

2005 Toyota RAV4

2005 SUSPENSION Suspension & Axle - RAV4

2005 SUSPENSION

Suspension & Axle - RAV4

TROUBLESHOOTING

PROBLEM SYMPTOMS TABLE

Use the **Fig. 1** below to help you find the cause of the problem. The numbers indicate the priority of the likely cause of the problem. Check each part in order. If necessary, replace these parts.

Symptom	Suspected Area
Bottoming	1. Vehicle (Overloaded) 2. Spring (Weak) 3. Shock absorber (Worn)
Sways/pitches	1. Tire (Worn or improperly inflated) 2. Stabilizer bar (Bent or broken) 3. Shock absorber (Worn)
Front wheel shimmy	1. Tire (Worn or improperly inflated) 2. Wheel (Out of balance) 3. Shock absorber (Worn) 4. Wheel alignment (Incorrect) 5. Ball joint (Worn) 6. Hub bearing (Loosen or worn) 7. Steering linkage (Loosen or worn) 8. Steering gear (Out of adjustment or broken)
Abnormal tire wear	1. Tire (Improperly inflated) 2. Wheel alignment (Incorrect) 3. Suspension parts (Worn) 4. Shock absorber (Worn)
Noise in rear differential	1. Oil level (Low or wrong grade) 2. Excessive backlash between pinion and ring gear 3. Ring, pinion or side gear (Worn or chipped) 4. Pinion shaft bearing (Worn) 5. Side bearing (Worn) 6. Differential bearing (Loosen or worn)
Oil leak from rear differential	1. Oil level (Too high or wrong grade) 2. Drive pinion oil seal (Worn or damaged) 3. Side gear oil seal (Worn or damaged) 4. Companion flange (Loosen or damaged) 5. Side gear shaft (Damaged)

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Fig. 1: Problem Symptoms Table

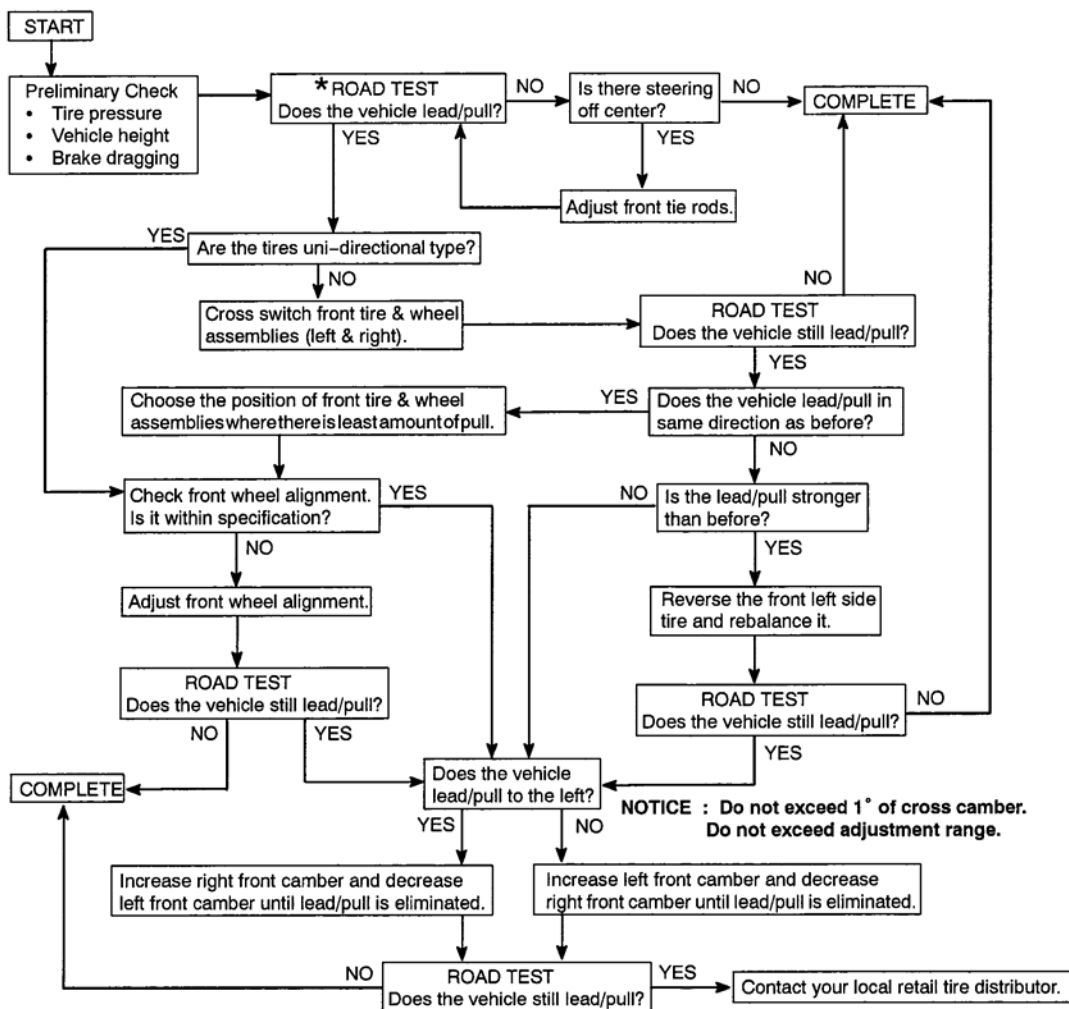
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REPAIR PROCEDURES

HINT:

This is a flow chart for vehicle pull.

This is a flow chart for vehicle pull.



* Select a flat road where the vehicle can be driven in a straight line for 100 meters at a constant speed of 35mph. Please confirm safety and set the steering wheel to its straight position. Drive the vehicle in a straight line for 100 meters at a constant speed of 35mph without holding the steering wheel.

- (1) The vehicle can keep straight but the steering wheel has some angle.
→ STEERING OFF CENTER (See page SR-9)
- (2) The vehicle cannot keep straight.
→ STEERING PULL

Fig. 2: Repair Procedure Flow Chart

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TIRE AND WHEEL

INSPECTION

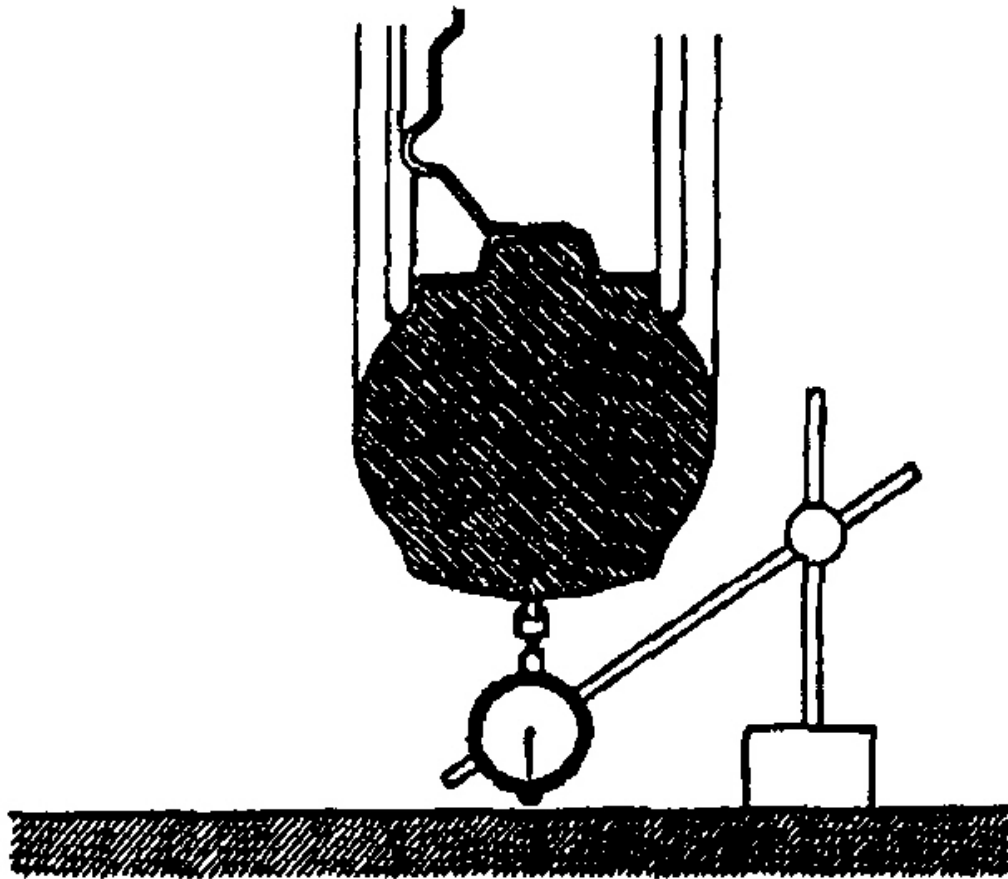
1. INSPECT TIRE

- a. Check the tires for wear and proper inflation pressure.

Cold tire inflation pressure: 200 kPa (2.0 kgf/cm² , 29 psi)

- b. Using a dial indicator, check the runout.

Tire runout: 1.0 mm (0.039 in.) or less



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Fig. 3: Checking Runout Using Dial Indicator
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

2. ROTATE TIRE

HINT:

- Rotate tires as shown.
- Rotate as shown in (B) if the spare tire is included in the rotation.

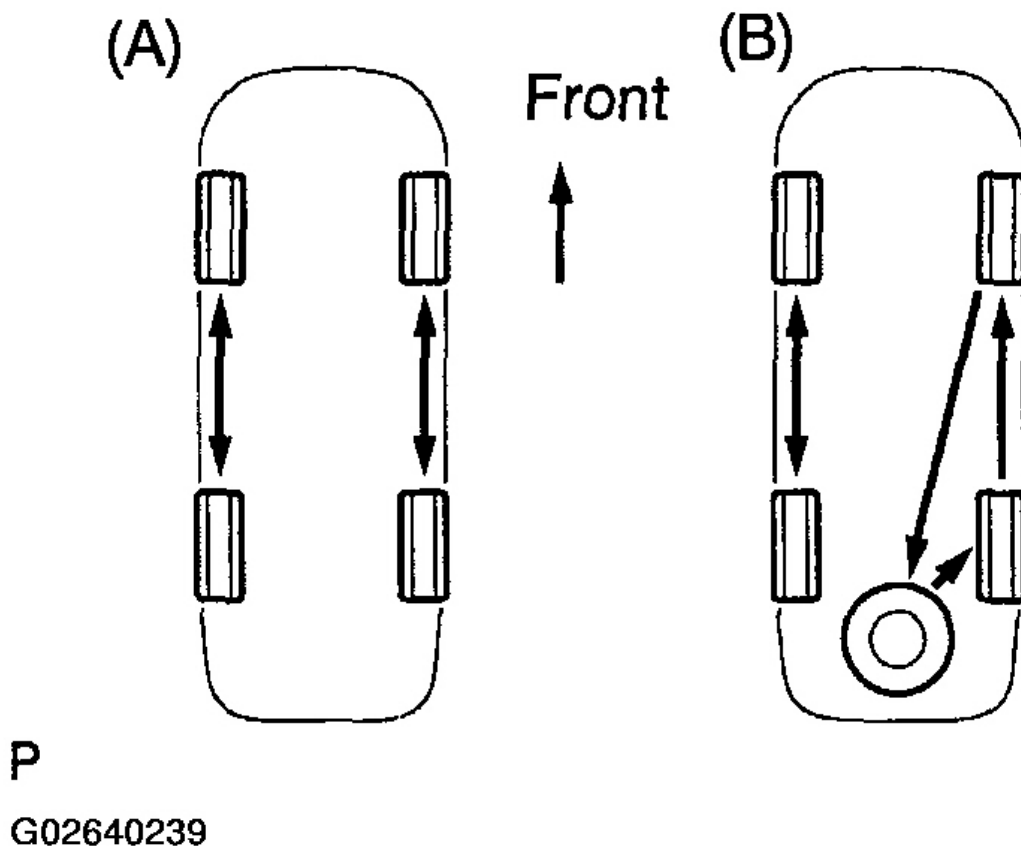


Fig. 4: Identifying Tire Rotation Procedure
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

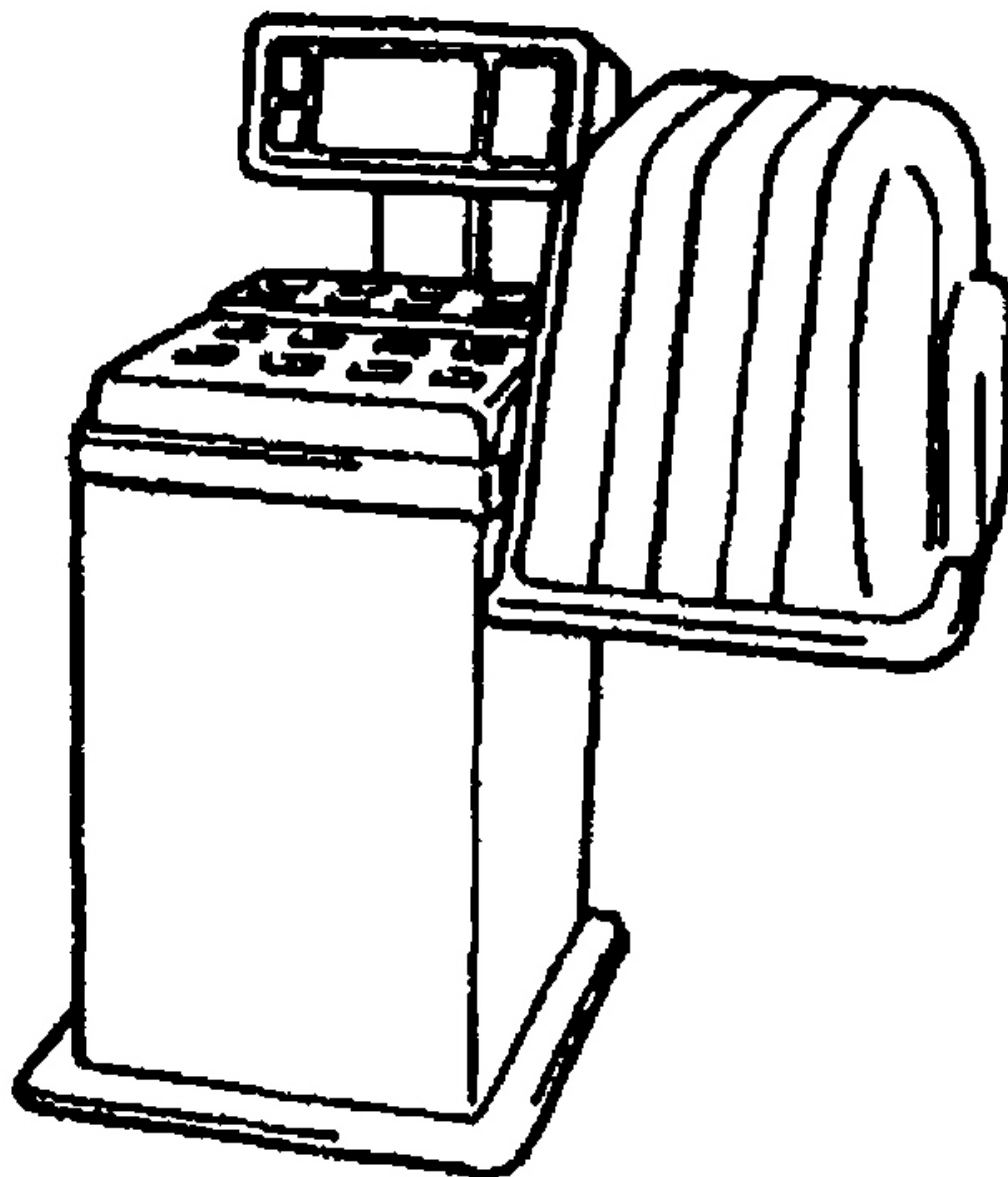
3. INSPECT WHEEL BALANCE

- a. Check and adjust the off-the-car balance.
- b. If necessary, check and adjust the on-the-car-balance.

Imbalance after adjustment: 8.0 g (0.018 lb) or less

4. CHECK WHEEL BEARING FOR LOOSENESS
5. CHECK SUSPENSION FOR LOOSENESS
6. CHECK STEERING LINKAGE FOR LOOSENESS
7. CHECK BALL JOINT FOR LOOSENESS
8. CHECK SHOCK ABSORBER WORKS PROPERLY
 - Check for oil leak.

- Check mounting bushings for wear.
- Bounce the front and rear of the vehicle.



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Fig. 5: Identifying Wheel Balancing Equipment
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

FRONT WHEEL ALIGNMENT

INSPECTION

1. MEASURE VEHICLE HEIGHT

- a. Bounce the vehicle.
- b. Measure the front vehicle height.

Measure the distance from the ground to the center of the lower suspension arm front mounting bolt.

- c. Measure the rear vehicle height.

Measure the distance from the ground to the center of the body side No. 1 suspension arm mounting bolt.

Front vehicle height:

2WD		225 mm (8.86 in.)
4WD	Tire size: 215/70R16	235 mm (9.25 in.)
	Tire size: 235/60R16	228 mm (8.98 in.)

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Fig. 6: Front Vehicle Height Specifications
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Rear vehicle height:

2WD		357 mm (14.06 in.)
4WD	Tire size: 215/70R16	366 mm (14.41 in.)
	Tire size: 235/60R16	359 mm (14.13 in.)

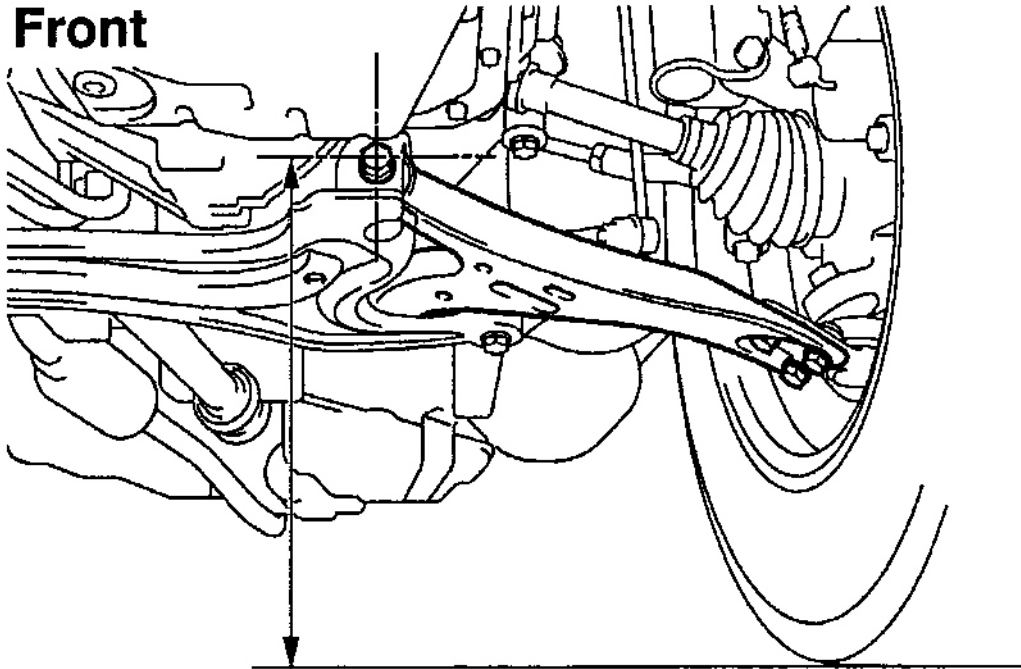
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Fig. 7: Rear Vehicle Height Specifications
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

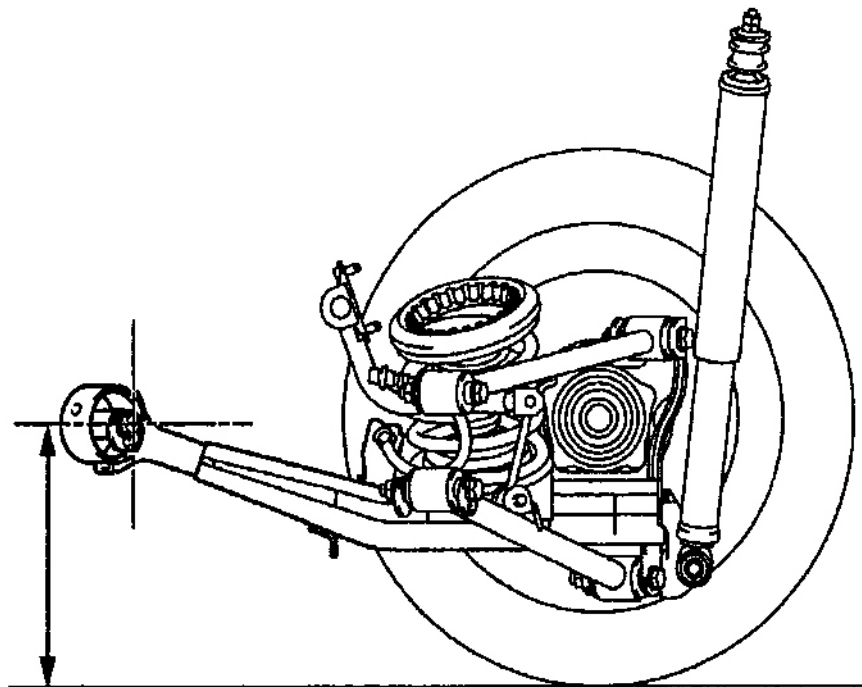
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Front



Rear



P

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Fig. 8: Measuring Vehicle Height

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

2. INSTALL CAMBER-CASTER-KINGPIN GAUGE AND POSITION VEHICLE ON WHEEL ALIGNMENT TESTER

Follow the specific instructions of the equipment manufacturer.

3. INSPECT CAMBER, CASTER AND STEERING AXIS INCLINATION

Left-right error: 45' (0.75°) or less Camber:

VEHICLE HEIGHT SPECIFICATIONS

2WD	-0°25' +/- 45' (-0.42° +/- 0.75°)
4WD	-0°20' +/- 45' (-0.33° +/- 0.75°)

Caster:

CASTER SPECIFICATIONS

2WD	2°00' +/- 45' (2.00° +/- 0.75°)
4WD	1°55' +/- 45' (1.92° +/- 0.75°)

Steering axis inclination:

STEERING AXIS INCLINATION SPECIFICATIONS

2WD	11°00' +/- 45' (11.00° +/- 0.75°)
4WD	10°45' +/- 45' (10.75° +/- 0.75°)

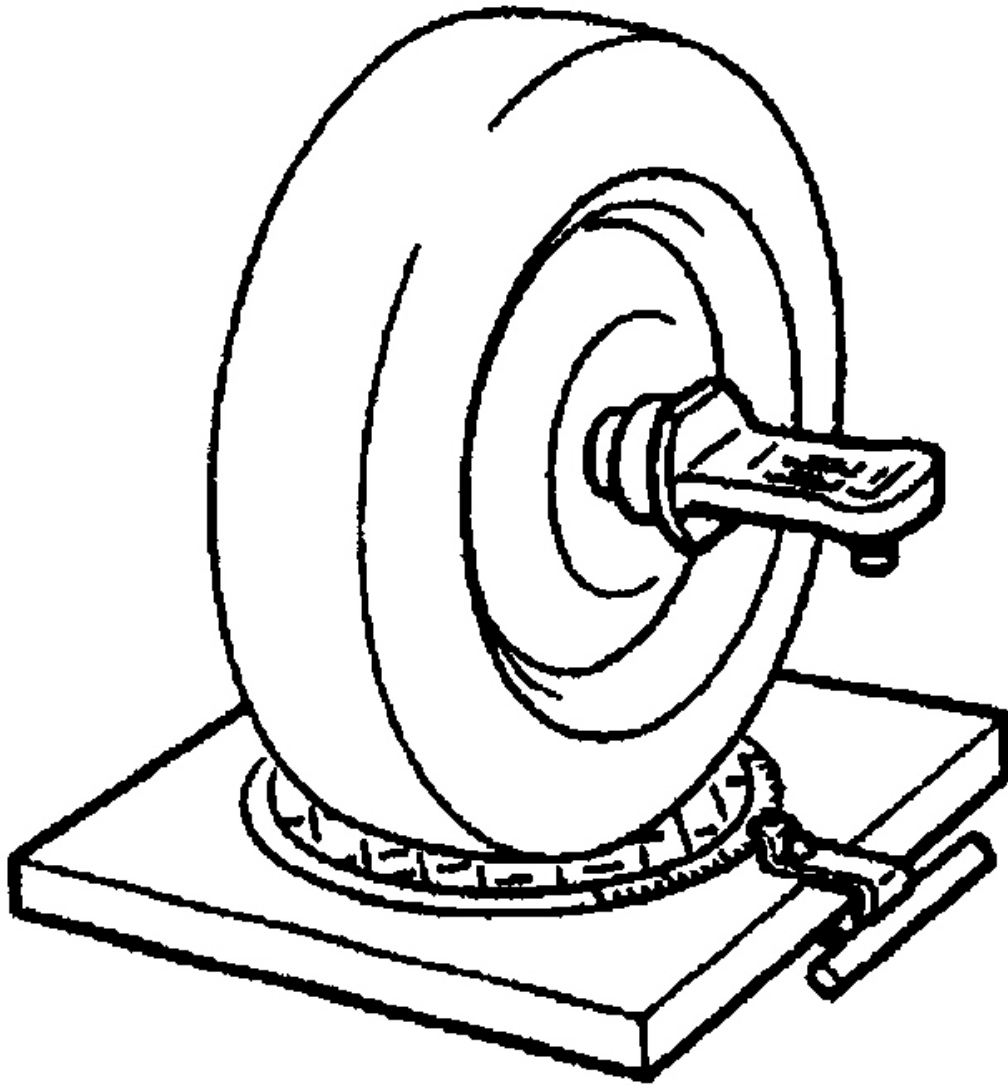
If the caster and steering axis inclination are not within the specification, after the camber has correctly adjusted, recheck the suspension parts for damaged and/or worn out parts.

4. ADJUST CAMBER

HINT:

After the camber has been adjusted, inspect the toe-in.

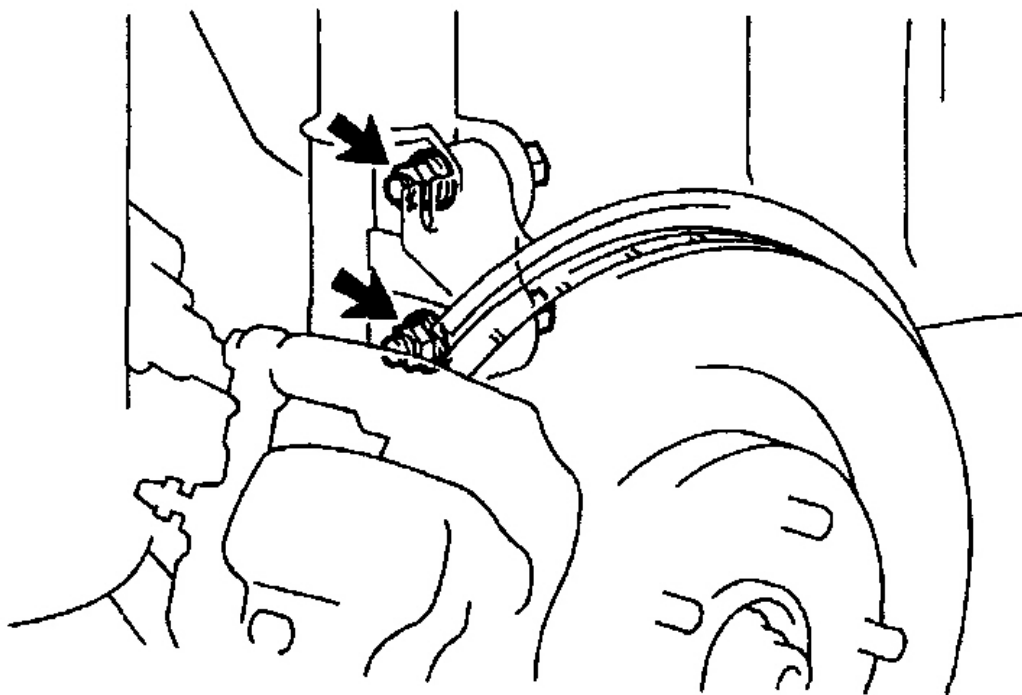
- Remove the front wheel.



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Fig. 9: Installing Camber-Caster-Kingpin Gauge
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- b. Remove the 2 nuts on the lower side of the shock absorber.
- c. Coat the threads of the nuts with engine oil.
- d. Temporarily install the 2 nuts.



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Fig. 10: Removing Nuts On Lower Side Of Shock Absorber

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

- e. Adjust the camber by pushing or pulling the lower side of the shock absorber in the direction where the camber adjustment is required.
- f. Tighten the 2 nuts.

Torque: 143 N.m (1,460 kgf.cm, 105 ft.lbf)

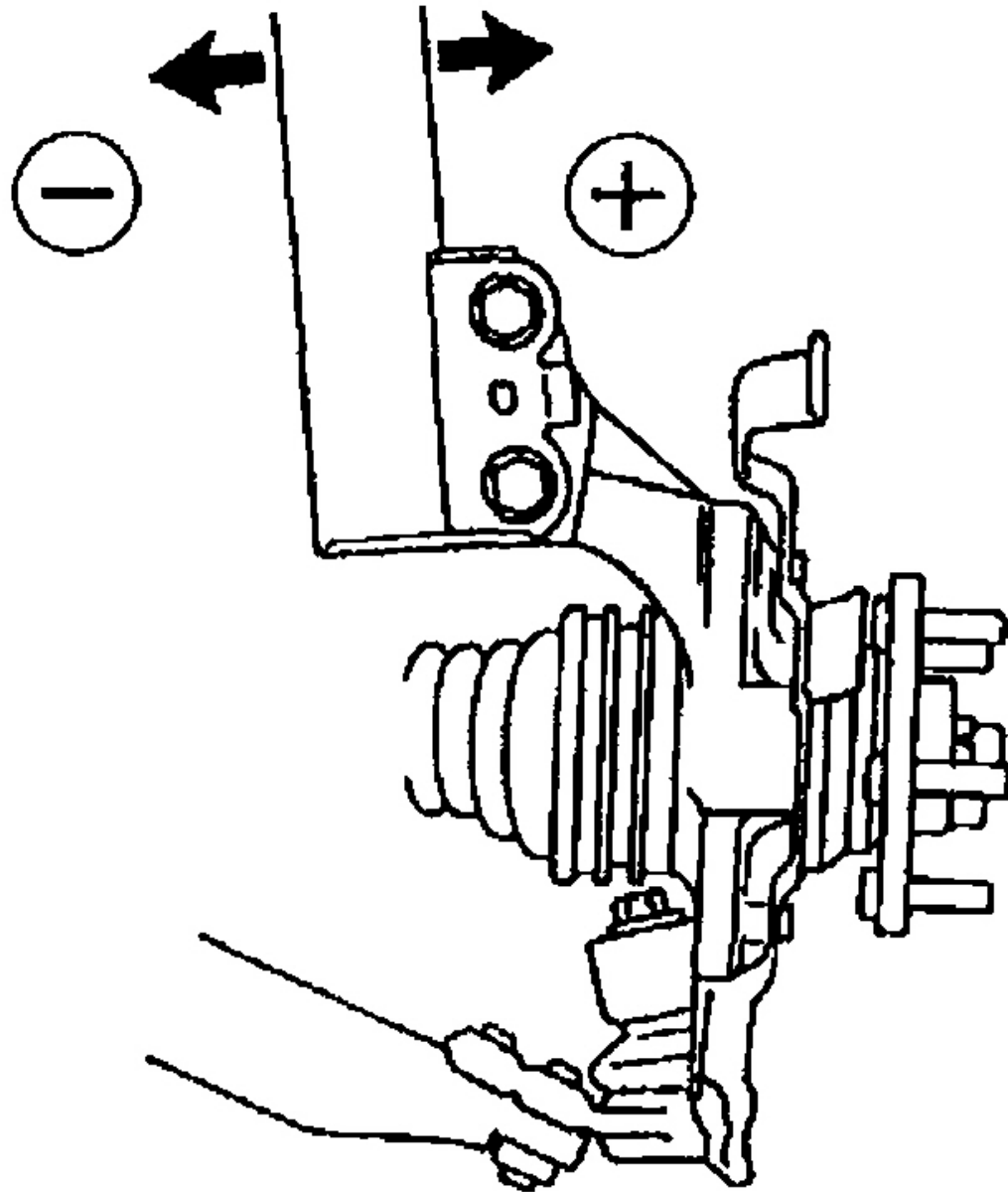
- g. Install the front wheel.

Torque: 103 N.m (1,050 kgf.cm, 76 ft.lbf)

- h. Check the camber.

HINT:

- Try to adjust the camber to the center of the specified value.
- Adjusting value for the set bolts is 6' - 30' (0.1° - 0.5°).



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Fig. 11: Adjusting Camber

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

If the camber is not within the specification, estimate how much additional camber adjustment will be required and select the camber adjusting bolt using the following table.

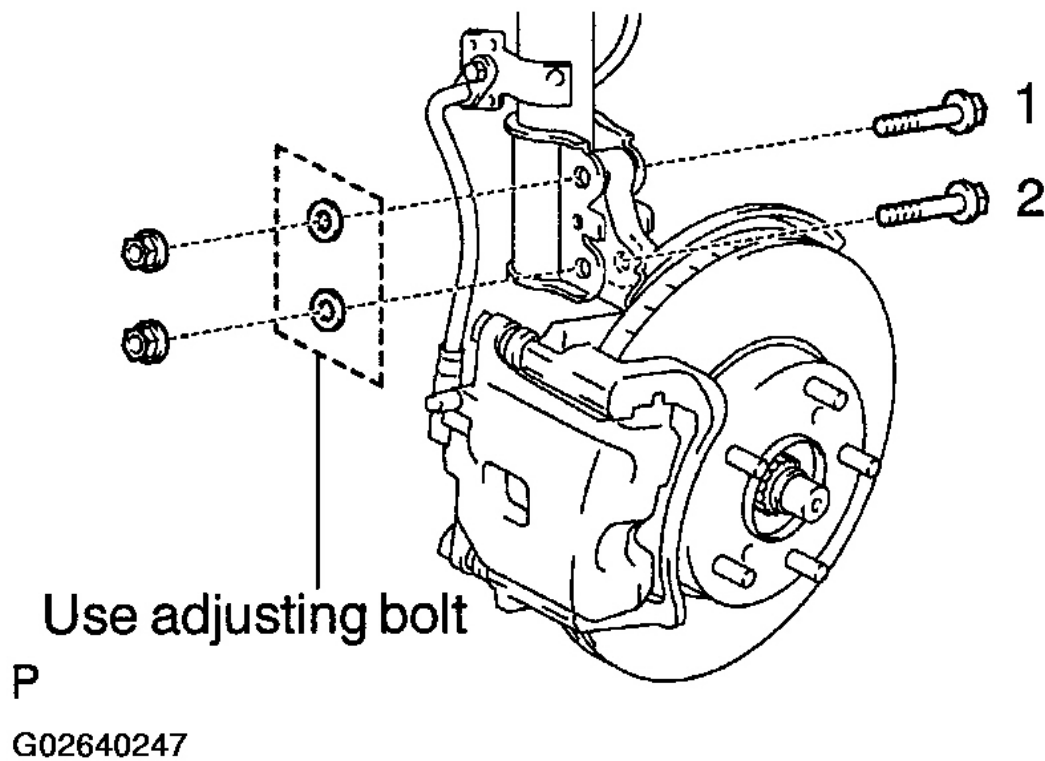


Fig. 12: Adjusting Bolt Selection Table

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

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Bolt Adjusting Value	Set Bolt		Adjusting Bolt					
	90105-15001		90105-15004		90105-15005		90105-15006	
			1 Dot		2 Dots		3 Dots	
								
	1	2	1	2	1	2	1	2
15'	●			●				
30'	●					●		
45'	●							●
1°00'			●					●
1°15'					●			●
1°30'							●	●

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Fig. 13: Identifying Adjusting Bolts

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

- Follow the above mentioned steps again. Between the step (b) and (c), exchange 1 or 2 selected bolts with used ones.

HINT:

When exchanging the 2 bolts with used ones, exchange 1 bolt for each time.

5. INSPECT TOE-IN

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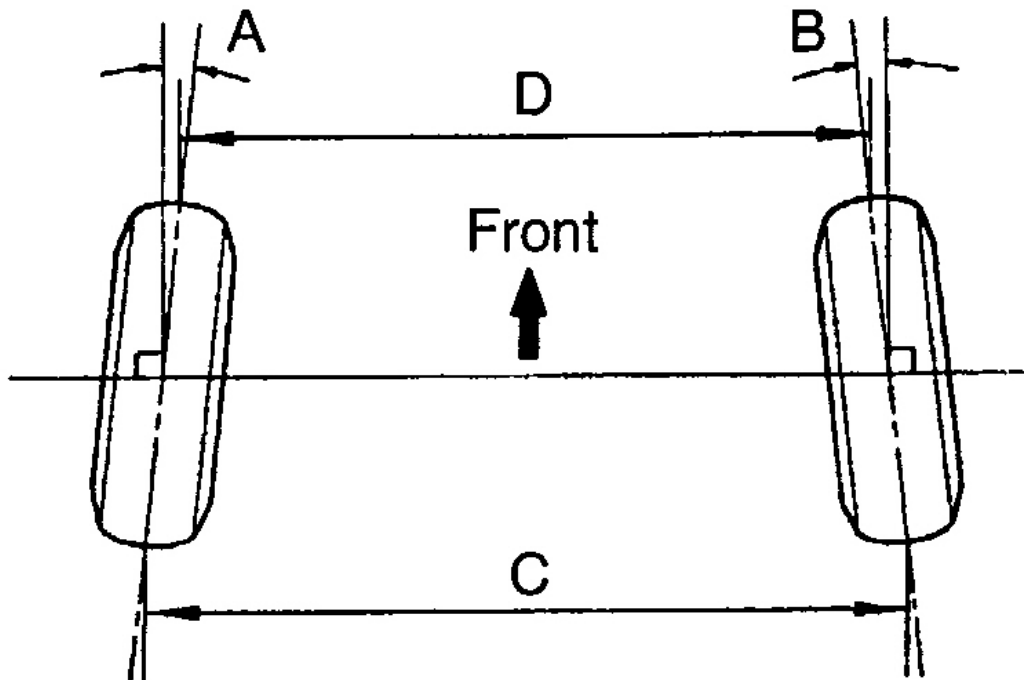
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2WD	Toe-in (Total)	A + B:	$0^{\circ}00' \pm 10'$ ($0^{\circ} \pm 0.16^{\circ}$)
		C - D:	0 ± 2 mm (0 ± 0.08 in.)
4WD Tire size: 215/70R16	Toe-in (Total)	A + B:	$0^{\circ}05' \pm 10'$ ($0.08^{\circ} \pm 0.16^{\circ}$)
		C - D:	1 ± 2 mm (0.04 ± 0.08 in.)
4WD Tire size: 235/60R16	Toe-in (Total)	A + B:	$0^{\circ}05' \pm 10'$ ($0.08^{\circ} \pm 0.17^{\circ}$)
		C - D:	1 ± 2 mm (0.04 ± 0.08 in.)

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Fig. 14: TOE-IN Specifications

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



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Fig. 15: Inspecting TOE-IN

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

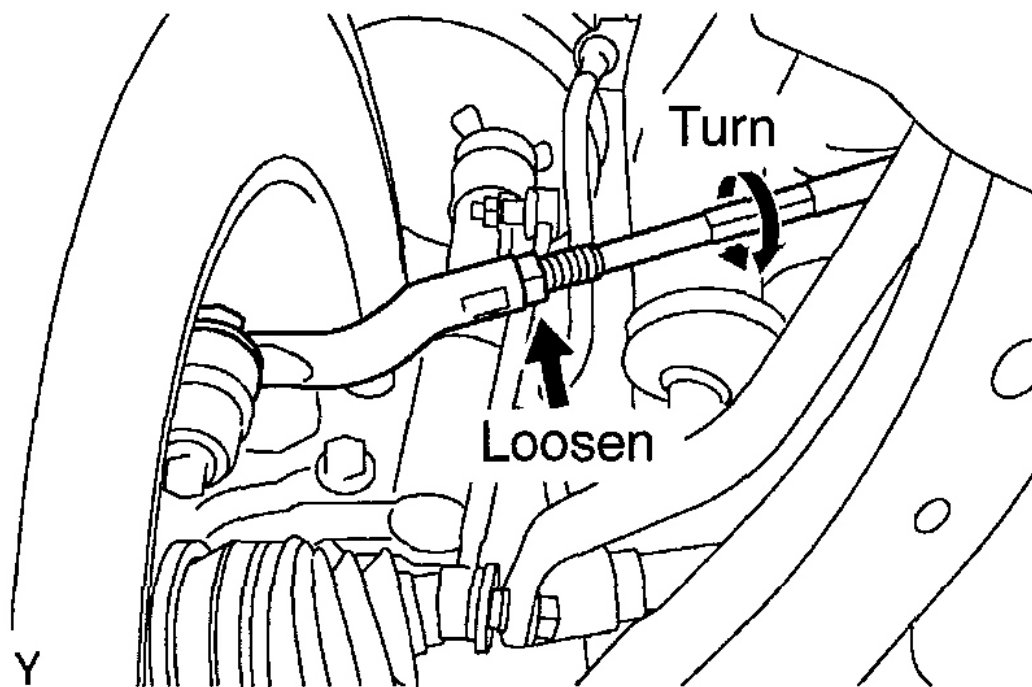
If the toe-in is not within the specification, adjust it.

6. ADJUST TOE-IN

- a. Remove the boot clips.
- b. Loosen the tie rod end lock nuts.
- c. Turn the left and right rack ends by an equal amount to adjust the toe-in.

HINT:

- Try to adjust the toe-in to the center of the specified value.



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Fig. 16: Loosening Tie Rod End Lock Nuts

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

- Make sure that the length of the left and right rack ends is the same.

Tie rod end length difference: 1.5 mm (0.059 in.) or less

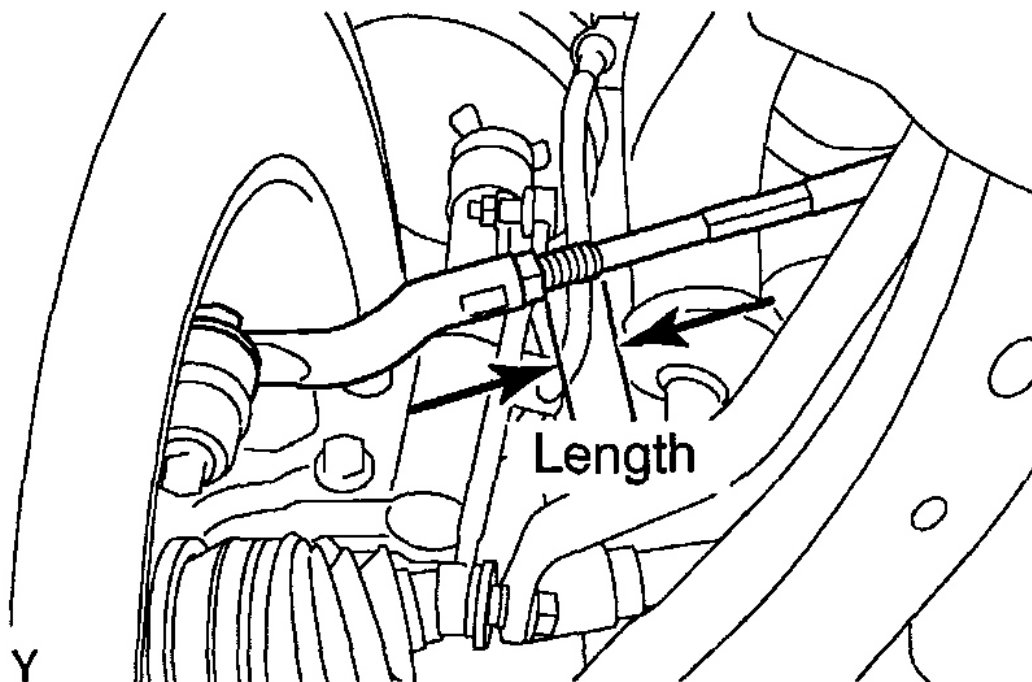
- d. Tighten the tie rod end lock nuts.

Torque: 56 N.m (570 kgf.cm, 41 ft.lbf)

- e. Place the boot on the seat and install the boot clips.

HINT:

Make sure that the boots are not twisted.



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Fig. 17: Identifying Length Of Left And Right Rack Ends
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7. INSPECT WHEEL ANGLE

Turn the steering wheel fully and measure the turning angle.

Wheel angle:

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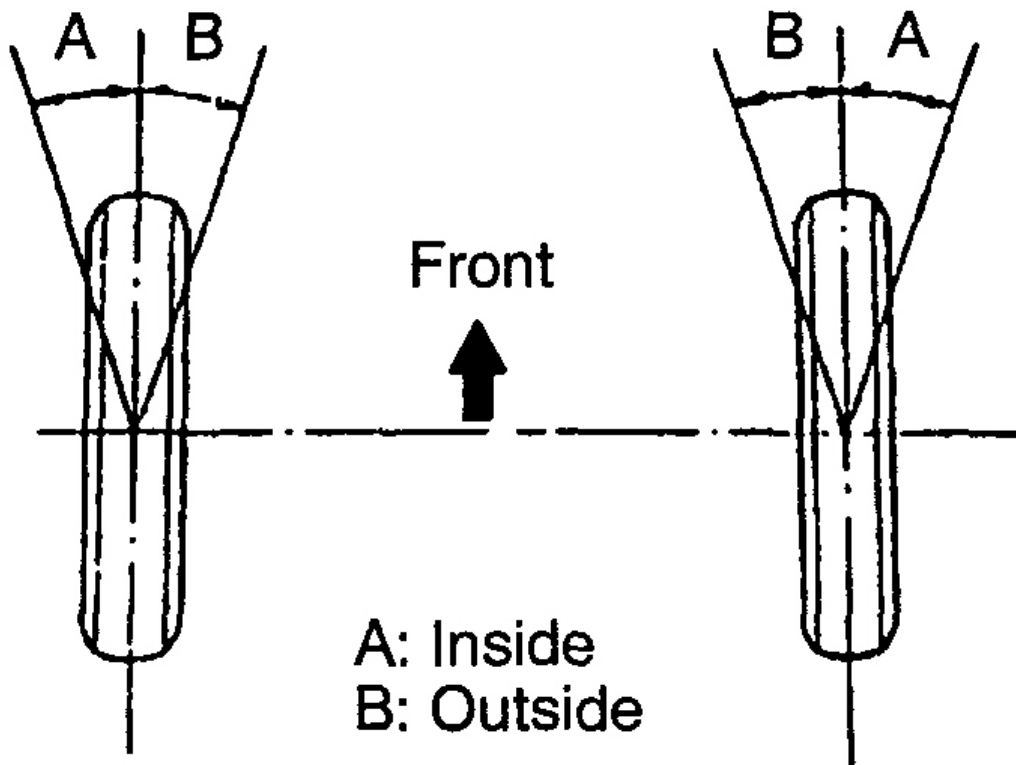
Inside		$35^{\circ} \pm 2^{\circ}$
Outside (Reference)	2WD	30°
	4WD	31°

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Fig. 18: Wheel Angle Specifications

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

If the wheel angles differ from the specified value, check whether the length of the right and left rack ends is the same.



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Fig. 19: Inspecting Wheel Angle

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

REAR WHEEL ALIGNMENT

INSPECTION

1. **MEASURE VEHICLE HEIGHT** (See **FRONT WHEEL ALIGNMENT**)
2. **INSTALL CAMBER-CASTER-KINGPIN GAUGE AND POSITION VEHICLE ON WHEEL ALIGNMENT TESTER**

Follow the specifications of the equipment manufacturer.

3. **INSPECT CAMBER**

Left-right error: 45' (0.75°) or less:

2WD		$-1^{\circ}15' \pm 45' (-1.25^{\circ} \pm 0.75^{\circ})$
4WD	Tire size: 215/70R16	$-0^{\circ}55' \pm 45' (-0.92^{\circ} \pm 0.75^{\circ})$
	Tire size: 235/60R16	$-0^{\circ}50' \pm 45' (-0.83^{\circ} \pm 0.75^{\circ})$

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Fig. 20: Camber Specifications

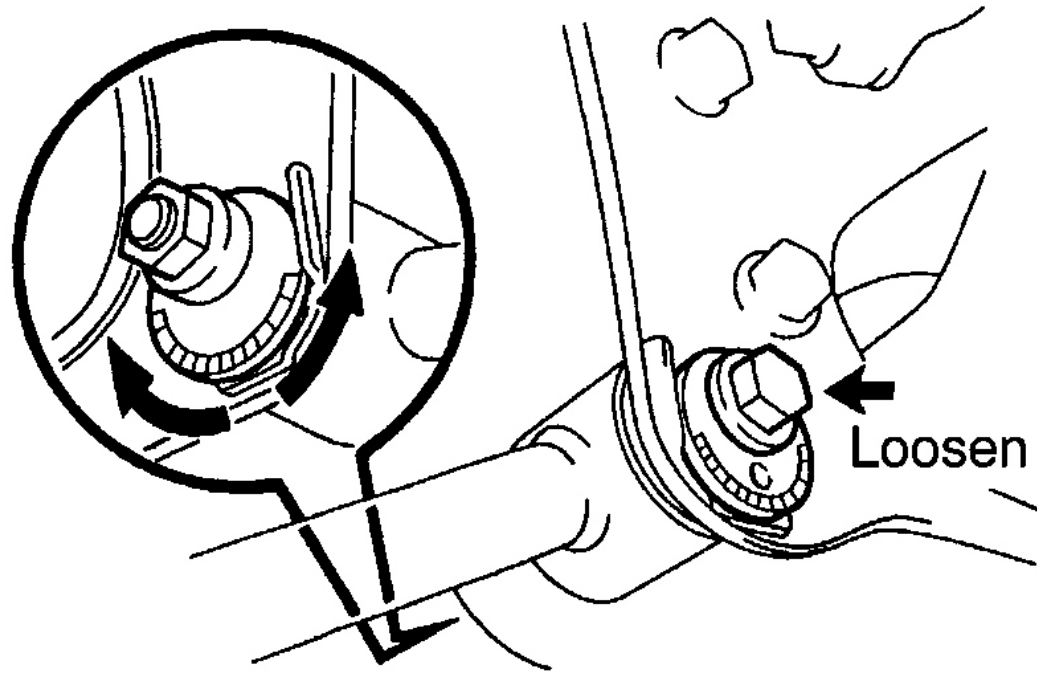
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

If the camber is not within the specified value, adjust the camber.

4. **ADJUST CAMBER**
 - a. Loosen the camber adjust cam lock bolt.
 - b. Turn the camber adjust cam to adjust the camber.

HINT:

- Try to adjust the camber to the center of the specified value.
- The camber will change about 16' (0.27°) with each graduation of the cam.



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Fig. 21: Loosening Camber Adjust Cam Lock Bolt
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- c. Tighten the lock bolt.

Torque: 113 N.m (1,150 kgf.cm, 83 ft.lbf)

5. INSPECT TOE-IN

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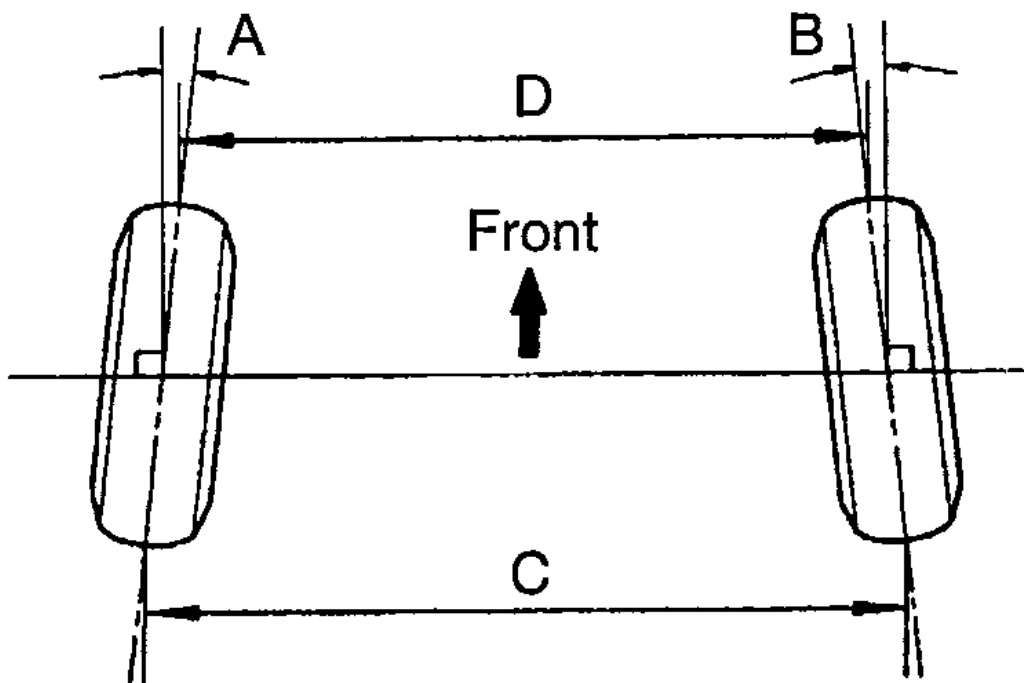
2WD	Toe-in (Total)	A + B: $0^{\circ}19' \pm 10'$ ($0.32^{\circ} \pm 0.16^{\circ}$) C - D: 4 ± 2 mm (0.16 ± 0.08 in.)
4WD Tire size: 215/70R16	Toe-in (Total)	A + B: $0^{\circ}14' \pm 10'$ ($0.24^{\circ} \pm 0.16^{\circ}$) C - D: 3 ± 2 mm (0.12 ± 0.08 in.)
4WD Tire size: 235/60R16	Toe-in (Total)	A + B: $0^{\circ}15' \pm 10'$ ($0.25^{\circ} \pm 0.17^{\circ}$) C - D: 3 ± 2 mm (0.12 ± 0.08 in.)

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Fig. 22: Toe-In Specifications

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

If the toe-in is not within the specified value, adjust it.



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Fig. 23: Inspecting Toe-In

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

6. ADJUST TOE-IN

- a. Measure the distance between each wheel disc and corner of the cam bracket, then confirm that both are the same.

Lower suspension arm length difference: 1 mm (0.04 in.) or less

If the difference between the left and right is more than 1 mm (0.04 in.), adjust it by following the step (b) to (d).

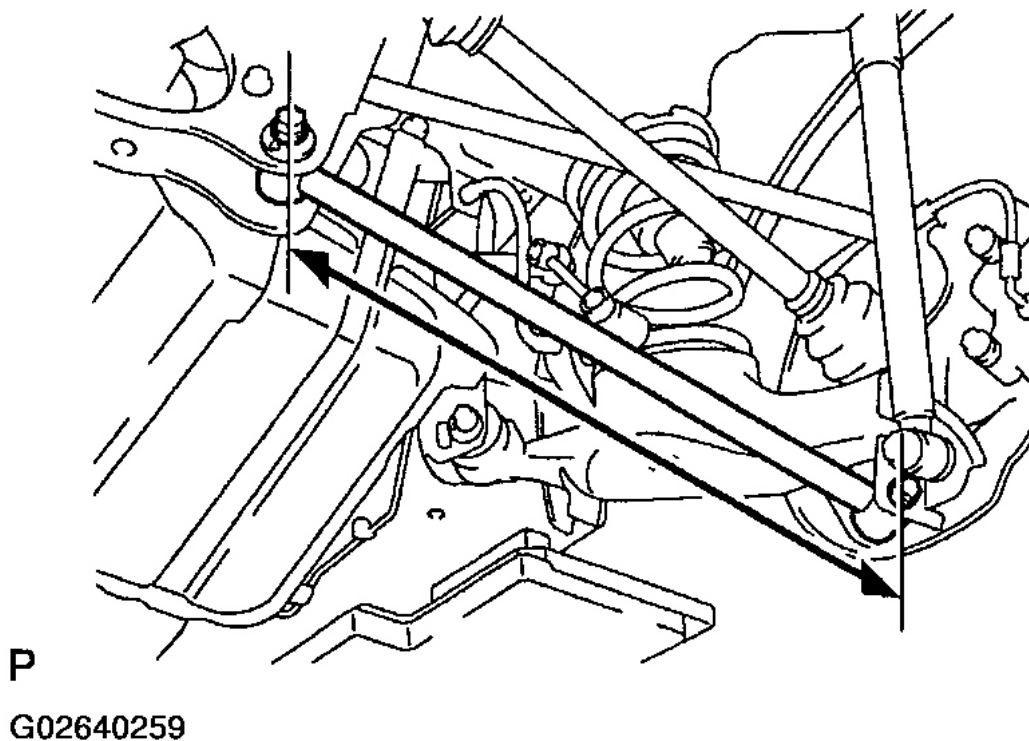


Fig. 24: Measuring Distance Between Wheel Disc And Corner Of Cam Bracket
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- b. Loosen the toe-adjust cam lock bolt.
- c. Turn the toe-adjust cam an equal amount to adjust toe-in.

HINT:

- Try to adjust the toe-in to the center value.
 - The toe-in will change about 2.5 mm (0.10 in.) with each graduation of the cam (both side).
- d. Torque the lock bolts.

Torque: 132 N.m (1,350 kgf.cm, 97 ft.lbf)

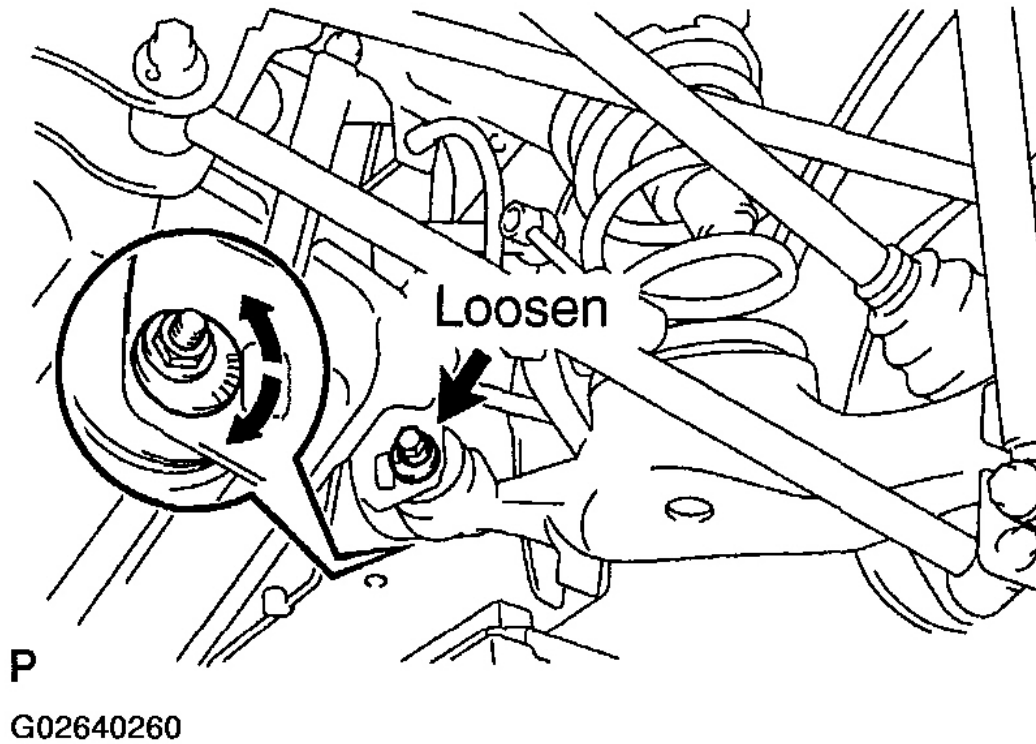


Fig. 25: Loosening Toe-Adjust Cam Lock Bolt
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FRONT AXLE HUB

COMPONENTS

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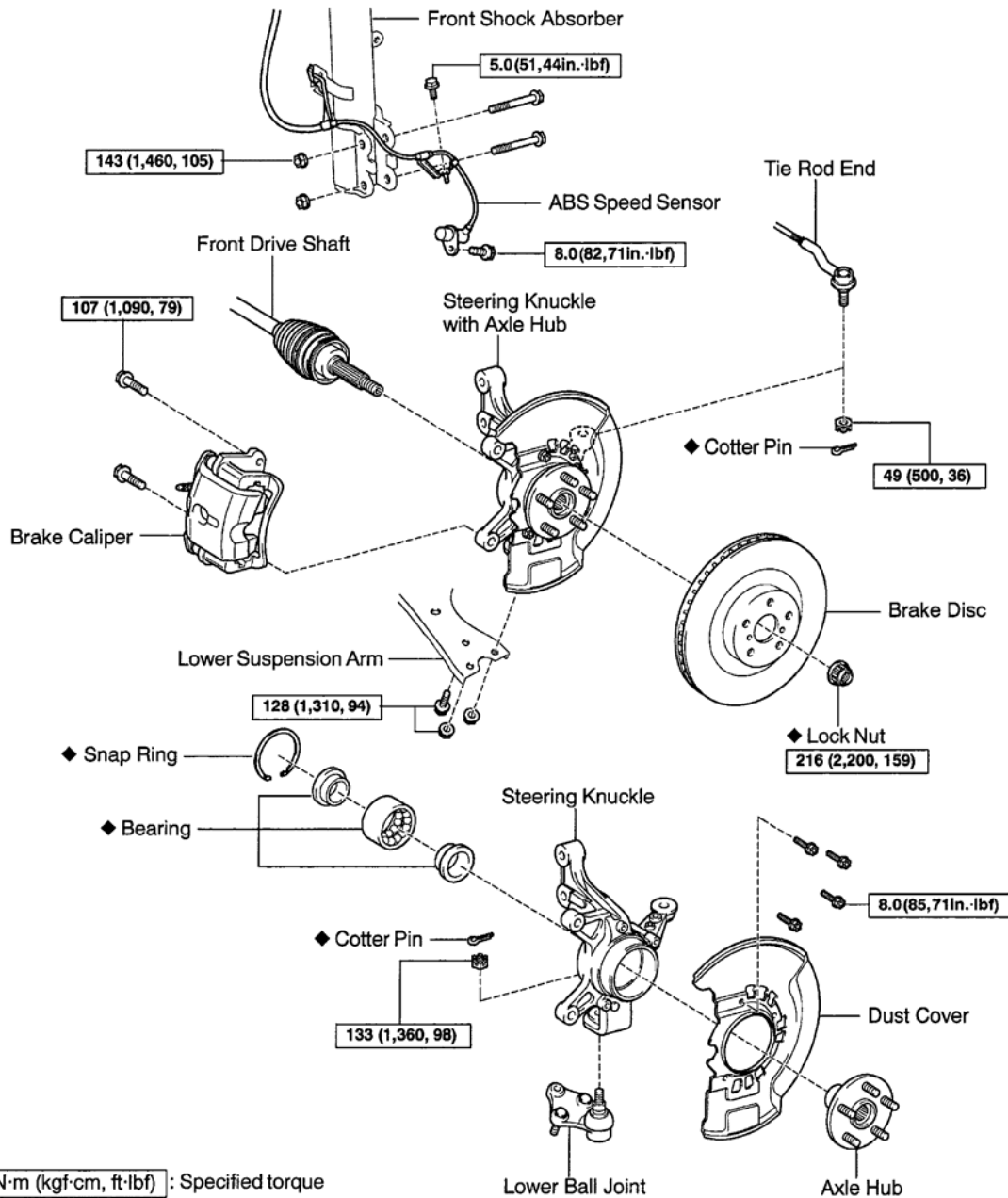


Fig. 26: Identifying Front Axle Hub Components & Torque Specifications
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

REMOVAL

1. REMOVE FRONT WHEEL
2. REMOVE BRAKE CALIPER AND DISC

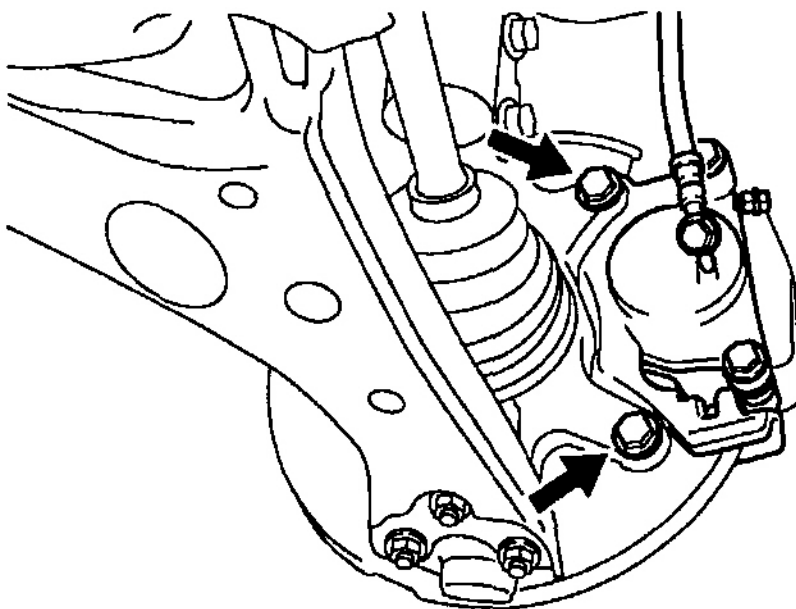
- a. Remove the 2 bolts, and disconnect the brake caliper.

Torque: 107 N.m (1,090 kgf.cm, 79 ft.lbf)

- b. Support the brake caliper securely.

NOTE: Do not damage the flexible hose.

- c. Remove the brake disc.



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Fig. 27: Removing Brake Caliper And Disc
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

3. CHECK BEARING BACKLASH AND AXLE HUB DEVIATION

- a. Set a dial indicator near the center of the axle hub.
- b. Check the backlash.

Maximum: 0.05 mm (0.0020 in.)

If it is greater than maximum, replace the bearing (See **DISASSEMBLY, REASSEMBLY**).

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c. Check the deviation.

Maximum: 0.07 mm (0.0028 in.)

If it is greater than maximum, replace the bearing (See **DISASSEMBLY**, **REASSEMBLY**).

d. Remove a dial indicator.

4. **REMOVE DRIVE SHAFT LOCK NUT (See REMOVAL)**

5. **w/ ABS: DISCONNECT ABS SPEED SENSOR**

Remove the 2 bolts, and disconnect the ABS speed sensor and wire from the steering knuckle.

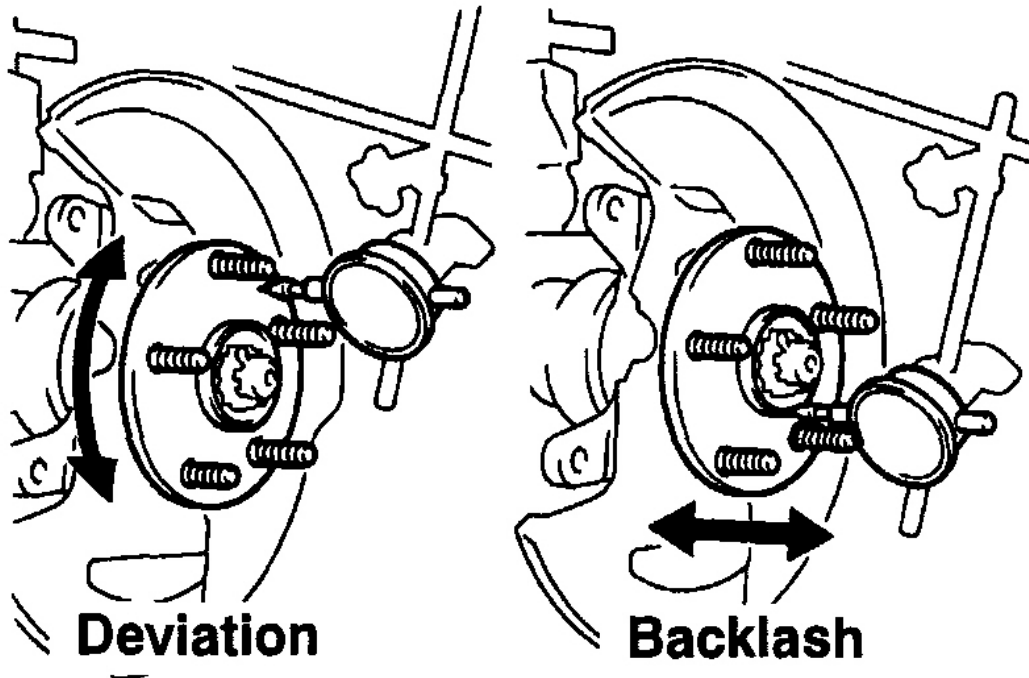
Torque:

Sensor installation bolt:

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

Wire harness clamp bolt:

5.0 N.m (51 kgf.cm, 44 in.lbf)



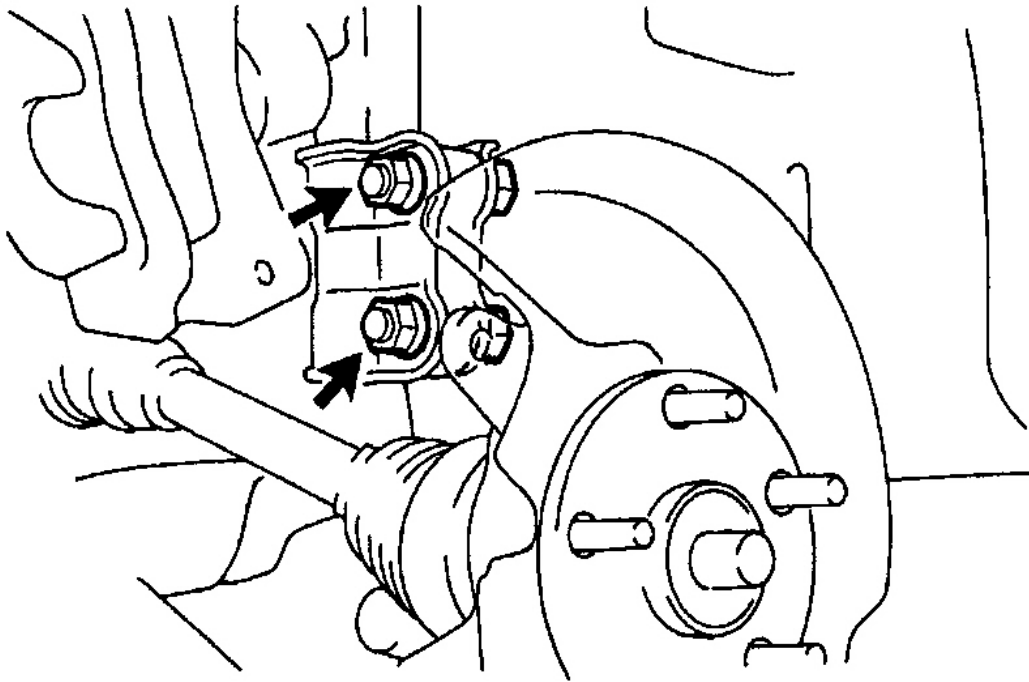
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Fig. 28: Setting Dial Indicator Near Center Of Axle Hub
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

6. REMOVE STEERING KNUCKLE WITH AXLE HUB

- a. Loosen the 2 nuts of the lower side of the shock absorber.

