



## Technical Service BULLETIN

September 12, 2002

Title:

### FRONT BRAKE VIBRATION

Models:

'00 – '05 Tundra

REVISED  
BR004-02  
BRAKES

#### TSB REVISION NOTICE:

- April 4, 2005: Applicable Vehicles has been updated to include 2003 – 2005 model years. The following sections have been updated, expanded, or added: Introduction, Warranty Information, Production Change Information, Parts Information, Required SSTs, Diagnosis Procedure, Repair Procedure No. 1, and Repair Procedure No. 2. PLEASE READ ENTIRE TSB.
  - September 24, 2004: A note has been added on page 10, step 26.
  - March 5, 2004: A torque specification on page 10, step 24, was changed.
  - September 8, 2003: A torque specification on page 11, step 28, was changed.
- Previous versions of this TSB should be discarded.

**Introduction** Under certain usage conditions, some Tundra trucks may exhibit front brake vibration. Improvements have been made to various brake components to help improve this condition.

- Applicable Vehicles**
- **2000 – 2005** model year **Tundra** vehicles produced **BEFORE** the Production Change Effective VINs shown below.

#### Production Change Information

MODEL	MODEL TYPE	PRODUCTION CHANGE EFFECTIVE VIN
Tundra	V6 4 x 2	5TBRU34115S446784
	V8 4 x 2	5TBRT38155S460748
	V8 4 x 4	
	D-cab 4 x 2	5TBET38135S470659
	D-cab 4 x 4	5TBDT48135S476513



**Warranty  
Information****Procedure No. 1:** (If TSB BR004–02 has **NOT** been performed)

OP CODE	DESCRIPTION	TIME	OFP	T1	T2
BR2002	Front Brake Caliper & Rotor Replacement (2WD, Both Sides)	3.6	47730–0C010	9B	13
BR2003	Front Brake Caliper Replacement & Rotor Grinding (2WD, Both Sides)	5.2			
BR2004	Front Brake Caliper & Rotor Replacement (4WD, Both Sides)	3.8			
BR2005	Front Brake Caliper Replacement & Rotor Grinding (4WD, Both Sides)	5.4			

**Procedure No. 2:** (If TSB BR004–02 has previously been performed)

OP CODE	DESCRIPTION	TIME	OFP	T1	T2
BR5010	Front Brake Caliper Replacement & Rotor Resurface (2WD & 4WD, Both Sides)	4.3	47730–0C010	9B	13
BR5011	Rotor Resurface (On–Car) (2WD & 4WD, Both Sides)	2.4			
BR5012	Front Brake Caliper & Rotor Replacement (2WD & 4WD, Both Sides)	3.0			
BR5013	Rotor Replacement (2WD & 4WD, Both Sides)	1.8			

**Applicable Warranty\*:**

**This repair is covered under the Toyota Comprehensive Warranty. This warranty is in effect for 36 months or 36,000 miles, whichever occurs first, from the vehicle's in-service date.**







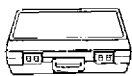
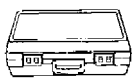
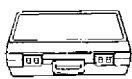

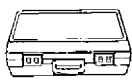

\* Warranty application is limited to correction of a problem based upon a customer's specific complaint.

**Parts  
Information**

PREVIOUS PART NUMBER	CURRENT PART NUMBER	PART NAME	QTY (2WD)	QTY (4WD)
–	47710–0C021	Caliper Assembly RH (Includes Pad, Shim and Fitting Kits)	1	1
–	47720–0C021	Caliper Assembly LH (Includes Pad, Shim and Fitting Kits)	1	1
43512–0C010	43512–0C011	Disc (Only Necessary If Rotor Is Below Specs)	1	1
47703–0C010 47703–0C011	47703–0C020	Cover Sub–Assembly, Disc Brake Dust, Front RH	1	1
47704–0C010 47704–0C011	47704–0C020	Cover Sub–Assembly, Disc Brake Dust, Front LH	1	1
47315–0C010	47315–0C020	Tube, Front Brake, No. 5	1	1
47318–0C010	47318–0C020	Tube, Front Brake, No. 8	1	1
90080–10129	90080–10298	*Bolt (For Brake Caliper)	4	4
90369–54001	90369–54002	Bearing	2	2
90521–99114	Same	Snap Ring	2	2
90312–95001	Same	Oil Seal	2	2
95381–03225	Same	Cotter Pin	2	2
43521–35010	Same	Lock Nut	2	–
95381–04045	Same	Cotter Pin	–	2
90316–69001	Same	Oil Seal	–	2

