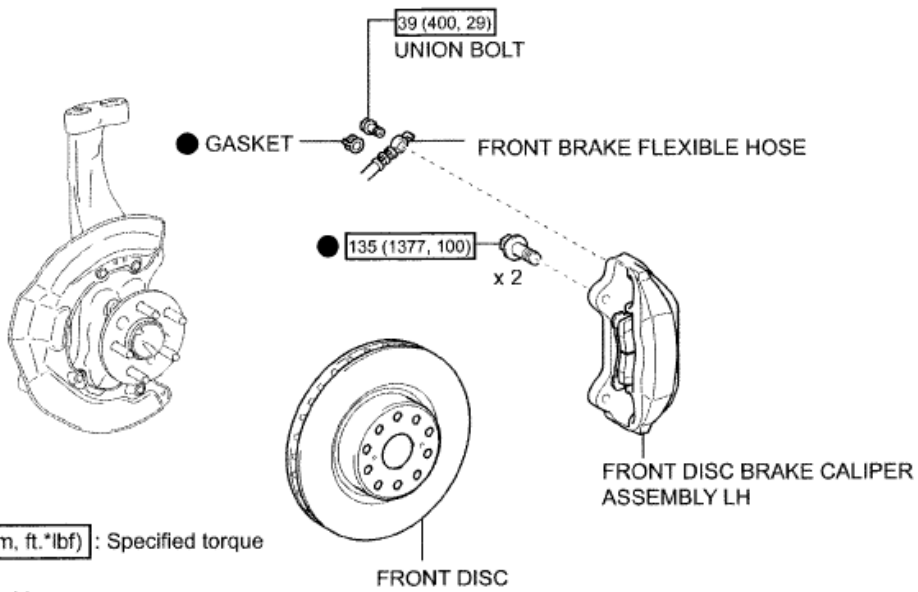
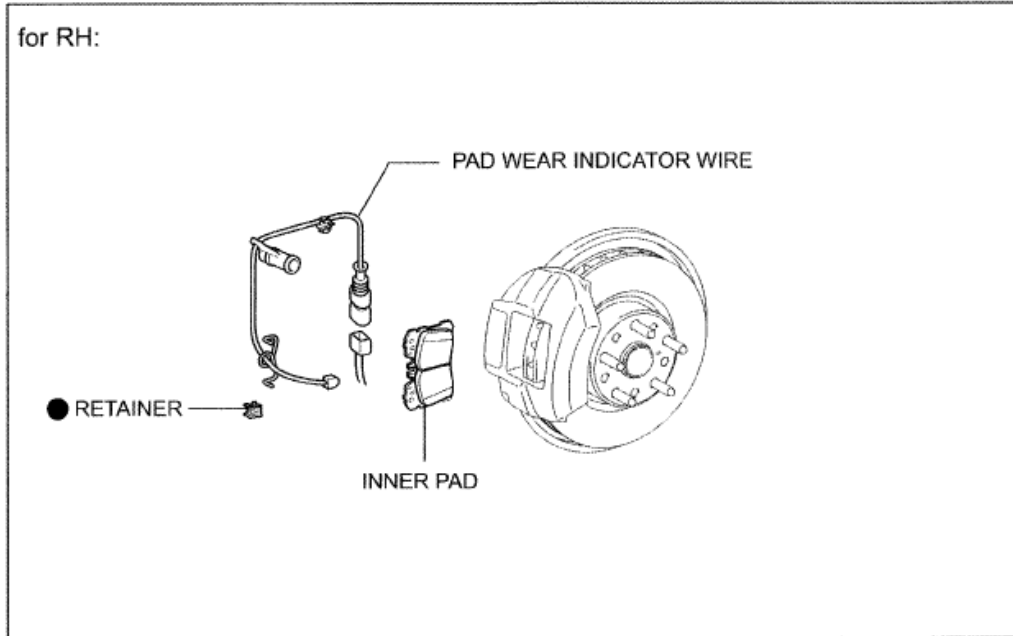


