

BRAKE SYSTEM

BROPW-03

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 of 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 the IN section.

TROUBLESHOOTING

PROBLEM SYMPTOMS TABLE

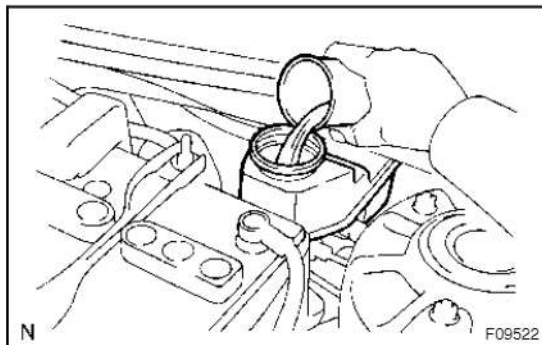
BROPX-09

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.

Symptom	Suspect Area	See page
Low pedal or spongy pedal	5. Fluid leaks for brake system 6. Air in brake system 7. Piston seals (Worn or damaged) 8. Rear brake shoe clearance (Out of adjustment) 9. Master cylinder (Faulty) 10. Booster push rod (Out of adjustment)	DI-881 BR-4 BR-22 BR-36 BR-28 BR-32 BR-10 BR-18
Brake drag	1. Brake pedal free play (Minimum) 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, tension or return spring (Faulty) 9. Booster push rod (Out of adjustment) 10. Vacuum leaks for booster system 11. Master cylinder (Faulty)	BR-6 BR-9 - BR-32 BR-46 BR-19 BR-33 BR-28 BR-42 BR-22 BR-36 BR-28 BR-22 BR-36 BR-28 BR-28 BR-42 BR-18 BR-14 BR-10
Brake pull	1. Piston (Stuck) 2. Pad or lining (Oily) 3. Piston (Frozen) 4. Disc (Scored) 5. Pad or lining (Cracked or distorted)	BR-22 BR-36 BR-28 BR-19 BR-33 BR-28 BR-42 BR-22 BR-36 BR-28 BR-25 BR-39 BR-19 BR-33 BR-28 BR-42

BRAKE - TROUBLESHOOTING

Hard pedal but brake inefficient	1. Fluid leaks for brake system 2. Air in brake system 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. Vacuum leaks for booster system	DI-881 BR-4 BR-19 BR-33 BR-28 BR-42 BR-19 BR-33 BR-28 BR-42 BR-32 BR-46 BR-19 BR-33 BR-28 BR-42 BR-19 BR-33 BR-28 BR-42 BR-25 BR-39 BR-18 BR-14
Noise from brakes	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 (Damaged) 10. Shoe hold-down spring (Damaged)	BR-19 BR-33 BR-28 BR-42 BR-22 BR-36 BR-25 BR-39 BR-19 BR-22 BR-19 BR-33 BR-28 BR-42 BR-19 BR-33 BR-28 BR-42 BR-28 BR-42 BR-19 BR-33 BR-28 BR-42



BRAKE FLUID BLEEDING

BROPY-05

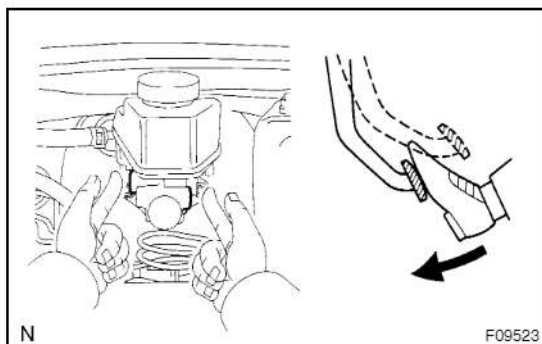
HINT:

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

NOTICE:

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

1. **FILL BRAKE RESERVOIR WITH BRAKE FLUID**
Fluid: SAE J1703 or FMVSS No. 116 DOT3
2. **REMOVE BATTERY**

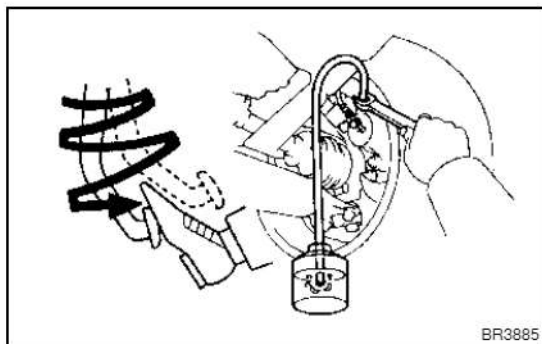
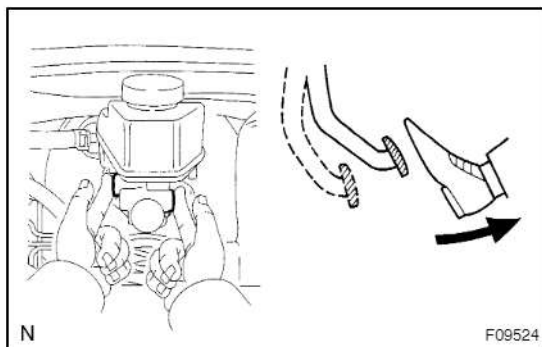


3. BLEED MASTER CYLINDER

HINT:

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

- (a) Disconnect the brake lines from the master cylinder.
SST 09023-00101
- (b) Slowly depress the brake pedal and hold it.
- (c) Block off the outlet plug with your finger and release the brake pedal.
- (d) Repeat (b) and (c) 3 or 4 times.



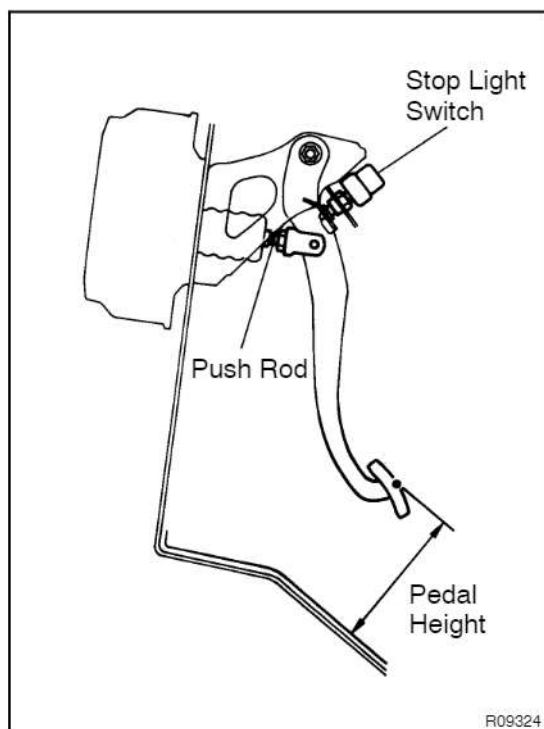
4. BLEED BRAKE LINE

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

5. CHECK FLUID LEVEL IN RESERVOIR

Check the fluid level and add fluid if necessary.

