

2005 BRAKES

Brakes - RAV4

BRAKE SYSTEM

PRECAUTION

- Care must be taken to replace each part properly as it could affect the performance of the brake system and result in a driving hazard. Replace the parts with parts having the same part number or equivalent.
- It is very important to keep parts and the area clean when repairing the brake system.
- If the vehicle is equipped with a mobile communication system, refer to the **PRECAUTION** in INTRODUCTION.

TROUBLESHOOTING

PROBLEM SYMPTOMS TABLE

Use the table 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.

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Symptom	Suspect Area
Lower pedal or spongy pedal	1. Brake system (Fluid leaks) 2. Brake system (Air in) 3. Piston seals (Worn or damaged) 4. Rear Brake shoe clearance (Out of adjustment) 5. Master cylinder (Faulty) 6. Booster push rod (Out of adjustment)
Brake drag	1. Brake pedal freeplay (Minimal) 2. Parking brake lever travel (Out of adjustment) 3. Parking brake wire (Sticking) 4. Rear brake shoe clearance (Out of adjustment) 5. Pad or lining (Cracked or distorted) 6. Piston (Stuck) 7. Piston (Frozen) 8. Anchor or return spring (Faulty) 9. Booster push rod (Out of adjustment) 10.Booster system (Vacuum leaks) 11.Master cylinder (Faulty)
Brake pull	1. Piston (Stuck) 2. Pad or lining (Oily) 3. Piston (Frozen) 4. Disc (Scored) 5. Pad or lining (Cracked or distorted)

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Fig. 1: Identifying Brake Troubleshooting Problem Symptoms
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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Symptom	Suspect Area
Hard pedal but brake inefficient	1. Brake system (Fluid leaks) 2. Brake system (Air in) 3. Pad or lining (Worn) 4. Pad or lining (Cracked or distorted) 5. Rear brake shoe clearance (Out of adjustment) 6. Pad or lining (Oily) 7. Pad or lining (Glazed) 8. Disc (Scored) 9. Booster push rod (Out of adjustment) 10. Booster system (Vacuum leaks)
Noise from brake	1. Pad or lining (Cracked or distorted) 2. Installation bolt (Loose) 3. Disc (Scored) 4. Pad support plate (Loose) 5. Sliding pin (Worn) 6. Pad or lining (Dirty) 7. Pad or lining (Glazed) 8. Anchor, tension or return spring (Faulty) 9. Anti-squeal shim (Damage) 10. Hold-down spring (Damage)

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Fig. 2: Identifying Brake Troubleshooting Problem Symptoms
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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BRAKE FLUID

BLEEDING

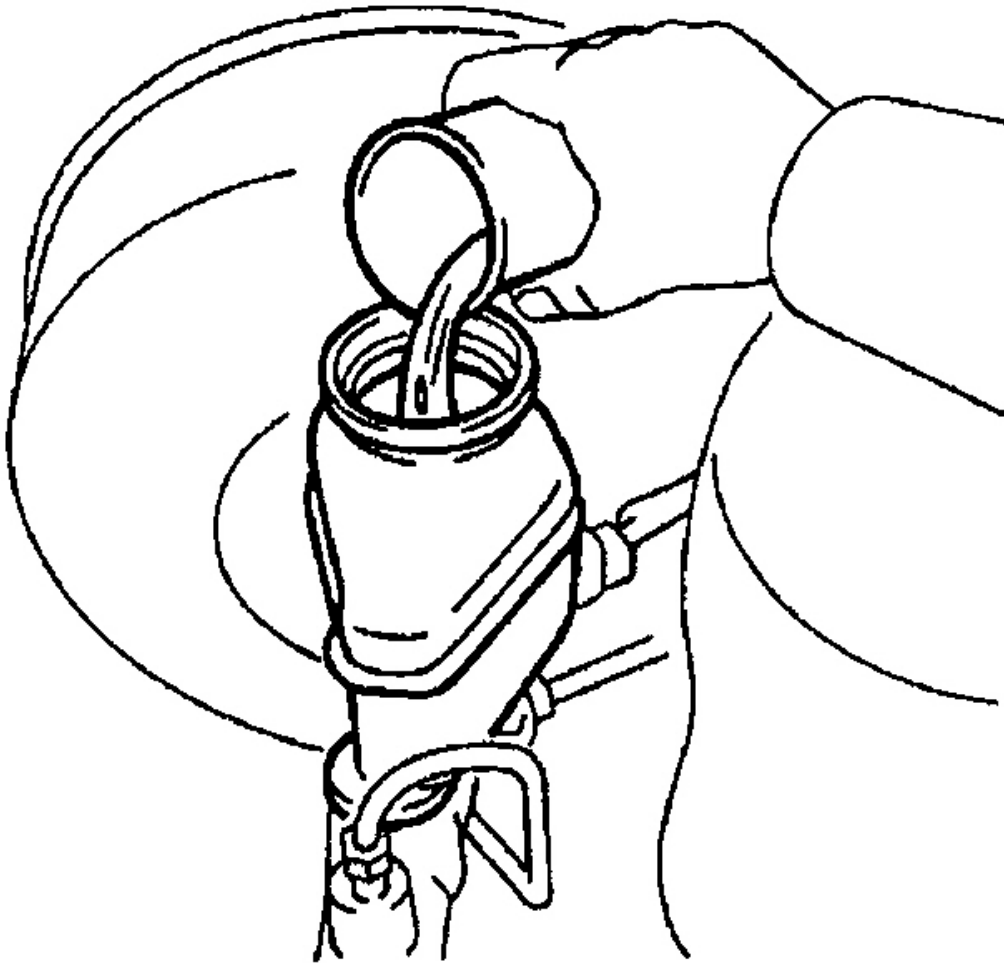
HINT:

If any work is done on the brake system or air in the brake lines is suspected, bleed the system of air.

NOTE: Do not let brake fluid remain on a painted surface. Wash it off immediately.

1. FILL BRAKE RESERVOIR WITH BRAKE FLUID

Fluid: SAEJ1703 or FMVSS No. 116 DOT3



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Fig. 3: Identifying Bleeding Process

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

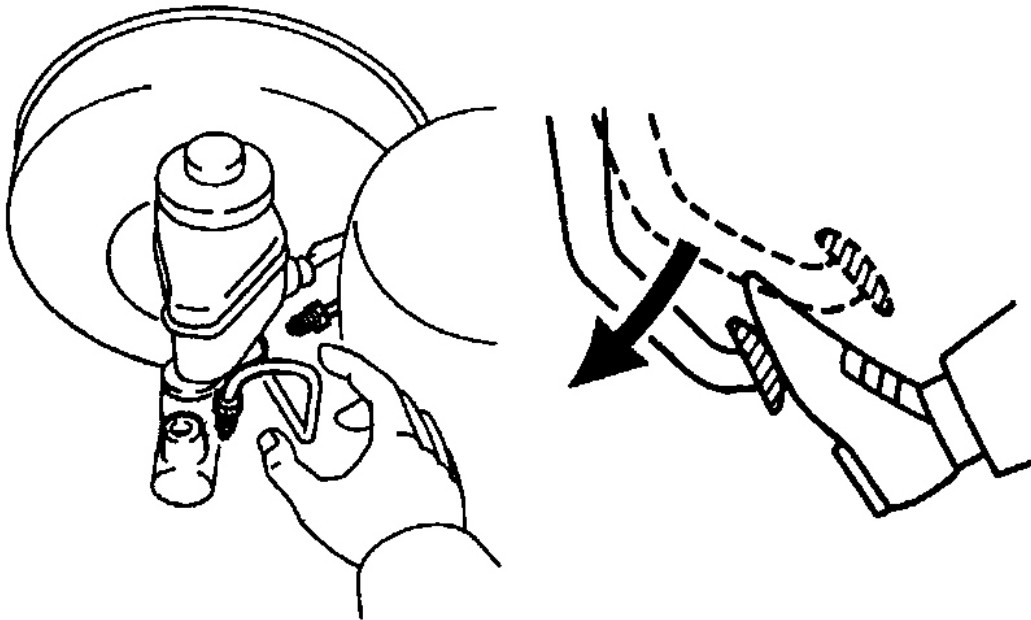
2. BLEED MASTER CYLINDER

HINT:

If the master cylinder has been disassembled or if the reservoir becomes empty, bleed the master cylinder of the air.

- a. Disconnect the brake lines from the master cylinder.

- b. Slowly depress the brake pedal and hold it.

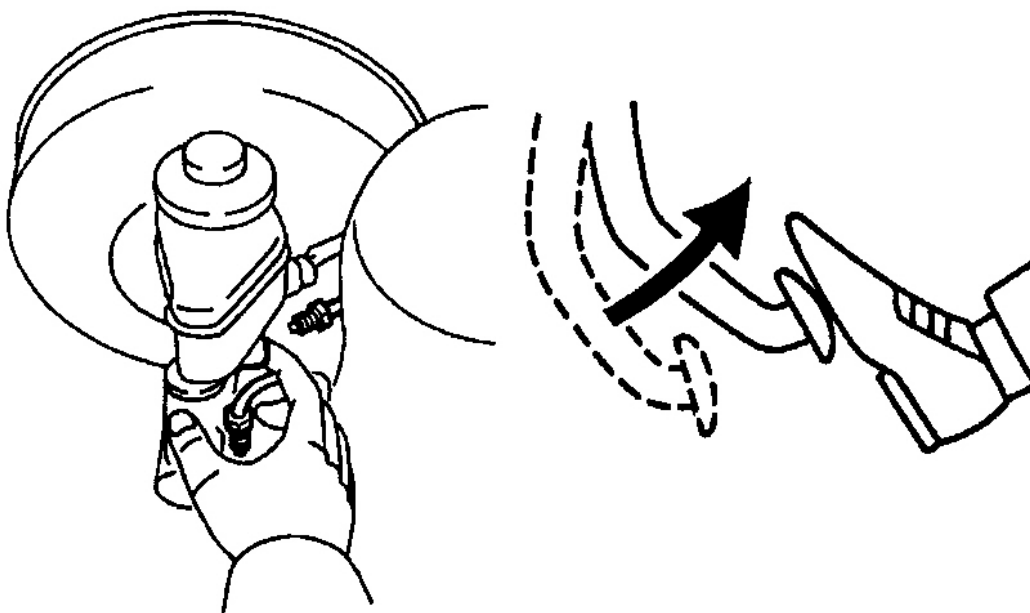


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Fig. 4: Bleeding Master Cylinder

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

- c. Block off the outlet plug with your finger and release the brake pedal.
- d. Repeat (b) and (c) 3 or 4 times.

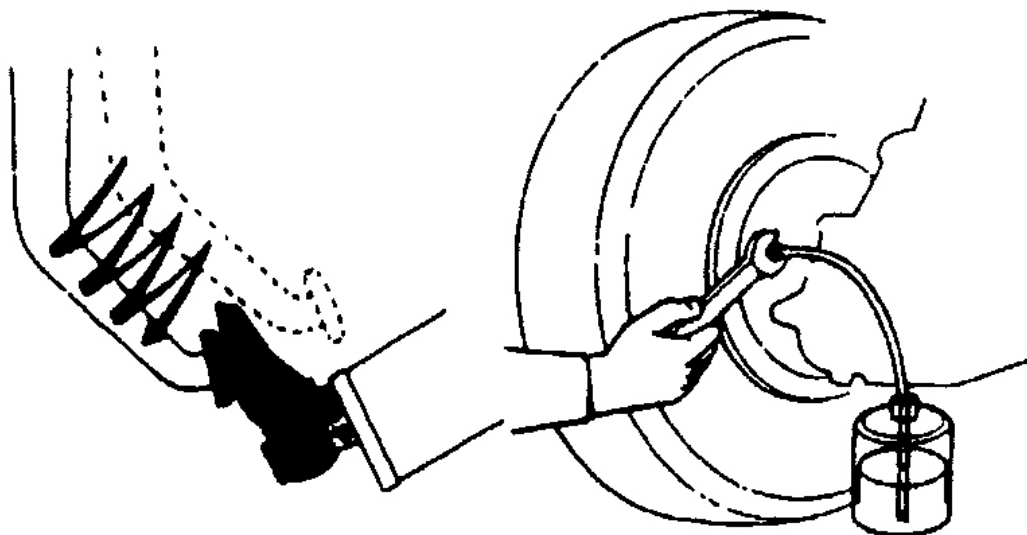


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Fig. 5: Blocking Off Outlet Plug At Master Cylinder
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

3. BLEED BRAKE LINE

- Connect the vinyl tube to the caliper or wheel cylinder.
- Depress the brake pedal several times, then loosen the bleeder plug with the pedal held down.
- At the point when fluid stops coming out, tighten the bleeder plug, then release the brake pedal.
- Repeat (b) and (c) until all the air in the fluid has been bled out.
- Repeat the above procedure to bleed the brake line of the air for each wheel.



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Fig. 6: Bleeding Brake Line

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

4. CHECK FLUID LEVEL IN RESERVOIR

Check the fluid level and add fluid if necessary.

Fluid: SAEJ1703 or FMVSS No. 116 DOT3

BRAKE PEDAL

ON-VEHICLE INSPECTION

1. CHECK PEDAL HEIGHT

Pedal height from asphalt sheet: 170.0 - 180.0 mm (6.693 - 7.087 in.)

If the pedal height is incorrect, adjust it.

2. IF NECESSARY, ADJUST PEDAL HEIGHT

- Disconnect the connector from the stop light switch.
- Loosen the stop light switch lock nut and remove the stop light switch.
- Loosen the push rod lock nut.

2005 Toyota RAV4

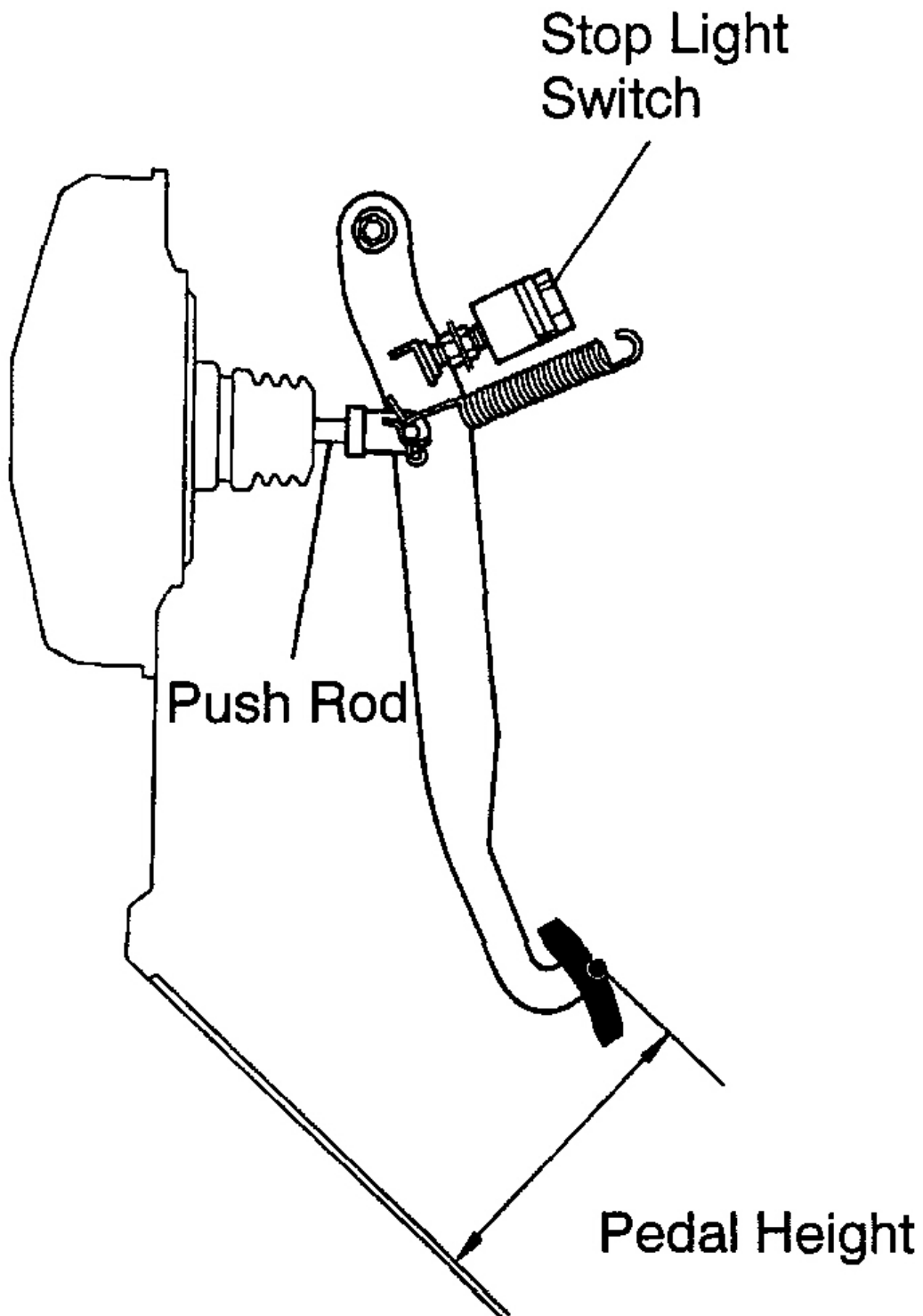
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- d. Adjust the pedal height by turning the pedal push rod.
- e. Tighten the push rod lock nut.

Torque Specification: 26 N.m (260 kgf.cm, 20 ft.lbf)

2005 Toyota RAV4

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Fig. 7: Identifying Pedal Height**Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.**

- f. Install the stop light switch and turn it until it lightly contacts with the pedal stopper.
- g. Push in the brake pedal 5 - 15 mm (0.20 - 0.59 in.), turn the stop light switch to lock the nut in the position where the stop light goes off.
- h. Connect the connector to the stop light switch.
- i. After installation, push in the brake pedal 5 - 15 mm (0.20 - 0.59 in.), check that stop light lights up.
- j. Connect the connector to the stop light switch.
- k. After adjusting the pedal height, check the pedal freeplay.

3. CHECK PEDAL FREEPLAY

- a. Stop the engine and depress the brake pedal several times until there is no more vacuum left in the booster.
- b. Push in the pedal by hand until the resistance begins to be felt, then measure the distance, as shown.

Pedal freeplay: 1 - 6 mm (0.04 - 0.24 in.)**HINT:**

The freeplay to the 1st point of resistance is due to the play between the clevis and pin. It is 1 - 3 mm (0.04 - 0.12 in.) on the pedal.

If incorrect, check the stop light switch clearance. If the clearance is OK, then troubleshoot the brake system.

Stop light switch clearance: 0.5 - 2.4 mm (0.020 - 0.094 in.)

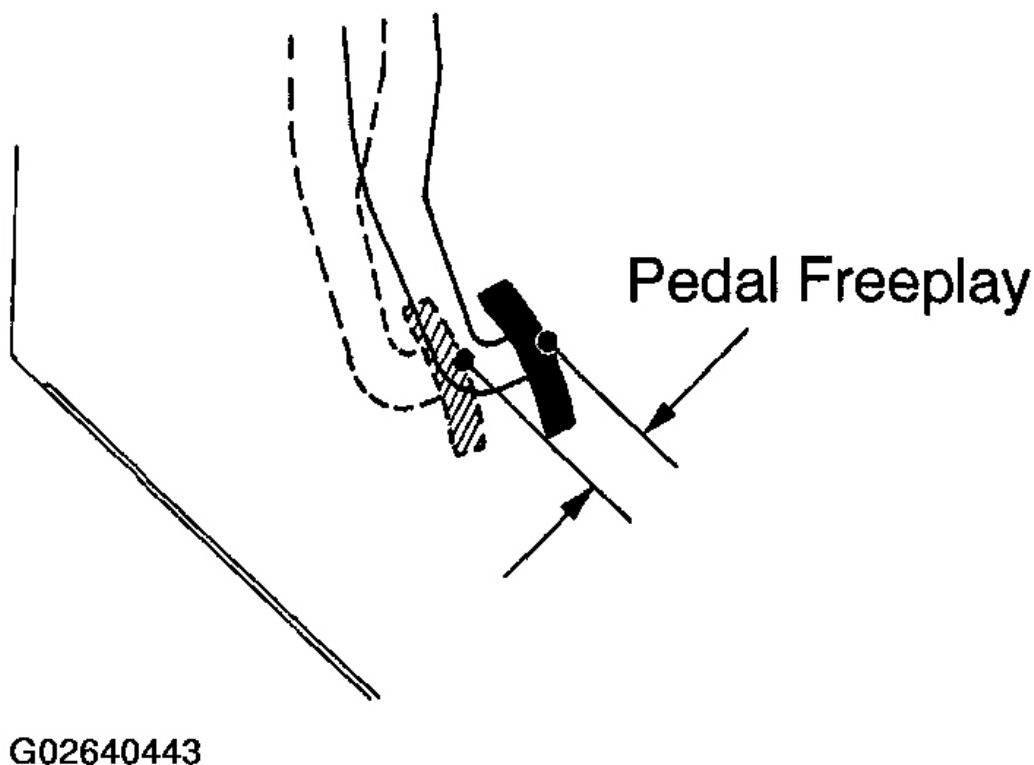


Fig. 8: Identifying Pedal Freeplay

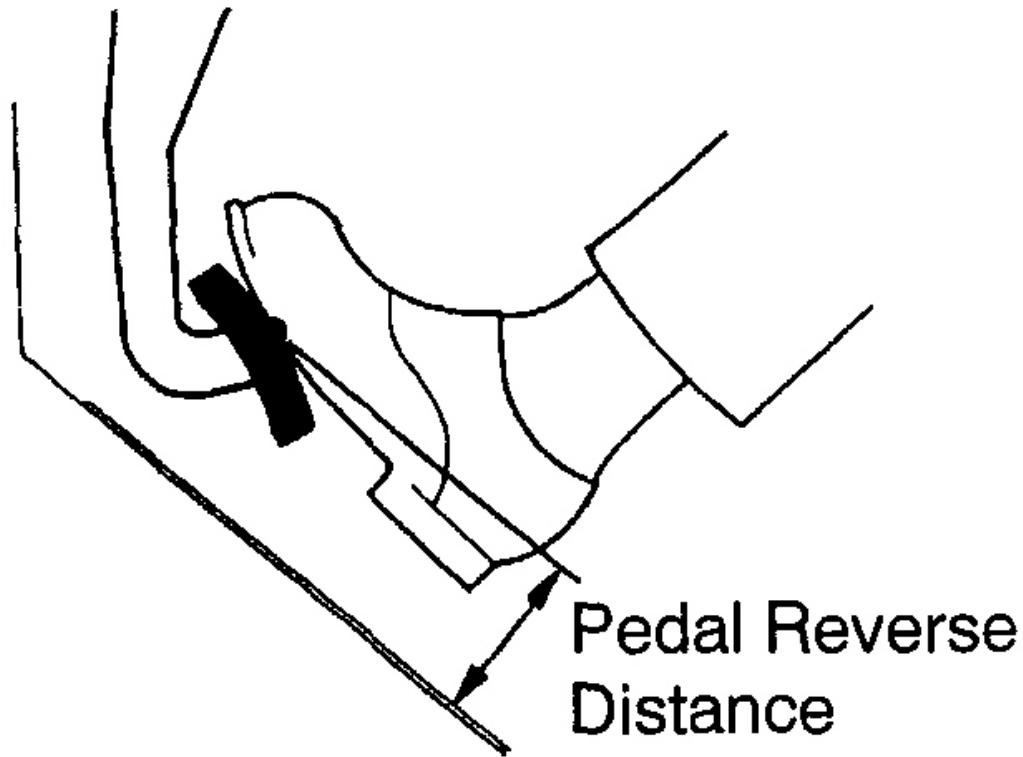
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

4. CHECK PEDAL RESERVE DISTANCE

- a. Release the parking brake.
- b. With the engine running, depress the pedal and measure the pedal reserve distance, as shown.

Pedal reserve distance from asphalt sheet at 490 N (50 kgf, 110.2 lbf): More than 118 mm (4.65 in.)

If the reserve distance is incorrect, troubleshoot the brake system.



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Fig. 9: Checking Pedal Reserve Distance
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

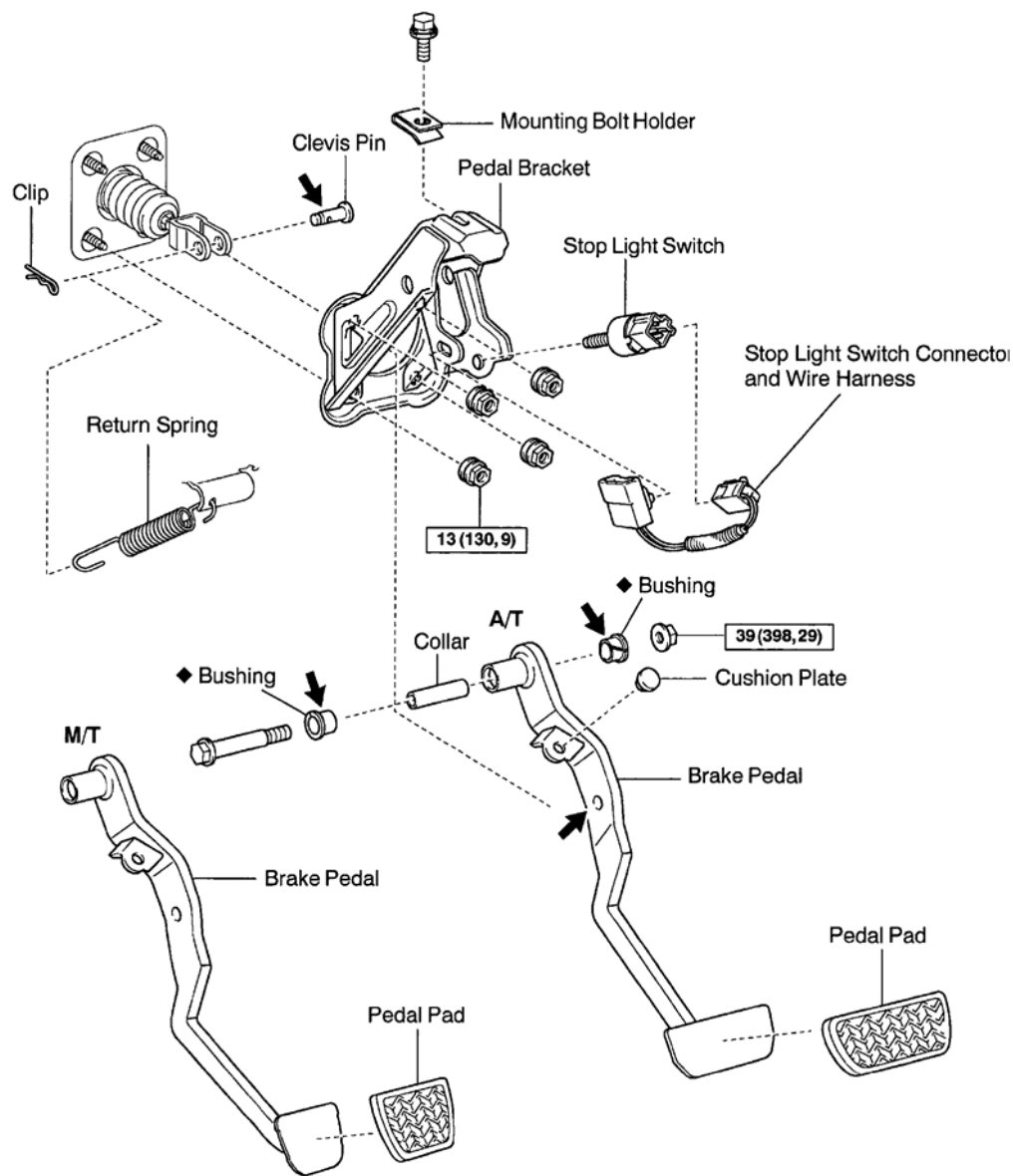
COMPONENTS

HINT:

If remove the pedal bracket, remove the instrument panel (See **REMOVAL**).

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

◆ Non-reusable part

→ Lithium soap base glycol grease

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Fig. 10: Identifying Pedal Components & Torque Specifications

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

PARKING BRAKE LEVER

ON-VEHICLE INSPECTION

1. CHECK PARKING BRAKE LEVER TRAVEL

Pull the parking brake lever all the way up, and count the number of clicks.

Parking brake lever travel at 196 N (20 kgf, 44 lbf): 6 - 8 clicks

If incorrect, adjust the parking brake.

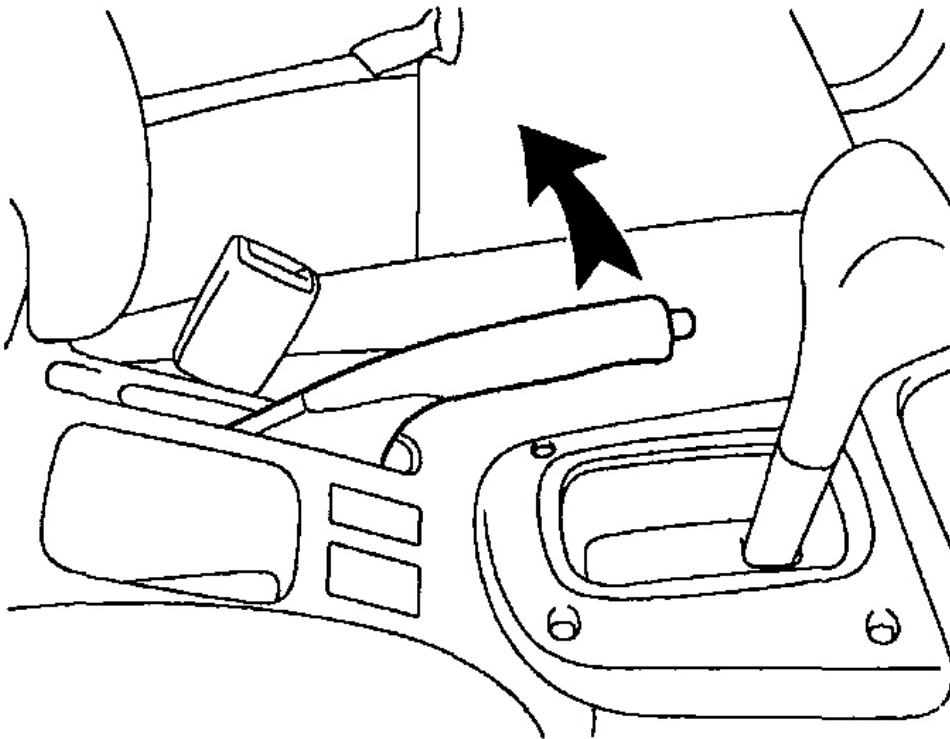
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Fig. 11: Checking Parking Brake Lever Travel

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

2. IF NECESSARY, ADJUST PARKING BRAKE

HINT:

Before adjusting the parking brake, make sure that the rear brake shoe clearance has been adjusted. For shoe clearance adjustment, see **INSTALLATION**.

- a. Remove the rear console box.
- b. Loosen the lock nut and turn the adjusting nut until the lever travel is correct.

- c. Tighten the lock nut.

Torque Specification: 5.4 N.m (55 kgf.cm, 48 in.lbf)

- d. Install the rear console box.

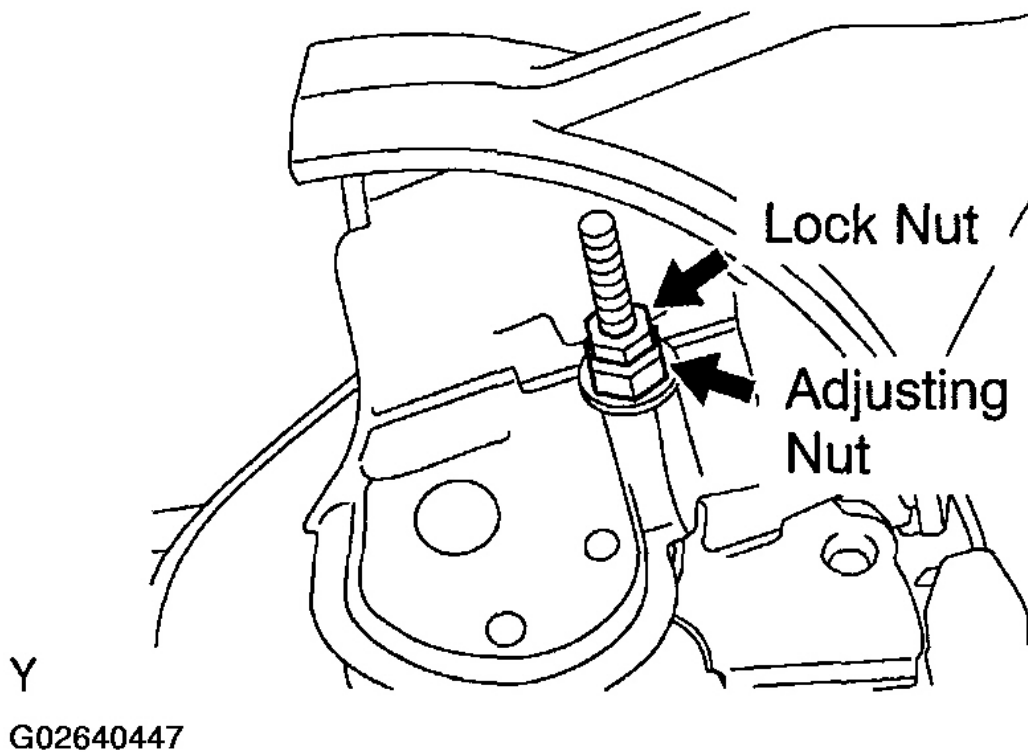


Fig. 12: Locating Adjusting Nut

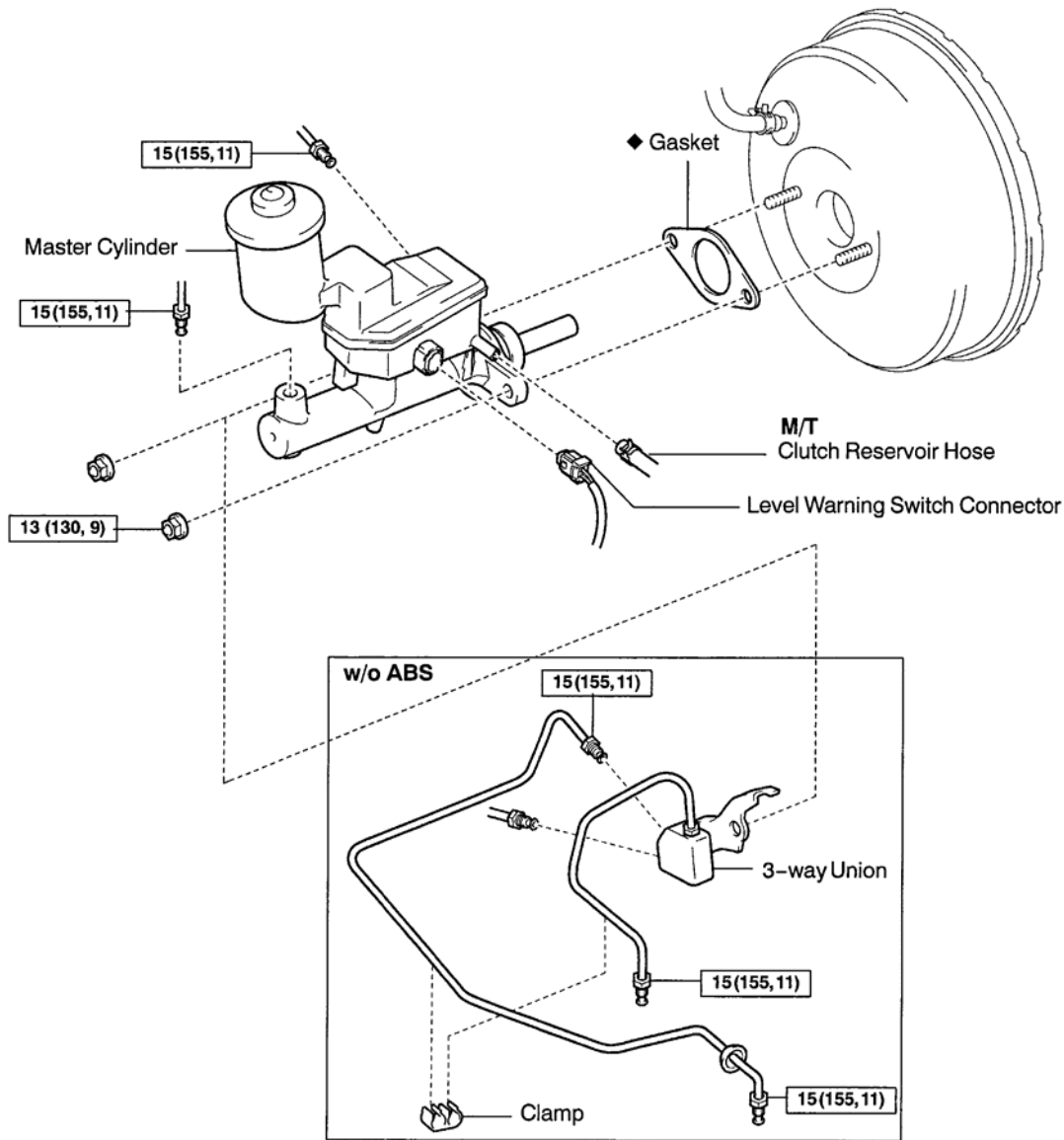
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BRAKE MASTER CYLINDER

