arm sub-assembly from the

front lower ball joint.

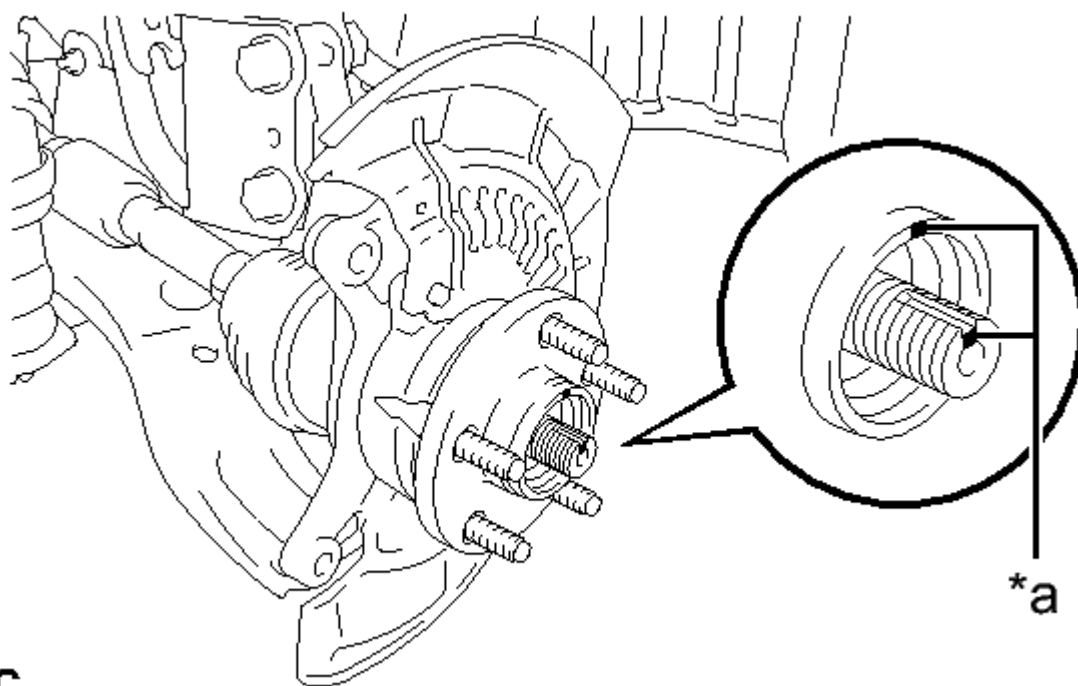


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Fig. 12: Identifying Front Lower Suspension Arm Bolt And Nuts
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

10. SEPARATE FRONT DRIVE SHAFT ASSEMBLY

- a. Put matchmarks on the front drive shaft assembly and front axle hub sub-assembly.



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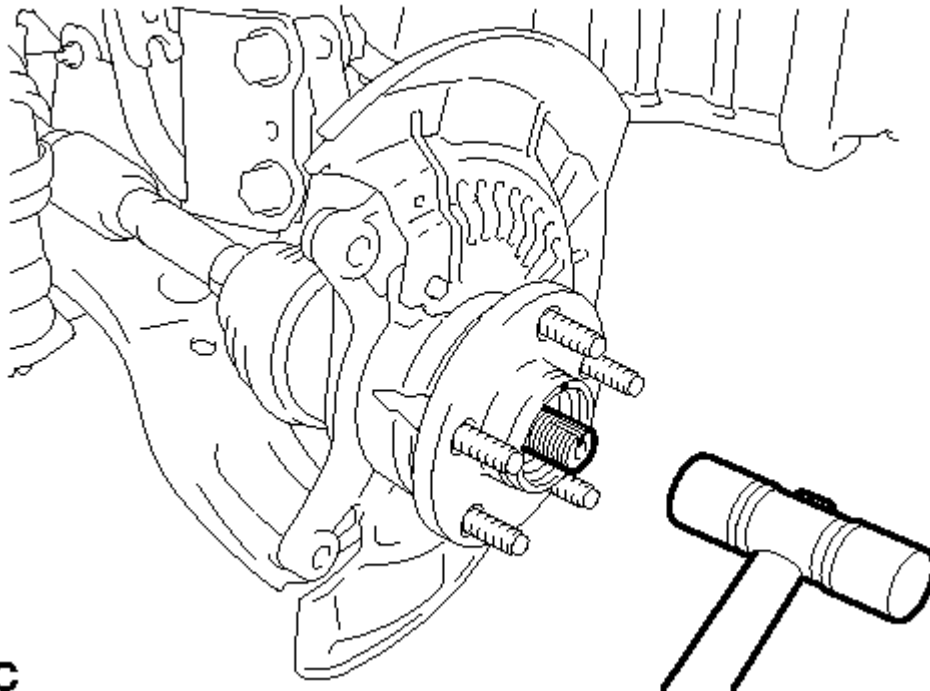
Fig. 13: Identifying Front Drive Shaft & Front Axle Hub Sub-Assembly Matchmarks
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

TEXT IN ILLUSTRATION

***a** Matchmark

- b. Using a plastic hammer, separate the front drive shaft assembly from the front axle assembly.

If it is difficult to separate, tap the end of the front drive shaft assembly using a brass bar and a hammer.

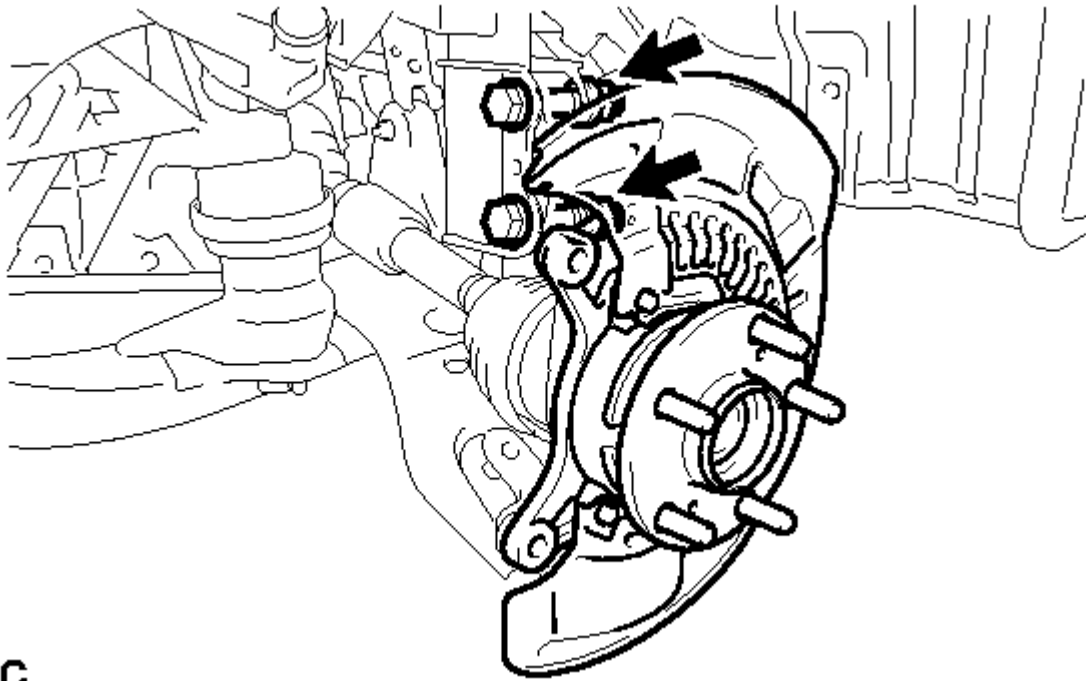


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Fig. 14: Separating Front Drive Shaft Assembly From Front Axle Assembly
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

NOTE: Be careful not to damage the drive shaft boot and speed sensor rotor.

11. REMOVE FRONT AXLE ASSEMBLY

- a. Remove the 2 bolts, 2 nuts and front axle assembly.



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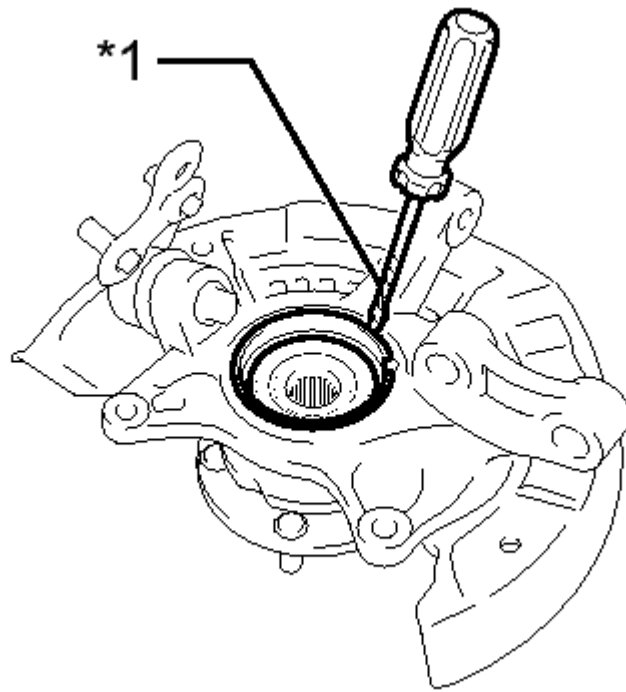
Fig. 15: Identifying Front Axle Assembly Bolts And Nuts
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

NOTE:

- When removing the nuts, keep the bolts from rotating.
- Be careful not to damage the drive shaft boot and speed sensor rotor.

12. REMOVE FRONT NO. 1 WHEEL BEARING DUST DEFLECTOR

- a. Using a screwdriver with its tip wrapped with protective tape, remove the front No. 1 wheel bearing dust deflector.



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Fig. 16: Removing Front No. 1 Wheel Bearing Dust Deflector
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

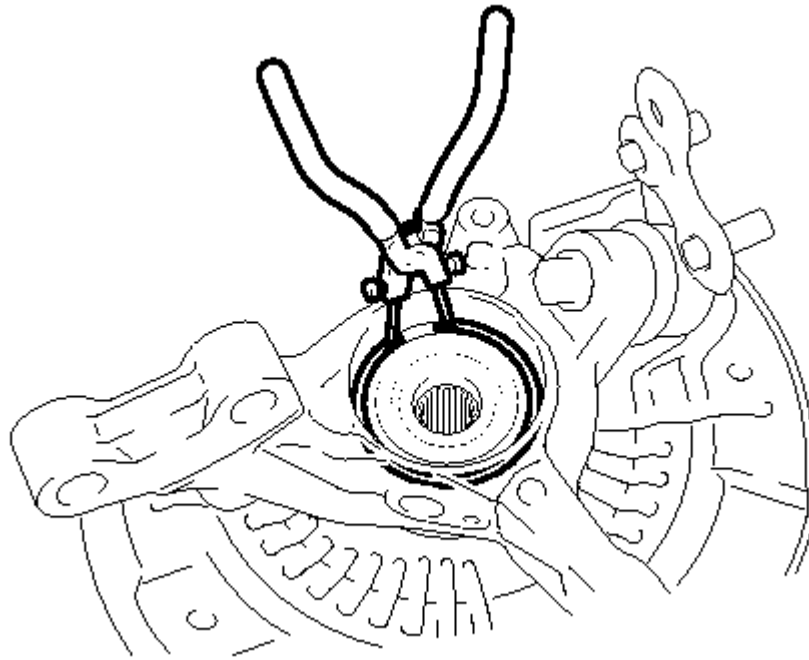
TEXT IN ILLUSTRATION

*1	Protective Tape
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NOTE: Be careful not to damage the steering knuckle.

13. REMOVE FRONT AXLE HUB HOLE SNAP RING

- a. Using snap ring pliers, remove the front axle hub hole snap ring.



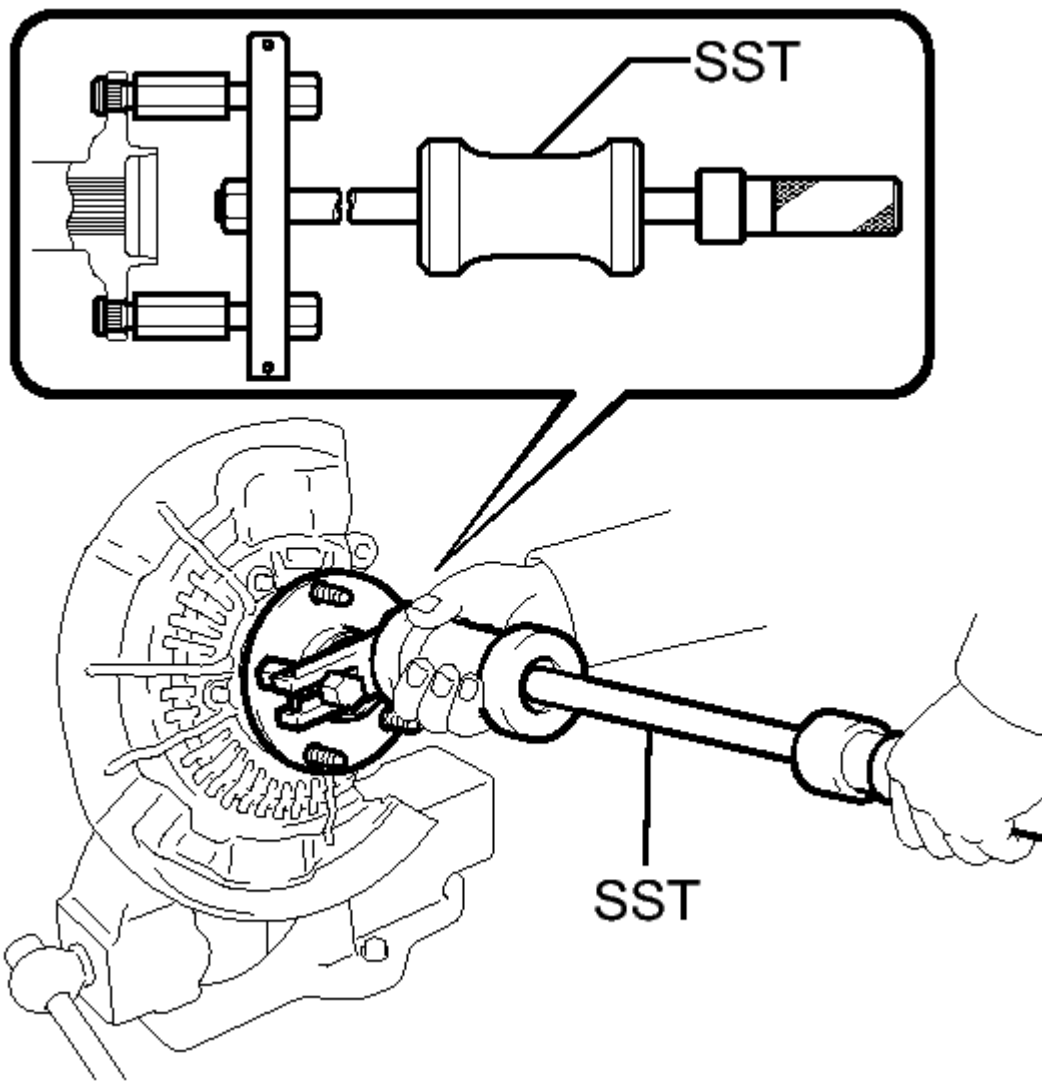
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Fig. 17: Removing Front Axle Hub Hole Snap Ring
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

14. REMOVE FRONT AXLE HUB SUB-ASSEMBLY

- a. Hold the front axle assembly between aluminum plates in a vise.

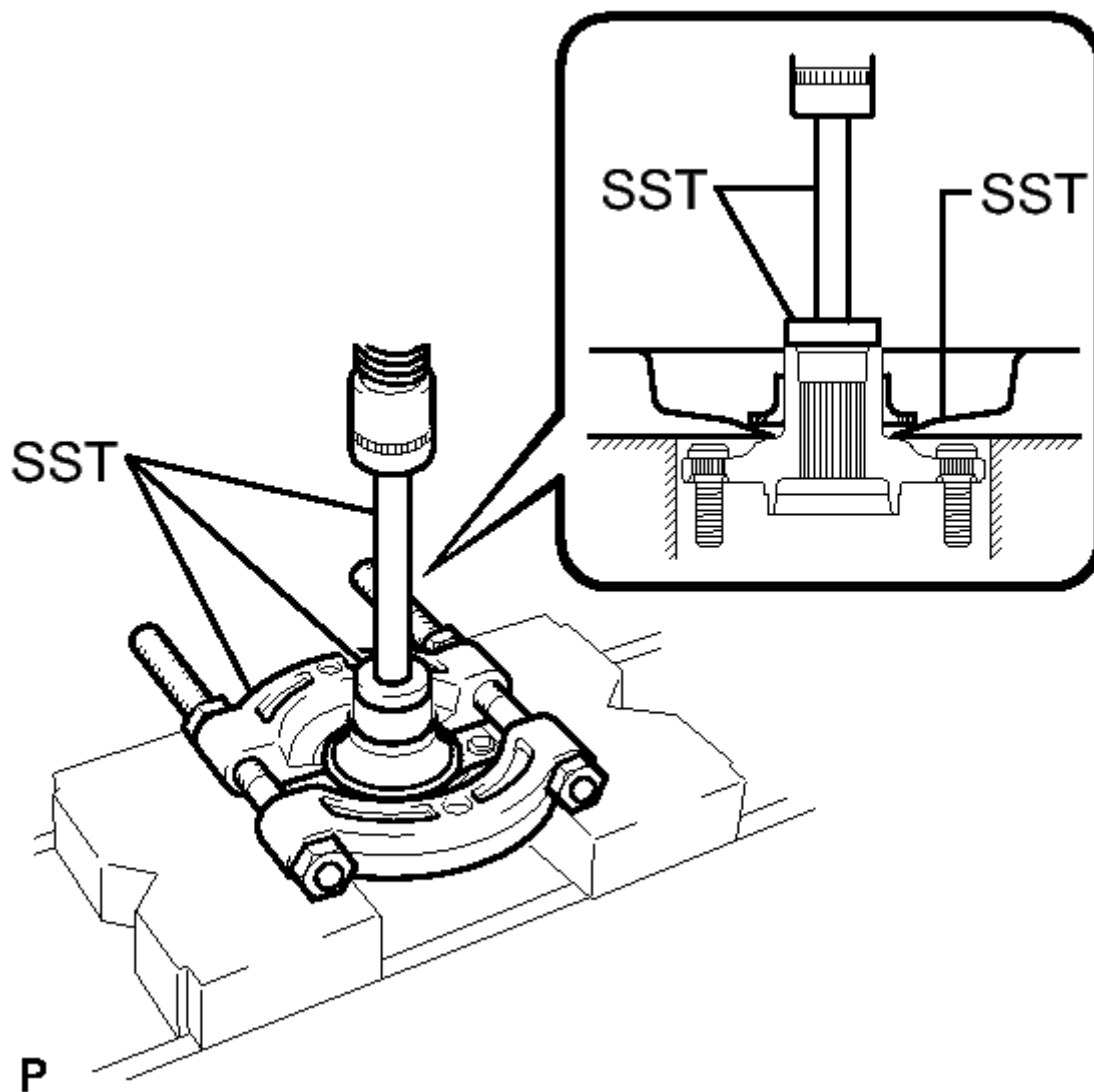
NOTE: Do not overtighten the vise.



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Fig. 18: Removing Front Axle Hub Sub-Assembly
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- b. Using SST, remove the front axle hub sub-assembly.
 - SST: 09520-00031
- c. Using SST and a press, remove the bearing inner race (outside) from the front axle hub sub-assembly.



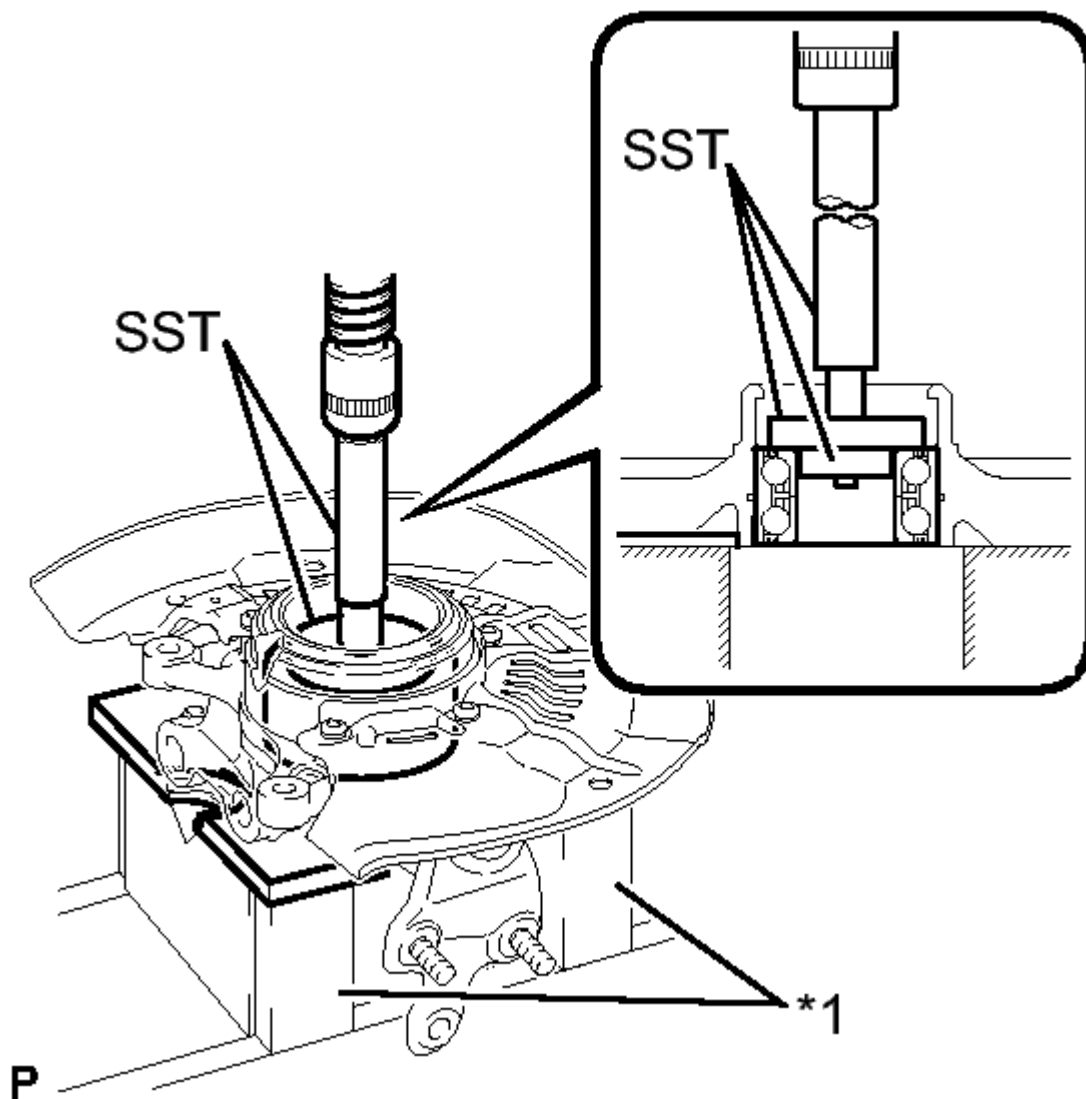
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Fig. 19: Identifying Bearing Inner Race (Outside)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- SST: 09555-55010
- SST: 09950-60010
09951-00430
- SST: 09950-70010
09951-07100

NOTE: Be careful not to drop the front axle hub sub-assembly.

15. REMOVE FRONT AXLE HUB BEARING

- a. Place the bearing inner race (outside) on the front axle hub bearing.



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Fig. 20: Removing Front Axle Hub Bearing At Steering Knuckle Using SST, V-Blocks & Press
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- b. Using SST, V-blocks and a press, remove the front axle hub bearing from the steering knuckle.

If the steering knuckle cannot be kept level using SST, stabilize the steering knuckle using a washer or an equivalent tool.

TEXT IN ILLUSTRATION

*1	V- block
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- SST: 09527-21011
- SST: 09950-60010

09951-00440

09952-06010

- **SST: 09950-60020**

09951-00750

- **SST: 09950-70010**

09951-07100

NOTE: **Keep the steering knuckle level.**

INSTALLATION

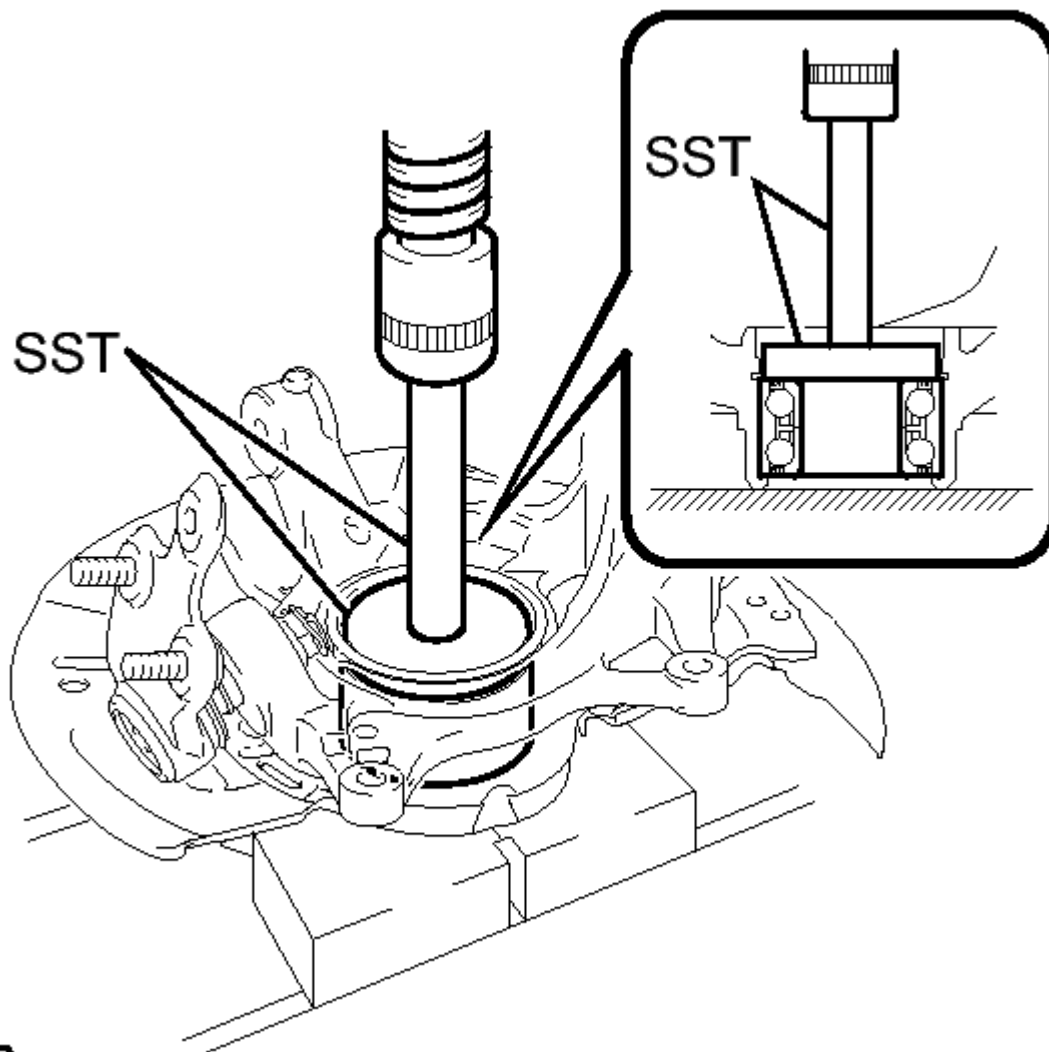
INSTALLATION

HINT:

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

1. INSTALL FRONT AXLE HUB BEARING

- a. Using SST and a press, install a new front axle hub bearing to the steering knuckle.



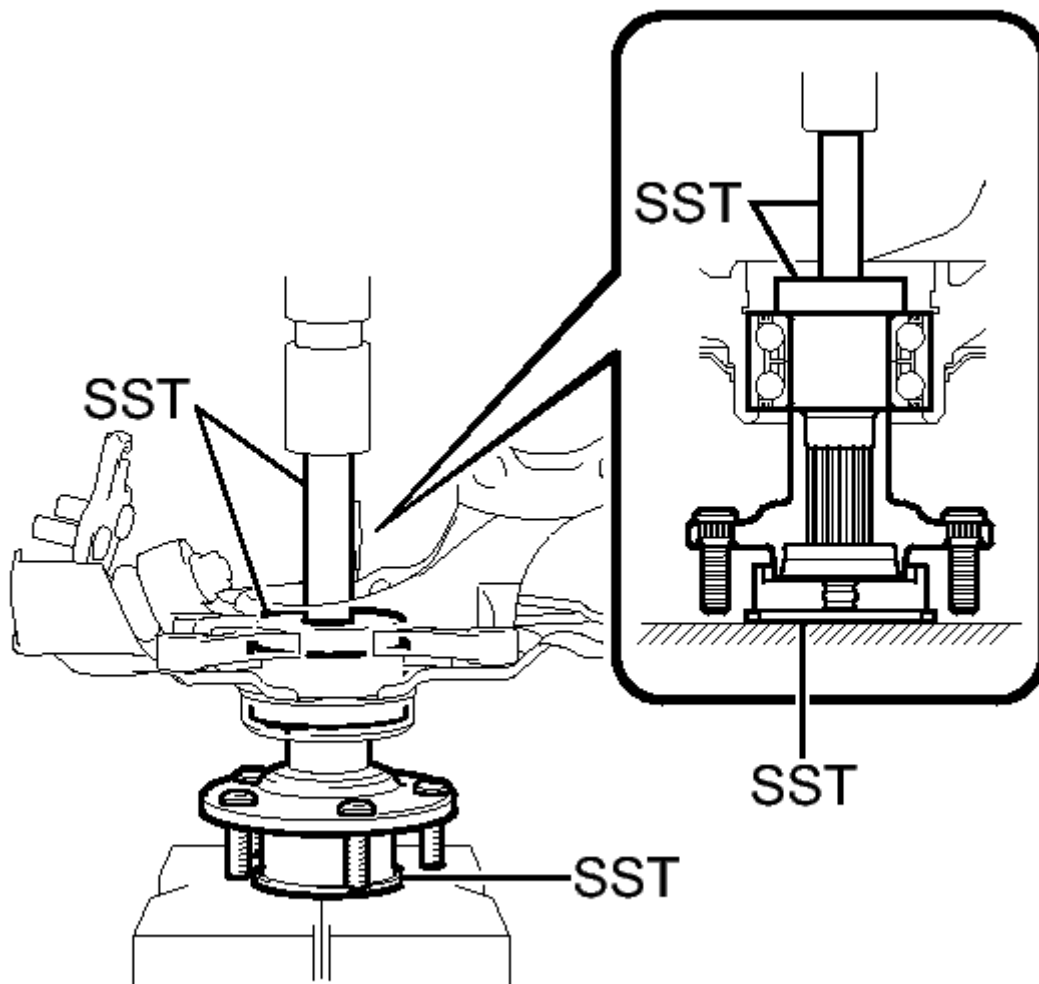
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Fig. 21: Installing Front Axle Hub Bearing To Steering Knuckle Using SST & Press
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- SST: 09950-60020
09951-00810
- SST: 09950-70010
09951-07100

2. INSTALL FRONT AXLE HUB SUB-ASSEMBLY

- a. Using SST and a press, install the front axle hub sub-assembly to the steering knuckle.



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Fig. 22: Installing Front Axle Hub Sub-Assembly To Steering Knuckle
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

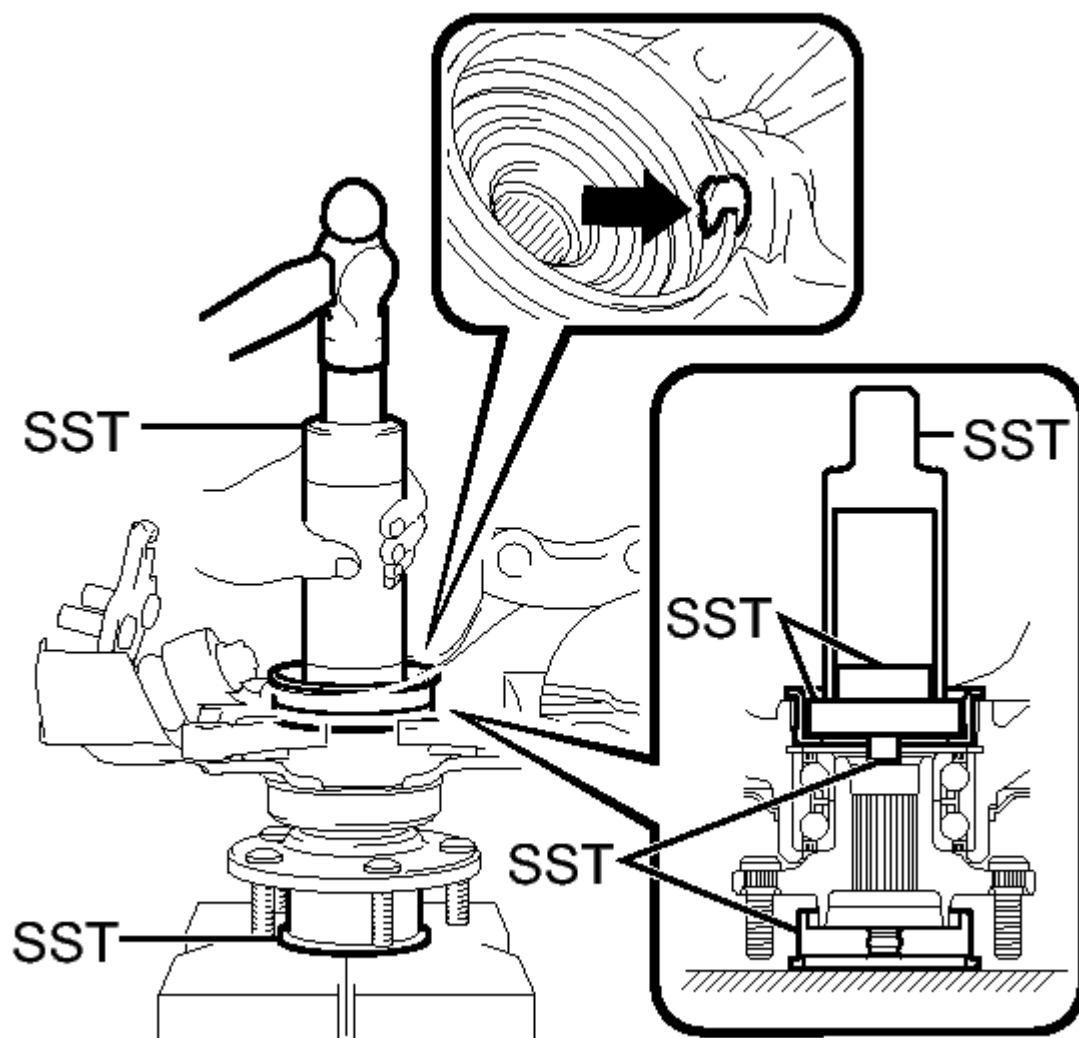
- SST: 09608-32010
- SST: 09950-60010
09951-00620
- SST: 09950-70010
09951-07100

3. INSTALL FRONT AXLE HUB HOLE SNAP RING

- a. Using snap ring pliers, install a new front axle hub hole snap ring.

4. INSTALL FRONT NO. 1 WHEEL BEARING DUST DEFLECTOR

- a. Using SST and a hammer, install a new front No. 1 wheel bearing dust deflector.



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Fig. 23: Installing No. 1 Front Wheel Bearing Dust Deflector
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- SST: 09316-60011
09316-00011
- SST: 09608-32010
- SST: 09950-60010
09951-00500
- SST: 09950-60020
09951-00810
09952-06010

HINT:

Align the cutout for the speed sensor in the No. 1 front wheel bearing dust deflector with the hole of the steering knuckle.

5. INSTALL FRONT AXLE ASSEMBLY

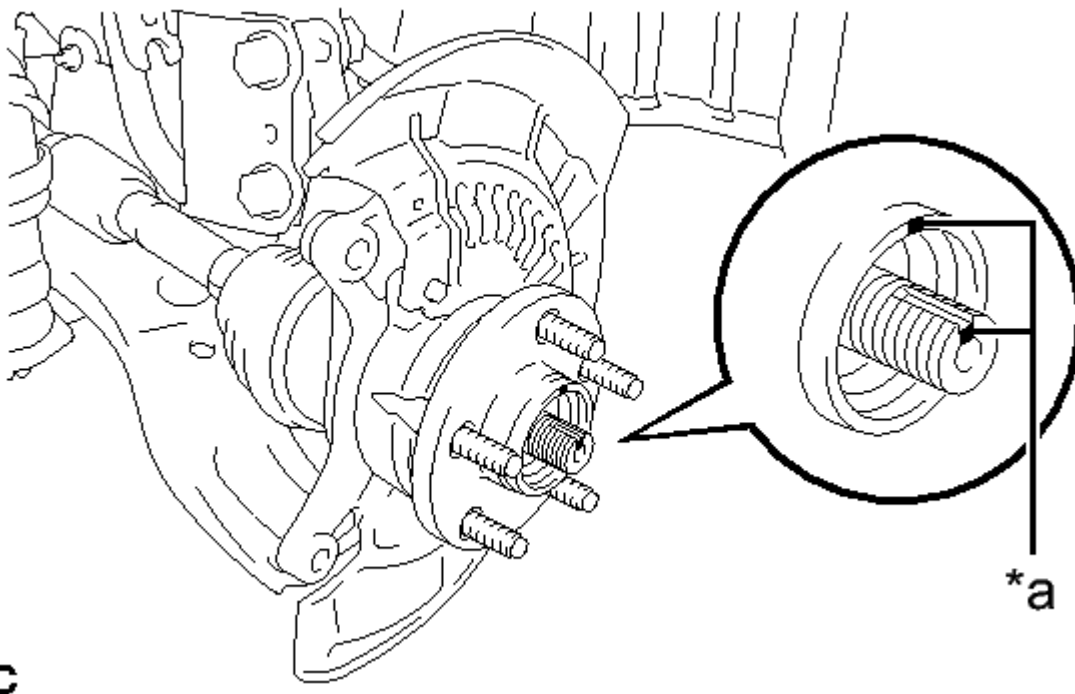
- a. Install the front axle assembly to the front shock absorber with the 2 bolts and 2 nuts.

Torque: 250 N*m (2549 kgf*cm, 184 ft.*lbf)

NOTE: When installing the nuts, keep the bolts from rotating.

6. INSTALL FRONT DRIVE SHAFT ASSEMBLY

- a. Align the matchmarks and install the front drive shaft assembly to the front axle hub sub-assembly.



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Fig. 24: Identifying Front Drive Shaft & Front Axle Hub Sub-Assembly Matchmarks
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

TEXT IN ILLUSTRATION

***a** Matchmark

7. INSTALL FRONT LOWER SUSPENSION ARM SUB-ASSEMBLY

- a. Install the front lower suspension arm sub-assembly to the front lower ball joint with the bolt and 2 nuts.

Torque: 92 N*m (938 kgf*cm, 68 ft.*lbf)

8. CONNECT TIE ROD ASSEMBLY (for 2GR-FE) . Refer to INSTALLATION - Step 9

9. **CONNECT TIE ROD ASSEMBLY (for 1AR-FE)** . Refer to **INSTALLATION - Step 5**
10. **INSTALL FRONT DISC** . Refer to **INSTALLATION - Step 1**
11. **INSTALL FRONT DISC BRAKE CALIPER ASSEMBLY** See step 7
12. **INSTALL FRONT AXLE SHAFT NUT (for 2GR-FE)** . Refer to **INSTALLATION - Step 12**
13. **INSTALL FRONT AXLE SHAFT NUT (for 1AR-FE)** . Refer to **INSTALLATION - Step 8**
14. **SEPARATE FRONT DISC BRAKE CALIPER ASSEMBLY** See step 2
15. **REMOVE FRONT DISC** . Refer to **REMOVAL - Step 14**
16. **INSPECT FRONT AXLE HUB BEARING LOOSENESS** See step 4
17. **INSPECT FRONT AXLE HUB RUNOUT** See step 5
18. **INSTALL FRONT DISC** . Refer to **INSTALLATION - Step 1**
19. **INSTALL FRONT DISC BRAKE CALIPER ASSEMBLY** See step 7
20. **INSTALL FRONT SPEED SENSOR**
 - a. Install the resin clamp and front speed sensor with the bolt.

Torque: 8.3 N*m (85 kgf*cm, 73 in.*lbf)

NOTE:

- Prevent foreign matter from attaching to the front speed sensor tip.
- Firmly insert the front speed sensor body into the steering knuckle before tightening the bolt.
- After installing the front speed sensor to the steering knuckle, make sure that there is no clearance between the front speed sensor stay and steering knuckle. Also make sure that no foreign matter is stuck between the parts.
- Before installing the clamp, firmly insert the points of the clamp into the installation holes.

21. **INSTALL FRONT WHEEL**

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

22. **INSPECT AND ADJUST FRONT WHEEL ALIGNMENT**

Refer to **ADJUSTMENT**

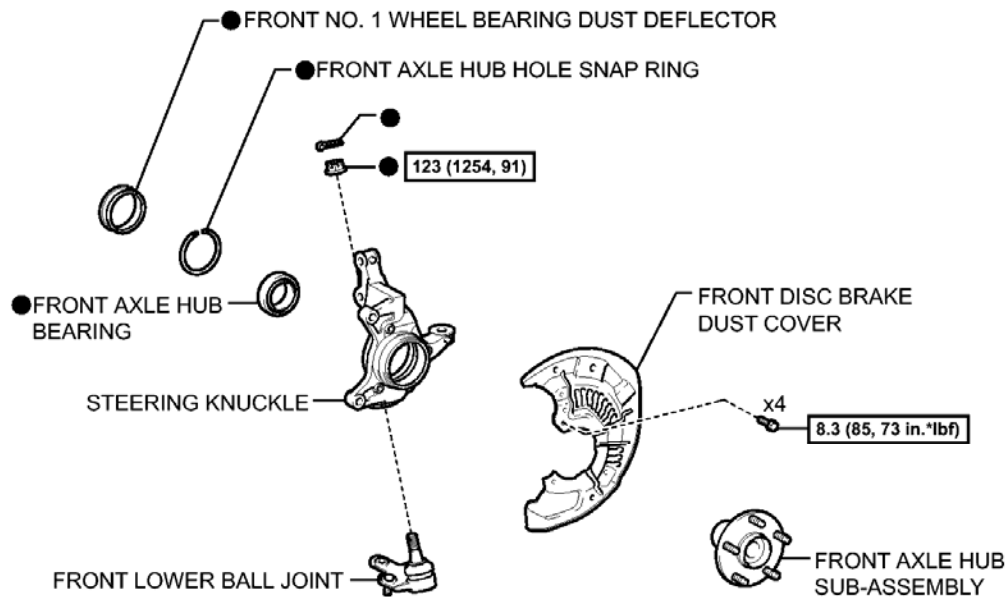
23. **INSPECT SPEED SENSOR SIGNAL**

Refer to **INSTALLATION - Step 9**

STEERING KNUCKLE

COMPONENTS

ILLUSTRATION



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Fig. 25: Steering Knuckle Replacement Components With Torque Specifications
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

REMOVAL

REMOVAL

HINT:

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

1. REMOVE FRONT AXLE ASSEMBLY

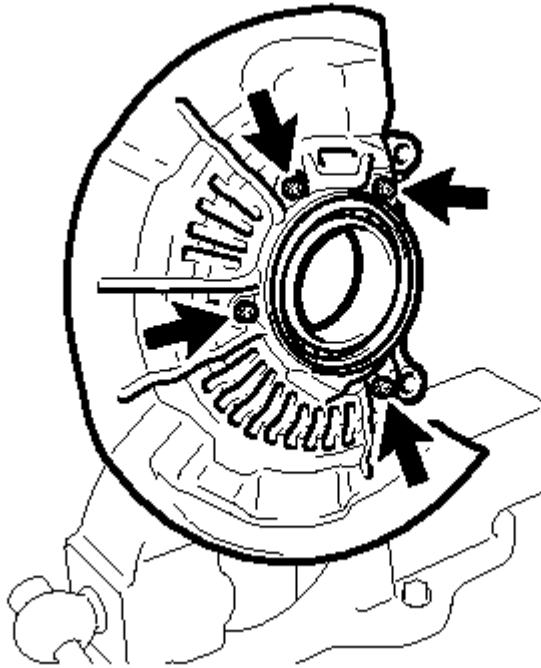
See step 11

2. REMOVE FRONT LOWER BALL JOINT . Refer to **REMOVAL - Step 12**

3. REMOVE FRONT NO. 1 WHEEL BEARING DUST DEFLECTOR See step 12

4. REMOVE FRONT AXLE HUB HOLE SNAP RING See step 13

5. **REMOVE FRONT AXLE HUB SUB-ASSEMBLY** See step 14
6. **REMOVE FRONT DISC BRAKE DUST COVER**
 - a. Remove the 4 bolts and front disc brake dust cover from the steering knuckle.



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Fig. 26: Identifying Front Disc Brake Dust Cover Bolts
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

7. **REMOVE STEERING KNUCKLE**
 - a. Place the bearing inner race (outside) on the front axle hub bearing.
 - b. Using SST, V-blocks and a press, remove the front axle hub bearing from the steering knuckle.

If the steering knuckle cannot be kept level using SST, stabilize the steering knuckle using a washer or an equivalent tool.

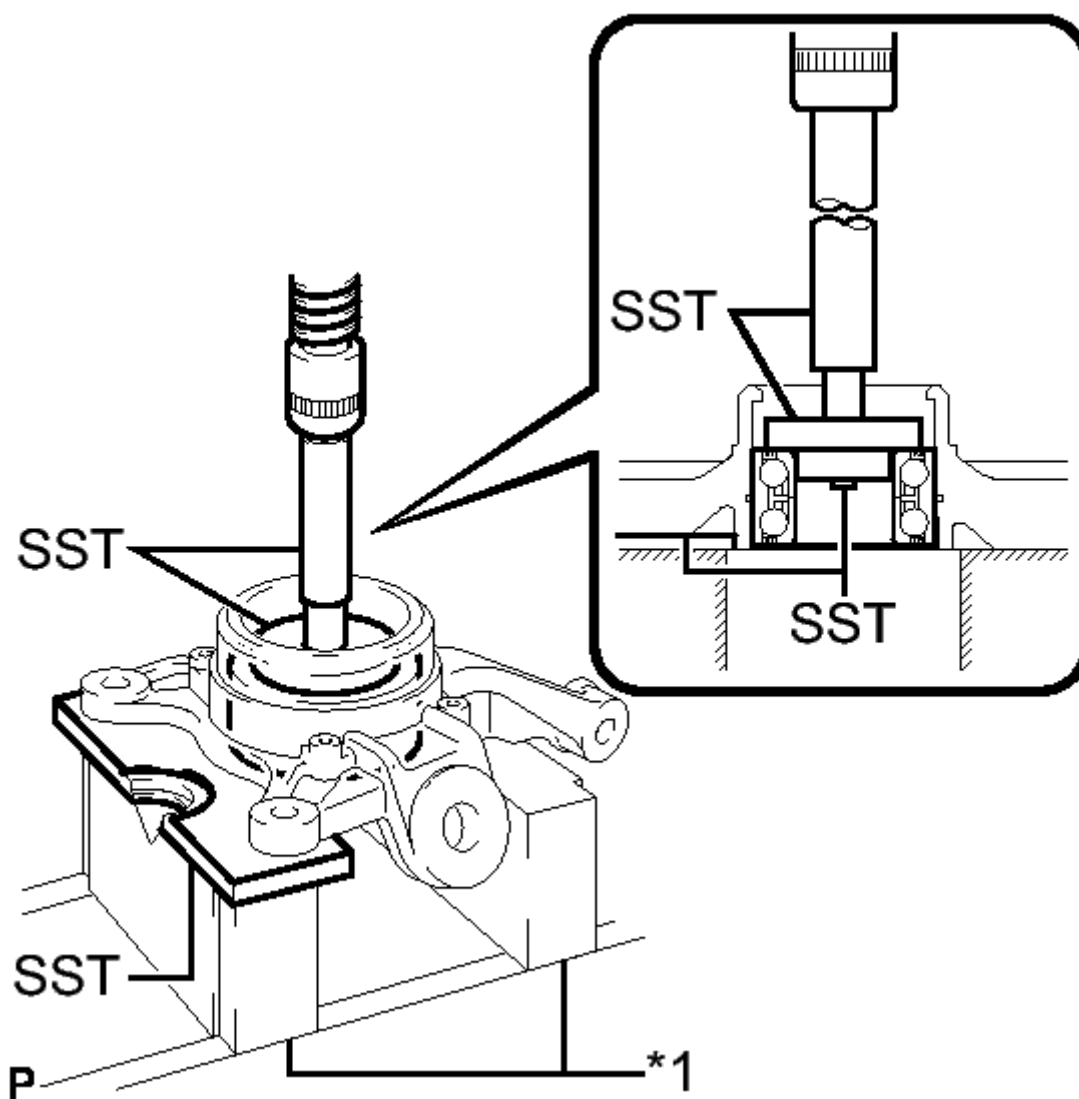


Fig. 27: Removing Front Axle Hub Bearing From Steering Knuckle
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

TEXT IN ILLUSTRATION

*1	V- block
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- SST: 09527-21011
- SST: 09950-60010
 09951-00440
 09952-06010
- SST: 09950-60020
 09951-00750
- SST: 09950-70010

09951-07100

NOTE: **Keep the steering knuckle level.**

INSTALLATION

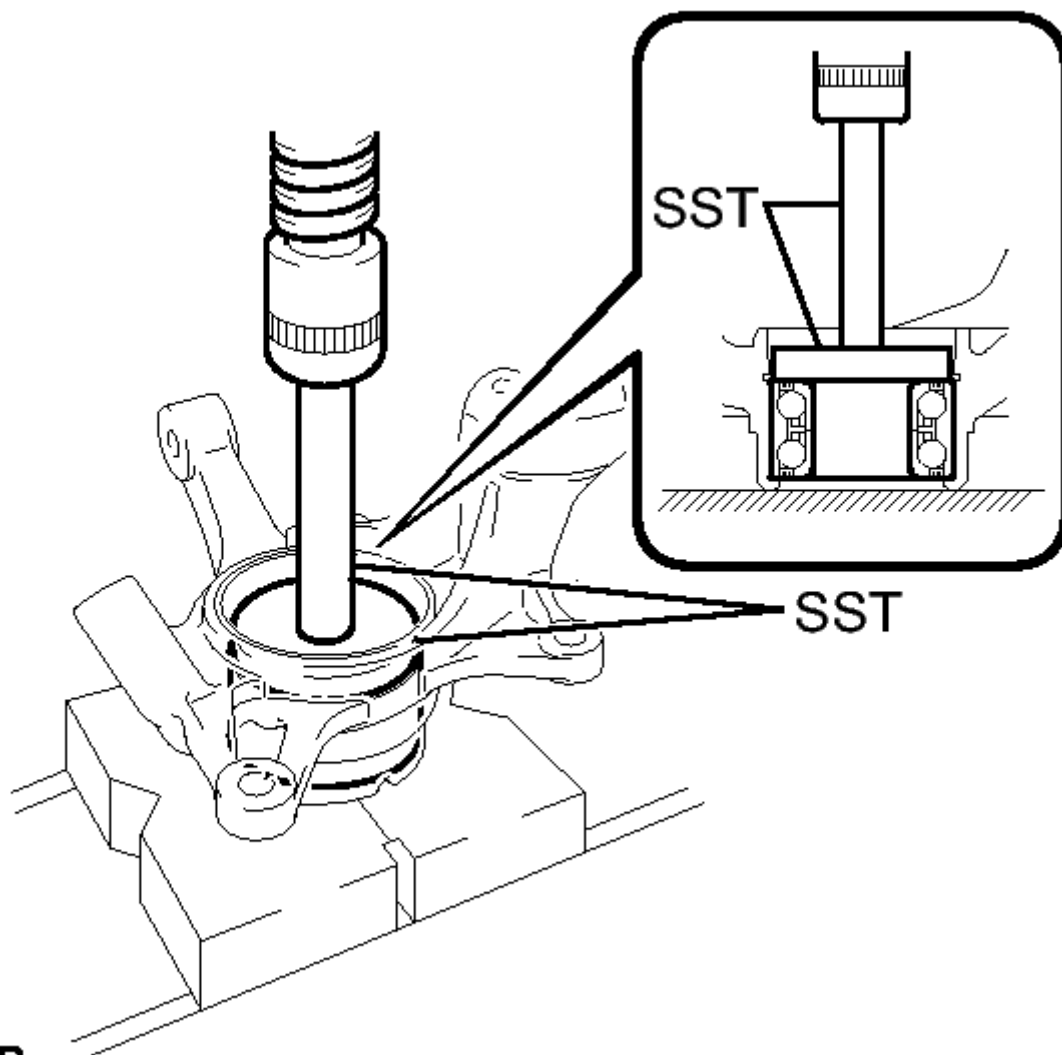
INSTALLATION

HINT:

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

1. INSTALL STEERING KNUCKLE

- a. Using SST and a press, install a new front axle hub bearing to the steering knuckle.