Fluid: SAE J1703 or FMVSS No. 116 DOT3



BRAKE PEDAL ON-VEHICLE INSPECTION

BR0PZ-10

1. CHECK PEDAL HEIGHT

Pedal height from asphalt sheet:

Standard Pedal:

139.8 – 149.8 mm (5.504 – 5.898 in.)

Sport Pedal:

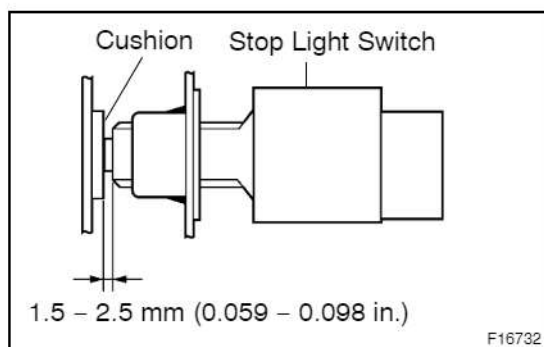
141.1 – 151.1 mm (5.555 – 5.949 in.)

If the pedal height is incorrect, adjust it.

2. IF NECESSARY, ADJUST PEDAL HEIGHT

- Remove the lower No. 1 panel and finish panel.
- Disconnect the connector from the stop light switch.
- Turn the stop light switch counterclockwise and remove the stop light switch.
- Loosen the clevis lock nut.
- Adjust the pedal height by turning the pedal push rod.
- Tighten the clevis lock nut.

Torque: 25 N·m (260 kgf·cm, 19 ft·lbf)



- Insert the stop light switch until the body hits the cushion.

NOTICE:

When inserting the stop light switch, support the pedal from behind so that the pedal is not pushed in.

- Make a quarter turn clockwise to install the stop light switch.

NOTICE:

The turning torque for installing the stop light switch should be 1.5 N·m (15 kgf·cm, 13 ft·lbf) or less.

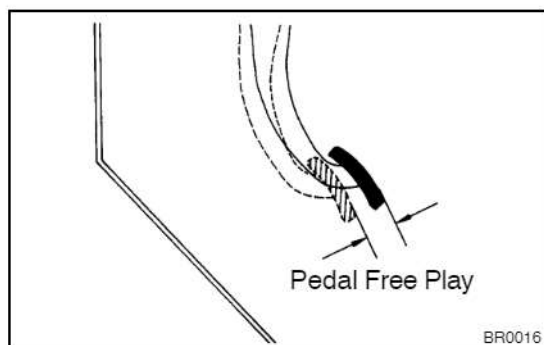
HINT:

Due to the inverse screw structure, if the stop light switch is turned clockwise, the stop light switch moves in the direction to be pulled out.

- Connect the connector to the stop light switch.
- Check the protrusion of the rod.

Protrusion of the rod: 1.5 – 2.5 mm (0.059 – 0.098 in.)

- After adjusting the pedal height, check the pedal free play.



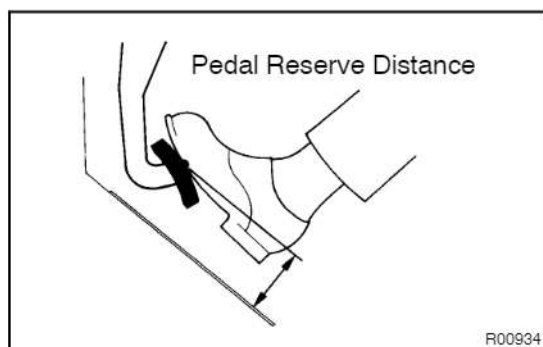
3. CHECK PEDAL FREE PLAY

- Stop the engine and depress the brake pedal several times until there is no more vacuum left in the booster.
- Push in the pedal until the beginning of the resistance is felt. Measure the distance, as shown.

Pedal free play: 1 – 6 mm (0.04 – 0.24 in.)

If incorrect, check the stop light switch clearance.

If the clearance is OK, then troubleshoot the brake system.



4. CHECK PEDAL RESERVE DISTANCE

Release the parking brake lever.

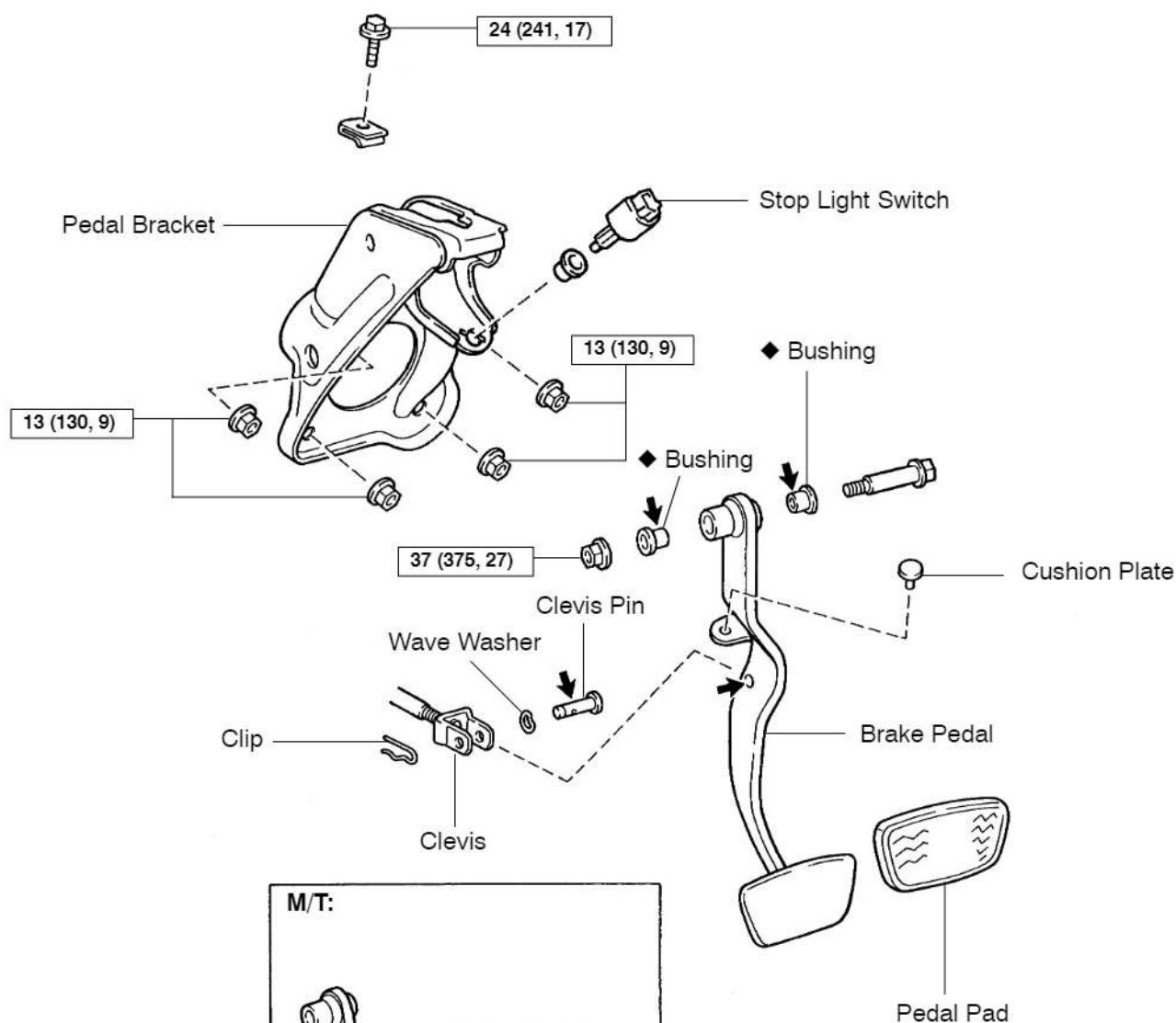
With engine running, depress the pedal and measure the pedal reserve distance, as shown.