# FRONT BRAKE

## COMPONENTS



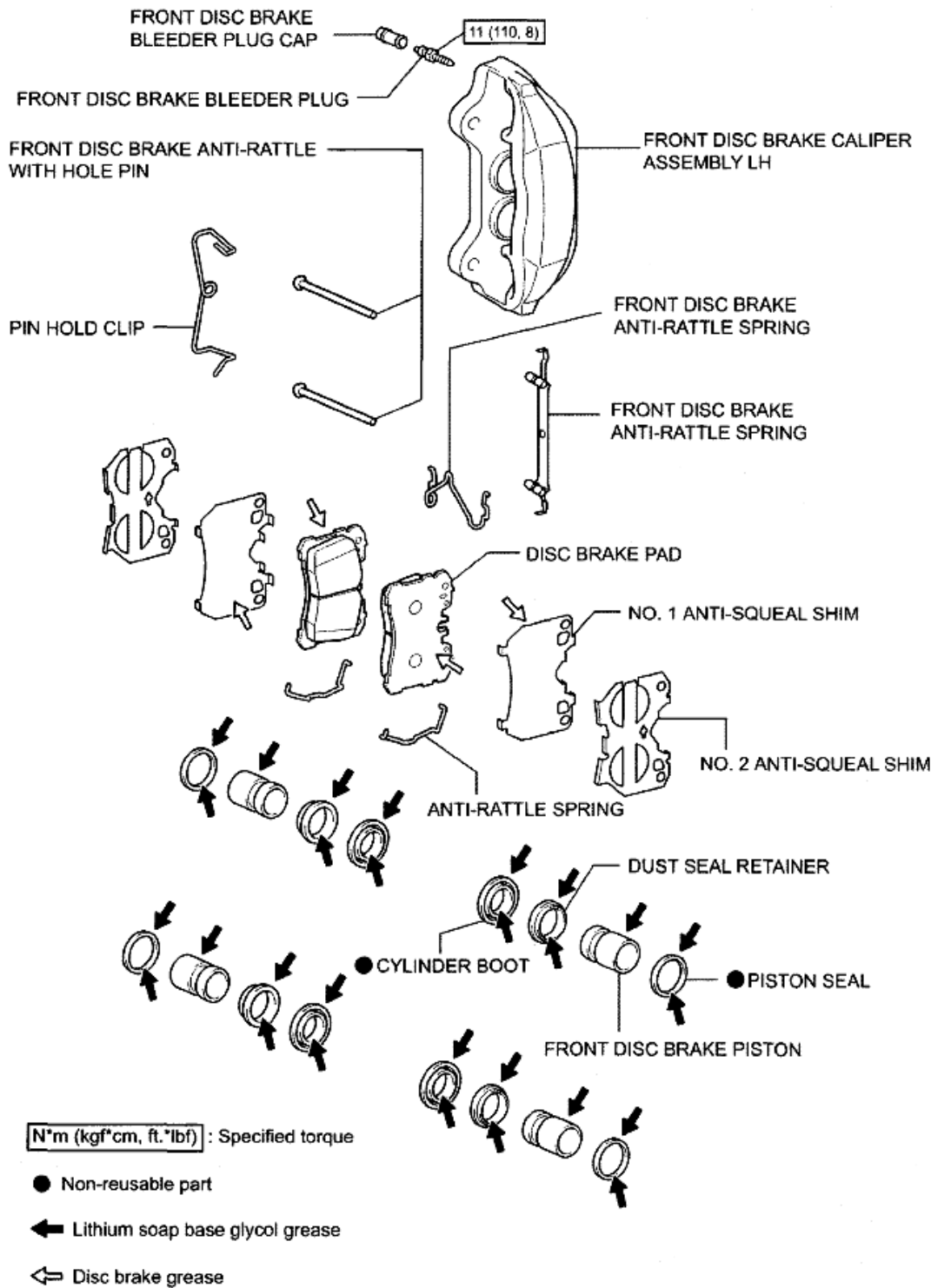
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**Fig. 77: Identifying Front Brake Replacement Components With Torque Specifications (1 Of 2)**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

2008 Lexus LS 460

2008 BRAKES Brake - LS460 & LS460L



C145660E01

**Fig. 78: Identifying Front Brake Replacement Components With Torque Specifications (2 Of 2)**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

**REMOVAL**

**NOTE:** While the battery is connected, even if the engine switch is off, the brake control system activates when the brake pedal is depressed or the door courtesy switch turns on. Therefore during servicing of the brake system components, do not operate the brake pedal and open/close the doors while the battery is connected.

**HINT:**

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

1. **REMOVE COWL TOP VENTILATOR LOUVER RH** (See **REMOVAL** )
2. **DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL**

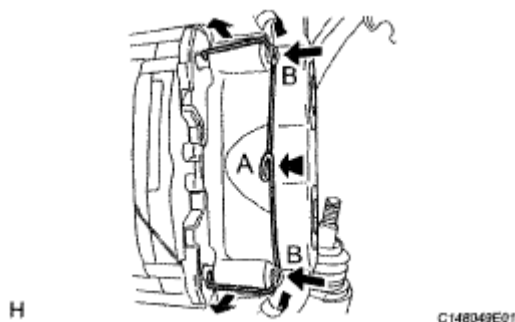
**CAUTION:** Wait at least 90 seconds after disconnecting the cable from the negative (-) battery terminal to prevent airbag and seat belt pretensioner activation.

**NOTE:** After the engine switch is turned off, the HDD navigation system requires approximately 6 minutes to record various types of memory and settings. As a result, after turning the engine switch off, wait 6 minutes or more before disconnecting the cable from the negative (-) battery terminal.

3. **REMOVE FRONT WHEEL**
4. **REMOVE FRONT DISC BRAKE PAD KIT**

- a. While pressing the area labeled A, push the hole pin (labeled B) toward the brake caliper, and remove the pin hold clip.

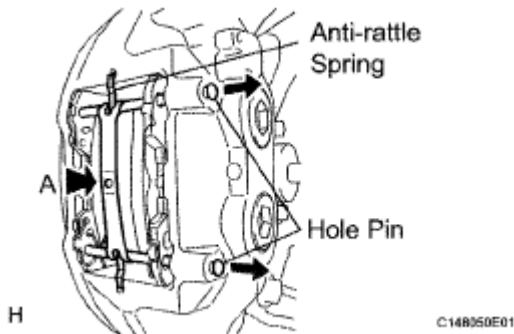
**NOTE:** The pin hold clip can be used again if it has sufficient rebound; no deformation or wear; and has had all rust, dirt and foreign particles cleaned off.