COMPONENTS

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

◆ Non-reusable part

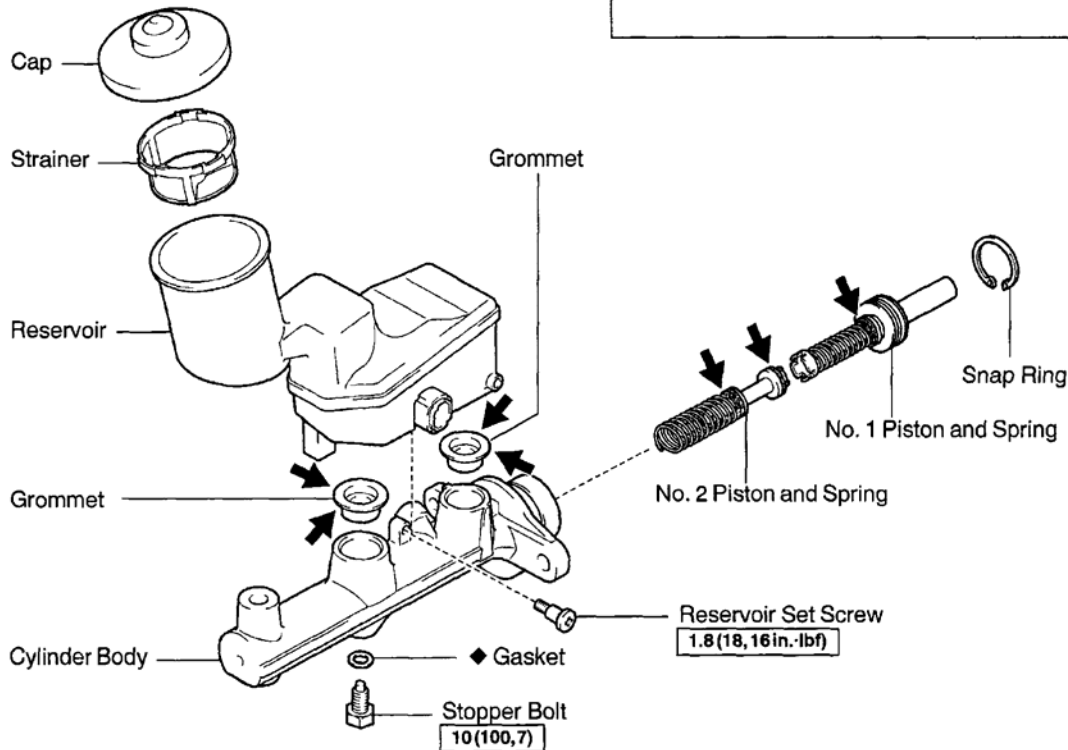
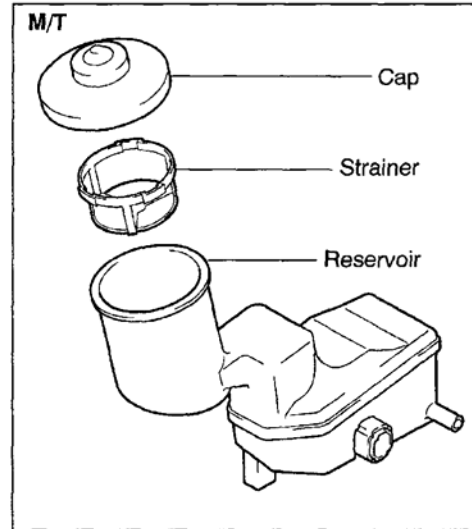
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Fig. 13: Identifying Brake Master Cylinder Components & Torque Specifications (1 of 3)
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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w/ ABS



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

◆ Non-reusable part

◀ Lithium soap base glycol grease

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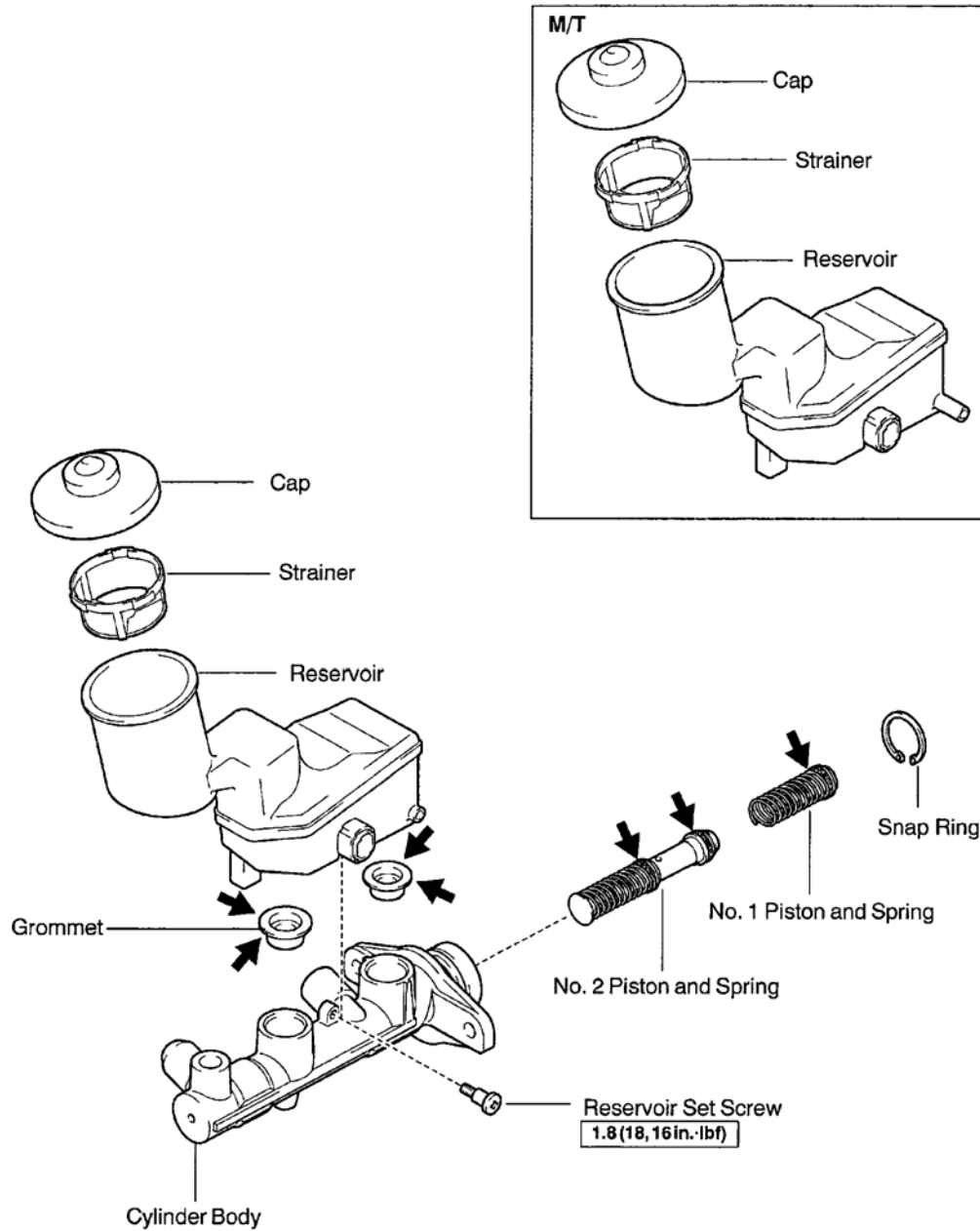
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Fig. 14: Identifying Brake Master Cylinder Components & Torque Specifications (2 of 3)
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w/ VSC



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

◀ Lithium soap base glycol grease

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Fig. 15: Identifying Brake Master Cylinder Components & Torque Specifications (3 of 3)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

REMOVAL

1. **DISCONNECT LEVEL WARNING SWITCH CONNECTOR**
2. **DRAW OUT FLUID WITH SYRINGE**

NOTE: Do not let brake fluid remain on a painted surface. Wash it off immediately.

3. **w/o ABS & VSC: DISCONNECT BRAKE LINES**

Using SST, disconnect the 4 brake lines from the master cylinder and 3-way.

SST 09023-00101

Torque Specification: 15 N.m (155 kgf.cm, 11 ft.lbf)

4. **w/o ABS & VSC: REMOVE FRONT LH BRAKE LINE**

- a. Remove the clamp.
- b. Using SST and spanner, remove the front LH brake line from the flexible hose.

SST 09023-00101

Torque Specification: 15 N.m (155 kgf.cm, 11 ft.lbf)

5. **w/ ABS & VSC: DISCONNECT BRAKE LINES**

Using SST, disconnect the 2 brake lines from the master cylinder.

SST 09023-00101

Torque Specification: 15 N.m (155 kgf.cm, 11 ft.lbf)

6. **M/T: DISCONNECT CLUTCH RESERVOIR HOSE**

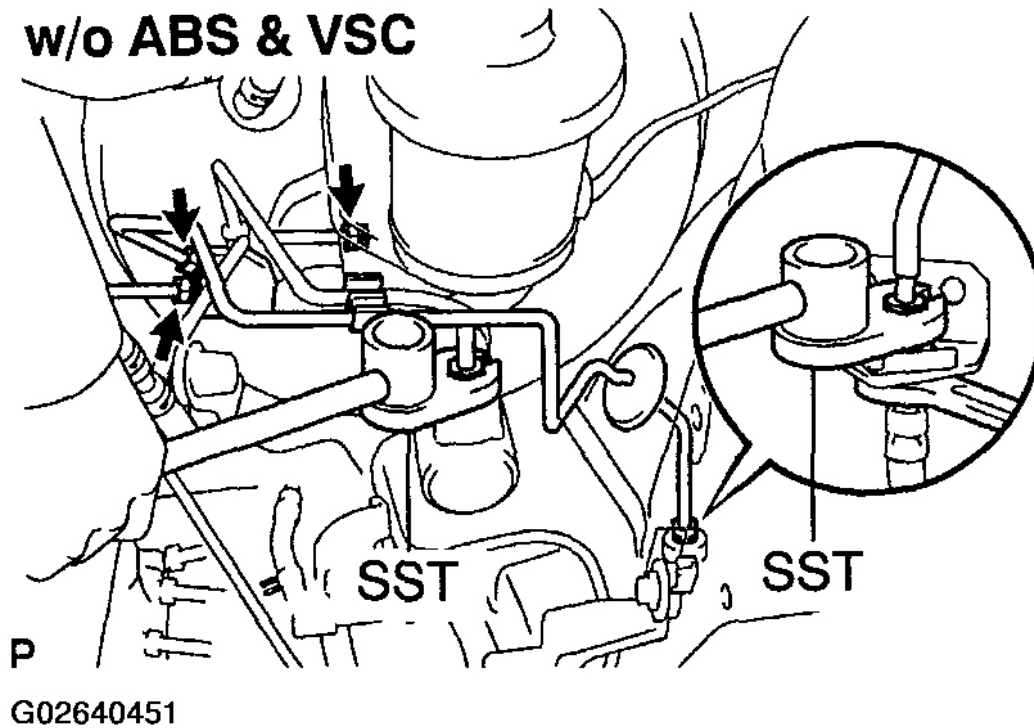


Fig. 16: Disconnecting Brake Lines From Master Cylinder Using SST
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

7. w/o ABS & VSC: REMOVE MASTER CYLINDER

- a. Remove the 2 nuts and pull out the master cylinder and 3-way.

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

- b. Remove the gasket.

HINT:

At the time of installation, use a new gasket.

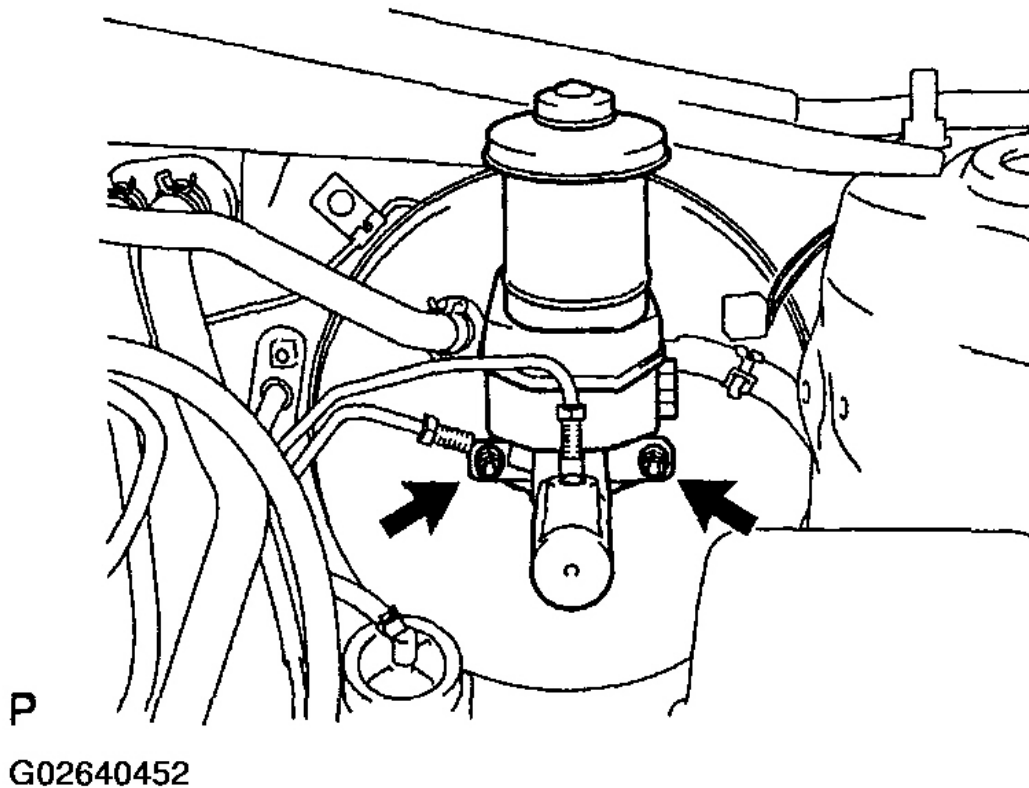


Fig. 17: Removing Out Master Cylinder

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

8. w/ ABS & VSC: REMOVE MASTER CYLINDER

- a. Remove the 2 nuts, and pull out the master cylinder.

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

- b. Remove the gasket.

HINT:

At the time of installation, use a new gasket.

DISASSEMBLY

1. REMOVE RESERVOIR

- a. Remove the set screw and pull out the reservoir.

Torque Specification: 1.8 N.m (18 kgf.cm, 16 in.lbf)

b. Remove the cap and strainer from the reservoir.

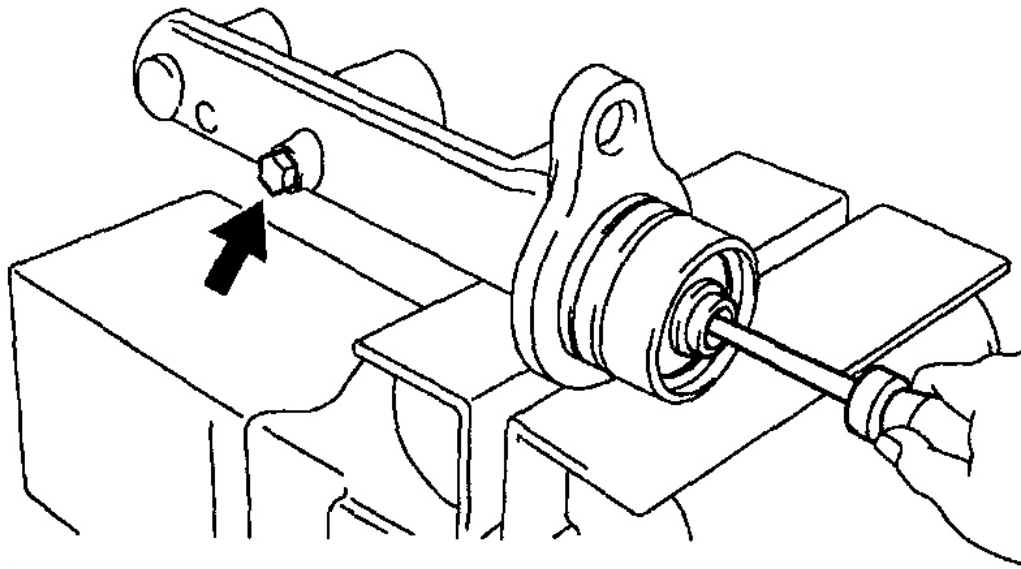
2. **REMOVE 2 GROMMETS**
3. **PLACE CYLINDER IN VISE**
4. **REMOVE PISTON STOPPER BOLT**

Using a screwdriver, push the pistons in all the way and remove the piston stopper bolt and gasket.

HINT:

Tape the screwdriver tip before use.

Torque Specification: 10 N.m (100 kgf.cm, 7 ft.lbf)



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Fig. 18: Removing Piston Stopper Bolt
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

5. **REMOVE 2 PISTONS AND SPRINGS**

a. Push in the piston with a screwdriver and remove the snap ring with snap ring pliers.

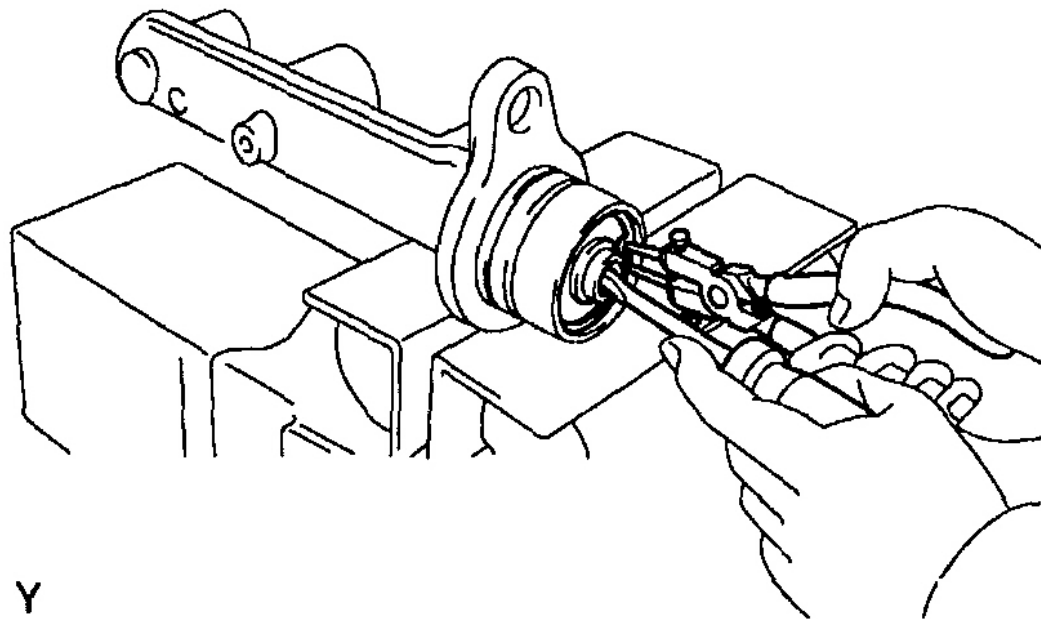
HINT:

Tape the screwdriver tip before use.

- b. Remove the No. 1 piston and spring by hand, pulling straight out, not at an angle.

NOTE:

- If pulled out and installed at an angle, there is a possibility that the cylinder bore could be damaged.
- At the time of reassembly, be careful not to damage the rubber lips on the pistons.



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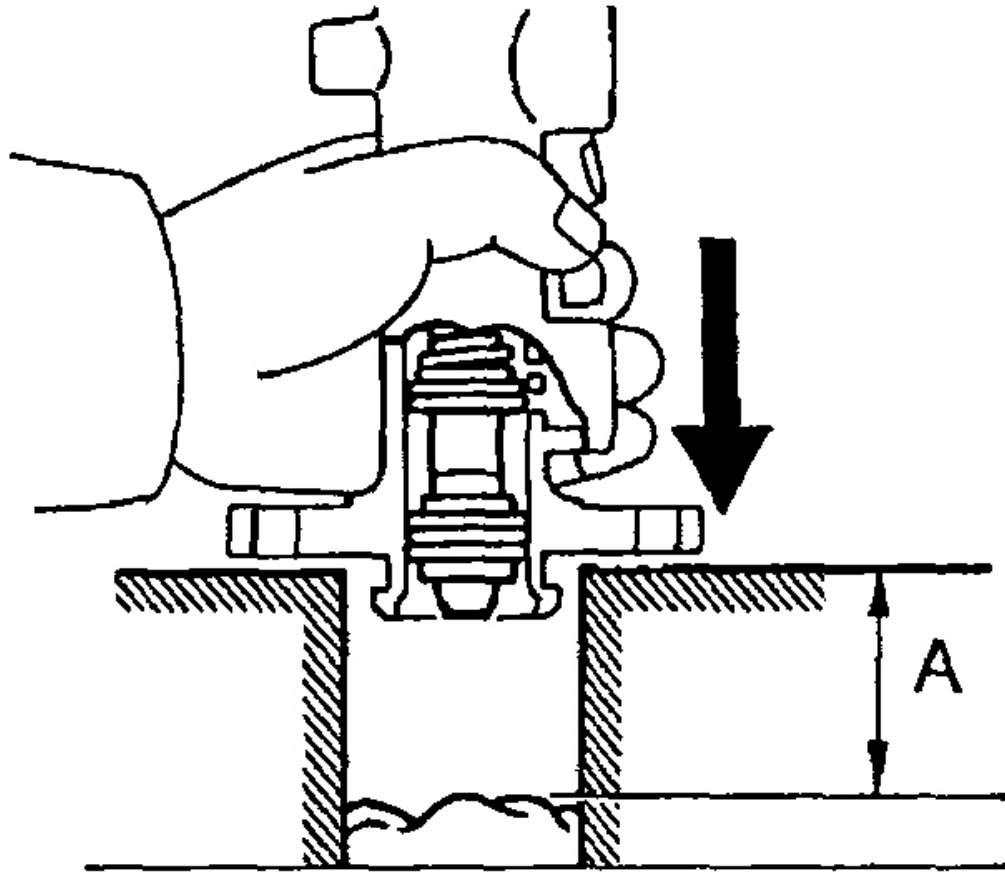
Fig. 19: Removing Snap Ring

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

- c. Place a rag and 2 wooden blocks on the work table and lightly tap the cylinder flange against the block edges until the piston drops out of the cylinder.

HINT:

Make sure the distance (A) from the rag to the top of the blocks is at least 100 mm (3.94 in.).



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Fig. 20: Removing Piston From Cylinder
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION

HINT:

Clean the disassembled parts with compressed air.

1. **INSPECT CYLINDER BORE FOR RUST OR SCORING**
2. **INSPECT CYLINDER FOR WEAR OR DAMAGE**

If necessary, clean or replace the cylinder.

2005 Toyota RAV4

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REASSEMBLY

Reassembly is in the reverse order of disassembly (See DISASSEMBLY).

NOTE: Before reassembly, apply lithium soap base glycol grease to the rubber parts indicated by the arrows (See BRAKE MASTER CYLINDER).

INSTALLATION

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

HINT:

- Before installation, adjust the length of the brake booster push rod (See INSTALLATION).
- After installation, fill the brake reservoir with brake fluid, bleed the brake system (See BRAKE FLUID), and check for leaks.
- After installation, check and adjust the brake pedal (See BRAKE PEDAL).
- M/T: After installation, bleed the clutch system.

BRAKE BOOSTER ASSEMBLY

ON-VEHICLE INSPECTION

1. AIR TIGHTNESS CHECK

- a. Start the engine and stop it after 1 or 2 minutes. Depress the brake pedal several times slowly.

If the pedal goes down farthest at the 1st time, but gradually rises after at the 2nd or 3rd time, the booster is air tight.

- b. Depress the brake pedal while the engine is running, and stop the engine with the pedal depressed.

If there is no change in the pedal reserve travel after holding the pedal for 30 seconds, the booster is air-tight.

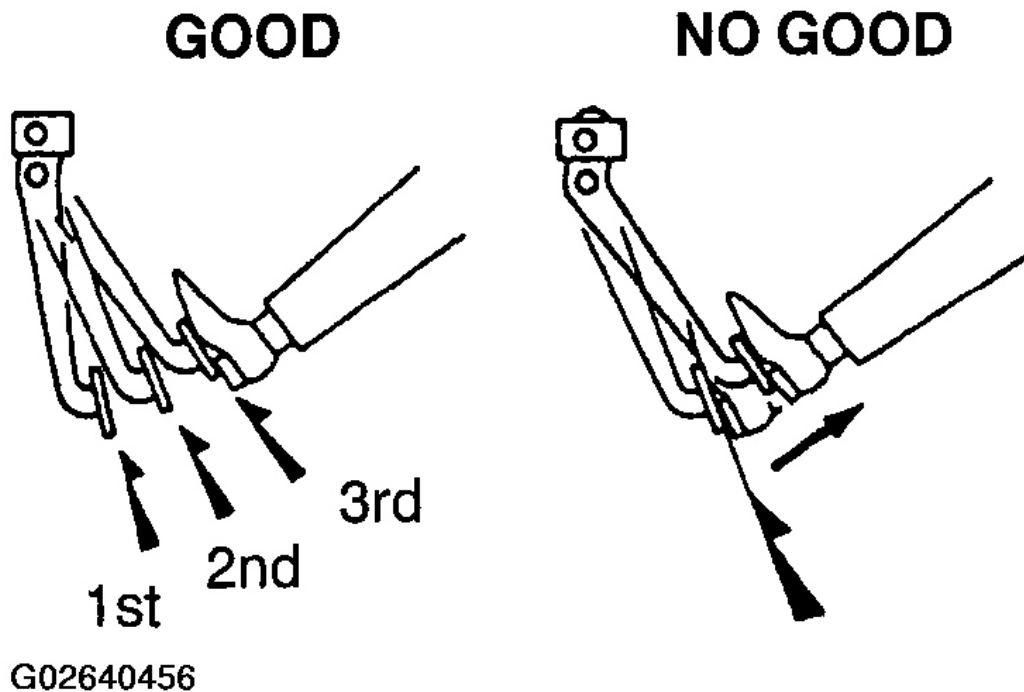


Fig. 21: Booster Air Tightness Check

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

2. OPERATING CHECK

- Depress the brake pedal several times with the engine OFF and check that there is no change in the pedal reserve distance.
- Depress the brake pedal and start the engine.

If the pedal goes down slightly, operation is normal.

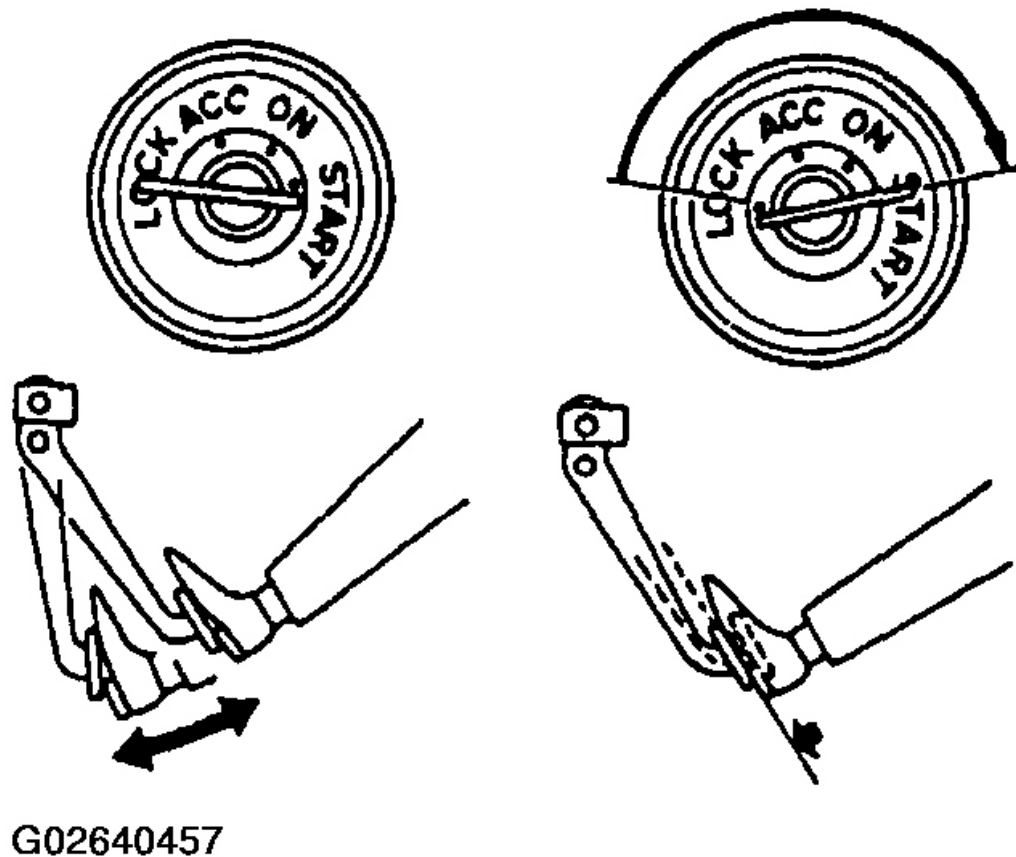
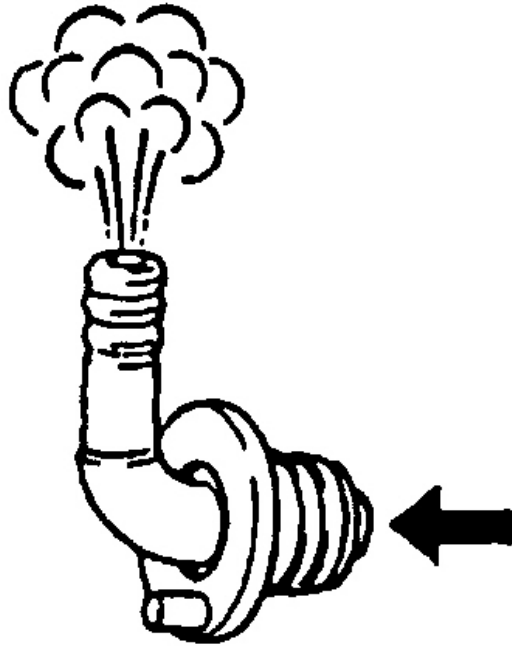


Fig. 22: Performing Operational Check
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

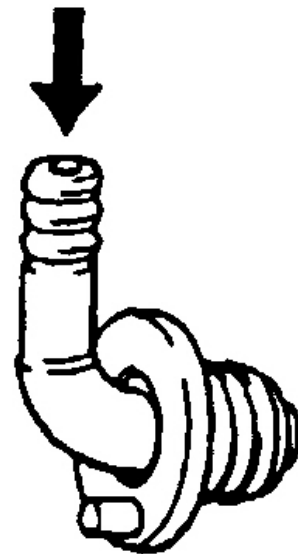
3. INSPECT VACUUM CHECK VALVE

- Slide the clip and disconnect the vacuum hose.
- Remove the vacuum check valve.
- Check that there is ventilation from the booster to engine, and no ventilation from the engine to the booster.
- If any fault is found, replace the vacuum check valve.

Ventilation



No Ventilation



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Fig. 23: Inspecting Vacuum Check Valve

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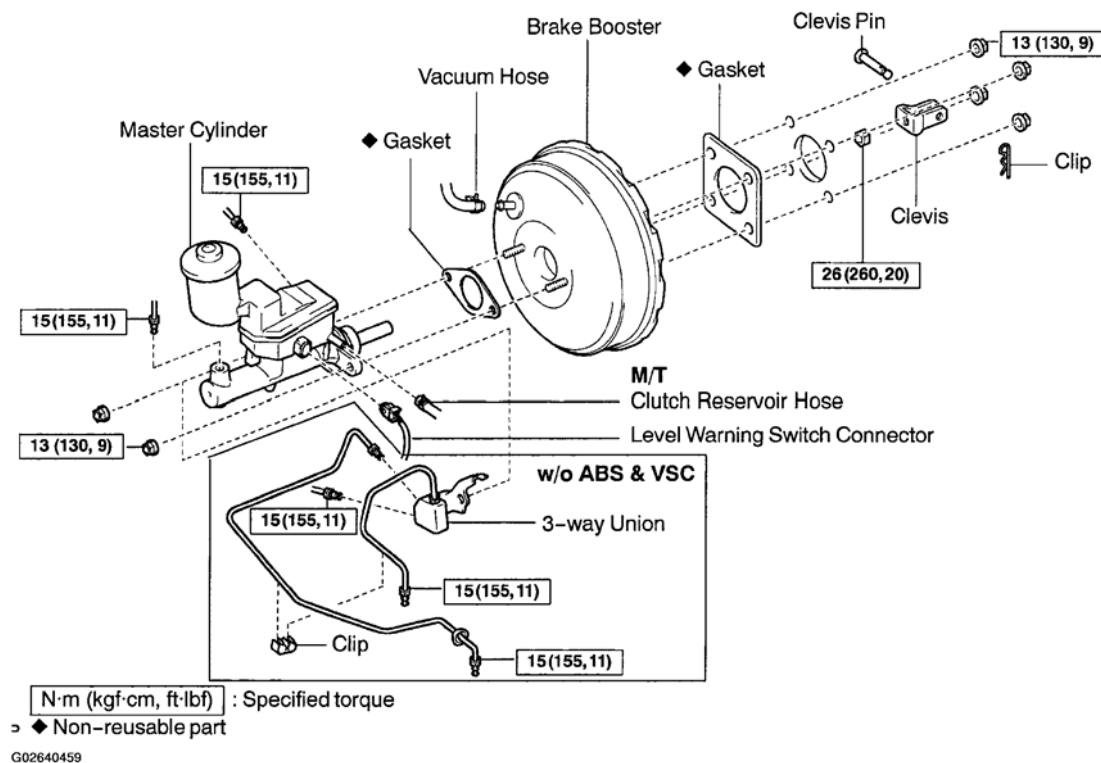


Fig. 24: Identifying Brake Booster Assembly Components & Torque Specifications
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

REMOVAL

1. **REMOVE MASTER CYLINDER** (See **BRAKE MASTER CYLINDER**)
2. **DISCONNECT VACUUM HOSE FROM BRAKE BOOSTER**
3. **DISCONNECT PEDAL RETURN SPRING**
4. **REMOVE CLIP AND CLEVIS PIN**
5. **REMOVE BRAKE BOOSTER**
 - a. Remove the 4 nuts and clevis.
 - b. Pull out the brake booster and gasket.

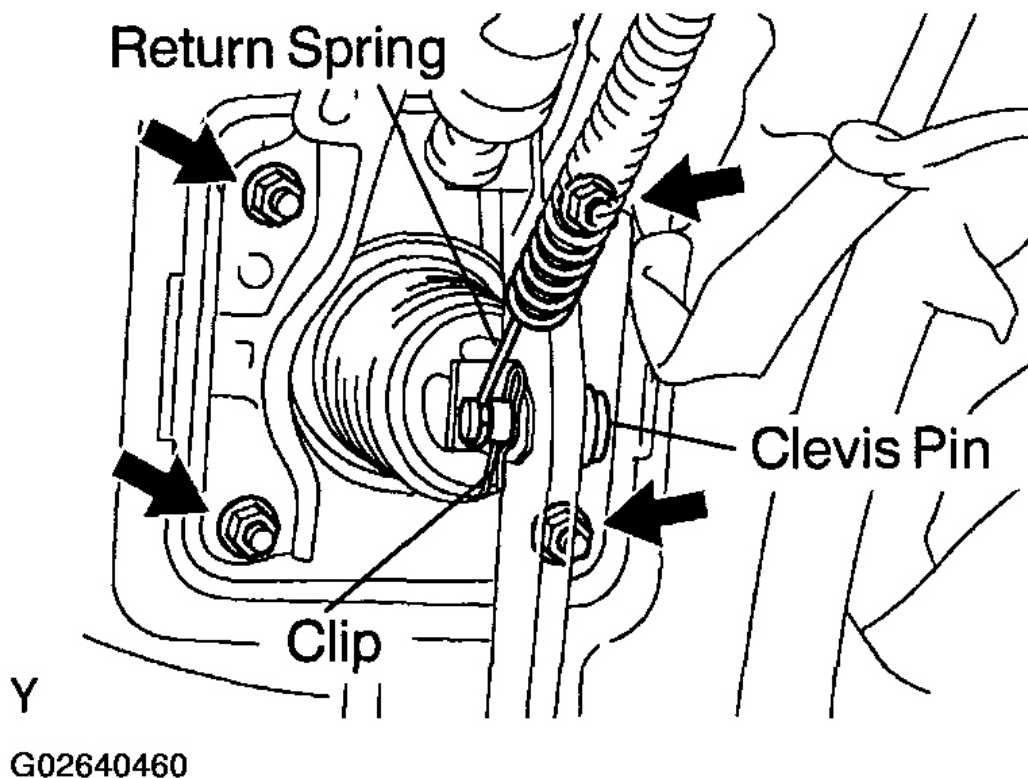


Fig. 25: Removing Master Cylinder

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

INSTALLATION

1. INSTALL BRAKE BOOSTER

- Install a new gasket and booster.
- Install the clevis to the operating rod.
- Install and torque the booster installation nuts.

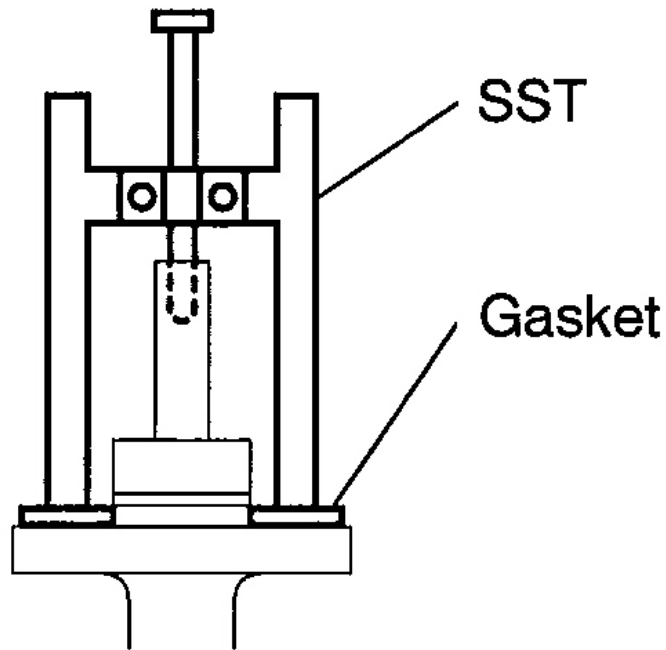
Torque Specification: 13 N.m (130 kgf.cm, 9 ft.lbf)

- Insert the clevis pin into the clevis and brake pedal, and install the clip to the clevis pin.
- Install the pedal return spring.

2. ADJUST LENGTH OF BOOSTER PUSH ROD

- Install a new gasket on the master cylinder.
- Set SST on the gasket, and lower the pin until its tip slightly touches the piston.

SST 09737-00011



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Fig. 26: Setting SST On Master Cylinder Gasket
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- c. Turn the SST upside down, and set it on the booster.

SST 09737-00011

- d. Measure the clearance between the booster push rod and pin head (SST).

Clearance: 0 mm (0 in.)