Pedal reserve distance from asphalt sheet at 490 N (50 kgf, 110.2 lbf): More than 85 mm (3.35 in.)

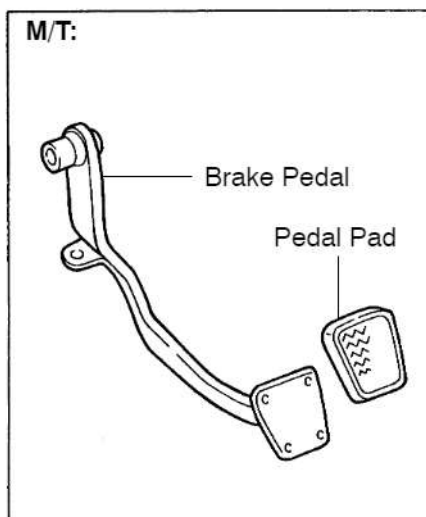
If incorrect, troubleshoot the brake system.

COMPONENTS

A/T:



M/T:

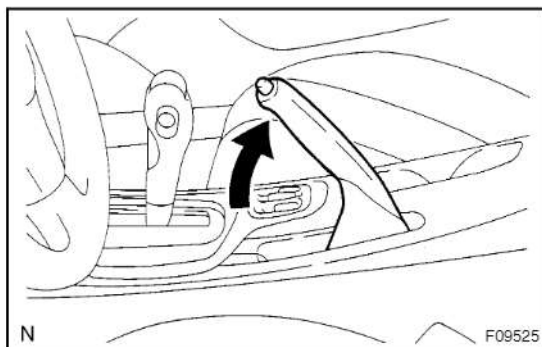


N·m (kgf·cm, ft·lbf) : Specified torque

◆ Non-reusable part

N ← Lithium soap base glycol grease

F15923



PARKING BRAKE LEVER ON-VEHICLE INSPECTION

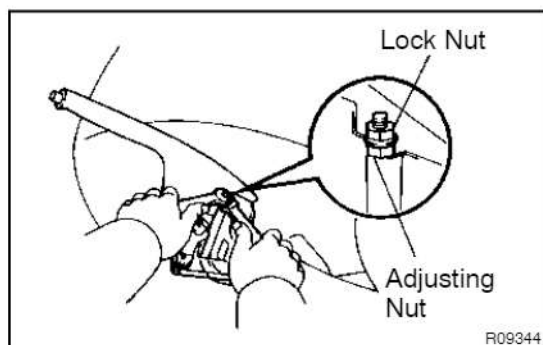
BR000-08

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, 44.1 lbf):
7 - 8 clicks**

If incorrect, adjust the parking brake.



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 step 1 on page BR-45 or see step 2 on page BR-32.

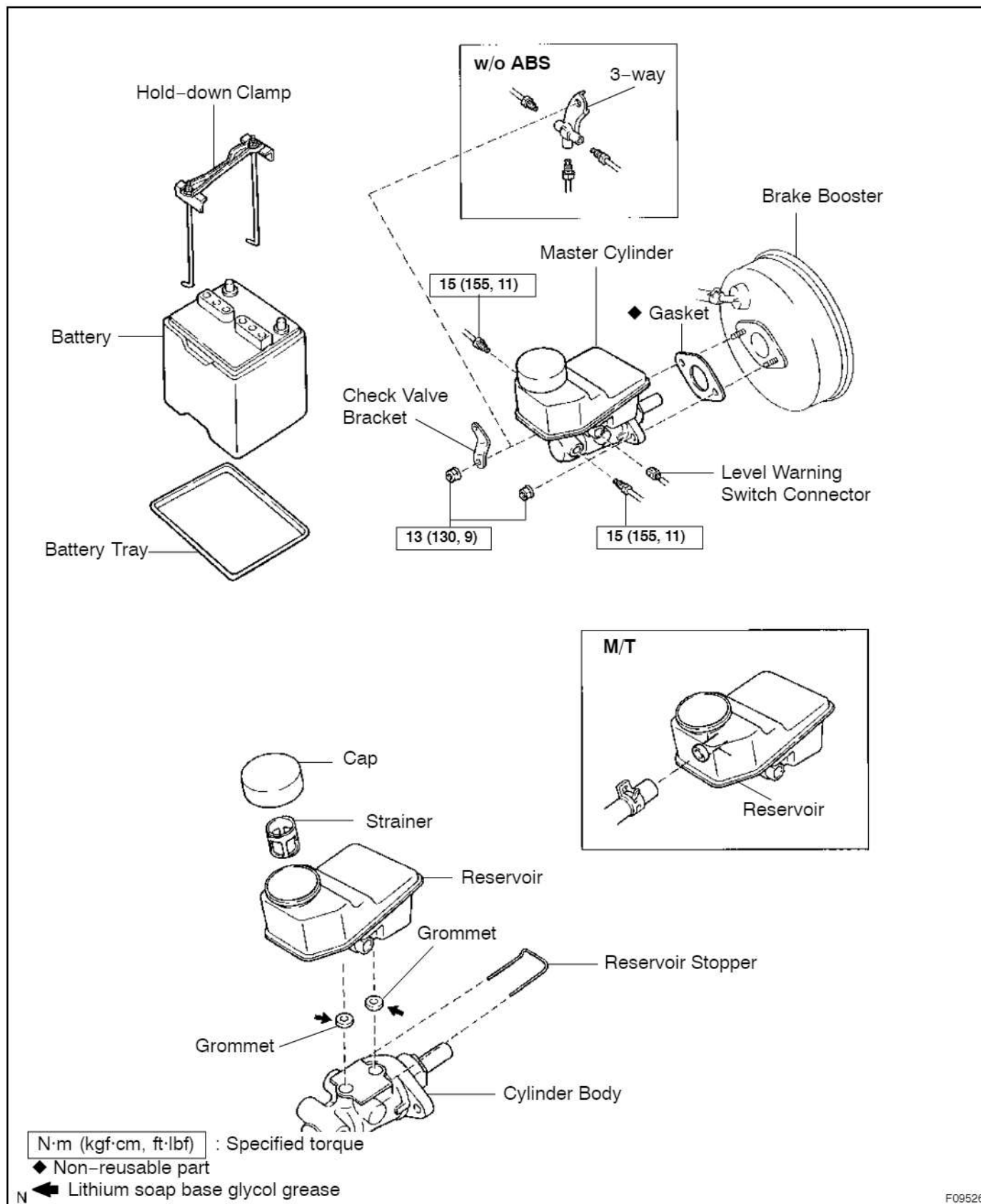
- Remove the console box.
- Loosen the lock nut and turn the adjusting nut until the lever travel is correct.
- Tighten the lock nut.