Torque: 143 N.m (1,460 kgf.cm, 105 ft.lbf)



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Fig. 29: Loosening Nuts Of Lower Side Of Shock Absorber
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

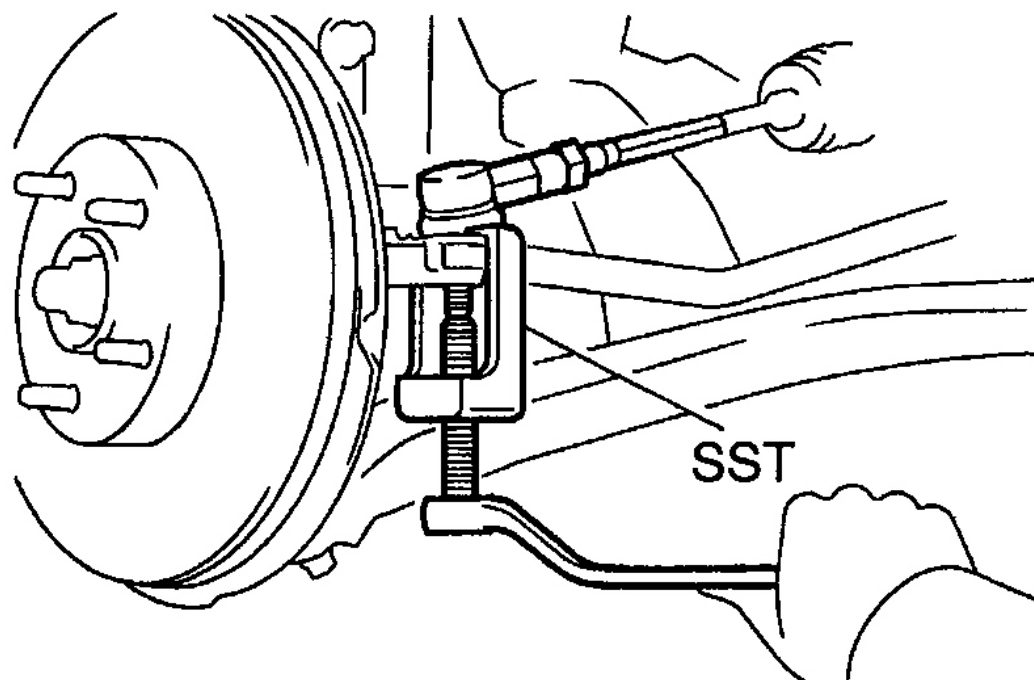
- b. Disconnect the tie rod end from the steering knuckle.

1. Remove the cotter pin and nut.

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

2. Using SST, disconnect the tie rod end from the steering knuckle.

SST 09610-20012



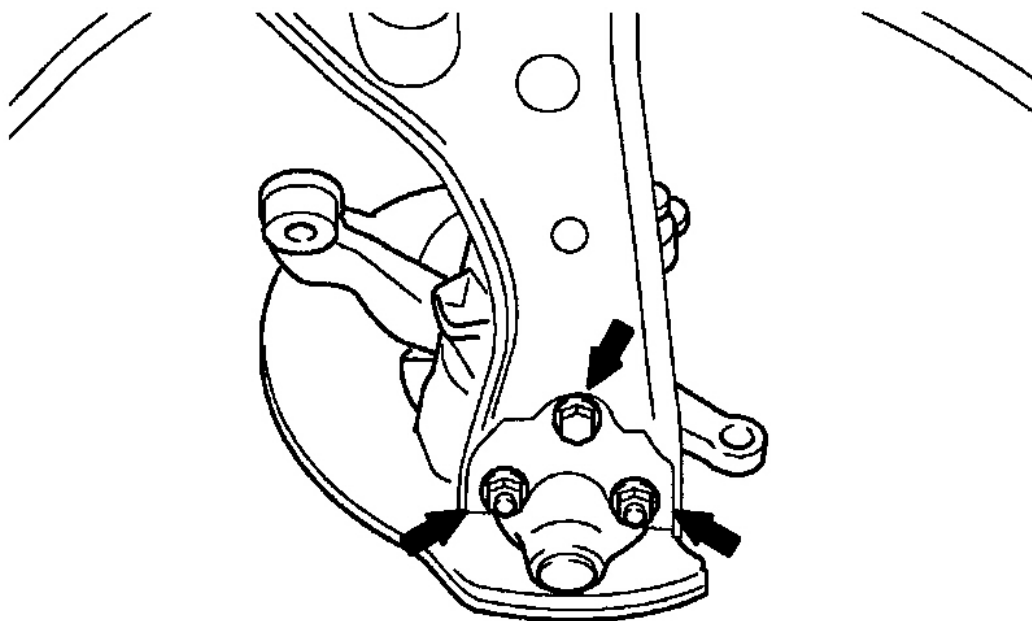
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Fig. 30: Disconnecting Tie Rod End From Steering Knuckle Using Special Tool
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- c. Remove the bolt and 2 nuts, and disconnect the lower ball joint from the lower suspension arm.

Torque: 128 N.m (1,310 kgf.cm, 94 ft.lbf)

- d. Disconnect the drive shaft from the steering knuckle (See **REMOVAL**).
- e. Remove the 2 bolts, 2 nuts and steering knuckle with axle hub.



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Fig. 31: Removing Bolts, Nuts And Steering Knuckle With Axle Hub
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

HINT:

At the time of installation, coat the threads of the nuts with engine oil.

NOTE: Be careful not to damage the ABS speed sensor rotor of the drive shaft.

DISASSEMBLY

1. REMOVE LOWER BALL JOINT

- Remove the cotter pin and nut.
- Using SST, remove the lower ball joint.

SST 09628-62011

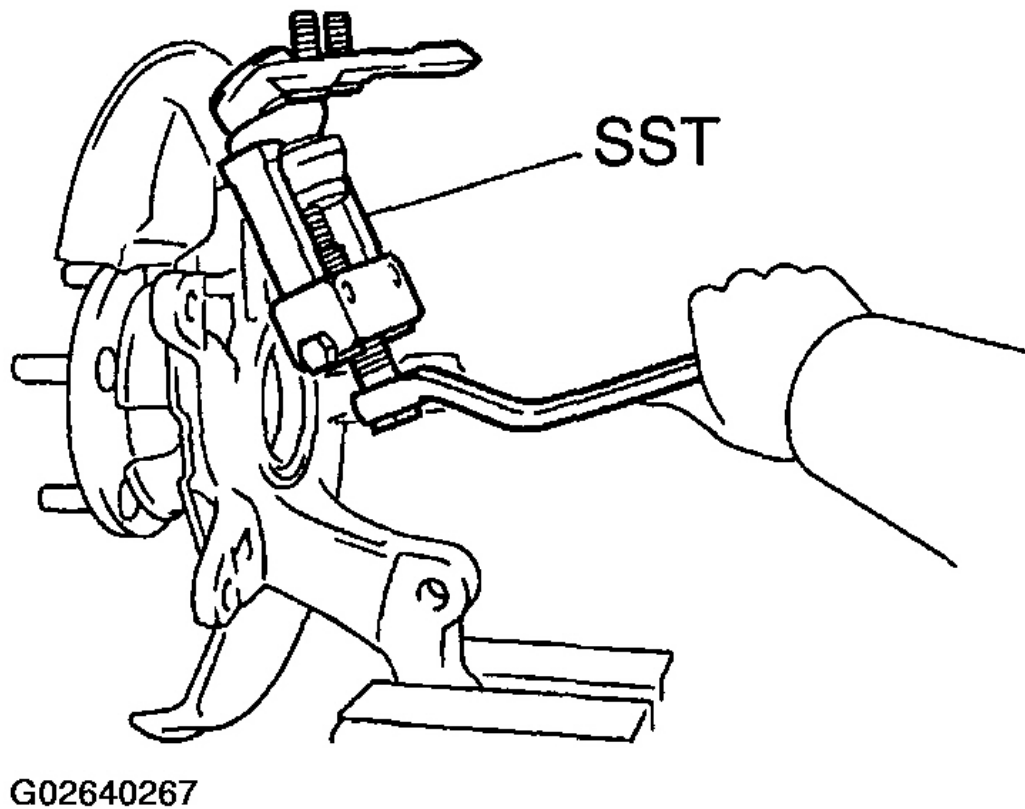
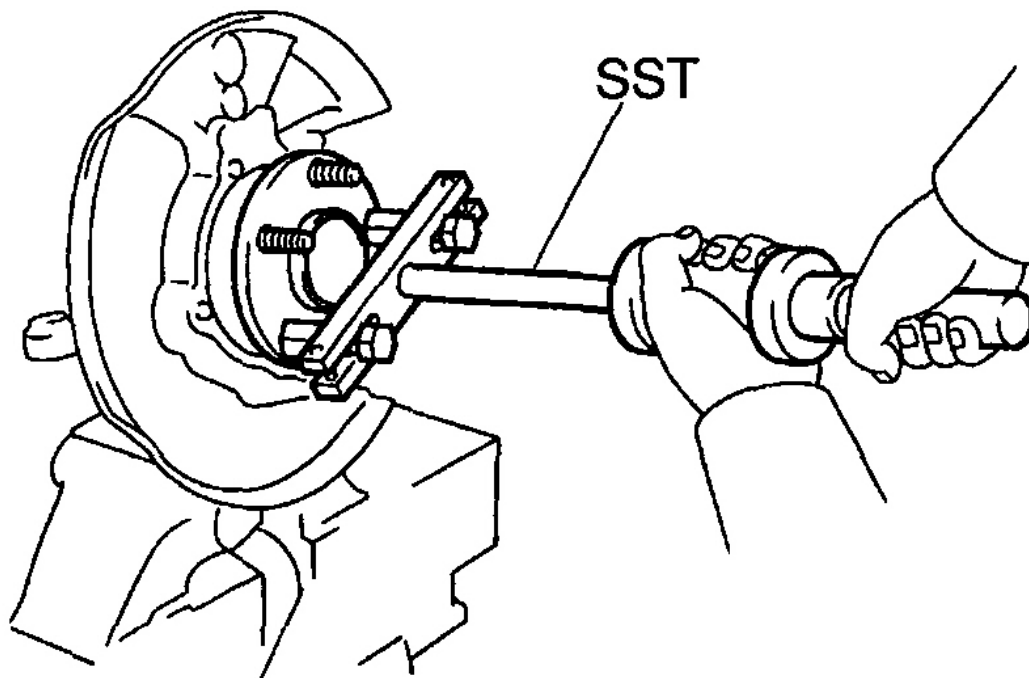


Fig. 32: Removing Lower Ball Joint Using Special Tool
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

2. REMOVE AXLE HUB

- a. Using SST, remove the axle hub.

SST 09520-00031 (09520-00040, 09521-00010, 09521-00020)



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Fig. 33: Removing Axle Hub Using Special Tool
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- b. Using SST, remove the inner race (outside) from the axle hub.

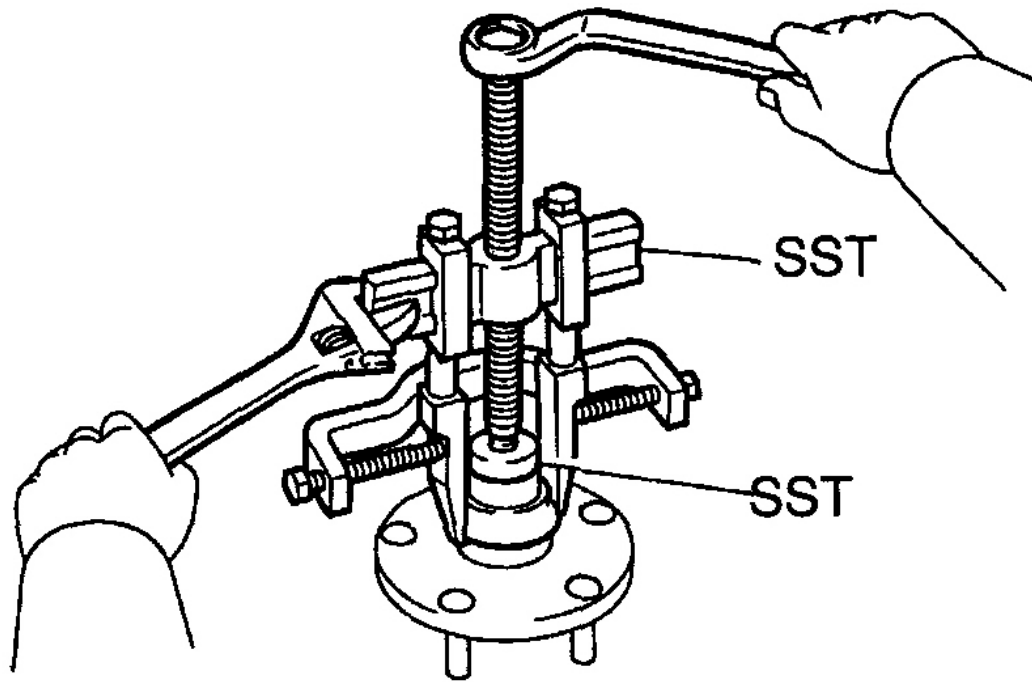
SST 09950-40011 (09951-04020, 09952-04010, 09953-04020, 09954-04010, 09955-04061, 09957-04010, 09958-04011), 09950-60010 (09951-00370)

3. REMOVE DUST COVER

Using a Torx(R) socket (T30), remove the 4 bolts and dust cover.

4. REMOVE BEARING FROM STEERING KNUCKLE

- a. Using snap ring pliers, remove the snap ring.
- b. Place the inner race on the outside of the bearing.



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Fig. 34: Removing Snap Ring Using Snap Ring Pliers

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

- c. Using SST and a press, remove the bearing from the steering knuckle.

SST 09527-17011, 09950-60010 (09951-00540), 09950-70010 (09951-07150)

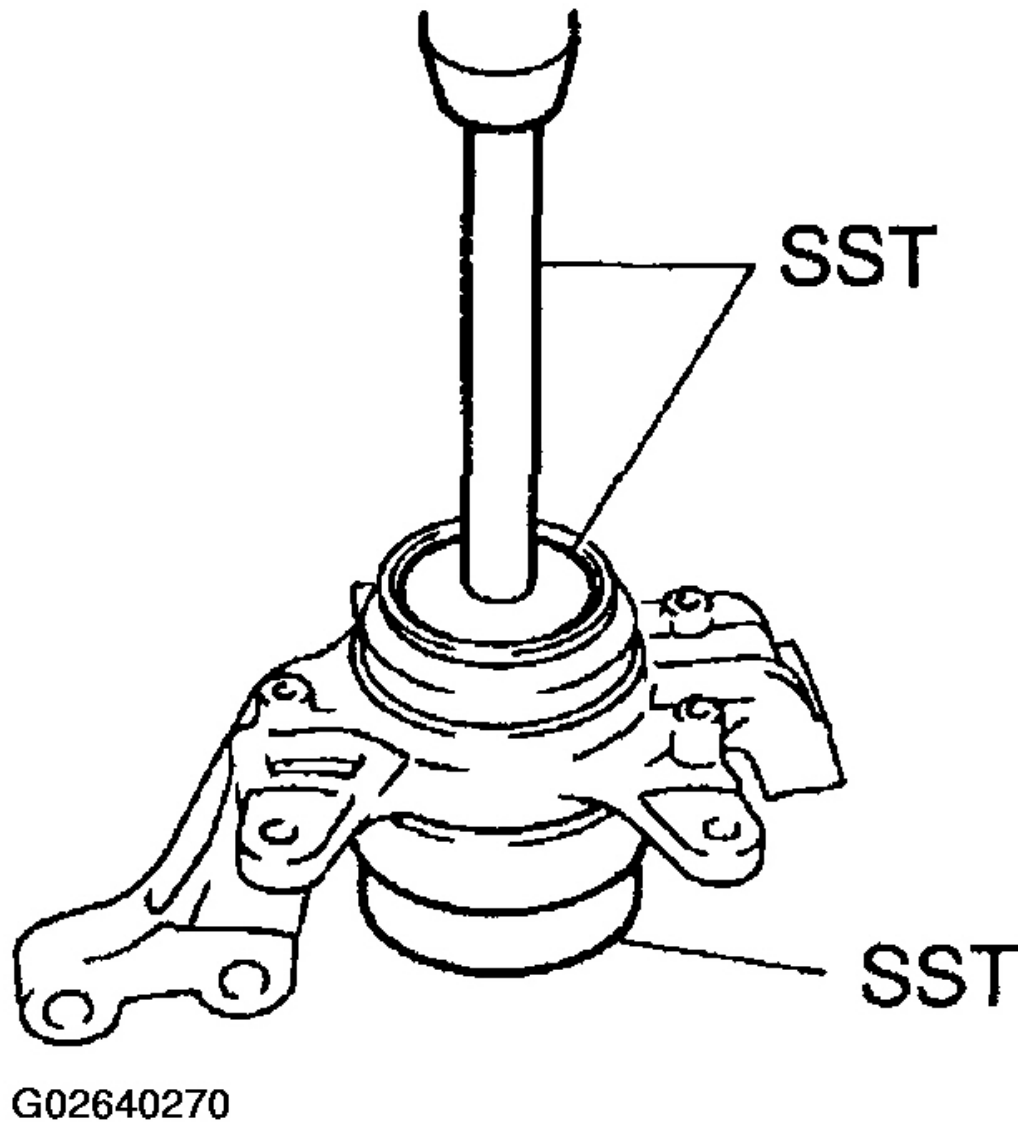


Fig. 35: Removing Bearing From Steering Knuckle Using Special Tool
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

REASSEMBLY

1. INSTALL BEARING

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

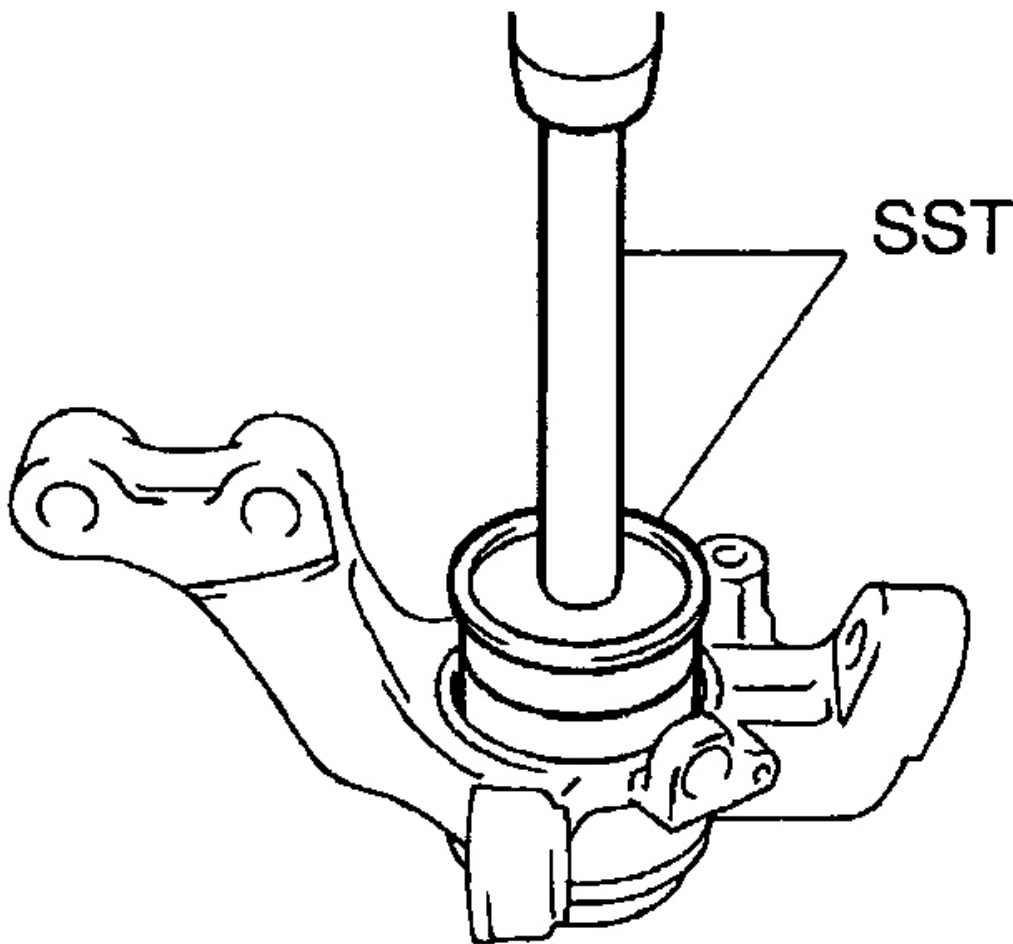
SST 09608-32010, 09950-70010 (09951-07150)

b. Using snap ring pliers, install a new snap ring.

2. INSTALL DUST COVER

Place the dust cover and using a Torx(R) socket (T30), install the 4 bolts.

Torque: 8.0 N.m (85 kgf.cm, 71 in.lbf)



G02640271

Fig. 36: Installing Bearing To Steering Knuckle Using Special Tool
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

3. INSTALL FRONT AXLE HUB

2005 Toyota RAV4

2005 SUSPENSION Suspension & Axle - RAV4

Using SST and a press, install the axle hub.

SST 09527-17011, 09950-60010 (09951-00370), 09950-70010 (09951-07150)

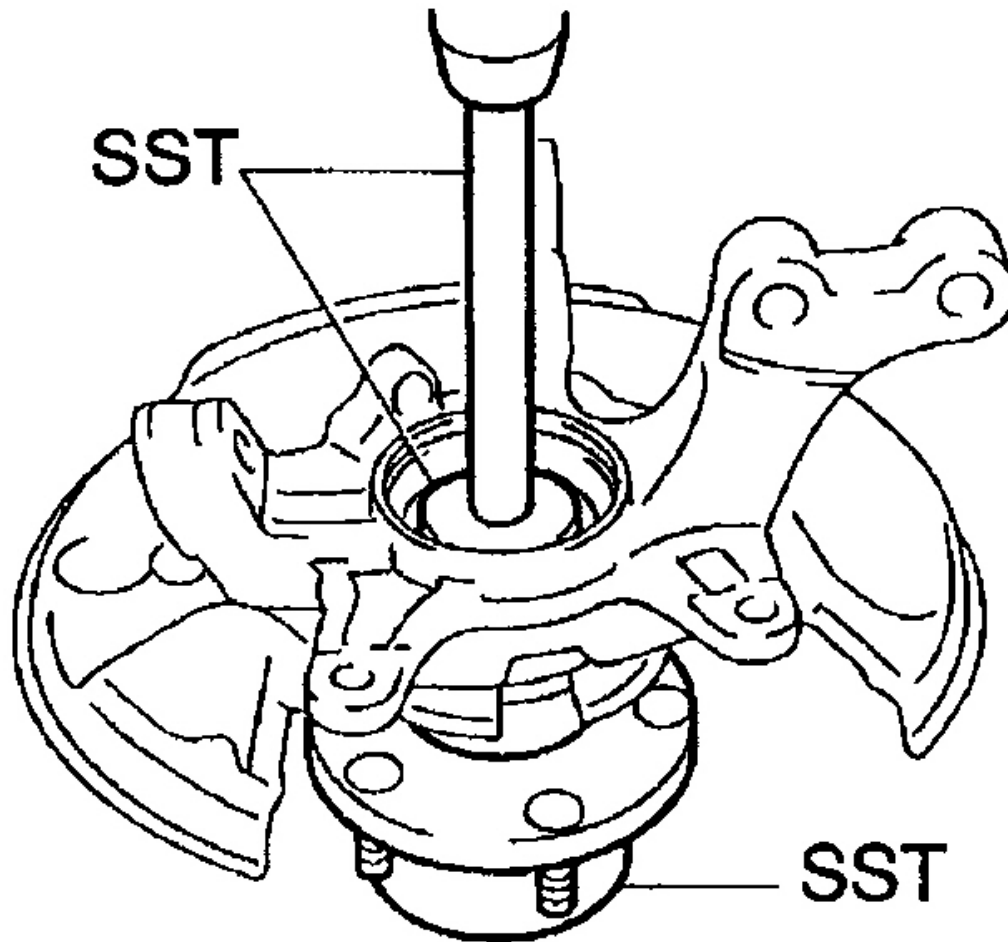
4. INSTALL LOWER BALL JOINT

- a. Install the lower ball joint with the nut.

Torque: 133 N.m (1,360 kgf.cm, 98 ft.lbf)

- b. Install a new cotter pin.

If the holes for cotter pin are not aligned, tighten the nut further up to 60°.



G02640272

Fig. 37: Installing Axle Hub Using Special Tool
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSTALLATION

Installation is in the reverse order of removal (See REMOVAL).

HINT:

After installation, check the ABS speed sensor signal (See DTC DTC C0200/31 - C1239/39) and front wheel alignment (See FRONT WHEEL ALIGNMENT).

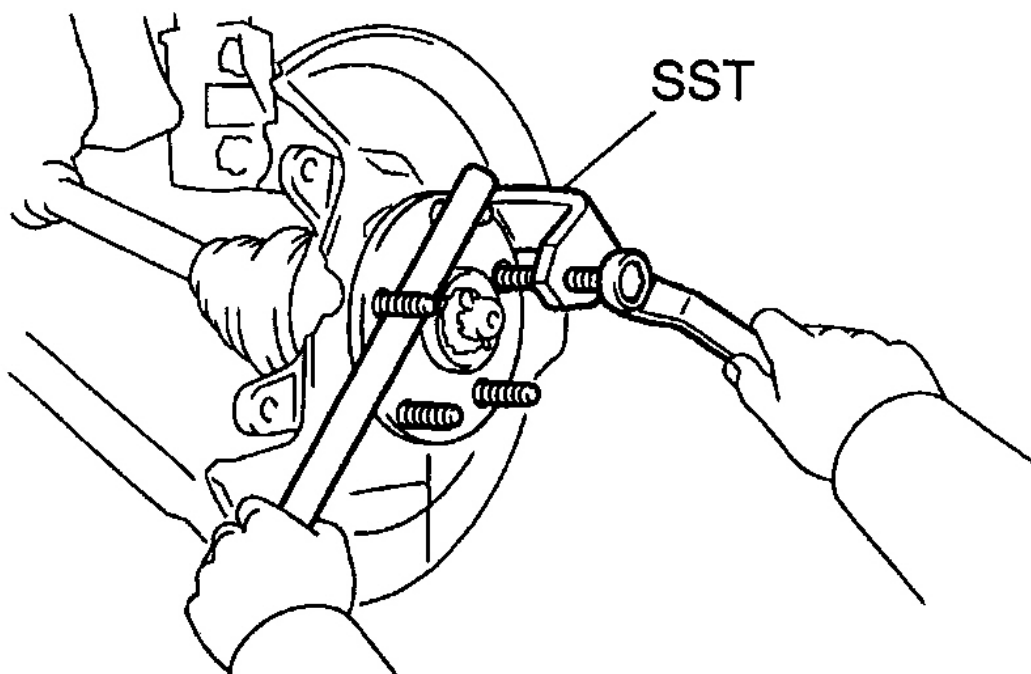
FRONT WHEEL HUB BOLT

REPLACEMENT

1. REMOVE FRONT WHEEL
2. REMOVE FRONT BRAKE DISC (See REMOVAL)
3. REMOVE HUB BOLT

Using SST, remove the hub bolt.

SST 09628-10011



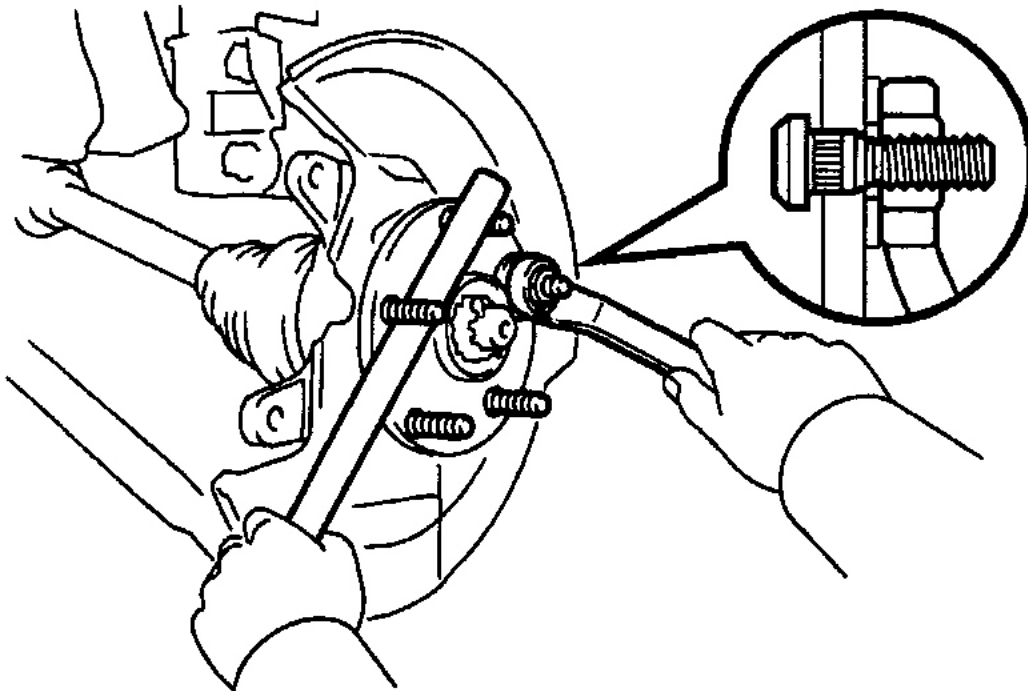
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Fig. 38: Removing Hub Bolt Using Special Tool
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

4. INSTALL HUB BOLT
 - a. Install a washer and a nut to a new hub bolt, as shown.
 - b. Using a brass bar to hold, install the hub bolt by tightening the nut.
5. INSTALL FRONT BRAKE DISC AND CALIPER (See INSTALLATION)

6. INSTALL FRONT WHEEL

Torque: 103 N.m (1,050 kgf.cm 76 ft.lbf)



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Fig. 39: Installing Hub Bolt By Tightening Nut
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

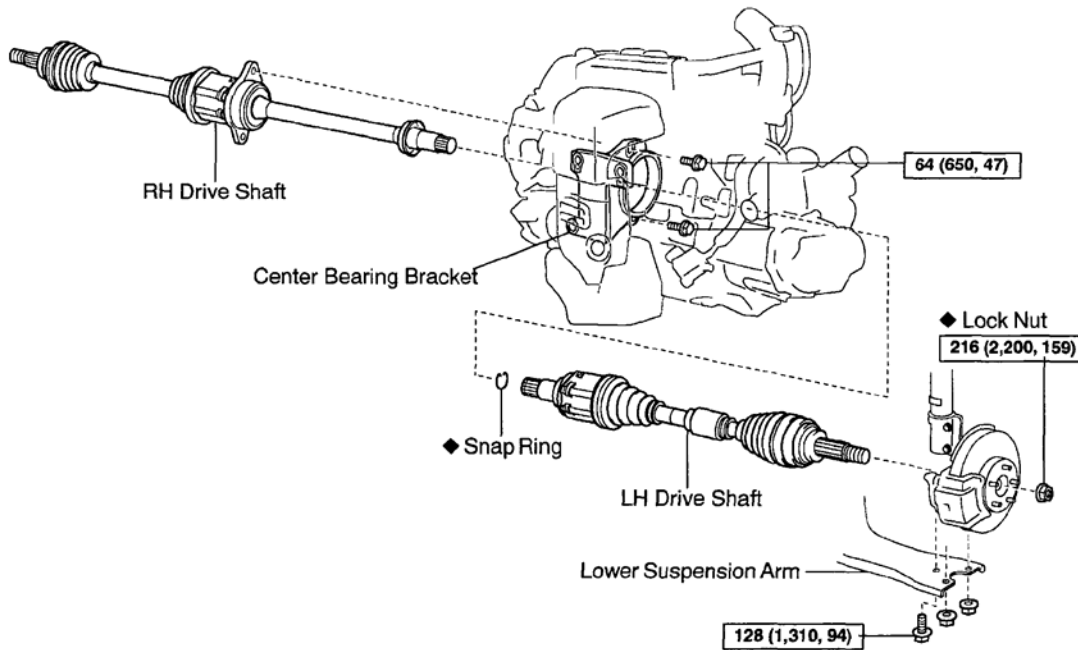
FRONT DRIVE SHAFT

COMPONENTS

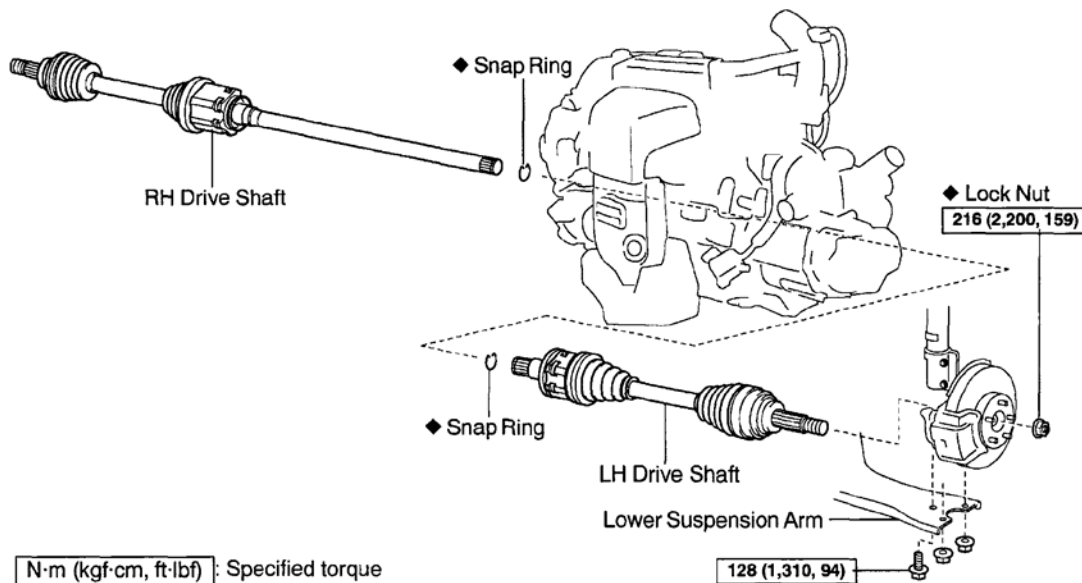
2005 Toyota RAV4

2005 SUSPENSION Suspension & Axle - RAV4

2WD



4WD



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

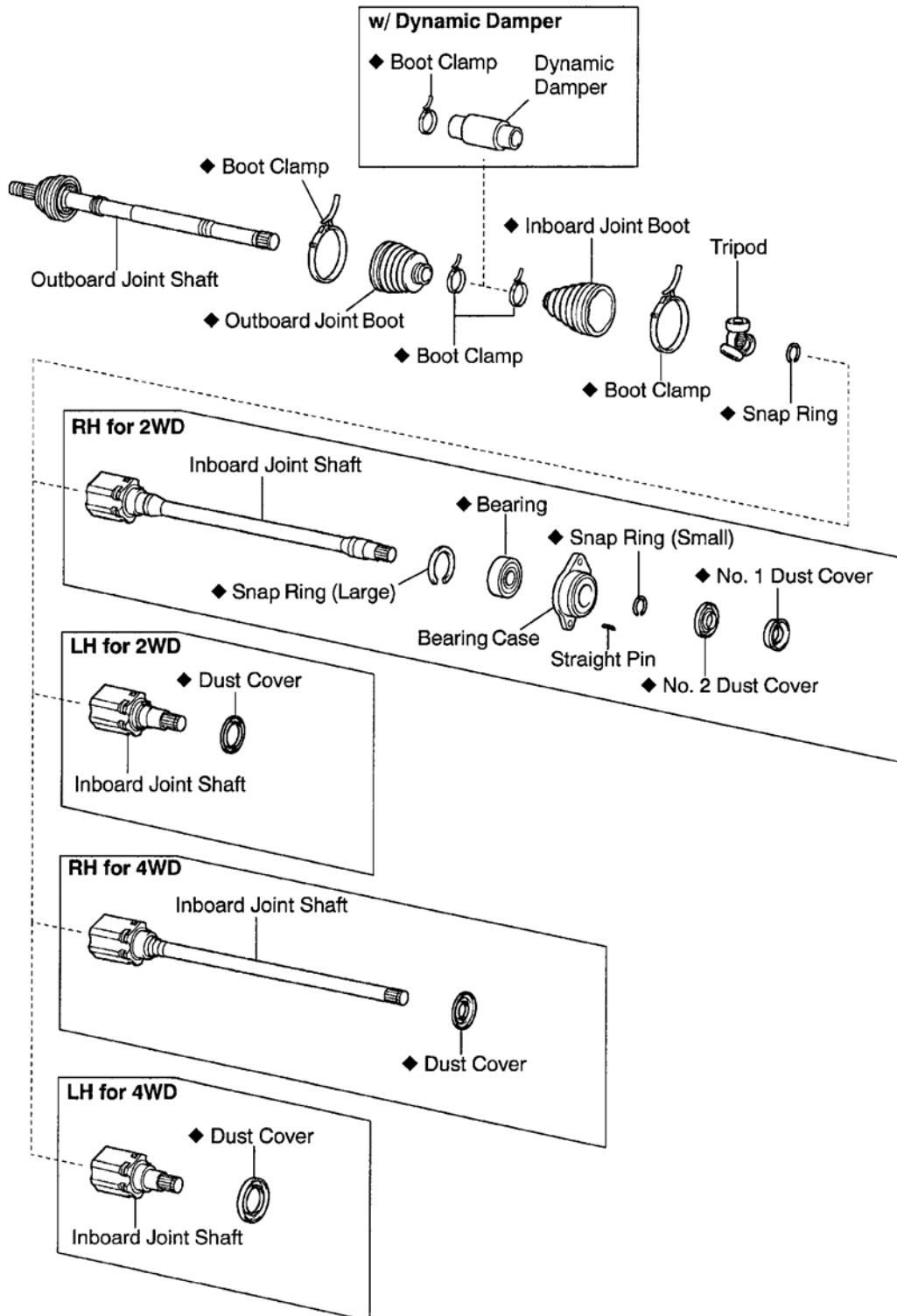
◆ Non-reusable part

G02640275

Fig. 40: Identifying Front Drive Shaft Components & Torque Specifications (1 Of 2)
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

2005 Toyota RAV4

2005 SUSPENSION Suspension & Axle - RAV4



◆ Non-reusable part

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2005 Toyota RAV4

2005 SUSPENSION Suspension & Axle - RAV4

Fig. 41: Identifying Front Drive Shaft Components (2 Of 2)

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

REMOVAL

NOTE:

- The hub bearing could be damaged if it is subjected to the vehicle weight, such as when moving the vehicle with the drive shaft removed.

Therefore if it is absolutely necessary to place the vehicle weight on the hub bearing, first support it with the SST.

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

- w/ ABS: After disconnecting the drive shaft from the axle hub, work carefully so as not to damage ABS speed sensor rotor serrations on the drive shaft.

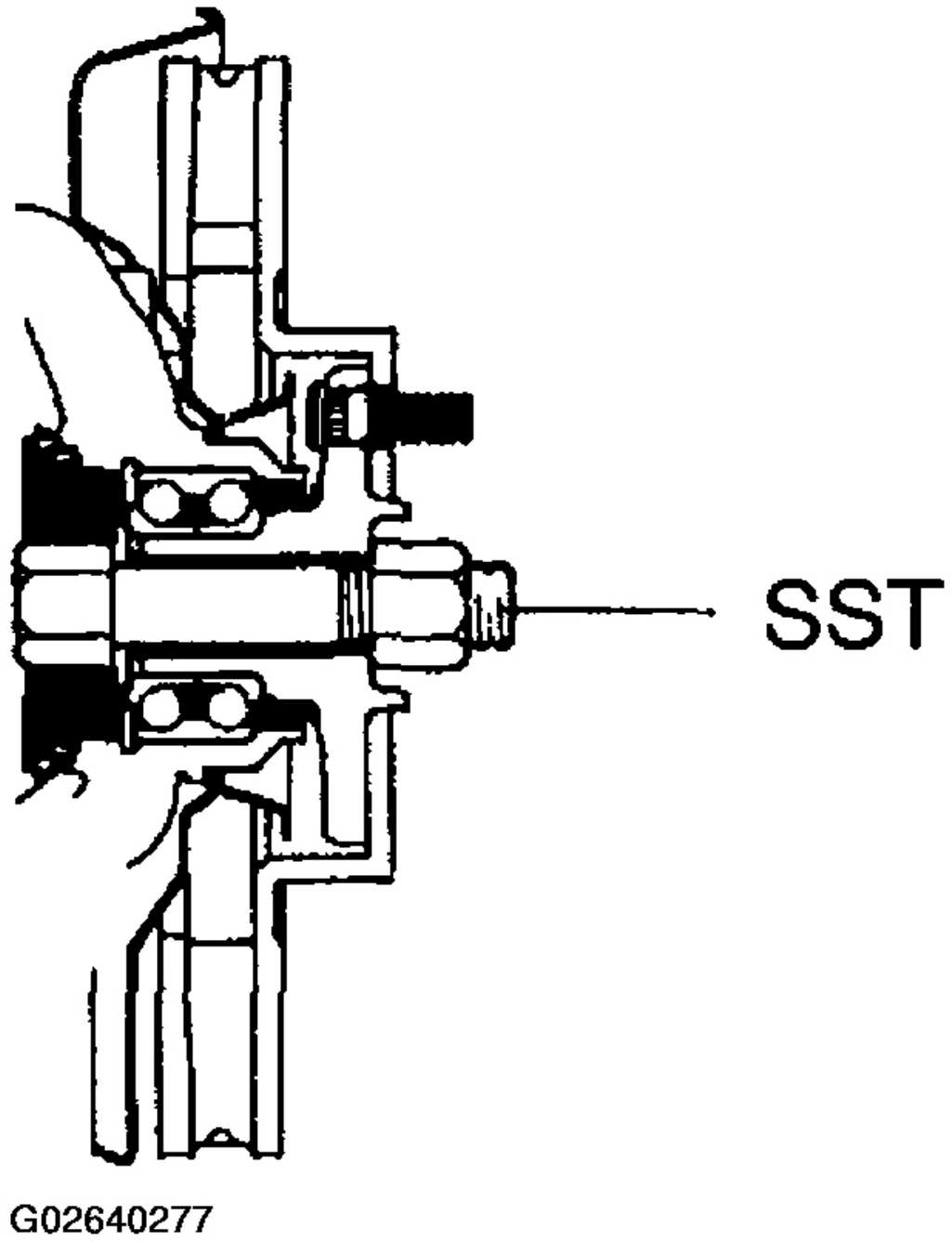


Fig. 42: Supporting Hub Bearing With SST
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

1. REMOVE FRONT WHEEL

Torque: 103 N.m (1,050 kgf.cm, 76 ft.lbf)

2. DRAIN GEAR OIL (M/T) OR ATF (A/T)

3. 4WD: DRAIN TRANSFER OIL

4. REMOVE DRIVE SHAFT LOCK NUT

- a. Using SST and a hammer, unstake the staked part of the lock nut.

SST 09930-00010

- b. While applying the brakes, remove the nut.

Torque: 216 N.m (2,200 kgf.cm, 159 ft.lbf)

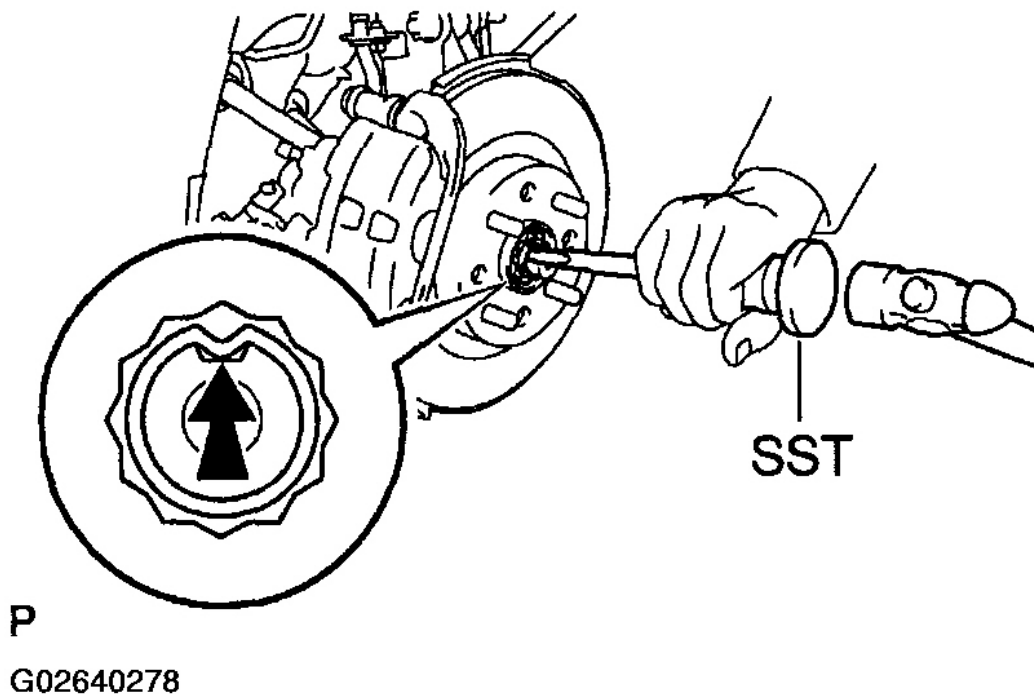
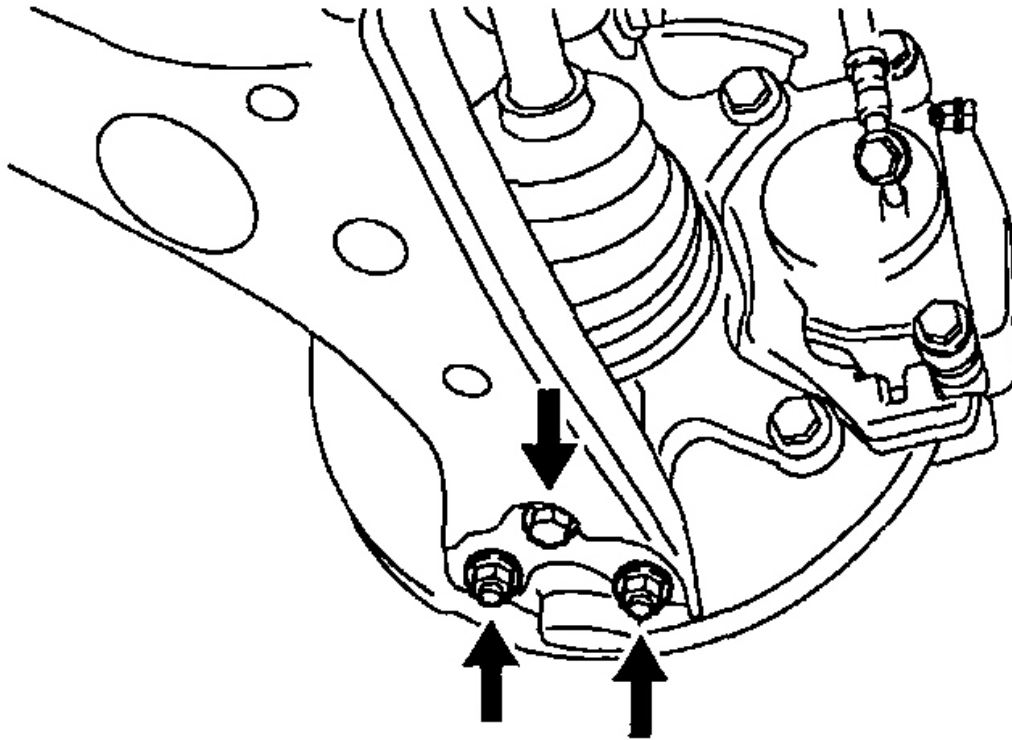


Fig. 43: Unstaking Staked Part Of Lock Nut Using SST And Hammer
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

5. DISCONNECT LOWER SUSPENSION ARM

Remove the bolt and 2 nuts, disconnect the lower suspension arm from the lower ball joint.

Torque: 128 N.m (1,310 kgf.cm, 94 ft.lbf)



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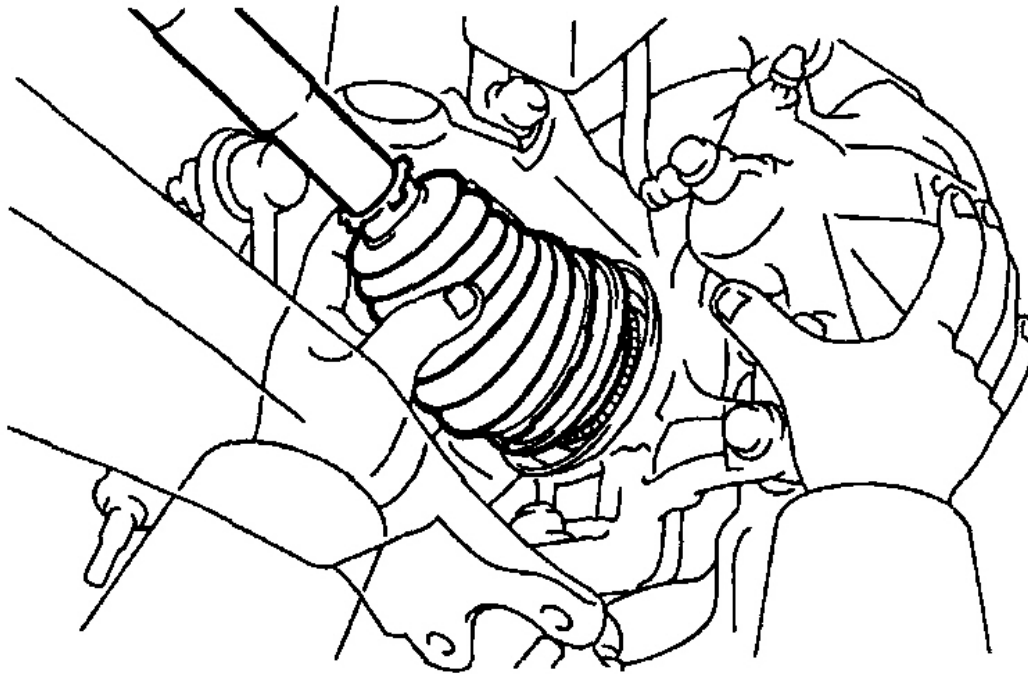
Fig. 44: Removing Bolt And Nuts

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

6. DISCONNECT DRIVE SHAFT FROM AXLE HUB

Using a plastic hammer, disconnect the drive shaft from the axle hub.

NOTE: Be careful not to damage the ABS speed sensor rotor.



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Fig. 45: Disconnecting Drive Shaft From Axle Hub Using Special Tool
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

7. REMOVE DRIVE SHAFT

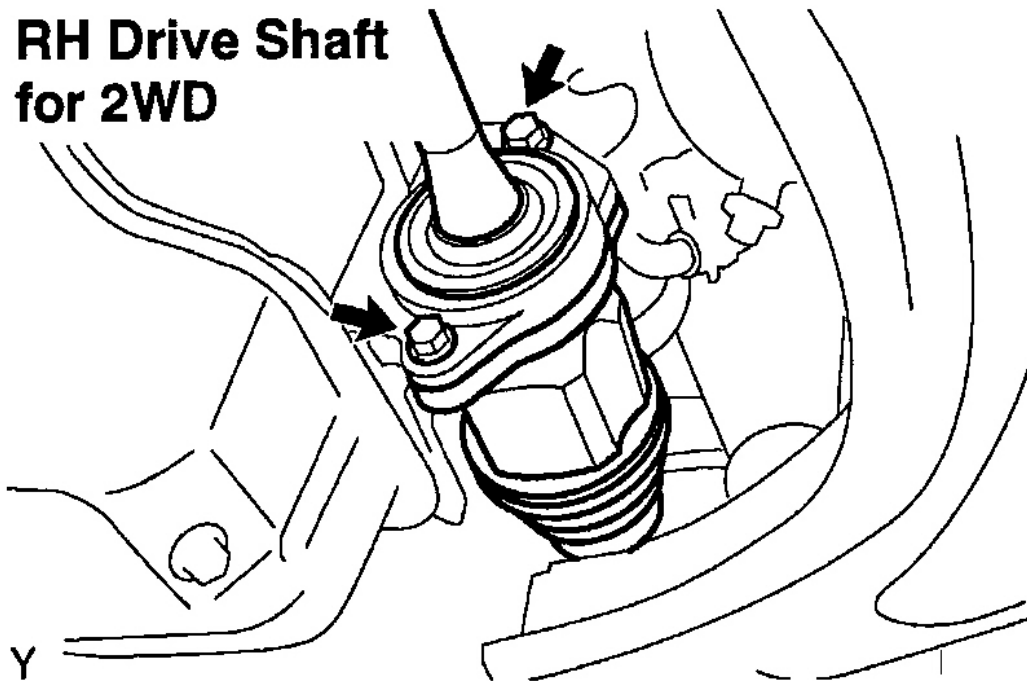
- a. RH drive shaft for 2WD: Remove the 2 bolts and drive shaft.

Torque: 64 N.m (650 kgf.cm, 47 ft.lbf)

HINT:

At the time of installation, coat the oil seal lip with MP grease.

RH Drive Shaft for 2WD



G02640281

Fig. 46: Removing Bolts And Drive Shaft - 2WD

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

- b. Except RH drive shaft for 2WD: Using SST, remove the drive shaft.

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

- c. Using a screwdriver, remove the snap ring.

HINT:

At the time of installation, please refer to the following items.

- Before installing the drive shaft, set the snap ring opening side facing downward.
- Whether or not the drive shaft is in contact with the pinion shaft can be known by sound or feeling when driving it in.
- After installation, check that there is 2-3 mm (0.08-0.12 in.) of play in axial direction.
- After installation, check that the drive shaft can not be pulled out by hand.

Except RH Drive Shaft for 2WD

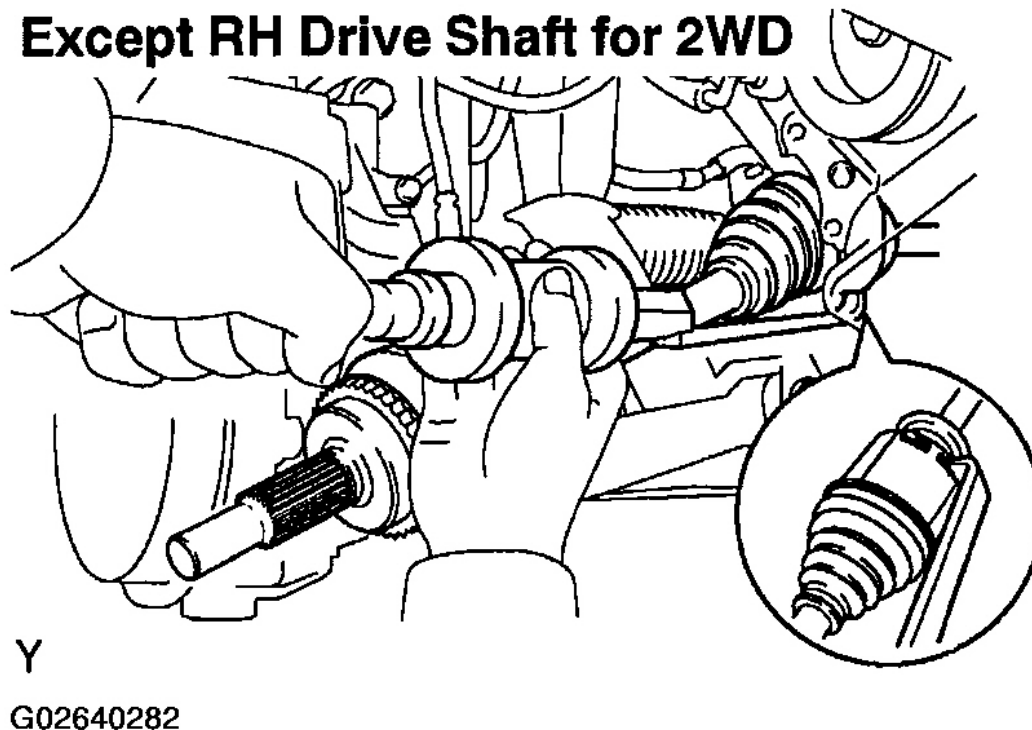


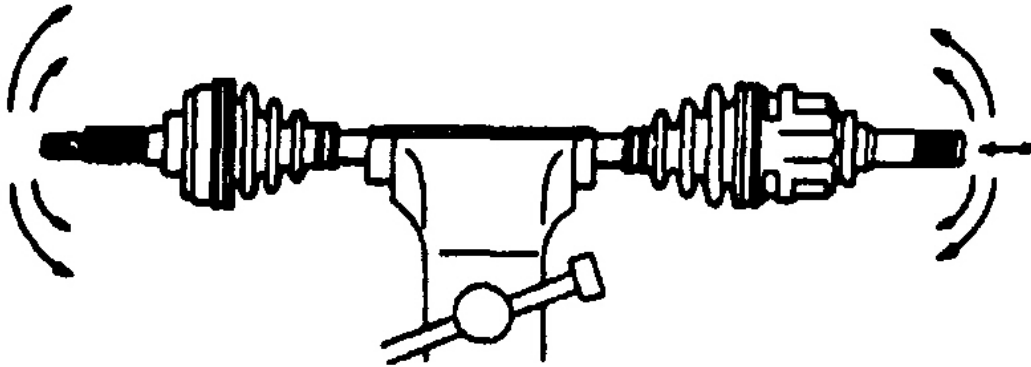
Fig. 47: Removing Snap Ring Using Special Tool
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

DISASSEMBLY

1. DISASSEMBLE DRIVE SHAFT

NOTE: Do not disassemble the outboard shaft.

- a. Check the drive shaft.
 1. Check that there is no remarkable play in the outboard joint.
 2. Check that the inboard joint slides smoothly in the thrust direction.
 3. Check that there is no remarkable play in the radial direction of the inboard joint.
 4. Check the boots for damage.
- b. Remove the inboard and outboard joint boot clamps. Using a screwdriver, unclamp the boot clamps.
- c. w/ Dynamic damper: Remove the dynamic damper clamps. Using a screwdriver, unclamp the clamps.



G02640283

Fig. 48: Checking Drive Shaft

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

- d. Remove the inboard shaft.
 - 1. Slide the inboard boot toward the outboard joint.
 - 2. Place matchmarks on the inboard joint shaft, tripod and outboard joint shaft, and then remove the inboard joint shaft.

NOTE: Do not punch the marks.

- e. Remove the tripod.
 - 1. Using a snap ring expander, remove the snap ring.

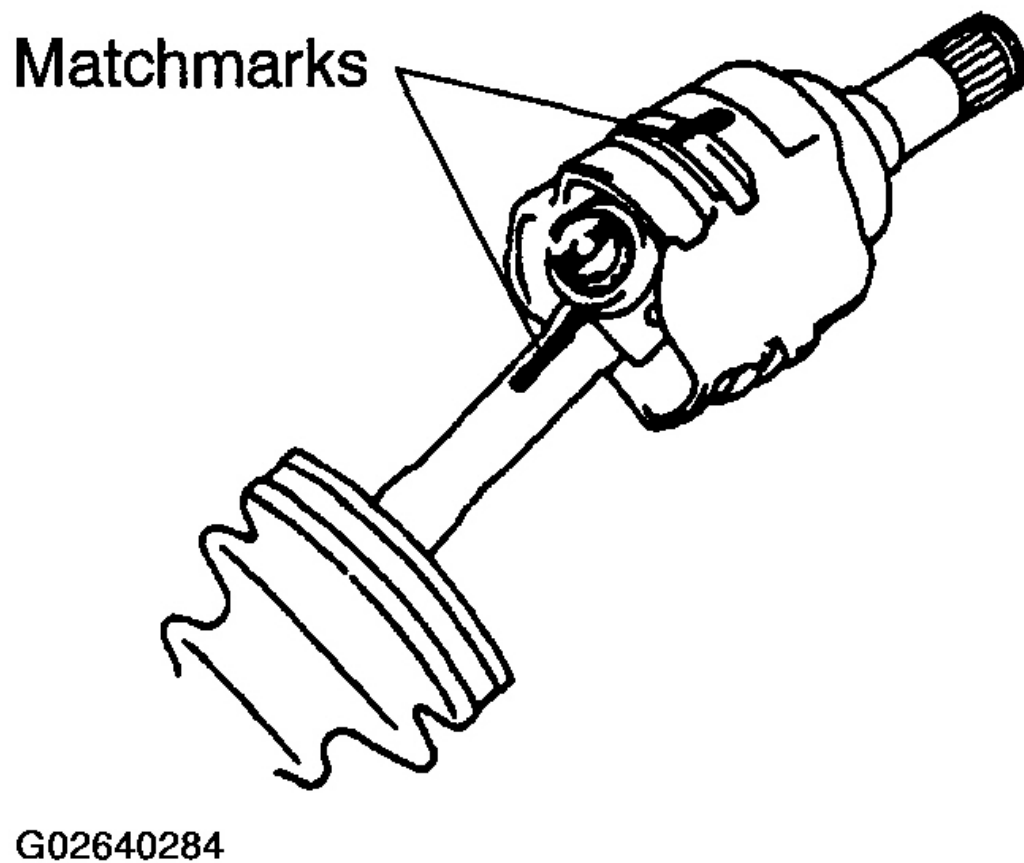


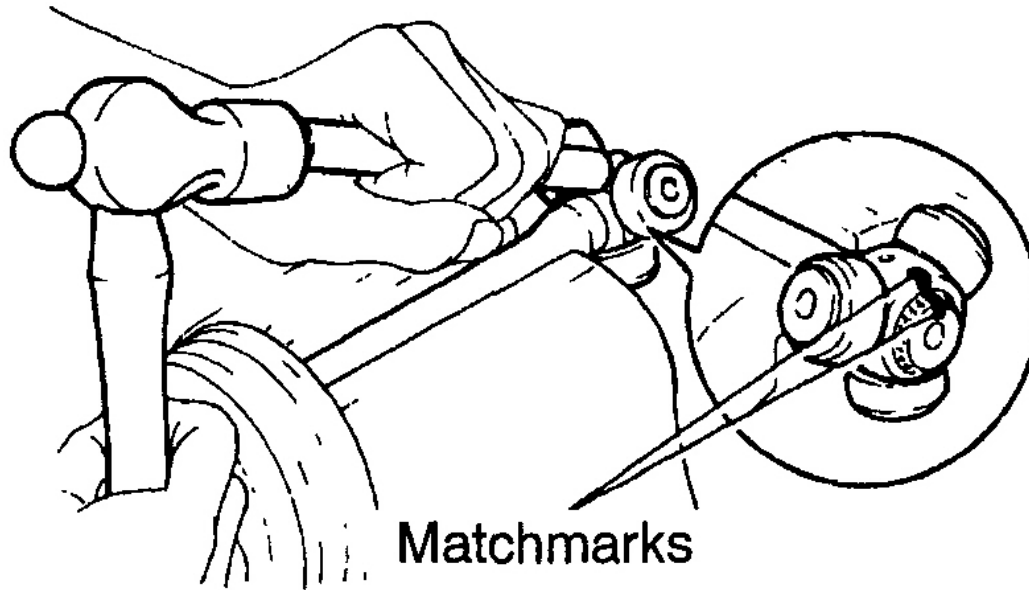
Fig. 49: Placing Matchmarks On Inboard Joint Shaft, Tripod And Outboard Joint Shaft

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

2. Place matchmarks on the outboard joint shaft and tripod.
3. Using a brass bar and a hammer, remove the tripod.

NOTE: Do not tap the roller.

- f. Remove the inboard joint boot, (dynamic damper), outboard joint boot and boot clamps.



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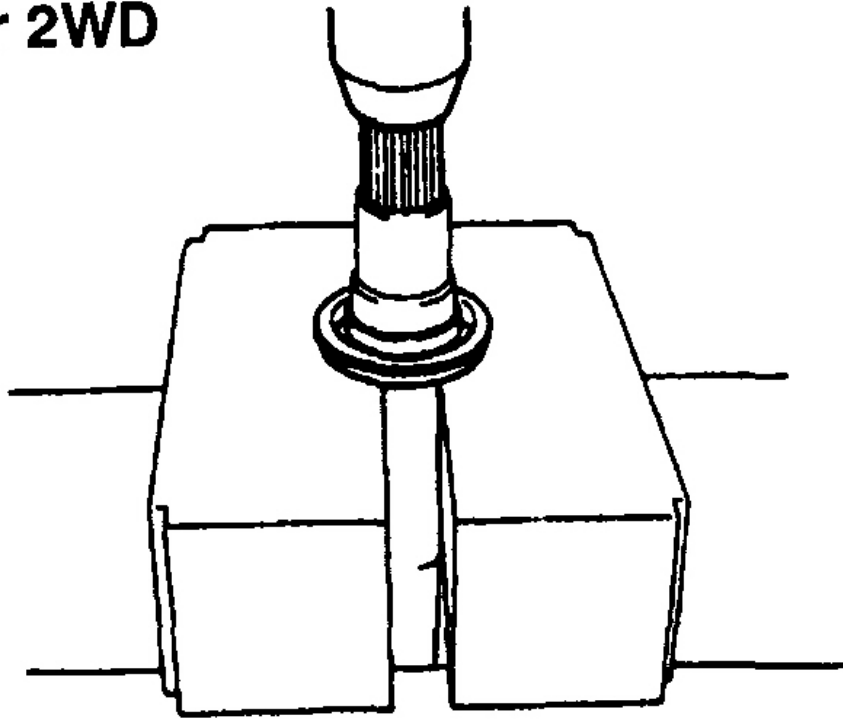
Fig. 50: Removing Tripod Using Special Tool

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

2. RH for 2WD: DISASSEMBLE INBOARD JOINT SHAFT

- a. Remove the No. 1 dust cover. Using a press, remove the dust cover.

RH for 2WD

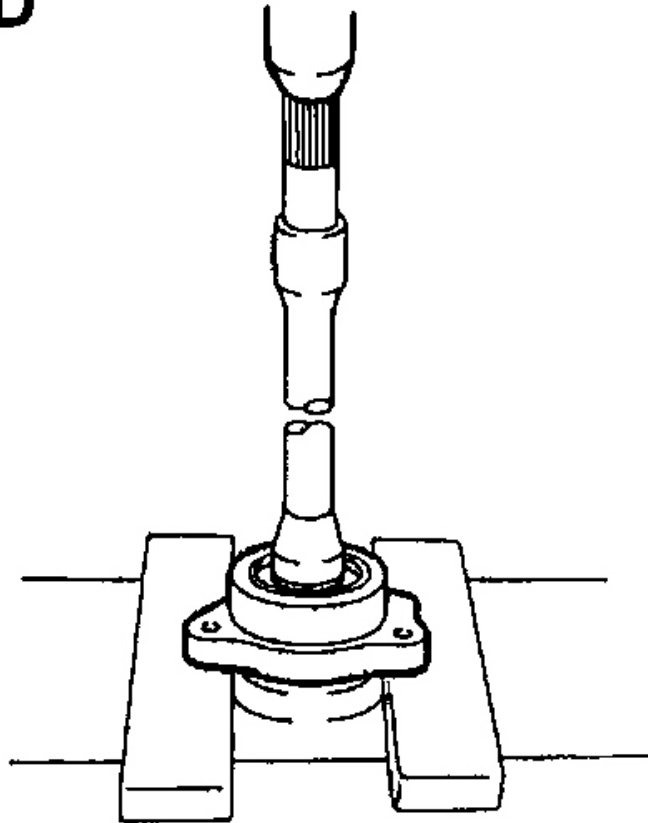


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Fig. 51: Removing Dust Cover Using Special Tool
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

3. Remove the bearing case.
 1. Using a screwdriver, remove the snap ring (large).
 2. Using a press, remove the bearing case.
 3. Using a pin punch and a hammer, remove the straight pin from the bearing case.

RH for 2WD



G02640287

Fig. 52: Removing Bearing Case

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

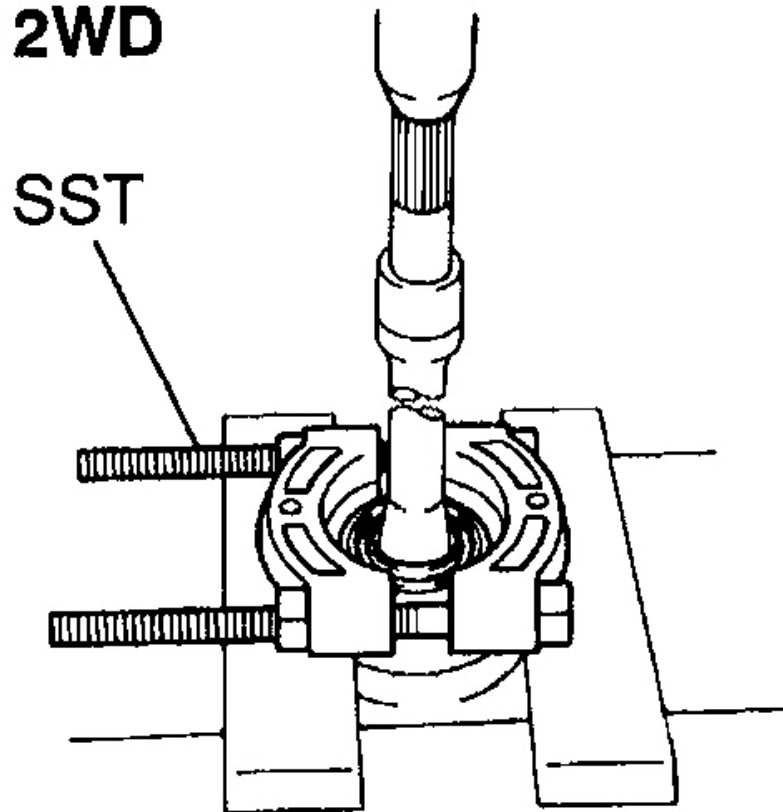
4. Remove the No. 2 dust cover.

Using SST and a press, remove the dust cover.

SST 09950-00020

5. Remove the bearing.
 1. Using a snap ring expander, remove the snap ring (small).

RH for 2WD



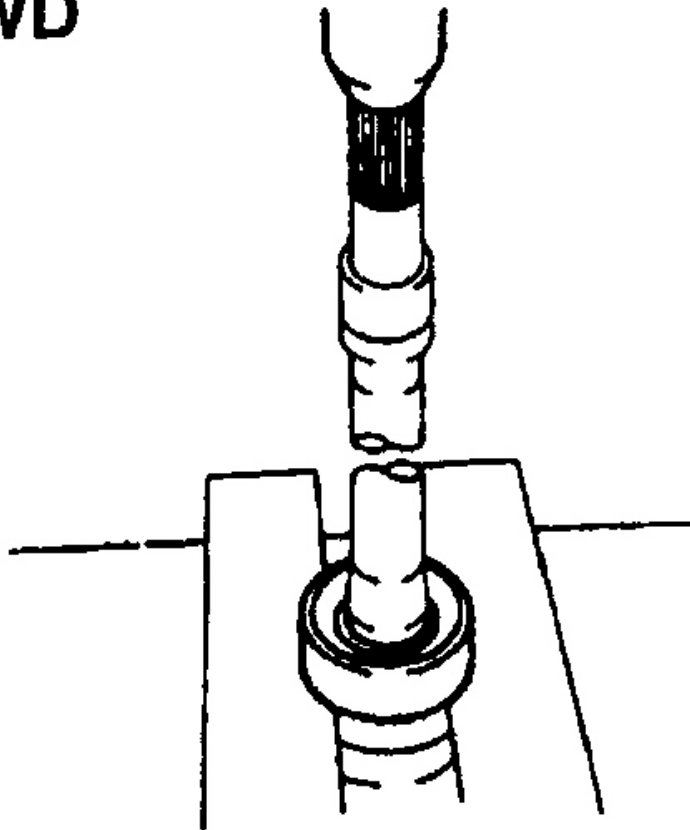
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Fig. 53: Removing Snap Ring Using Special Tool

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

2. Using a press, remove the bearing.

RH for 2WD



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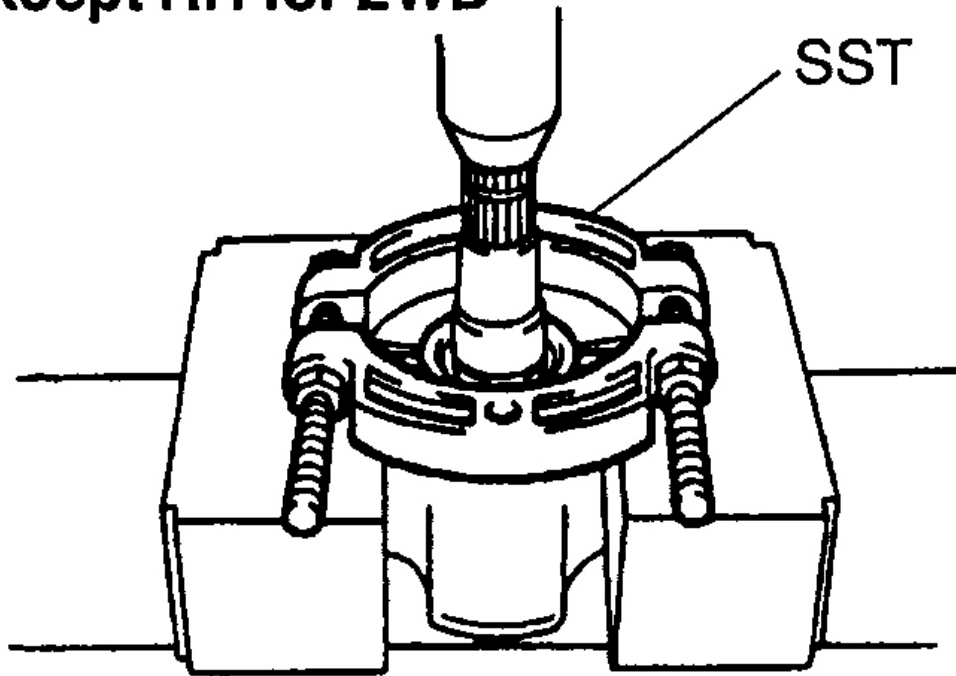
Fig. 54: Removing Bearing Using Special Tool
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

6. Except RH for 2WD: REMOVE DUST COVER

Using SST and a press, remove the dust cover from the inboard joint shaft.