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Fig. 28: Identifying Front Axle Hub

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

- SST: 09950-60020
09951-00810
- SST: 09950-70010
09951-07100

2. INSTALL FRONT DISC BRAKE DUST COVER

- a. Install the front disc brake dust cover to the steering knuckle with the 4 bolts.

Torque: 8.3 N*m (85 kgf*cm, 73 in.*lbf)

3. **INSTALL FRONT AXLE HUB SUB-ASSEMBLY** See step 2
4. **INSTALL FRONT AXLE HUB HOLE SNAP RING** See step 3
5. **INSTALL FRONT NO. 1 WHEEL BEARING DUST DEFLECTOR** See step 4

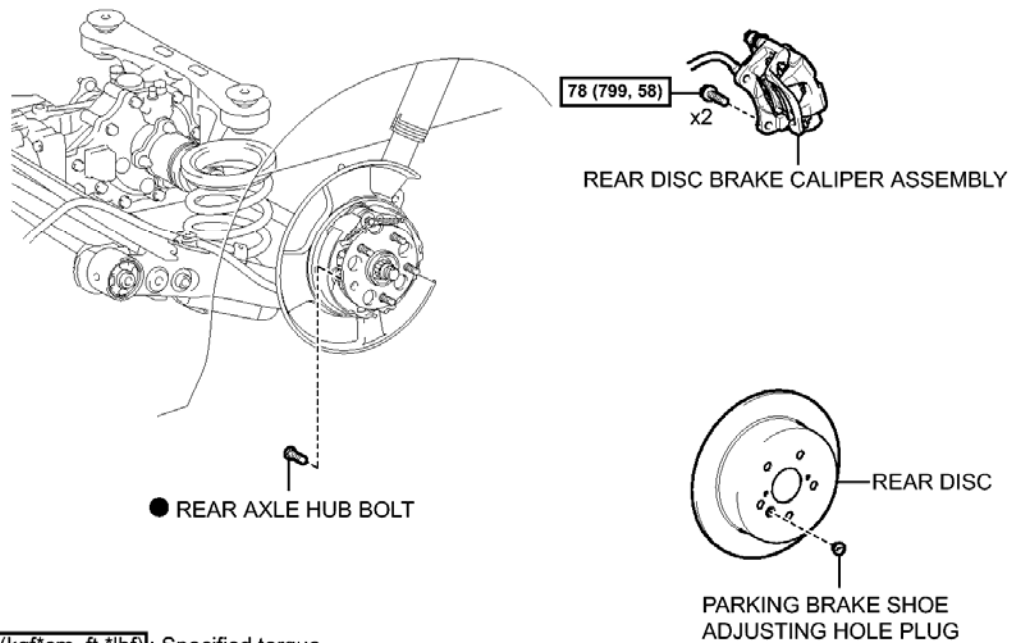
6. **INSTALL FRONT LOWER BALL JOINT** . Refer to **INSTALLATION - Step 1**
7. **INSTALL FRONT AXLE ASSEMBLY**

See step 5

REAR AXLE HUB BOLT

COMPONENTS

ILLUSTRATION



$\boxed{\text{N}^*\text{m (kgf}^*\text{cm, ft.}^*\text{lbf)}}$: Specified torque

● Non-reusable part

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Fig. 29: Rear Axle Hub Bolt Replacement Components With Torque Specifications
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

REPLACEMENT

REPLACEMENT

HINT:

Replace the RH side using the same procedures as for the LH side.

1. **REMOVE REAR WHEEL**
2. **SEPARATE REAR DISC BRAKE CALIPER ASSEMBLY** See step 3
3. **REMOVE PARKING BRAKE SHOE ADJUSTING HOLE PLUG** . Refer to REMOVAL - Step 14
4. **REMOVE REAR DISC** . Refer to REMOVAL - Step 15
5. **REMOVE REAR AXLE HUB BOLT**
 - a. Temporarily install the 2 nuts and washers to the rear axle hub bolt as shown in the illustration.

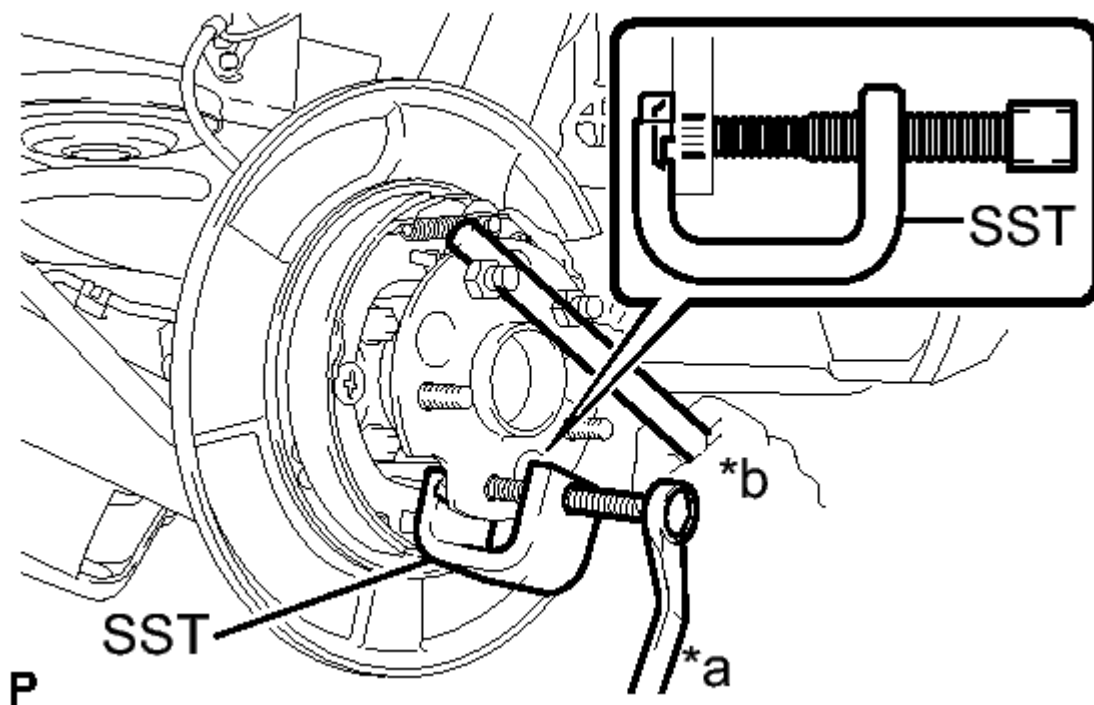


Fig. 30: Removing Rear Axle Hub Bolt Using SST & Brass Bar
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

TEXT IN ILLUSTRATION

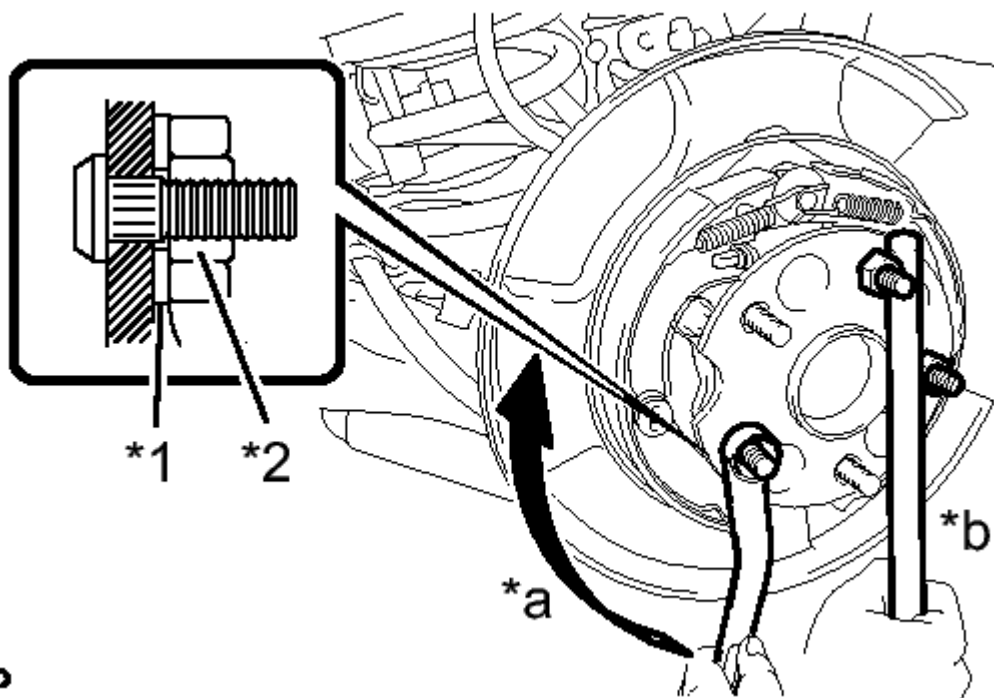
*a	Turn
*b	Hold

- b. Using SST and a brass bar or an equivalent to hold the hub and bearing assembly, remove the rear axle hub bolt.

- **SST: 09650-17011**

6. INSTALL REAR AXLE HUB BOLT

- a. Install a washer and nut to a new bolt, as shown in the illustration.



P

Fig. 31: Installing Rear Axle Hub Bolt

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

TEXT IN ILLUSTRATION

*1	Washer
*2	Nut
*a	Turn
*b	Hold

- b. Using a brass bar or an equivalent, hold the hub and turn the nut until the bottom surface of the hub bolt head touches the axle hub.

HINT:

Use a feeler gauge to check for gaps between the hub bolt head and hub surface.

- c. Remove the nut and washer.

NOTE: **Do not damage the threads of the hub bolt.**

7. **INSTALL REAR DISC** . Refer to **INSTALLATION - Step 1**
8. **INSTALL PARKING BRAKE SHOE ADJUSTING HOLE PLUG** . Refer to **INSTALLATION - Step 2**
9. **INSTALL REAR DISC BRAKE CALIPER ASSEMBLY** See step 10
10. **ADJUST PARKING BRAKE SHOE CLEARANCE AND PARKING BRAKE PEDAL TRAVEL** .

Refer to **ADJUSTMENT - Step 2**

11. INSTALL REAR WHEEL

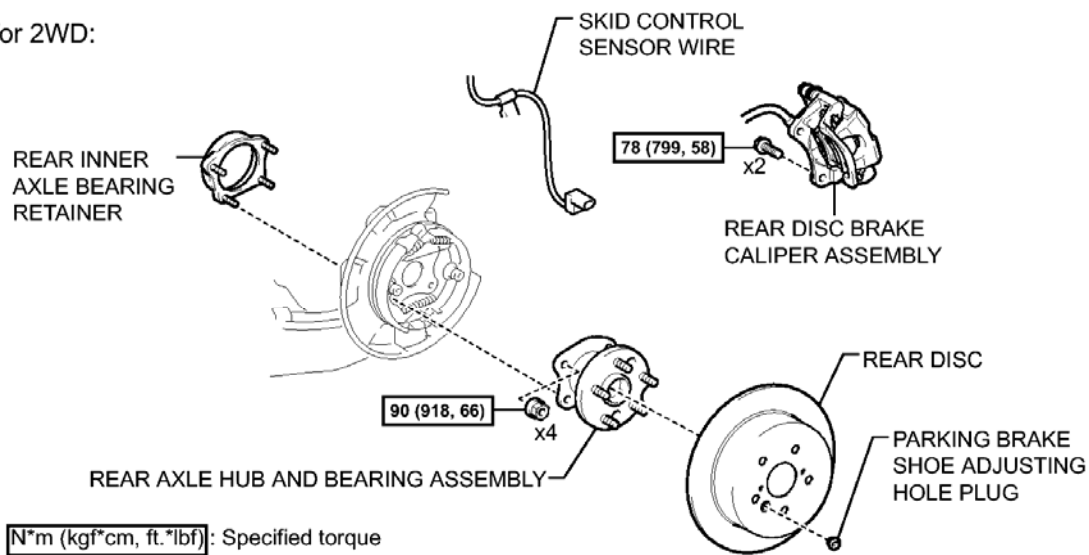
Torque: 103 N*m (1050 kgf*cm, 76 ft.*lbf)

REAR AXLE HUB

COMPONENTS

ILLUSTRATION

for 2WD:

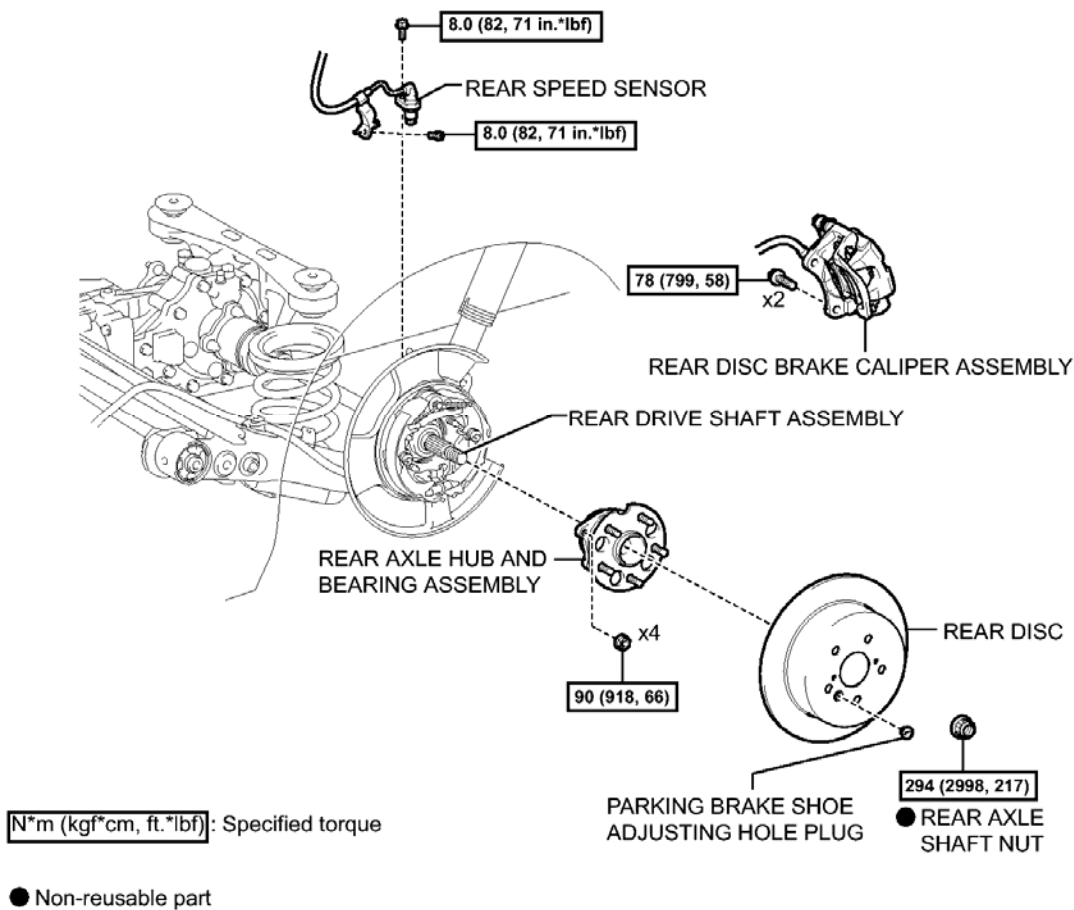


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Fig. 32: Rear Axle Hub Replacement Components With Torque Specifications (1 Of 2)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

ILLUSTRATION

for AWD:



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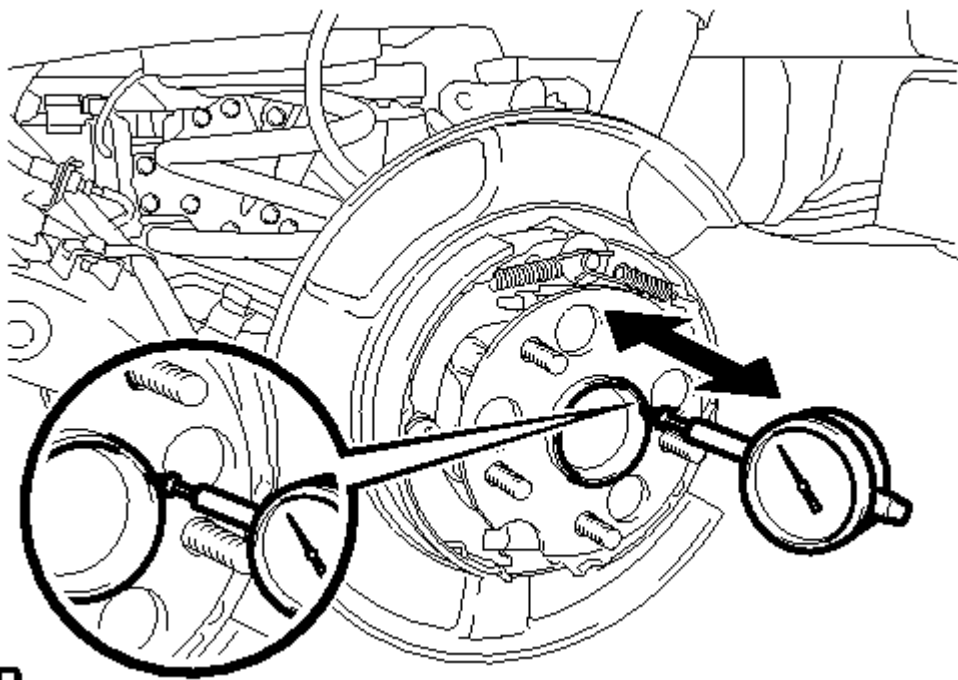
Fig. 33: Rear Axle Hub Replacement Components With Torque Specifications (2 Of 2)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

ON-VEHICLE INSPECTION

ON-VEHICLE INSPECTION

1. INSPECT REAR AXLE HUB BEARING LOOSENESS

- Using a dial indicator, check for looseness near the center of the axle hub.



P

Fig. 34: Inspecting Rear Axle Hub Bearing Looseness Using A Dial Indicator
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Maximum

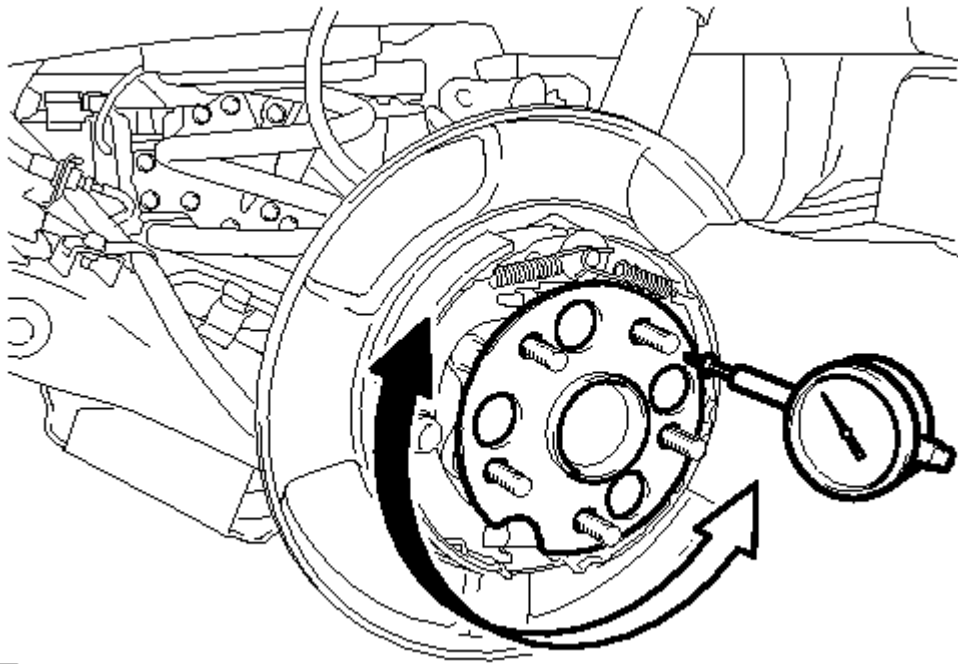
0.05 mm (0.0020 in.)

If looseness exceeds the maximum, replace the axle hub assembly.

NOTE: **Ensure that the dial indicator is set at right angles to the measurement surface.**

2. INSPECT REAR AXLE HUB RUNOUT

- a. Using a dial indicator, check for runout in the surface of the axle hub outside the hub bolt.



P

Fig. 35: Inspecting Rear Axle Hub Runout Using A Dial Indicator
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Maximum

0.07 mm (0.0027 in.)

If runout exceeds the maximum, replace the axle hub assembly.

NOTE: **Ensure that the dial indicator is set at right angles to the measurement surface.**

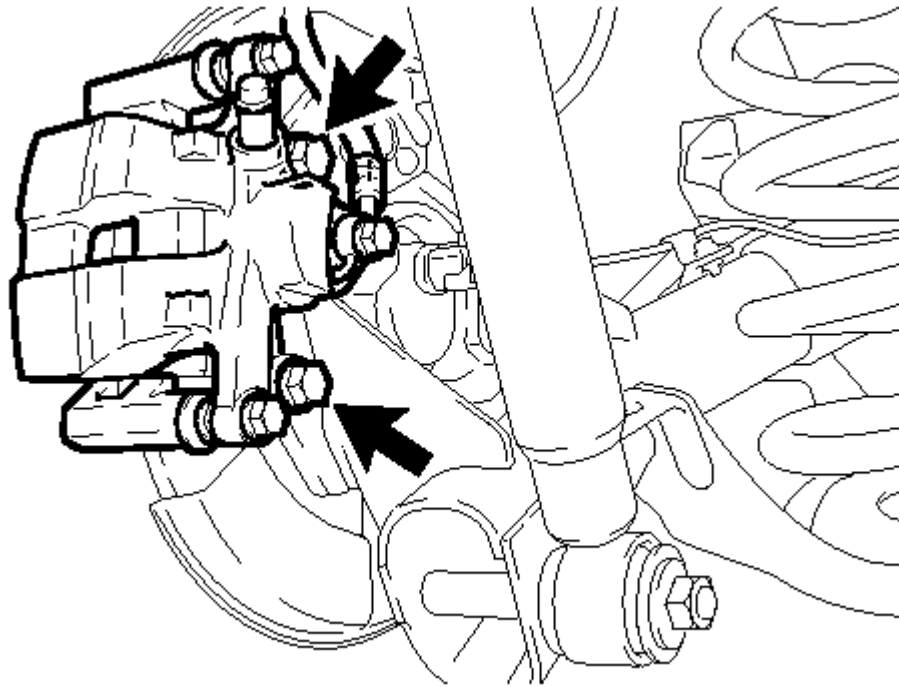
REMOVAL

REMOVAL

HINT:

Replace the RH side by the same procedures as the LH side.

1. **REMOVE REAR WHEEL**
2. **REMOVE REAR AXLE SHAFT NUT (for AWD)** . Refer to **REMOVAL - Step 2**
3. **SEPARATE REAR DISC BRAKE CALIPER ASSEMBLY**
 - a. Removing the 2 bolts, separate the rear disc brake caliper assembly.



P

Fig. 36: Identifying Rear Disc Brake Caliper Assembly LH & Fasteners
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

4. **REMOVE PARKING BRAKE SHOE ADJUSTING HOLE PLUG** . Refer to **REMOVAL - Step 14**
5. **REMOVE REAR DISC** . Refer to **REMOVAL - Step 15**
6. **DISCONNECT SKID CONTROL SENSOR WIRE (for 2WD)**
 - a. Using a screwdriver, disengage the claw of the connector lock portion and disconnect the skid control sensor wire connector.

NOTE: **Do not remove the connector cover from the connector because the skid control sensor wire connector may be damaged.**

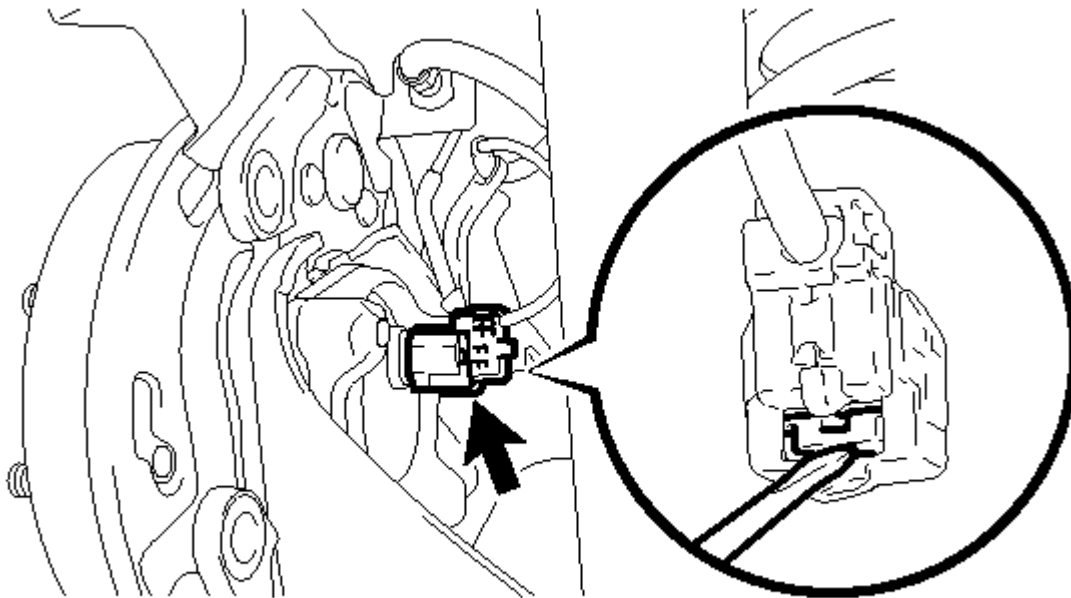
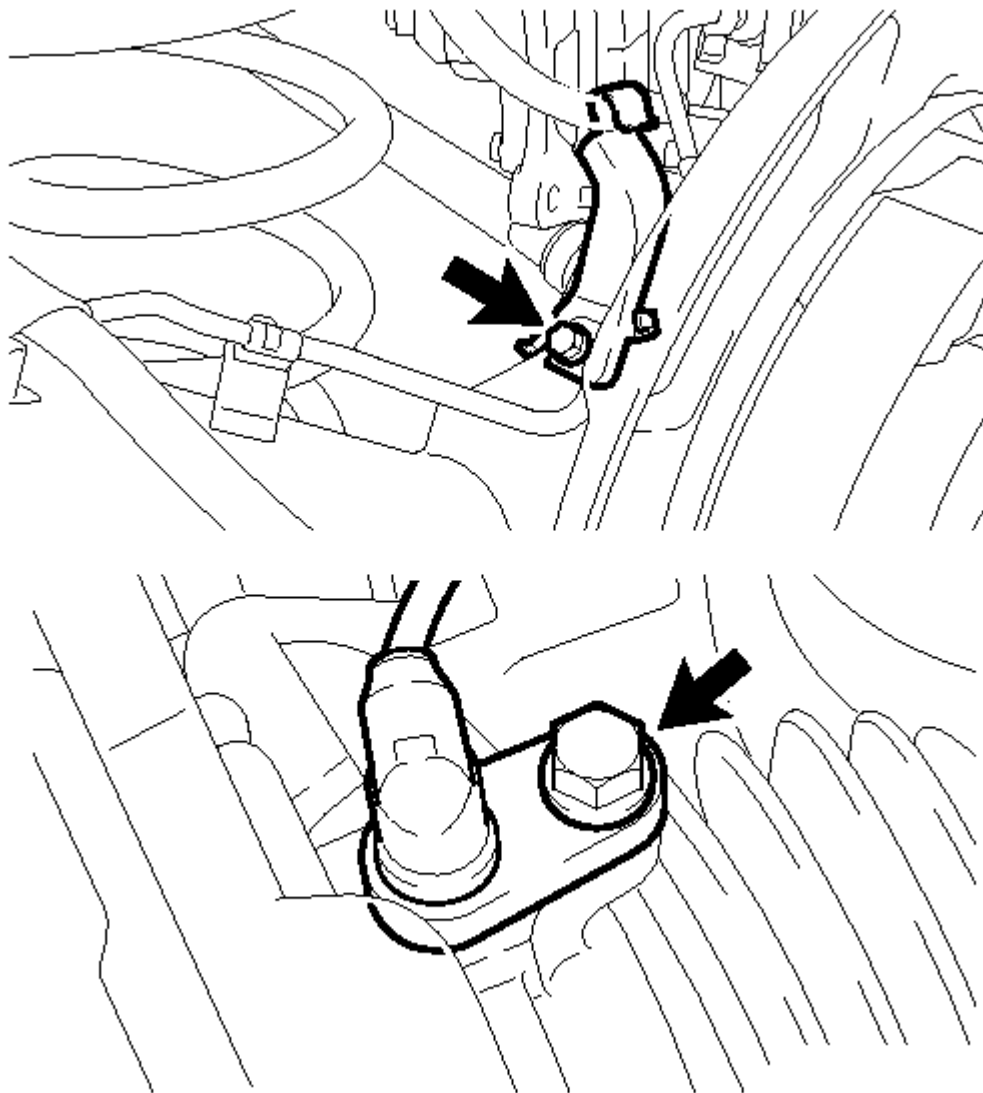


Fig. 37: Removing Skid Control Sensor Wire Connector Using A Screwdriver (For 2WD)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

7. SEPARATE REAR SPEED SENSOR (for AWD)

- a. Removing the 2 bolts and separate the rear speed sensor.



P

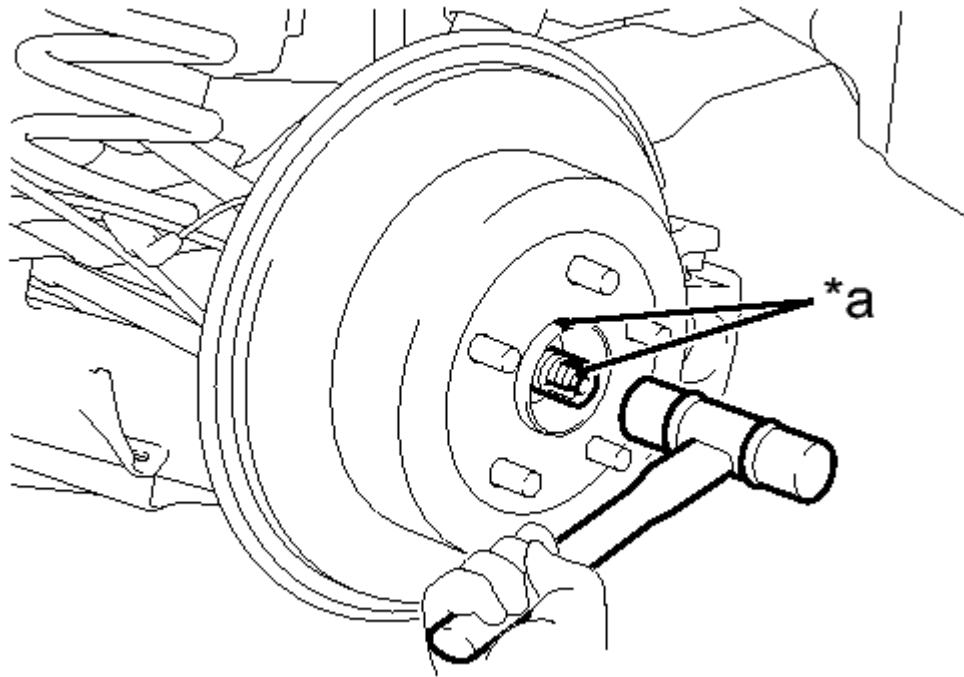
Fig. 38: Identifying Rear Speed Sensor LH No. 1 Bracket & Fasteners (For AWD)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

NOTE:

- Be careful not to damage the speed sensor.
- Prevent foreign matter from attaching to the speed sensor.

8. SEPARATE REAR DRIVE SHAFT ASSEMBLY (for AWD)

- a. Put matchmarks on the rear drive shaft assembly and rear axle hub and bearing assembly.



C

Fig. 39: Identifying Rear Drive Shaft Assembly, Plastic Hammer & Matchmarks
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

TEXT IN ILLUSTRATION

***a** Matchmark

NOTE: Do not punch the matchmarks.

- b. Using a plastic hammer, separate the rear drive shaft assembly from the axle hub and bearing assembly.

NOTE:

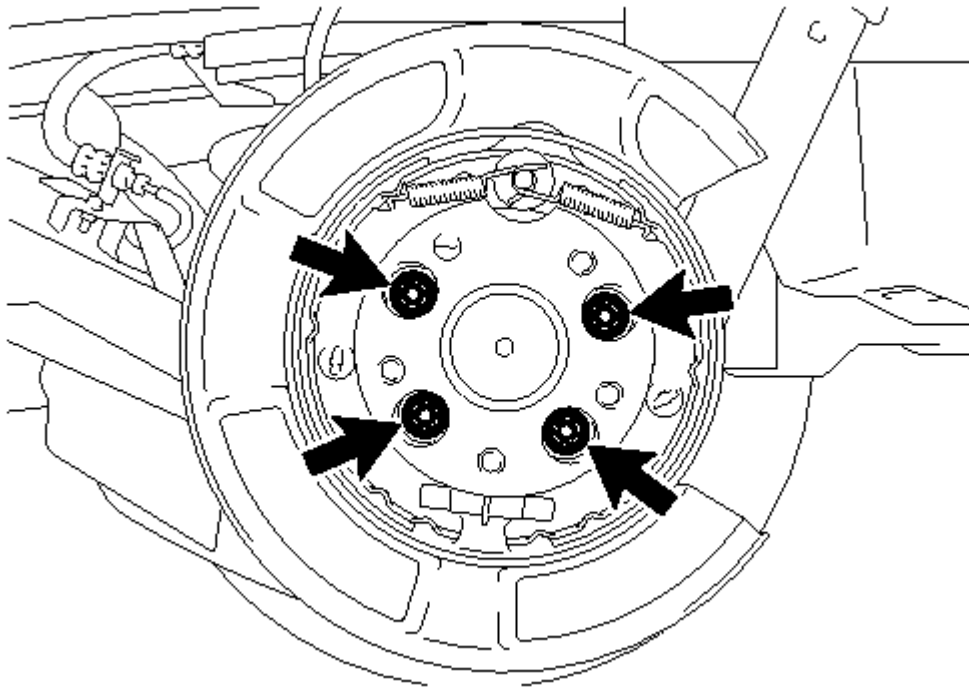
- Do not pull the rear axle further out of the vehicle than is necessary.
- Do not damage the outboard joint boot.

HINT:

If it is difficult to separate, tap the end of the rear drive shaft assembly using a brass bar and a hammer.

9. REMOVE REAR AXLE HUB AND BEARING ASSEMBLY

- a. Remove the 4 nuts and hub and bearing assembly LH.



P

Fig. 40: Identifying Rear Axle Hub/Bearing Assembly & Nuts
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

10. **REMOVE REAR INNER AXLE BEARING RETAINER (for 2WD)**
 - a. Remove the rear inner axle bearing retainer.

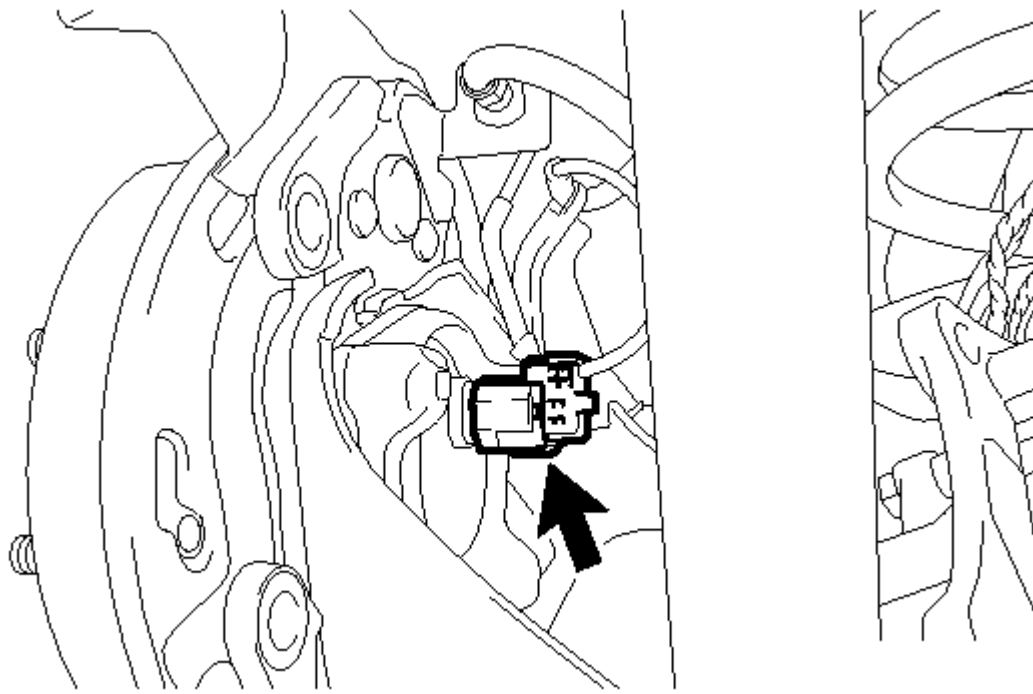
INSTALLATION

INSTALLATION

1. **INSTALL REAR INNER AXLE BEARING RETAINER (for 2WD)**
 - a. Install the rear axle bearing retainer.
2. **INSTALL REAR AXLE HUB AND BEARING ASSEMBLY**
 - a. Install the hub and bearing assembly LH with the 4 nuts.

Torque: 90 N*m (918 kgf*cm, 66 ft.*lbf)

3. **INSPECT REAR AXLE HUB BEARING LOOSENESS** See step 1
4. **INSPECT REAR AXLE HUB RUNOUT** See step 2
5. **CONNECT SKID CONTROL SENSOR WIRE (for 2WD)**
 - a. Connect the skid control sensor wire connector.



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Fig. 41: Identifying Skid Control Sensor Wire Connector (For 2WD)
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

6. INSTALL REAR DRIVE SHAFT ASSEMBLY (for AWD)

- a. Install the rear drive shaft to the axle carrier.

NOTE: Be careful not to damage the boot and speed sensor rotor to the rear drive shaft and oil seal of the axle hub bearing.

7. INSTALL REAR SPEED SENSOR (for AWD)

- a. Install the 2 bolts, connect the rear speed sensor LH.

Torque: 8.0 N*m (82 kgf*cm, 71 in.*lbf)

NOTE:

- Be careful not to damage the speed sensor.
- Prevent foreign matter from attaching to the speed sensor.
- Do not twist the sensor wire when installing the sensor.

8. INSTALL REAR DISC . Refer to INSTALLATION - Step 1

9. INSTALL PARKING BRAKE SHOE ADJUSTING HOLE PLUG . Refer to INSTALLATION - Step 2

10. INSTALL REAR DISC BRAKE CALIPER ASSEMBLY

- a. Install the rear disc brake caliper assembly with the 2 bolts.

Torque: 78 N*m (799 kgf*cm, 58 ft.*lbf)

11. **INSTALL REAR AXLE SHAFT NUT (for AWD)** . Refer to INSTALLATION - Step 2
12. **ADJUST PARKING BRAKE SHOE CLEARANCE AND PARKING BRAKE PEDAL TRAVEL** .
Refer to ADJUSTMENT - Step 2
13. **INSTALL REAR WHEEL**

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

14. **INSPECT SPEED SENSOR SIGNAL**

Refer to INSTALLATION - Step 43

DIFFERENTIAL OIL

REPLACEMENT

REPLACEMENT

1. **REMOVE REAR DIFFERENTIAL FILLER PLUG**
 - a. Stop the vehicle in a level place.
 - b. Using a hexagon wrench (10 mm), remove the rear differential filler plug and gasket.

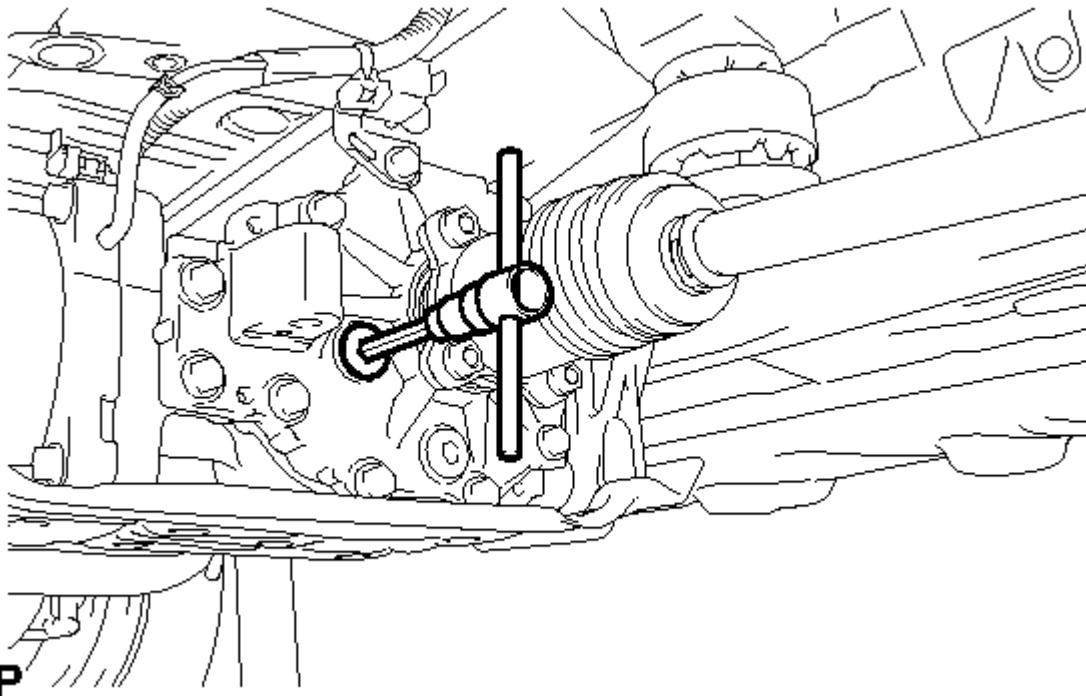


Fig. 42: Remove/Install Rear Differential Filler Plug Using A Hexagon Wrench
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

2. **REMOVE REAR DIFFERENTIAL DRAIN PLUG**
 - a. Using a hexagon wrench (10 mm), remove the rear differential drain plug and gasket, then drain the

differential oil.

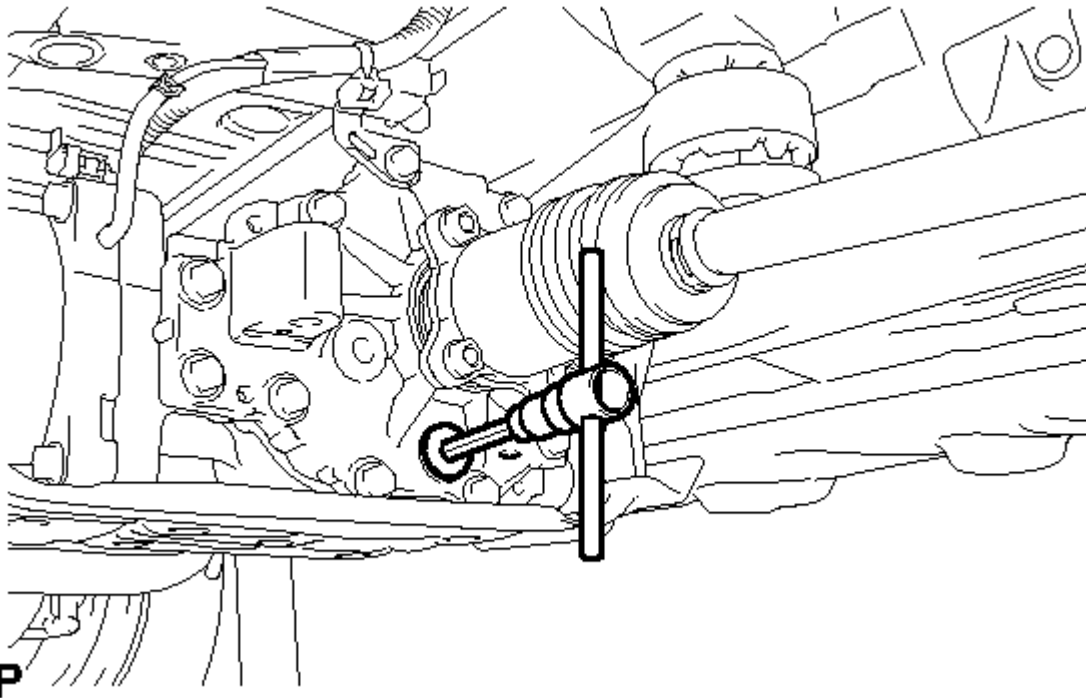


Fig. 43: Remove/Install Rear Differential Drain Plug Using A Hexagon Wrench
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

3. INSTALL REAR DIFFERENTIAL DRAIN PLUG

- a. Using a hexagon wrench (10 mm), install the rear differential drain plug with a new gasket.

Torque: 39 N*m (398 kgf*cm, 29 ft.*lbf)

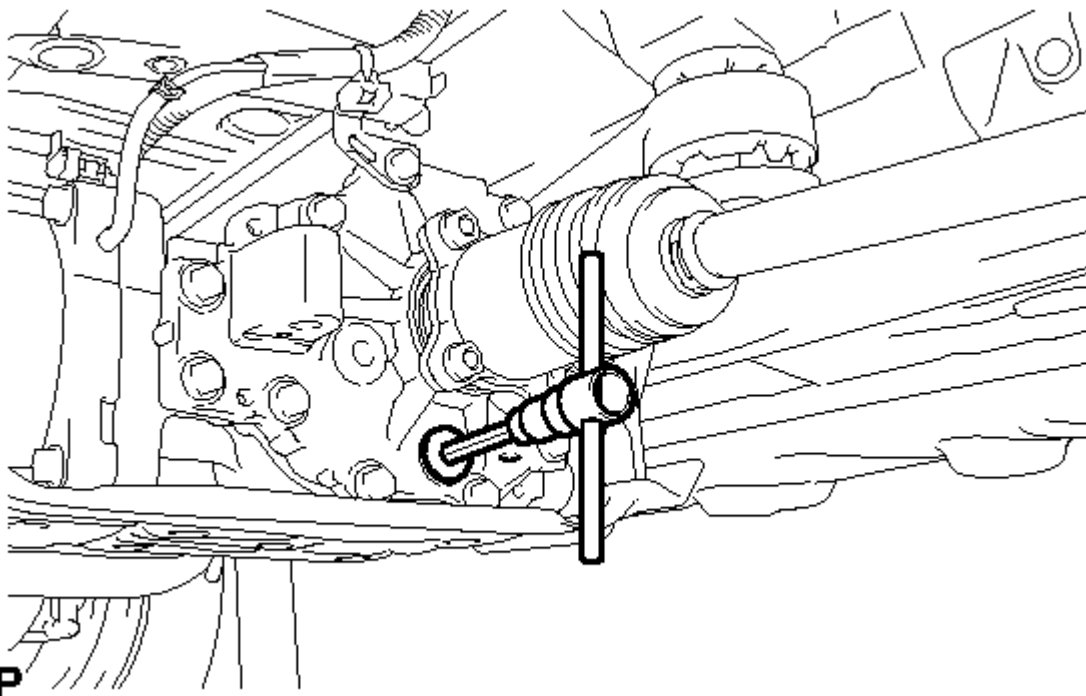


Fig. 44: Remove/Install Rear Differential Drain Plug Using A Hexagon Wrench
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

4. ADD DIFFERENTIAL OIL

- a. Add differential oil until the oil level is between 0 and 5 mm (0 and 0.197 in.) from the bottom lip of the rear differential filler plug opening.