**Fig. 79: Locating Front Disc Brake Pad & Hole Pin**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- b. While pressing the area labeled A, remove the 2 front disc brake anti-rattles with hole pins and front disc brake anti-rattle spring.

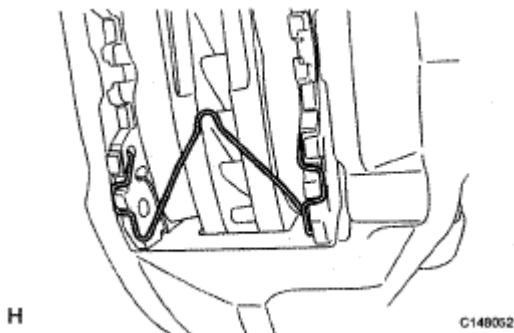
**NOTE:** The anti-rattle spring can be used again if it has sufficient rebound; no deformation, cracks or wear; and has had all rust, dirt and foreign particles cleaned off.



**Fig. 80: Identifying Front Disc Brake Anti-Rattles With Hole Pins**  
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

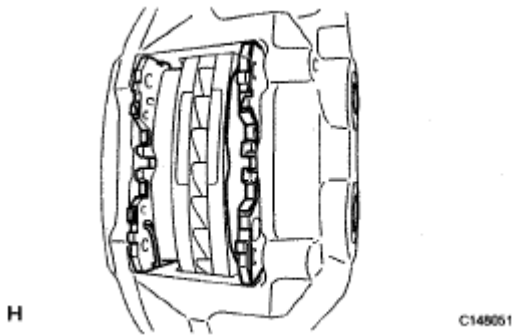
- c. Remove the front disc brake anti-rattle spring.

**NOTE:** The anti-rattle spring can be used again if it has sufficient rebound; no deformation, cracks or wear; and has had all rust, dirt and foreign particles cleaned off.



**Fig. 81: Identifying Front Disc Brake Anti-Rattle Spring**  
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- d. Remove the 2 pads from the disc brake caliper.  
 e. Remove the No. 1 and No. 2 anti-squeal shims and anti-rattle spring from each pad.



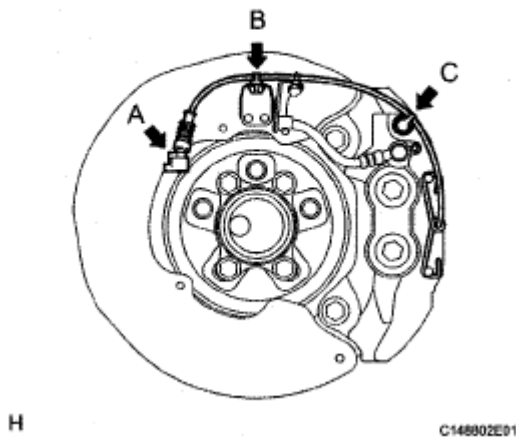
**Fig. 82: Identifying No. 1 & No. 2 Anti-Squeal Shims & Anti-Rattle Spring**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

f. for RH:

Remove the pad wear indicator wire as follows:

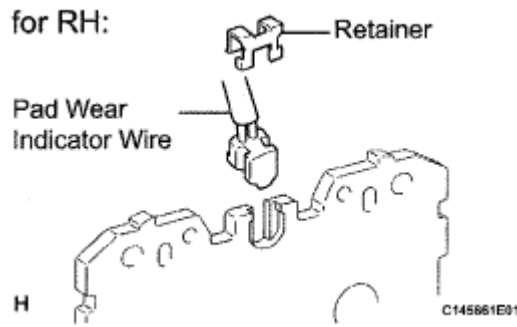
1. Disconnect the pad wear indicator wire connector (labeled A).
2. Detach the clamp (labeled B) and bleeder plug cap (labeled C).

for RH:



**Fig. 83: Locating Pad Wear Indicator Wire Connector, Clamp & Bleeder Plug Cap**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

3. Remove the retainer and pad wear indicator wire from the inner pad.



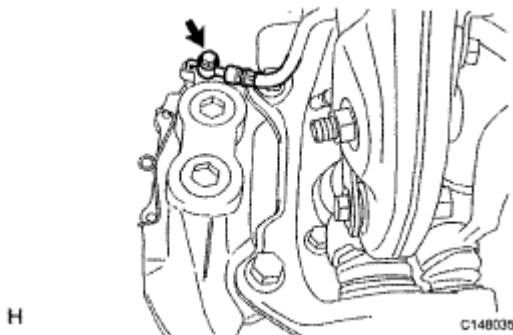
**Fig. 84: Identifying Retainer & Pad Wear Indicator Wire**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