SST 09950-00020

Except RH for 2WD



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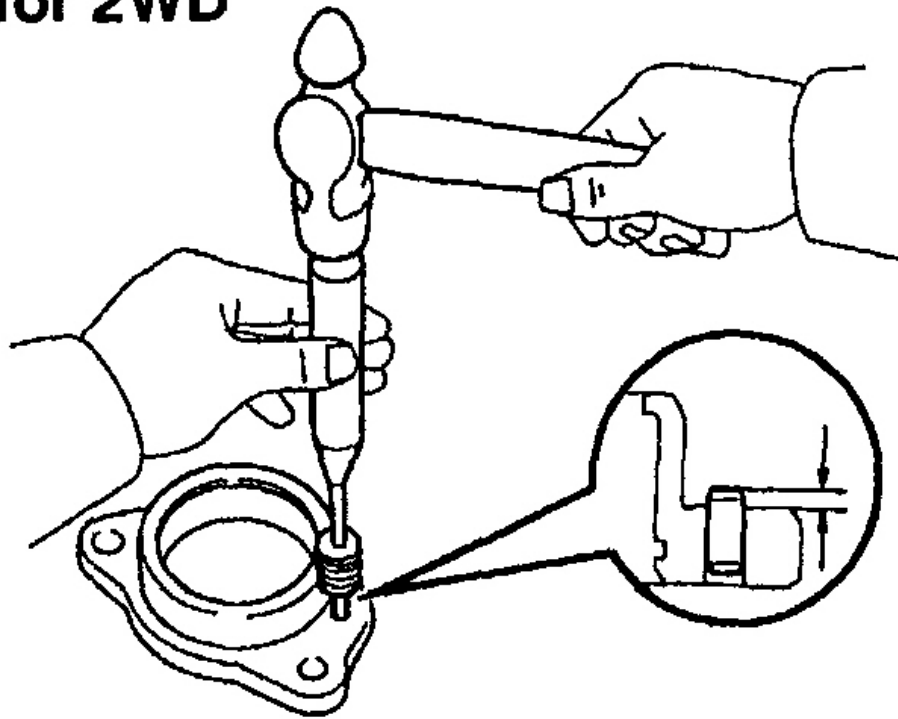
Fig. 55: Removing Dust Cover From Inboard Joint Shaft Using SST And Press
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

REASSEMBLY

1. RH for 2WD: REASSEMBLE INBOARD JOINT SHAFT

- a. Assemble the bearing case.
 1. Using a pin punch and a hammer, install the straight pin into the bearing case.

RH for 2WD



G02640291

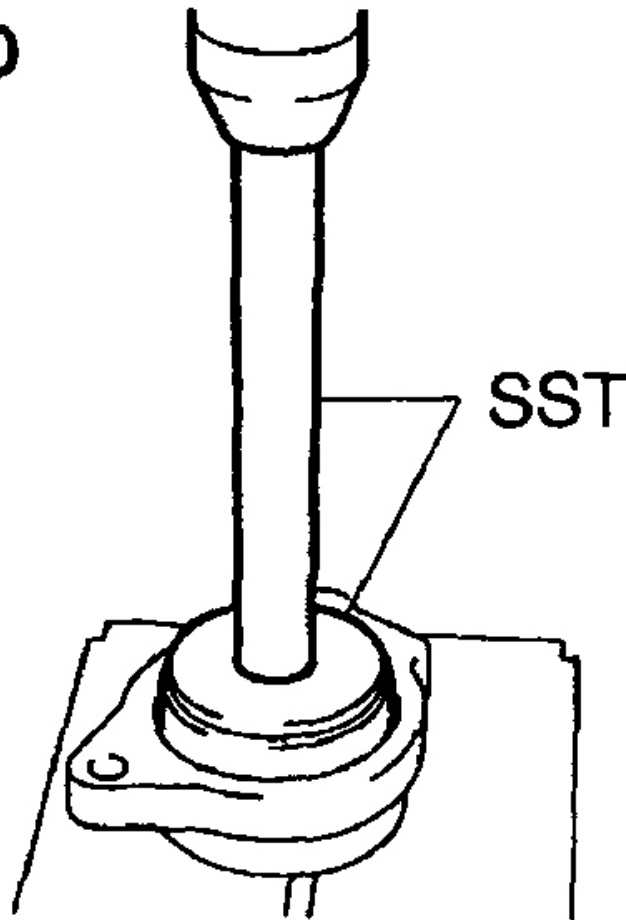
Fig. 56: Installing Straight Pin Into Bearing Case Using Pin Punch And Hammer
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

2. Using SST and a press, install a new bearing into the bearing case.

SST 09950-60020 (09951-00720), 09950-70010 (09951-07150)

3. Using a screwdriver, install a new snap ring (large).

RH for 2WD



G02640292

Fig. 57: Installing Bearing Into Bearing Case Using SST And Press
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

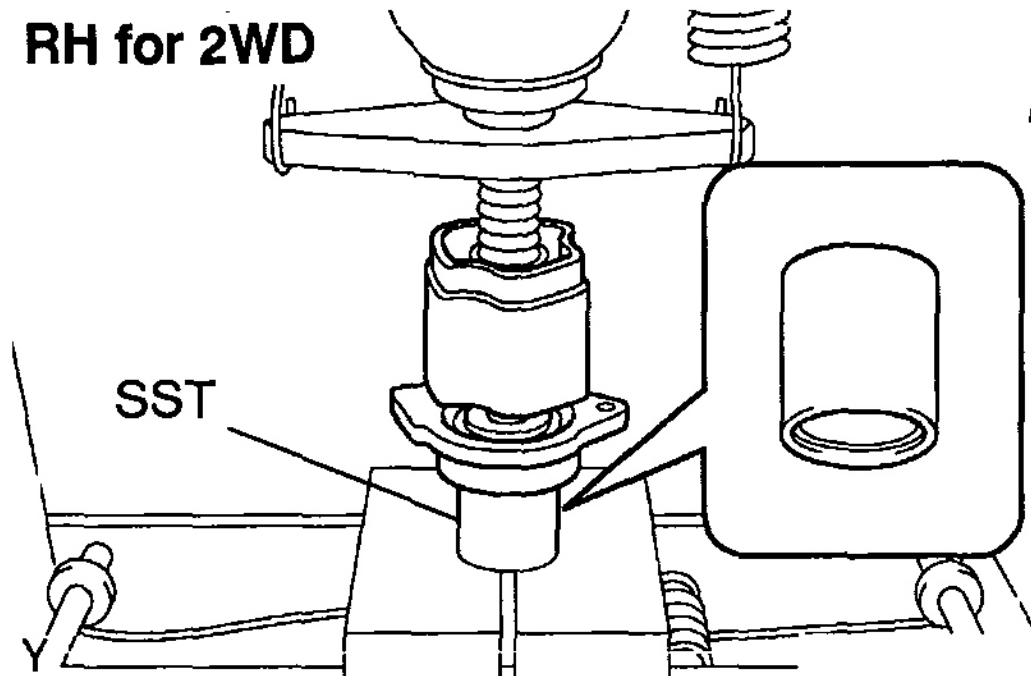
b. Install the bearing case.

1. Using SST and a press, install the bearing with the bearing case assembly to the inboard shaft.

SST 09710-04081

2. Using a snap ring expander, install a new snap ring (small).

RH for 2WD



G02640293

Fig. 58: Installing Bearing With Bearing Case Assembly To Inboard Shaft Using SST And Press

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

- c. Install the dust covers.
 - 1. Using SST and a press, install a new No. 2 dust cover.

SST 09710-04081

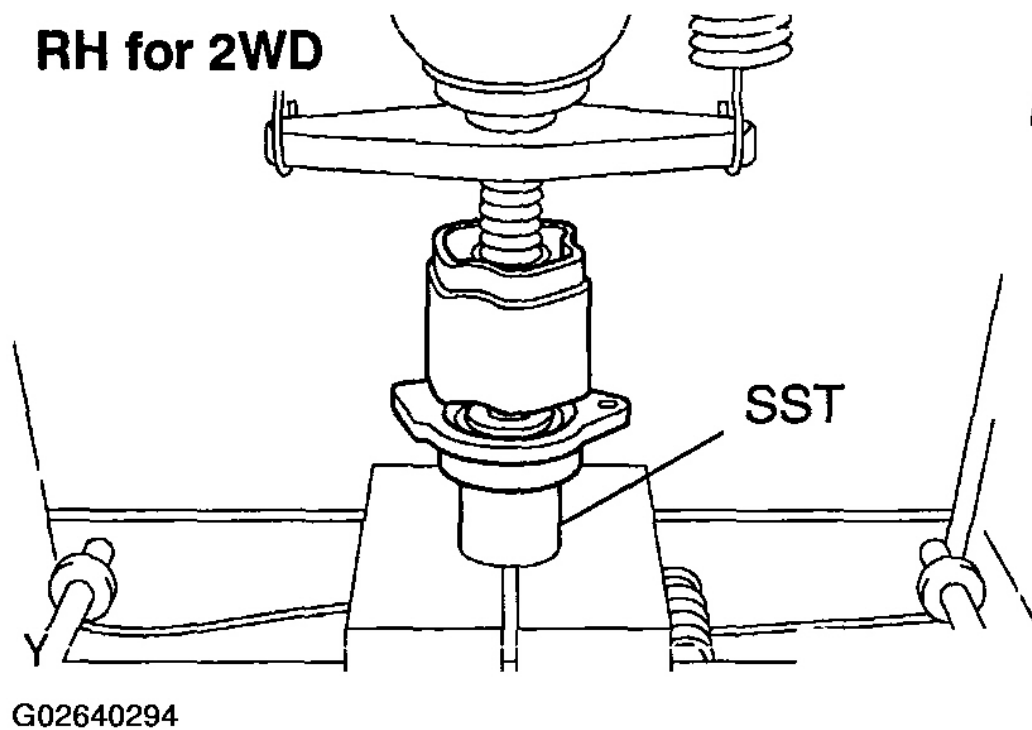
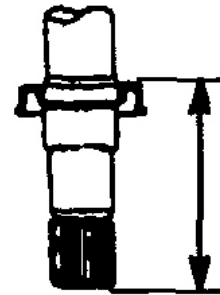
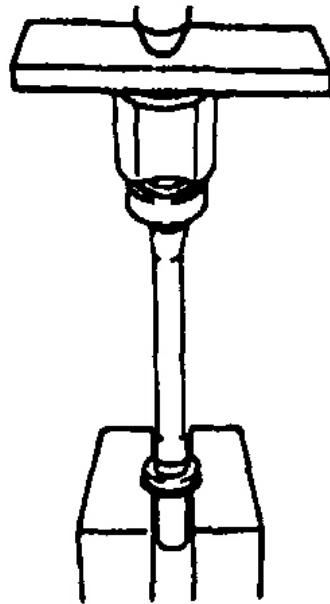


Fig. 59: Installing Number Dust Cover Using SST And Press
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

2. Using a press, install a new No. 1 dust cover, as shown.

RH for 2WD



86 – 87 mm
(3.39 – 3.43 in.)

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Fig. 60: Installing Number Dust Cover Using Press
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

2. Except RH for 2WD: INSTALL NEW DUST COVER

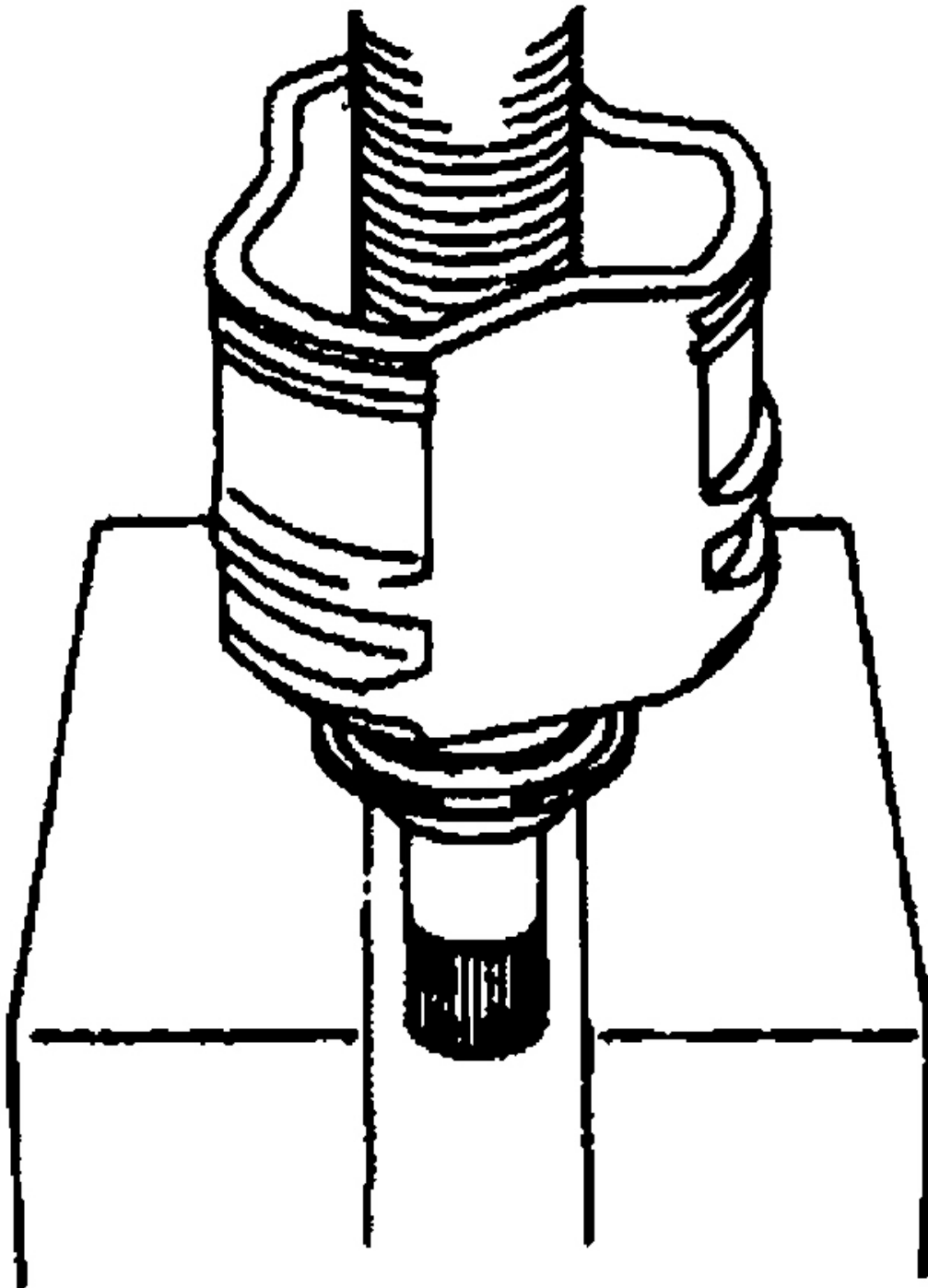
Using a press, install a new dust cover.

3. REASSEMBLE DRIVE SHAFT

- a. Temporarily install a new outboard joint boot (dynamic damper), a new inboard joint boot and new boot clamps.

2005 Toyota RAV4

2005 SUSPENSION Suspension & Axle - RAV4



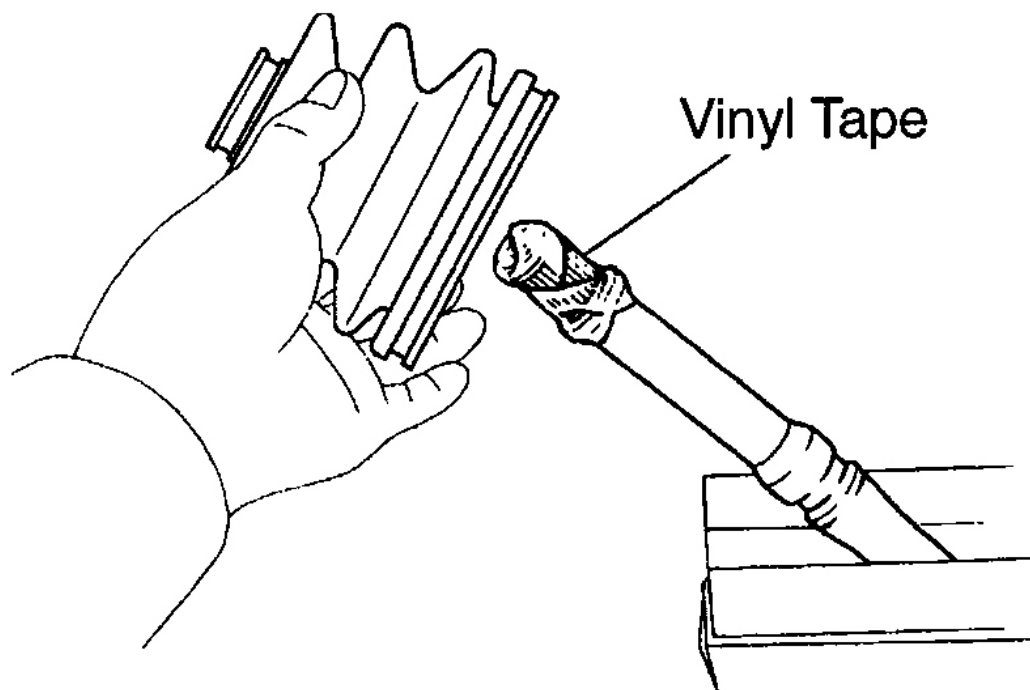
G02640296

Fig. 61: Installing Dust Cover Using Special Tool

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

HINT:

Before installing the boots, wrap vinyl tape around the spline of the drive shaft to prevent damaging the boots.



G02640297

Fig. 62: Wrapping Vinyl Tape Around Spline Of Drive Shaft To Prevent Damaging Boot

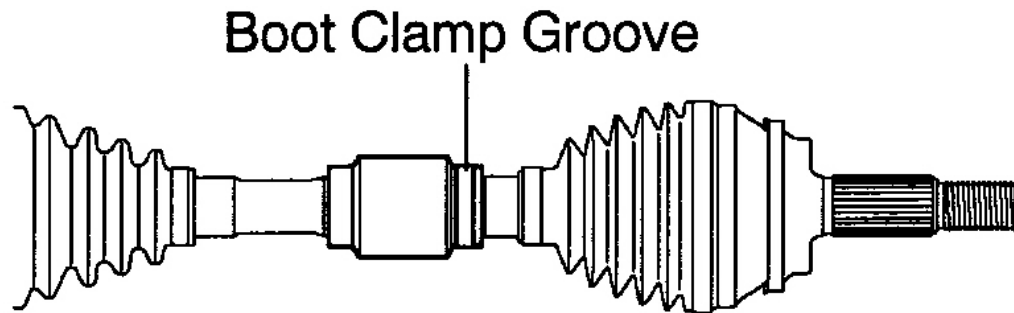
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

1. install a new outboard joint boot to the outboard joint shaft, and place new boot clamps on the outboard joint boot.
2. w/dynamic damper: Install the dynamic damper to the outboard joint shaft, and place a new boot clamp on it.

HINT:

The dynamic damper direction is shown.

3. Place new boot clamps on a new inboard boot, and install them to the outboard joint shaft.

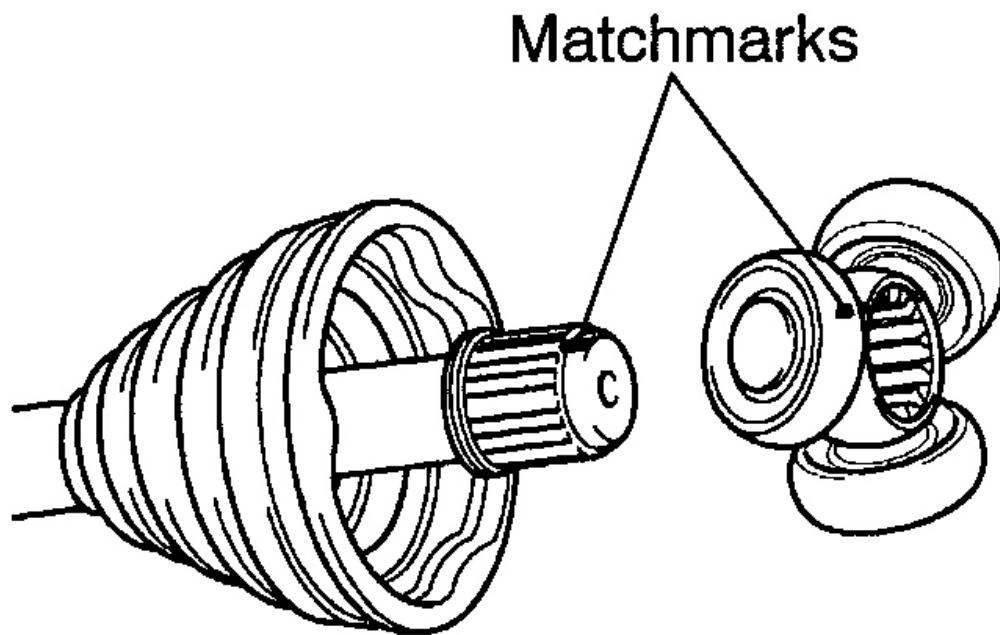


Y

G02640298

Fig. 63: Placing Boot Clamps On Inboard Boot
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- b. Install the tripod.
 1. Place the beveled side of the tripod axial spline toward the outboard joint.
 2. Align the matchmarks placed before removal procedure.
 3. Using a brass bar and a hammer, tap the tripod to the drive shaft.



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Fig. 64: Identifying Matchmarks Position

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

NOTE: Do not tap the roller.

4. Using a snap ring expander, install a new snap ring.
- c. Cover the outboard joint boot.

Pack the outboard joint and boot with grease in the boot kit, and cover the outboard joint with the boot.

Grease capacity: (Color = yellow) 190-200 g (6.8 - 7.1 oz.)

- d. Cover the inboard joint boot.
 1. Pack the inboard joint shaft and boot with grease in the boot kit.

Grease capacity: (Color = ocher yellow) 185-195 g (6.6 - 7.0 oz.)

2. Align the matchmarks placed before removal procedure, and install the inboard joint shaft to the outboard joint shaft.
3. Cover the inboard joint shaft with the boot.

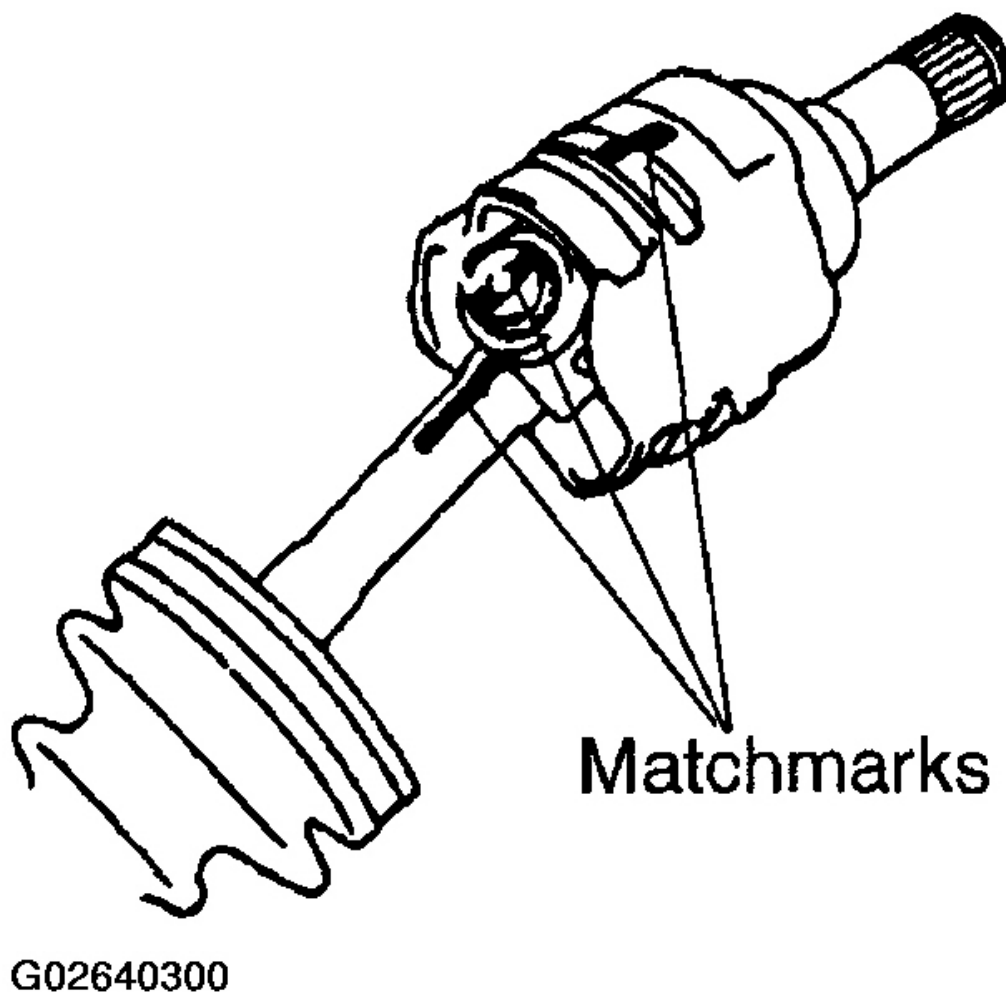


Fig. 65: Installing Inboard Joint Shaft To Outboard Joint Shaft With Matchmarks
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- e. Tighten the boot clamps.
 1. Make sure that the 2 boots are on the shaft groove.
 2. Make sure that the 2 boots are not stretched or contracted when the drive shaft is at standard

length.

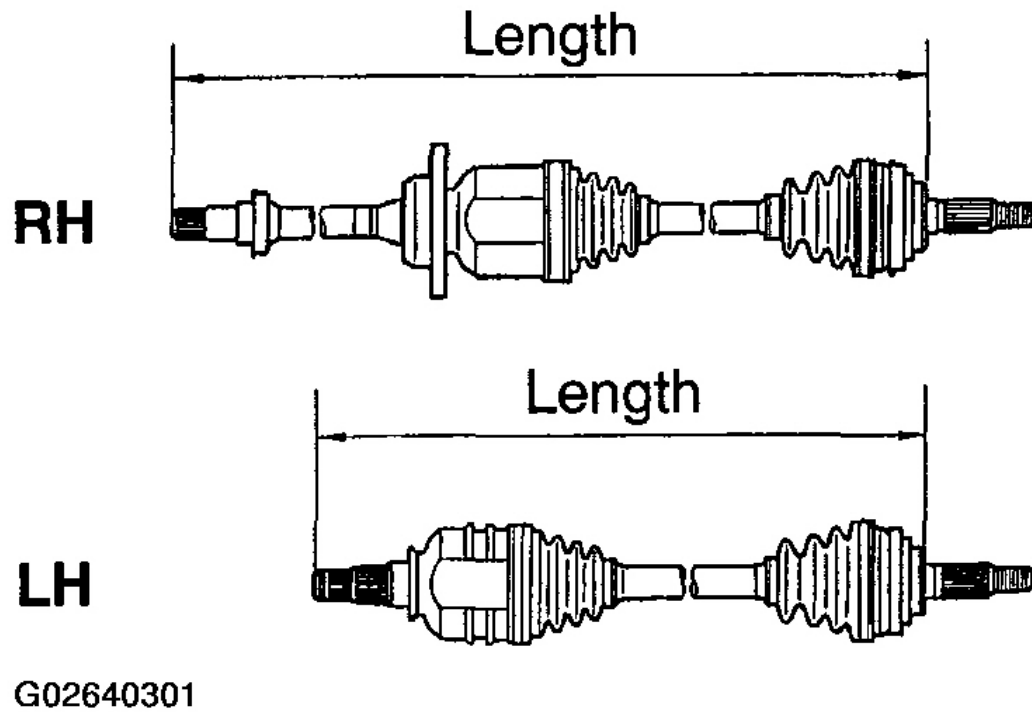


Fig. 66: Identifying Drive Shaft Standard Length
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Drive shaft standard length:

DRIVE SHAFT STANDARD LENGTH SPECIFICATIONS

2WD RH	858.5 +/- 5.0 mm (33.80 +/- 0.197 in.)
2WD LH	585.4 +/- 5.0 mm (23.00 +/- 0.197 in.)
4WD RH	920.5 +/- 5.0 mm (36.24 +/- 0.197 in.)
4WD LH	520.5 +/- 5.0 mm (20.47 +/- 0.197 in.)

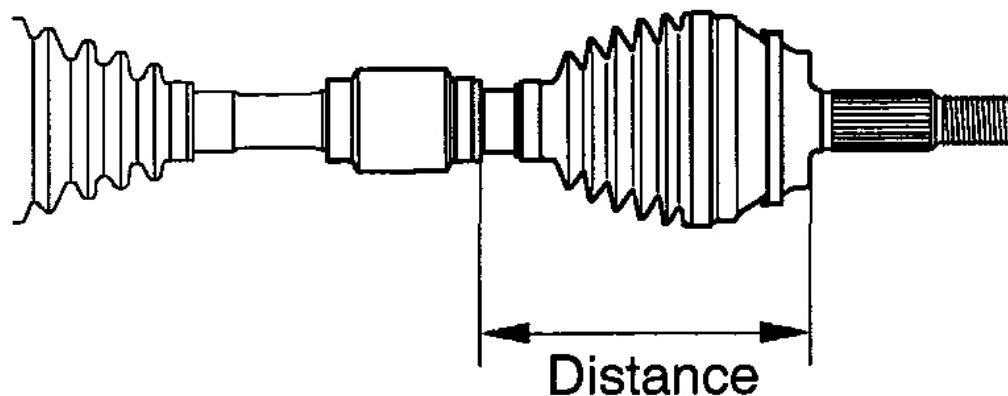
3. w/dynamic damper: Slide the dynamic damper by the distance, as shown.

Distance: 155.9 - 159.9 mm (6.14 - 6.30 in.)

4. Bend the band and tighten the boot clamps (and dynamic damper clamp) with a screwdriver.

2005 Toyota RAV4

2005 SUSPENSION Suspension & Axle - RAV4



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G02640302

Fig. 67: Identifying Dynamic Damper Distance
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSTALLATION

Installation is in the reverse order of removal procedure (See REMOVAL).

HINT:

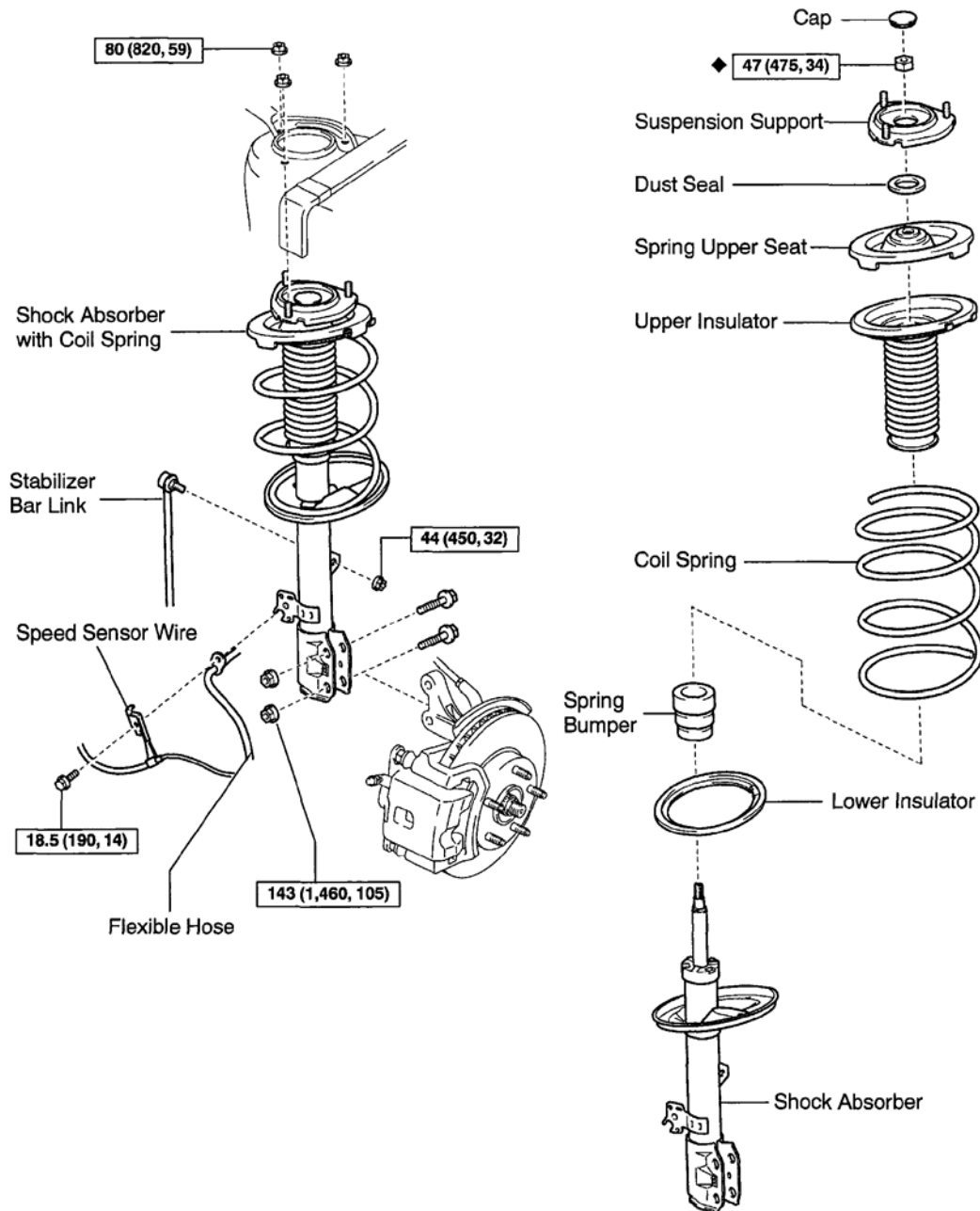
After installation, check the ABS speed sensor signal (See DTC DTC C0200/31 - C1239/39) and front wheel alignment (See FRONT WHEEL ALIGNMENT).

FRONT SHOCK ABSORBER

COMPONENTS

2005 Toyota RAV4

2005 SUSPENSION Suspension & Axle - RAV4



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

P ◆ Non-reusable part

G02640303

Fig. 68: Identifying Front Shock Absorber Components & Torque Specifications
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

REMOVAL

1. REMOVE FRONT WHEEL

Torque: 103 N.m (1,050 kgf.cm, 76 ft.lbf)

2. DISCONNECT STABILIZER BAR LINK

Remove the bolt, and disconnect the stabilizer bar link from the shock absorber.

Torque: 44 N.m (450 kgf.cm, 32 ft.lbf)

HINT:

If the ball joint turns together with the nut, use a hexagon wrench (5 mm) to fix the stud.

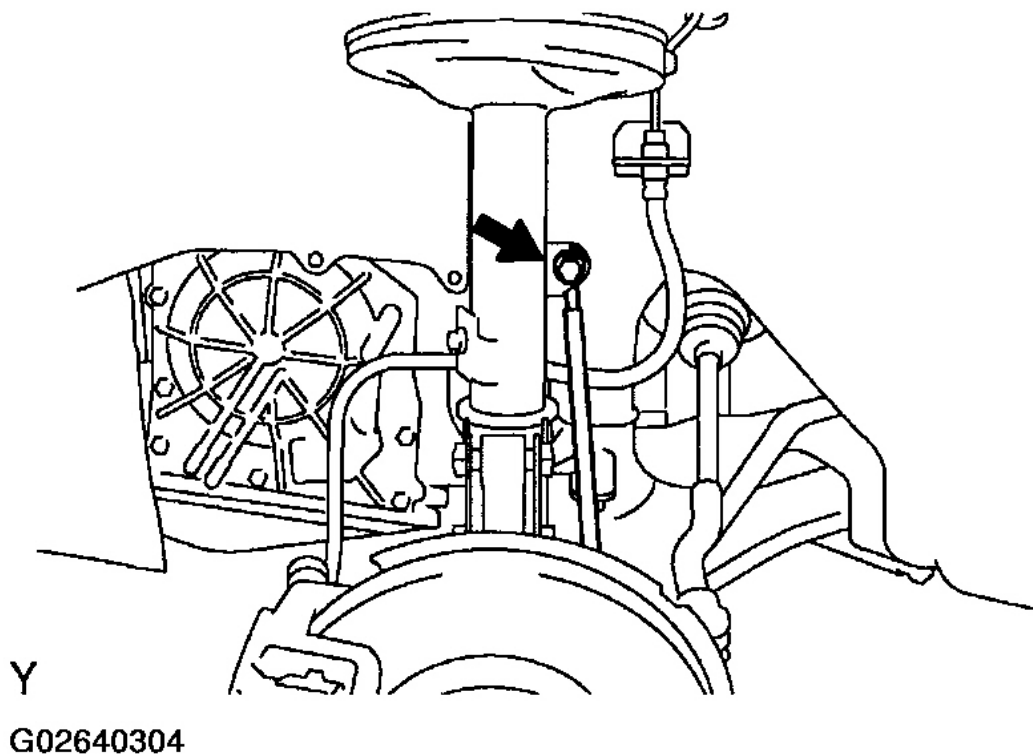


Fig. 69: Disconnecting Stabilizer Bar Link From Shock Absorber
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

3. DISCONNECT FLEXIBLE HOSE (AND ABS SPEED SENSOR WIRE HARNESS)

- a. w/o ABS: Remove the bolt, and disconnect the flexible hose from the shock absorber.

Torque: 18.5 N.m (190 kgf.cm, 14 ft.lbf)

- b. w/ ABS: Remove the bolt, and disconnect the flexible hose and ABS speed sensor wire from the shock absorber.

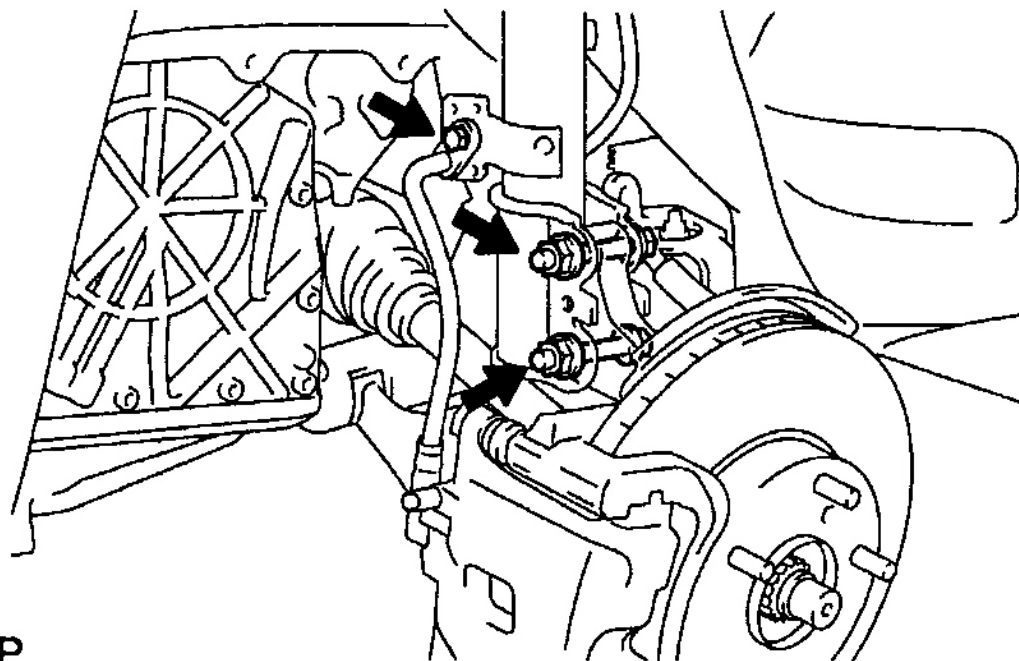
Torque: 18.5 N.m (190 kgf.cm, 14 ft.lbf)

4. REMOVE SHOCK ABSORBER WITH COIL SPRING

- a. Loosen the 2 nuts at the lower side of the shock absorber.

Torque: 143 N.m (1,460 kgf.cm, 105 ft.lbf)

NOTE: Do not remove the 2 bolts.



G02640305

Fig. 70: Identifying Nuts At Lower Side Of Shock Absorber
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- b. Remove the 3 nuts of the suspension support.

Torque: 80 N.m (820 kgf.cm, 59 ft.lbf)

- c. Remove the 2 bolts and 2 nuts at the lower side of the shock absorber.

HINT:

At the time of installation, coat the nut's threads with engine oil.

- d. Remove the shock absorber with coil spring.

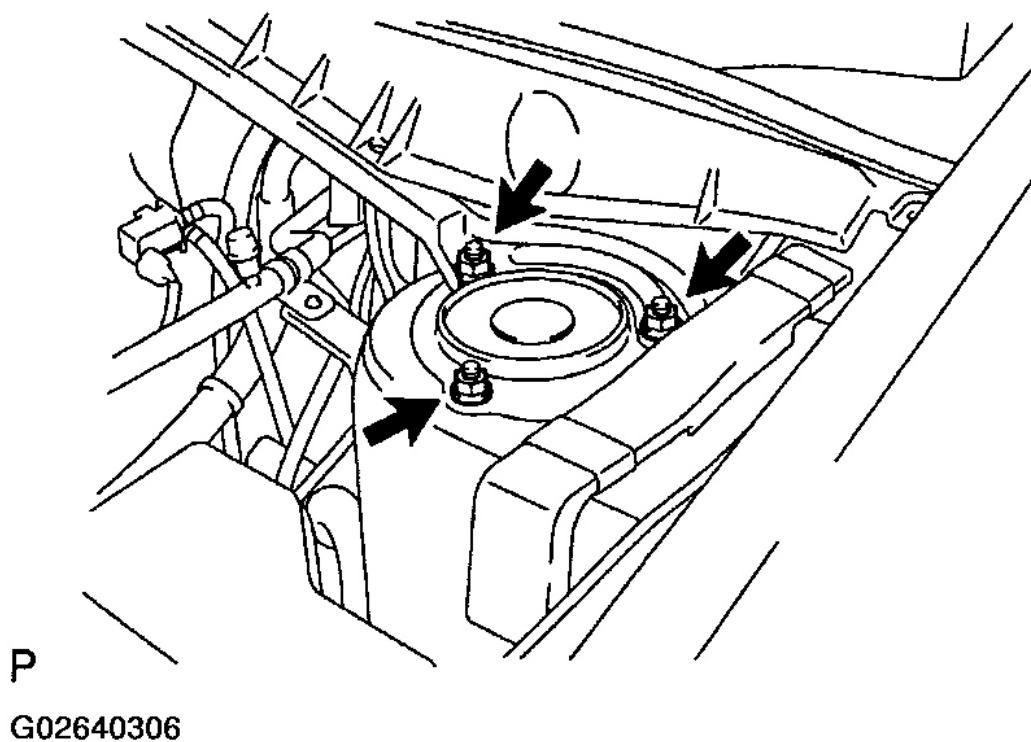


Fig. 71: Removing Nuts At Upper Suspension Support
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

DISASSEMBLY

REMOVE COIL SPRING

- a. Install 2 nuts and a bolt to the bracket at the lower portion of the shock absorber and secure it with a vise.
b. Using SST, compress the coil spring.

SST 09727-30021 (09727-00010, 09727-00021, 09727-00031)

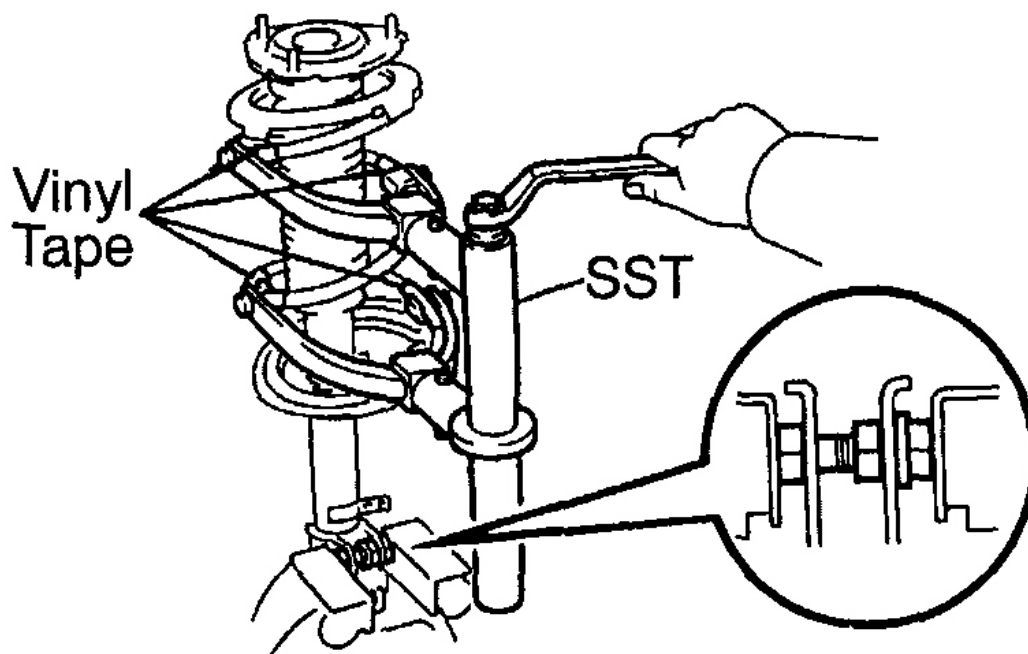
HINT:

To prevent the coil spring from being damaged, wind vinyl tape on the coil spring.

NOTE:

- When holding the shock absorber with the coil spring removed, do not hold it by the spring lower seat. Also, do not knock the spring lower seat.
- Do not use an impact wrench which will damage the SST.

c. Remove the cap.



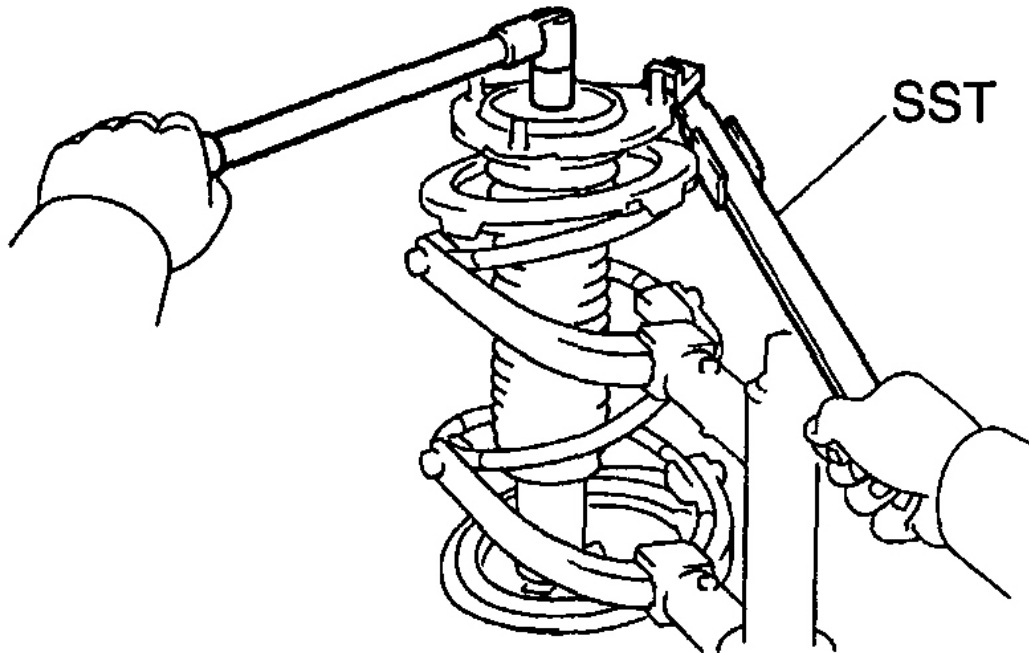
G02640307

Fig. 72: Compressing Coil Spring Using Special Tool
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

d. Using SST to hold the spring upper seat, remove the nut.

SST 09729-22031

- e. Remove the suspension support, dust seal, spring upper seat, upper insulator, coil spring, spring bumper and lower insulator from the shock absorber.
- f. Remove the SST from the coil spring.



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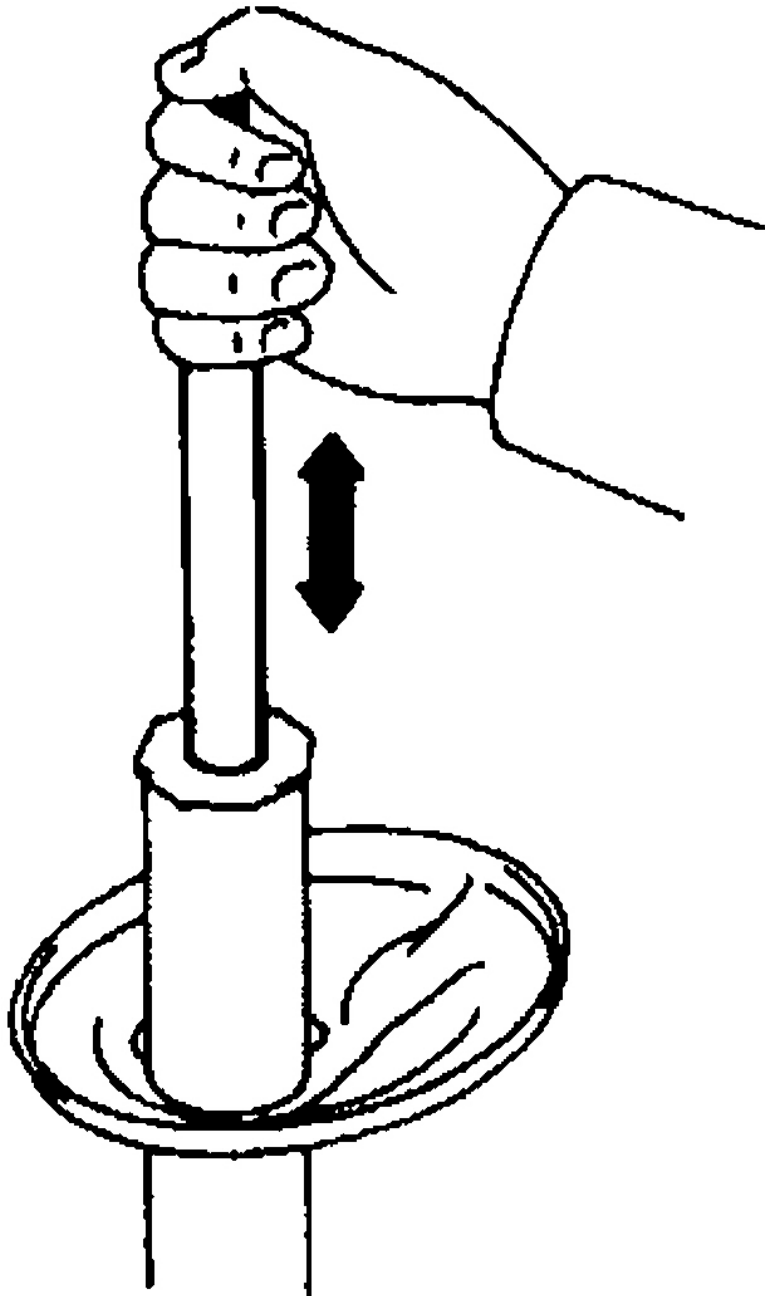
Fig. 73: Removing Shock shaft Nut Using Special Tool
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION

INSPECT SHOCK ABSORBER

Compress and extend the shock absorber rod, and check that there is no abnormal resistance or unusual operation sounds. If there are any abnormalities, replace the shock absorber with a new one.

NOTE: When discarding the shock absorber, see DISPOSAL on DISPOSAL.



G02640309

Fig. 74: Inspecting Shock Absorber
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

DISPOSAL

2005 Toyota RAV4

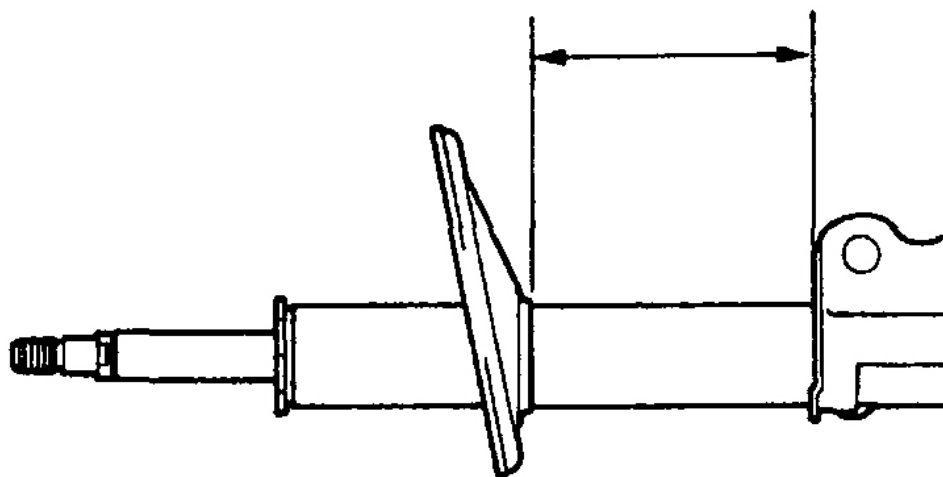
2005 SUSPENSION Suspension & Axle - RAV4

1. **FULLY EXTEND SHOCK ABSORBER ROD**
2. **DRILL HOLE TO DISCHARGE GAS FROM CYLINDER**

Using a drill, make a hole in the cylinder, as shown, to discharge the gas inside.

CAUTION:

- When drilling, chips may fly out, so work carefully.
- The gas is colorless, odorless and non-poisonous.

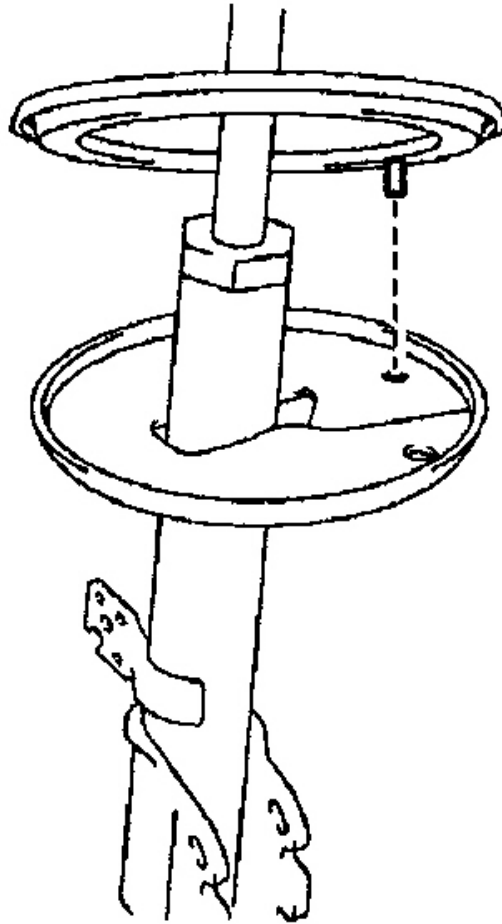


G02640310

Fig. 75: Using A Drill, Make A Hole In The Cylinder
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

REASSEMBLY

1. **INSTALL LOWER INSULATOR ONTO SHOCK ABSORBER**
2. **INSTALL SPRING BUMPER TO PISTON ROD**



P

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Fig. 76: Installing Spring Bumper To Piston Rod
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

3. INSTALL COIL SPRING AND SUSPENSION SUPPORT

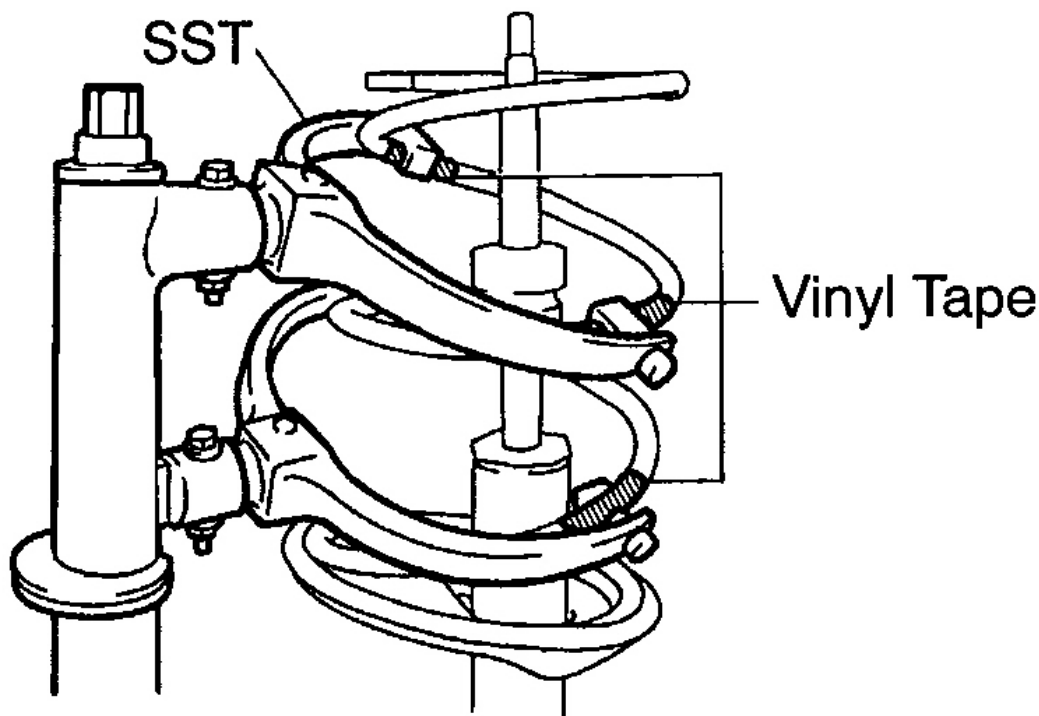
- a. Using SST, compress the coil spring.

SST 09727-30021 (09727-00010, 09727-00021, 09727-00031)

HINT:

To prevent the coil spring from being damaged, wind vinyl tape around the coil spring.

NOTE: Do not use an impact wrench which will damage the SST.



G02640312

Fig. 77: Compressing Coil Spring Using Special Tool
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- b. Install the coil spring to the shock absorber.

HINT:

Fit the lower end of the coil spring to the gap of the lower spring seat.

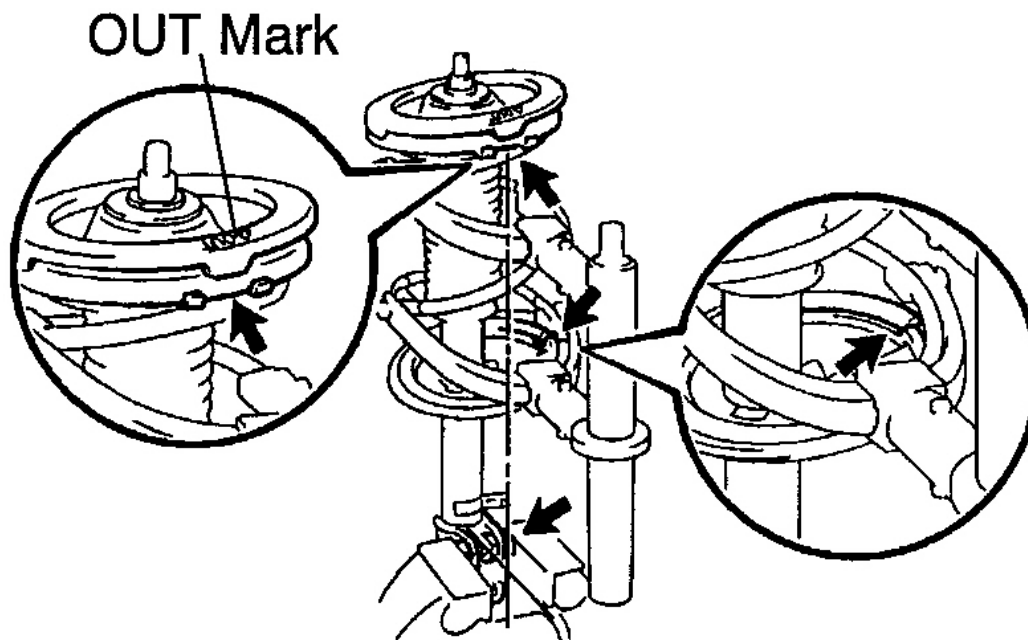
- c. Align the tab of spring upper seat with the tabs of the upper insulator.
- d. Install the spring upper seat with upper insulator to the shock absorber with the OUT mark facing the outside of the vehicle.
- e. Install the dust seal and suspension support.
- f. Using SST to hold the spring upper seat, install a new nut.

SST 09729-22031

Torque: 47 N.m (475 kgf.cm, 34 ft.lbf)

g. Remove the SST.

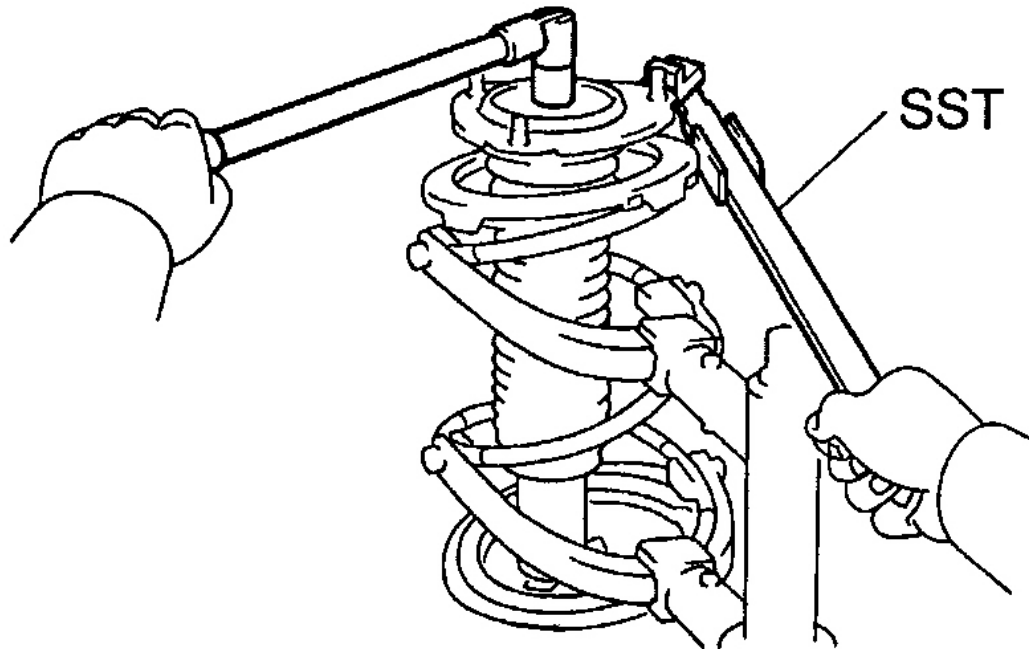
SST 09727-30021 (09727-00010, 09727-00021, 09727-00031)



G02640313

Fig. 78: Installing Spring Upper Seat With Upper Insulator To Shock Absorber With OUT MARK

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



G02640314

Fig. 79: Installing Nut Using Special Tool

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

- h. Pack the suspension support with MP grease.
- i. Install the cap.

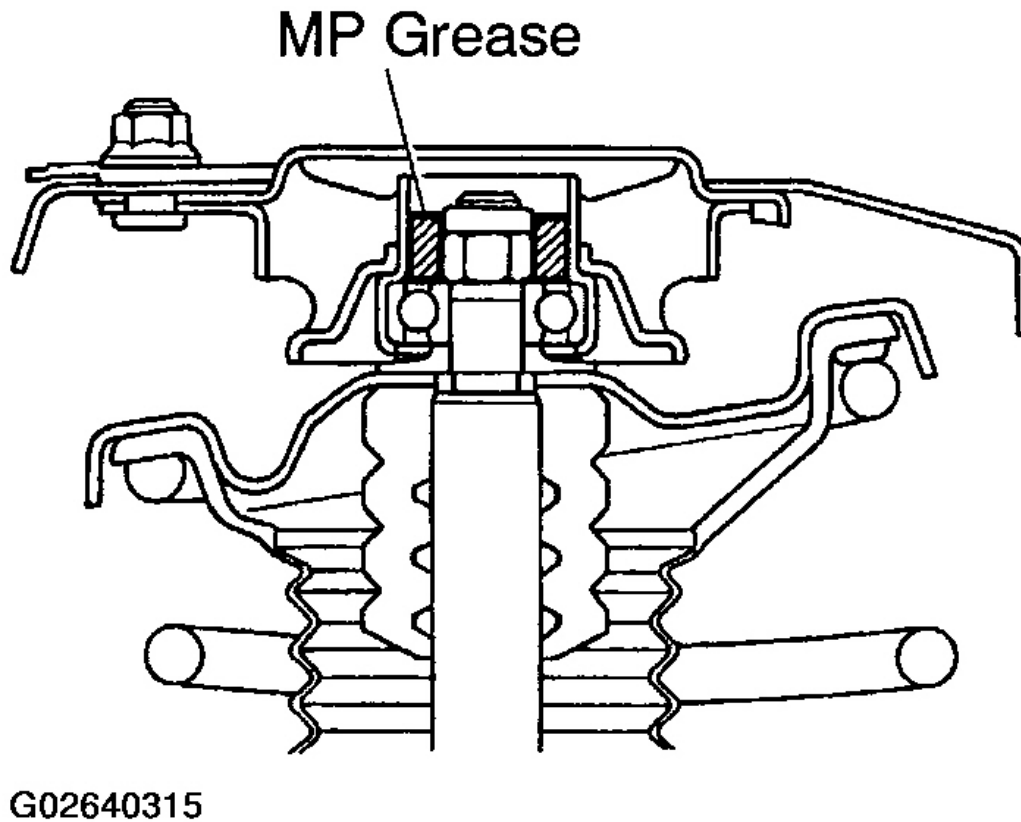


Fig. 80: Packing Suspension Support With MP Grease
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSTALLATION

Installation procedures are removal procedures in reverse order (see REMOVAL).

HINT:

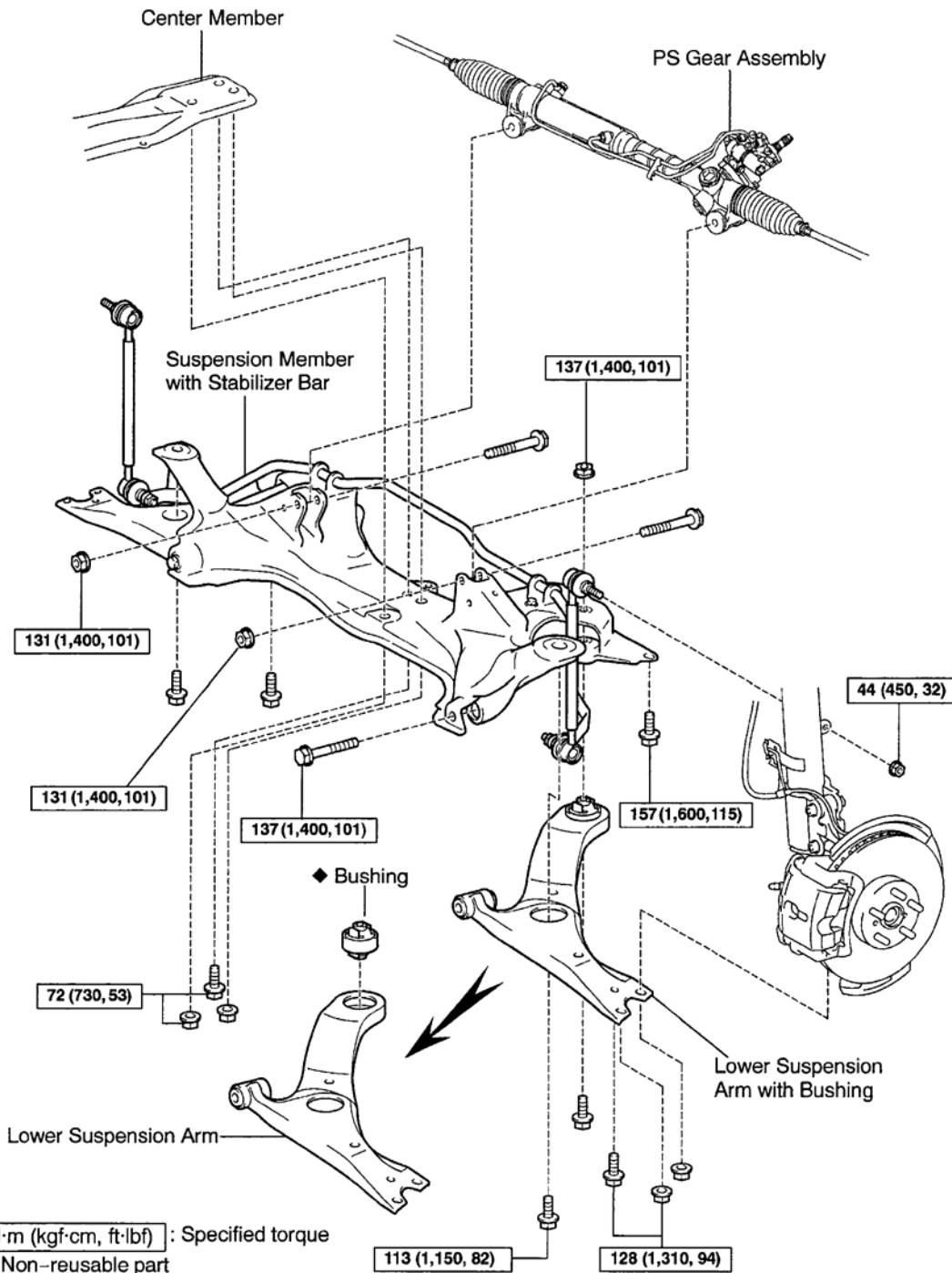
After installation, check the front wheel alignment (see FRONT WHEEL ALIGNMENT).