\* 90080–10298 is 3 mm shorter than 90080–10129

Required  
SSTs

ITEM NO.	SPECIAL SERVICE TOOLS (SSTs)	PART NUMBER	QTY	DRW**
1	<b>Crankshaft Rear Oil Seal Replacer*</b> 	09223-15030	1	3
2	<b>Toyota Diagnostic Tester Kit*</b> NOTE: • All components from this kit/set are needed • 12 Megabyte Diagnostic Tester Program Card (P/N 01002593-005) with version 12.01a Software (or later) is needed 	TOY220036	1	9
3	<b>CAN Interface Module Kit*</b> NOTE: All components from this kit/set are needed 	01002744	1	9
4	<b>Front Suspension Bushing Tool Set*</b> 	09710-28012-01	1	13
5	<b>Rear Axle Bearing Remover*</b> 	09527-17011	1	14
6	<b>Steering Knuckle Tool*</b> 	09649-17010	1	15
7	<b>Replacer Set #1*</b> 	09950-60010-01	1	24
8	<b>Replacer Set #2*</b> 	09950-60020-01	1	24
9	<b>Universal Puller Set B*</b> 	09950-40011	1	24
10	<b>All Trac Tool Set*</b> 	00002-00909-01	1	25
11	<b>Handle Set*</b> 	09950-60020-01	1	25
12	<b>10 mm Union Nut Wrench or Equivalent</b> 	09023-00100	1	–

\* Essential SSTs.

\*\* Refers to drawer number in SST Storage System.

**NOTE:**

**Additional Diagnostic Tester Kits, CAN Interface Modules, Program Cards, or other SSTs may be ordered by calling SPX/OTC at 1-800-933-8335.**

**Diagnosis Procedure**

1. Confirm the customer complaint.
2. Determine if vibration is from front or rear (while brakes are still warm from confirmation test driving).

The following procedure will isolate the drum brakes from the rest of the hydraulic system by using the parking brake (PKB).

- A. Drive the Tundra along a smooth, level section of road at approximately 40 mph – 50 mph.
- B. Slowly apply the PKB while driving until the brake begins to engage and slow the vehicle. Do not apply the PKB past this point of initial engagement.

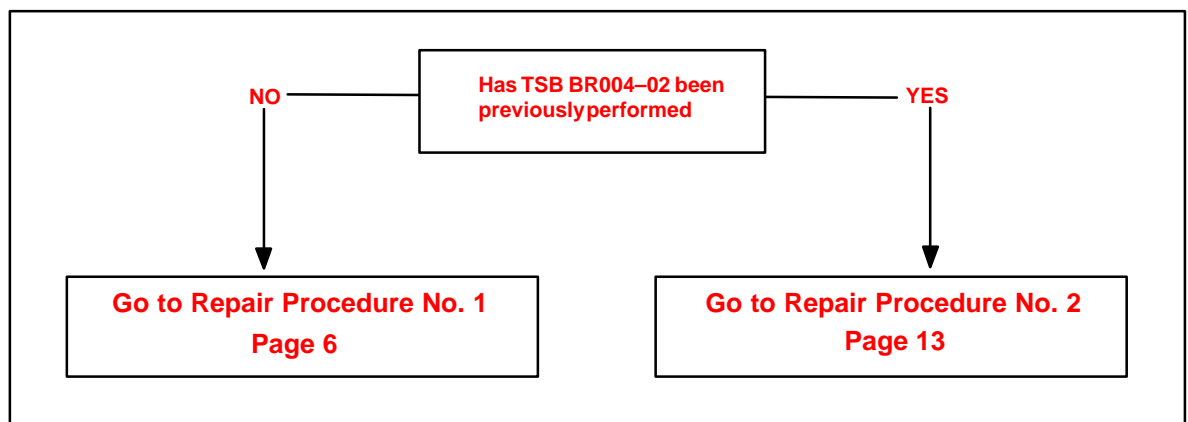
**NOTE:**

Remember with a foot PKB (on automatic transmission), the pedal must be pressed a second time to disengage the parking brake.