Between 0 and 5 mm

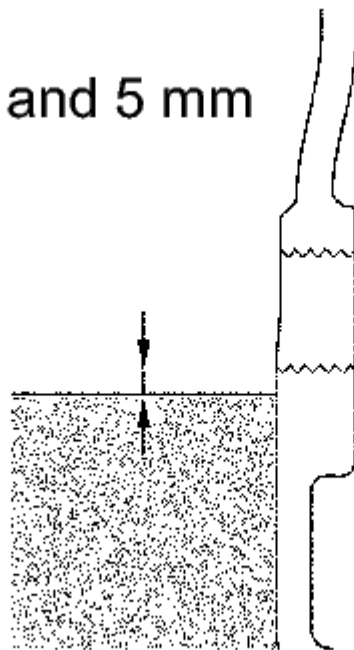


Fig. 45: Checking Oil Level

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

Capacity

0.5 to 0.6 liters (0.5 to 0.6 US qts, 0.4 to 0.5 Imp.qts)

Oil grade

Toyota Genuine Differential Gear Oil LT 75W-85 GL-5 or equivalent

NOTE:

- An excessively large or small amount of differential oil may cause damage.
- After adding differential oil, drive the vehicle and recheck the oil level.

5. INSPECT AND ADJUST DIFFERENTIAL OIL

- a. Check that the oil level is between 0 and 5 mm (0 and 0.197 in.) from the bottom lip of the rear differential filler plug opening.

Between 0 and 5 mm

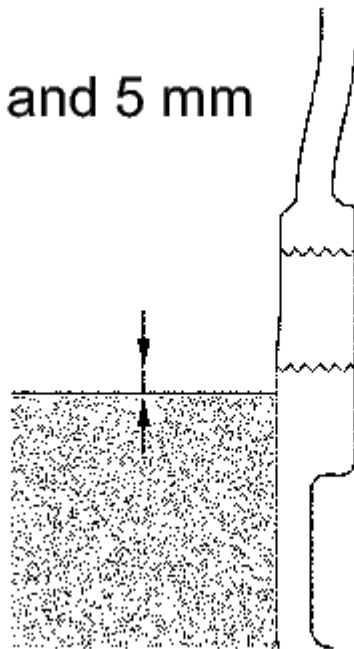


Fig. 46: Checking Oil Level

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

NOTE:

- An excessively large or small amount of differential oil may cause damage.

- After adding differential oil, drive the vehicle and recheck the oil level.

b. Inspect for oil leak if the oil level is low.

6. INSTALL REAR DIFFERENTIAL FILLER PLUG

- a. Using a hexagon wrench (10 mm), install the rear differential filler plug and a new gasket.

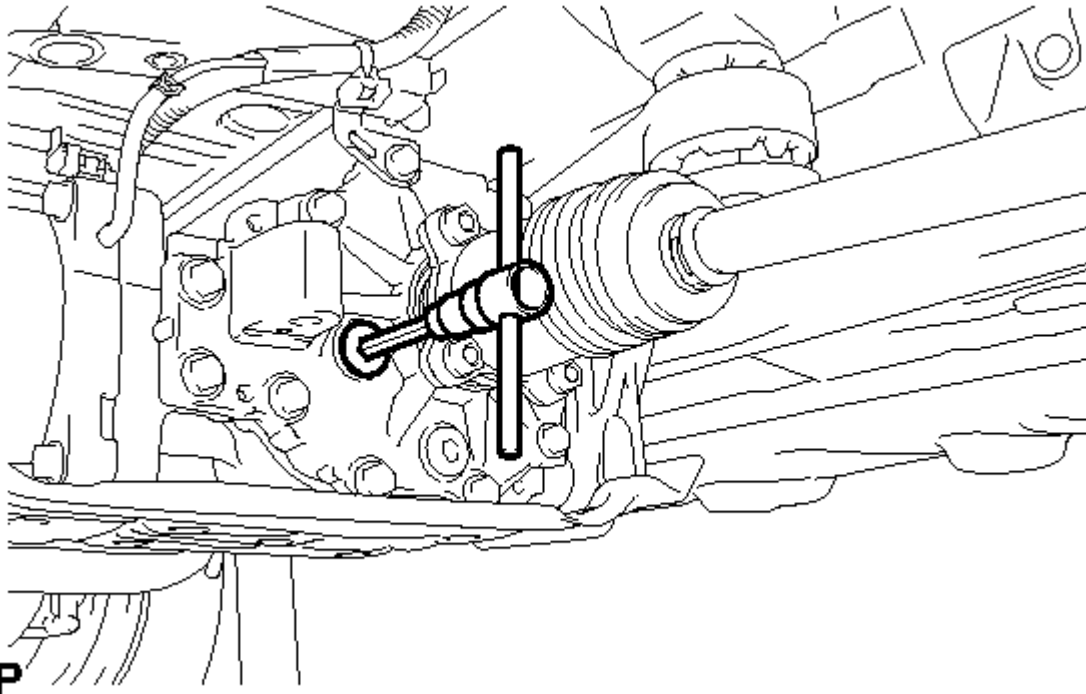


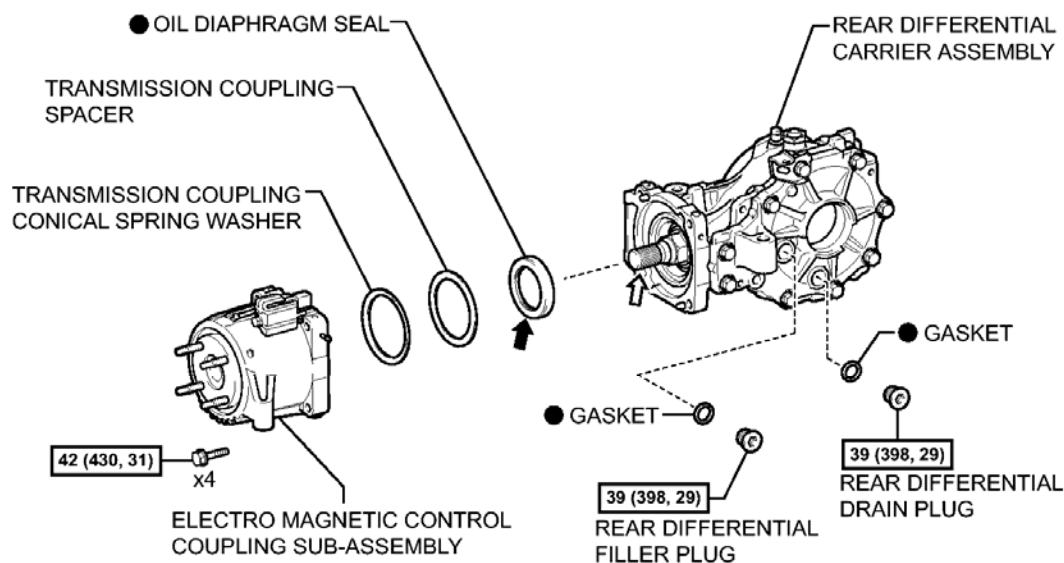
Fig. 47: Remove/Install Rear Differential Filler Plug Using A Hexagon Wrench
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Torque: 39 N*m (398 kgf*cm, 29 ft.*lbf)

REAR DIFFERENTIAL CARRIER OIL SEAL

COMPONENTS

ILLUSTRATION



N*m (kgf*cm, ft.*lbf): Specified torque

● Non-reusable part

← MP grease

↔ Differential gear oil LT

P

Fig. 48: Rear Differential Carrier Oil Seal Replacement Components With Torque Specifications
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

REPLACEMENT

REPLACEMENT

1. REMOVE PROPELLER WITH CENTER BEARING SHAFT ASSEMBLY

Refer to **REMOVAL**

2. REMOVE REAR DIFFERENTIAL FILLER PLUG See step 1

3. REMOVE REAR DIFFERENTIAL DRAIN PLUG See step 2

4. REMOVE ELECTRO MAGNETIC CONTROL COUPLING SUB-ASSEMBLY

- Disconnect the electro magnetic control coupling sub-assembly connector and separate the wire harness clamp.

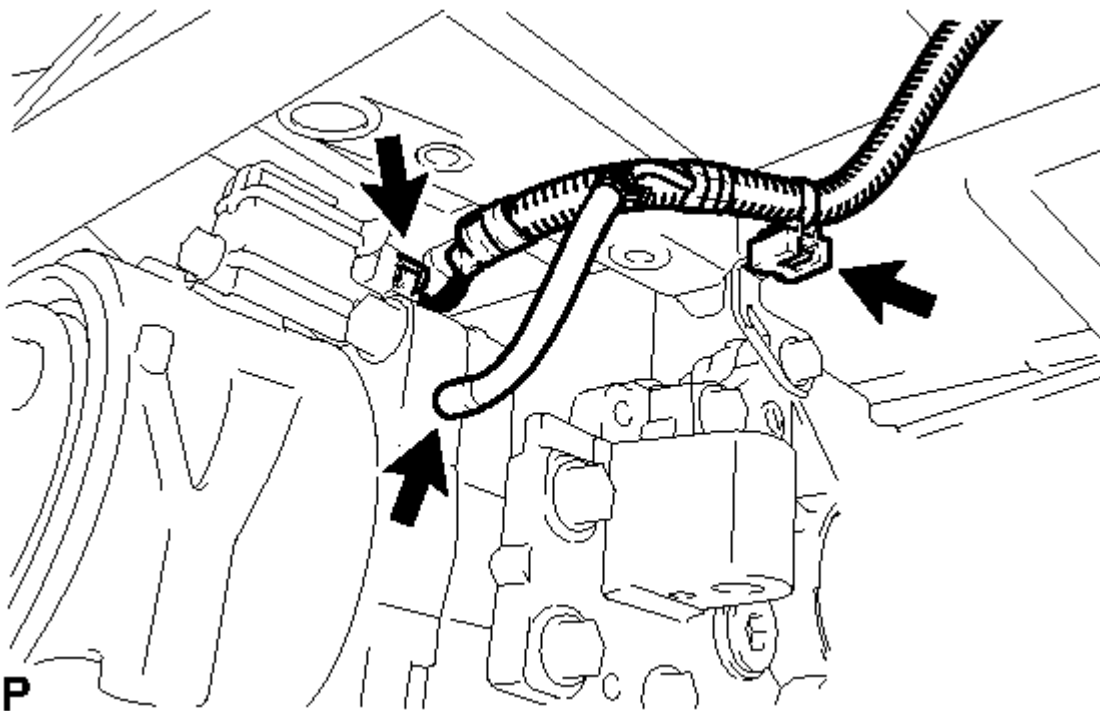
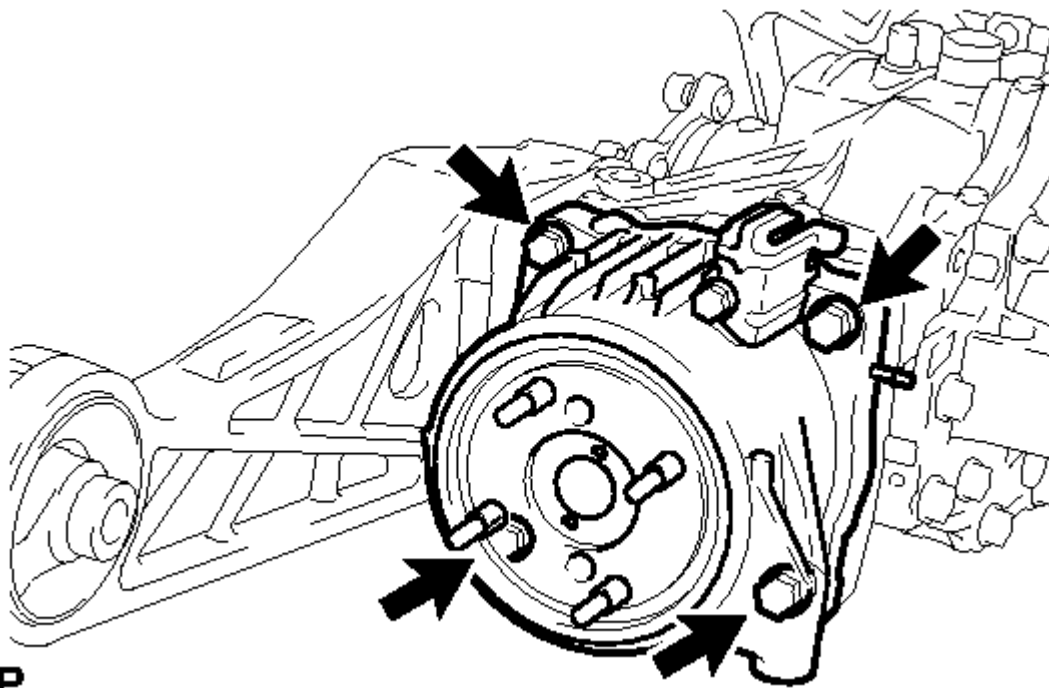


Fig. 49: Identifying Electro Magnetic Control Coupling Sub-Assembly Connector, Wire Harness Clamp & Hose

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

NOTE: Do not damage the electro magnetic control coupling wire harness.

- b. Disconnect the vacuum hose.
- c. Remove the 4 bolts.



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Fig. 50: Identifying Electro Magnetic Control Coupling Sub-Assembly & Bolts
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- d. Using a brass bar and a hammer, tap the electro magnetic control coupling sub-assembly to remove the electro magnetic control coupling sub-assembly from the rear differential carrier assembly.

NOTE:

- Hold the brass bar against the rib of the electro magnetic control coupling sub-assembly.
- Do not drop the electro magnetic control coupling sub-assembly.

5. REMOVE TRANSMISSION COUPLING CONICAL SPRING WASHER

- a. Remove the transmission coupling conical spring washer from the rear differential carrier assembly.

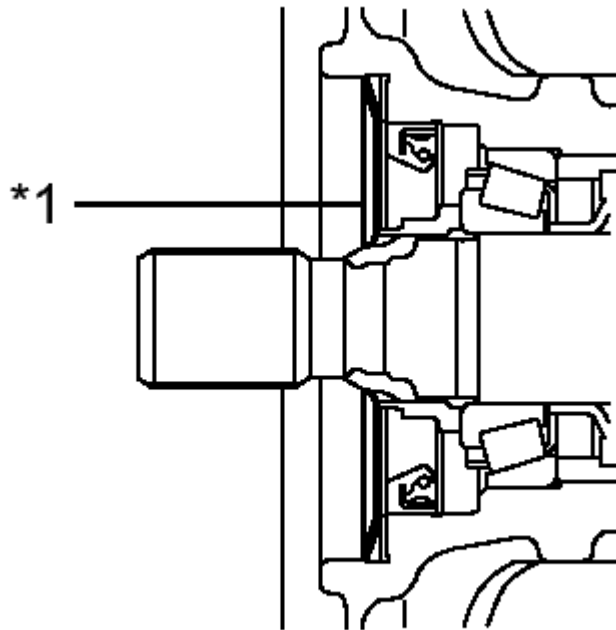


Fig. 51: Identifying Transmission Coupling Conical Spring Washer
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

TEXT IN ILLUSTRATION

	Transmission Coupling
*1	Conical Spring Washer

6. REMOVE TRANSMISSION COUPLING SPACER

- a. Remove the transmission coupling spacer from the rear differential carrier assembly.

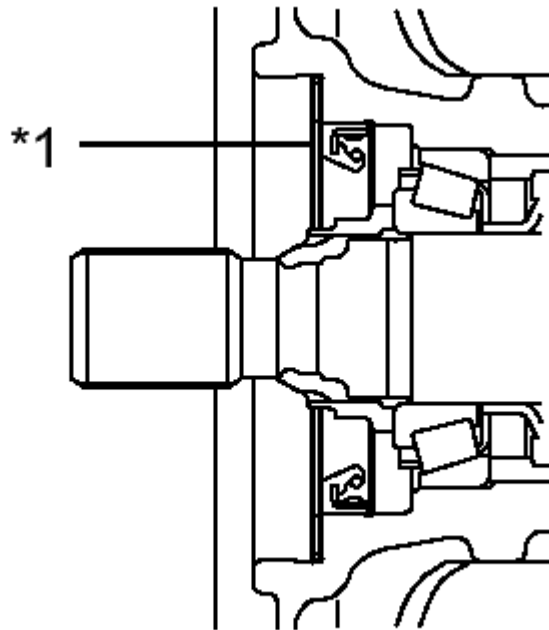


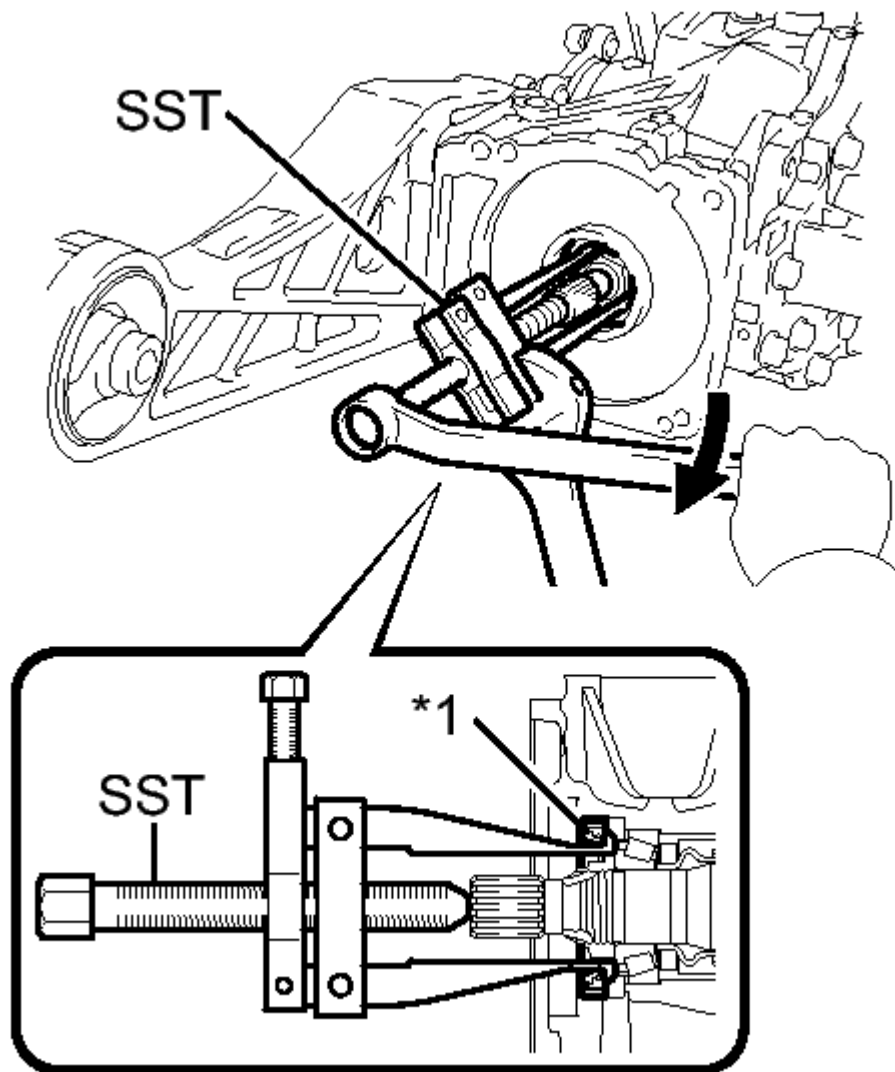
Fig. 52: Identifying Transmission Coupling Spacer
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

TEXT IN ILLUSTRATION

	Transmission
*1	Coupling Spacer

7. REMOVE OIL DIAPHRAGM SEAL

- a. Using SST, remove the oil diaphragm seal.
 - **SST: 09308-10010**



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Fig. 53: Removing Oil Diaphragm Seal Using SST
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

TEXT IN ILLUSTRATION

	Oil
*1	Diaphragm Seal

8. INSTALL OIL DIAPHRAGM SEAL

- a. Apply MP grease to the lip of the new oil diaphragm seal.
- b. Using SST and a hammer, install a new oil diaphragm seal.

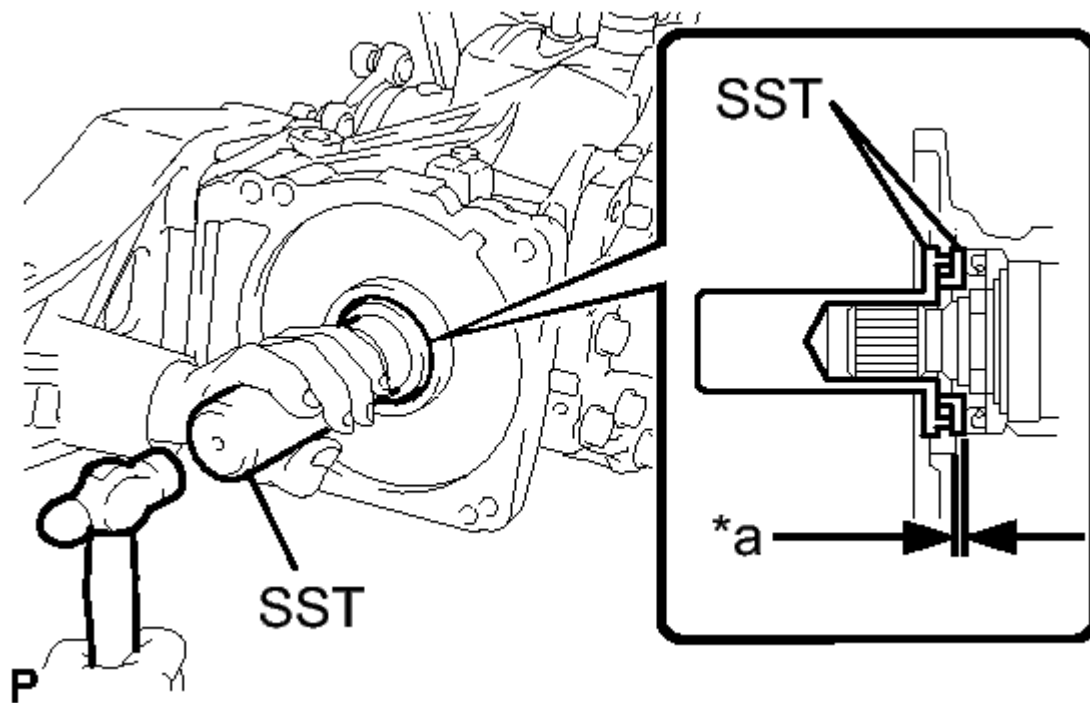


Fig. 54: Installing Oil Diaphragm Seal Using SST & Hammer
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

TEXT IN ILLUSTRATION

	Driven
*a	in
	Depth

- SST: 09506-35010
- SST: 09554-22010

Oil Seal Driven in Depth

0.7 to 1.3 mm (0.0276 to 0.0512 in.)

9. INSTALL TRANSMISSION COUPLING SPACER

- Install the transmission coupling spacer to the rear differential carrier assembly.

NOTE: Keep the transmission coupling spacer free of oil and foreign matter.

10. INSTALL TRANSMISSION COUPLING CONICAL SPRING WASHER

- Install the transmission coupling conical spring washer to the rear differential carrier assembly.

NOTE:

- Install the transmission coupling conical spring washer so that the marked surface faces the front of the vehicle (coupling

side).

- **Keep the transmission coupling conical spring washer free of oil and foreign matter.**

11. INSTALL ELECTRO MAGNETIC CONTROL COUPLING SUB-ASSEMBLY

- a. Using a scraper and wire brush, remove the seal packing from the rear differential carrier assembly and electro magnetic control coupling sub-assembly.

NOTE:

- **Do not damage the installation surface.**
- **Be sure to completely remove all seal packing from the rear differential carrier assembly and electro magnetic control coupling sub-assembly.**
- **Do not allow the removed seal packing to enter the rear differential carrier assembly and electro magnetic control coupling sub-assembly.**

- b. Using a non-residue solvent, remove grease and oil from the contact surfaces of the rear differential carrier assembly and the electro magnetic control coupling sub-assembly.

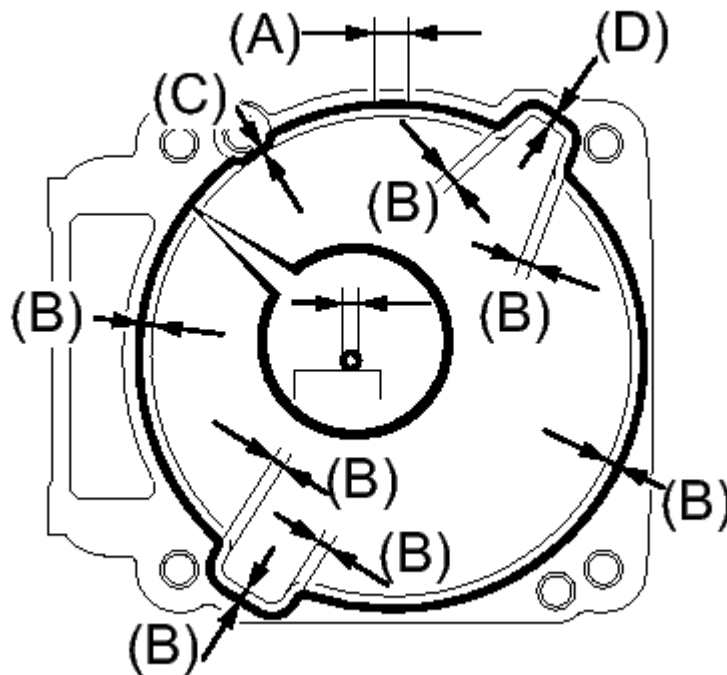
NOTE:

Do not damage the installation surface.

- c. Apply seal packing to the areas indicated in the illustration of the electro magnetic control coupling sub-assembly.

Seal packing

Toyota Genuine Seal Packing 1281, Three Bond 1281 or equivalent



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Fig. 55: Identifying Electro Magnetic Control Coupling Sub-Assembly Seal Packing Areas
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

NOTE:

- Start applying seal packing within range (A).
- Make sure that the clearance from the center of the bead is within 1 mm (0.0394 in.).
- Apply seal packing in a continuous bead 2 to 3 mm (0.0787 to 0.118 in.) in diameter.
- If there is an area where seal packing is not applied in a continuous bead, be sure to apply seal packing by overlapping the ends of the bead at least 10 mm (0.394 in.).
- Stop applying seal packing after allowing it to overlap with the beginning of the bead by at least 10 mm (0.394 in.) within range (A) in the illustration.
- Install the electro magnetic control coupling sub-assembly within 10 minutes after applying seal packing. If the electro magnetic control coupling sub-assembly is not installed within 10 minutes after applying seal packing, completely remove and then reapply seal packing.
- After installing the electro magnetic control coupling sub-assembly, do not immediately add oil or drive the vehicle for at least 1 hour.

HINT:

- (B) : 3.0 mm (0.118 in.)
 - (C) : 1.0 mm (0.0394 in.)
 - (D) : 4.0 mm (0.157 in.)
- d. Apply differential gear oil LT to the splines of the rear drive pinion.
 - e. Install the electro magnetic control coupling sub-assembly with the 4 bolts.

Torque: 42 N*m (430 kgf*cm, 31 ft.*lbf)

NOTE:

- Do not damage the oil diaphragm seal.
- Do not damage the contact surfaces of the oil diaphragm seal, stud bolt or electro magnetic control coupling sub-assembly.

- f. Connect the vacuum hose.
- g. Install the wire harness clamp and connect the electro magnetic control coupling sub-assembly connector.

NOTE: Do not damage the electro magnetic control coupling wire harness.

12. INSTALL PROPELLER WITH CENTER BEARING SHAFT ASSEMBLY

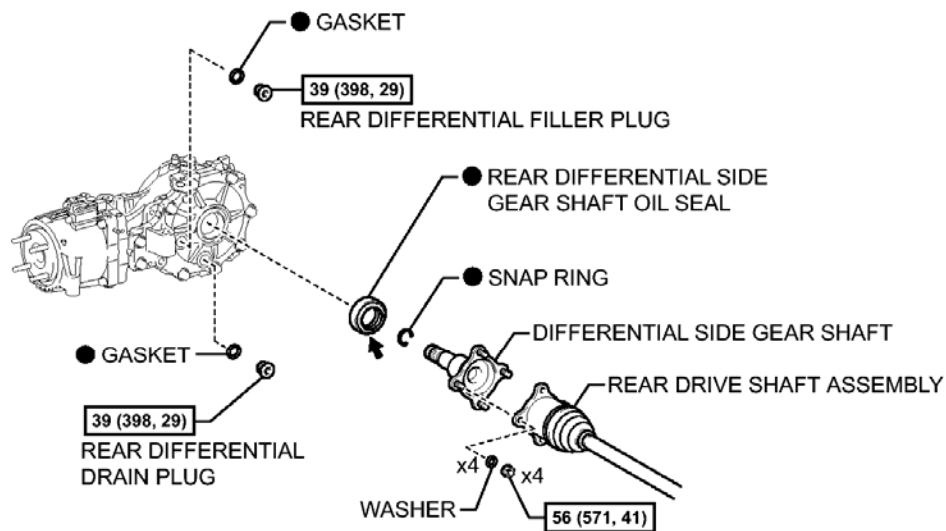
Refer to **INSTALLATION**

13. **INSTALL REAR DIFFERENTIAL DRAIN PLUG** See step 3
14. **ADD DIFFERENTIAL OIL** See step 4
15. **INSPECT AND ADJUST DIFFERENTIAL OIL** See step 5
16. **INSTALL REAR DIFFERENTIAL FILLER PLUG** See step 6
17. **INSPECT FOR DIFFERENTIAL OIL LEAK**

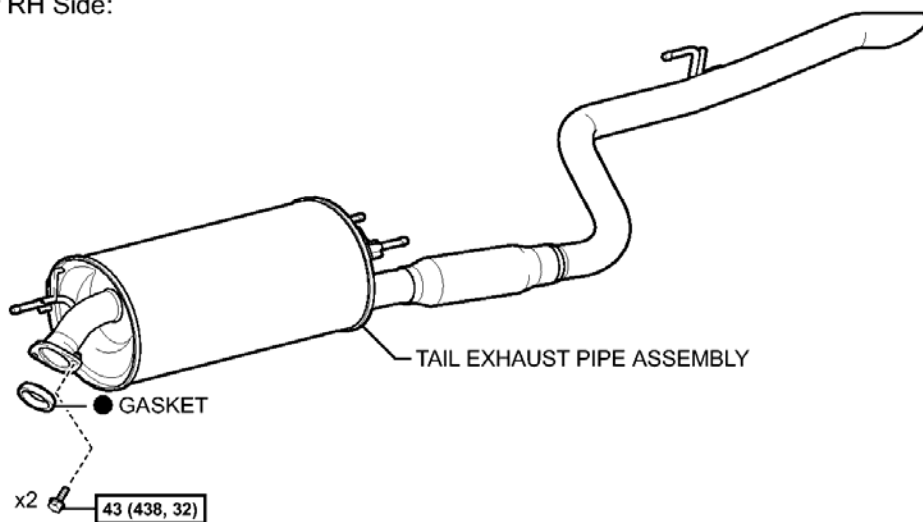
REAR DIFFERENTIAL SIDE GEAR SHAFT OIL SEAL

COMPONENTS

ILLUSTRATION



for RH Side:



$\text{N}\cdot\text{m}$ (kgf $\cdot\text{cm}$, ft. $\cdot\text{lbf}$): Specified torque

● Non-reusable part

← MP Grease

P

Fig. 56: Rear Differential Side Gear Shaft Oil Seal Replacement Components With Torque Specifications
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

REPLACEMENT

REPLACEMENT

HINT:

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

1. **REMOVE REAR DIFFERENTIAL FILLER PLUG** See step 1
2. **REMOVE REAR DIFFERENTIAL DRAIN PLUG** See step 2
3. **REMOVE REAR WHEEL**
4. **REMOVE TAIL EXHAUST PIPE ASSEMBLY (for RH Side)** . Refer to **REMOVAL - Step 2**
5. **SEPARATE REAR DRIVE SHAFT ASSEMBLY**
 - a. Put matchmarks on the rear drive shaft and differential side gear shaft.

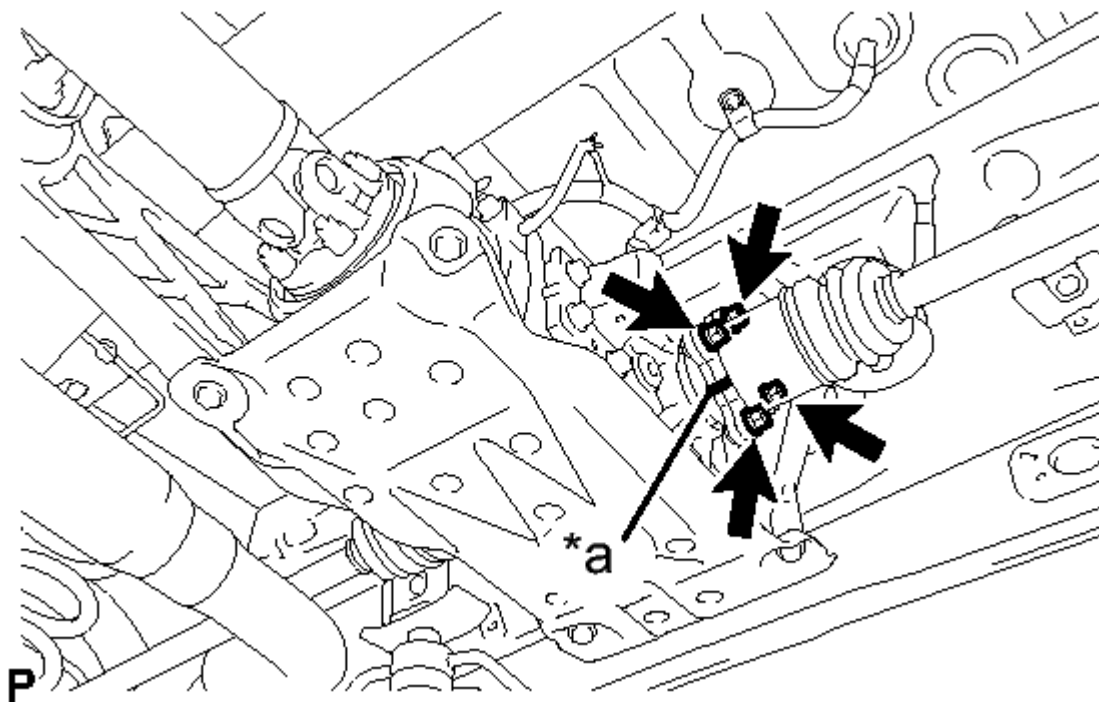


Fig. 57: Identifying Rear Drive Shaft Assembly Fasteners & Matchmarks
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

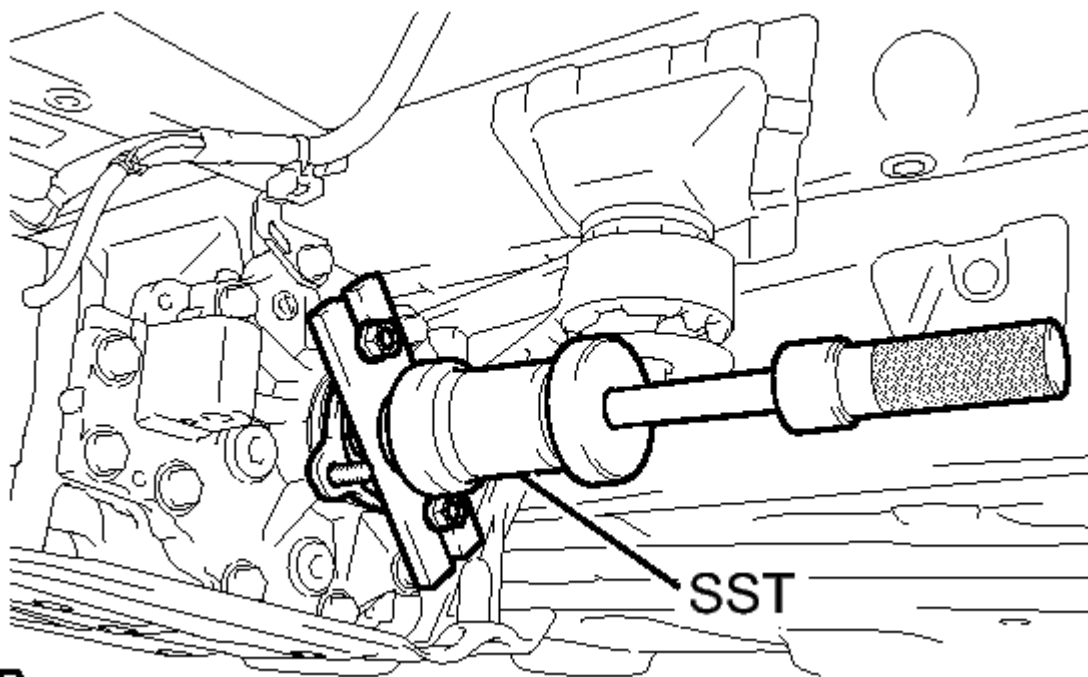
TEXT IN ILLUSTRATION

*a	Matchmark
----	-----------

- b. Remove the 4 nuts and 4 washers, and then separate the rear drive shaft.

NOTE: **To protective the drive shaft boots, hang the separated drive shaft from a string or similar.**

6. **REMOVE DIFFERENTIAL SIDE GEAR SHAFT**
 - a. Using SST, remove the differential side gear shaft.



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Fig. 58: Remove/Install Differential Side Gear Shaft Using SST
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

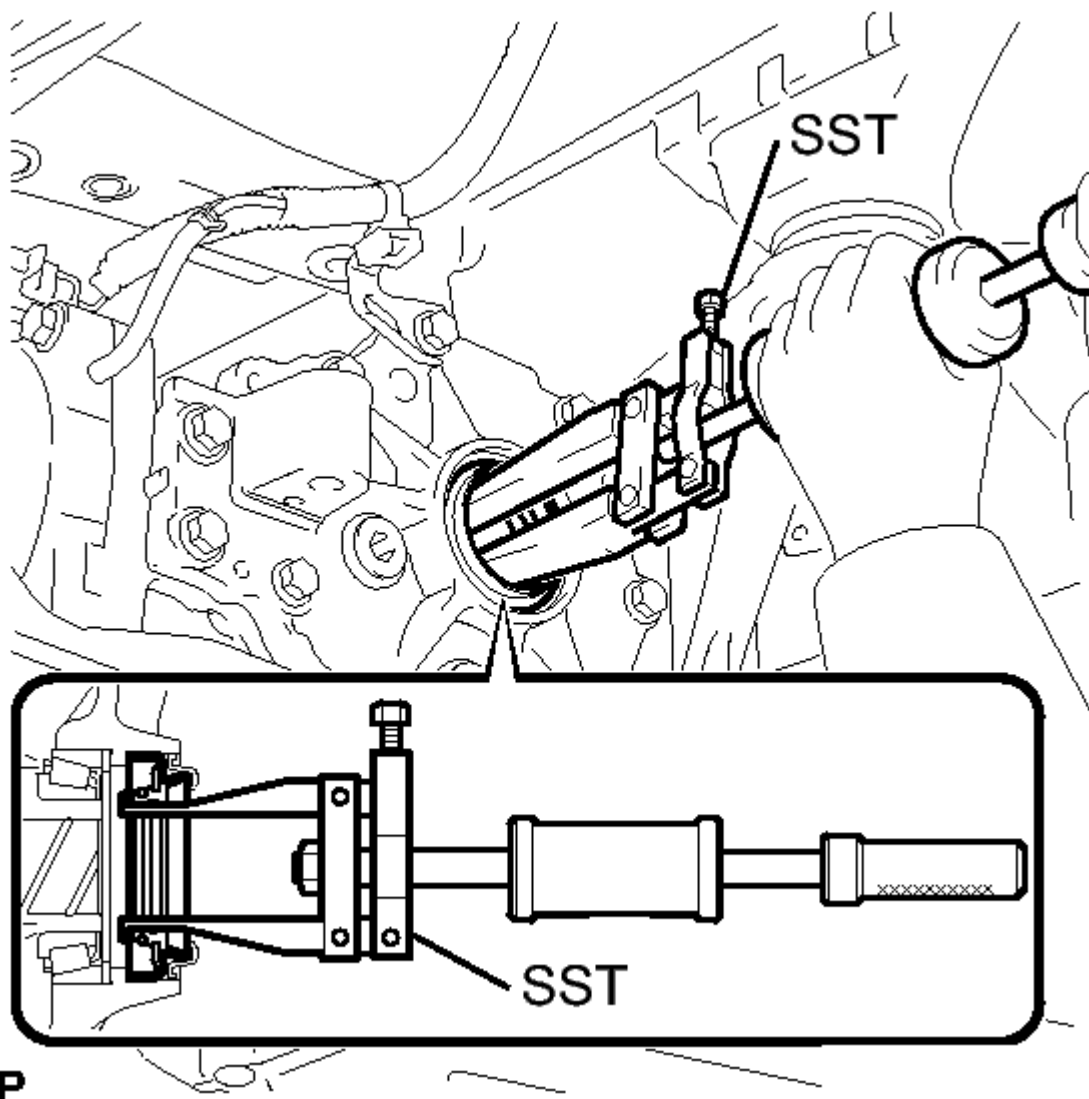
- **SST: 09520-24010**
09520-04010
09520-32040

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

- b. Using 2 screwdrivers and a hammer, remove the side gear shaft snap ring.

7. REMOVE REAR DIFFERENTIAL SIDE GEAR SHAFT OIL SEAL

- a. Using SST, remove the rear differential side gear shaft oil seal from the differential carrier assembly.
 - **SST: 09308-00010**



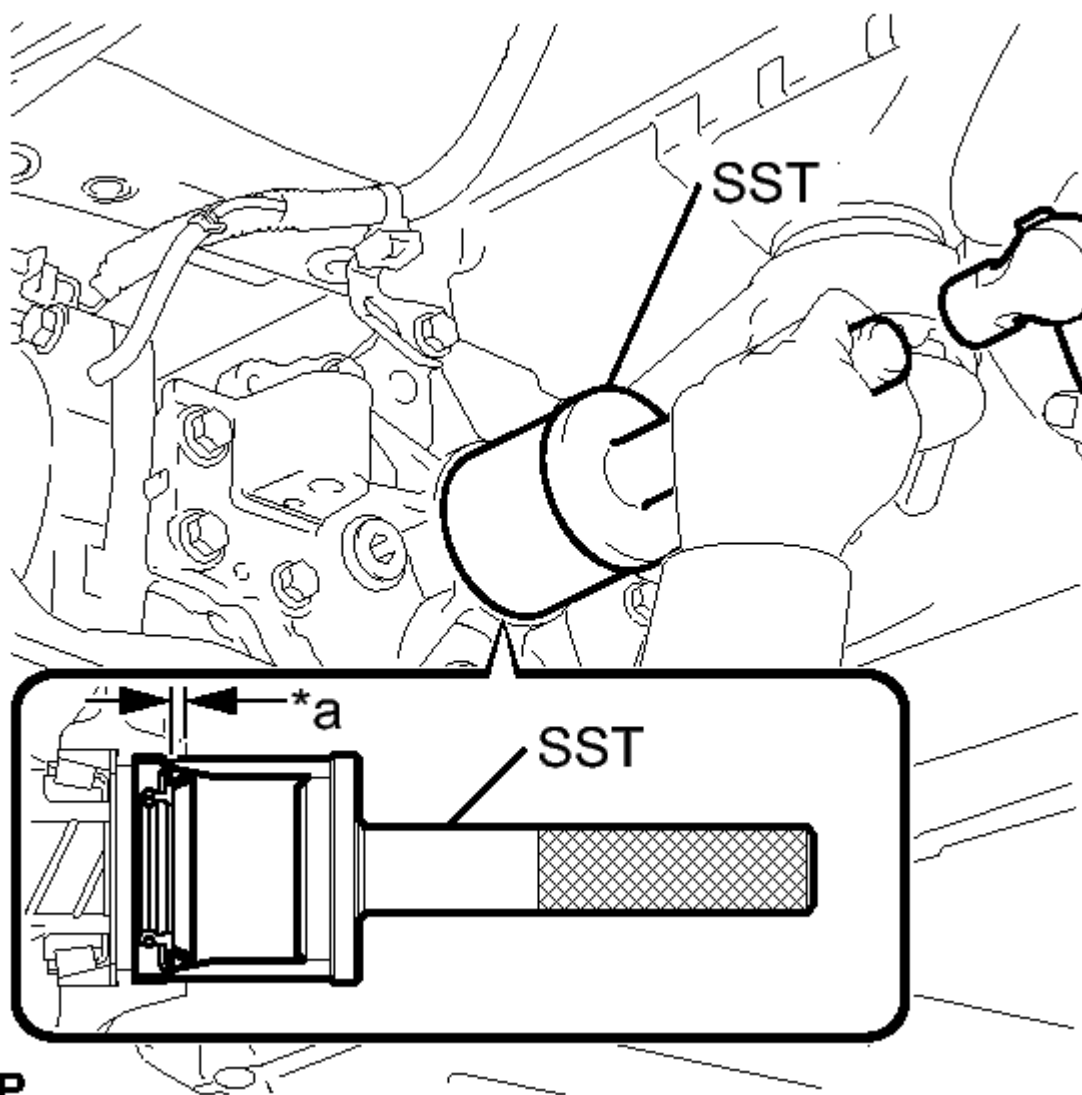
P

Fig. 59: Removing Rear Differential Side Gear Shaft Oil Seal At Differential Carrier Assembly Using SST

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

8. INSTALL REAR DIFFERENTIAL SIDE GEAR SHAFT OIL SEAL

- a. Apply a light coat of MP grease to the lip of the new rear differential side gear shaft oil seal.
- b. Using SST and a hammer, tap a new rear differential side gear shaft oil seal into the differential carrier assembly.



P

Fig. 60: Installing Rear Differential Side Gear Shaft Oil Seal Using SST & Hammer
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

TEXT IN ILLUSTRATION

*a Depth

- SST: 09517-30010
- SST: 09631-32020

Oil seal driven in depth (A)

4.2 to 4.8 mm (0.165 to 0.189 in.)

NOTE: Install the rear differential side gear shaft oil seal uniformly so that it is driven in straight.

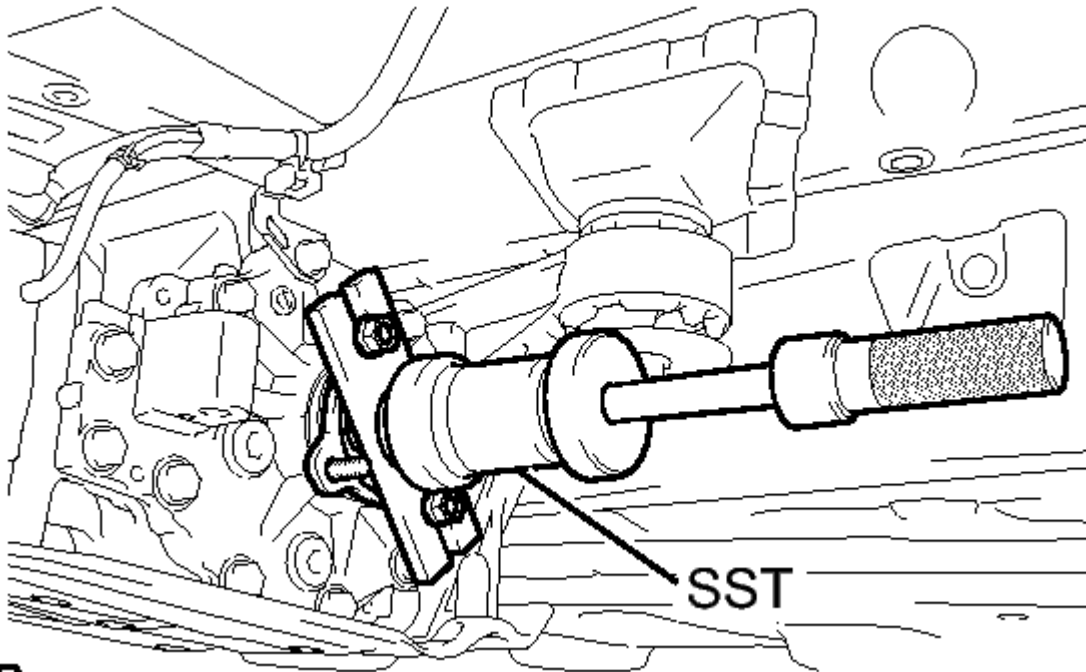
9. INSTALL DIFFERENTIAL SIDE GEAR SHAFT

- **SST: 09520-24010**

09520-04010

09520-32040

- a. Install the new snap ring onto the differential side gear shaft.
- b. Using SST, install the differential side gear shaft.

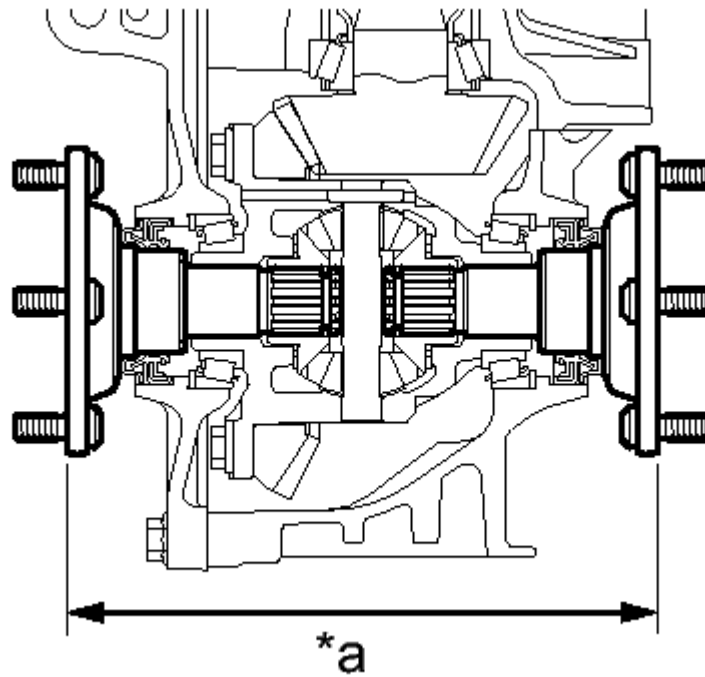


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Fig. 61: Remove/Install Differential Side Gear Shaft Using SST
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

NOTE:

- Set the snap ring with the opening side facing downward.
 - Do not tap in the side gear shaft at an angle. If the snap ring is installed at an angle, replace it with a new one and tap in the shaft again.
 - Do not damage the oil seal.
- c. Using a vernier caliper, measure the distance between the right and left side gear shafts, as shown in the illustration.