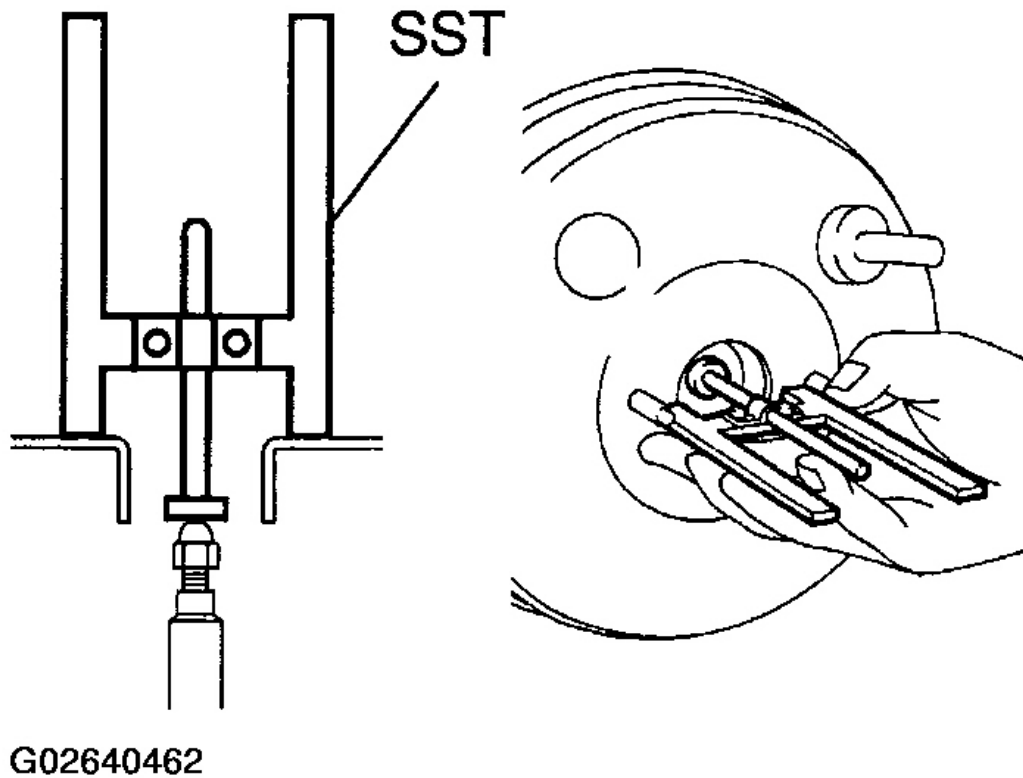


Fig. 27: Measuring Clearance Between Booster Push Rod & Pin Head

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

- e. Using SST, adjust the booster push rod length until the push rod slightly touches the pin head.

SST 09737-00020

HINT:

When adjusting the push rod, depress the brake pedal enough so that the push rod is stuck out.

3. **CONNECT VACUUM HOSE TO BRAKE BOOSTER**
4. **INSTALL MASTER CYLINDER (See INSTALLATION)**
5. **FILL BRAKE RESERVOIR WITH BRAKE FLUID AND BLEED BRAKE SYSTEM (See BRAKE FLUID)**
6. **CHECK FOR LEAKS**
7. **CHECK AND ADJUST BRAKE PEDAL (See BRAKE PEDAL)**

Check and adjust the brake pedal, then tighten the clevis lock nut.

Torque Specification: 26 N.m (260 kgf.cm, 20 ft.lbf)

8. **DO OPERATIONAL CHECK** (See **BRAKE BOOSTER ASSEMBLY**)

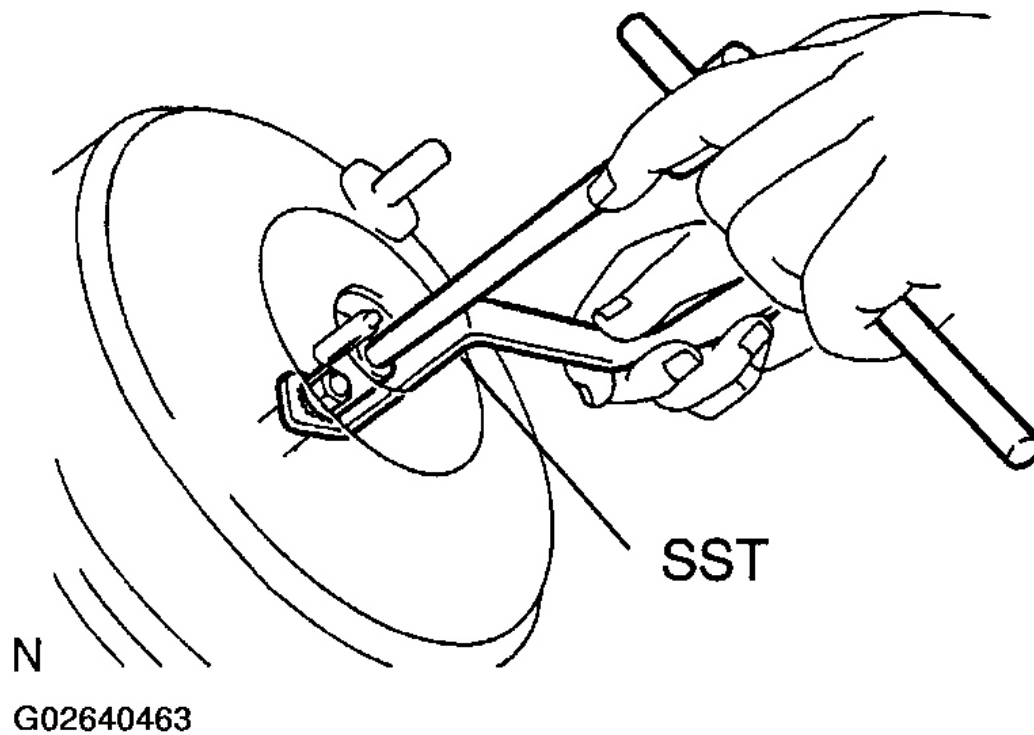


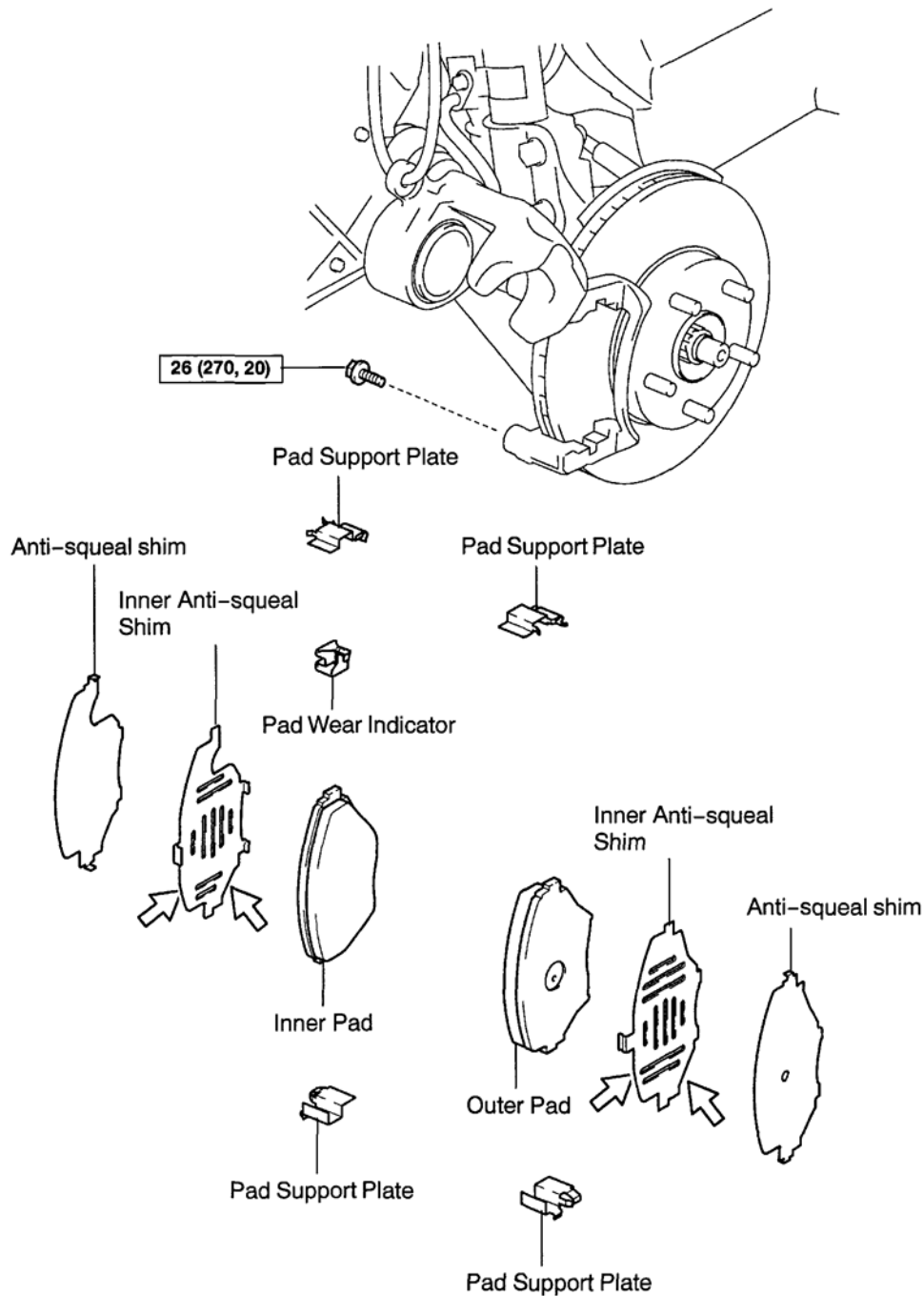
Fig. 28: Adjusting Booster Push Rod Length Using SST
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

FRONT BRAKE PAD

COMPONENTS

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

↪ Disc brake grease

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Fig. 29: Identifying Front Brake Pad Components & Torque Specifications
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

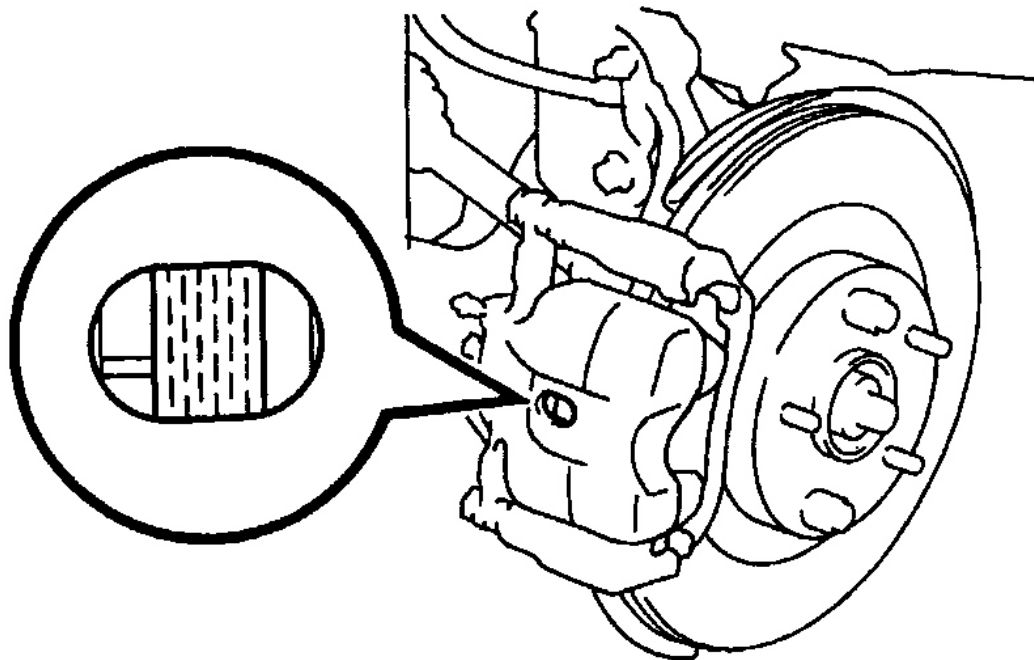
REPLACEMENT**1. REMOVE FRONT WHEEL**

Remove the wheel and temporarily fasten the disc with the hub nuts.

2. INSPECT PAD LINING THICKNESS

Check the pad thickness through the caliper inspection hole and replace the pads if they are not within the specification.

Minimum thickness: 1.0 mm (0.039 in.)



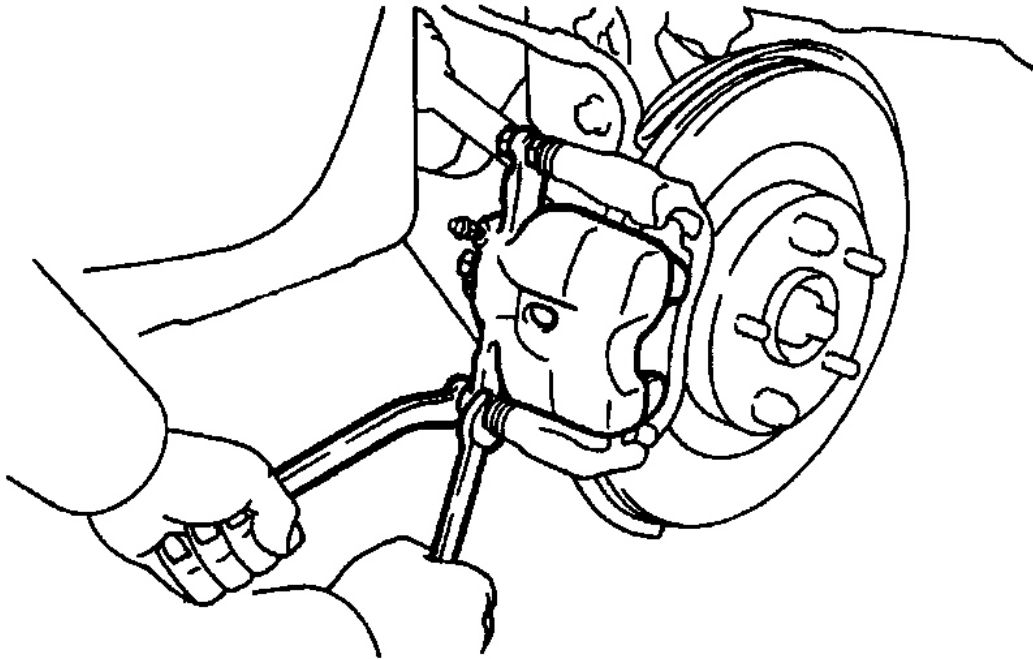
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Fig. 30: Inspecting Pad Lining Thickness

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

3. LIFT UP CALIPER

- a. Hold the sliding pin on the bottom and loosen the installation bolt.
- b. Remove the installation bolt.
- c. Lift up the caliper and suspend it securely.



G02640466

Fig. 31: Removing Caliper Installation Bolt

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

HINT:

Do not disconnect the flexible hose from the caliper.

4. **REMOVE 2 BRAKE PADS, 4 ANTI-SQUEAL SHIMS, 4 PAD SUPPORT PLATES AND PAD WEAR INDICATOR**

NOTE: The support plates can be used again provided that they have sufficient rebound, no deformation, cracks or wear, and have had all rust, dirt and foreign particles cleaned off.

5. **CHECK DISC THICKNESS AND RUNOUT (See INSPECTION)**
6. **INSTALL 4 PAD SUPPORT PLATES**
7. **INSTALL NEW PADS**

NOTE: When replacing worn pads, the anti-squeal shims must be replaced together with the pads.

2005 Toyota RAV4

2005 BRAKES Brakes - RAV4

- a. Apply disc brake grease to both side of the inner anti-squeal shims (See **FRONT BRAKE PAD**).
- b. Install the 2 anti-squeal shims on each pad.
- c. Install the inner pad and outer pad.
- d. Install the pad wear indicator to the upside of the Inner pad.

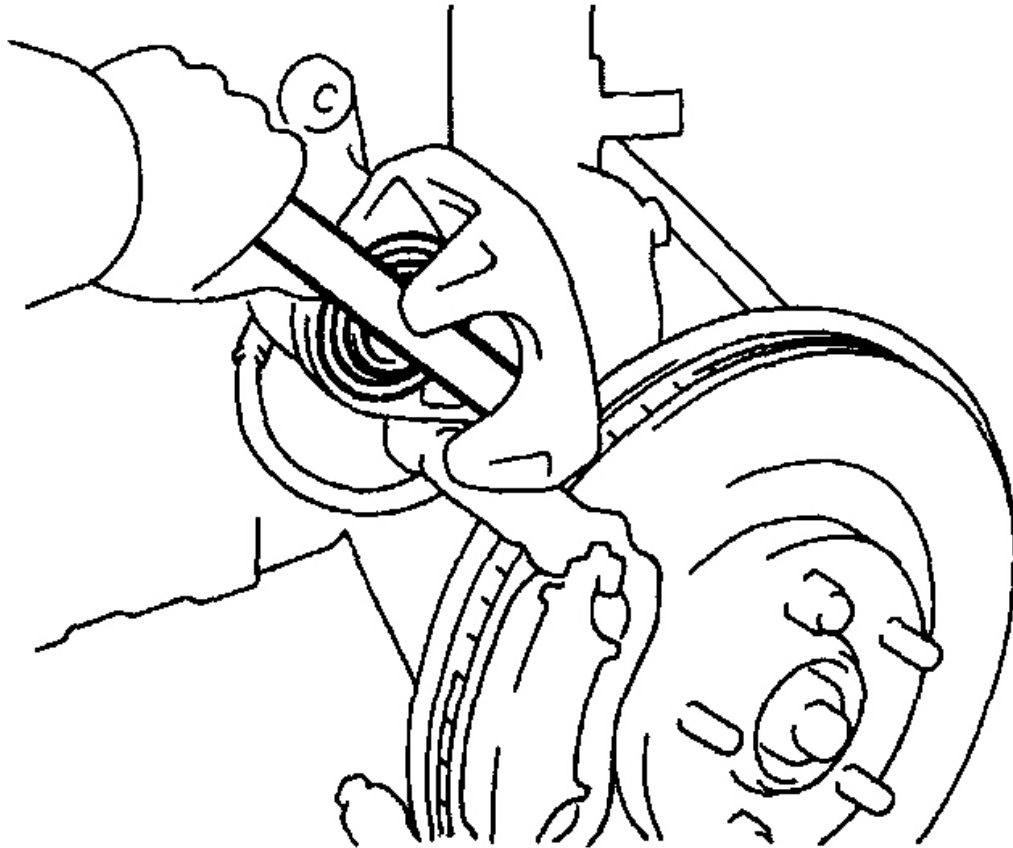
NOTE: **There should be no oil or grease adhering to the friction surfaces of the pads or the disc.**

8. INSTALL CALIPER

- a. Draw out a small amount of brake fluid from the reservoir.
- b. Press in the piston with a hammer handle or an equivalent.

HINT:

If the piston is difficult to push in, loosen the bleeder plug and push in the piston while letting some brake fluid escape.



G02640467

Fig. 32: Pressing In Piston Using Hammer Handle
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- c. Install the caliper.
- d. Hold the sliding pin and torque the installation bolt.

Torque Specification: 26 N.m (270 kgf.cm, 20 ft.lbf)

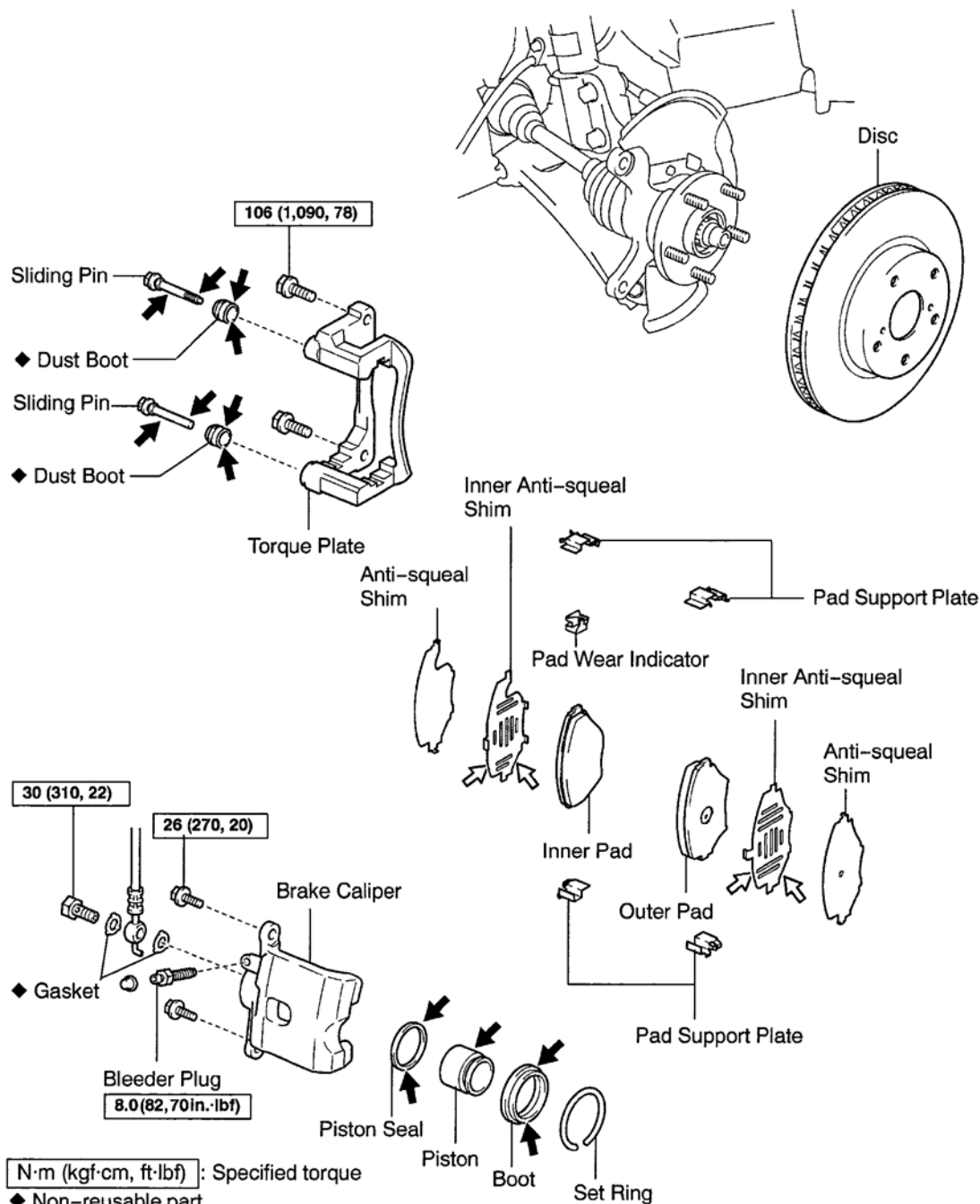
- 9. INSTALL FRONT WHEEL
- 10. CHECK THAT FLUID LEVEL IS AT MAX LINE

FRONT BRAKE CALIPER

COMPONENTS

2005 Toyota RAV4

2005 BRAKES Brakes - RAV4



G02640468

Fig. 33: Identifying Front Brake Caliper Components & Torque Specifications
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

REMOVAL

1. DISCONNECT FLEXIBLE HOSE

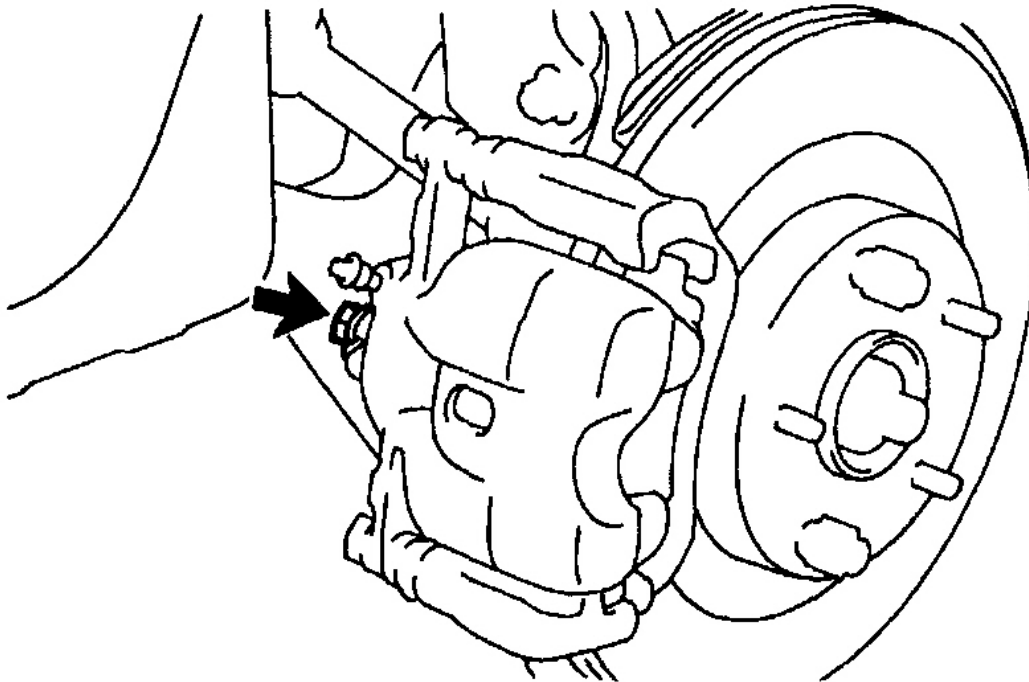
- a. Remove the union bolt and 2 gaskets from the caliper, then disconnect the flexible hose from the caliper.

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

HINT:

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

- Use 2 new gaskets.
- Install the flexible hose lock securely in the lock hole in the caliper.



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Fig. 34: Installing Flexible Hose Lock Securely In Lock Hole In Caliper
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- b. Use a container to catch the brake fluid as it drains out.

2. REMOVE CALIPER

- a. Hold the sliding pin and loosen the 2 installation bolts.

Torque Specification: 26 N.m (270 kgf.cm, 20 ft.lbf)

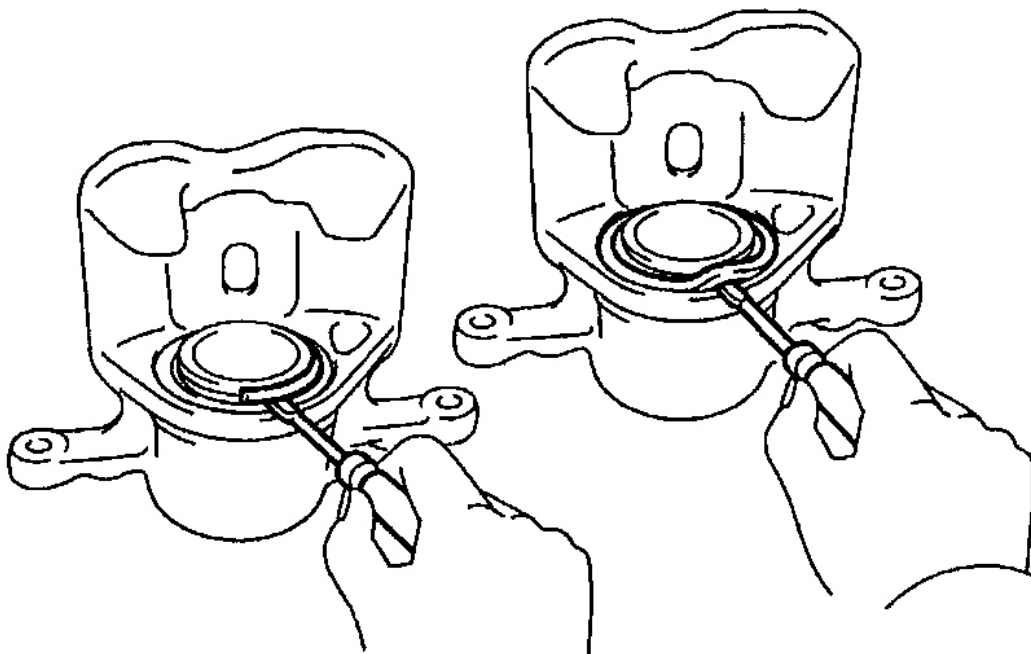
- b. Remove the 2 installation bolts.
- c. Remove the caliper from the torque plate.

3. REMOVE 2 BRAKE PADS WITH ANTI-SQUEAL SHIMS AND 4 PAD SUPPORT PLATES

DISASSEMBLY

1. REMOVE CYLINDER BOOT SET RING AND CYLINDER BOOT

Using a screwdriver, remove the cylinder boot set ring and cylinder boot.



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Fig. 35: Removing Cylinder Boot Set Ring & Cylinder Boot Using Screwdriver
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

2. REMOVE PISTON

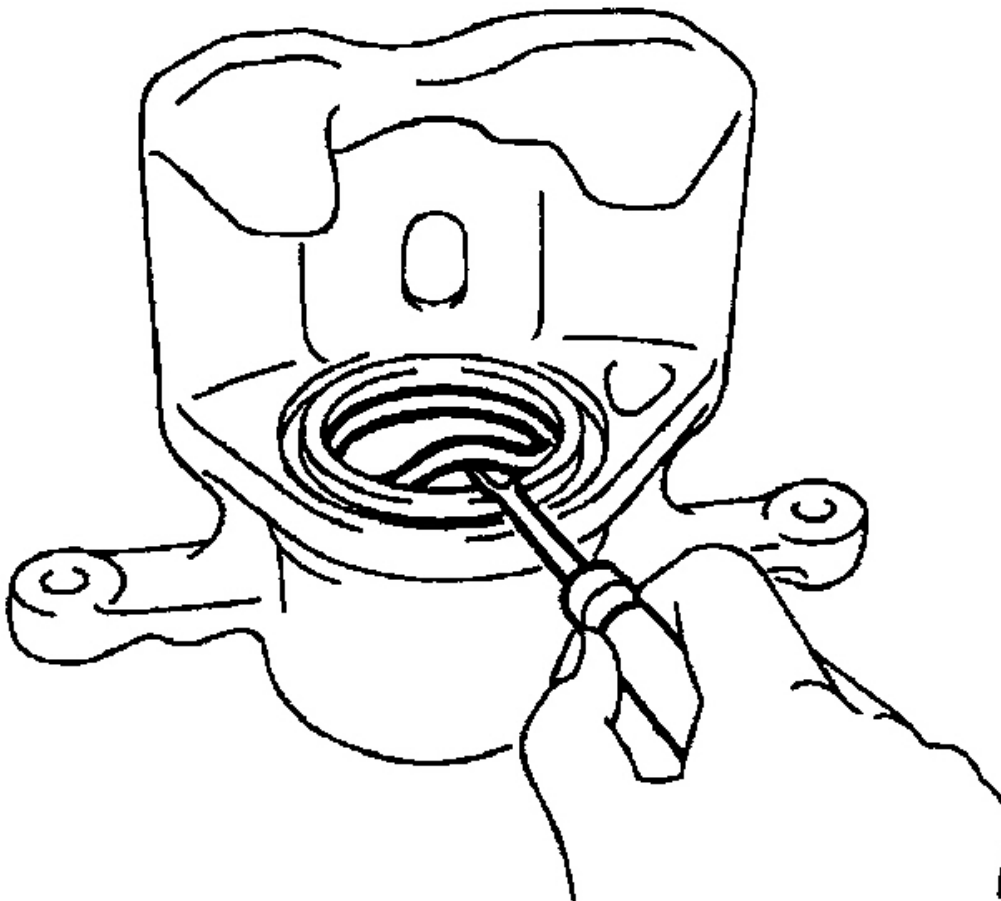
- a. Put a piece of cloth or equivalent between the piston and the caliper.
- b. Use compressed air to remove the piston from the cylinder.

CAUTION: Do not place your fingers in front of the piston when using

compressed air.

3. REMOVE PISTON SEAL

Using a screwdriver, remove the piston seal.



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Fig. 36: Removing Piston Seal Using Screwdriver
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

4. REMOVE SLIDING PINS AND DUST BOOTS

- a. Remove the 2 sliding pins from the torque plate.
- b. Remove the 2 dust boots.

INSPECTION

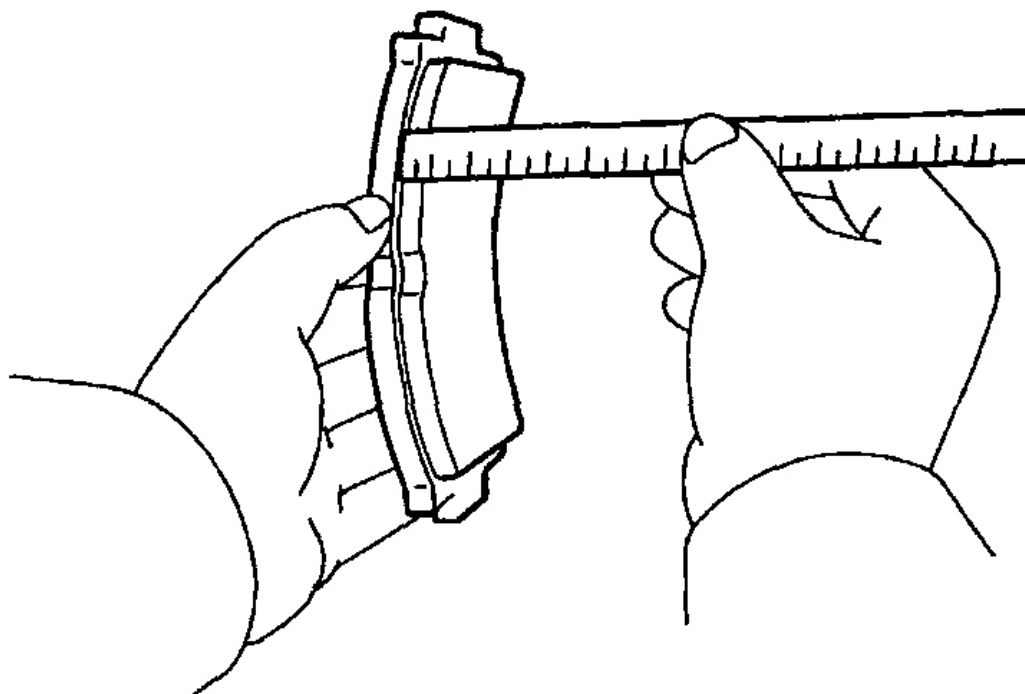
1. MEASURE PAD LINING THICKNESS

Using a ruler, measure the pad lining thickness.

Standard thickness: 12.0 mm (0.472 in.)

Minimum thickness: 1.0 mm (0.039 in.)

Replace the pad if the pad's thickness is at the minimum thickness or less, or if the pad has severe and uneven wear.



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Fig. 37: Measuring Pad Lining Thickness
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

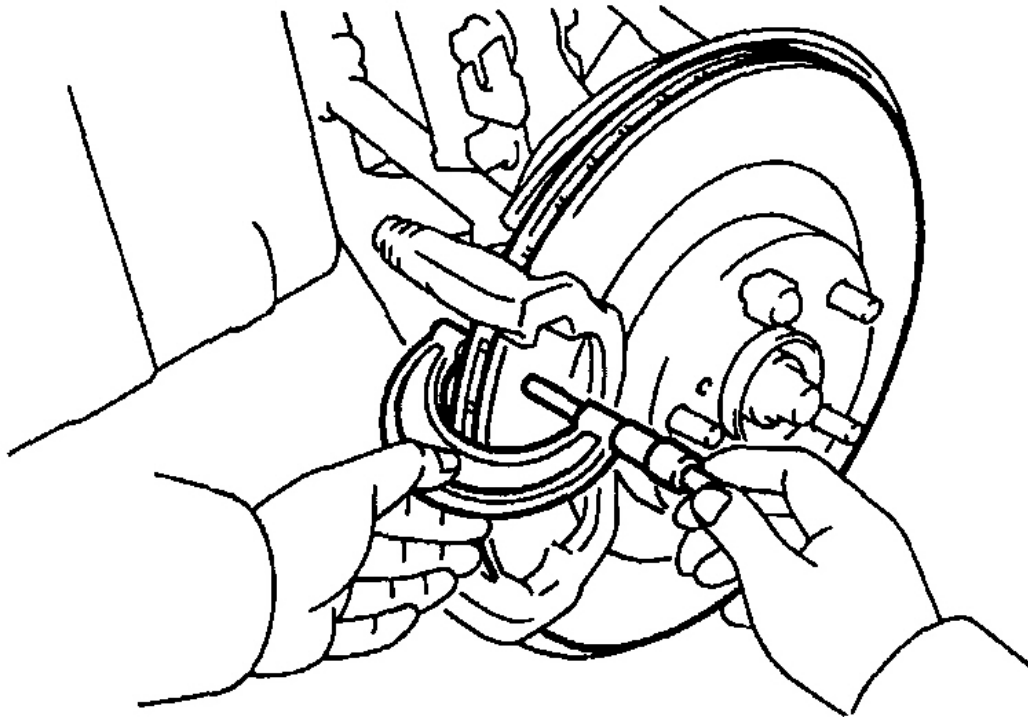
2. MEASURE DISC THICKNESS

Using a micrometer, measure the disc thickness.

Standard thickness: 25.0 mm (0.984 in.)

Minimum thickness: 23.0 mm (0.906 in.)

Replace the disc if the thickness of the disc is at the minimum thickness or less. Replace the disc or grind it on a lathe if it is scored or is worn unevenly.



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Fig. 38: Measuring Disc Thickness

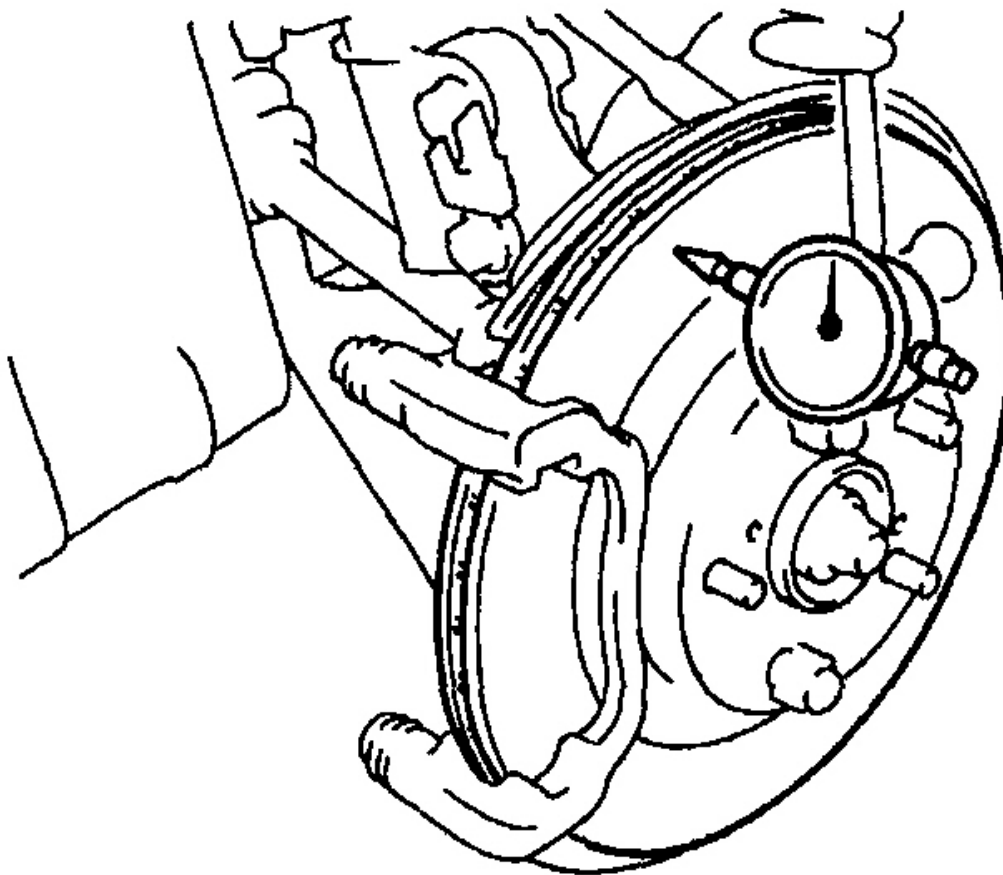
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

3. MEASURE DISC RUNOUT

Using a dial indicator, measure the disc runout at a position 10 mm (0.39 in.) from the outside edge.