**5. DRAIN BRAKE FLUID**

**NOTE:** Wash brake fluid off immediately if it is spilled on any painted surface.

**6. DISCONNECT FRONT BRAKE FLEXIBLE HOSE**

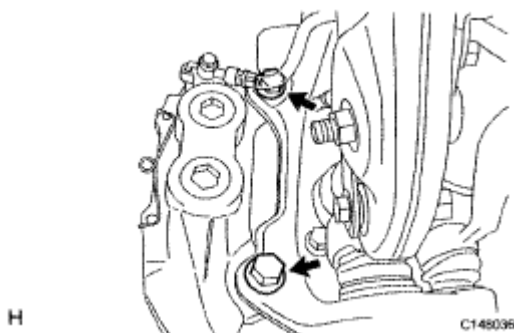
- a. Remove the union bolt and gasket from the disc brake caliper, then disconnect the flexible hose from the disc brake caliper.



**Fig. 85: Locating Union Bolt**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

**7. REMOVE FRONT DISC BRAKE CALIPER ASSEMBLY LH**

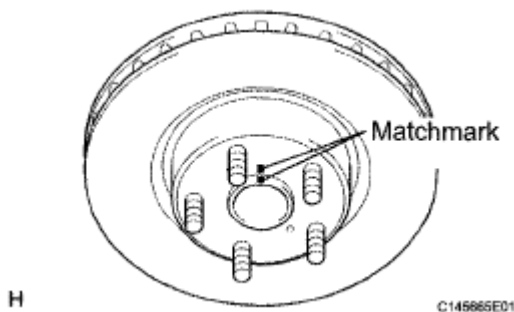
- a. Remove the 2 bolts and disc brake caliper from the knuckle.



**Fig. 86: Locating Bolts & Disc Brake Caliper**  
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

## 8. REMOVE FRONT DISC

- a. Put matchmarks on the front disc and the axle hub if planning to reuse the disc.
- b. Remove the front disc.



**Fig. 87: Identifying Matchmarks On Front Disc & Axle Hub**  
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

## DISASSEMBLY

### HINT:

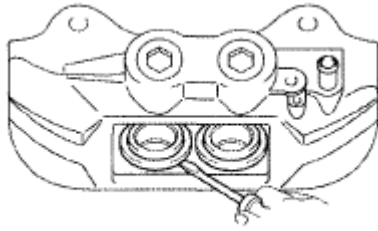
- Use the same procedures for the LH side and RH side.
- The procedures listed below are for the LH side.

### 1. REMOVE CYLINDER BOOT

- a. Using a screwdriver, remove the 4 cylinder boots from the disc brake caliper.

### HINT:

Tape the screwdriver tip before use.



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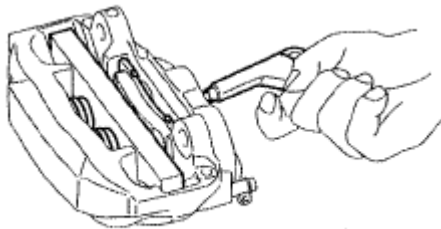
**Fig. 88: Identifying Disc Brake Caliper Cylinder Boots**  
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

**2. REMOVE FRONT DISC BRAKE PISTON**

- a. Install one side of the disc brake pad.
- b. Install a wooden plate between the pistons of the disc brake caliper to prevent the pistons from jumping out
- c. Using an air gun, gradually apply air and remove the 2 disc brake pistons from the cylinder.

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

- d. Remove the brake pad and wooden plate.



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**Fig. 89: Applying Air & Removing Disc Brake Pistons From Cylinder**  
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- e. Temporarily install the 2 disc brake pistons that were removed. Then install the disc brake pad to the side in which the 2 disc brake pistons were temporarily installed.
- f. Install a wooden plate between the pistons of the disc brake caliper to prevent the pistons from jumping out.
- g. Using an air gun, gradually apply air and remove the 2 disc brake pistons from the other side of the cylinder.

**3. REMOVE PISTON SEAL**

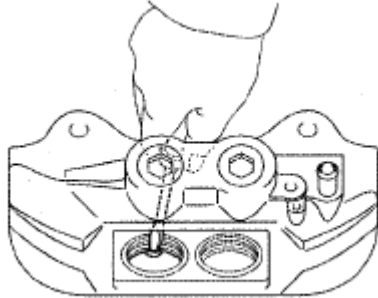
- a. Using a screwdriver, remove the 4 piston seals from the disc brake caliper.

**NOTE: Do not damage the inner cylinder and cylinder groove.**



**HINT:**

Tape the screwdriver tip before use.



**Fig. 90: Identifying Piston Seals**

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

4. REMOVE FRONT DISC BRAKE BLEEDER PLUG CAP
5. REMOVE FRONT DISC BRAKE BLEEDER PLUG

**INSPECTION**

1. CHECK BRAKE CYLINDER AND PISTON
  - a. Check the cylinder bore and piston for rust or scoring. If necessary, replace the disc brake caliper assembly.
2. CHECK PAD LINING THICKNESS
  - a. Using a ruler, measure the pad lining thickness.