FRONT LOWER SUSPENSION ARM

COMPONENTS

2005 Toyota RAV4

2005 SUSPENSION Suspension & Axle - RAV4



G02640316

Fig. 81: Identifying Front Lower Suspension Arm Components & Torque Specifications
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

REMOVAL

1. REMOVE FRONT WHEEL

Torque: 103 N.m (1,050 kgf.cm, 76 ft.lbf)

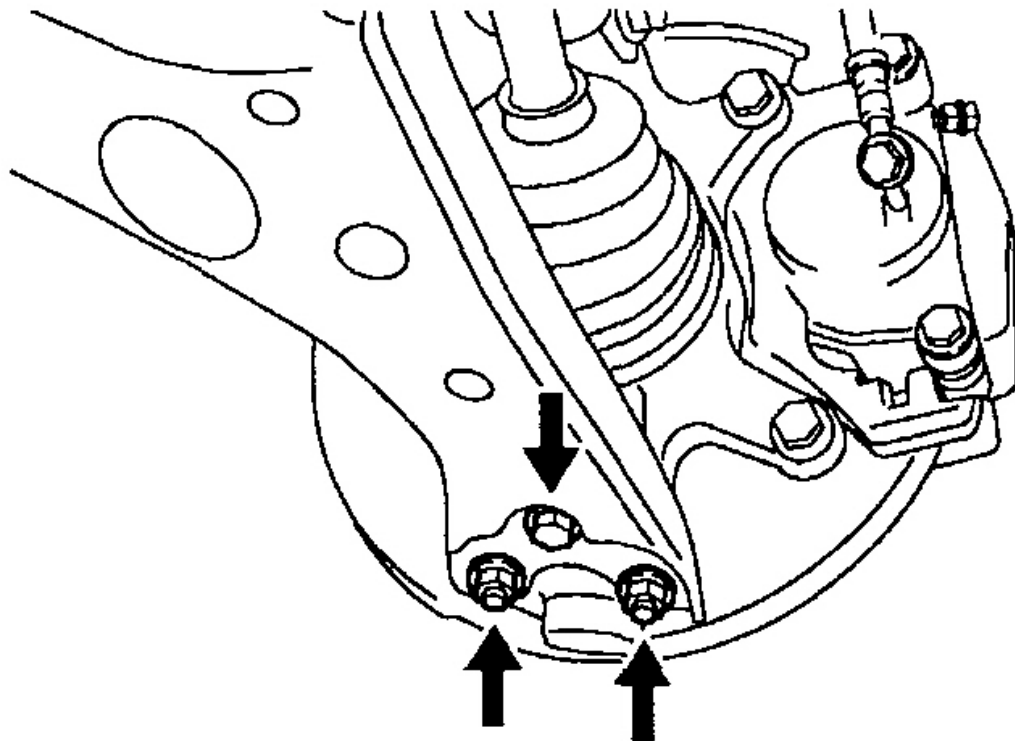
2. REMOVE LOWER SUSPENSION ARM

- a. Disconnect the stabilizer bar link from the stabilizer bar.
- b. Remove the bolt and 2 nuts, and disconnect the lower suspension arm from the lower ball joint.

Torque: 128 N.m (1,310 kgf.cm, 94 ft.lbf)

- c. Remove the 2 power steering gear assembly set bolts and nuts.

Torque: 131 N.m (1,400kgf.cm, 101 ft.lbf)



Y

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Fig. 82: Disconnecting Lower Suspension Arm From Lower Ball Joint
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- d. Remove the 5 bolts, 2 nuts and suspension member assembly.

Torque:

157 N.m (1,600 kgf.cm, 115 ft.lbf) for bolt A

113 N.m (1,150 kgf.cm, 82 ft.lbf) for bolt B

72 N.m (730 kgf.cm, 53 ft.lbf) for bolt C

72 N.m (730 kgf.cm, 53 ft.lbf) for nut D

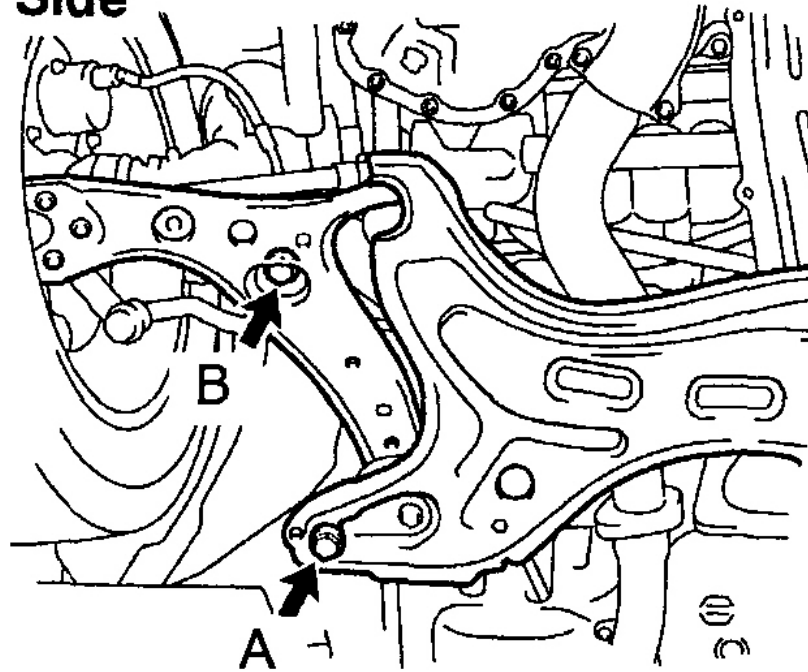
- e. Remove the 2 bolts, nut and lower suspension arm.

Torque: 137 N.m (1,400 kgf.cm, 101 ft.lbf)

HINT:

At the time of installation, tighten the bolts and nut after stabilizing the suspension.

RH Side



LH Side

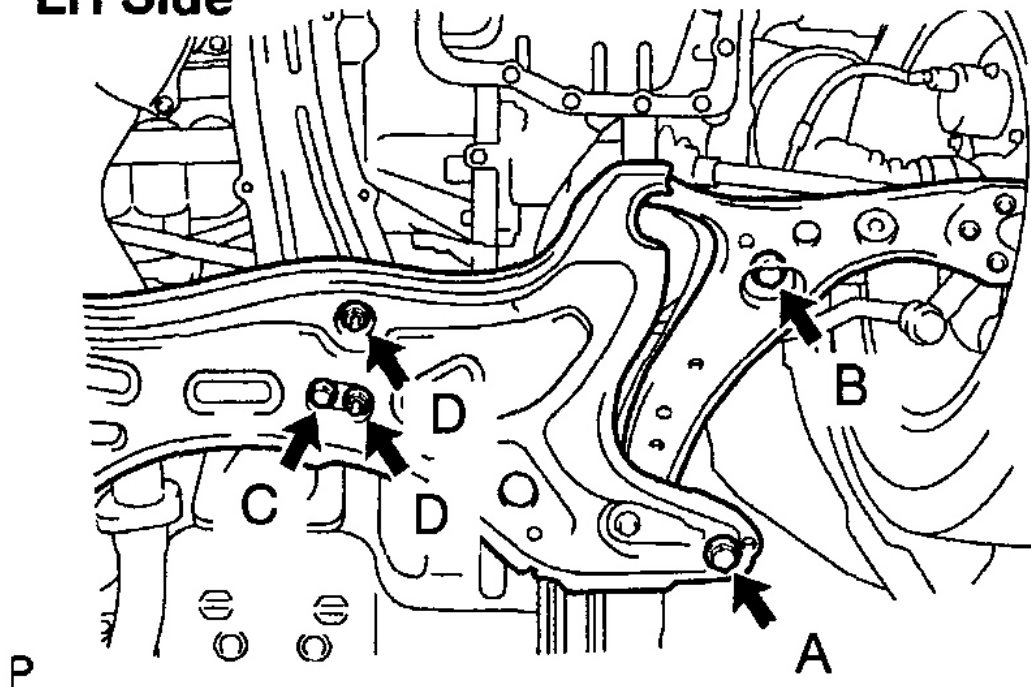
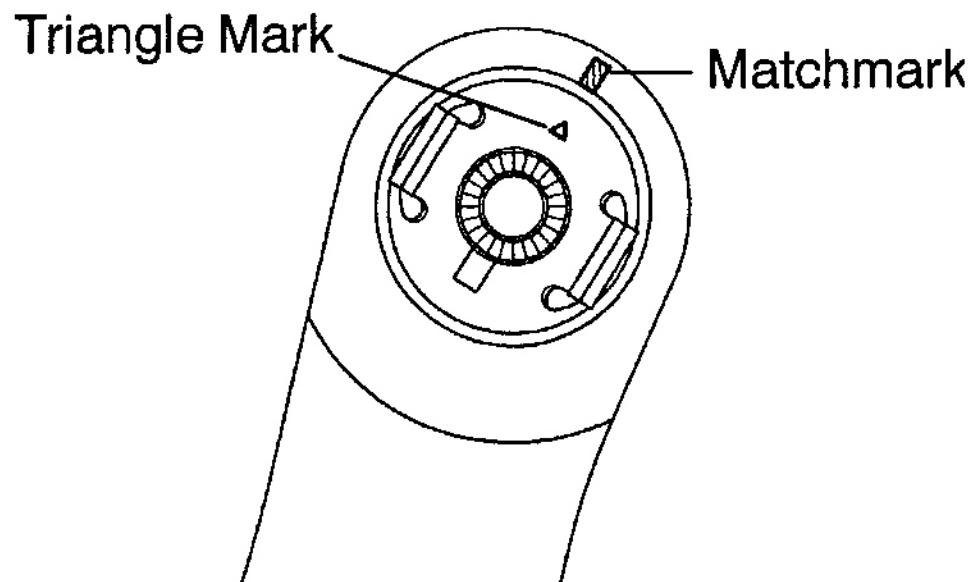


Fig. 83: Removing Bolts Nut And Lower Suspension Arm
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

REPLACEMENT

1. REMOVE FRONT SUSPENSION ARM BUSHING

- a. Place the matchmark on the arm as shown.



P

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Fig. 84: Placing Matchmark On Arm
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- b. Using SST and a press, press the bushing.

SST 09710-26011 (09710-05081), 09710-30021 (09710-03061)

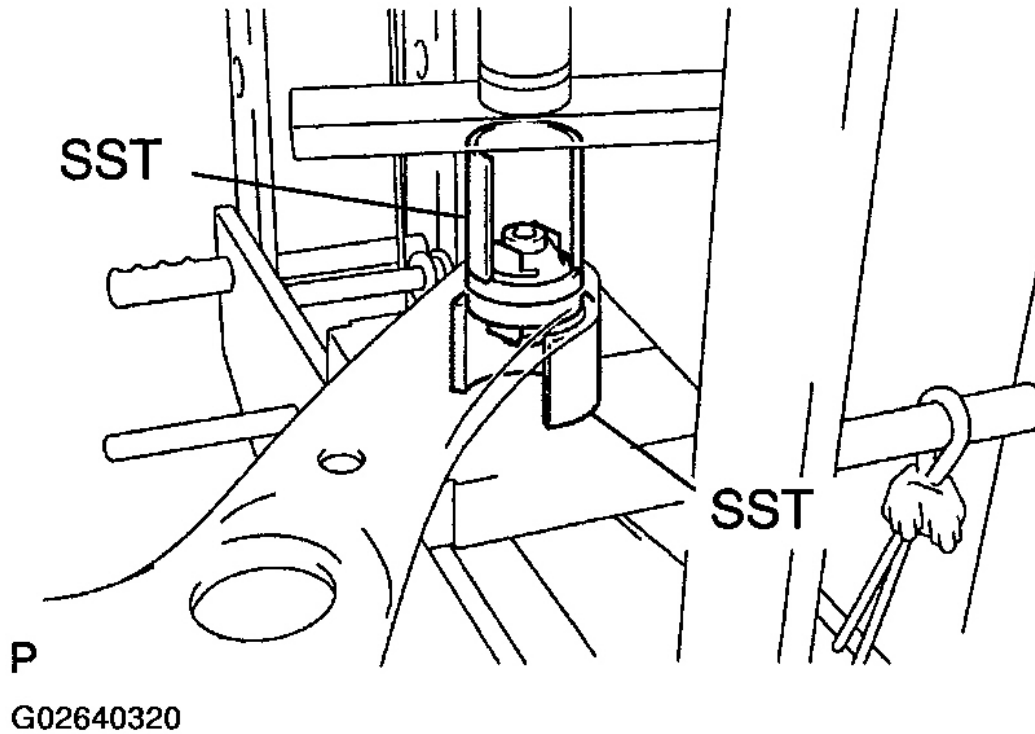


Fig. 85: Pressing Bushing Using SST And Press
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

2. INSTALL NEW BUSHING

- a. Align the matchmark on the arm and the triangle mark of a new bushing as shown.

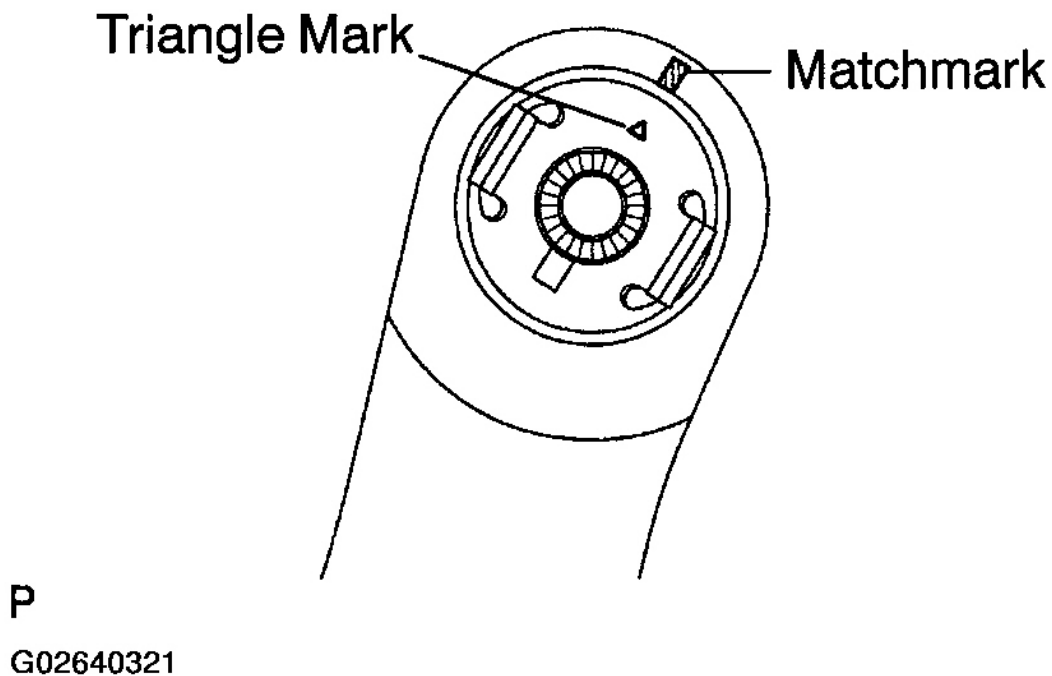


Fig. 86: Aligning Matchmark On Arm And Triangle Mark Of Bushing
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- b. Using SST and a press, press the bushing as shown.

SST 09710-26011 (09710-05081), 09710-30021 (09710-03061)

Distance: 6.5 - 7.5 mm (0.26 - 0.30 in.)

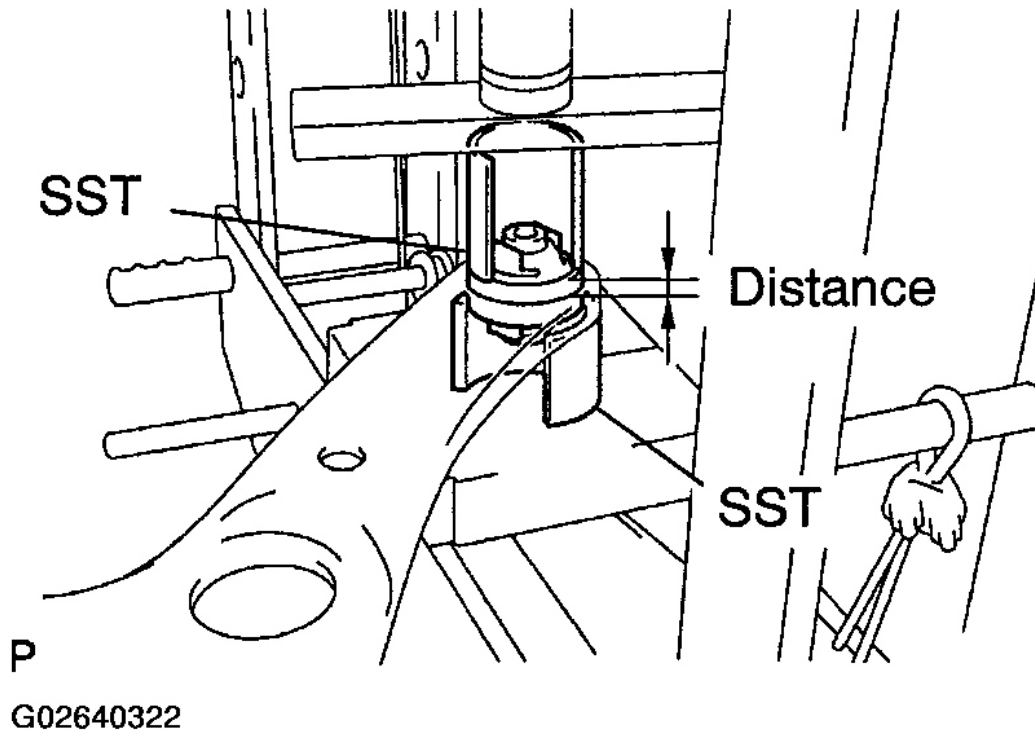


Fig. 87: Pressing Bushing Using SST And Press
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSTALLATION

Installation is in the reverse order of removal procedure (See REMOVAL).

HINT:

After installation, check the front wheel alignment (See FRONT WHEEL ALIGNMENT).

FRONT LOWER BALL JOINT

COMPONENTS

2005 Toyota RAV4

2005 SUSPENSION Suspension & Axle - RAV4

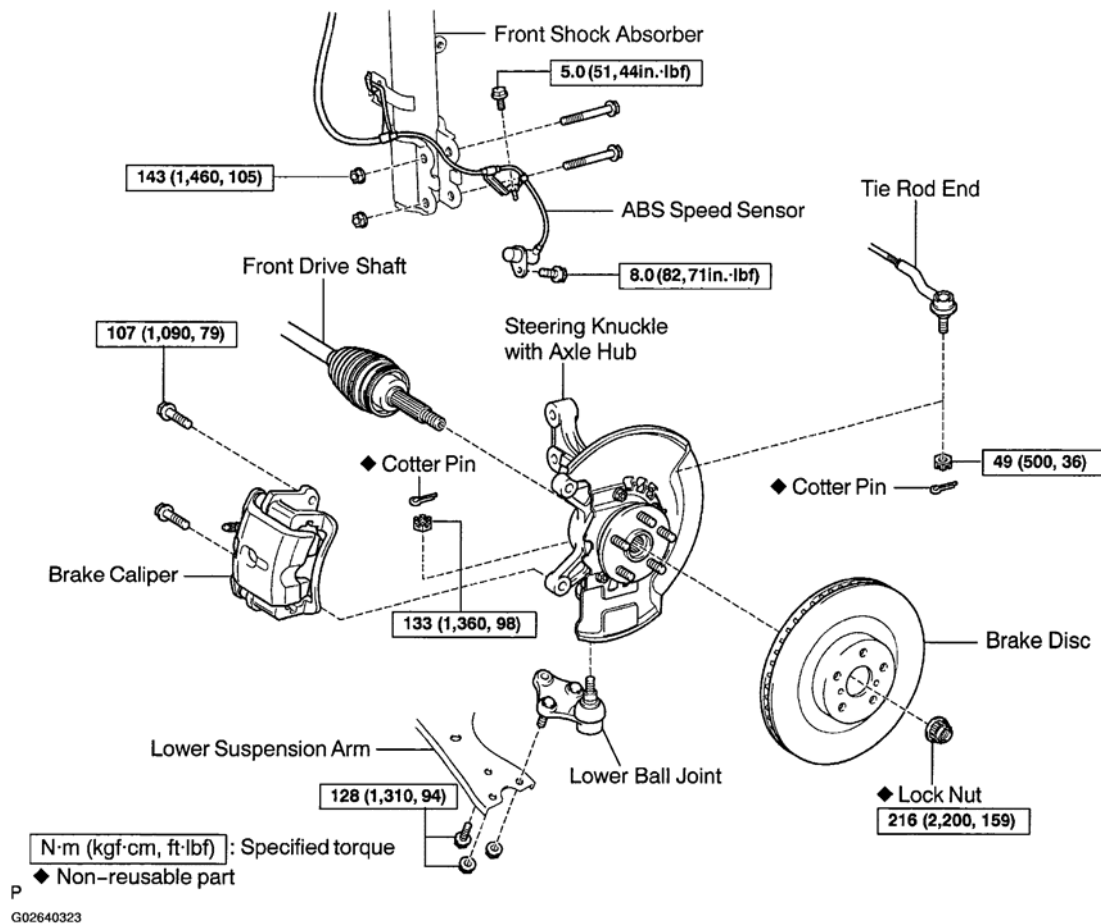


Fig. 88: Identifying Front Lower Ball Joint Components & Torque Specifications
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

REMOVAL

1. REMOVE STEERING KNUCKLE WITH AXLE HUB (See REMOVAL)
2. REMOVE LOWER BALL JOINT
 - a. Remove the cotter pin and nut.
 - b. Using SST, remove the lower ball joint.

SST 09628-62011

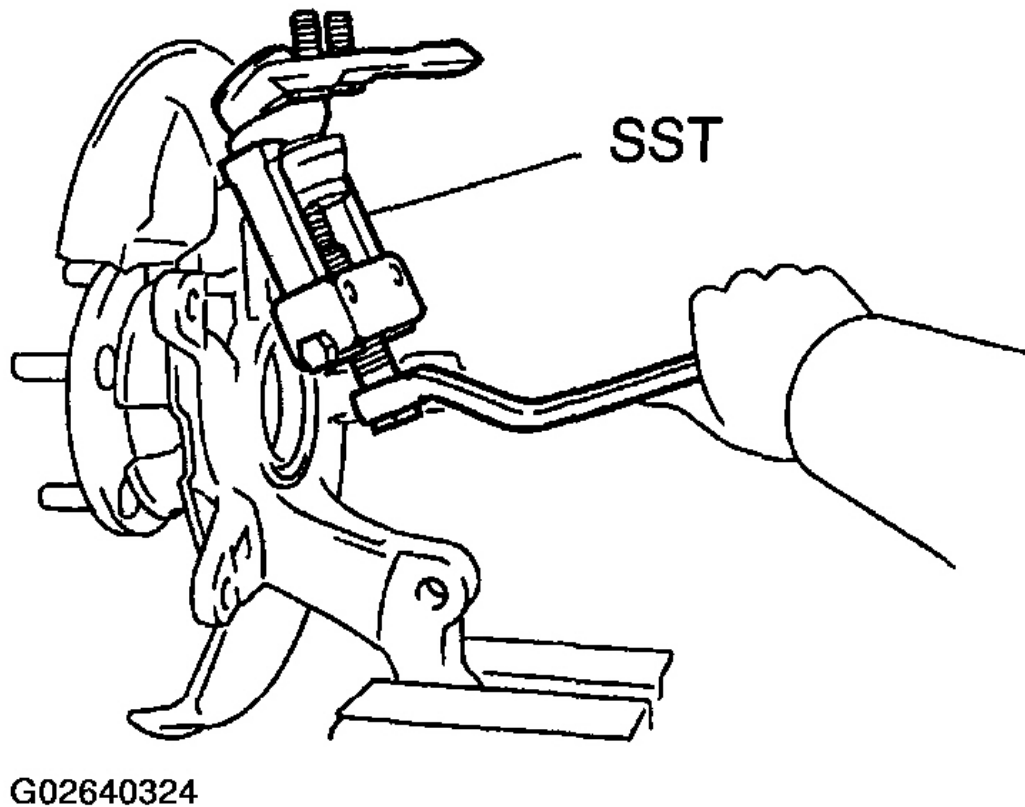


Fig. 89: Removing Lower Ball Joint Using Special Tool
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

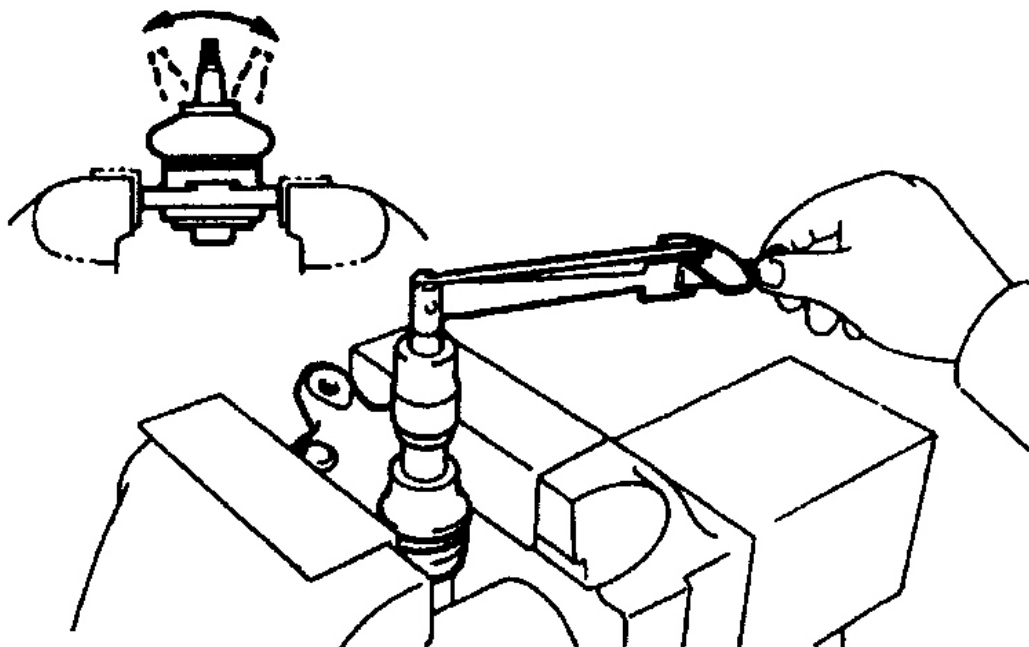
INSPECTION

INSPECT BALL JOINT FOR ROTATION CONDITION

- As shown, flip the ball joint stud back and forth 5 times, before installing the nut.
- Using a torque wrench, turn the nut continuously at the rate of 3 - 5 seconds per 1 turn and take the torque reading on the 5th turn.

Turning torque:

1.0 - 4.9 N.m (10-50 kgf.cm, 9-43 in.lbf)



G02640325

Fig. 90: Inspecting Ball Joint For Rotation Condition
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSTALLATION

1. INSTALL LOWER BALL JOINT

- Install the lower ball joint with the nut.

Torque: 133 N.m (1,360 kgf.cm, 98 ft.lbf)

- Install a new cotter pin.

If the holes for the cotter pin are not aligned, tighten the nut further up to 60°.

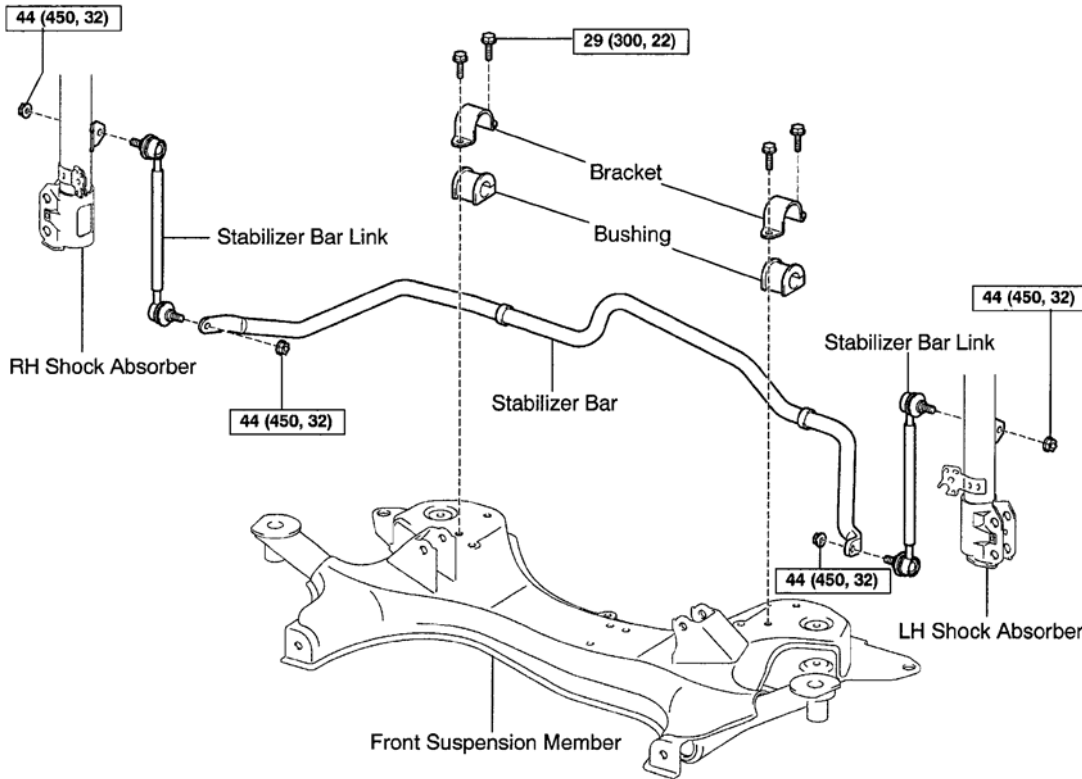
2. INSTALL STEERING KNUCKLE WITH AXLE HUB (See INSTALLATION)

3. CHECK ABS SPEED SENSOR SIGNAL (See DTC DTC C0200/31 - C1239/39)

4. CHECK FRONT WHEEL ALIGNMENT (See FRONT WHEEL ALIGNMENT)

FRONT STABILIZER BAR

COMPONENTS



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

G02640326

Fig. 91: Identifying Front Stabilizer Bar Components & Torque Specifications
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

REMOVAL

1. REMOVE STABILIZER BAR LINKS

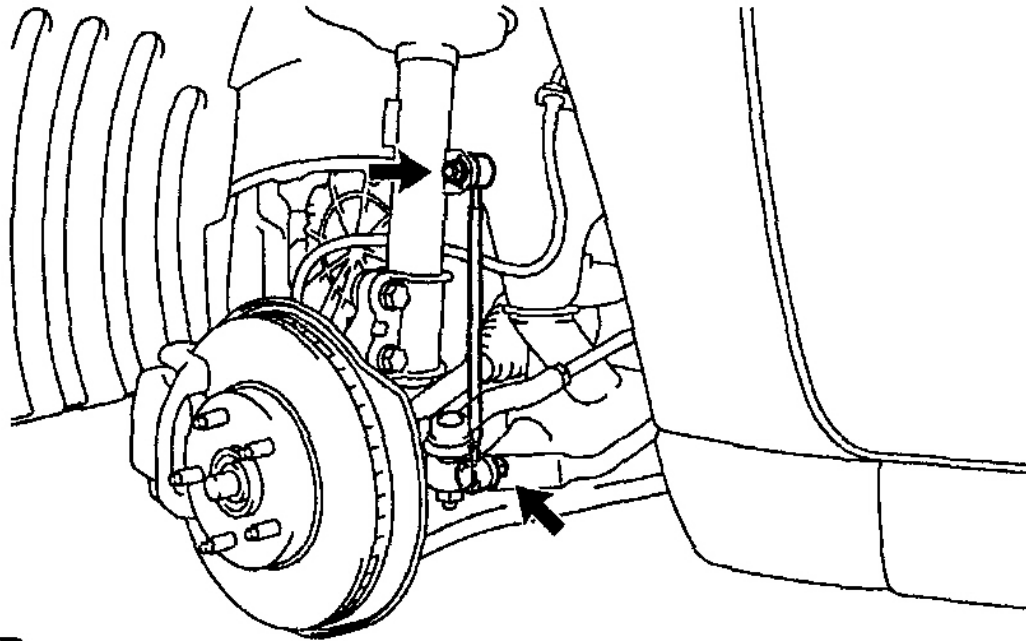
- Remove the 2 nuts and stabilizer bar link.

Torque: 44 N.m (450 kgf.cm, 32 ft.lbf)

HINT:

If the ball joint turns together with the nut, use a hexagon (5 mm) wrench to fix the stud.

- Employ the same manner described above to the other side.



P

G02640327

Fig. 92: Removing Stabilizer Bar Link

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

2. REMOVE STABILIZER BAR

- a. Remove the 2 bolts, bracket and bushing.

Torque: 29 N.m (300 kgf.cm, 22 ft.lbf)

- b. Employ the same manner described above to the other side.
- c. Remove the stabilizer bar.

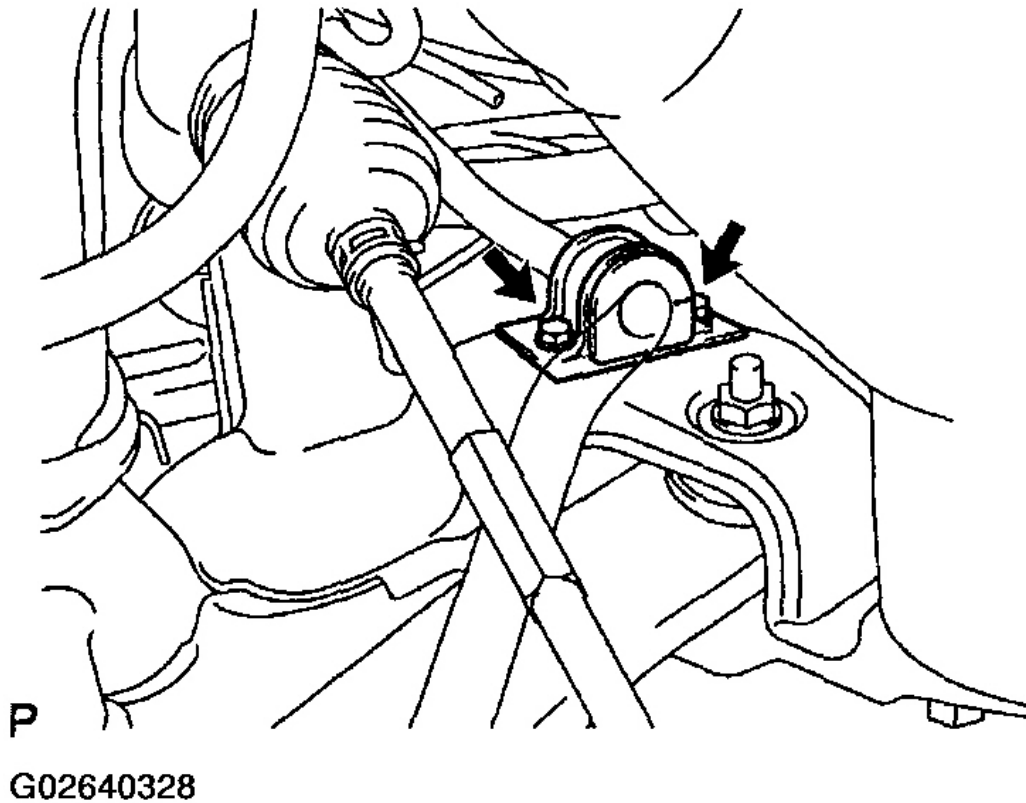


Fig. 93: Removing Bolts, Bracket And Bushing
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

HINT:

At the time of installation, please refer to the following items.

- Install the bushing so that the cutout will face to the rear.
- Install the bushing to the outside of the bushing stopper.

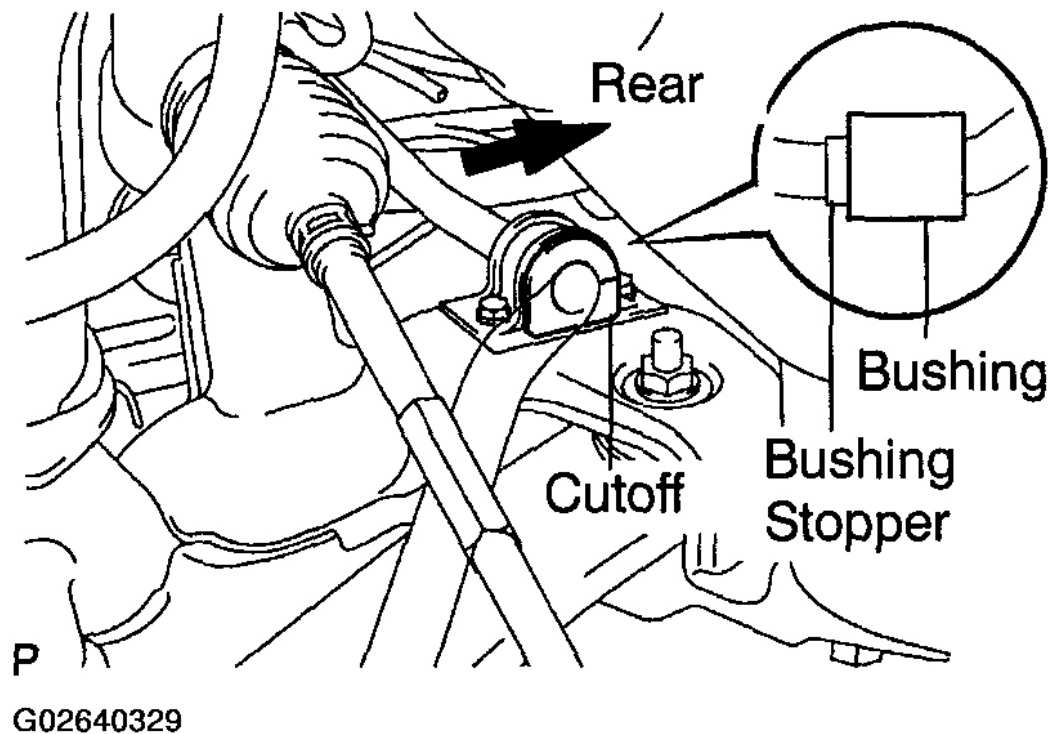


Fig. 94: Installing Bushing

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

INSPECTION

1. INSPECT STABILIZER BAR LINK FOR ROTATION CONDITION

- As shown, flip the ball joint stud back and forth 5 times, before installing the nut.
- Using a torque wrench, turn the nut continuously at the rate of 2 - 4 seconds per 1 turn and take the torque reading on the 5th turn.

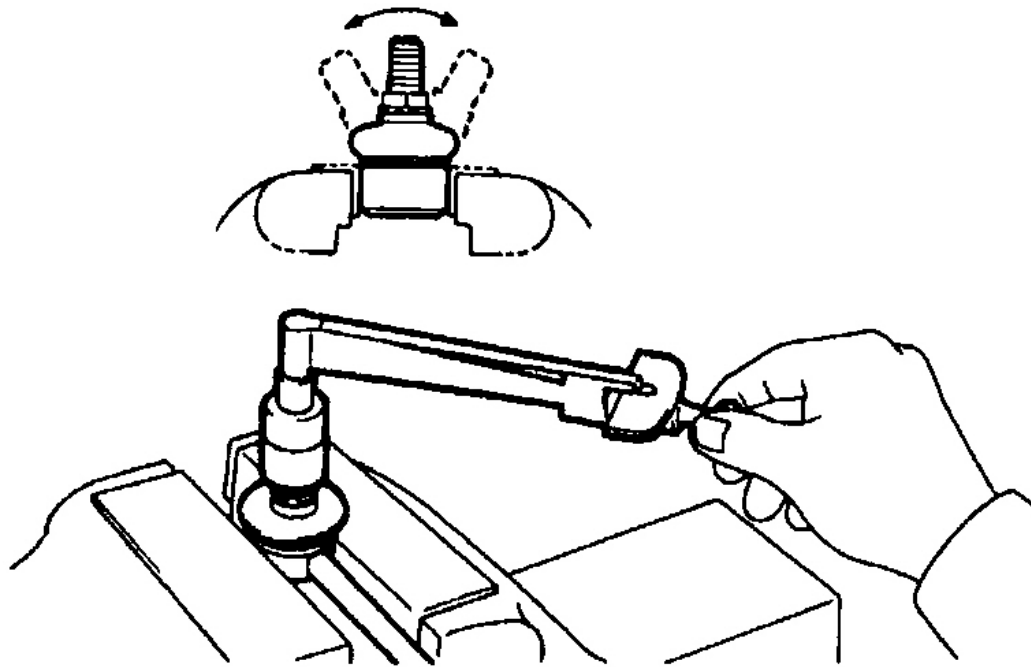
Turning torque:

0.05 - 1.0 N.m (0.5 - 10 kgf.cm, 0.4 - 8.7 in.lbf)

2. CHECK STABILIZER BUSHINGS

Visually check the bushings for cracks.

If necessary, replace it.



G02640330

Fig. 95: Inspecting Stabilizer Bar Link For Rotation Condition
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSTALLATION

Installation procedures are removal procedures in reverse order (See REMOVAL).

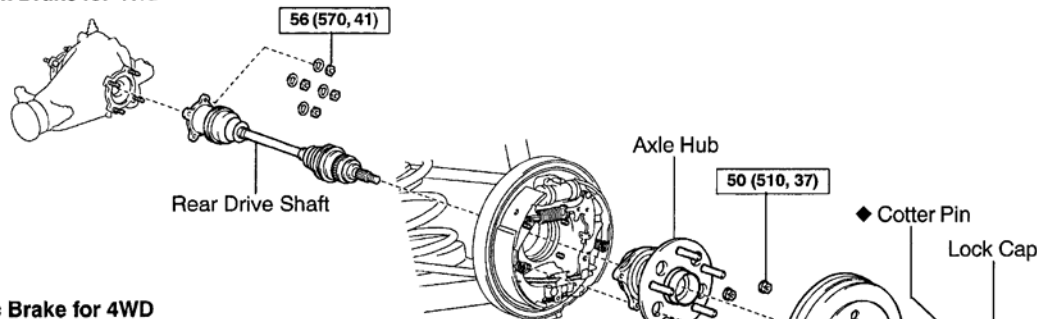
REAR AXLE HUB

COMPONENTS

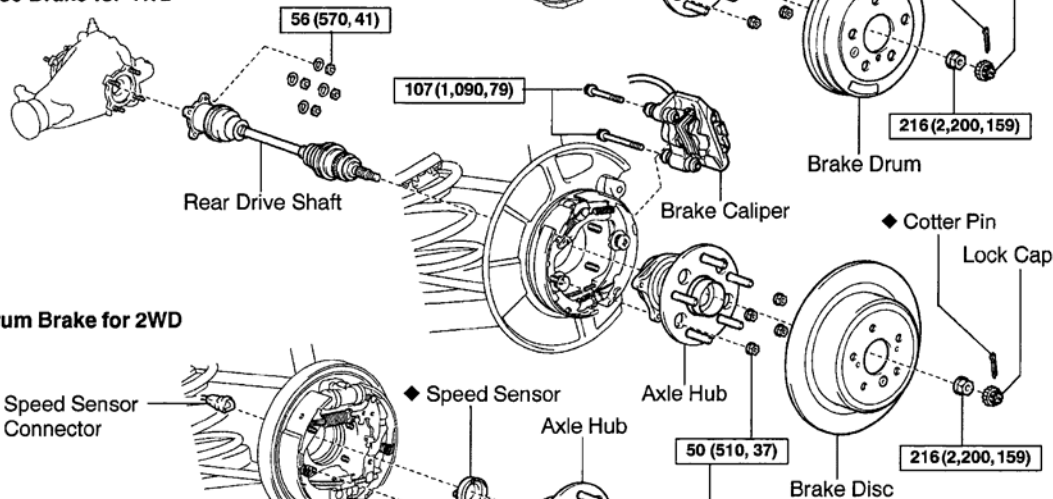
2005 Toyota RAV4

2005 SUSPENSION Suspension & Axle - RAV4

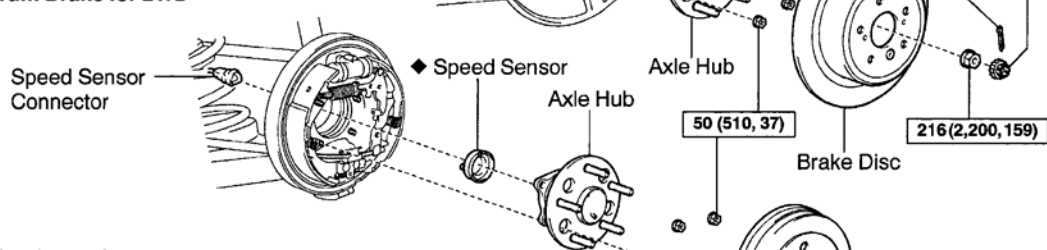
Drum Brake for 4WD



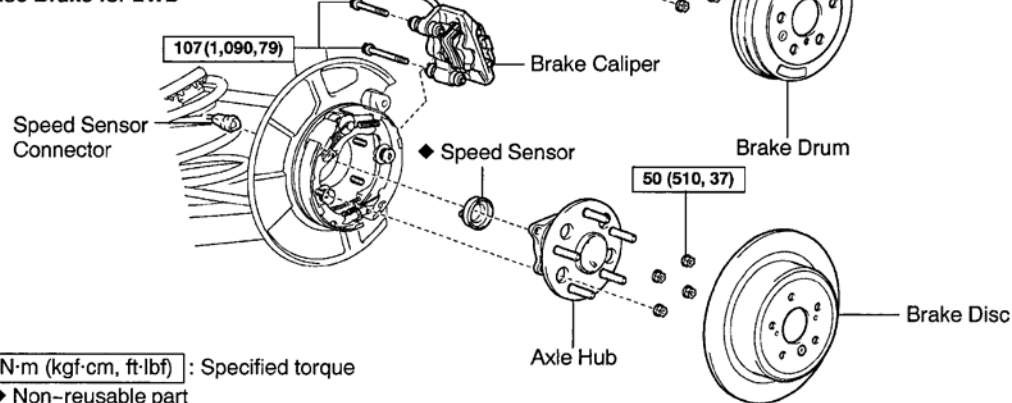
Disc Brake for 4WD



Drum Brake for 2WD



Disc Brake for 2WD



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

◆ Non-reusable part

G02640331

Fig. 96: Identifying Rear Axle Hub Components & Torque Specifications
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

REMOVAL

1. REMOVE REAR WHEEL

2005 Toyota RAV4

2005 SUSPENSION Suspension & Axle - RAV4

Torque: 103 N.m (1,050 kgf.cm, 76 ft.lbf)

2. **4WD: REMOVE REAR DRIVE SHAFT (See REMOVAL)**

3. **w/disc brake: REMOVE BRAKE CALIPER AND DISC**

- a. Remove the 2 bolts, and disconnect the brake caliper.

Torque: 107 N.m (1,090 kgf.cm, 79 ft.lbf)

- b. Suspend the brake caliper.

- c. Remove the brake disc.

4. **w/drum brake: REMOVE BRAKE DRUM**

5. **CHECK BEARING BACKLASH AND AXLE HUB DEVIATION**

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

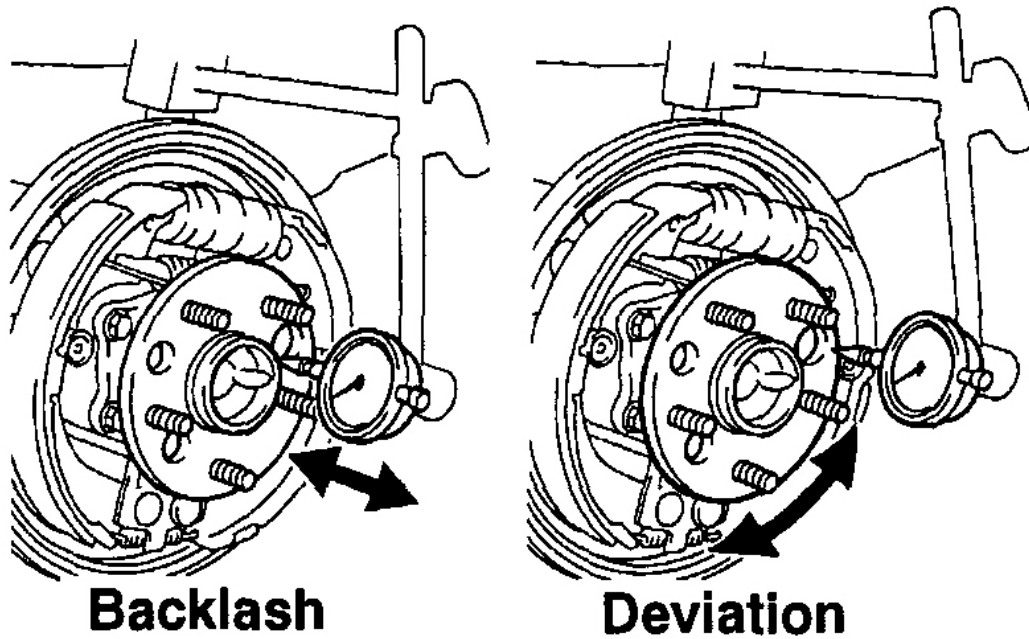
Maximum: 0.05 mm (0.0020 in.)

If the backlash exceeds the maximum value, replace the axle hub.

- b. Using a dial indicator, check the deviation of the surface of the axle hub outside the hub bolt.

Maximum: 0.07 mm (0.0028 in.)

If the deviation exceeds the maximum value, replace the axle hub.



G02640332

Fig. 97: Checking Backlash Near Center Of Axle Hub Using Dial Indicator
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

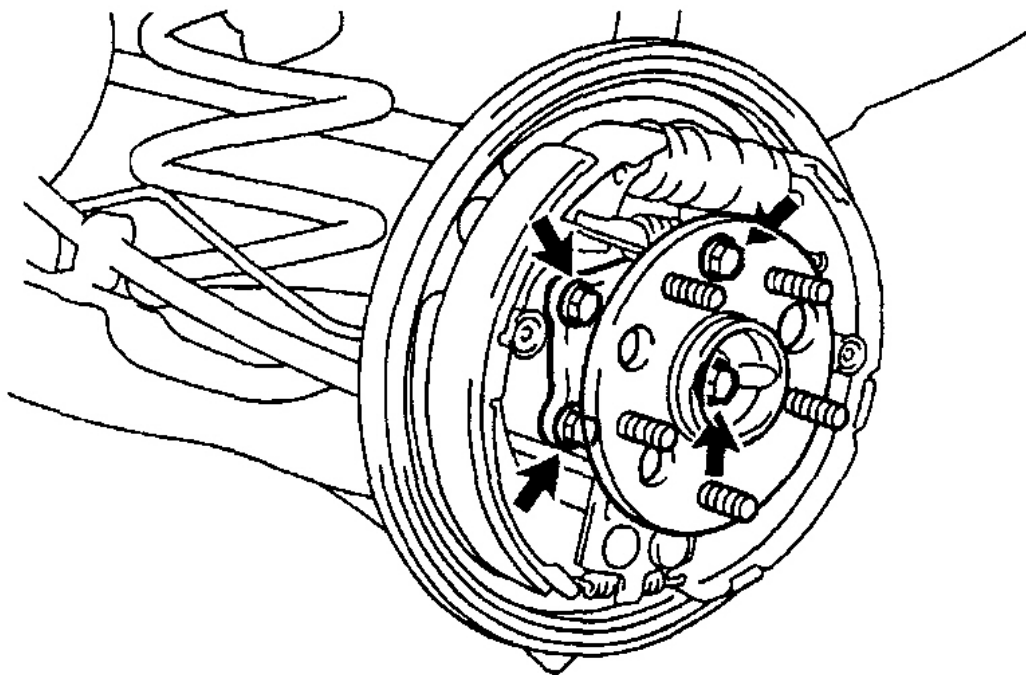
6. REMOVE REAR AXLE HUB

a. 2WD:

Disconnect the speed sensor connector.

b. Remove the 4 nuts and rear axle hub.

Torque: 50 N.m (510 kgf.cm, 37 ft.lbf)



G02640333

Fig. 98: Removing Rear Axle Hub

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

REPLACEMENT

1. 2WD: REMOVE ABS SPEED SENSOR

- a. Using a pin punch and a hammer, pull out the 2 pins, and remove the 2 attachments from SST.

SST 09520-00031 (09520-00040, 09521-00020)

- b. Mount the axle hub assembly with a soft jaw vise.

NOTE: Replace the axle hub assembly if it is dropped or strong shock is given to it.

- c. Using SST and 2 bolts (Diameter: 12 mm, Pitch: 1.5 mm), remove the ABS speed sensor.

SST 09520-00031 (09520-00040, 09521-00020), 09950-00020

NOTE: • Do not allow any foreign objects to stick to the sensor rotor.

2005 Toyota RAV4

2005 SUSPENSION Suspension & Axle - RAV4

- Pull out the ABS speed sensor straightly in order not to damage the sensor rotor.
- If the sensor rotor is damaged, replace the axle hub assembly.
- Do not scratch the contacting surface of the axle hub and speed sensor.

2. 2WD: INSTALL NEW ABS SPEED SENSOR

- a. Clean the contacting surface of the axle hub and a new speed sensor.

NOTE: Do not allow any foreign objects to stick to the sensor rotor.

- b. Place the speed sensor on the axle hub so that the connector can be set at the bottom under the on-vehicle condition.

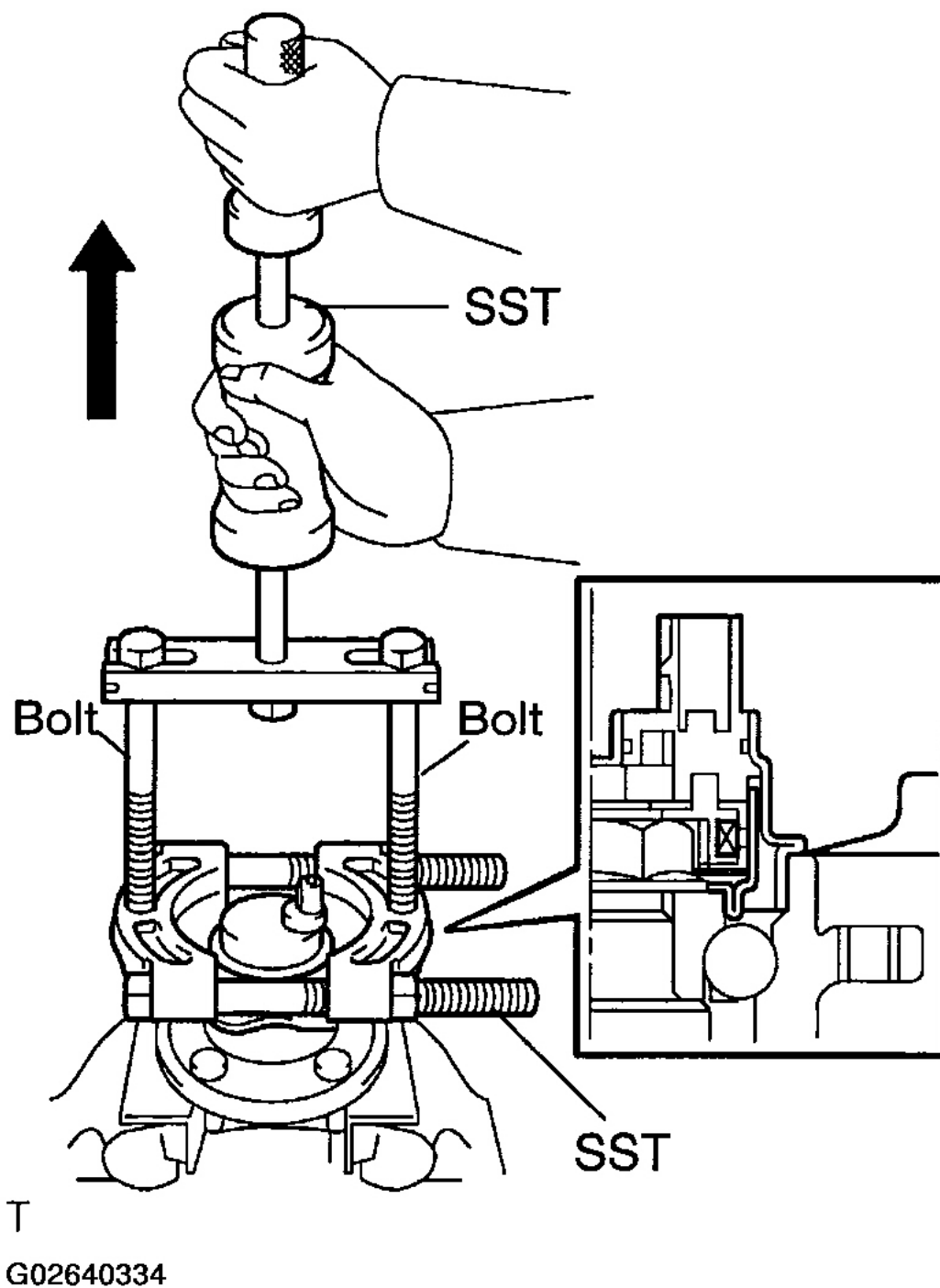


Fig. 99: Pulling Out Pins Using Special Tool
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

c. Using SST and a press, install a new speed sensor to the axle hub.

SST 09527-10011, 09710-04101, 09950-60020 (09951-00680)

NOTE:

- Do not tap the speed sensor with a hammer directly.
- Check that there should be no foreign objects on the speed sensor detection portion.
- Press the speed sensor straightly and slowly.

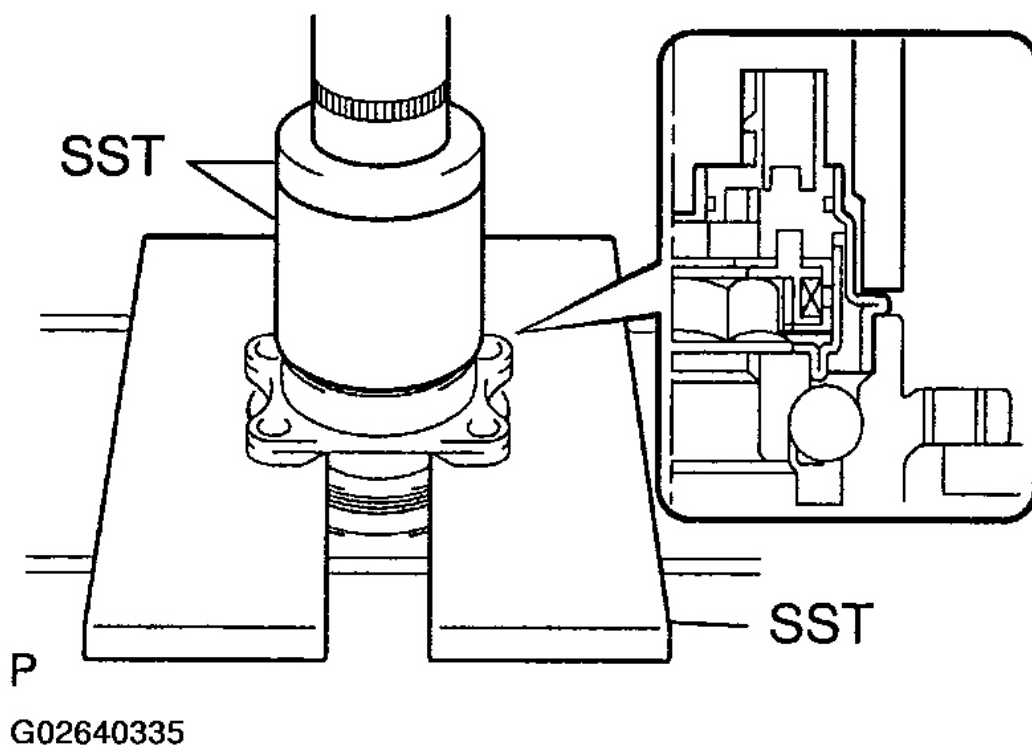


Fig. 100: Installing Speed Sensor To Axle Hub Using Special Tool
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSTALLATION

Installation is in the reverse order of removal procedure (See REMOVAL).

HINT:

After installation, check the ABS speed sensor signal (See DTC DTC C0200/31 - C1239/39).

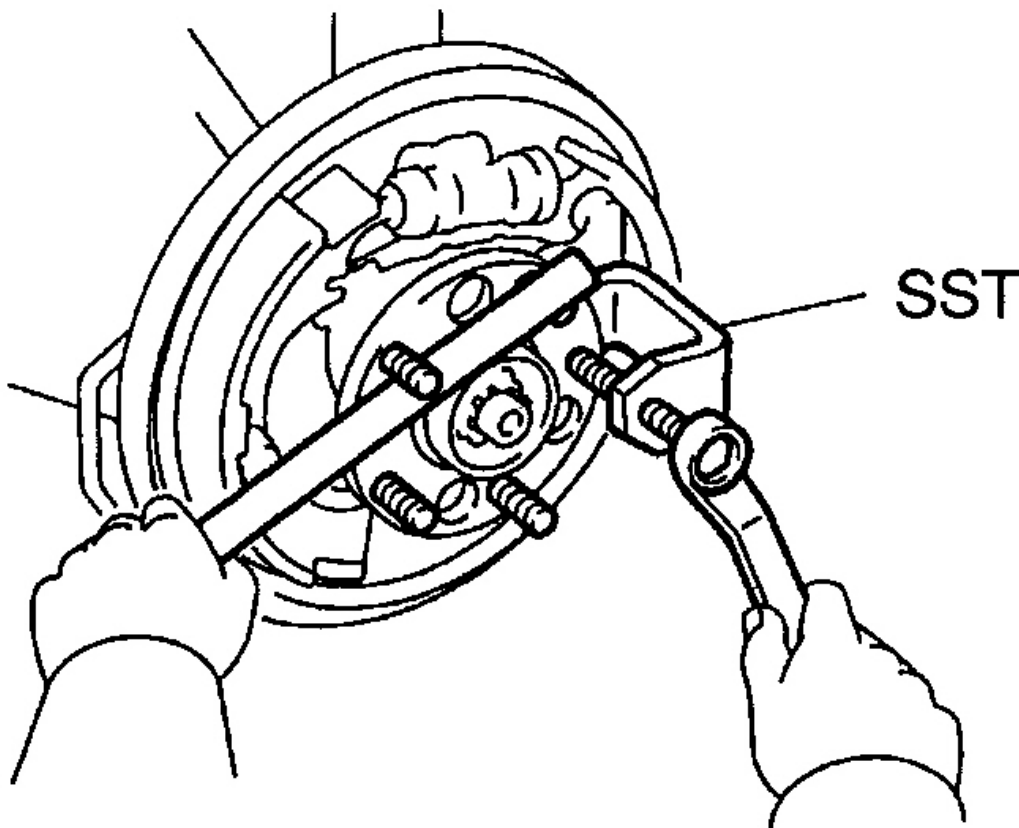
REAR WHEEL HUB BOLT

REPLACEMENT

1. REMOVE REAR WHEEL
2. w/drum brake: REMOVE BRAKE DRUM
3. w/disc brake: REMOVE BRAKE CALIPER AND DISC (See REAR BRAKE CALIPER)
4. REMOVE HUB BOLT

Using SST, remove the hub bolt.

SST 09628-10011



G02640336

Fig. 101: Removing Hub Bolt Using Special Tool

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

5. **INSTALL NEW HUB BOLT**

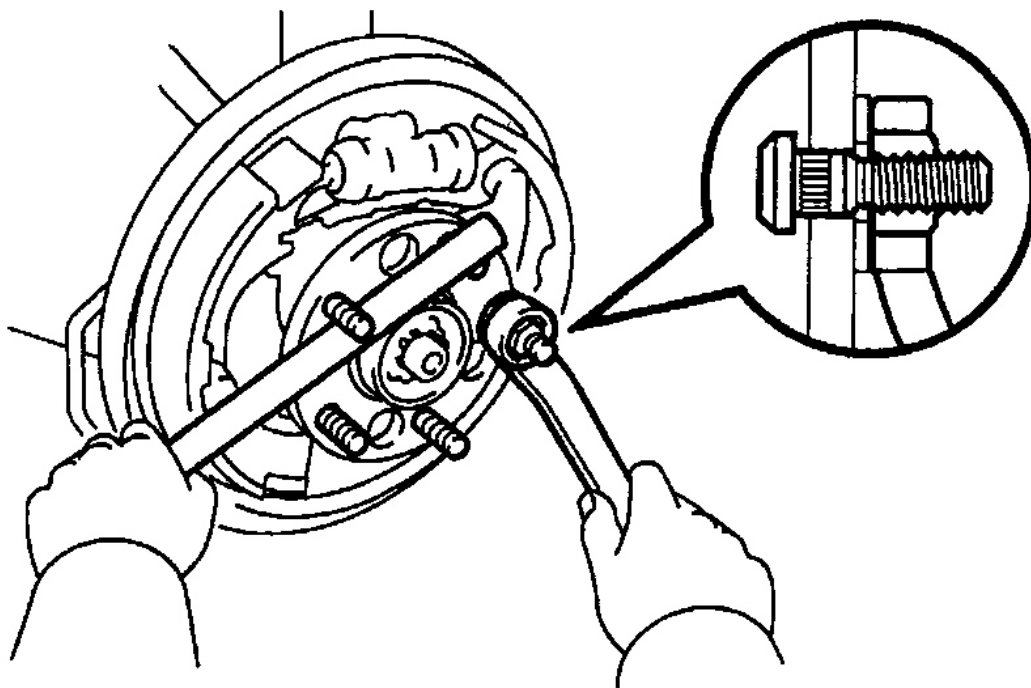
- a. Install a washer and a nut to a new hub bolt, as shown, and install the hub bolt by tightening the nut.
- b. Using a brass bar to hold, install the hub bolt by tightening the nut.

6. **w/drum brake: REINSTALL BRAKE DRUM**

7. **w/disc brake: REINSTALL BRAKE DISC AND CALIPER (See INSTALLATION)**

8. **INSTALL REAR WHEEL**

Torque: 103 N.m (1,050 kgf.cm, 76 ft.lbf)



G02640337

Fig. 102: Installing Hub Bolt Using Special Tool

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

REAR DRIVE SHAFT (4WD)

COMPONENTS

2005 Toyota RAV4

2005 SUSPENSION Suspension & Axle - RAV4

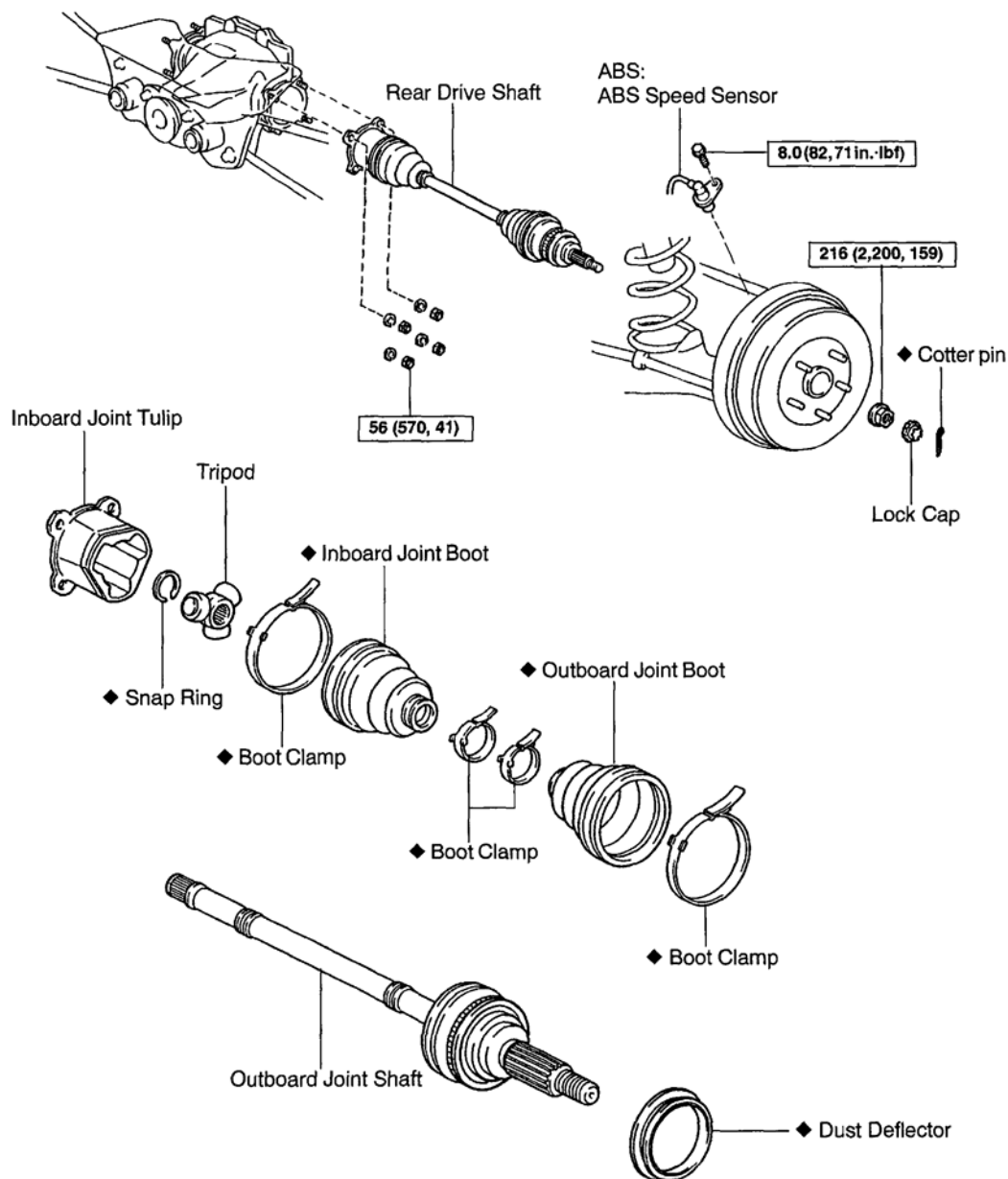


Fig. 103: Identifying Rear Drive Shaft Components & Torque Specifications (4WD)

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

REMOVAL

NOTE:

- The hub bearing could be damaged if it is subjected to the vehicle weight, such as when moving the vehicle with the drive shaft bearing removed.

2005 Toyota RAV4

2005 SUSPENSION Suspension & Axle - RAV4

Therefore, if it is absolutely necessary to place the vehicle weight on the hub bearing, first support it with SST.

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

- **w/ ABS:** After disconnecting the drive shaft from the axle hub, work carefully so as not to damage the sensor rotor serrations on the drive shaft.

1. REMOVE REAR WHEEL

Torque: 103 N.m (1,050 kgf.cm, 76 ft.lbf)

2. w/ABS: REMOVE BOLT AND ABS SPEED SENSOR

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

3. REMOVE DRIVE SHAFT LOCK NUT

- Remove the cotter pin and lock cap.
- With depressing the brakes, remove the nut.