Maximum disc runout: 0.05 mm (0.0020 in.)

If the disc's runout is at the maximum value or greater, check the bearing play in the axial direction and check the axle hub runout (See **REMOVAL** under FRONT AXLE HUB. If the bearing play and axle hub runout are not abnormal, adjust the disc runout or grind it on a "On-Car" brake lathe.



G02640474

Fig. 39: Measuring Disc Runout

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

4. IF NECESSARY, ADJUST DISC RUNOUT

- a. Remove the 2 bolts and torque plate from the knuckle.
- b. Remove the hub nuts and the disc. Reinstall the disc in the position turned 1/5 from its original position on the hub. Install and torque the hub nuts.

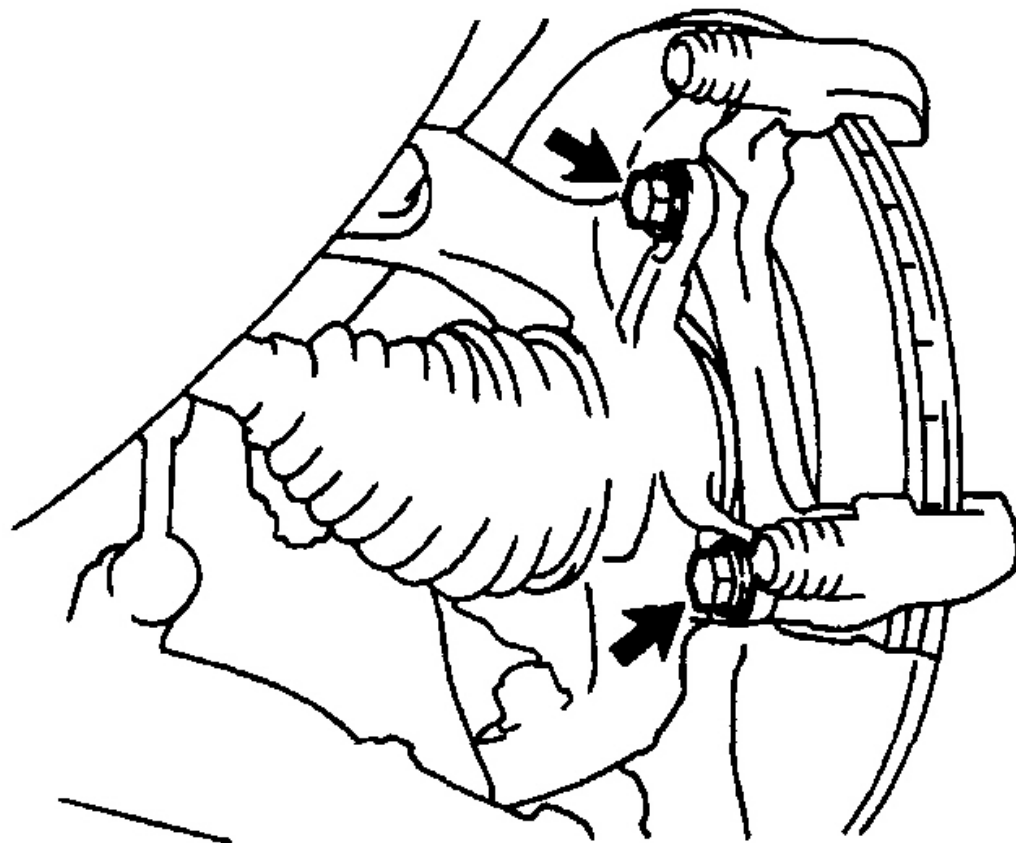
Torque Specification: 103 N.m (1,050 kgf.cm, 76 ft.lbf)

- c. Remeasure the disc runout. Make a note of the runout and the disc's position on the hub.
- d. Repeat (b) and (c) until the disc is installed on the 3 remaining hub positions.
 - If the minimum runout recorded in (b) and (c) is less than 0.05 mm (0.0020 in.), install the

disc in that position.

- If the minimum runout recorded in (b) and (c) is greater than 0.05 mm (0.0020 in.), replace the disc and repeat step 3.
- e. Install the torque plate and torque the mounting bolts.

Torque Specification: 106 N.m (1,090 kgf.cm, 78 ft.lbf)



G02640475

Fig. 40: Installing Torque Plate & Mounting Bolts
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

REASSEMBLY

Reassembly is in the reverse order of disassembly (See DISASSEMBLY).

2005 Toyota RAV4

2005 BRAKES Brakes - RAV4

NOTE: Before reassembly, apply lithium soap base glycol grease to the parts indicated by the arrows (See FRONT BRAKE CALIPER).

INSTALLATION

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

HINT:

- After Installation, fill the brake reservoir with the fluid and bleed the brake system (See BRAKE FLUID).
- Check for fluid leaks.

REAR DRUM BRAKE

COMPONENTS

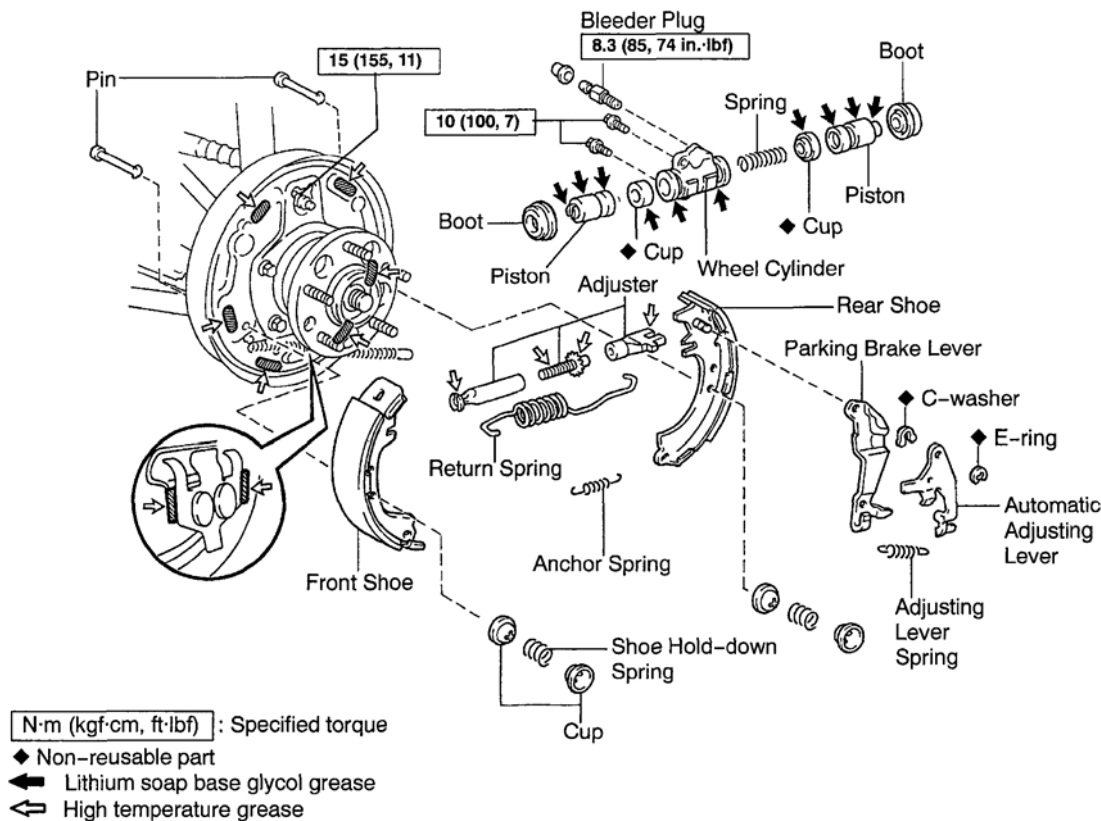


Fig. 41: Identifying Rear Drum Brake Components & Torque Specifications
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

REMOVAL**1. INSPECT SHOE LINING THICKNESS**

Remove the inspection hole plug, and check the shoe lining thickness through the hole.

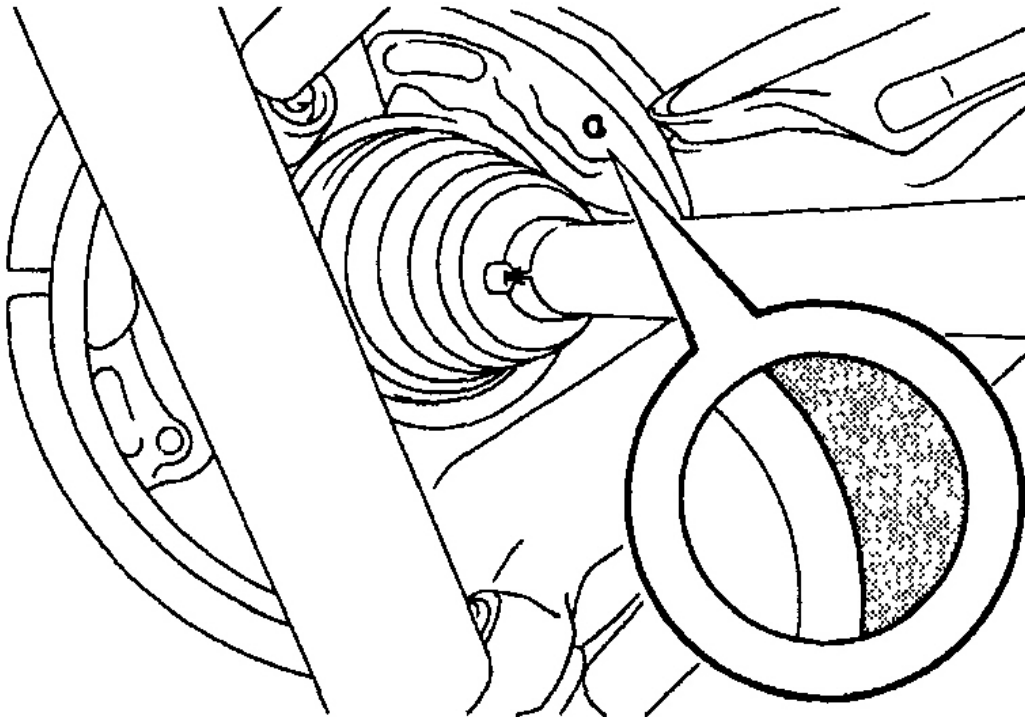
If less than minimum, replace the shoes.

Minimum thickness: 1.0 mm (0.039 in.)

2. REMOVE REAR WHEEL**3. REMOVE BRAKE DRUM**

HINT:

If the brake drum cannot be removed easily, do the following steps.



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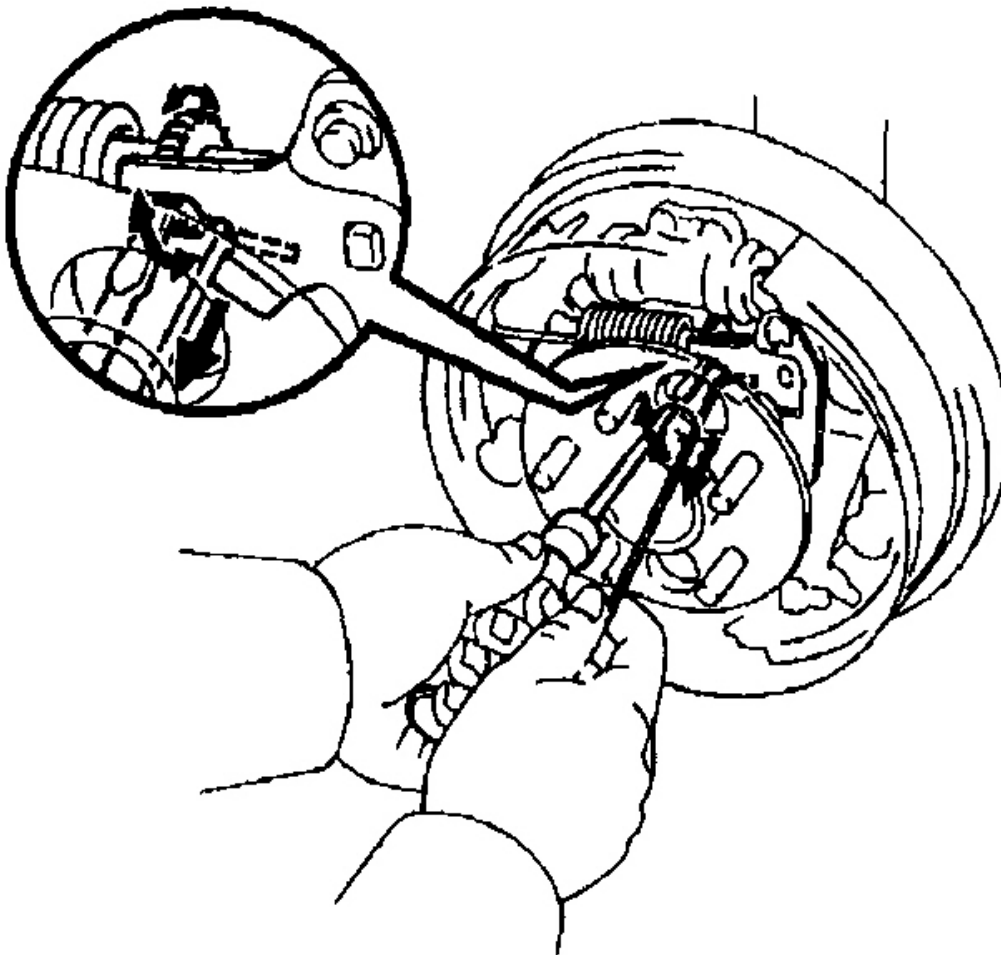
Fig. 42: Removing Inspection Hole Plug

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

- a. Insert a bent wire or an equivalent through the hole in the brake drum, and hold the automatic adjusting lever away from the adjuster.
- b. Using a screwdriver, reduce the brake shoe adjustment by turning the adjuster.

HINT:

At the time of installation, align the hub's large hole next to the small hole in the clockwise direction with the drum's plug hole.

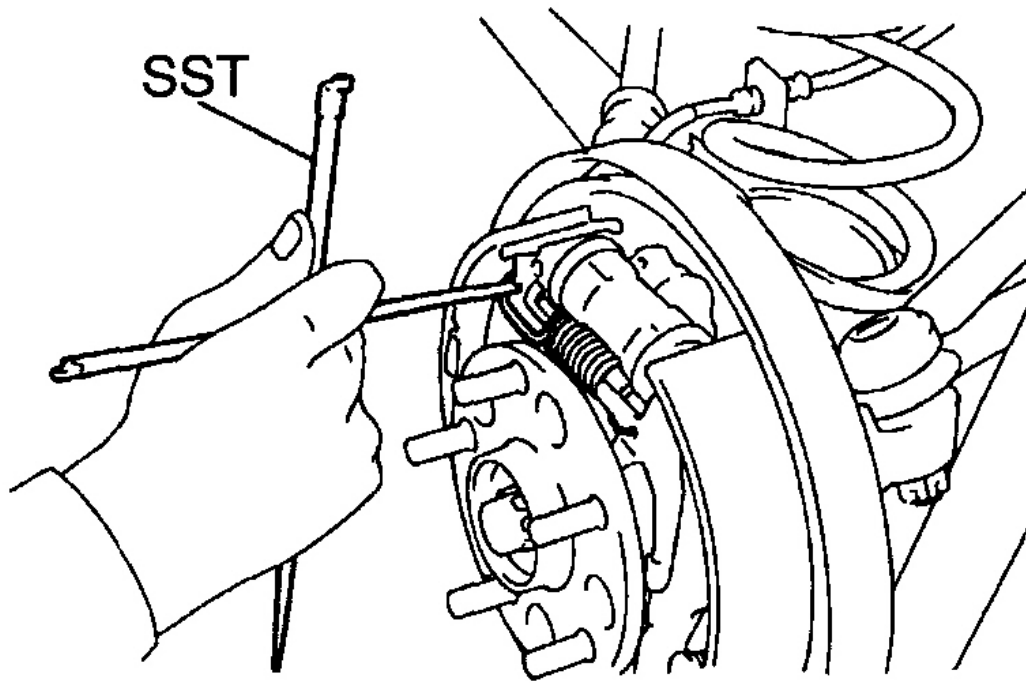


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4. REMOVE FRONT SHOE

- a. Using SST, remove the return spring.

SST 09703-30010



G02640479

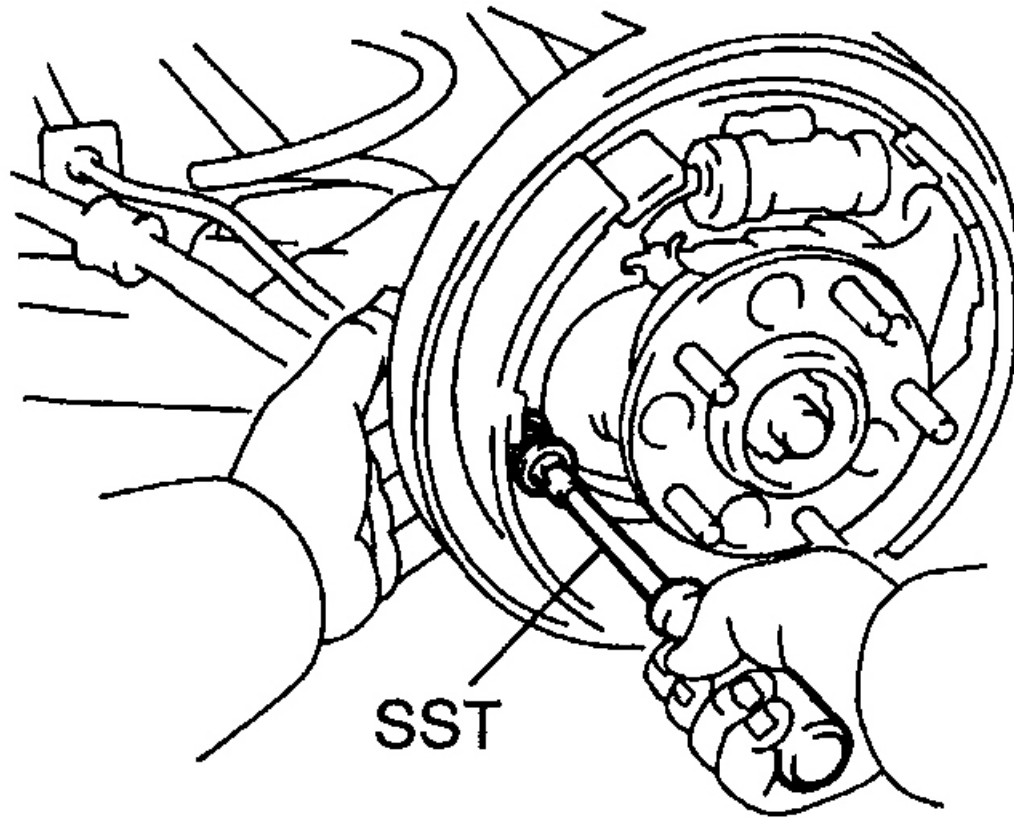
Fig. 44: Removing Return Spring Using SST

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

- b. Using SST, remove the shoe hold-down spring, 2 cups and pin.

SST 09718-00010

- c. Disconnect the anchor spring from the front shoe and remove the front shoe.
- d. Remove the anchor spring from the rear shoe.



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Fig. 45: Removing Shoe Hold-Down Spring Using SST
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

5. REMOVE REAR SHOE

- a. Using SST, remove the shoe hold-down spring, 2 cups and pin.

SST 09718-00010

- b. Using a screwdriver, disconnect the parking brake cable from the anchor plate.
- c. Using pliers, disconnect the parking brake cable from the lever and remove the rear shoe together with the adjuster.

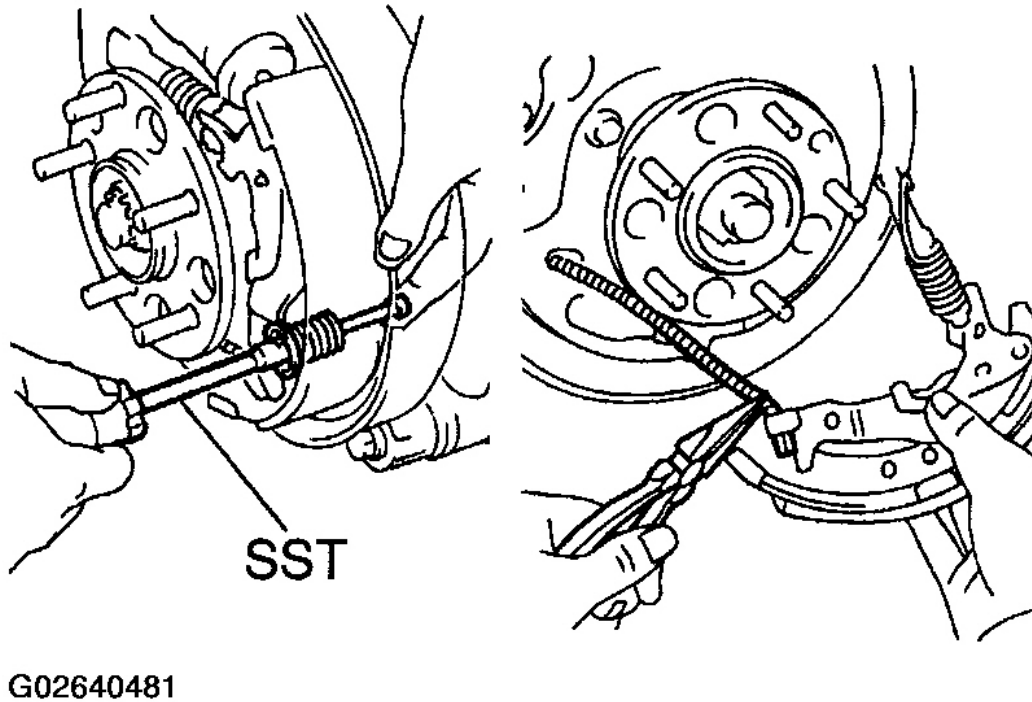
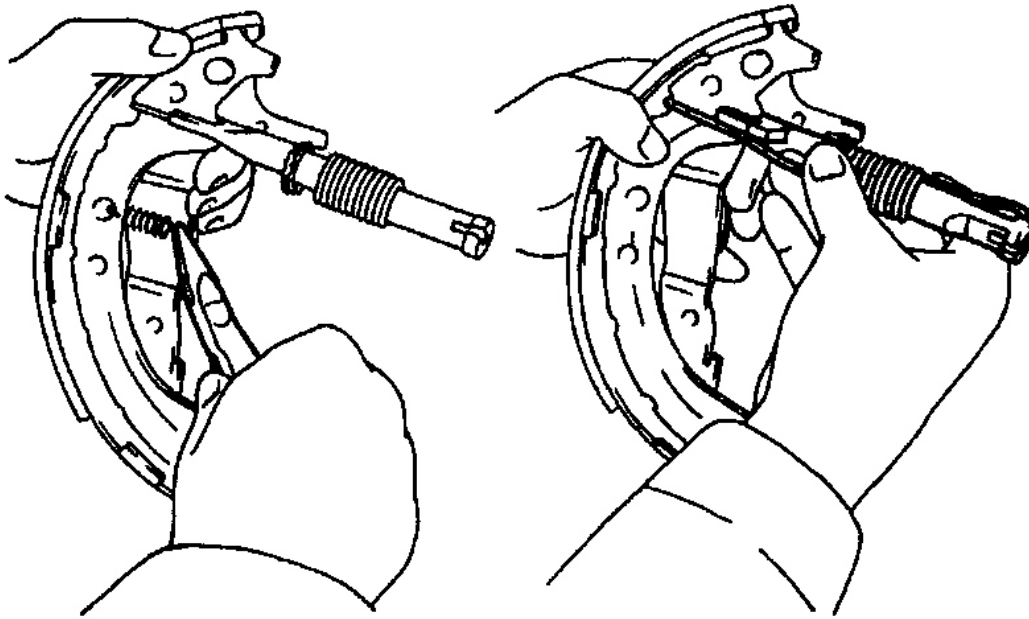


Fig. 46: Removing Shoe Hold-Down Spring, 2 Cups & Pin Using SST
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

6. REMOVE ADJUSTER FROM REAR SHOE

- a. Remove the adjusting lever spring.
- b. Remove the adjuster together with the return spring.



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Fig. 47: Removing Adjusting Lever Spring
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

7. REMOVE WHEEL CYLINDER

- a. Using SST, disconnect the brake line. Use a container to catch the brake fluid.

SST 09023-00101

Torque Specification: 15 N.m (155 kgf.cm, 11 ft.lbf)

- b. Remove the 2 bolts and the wheel cylinder.

Torque Specification: 10 N.m (100 kgf.cm, 7 ft.lbf)

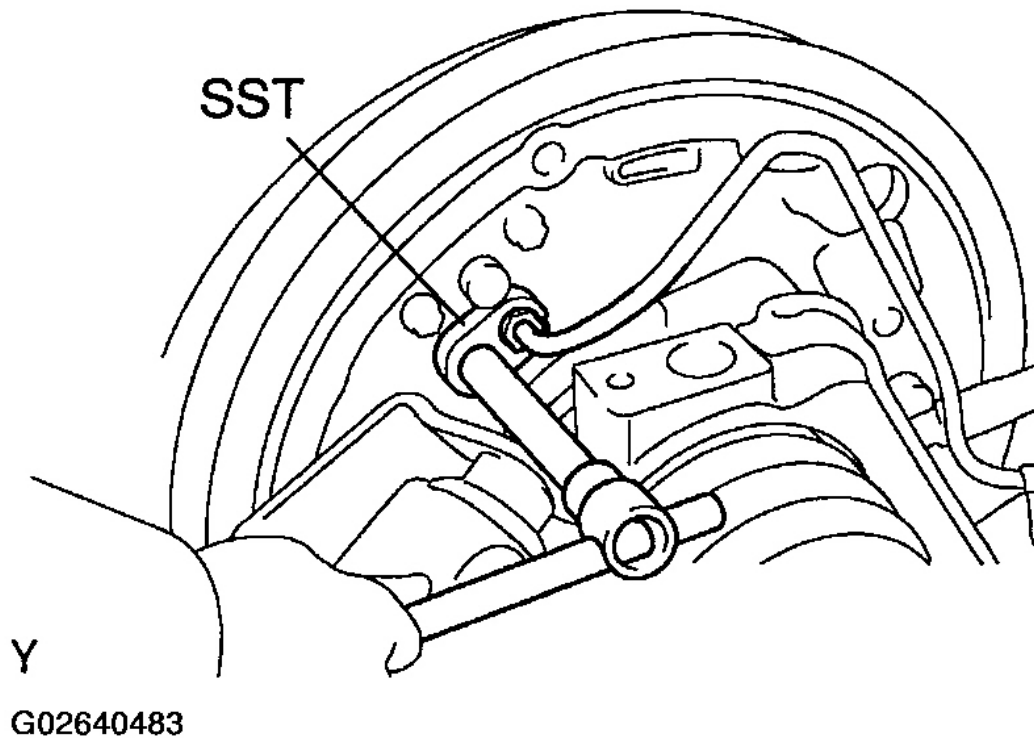


Fig. 48: Disconnecting Brake Line Using SST
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

8. DISASSEMBLE WHEEL CYLINDER

- a. Remove the 2 boots from the wheel cylinder.
- b. Remove the 2 pistons and spring from the wheel cylinder.
- c. Remove the 2 piston cups from each piston.

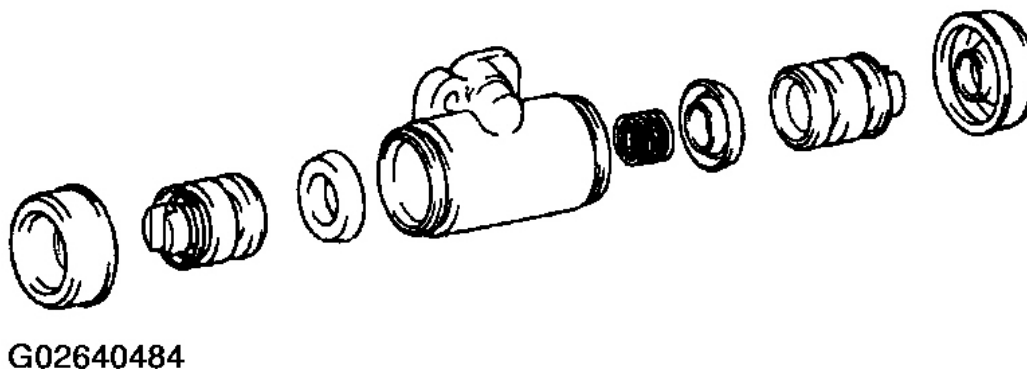


Fig. 49: Removing Pistons & Spring From Wheel Cylinder
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION

1. INSPECT DISASSEMBLED PARTS

Inspect the disassembled parts for wear, rust or damage.

2. MEASURE BRAKE SHOE LINING THICKNESS

Using a ruler, measure the shoe lining thickness.

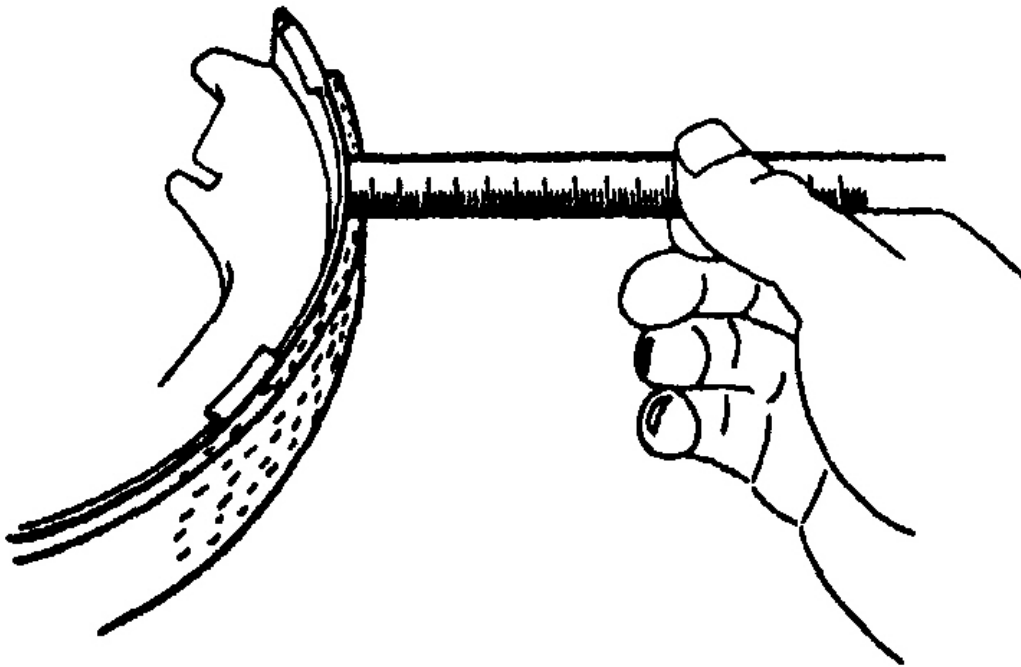
Standard thickness: 5.0 mm (0.197 in.)

Minimum thickness: 1.0 mm (0.039 in.)

If the shoe lining is less than the minimum or shows signs of uneven wear, replace the brake shoes.

HINT:

If a brake shoe needs replacing, the brake shoes must be replaced as a set.



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Fig. 50: Measuring Brake Shoe Lining Thickness

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

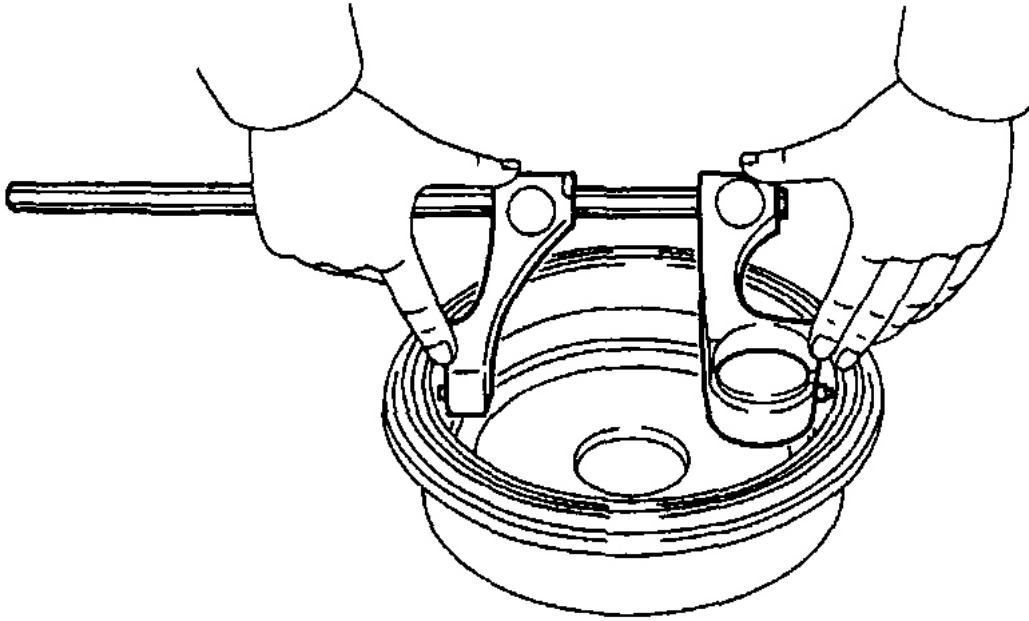
3. MEASURE BRAKE DRUM INSIDE DIAMETER

Using a brake drum gauge or equivalent, measure the inside diameter of the drum.

Standard inside diameter: 228.6 mm (9.000 in.)

Maximum inside diameter: 230.6 mm (9.079 in.)

If the drum is scored or worn, the brake drum may be lathed to the maximum inside diameter.



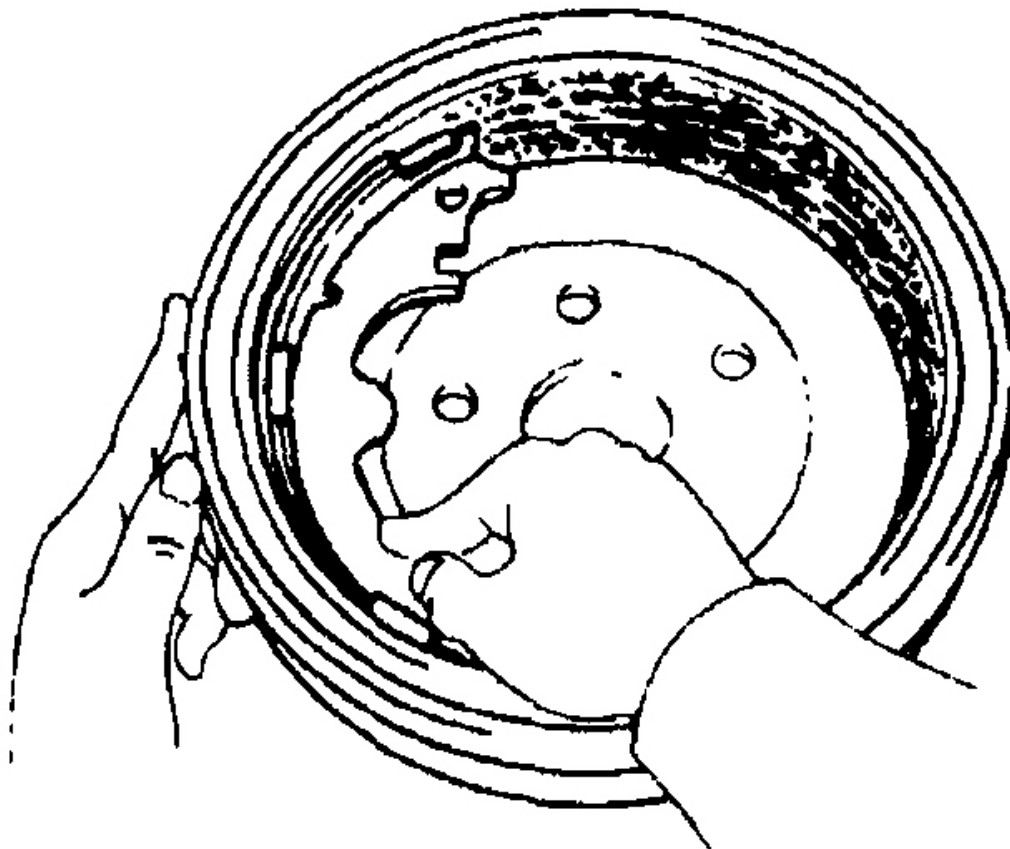
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Fig. 51: Measuring Brake Drum Inside Diameter

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

4. INSPECT REAR BRAKE LINING AND DRUM FOR PROPER CONTACT

If the contact between the brake lining and drum is improper, repair the lining with a brake shoe grinder, or replace the brake shoe assembly.



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Fig. 52: Inspecting Rear Brake Lining & Drum For Proper Contact
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSTALLATION

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

NOTE: Apply lithium soap base glycol grease and high temperature grease to the parts indicated by the arrows (See REAR DRUM BRAKE).

1. CHECK OPERATION OF AUTOMATIC ADJUSTING MECHANISM

- Move the parking brake lever of the rear shoe back and forth. Check that the adjuster turns.

If the adjuster does not turn, check incorrect installation of the rear brake.