P

Fig. 62: Identifying Right & Left Side Gear Shaft Distance Using A Vernier Caliper
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

TEXT IN ILLUSTRATION

*a	Distance
----	----------

Standard Distance

221 to 223 mm (8.71 to 8.77 in.)

10. INSTALL REAR DRIVE SHAFT ASSEMBLY

- a. Align the matchmarks and connect the rear drive shaft to the differential side gear shaft.

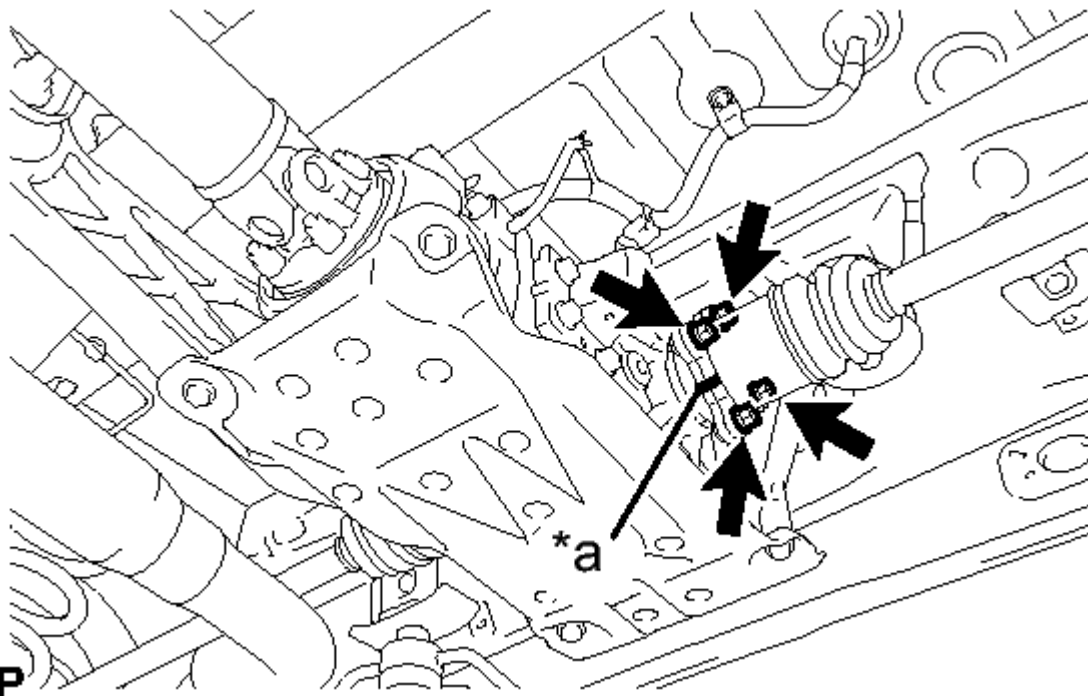


Fig. 63: Identifying Rear Drive Shaft Assembly Fasteners & Matchmarks
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

TEXT IN ILLUSTRATION

*a Matchmark

NOTE: Be careful not to damage the boots and end cover.

- b. Install the rear drive shaft with the 4 nuts and 4 washers.

Torque: 56 N*m (571 kgf*cm, 41 ft.*lbf)

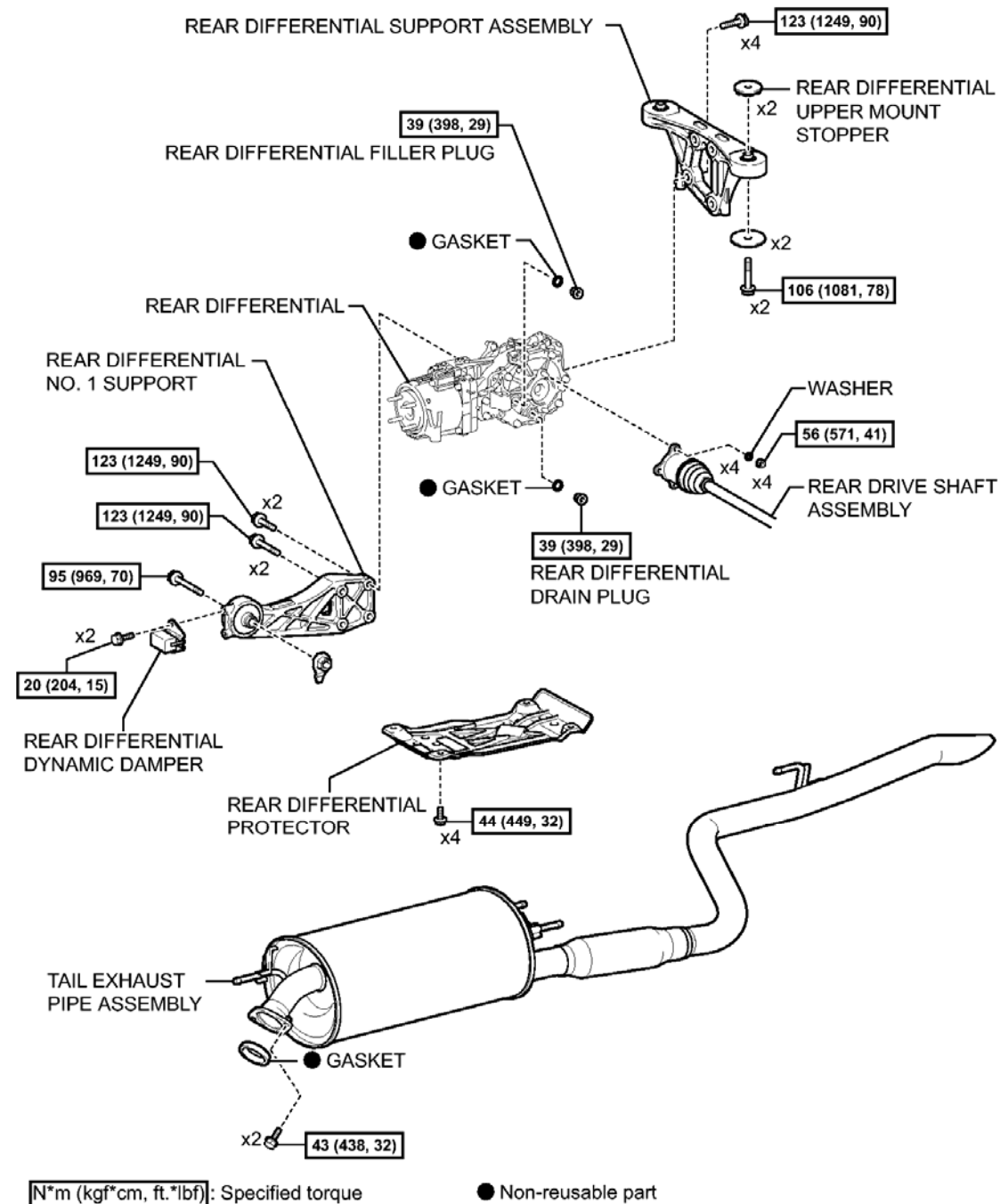
11. **INSTALL TAIL EXHAUST PIPE ASSEMBLY (for RH Side)** . Refer to **INSTALLATION - Step 6**
12. **INSTALL REAR DIFFERENTIAL DRAIN PLUG** See step 3
13. **ADD DIFFERENTIAL OIL** See step 4
14. **INSPECT AND ADJUST DIFFERENTIAL OIL** See step 5
15. **INSTALL REAR DIFFERENTIAL FILLER PLUG** See step 6
16. **INSPECT FOR DIFFERENTIAL OIL LEAK**
17. **INSTALL REAR WHEEL**

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

18. **INSPECT FOR EXHAUST GAS LEAK**

REAR DIFFERENTIAL CARRIER ASSEMBLY

ILLUSTRATION

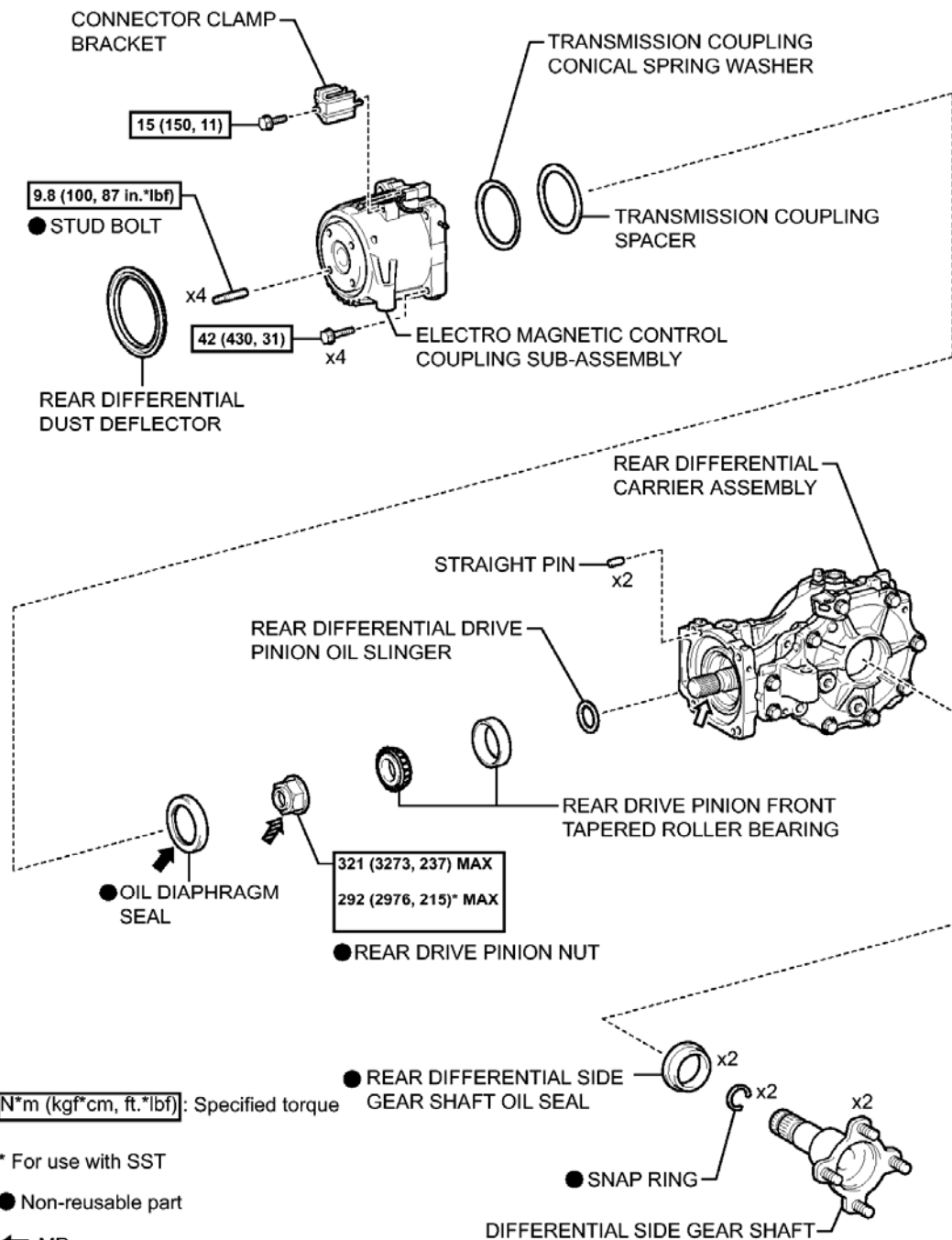


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Fig. 64: Rear Differential Carrier Assembly Replacement Components With Torque Specifications (1 Of 3)

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

ILLUSTRATION

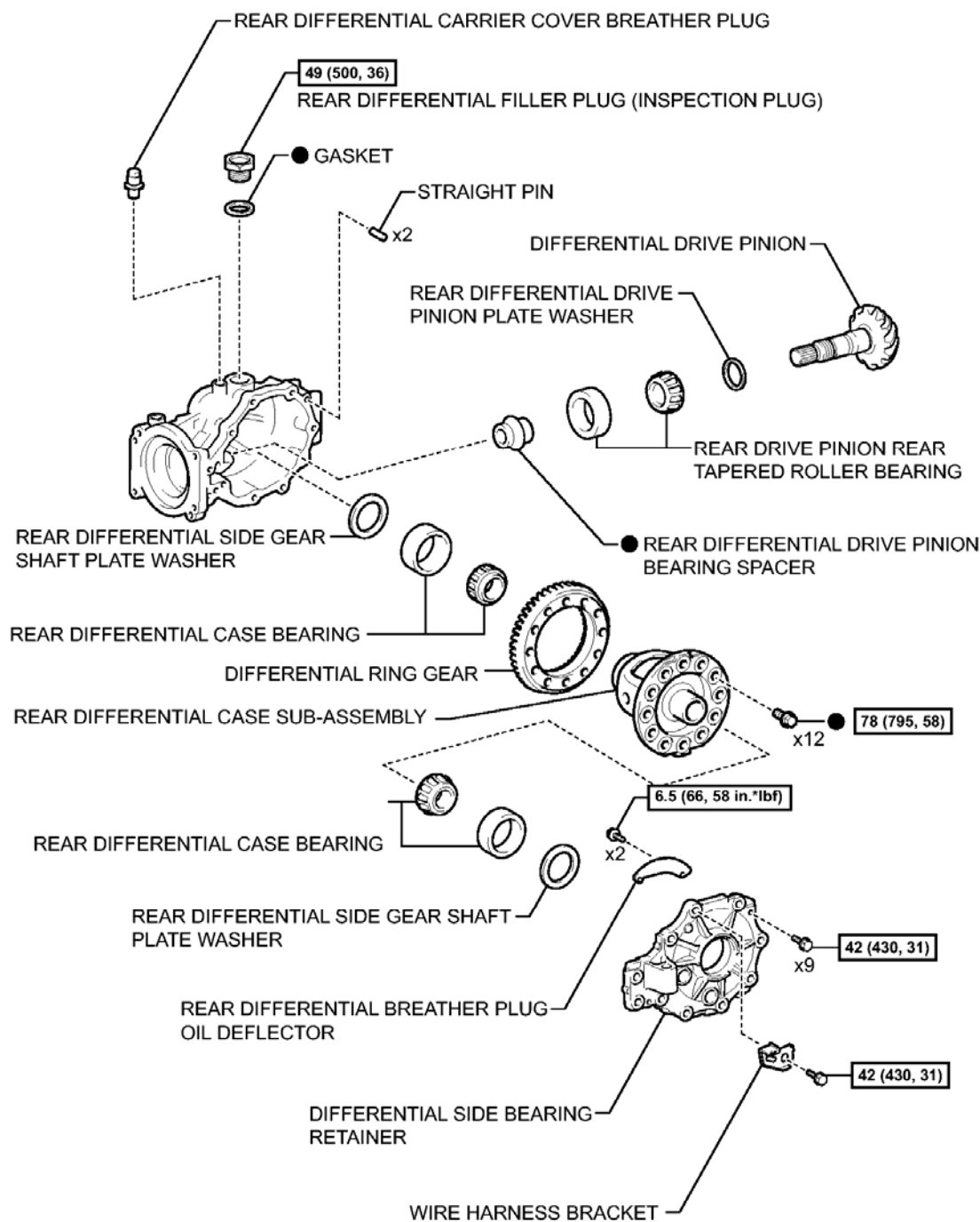


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Fig. 65: Rear Differential Carrier Assembly Replacement Components With Torque Specifications (2 Of 3)

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

ILLUSTRATION



[N*m (kgf*cm, ft.*lbf)]: Specified torque

● Non-reusable part

P

Fig. 66: Rear Differential Carrier Assembly Replacement Components With Torque Specifications (3 Of 3)

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

REMOVAL

REMOVAL

1. **REMOVE REAR DIFFERENTIAL FILLER PLUG** See step 1
2. **REMOVE REAR DIFFERENTIAL DRAIN PLUG** See step 2
3. **REMOVE REAR WHEELS**
4. **REMOVE PROPELLER WITH CENTER BEARING SHAFT ASSEMBLY**

Refer to REMOVAL

5. **REMOVE REAR DIFFERENTIAL PROTECTOR**
 - a. Remove the 4 bolts and rear differential protector.

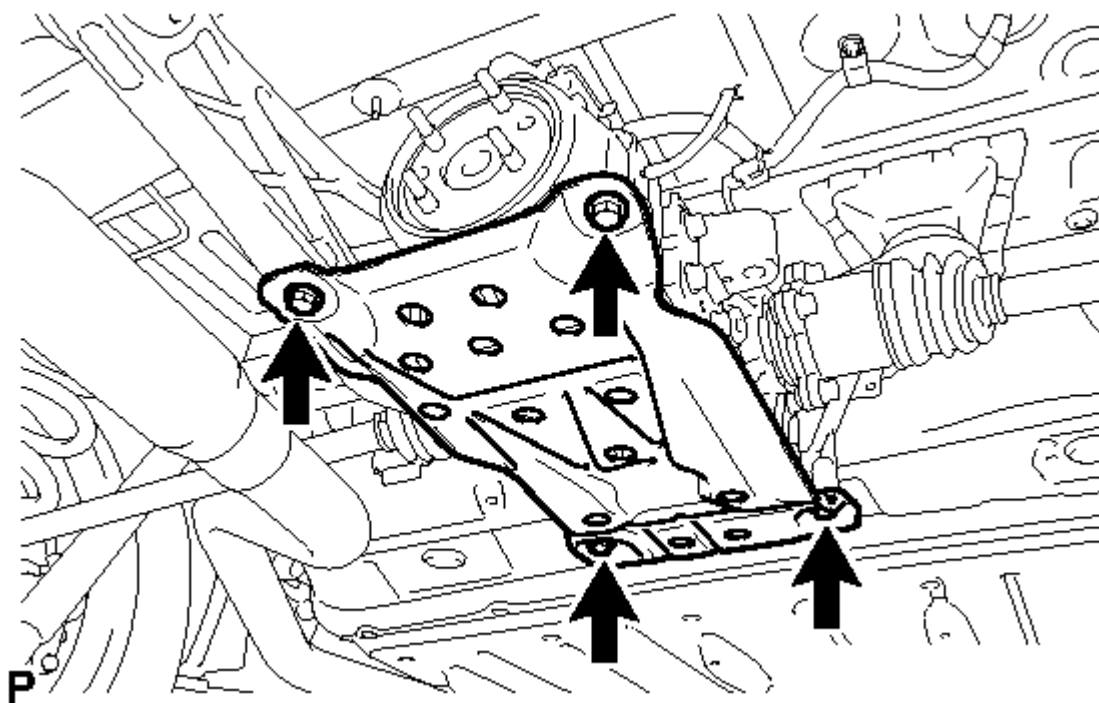


Fig. 67: Identifying Rear Differential Protector & Bolts
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

6. **REMOVE TAIL EXHAUST PIPE ASSEMBLY** . Refer to REMOVAL - Step 2
7. **SEPARATE REAR DRIVE SHAFT ASSEMBLY LH** See step 5
8. **SEPARATE REAR DRIVE SHAFT ASSEMBLY RH**

HINT:

Use the same procedures as for the LH side.

9. REMOVE REAR DIFFERENTIAL

- a. Disconnect the connector and separate the wire harness clamp.

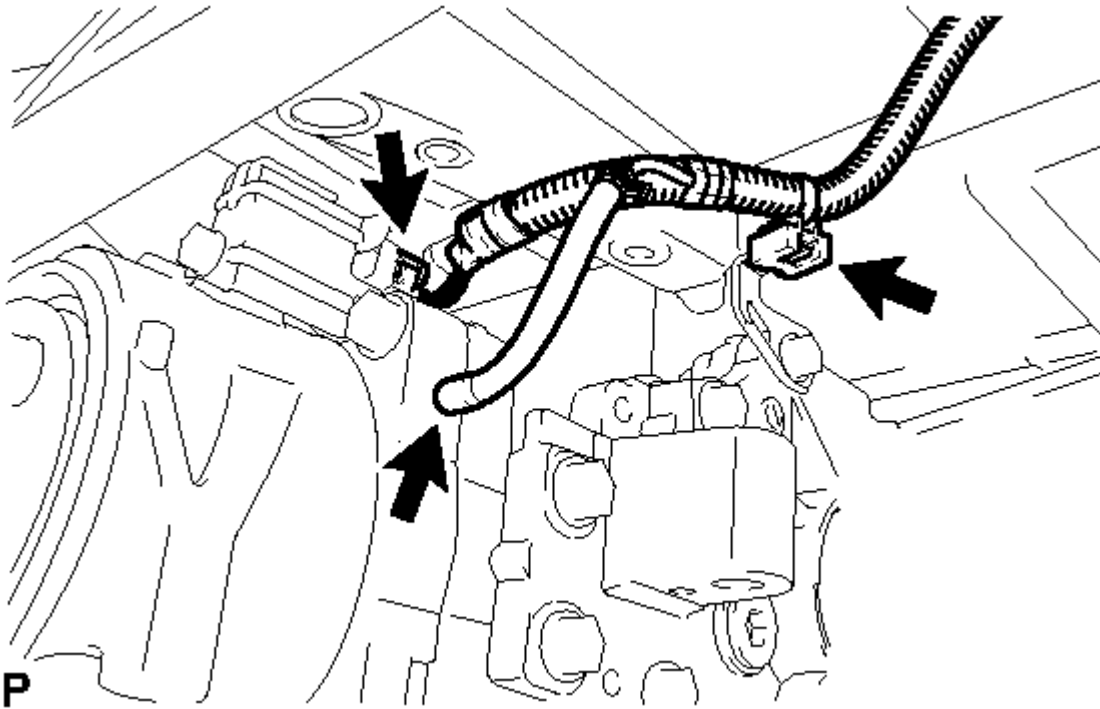


Fig. 68: Identifying Electro Magnetic Control Coupling Sub-Assembly Connector, Wire Harness Clamp & Hose

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

NOTE: Do not damage the electro magnetic control coupling wire harness.

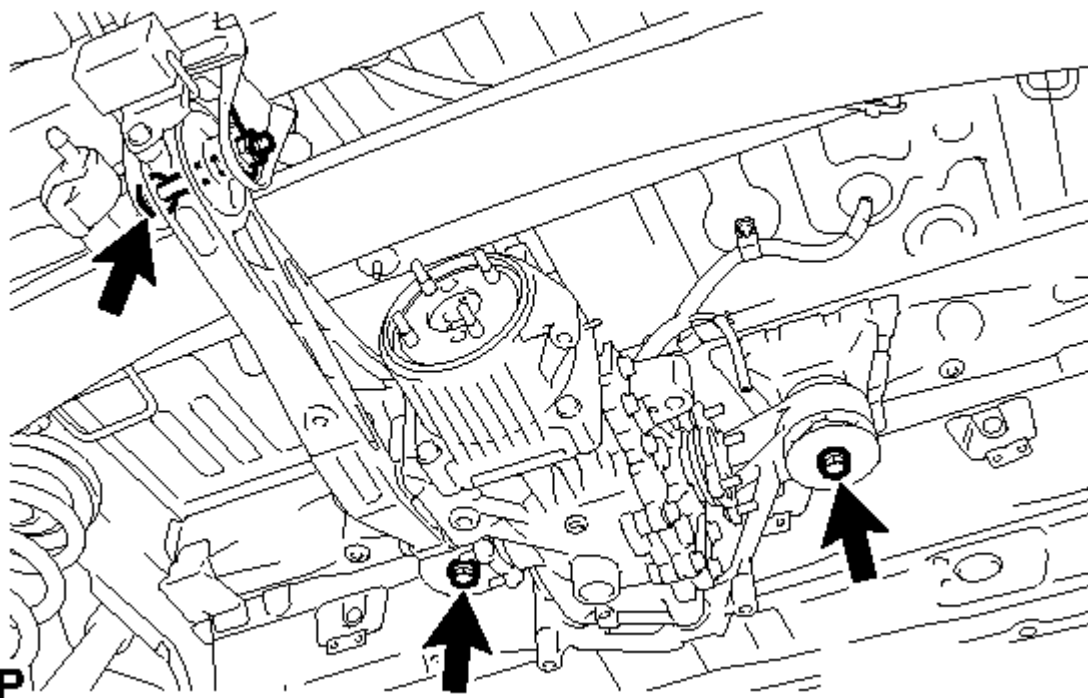
- b. Disconnect the vacuum hose.
- c. Set the rear differential onto the transmission jack.

NOTE: Install a height adjustment attachment and plate lift attachment onto the rear differential.

HINT:

Place the differential on wooden blocks or equivalents so that the differential is level.

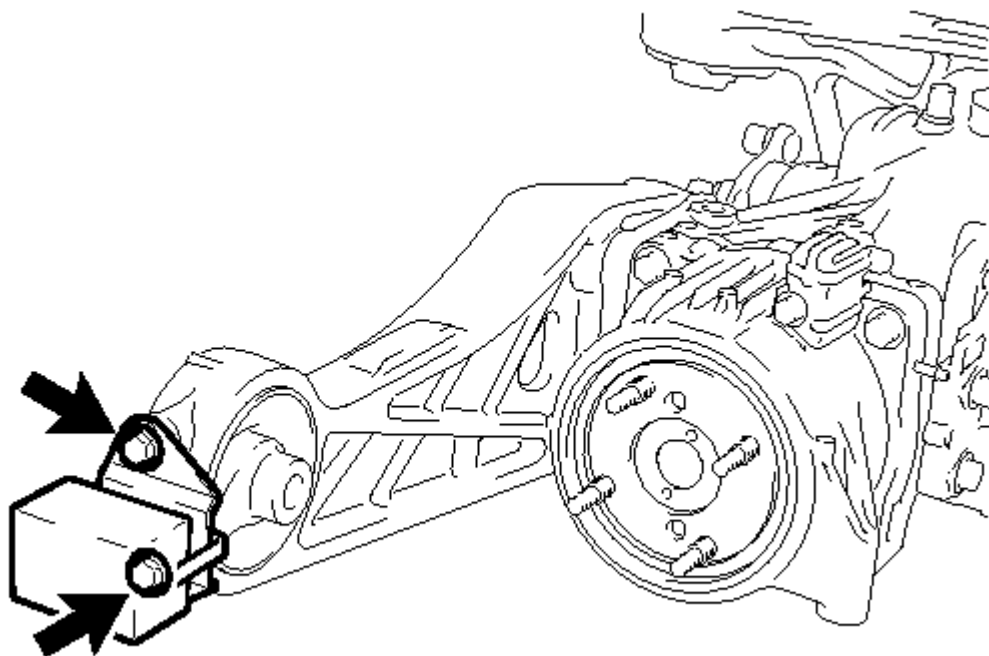
- d. Remove the 3 bolts and remove the rear differential.



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Fig. 69: Identifying Rear Differential Mounting Bolts
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

10. **REMOVE REAR DIFFERENTIAL DYNAMIC DAMPER**
 - a. Remove the 2 bolts and rear differential dynamic damper.



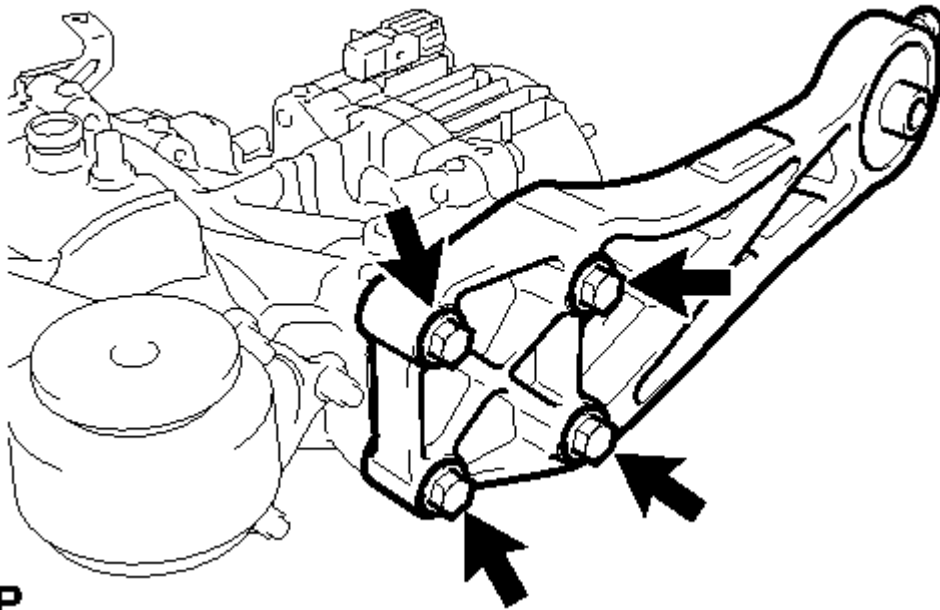
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Fig. 70: Identifying Rear Differential Dynamic Damper & Bolts

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

11. REMOVE REAR DIFFERENTIAL NO. 1 SUPPORT

- a. Remove the 4 bolts and rear differential No. 1 support.

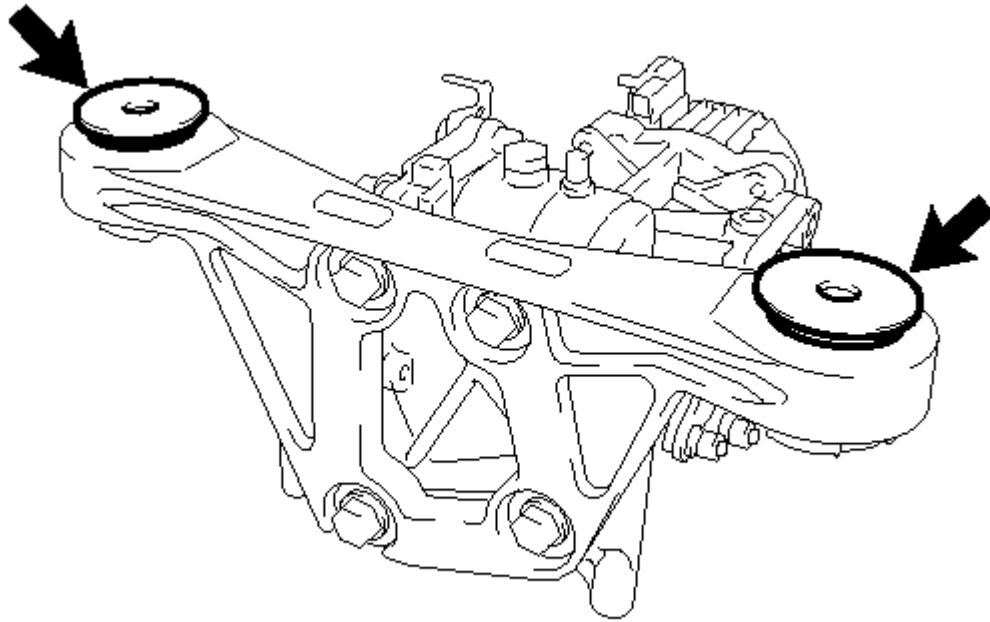


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Fig. 71: Identifying Rear Differential No. 1 Support & Bolts
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

12. REMOVE REAR DIFFERENTIAL UPPER MOUNT STOPPER

- a. Remove the 2 rear differential upper mount stoppers from the rear differential support.

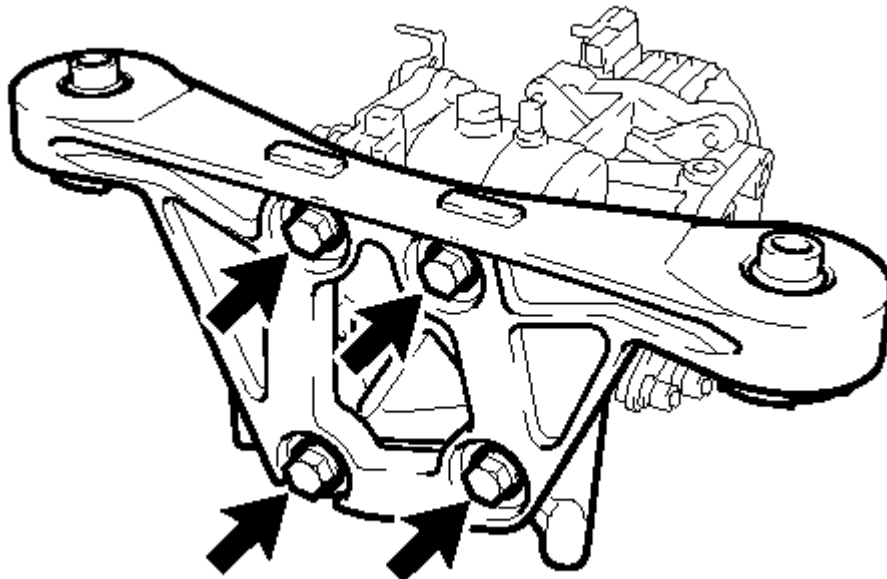


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Fig. 72: Identifying Rear Differential Upper Mount Stoppers At Rear Differential Support
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

13. REMOVE REAR DIFFERENTIAL SUPPORT ASSEMBLY

- a. Remove the 4 bolts and rear differential support.



P

Fig. 73: Identifying Rear Differential Support Assembly & Bolts

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

DISASSEMBLY

DISASSEMBLY

1. SECURE DIFFERENTIAL CARRIER ASSEMBLY

- Secure the differential carrier assembly to the overhaul stand, etc.

2. REMOVE DIFFERENTIAL SIDE GEAR SHAFT LH See step 6

3. REMOVE DIFFERENTIAL SIDE GEAR SHAFT RH

HINT:

Use the same procedures as for the LH side.

4. REMOVE REAR DIFFERENTIAL FILLER PLUG (INSPECTION PLUG)

- Using a hexagon wrench (17 mm), remove the rear differential filler plug (inspection plug) and gasket.

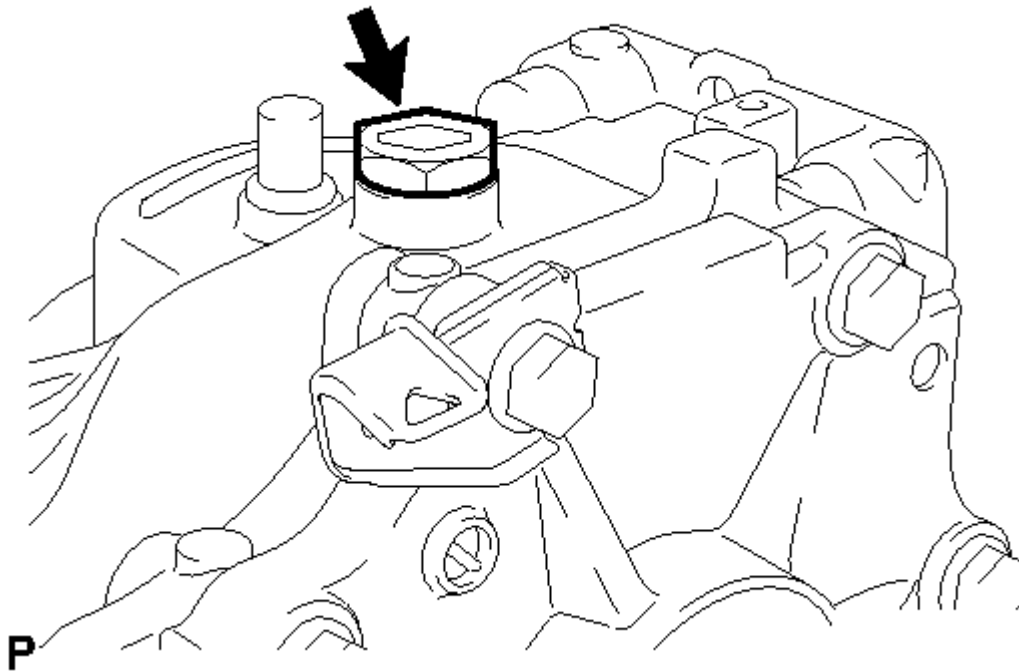
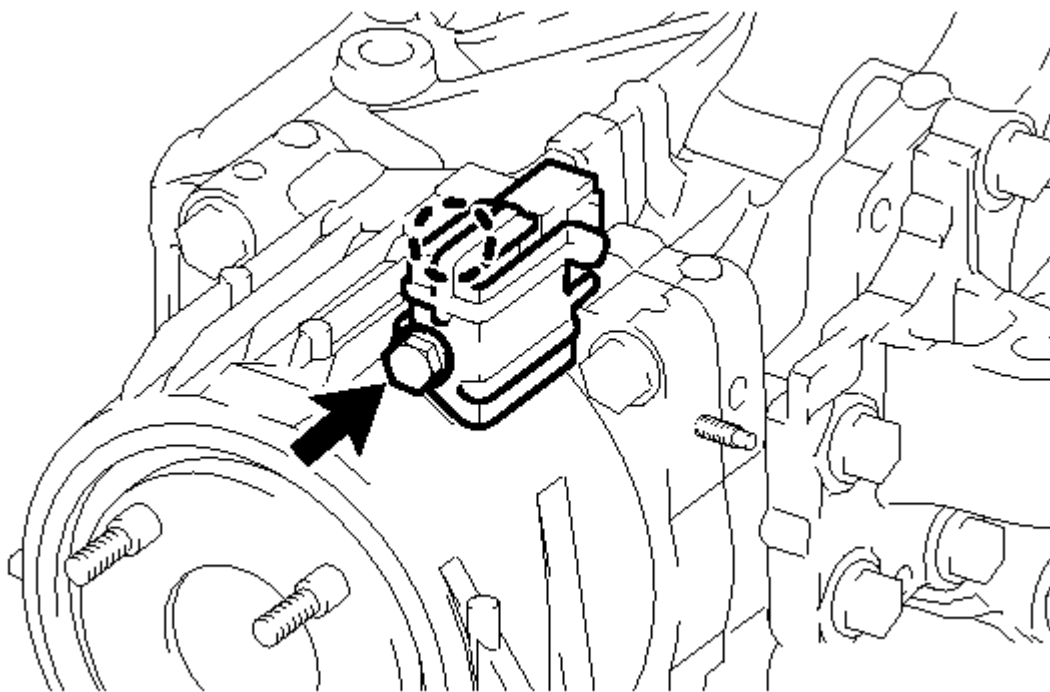


Fig. 74: Identifying Rear Differential Filler Plug (Inspection Plug)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

5. REMOVE CONNECTOR CLAMP BRACKET

- Disengage the claw and separate the connector.



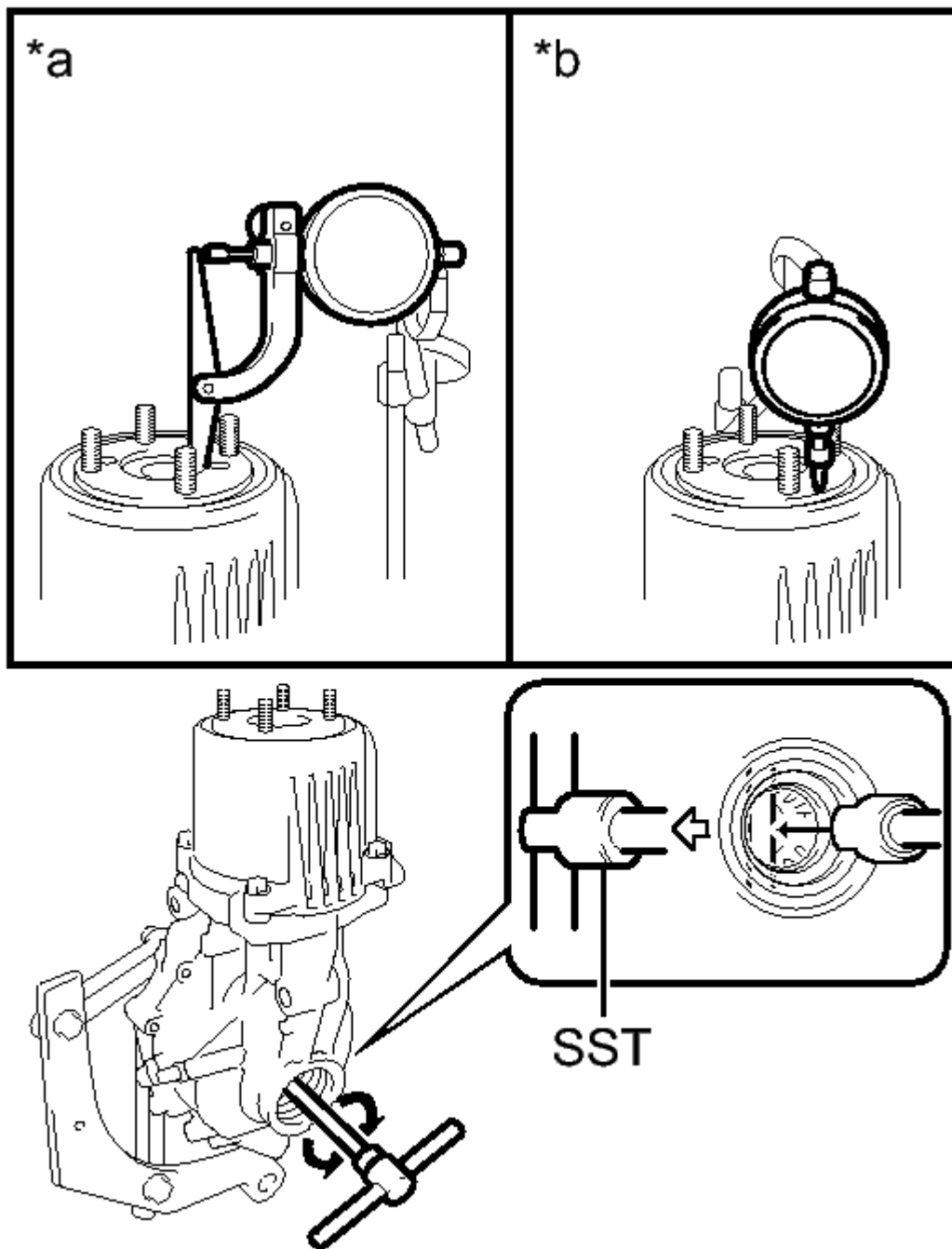
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Fig. 75: Identifying Connector Clamp Bracket & Bolt
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- b. Remove the bolt and connector clamp bracket.

NOTE: Do not damage the electro magnetic control coupling wire harness.

6. INSPECT RUNOUT OF ELECTRO MAGNETIC CONTROL COUPLING SUB-ASSEMBLY



C

Fig. 76: Inspecting Electro Magnetic Control Coupling Sub-Assembly Runout Using A Dial Indicator & SST

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

TEXT IN ILLUSTRATION

11

*a	Vertical
*b	Lateral

- a. Install a dial indicator and magnetic base perpendicular to the inner side of the electro magnetic control coupling sub-assembly as shown in the illustration.
- b. Using SST, rotate the electro magnetic control coupling sub-assembly forward and backward, and measure the vertical runout.

- **SST: 09564-32011**

Maximum runout

0.04 mm (0.00157 in.)

If the runout is greater than the maximum value, replace the electro magnetic control coupling sub-assembly.

- c. Install a dial indicator and magnetic base perpendicular to the electro magnetic control coupling sub-assembly as shown in the illustration.
- d. Using SST, rotate the electro magnetic control coupling sub-assembly forward and backward, and measure the lateral runout.

- **SST: 09564-32011**

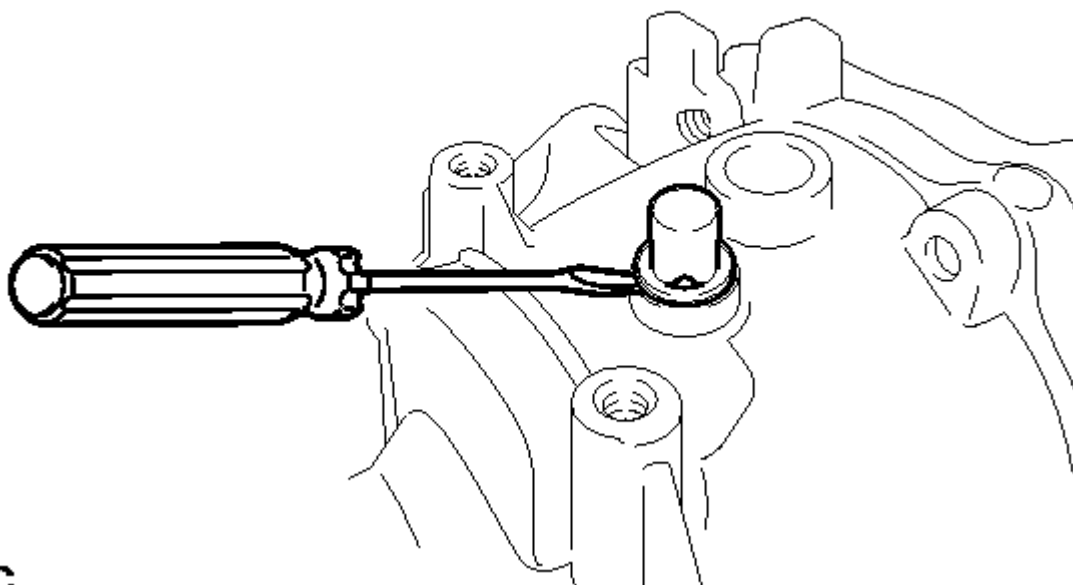
Maximum runout

0.063 mm (0.00248 in.)

If the runout is greater than the maximum value, replace the electro magnetic control coupling sub-assembly.

7. REMOVE REAR DIFFERENTIAL CARRIER COVER BREATHER PLUG

- a. Using a screwdriver, remove the rear differential carrier cover breather plug.

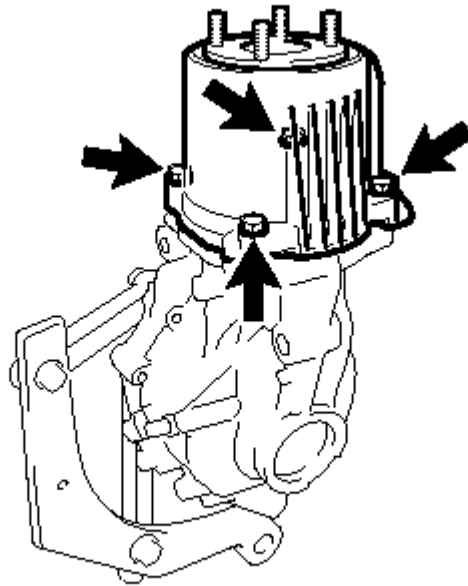


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Fig. 77: Identifying Rear Differential Carrier Cover Breather Plug
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

NOTE: **Tape the screwdriver tip before use.**

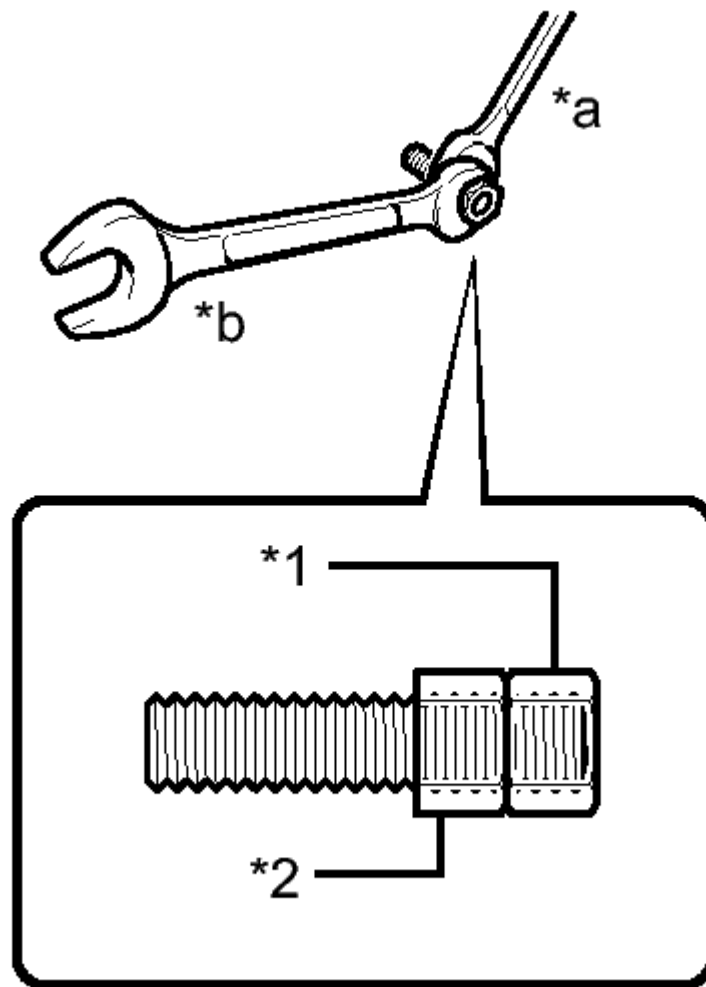
- 8. REMOVE ELECTRO MAGNETIC CONTROL COUPLING SUB-ASSEMBLY**
 - a. Remove the 4 bolts.



C

Fig. 78: Identifying Electro Magnetic Control Coupling Sub-Assembly & Bolts
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- b. Using a plastic hammer, lightly tap the electro magnetic control coupling sub-assembly to remove it from the rear differential carrier assembly.
- 9. **REMOVE TRANSMISSION COUPLING CONICAL SPRING WASHER** See step 5
- 10. **REMOVE TRANSMISSION COUPLING SPACER** See step 6
- 11. **REMOVE STUD BOLT**
 - a. Install 2 service nuts to the stud bolt.



C

Fig. 79: Identifying Stud Bolt & Service Nuts

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

TEXT IN ILLUSTRATION

*1	Upper Nut
*2	Lower Nut
*a	Hold
*b	Turn

Recommended service nut

Thread diameter

8 mm (0.3150 in.)