Torque: 216 N.m (2,200 kgf.cm, 159 ft.lbf)

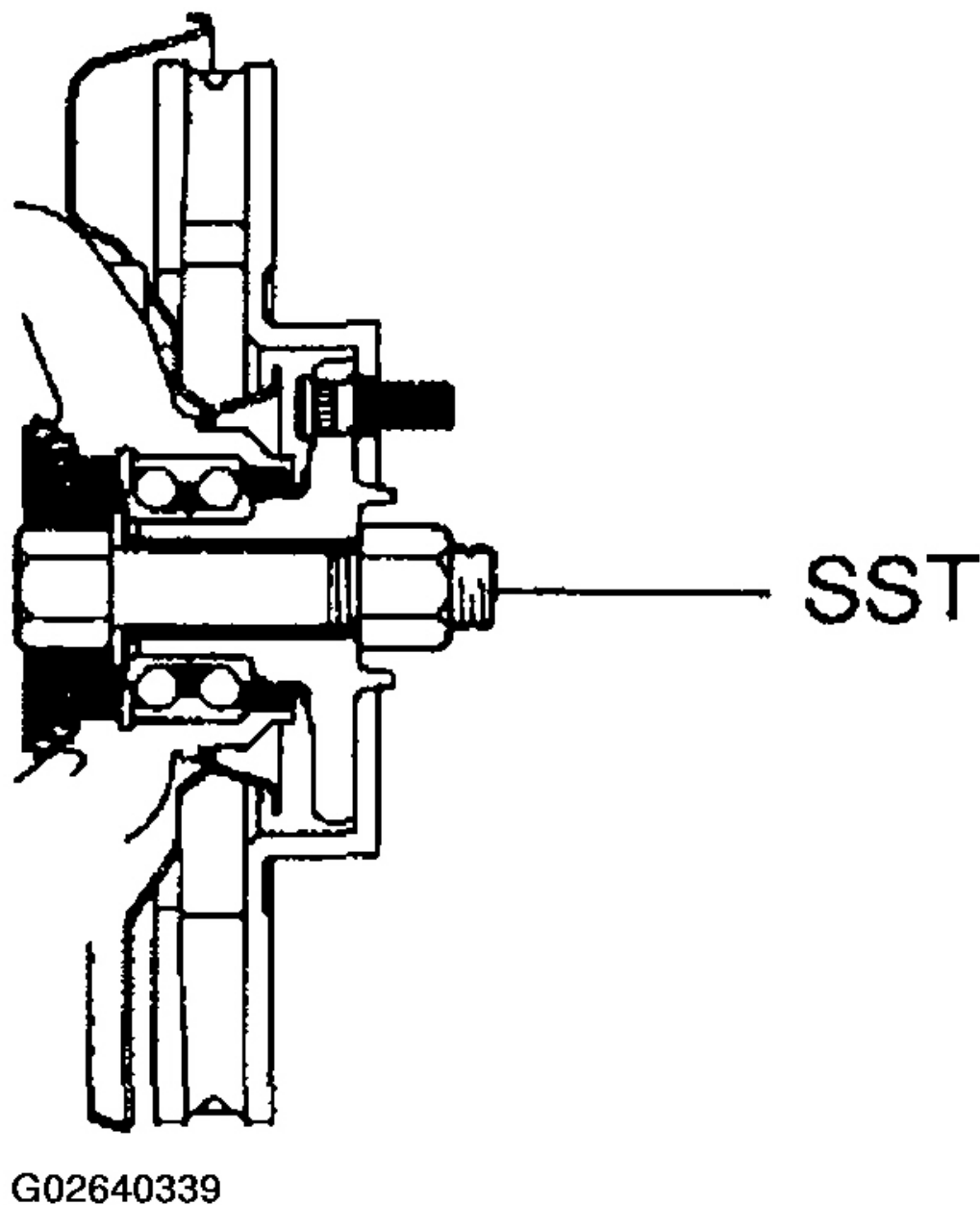


Fig. 104: Supporting Hub Bearing With SST
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

4. REMOVE REAR DRIVE SHAFT

- a. Place matchmarks on the drive shaft and differential side gear shaft.

- b. Remove the 4 nuts and washers, and disconnect the drive shaft from the differential side gear shaft.

Torque: 56 N.m (570 kgf.cm, 41 ft.lbf)

- c. Remove the drive shaft from the axle carrier.

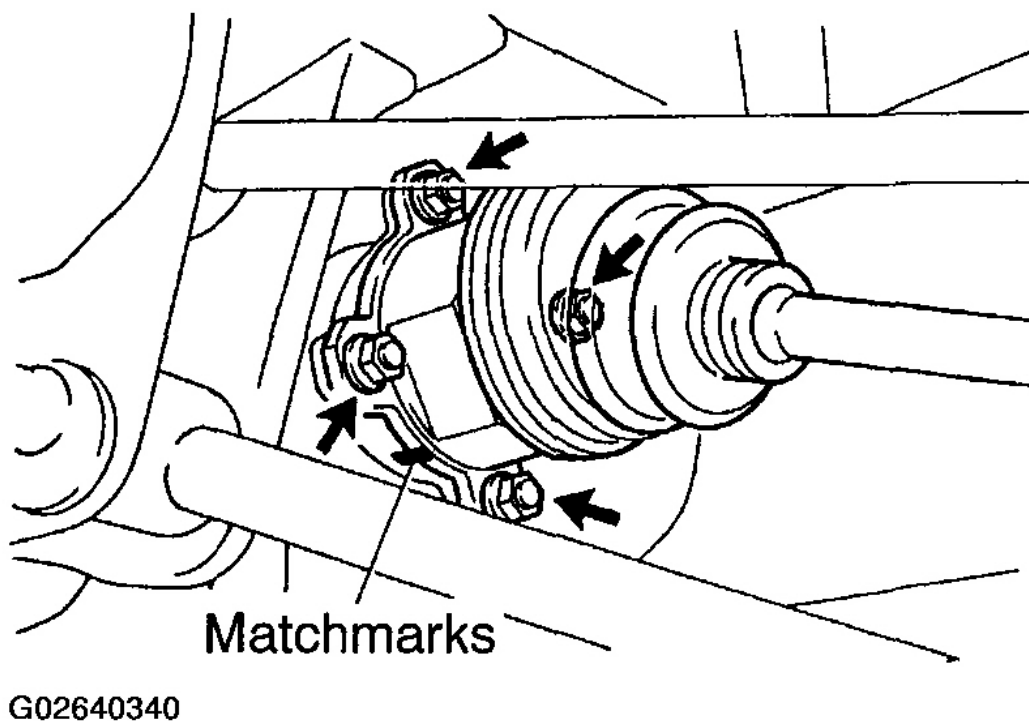


Fig. 105: Placing Matchmarks On Drive Shaft And Differential Side Gear Shaft
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

DISASSEMBLY

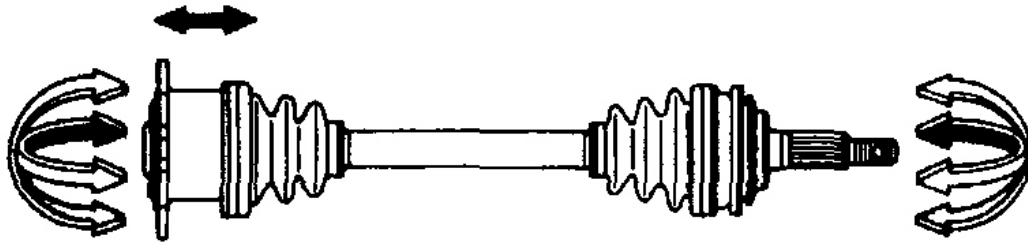
NOTE: Do not disassemble the outboard shaft.

DISASSEMBLE DRIVE SHAFT

- a. Check the drive shaft.
1. Check that there is no remarkable play in the outboard joint.
 2. Check that the inboard joint slides smoothly in the thrust direction.
 3. Check that there is no remarkable play in the radial direction of the inboard joint.
 4. Check the boots for damage.

- b. Remove the boot clamps.

Using a screwdriver, remove the 4 boot clamps.



G02640341

Fig. 106: Checking Drive Shaft

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

- c. Remove the inboard joint tulip.
1. Place matchmarks on the inboard joint tulip and outboard joint shaft.

NOTE: Do not punch the marks.

2. Remove the inboard joint tulip from the outboard joint shaft.

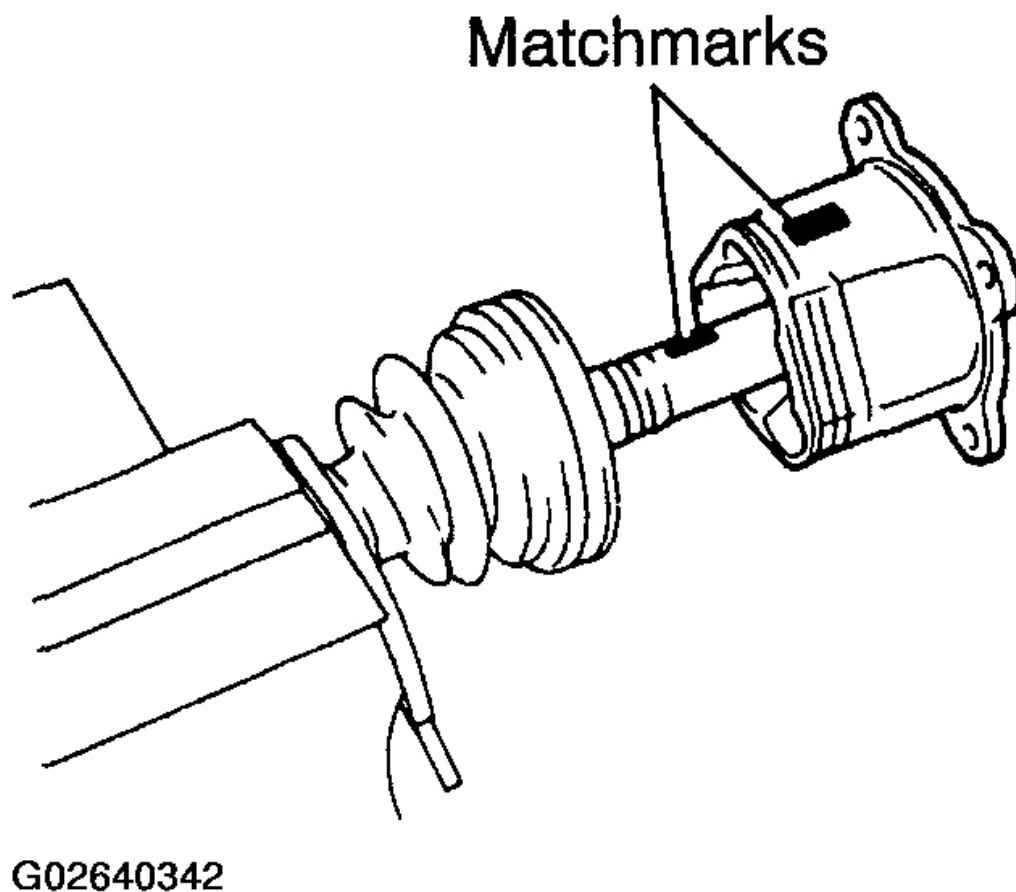


Fig. 107: Placing Matchmarks On Inboard Joint Tulip And Outboard Joint Shaft
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- d. Remove the tripod.
 1. Using a snap ring expander, remove the snap ring.
 2. Place matchmarks on the outboard joint shaft and tripod.

NOTE: Do not punch the marks.

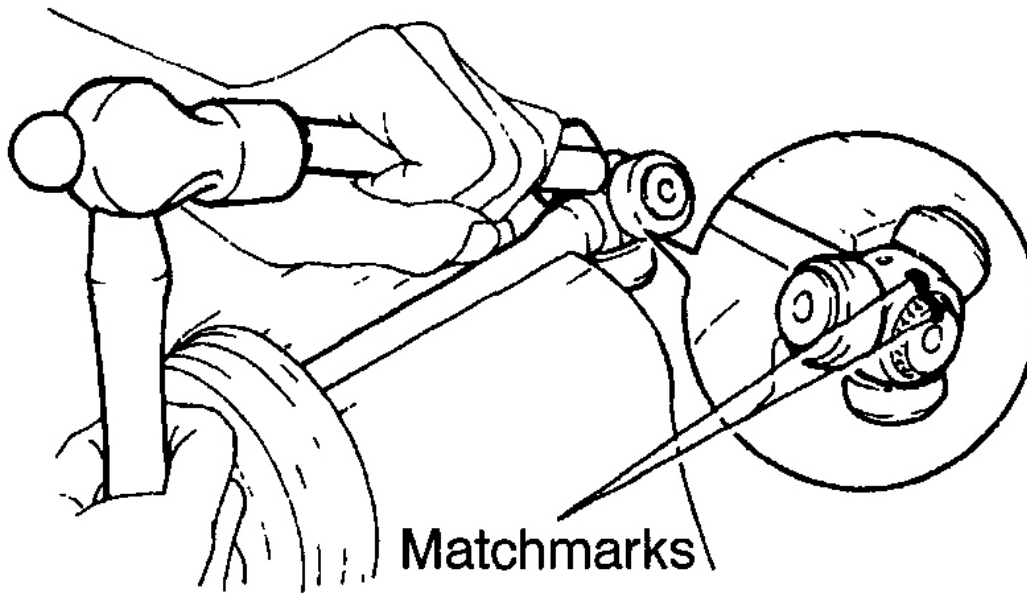
3. Using a brass bar and a hammer, remove the tripod from the drive shaft.

NOTE: Do not tap the roller.

4. Remove the inboard and outboard joint boots and 4 boot clamps.

5. Remove the dust deflector.

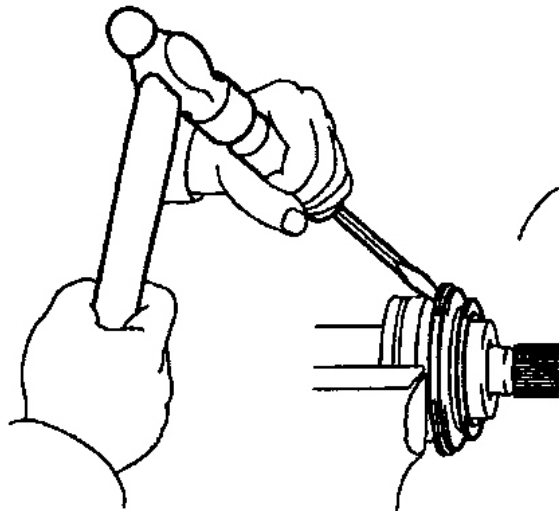
Using a screwdriver and a hammer, remove the dust deflector.



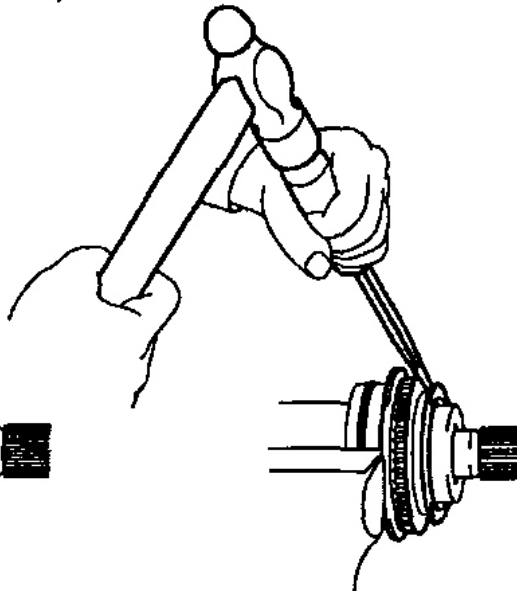
G02640343

Fig. 108: Placing Matchmarks On Outboard Joint Shaft And Tripod
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

w/o ABS



w/ ABS



G02640344

Fig. 109: Removing Dust Deflector Using Screwdriver And Hammer
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

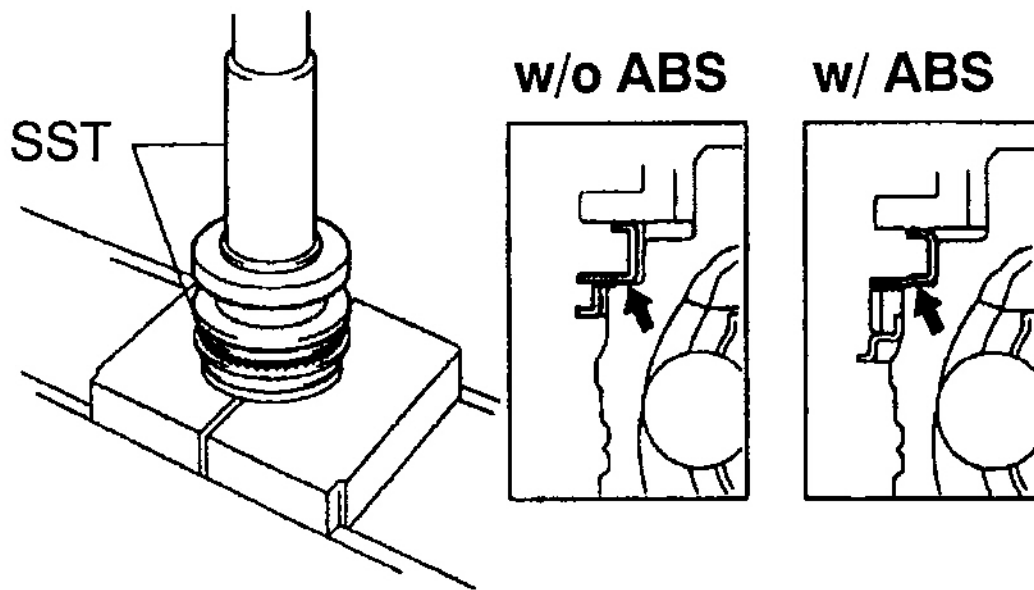
REASSEMBLY

REASSEMBLE DRIVE SHAFT

- a. Install a new dust deflector.

Using SST and a press, install a new dust deflector.

SST 09309-36010,09316-2001



G02640345

Fig. 110: Installing Dust Deflector Using SST And Press
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

NOTE: Be careful not to damage the ABS speed sensor rotor.

- b. Temporarily install new outboard and inboard joint boots.

HINT:

Before installing the boots, wrap vinyl tape around the spline of the outboard joint shaft to prevent damaging the boots.

1. Place 2 new boot clamps on a new outboard joint boot and install them to the outboard joint shaft.
 2. Place 2 new boot clamps on a new inboard joint boot and install them to the outboard joint shaft.
- c. Install the tripod.
1. Place the beveled side of the tripod axial spline toward the outboard joint.
 2. Align the matchmarks placed before removal procedure.
 3. Using a brass bar and a hammer, tap the tripod to the drive shaft.

NOTE: Do not tap the roller.

4. Using a snap ring expander, install a new snap ring.

- d. Cover the outboard joint boot.

Pack the outboard joint and boot with grease in the boot kit, and cover the outboard joint with the boot.

Grease capacity: (Color = black)

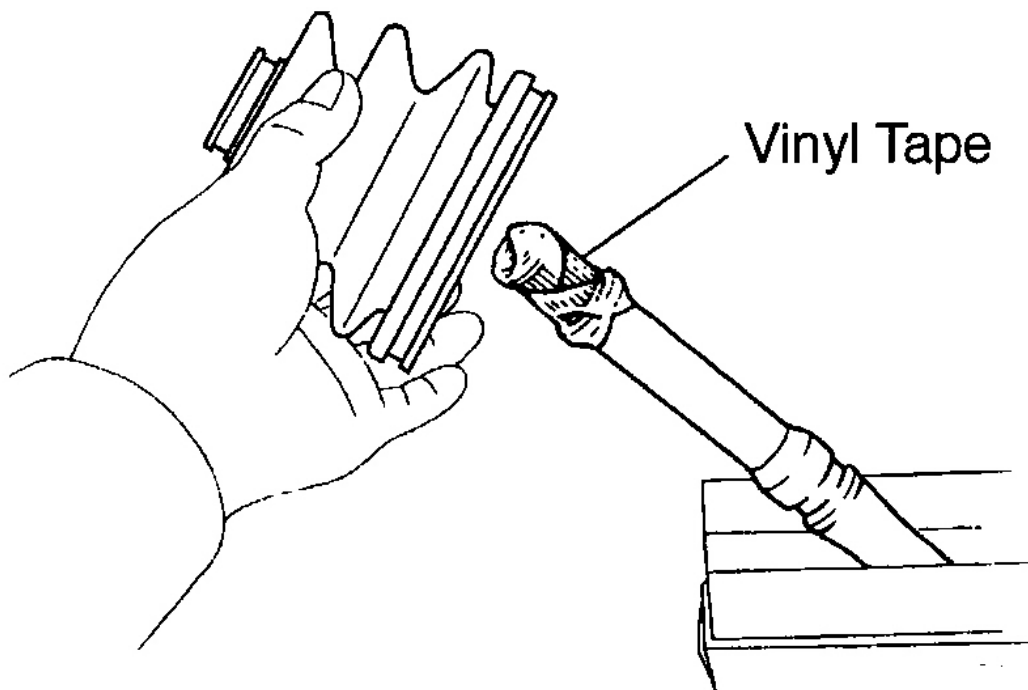
100-110 g (3.5-4.2 oz.)

- e. Cover the inboard joint boot.

1. Pack the inboard joint tulip and boot with grease in the boot kit.

Grease capacity: (Color = yellow)

180-190 g (6.3-6.7 oz.)

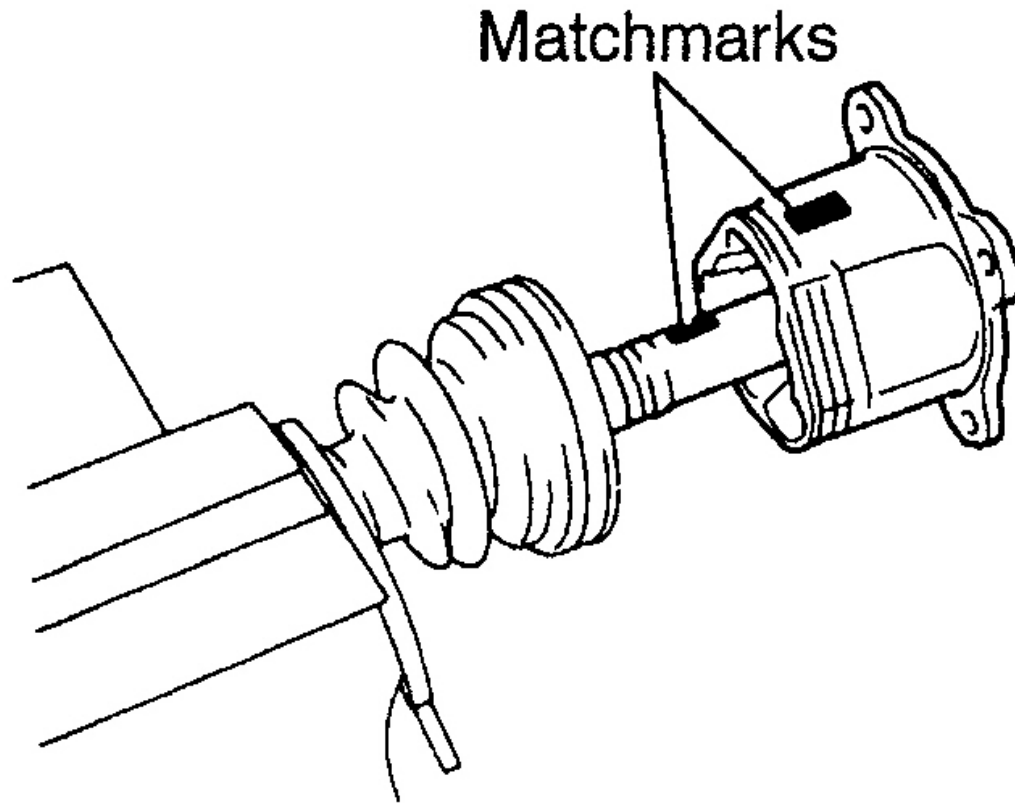


G02640346

Fig. 111: Installing Outboard And Inboard Joint Boots
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

2. Align the matchmarks placed before removal procedure, and install the inboard joint tulip to the outboard joint shaft.

3. Cover the inboard tulip with the boot.
- f. Tighten the boot clamps.
 1. Make sure that the 2 boots are on the shaft groove.



G02640347

Fig. 112: Installing Inboard Joint Tulip To Outboard Joint Shaft With Matchmarks
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

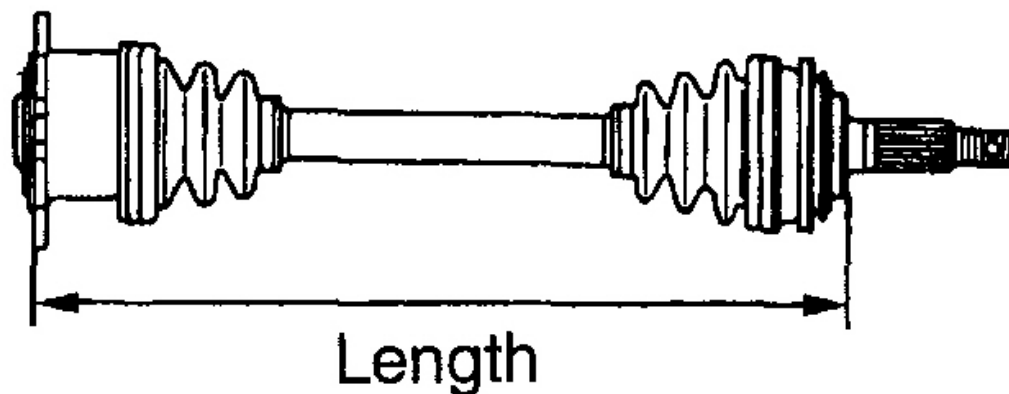
2. Make sure that the 2 boots are not stretched or contracted when the drive shaft is at standard length.

Standard length:

STANDARD LENGTH SPECIFICATIONS

RH	611.9 +/- 5.0 mm (26.059 +/- 0.197 in.)
LH	564.9 +/- 5.0 mm (21.787 +/- 0.197 in.)

3. Bend the band and tighten the boot clamps with a screwdriver.



G02640348

Fig. 113: Identifying Drive Shaft Standard Length
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSTALLATION

Installation is in the reverse order of removal procedure (See REMOVAL).

HINT:

After installation, check the ABS speed sensor signal (See DTC DTC C0200/31 - C1239/39).

REAR DIFFERENTIAL FRONT OIL SEAL (4WD)

COMPONENTS

2005 Toyota RAV4

2005 SUSPENSION Suspension & Axle - RAV4

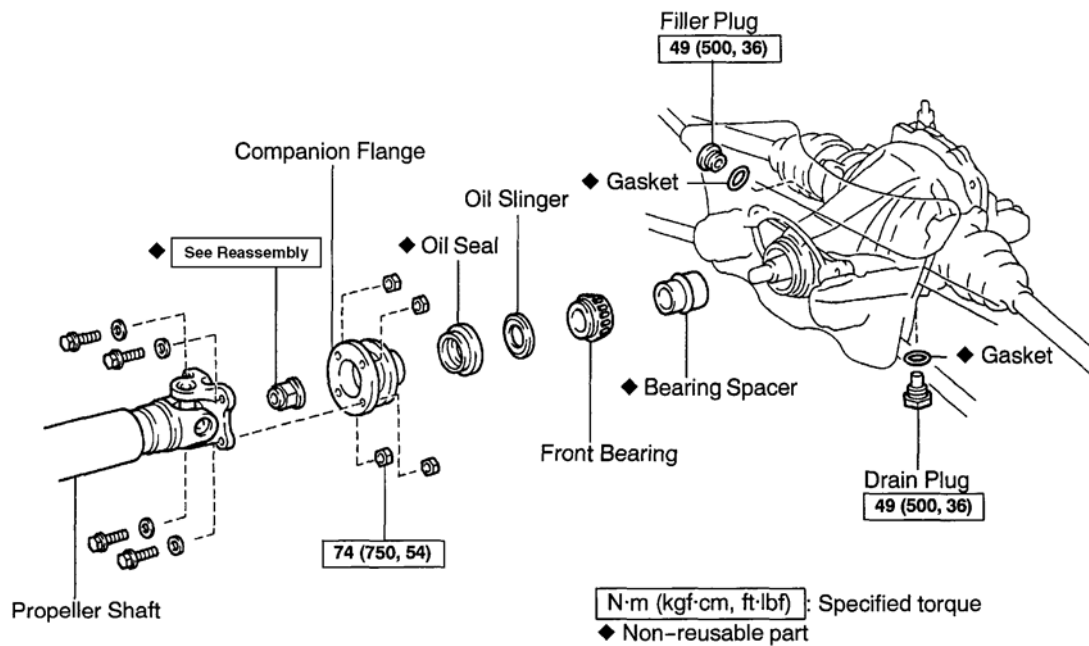
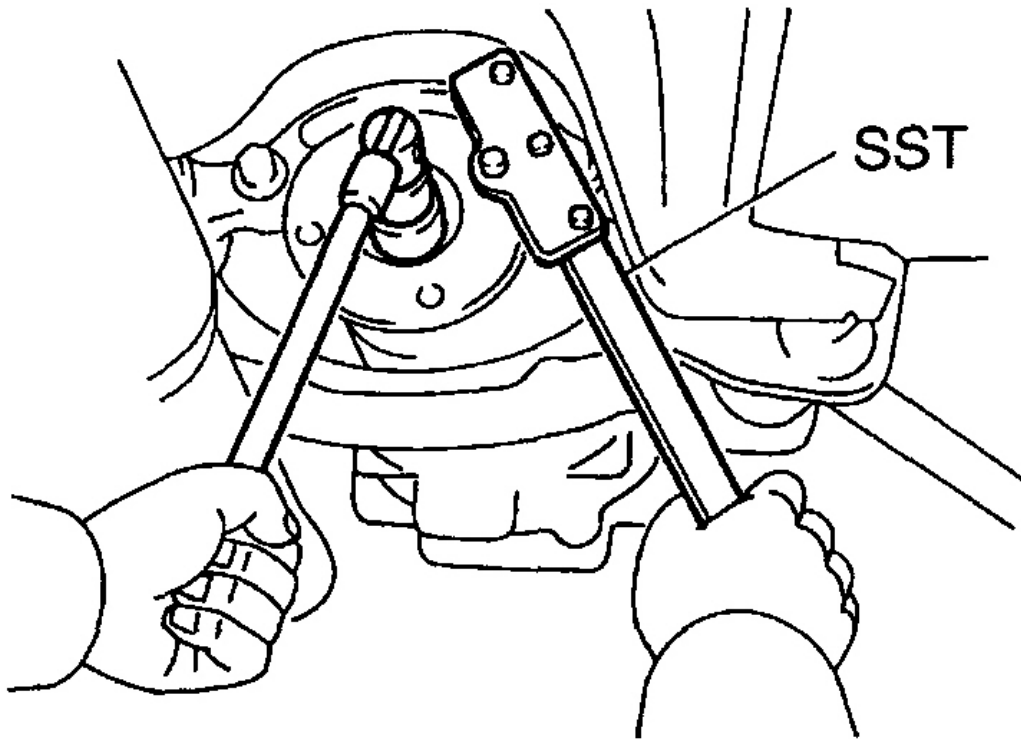


Fig. 114: Identifying Rear Differential Front Oil Seal Components & Torque Specifications (4WD)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

REPLACEMENT

1. **DRAIN DIFFERENTIAL OIL**
2. **REMOVE PROPELLER SHAFT (See REMOVAL)**
3. **REMOVE COMPANION FLANGE**
 - a. Using a chisel and a hammer, unstake the staked part of the nut.
 - b. Using SST to hold the flange, remove the nut.

SST 09330-00021

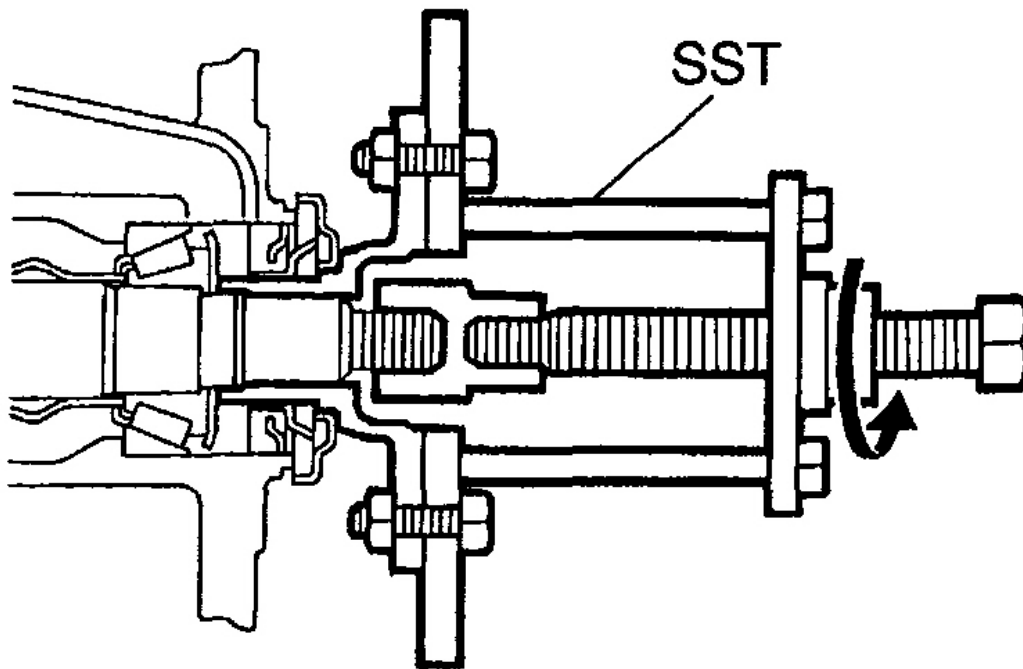


G02640350

Fig. 115: Removing Companion Flange Nut Using Special Tool
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- c. Using SST, remove the companion flange.

SST 09950-30012 (09951-03010, 09953-03010, 09954-03010, 09955-03040, 09956-03020)



G02640351

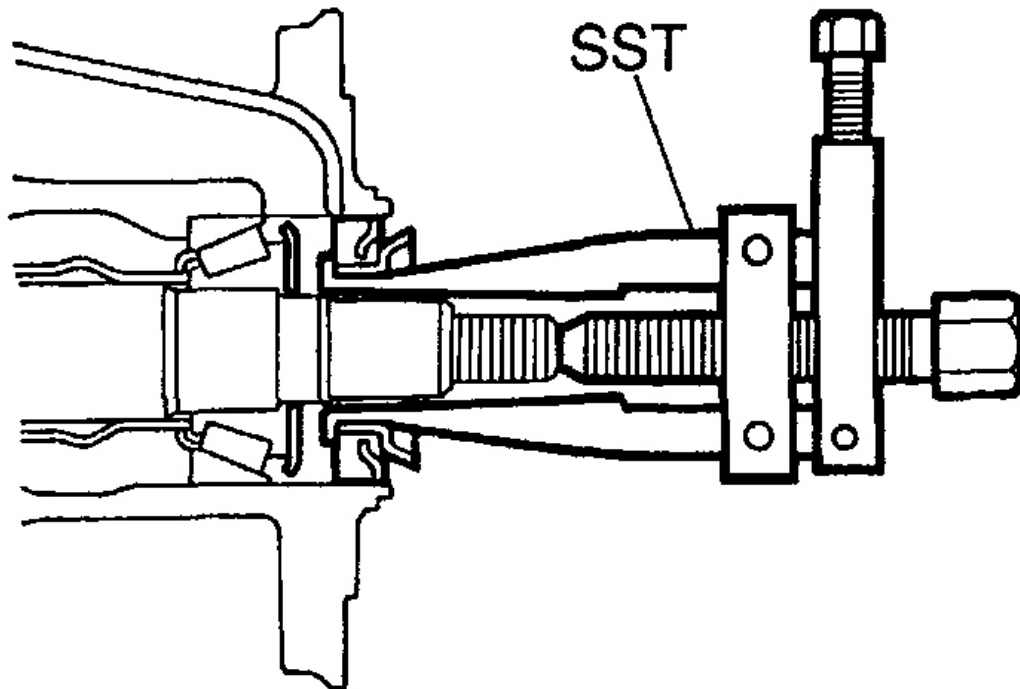
Fig. 116: Removing Companion Flange Using Special Tool
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

4. REMOVE FRONT OIL SEAL AND OIL SLINGER

- a. Using SST, remove the oil seal.

SST 09308-10010

- b. Remove the oil slinger.



G02640352

Fig. 117: Removing Oil Seal Using Special Tool
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

5. REMOVE FRONT BEARING AND BEARING SPACER

- a. Using SST, remove the front bearing.

SST 09556-22010

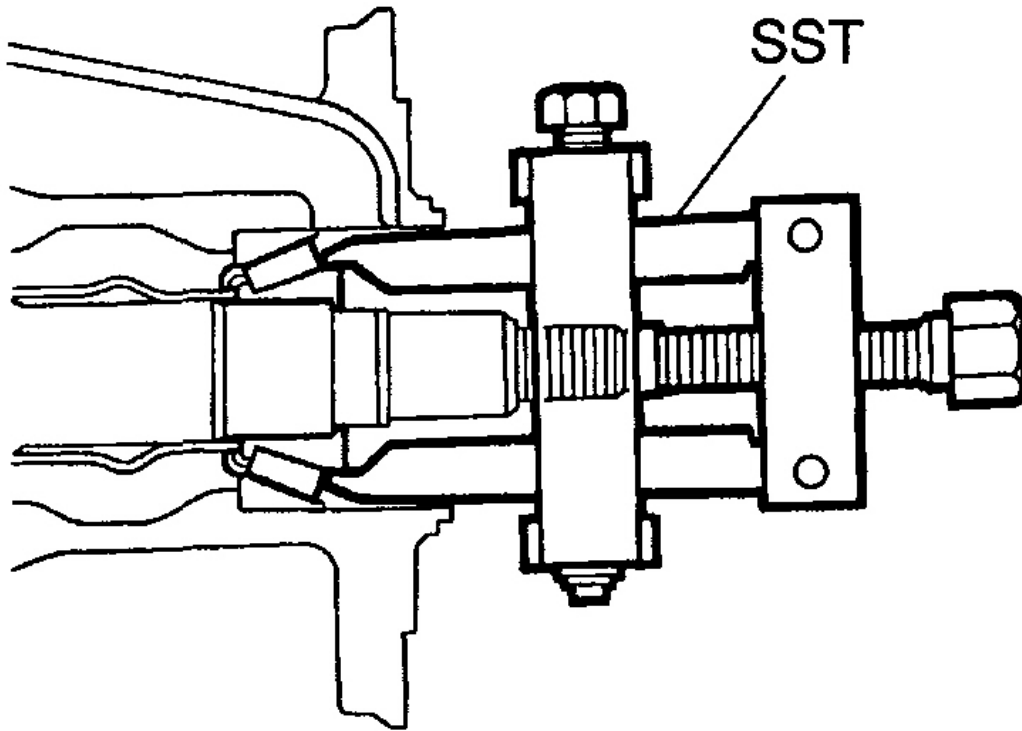
- b. Remove the bearing spacer.

6. INSTALL NEW BEARING SPACER AND FRONT BEARING

- a. Install a new bearing spacer on the shaft.
- b. Install the front bearing on the shaft.

7. INSTALL OIL SLINGER AND NEW OIL SEAL

- a. Install the oil slinger.



G02640353

Fig. 118: Installing Oil Slinger

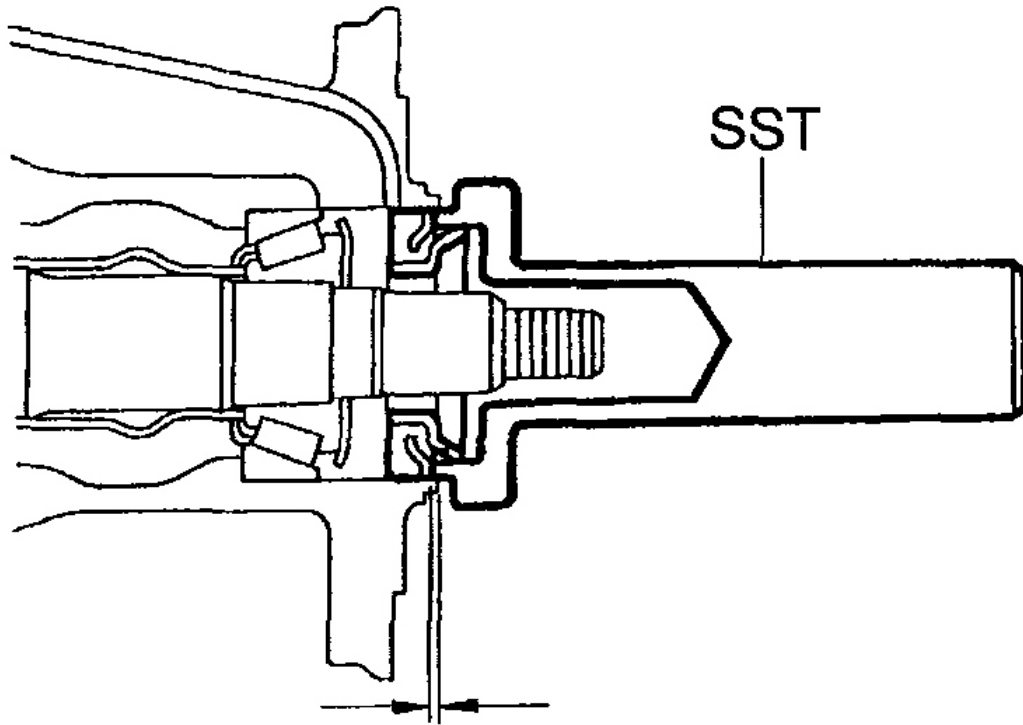
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- b. Using SST, install a new oil seal.

SST 09554-22010

Oil seal drive in depth: 2.0 mm (0.079 in.)

- c. Apply MP grease to the oil seal lip.



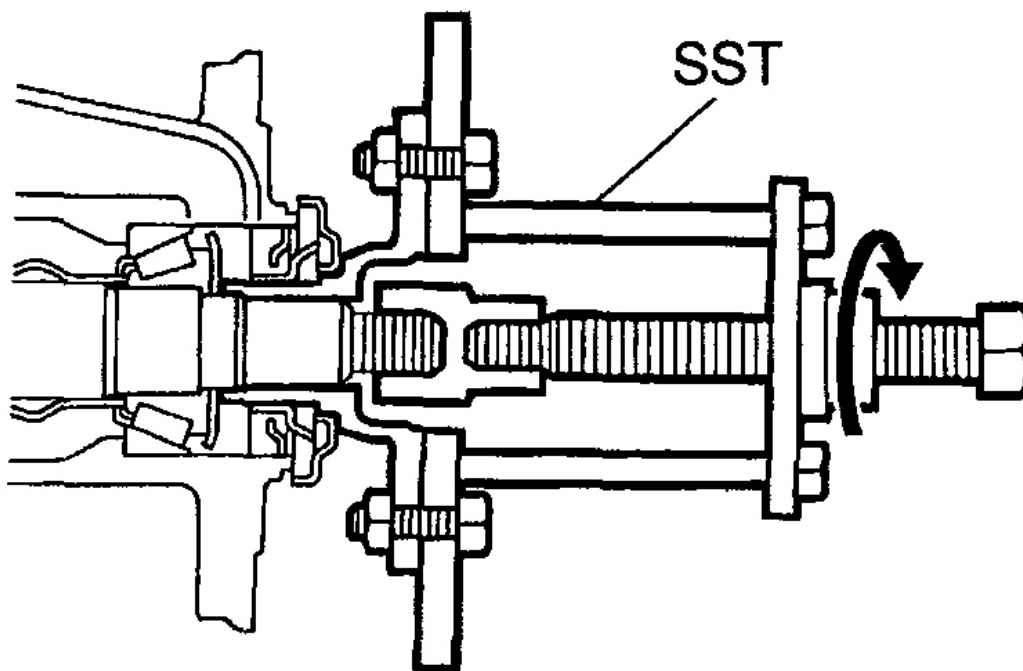
G02640354

Fig. 119: Installing Oil Seal Using Special Tool
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

8. INSTALL COMPANION FLANGE

- a. Using SST, install the companion flange on the shaft.

SST 09950-30012 (09951-03010, 09953-03010, 09954-03010, 09955-03040, 09956-03020)



G02640355

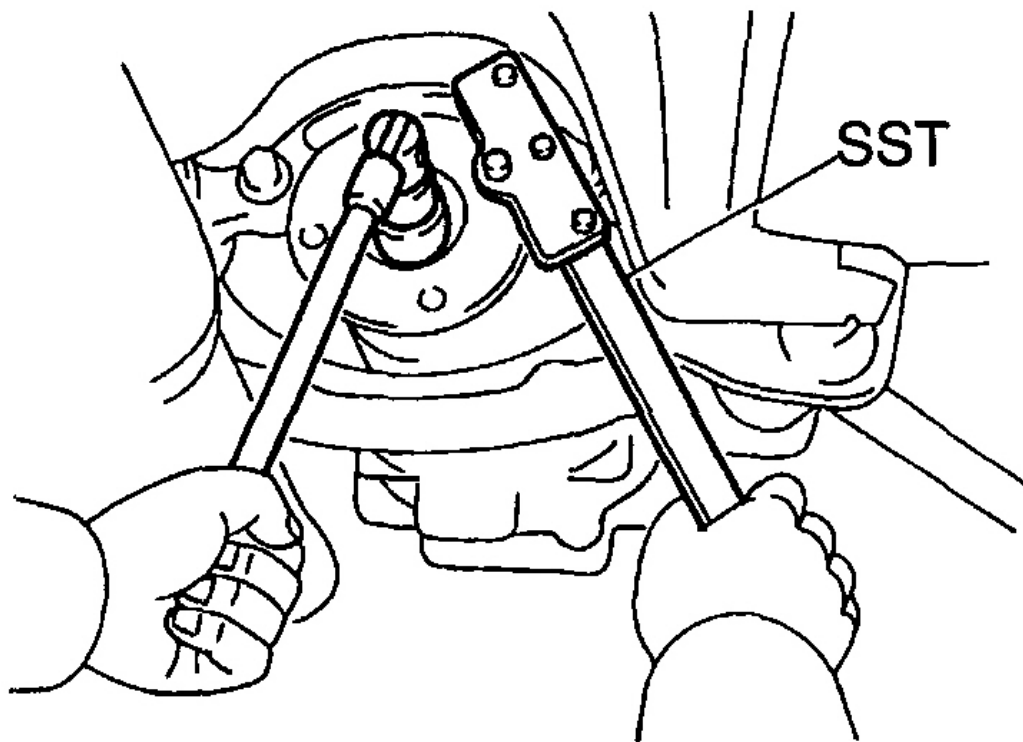
Fig. 120: Installing Companion Flange On Shaft Using Special Tool
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- b. Coat the threads of a new nut with hypoid gear oil.
- c. Using SST to hold the flange, torque the nut.

SST 09330-00021

Torque: 108 N.m (1,100 kgf.cm, 80 ft.lbf)

- d. Adjust the preload of bearing on the drive pinion (See **REASSEMBLY**).
- 9. **STAKE DRIVE PINION NUT**
- 10. **INSTALL PROPELLER SHAFT (See INSTALLATION)**
- 11. **FILL DIFFERENTIAL WITH DIFFERENTIAL OIL (See REAR DIFFERENTIAL CARRIER (4WD))**



G02640356

Fig. 121: Installing Nut Using Special Tool
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

REAR DIFFERENTIAL CARRIER (4WD)

ON-VEHICLE REPAIR

REPLACE REAR DIFFERENTIAL OIL

- Remove the filler plug and gasket.
- Remove the drain plug and gasket, and drain the oil.
- Reinstall the drain plug with a new gasket.

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

- Fill new differential oil as shown.

Capacity: 0.9 liter (1.0 US qts, 0.8 Imp. qts)

Oil grade: Hypoid gear oil API GL-5

Recommended oil viscosity:

RECOMMENDED OIL VISCOSITY SPECIFICATIONS

Above -18°C (0°F)	SAE 90
Below -18°C (0°F)	SAE 80W or 80W-90

- e. Reinstall the filler plug with a new gasket.

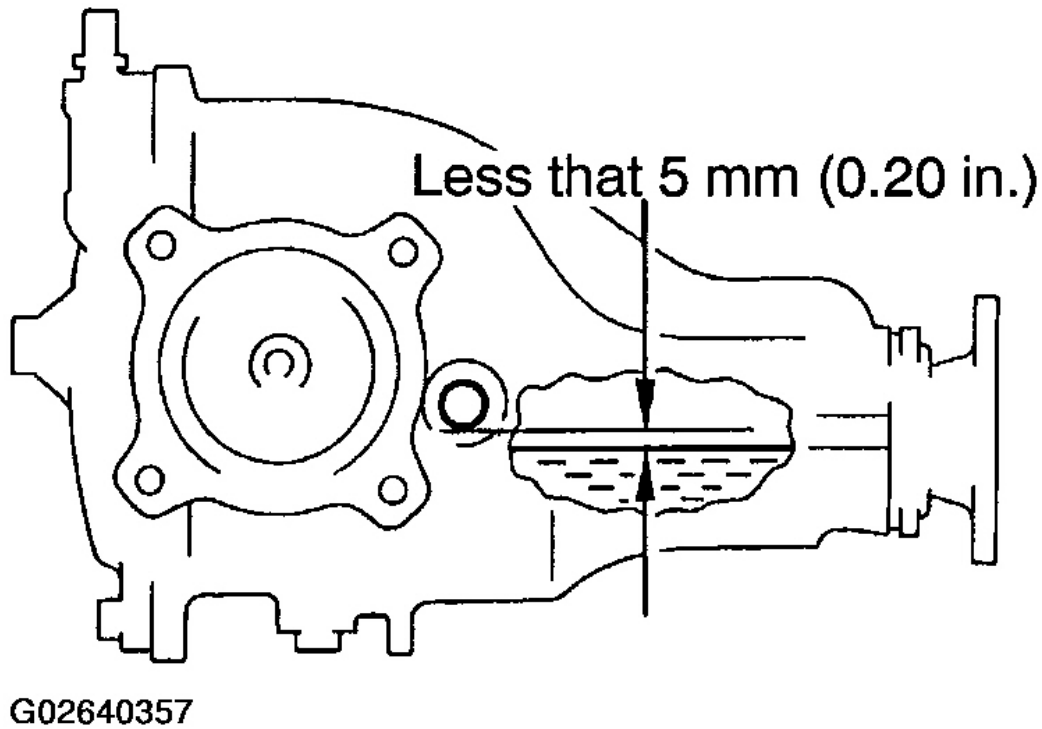
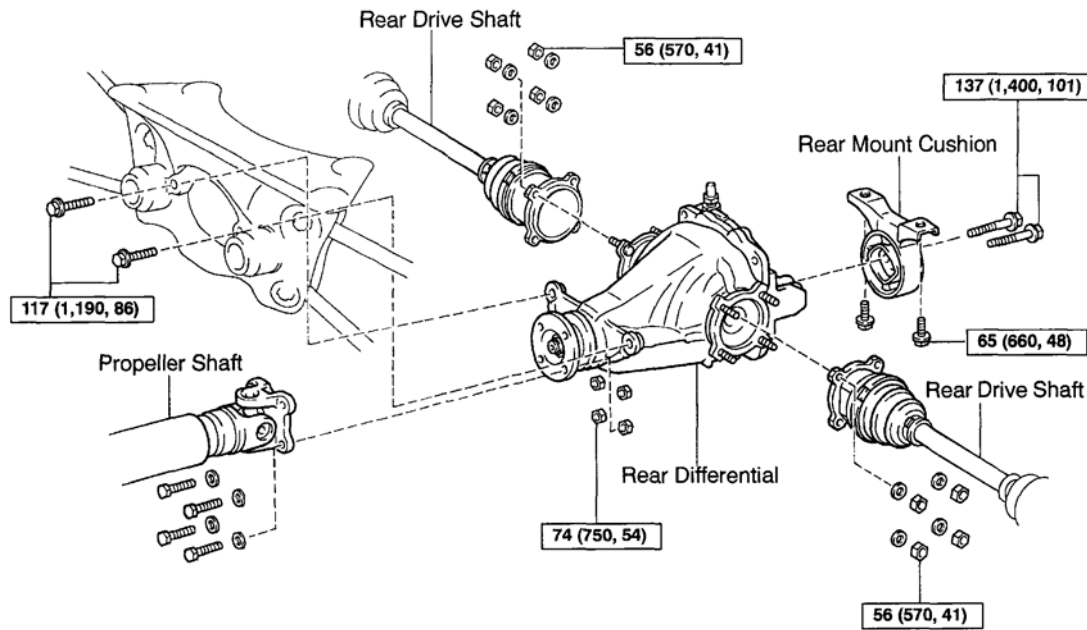


Fig. 122: Identifying Differential Oil Dimension
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

COMPONENTS

2005 Toyota RAV4

2005 SUSPENSION Suspension & Axle - RAV4



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

G02640358

Fig. 123: Identifying Rear Differential Carrier Components & Torque Specifications (4WD) (1 Of 2)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

2005 Toyota RAV4

2005 SUSPENSION Suspension & Axle - RAV4

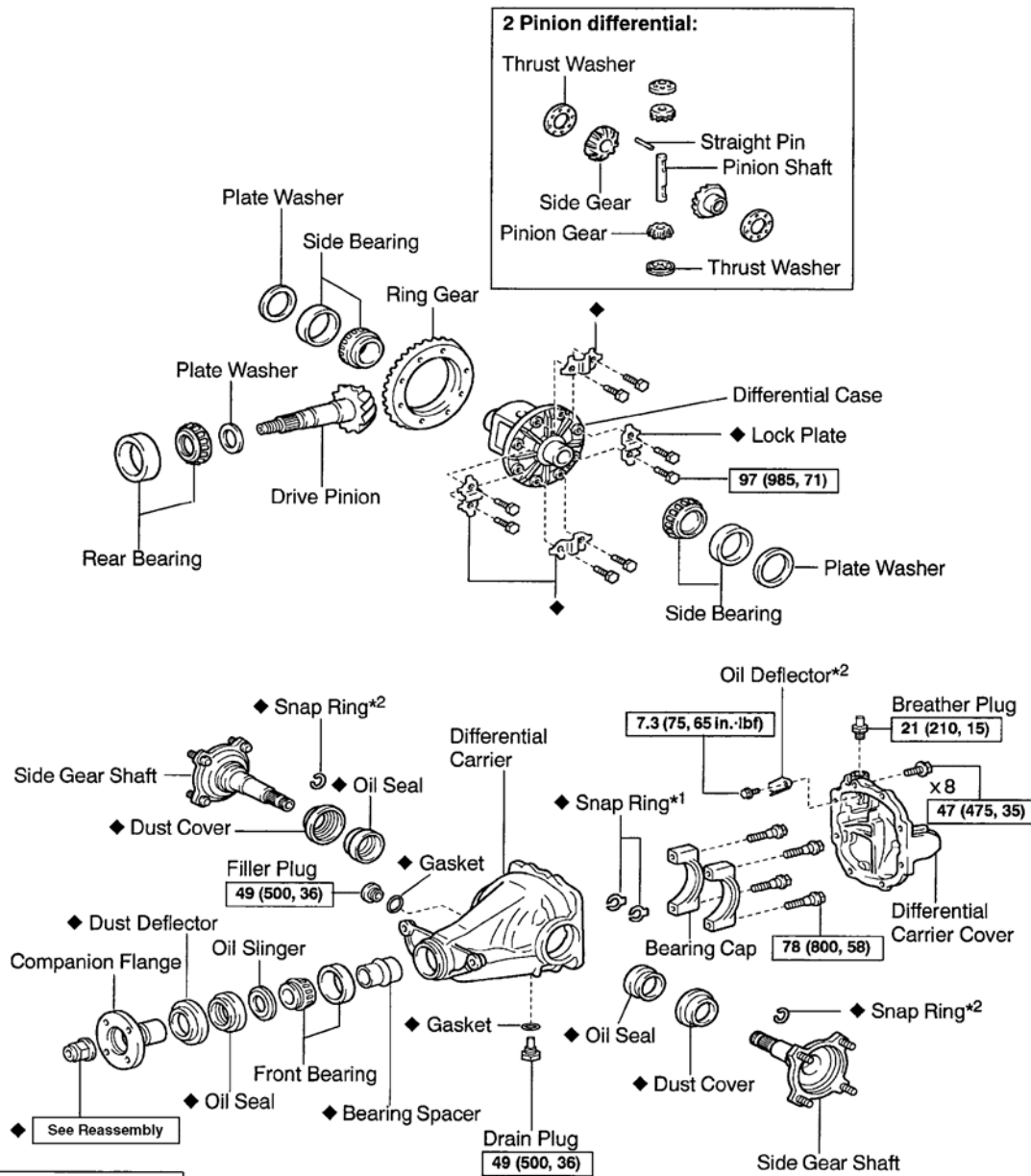


Fig. 124: Identifying Rear Differential Carrier Components & Torque Specifications (4WD) (2 Of 2)
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

REMOVAL

1. REMOVE DRIVE SHAFTS (See REMOVAL)

HINT:

2005 Toyota RAV4

2005 SUSPENSION Suspension & Axle - RAV4

Support the drive shafts securely.

2. REMOVE PROPELLER SHAFT (See REMOVAL)

HINT:

Support the propeller shaft securely.

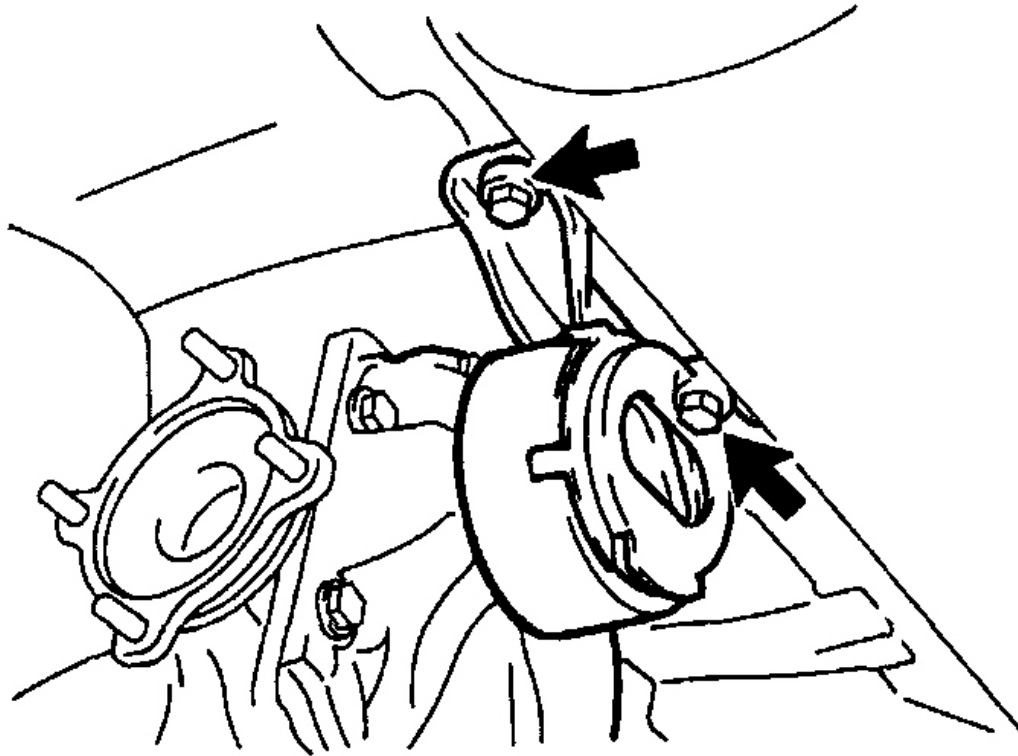
3. DRAIN DIFFERENTIAL OIL

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

4. REMOVE DIFFERENTIAL

- a. Support the differential with a jack.
- b. Remove the 2 rear mounting bolts.

Torque: 65 N.m (660 kgf.cm, 48 ft.lbf)



G02640360

Fig. 125: Removing Rear Mounting Bolts

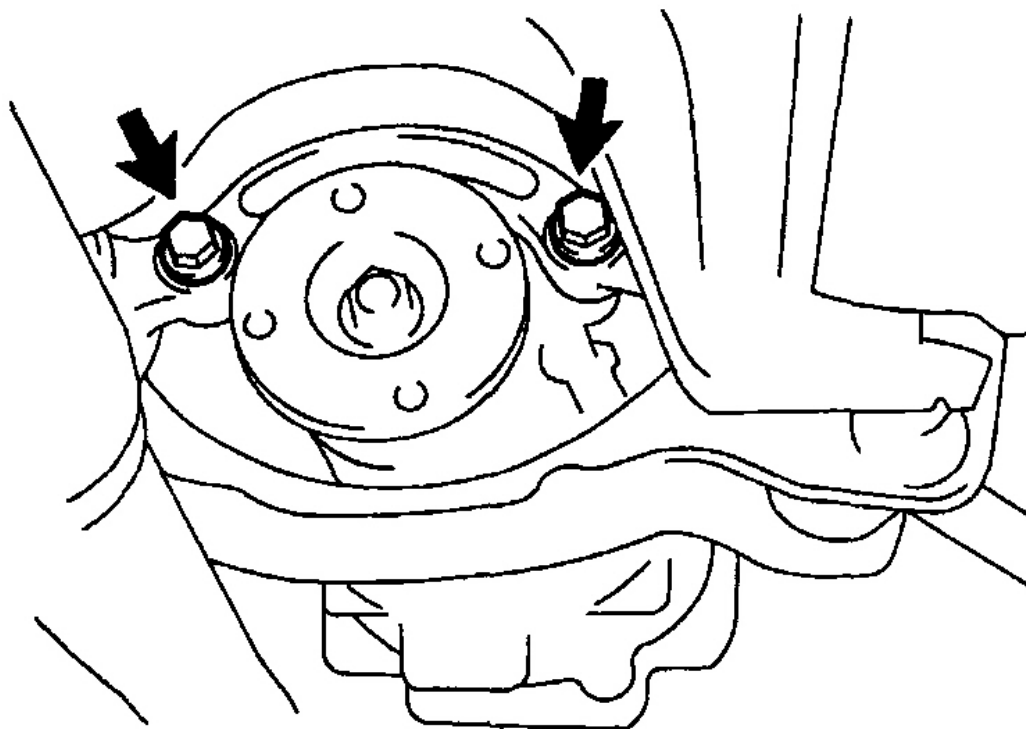
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- c. Remove the 2 front mounting bolts and differential.

Torque: 117 N.m (1,190 kgf.cm, 86 ft.lbf)

- d. Remove the 2 bolts and differential rear mount cushion from the differential.

Torque: 137 N.m (1,400 kgf.cm, 101 ft.lbf)



G02640361

Fig. 126: Removing Front Mounting Bolts And Differential
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

DISASSEMBLY

1. REMOVE DIFFERENTIAL CARRIER COVER

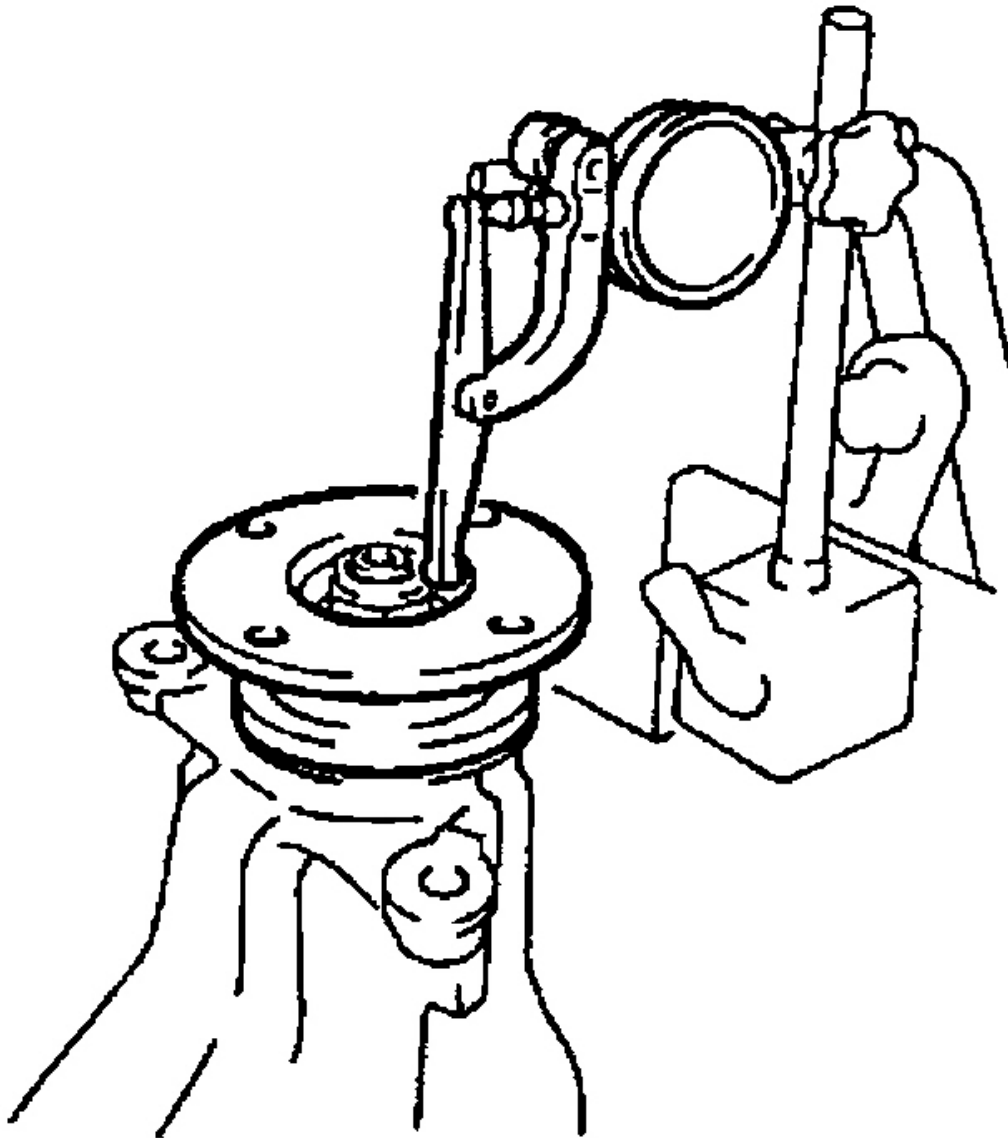
- Remove the 8 bolts from the carrier cover.
- Using a brass bar and a hammer, separate the cover from the carrier.
- Remove the breather plug from the differential carrier cover.
- Torque sensing LSD:

Remove the bolt and oil deflector from the differential.

2. CHECK RUNOUT OF COMPANION FLANGE

- Using a dial indicator, measure the runout of the companion flange vertically.

Maximum runout: 0.10 mm (0.0039 in.)

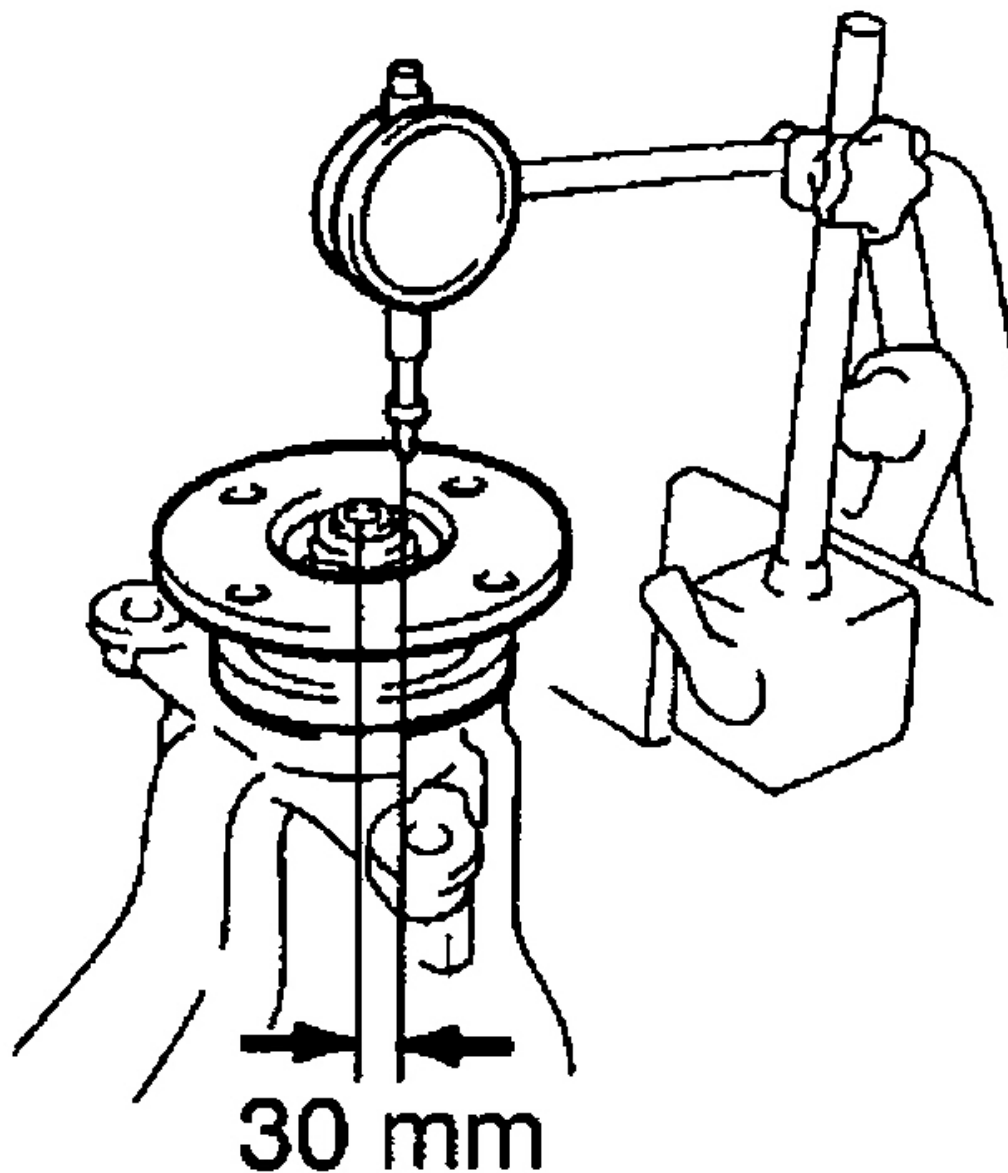


G02640362

Fig. 127: Measuring Runout Of Companion Flange Using Dial Indicator
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- b. Place a dial indicator on the place 30 mm (1.181 in.) apart from the center of the companion flange.
- c. Measure the runout of the companion flange horizontally.

Maximum runout: 0.10 mm (0.0039 in.)



G02640363

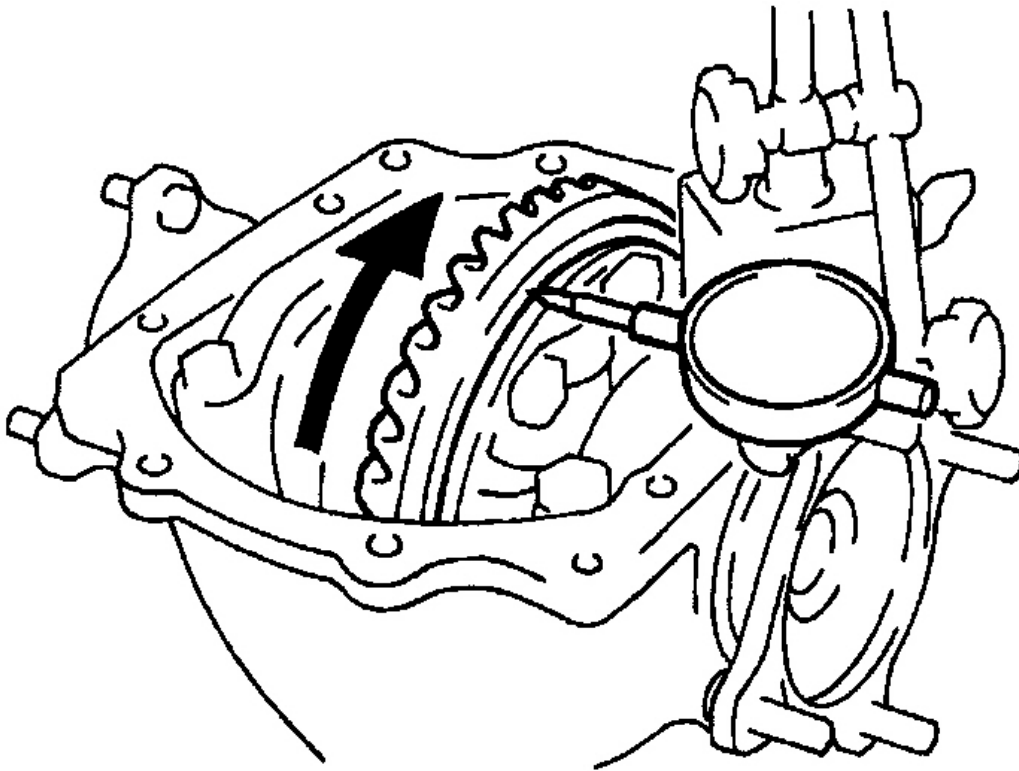
Fig. 128: Measuring Runout Of Companion Flange Horizontally Using Dial Indicator
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- a. Check the runout.