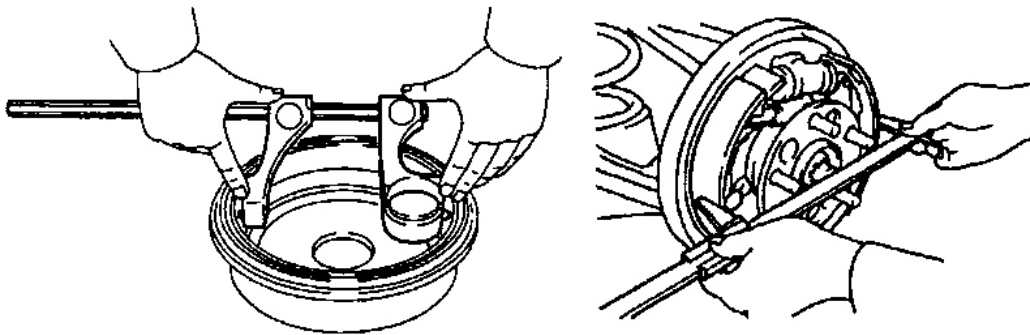
- b. Adjust the adjuster length to the shortest possible amount.
- c. Install the brake drum.
- d. Pull the parking brake lever all the way up until a clicking sound can no longer be heard.

2. CHECK CLEARANCE BETWEEN BRAKE SHOES AND DRUM

- a. Remove the brake drum.
- b. Measure the brake drum inside diameter and diameter of the brake shoes. Check that the difference between the diameters is the correct shoe clearance.

Shoe clearance: 0.6 mm (0.024 in.)

If incorrect, check the parking brake system.



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Fig. 53: Checking Clearance Between Brake Shoes & Drum
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

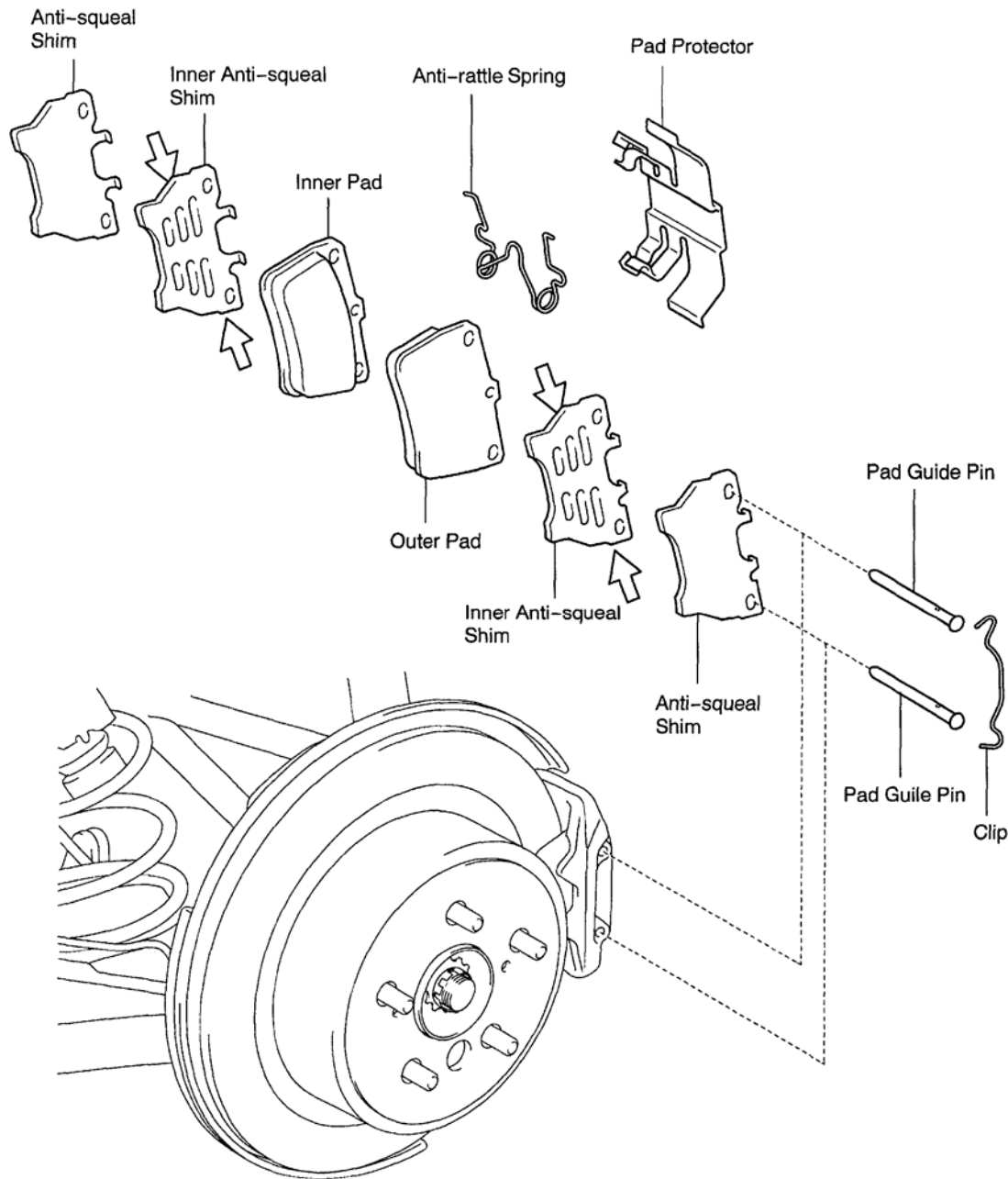
- 3. FILL BRAKE RESERVOIR WITH BRAKE FLUID**
- 4. BLEED BRAKE SYSTEM (See BRAKE FLUID)**
- 5. CHECK FOR LEAKS**
- 6. INSTALL REAR WHEEL**

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

REAR BRAKE PAD**COMPONENTS**

2005 Toyota RAV4

2005 BRAKES Brakes - RAV4



↩ Disc brake grease
G02640489

Fig. 54: Identifying Rear Brake Pad Components
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

REPLACEMENT

1. REMOVE REAR WHEEL

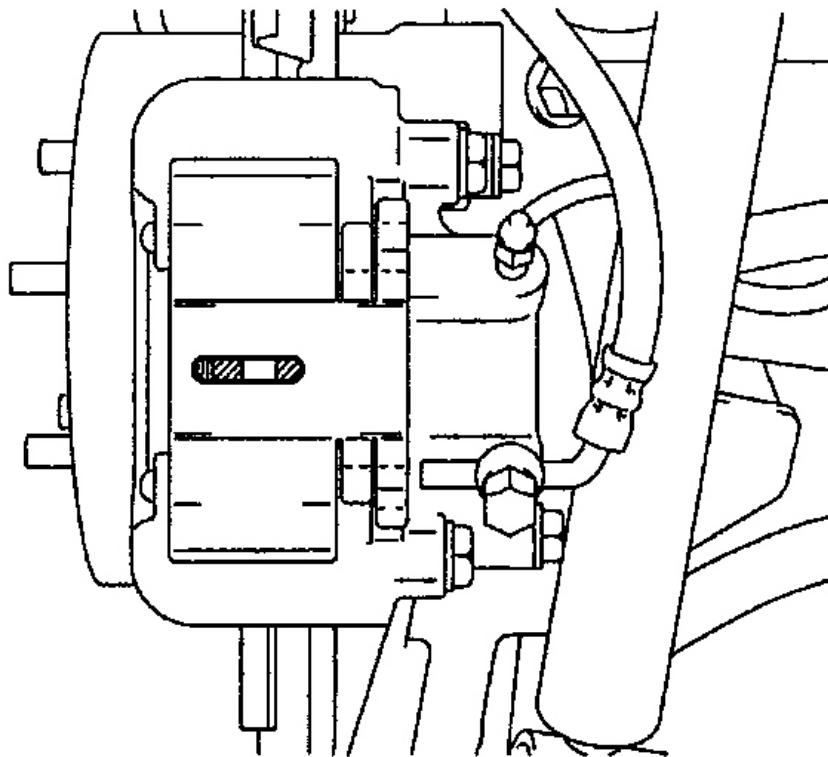
Remove the wheel and temporarily fasten the disc with the hub nuts.

2. INSPECT PAD LINING THICKNESS

Check the pad thickness through the pad protector inspection hole.

Minimum thickness: 1.0 mm (0.039 in.)

If the thickness is not within the specification replace the pads.



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Fig. 55: Checking Pad Thickness Through Pad Protector Inspection Hole
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

3. REMOVE PAD PROTECTOR AND 2 PAD GUIDE PINS

NOTE:

- Do not deform the clip and pad protector.
- The clip and pad protector can be used again provided that they have

sufficient rebound, no deformation, cracks or wear, and have had all rust, dirt and foreign particles cleaned off.

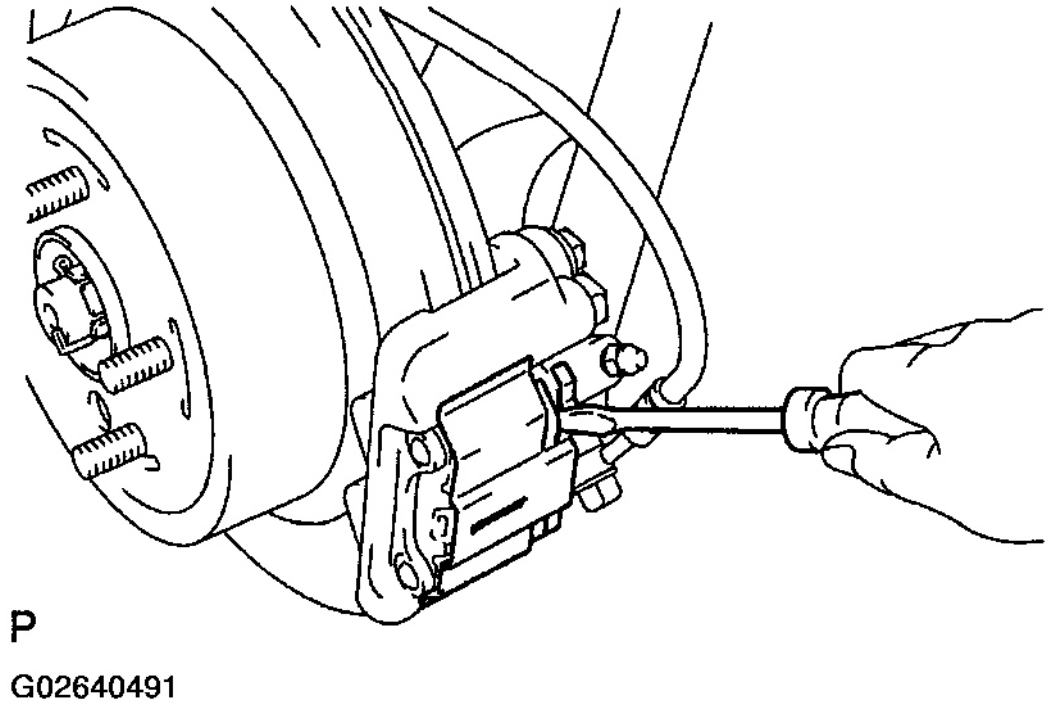


Fig. 56: Removing Pad Protector & 2 Pad Guide Pins
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- a. Using a screw driver, pry the protector and remove it.
- b. Remove the clip and 2 pad guide pins.
4. **REMOVE ANTI-RATTLE SPRING, 2 PAD AND ANTI-SQUEAL SHIMS**
 - a. Remove the anti-rattle spring.
 - b. Remove the 2 pads.
 - c. Remove the anti-squeal shims from each pads.
5. **CHECK DISC THICKNESS AND RUNOUT (See INSPECTION) .**
6. **INSTALL NEW PADS**

NOTE: When replacing worn pads, the anti-squeal shims must be replaced together with the pads.

- a. Apply disc brake grease to both side of inner anti-squeal shims (see REAR BRAKE PAD).

- b. Install the 2 anti-squeal shims on each pad.
- c. Draw out a small amount of brake fluid from the reservoir.
- d. Press in the piston with a monkey wrench handle or equivalent.

HINT:

- Tape the monkey wrench handle before use.
- If the piston is difficult to push in, loosen the bleeder plug and push in the piston while letting some brake fluid escape.

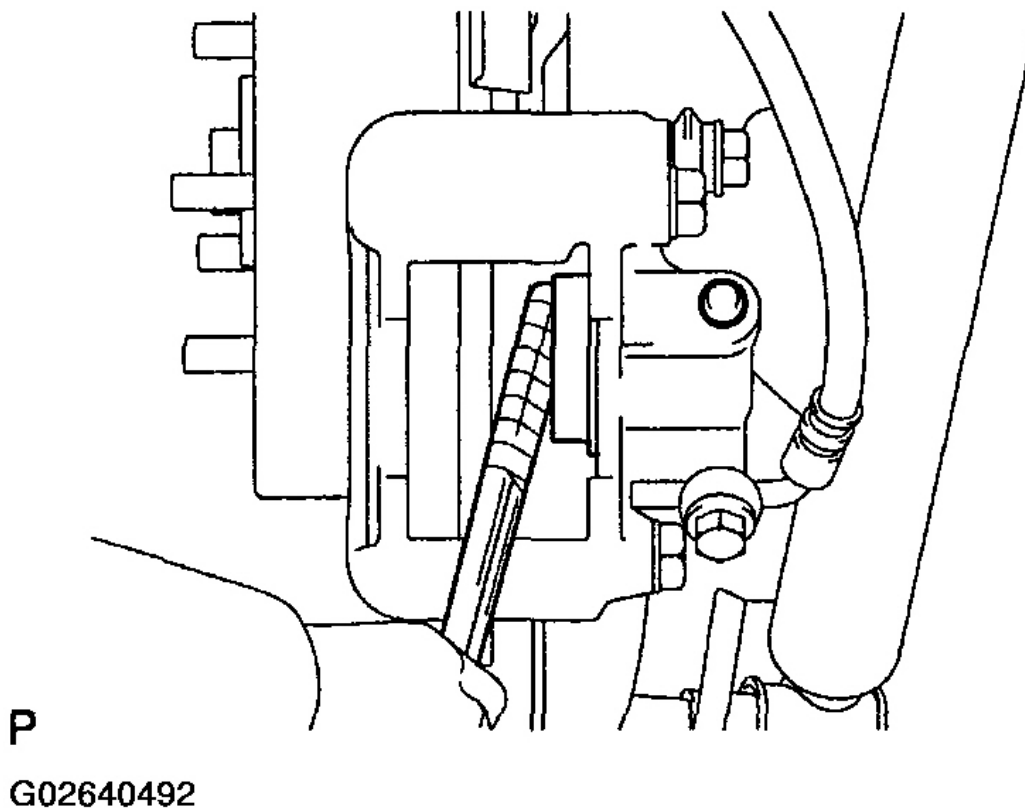


Fig. 57: Pressing Piston Further Into Caliper

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

- e. Install the inner pad with pad wear indicator plate facing downward, and install the outer pad.

NOTE:

There should be no oil or grease adhering to the friction surfaces of the pads and the disc.

2005 Toyota RAV4

2005 BRAKES Brakes - RAV4

- f. Install the anti-rattle spring.
- g. Install the 2 pad guide pins.
- h. Install the clip.
- i. Install the pad protector.

7. INSTALL REAR WHEEL

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

8. DEPRESS BRAKE PEDAL SEVERAL TIMES

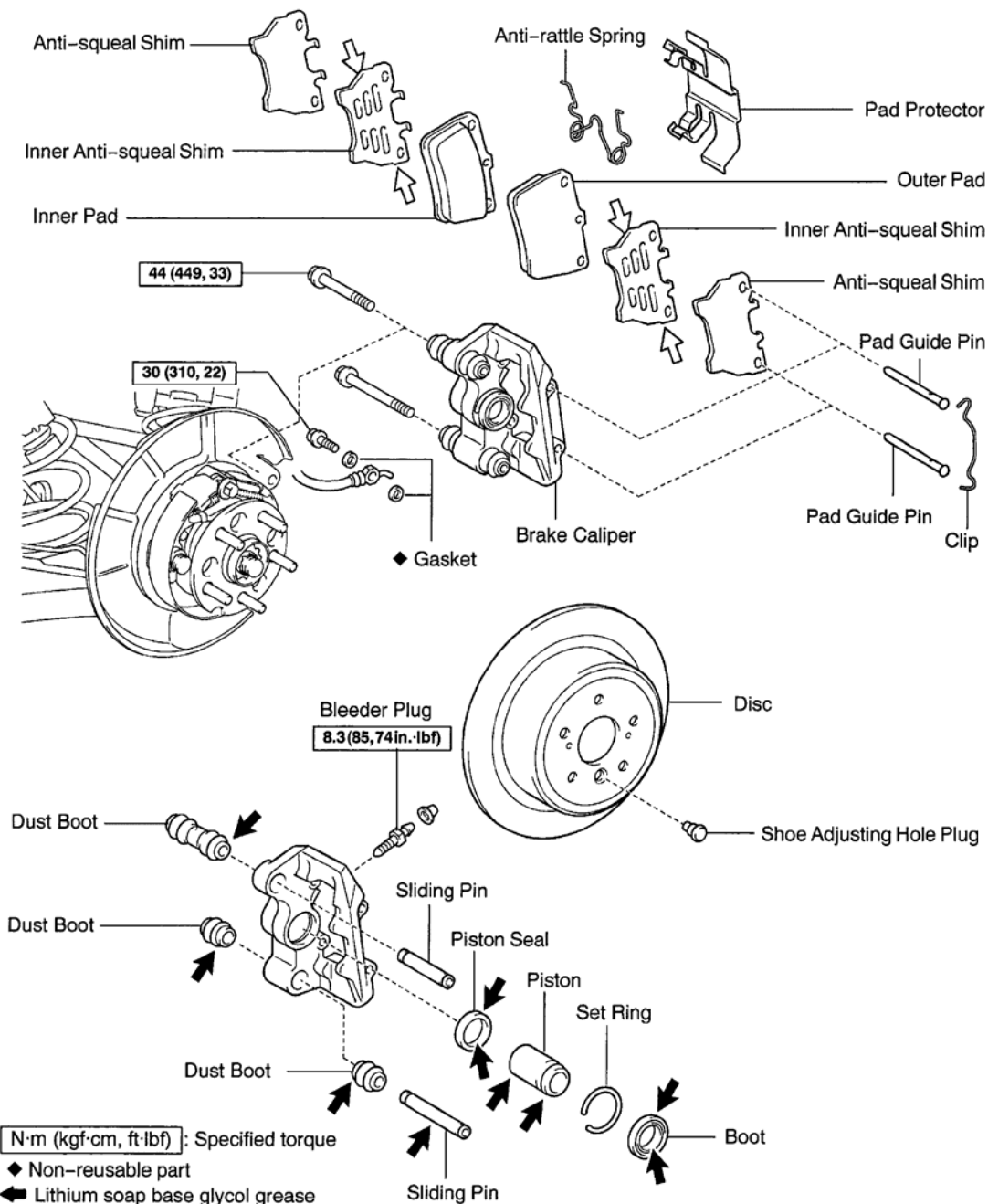
9. CHECK THAT FLUID LEVEL IS AT MAX LINE

REAR BRAKE CALIPER

COMPONENTS

2005 Toyota RAV4

2005 BRAKES Brakes - RAV4



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Fig. 58: Exploded View Of Rear Brake Caliper Components & Torque Specifications
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

REMOVAL

1. REMOVE REAR WHEEL

2005 Toyota RAV4

2005 BRAKES Brakes - RAV4

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

2. DISCONNECT FLEXIBLE HOSE

Remove the union bolt and 2 gaskets from the caliper, then disconnect the flexible hose from the caliper. Use a container to catch the brake fluid as it drains out.

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

HINT:

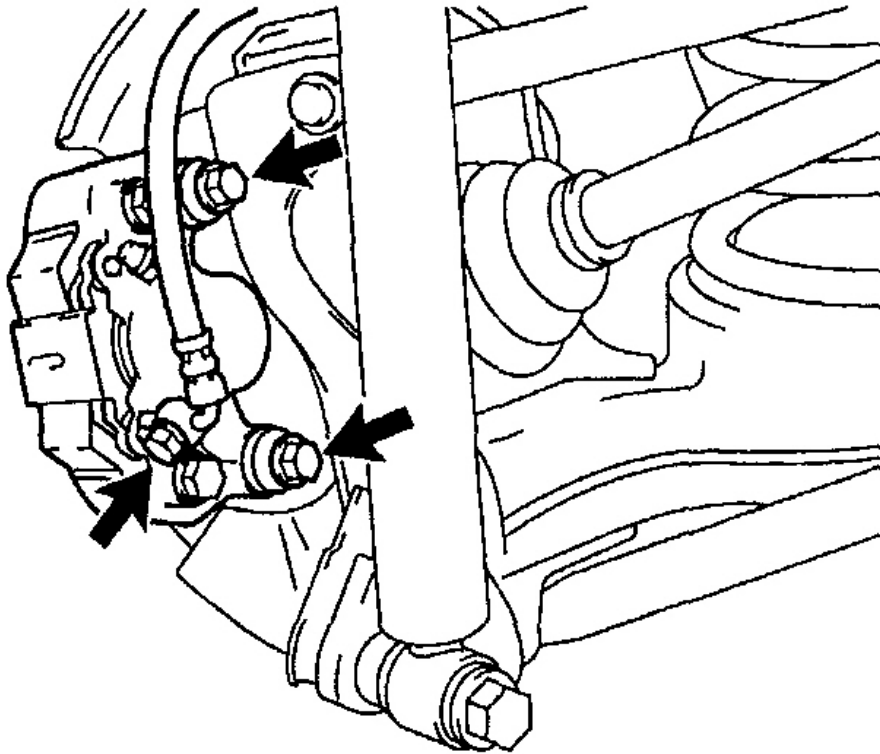
At the time of installation, please refer to the following items.

- Use 2 new gaskets.
- Install the flexible hose lock securely in the lock hole in the caliper.

3. REMOVE CALIPER

Remove the 2 installation bolts and caliper.

Torque Specification: 44 N.m (449 kgf.cm, 33 ft.lbf)



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Fig. 59: Removing Caliper

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

4. **REMOVE BRAKE PADS (See REPLACEMENT)**
 - a. Remove the pad protector.
 - b. Remove the clip and 2 pad guide pins.
 - c. Remove the anti-rattle spring.
 - d. Remove the 2 pads with the 4 anti-squeal shims.

DISASSEMBLY

1. REMOVE SET RING AND CYLINDER BOOT

Using a screwdriver, remove the set ring and cylinder boot.

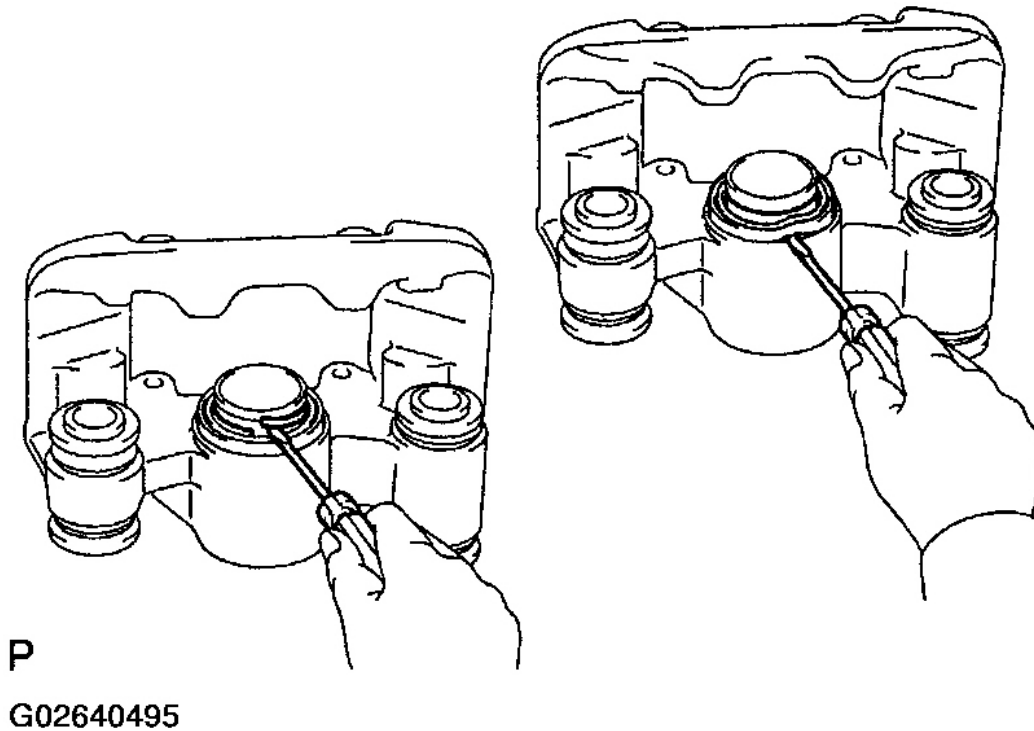
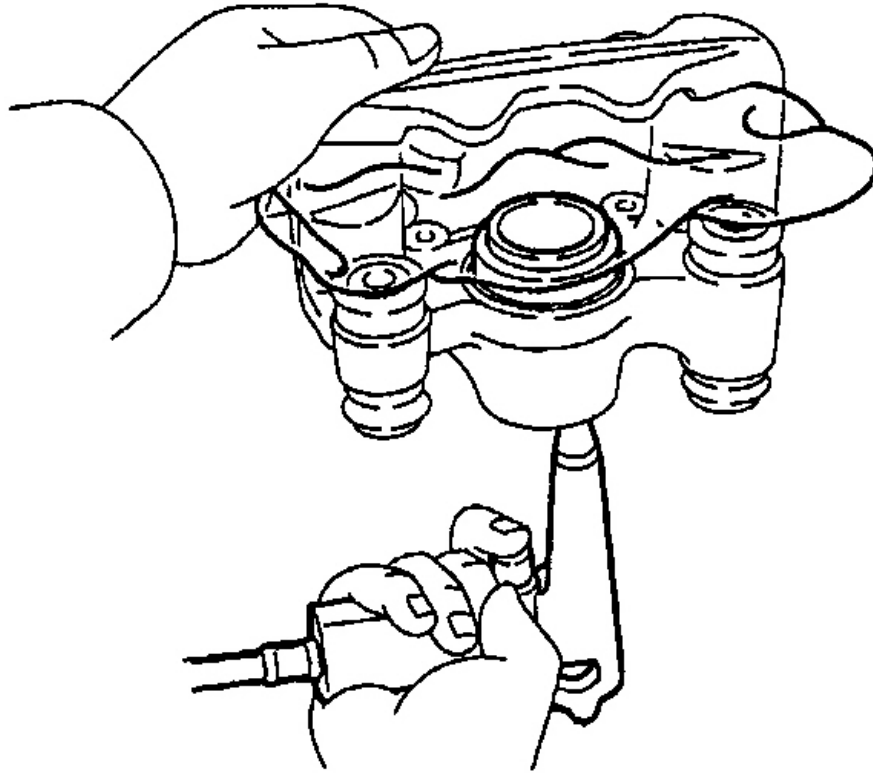


Fig. 60: Removing Set Ring & Cylinder Boot
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

2. REMOVE PISTON

- a. Put a piece of cloth or an equivalent between the piston and caliper.
- b. Use compressed air to remove the piston from the cylinder.

CAUTION: Do not place your fingers in front of the piston when using compressed air.



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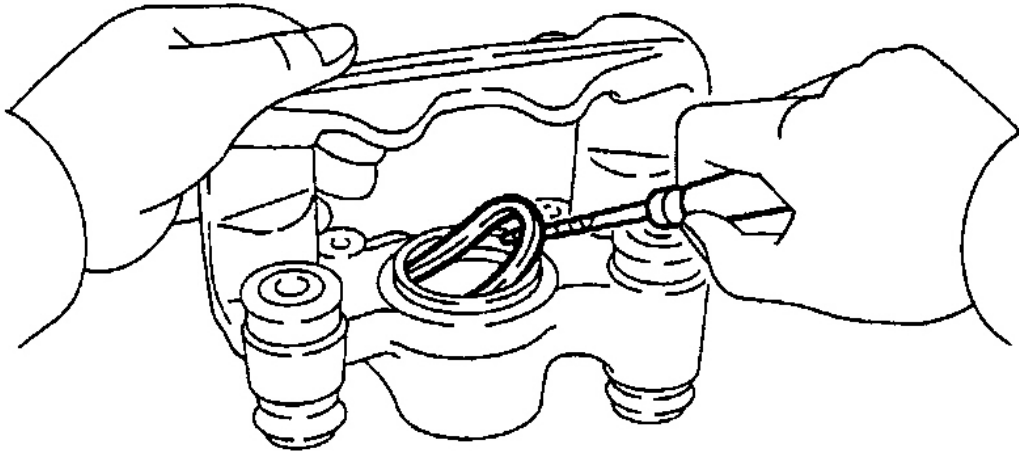
Fig. 61: Removing Piston From Caliper

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

3. REMOVE PISTON SEAL FROM CYLINDER

Using a screwdriver, remove the piston seal.

4. REMOVE 2 SLIDING PINS AND 3 DUST BOOTS



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Fig. 62: Removing 2 Sliding Pins & 3 Dust Boots
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION

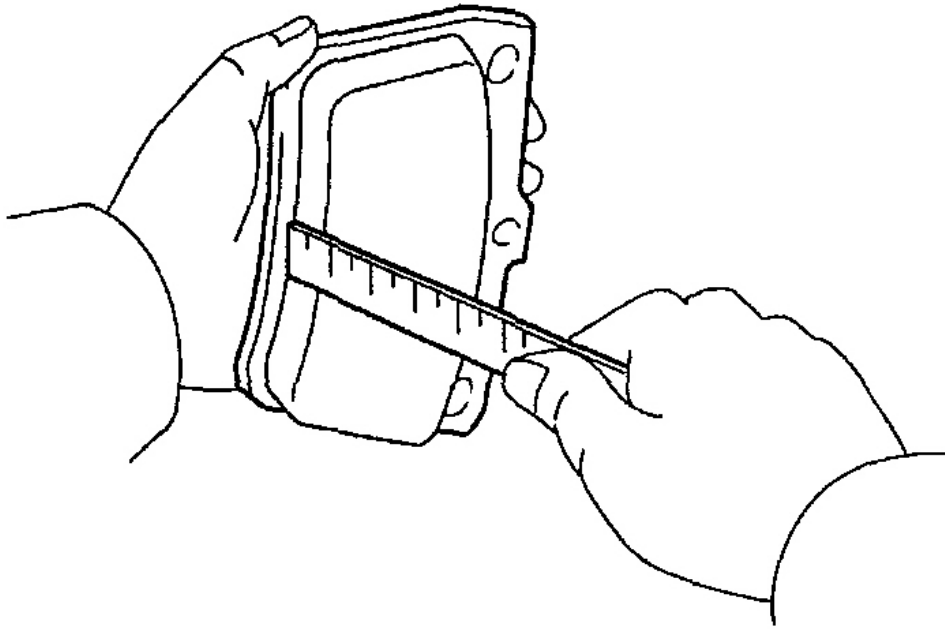
1. MEASURE PAD LINING THICKNESS

Using a ruler, measure the pad lining thickness.

Standard thickness: 10.0 mm (0.394 in.)

Minimum thickness: 1.0 mm (0.039 in.)

Replace the pad if the pad's thickness is at the minimum thickness or less, or if the pad has severe, uneven wear.



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Fig. 63: Measuring Pad Lining Thickness
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

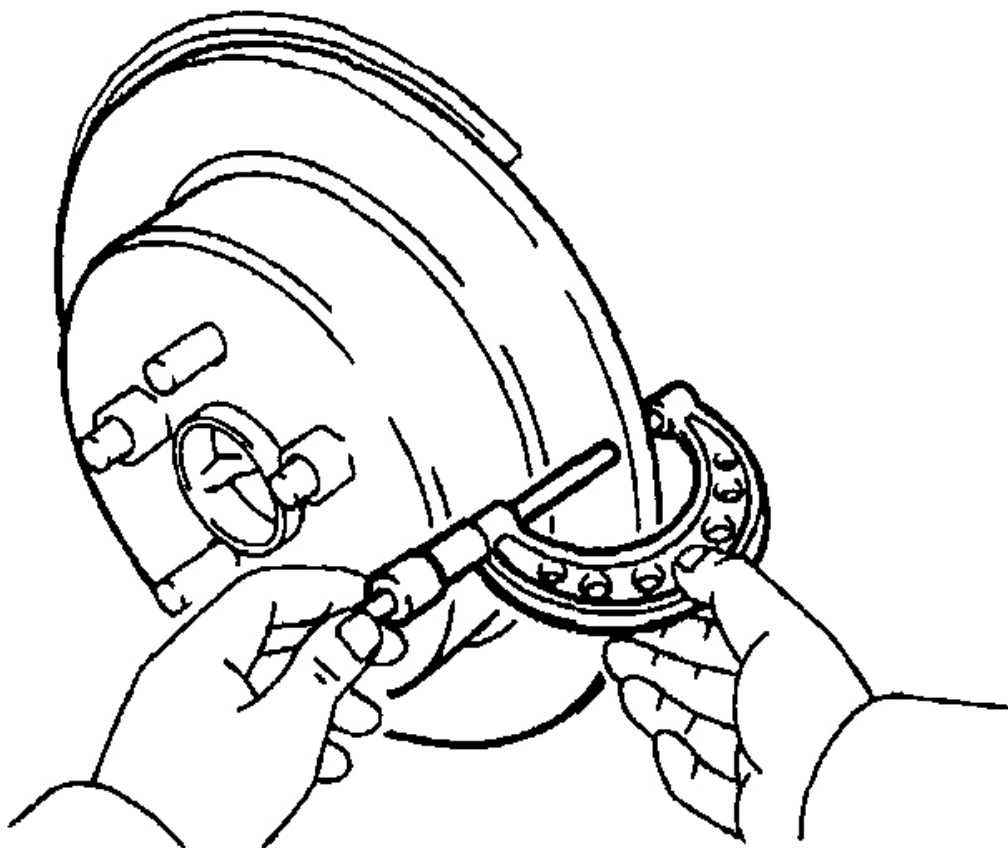
2. MEASURE DISC THICKNESS

Using a micrometer, measure the disc thickness.

Standard thickness: 9.0 mm (0.354 in.)

Minimum thickness: 8.0 mm (0.317 in.)

Replace the disc if the thickness of the disc is at the minimum thickness or less. Replace the disc or grind it on a lathe if it is scored or worn unevenly.



G02640499

Fig. 64: Measuring Disc Thickness

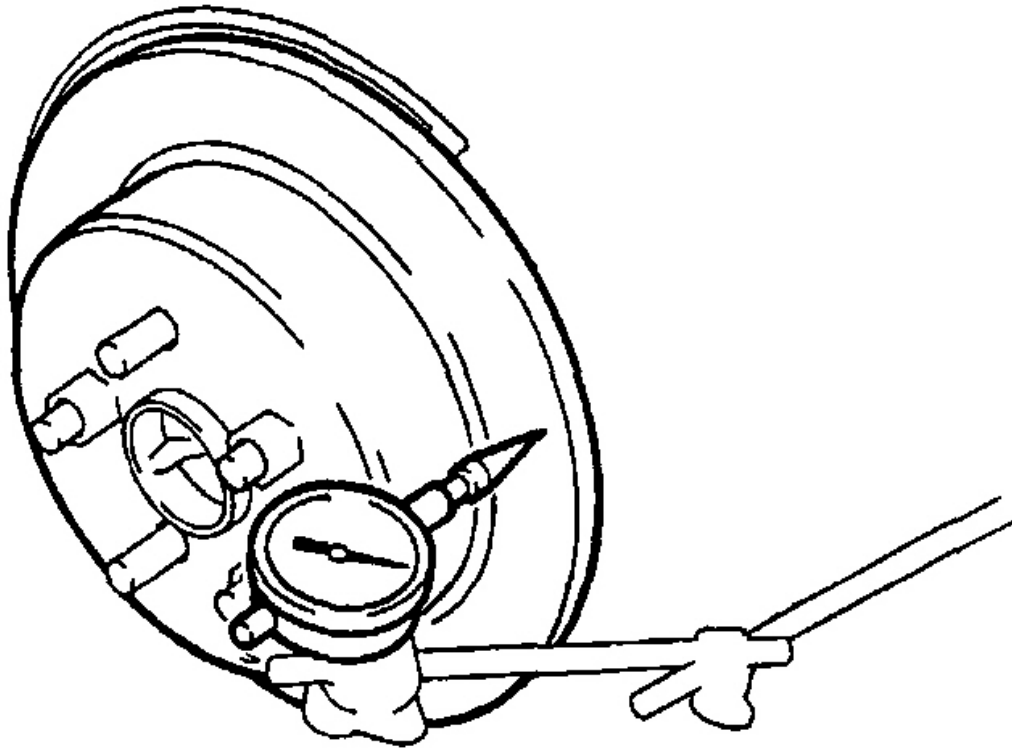
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

3. MEASURE DISC RUNOUT

Using a dial indicator, measure the disc runout 10 mm (0.39 in.) away from the outer edge of the disc.

Maximum disc runout: 0.10 mm (0.0039 in.)

If the runout exceeds the maximum value, change the installation positions of the disc and axle so that the runout will become minimal. If the runout exceeds the maximum even when the installation positions are changed or if the disc thickness is not within the specified range, shave the disc. If the disc thickness is less than the minimum, replace the disc.



G02640500

Fig. 65: Measuring Disc Runout

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

4. IF NECESSARY, ADJUST DISC RUNOUT

- a. Remove the hub nuts and the disc. Turn the disc 1/5 and reinstall the disc. Install and torque the hub nuts.

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

- b. Remeasure the disc runout. Make a note of the runout and the disc's position on the hub.
- c. Repeat (b) until the disc has been installed on the 3 remaining hub positions.
- d. If the minimum runout recorded in (b) and (c) is less than 0.05 mm (0.0020 in.), install the disc in that position.
- e. If the minimum runout recorded in (b) and (c) is greater than 0.05 mm (0.0020 in.), replace the disc and repeat step 3.

2005 Toyota RAV4

2005 BRAKES Brakes - RAV4

REASSEMBLY

Reassembly procedures are disassembly procedures in reverse order (see DISASSEMBLY).

NOTE: Before reassembly, apply lithium soap base glycol grease to the rubber parts indicated by the arrows (See BRAKE MASTER CYLINDER).

INSTALLATION

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

HINT:

- After installation, fill the brake reservoir with brake fluid and bleed the brake system (see BRAKE FLUID).
- Check for fluid leaks.