**HINT:**

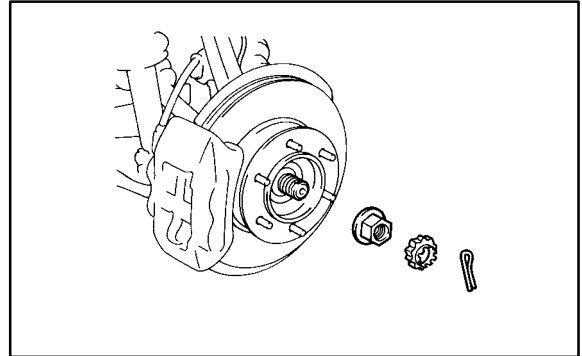
When diagnosing a Tundra with a foot PKB, slowly apply the PKB until the first “click”. Then press the PKB pedal a second time so it will disengage when it is released. At this time the PKB can be pressed to the desired level for continued diagnosis.

- C. Hold the PKB at this point of initial engagement for a few seconds to slowly reduce the vehicle speed and allow adequate time to monitor the ride condition.
- D. Disengage the PKB.
- E. If brake vibration is felt during step (C), then it indicates that the rear brake drums are one source of brake vibration on this vehicle.  
Refer to TSB No. BR003–02, “*Rear Brake Vibration*,” for parts and repair information relating to Tundra rear brake vibration.
- F. If no vibration is felt during step (C), then the front brake assemblies are the most likely cause of brake vibration on this vehicle.
- G. Determine if TSB BR004–02 has already been performed.

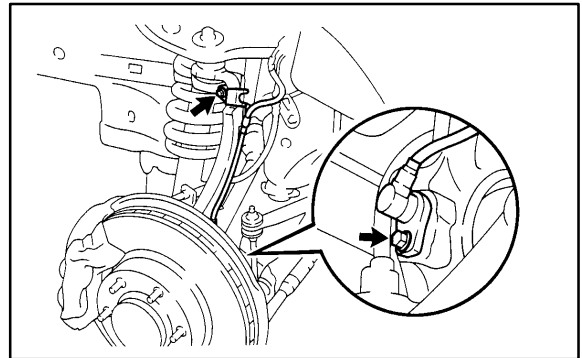


**Repair  
Procedure  
No. 1**

1. Remove the front wheel.
2. **2WD:**  
Using a screwdriver and hammer, remove the grease cap.
3. **4WD:**  
Disconnect drive shaft.
  - A. Remove the cotter pin and lock cap.
  - B. While applying the brakes, remove the lock nut.

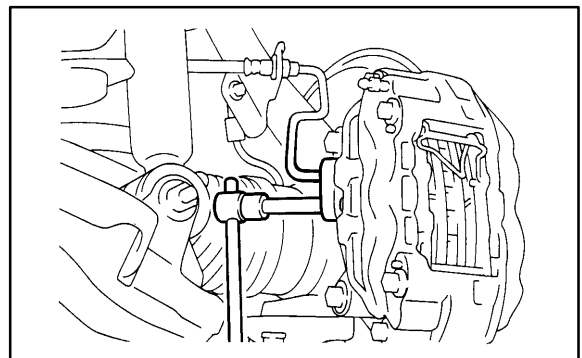


4. **With ABS:**  
Disconnect ABS speed sensor and wire harness clamp from steering knuckle.  
Remove the 2 bolts and disconnect the ABS speed sensor and wire harness clamp from the steering knuckle.

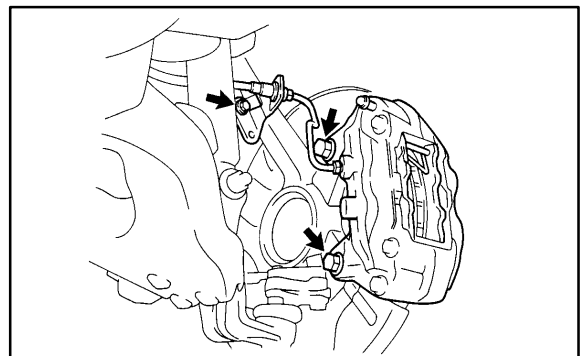


5. Disconnect brake line.  
Using the following SST, disconnect the brake line. Use a container to catch the brake fluid.