Thread pitch

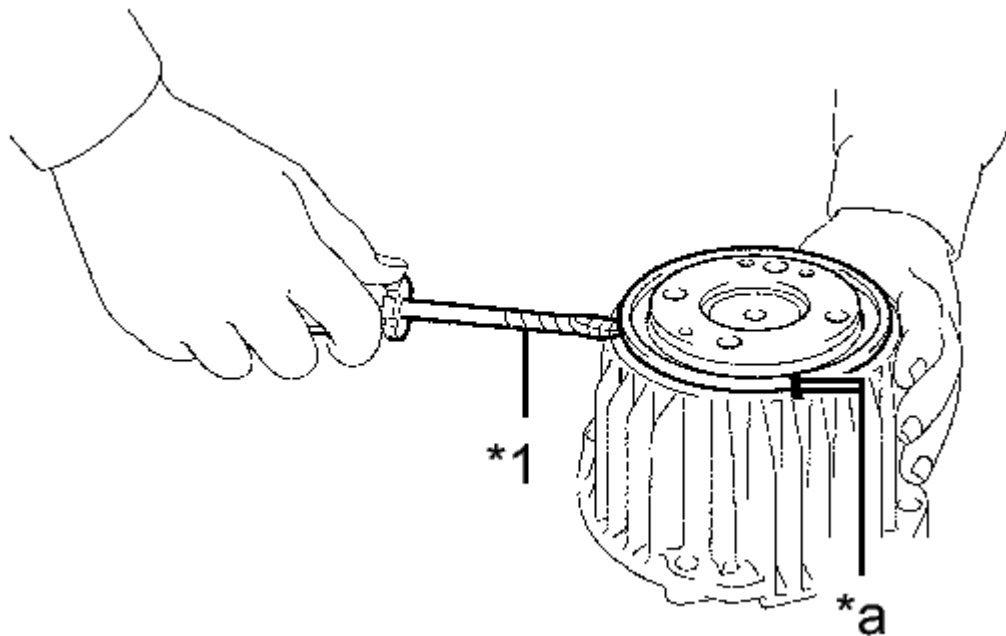
1.25 mm (0.0492 in.)

- b. Lock the upper nut using the lower nut.
- c. Turn the lower nut and remove the other 3 stud bolts in the same way.

NOTE: If the threads of the electro magnetic control coupling sub-assembly are damaged while removing the stud bolt, replace the electro magnetic control coupling sub-assembly with a new one.

12. REMOVE REAR DIFFERENTIAL DUST DEFLECTOR

- a. Put matchmarks on the rear differential dust deflector and electro magnetic control coupling sub-assembly.



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Fig. 80: Removing Rear Differential Dust Deflector
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- b. Using a screwdriver, remove the rear differential dust deflector.

TEXT IN ILLUSTRATION

*1	Tape
*a	Matchmark

NOTE:

- Pry the circumference of the rear differential dust deflector uniformly to prevent deformation.
- Do not damage the end surface of the electro magnetic control coupling sub-assembly.

HINT:

- Tape the screwdriver tip before use.
- If the end surface of the electro magnetic control coupling sub-assembly are damaged while removing the rear differential dust deflector, replace the electro magnetic control coupling sub-assembly with a new one.

13. INSPECT DIFFERENTIAL RING GEAR BACKLASH

- a. Insert a dial indicator and magnetic base through the rear differential filler plug hole, and set it perpendicular to a ring gear tooth tip.
- b. Using SST, hold the drive pinion in place.

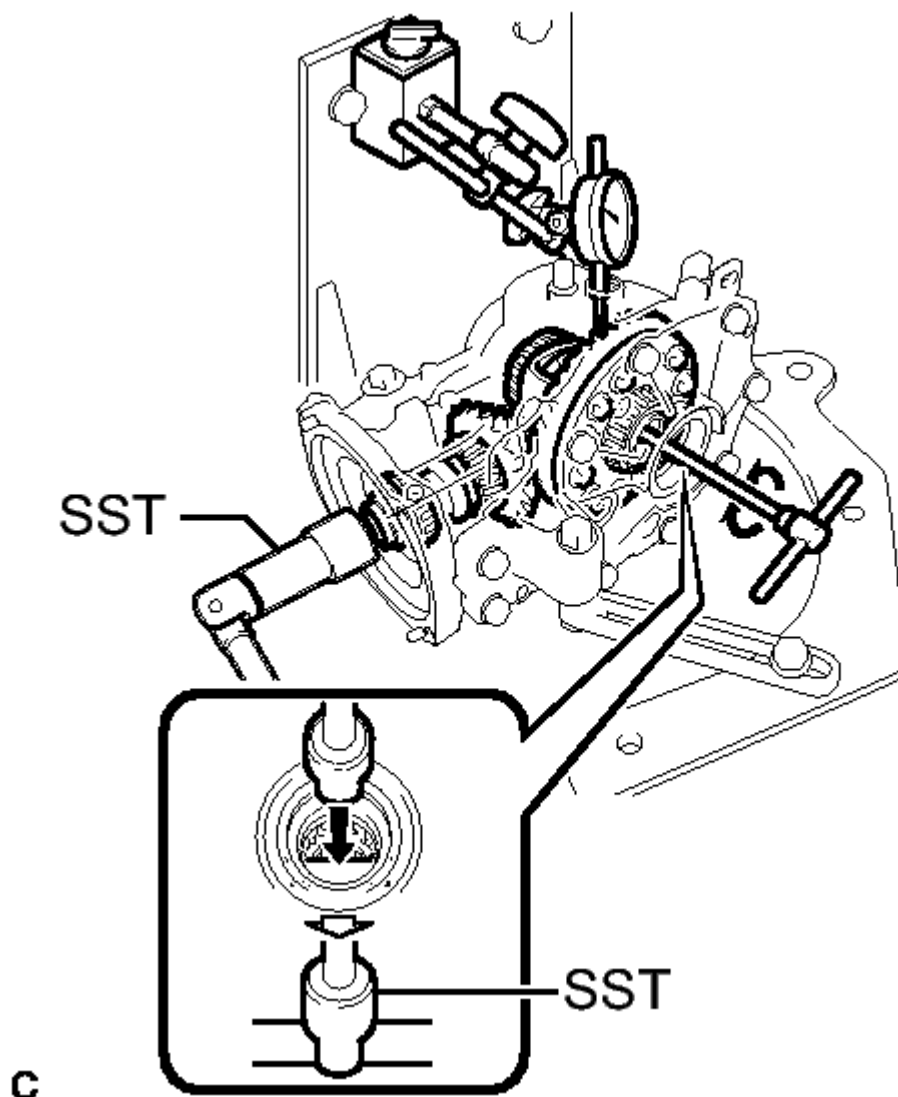


Fig. 81: Inspecting Differential Ring Gear Backlash Using A Dial Indicator And SST
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- SST: 09556-16011
- c. Using SST, rotate the rear differential case forward and backward, and measure the backlash.
 - SST: 09564-32011

Backlash

0.13 to 0.25 mm (0.00512 to 0.00984 in.)

NOTE: Measure at 3 or more areas on the circumference of the ring gear.

If the backlash is not within the specification, adjust the side bearing preload or repair as necessary.

14. INSPECT DIFFERENTIAL DRIVE PINION PRELOAD

- a. Using SST and a torque wrench, inspect the differential drive pinion preload (starting torque) of the backlash between the differential drive pinion and differential ring gear.

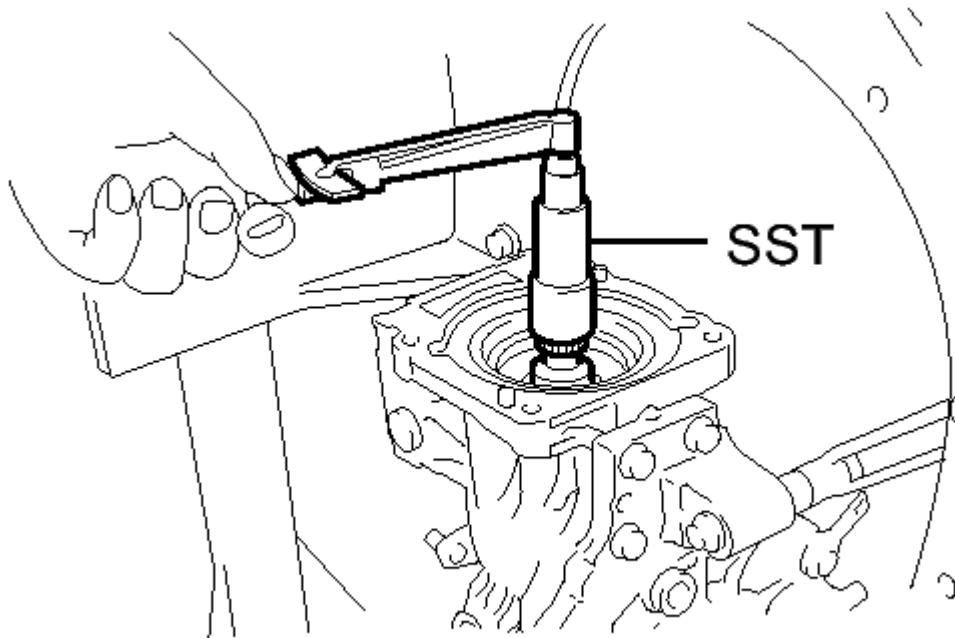


Fig. 82: Measuring Differential Drive Pinion Preload
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- SST: 09556-16011

Standard drive pinion preload

1.6 to 2.5 N*m (16 to 25 kgf*cm, 14 to 22 in.*lbf)

NOTE: For a more accurate measurement, rotate the rear differential case bearing forward and backward before measuring.

If the preload is not within the specified range, adjust the total preload or repair as necessary.

15. INSPECT TOTAL PRELOAD

- a. Using SST and a torque wrench, inspect the total preload (starting torque) with the teeth of the differential drive pinion and differential ring gear in contact.

- SST: 09556-16011

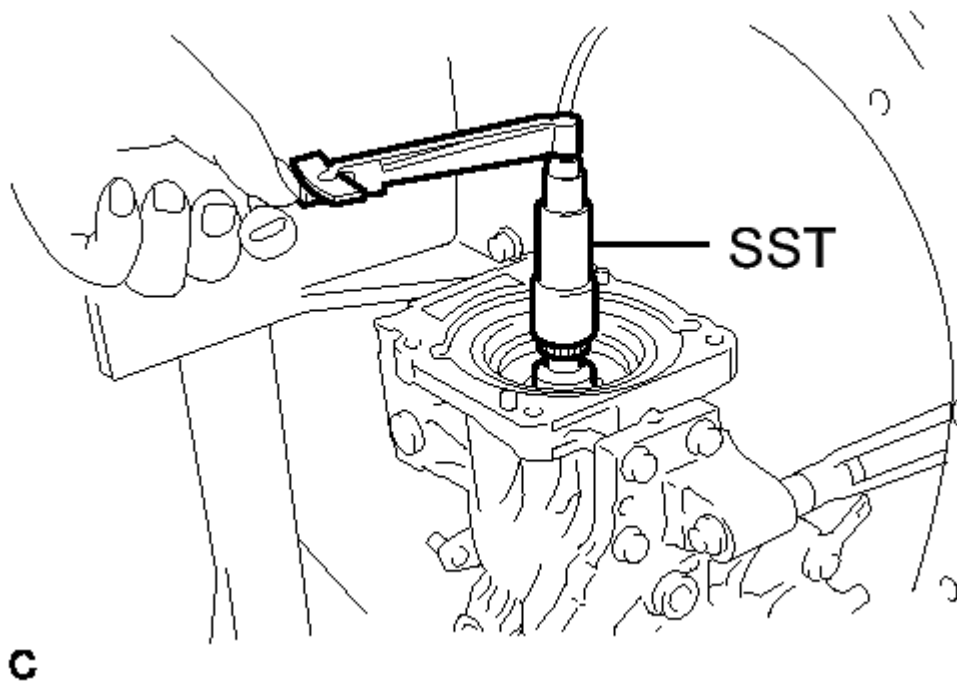


Fig. 83: Measuring Differential Drive Pinion Preload
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Standard total preload

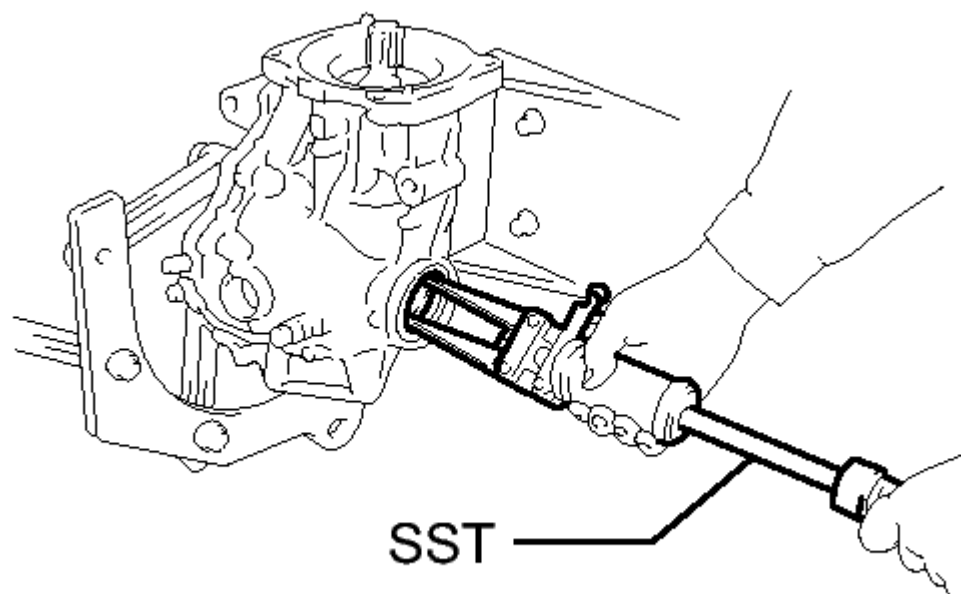
2.8 to 5.8 N*m (29 to 59 kgf*cm, 25 to 51 in.*lbf)

NOTE: For a more accurate measurement, rotate the rear differential case bearing forward and backward before measuring.

If the preload is not within the specified range, adjust the total preload or repair as necessary.

16. REMOVE REAR DIFFERENTIAL SIDE GEAR SHAFT OIL SEAL

- a. Using SST, remove the 2 rear differential side gear shaft oil seals from the rear differential carrier assembly.



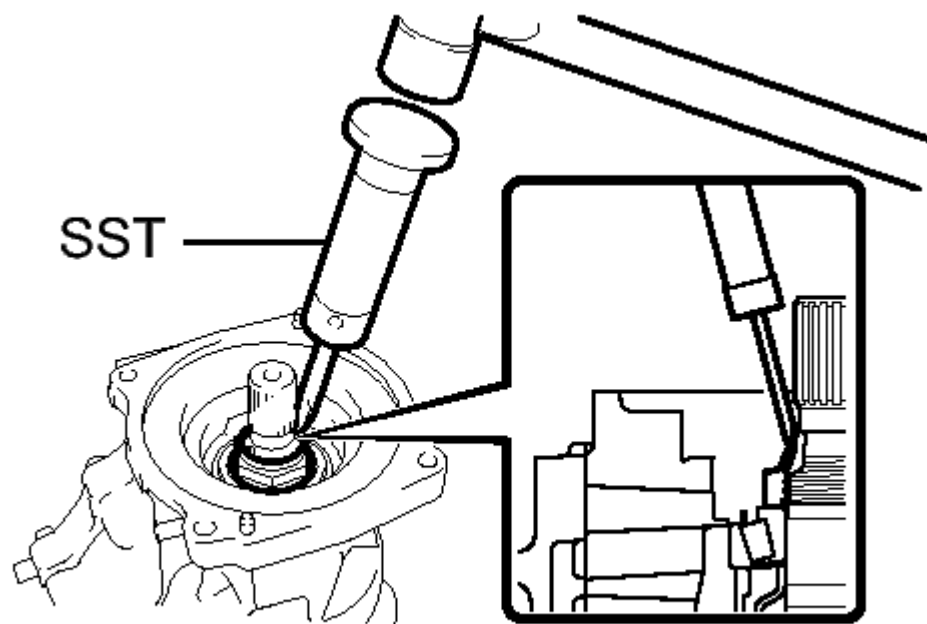
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Fig. 84: Removing Rear Differential Side Gear Shaft Oil Seals
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- SST: 09308-00010

17. REMOVE REAR DRIVE PINION NUT

- Using SST and a hammer, unstake the rear drive pinion nut.



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Fig. 85: Unstaking Rear Drive Pinion Nut
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

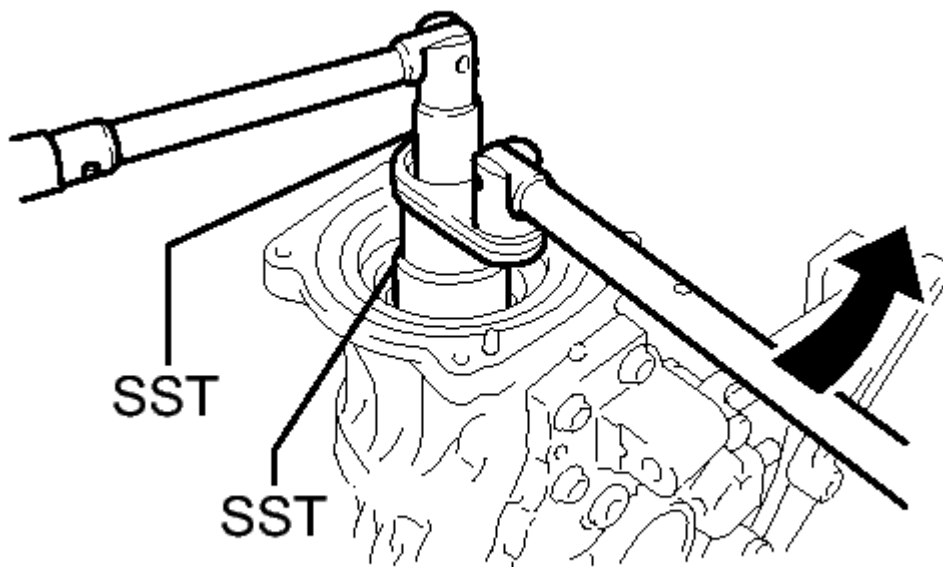
- SST: 09930-00010

NOTE:

- Use SST with the tapered part facing against the shaft.
- Do not modify the SST tip with a grinder or equivalent.
- Fully unstake the rear drive pinion nut.

- b. Using SST, hold the differential drive pinion in place and remove the rear drive pinion nut from the differential drive pinion.

- SST: 09556-16011
- SST: 09564-16020

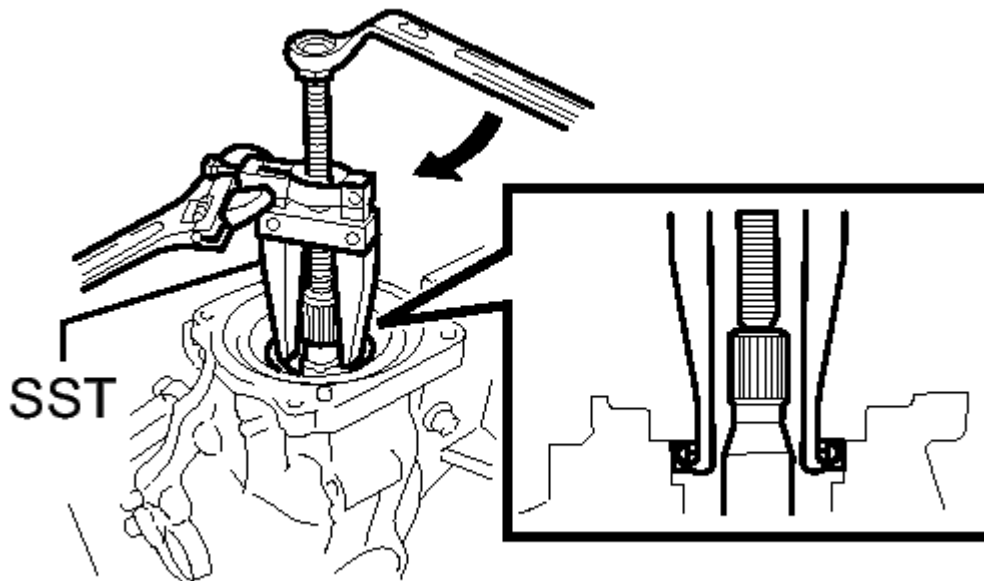


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Fig. 86: Removing Rear Drive Pinion Nut
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

18. REMOVE OIL DIAPHRAGM SEAL

- a. Using SST, remove the oil diaphragm seal from the rear differential carrier assembly.



C

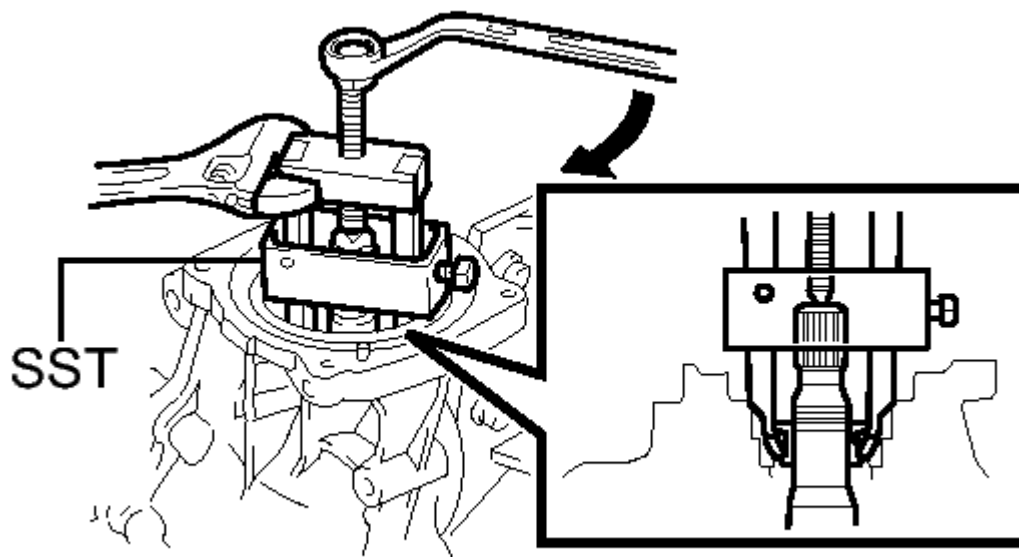
Fig. 87: Removing Diaphragm Oil Seal

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

- SST: 09308-10010

19. REMOVE REAR DRIVE PINION FRONT TAPERED ROLLER BEARING

- Using SST, remove the rear drive pinion front tapered roller bearing (inner race) from the differential drive pinion.



C

Fig. 88: Removing Rear Drive Pinion Front Tapered Roller Bearing (Inner Race)
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- SST: 09556-40010

20. REMOVE DIFFERENTIAL SIDE BEARING RETAINER

- Remove the 10 bolts from the wire harness bracket and rear differential carrier assembly.

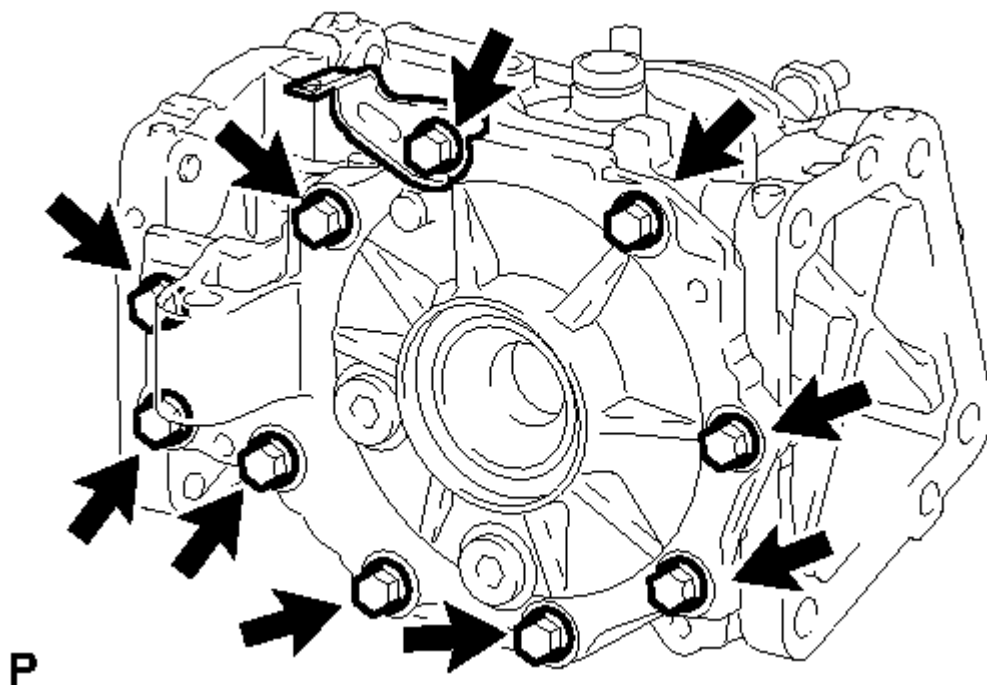
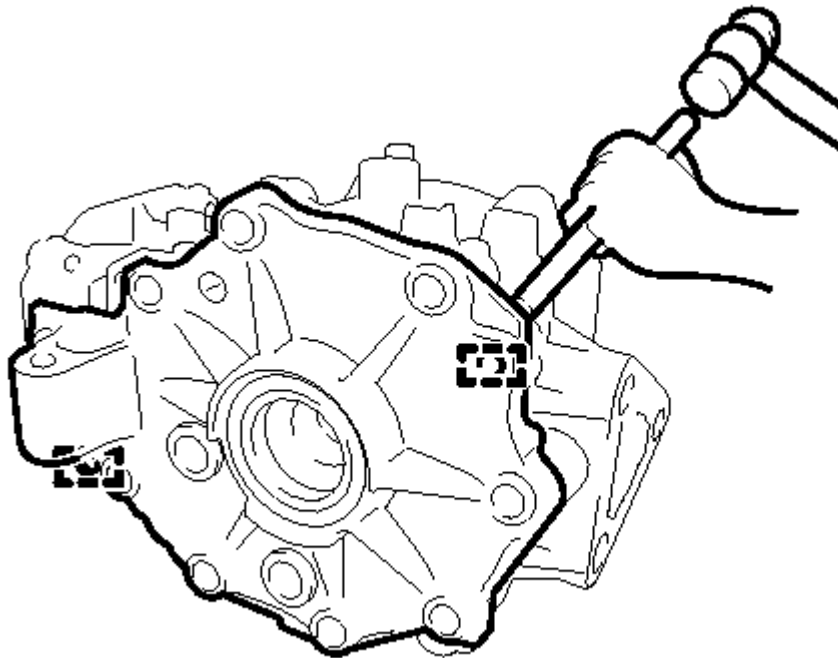


Fig. 89: Identifying Wire Harness Bracket & Rear Differential Carrier Assembly Bolts
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- b. Using a brass bar and a hammer, disengage the 2 pins and remove the differential side bearing retainer from the rear differential carrier assembly.



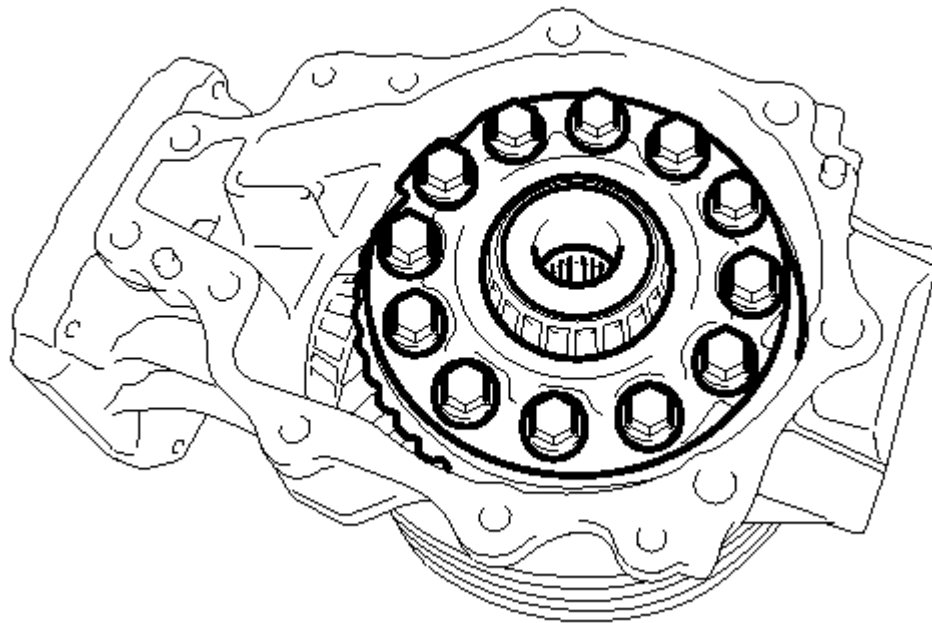
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Fig. 90: Disengage The 2 Pins
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

NOTE: Set the brass bar on the ribbed part of the differential side bearing retainer.

21. REMOVE REAR DIFFERENTIAL CASE SUB-ASSEMBLY

- a. Remove the rear differential case sub-assembly from the rear differential carrier.

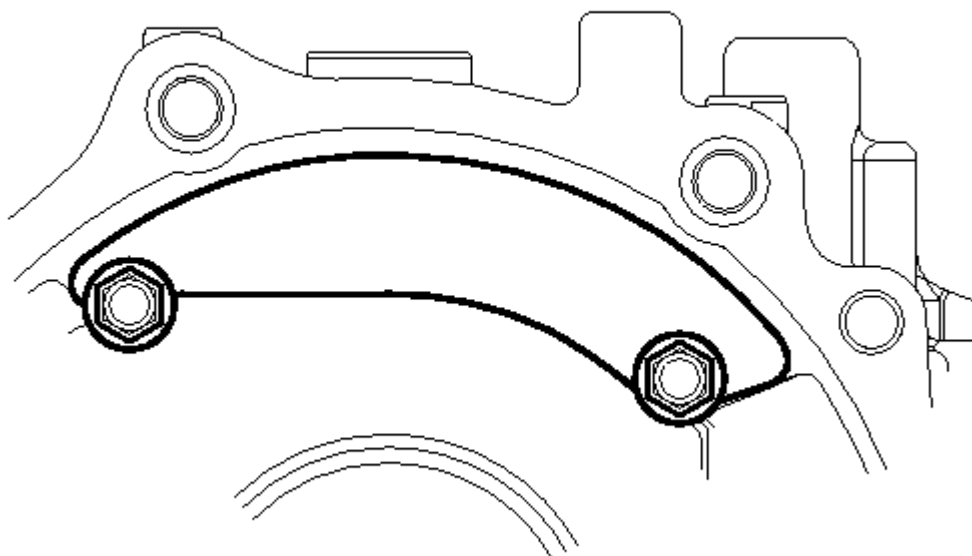


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Fig. 91: Identifying The Rear Differential Case Assembly
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

22. REMOVE REAR DIFFERENTIAL BREATHER PLUG OIL DEFLECTOR

- a. Remove the 2 bolts and rear differential breather plug oil deflector.



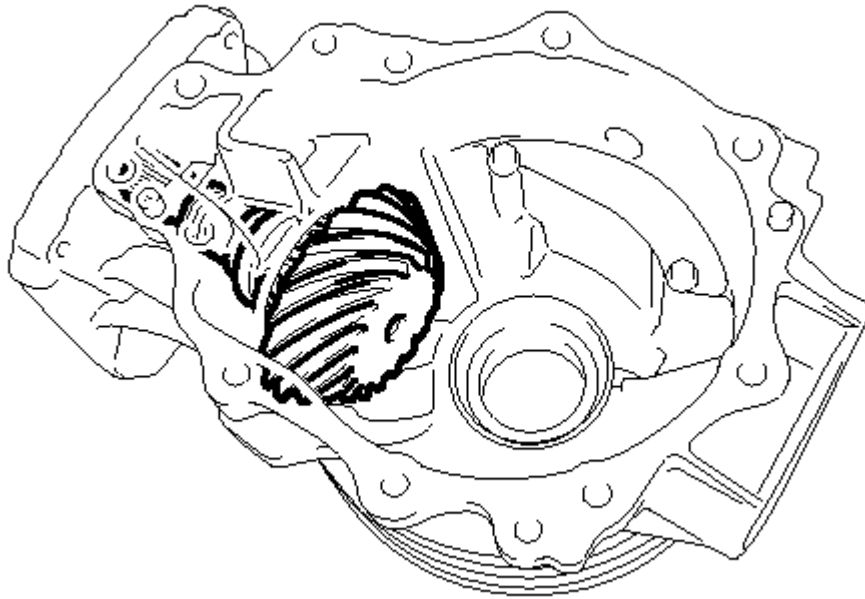
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Fig. 92: Identifying Bolts And Rear Differential Breather Plug Oil Deflector

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

23. REMOVE DIFFERENTIAL DRIVE PINION

- a. Remove the differential drive pinion from the rear differential carrier.



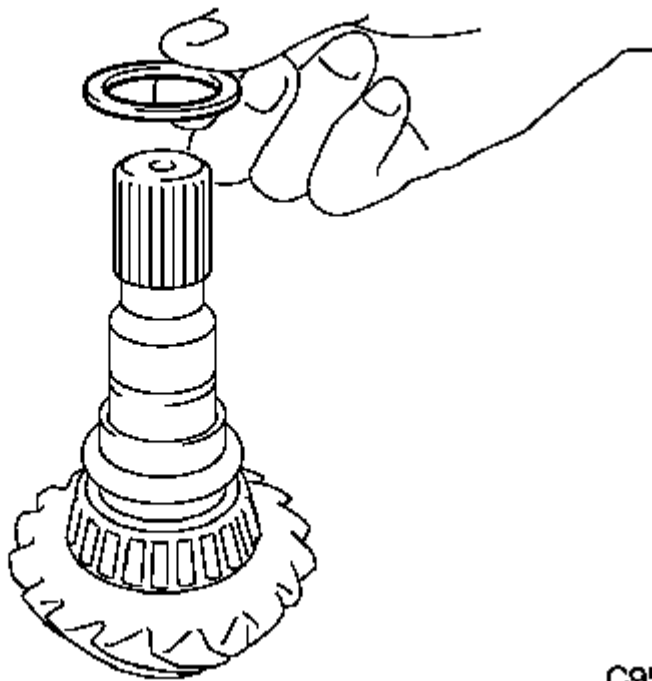
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Fig. 93: Identifying The Differential Drive Pinion

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

24. REMOVE REAR DIFFERENTIAL DRIVE PINION OIL SLINGER

- a. Remove the rear differential drive pinion oil slinger from the differential drive pinion.



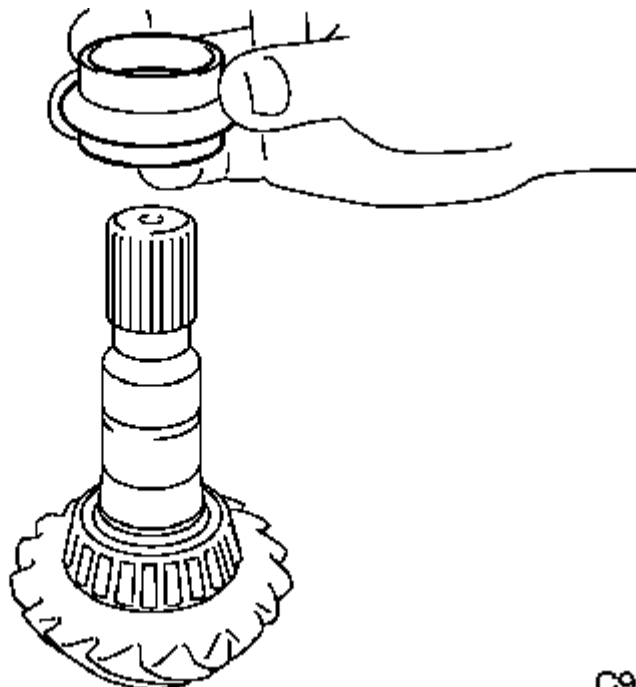
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Fig. 94: Removing/Installing Rear Differential Drive Pinion Oil Slinger
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

25. REMOVE REAR DIFFERENTIAL DRIVE PINION BEARING SPACER

- a. Remove the rear differential drive pinion bearing spacer from the differential drive pinion.



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C95832

Fig. 95: Removing/Installing Rear Differential Drive Pinion Bearing Spacer
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

26. REMOVE REAR DRIVE PINION REAR TAPERED ROLLER BEARING

- a. Using SST and a press, press out the rear drive pinion rear tapered roller bearing (inner race) from the differential drive pinion.

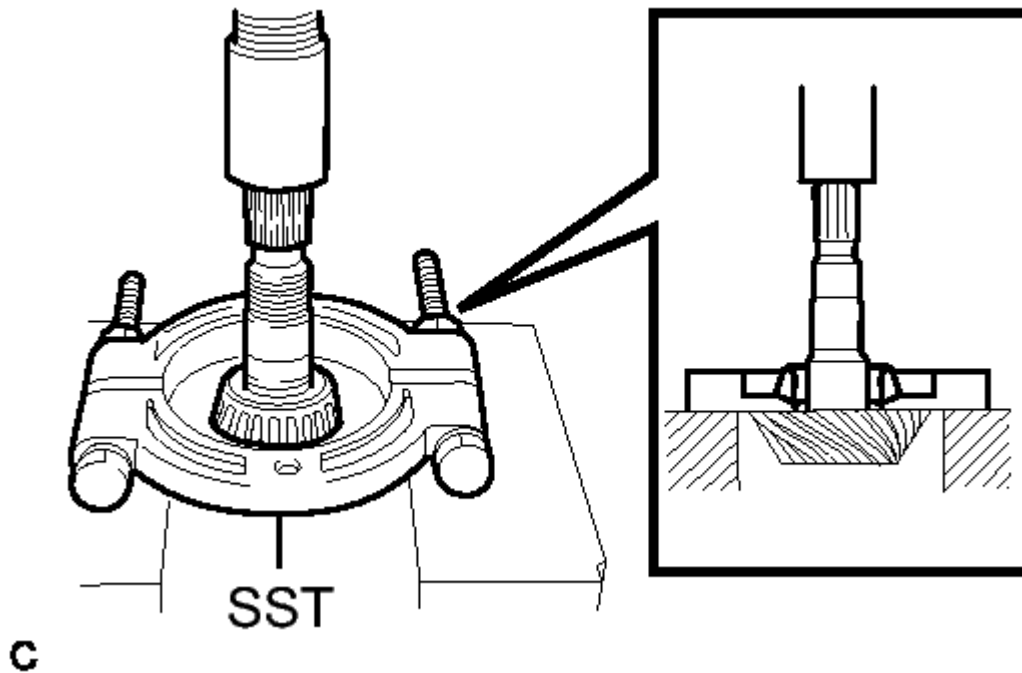


Fig. 96: Pressing Out Rear Drive Pinion Rear Tapered Roller Bearing (Inner Race)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- SST: 09950-00020

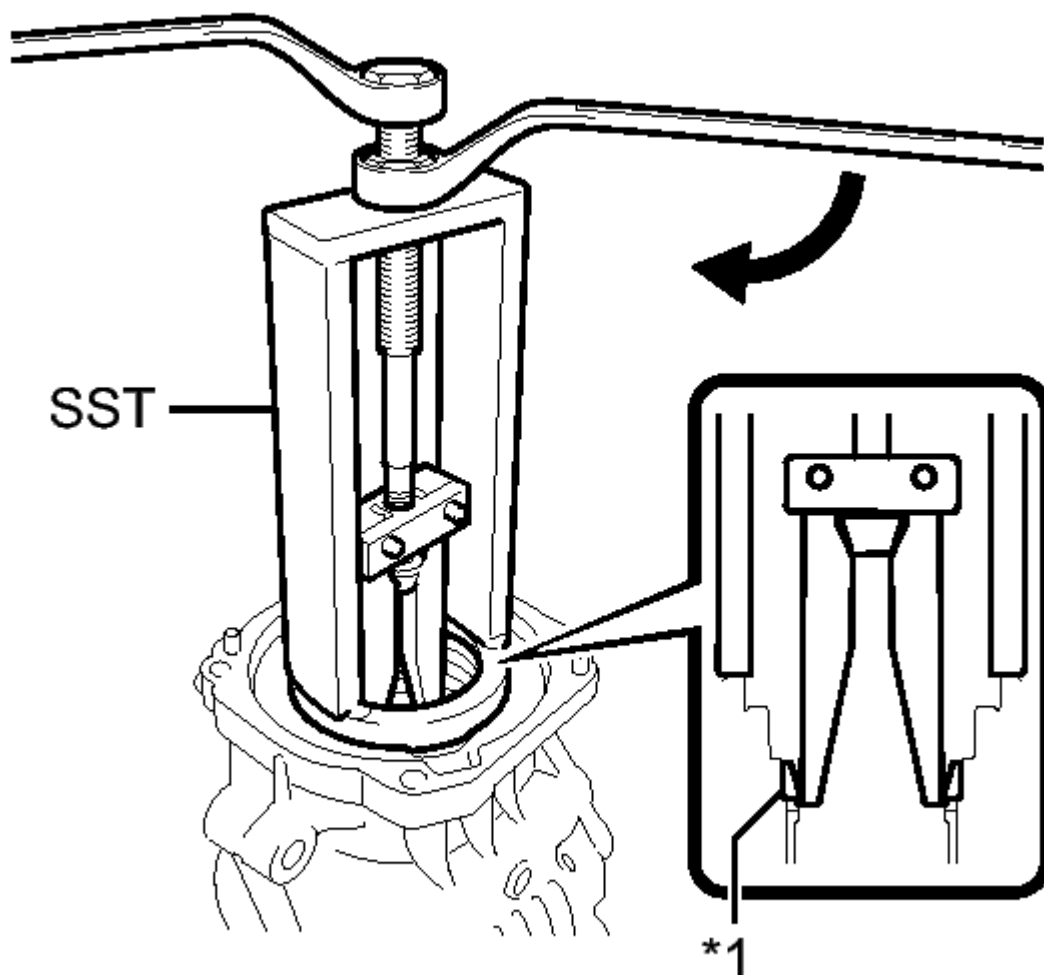
HINT:

If the rear differential drive pinion or differential ring gear is damaged, replace them both.

- b. Remove the rear differential drive pinion plate washer.

27. REMOVE REAR DRIVE PINION FRONT TAPERED ROLLER BEARING

- a. Using SST, remove the rear drive pinion front tapered roller bearing (outer race) from the rear differential carrier.



C

Fig. 97: Remove The Rear Drive Pinion Front Tapered Roller Bearing (Outer Race)
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- SST: 09387-00041
 09387-01030
 09387-01041
- SST: 09387-02020

TEXT IN ILLUSTRATION

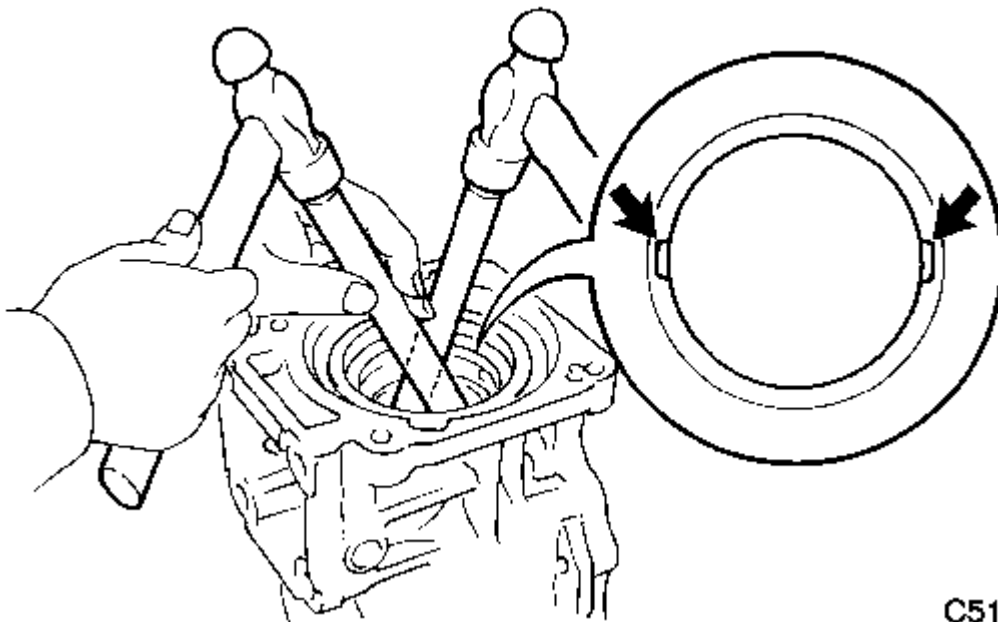
	Rear Drive Pinion Front Tapered Roller
*1	

Bearing (Outer Race)

28. REMOVE REAR DRIVE PINION REAR TAPERED ROLLER BEARING

- Using a brass bar and a hammer, lightly and uniformly tap out the rear drive pinion rear tapered roller bearing (outer race) from the rear differential carrier.

NOTE: Set the brass bar on the notch.

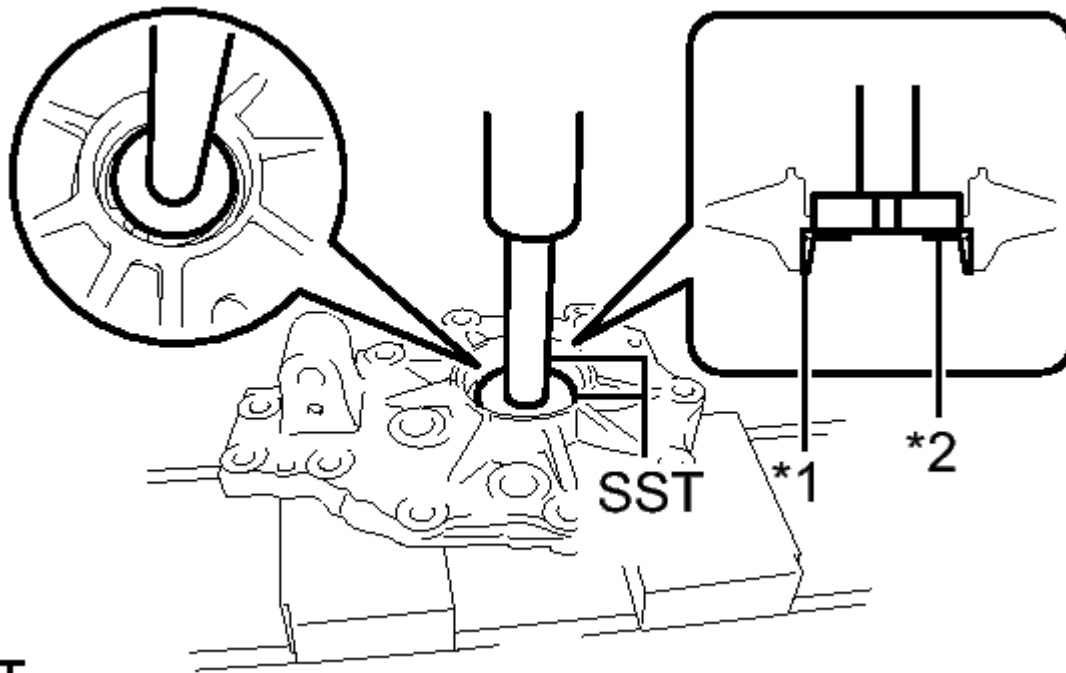


C51301

Fig. 98: Removing Rear Drive Pinion Rear Tapered Roller Bearing (Outer Race)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

29. REMOVE REAR DIFFERENTIAL CASE BEARING (for LH Side)

- Using SST and a press, remove the rear differential case bearing (LH side outer race) and rear differential side gear shaft plate washer from the differential side bearing retainer.



T

Fig. 99: Remove The Rear Differential Case Bearing (LH side outer race)
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

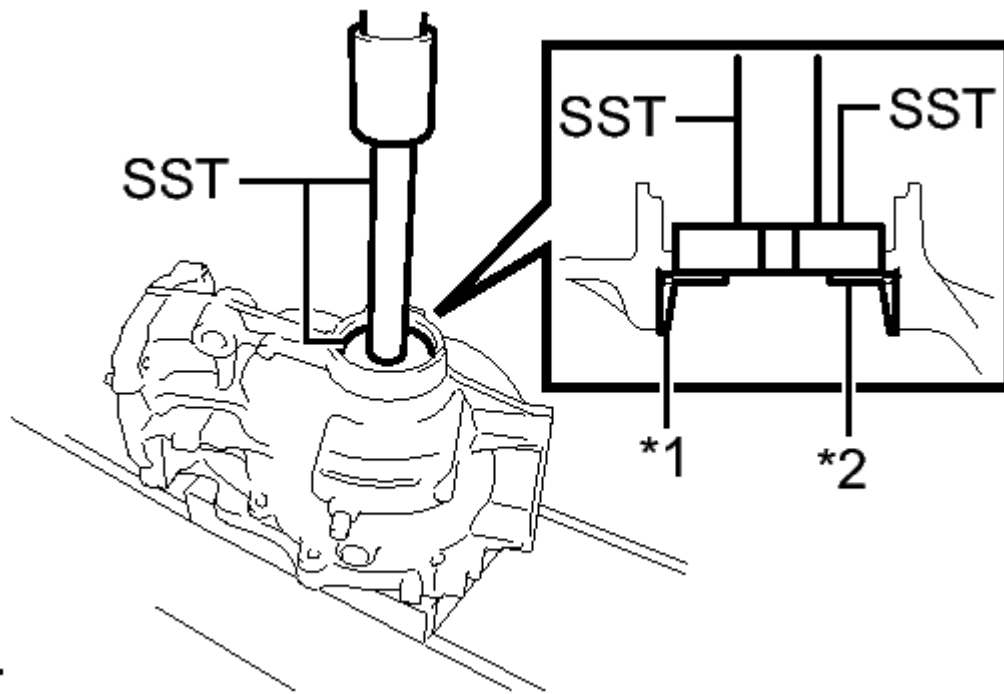
- SST: 09950-60010
09951-00580
- SST: 09950-70010
09951-07100

TEXT IN ILLUSTRATION

*1	Rear Differential Case Bearing (Outer Race)
*2	Rear Differential Side Gear Shaft Plate Washer

30. REMOVE REAR DIFFERENTIAL CASE BEARING (for RH Side)

- a. Using SST and a press, remove the rear differential case bearing (RH side outer race) and rear differential side gear shaft plate washer from the rear differential carrier.