PARKING BRAKE

COMPONENTS

2005 Toyota RAV4

2005 BRAKES Brakes - RAV4

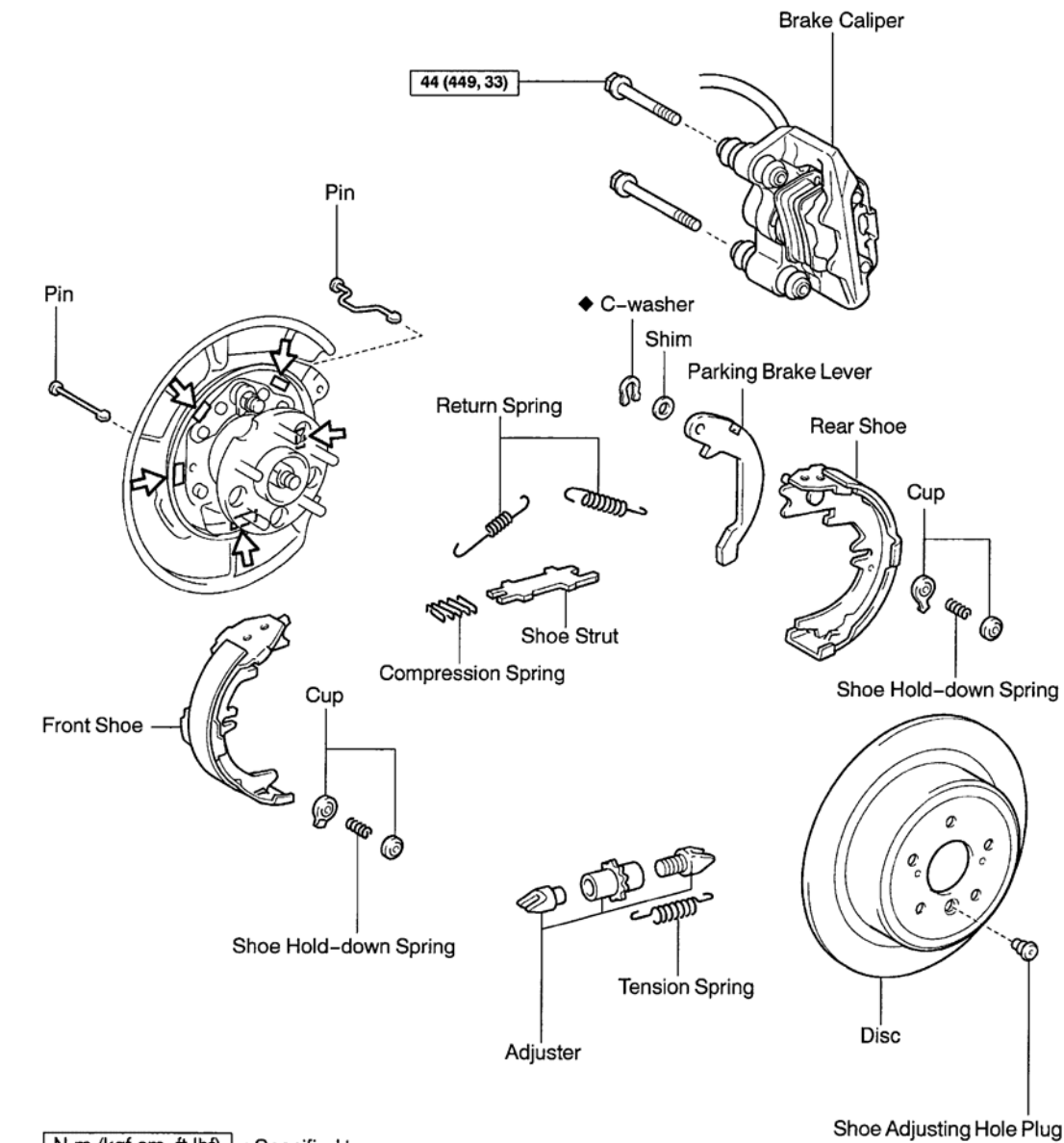


Fig. 66: Exploded View Of Parking Brake Components & Torque Specifications
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

DISASSEMBLY

1. REMOVE REAR WHEEL

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

2. REMOVE REAR DISC BRAKE ASSEMBLY

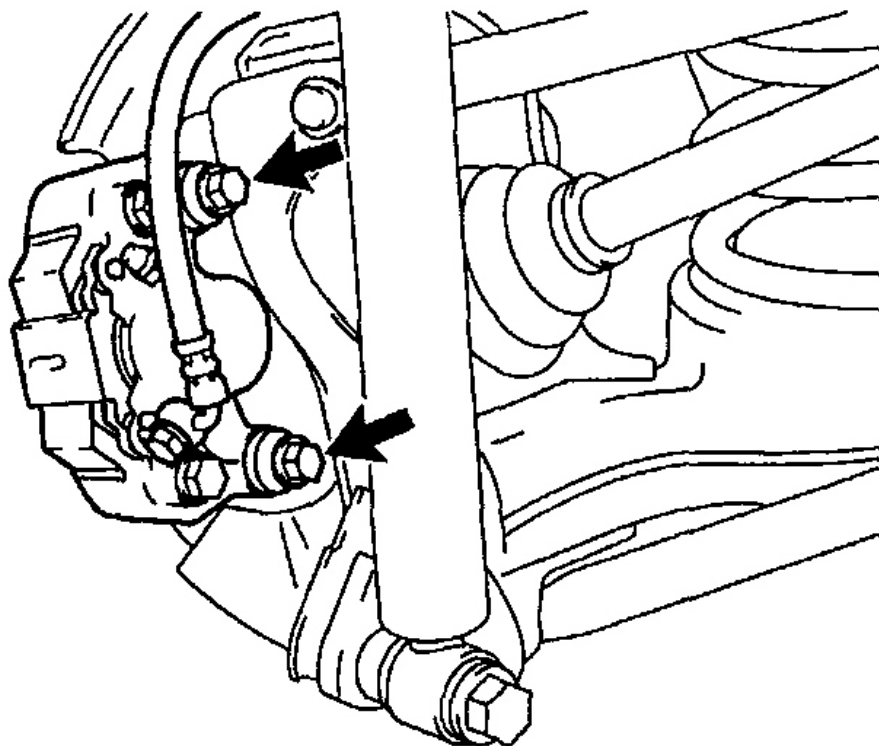
- a. Remove the 2 installation bolts and rear brake caliper.

Torque Specification: 44 N.m (449 kgf.cm, 33 ft.lbf)

HINT:

Do not disconnect the flexible hose from the brake caliper.

- b. Suspend the brake caliper securely. Ensure that the hose is not stretched.



P

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Fig. 67: Removing Rear Disc Brake Assembly

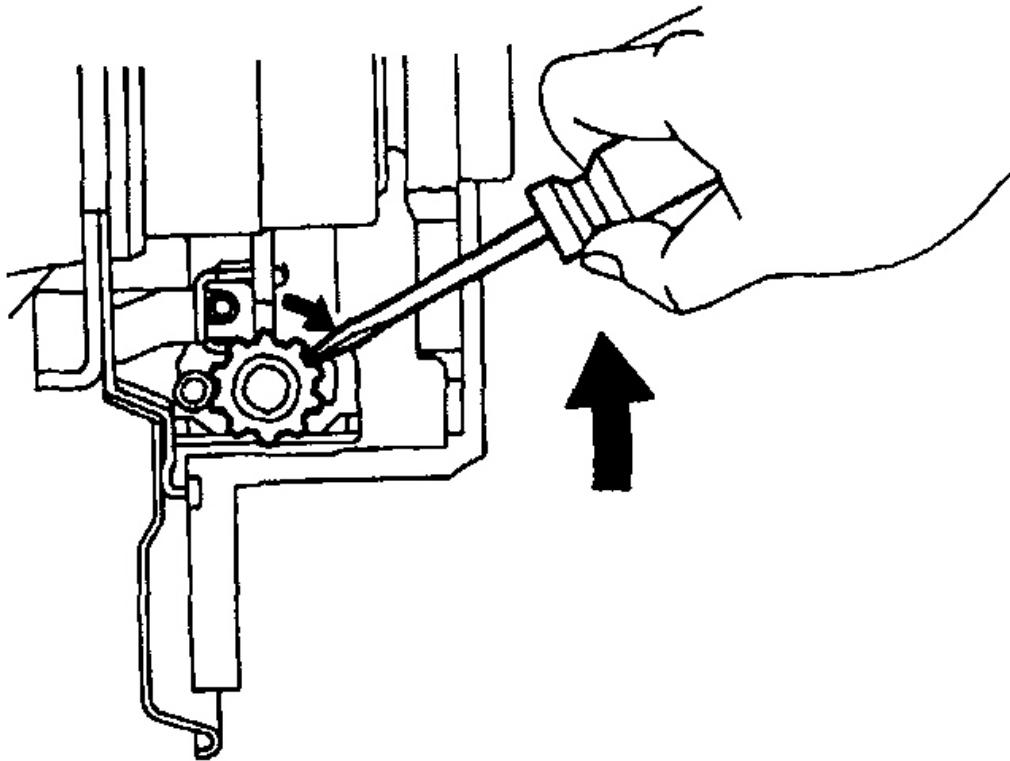
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

3. REMOVE DISC

Release the parking brake lever, and remove the disc.

HINT:

If the disc cannot be removed easily, turn the shoe adjuster until the wheel turns freely.



G02640503

Fig. 68: Releasing Parking Brake Lever

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

4. REMOVE SHOE RETURN SPRINGS

Using SST, remove the 2 shoe return springs.

SST 09717-20010

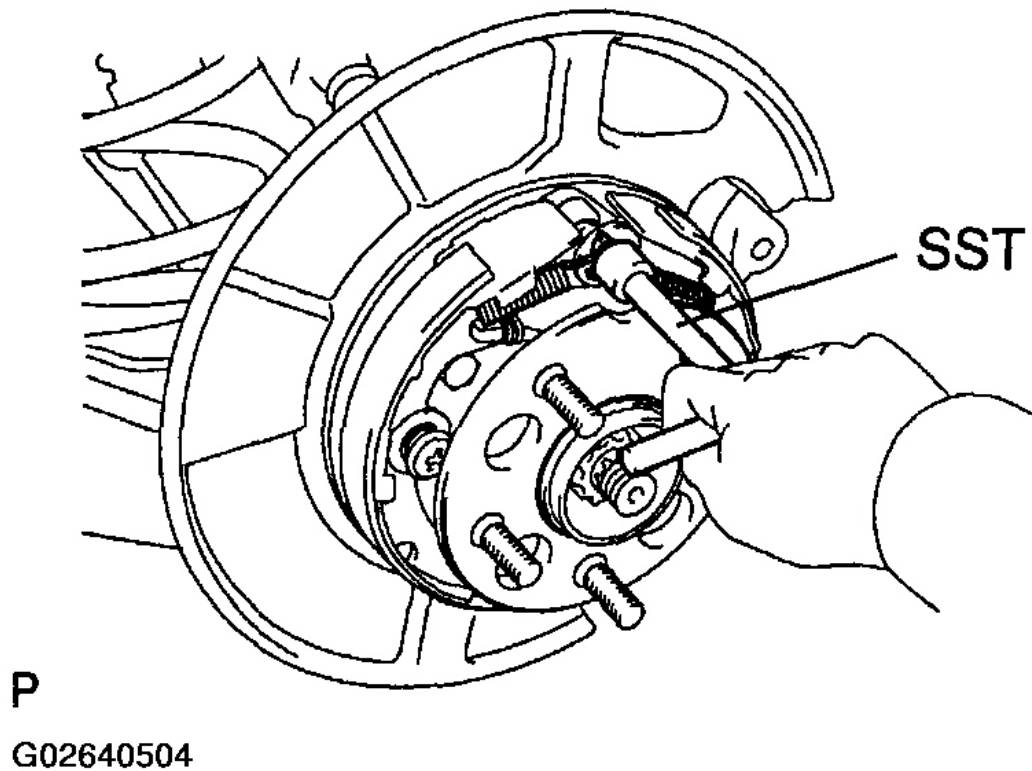


Fig. 69: Removing Shoe Return Springs

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

HINT:

At the time of reassembly, using SST install the 2 shoe return springs.

SST 09718-20010

5. REMOVE SHOE STRUT AND COMPRESSION SPRING

HINT:

At the time of reassembly, install the strut with the spring facing forward.

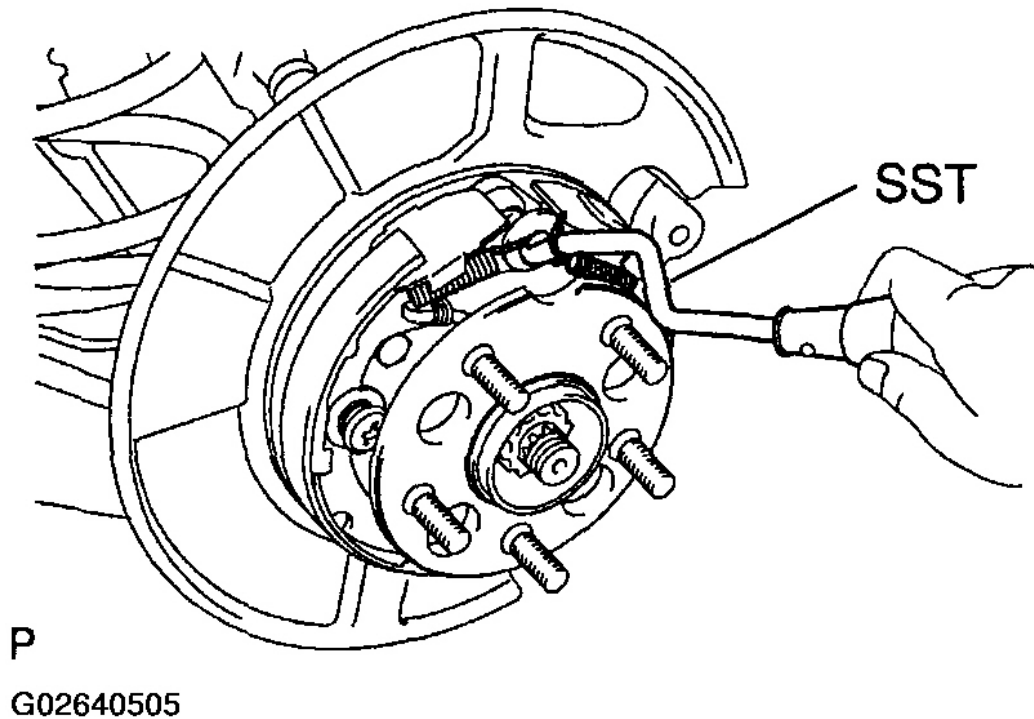
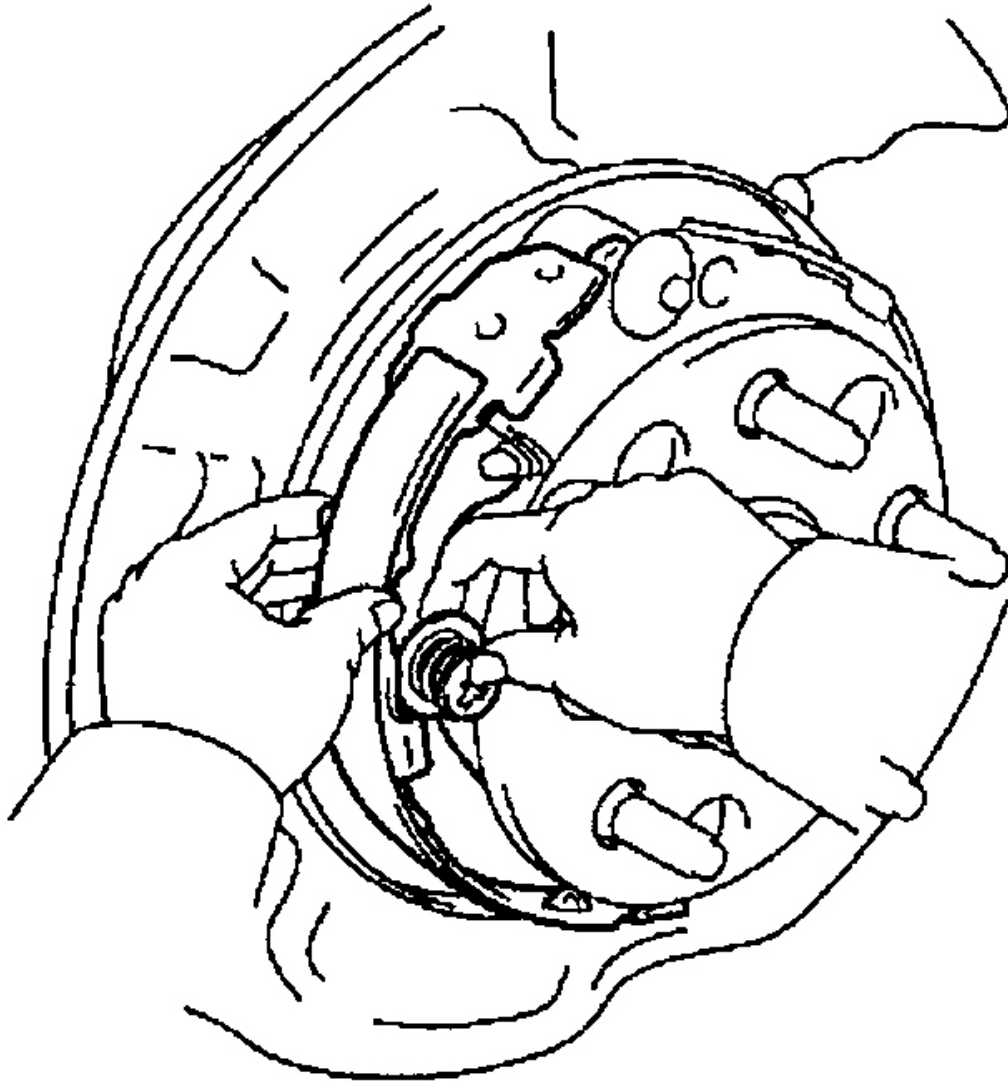


Fig. 70: Removing Shoe Strut & Compression Spring
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

6. REMOVE FRONT SHOE AND ADJUSTER

- a. Slide out the front shoe and remove the shoe adjuster
- b. Disconnect the tension spring and remove the front shoe.
- c. Remove the 2 cups, shoe hold-down spring and pin.



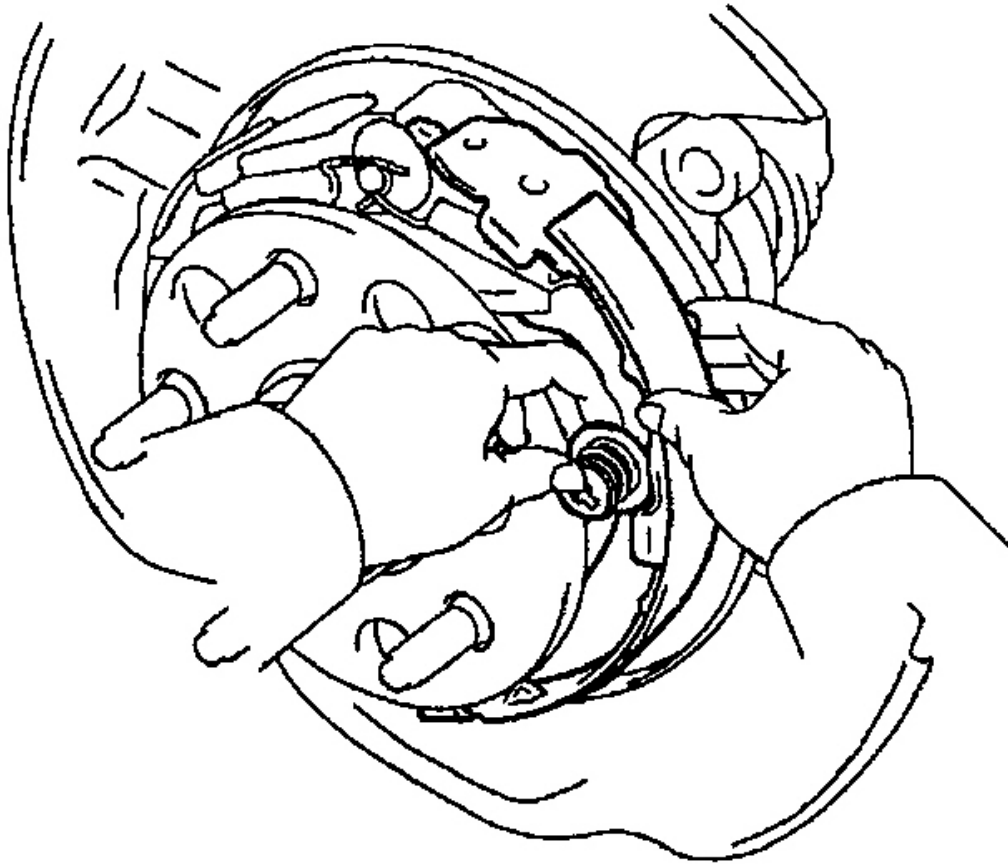
G02640506

Fig. 71: Removing Front Shoe

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

7. REMOVE REAR SHOE

- a. Slide out the rear shoe.
- b. Disconnect the parking brake cable from the parking brake shoe lever.
- c. Remove the 2 caps, shoe hold-down spring and pin.



G02640507

Fig. 72: Removing Rear Shoe

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

INSPECTION

1. INSPECT DISASSEMBLED PARTS

Inspect the disassembled parts for wear, rust or damage.

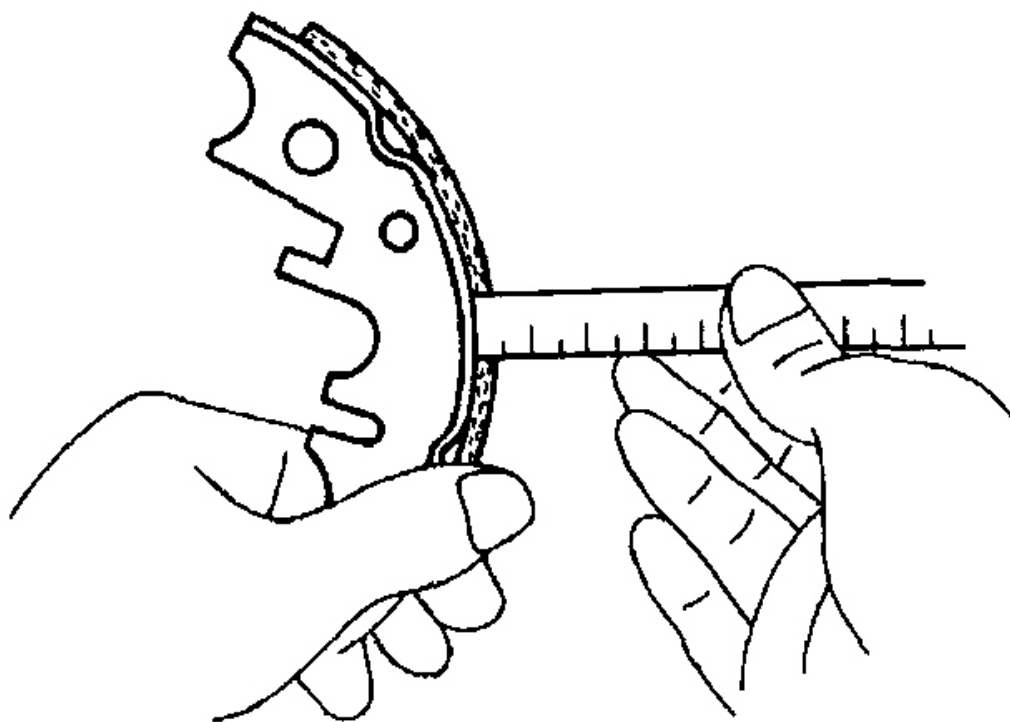
2. MEASURE BRAKE SHOE LINING THICKNESS

Using a ruler, measure the thickness of the shoe lining.

Standard thickness: 2.5 mm (0.098 in.)

Minimum thickness: 1.0 mm (0.039 in.)

If the lining thickness is at the minimum thickness or less, or if there is severe, uneven wear, replace the brake shoe.



G02640508

Fig. 73: Measuring Brake Shoe Lining Thickness
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

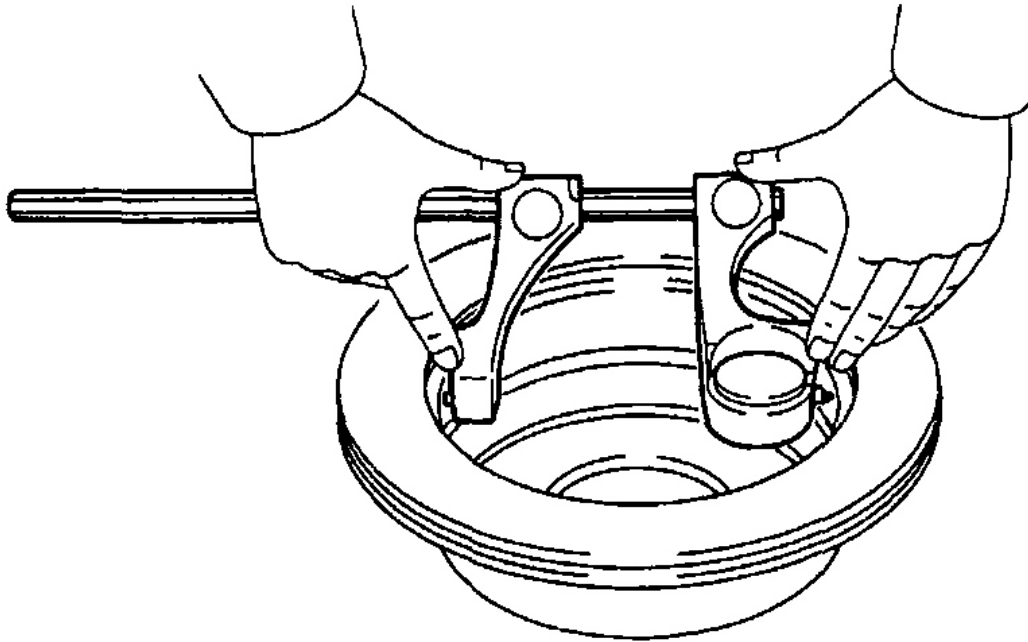
3. MEASURE DISC INSIDE DIAMETER

Using a brake drum gauge or equivalent, measure the inside diameter of the disc.

Standard inside diameter: 190.0 mm (7.480 in.)

Maximum inside diameter: 191.0 mm (7.520 in.)

Replace the disc if the inside diameter is at the maximum value or more. Replace the disc or grind it with a lathe if the disc is scored or is worn unevenly.

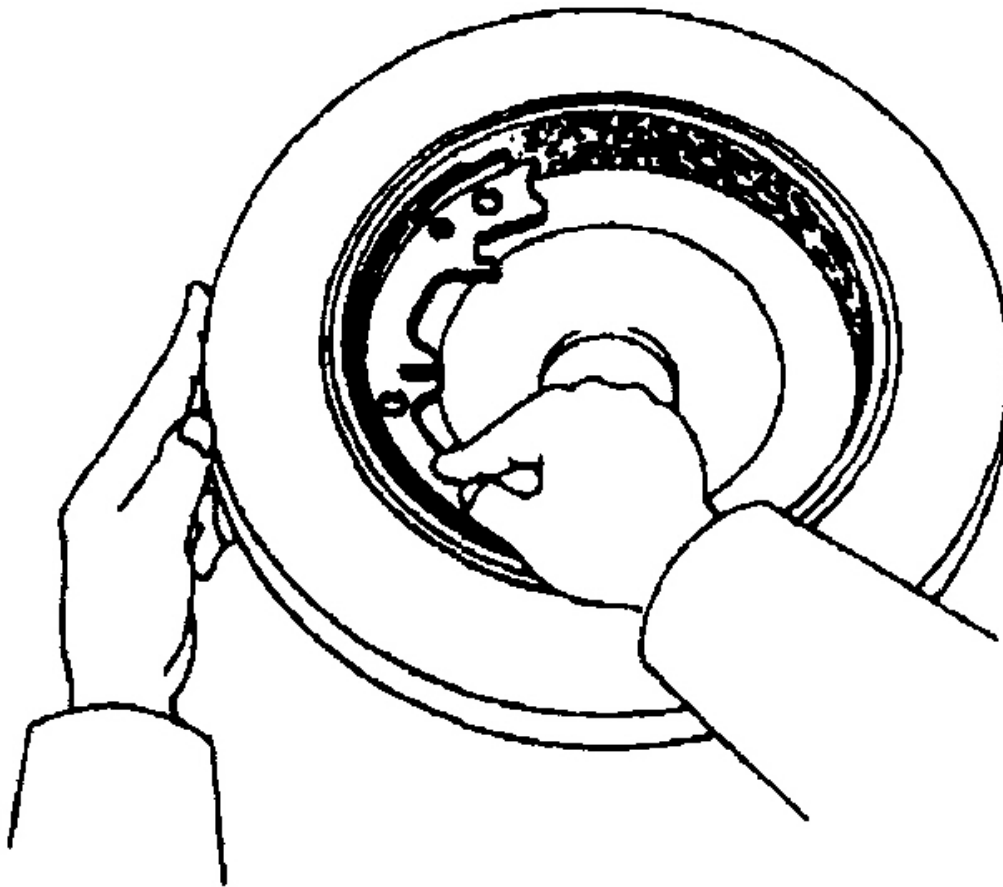


G02640509

Fig. 74: Measuring Disc Brake Drum Inside Diameter
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

4. INSPECT PARKING BRAKE LINING AND DISC FOR PROPER CONTACT

Apply chalk to the inside surface of the disc, then grind down the brake shoe lining to fit. If the contact between the disc and the brake shoe lining is improper, repair it using a brake shoe grinder or replace the brake shoe assembly.



G02640510

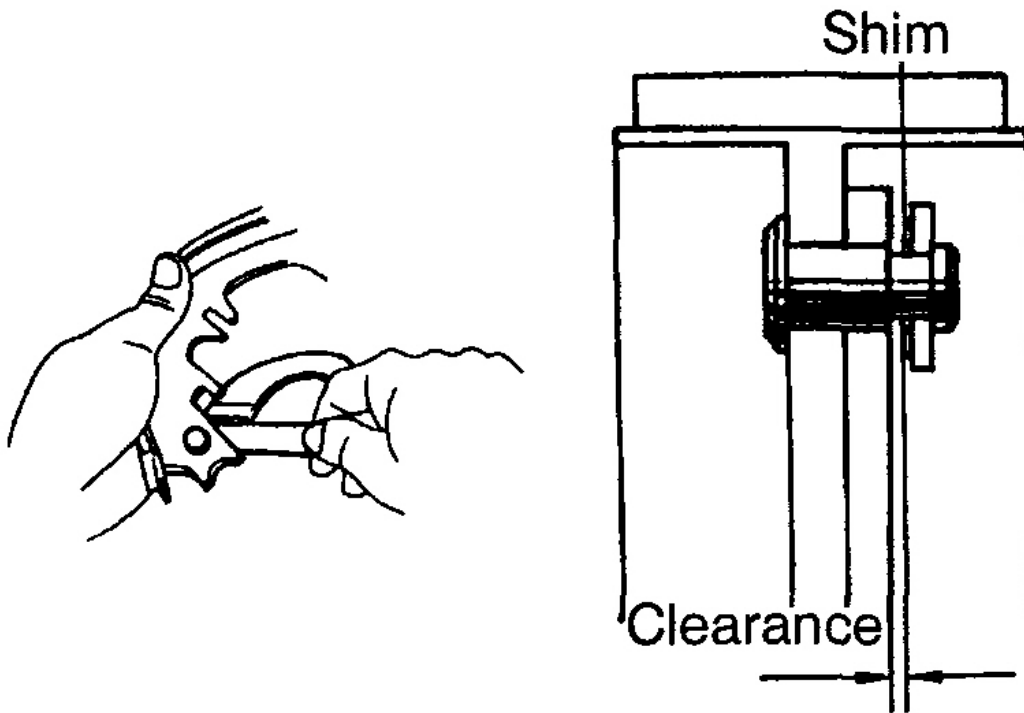
Fig. 75: Inspecting Parking Brake Lining & Disc For Proper Contact
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

5. MEASURE CLEARANCE BETWEEN PARKING BRAKE SHOE AND LEVER

Using a feeler gauge, measure the clearance.

Standard clearance: Less than 0.35 mm (0.0138 in.)

If the clearance is not within the specification, replace the shim with one of the correct size.



G02640511

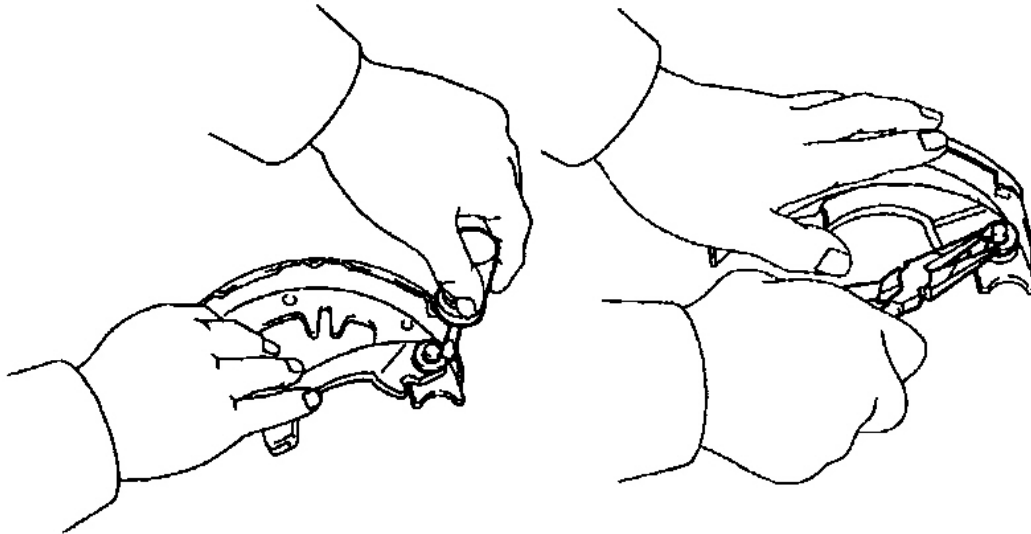
Fig. 76: Measuring Clearance Between Parking Brake Shoe & Lever
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

THICKNESS SPECIFICATION

Thickness mm (in.)	Thickness mm (in.)
0.3 (0.012)	0.9 (0.035)
0.6 (0.024)	-

6. IF NECESSARY, REPLACE SHIM

- Using a screwdriver, remove the C-washer and shim.
- Install the correct size shim.
- Install a new C-washer.
- Remeasure the clearance.



G02640512

Fig. 77: Removing C-Washer & Shim

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

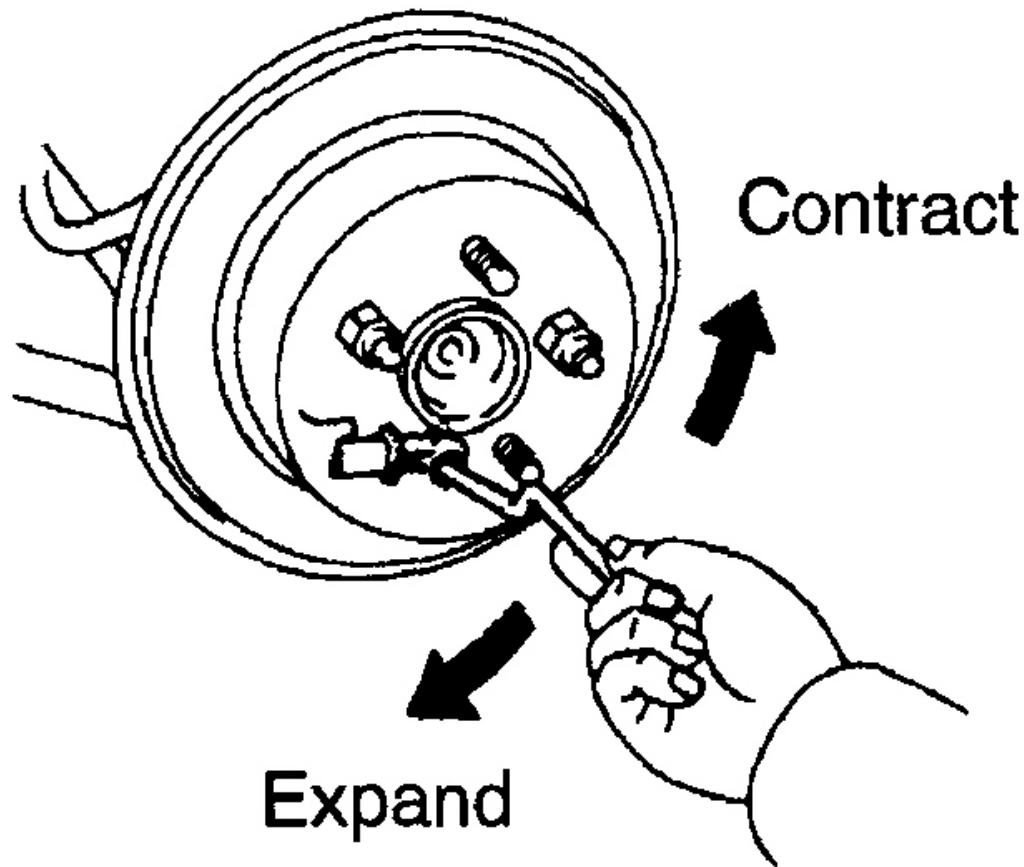
REASSEMBLY

Reassembly is in the reverse order of disassembly (See DISASSEMBLY).

NOTE: Apply high temperature grease to the parts indicated by the arrows (See PARKING BRAKE).

1. ADJUST PARKING BRAKE SHOE CLEARANCE

- a. Temporarily install the hub nuts.
- b. Remove the hole plug.
- c. Turn the adjuster and expand the shoes until the disc locks.