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

- Install the console box.

BRAKE MASTER CYLINDER COMPONENTS

BR001-07



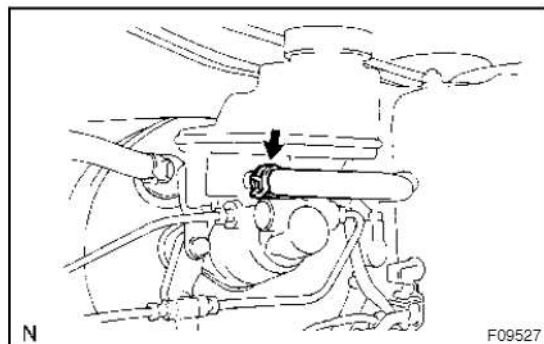
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REMOVAL

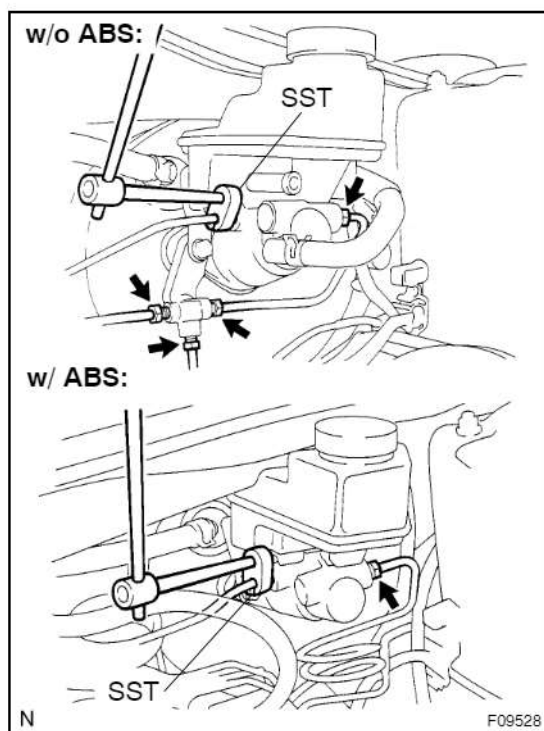
1. REMOVE BATTERY
2. DISCONNECT LEVEL WARNING SWITCH CONNECTOR
3. DRAW OUT FLUID WITH SYRINGE

NOTICE:

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

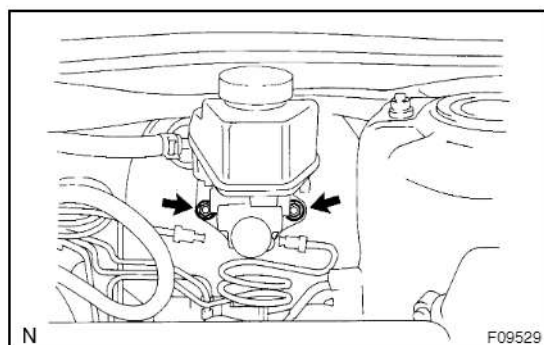


4. M/T:
DISCONNECT RESERVOIR HOSE



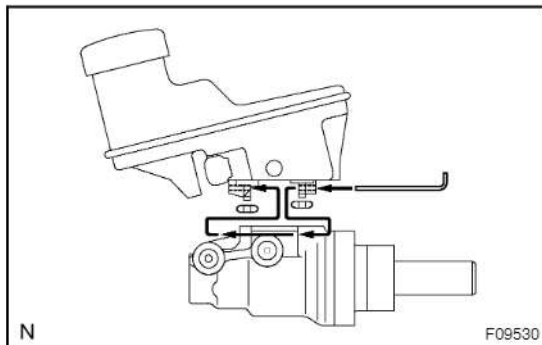
5. DISCONNECT BRAKE LINE

- (a) w/o ABS:
Using SST, disconnect the 5 brake lines from the master cylinder and 3-way union.
SST 09023-00101
Torque: 15 N·m (155 kgf·cm, 11 ft·lbf)
- (b) w/ ABS:
Using SST, disconnect the 2 brake lines from the master cylinder.
SST 09023-00101
Torque: 15 N·m (155 kgf·cm, 11 ft·lbf)



6. REMOVE MASTER CYLINDER

- (a) Remove the 2 mounting nuts.
Torque: 13 N·m (130 kgf·cm, 9 ft·lbf)
- (b) w/o ABS:
Pull out the check valve bracket, 3-way and master cylinder.
- (c) w/ ABS:
Pull out the check valve bracket and master cylinder.
- (d) Remove the gasket from the master cylinder.

**7. REMOVE RESERVOIR**

- (a) Pull out the reservoir stopper.

HINT:

At the time of installation, make sure to insert the reservoir stopper through holes of the reservoir and the master cylinder groove.

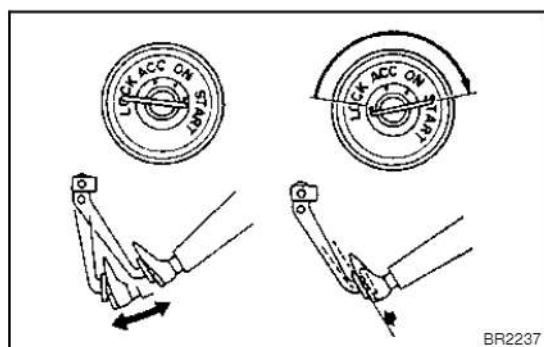
- (b) Remove the reservoir and 2 grommets.
(c) Remove the cap and strainer from the reservoir.

INSTALLATION

Installation is in the reverse order of removal (See page BR-11).

HINT:

- Before installation, adjust length of brake booster push rod (See page BR-18).
- After installation, fill the brake reservoir with brake fluid, bleed the brake system (See page BR-4), and check for leaks.
- Check and adjust brake pedal (See page BR-6).

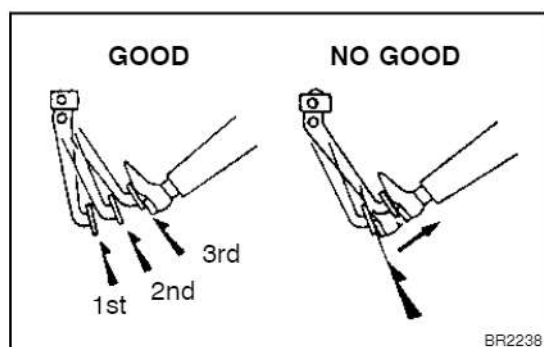


BRAKE BOOSTER ASSEMBLY ON-VEHICLE INSPECTION

BR007-05

1. OPERATING CHECK

- (a) Depress the brake pedal several times with the engine off and check that there is no change in the pedal reserve distance.
- (b) Depress the brake pedal and start the engine. If the pedal goes down slightly, operation is normal.