**SST P/N: 09023-00100**



6. Remove brake caliper and disc.
  - A. Remove the bolt and brake line clamp from the steering knuckle.
  - B. Remove the 2 bolts, brake caliper, and disc.



**Repair  
Procedure  
No. 1**  
(Continued)

7. Remove shock absorber.
  - A. Disconnect shock absorber from lower suspension arm.
  - B. Remove the shock absorber lower side set nut and washer.

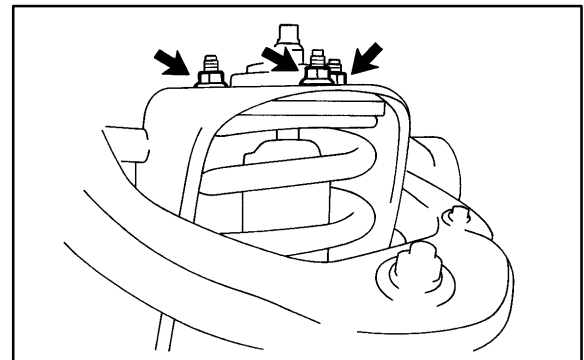
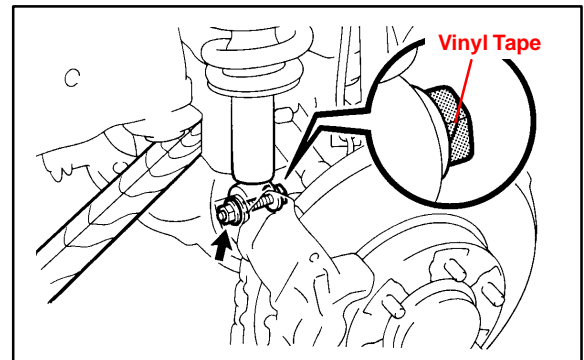
**NOTE:**

**Do not remove the bolt.**

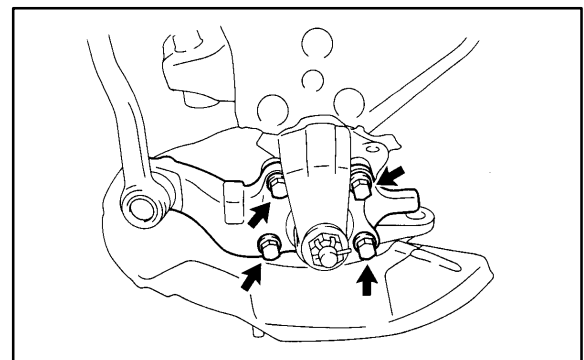
- C. Wrap the bolt's head with vinyl tape to prevent the drive shaft boot from being damaged.
- D. Pry down the lower suspension arm to remove the bolt and disconnect the shock absorber.
- E. Remove the 3 nuts and shock absorber with the coil spring.

**NOTE:**

**Do not damage the brake tube.**



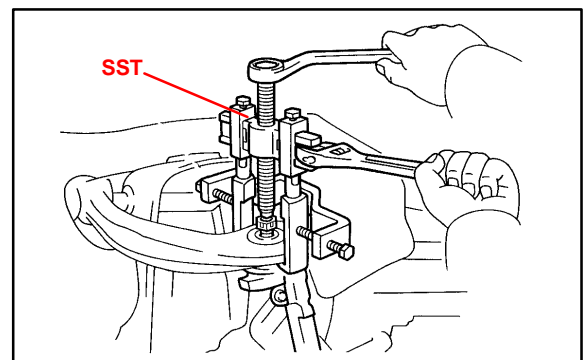
8. Disconnect lower ball joint.  
Remove the 4 bolts and disconnect the lower ball joint.



9. Remove steering knuckle.
  - A. Remove the cotter pin and loosen the nut.
  - B. Using the following SSTs, disconnect the steering knuckle.