T

Fig. 100: Remove The Rear Differential Case Bearing (RH Side Outer Race)
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

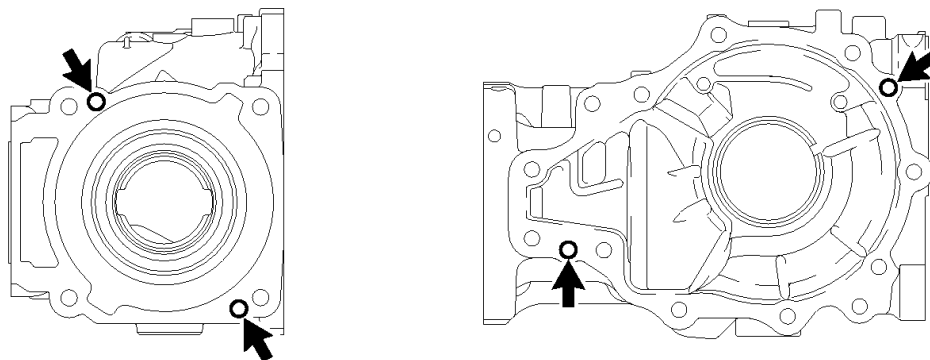
- SST: 09950-60010
 09951-00580
- SST: 09950-70010
 09951-07100

TEXT IN ILLUSTRATION

*1	Rear Differential Case Bearing (Outer Race)
*2	Rear Differential Side Gear Shaft Plate Washer

31. REMOVE STRAIGHT PIN

- a. Remove the 4 straight pins from the rear differential carrier.



P

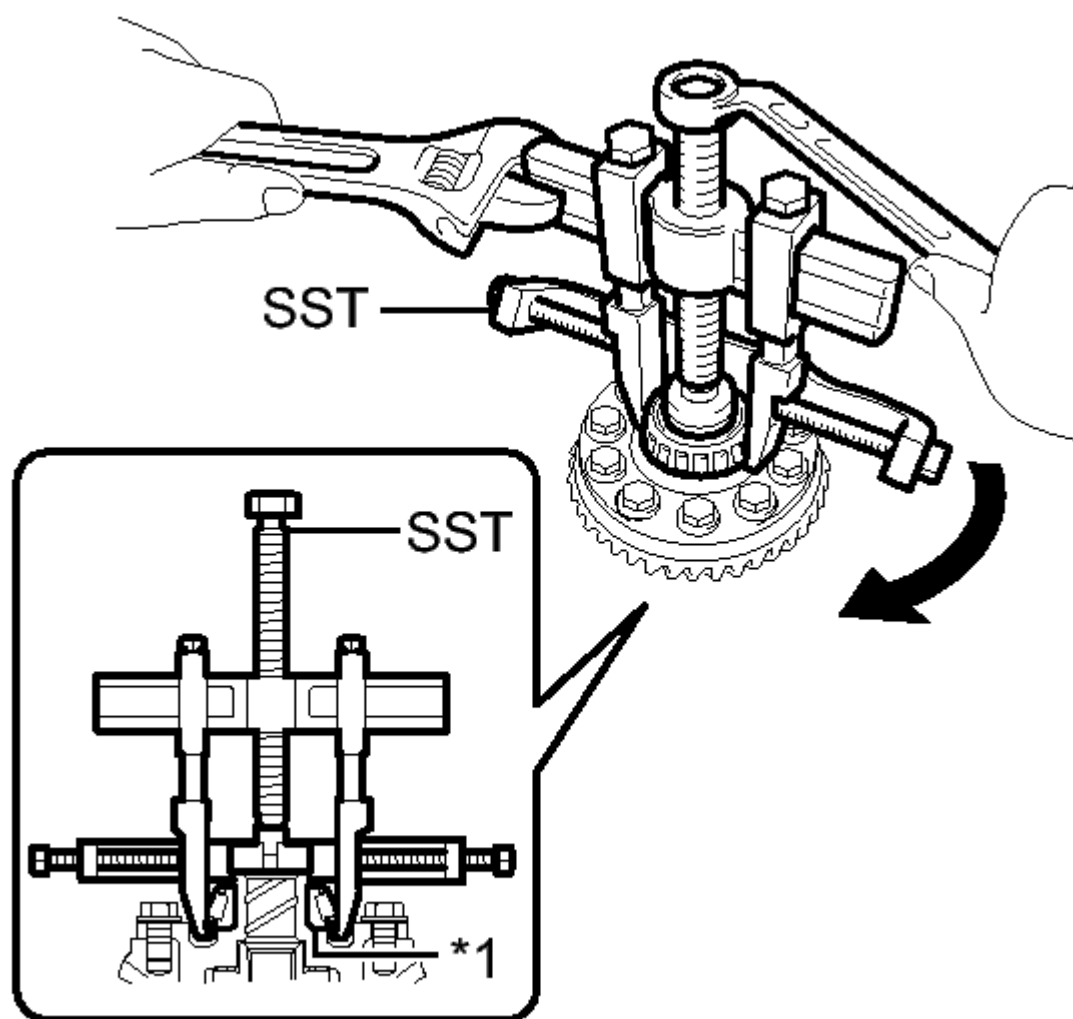
Fig. 101: Identifying Straight Pins At Rear Differential Carrier
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

32. REMOVE REAR DIFFERENTIAL CASE BEARING (for LH Side)

HINT:

Perform this step only when replacing the rear differential case bearing or rear differential case sub-assembly.

- a. Using SST, remove the rear differential case bearing (LH side inner race) from the rear differential case.



T

Fig. 102: Remove The Rear Differential Case Bearing
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- **SST: 09950-40011**
09951-04020
09952-04010
09953-04020
09954-04010
09955-04061
09957-04010
09958-04011
- **SST: 09950-60010**
09951-00370

NOTE: Before using the SST center bolt (09953-04020), apply hypoid gear oil to its threads and tip.

HINT:

If the race remains on the rear differential case sub-assembly, repeat the step above to remove the race.

TEXT IN ILLUSTRATION

*1	Rear Differential Case Bearing (Inner Race)
----	--

33. REMOVE REAR DIFFERENTIAL CASE BEARING (for RH Side)

HINT:

Perform this step only when replacing the rear differential case bearing or rear differential case sub-assembly.

- a. Using SST, remove the rear differential case bearing (RH side inner race) from the rear differential case sub-assembly.

- **SST: 09950-40011**

09951-04020

09952-04010

09953-04020

09954-04010

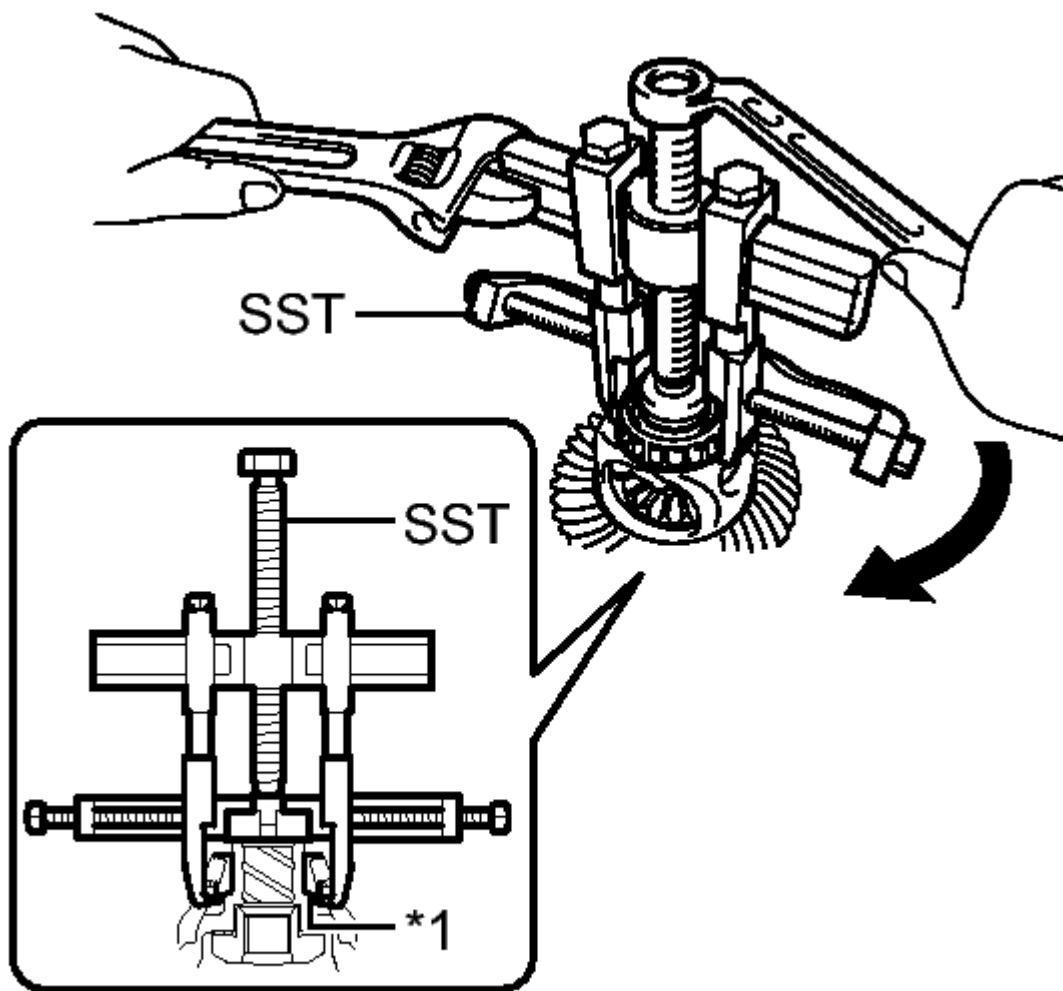
09955-04011

09957-04010

09958-04011

- **SST: 09950-60010**

09951-00370



T

Fig. 103: Remove The Rear Differential Case Bearing
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

NOTE: Before using the SST center bolt (09953-04020), apply hypoid gear oil to its threads and tip.

HINT:

If the race remains on the rear differential case sub-assembly, repeat the step above to remove the race.

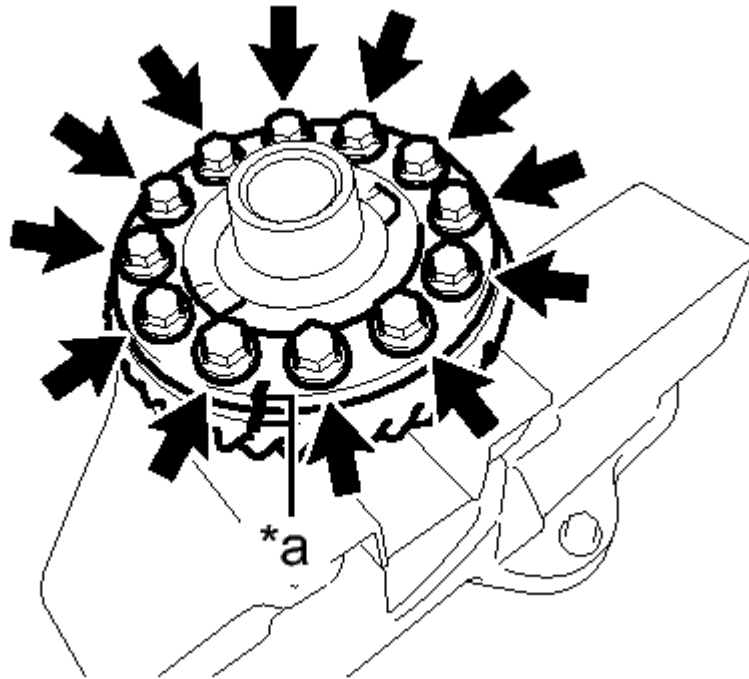
TEXT IN ILLUSTRATION

*1	Rear Differential Case Bearing
----	---

(Inner Race)

34. REMOVE DIFFERENTIAL RING GEAR

- a. Place matchmarks on the rear differential case and differential ring gear.



T

Fig. 104: Identifying Rear Differential Case, Differential Ring Gear, Matchmarks & Bolts
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

TEXT IN ILLUSTRATION

*a	Matchmark
----	-----------

- b. Remove the 12 ring gear set bolts.
- c. Using a plastic-faced hammer, lightly tap the outer circumference of the differential ring gear to remove it from the rear differential case sub-assembly.

REASSEMBLY

REASSEMBLY

1. INSTALL DIFFERENTIAL RING GEAR

- a. Clean the contact surfaces of the differential case and differential ring gear.

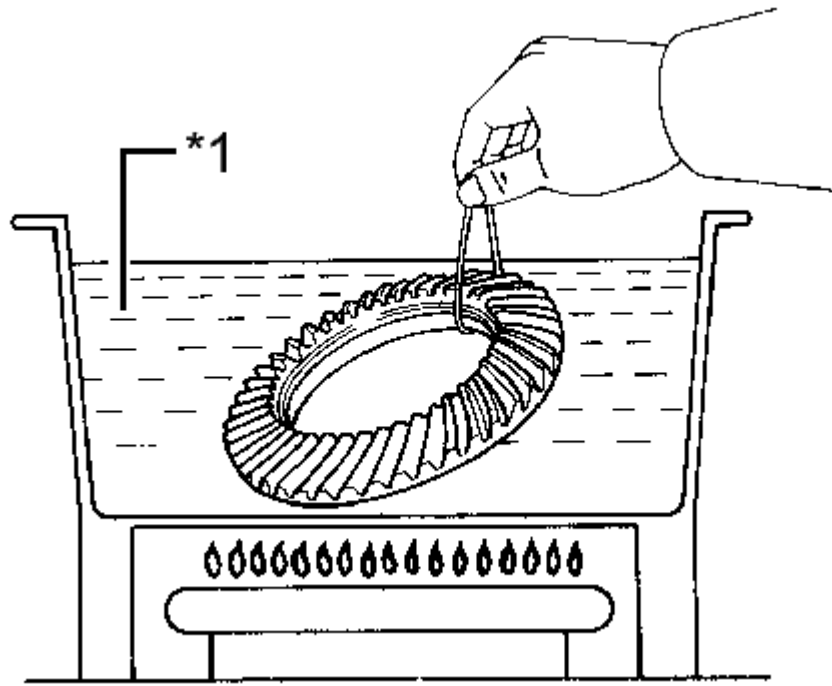


Fig. 105: Heating Differential Ring Gear In Boiling Water
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- b. Heat the differential ring gear in boiling water.

TEXT IN ILLUSTRATION

*1	Boiling Water
----	------------------

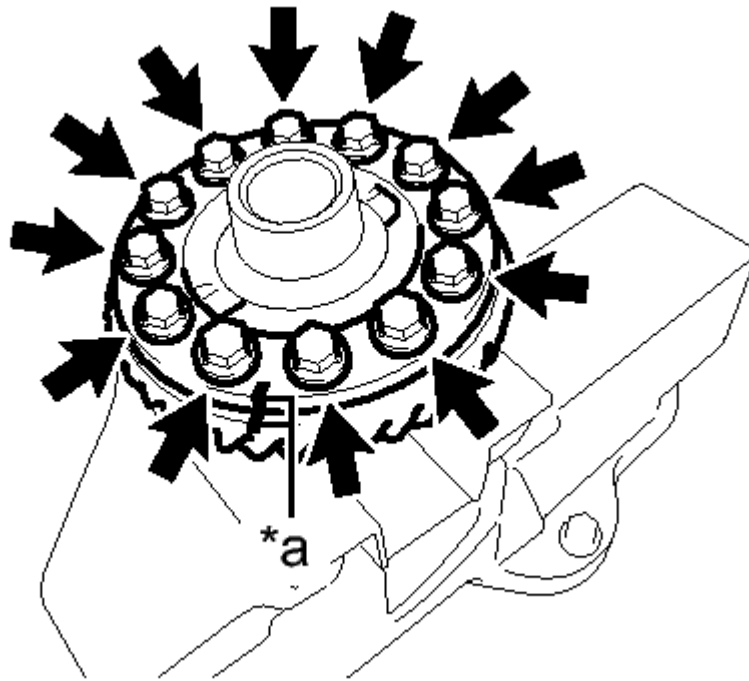
- c. Carefully remove the differential ring gear from the boiling water.

WARNING: Do not burn yourself.

- d. Secure the rear differential case sub-assembly between aluminum plates in a vise.

NOTE: Do not overtighten the vise.

- e. After the moisture on the differential ring gear has completely evaporated, quickly install the differential ring gear to the differential case.
- f. Align the matchmarks on the rear differential case and differential ring gear, and install the differential ring gear.



T

Fig. 106: Identifying Rear Differential Case, Differential Ring Gear, Matchmarks & Bolts
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

TEXT IN ILLUSTRATION

***a Matchmark**

- g. Temporarily install 12 new bolts to which thread lock has been applied.

Adhesive

Toyota Genuine Adhesive 1360K, Three Bond 1360K or equivalent

- h. After the differential ring gear cools down sufficiently, tighten the 12 bolts uniformly.

Torque: 99 N*m (1010 kgf*cm, 73 ft.*lbf)

NOTE:

- Install the bolts by tightening diametrically opposite bolts uniformly in several passes.
- Tighten the bolts after the differential ring gear has cooled down sufficiently.
- Do not allow any oil to contact the bolt, differential ring gear threads or differential case seating surface.

2. INSTALL REAR DIFFERENTIAL CASE BEARING (for LH Side)

- a. Using SST and a press, install the rear differential case bearing (inner race) to the rear differential case sub-assembly.

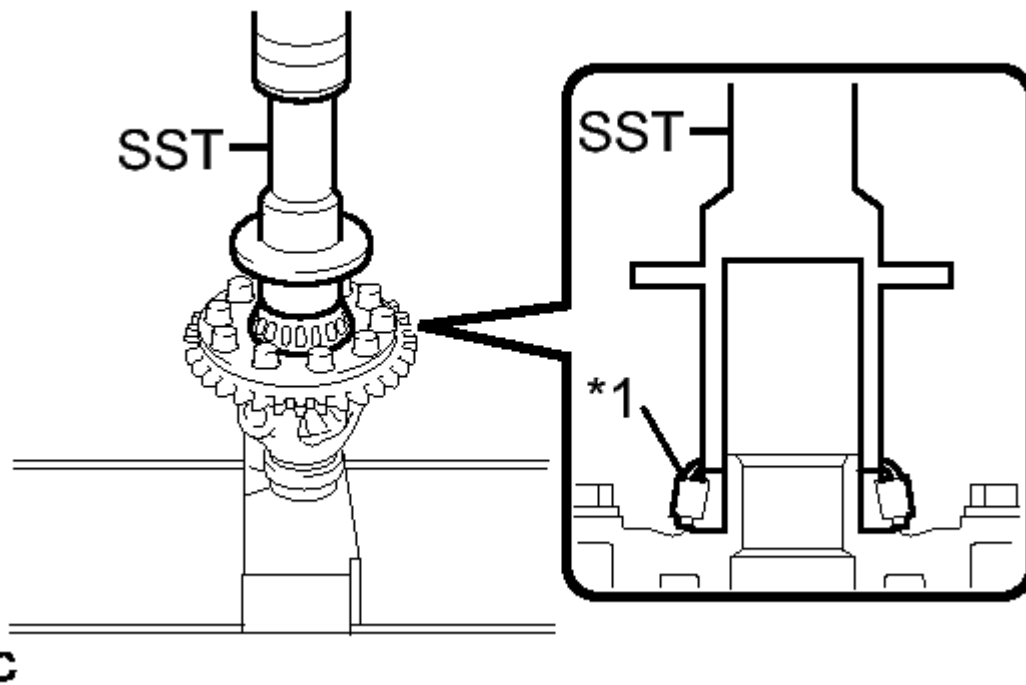


Fig. 107: Installing Rear Differential Case Bearing (For LH Side) Using SST & Press
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- SST: 09223-46011

TEXT IN ILLUSTRATION

*1	Rear Differential Case Bearing (Inner Race)
----	--

If the rear differential case bearing (LH side inner race) is damaged, replace it with a new one.

3. INSTALL REAR DIFFERENTIAL CASE BEARING (for RH Side)

- Using SST and a press, install the rear differential case bearing (inner race) to the rear differential case sub-assembly.

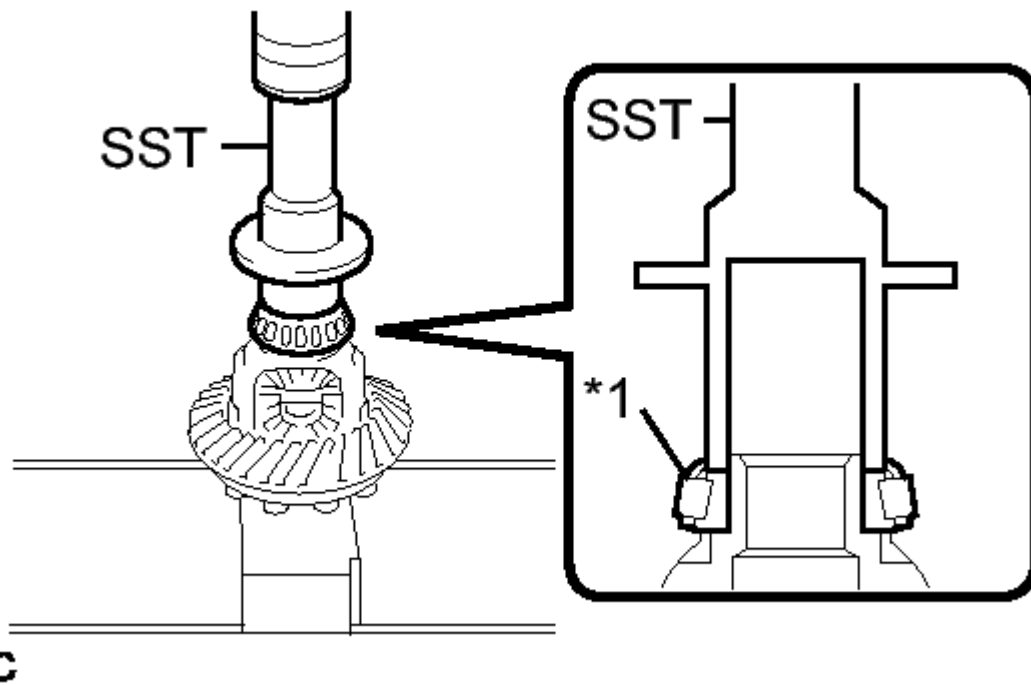


Fig. 108: Install Rear Differential Case Bearing (For RH Side) Using SST & Press
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- SST: 09223-46011

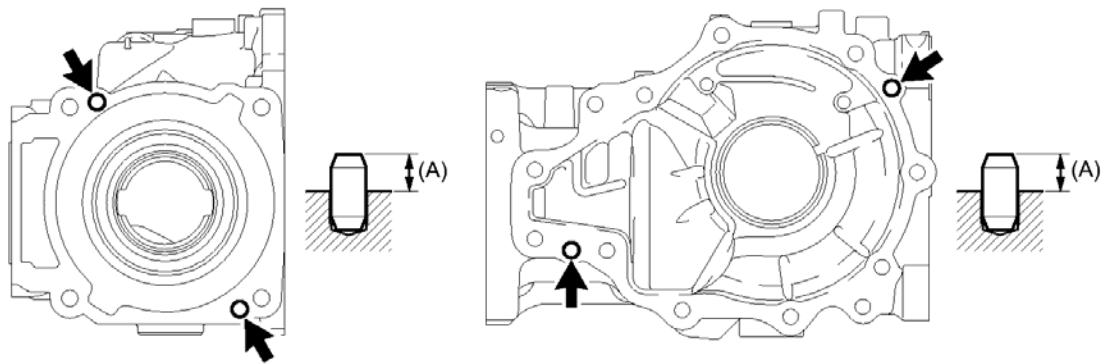
TEXT IN ILLUSTRATION

*1	Rear Differential Case Bearing (Inner Race)
----	--

If the rear differential case bearing (RH side inner race) is damaged, replace it with a new one.

4. INSTALL STRAIGHT PIN

- Using a plastic hammer, install the 4 straight pins to the differential carrier.



P

Fig. 109: Installing Straight Pins At Differential Carrier Using Plastic Hammer
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

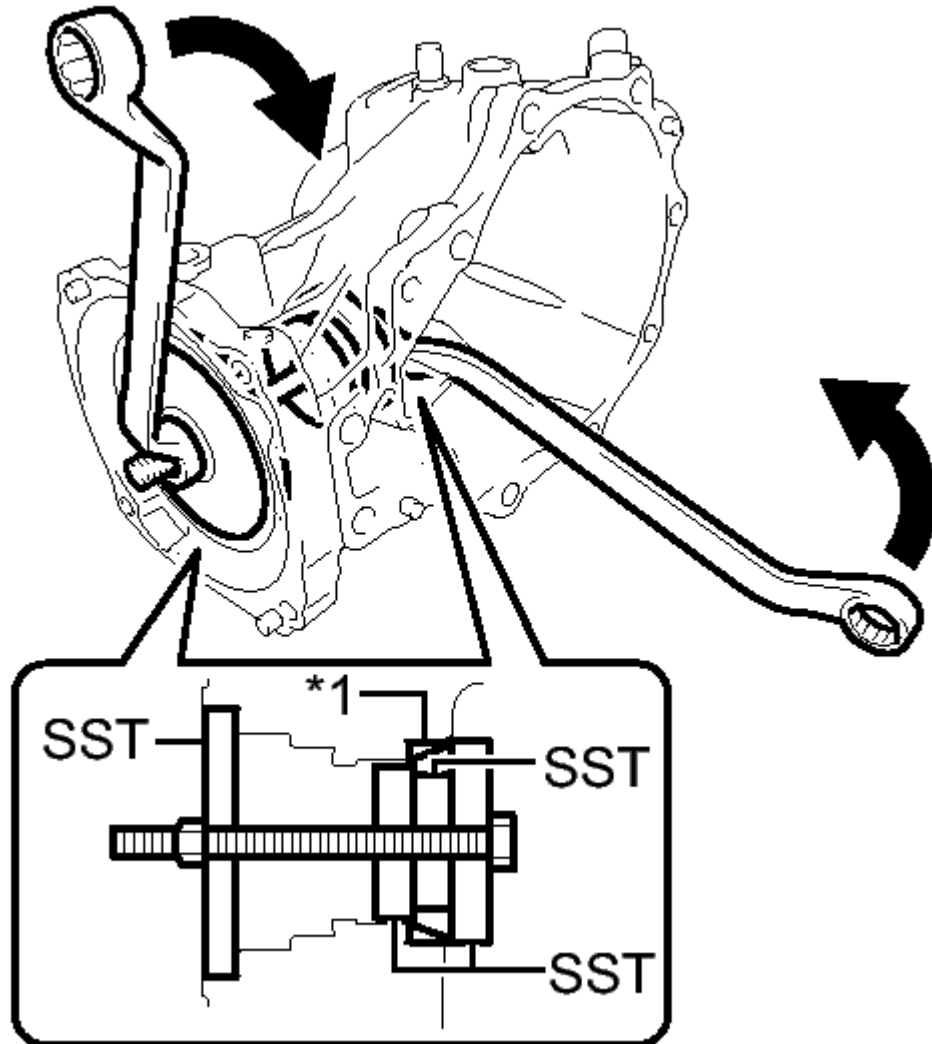
(A)

8 to 9 mm (0.315 to 0.354 in.)

- b. Thoroughly remove oil and water from the surface of the rear differential case sub-assembly that will face the differential ring gear.

5. INSTALL REAR DRIVE PINION REAR TAPERED ROLLER BEARING

- a. Using SST, bolts, nuts and washers, install the rear drive pinion rear tapered roller bearing (outer race) to the rear differential carrier.



T

Fig. 110: Identifying Bolt, Nuts And Washers
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

TEXT IN ILLUSTRATION

	Rear
	Drive
	Pinion
	Front
*1	Tapered
	Roller
	Bearing
	(Outer
	Race)

- SST: 09950-60010
 09951-00500

09951-00530

- **SST: 09950-60020**

09951-00680

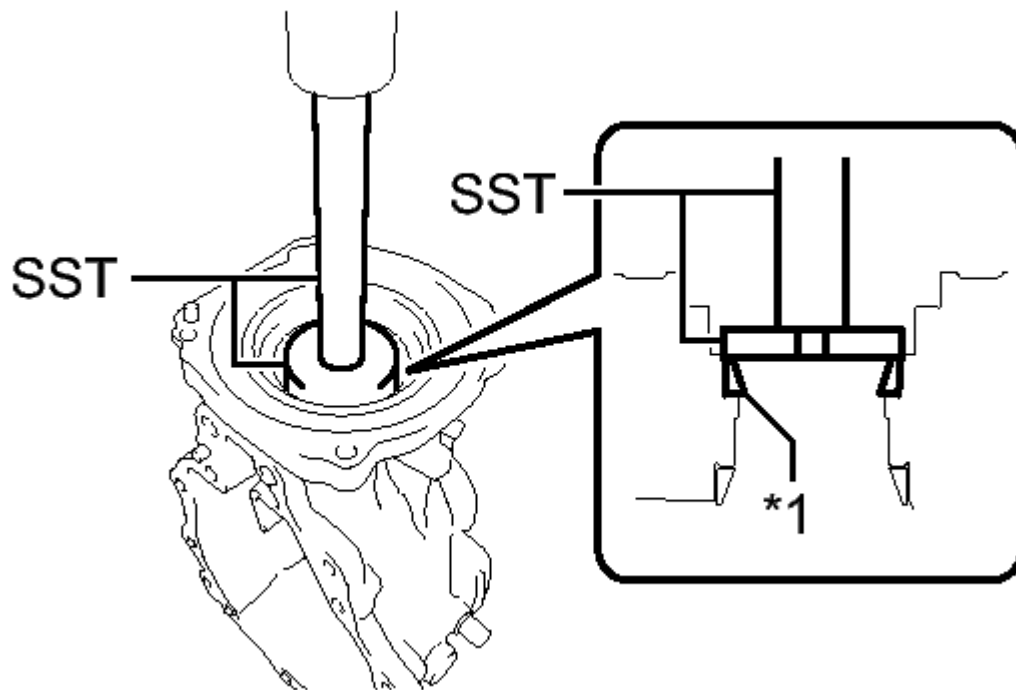
09951-00890

HINT:

Use M12 x P1.5 bolts with shaft lengths of 124 mm (4.88 in.) and M12 x P1.5 nuts for installation.

6. INSTALL REAR DRIVE PINION FRONT TAPERED ROLLER BEARING

- Using SST and a press, install the rear drive pinion front tapered roller bearing (outer race) to the rear differential carrier.



T

Fig. 111: Install The Rear Drive Pinion Front Tapered Roller Bearing
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- **SST: 09950-60010**

09951-00610

- **SST: 09950-70010**

09951-07150

7. INSTALL REAR DRIVE PINION REAR TAPERED ROLLER BEARING

- Install the rear differential drive pinion plate washer to the differential drive pinion.

NOTE: Install each rear differential drive pinion washer to the position it was

removed from.

- b. Using SST and a press, install the rear drive pinion rear tapered roller bearing (inner race) to the differential drive pinion.

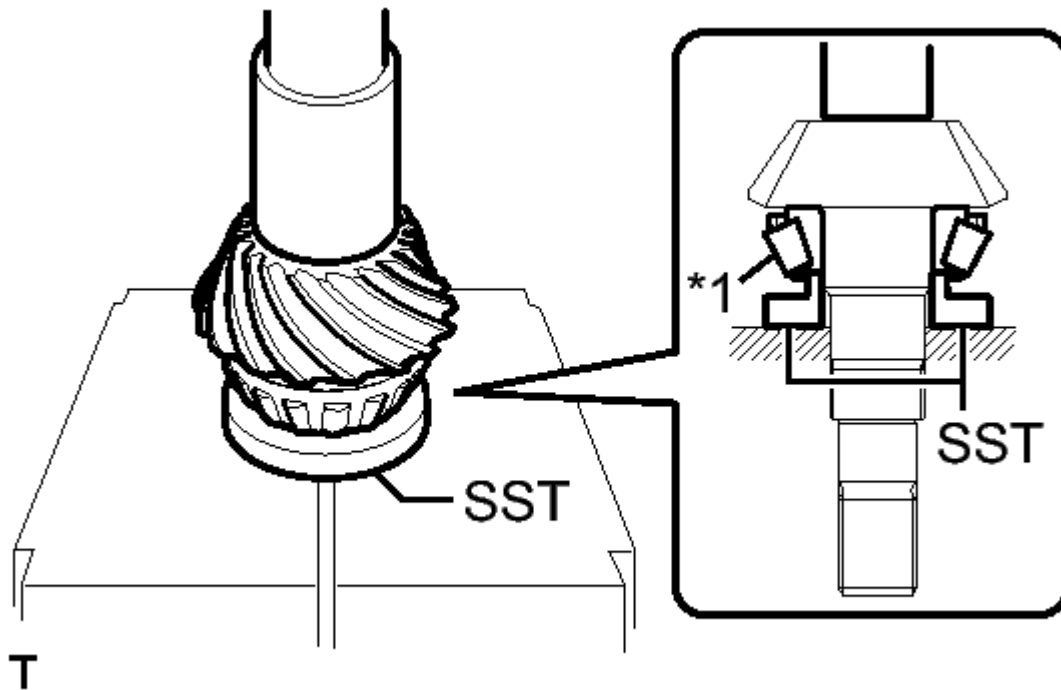


Fig. 112: Installing Rear Drive Pinion Rear Tapered Roller Bearing (Inner Race) Using SST & Press

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

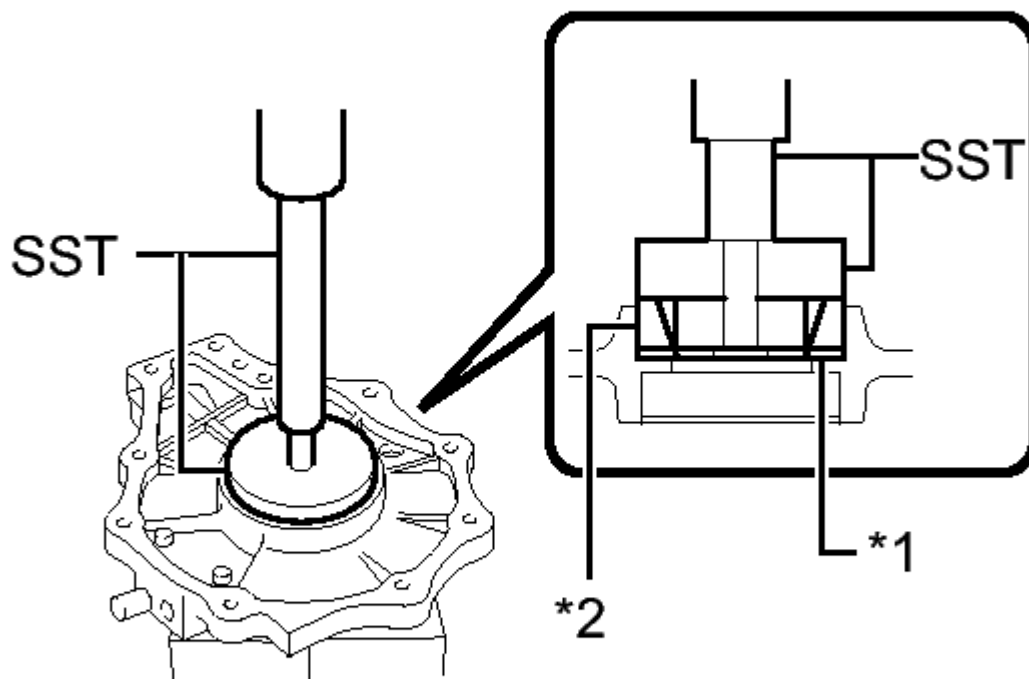
TEXT IN ILLUSTRATION

	Rear Drive Pinion Front
*1	Tapered Roller Bearing (Inner Race)

- SST: 09506-30012

8. INSTALL REAR DIFFERENTIAL CASE BEARING (for LH Side)

- a. Using SST and a press, install the rear differential side gear shaft plate washer and rear differential case bearing (outer race) to the differential side bearing retainer.



C

Fig. 113: Installing Rear Differential Side Gear Shaft Plate Washer And Rear Differential Case Bearing

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

TEXT IN ILLUSTRATION

*1	Rear Differential Case Bearing (Outer Race)
*2	Rear Differential Side Gear Shaft Plate Washer

- SST: 09950-60010
09951-00580
09952-06010
- SST: 09950-60020
09951-00680
- SST: 09950-70010
09951-07100

NOTE:

- Install each rear differential side gear shaft plate washer to the position it was removed from.
- When replacing a rear differential case bearing, replace the inner and outer races as a set.
- Install the rear differential side gear shaft oil seal after performing the tooth contact inspection and backlash adjustment.

9. INSTALL REAR DIFFERENTIAL CASE BEARING (for RH Side)

- a. Using SST and a press, install the rear differential side gear shaft plate washer and rear differential case bearing (outer race) to the rear differential carrier.

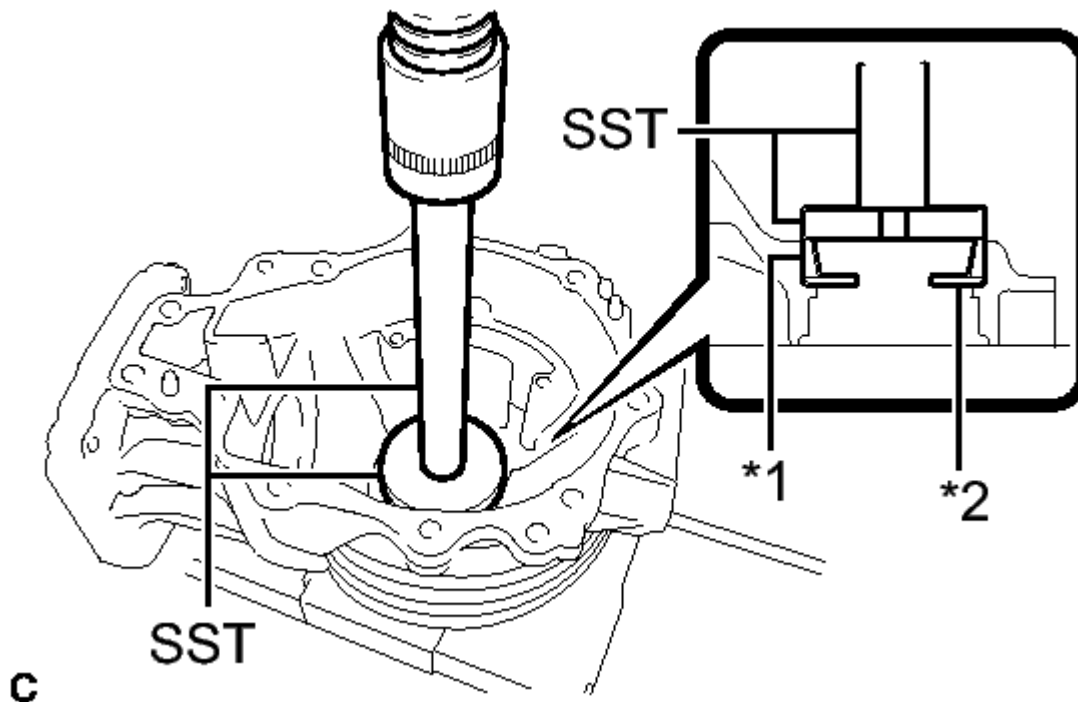


Fig. 114: Install The Rear Differential Side Gear Shaft Plate Washer
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

TEXT IN ILLUSTRATION

*1	Rear Differential Case Bearing (Outer Race)
*2	Rear Differential Side Gear Shaft Plate Washer

- SST: 09950-60010
09951-00680
- SST: 09950-70010
09951-07150

NOTE:

- Install each rear differential side gear shaft plate washer to the position it was removed from.
- When replacing a rear differential case bearing, replace the inner and outer races as a set.
- Install the rear differential side gear shaft oil seal after performing the tooth contact inspection and backlash adjustment.

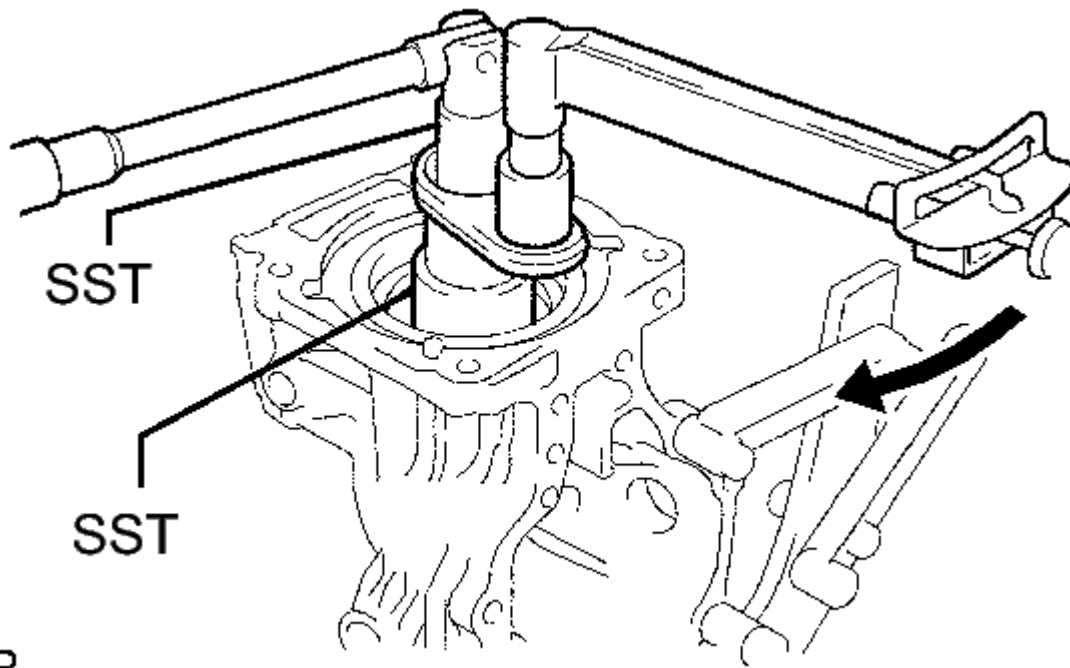
10. ADJUST DIFFERENTIAL DRIVE PINION PRELOAD

- Install the differential drive pinion with rear drive pinion rear tapered roller bearing (inner race) to the rear differential carrier.
- Apply hypoid gear oil LSD to the threads and seating surface of a new rear drive pinion nut.
- Install the rear drive pinion front tapered roller bearing (inner race) and the new rear drive pinion nut to the differential drive pinion.

NOTE:

New bearings are coated with anti-rust oil. If using new bearings, do not wash it off.

- Using SST, gradually tighten the rear drive pinion nut until the specified preload is reached. Do not exceed the torque limit shown below.



P

Fig. 115: Tightening Rear Drive Pinion Nut

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

- SST: 09564-16020

without SST

Torque: 321 N*m (3273 kgf*cm, 237 ft.*lbf)

or less

with SST

Torque: 292 N*m (2976 kgf*cm, 215 ft.*lbf)

or less

NOTE: **Tighten the rear drive pinion nut gradually. Never tighten it excessively.**

HINT:

Use a torque wrench with a fulcrum length of 500 mm (1.64 ft.).

- Using SST and a torque wrench, measure the differential drive pinion preload (starting torque) of the differential drive pinion.

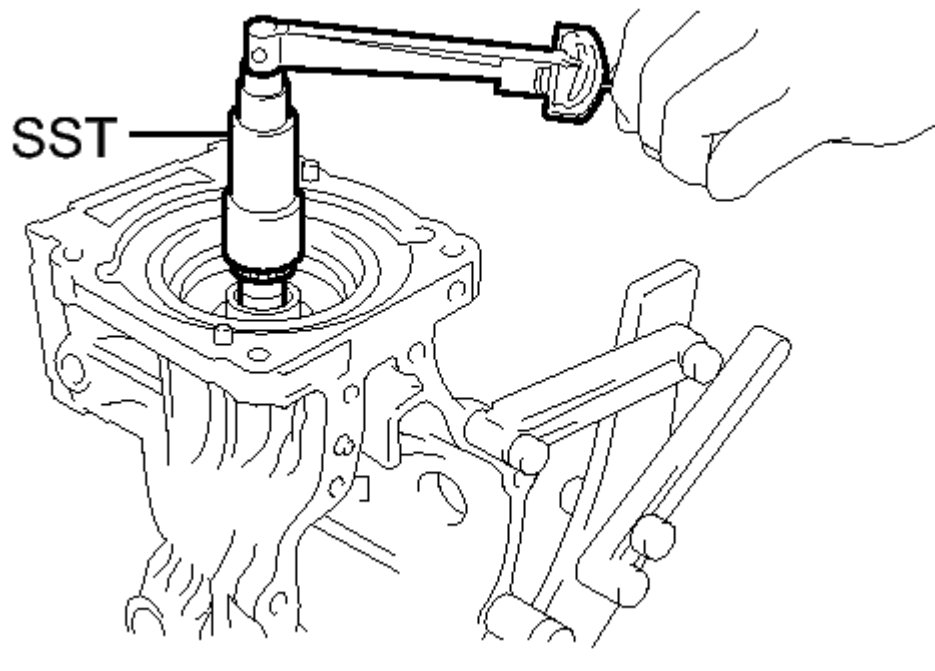


Fig. 116: Measuring Differential Drive Pinion Preload
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- SST: 09556-16011

Standard drive pinion preload (New bearing)

1.9 to 3.0 N*m (19 to 31 kgf*cm, 17 to 26 in.*lbf)

Standard drive pinion preload (Reused bearing)

1.6 to 2.5 N*m (16 to 25 kgf*cm, 14 to 22 in.*lbf)

NOTE:

- For a more accurate measurement, rotate the bearing forward and backward before inspection.
- Record the preload measurement for use with the total preload measurement.

11. INSTALL REAR DIFFERENTIAL CASE SUB-ASSEMBLY

- Using a scraper and wire brush, remove the seal packing from the rear differential carrier and differential side bearing retainer.

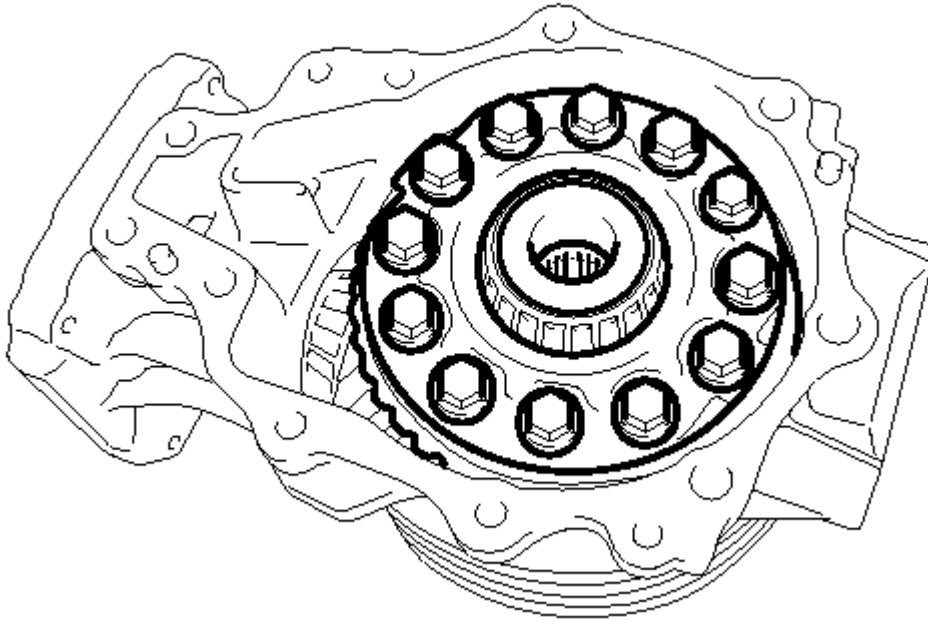
NOTE:

- Do not scratch the installation surface.
- Be sure to completely remove all seal packing from the rear differential carrier assembly and differential side bearing

retainer.

- Do not allow the removed seal packing to enter the rear differential carrier.

b. Install the rear differential case sub-assembly to the rear differential carrier.



T

Fig. 117: Identifying The Rear Differential Case Assembly
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

c. Install the differential side bearing retainer to the rear differential carrier with the 10 bolts.