2. AIR TIGHTNESS CHECK

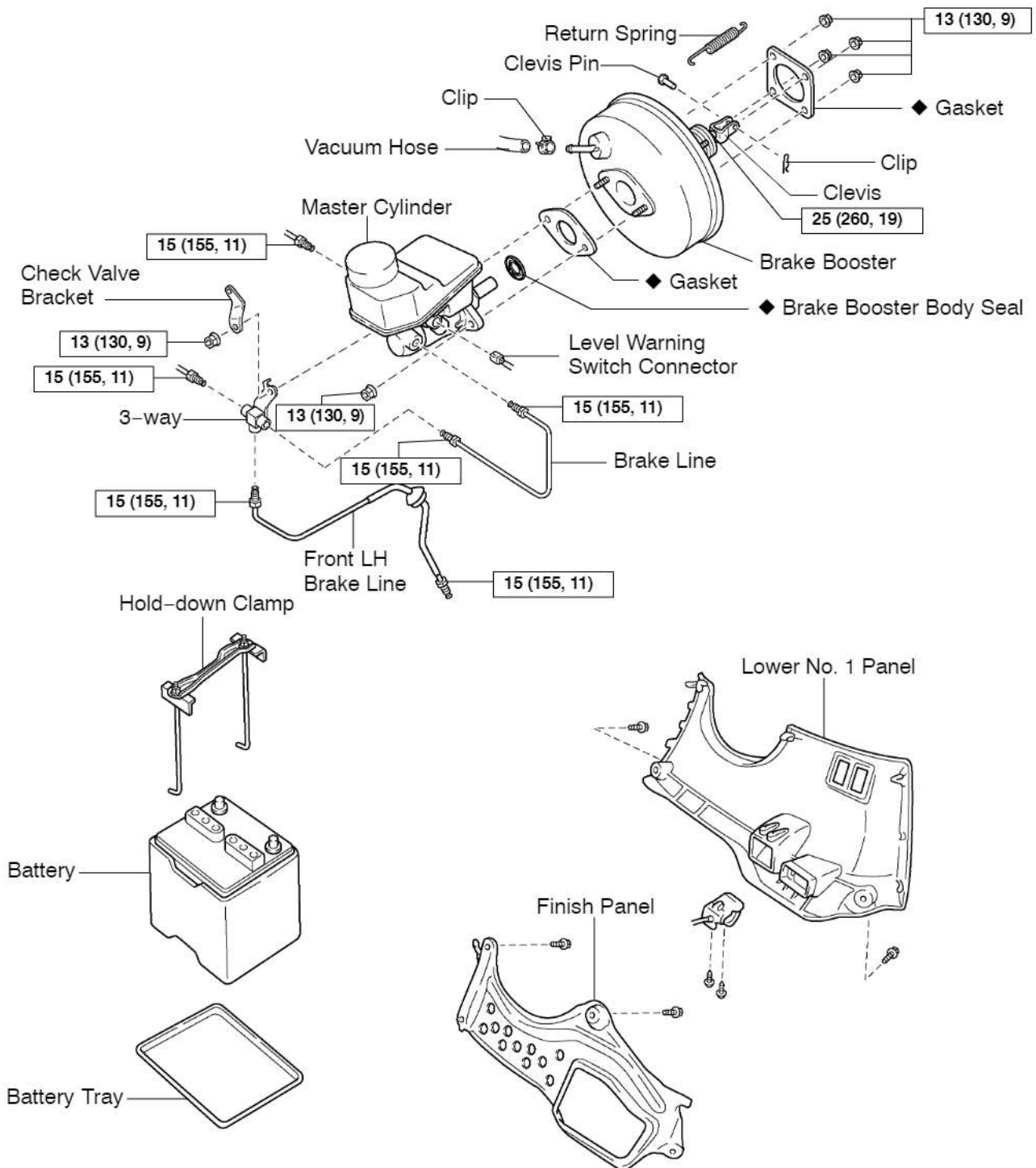
- (a) Start the engine and stop it after 1 or 2 minutes. Depress the brake pedal several times slowly.

If the pedal goes down farthest the 1st time, but gradually rises after 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.

COMPONENTS

w/o ABS:



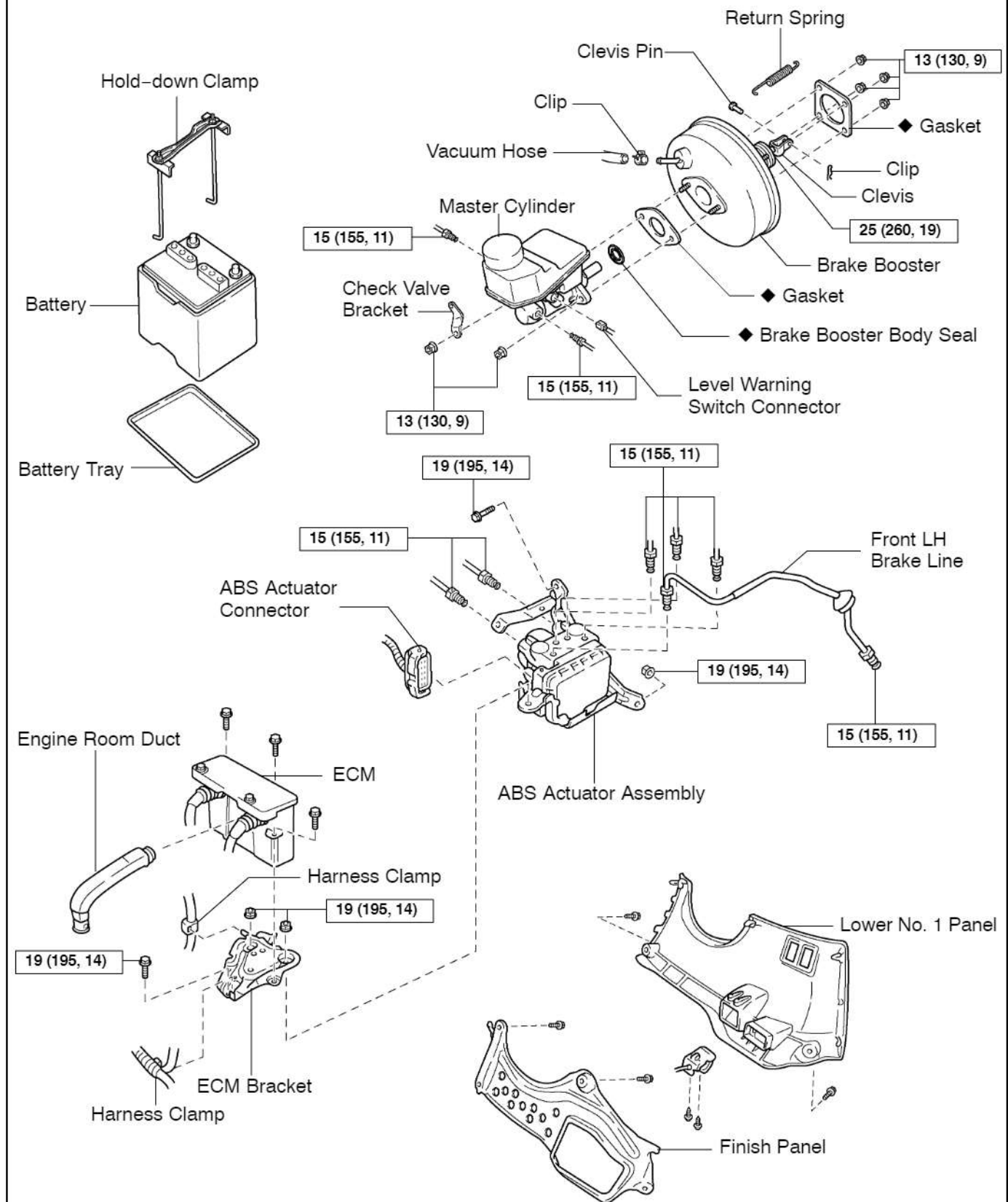
N·m (kgf·cm, ft·lbf) : Specified torque

◆ Non-reusable part

N

cmc0939

w/ ABS:



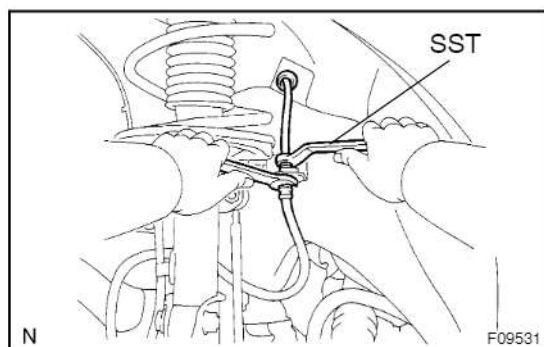
N·m (kgf·cm, ft·lbf) : Specified torque

N ◆ Non-reusable part

cmc0943

REMOVAL

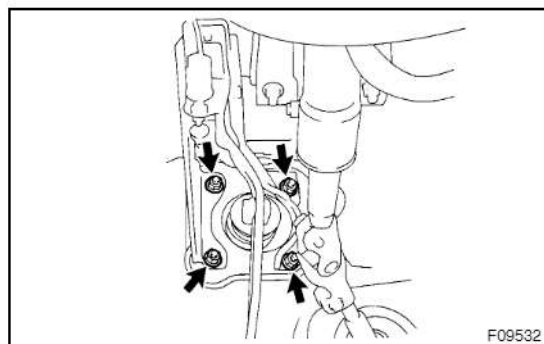
1. **REMOVE FRONT LH WHEEL**
Torque: 103 N·m (1,050 kgf·cm, 76 ft·lbf)
2. **REMOVE MASTER CYLINDER** (See page BR-11)
3. **DISCONNECT VACUUM HOSE FROM BRAKE BOOSTER**
4. **w/ ABS:**
REMOVE ABS ACTUATOR ASSEMBLY
(See page BR-51)



5. **REMOVE FRONT LH BRAKE LINE**
 - (a) Using SST and spanner, disconnect the brake line from the flexible hose of front LH brake.
SST 09751-36011
 - (b) Pull out the brake line with the grommet from the body.

6. REMOVE BRAKE BOOSTER

- (a) Remove the lower No. 1 panel and finish panel.
- (b) Remove the return spring, clip and clevis pin.



- (c) Remove the clevis and 4 nuts.
- (d) Pull out the brake booster and gasket.

7. REMOVE BRAKE BOOSTER BODY SEAL

Pry out the brake booster body seal.

INSTALLATION

1. INSTALL BRAKE BOOSTER

- (a) Install a new gasket and brake booster with 4 nuts.
Torque: 13 N·m (130 kgf·cm, 9 ft·lbf)
- (b) Install the clevis, and torque the lock nut.
Torque: 25 N·m (260 kgf·cm, 19 ft·lbf)
- (c) Install the clevis pin into the clevis and brake pedal, and install the clip to the clevis pin.
- (d) Install the pedal return spring.

2. INSTALL FRONT LH BRAKE LINE

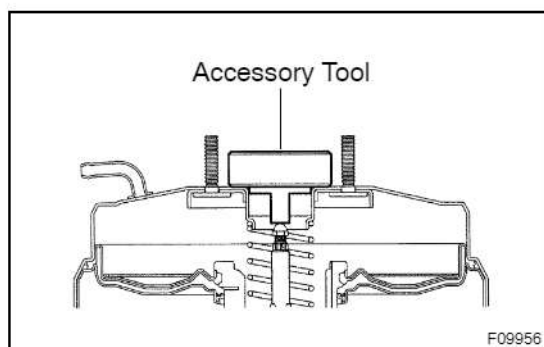
- (a) Insert the brake line with the grommet into the body, and install the grommet to the body.
- (b) Using SST and spanner, connect the brake line to the flexible hose of front LH brake.

SST 09751-36011

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

3. w/ ABS:

INSTALL ABS ACTUATOR ASSEMBLY (See page BR-52)



4. When replacing the brake master cylinder only:

ADJUST LENGTH OF BRAKE BOOSTER PUSH ROD

- (a) Apply chalk to the tip of an accessory tool.
- (b) Place the accessory tool to the brake booster.
- (c) Measure the clearance between the brake booster push rod and accessory tool.

Clearance: 0 mm (0 in.)

HINT:

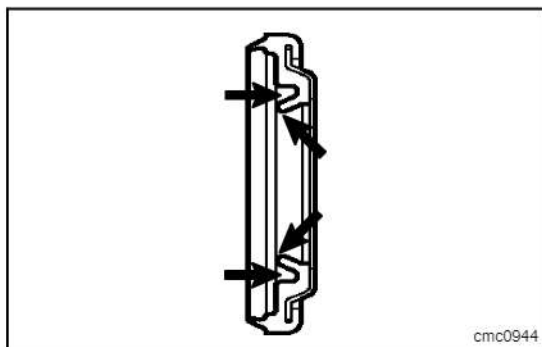
Adjust the clearance in following cases:

- If there is a clearance between the accessory tool and the shell of the booster (floating accessory tool), the clearance is small.
- If the chalk does not stick on the tip of the push rod, the clearance is large.
- (d) If the clearance is outside of the specified range, depress the brake pedal and adjust the length of the protruding push rod of the brake booster.

NOTICE:

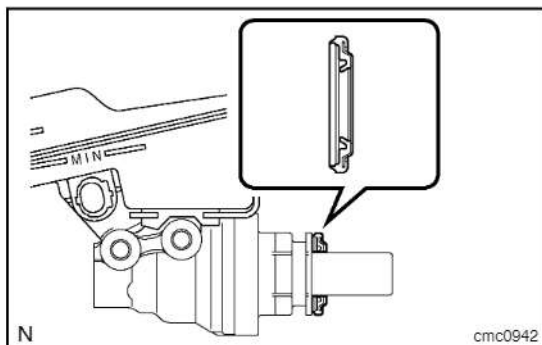
Make an adjustment with the booster having no vacuum. (Depress the brake pedal several times with the engine stopped.)