**SST P/N: 09950-40011**

(09951-04010,  
09952-04010,  
09953-04020,  
09954-04010  
09955-04031,  
09958-04011)



**Repair  
Procedure  
No. 1**  
(Continued)

C. Remove the nut and steering knuckle.

**NOTE:**

**4WD:**

Be careful not to damage the oil seal and drive shaft boot.

**HINT:**

**4WD:**

When it is difficult to disconnect the drive shaft, tap the tip of the drive shaft with a plastic hammer.

**10. 2WD:**

Remove grease cap.

A. Mount the axle hub in a soft jaw vise.

**NOTE:**

Install nuts on the hub bolts, close the vise until it holds the hub nuts. Do not tighten further (refer to the illustration below).

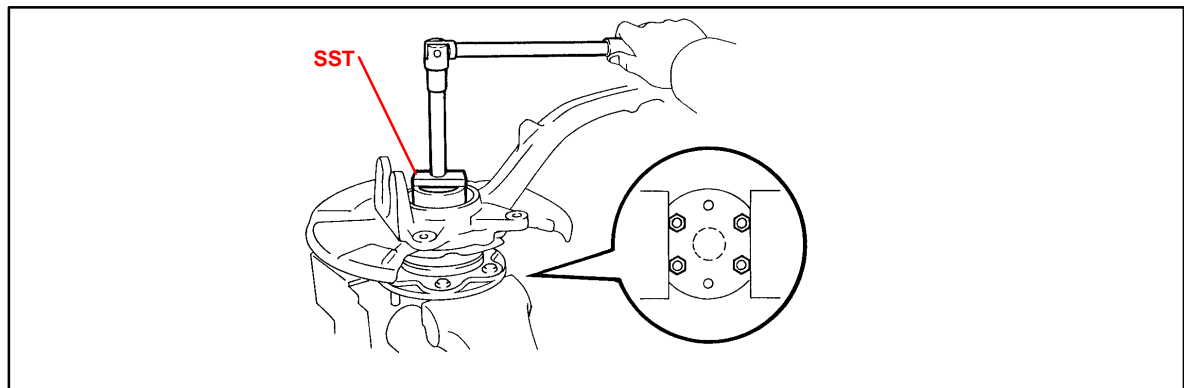
**HINT:**

Install nuts on the hub bolts, close the vise until it holds the hub nuts. Do not tighten further (refer to the illustration below).

B. Using a screwdriver, remove the grease cap.

**NOTE:**

Be careful not to damage the grease cap.



**11. 4WD:**

Remove oil seal (inside).

A. Mount the axle hub in a soft jaw vise.

**HINT:**

Install nuts on the hub bolts, close the vise until it holds the hub nuts. Do not tighten further (refer to the illustration above).

B. Using a screwdriver, remove the oil seal (inside).



**Repair  
Procedure  
No. 1**  
(Continued)

**12. 2WD:**

Remove lock nut and ABS speed sensor rotor (with ABS) or spacer (without ABS).  
Using a chisel and hammer, loosen the staked part of the lock nut.

**NOTE:**

Be careful not to damage the bushing.

A. Using the following SST, remove the lock nut.

**SST P/N: 00002-00909** (09318-12010)

**NOTE:**

Do NOT use air wrench.

B. Remove the ABS speed sensor rotor or spacer.

**NOTE:**

Take care not to scratch the serration of the speed sensor rotor.