**Standard thickness:**

**13.5 mm (0.532 in.)**

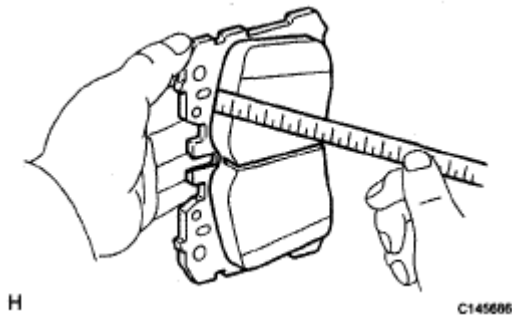
**Minimum thickness:**

**1.0 mm (0.0394 in.)**

If the pad lining thickness is less than the minimum, replace the pad.

**HINT:**

Be sure to check the wear on the front disc after replacing the brake pad with a new one.



**Fig. 91: Measuring Pad Lining Thickness Using Ruler**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

**3. CHECK FRONT DISC BRAKE ANTI-RATTLE SPRING**

- a. Use brake cleaner to clean the front disc brake anti-rattle spring. Check for deformation and cracks.
- b. When installing the front disc brake anti-rattle spring to the front disc brake caliper, check that the spring's force is applied to the hole pin and brake pad.

**4. CHECK DISC THICKNESS**

- a. Using a micrometer, measure the disc thickness.

**Standard thickness:**

**13.14 inch disc:**

**30.0 mm (1.181 in.)**

**14.06 inch disc:**

**34.0 mm (1.339 in.)**

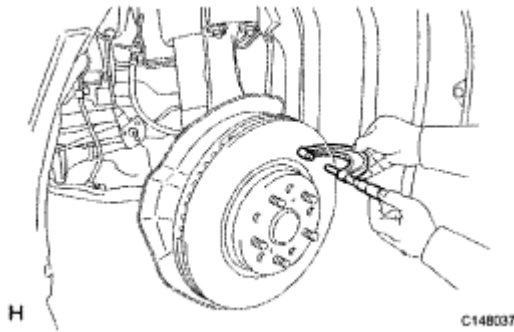
**Minimum thickness:**

**13.14 inch disc:**

**27.0 mm (1.063 in.)**

**14.06 inch disc:**

**31.0 mm (1.221 in.)**



**Fig. 92: Measuring Disc Thickness Using Micrometer**  
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

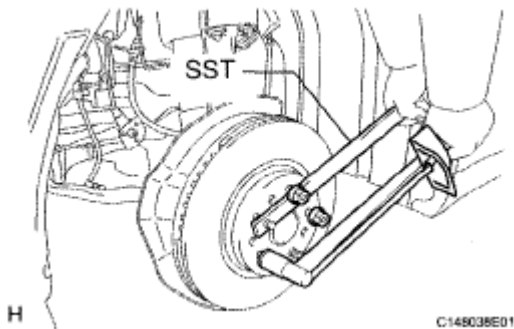
If the disc thickness is less than the minimum, replace the disc.

## 5. CHECK DISC RUNOUT

- a. Using SST to hold the disc, fix the disc in place with the 5 hub nuts.

**SST 09330-00021**

**Torque: 140 N\*m (1428 kgf\*cm, 103 ft.\*lbf)**



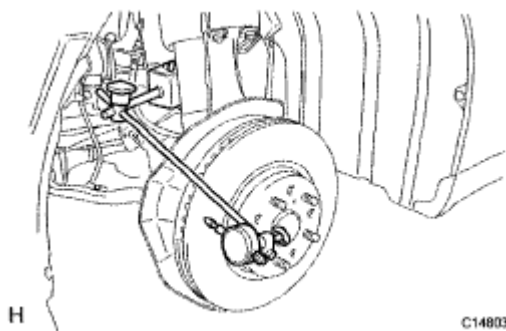
**Fig. 93: Holding Disc With SST**  
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- b. Using a dial indicator, measure the disc runout 10 mm inside (0.39 in.) the outer edge of the disc.

**Maximum disc runout:**

**0.04 mm (0.0016 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, check the bearing looseness in the axial direction (see **REMOVAL**) and the axle hub runout (see **REMOVAL**). If the bearing looseness and the axle hub runout are normal, and if the disc thickness is not within the specified range, grind the disc. If the disc thickness is less than the minimum, replace the disc.



**Fig. 94: Measuring Disc Runout Using Dial Indicator**  
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- c. Remove the front disc.

## REASSEMBLY

### HINT:

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

### 1. TEMPORARILY INSTALL FRONT DISC BRAKE BLEEDER PLUG

- a. Temporarily install the bleeder plug to the disc brake caliper.

### HINT:

The bleeder plug will be tightened to a torque specification in the "BLEED AIR FROM FRONT BRAKE SYSTEM" procedure.

### 2. INSTALL FRONT DISC BRAKE BLEEDER PLUG CAP

### 3. INSTALL PISTON SEAL

- a. Apply lithium soap base glycol grease to 4 new piston seals.
- b. Install the 4 piston seals to the disc brake caliper.