5. CONNECT VACUUM HOSE TO BRAKE BOOSTER



6. INSTALL BRAKE BOOSTER BODY SEAL

- (a) Apply silicone grease to a new brake booster body seal, as shown in the illustration.



- (b) Install the brake booster body seal to the master cylinder piston.

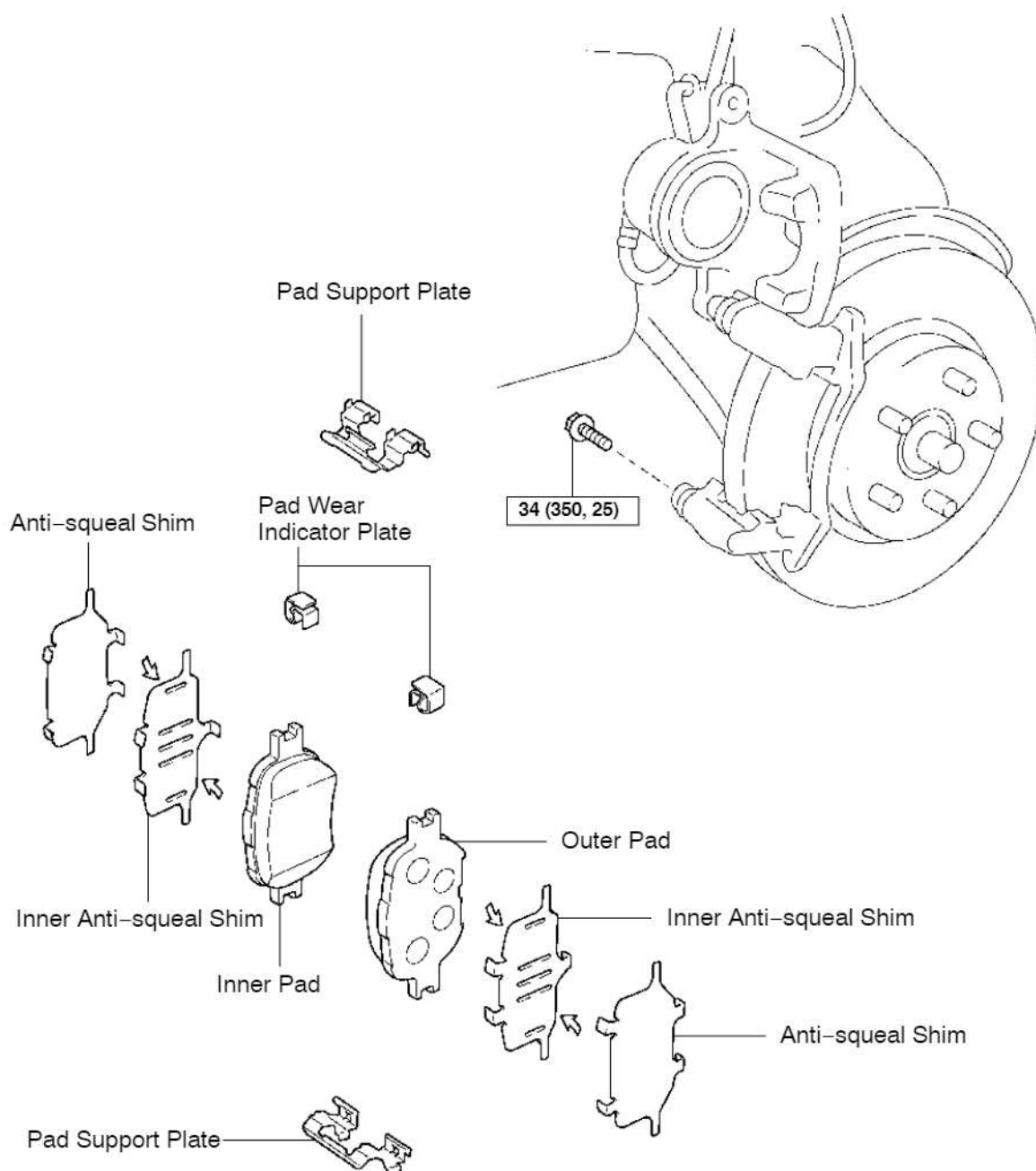
NOTICE:

Be sure to install the brake booster body seal in the correct direction.

7. **INSTALL MASTER CYLINDER (See page BR-13)**
8. **FILL BRAKE RESERVOIR WITH BRAKE FLUID AND BLEED BRAKE SYSTEM (See page BR-4)**
9. **CHECK FOR FLUID LEAKAGE**
10. **CHECK AND ADJUST BRAKE PEDAL**
 - (a) Check and adjust the brake pedal (See page BR-6).
 - (b) Install the finish panel and lower No. 1 panel.
11. **DO OPERATIONAL CHECK (See page BR-14)**

FRONT BRAKE PAD COMPONENTS

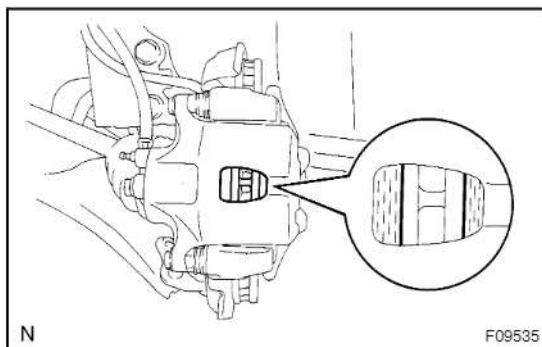
BR005-08



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

↶ Disc brake grease

F16321

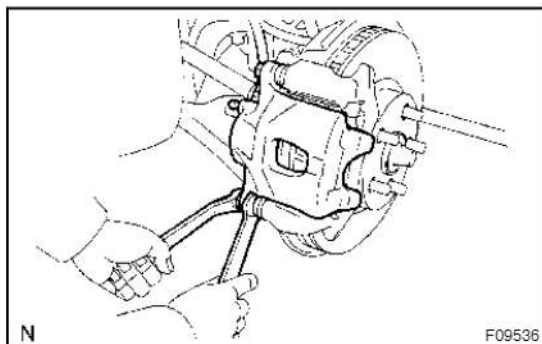


REPLACEMENT

1. REMOVE FRONT WHEEL
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.)



3. LIFT UP CALIPER

- (a) Hold the sliding pin and remove the bottom side installation bolt.

HINT:

Do not disconnect the flexible hose from the brake caliper.

- (b) Lift up the caliper and suspend it securely.

4. REMOVE 2 PADS WITH 4 ANTI-SQUEAL SHIMS AND PAD 2 WEAR INDICATOR PLATES

5. REMOVE 2 PAD SUPPORT PLATES

NOTICE:

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.

6. CHECK DISC THICKNESS AND RUNOUT

(See page BR-25)

7. INSTALL PAD SUPPORT PLATES

Install the 2 pad support plates.