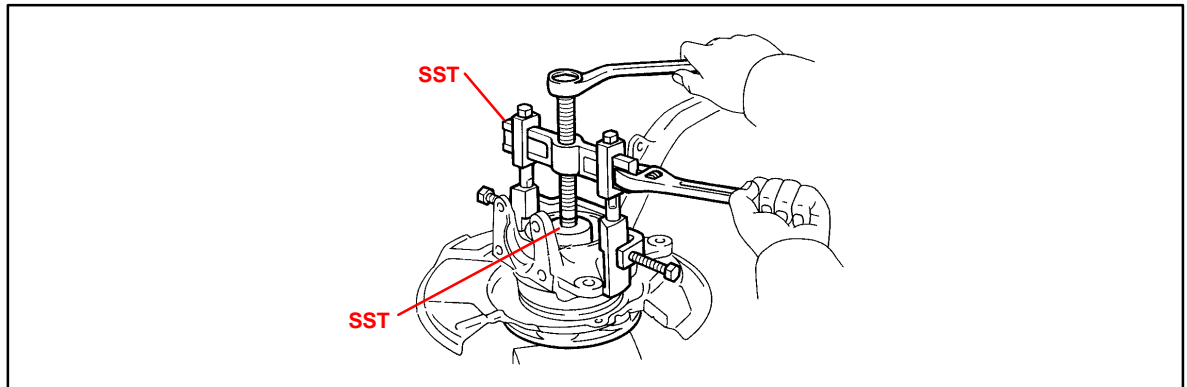
**13. Remove axle hub from steering knuckle.**

A. Remove the 4 bolts and shift the dust cover toward the hub side (outside).

B. Using the following SSTs, remove the axle hub from the steering knuckle.

**SST P/N: 09710-28012-01** (09710-07031)

**SST P/N: 09950-40011** (09951-04020, 09952-04010, 09953-04020, 09954-04010,  
09955-04031, 09957-04010, 09958-04011)

**HINT:**

If necessary, use a press to remove the axle hub from the steering knuckle.

C. Remove the dust cover from the steering knuckle.

**D. 4WD:**

Remove the bearing spacer and ABS speed sensor rotor (with/ABS) or spacer (without ABS).

**NOTE:**

Take care not to scratch the serration of the speed sensor rotor.

**Repair  
Procedure  
No. 1**  
(Continued)

14. Remove oil seal (outside).

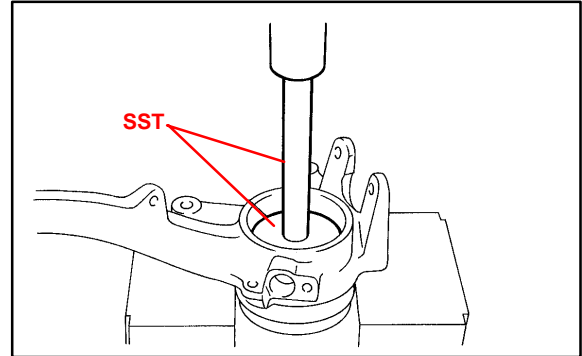
Using a screwdriver, remove the oil seal (outside) from the steering knuckle.

15. Remove bearing from steering knuckle.

- A. Using snap ring pliers, remove the snap ring.
- B. Using the following SSTs and a press, remove the bearing from the steering knuckle.

**SST P/N: 09950-60020**  
(09951-00810)

**SST P/N: 09950-70010**  
(09951-07150)



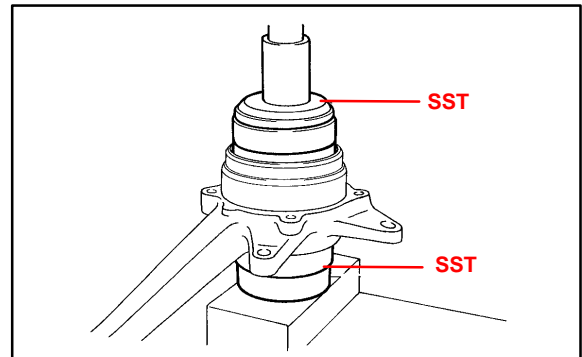
16. Install new bearing.

- A. Using the following SSTs and a press, install a NEW bearing to the steering knuckle.

**SST P/N: 09527-17011**

**SST P/N: 09950-60020**  
(09951-00910)

- B. Using snap ring pliers, install a NEW snap ring.



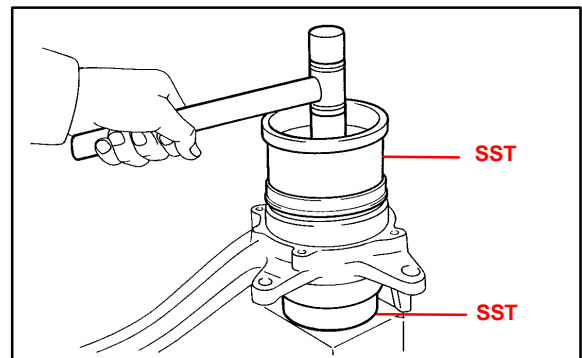
17. Install new oil seal (outside).