Using a dial indicator, check the runout of the ring gear.

Maximum runout: 0.07 mm (0.0028 in.)

If the runout is greater than the maximum value, replace it with a new ring gear.



G02640364

Fig. 129: Checking Runout Of Ring Gear Using Dial Indicator
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

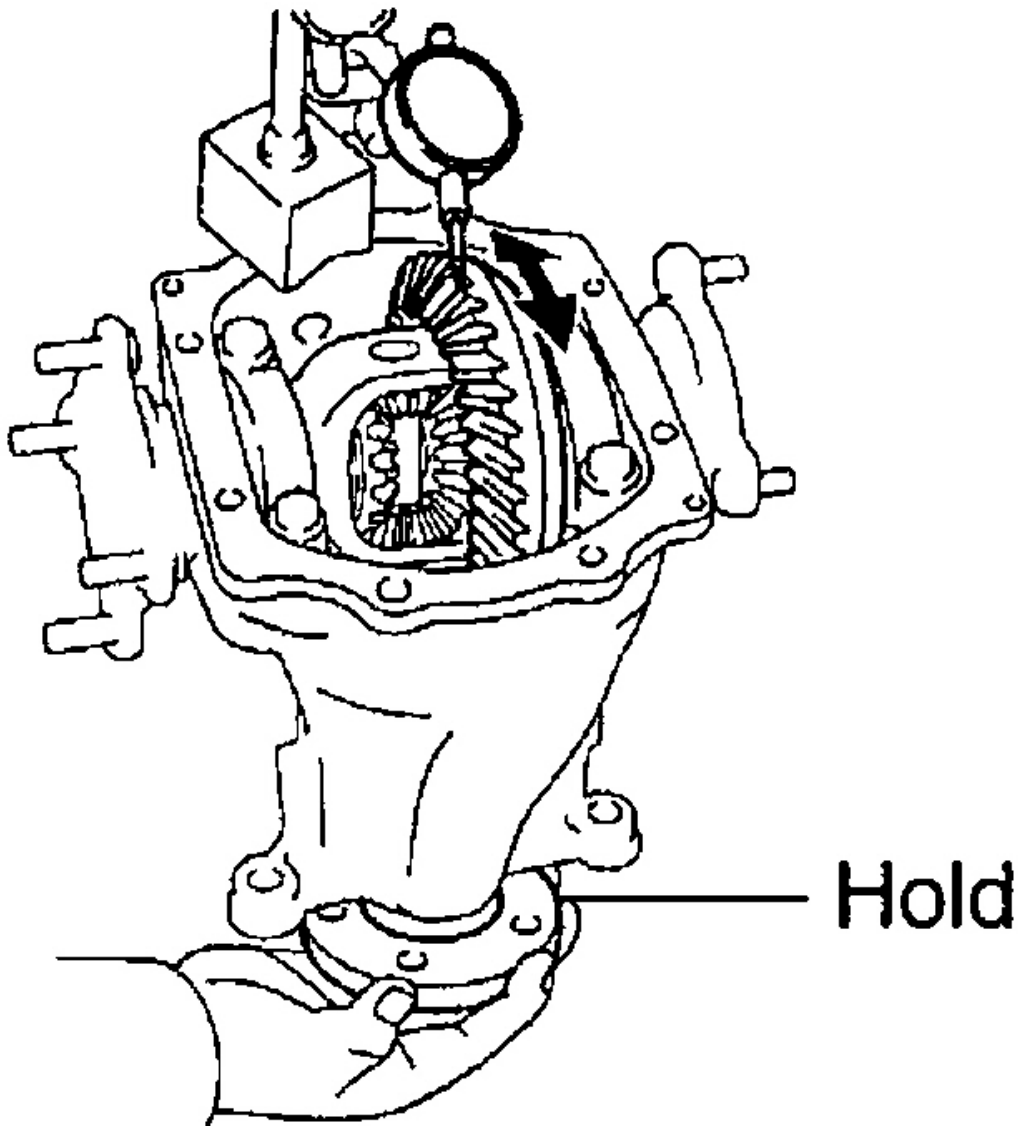
- b. Check the backlash.

Using a dial indicator, check the backlash of the ring gear.

Backlash: 0.13 - 0.18 mm (0.0051 - 0.0071 in.)

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

4. **CHECK TOOTH CONTACT BETWEEN RING GEAR AND DRIVE PINION (See REASSEMBLY)**



G02640365

Fig. 130: Checking Backlash Of Ring Gear Using Dial Indicator
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

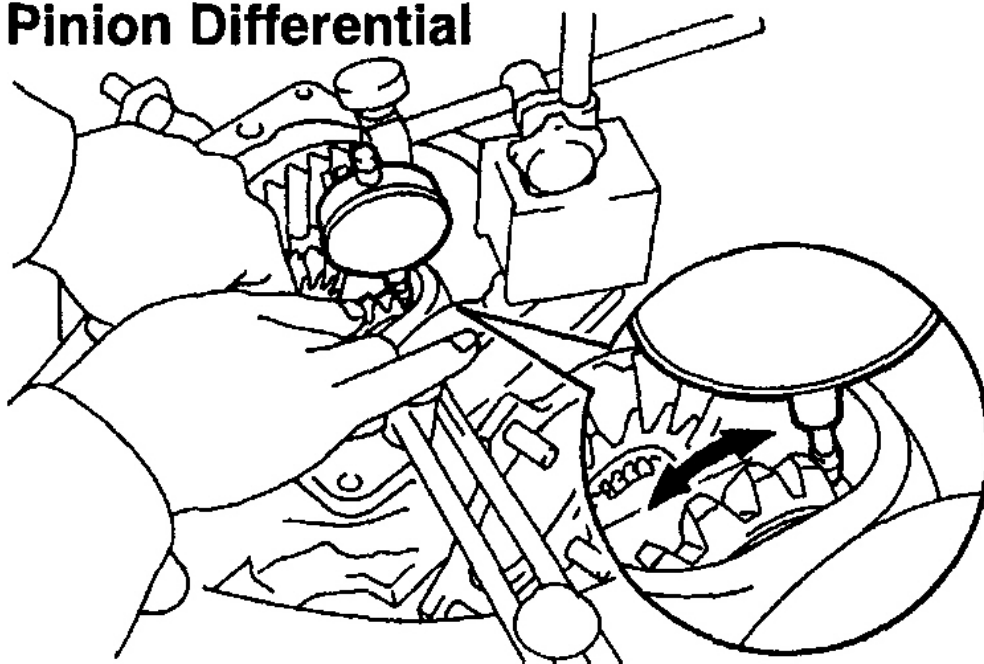
5. 2 pinion differential: CHECK BACKLASH OF SIDE GEAR

Using a dial indicator, check the backlash of the side gear with holding 1 pinion gear toward the differential case.

Backlash: 0.05 - 0.20 mm (0.0020 - 0.0079 in.)

If the backlash is not within the specification, install the 2 side gear thrust washers of different thickness (See **REASSEMBLY**).

2 Pinion Differential



G02640366

Fig. 131: Checking Backlash Of Side Gear Using Dial Indicator
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

6. MEASURE DRIVE PINION PRELOAD

Using a torque wrench, measure the preload of the backlash between the drive pinion and ring gear.

Preload (at starting):

0.6 - 0.9 N.m (6 - 9 kgf.cm, 5.3 - 8.0 in.lbf)

7. CHECK TOTAL PRELOAD

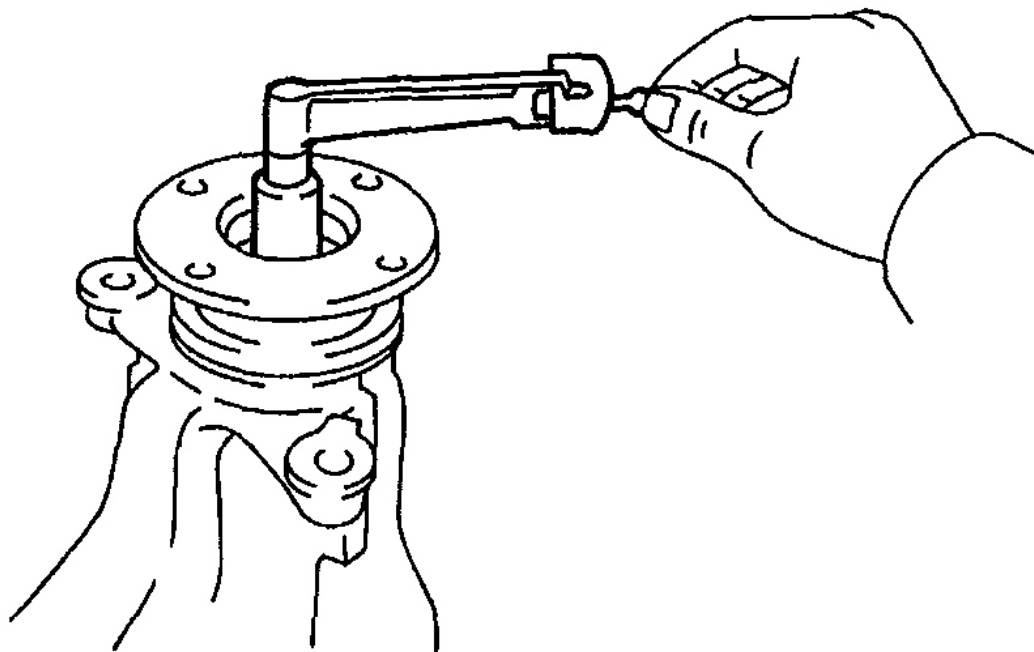
Using a torque wrench, measure the preload.

Total preload (at starting):

Drive pinion preload plus

0.3 - 0.5 N.m (3 - 5 kgf.cm, 2.6 - 4.3 in.lbf)

If necessary, disassemble and inspect the differential.



G02640367

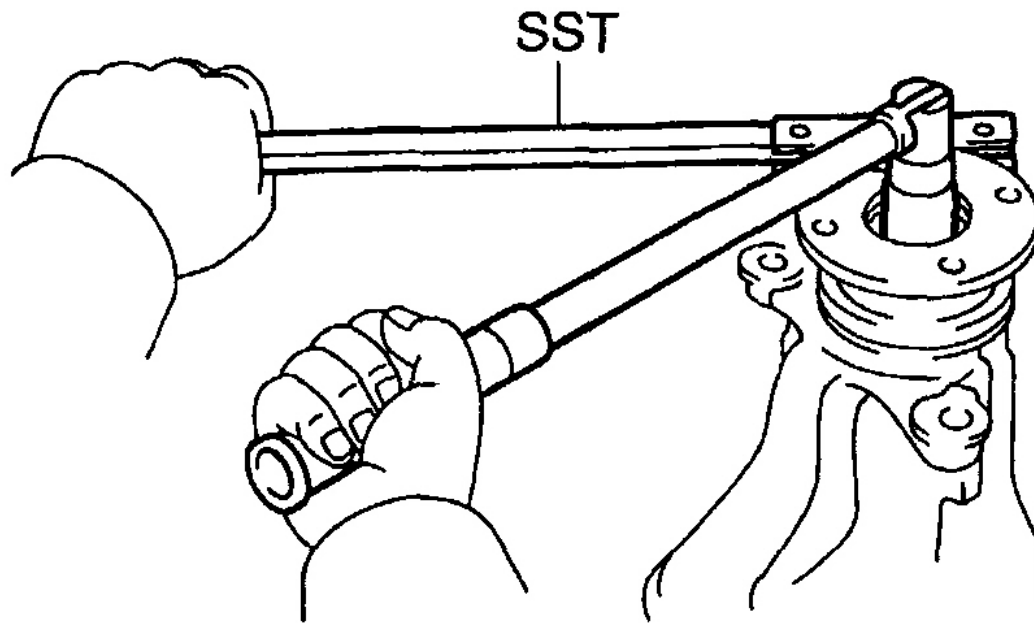
Fig. 132: Measuring Drive Pinion Preload

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

8. REMOVE COMPANION FLANGE

- Using a chisel and a hammer, unstake the staked part of the nut.
- Using SST to hold the flange, remove the nut.

SST 09330-00021



G02640368

Fig. 133: Removing Companion Flange Nut Using Special Tool
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- c. Using SST, remove the companion flange.

SST 09950-30012 (09951-03010, 09953-03010, 09954-03010, 09955-03040, 09956-03020)

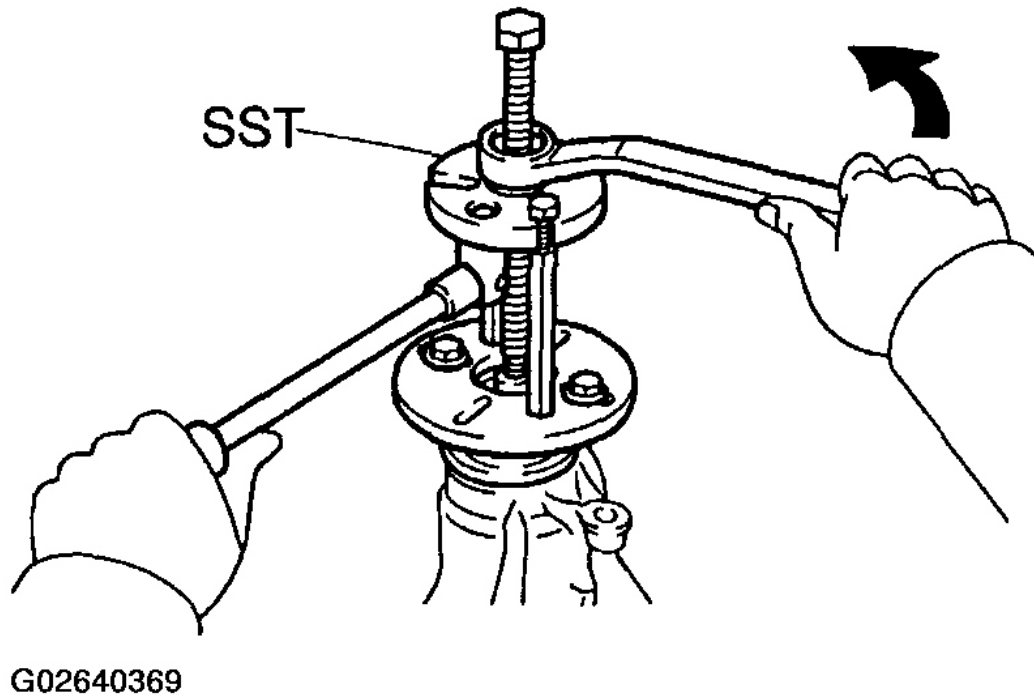


Fig. 134: Removing Companion Flange Using Special Tool
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

9. REMOVE FRONT OIL SEAL AND OIL SLINGER

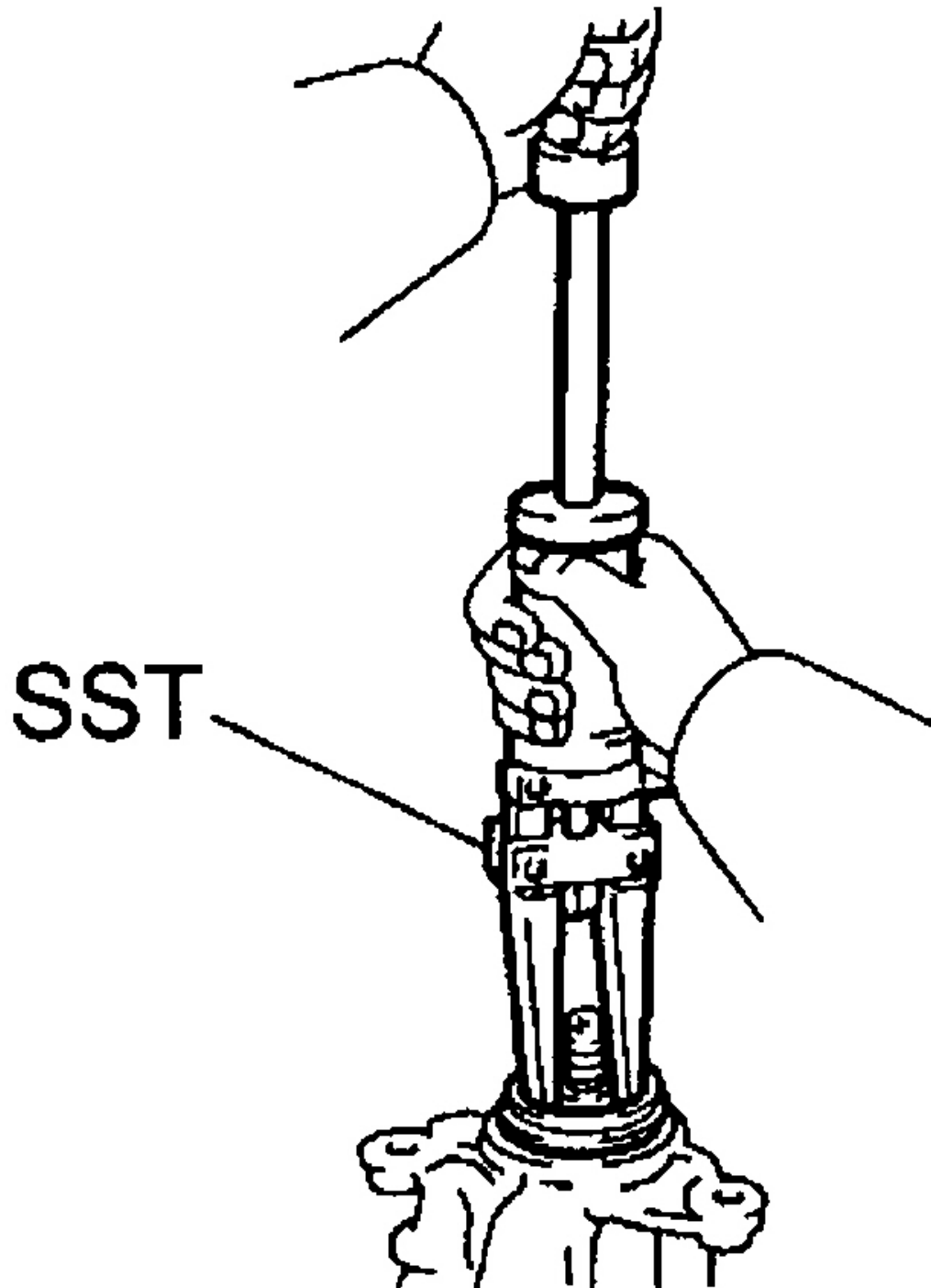
- a. Using SST, remove the oil seal from the differential carrier.

SST 09308-10010

- b. Remove the oil slinger.

2005 Toyota RAV4

2005 SUSPENSION Suspension & Axle - RAV4



G02640370

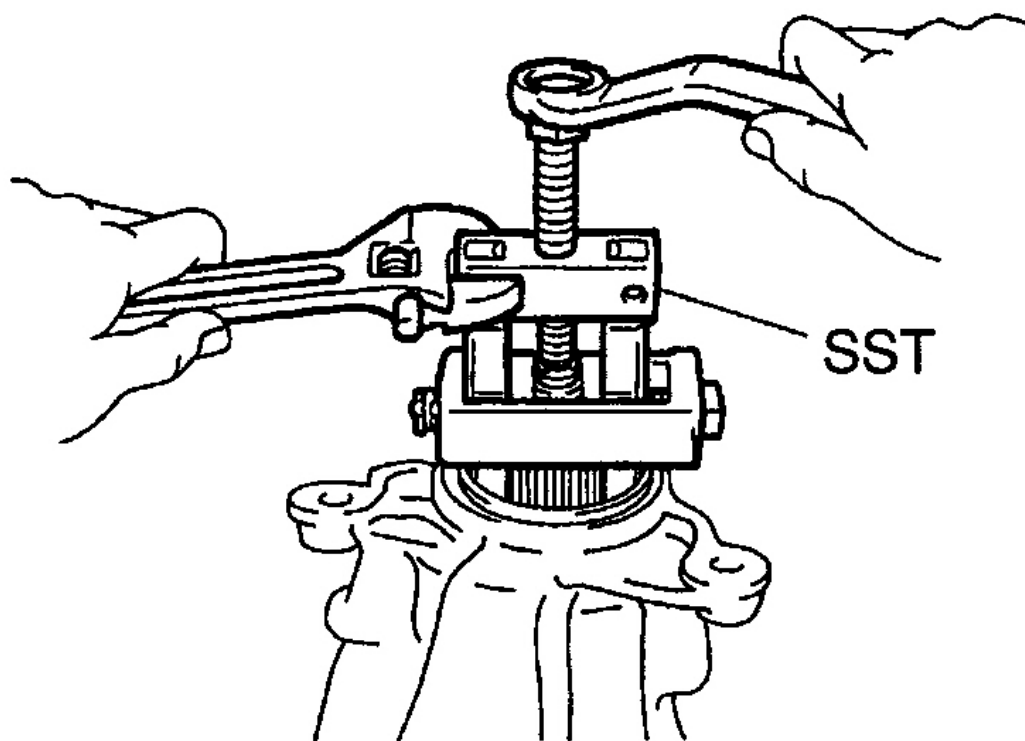
Fig. 135: Removing Oil Seal From Differential Carrier Using Special Tool
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

10. REMOVE FRONT BEARING AND BEARING SPACER

- a. Using SST, remove the front bearing from the drive pinion.

SST 09556-22010

- b. Remove the bearing spacer.



G02640371

Fig. 136: Removing Front Bearing From Drive Pinion Using Special Tool
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

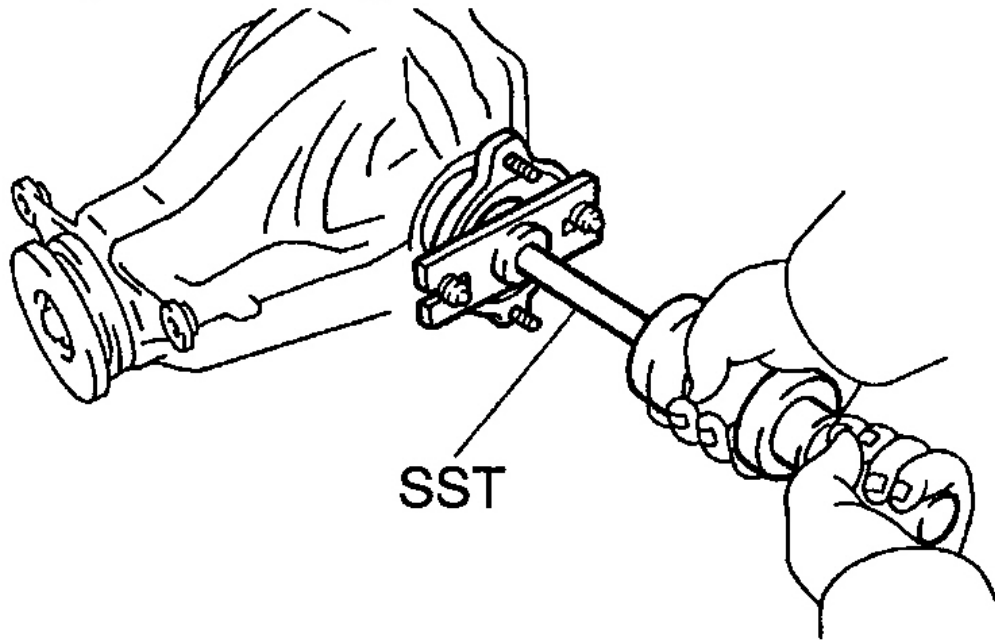
11. Torque sensing LSD: MOVE SIDE GEAR SHAFTS

- a. Using SST, remove the 2 side gear shafts from the differential carrier.

SST 09520-24010 (09520-04010, 09520-32040)

- b. Using a screwdriver, remove the 2 snap rings from the 2 side gear shafts.

Torque Sensing LSD



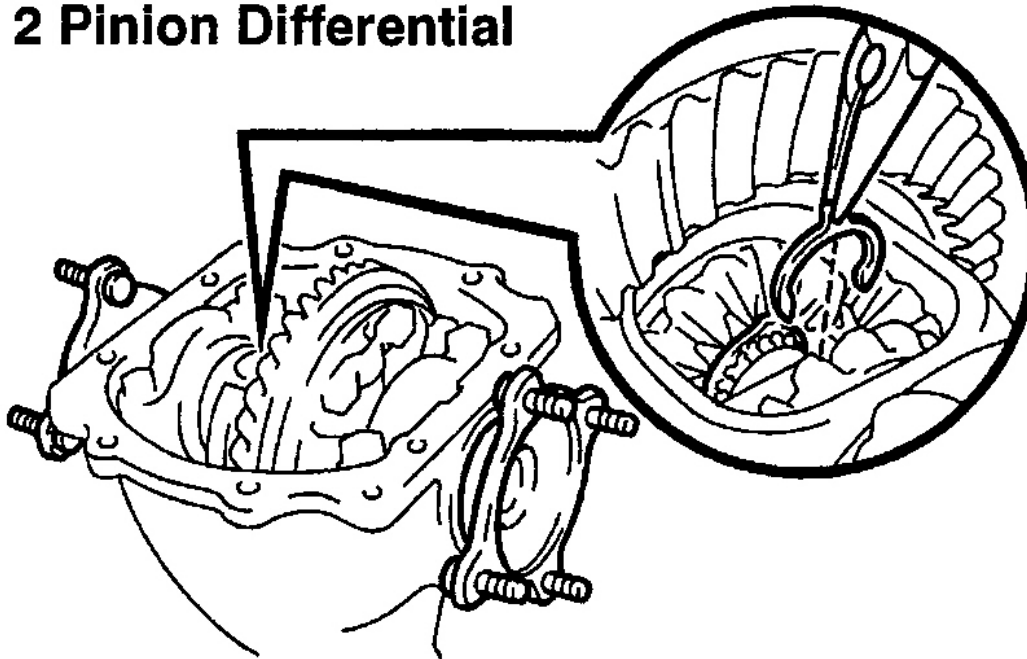
G02640372

Fig. 137: Removing Snap Rings From Side Gear Shafts Using Special Tool
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

12. 2 pinion differential: REMOVE SIDE GEAR SHAFTS

- a. Using needle nose pliers, remove the 2 snap rings from the 2 side gear shafts.
- b. Remove the 2 side gear shafts.

2 Pinion Differential



G02640373

Fig. 138: Removing Side Gear Shafts

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

13. REMOVE SIDE GEAR SHAFT OIL SEALS

Using SST, remove the 2 oil seals from the housing.

SST 09308-10010

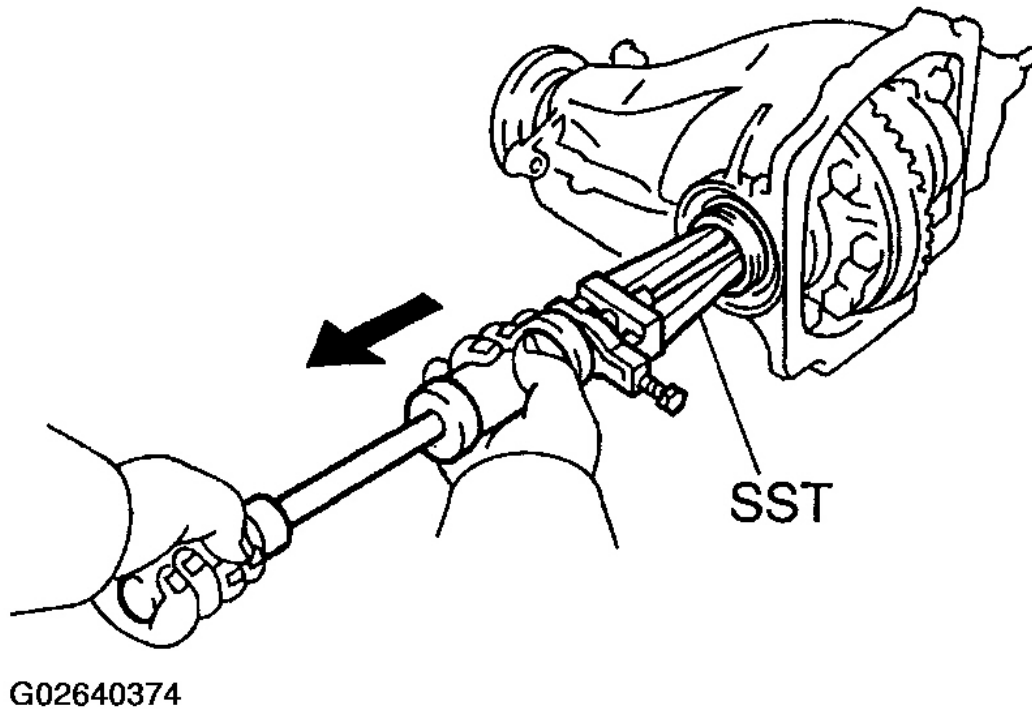


Fig. 139: Removing Oil Seals From Housing Using Special Tool
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

14. REMOVE DIFFERENTIAL CASE

- a. Place matchmarks on the bearing cap and differential carrier.
- b. Remove the 4 bolts and 2 bearing caps.

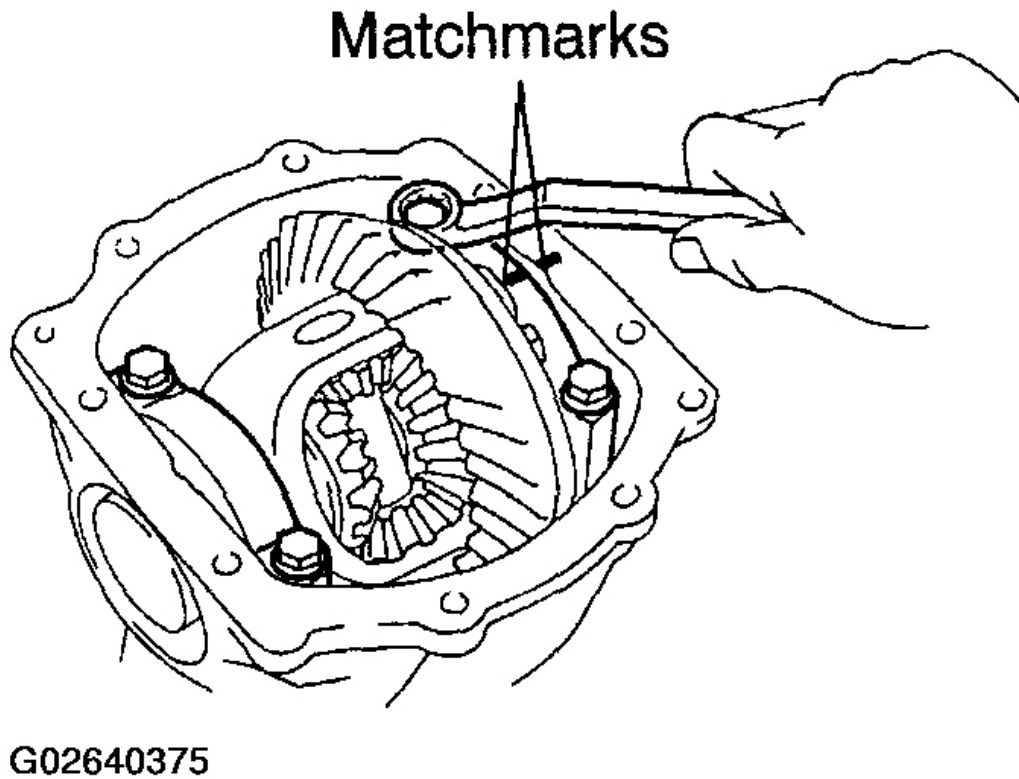


Fig. 140: Placing Matchmarks On Bearing Cap And Differential Carrier
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- c. Using SST and a hammer, remove the 2 plate washers.

SST 09504-22012

HINT:

Measure the plate washer and note down the thickness.

- d. Remove the differential case and 2 bearing outer races from the carrier.

HINT:

Tag the 2 bearing outer races to show the location of reassembling.

15. REMOVE DRIVE PINION FROM DIFFERENTIAL CARRIER

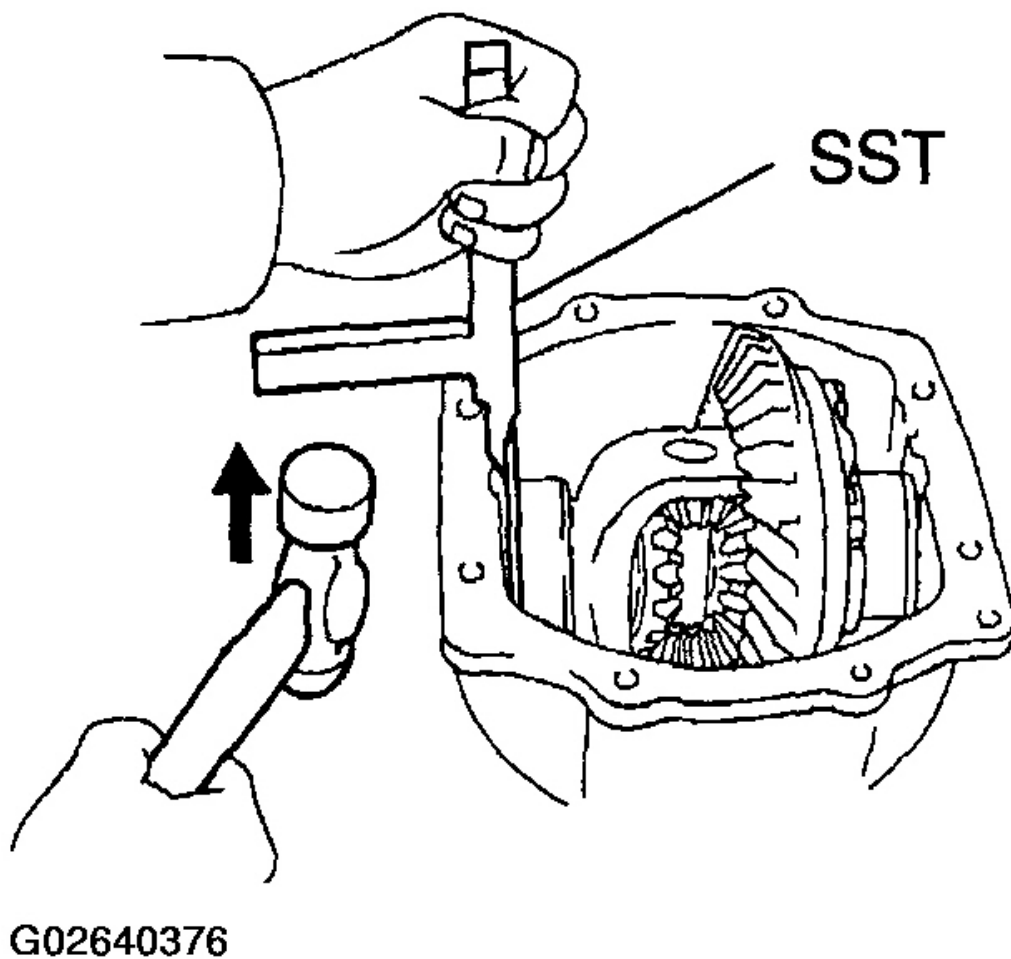


Fig. 141: Removing Plate Washers Using SST And Hammer
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

16. REMOVE DRIVE PINION REAR BEARING

- a. Using SST and a press, remove the bearing from the drive pinion.

SST 09950-00020

HINT:

If the drive pinion and ring gear are damaged, replace them as a set.

- b. Remove the plate washer.

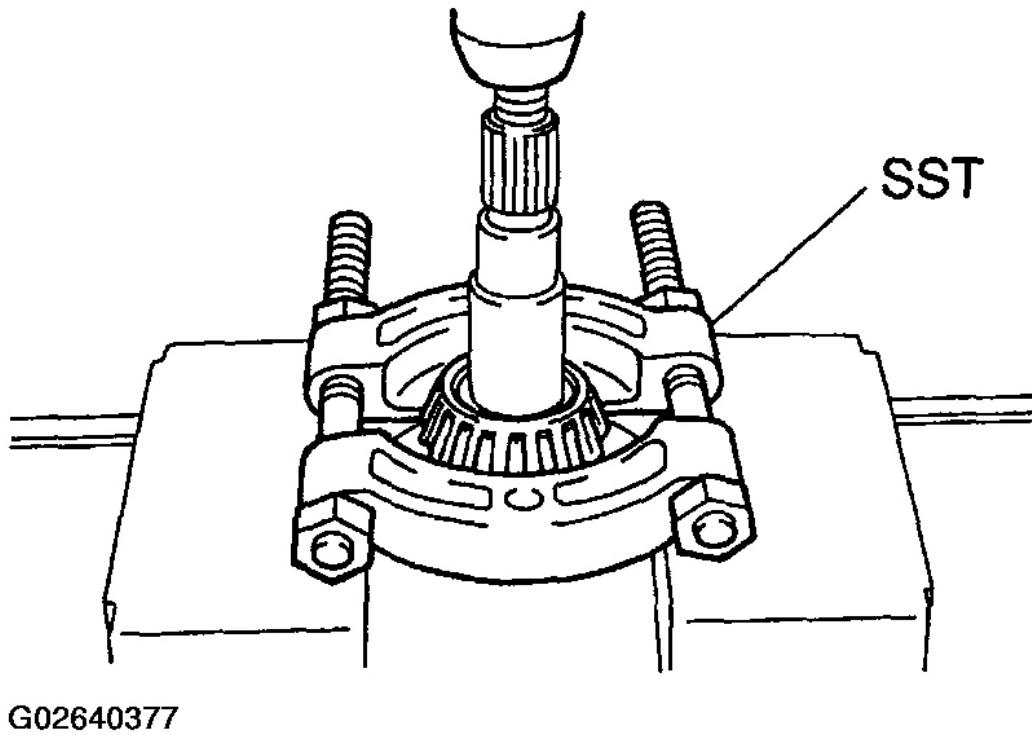
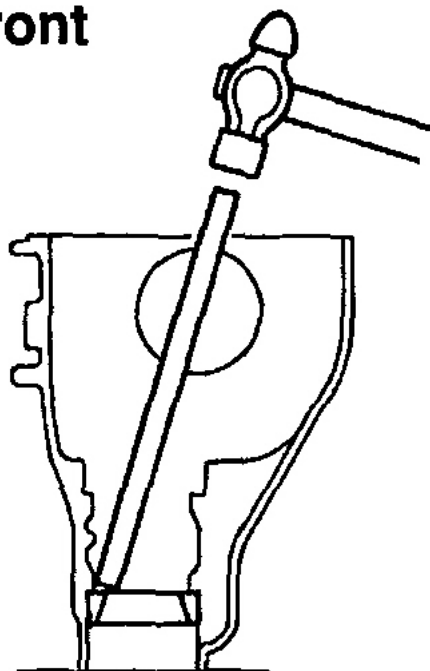


Fig. 142: Removing Bearing From Drive Pinion Using Special Tool
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

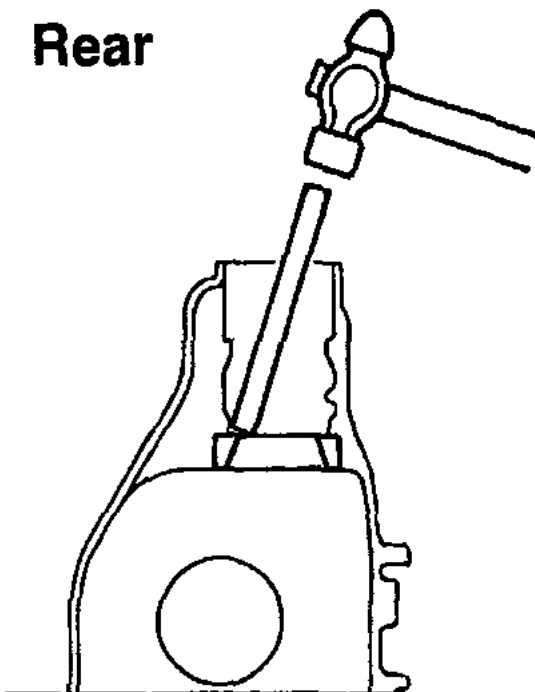
17. REMOVE FRONT AND REAR BEARING OUTER RACES

Using a brass bar and a hammer, remove the 2 outer races from the carrier.

Front



Rear

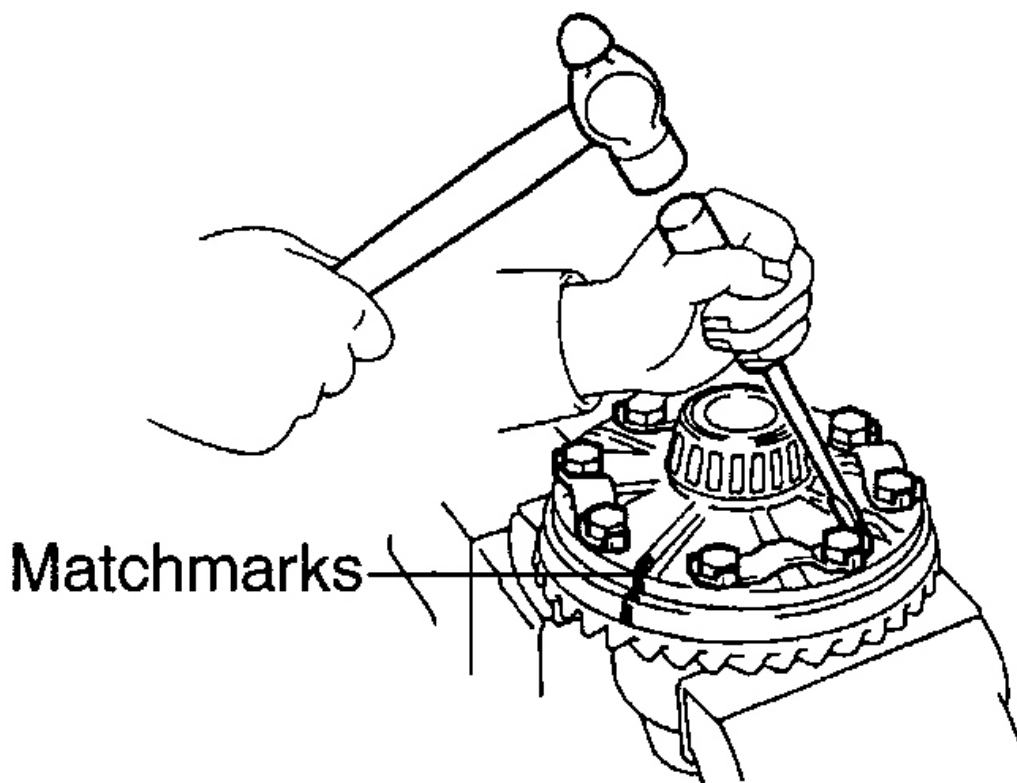


G02640378

Fig. 143: Removing Outer Races From Carrier Using Brass Bar And Hammer
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

18. REMOVE RING GEAR

- a. Place matchmarks on the ring gear and differential case.
- b. Using a screwdriver and a hammer, unstake the 4 lock plates.
- c. Remove the 8 ring gear set bolts and 4 lock plates.
- d. Using a plastic hammer, tap the ring gear to separate it from the differential case.



G02640379

Fig. 144: Placing Matchmarks On Ring Gear And Differential Case
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

19. REMOVE SIDE BEARINGS

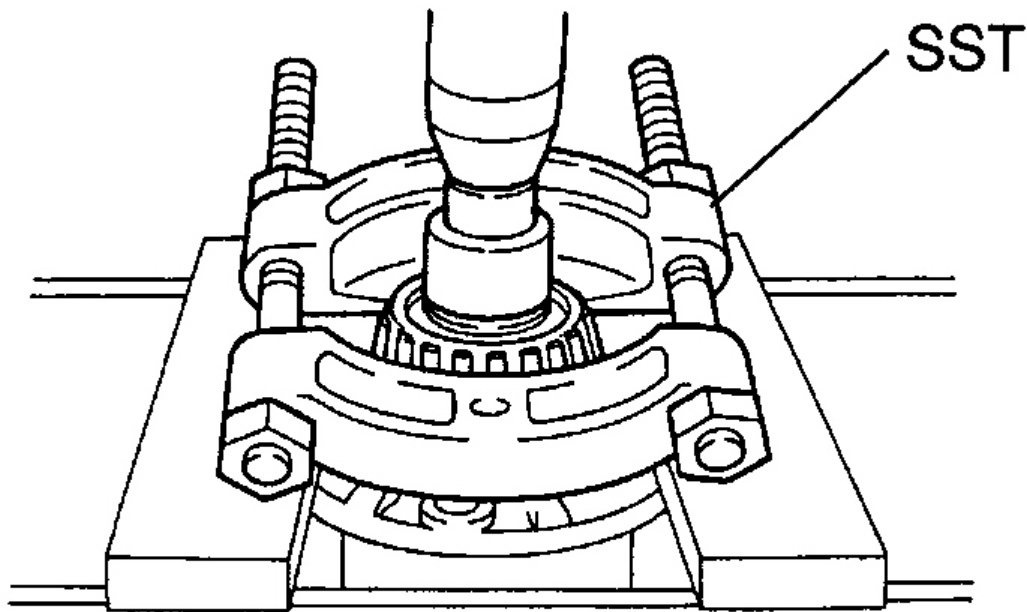
Using SST and a press, remove the 2 side bearings from the differential case.

SST 09950-00020

NOTE: Be careful not to drop the differential case.

20. 2 pinion differential: DISASSEMBLE DIFFERENTIAL CASE

NOTE: If equipped with torque sensing LSD, do not disassemble the differential case.

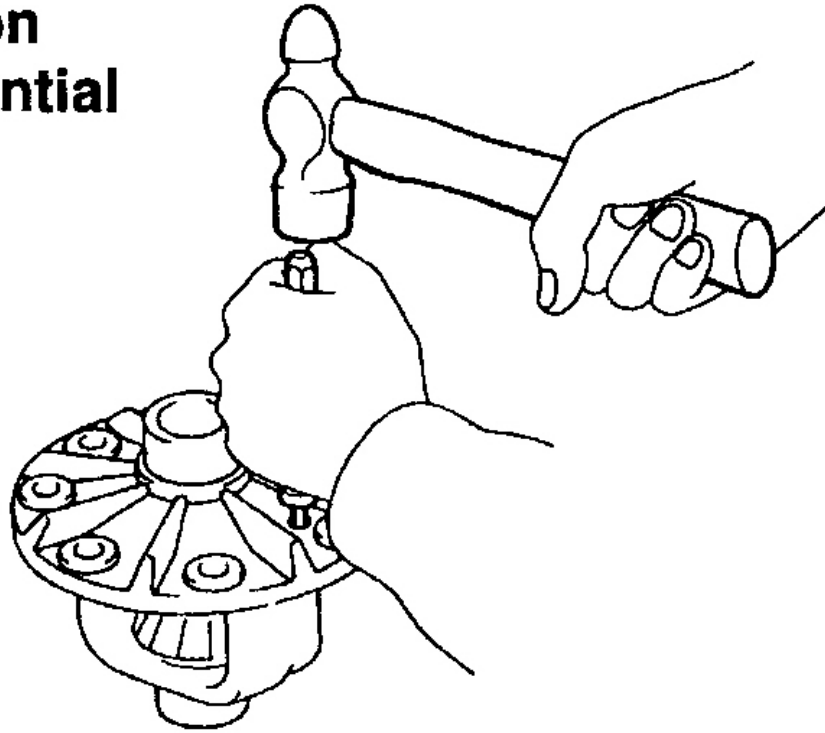


G02640380

Fig. 145: Removing Side Bearings From Differential Case Using SST And Press
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- a. Using a pin punch and a hammer, remove the straight pin.
- b. Remove the pinion shaft, 2 pinion gears, 2 pinion gear thrust washers, 2 side gears and 2 side gear thrust washers.

2 Pinion Differential



G02640381

Fig. 146: Removing Straight Pin Using Pin Punch And Hammer
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

REPLACEMENT

1. REPLACE SIDE GEAR SHAFT DUST COVER

- Using a screwdriver and a hammer, remove the side gear shaft dust cover.
- Using a steel plate and a press, install a new dust cover to the side gear shaft.

NOTE: Be careful not to damage the dust cover.

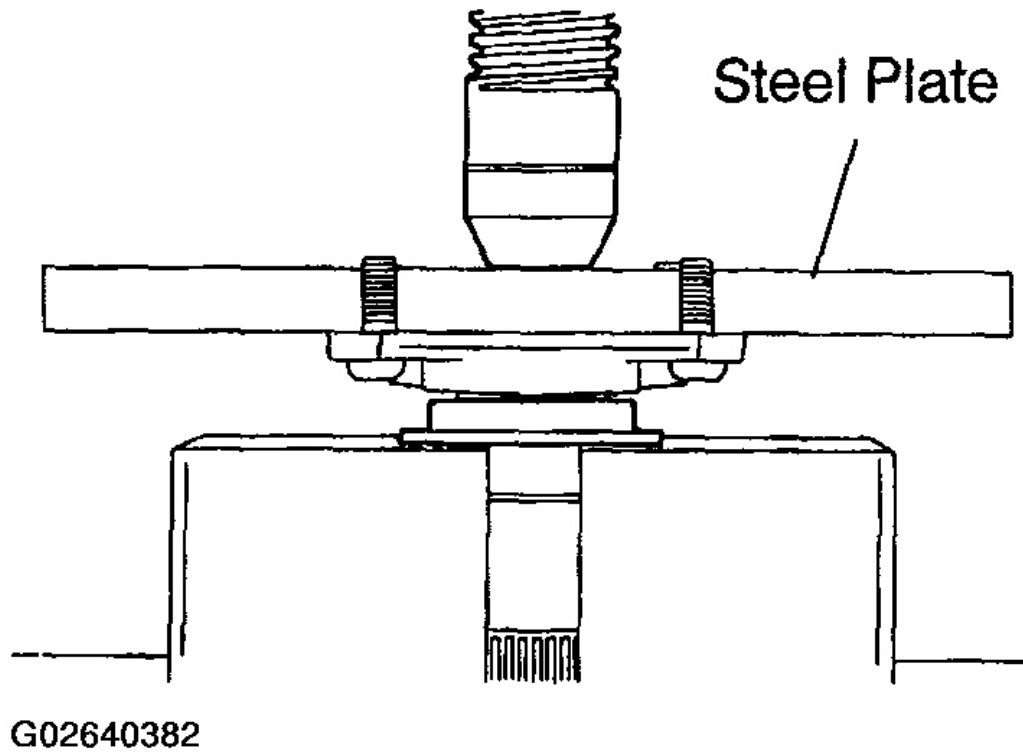


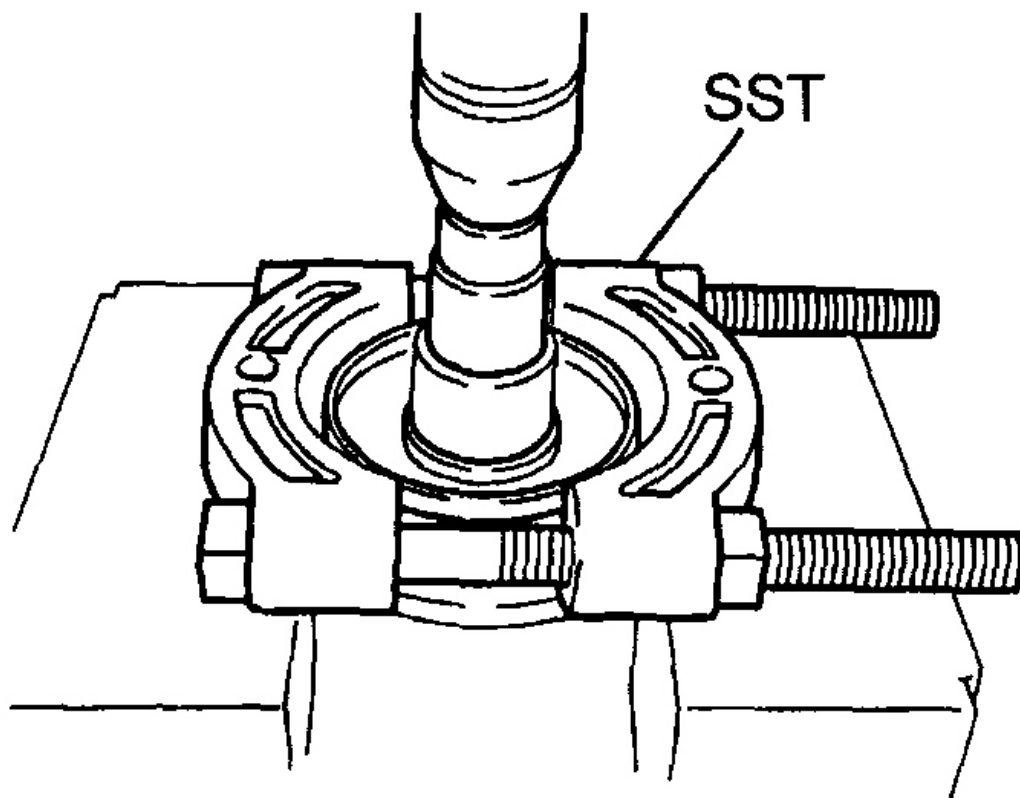
Fig. 147: Installing Dust Cover To Side Gear Shaft Using Steel Plate And Press
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

2. REPLACEMENT COMPANION FLANGE DUST DEFLECTOR

- a. Using SST and a press, remove the dust deflector.

SST 09950-00020

- b. Using a press, install a new dust deflector.



G02640383

Fig. 148: Removing Dust Deflector Using Special Tool
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

REASSEMBLY

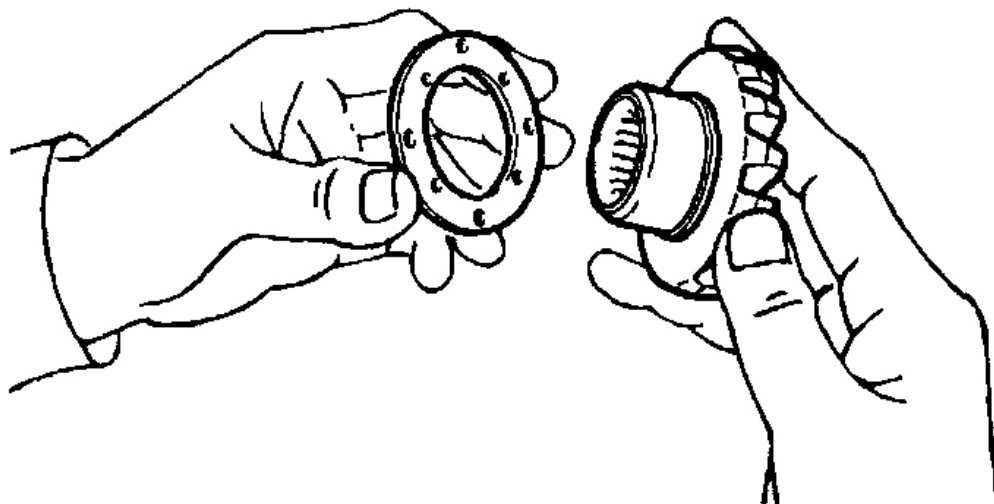
1. 2 pinion differential: REASSEMBLE DIFFERENTIAL CASE

- Install the 2 proper thrust washers on the 2 side gears.
- Install the 2 side gears, 2 pinion gears, 2 pinion gear thrust washers and pinion shaft in the differential case.

HINT:

Align the holes of the differential case and pinion shaft.

2 Pinion Differential



G02640384

Fig. 149: Installing Proper Thrust Washers On Side Gear
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- c. Measure the side gear backlash.
 - 1. Install the 2 side gear shafts.
 - 2. Measure the side gear backlash with holding 1 pinion gear toward the differential case.

Backlash: 0.05 - 0.20 mm (0.0020 - 0.0079 in.)

If the backlash is not within the specification, install the 2 side gear thrust washers with different thicknesses.

HINT:

Refer to the table below and select 2 thrust washers which ensures that the backlash is within the specification.

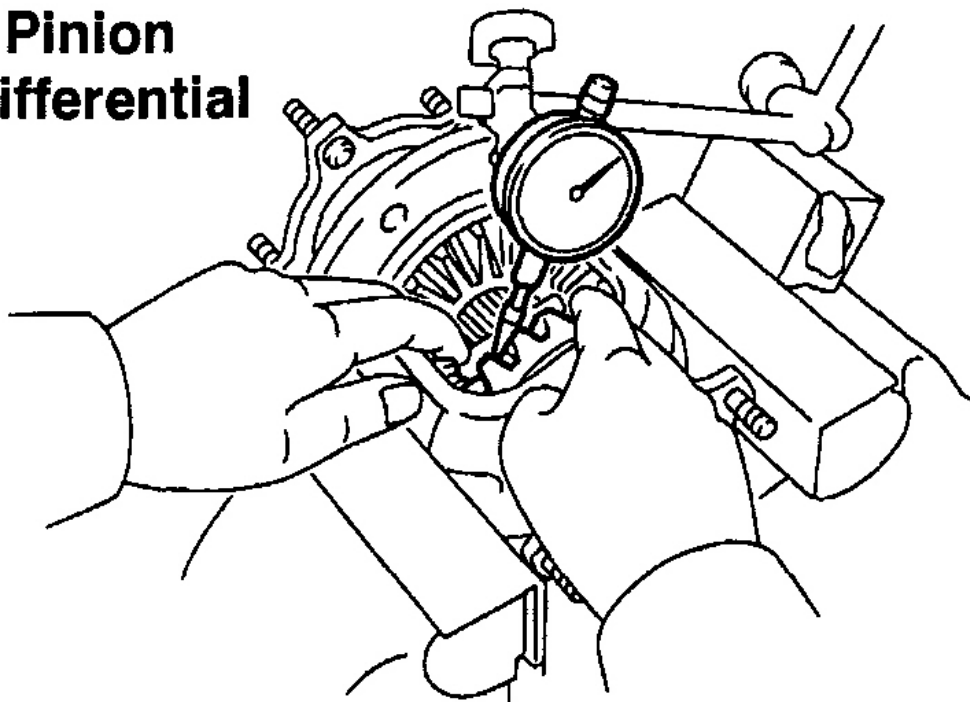
Thrust washer thickness [mm (in.)]

THRUST WASHER THICKNESS SPECIFICATIONS

0.93 - 0.97 (0.0366 - 0.0382)	1.18 - 1.22 (0.0465 - 0.0480)
0.98 - 1.02 (0.0386 - 0.0402)	1.23 - 1.27 (0.0484 - 0.0500)
1.03 - 1.07 (0.0406 - 0.0421)	1.28 - 1.32 (0.0503 - 0.0520)
1.08 - 1.12 (0.0425 - 0.0441)	1.33 - 1.37 (0.0523 - 0.0539)
1.13 - 1.17 (0.0445 - 0.0461)	1.38 - 1.42 (0.0543 - 0.0559)

3. Remove the 2 side gear shafts.

2 Pinion Differential



N

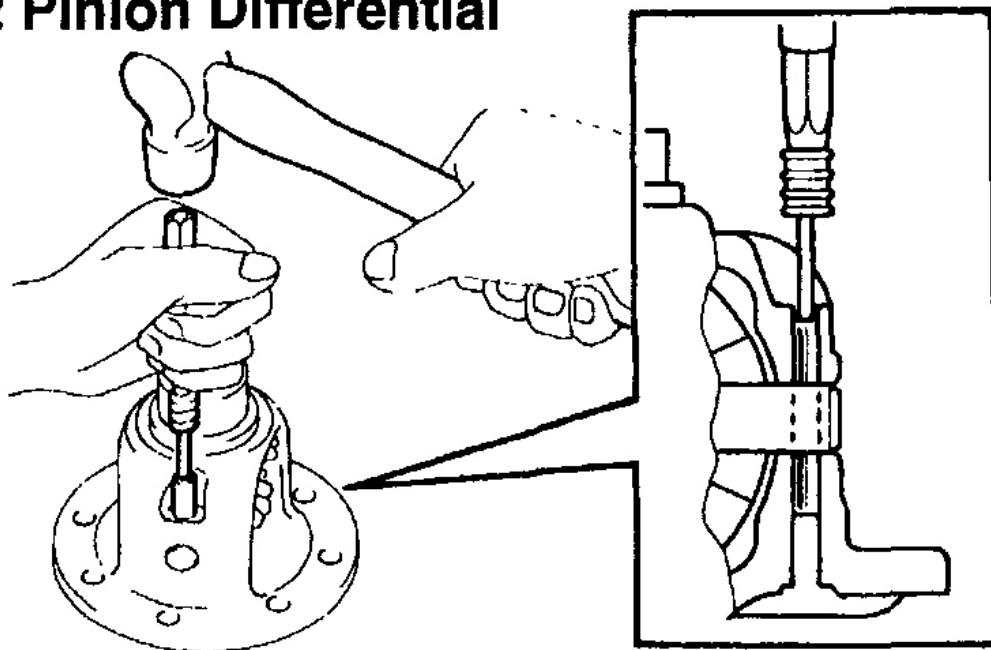
G02640385

Fig. 150: Measuring Side Gear Backlash

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

- d. Using a pin punch and a hammer, install the straight pin through the differential case and hole of the pinion shaft.
- e. Using a chisel and a hammer, stake the outside of the differential case pin hole.

2 Pinion Differential

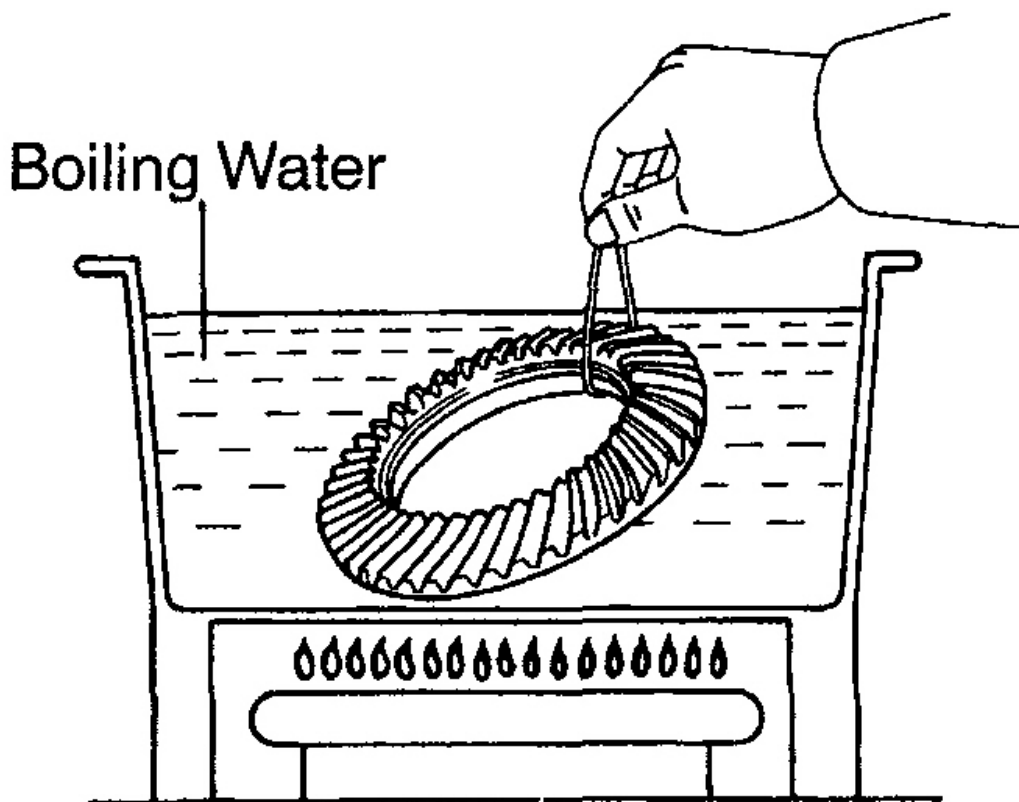


G02640386

Fig. 151: Staking Outside Of Differential Case Pin Hole Using Chisel And Hammer
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

2. INSTALL RING GEAR ON DIFFERENTIAL CASE

- a. Clean the contact surfaces of the differential case and ring gear.
- b. Heat the ring gear in boiling water.
- c. Carefully remove the ring gear from the boiling water.
- d. After the moisture on the ring gear has completely evaporated, quickly install the ring gear to the differential case.



G02640387

Fig. 152: Heating Ring Gear In Boiling Water

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

- e. Align the matchmarks on the ring gear and differential case.
- f. Temporarily install 4 new lock plates and the 8 bolts.
- g. After the ring gear cools down enough, torque the 8 bolts uniformly at a time.

Torque: 97 N.m (985 kgf.cm, 71 ft.lbf)

- h. Using a chisel and a hammer, raise up claws of the 4 lock plates.

HINT:

- Bend one of the claws which touches the flat surface of the bolt so that the claw can contact the surface firmly.
- If one of the claws is divided into two due the protruding portion of the bolt, make the claw

contact firmly with the tightening side of the bolt.

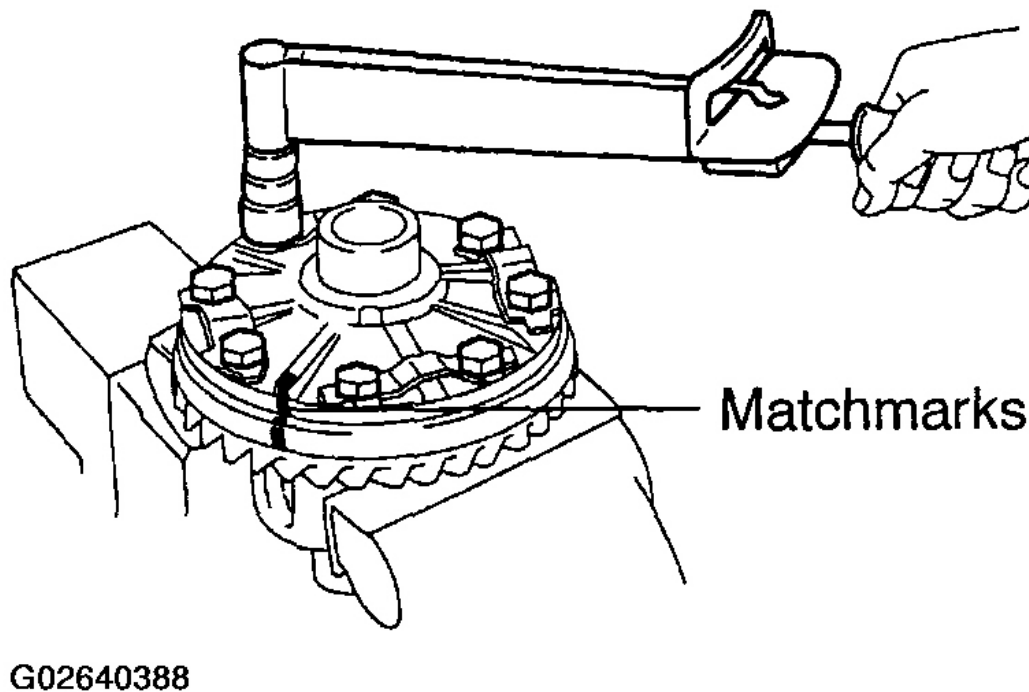


Fig. 153: Aligning Matchmarks On Ring Gear And Differential Case
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

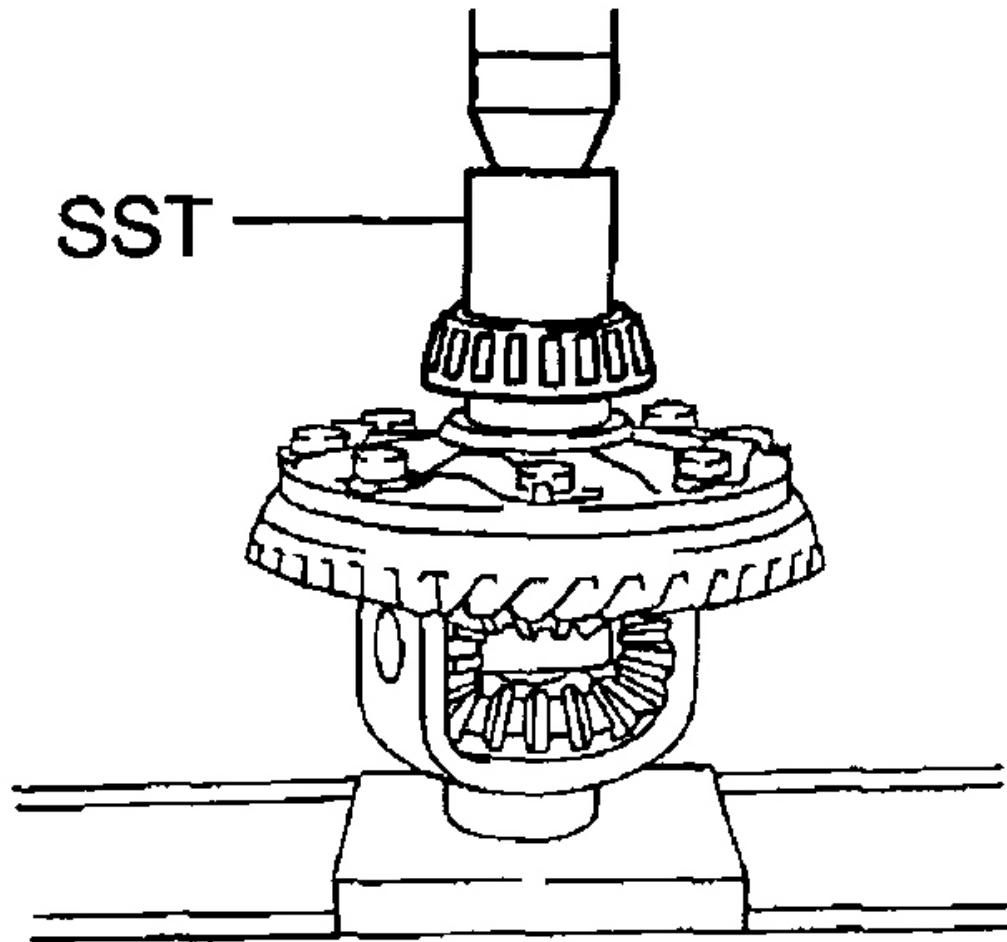
3. INSTALL SIDE BEARINGS

Using SST and a press, install the 2 side bearings into the differential case.

SST 09710-22021 (09710-01031)

4. INSPECT RING GEAR RUNOUT

- a. Install the differential case on the carrier, and install the 2 plate washers so that there is no play in the bearing.
- b. Install the bearing caps.