G02640513

Fig. 78: Adjusting Parking Brake Shoe Clearance
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

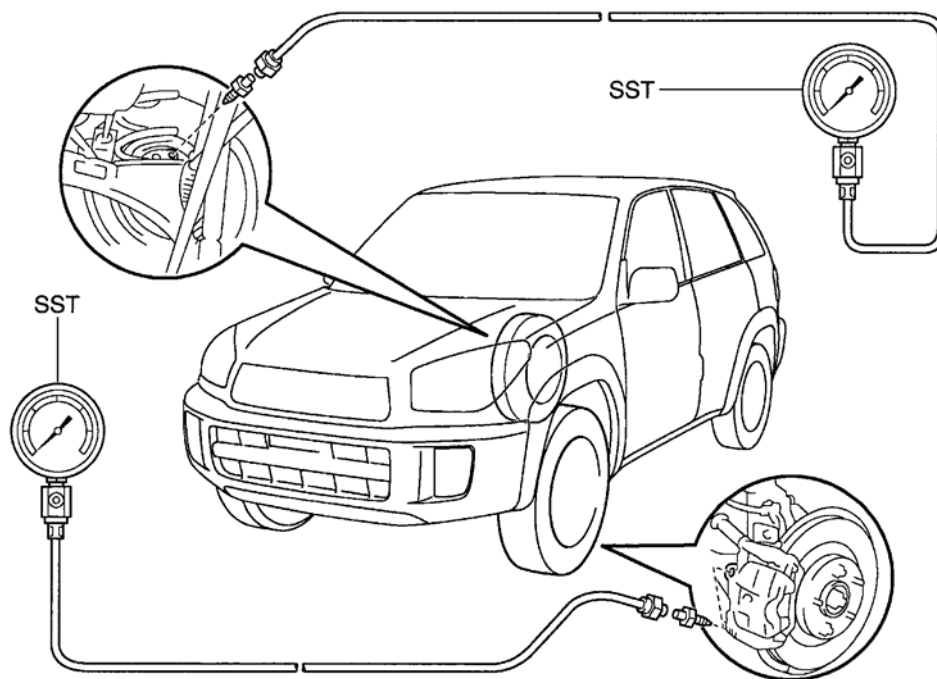
- d. Return the adjuster 8 notches.
- e. Install the hole plug.
2. **SETTLING PARKING BRAKE SHOES AND DISC**
 - a. Drive the vehicle at about 50 km/h (31 mph) on a safe, level and dry road.
 - b. With the parking brake release button pushed in, pull on the lever with 98 N (10 kgf, 19.8 lbf) of force.
 - c. Drive the vehicle for about 400 meters (0.25 mile) in this condition.
 - d. Repeat this procedure 2 or 3 times.
3. **CHECK AND ADJUST PARKING BRAKE LEVER TRAVEL (See PARKING BRAKE LEVER) .**

PROPORTIONING VALVE (P VALVE)

ON-VEHICLE INSPECTION

1. INSTALL LSPV GAUGE (SST) AND BLEED AIR

SST 09709-29018



Y

G02640514

Fig. 79: Installing LSPV Gauges (SST)

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

2. RAISE MASTER CYLINDER PRESSURE AND CHECK REAR WHEEL CYLINDER PRESSURE

MASTER CYLINDER PRESSURE SPECIFICATION

Master cylinder pressure	Rear wheel cylinder pressure
3,430 kPa (35 kgf/cm ² , 497 psi)	3,430 kPa (35 kgf/cm ² , 497 psi)
7,845 kPa (80 kgf/cm ² , 1,138 psi)	5,165 kPa (51.65 kgf/cm ² , 749 psi)

When inspecting the fluid pressure, inspect the left front and right rear together, and the right front and left rear together.

If the rear wheel cylinder pressure is incorrect, replace the P valve assembly.

3. **BLEED BRAKE SYSTEM** (See **BRAKE FLUID**)
4. **CHECK FOR LEAKS**

ABS ACTUATOR

ON-VEHICLE INSPECTION

1. **CONNECT TOYOTA HAND-HELD TESTER**
 - a. Connect the TOYOTA hand-held tester to the DLC3.
 - b. Start the engine and run it at idle.
 - c. Select the ACTIVE TEST mode on the TOYOTA hand-held tester.

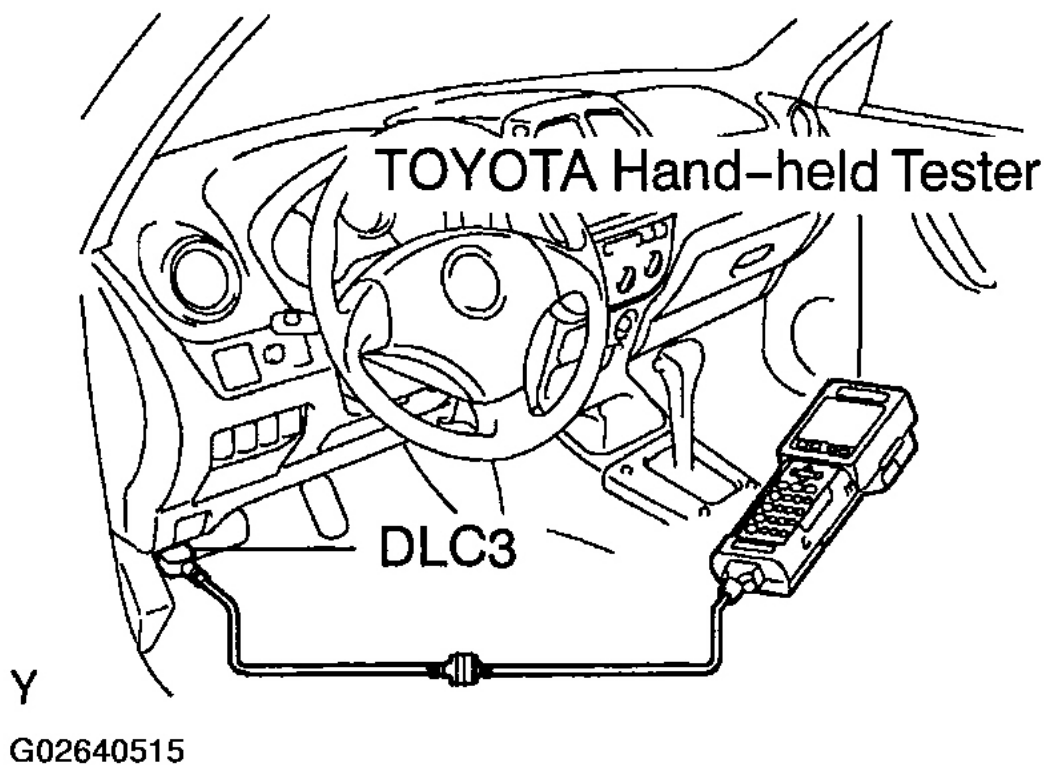


Fig. 80: Connecting Toyota Hand-Held Tester To DLC3
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

HINT:

Refer to the hand-held tester operator's manual for further details.

2. INSPECT ABS ACTUATOR MOTOR OPERATION

- a. Check that the operation sound of the ABS actuator motor can be heard when the motor relay is turned ON by the TOYOTA hand-held tester.

NOTE: Do not keep motor relay ON for more than 5 seconds continuously. When operating it continuously, set the interval of more than 20 seconds.

If the operation sound can not be heard, replace the ABS actuator because the motor operation is in failure.

- b. Turn the motor relay OFF.

3. INSPECT RIGHT FRONT WHEEL SOLENOID

- a. Depress the brake pedal and hold it for about 15 seconds, and check that the brake pedal does not go down further.

If the brake pedal goes down, replace the ABS actuator because the sealing condition of the reduction solenoid valve is abnormal.

- b. Check that the brake pedal does not pulsate when the motor relay is turned ON by the TOYOTA hand-held tester.

NOTE: Do not keep motor relay ON for more than 5 seconds continuously. When operating it continuously, set the interval of more than 20 seconds.

If there is a pulsation in the brake pedal, replace the ABS actuator because the sealing condition of the reduction solenoid valve is abnormal.

- c. Turn the motor relay OFF.
- d. Depress the brake pedal and hold it until the step (g) is completed.
- e. Check that the brake pedal does not go down further when the SFRH and SFRR solenoids are turned ON by the TOYOTA hand-held tester.

NOTE: Do not keep solenoid ON for more than 2 seconds continuously. When operating it continuously, set the interval of more than 20 seconds.

If the brake pedal goes down, replace the ABS actuator because the holding solenoid valve operation is abnormal.

HINT:

2005 Toyota RAV4

2005 BRAKES Brakes - RAV4

To prevent the solenoids, TOYOTA hand-held tester turns OFF automatically 2 secs. after has been turned ON simultaneously.

- f. Check that the brake pedal goes down further when the solenoids are turned OFF.

If the brake pedal does not go down, replace the ABS actuator because the reduction solenoid valve operation is abnormal.

- g. Check that the brake pedal returns when the motor relay is turned ON by the TOYOTA hand-held tester.

NOTE: **Do not keep motor relay ON for more than 5 seconds continuously. When operating it continuously, set the interval of more than 20 seconds.**

If the brake pedal does not return, replace the ABS actuator because the motor operation is in failure.

- h. Turn the motor relay OFF and release the brake pedal.

4. INSPECT OTHER WHEEL SOLENOIDS OPERATION

Check the solenoids of the other wheels with the same inspection procedure as the right front wheel solenoids.

HINT:

Left front wheel: SFLH and SFLR

Right rear wheel: SRRH and SRRR

Left rear wheel: SRLH and SRLR

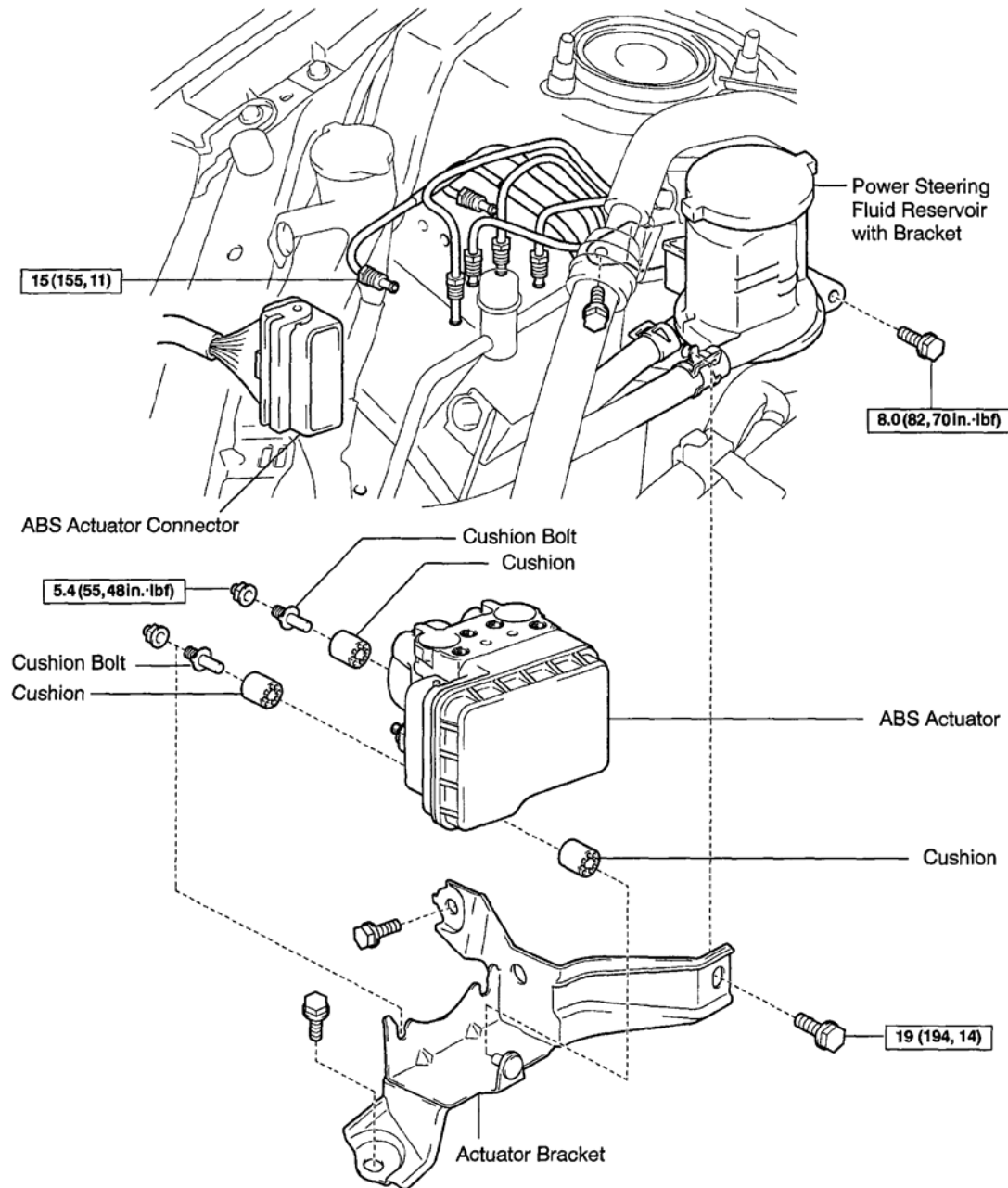
NOTE: **Never depress the brake pedal under the condition that the reduction solenoid alone is turned ON as ABS ECU is reset.**

5. CLEAR DTC (See PRE-CHECK) .

COMPONENTS

2005 Toyota RAV4

2005 BRAKES Brakes - RAV4



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

G02640516

Fig. 81: Identifying ABS Actuator Components & Torque Specifications
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

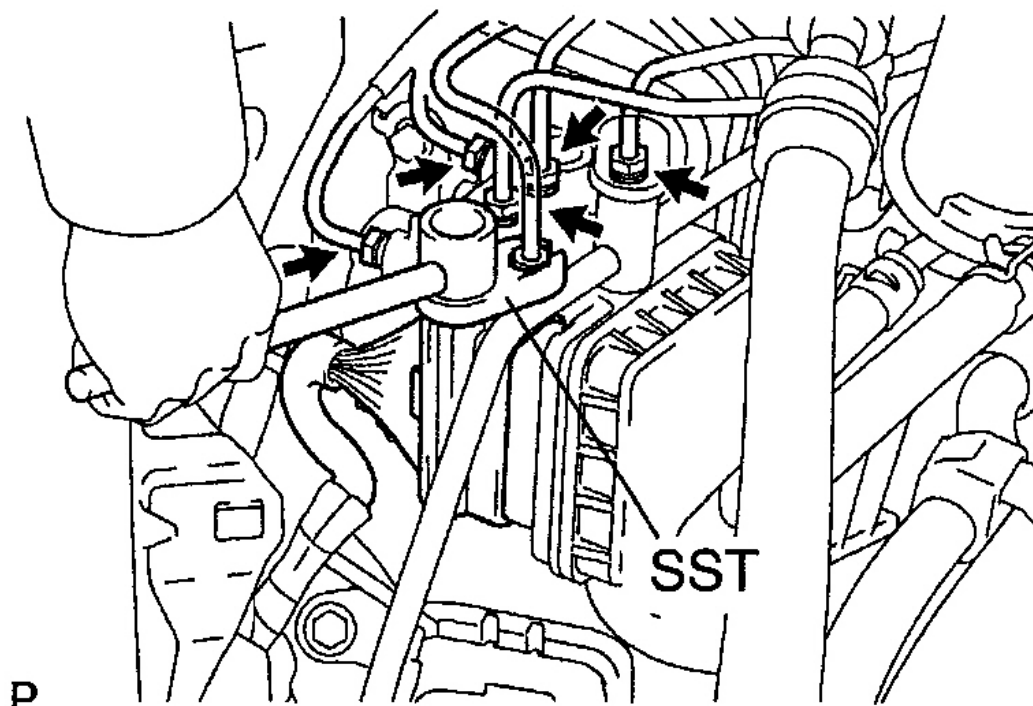
REMOVAL

1. DISCONNECT BRAKE LINES

Using SST, disconnect the 6 brake lines from the ABS actuator.

SST 09023-00101

Torque Specification: 15 N.m (155 kgf.cm, 11 ft.lbf)



G02640517

Fig. 82: Disconnect 6 Brake Lines From ABS Actuator
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

2. DISCONNECT POWER STEERING FLUID RESERVOIR WITH BRACKET

Remove the 2 bolts and disconnect the PS fluid reservoir with the bracket from the body.

Torque Specification: 8.0 N.m (82 kgf.cm, 70 in.lbf)

3. REMOVE ABS ACTUATOR ASSEMBLY

- a. Disconnect the connector.
- b. Remove the 3 bolts and ABS actuator assembly.

Torque Specification: 19 N.m (194 kgf.cm, 14 ft.lbf)

4. REMOVE ABS ACTUATOR

Remove the 2 nuts and actuator from the actuator bracket.

5. REMOVE 2 CUSHION BOLTS AND 3 CUSHIONS

INSTALLATION

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

HINT:

- After installation, fill the brake reservoir with brake fluid and bleed the brake system (See **BRAKE FLUID**).
- Check for fluid leaks.

ABS & VSC ACTUATOR

ON-VEHICLE INSPECTION

1. CONNECT HAND-HELD TESTER

- a. Connect the hand-held tester to the DLC3.
- b. Start the engine and run at idle.
- c. Select the ACTIVE TEST mode on the hand-held tester.

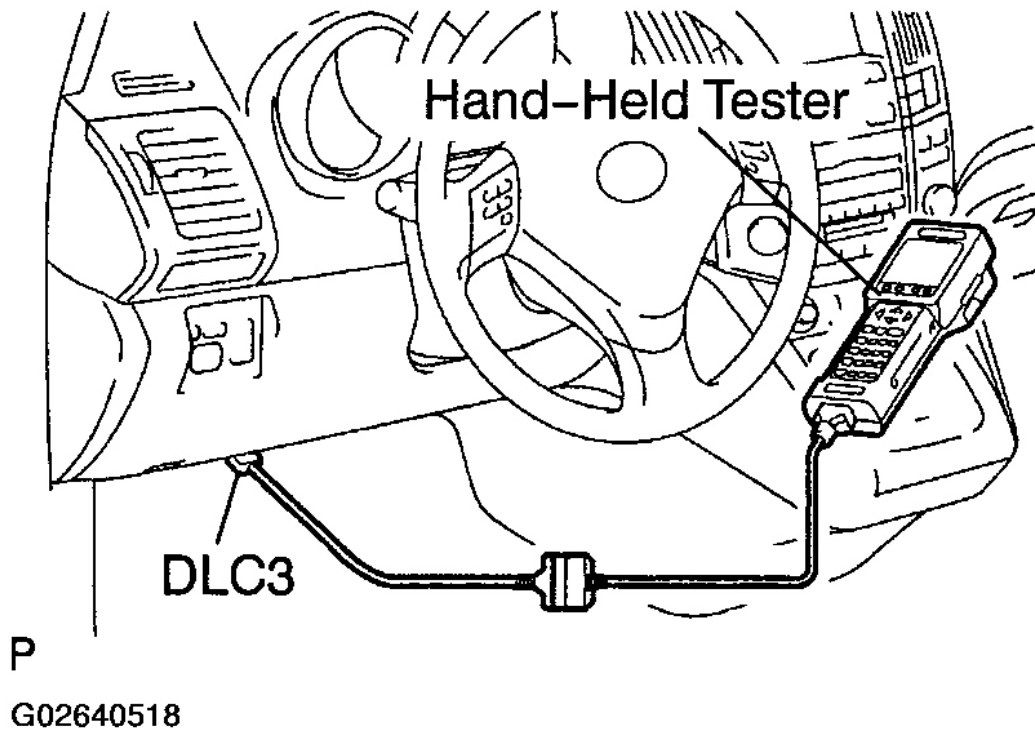


Fig. 83: Connecting Hand-Held Tester To DLC3
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

HINT:

Refer to the hand-held tester operator's manual for further details.

2. INSPECT ACTUATOR MOTOR OPERATION

- With the motor relay on, check the actuator motor operation noise.
- Turn the motor relay off.
- Depress the brake pedal and hold it for about 15 seconds. Check that the brake pedal cannot be depressed.
- With the motor relay on, check that the pedal does not pulsate.

NOTE: Do not keep a motor relay on for more than 5 seconds continuously. When operating it continuously, set an interval of more than 20 seconds.

- Turn the motor relay off and release the brake pedal.

3. INSPECT RIGHT FRONT WHEEL OPERATION

2005 Toyota RAV4

2005 BRAKES Brakes - RAV4

NOTE: Never turn on a solenoid in a manner different to those described below.

- a. With the brake pedal depressed, perform the following operations.
- b. Turn the SFRH and SFRR solenoid on simultaneously, and check that the pedal cannot be depressed.

NOTE: Do not keep a solenoid turned on for more than 10 seconds continuously. When operating it continuously, set an interval of more than 20 seconds.

- c. Turn the SFRH and SFRR solenoid off simultaneously, and check that the pedal can be depressed.
- d. Turn the motor relay on, and check that the pedal returns.

NOTE: Do not keep a motor relay turned on for more than 5 seconds continuously. When operating it continuously, set an interval of more than 20 seconds.

- e. Turn the motor relay off and release the brake pedal.

4. INSPECT OTHER WHEEL OPERATION

- a. Using the same procedure, check the solenoids of the other wheels.

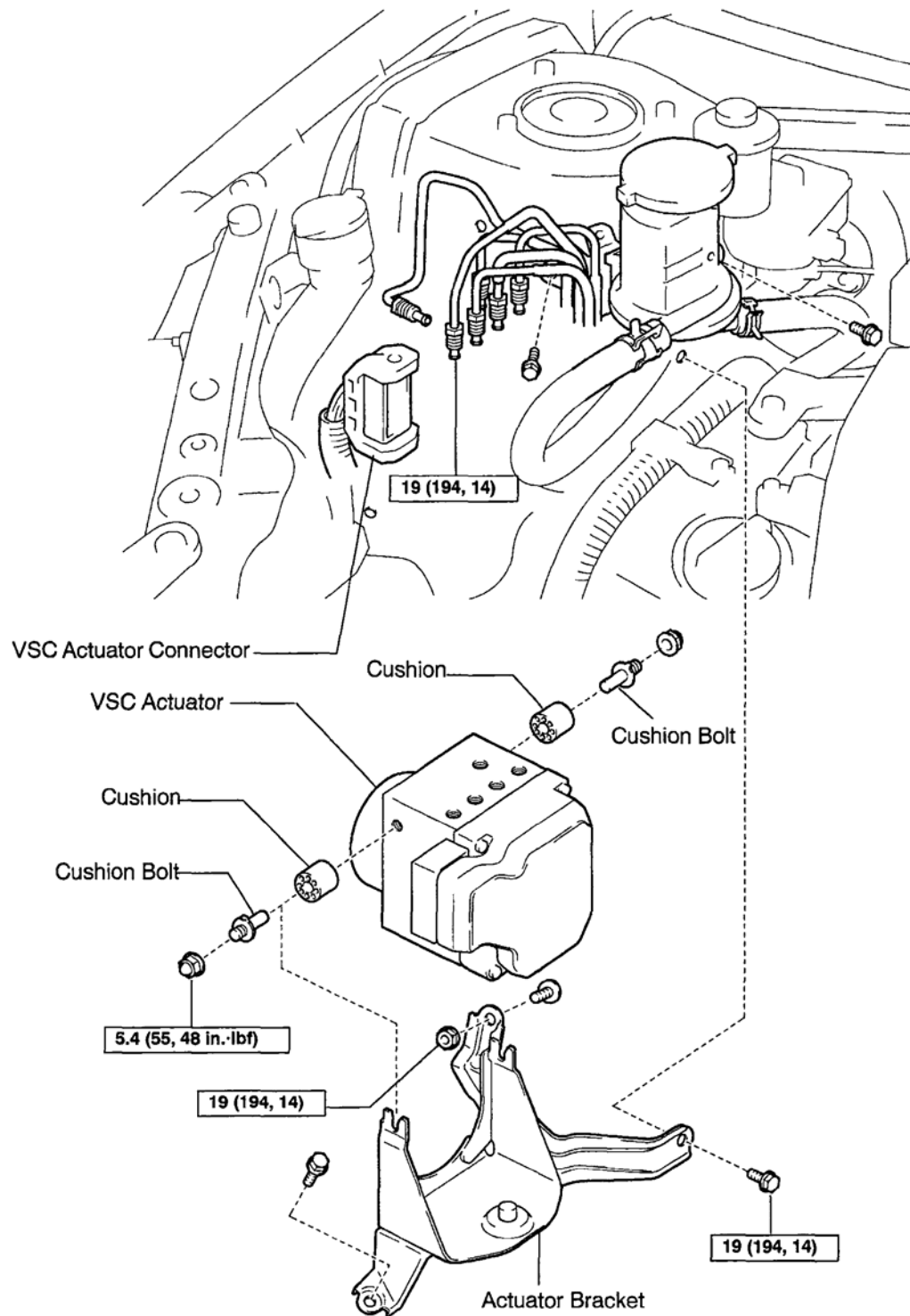
HINT:

- Left front wheel: SFLH, SFLR
- Right rear wheel: SRRH, SRRR
- Left rear wheel: SRLH, SRLR

COMPONENTS

2005 Toyota RAV4

2005 BRAKES Brakes - RAV4



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

G02640519

Fig. 84: Identifying ABS & VSC Actuator Components & Torque Specifications

2005 Toyota RAV4

2005 BRAKES Brakes - RAV4

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

REMOVAL

1. DRAIN BRAKE FLUID

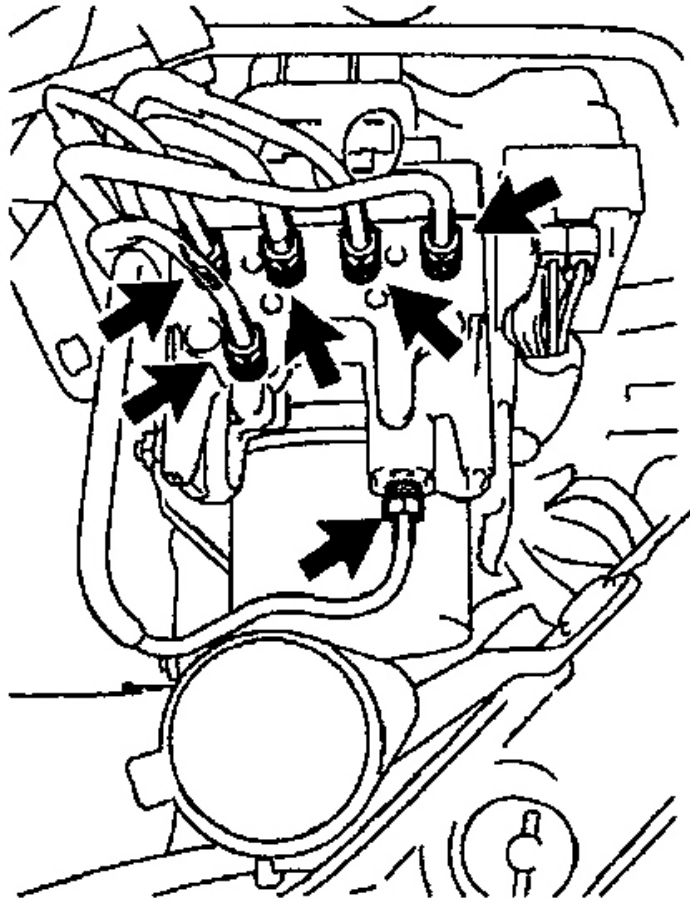
NOTE: Wash the brake fluid off immediately if it adheres to any painted surface.

2. DISCONNECT BRAKE LINES

- a. Using SST(s), disconnect the 6 brake tubes from the actuator with bracket.

SST 09023-00101

Torque Specification: 15 N.m (155 kgf.cm, 11 ft.lbf)



P

G02640520

Fig. 85: Disconnecting 6 Brake Tubes From Actuator
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- b. Use tags or make memo to identify the places for reconnect.

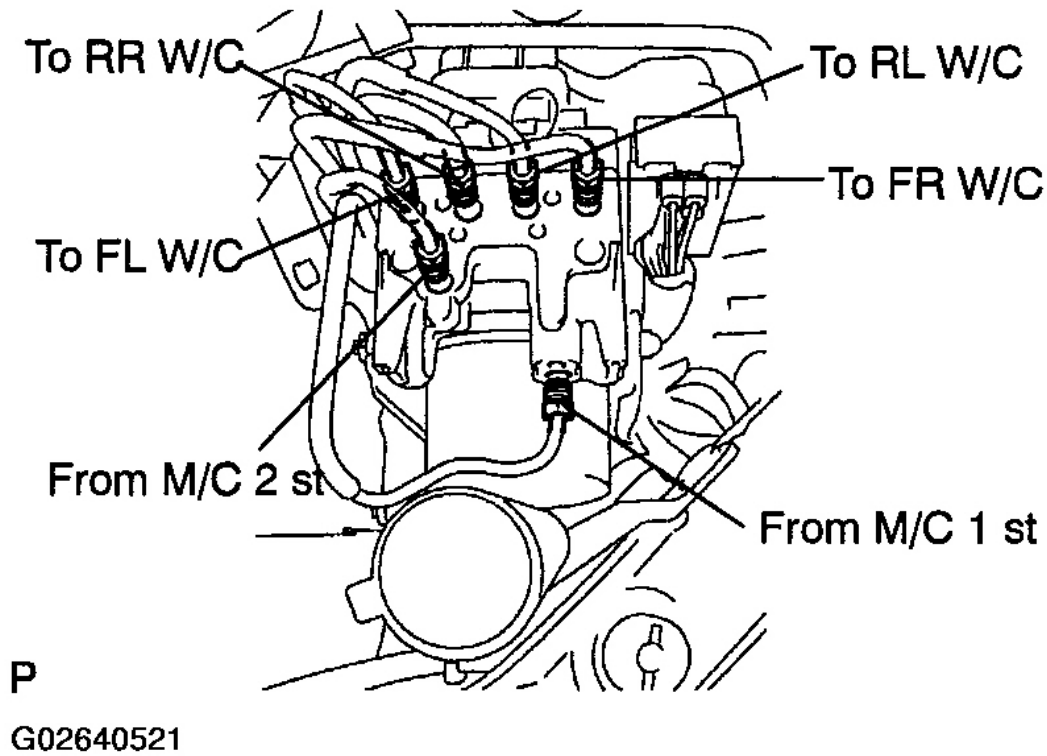


Fig. 86: Tagging Lines For Reconnection

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

3. REMOVE VSC ACTUATOR ASSEMBLY

- a. Pull the lock lever upward.
- b. Disconnect the actuator connector.

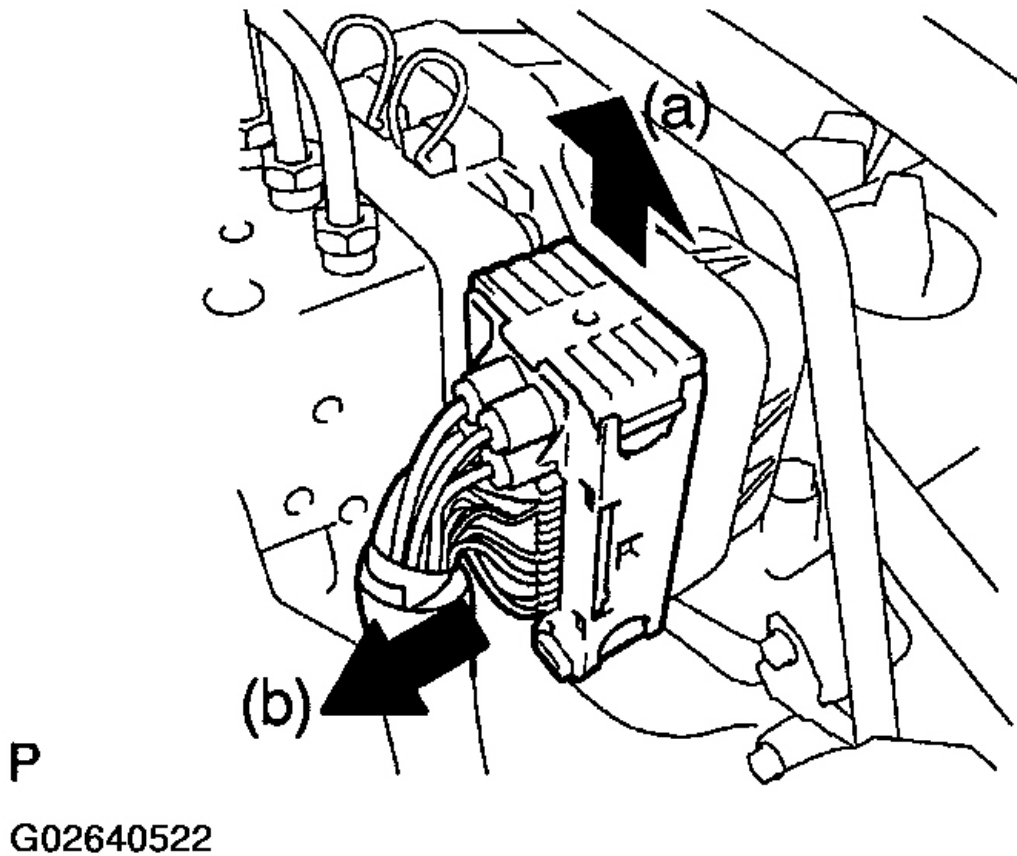


Fig. 87: Removing VSC Actuator Assembly

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

- c. Remove the 2 bolts, nut and actuator from the actuator with bracket.

Torque Specification: 19 N.m (194 kgf.cm, 14 ft.lbf)

NOTE: Be careful not to damage the brake tubes.

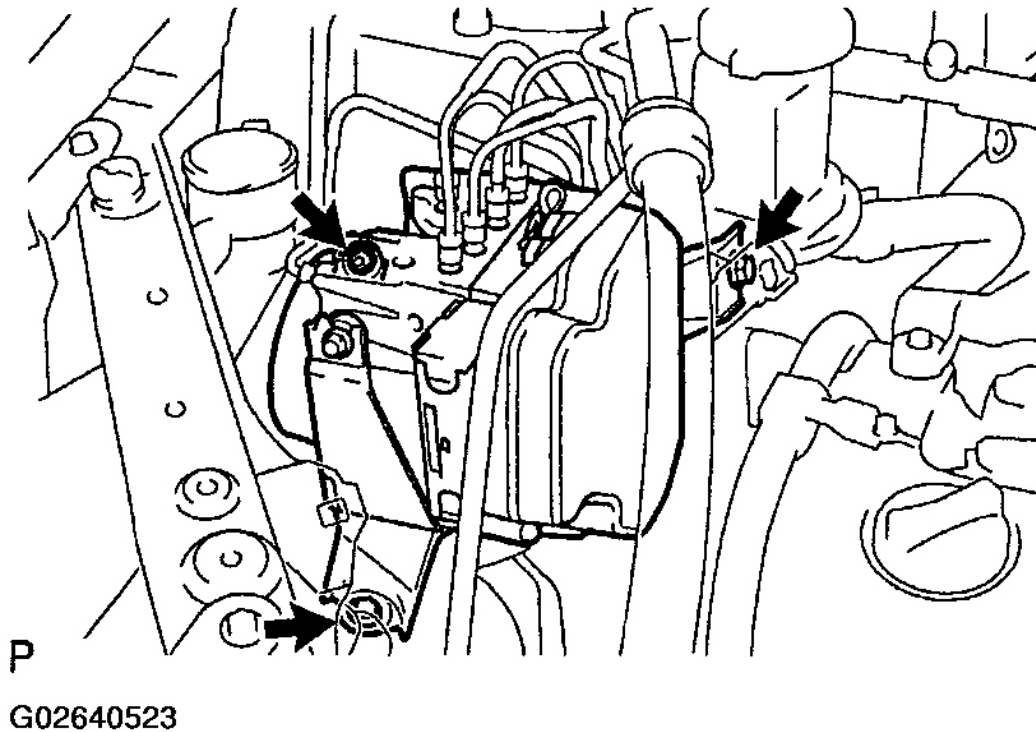


Fig. 88: Removing Actuator With Bracket
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

4. REMOVE VSC ACTUATOR

Remove the 2 nuts and actuator from the actuator bracket.

Torque Specification: 5.4 N.m (55 kgf.cm, 48in.lbf)

5. REMOVE 2 CUSHION BOLTS AND 2 CUSHIONS

INSTALLATION

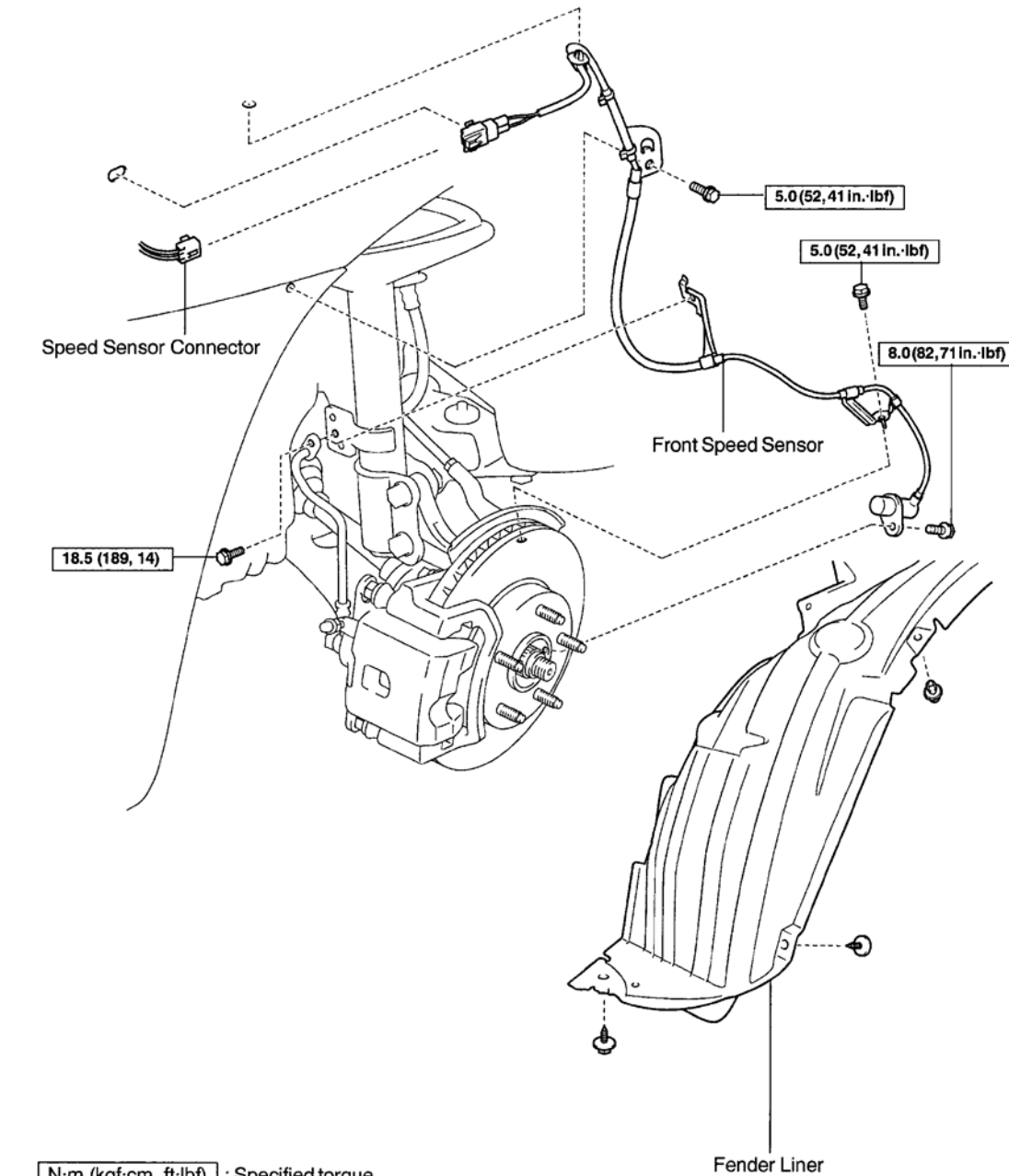
Installation procedures are removal in reverse order (see REMOVAL).