- A. Using the following SSTs and a plastic hammer, install a NEW oil seal (outside).

**SST P/N: 09223-15030**

**SST P/N: 09527-17011**

- B. Coat MP grease to the oil seal lip.



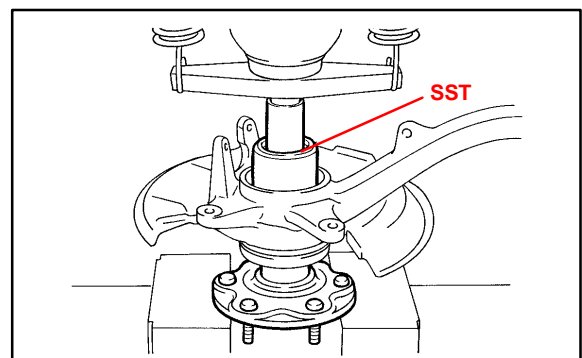
18. Install new dust cover and axle hub to steering knuckle.

- A. Install the NEW dust cover to the steering knuckle with the 4 bolts.

**Torque: 18 N•m**  
**(185 kgf•cm, 13 ft•lbf)**

- B. Using the following SST and a press, install the axle hub to the steering knuckle.

**SST P/N: 09649-17010**



**Repair  
Procedure  
No. 1**  
(Continued)

19. Install ABS speed sensor rotor (with ABS) or spacer (without ABS).

**NOTE:**

Take care not to scratch the serration of the speed sensor rotor and ensure the speed sensor is installed completely.

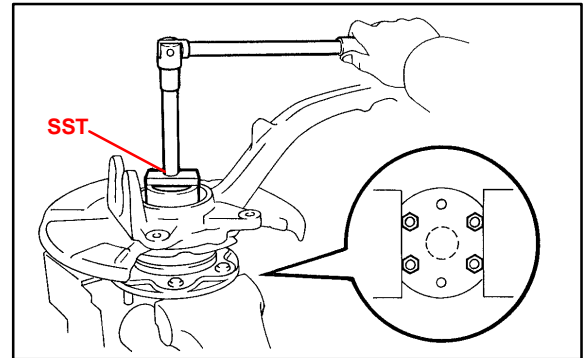
**20. 2WD:**

Install new lock nut.

- A. Using the following SST, install and torque a NEW lock nut to the axle hub.

**SST P/N: 00002-00909**  
(09318-12010)

**Torque: 274 N•m**  
(2,800 kgf•cm, 203 ft•lbf)



**NOTE:**

Do NOT use air wrench.

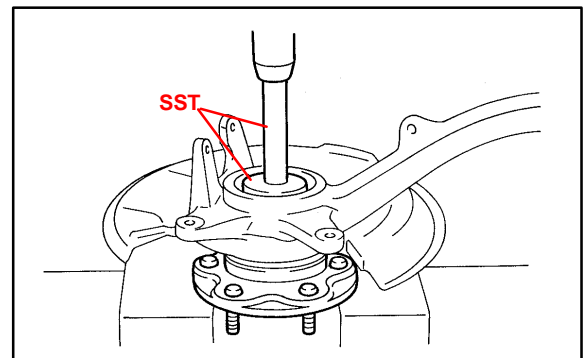
- B. Using a chisel and hammer, stake the lock nut.

**21. 4WD:**

Using the following SSTs and a press, install the bearing spacer.

**SST P/N: 09950-60010** (09951-00650)

**SST P/N: 09950-70010** (09951-07150)



**22. 4WD:**

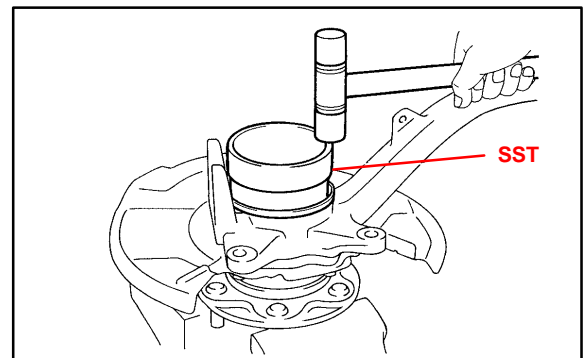
Install new oil seal (inside).