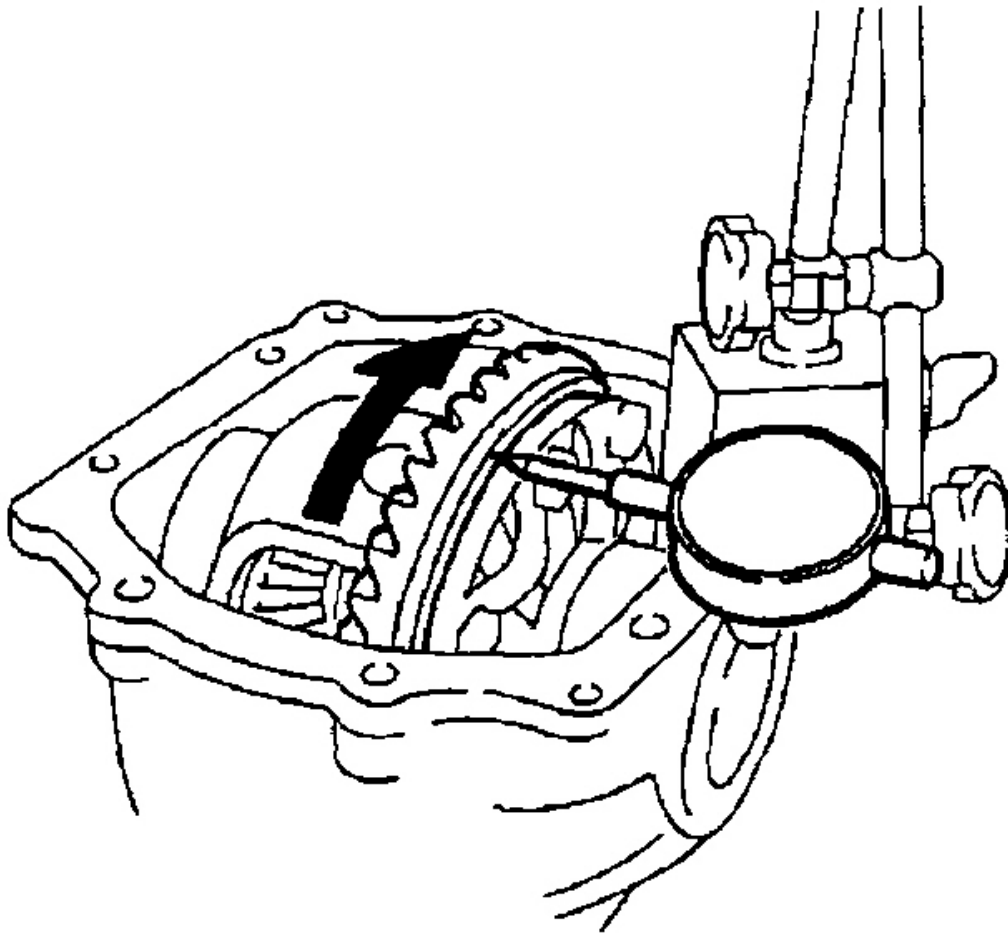
G02640389

Fig. 154: Installing Side Bearings Into Differential Case Using Special Tool
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- c. Using a dial indicator, measure the runout of the ring gear.

Maximum runout: 0.07 mm (0.0028 in.)

- d. Remove the 2 bearing caps, 2 plate washers and differential carrier.



G02640390

Fig. 155: Measuring Runout Of Ring Gear Using Special Tool
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

5. INSTALL FRONT AND REAR BEARING OUTER RACES

- a. Front side:

Using SST and a press, install the outer race to the carrier.

SST 09950-60020 (09951-00790), 09950-70010 (09951-07150)

- b. Rear side:

Using SST and a press, install the 2 outer races to the carrier.

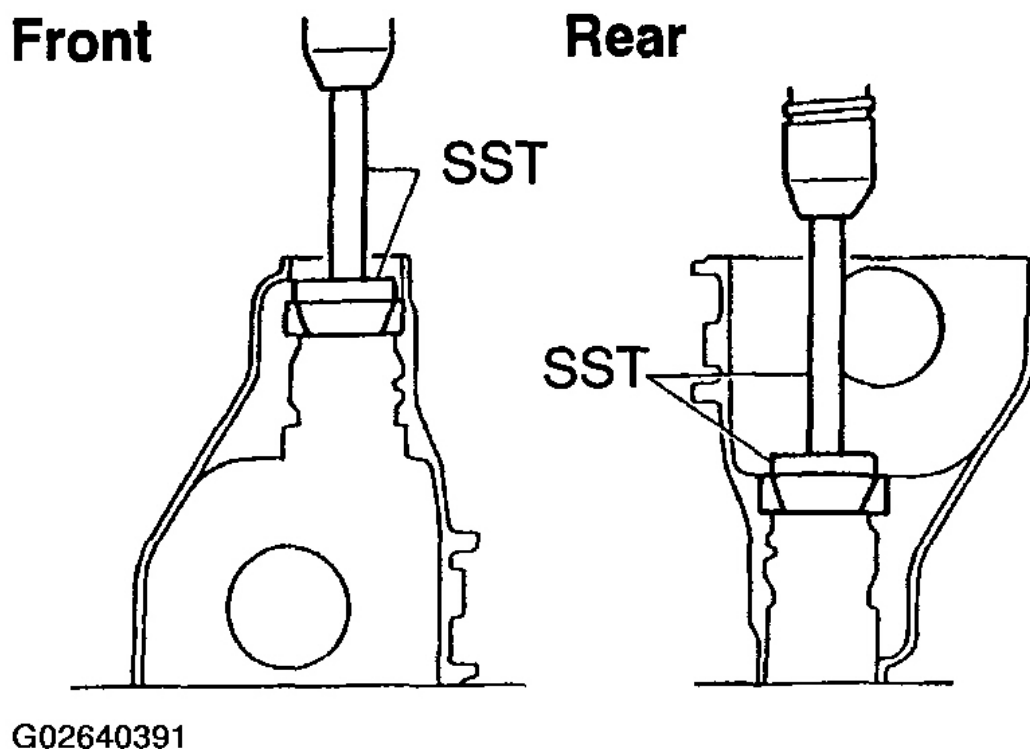


Fig. 156: Installing Outer Races To Carrier Using Special Tool
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

SST 09950-60020 (09951-00710), 09950-70010 (09951-07150)

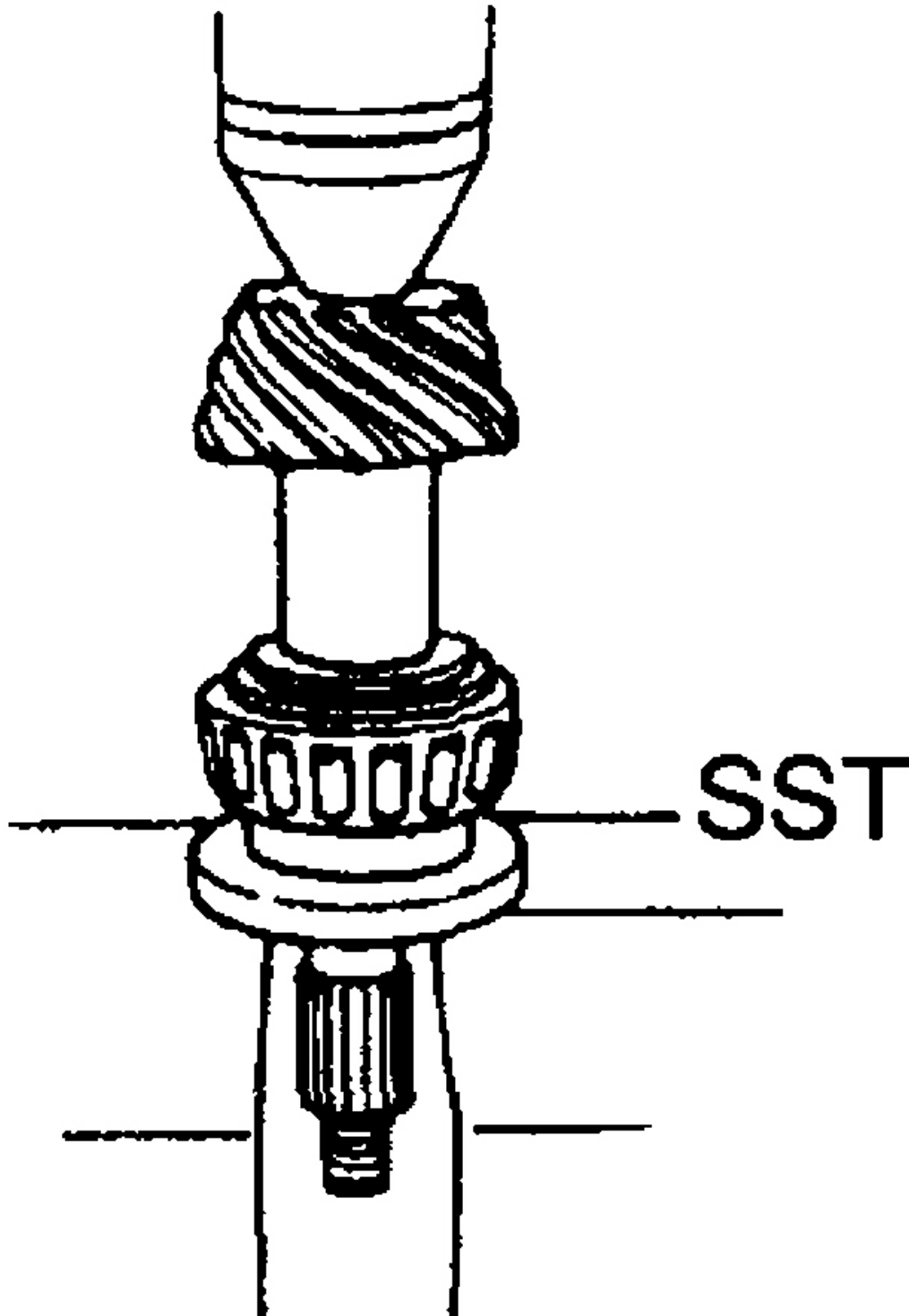
6. INSTALL DRIVE PINION REAR BEARING

- Install the removed plate washer on the drive pinion.
- Using SST and a press, install the rear bearing onto the drive pinion.

SST 09506-30012

2005 Toyota RAV4

2005 SUSPENSION Suspension & Axle - RAV4



G02640392

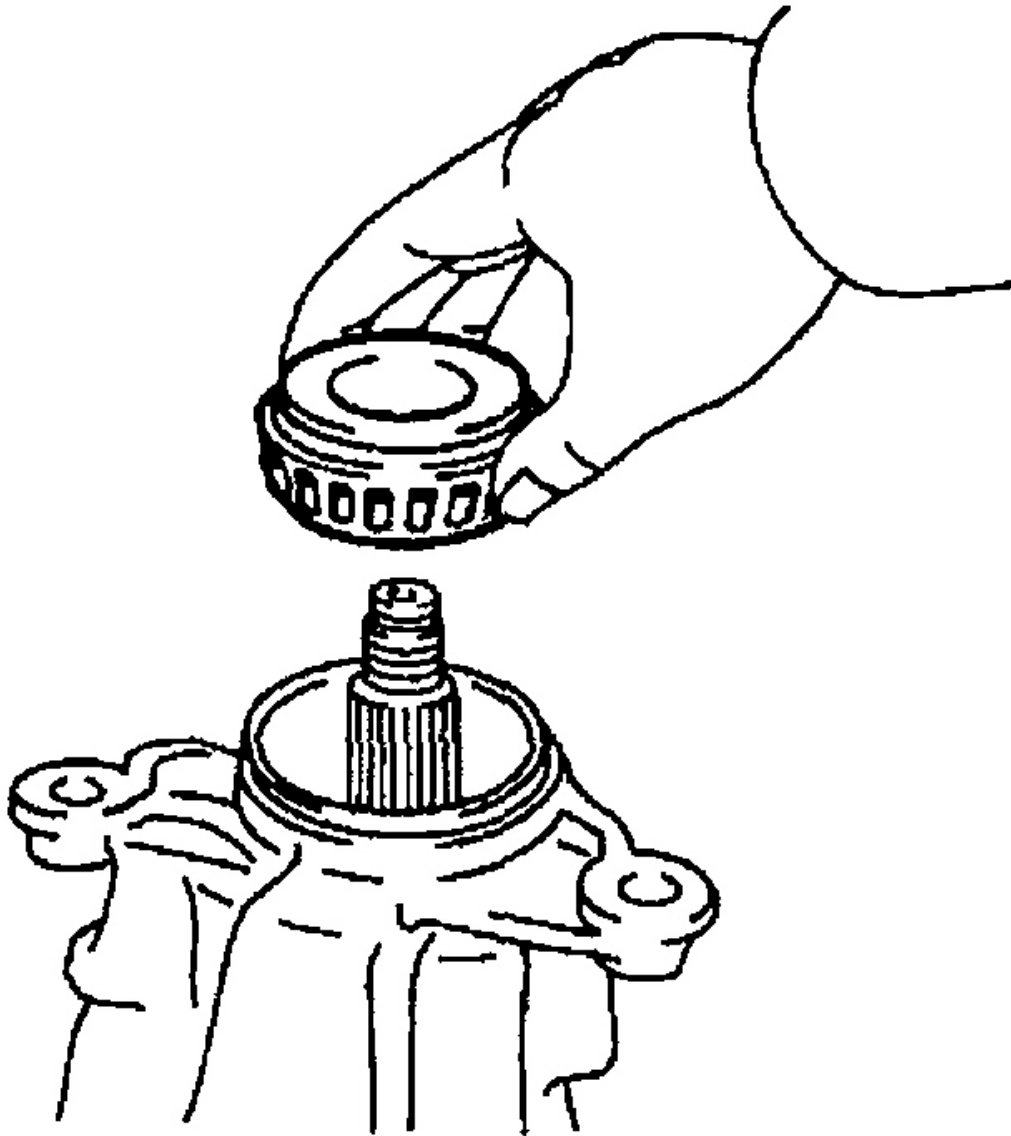
Fig. 157: Installing Rear Bearing Onto Drive Pinion Using SST And Press
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

7. TEMPORARILY ADJUST DRIVE PINION PRELOAD

- a. Install the drive pinion and front bearing.

HINT:

Assemble the spacer, oil slinger and oil seal after adjusting the gear contact pattern.



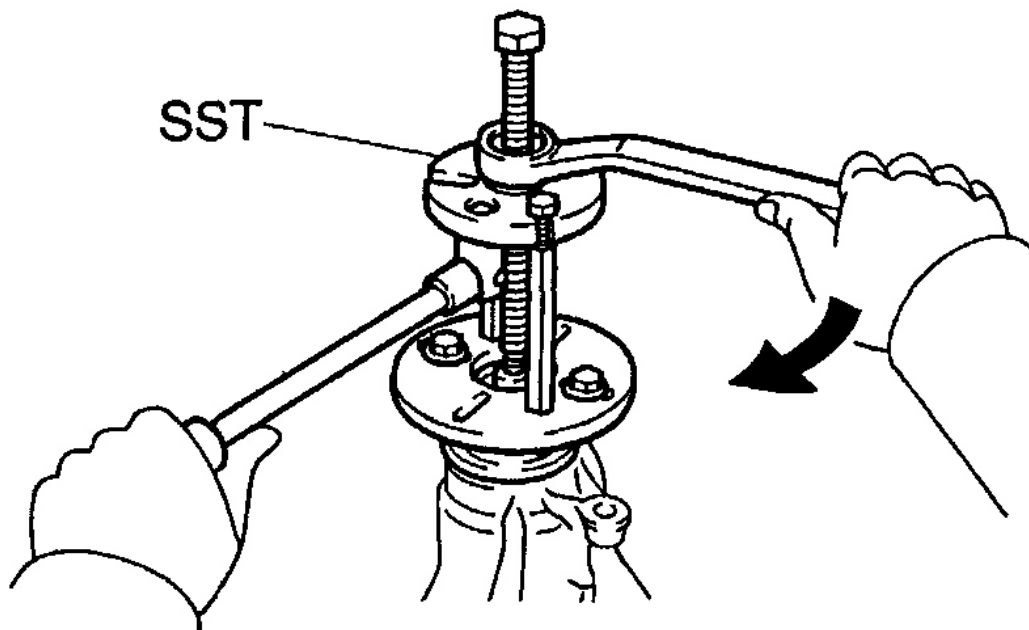
G02640393

Fig. 158: Installing Drive Pinion And Front Bearing
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- b. Using SST, install the companion flange.

SST 09950-30012 (09951-03010, 09953-03010, 09954-03010, 09955-03040, 09956-03020)

- c. Coat the threads of the nut with MP grease.



G02640394

Fig. 159: Installing Companion Flange Using Special Tool
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- d. Adjusting the drive pinion preload by tightening the companion flange nut.

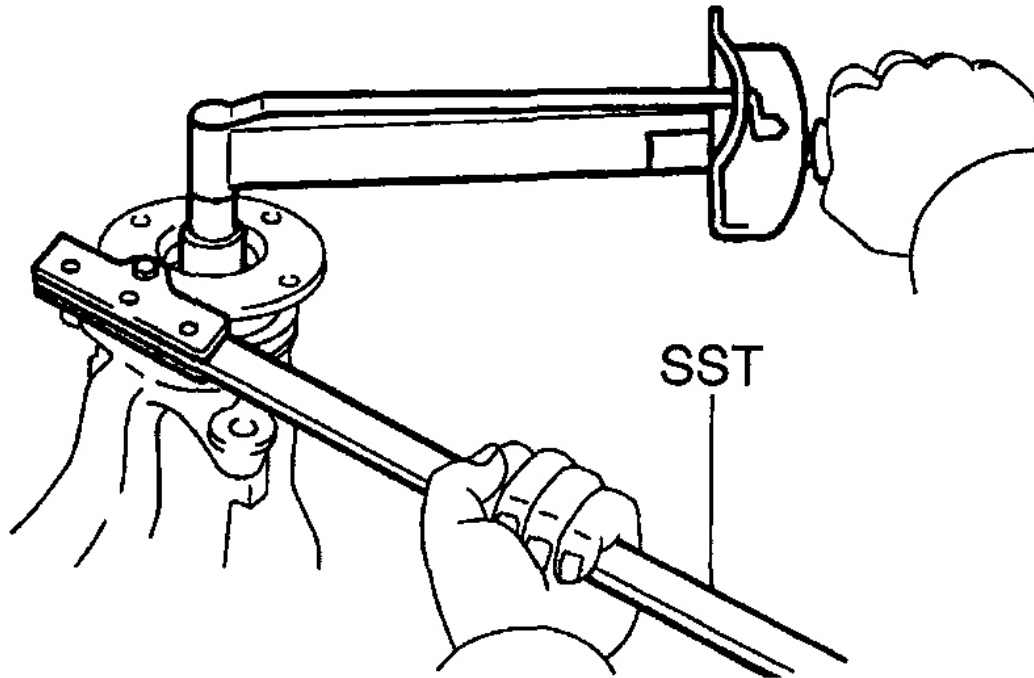
Using SST to hold the flange, tighten the nut.

Torque:

108 - 235 N.m (1,100 - 2,400 kgf.cm, 80 - 173 ft.lbf)

SST 09330-00021

NOTE: Without a spacer, torque a little at a time, being careful not to over tighten it.



G02640395

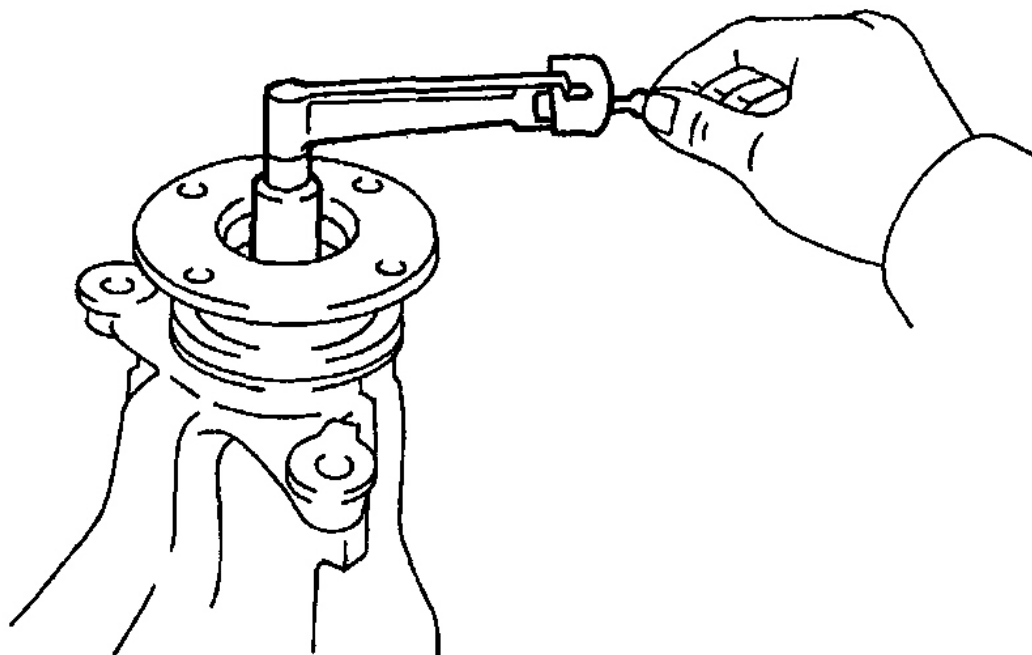
Fig. 160: Adjusting Drive Pinion Preload By Tightening Companion Flange Nut
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- e. Using a torque wrench, measure the preload.

Preload (at starting):

PRELOAD SPECIFICATIONS

New bearing	1.1 - 1.7 N.m (11 - 17 kgf.cm, 9.5 - 14.7 in.lbf)
Reused bearing	0.6 - 0.9 N.m (6 - 9 kgf.cm, 5.2 - 7.8 in.lbf)



G02640396

Fig. 161: Measuring Preload Using Special Tool

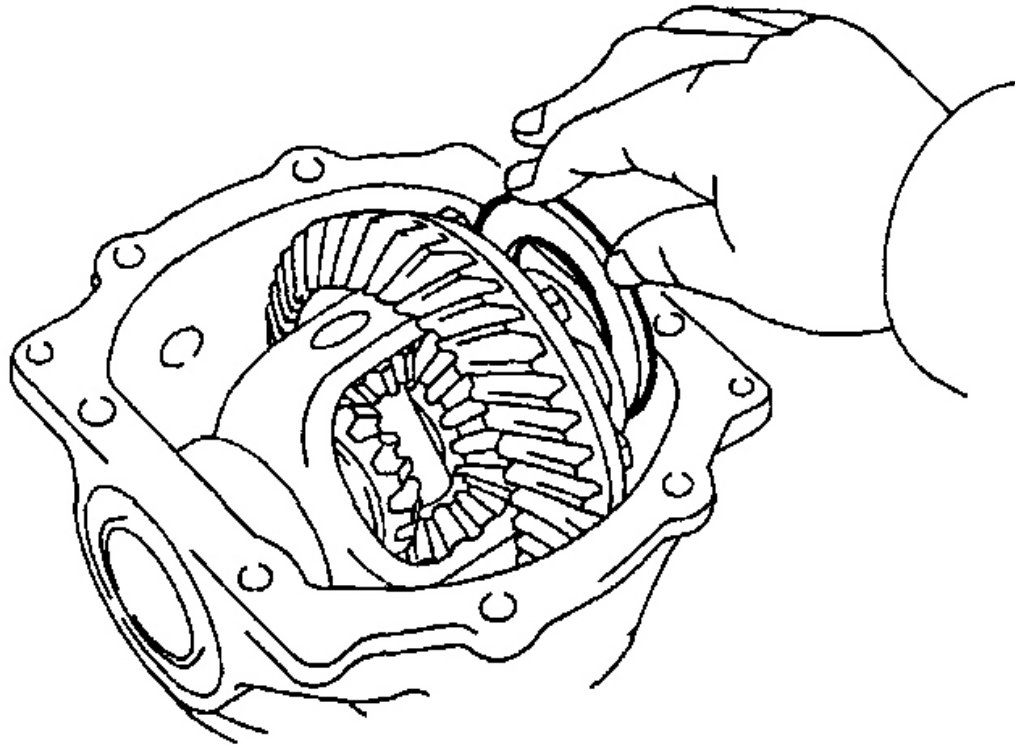
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

8. INSTALL DIFFERENTIAL CASE IN CARRIER

- a. Place the 2 bearing outer races on their respective bearings. Make sure the left and right races are not interchanged.
- b. Install the differential case in the carrier.

9. ADJUST RING GEAR BACKLASH

- a. Install only the plate washer on the ring gear back side.
- b. Make the washer and bearing fit by tapping the ring gear with a plastic hammer.



G02640397

Fig. 162: Installing Differential Case In Carrier
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- c. Using a dial indicator, hold the companion flange and measure the ring gear backlash.

Backlash (reference):

0.13 - 0.18 mm (0.0051 - 0.0071 in.)

- d. Select a ring gear back side plate washer so that the backlash becomes 0.13 - 0.18 mm (0.0051 - 0.0071 in.).

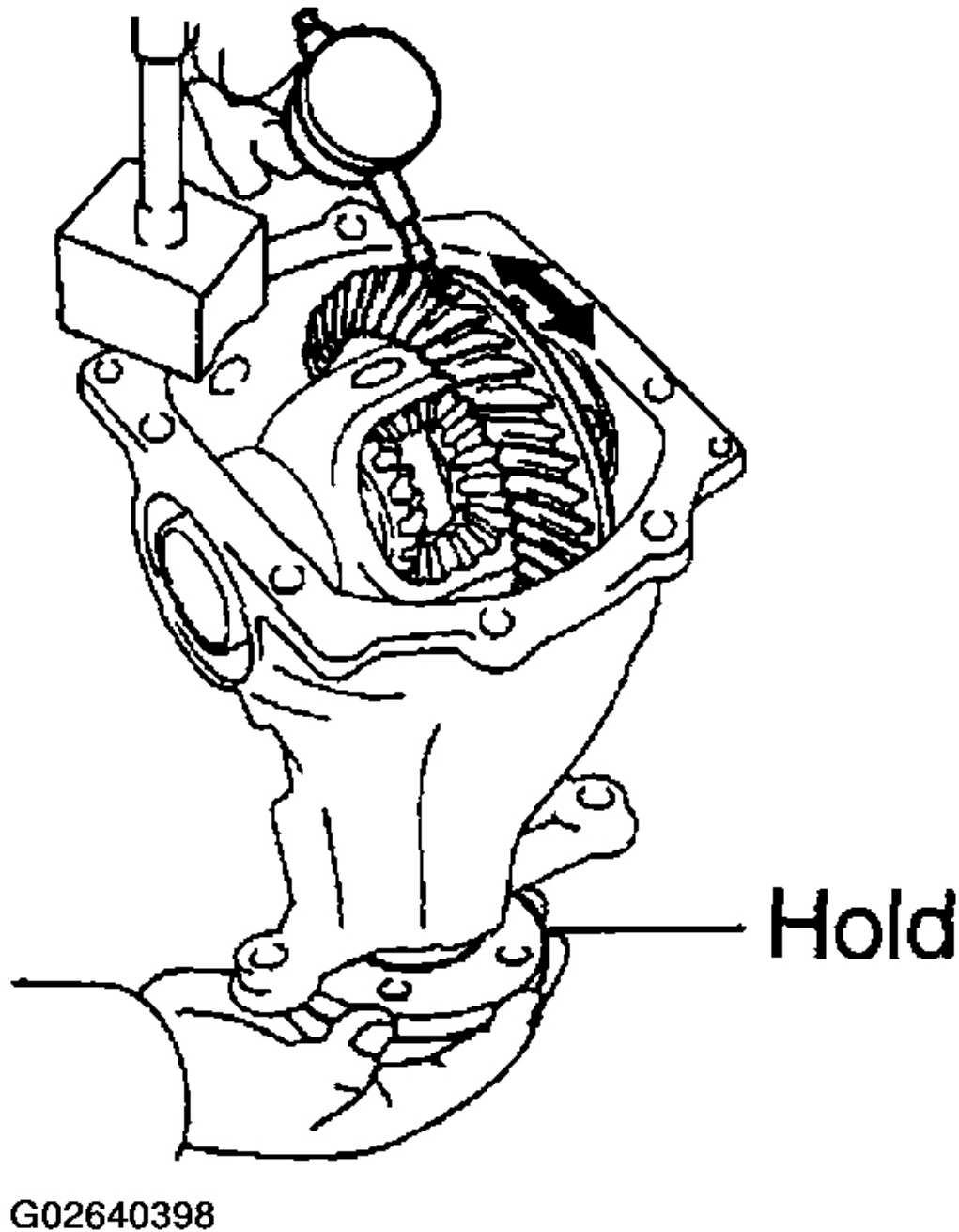
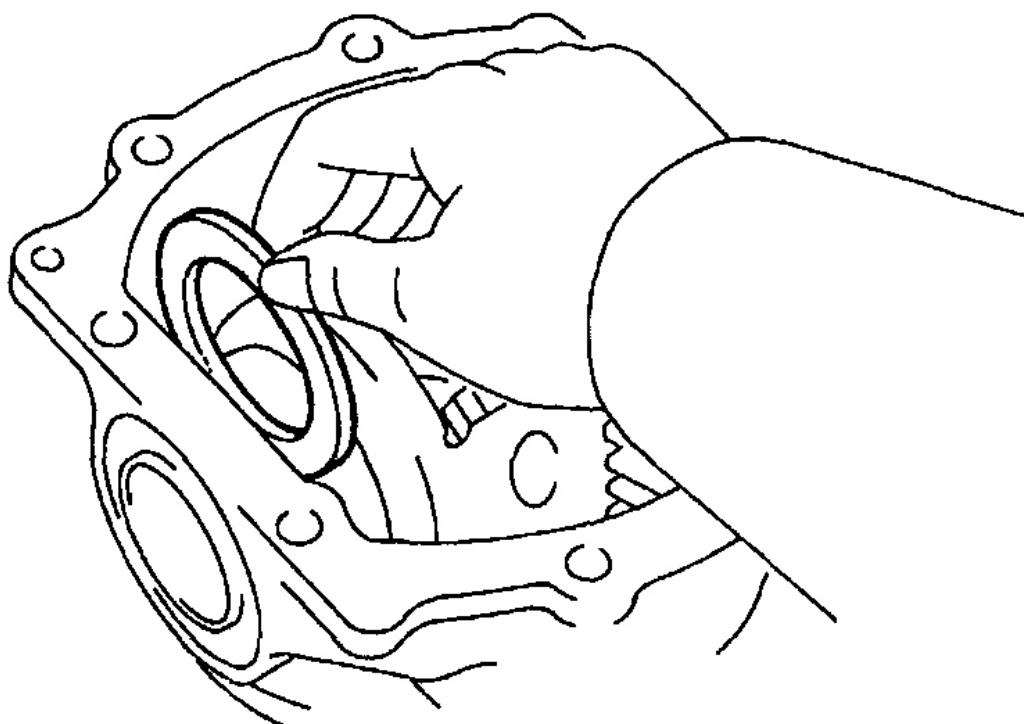


Fig. 163: Measuring Ring Gear Backlash Using Dial Indicator
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- e. Select a ring gear teeth side washer so that there is no clearance between the outer race and case.

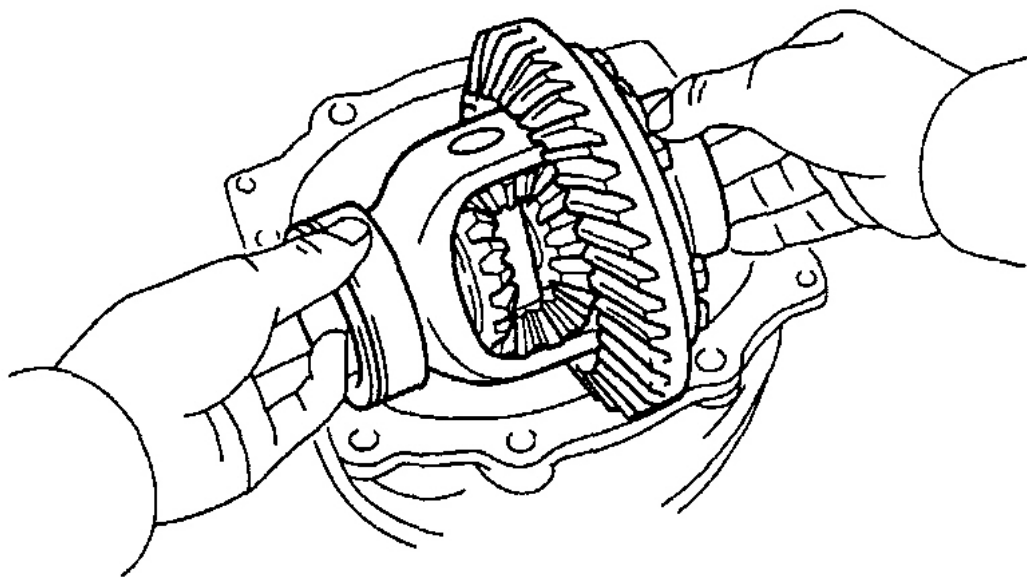
- f. Remove the plate washer and differential case.
- g. Install the plate washer into the ring gear back side.



G02640399

Fig. 164: Removing Plate Washer And Differential Case
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- h. Place the outer plate washer on the differential case together with the outer race, and install the differential case with the outer race into the carrier.
- i. Using a plastic hammer, make the washer fit and bearing by tapping the ring gear.



G02640400

Fig. 165: Placing Outer Plate Washer On Differential Case
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- j. Using a dial indicator, measure the ring gear backlash during holding the companion flange.

Backlash: 0.13 - 0.18 mm (0.0051 - 0.0071 in.)

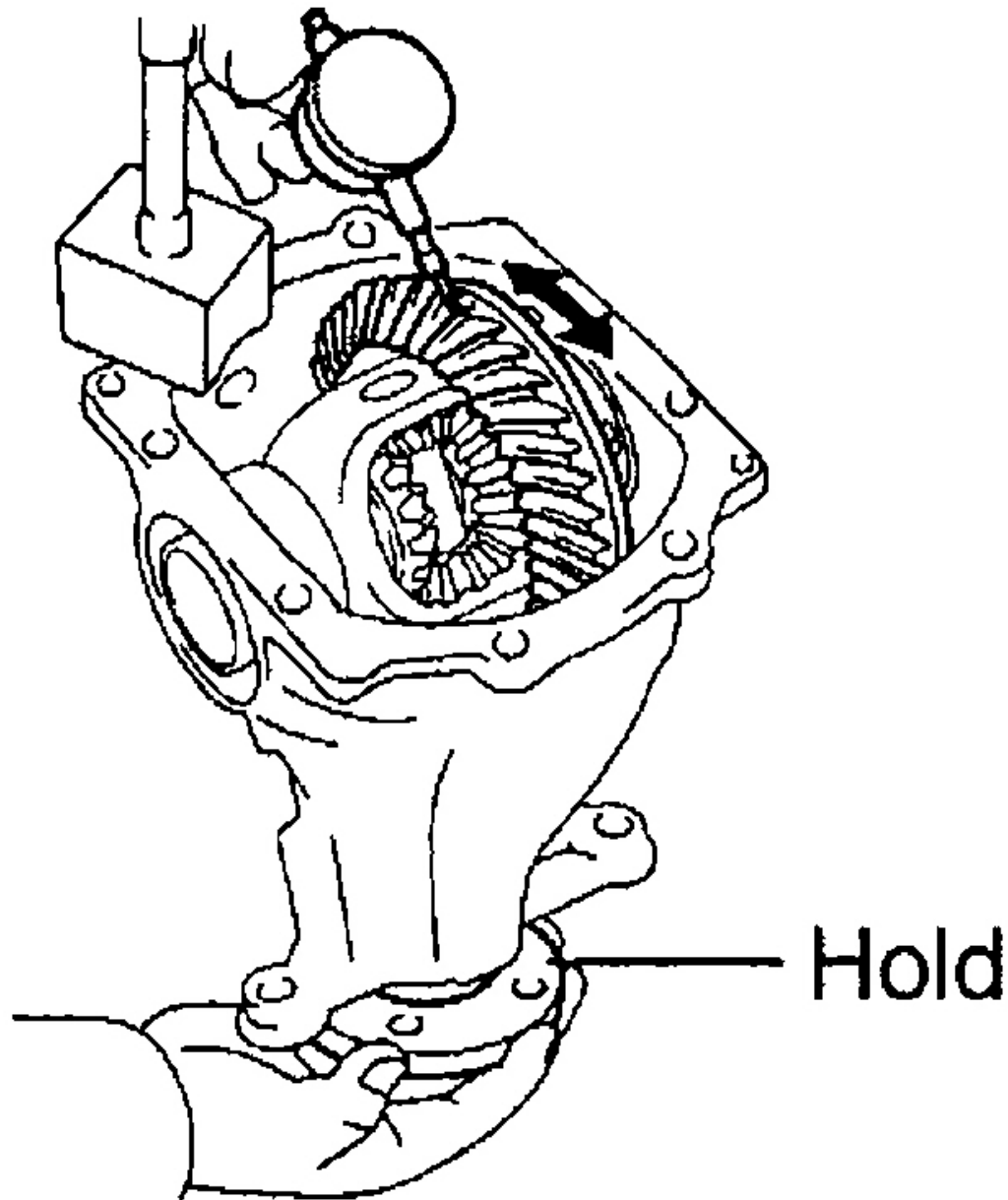
If the value is not within the specification, adjust it by either increasing or decreasing the thickness of the washers on both sides by an equal amount.

HINT:

There should be clearance between the plate washer and case. Ensure that there is the ring gear backlash.

10. ADJUST SIDE BEARING PRELOAD

- a. After adjusting the ring gear backlash as reference, remove the teeth side plate washer.



G02640401

Fig. 166: Measuring Ring Gear Backlash During Holding Companion Flange Using Dial Indicator

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

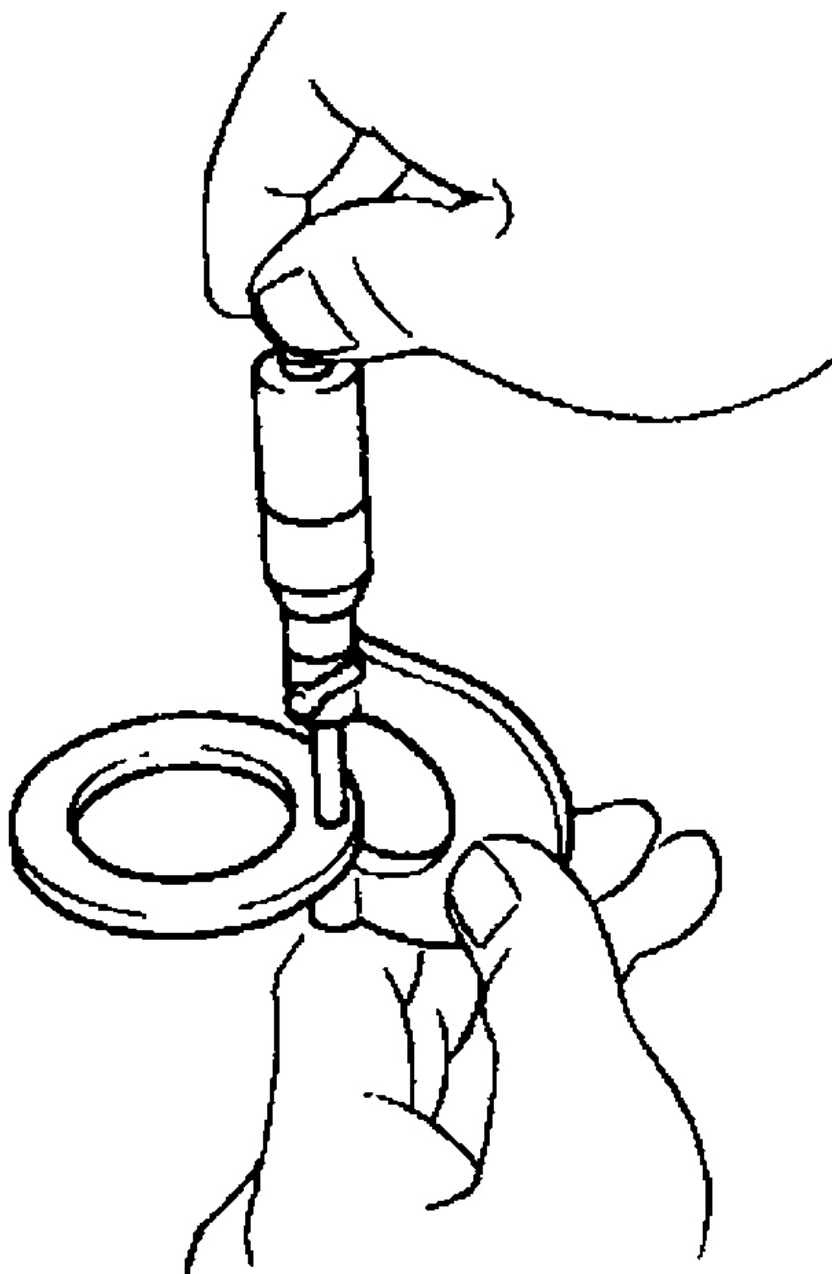
2005 Toyota RAV4

2005 SUSPENSION Suspension & Axle - RAV4

- b. Using a micrometer, measure the thickness of the removed plate washer.
- c. Install a new washer of 0.06 - 0.09 mm (0.0024 - 0.0035 in.) thicker than the removed washer.

HINT:

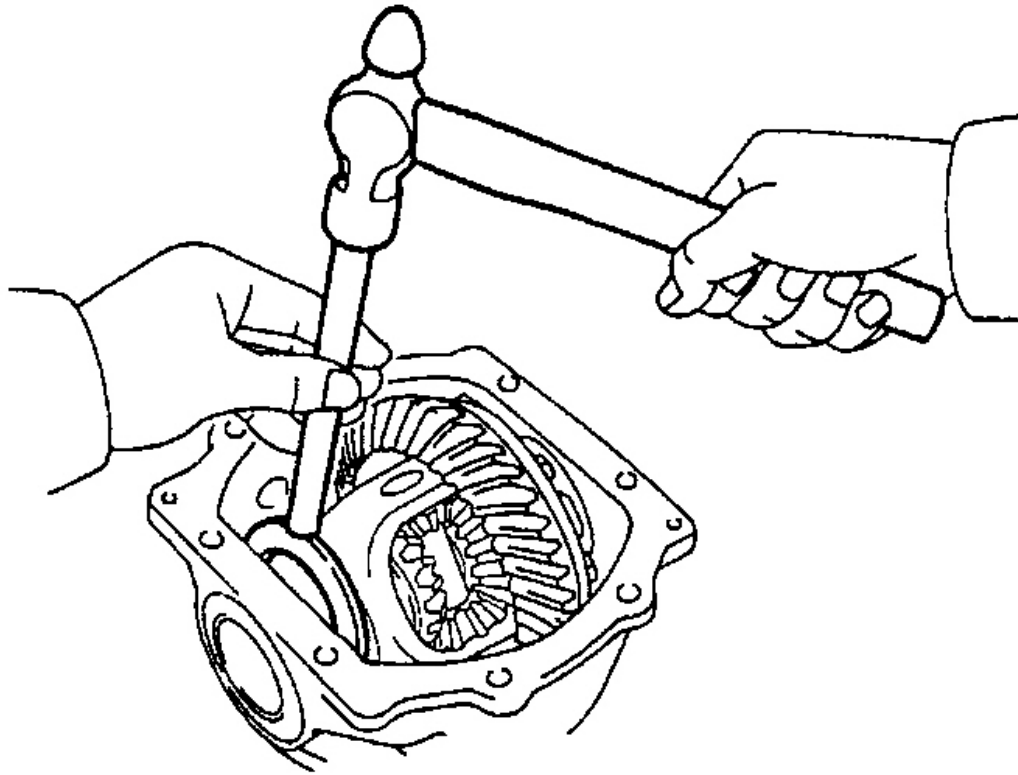
Select a washer which can be pressed in 2/3 of the way by finger.



G02640402

Fig. 167: Measuring Thickness Of Plate Washer Using Micrometer
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- d. Using a brass bar and a hammer, tap the plate washer.

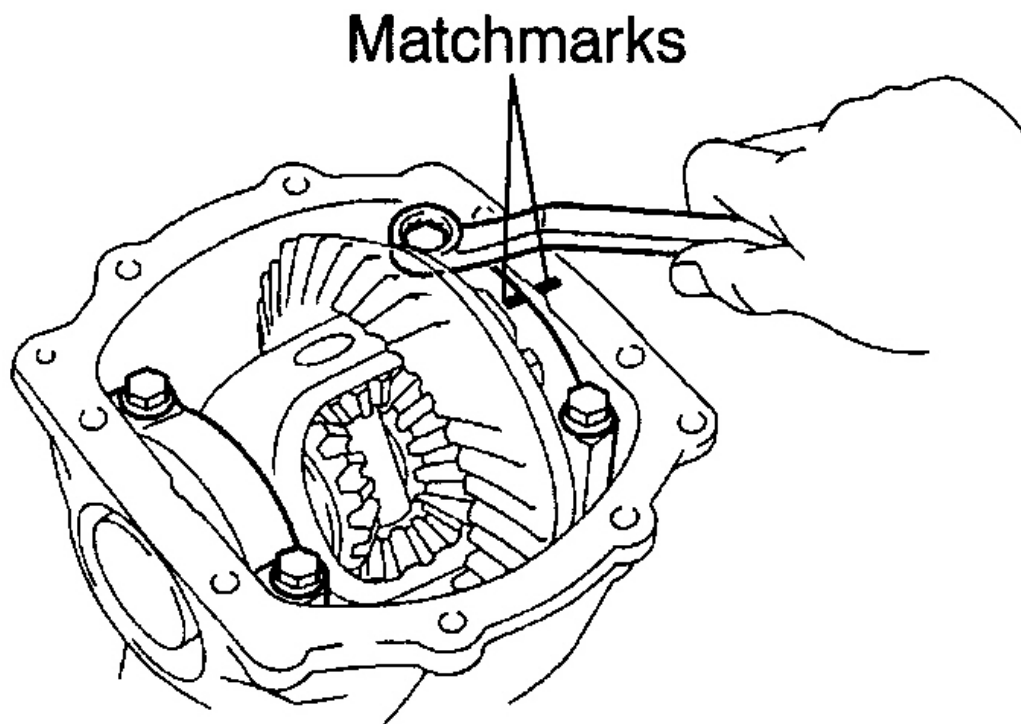


G02640403

Fig. 168: Taping Plate Washer Using Brass Bar And Hammer
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- e. Align the matchmarks on the cap and carrier, and install the 2 bearing caps with the 4 bolts.

Torque: 78 N.m (800 kgf.cm, 58 ft.lbf)



G02640404

Fig. 169: Aligning Matchmarks On Cap And Carrier
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

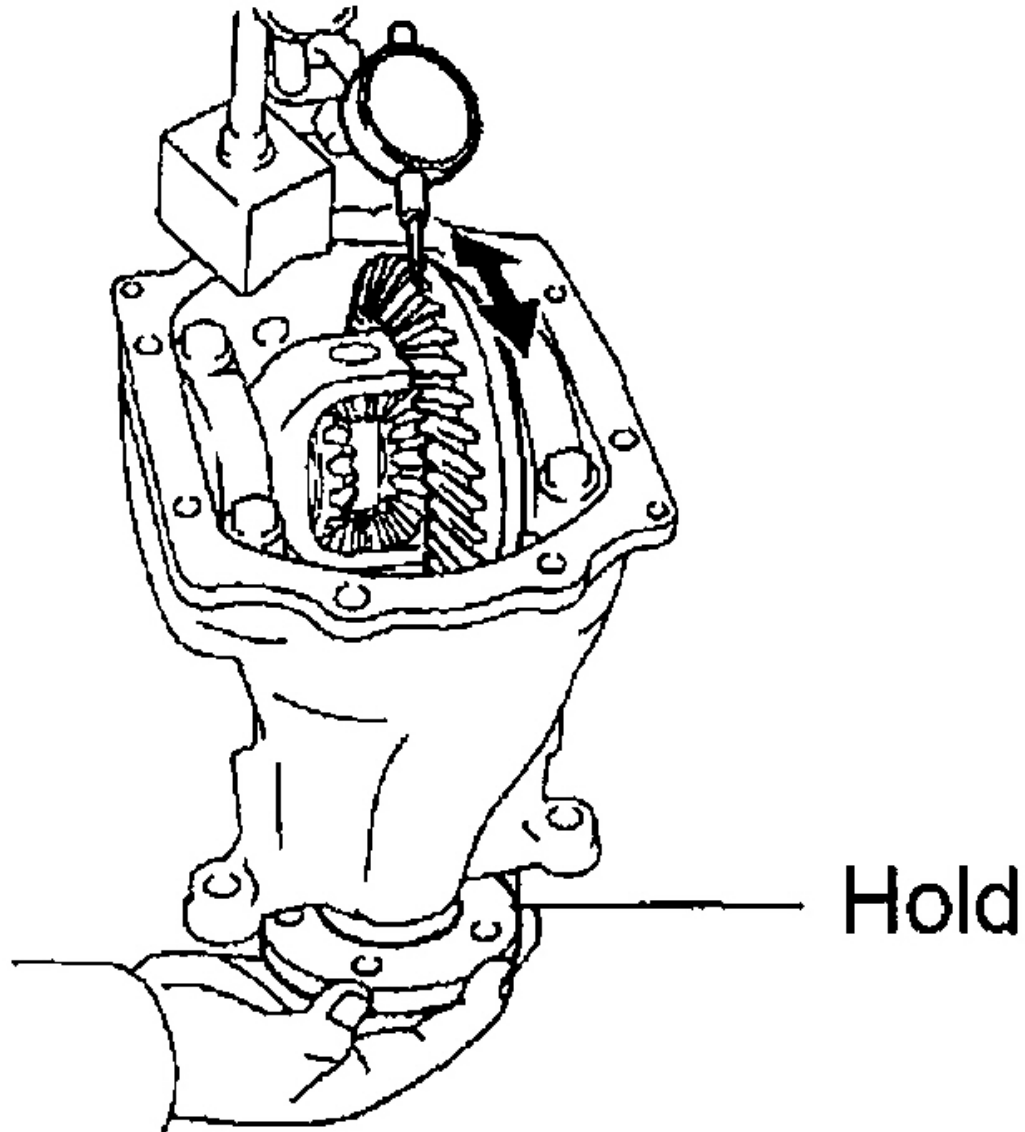
- f. Recheck the ring gear backlash.

Backlash: 0.13 - 0.18 mm (0.0051 - 0.0071 in.)

If the value is not within the specification, adjust it by either increasing or decreasing the washers thickness on both sides by equal amount.

HINT:

The backlash will change by about 0.02 mm (0.0008 in.) corresponding to 0.03 mm (0.0012 in.) change in the plate washer thickness.



G02640405

Fig. 170: Measuring Ring Gear Backlash
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Washer thickness:

WASHER THICKNESS SPECIFICATIONS

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2005 Toyota RAV4

2005 SUSPENSION Suspension & Axle - RAV4

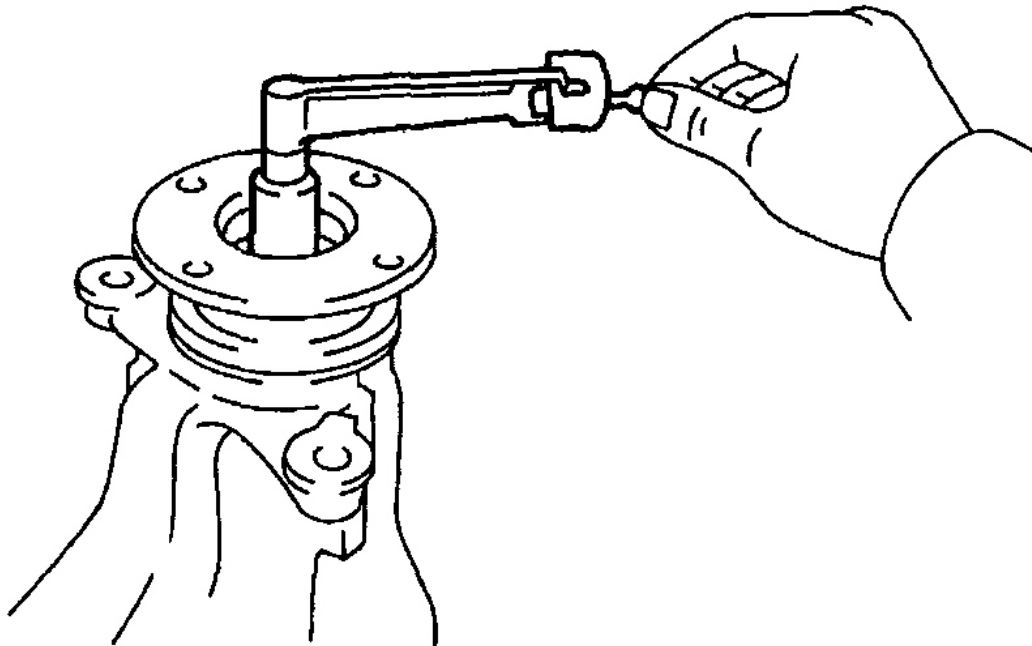
Thickness mm (in.)	Thickness mm (in.)	Thickness mm (in.)
2.21 - 2.23 (0.0870 - 0.0878)	2.57 - 2.59 (0.1012 - 0.1020)	2.93 - 2.95 (0.1154 - 0.1161)
2.24 - 2.26 (0.0882 - 0.0890)	2.60 - 2.62 (0.1024 - 0.1031)	2.96 - 2.98 (0.1165 - 0.1173)
2.27 - 2.29 (0.0894 - 0.0902)	2.63 - 2.65 (0.1035 - 0.1043)	2.99 - 3.01 (0.1177 - 0.1185)
2.30 - 2.32 (0.0906 - 0.0913)	2.66 - 2.68 (0.1047 - 0.1055)	3.02 - 3.04 (0.1189 - 0.1197)
2.33 - 2.35 (0.0917 - 0.0925)	2.69 - 2.71 (0.1059 - 0.1067)	3.05 - 3.07 (0.1201 - 0.1209)
2.36 - 2.38 (0.0929 - 0.0937)	2.72 - 2.74 (0.1071 - 0.1079)	3.08 - 3.10 (0.1213 - 0.1220)
2.39 - 2.41 (0.0941 - 0.0949)	2.75 - 2.77 (0.1083 - 0.1091)	3.11 - 3.13 (0.1224 - 0.1232)
2.42 - 2.44 (0.0953 - 0.0961)	2.78 - 2.80 (0.1094 - 0.1102)	3.14 - 3.16 (0.1236 - 0.1244)
2.45 - 2.47 (0.0965 - 0.0972)	2.81 - 2.83 (0.1106 - 0.1114)	3.17 - 3.19 (0.1248 - 0.1256)
2.48 - 2.50 (0.0976 - 0.0984)	2.84 - 2.86 (0.1118 - 0.1126)	3.20 - 3.22 (0.1260 - 0.1268)
2.51 - 2.53 (0.0988 - 0.0996)	2.87 - 2.89 (0.1130 - 0.1138)	-
2.54 - 2.56 (0.1000 - 0.1008)	2.90 - 2.92 (0.1142 - 0.1150)	-

11. MEASURE TOTAL PRELOAD

Using a torque wrench, measure the preload.

Total preload (at starting):

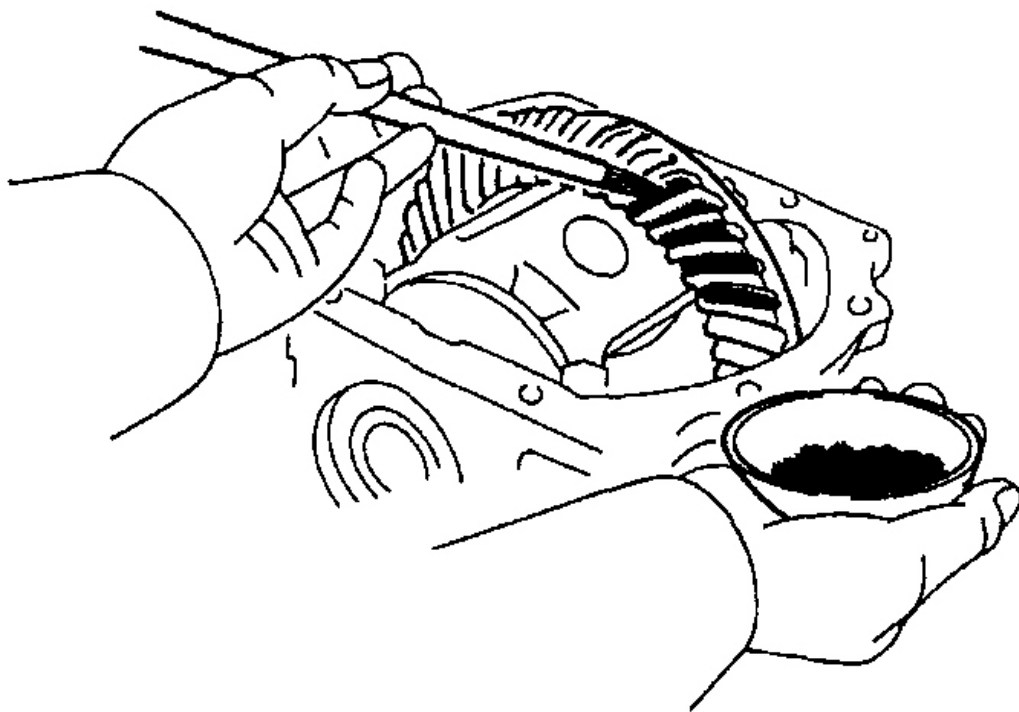
Drive pinion preload plus 0.3 - 0.5 N.m (3 - 5 kgf.cm, 2.6 - 4.3 in.lbf)



G02640406

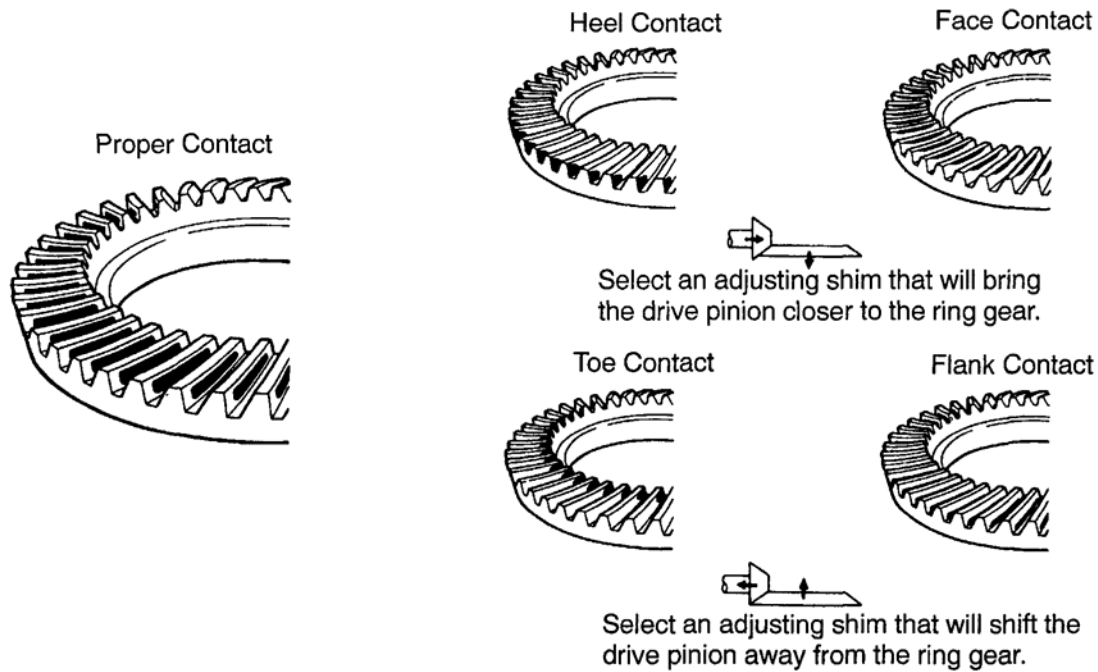
Fig. 171: Measuring Preload Using Torque Wrench
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

12. **INSPECT TOOTH CONTACT BETWEEN RING GEAR AND DRIVE PINION**
 - a. Coat 3 or 4 teeth at 3 different positions on the ring gear with red lead primer.
 - b. Hold the companion flange firmly and rotate the ring gear in both directions.
 - c. Inspect the tooth contact pattern.



G02640407

Fig. 172: Coating Teeth At Different Positions On Ring Gear With Red Lead Primer
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



G02640408

Fig. 173: Identifying Tooth Contact Pattern

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

If the teeth are not contacting properly, use the following table to select a proper washer for correction.

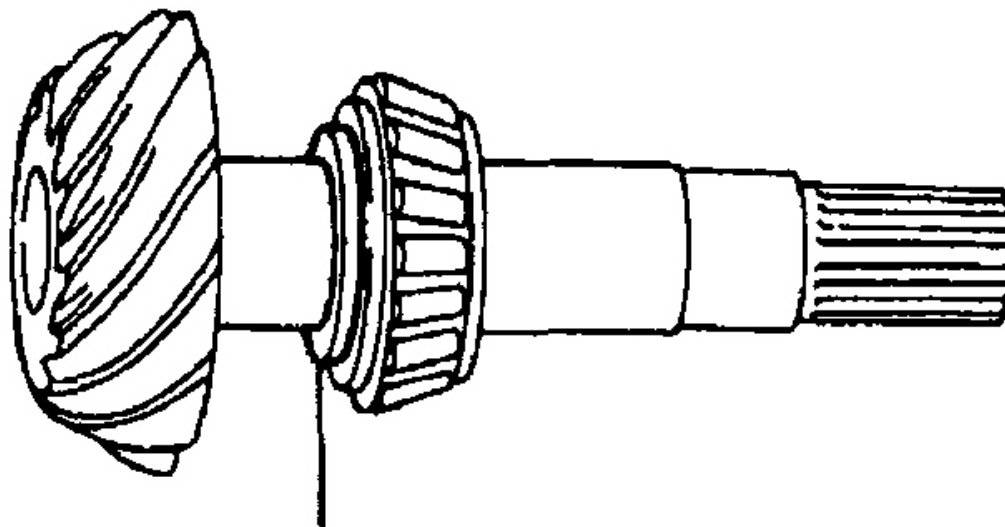


Plate Washer

G02640409

Fig. 174: Identifying Plate Washer Location

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

Washer thickness:

WASHER THICKNESS SPECIFICATIONS

Thickness mm (in.)	Thickness mm (in.)	Thickness mm (in.)
2.26 - 2.28 (0.0890 - 0.0898)	2.41 - 2.43 (0.0949 - 0.0957)	2.56 - 2.58 (0.1008 - 0.1016)
2.29 - 2.31 (0.0902 - 0.0909)	2.44 - 2.46 (0.0961 - 0.0969)	2.59 - 2.61 (0.1020 - 0.1028)
2.32 - 2.34 (0.0913 - 0.0921)	2.47 - 2.49 (0.0972 - 0.0980)	2.62 - 2.64 (0.1031 - 0.1039)
2.35 - 2.37 (0.0925 - 0.0933)	2.50 - 2.52 (0.0984 - 0.0992)	2.65 - 2.67 (0.1043 - 0.1051)
2.38 - 2.40 (0.0937 - 0.0945)	2.53 - 2.55 (0.0996 - 0.1004)	2.68 - 2.70 (0.1055 - 0.1063)

13. **REMOVE COMPANION FLANGE (See REPLACEMENT)**
14. **REMOVE FRONT BEARING (See DISASSEMBLY)**
15. **INSTALL NEW BEARING SPACER AND FRONT BEARING**

Install a new bearing spacer and the front bearing on the drive pinion.

16. **INSTALL OIL SLINGER**

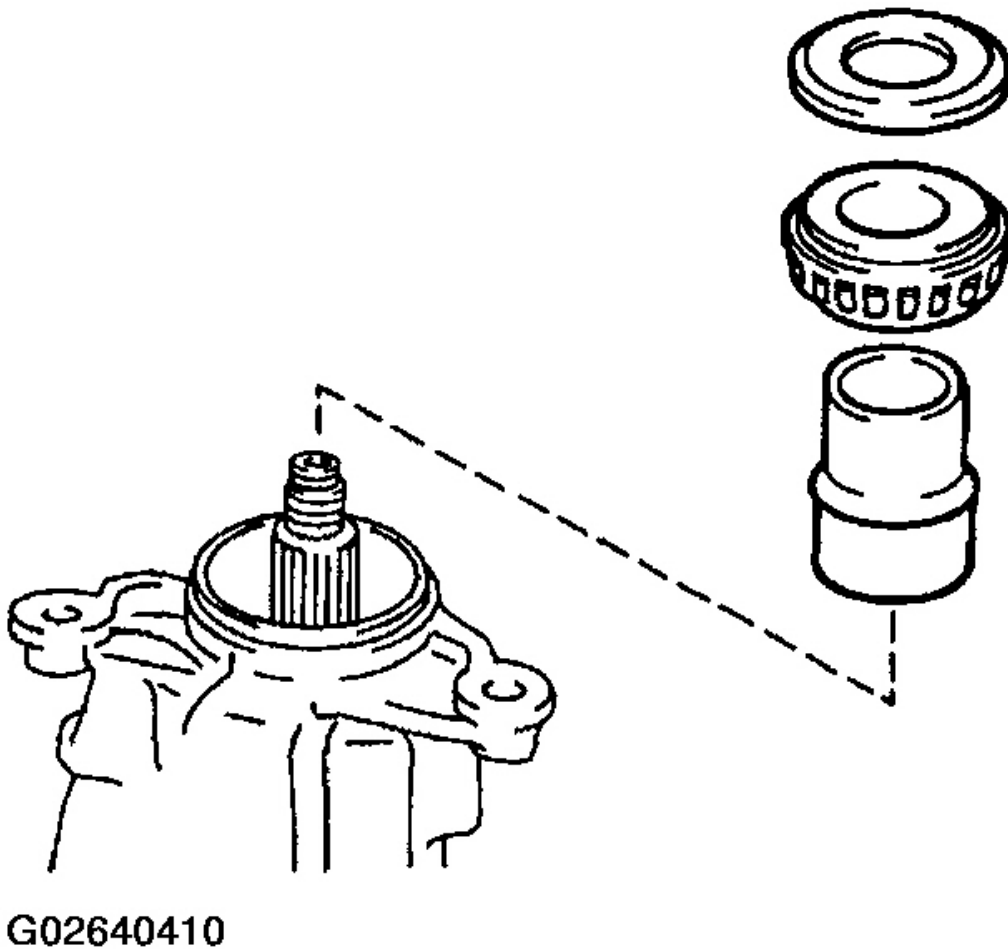


Fig. 175: Installing Bearing Spacer And Front Bearing On Drive Pinion
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

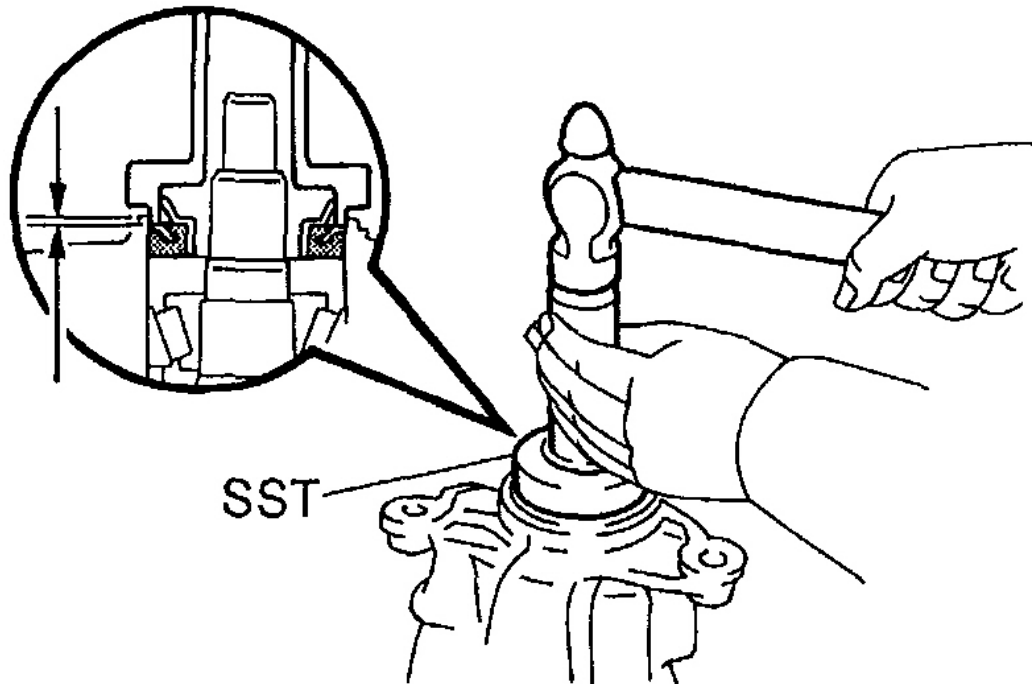
17. INSTALL NEW FRONT OIL SEAL

- a. Using SST and a hammer, install a new oil seal.

SST 09554-22010

Oil seal drive in depth: 2.0 mm (0.079 in.)

- b. Apply MP grease to the oil seal lip.



G02640411

Fig. 176: Installing Oil Seal Using Special Tool

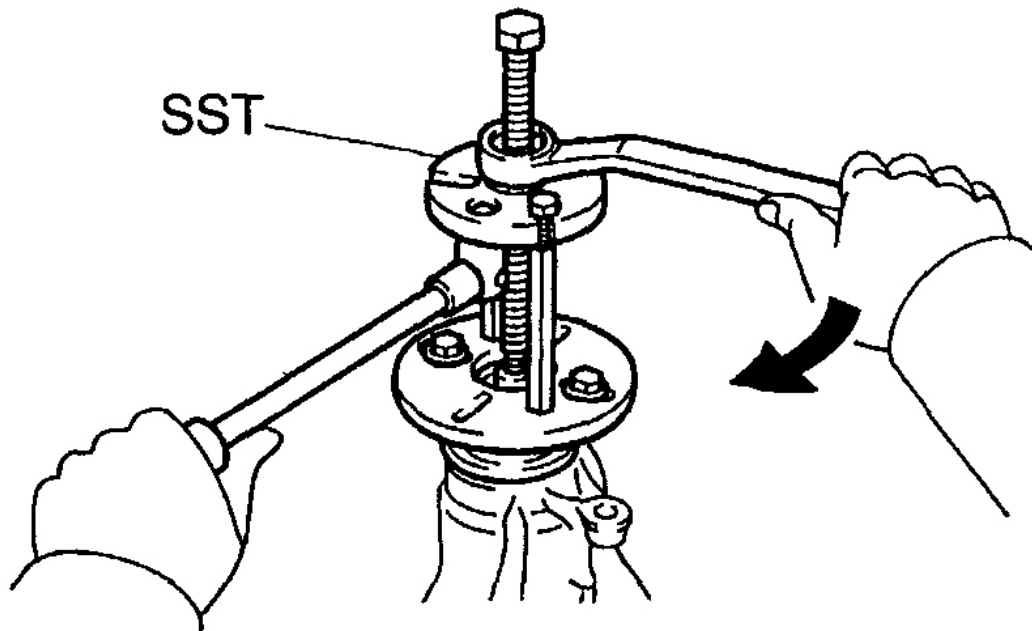
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

18. INSTALL COMPANION FLANGE

- a. Using SST, install the companion flange on the drive pinion.

SST 09950-30012 (09951-03010, 09953-03010, 09954-03010, 09955-03040, 09956-03020)

- b. Coat the threads of a new nut with hypoid gear oil.