HINT:

- Check for fluid level in reservoir.
- Check for fluid leaks.
- Check for brake actuator with hand-held tester (see PRE-CHECK).

FRONT SPEED SENSOR

COMPONENTS



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

G02640524

Fig. 89: Identifying Front Speed Sensor Components & Torque Specifications
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

REMOVAL

2005 Toyota RAV4

2005 BRAKES Brakes - RAV4

1. TURN OVER FENDER LINER

2. REMOVE SPEED SENSOR

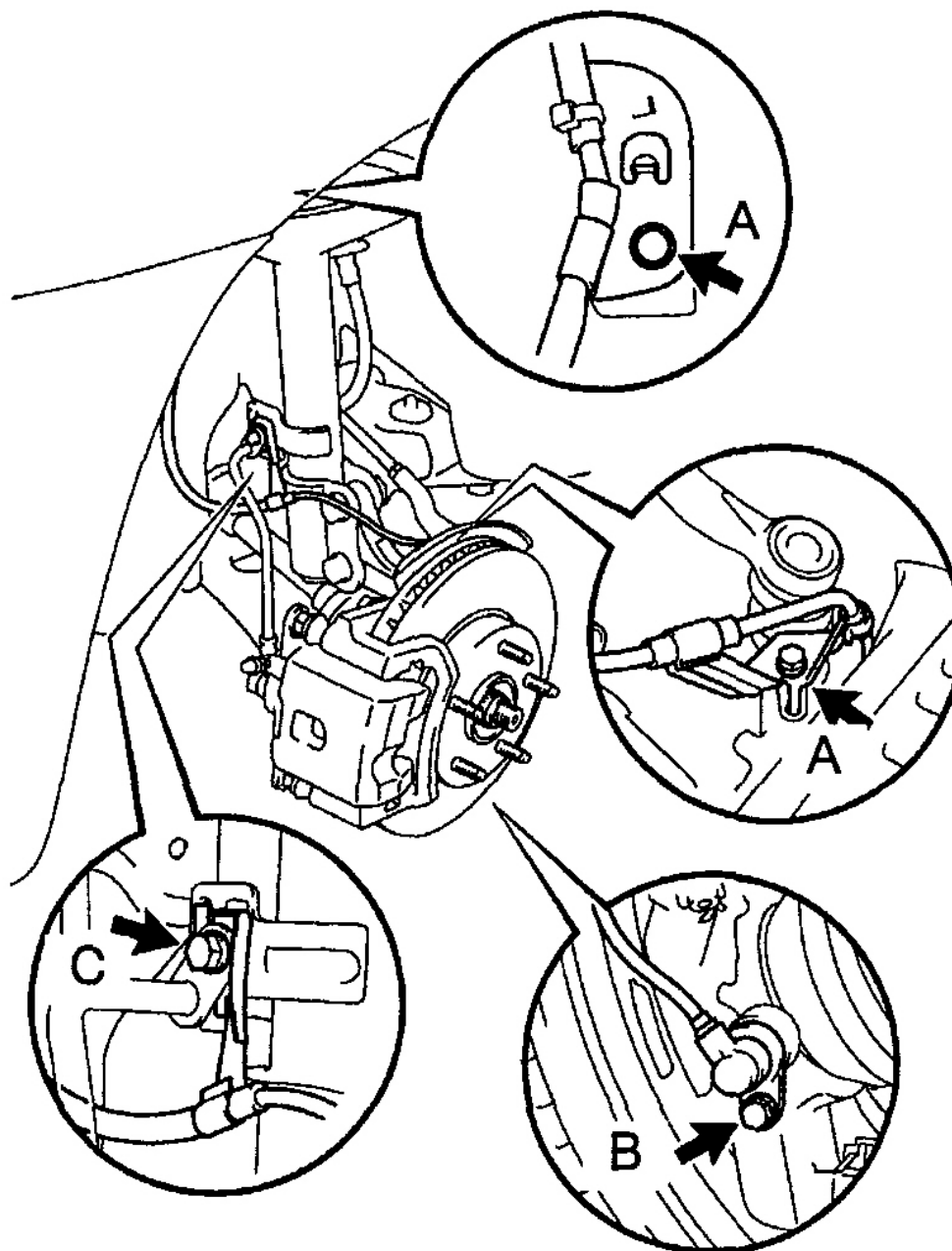
- a. Disconnect the sensor connector from the sensor harness.
- b. Remove the sensor connector from the body.
- c. Remove the harness clamp from the body.
- d. Remove the 4 bolts and sensor.

Torque Specification:

Bolt A: 5.0 N.m (52 kgf.cm, 41 in.lbf)

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

Bolt C: 18.5 N.m (189 kgf.cm, 14 ft.lbf)



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Fig. 90: Removing Speed Sensor

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

2005 Toyota RAV4

2005 BRAKES Brakes - RAV4

INSTALLATION

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

HINT:

After installation, check the speed sensor signal (See PRE-CHECK in "ABS With Electronic Brake Force Distribution (EBD) - Diagnostics", and PRE-CHECK in "ABS With EBD & BA & TRAC & VSC System - Diagnostics").

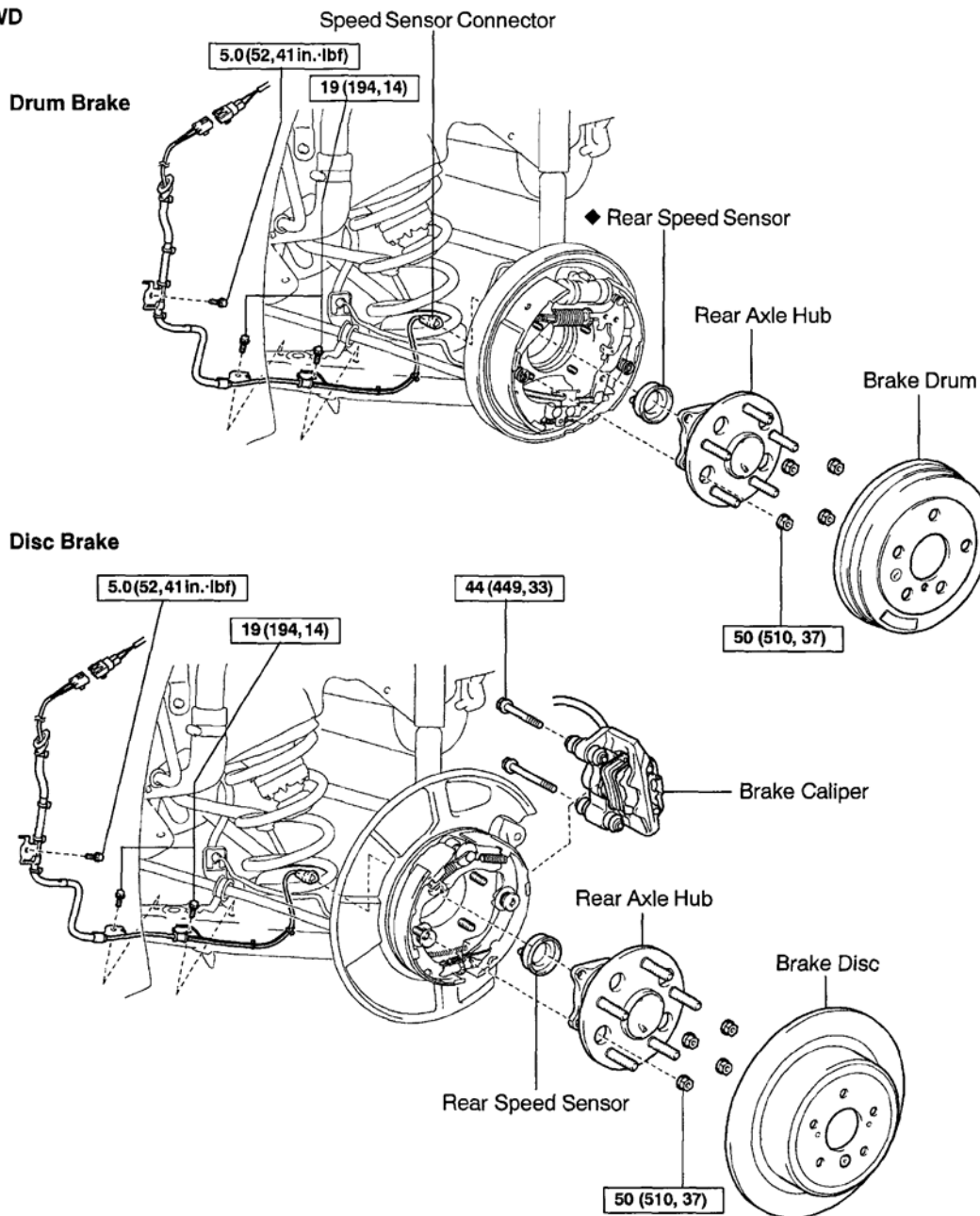
REAR SPEED SENSOR

COMPONENTS

2005 Toyota RAV4

2005 BRAKES Brakes - RAV4

2WD



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

◆ Non-reusable part

G02640526

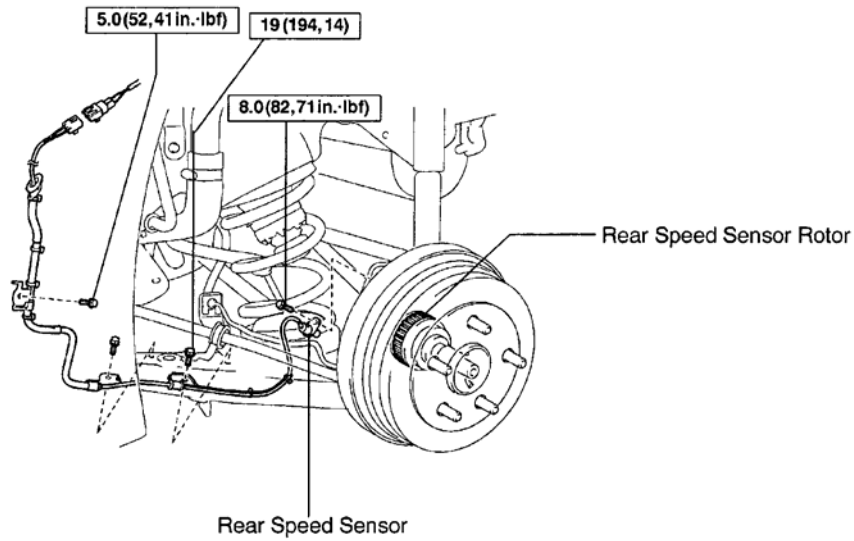
Fig. 91: Exploded View Of Rear Speed Sensor Components & Torque Specifications (1 Of 2)
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

2005 Toyota RAV4

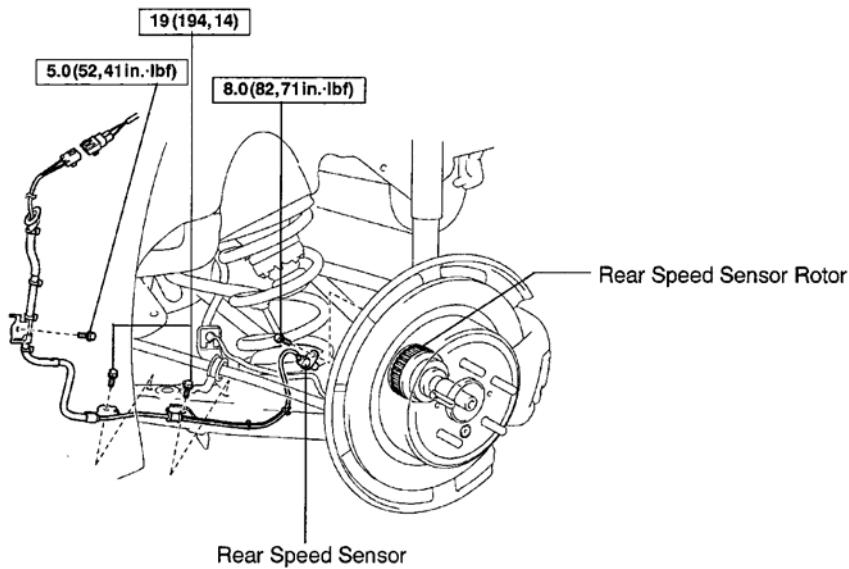
2005 BRAKES Brakes - RAV4

4WD

Drum Brake



Disc Brake



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

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Fig. 92: Exploded View Of Rear Speed Sensor Components & Torque Specifications (2 Of 2)

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

REMOVAL

1. DISCONNECT SPEED SENSOR CONNECTOR

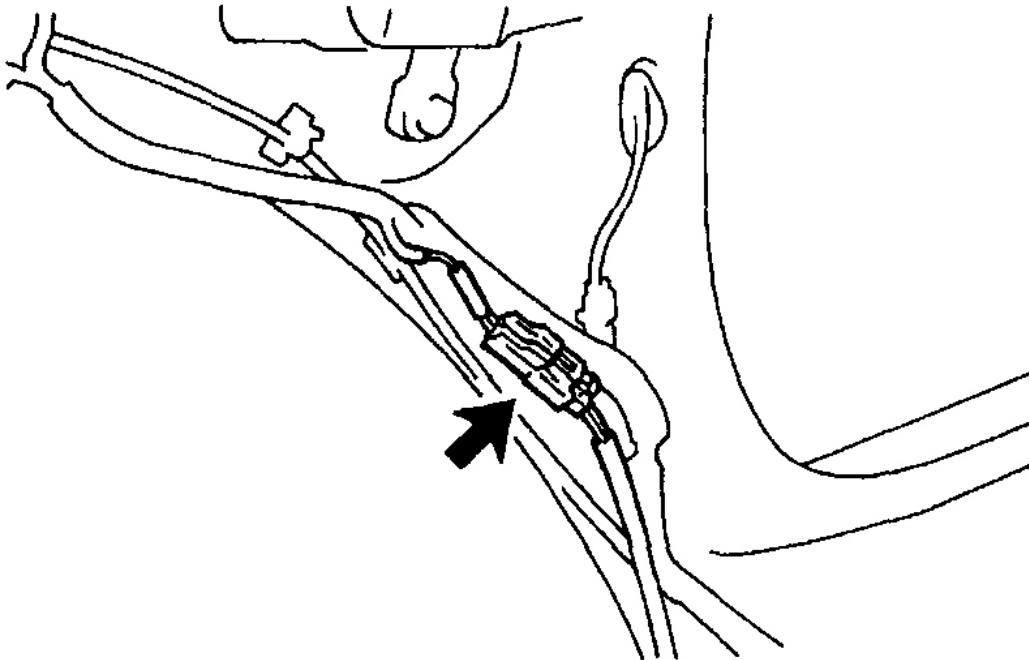
- Remove the seat cushion and rear side trim.
- Disconnect the speed sensor connector.
- Remove the 3 clamp bolts holding the sensor wire harness to the body and suspension arm.

Torque Specification:

To body: 5.0 N.m (52 kgf.cm, 41 in.lbf)

To suspension arm: 19 N.m (194 kgf.cm, 14 ft.lbf)

2. 2WD: REMOVE SPEED SENSOR WITH AXLE HUB (See REMOVAL)



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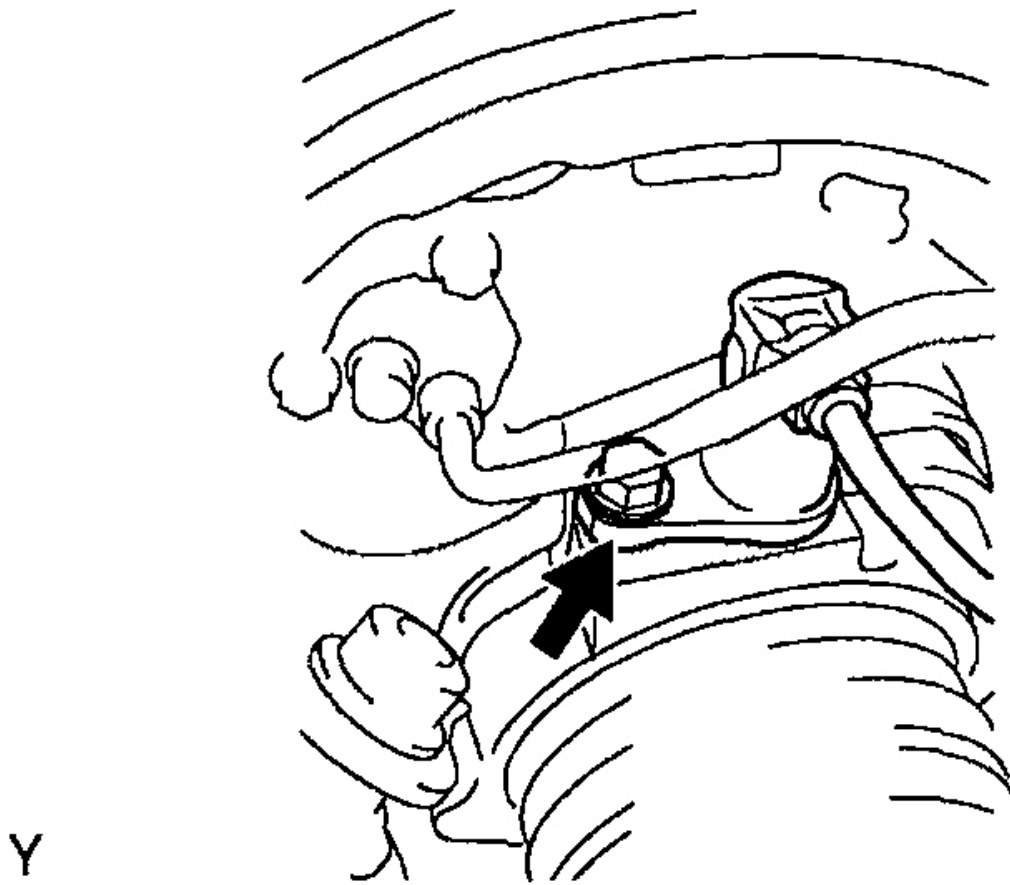
Fig. 93: Disconnecting Speed Sensor Connector

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

3. 4WD: REMOVE SPEED SENSOR

Remove the bolt and speed sensor from the axle carrier.

Torque Specification: 8.0 N.m (82 kgf.cm, 70 in.lbf)



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Fig. 94: Removing Bolt & Speed Sensor From Axle Carrier
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

DISASSEMBLY

2WD: REMOVE ABS SPEED SENSOR

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

2005 Toyota RAV4

2005 BRAKES Brakes - RAV4

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

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

NOTE: **Replace the axle hub assembly if it is dropped or a 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 matter to stick to the sensor rotor.**
 - **Pull out the ABS speed sensor straightly 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.**

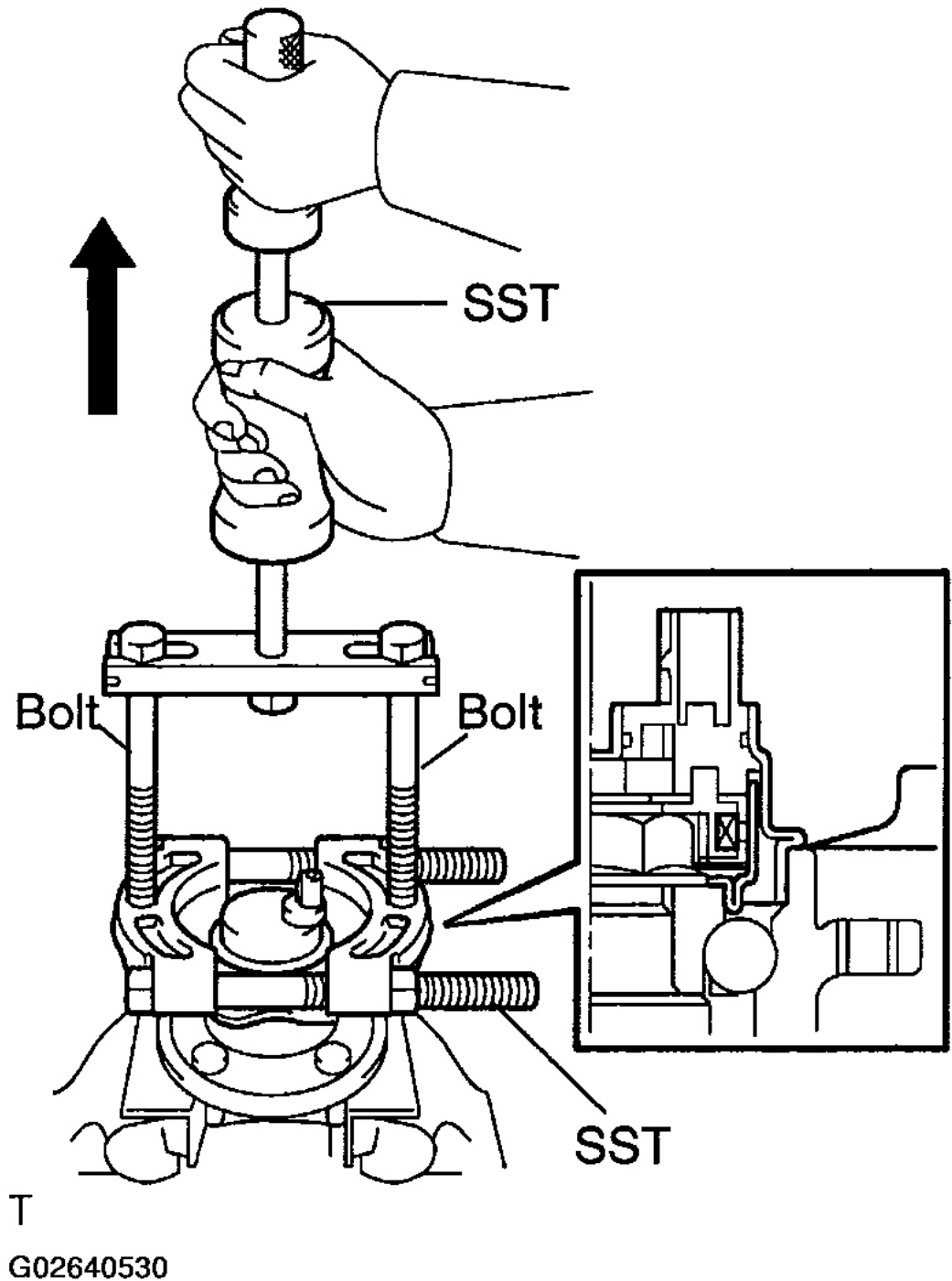


Fig. 95: Mounting Axle Hub Assembly In A Soft Jaw Vise
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

REASSEMBLY**2WD: INSTALL NEW SPEED SENSOR**

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

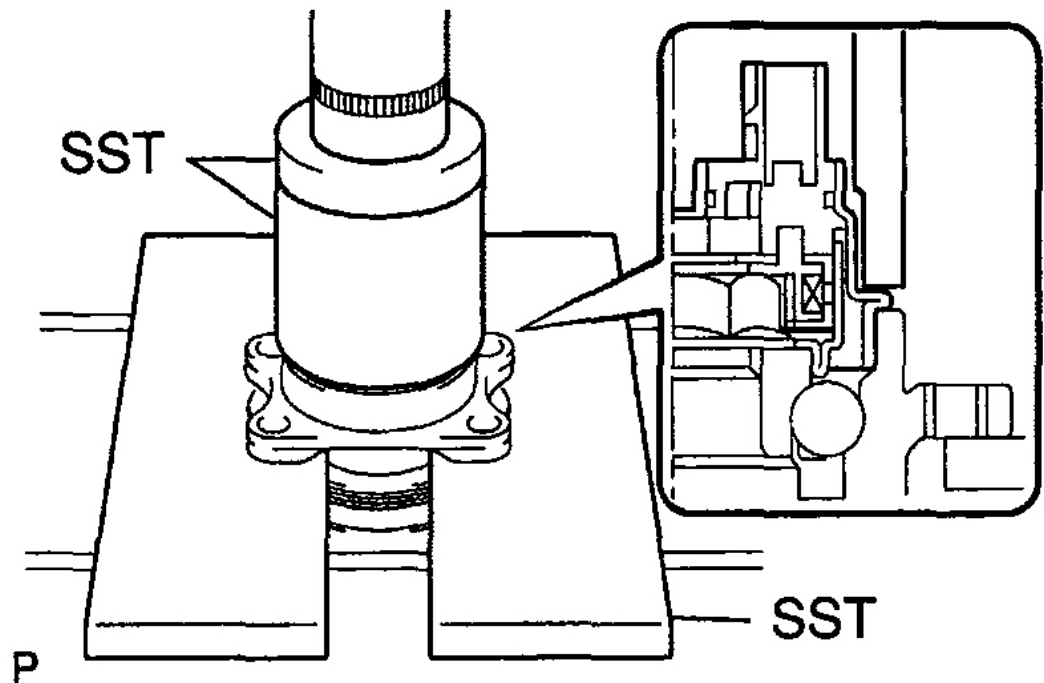
NOTE: Do not allow any foreign matter to stick to the sensor rotor.

- b. Place the speed sensor on the axle hub so that the connector is set at the bottom under the on-vehicle condition.
- c. Using SST and a press, install a new ABS 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 matter on the speed sensor detection portion.
- Press in the speed sensor straightly and slowly.



G02640531

2005 Toyota RAV4

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Fig. 96: Installing A New ABS Speed Sensor To Axle Hub **Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.**

INSTALLATION

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

HINT:

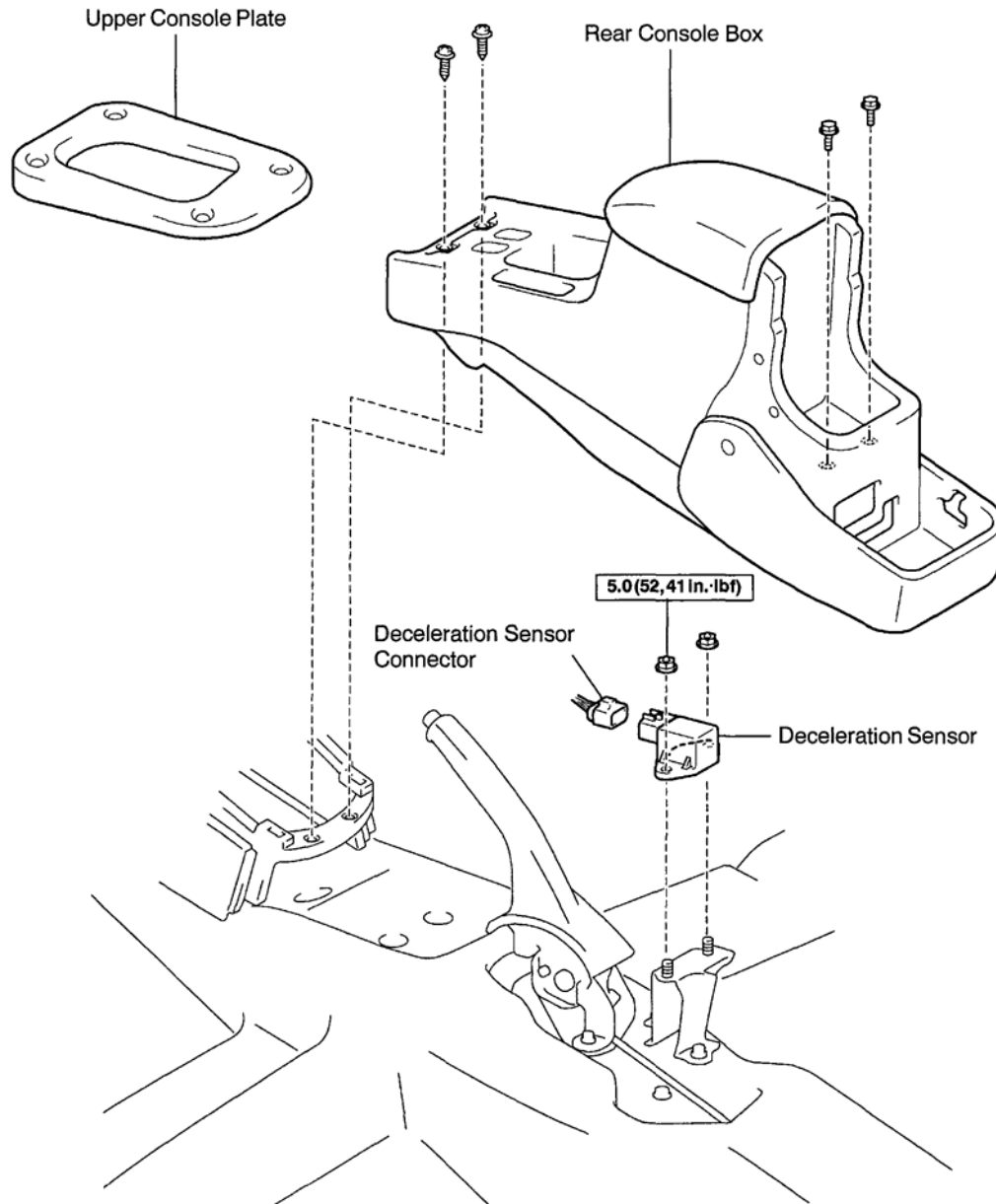
After installation, check the speed sensor signal (See **PRE-CHECK** in "Anti-Lock Brake System With Electronic Brake Force Distribution (EBD) - Diagnostics", and **PRE-CHECK** in "ABS With EBD & BA & TRAC & VSC System - Diagnostics").

DECELERATION SENSOR (W/ ABS)

COMPONENTS

2005 Toyota RAV4

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

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Fig. 97: Identifying Deceleration Sensor Components & Torque Specifications
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

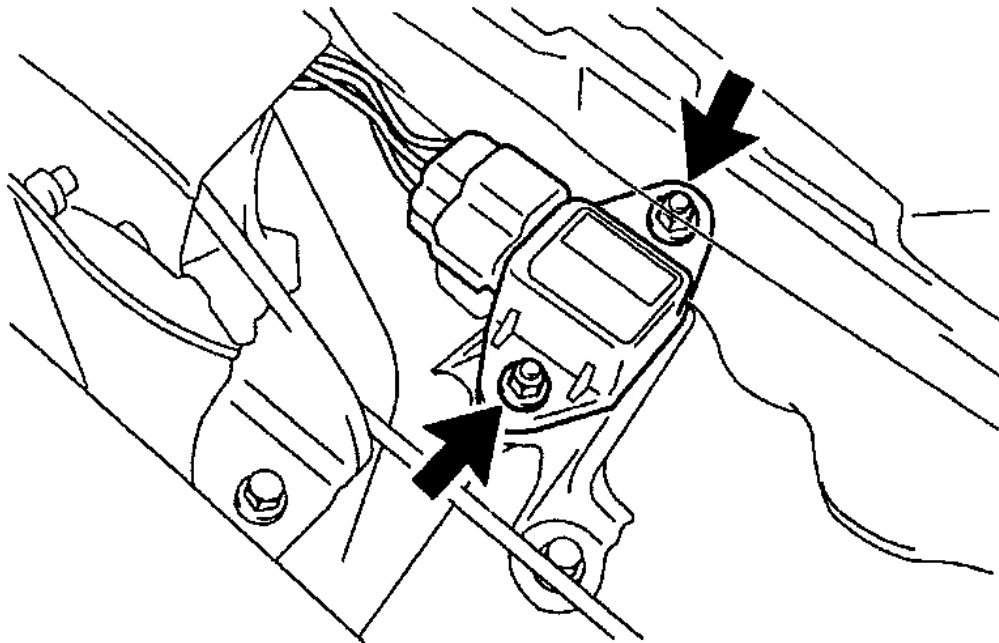
REMOVAL

REMOVE DECELERATION SENSOR

- a. Remove the rear console box and upper console plate (See **REMOVAL**).

- b. Disconnect the sensor connector.
- c. Remove the 2 nuts and deceleration sensor.

Torque Specification: 5.0 N.m (52 kgf.cm, 41 in.lbf)



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Fig. 98: Identifying Deceleration Sensor
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSTALLATION

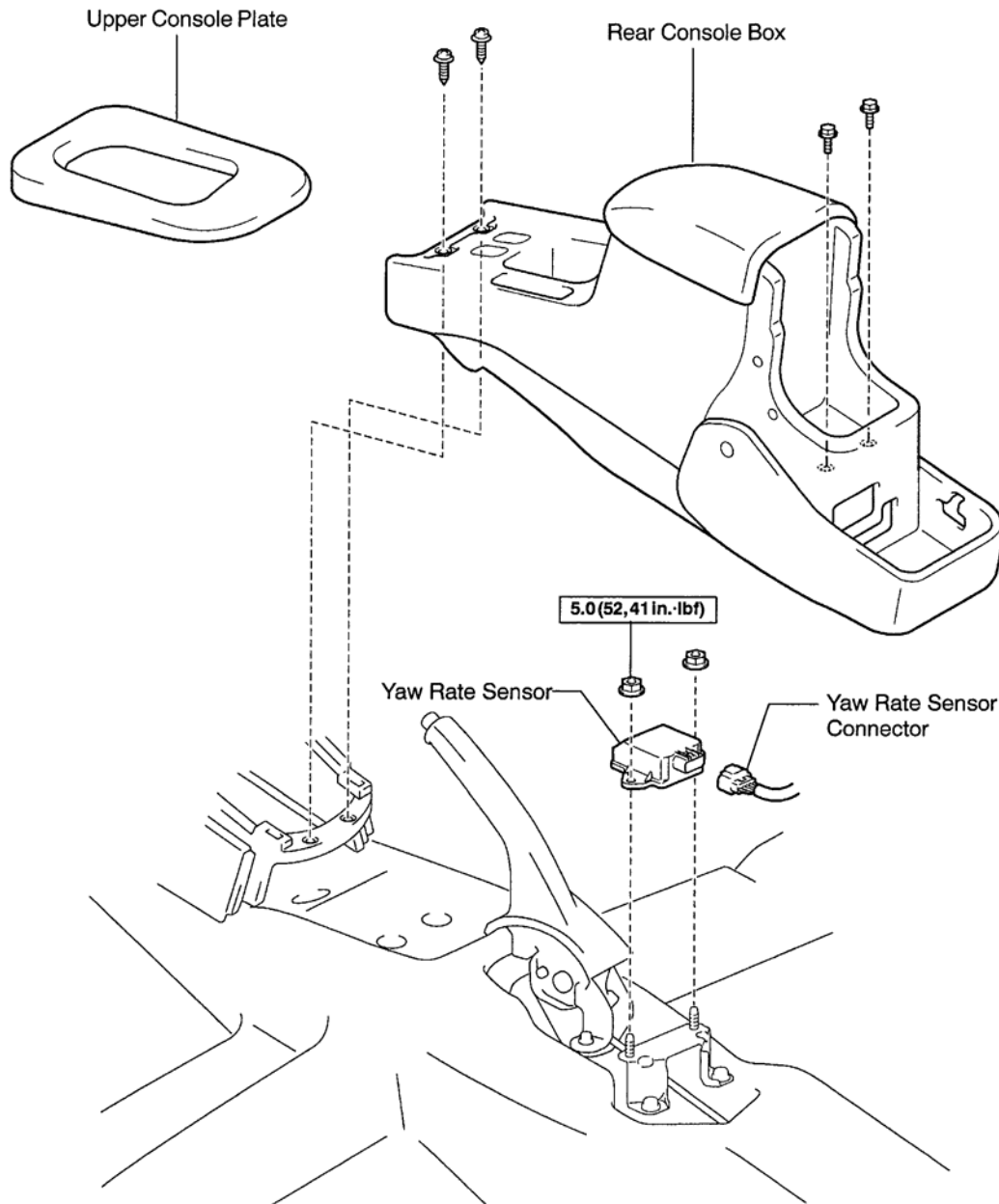
Installation is in the reverse order of removal (See REMOVAL).

YAW RATE SENSOR (W/ VSC)

COMPONENTS

2005 Toyota RAV4

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

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Fig. 99: Identifying YawRate Sensor Components & Torque Specifications
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

REMOVAL

1. REMOVE YAWRATE SENSOR

- a. Remove the rear console box and upper console plate (see **REMOVAL**).
- b. Disconnect the sensor connector.
- c. Remove the 2 nuts and yawrate sensor.

Torque Specification: 5 N.m (52 kgf.cm, 41in.lbf)

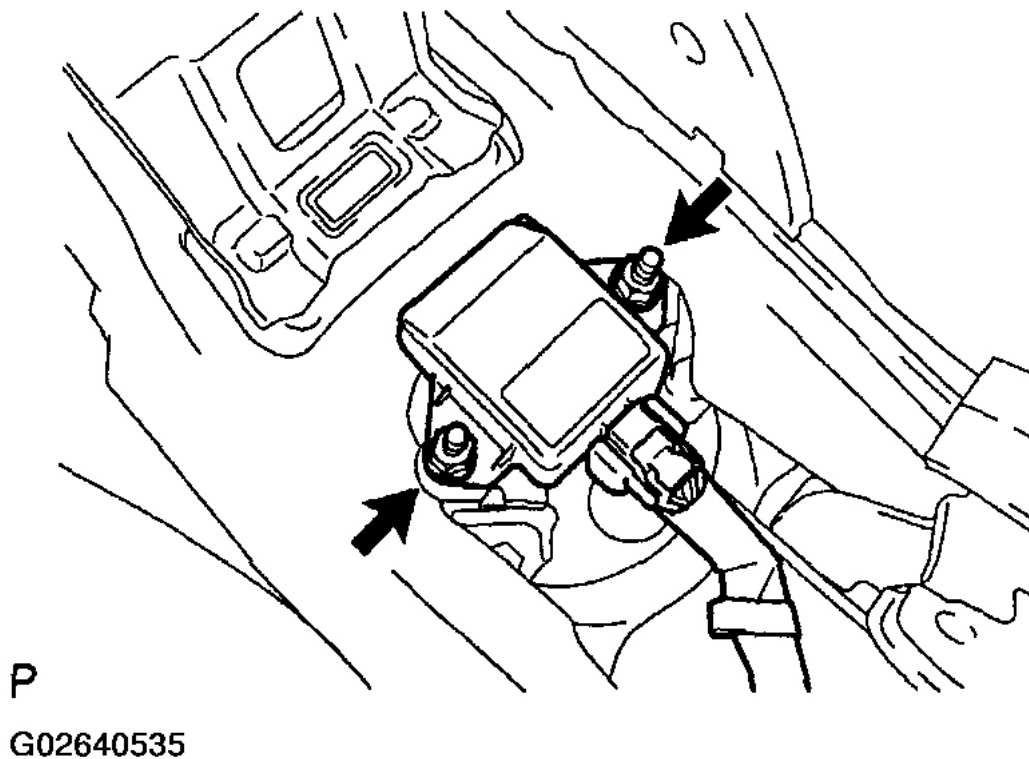


Fig. 100: Identifying Yawrate Sensor

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

INSTALLATION

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

HINT:

Perform yawrate sensor zero point calibration (see **PRE-CHECK**).