- A. Using the following SST and a plastic hammer, install a NEW oil seal (inside).

**SST P/N: 09527-17011**

**NOTE:**

Lightly strike the SST on its circumference evenly.



- B. Coat MP grease to the oil seal lip.

**Repair  
Procedure  
No. 1**  
(Continued)

23. Install steering knuckle.

**A. 4WD:**

Insert the drive shaft into the axle hub and temporarily tighten the nut.

**NOTE:**

**Be careful not to damage the oil seal and drive shaft boot.**

B. Connect the steering knuckle to the upper suspension arm.

C. Install the nut and a NEW cotter pin. If the holes for the cotter pin are not aligned, tighten the nut further up to 60°.

**Torque: 105 N•m (1,100 kgf•cm, 77 ft•lbf)**

24. Connect the lower ball joint to the steering knuckle with 4 bolts.

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

25. Install shock absorber with coil spring.

A. Install the upper side of shock absorber to the chassis frame with the 3 nuts.

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

B. Connect the lower side of shock absorber to the lower suspension arm with bolt, washer, and nut.

**Torque: 135 N•m (1,400 kgf•cm, 100 ft•lbf)**

26. Inspect and install the brake rotor and install the brake caliper with new mounting bolts.

A. Inspect the brake rotors and machine using an on-the-car brake lathe. Replace the rotor if it is below minimum thickness values

**Minimum Thickness: 26.0 mm (1.024 in.)**

**NOTE:**

**It is necessary to turn the rotors using the on-the-car brake lathe to ensure even and uniform rotor run out. DO NOT turn the rotor using an off-the-car brake lathe.**

B. Install the disc, brake caliper, and 2 NEW bolts.

**Torque: 123 N•m (1,259 kgf•cm, 90 ft•lbf)**

C. Install the brake line clamp to the steering knuckle with the bolt.

**Torque: 28 N•m (285 kgf•cm, 21 ft•lbf)**

27. Install new brake line.

Using the SST, connect NEW brake line.

**SST P/N: 09023-00100**

**Torque: 15 N•m (155 kgf•cm, 11 ft•lbf)**

**28. With ABS:**

Connect the ABS speed sensor and wire harness clamp to the steering knuckle with the 2 bolts.

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

**Repair  
Procedure  
No. 1**  
(Continued)

**29. 4WD:**

Install drive shaft lock nut.

A. While applying the brakes, tighten the nut.

**Torque: 235 N•m (2,400 kgf•cm, 173 ft•lbf)**

B. Install the lock cap and a NEW cotter pin. If the holes for the cotter pin are not aligned, tighten the nut further up to 60°.

**30. 2WD:**

Install grease cap.

31. Install front wheel.

**NOTE:**

**Do NOT use an air wrench.**

**Torque: 110 N•m (1,150 kgf•cm, 83 ft•lbf)**

32. Depress brake pedal several times.

33. Fill the brake reservoir with brake fluid and bleed brake system.

34. Check ABS Speed Sensor Signal (refer to the Technical Information System (TIS): 2000 – 2005 model year Tundra Repair Manual: *Diagnostics: Anti-lock Brake System: Pre-Check*).

**Repair  
Procedure  
No. 2**

1. Resurface the disc rotors with the “On-Car Lathe” to within serviceable limits.

**NOTE:**

**It is necessary to turn the rotors using only an on-the-car brake lathe to ensure even and uniform rotor run out. DO NOT turn the rotor using an off-the-car brake lathe.**

2. If the disc rotors are unserviceable or below minimum thickness (per specification stamped on the rotor), replace the rotors using the service parts from the Parts Information table (page 3).

3. Check any new disc rotor for runout.

4. If the disc rotor runout is over 0.03 mm (0.0012 in.), perform a phase matching procedure.

5. Replace the front brake caliper LH and RH assemblies using the service parts from the Parts Information table (page 3).

6. Perform a road test.