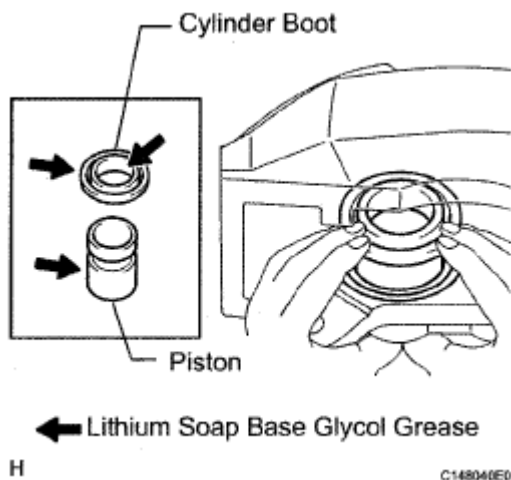
**Fig. 95: Identifying Piston Seals**

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

#### 4. INSTALL FRONT DISC BRAKE PISTON

- a. Apply lithium soap base glycol grease to the 4 front disc brake pistons and 4 new cylinder boots.
- b. Install the 4 cylinder boots to the 4 front disc brake pistons.
- c. Install the 4 pistons into the front disc brake caliper.

**NOTE:** Do not forcibly install the piston into the disc brake caliper.



**Fig. 96: Applying Lithium Soap Base Glycol Grease To Front Disc Brake Pistons & Cylinder Boots**

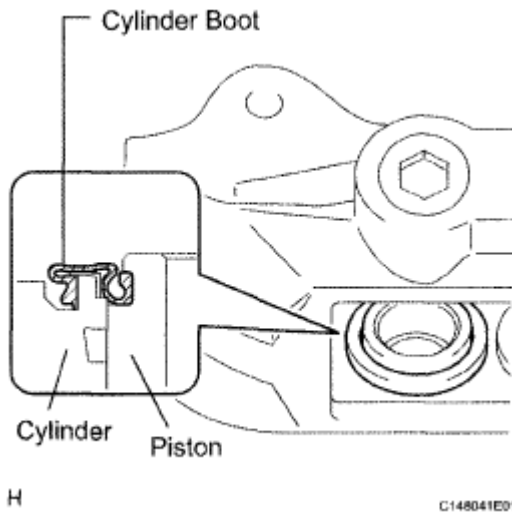
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

#### 5. INSTALL CYLINDER BOOT

- a. Install one side of each of the 4 cylinder boots to the front disc brake caliper.

**NOTE:**

- Install the cylinder boot securely to the grooves of the cylinder and piston.
- Do not damage the cylinder boot.



**Fig. 97: Identifying Cylinder Boot**  
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

**INSTALLATION**

**NOTE:** While the battery is connected, even if the engine switch is off, the brake control system activates when the brake pedal is depressed or the door courtesy switch turns on. Therefore during servicing of the brake system components, do not operate the brake pedal and open/close the doors while the battery is connected.

**HINT:**

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

**1. INSTALL FRONT DISC**

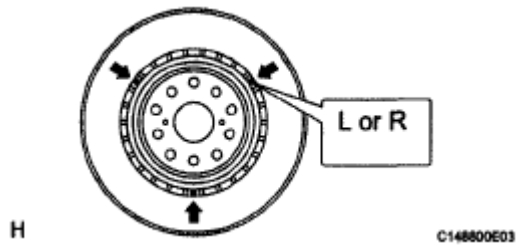
**NOTE:** The disc has an identification mark. Make sure of the identification mark when installing the disc.

**ITEM IDENTIFICATION MARK**

Item	Identification mark
LH	L
RH	R

**HINT:**

The disc has no identification mark. The disc can be installed to the LH or RH side.

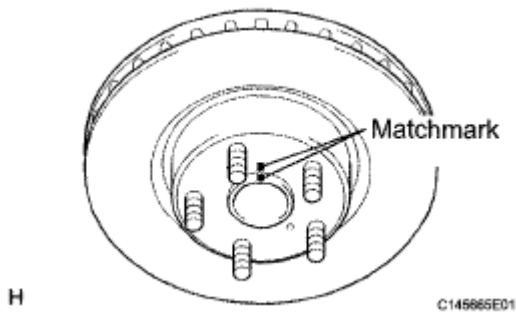


**Fig. 98: Locating Disc Identification Mark**  
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- a. Align the matchmarks, and install the front disc.

**HINT:**

When replacing the front disc with a new one, select the installation position where the front disc has the minimum runout.

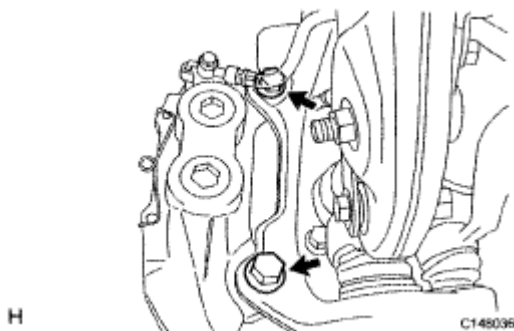


**Fig. 99: Aligning Matchmarks**  
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

**2. INSTALL FRONT DISC BRAKE CALIPER ASSEMBLY LH**

- a. Install the disc brake caliper with 2 new bolts.