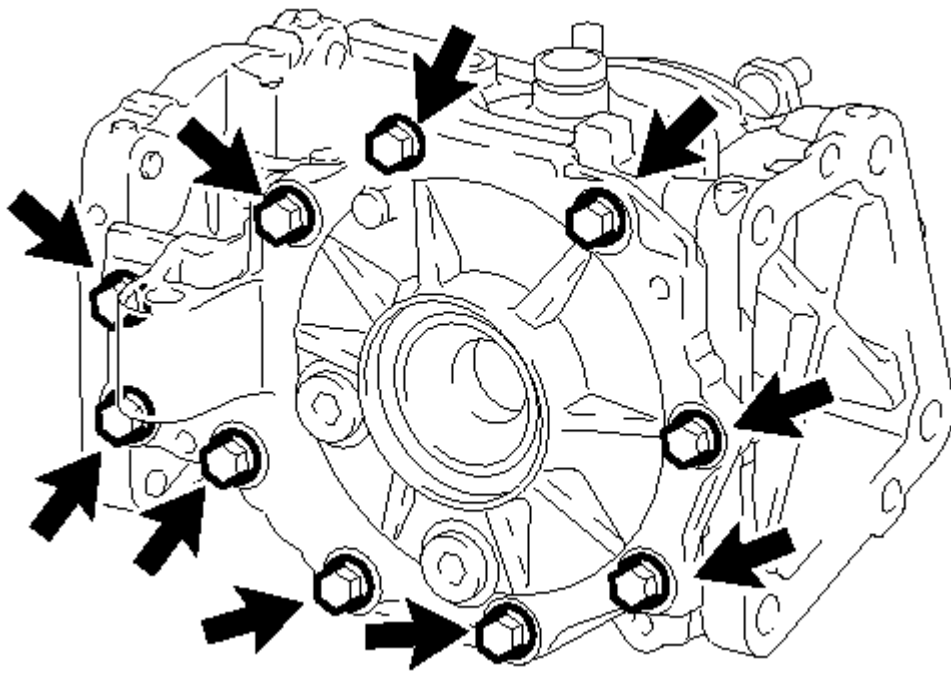
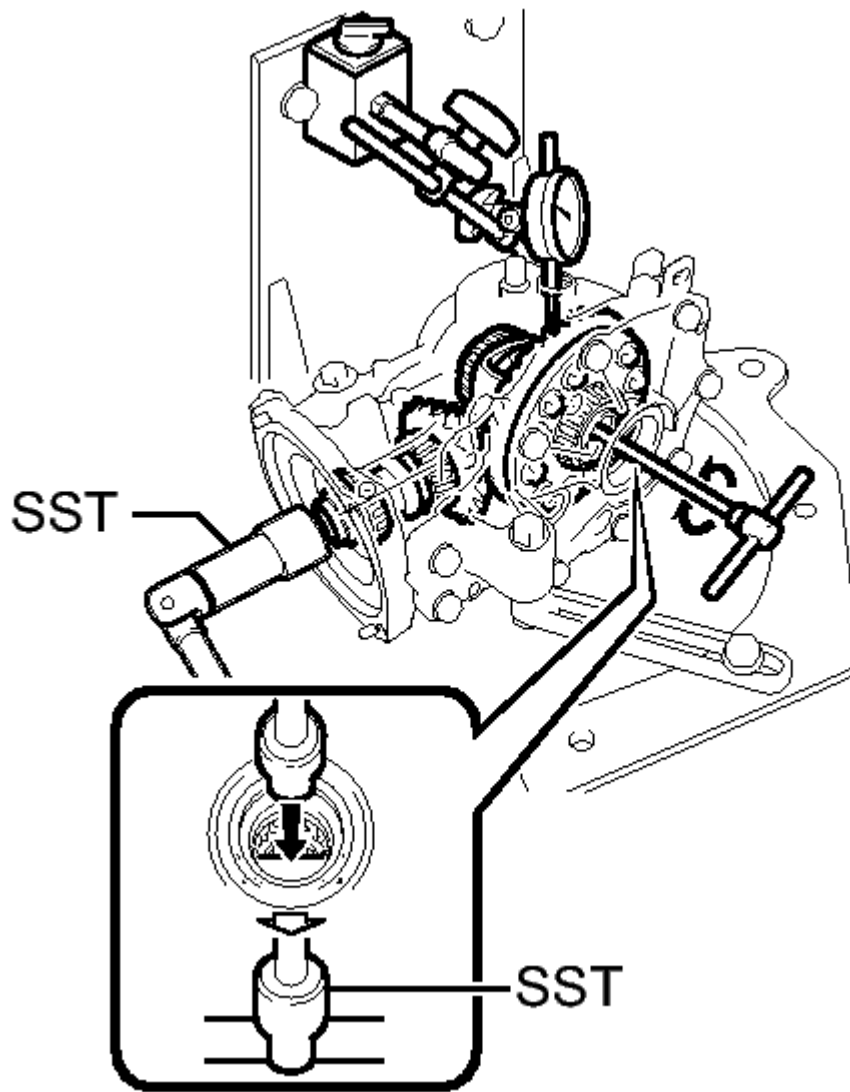


Fig. 118: Identifying Differential Side Bearing Retainer Bolts
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Torque: 42 N*m (430 kgf*cm, 31 ft.*lbf)

12. INSPECT DIFFERENTIAL RING GEAR BACKLASH

- a. Insert a dial indicator and magnetic base through the rear differential filler plug hole and set it perpendicular to a ring gear tooth surface's tip.
- b. Using SST, hold the drive pinion in place.
 - **SST: 09556-16011**
- c. Using SST, rotate the rear differential case forward and backward, and measure the backlash.
 - **SST: 09564-32011**



C

Fig. 119: Inspecting Differential Ring Gear Backlash Using A Dial Indicator And SST
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Backlash

0.13 to 0.25 mm (0.00512 to 0.00984 in.)

NOTE: Measure at 3 or more areas on the circumference of the ring gear.

- d. If the result is not within the specified range, select rear differential side gear shaft plate washers that are thicker or thinner as necessary. Adjust the thickness of the left and right rear differential side gear shaft plate washers in equal increments. Then install the rear differential case bearing (outer race).

HINT:

- When the backlash is smaller than the specified value, select a thick rear differential side gear shaft plate washer for the RH side and thin rear differential side gear shaft plate washer for the LH side.
- When the backlash is larger than the specified value, select a thin rear differential side gear shaft plate washer for the RH side and thick rear differential side gear shaft plate washer for the LH side.

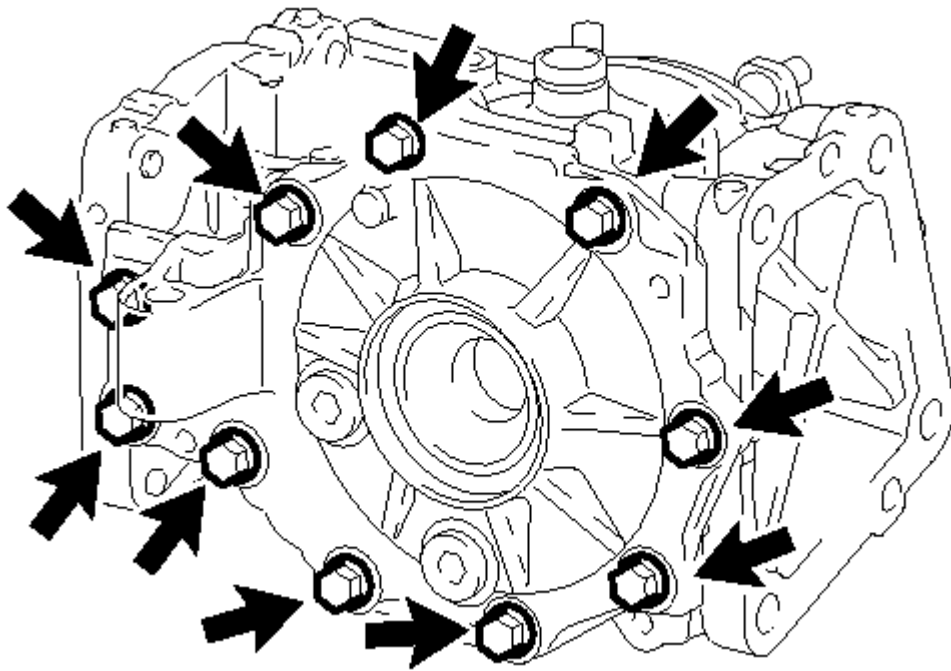
REAR DIFFERENTIAL SIDE GEAR SHAFT PLATE WASHER

Mark	Thickness mm (in.)	Parts No,	Mark	Thickness mm (in.)	Parts No,
75	1.74 to 1.76 (0.0685 to 0.0693)	90564- 30075	76	1.77 to 1.79 (0.0697 to 0.0705)	90564- 30076
77	1.80 to 1.82 (0.0709 to 0.0717)	90564- 30077	78	1.83 to 1.85 (0.0720 to 0.0728)	90564- 30078
79	1.86 to 1.88 (0.0732 to 0.0740)	90564- 30079	80	1.89 to 1.91 (0.0744 to 0.0752)	90564- 30080
81	1.92 to 1.94 (0.0756 to 0.0764)	90564- 30081	82	1.95 to 1.97 (0.0768 to 0.0776)	90564- 30082
83	1.98 to 2.00 (0.0780 to 0.0787)	90564- 30083	84	2.01 to 2.03 (0.0791 to 0.0799)	90564- 30084
85	2.04 to 2.06 (0.0803 to 0.0811)	90564- 30085	86	2.07 to 2.09 (0.0815 to 0.0823)	90564- 30086
88	2.10 to 2.12 (0.0827 to 0.0835)	90564- 30088	89	2.13 to 2.15 (0.0839 to 0.0847)	90564- 30089
90	2.16 to 2.18 (0.0850 to 0.0858)	90564- 30090	91	2.19 to 2.21 (0.0862 to 0.0870)	90564- 30091
92	2.22 to 2.24 (0.0874 to 0.0882)	90564- 30092	93	2.25 to 2.27 (0.0886 to 0.0894)	90564- 30093

94	2.28 to 2.30 (0.0898 to 0.0906)	90564- 30094	95	2.31 to 2.33 (0.0909 to 0.0917)	90564- 30095
96	2.34 to 2.36 (0.0921 to 0.0929)	90564- 30096	97	2.37 to 2.39 (0.0933 to 0.0941)	90564- 30097
98	2.40 to 2.42 (0.0945 to 0.0953)	90564- 30098	99	2.43 to 2.45 (0.0957 to 0.0965)	90564- 30099
00	2.46 to 2.48 (0.0969 to 0.0976)	90564- 30100	01	2.49 to 2.51 (0.0980 to 0.0988)	90564- 30101
02	2.52 to 2.54 (0.0992 to 0.1000)	90564- 30102	03	2.55 to 2.57 (0.1004 to 0.1012)	90564- 30103
04	2.58 to 2.60 (0.1016 to 0.1024)	90564- 30104	05	2.61 to 2.63 (0.1028 to 0.1035)	90564- 30105
06	2.64 to 2.66 (0.1039 to 0.1047)	90564- 30106	07	2.67 to 2.69 (0.1051 to 0.1059)	90564- 30107
08	2.70 to 2.72 (0.1063 to 0.1071)	90564- 30108	09	2.73 to 2.75 (0.1075 to 0.1083)	90564- 30109
10	2.76 to 2.78 (0.1087 to 0.1095)	90564- 30110	11	2.79 to 2.81 (0.1098 to 0.1106)	90564- 30111
12	2.82 to 2.84 (0.1110 to 0.1118)	90564- 30112	13	2.85 to 2.87 (0.1122 to 0.1130)	90564- 30113
14	2.88 to 2.90 (0.1134 to 0.1142)	90564- 30114	-	-	-

13. ADJUST TOOTH CONTACT BETWEEN RING GEAR AND DRIVE PINION

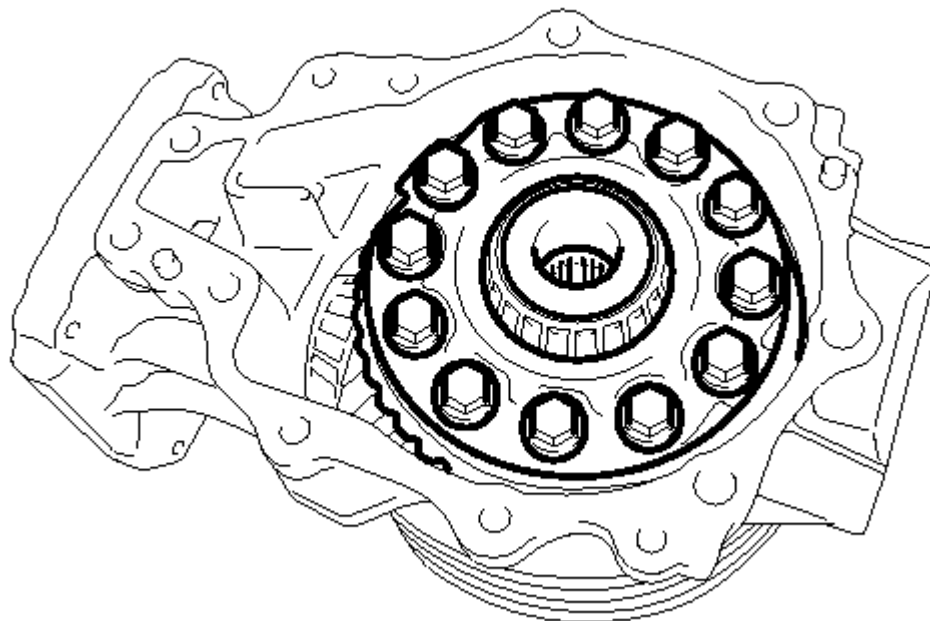
- a. Remove the 10 bolts and the differential side bearing retainer.



P

Fig. 120: Identifying Differential Side Bearing Retainer Bolts
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- b. Remove the differential case sub-assembly from the rear differential carrier.



T

Fig. 121: Identifying The Rear Differential Case Assembly
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

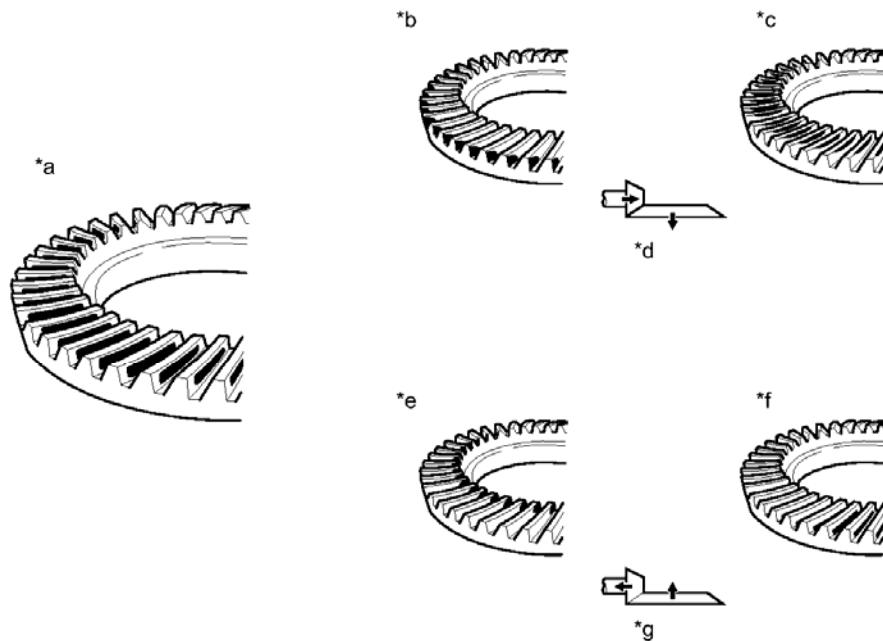
- c. Coat 3 or 4 teeth at 4 different positions on the differential ring gear with Prussian blue.
- d. Install the differential case sub-assembly to the rear differential carrier.
- e. Install the differential side bearing retainer with the 10 bolts.

Torque: 42 N*m (430 kgf*cm, 31 ft.*lbf)

- f. Turn the differential drive pinion several times.
- g. Remove the 10 bolts and the differential side bearing retainer.
- h. Remove the rear differential case assembly from the rear differential carrier.
- i. Inspect the tooth contact pattern.

HINT:

Check the tooth contact pattern at 2 or more positions on the circumference of the differential ring gear.



c

Fig. 122: Identifying Differential Ring Gear Tooth Contact Pattern
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

TEXT IN ILLUSTRATION

*a	Proper	*b	Heel
----	--------	----	------

	Contact		Contact
*c	Face Contact	*d	Select washers that will bring the drive pinion closer to the ring gear.
*e	Toe Contact	*f	Flank Contact
*g	Select washers that will bring the drive pinion away from the ring gear.	-	-

j. Perform the following procedure for face or flank contact:

1. If the result is not within the specified range, select rear differential side gear shaft plate washers that are thicker or thinner as necessary. Adjust the thickness of the left and right rear differential side gear shaft plate washers in equal increments. Then install the rear differential case bearing (outer race).
2. Repeat the differential ring gear and differential drive pinion tooth contact pattern inspection.

HINT:

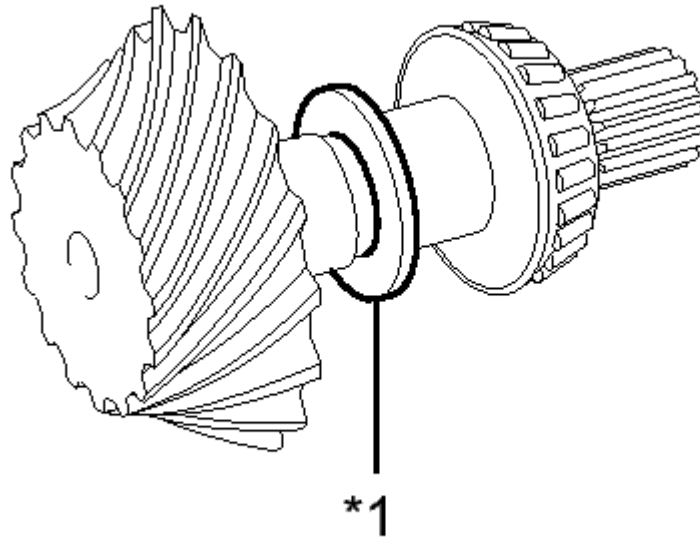
If the tooth contact pattern is not correct, reselect rear differential side gear shaft plate washers and reinspect the tooth contact pattern.

3. Repeat the differential ring gear and differential drive pinion backlash inspection.

HINT:

If the differential ring gear and differential drive pinion backlash are not as specified, replace the differential ring gear and differential drive pinion with new ones.

- k. Perform the following procedure for heel or toe contact:
1. Select a rear differential drive pinion plate washer again and install the rear drive pinion rear tapered roller bearing (inner race).



C

Fig. 123: Identifying Plate Washer
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

TEXT IN ILLUSTRATION

*1	Rear Differential Drive Pinion Plate Washer
----	--

REAR DIFFERENTIAL DRIVE PINION PLATE WASHER

Mark	Thickness mm (in.)	Parts No,	Mark	Thickness mm (in.)	Parts No,
41	1.695 to 1.705 (0.0667 to 0.0671)	90564- 35041	42	1.705 to 1.715 (0.0671 to 0.0675)	90564- 35042
43	1.715 to 1.725 (0.0675 to 0.0679)	90564- 35043	44	1.725 to 1.735 (0.0679 to 0.0683)	90564- 35044

45	1.735 to 1.745 (0.0683 to 0.0687)	90564- 35045	46	1.745 to 1.755 (0.0687 to 0.0691)	90564- 35046
47	1.755 to 1.765 (0.0691 to 0.0695)	90564- 35047	48	1.765 to 1.775 (0.0695 to 0.0699)	90564- 35048
49	1.775 to 1.785 (0.0699 to 0.0703)	90564- 35049	50	1.785 to 1.795 (0.0703 to 0.0707)	90564- 35050
51	1.795 to 1.805 (0.0707 to 0.0711)	90564- 35051	52	1.805 to 1.815 (0.0711 to 0.0715)	90564- 35052
53	1.815 to 1.825 (0.0715 to 0.0719)	90564- 35053	54	1.825 to 1.835 (0.0719 to 0.0722)	90564- 35054
55	1.835 to 1.845 (0.0722 to 0.0726)	90564- 35055	56	1.845 to 1.855 (0.0726 to 0.0730)	90564- 35056
57	1.855 to 1.865 (0.0730 to 0.0734)	90564- 35057	58	1.865 to 1.875 (0.0734 to 0.0738)	90564- 35058
59	1.875 to 1.885 (0.0738 to 0.0742)	90564- 35059	60	1.885 to 1.895 (0.0742 to 0.0746)	90564- 35060
61	1.895 to 1.905 (0.0746 to 0.0750)	90564- 35061	62	1.905 to 1.915 (0.0750 to 0.0754)	90564- 35062
63	1.915 to 1.925 (0.0754 to 0.0758)	90564- 35063	64	1.925 to 1.935 (0.0758 to 0.0762)	90564- 35064
65	1.935 to 1.945 (0.0762 to 0.0766)	90564- 35065	70	1.945 to 1.955 (0.0766 to 0.0770)	90564- 35070
71	1.955 to 1.965	90564-	72	1.965 to 1.975	90564-

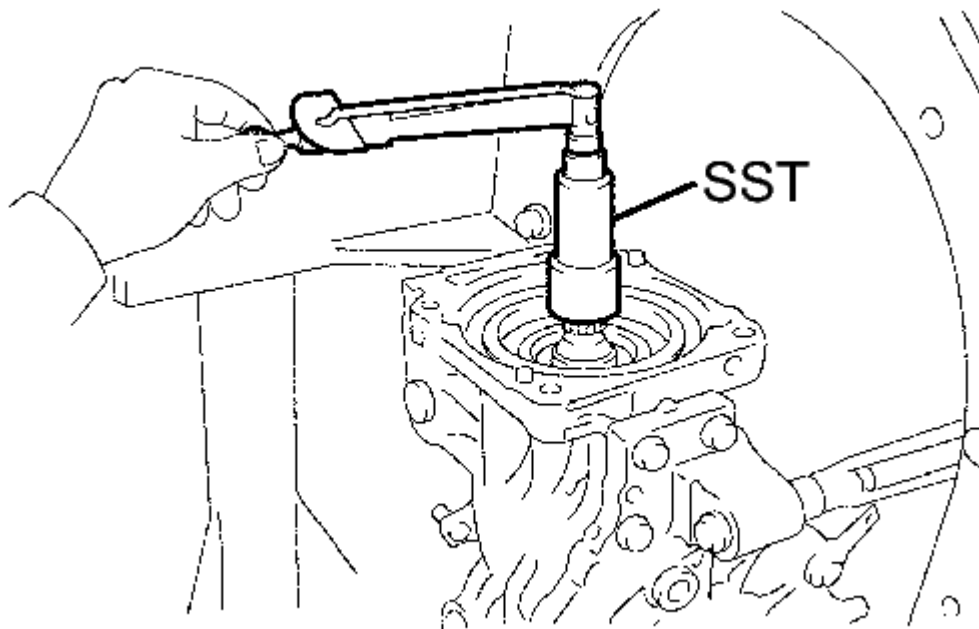
	(0.0770 to 0.0774)	35071		(0.0774 to 0.0778)	35072
73	1.975 to 1.985 (0.0778 to 0.0781)	90564- 35073	74	1.985 to 1.995 (0.0781 to 0.0785)	90564- 35074
75	1.995 to 2.005 (0.0785 to 0.0789)	90564- 35075	76	2.005 to 2.015 (0.0789 to 0.0793)	90564- 35076
77	2.015 to 2.025 (0.0793 to 0.0797)	90564- 35077	78	2.025 to 2.035 (0.0797 to 0.0801)	90564- 35078
79	2.035 to 2.045 (0.0801 to 0.0805)	90564- 35079	80	2.045 to 2.055 (0.0805 to 0.0809)	90564- 35080
81	2.055 to 2.065 (0.0809 to 0.0813)	90564- 35081	82	2.065 to 2.075 (0.0813 to 0.0817)	90564- 35082
83	2.075 to 2.085 (0.0817 to 0.0821)	90564- 35083	84	2.085 to 2.095 (0.0821 to 0.0825)	90564- 35084
85	2.095 to 2.105 (0.0825 to 0.0829)	90564- 35085	86	2.105 to 2.115 (0.0829 to 0.0833)	90564- 35086
87	2.115 to 2.125 (0.0833 to 0.0837)	90564- 35087	88	2.125 to 2.135 (0.0837 to 0.0841)	90564- 35088
89	2.135 to 2.145 (0.0841 to 0.0844)	90564- 35089	90	2.145 to 2.155 (0.0844 to 0.0848)	90564- 35090
91	2.155 to 2.165 (0.0848 to 0.0852)	90564- 35091	92	2.165 to 2.175 (0.0852 to 0.0856)	90564- 35092
93	2.175 to 2.185 (0.0856 to 0.0860)	90564- 35093	94	2.185 to 2.195 (0.0860 to 0.0864)	90564- 35094

95	2.195 to 2.205 (0.0864 to 0.0868)	90564- 35095	96	2.205 to 2.215 (0.0868 to 0.0872)	90564- 35164
97	2.215 to 2.225 (0.0872 to 0.0876)	90564- 35165	98	2.225 to 2.235 (0.0876 to 0.0880)	90564- 35166
99	2.235 to 2.245 (0.0880 to 0.0884)	90564- 35167	00	2.245 to 2.255 (0.0884 to 0.0888)	90564- 35168

1. Readjust the differential drive pinion preload, differential ring gear and differential drive pinion backlash and reinspect tooth contact pattern.

14. MEASURE TOTAL PRELOAD

- a. Using SST and a torque wrench, measure the total preload (starting torque) with the teeth of the differential drive pinion and differential ring gear in contact.



P

Fig. 124: Measuring Drive Pinion Total Preload

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

- SST: 09556-16011

Standard total preload (New bearing)

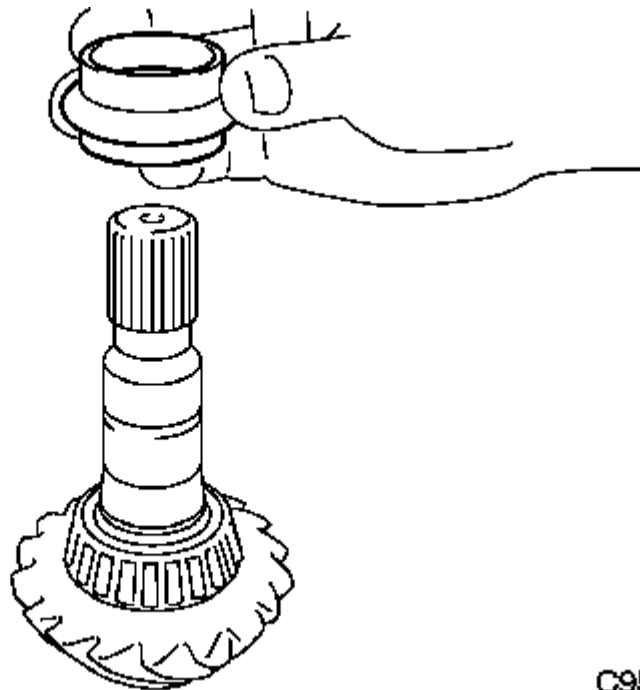
Standard drive pinion preload plus 3.2 to 5.8 N*m (32 to 59 kgf*cm, 28 to 51 in.*lbf)

Standard total preload (Reused bearing)

Standard drive pinion preload plus 2.8 to 5.8 N*m (29 to 59 kgf*cm, 25 to 51 in.*lbf)

NOTE: For a more accurate measurement, rotate the rear differential case bearing forward and backward before measuring.

- b. If the results are not within the specification, perform the procedure below:
 - 1. Select a thicker or thinner rear differential side gear shaft plate washer for the RH side, and then install the rear differential case bearing outer race (RH side only).
 - 2. Repeat the total preload measurement.
 - 3. Repeat the differential ring gear backlash inspection.
 - 4. Repeat the differential ring gear and drive pinion tooth contact pattern inspection.
- 15. **REMOVE DIFFERENTIAL SIDE BEARING RETAINER** See step 20
- 16. **REMOVE REAR DIFFERENTIAL CASE SUB-ASSEMBLY**
 - a. Remove the rear differential case sub-assembly from the rear differential carrier.
- 17. **REMOVE DIFFERENTIAL DRIVE PINION**
 - a. Remove the differential drive pinion from the rear differential carrier.
- 18. **INSTALL REAR DIFFERENTIAL DRIVE PINION BEARING SPACER**
 - a. Install a new rear differential drive pinion bearing spacer to the differential drive pinion.



T

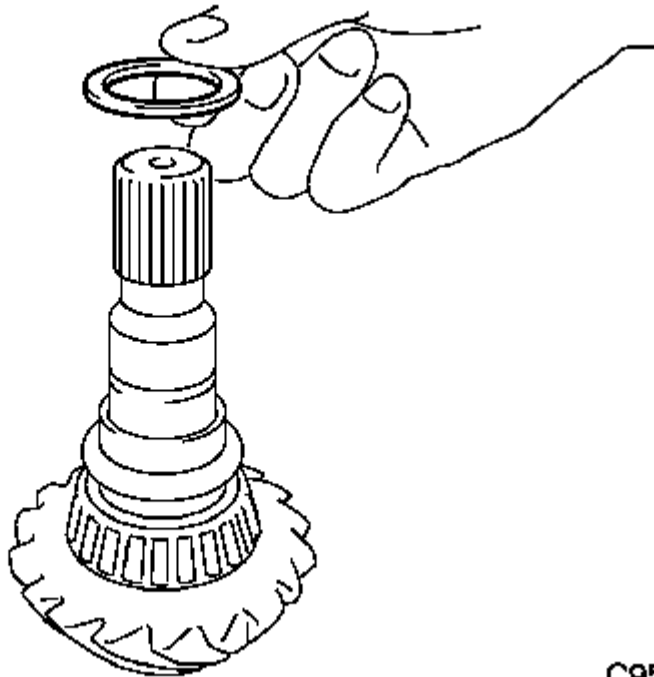
C95832

Fig. 125: Removing/Installing Rear Differential Drive Pinion Bearing Spacer
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

NOTE: Face the smaller inside diameter towards the front of the vehicle.

19. INSTALL REAR DIFFERENTIAL DRIVE PINION OIL SLINGER

- a. Install the rear differential drive pinion oil slinger to the differential drive pinion.



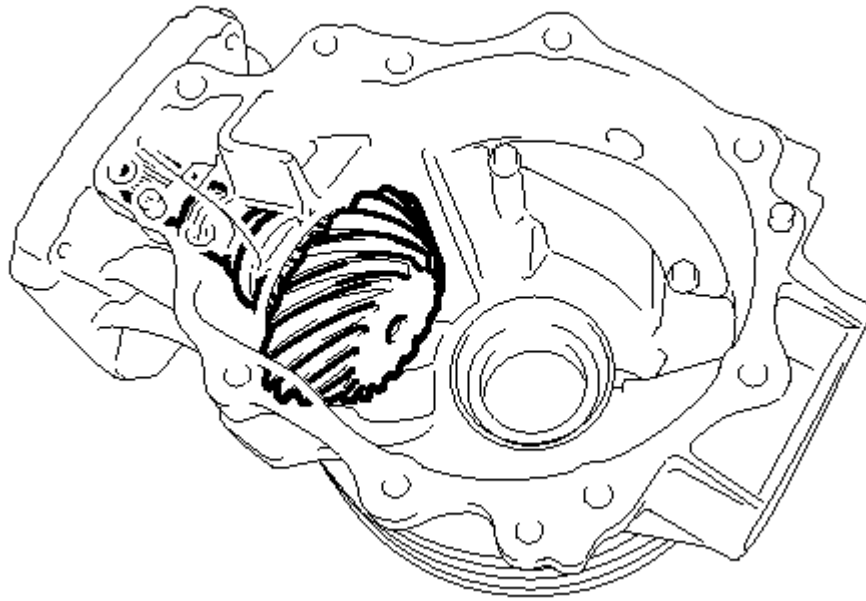
T

C95831

Fig. 126: Removing/Installing Rear Differential Drive Pinion Oil Slinger
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

20. INSTALL DIFFERENTIAL DRIVE PINION

- a. Install the differential drive pinion and rear drive pinion front tapered roller bearing (inner race) to the differential carrier.

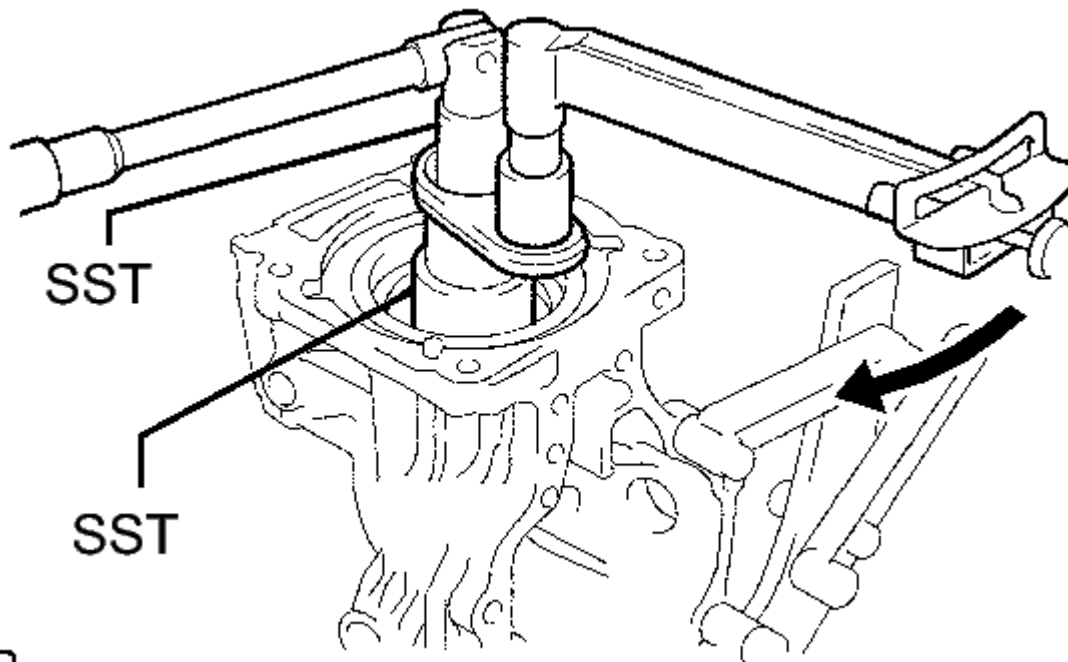


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Fig. 127: Identifying The Differential Drive Pinion
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

21. INSTALL REAR DRIVE PINION NUT

- a. Apply hypoid gear oil LSD to the threads and seating surface of a new rear drive pinion nut.
- b. Install the new rear drive pinion nut to the differential drive pinion. Using SST, tighten the new rear drive pinion nut while confirming the preload.



P

Fig. 128: Tightening Rear Drive Pinion Nut
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- SST: 09564-16020

without SST

Torque: 321 N*m (3273 kgf*cm, 237 ft.*lbf)

or less

with SST

Torque: 292 N*m (2976 kgf*cm, 215 ft.*lbf)

or less

HINT:

Use a torque wrench with a fulcrum length of 500 mm (1.64 ft.).

22. ADJUST DIFFERENTIAL DRIVE PINION PRELOAD

- Using SST and a torque wrench, inspect the differential drive pinion preload (starting torque).

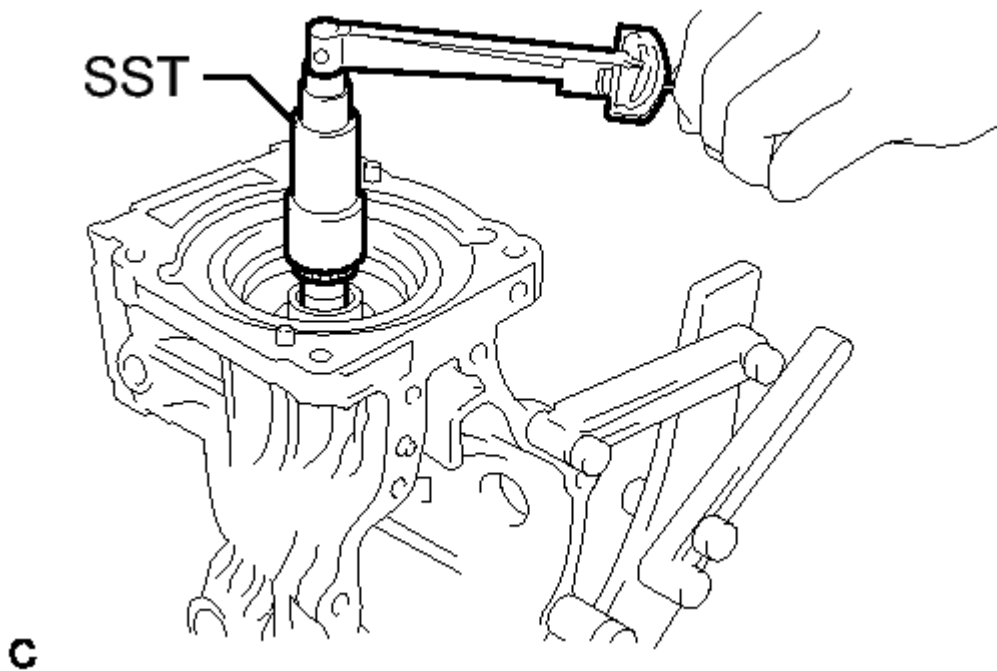


Fig. 129: Measuring Differential Drive Pinion Preload
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- **SST: 09556-16011**

Standard drive pinion preload (New bearing)

1.9 to 3.0 N*m (19 to 31 kgf*cm, 17 to 26 in.*lbf)

Standard drive pinion preload (Reused bearing)

1.6 to 2.5 N*m (16 to 25 kgf*cm, 14 to 22 in.*lbf)

NOTE: For a more accurate measurement, rotate the bearing forward and backward before adjustment.

- If the preload is insufficient, use SST to tighten the rear drive pinion nut 5 to 10° at a time. Measure the preload and repeat the adjustment as necessary until the preload matches the specified torque.

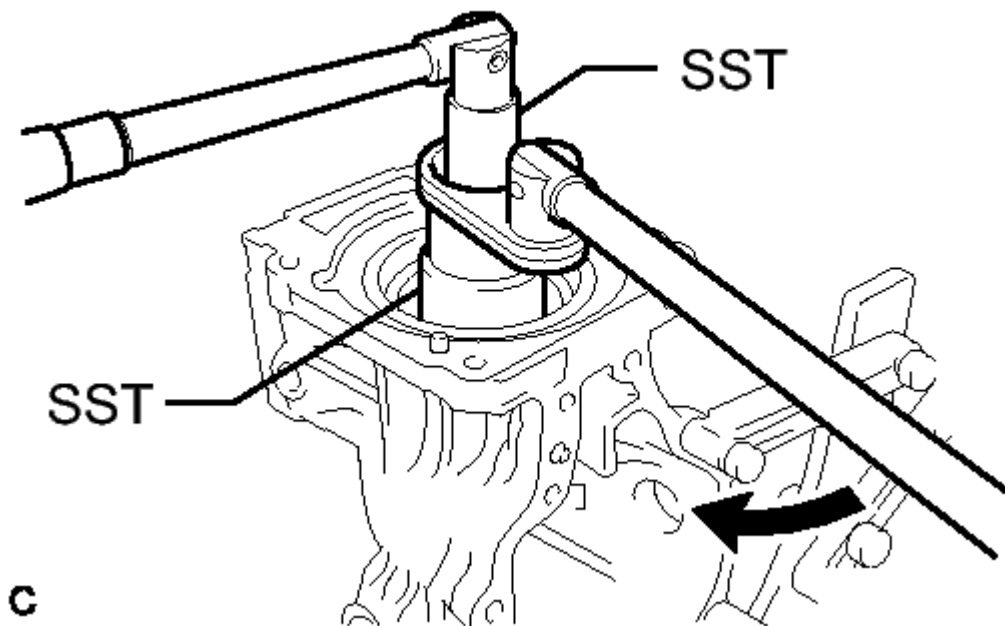


Fig. 130: Measuring Total Preload

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

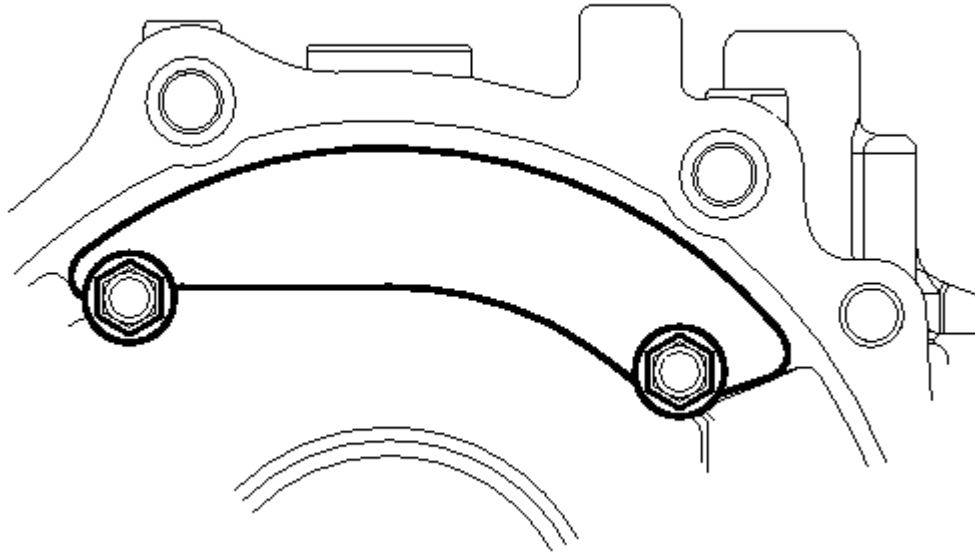
NOTE:

- If the tightening torque of the rear drive pinion nut exceeds 321 N*m (3273 kgf*cm, 237 ft.*lbf) but the preload is still insufficient, loosen the rear drive pinion nut. Then check if the rear drive pinion nut and differential drive pinion screw threads are damaged.
- If there is no defect, replace the rear differential drive pinion bearing spacer, apply hypoid gear oil LSD to its threads and

repeat the procedure above.

23. REMOVE REAR DIFFERENTIAL BREATHER PLUG OIL DEFLECTOR

- a. Install the 2 bolts and rear differential breather plug oil deflector to the differential side bearing retainer.



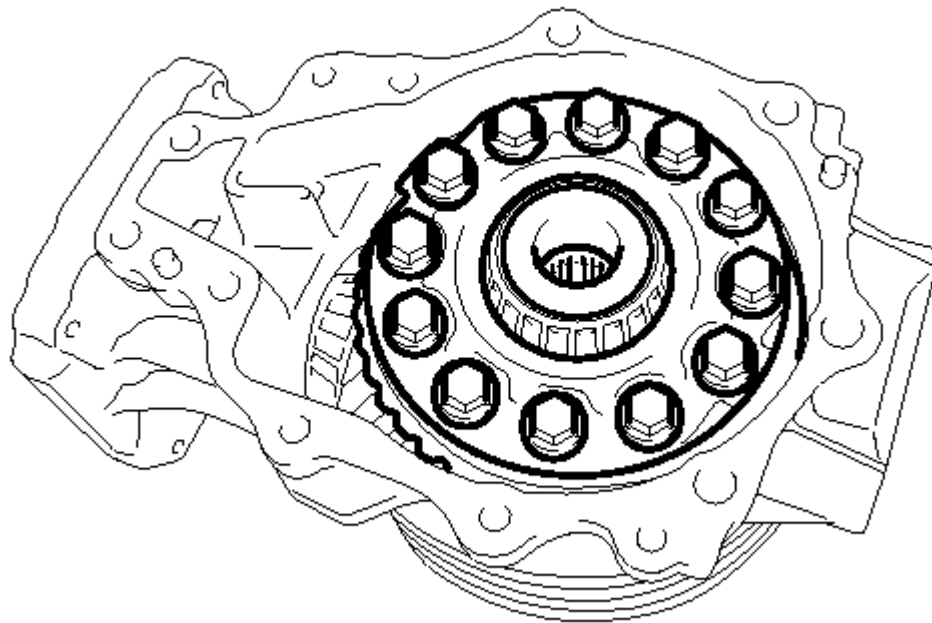
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Fig. 131: Identifying Bolts And Rear Differential Breather Plug Oil Deflector
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Torque: 6.5 N*m (66 kgf*cm, 58 in.*lbf)

24. INSTALL REAR DIFFERENTIAL CASE SUB-ASSEMBLY

- a. Install the rear differential case sub-assembly to the rear differential carrier.

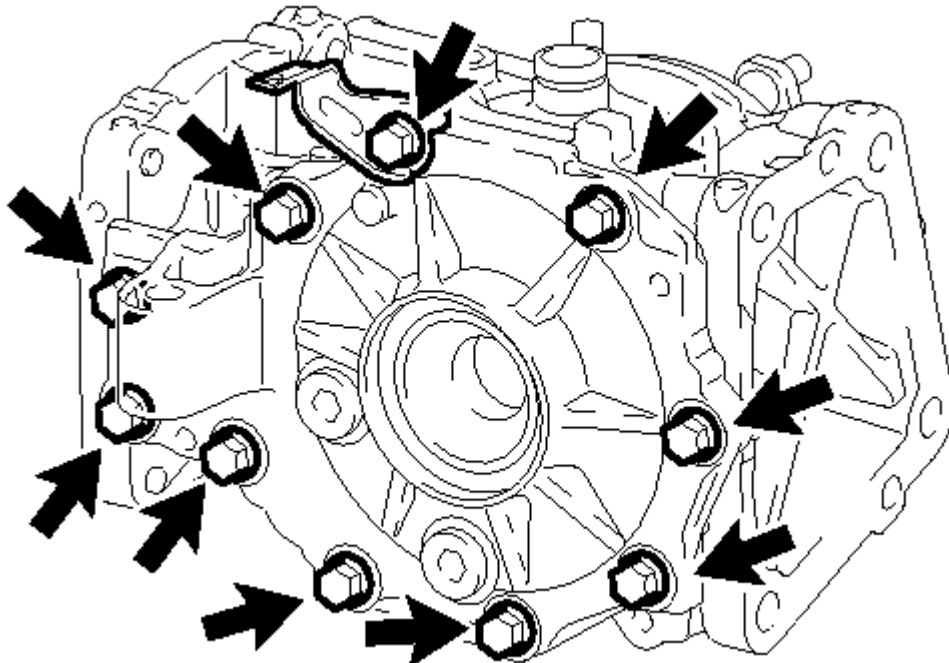


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Fig. 132: Identifying The Rear Differential Case Assembly
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

25. INSTALL DIFFERENTIAL SIDE BEARING RETAINER

- a. Install the differential side bearing retainer and wire harness clamp bracket to the rear differential carrier with the 10 bolts.



P

Fig. 133: Identifying Wire Harness Bracket & Rear Differential Carrier Assembly Bolts
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Torque: 42 N*m (430 kgf*cm, 31 ft.*lbf)

26. INSPECT DIFFERENTIAL RING GEAR BACKLASH

- a. Insert a dial indicator and magnetic base through the rear differential filler plug hole, and set it perpendicular to a ring gear tooth tip.
- b. Using SST, hold the differential drive pinion in place.
 - **SST: 09556-16011**
- c. Using SST, rotate the rear differential case sub-assembly forward and backward, and measure the backlash.
 - **SST: 09564-32011**

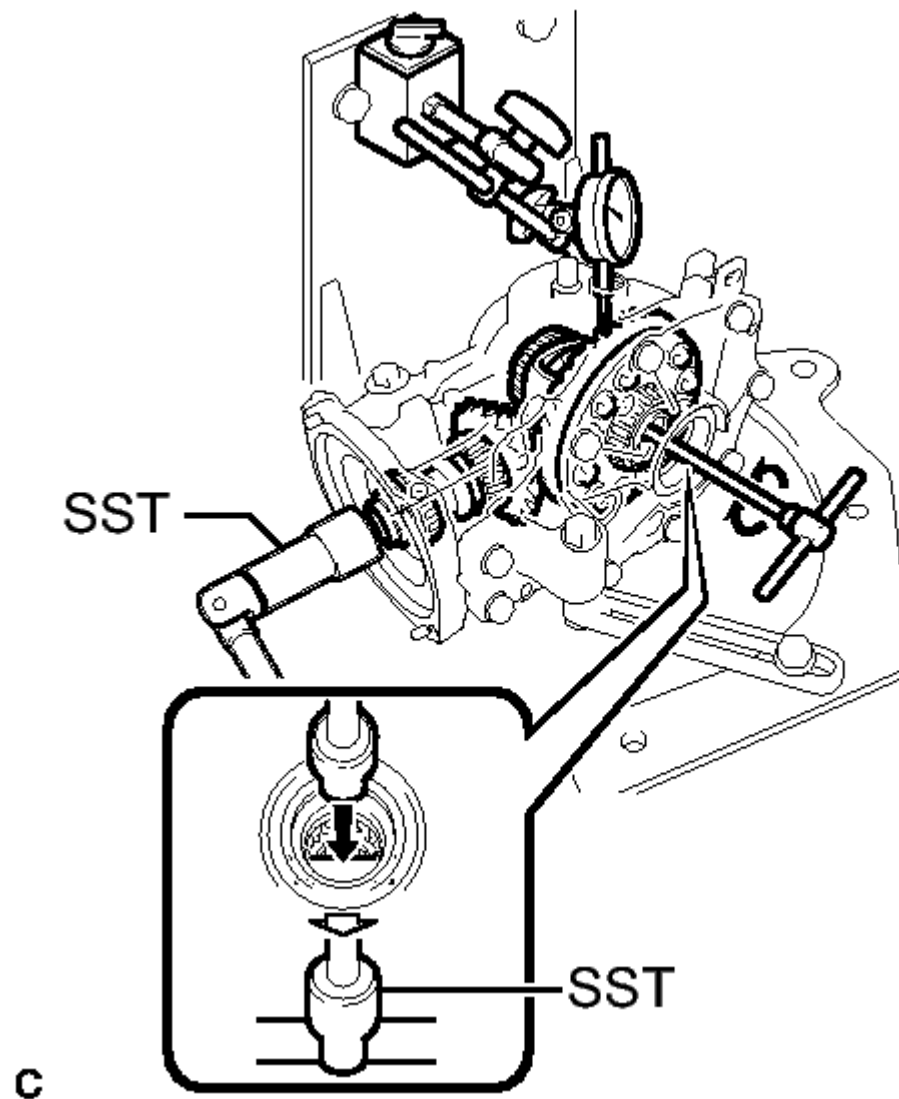


Fig. 134: Inspecting Differential Ring Gear Backlash Using A Dial Indicator And SST

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

Backlash

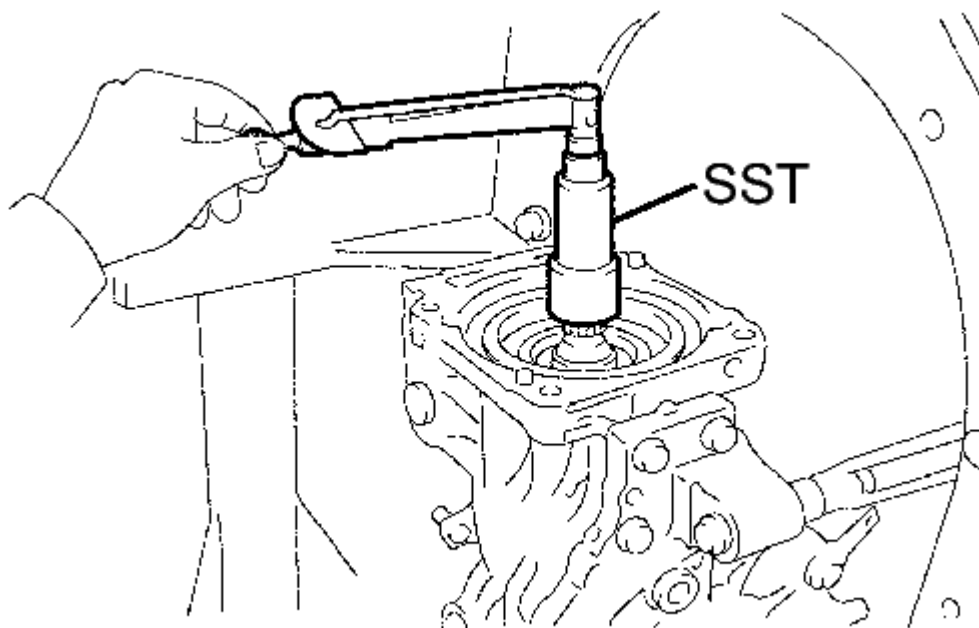
0.13 to 0.25 mm (0.00512 to 0.00984 in.)