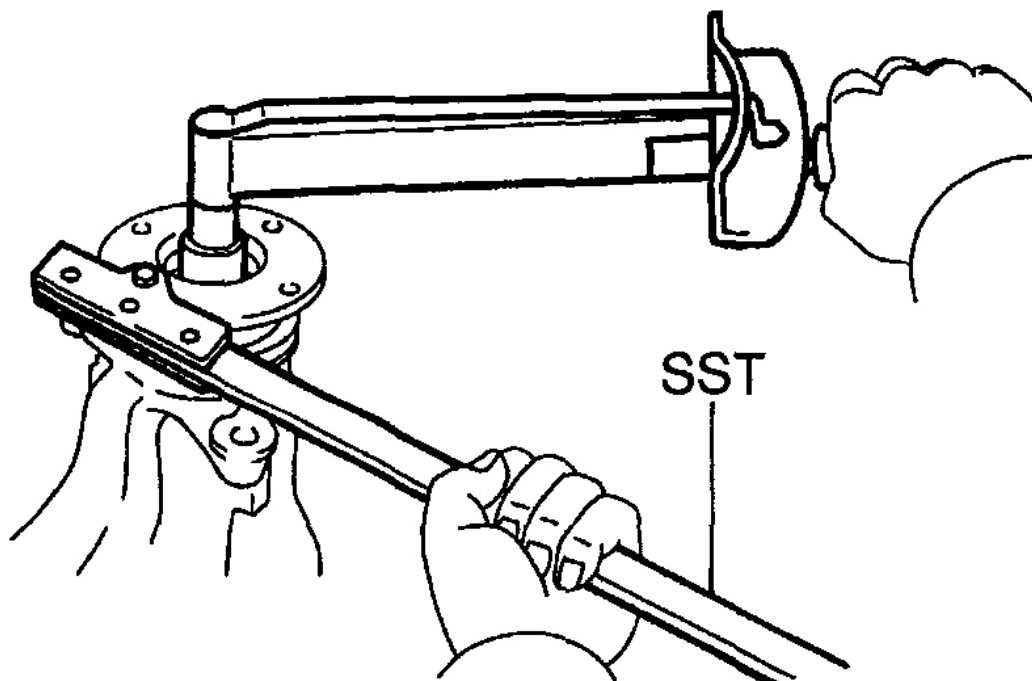
G02640412

Fig. 177: Installing Companion Flange On Drive Pinion Using Special Tool
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- c. Using SST to hold the flange, torque the nut.

SST 09330-00021

Torque: 108 N.m (1,100 kgf.cm, 80 ft.lbf)



G02640413

Fig. 178: Torquing Nut Using Special Tool
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

19. CHECK DRIVE PINION PRELOAD

Using a torque wrench, measure the preload of the backlash between the drive pinion and ring gear.

Preload (at starting):

PRELOAD SPECIFICATIONS

New bearing	1.1 - 1.7 N.m (11 - 17 kgf.cm, 9.5 - 14.7 in.lbf)
Reused bearing	0.6 - 0.9 N.m (6 - 9 kgf.cm, 5.2 - 7.8 in.lbf)

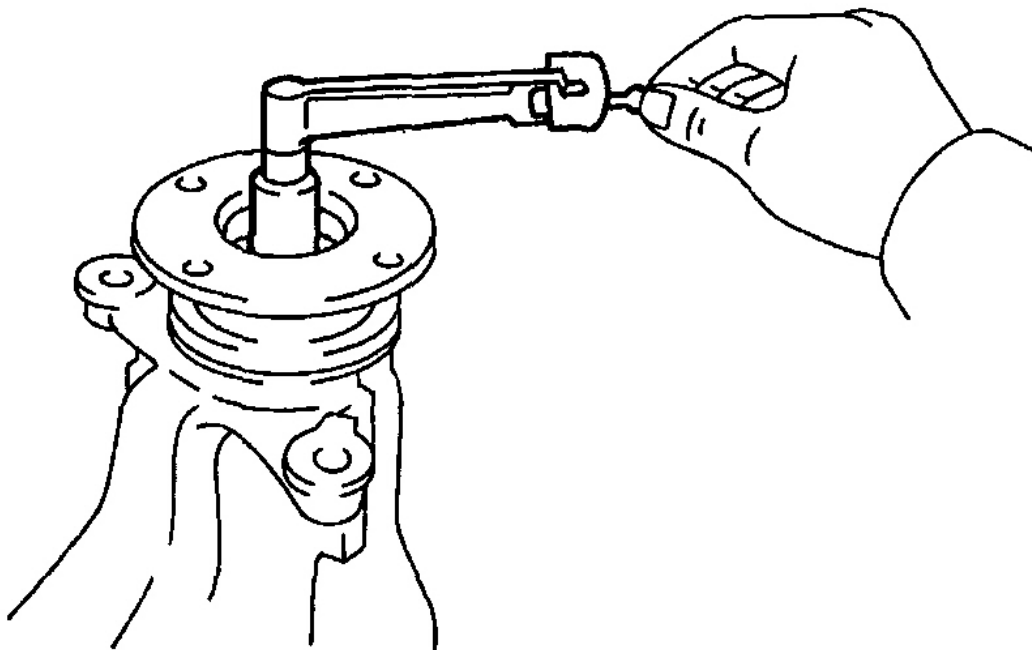
If the preload is larger than the specification, replace the bearing spacer.

If the preload is less than the specification, retighten the nut 13 N.m (130 kgf.cm, 9 ft.lbf) of torque at a time until reaching the specified value.

Torque: 235 N.m (2,400 kgf.cm, 174 ft.lbf) or less

If the torque exceeds the maximum value while retighten the nut, replace the bearing spacer and repeat the preload procedure. Do not loosen the pinion nut to reduce the preload.

20. **RECHECK TOTAL PRELOAD** (See DISASSEMBLY)
21. **RECHECK RING GEAR BACKLASH** (See DISASSEMBLY)



G02640414

Fig. 179: Checking Drive Pinion Preload

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

22. **RECHECK TOOTH CONTACT BETWEEN RING GEAR AND DRIVE PINION** (See REASSEMBLY)
23. **CHECK COMPANION FLANGE RUNOUT** (See DISASSEMBLY)
24. **STAKE DRIVE PINION NUT**
25. **INSTALL SIDE GEAR SHAFT OIL SEALS**
 - a. Using SST and a hammer, install 2 oil seals until they are flush with the carrier end surface.

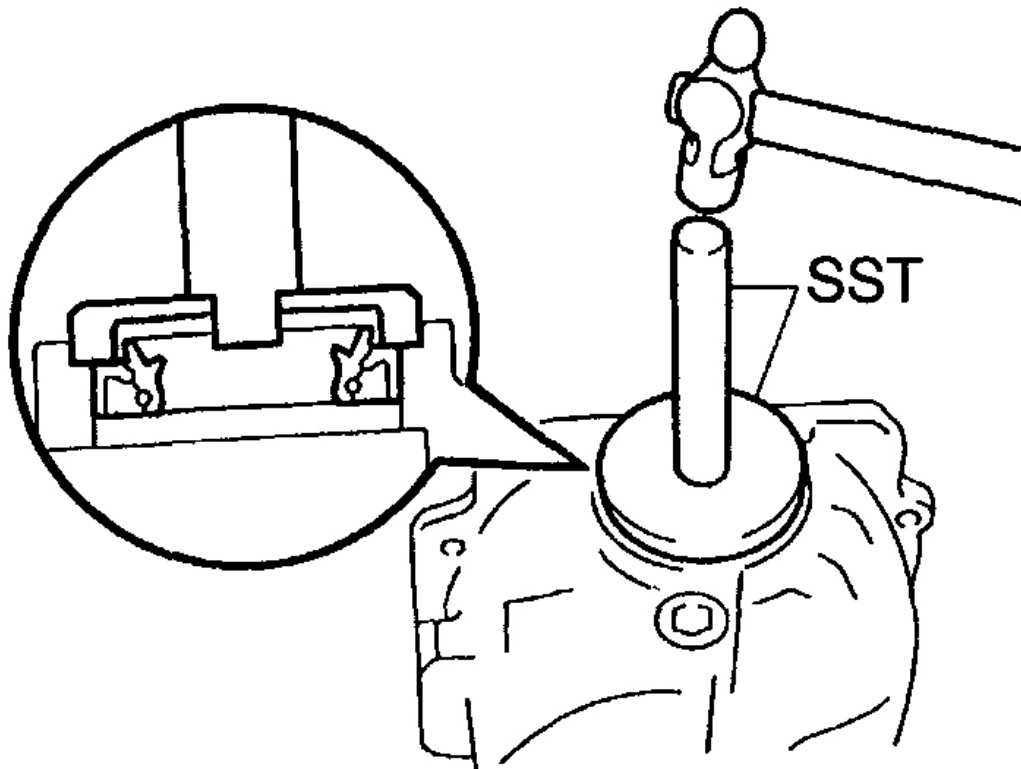
SST 09550-00032, 09950-70010 (09951-07150)
 - b. Coat the oil seal lip with MP grease.
26. **Torque sensing LSD: INSTALL SIDE GEAR SHAFTS**

- a. Install 2 new snap rings to the side gear shafts.
- b. Using SST, install the 2 side gear shafts until they contacts the pinion shaft.

SST 09520-24010 (09520-04010, 09520-32040)

HINT:

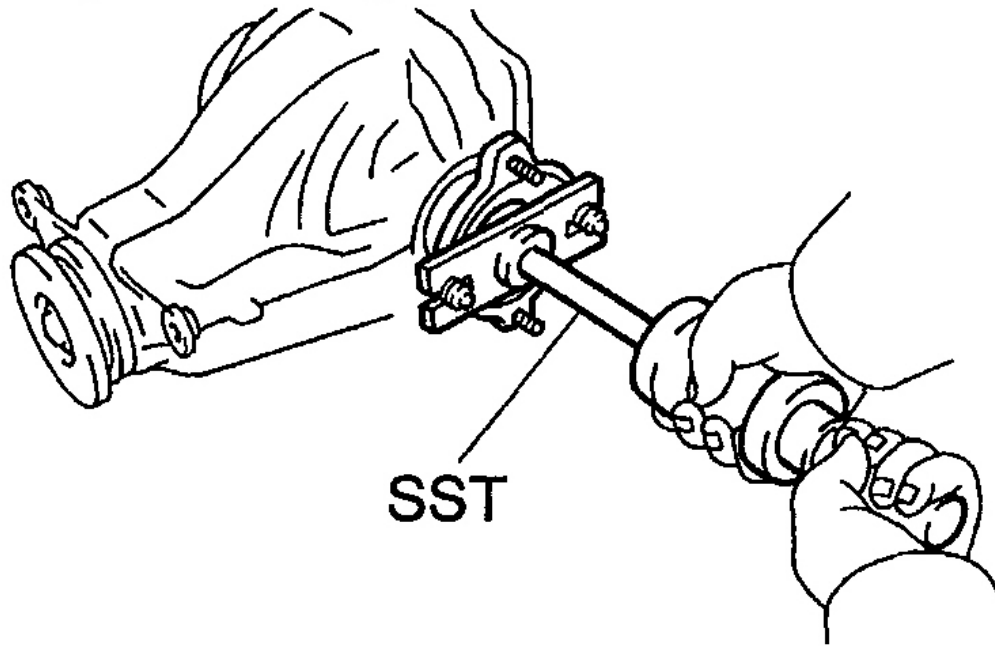
Check that the shaft is fully inserted by the noise being made when it is tapped.



G02640415

Fig. 180: Installing Oil Seals Using SST And Hammer
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Torque Sensing LSD



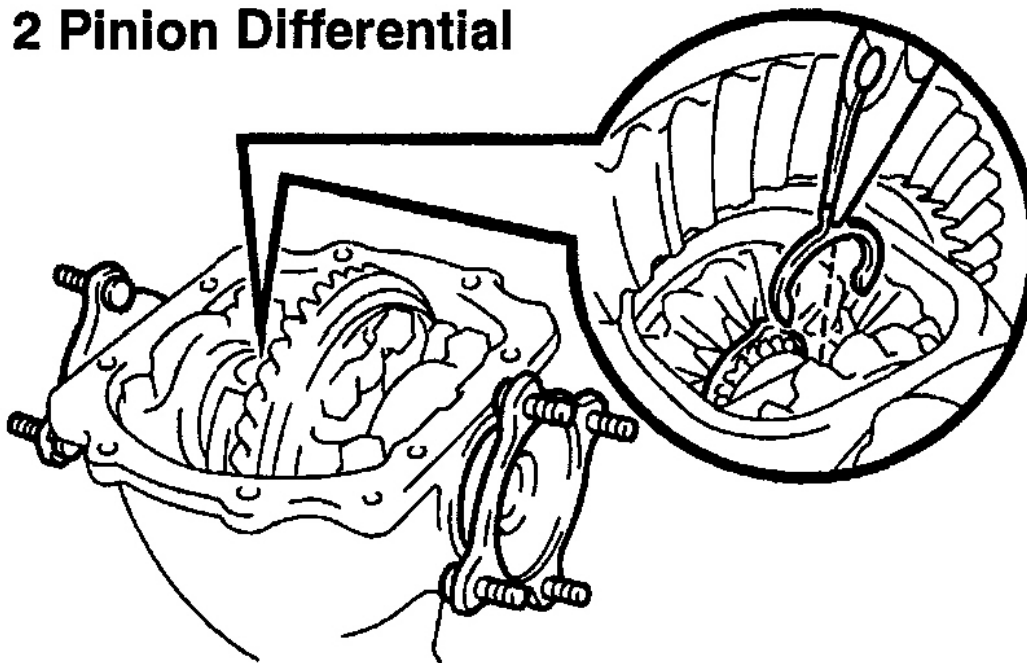
G02640416

Fig. 181: Installing Side Gear Shafts Using Special Tool
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

27. 2 pinion differential: INSTALL SIDE GEAR SHAFTS

- a. Install the 2 side gear shafts to the differential case.
- b. Using needle nose pliers, install 2 new snap rings to the 2 side gear shafts.

2 Pinion Differential



G02640417

Fig. 182: Installing Side Gear Shafts To Differential Case
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

28. INSTALL DIFFERENTIAL CARRIER COVER

- a. Torque sensing LSD:

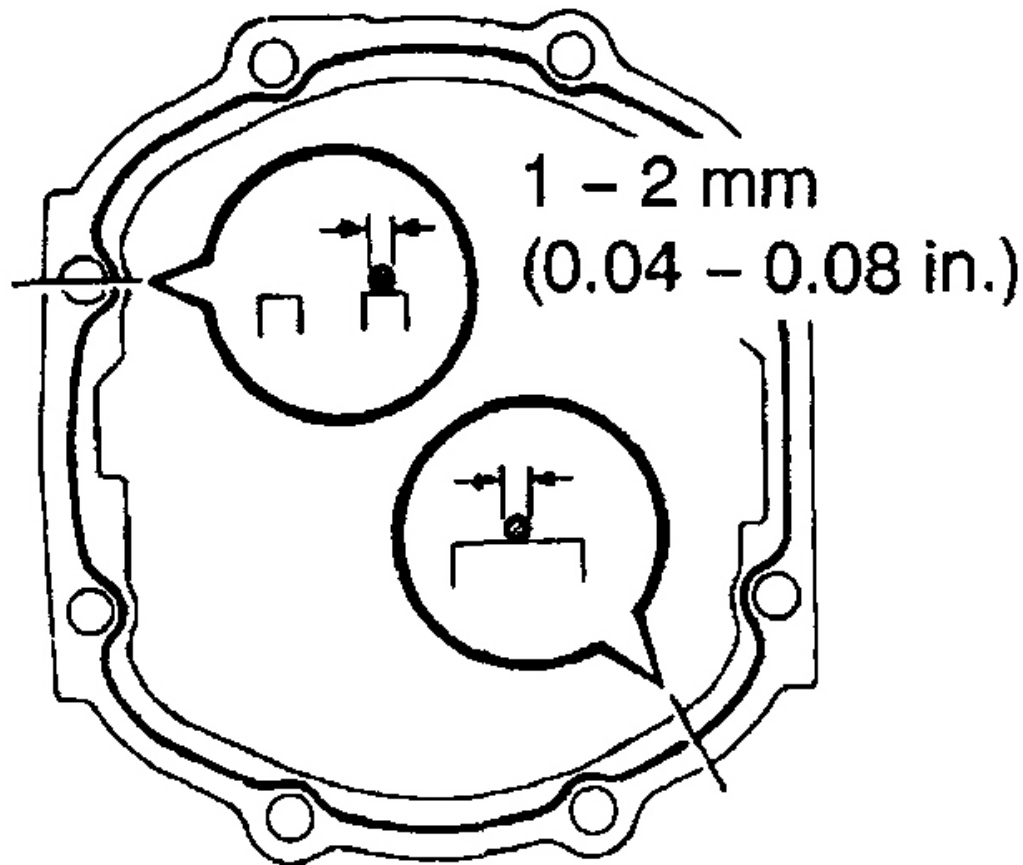
Install the oil deflector and bolt to the carrier cover.

Torque: 7.3 N.m (75 kgf.cm, 65 in.lbf)

- b. Install the breather plug to the carrier cover.

Torque: 21 N.m (210 kgf.cm, 15 ft.lbf)

- c. Clean contacting surfaces of any residual FIPG material by using gasoline or alcohol.
d. Apply FIPG to the carrier.



G02640418

Fig. 183: Applying FIPG To Carrier

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

FIPG:

Part No. 08826-00090, THREE BOND 1281 or equivalent

HINT:

Install the carrier cover within 3 minutes after applying FIPG.

- e. Torque the 8 bolts.

Torque: 47 N.m (475 kgf.cm, 34 ft.lbf)

INSTALLATION

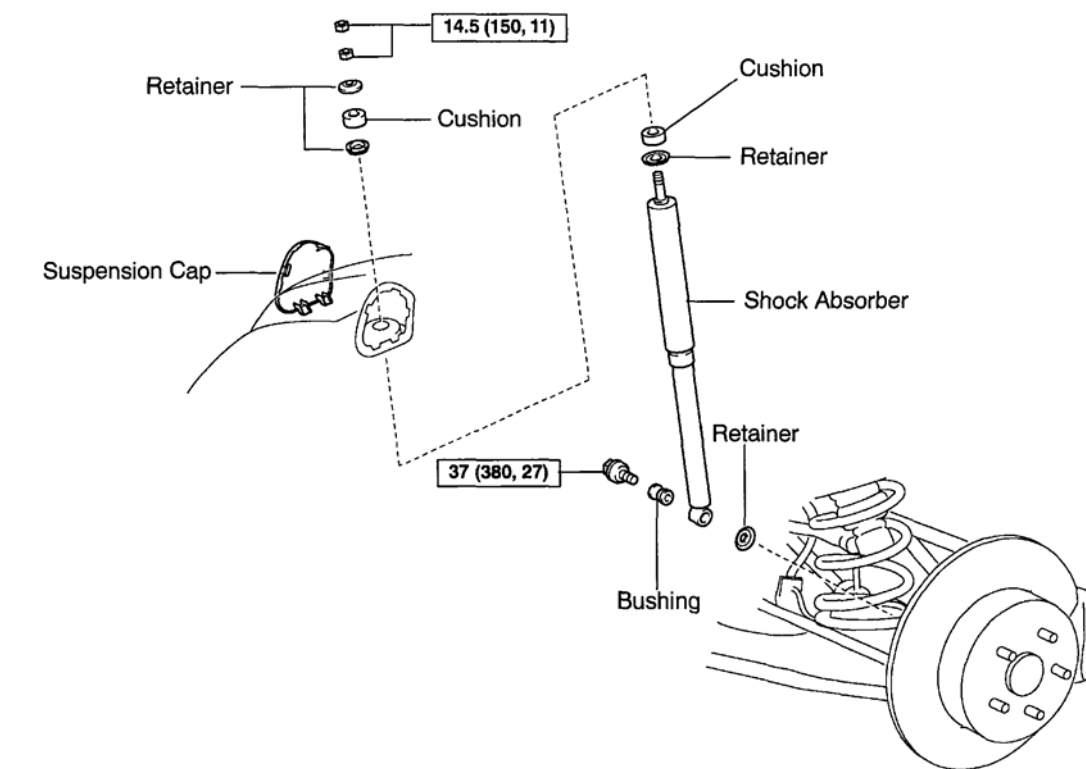
Installation is in the reverse order of removal procedure (See REMOVAL).

HINT:

After installation, fill the differential with differential oil (See REAR DIFFERENTIAL CARRIER (4WD)).

REAR SHOCK ABSORBER

COMPONENTS



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

G02640419

Fig. 184: Identifying Rear Shock Absorber Components & Torque Specifications

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

REMOVAL

1. REMOVE REAR WHEEL

Torque: 103 N.m (1,050 kgf.cm, 76 ft.lbf)

2. REMOVE SHOCK ABSORBER

- a. Remove the suspension cap.
- b. Remove the 2 nuts, 2 retainers and cushion.

Torque: 14.5 N.m (150 kgf.cm, 11 ft.lbf)

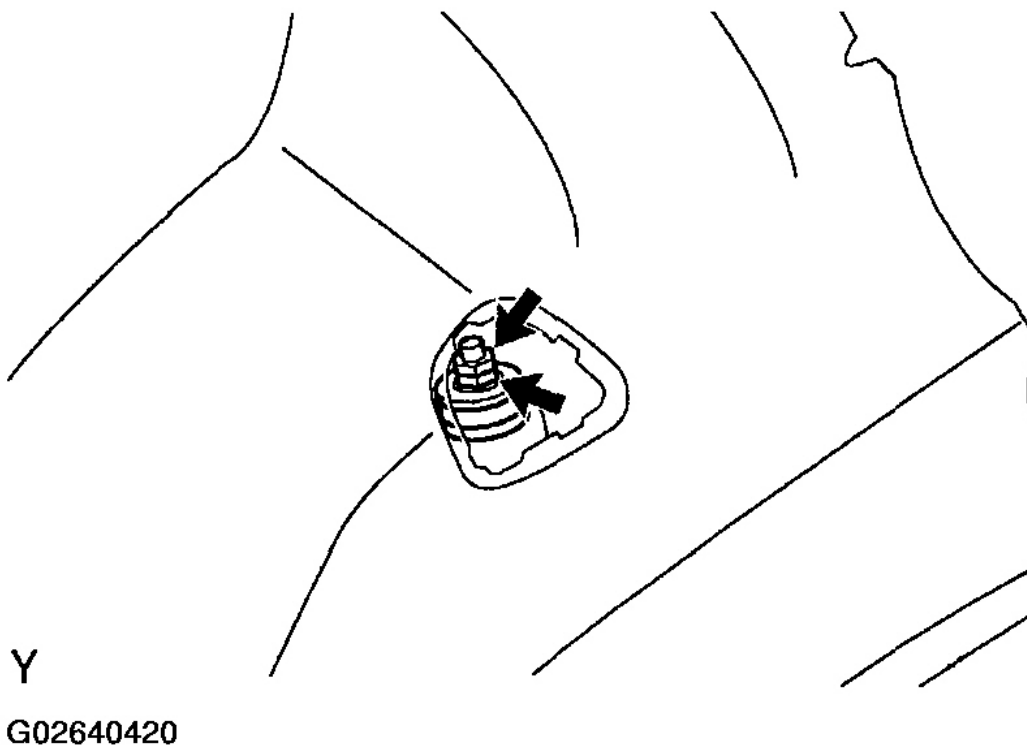


Fig. 185: Removing Upper Shock Absorber Nuts Retainers And Cushion
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- c. Using a jack, support the No. 1 suspension arm.

NOTE: Place a wooden or rubber block between a jack and the arm.

- d. Remove the bolt, 2 retainers, cushion and shock absorber.

Torque: 37 N.m (380 kgf.cm, 27 ft.lbf)

- e. Remove the bushing.

Y

G02640421

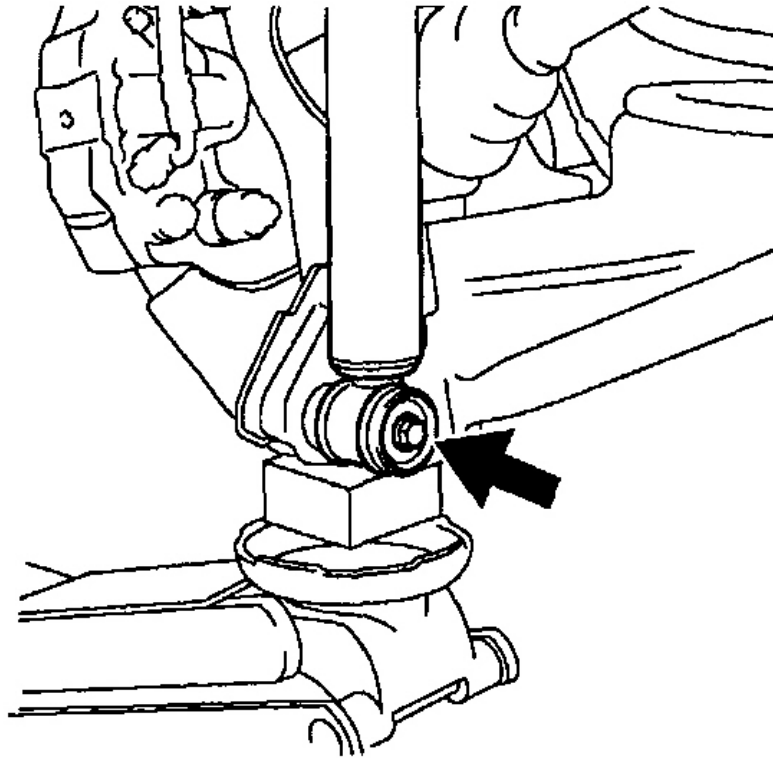


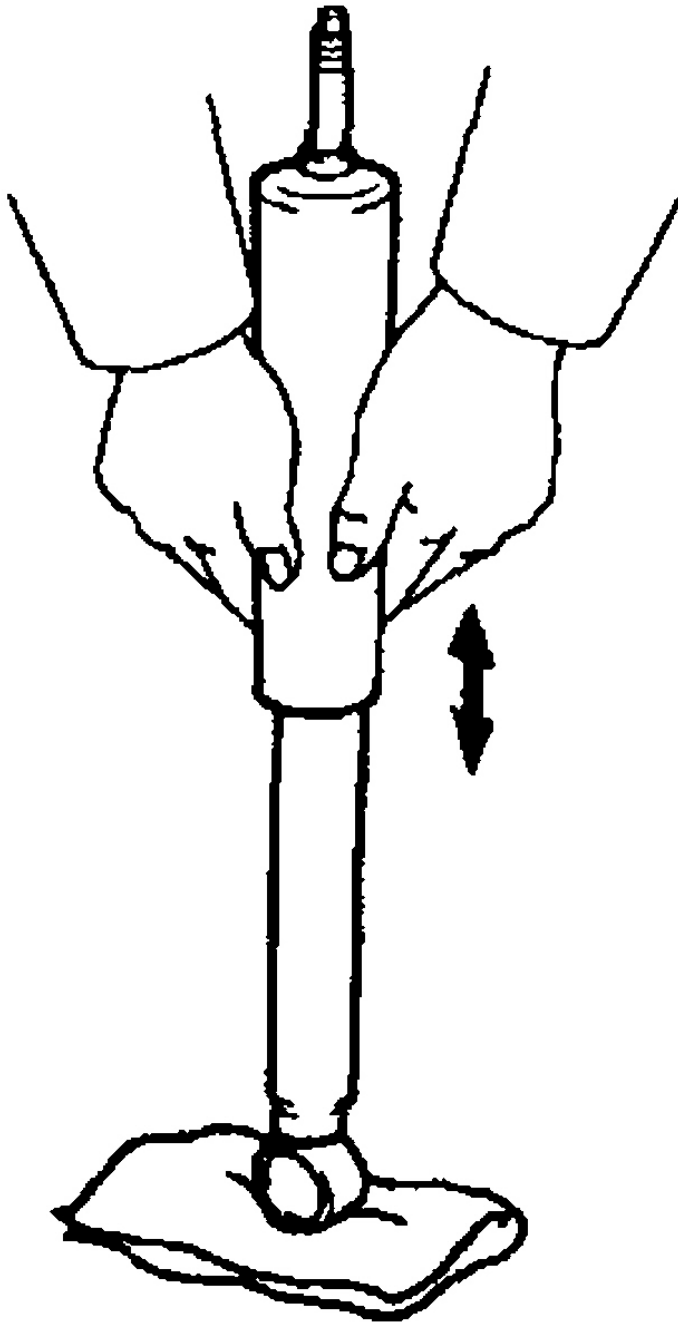
Fig. 186: Removing Lower Shock Absorber Nuts Retainers And Cushion
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION

INSPECT SHOCK ABSORBER

Compress and extend the shock absorber rod and check that there is no abnormal resistance or unusual operation sounds. If there are any abnormalities, replace the shock absorber with a new one.

NOTE: When discarding the shock absorber, see **DISPOSAL** on **DISPOSAL**.



G02640422

Fig. 187: Inspecting Shock Absorber

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

DISPOSAL

2005 Toyota RAV4

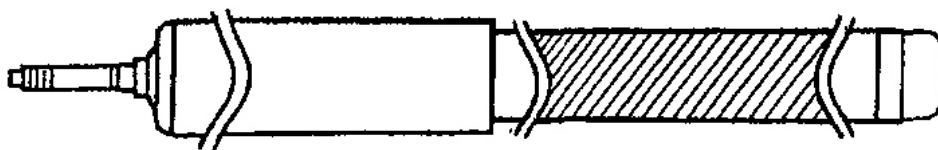
2005 SUSPENSION Suspension & Axle - RAV4

1. **FULLY EXTEND SHOCK ABSORBER ROD**
2. **DRILL HOLE TO DISCHARGE GAS FROM CYLINDER**

Using a drill, make a hole near the center of the cylinder, as shown, to discharge the gas inside.

CAUTION:

- When drilling, chips may fly out, so work carefully.
- The gas is colorless, odorless and non-poisonous.



G02640423

Fig. 188: Making Hole Near Center Of Cylinder Using Drill
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSTALLATION

Installation is in the reverse order of removal procedure (See REMOVAL).

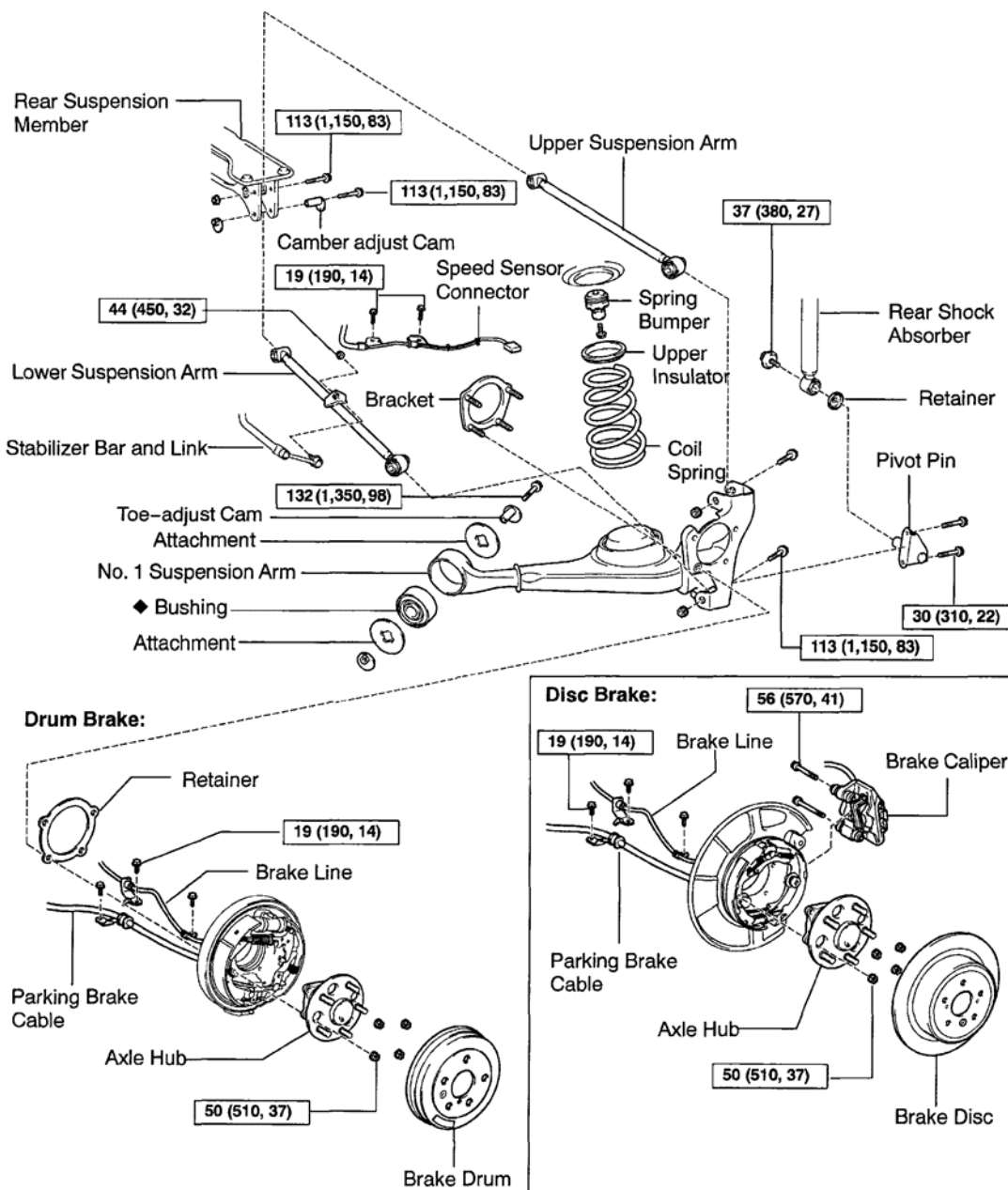
REAR SUSPENSION ARM AND COIL SPRING

COMPONENTS

2005 Toyota RAV4

2005 SUSPENSION Suspension & Axle - RAV4

2WD



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

◆ Non-reusable part

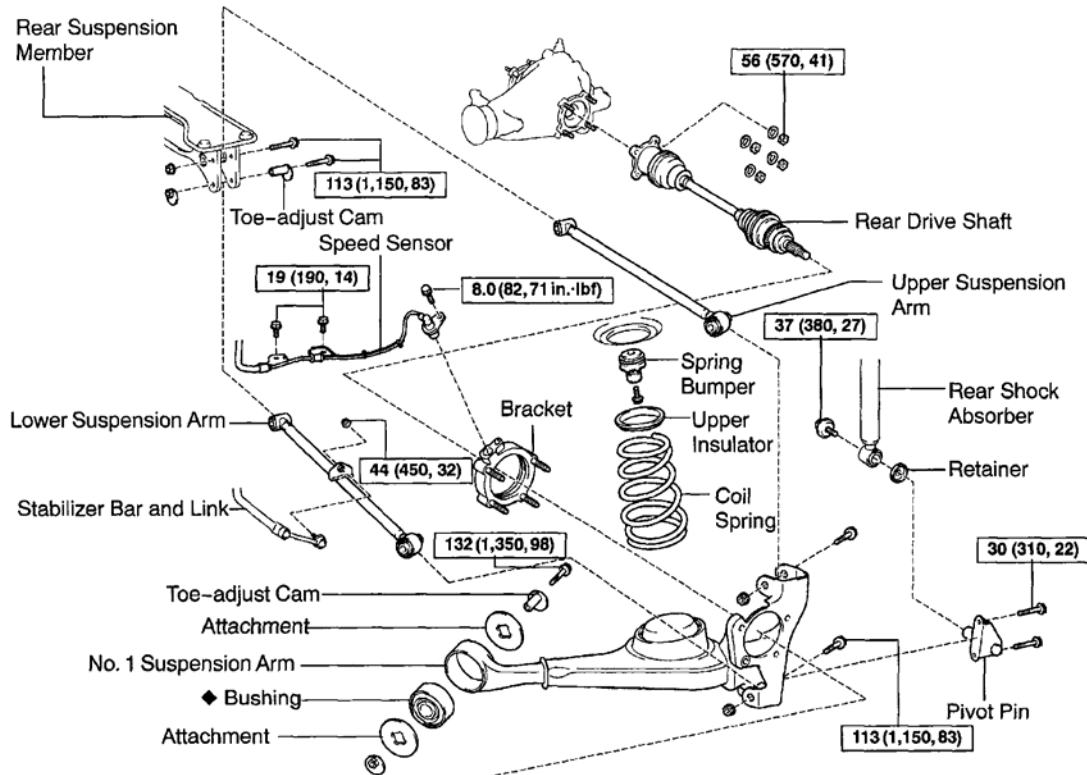
G02640424

Fig. 189: Identifying Rear Suspension Arm And Coil Spring Components & Torque Specifications - 2WD
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

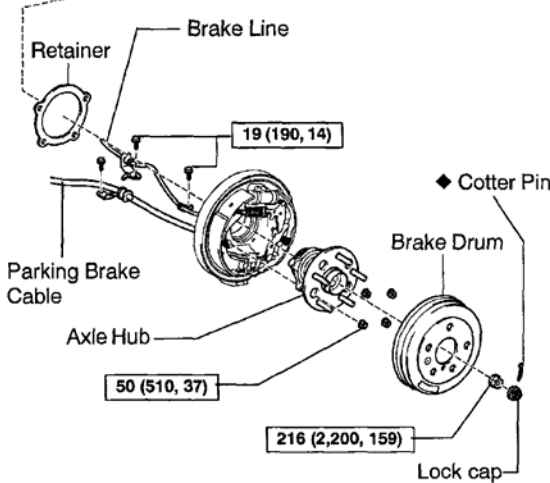
2005 Toyota RAV4

2005 SUSPENSION Suspension & Axle - RAV4

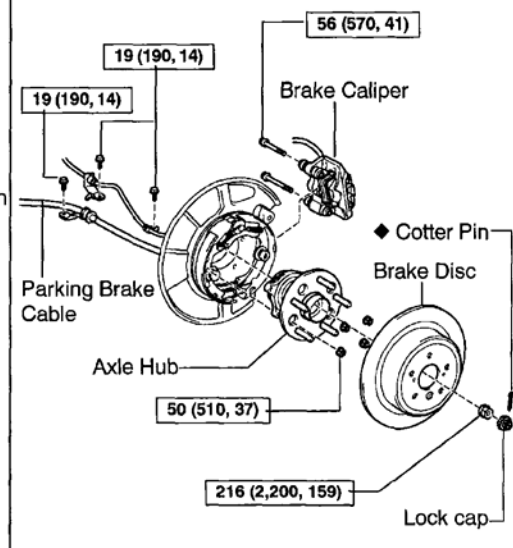
4WD



Drum Brake:



Disc Brake:



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

◆ Non-reusable part

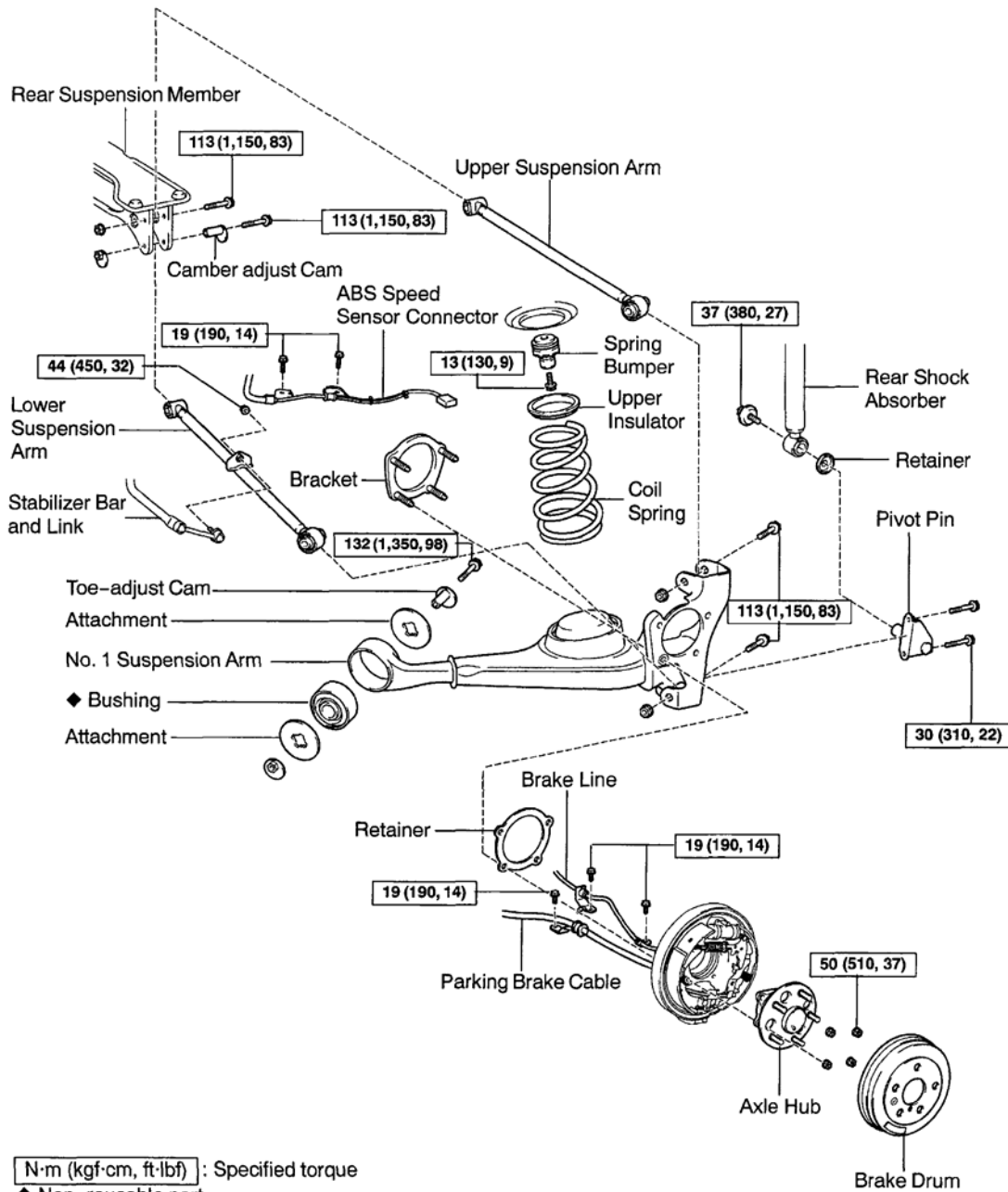
G02640425

Fig. 190: Identifying Rear Suspension Arm And Coil Spring Components & Torque Specifications - 4WD
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

2005 Toyota RAV4

2005 SUSPENSION Suspension & Axle - RAV4

2WD



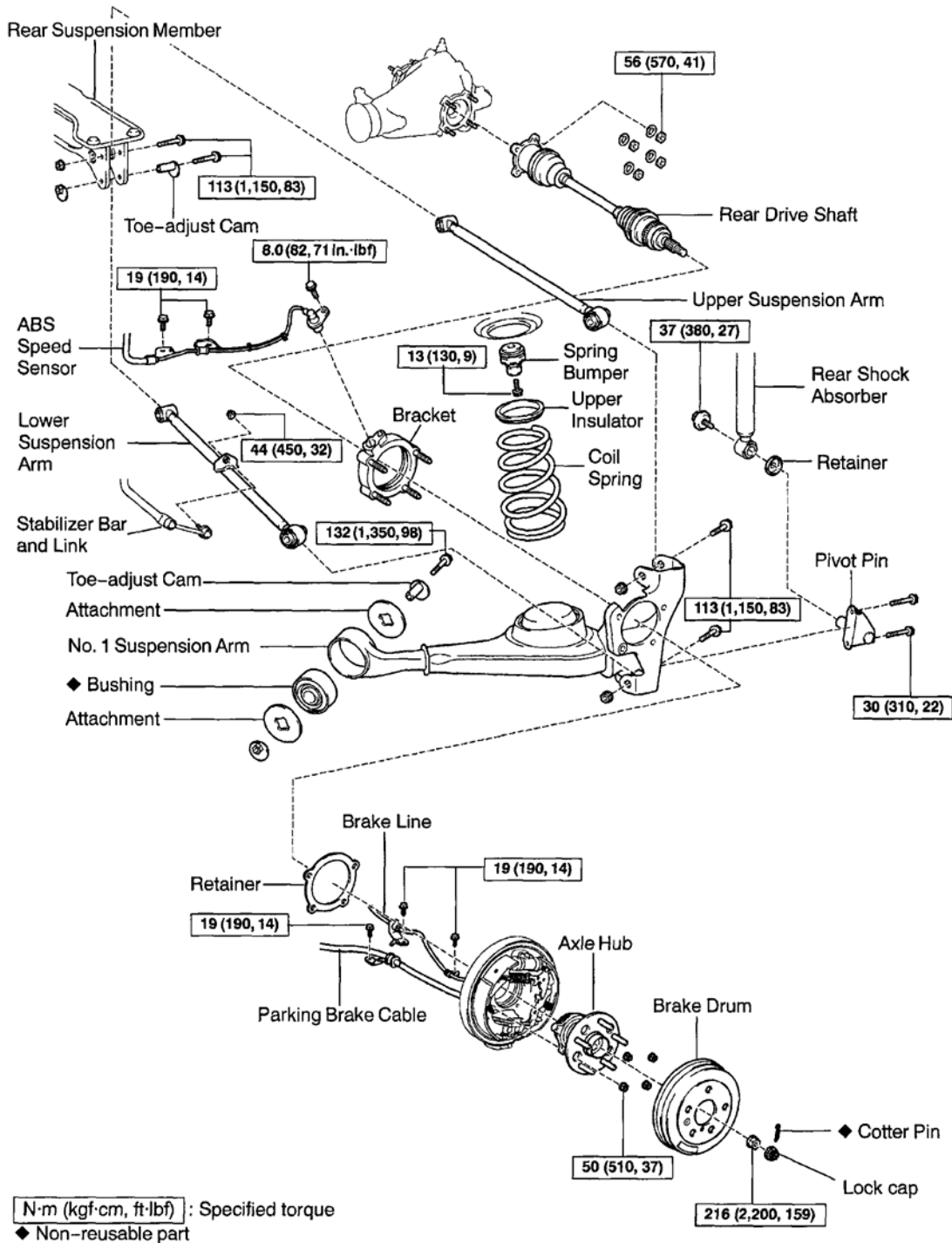
G02640426

Fig. 191: Identifying Rear Suspension Arm And Coil Spring Components & Torque Specifications - 2WD
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

2005 Toyota RAV4

2005 SUSPENSION Suspension & Axle - RAV4

4WD



G02640427

Fig. 192: Identifying Rear Suspension Arm And Coil Spring Components & Torque Specifications - 4WD
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

REMOVAL**1. REMOVE REAR WHEEL**

Torque: 103 N.m (1,050 kgf.cm, 76 ft.lbf)

2. 4WD: REMOVE REAR DRIVE SHAFT (See REMOVAL)**3. w/ ABS & VSC for 2 WD DISCONNECT ABS SPEED SENSOR CONNECTOR AND WIRE**

- a. Disconnect the sensor wire connector.
- b. Remove the 2 bolts, and disconnect the sensor wire from the No. 1 suspension arm.

Torque: 19 N.m (190 kgf.cm, 14 ft.lbf)

4. w/ ABS & VSC for 4WD DISCONNECT SPEED SENSOR AND WIRE

- a. Remove the bolt, and disconnect the sensor.

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

- b. Remove the 2 bolts, disconnect the speed sensor wire harness from the No. 1 suspension arm.

Torque: 19 N.m (190 kgf.cm, 14 ft.lbf)

5. w/drum brake: REMOVE BRAKE DRUM**6. w/disc brake: REMOVE BRAKE CALIPER AND DISC (See REMOVAL)****7. DISCONNECT BRAKE LINE**

Remove the 2 bolts and disconnect the brake line from the No. 1 suspension arm.

Torque: 19 N.m (190 kgf.cm, 14 ft.lbf)

8. DISCONNECT PARKING BRAKE CABLE

Remove the bolts and disconnect the parking brake cable from the No. 1 suspension arm.

Torque: 19 N.m (190 kgf.cm, 14 ft.lbf)

9. REMOVE REAR AXLE HUB (See REMOVAL)**10. DISCONNECT SHOCK ABSORBER (See REMOVAL)****11. DISCONNECT STABILIZER BAR AND LINK FROM LOWER SUSPENSION ARM (See REMOVAL)****12. REMOVE UPPER SUSPENSION ARM**

- a. Remove the 2 bolts, 2 nuts and upper suspension arm.
- b. Employ the same manner described above to the other side.

Torque: 113 N.m (1,150 kgf.cm, 83 ft.lbf)

13. REMOVE LOWER SUSPENSION ARM

- a. Place matchmarks on the camber adjust cam and suspension member.
- b. Remove the 2 bolts, 2 nuts, camber adjust cam and lower suspension arm.

Torque: 113 N.m (1,150 kgf.cm, 83 ft.lbf)

- c. Employ the same manner described above to the other side.

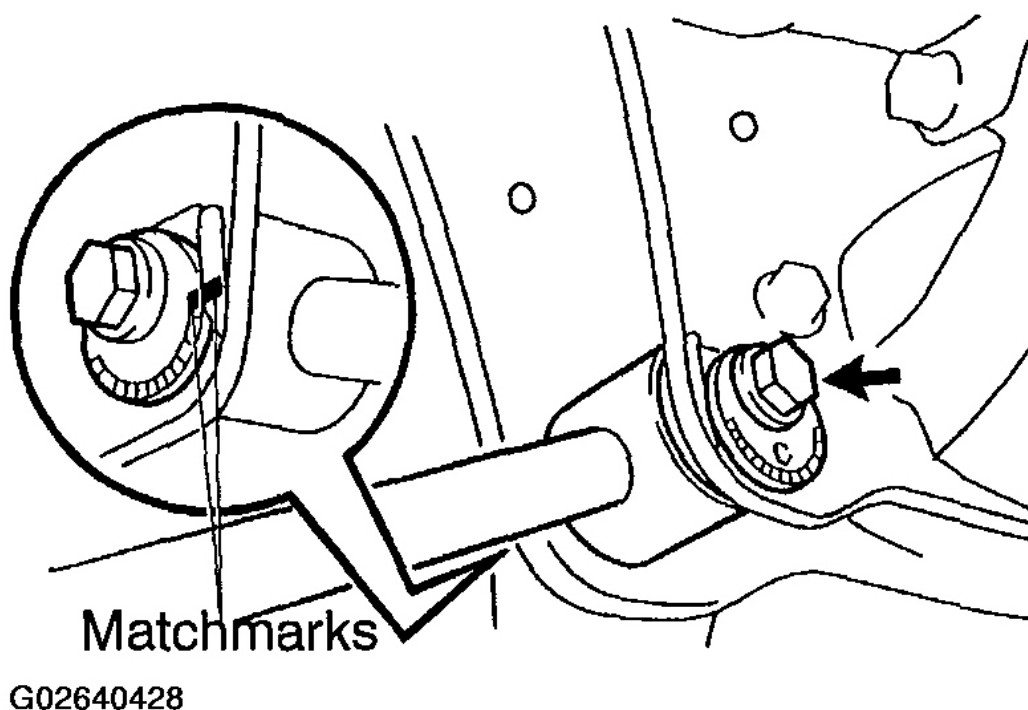


Fig. 193: Placing Matchmarks On Camber Adjust Cam And Suspension Member
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

14. REMOVE COIL SPRING AND REAR NO. 1 SUSPENSION ARM

- a. Place matchmarks on the toe-adjust cam and body.
- b. Loosen the bolt, and remove the coil spring and upper insulator.

HINT:

At the time of installation, fit the lower end of the coil spring to the gap of the No. 1 suspension arm.

- c. Remove the bolt, toe-adjust cam, 2 attachments, nut and lower suspension arm.

Torque: 132 N.m (1,350 kgf.cm, 98 ft.lbf)

HINT:

At the time of installation, tighten the bolt after stabilizing the suspension.

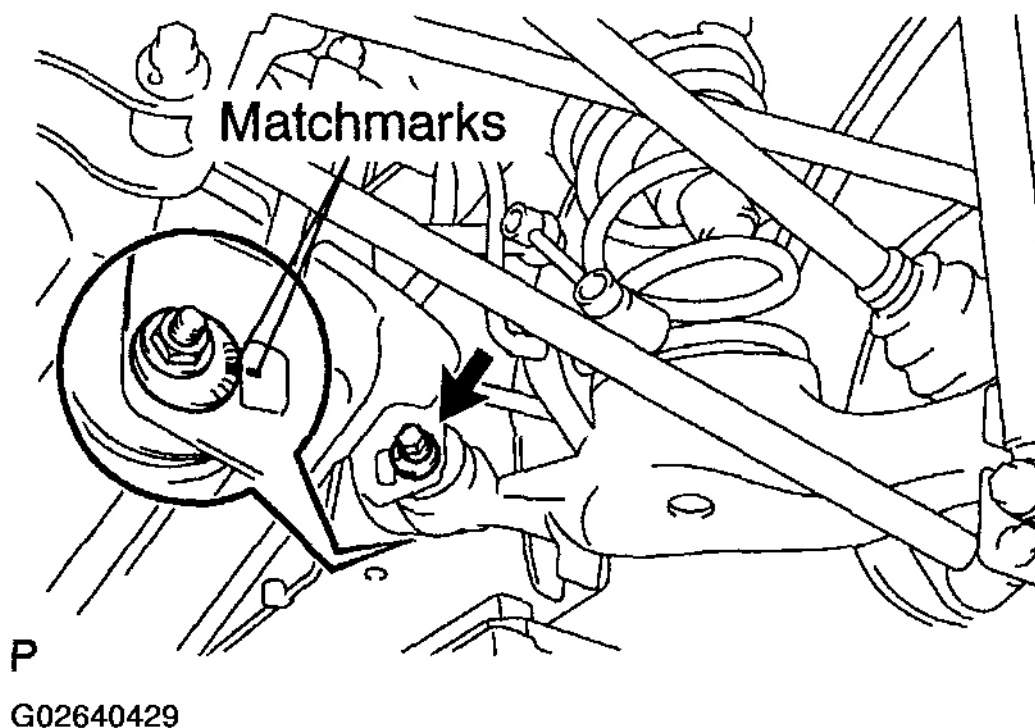


Fig. 194: Placing Matchmarks On Toe-Adjust Cam And Body
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

15. REMOVE SPRING BUMPER

Remove the bolt and spring bumper.

Torque: 13 N.m (130 kgf.cm, 9 ft.lbf)

REPLACEMENT

1. REPLACE SHOCK ABSORBER LOWER PIVOT PIN

- a. Remove the 2 bolts and lower pivot pin.

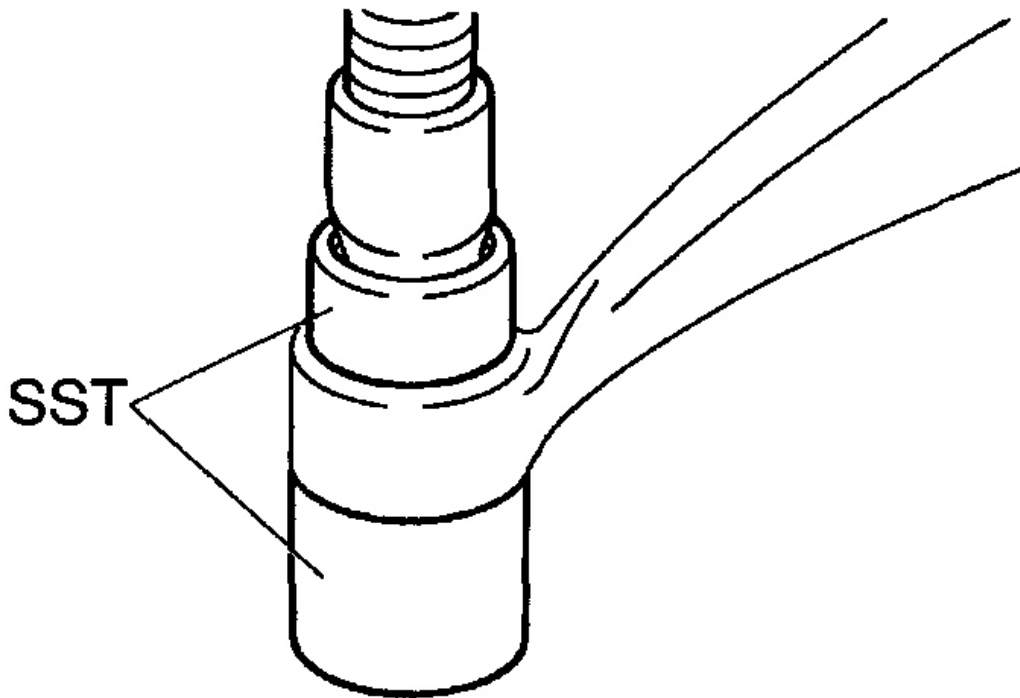
- b. Install a new pivot pin with the 2 bolts.

Torque: 30 N.m (310 kgf.cm, 22 ft.lbf)

2. REPLACE REAR NO. 1 SUSPENSION ARM BUSHING

- a. Using SST and a press, remove the bushing.

SST 09649-17010, 09710-30050



G02640430

Fig. 195: Removing Bushing Using SST And Press
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- b. Place a new bushing on the No. 1 suspension arm as shown.
- c. Using SST and a press, install the bushing.

SST 09710-30050

NOTE: Do not let grease or oil get into the bushing.

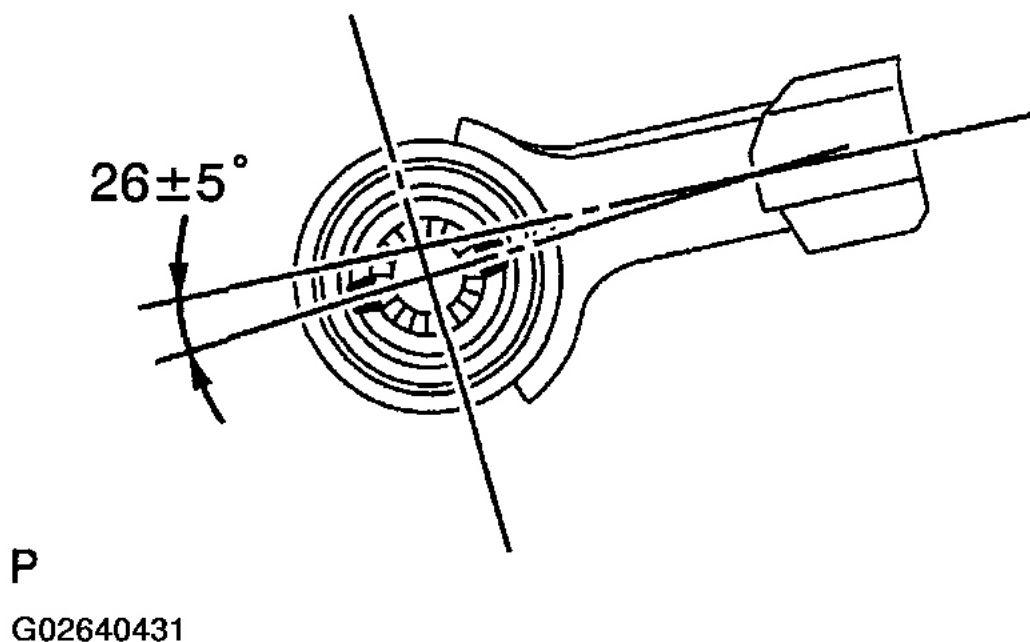


Fig. 196: Placing Bushing On No. 1 Suspension Arm
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSTALLATION

Installation is in the reverse order of removal procedure (See REMOVAL).

HINT:

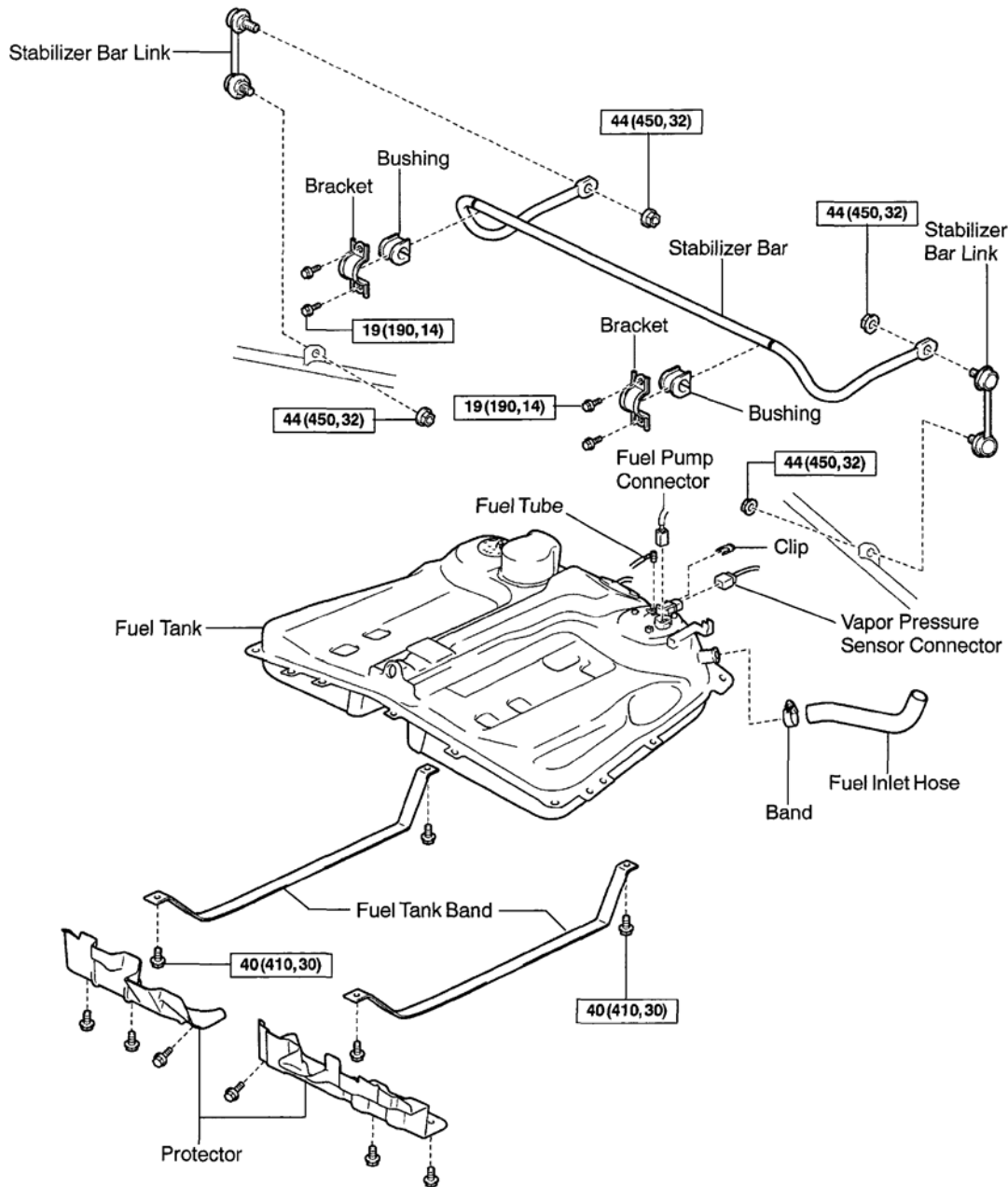
After installation, check the ABS & VSC speed sensor signal (See DTC DTC C0200/31 - C1239/39) and rear wheel alignment (See REAR WHEEL ALIGNMENT).

REAR STABILIZER BAR

COMPONENTS

2005 Toyota RAV4

2005 SUSPENSION Suspension & Axle - RAV4



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

P

G02640432

Fig. 197: Identifying Rear Stabilizer Bar Components & Torque Specifications
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

REMOVAL

1. REMOVE FUEL TANK (See FUEL TANK AND LINE)
2. REMOVE STABILIZER BAR LINKS

- a. Remove the 2 nuts and stabilizer bar link.

Torque: 44 N.m (450 kgf.cm, 32 ft.lbf)

HINT:

If the ball joint turns together with the nut, use a hexagon (5 mm) wrench to fix the stud.

- b. Employ the same manner described above to the other side.

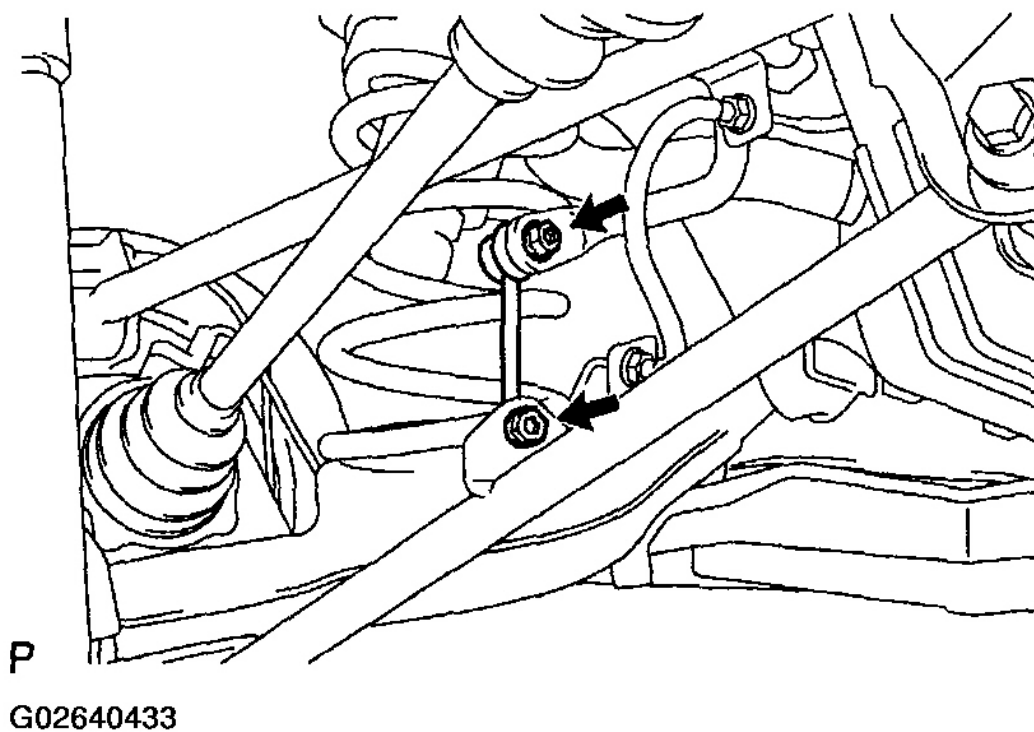


Fig. 198: Removing Stabilizer Bar Link
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

3. REMOVE STABILIZER BAR

- a. Remove the 2 bolts, bracket and bushing.

Torque: 19 N.m (190 kgf.cm, 14 ft.lbf)

- b. Employ the same manner described above to the other side.
- c. Remove the stabilizer bar.

HINT:

At the time of installation, please refer to the following items.

- Install the bushing so that the cutout will face the lower.
- Install the bushing to the inside of the paint line.

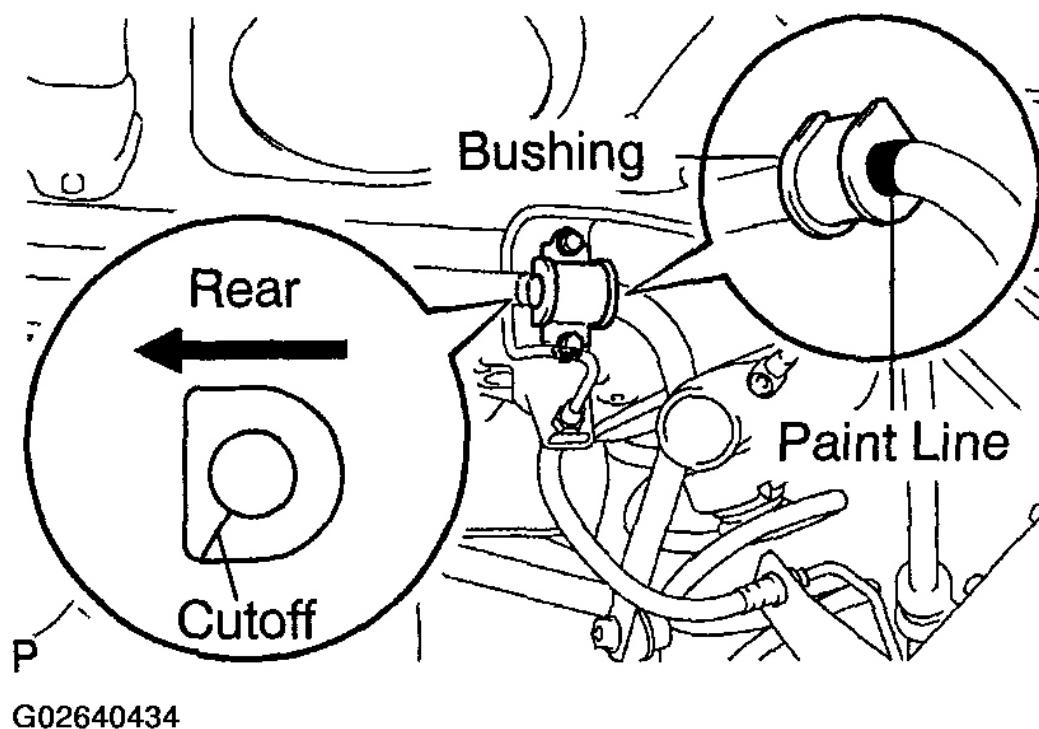


Fig. 199: Removing Stabilizer Bar

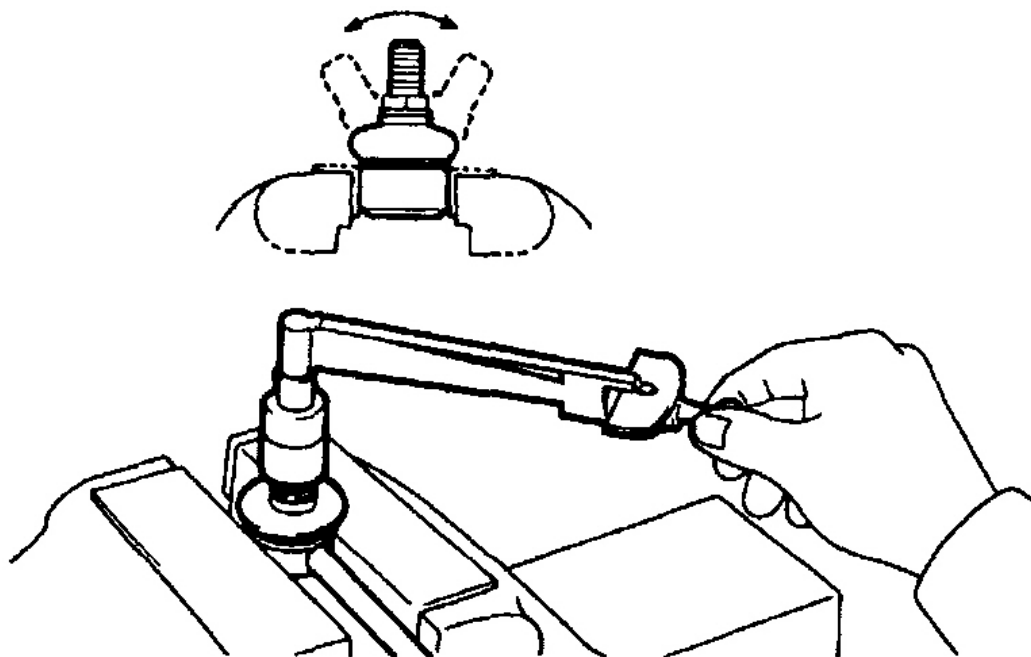
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION**INSPECT STABILIZER BAR LINK BALL JOINT FOR ROTATION CONDITION**

- As shown, flip the ball joint stud back and forth 5 times before installing the nut.
- Using a torque wrench, turn the nut continuously at a rate of 2 - 4 seconds per 1 turn and take the torque reading on the 5th turn.

Turning torque:

0.05 to 1.0 N.m (0.5 to 10 kgf.cm, 0.4 to 8.7 in.lbf)



G02640435

Fig. 200: Inspecting Stabilizer Bar Link Ball Joint For Rotation Condition Using Special Tool
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSTALLATION

Installation is in the reverse order of removal procedure (See REMOVAL).