**Torque: 135 N\*m (1377 kgf\*cm, 100 ft.\*lbf)**



**Fig. 100: Locating Bolts & Disc Brake Caliper**

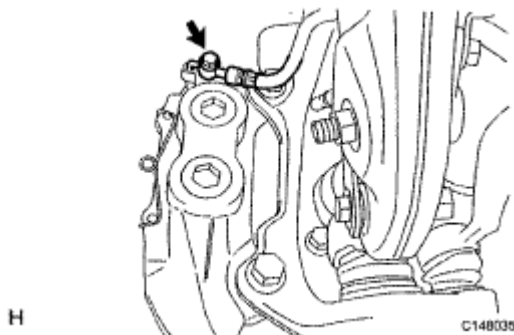
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

### 3. CONNECT FRONT BRAKE FLEXIBLE HOSE

- a. Connect the flexible hose with the union bolt and a new gasket.

**Torque: 39 N\*m (400 kgf\*cm, 29 ft.\*lbf)**

**NOTE:** Install the flexible hose lock securely in the lock hole in the disc brake caliper.



**Fig. 101: Locating Union Bolt**

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

### 4. INSTALL FRONT DISC BRAKE PAD KIT

**NOTE:**

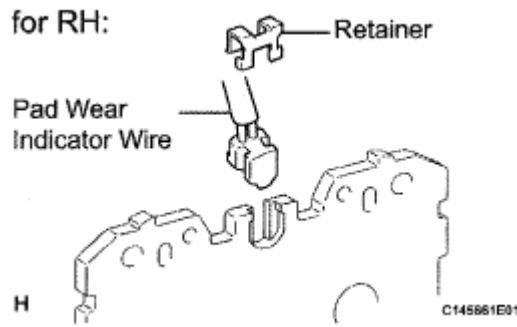
- When replacing worn pads, the anti-squeal shims must be replaced together with the pad.
- When installing the shim, make sure its arrow is pointing in the direction of disc rotation for forward movement.
- Install each shim in the correct position and direction.
- Install each pad as shown in the illustration below.
- There should be no oil or grease on the friction surface of the pads and the disc.
- When the brake pedal is first depressed after replacing the brake pad, DTC C1341, C1342, C1343 and/or C1344 may be output. As there is no malfunction, delete the DTC(s).

- a. for RH:

Install the pad wear indicator wire as follows:

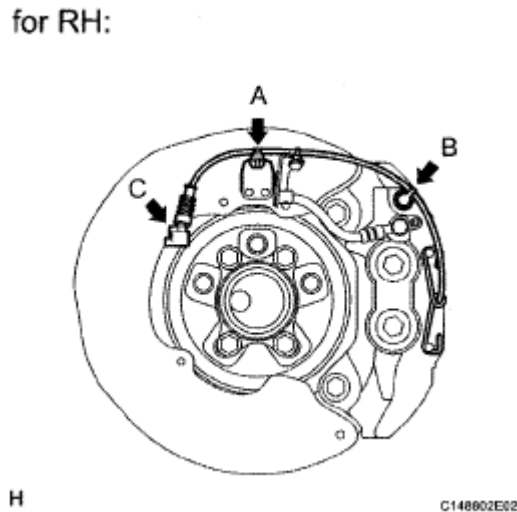
1. Install the pad wear indicator wire and a new retainer to the inner pad.





**Fig. 102: Identifying Retainer & Pad Wear Indicator Wire**  
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

2. Attach the clamp (labeled A) and bleeder plug cap (labeled B).
3. Connect the pad wear indicator wire connector (labeled C).



**Fig. 103: Locating Clamp, Pad Wear Indicator Wire Connector & Bleeder Plug Cap**  
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- b. Install the anti-rattle spring to each pad.

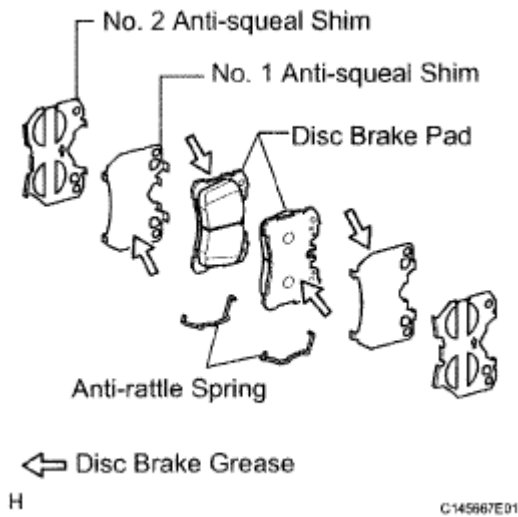
**HINT:**

Install the spring lock securely in the groove of the pad.

- c. Apply disc brake grease to the sides of the 2 No. 1 anti-squeal shims that contact the disc brake pad.