If the backlash is not within the specification, adjust the side bearing preload or repair as necessary.

NOTE: Measure at 3 or more areas on the circumference of the ring gear.

27. MEASURE TOTAL PRELOAD

- a. Using SST and a torque wrench, measure the total preload (starting torque) with the teeth of the differential drive pinion and differential ring gear in contact.



P

Fig. 135: Measuring Drive Pinion Total Preload

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

- SST: 09556-16011

Standard total preload (New bearing)

Standard drive pinion preload plus 3.2 to 5.8 N*m (32 to 59 kgf*cm, 28 to 51 in.*lbf)

Standard total preload (Reused bearing)

Standard drive pinion preload plus 2.8 to 5.8 N*m (29 to 59 kgf*cm, 25 to 51 in.*lbf)

NOTE: For a more accurate measurement, rotate the rear differential case bearing forward and backward before measuring.

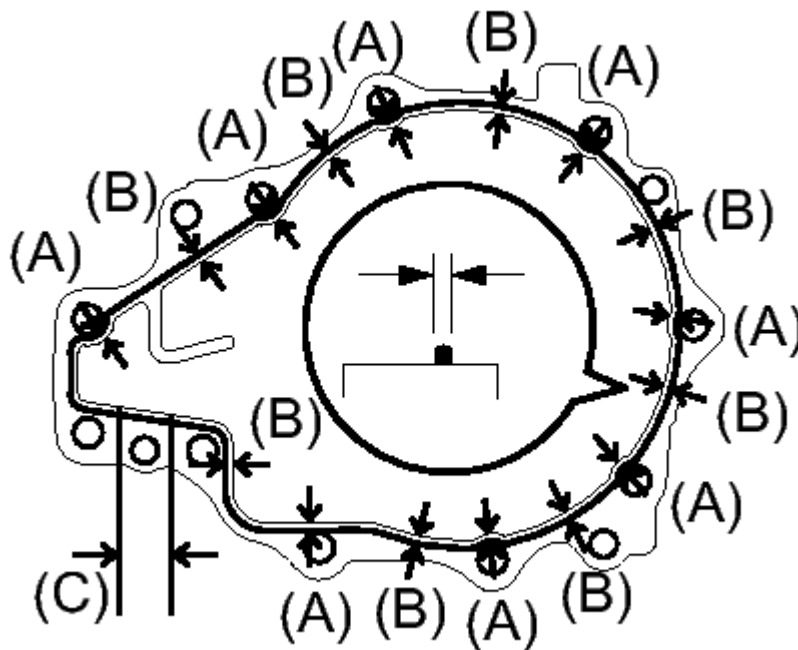
- b. If the results are not within the specification, perform the procedure below:
 - 1. Select a thicker or thinner rear differential side gear shaft plate washer for the RH side, and then install the rear differential case bearing outer race (RH side only).
 - 2. Repeat the total preload measurement.
 - 3. Repeat the differential ring gear backlash inspection.
 - 4. Repeat the differential ring gear and drive pinion tooth contact pattern inspection.

28. INSTALL DIFFERENTIAL SIDE BEARING RETAINER

- a. Remove the 10 bolts and differential side bearing retainer.
- b. Using a non-residue solvent, remove grease and oil from the contact surfaces of the rear differential carrier and differential side bearing retainer.

NOTE: Do not damage the installation surface.

- c. Apply seal packing to the areas indicated in the illustration of the differential side bearing retainer.



C

Fig. 136: Apply Seal Packing

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

Seal packing

Toyota Genuine Seal Packing 1281, Three Bond 1281 or equivalent

NOTE:

- Start applying seal packing within range (C).
- Make sure that the clearance from the center of the bead is within 1 mm (0.0394 in.).
- Apply seal packing in a continuous bead 2 to 3 mm (0.0787 to 0.118 in.) in diameter.
- If there is an area where seal packing is not applied in a continuous bead, be sure to apply seal packing by overlapping the ends of the bead at least 10 mm (0.394 in.).
- Stop applying seal packing after allowing it to overlap with the beginning of the bead by at least 10 mm (0.394 in.) within range (C) in the illustration.
- Install the differential side bearing retainer within 10 minutes after applying seal packing. If the differential side bearing retainer is not installed within 10 minutes after applying seal packing, completely remove and then reapply seal packing.

HINT:

The center of the bead

- (A): 2.0 mm (0.0787 in.)
 - (B): 3.0 mm (0.118 in.)
- d. Install the differential side bearing retainer to the rear differential carrier with the 10 bolts.

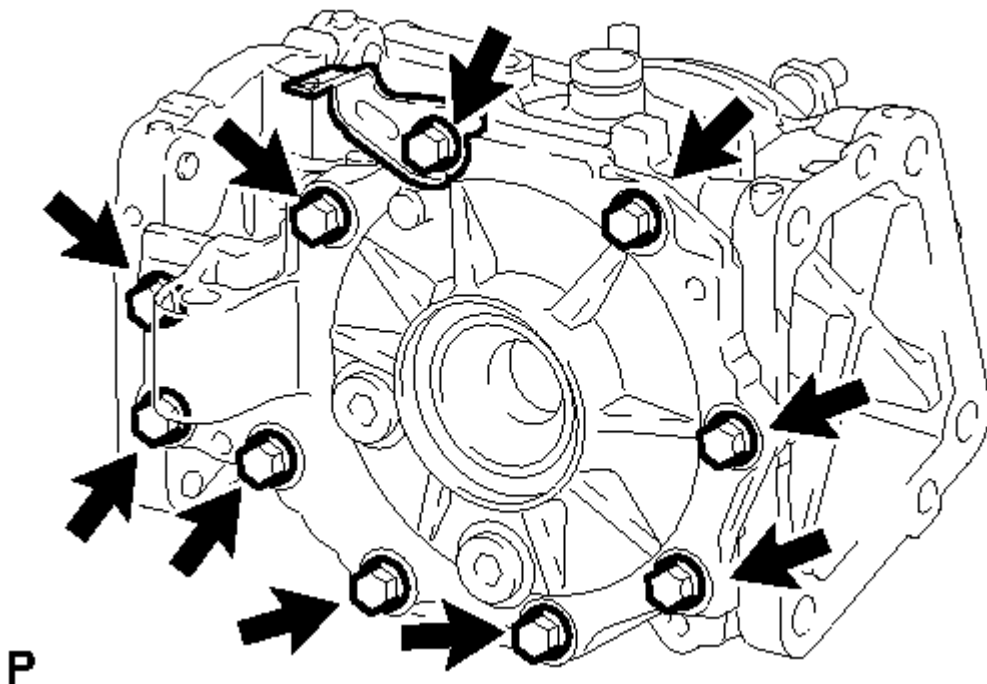


Fig. 137: Identifying Wire Harness Bracket & Rear Differential Carrier Assembly Bolts

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

Torque: 42 N*m (430 kgf*cm, 31 ft.*lbf)

NOTE: After installing the differential side bearing retainer, do not immediately add oil or drive the vehicle for at least 1 hour. In addition, avoid sudden acceleration and deceleration for a minimum of 12 hours.

29. INSPECT TOTAL PRELOAD

- a. Using SST and a torque wrench, inspect the total preload (starting torque) with the teeth of the differential drive pinion and differential ring gear in contact.

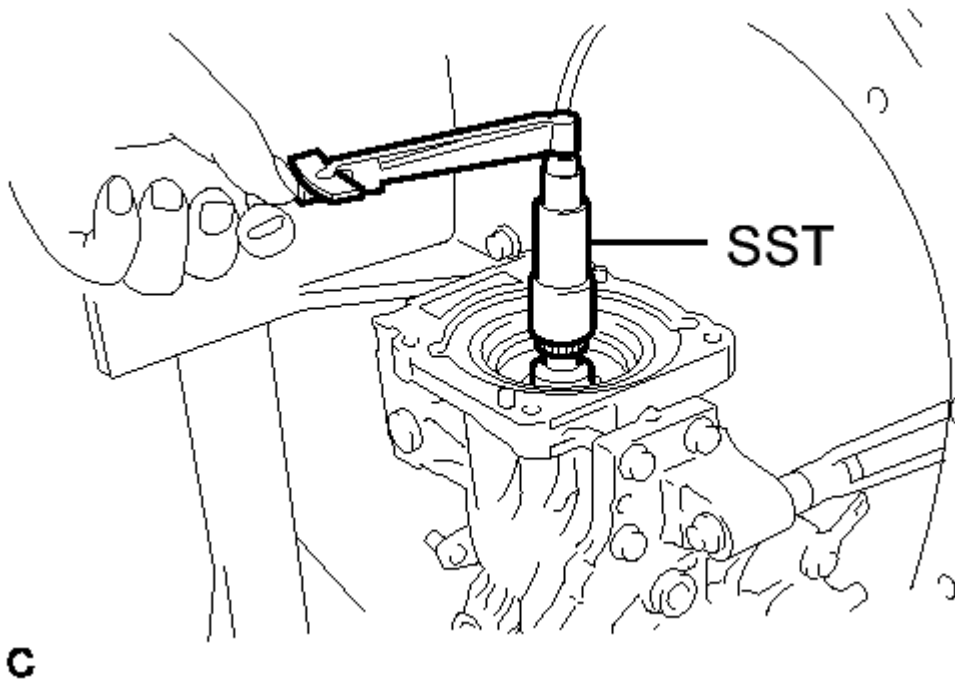


Fig. 138: Measuring Differential Drive Pinion Preload
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- SST: 09556-16011

Standard total preload (New bearing)

Standard drive pinion preload plus 3.2 to 5.8 N*m (32 to 59 kgf*cm, 28 to 51 in.*lbf)

Standard total preload (Reused bearing)

Standard drive pinion preload plus 2.8 to 5.8 N*m (29 to 59 kgf*cm, 25 to 51 in.*lbf)

NOTE: For a more accurate measurement, rotate the rear differential case bearing forward and backward before measuring.

30. INSPECT DIFFERENTIAL RING GEAR BACKLASH

- a. Insert a dial indicator and magnetic base through the rear differential filler plug hole, and set it perpendicular to a ring gear tooth tip.
- b. Using SST, hold the drive pinion in place.
 - **SST: 09556-16011**
- c. Using SST, rotate the rear differential case sub-assembly forward and backward, and measure the backlash.
 - **SST: 09564-32011**

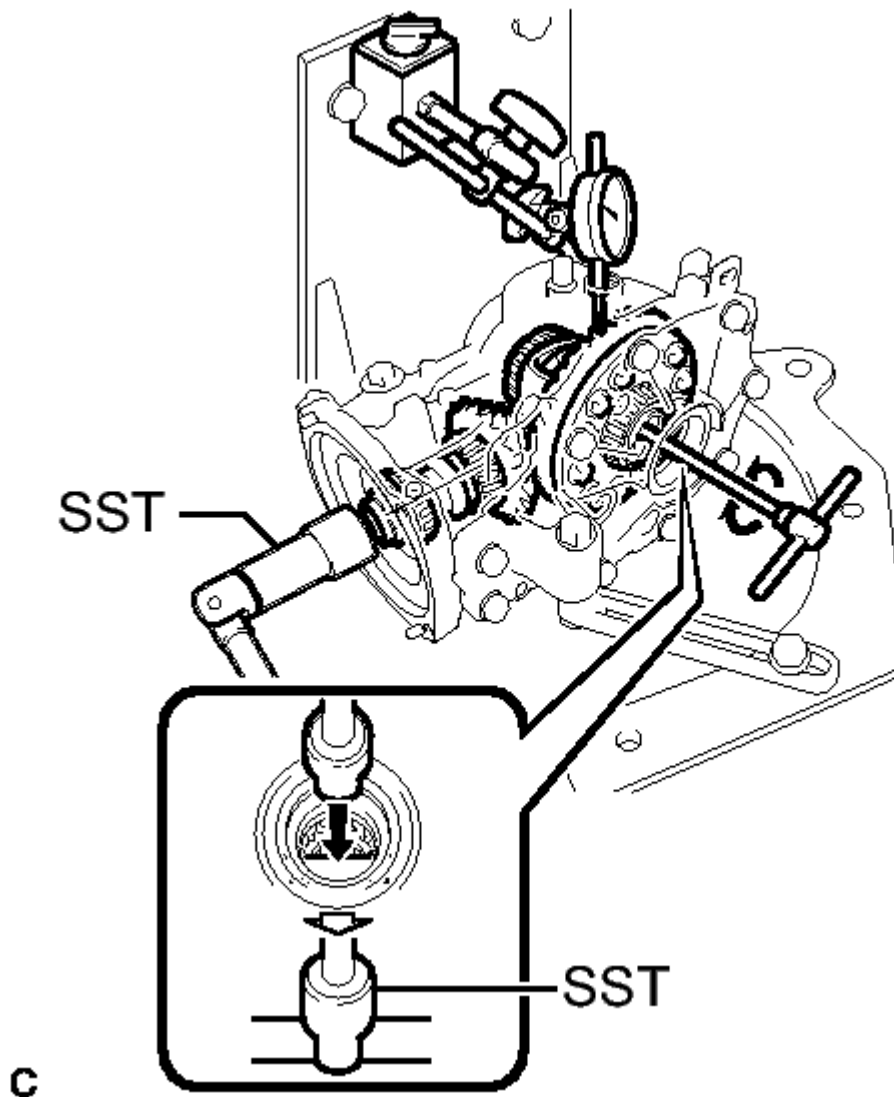


Fig. 139: Inspecting Differential Ring Gear Backlash Using A Dial Indicator And SST
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

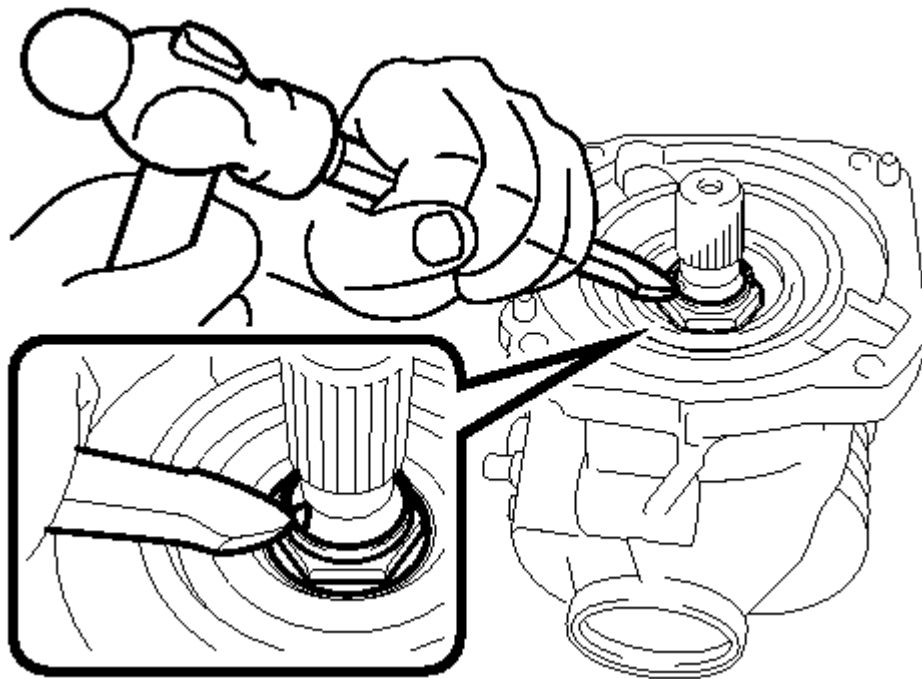
Backlash

0.13 to 0.25 mm (0.00512 to 0.00984 in.)

NOTE: Measure at 3 or more areas on the circumference of the ring gear.

31. INSTALL REAR DRIVE PINION NUT

- a. Using a chisel and a hammer, stake the rear drive pinion nut.



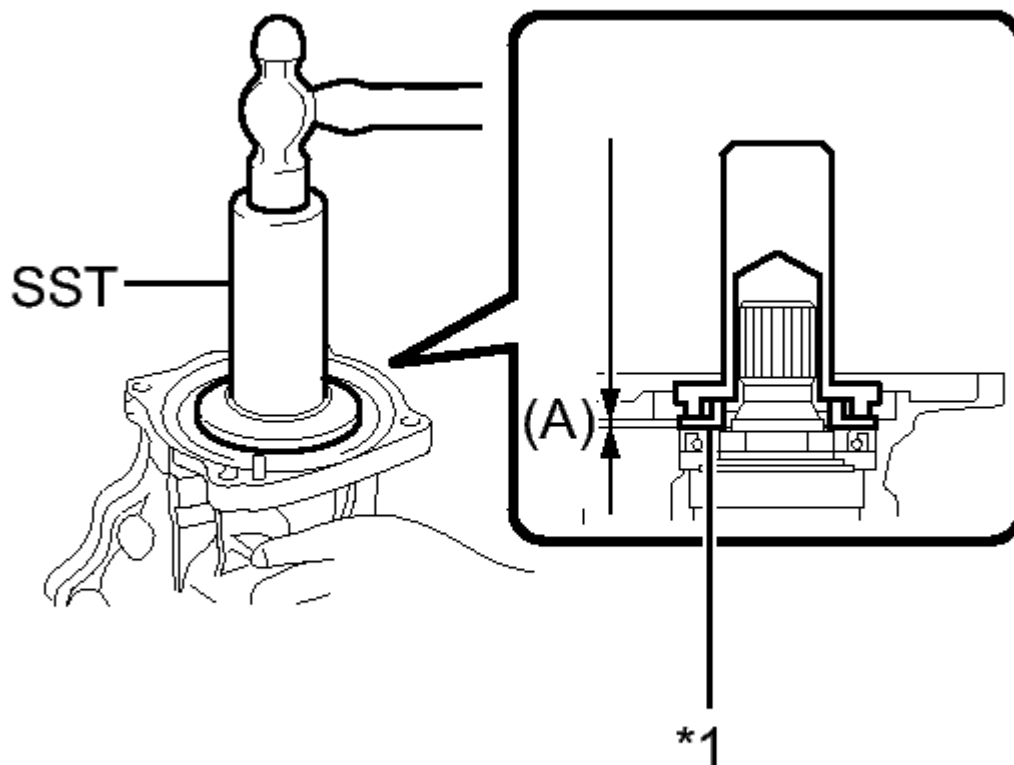
C

Fig. 140: Stake The Rear Drive Pinion Nut

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

32. INSTALL OIL DIAPHRAGM SEAL

- a. Apply a light coat of MP grease to the lip of the new oil diaphragm seal.
- b. Using SST and a hammer, install a new oil diaphragm seal into the rear differential carrier assembly.



C

Fig. 141: Installing Diaphragm Oil Seal
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

TEXT IN ILLUSTRATION

	Oil
*1	Diaphragm Seal

- SST: 09506-35010
- SST: 09554-22010

Oil diaphragm seal driven in depth

0.7 to 1.3 mm (0.0276 to 0.0512 in.)

NOTE:

- Install the oil diaphragm seal uniformly.
- Press fit the oil diaphragm seal straight.

33. INSTALL REAR DIFFERENTIAL SIDE GEAR SHAFT OIL SEAL

- Apply a light coat of MP grease to the lip of the 2 new rear differential side gear shaft oil seals.
- Using SST and a hammer, install 2 new rear differential side gear shaft oil seals into the rear differential carrier and differential side bearing retainer.

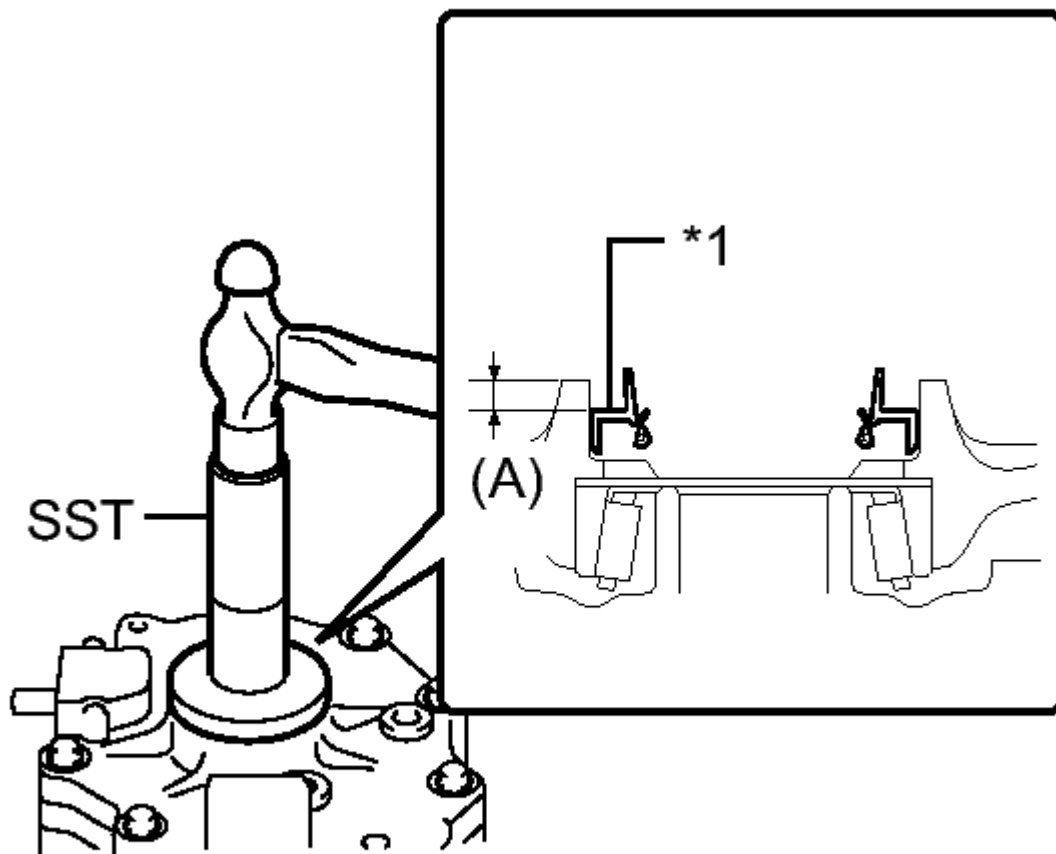


Fig. 142: Installing Rear Differential Side Gear Shaft Oil Seals
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

TEXT IN ILLUSTRATION

	Rear
*1	Differential Side Gear

Shaft Oil Seal

- SST: 09554-22010

Oil seal driven in depth (A)

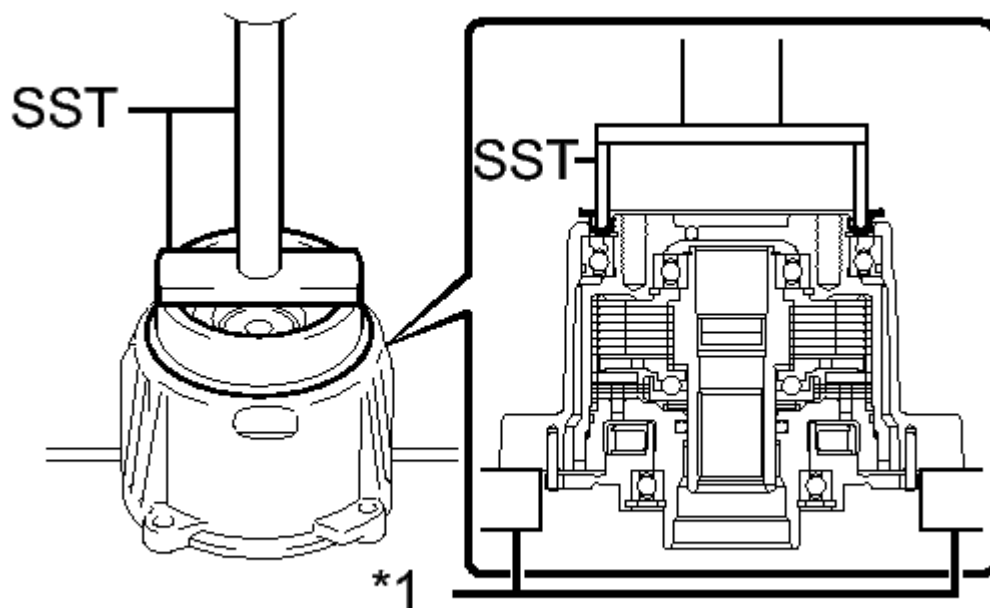
8.2 to 8.8 mm (0.323 to 0.346 in.)

NOTE:

- Install the rear differential side gear shaft oil seal uniformly.
- Press fit the rear differential side gear shaft oil seal straight.

34. INSTALL REAR DIFFERENTIAL DUST DEFLECTOR

- Using SST and a press, install the rear differential dust deflector.



P

Fig. 143: Installing Rear Differential Dust Deflector
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

TEXT IN ILLUSTRATION

*1 Block

- SST: 09518-36020
- SST: 09950-70010
- 09951-07150

NOTE:

- Be sure to press in the rear differential dust deflector until it contacts the bearing end surface.
- Do not damage the end surface of the electro magnetic control coupling sub-assembly.

35. **INSTALL TRANSMISSION COUPLING SPACER** See step 9

36. **INSTALL TRANSMISSION COUPLING CONICAL SPRING WASHER** See step 10

37. **INSTALL ELECTRO MAGNETIC CONTROL COUPLING SUB-ASSEMBLY**

- a. Using a scraper and wire brush, remove the seal packing from the rear differential carrier assembly and electro magnetic control coupling sub-assembly.

NOTE:

- Do not damage the installation surface.
- Be sure to completely remove all seal packing from the rear differential carrier assembly and electro magnetic control coupling sub-assembly.
- Do not allow the removed seal packing to enter the rear differential carrier assembly and electro magnetic control coupling sub-assembly.

- b. Using a non-residue solvent, remove grease and oil from the contact surfaces of the rear differential carrier assembly and the electro magnetic control coupling sub-assembly.

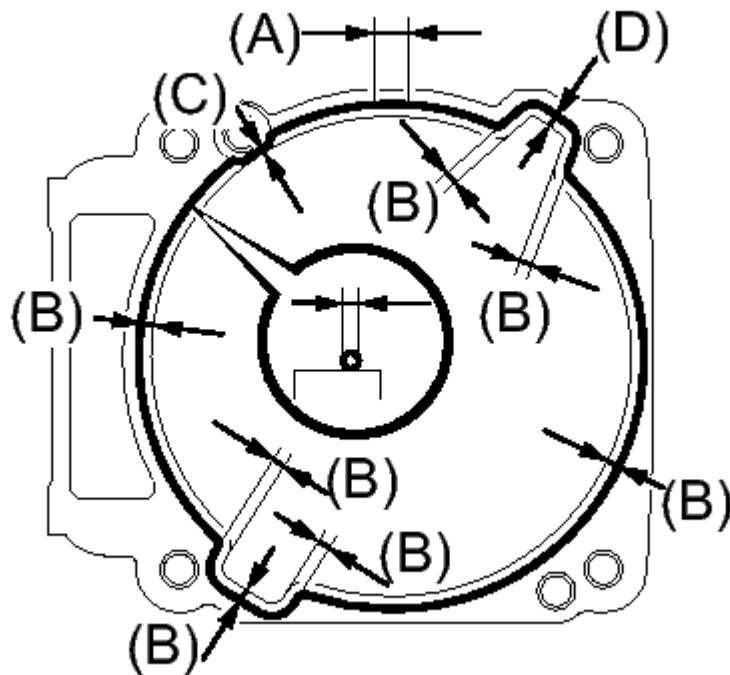
NOTE:

Do not damage the installation surface.

- c. Apply seal packing to the areas indicated in the illustration of the electro magnetic control coupling sub-assembly.

Seal packing

Toyota Genuine Seal Packing 1281, Three Bond 1281 or equivalent



P

Fig. 144: Identifying Electro Magnetic Control Coupling Sub-Assembly Seal Packing Areas
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

NOTE:

- Start applying seal packing within range (A).
- Make sure that the clearance from the center of the bead is within 1 mm (0.0394 in.).
- Apply seal packing in a continuous bead 2 to 3 mm (0.0787 to 0.118 in.) in diameter.
- If there is an area where seal packing is not applied in a continuous bead, be sure to apply seal packing by overlapping the ends of the bead at least 10 mm (0.394 in.).
- Stop applying seal packing after allowing it to overlap with the beginning of the bead by at least 10 mm (0.394 in.) within range (A) in the illustration.
- Install the electro magnetic control coupling sub-assembly within 10 minutes after applying seal packing. If the electro magnetic control coupling sub-assembly is not installed within 10 minutes after applying seal packing, completely remove and then reapply seal packing.
- After installing the electro magnetic control coupling sub-assembly, do not immediately add oil or drive the vehicle for at least 1 hour.

HINT:

- (B) : 3.0 mm (0.118 in.)
 - (C) : 1.0 mm (0.0394 in.)
 - (D) : 4.0 mm (0.157 in.)
- d. Apply differential gear oil LT to the splines of the rear drive pinion.
 - e. Install the electro magnetic control coupling sub-assembly with the 4 bolts.

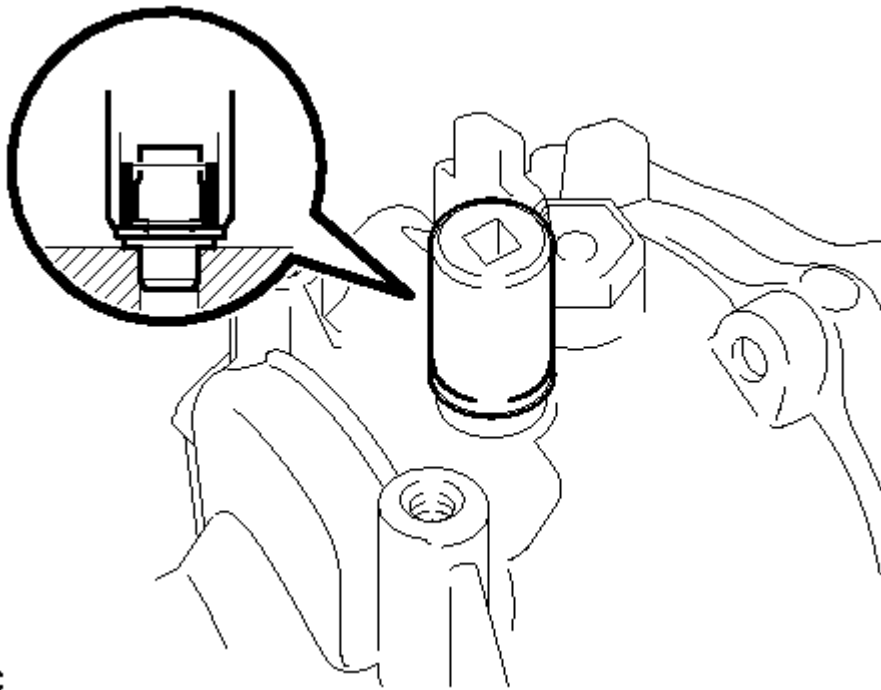
Torque: 42 N*m (430 kgf*cm, 31 ft.*lbf)

NOTE:

- Do not damage the oil diaphragm seal.
- Do not damage the contact surfaces of the oil diaphragm seal, stud bolt or electro magnetic control coupling sub-assembly.

38. INSTALL REAR DIFFERENTIAL CARRIER COVER BREATHER PLUG

- a. Using a socket wrench, service nut and a hammer, install the rear differential carrier cover breather plug to the rear differential carrier.



C

Fig. 145: Identifying Socket Wrench & Service Nut
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

HINT:

- Use a service nut with an inner diameter of 13 mm (0.512 in.) and a socket wrench appropriate for the service nut.
- Tap in the rear differential carrier cover breather plug until it sits flush with the rear differential carrier assembly.

39. INSTALL REAR DIFFERENTIAL FILLER PLUG (INSPECTION PLUG)

- a. Install a new gasket with the rear differential filler plug (inspection plug).

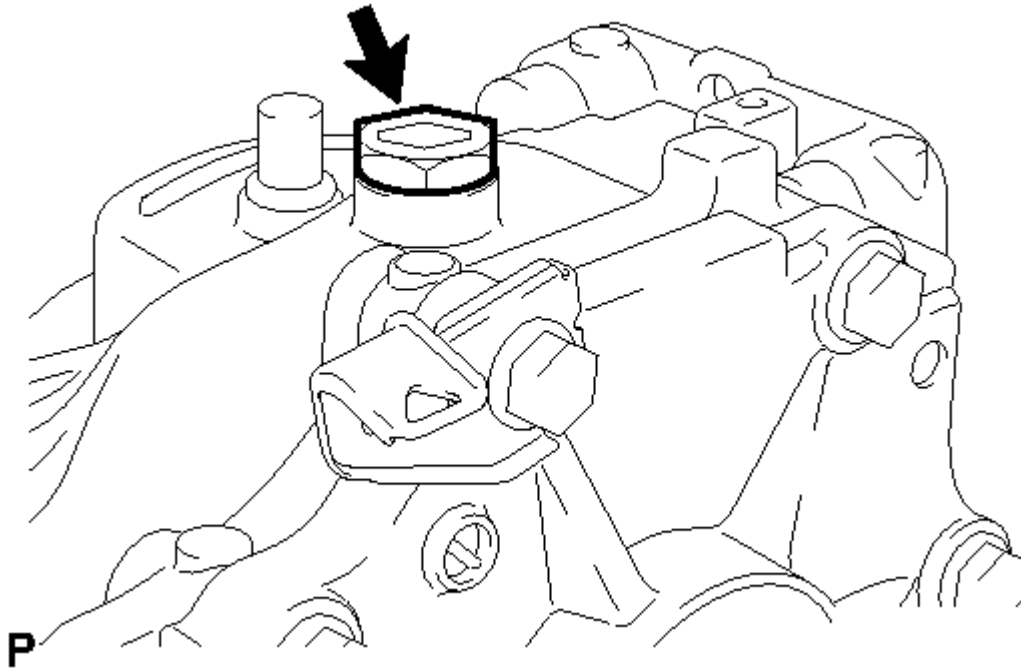
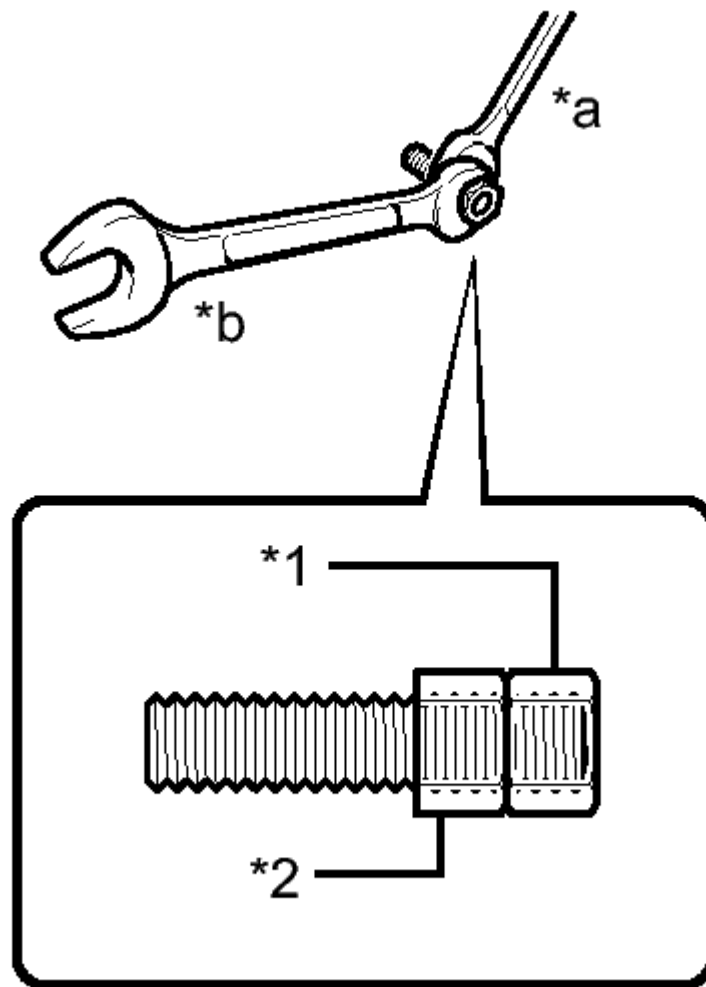


Fig. 146: Identifying Rear Differential Filler Plug (Inspection Plug)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Torque: 49 N*m (500 kgf*cm, 36 ft.*lbf)

40. INSTALL STUD BOLT

- a. Temporarily install 4 new stud bolts to the electro magnetic control coupling sub-assembly.
- b. Install 2 service nuts to the stud bolt.



C

Fig. 147: Identifying Stud Bolt & Service Nuts

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

TEXT IN ILLUSTRATION

*1	Upper Nut
*2	Lower Nut
*a	Hold
*b	Turn

Recommended service nut

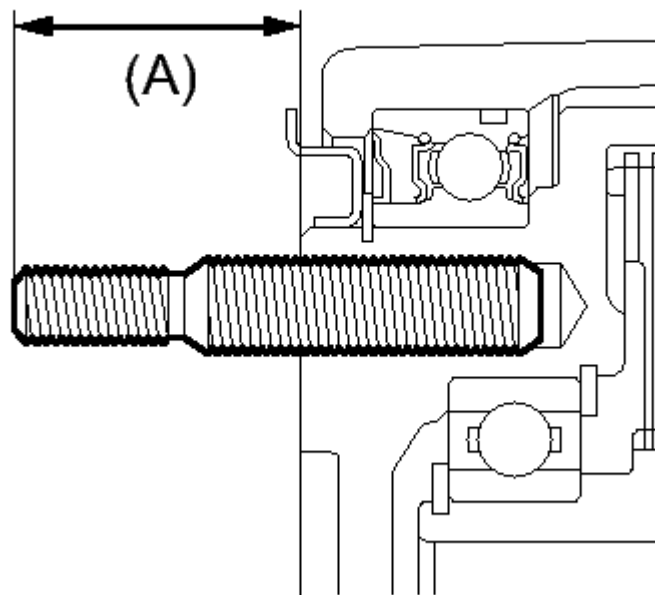
Thread diameter

8 mm (0.3150 in.)

Thread pitch

1.25 mm (0.0492 in.)

- c. Lock the upper nut using the lower nut.
- d. Turn the upper nut and tighten the other 3 stud bolts to the electro magnetic control coupling sub-assembly in the same way.



P

Fig. 148: Identifying Electro Magnetic Control Coupling Stud Bolts
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Torque: 9.8 N*m (100 kgf*cm, 87 in.*lbf)

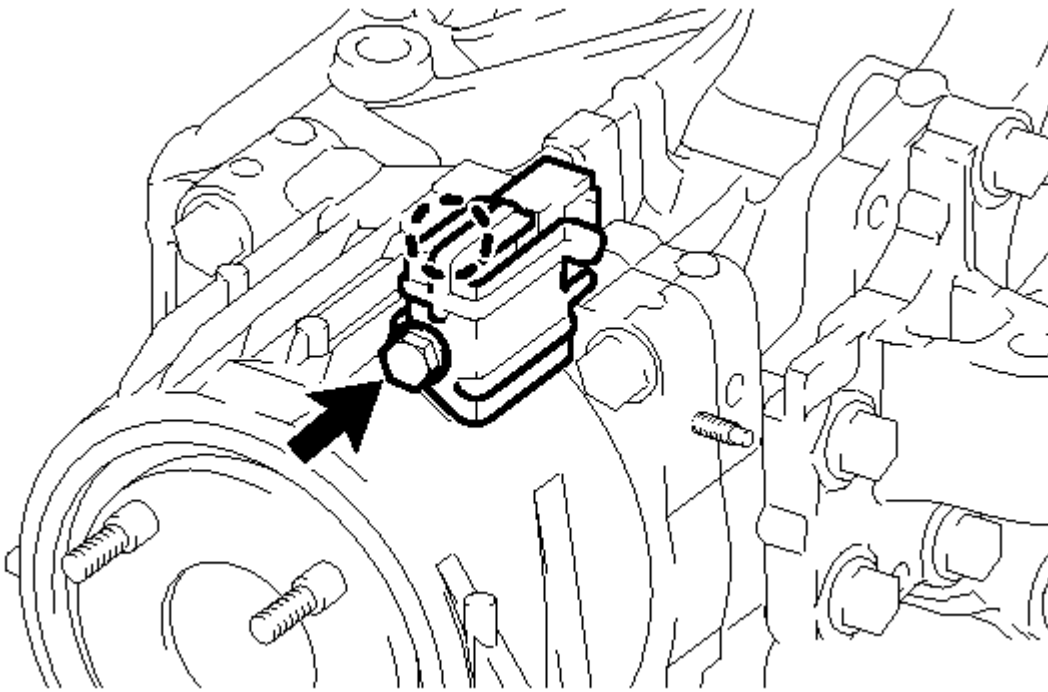
(A)

29.1 to 32.3 mm (1.15 to 1.27 in.)

NOTE: If the threads of the electro magnetic control coupling sub-assembly are damaged while installing the stud bolt, replace the electro magnetic control coupling sub-assembly with a new one.

- 41. **INSPECT RUNOUT OF ELECTRO MAGNETIC CONTROL COUPLING SUB-ASSEMBLY** See step 6
- 42. **INSTALL CONNECTOR CLAMP BRACKET**

- a. Install the connector clamp bracket with the bolt.



P

Fig. 149: Identifying Connector Clamp Bracket & Bolt
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Torque: 15 N*m (150 kgf*cm, 11 ft.*lbf)

NOTE: Do not damage the electro magnetic control coupling wire harness.

- b. Install the connector with the claw.

43. **INSTALL DIFFERENTIAL SIDE GEAR SHAFT LH** See step 9
44. **INSTALL DIFFERENTIAL SIDE GEAR SHAFT RH**

HINT:

Use the same procedures as for the LH side.

45. **REMOVE DIFFERENTIAL CARRIER ASSEMBLY**
 - a. Remove the differential carrier assembly from the overhaul attachment.

INSTALLATION

INSTALLATION

1. **INSTALL REAR DIFFERENTIAL SUPPORT ASSEMBLY**
 - a. Install the rear differential support assembly with the 4 bolts.

Torque: 123 N*m (1249 kgf*cm, 90 ft.*lbf)

2. INSTALL REAR DIFFERENTIAL UPPER MOUNT STOPPER

- a. Install the 2 rear differential upper mount stoppers onto the rear differential support.

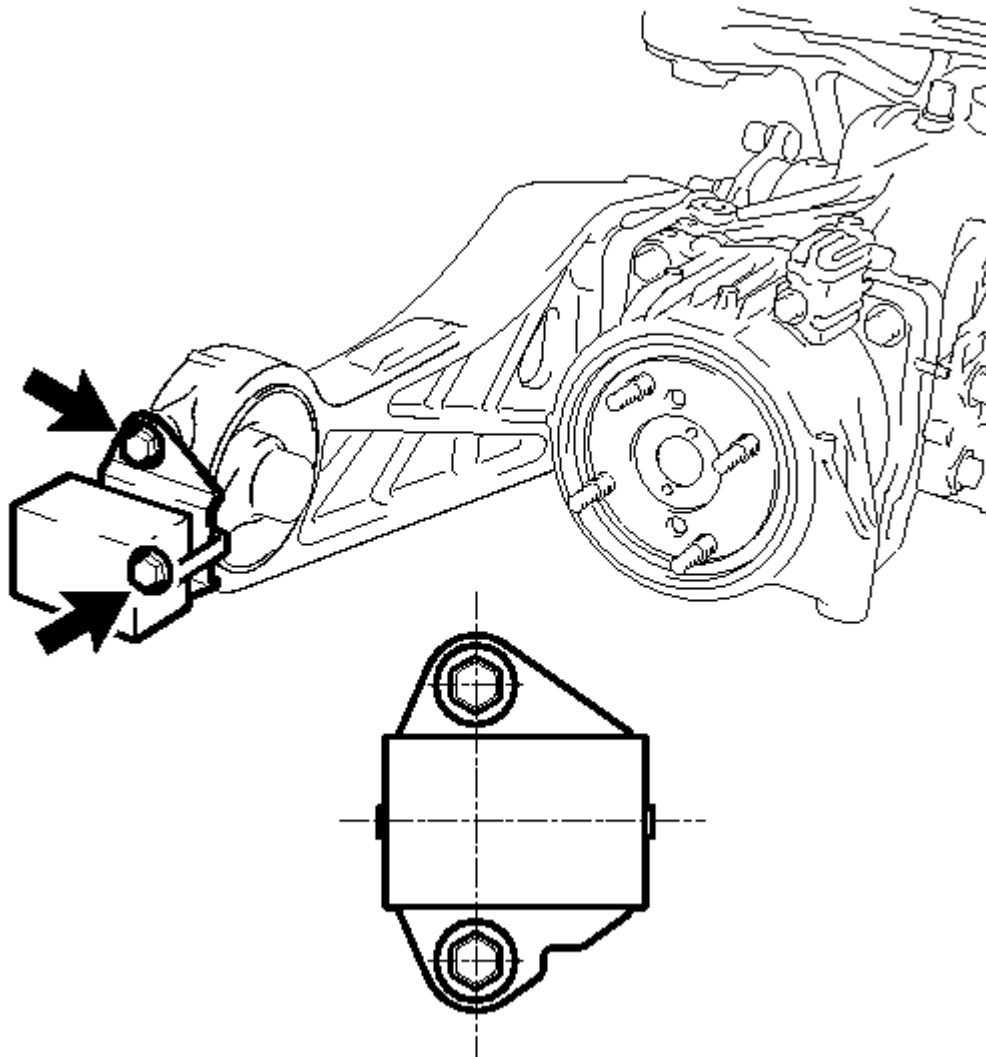
3. INSTALL REAR DIFFERENTIAL NO. 1 SUPPORT

- a. Install the rear differential No. 1 support with the 4 bolts.

Torque: 123 N*m (1249 kgf*cm, 90 ft.*lbf)

4. INSTALL REAR DIFFERENTIAL DYNAMIC DAMPER

- a. Install the rear differential dynamic damper with the 2 bolts.



P

Fig. 150: Identifying Rear Differential Damper & Bolts
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Torque: 20 N*m (204 kgf*cm, 15 ft.*lbf)

5. INSTALL REAR DIFFERENTIAL

- a. Install the rear differential with the 3 bolts.

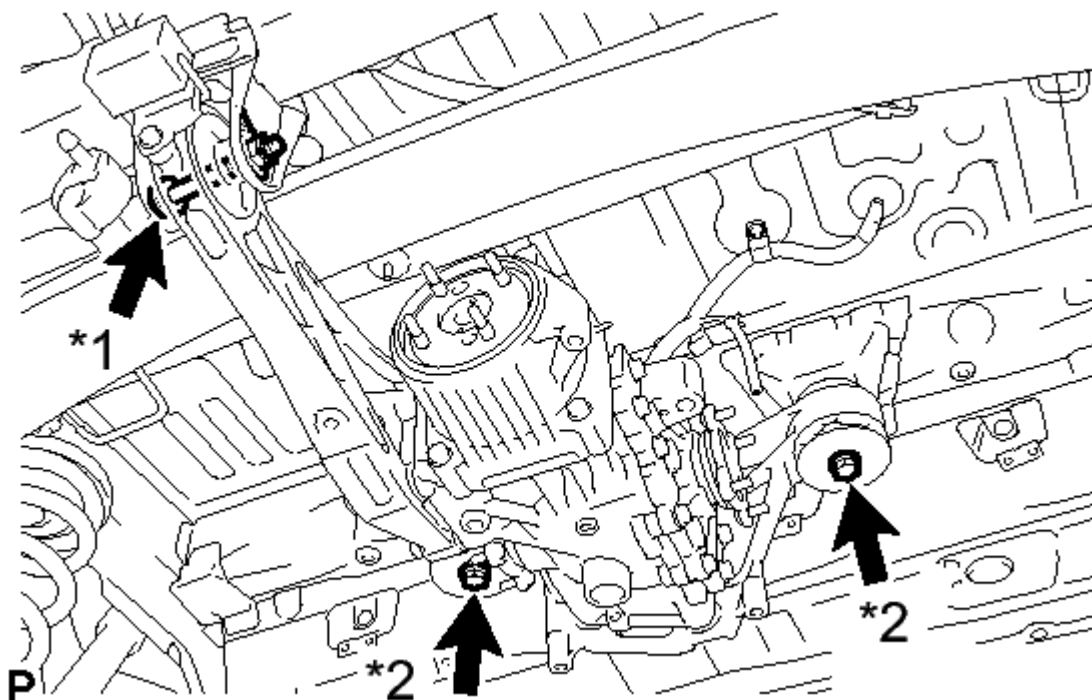


Fig. 151: Identifying Rear Differential Mounting Bolts
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

TEXT IN ILLUSTRATION

*1	Bolt A
*2	Bolt B

Bolt A

Torque: 95 N*m (969 kgf*cm, 70 ft.*lbf)

Bolt B

Torque: 106 N*m (1081 kgf*cm, 78 ft.*lbf)

- b. Connect the connector and install the wire harness clamp.
c. Connect the hose.

6. INSTALL REAR DRIVE SHAFT ASSEMBLY LH See step 10

7. INSTALL REAR DRIVE SHAFT ASSEMBLY RH

HINT:

Use the same procedures as for the LH side.

8. **INSTALL TAIL EXHAUST PIPE ASSEMBLY** . Refer to **INSTALLATION - Step 6**
9. **INSTALL REAR DIFFERENTIAL PROTECTOR**
 - a. Install the rear differential protector with the 4 bolts.

Torque: 44 N*m (449 kgf*cm, 32 ft.*lbf)

10. **INSTALL PROPELLER WITH CENTER BEARING SHAFT ASSEMBLY**

Refer to **INSTALLATION**

11. **INSTALL REAR DIFFERENTIAL DRAIN PLUG** See step 3
12. **ADD DIFFERENTIAL OIL** See step 4
13. **INSPECT AND ADJUST DIFFERENTIAL OIL** See step 5
14. **INSTALL REAR DIFFERENTIAL FILLER PLUG** See step 6
15. **INSPECT FOR EXHAUST GAS LEAK**
16. **INSPECT FOR DIFFERENTIAL OIL LEAK**
17. **INSTALL REAR WHEELS**

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