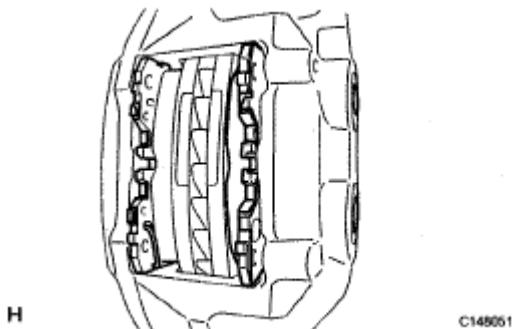
**NOTE:** Do not apply grease to the sides of the 2 No. 1 anti-squeal shims that contact the No. 2 anti-squeal shims.

- d. Install the No. 1 and No. 2 anti-squeal shims to each pad.



**Fig. 104: Identifying No. 1 & No. 2 Anti-Squeal Shims & Anti-Rattle Spring**  
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

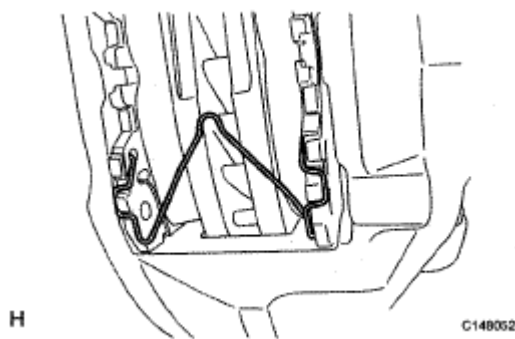
- e. Install the 2 pads to the disc brake caliper.



**Fig. 105: Identifying Pads & Disc Brake Caliper**  
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- f. Install the front disc brake anti-rattle spring between the 2 pads.

**NOTE:** The anti-rattle spring can be used again if it has sufficient rebound; no deformation, cracks or wear; and has had all rust, dirt and foreign particles cleaned off.

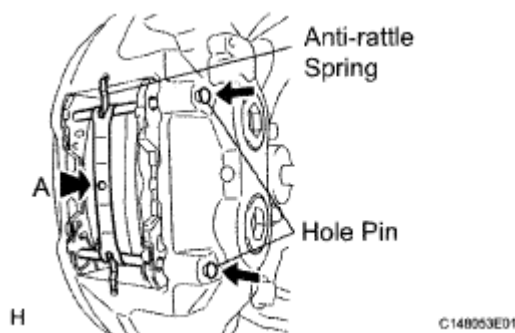


**Fig. 106: Identifying Front Disc Brake Anti-Rattle Spring**  
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- g. Install the front disc brake anti-rattle spring to the disc brake caliper.

**NOTE:** The anti-rattle spring can be used again if it has sufficient rebound; no deformation, cracks or wear; and has had all rust, dirt and foreign particles cleaned off.

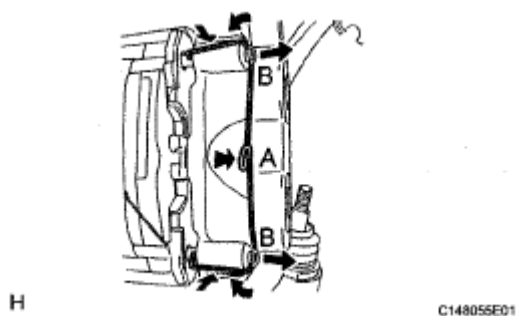
- h. While pressing the area labeled A, install the 2 front disc brake anti-rattles with hole pins.



**Fig. 107: Identifying Front Disc Brake Anti-Rattle Spring To Disc Brake Caliper**  
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- i. While pressing the area labeled A, slightly pull out the hole pin (labeled B) from the brake caliper, and install the pin hold clip.

**NOTE:** The pin hold clip can be used again if it has sufficient rebound; no deformation or wear; and has had all rust, dirt and foreign particles cleaned off.



**Fig. 108: Locating Hole Pin & Brake Pad**

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

5. **CONNECT CABLE TO NEGATIVE BATTERY TERMINAL**
6. **INSTALL COWL TOP VENTILATOR LOUVER RH** (See INSTALLATION )
7. **BLEEDING PRECAUTION**

**CAUTION:** Be sure to read the "PRECAUTION" thoroughly before bleeding (see PRECAUTION ).

8. **FILL RESERVOIR WITH BRAKE FLUID** (See REPLACEMENT )
9. **DISABLE BRAKE CONTROL** (See REPLACEMENT )
10. **BLEED AIR FROM FRONT BRAKE SYSTEM** (See REPLACEMENT )
11. **CANCEL DISABLE BRAKE CONTROL** (See REPLACEMENT )
12. **CHECK AND ADJUST BRAKE FLUID LEVEL IN RESERVOIR** (See REPLACEMENT )
13. **INSPECT FOR BRAKE FLUID LEAK**
14. **INSTALL FRONT WHEEL**

**Torque:** 140 N\*m (1428 kgf\*cm, 103 ft.\*lbf)

15. **PERFORM INITIALIZATION**
  - a. Perform INITIALIZATION .

**NOTE:** Certain systems need to be initialized after disconnecting and reconnecting the cable from the negative (-) battery terminal.

16. **CLEAR DTC**
  - a. Clear the DTCs (see DTC CHECK/CLEAR ).
17. **CHECK FOR DTC**
  - a. If any DTC is set, perform the troubleshooting for that DTC (see DTC CHECK/CLEAR ).