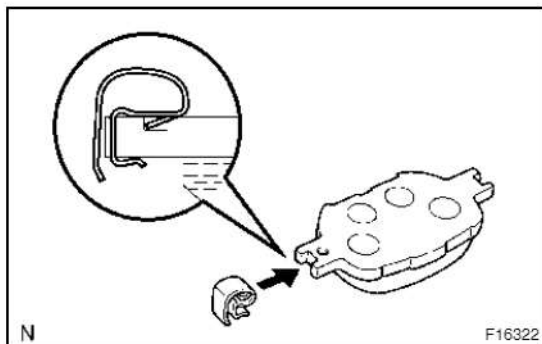
NOTICE:

Do not assemble the upper and lower pad support plates in reverse.

8. INSTALL NEW PADS

NOTICE:

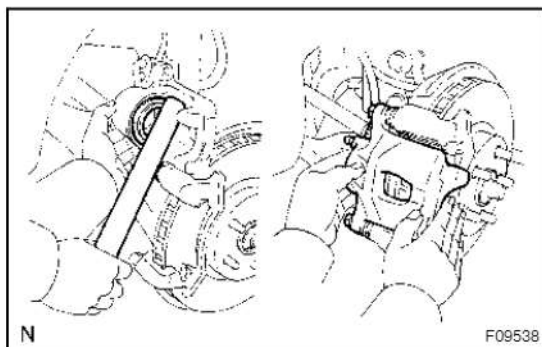
When replacing worn pads, the anti-squeal shims and wear indicator plate must be replaced together with the pads.



- (a) Install a pad wear indicator plate on the each pad.
- (b) Apply disc brake grease to both sides of each inner anti-squeal shim (See page BR-19).
- (c) Install the 2 anti-squeal shims on each pad.
- (d) Install the pads with the pad wear indicator plate facing upward.

NOTICE:

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

**9. INSTALL CALIPER**

- (a) Draw out a small amount of brake fluid from the reservoir.
- (b) Press in the piston with a hammer handle or similar implement.

HINT:

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

- (c) Install the caliper.
- (d) Hold the sliding pin and torque the installation bolts.

Torque: 34 N·m (350 kgf·cm, 25 ft·lbf)

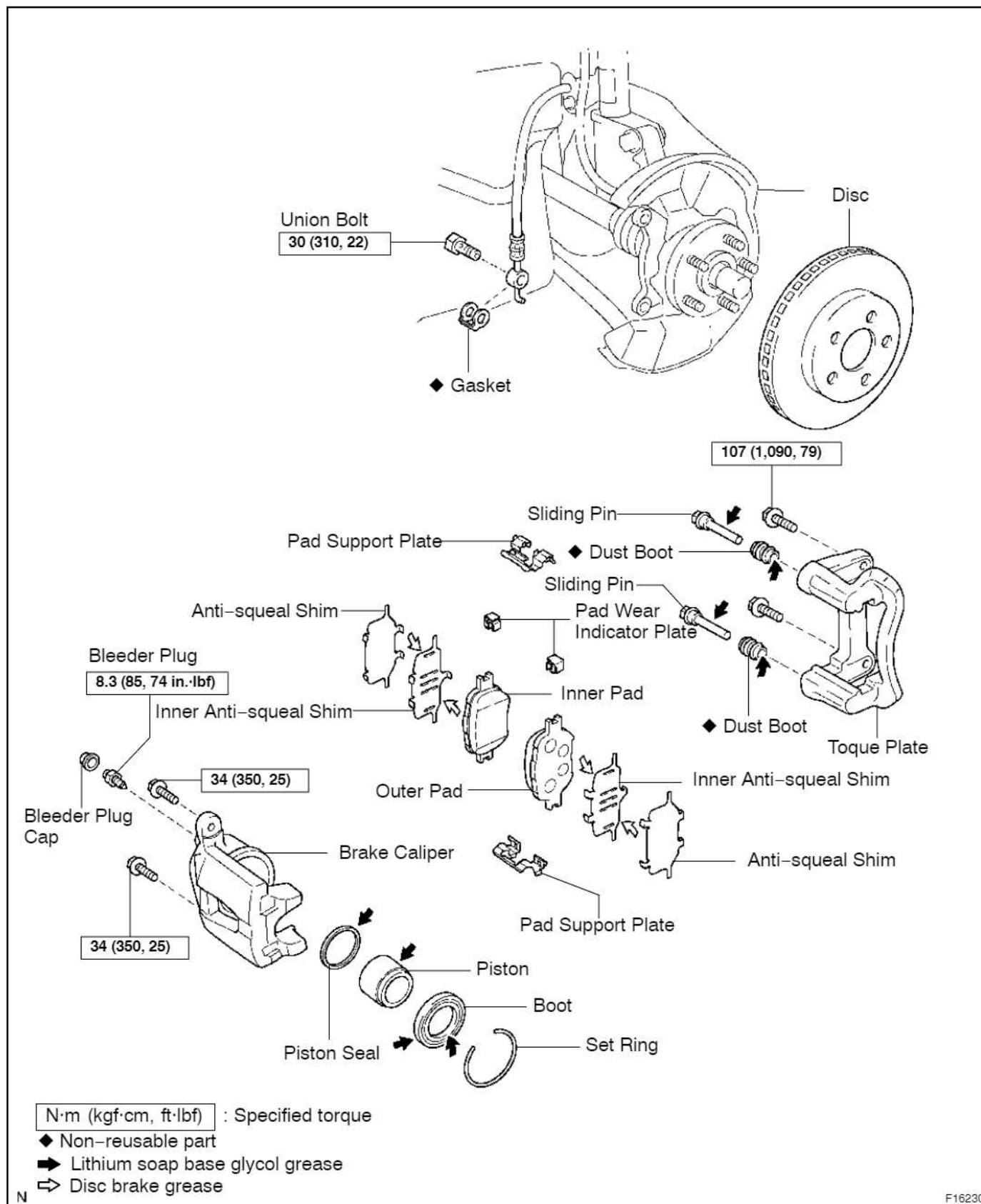
10. INSTALL FRONT WHEEL

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

11. DEPRESS BRAKE PEDAL SEVERAL TIMES**12. CHECK THAT FLUID LEVEL IS AT MAX LINE**

FRONT BRAKE CALIPER COMPONENTS

BR1U0-02

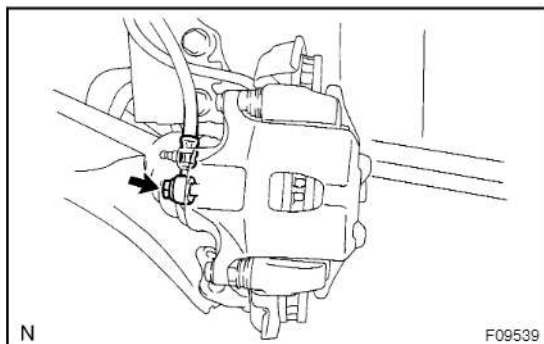


REMOVAL

1. REMOVE FRONT WHEEL

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

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



2. DISCONNECT FLEXIBLE HOSE

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

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

HINT:

At the time of installation, install the flexible hose lock securely in the lock hole in the caliper.

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

3. REMOVE CALIPER

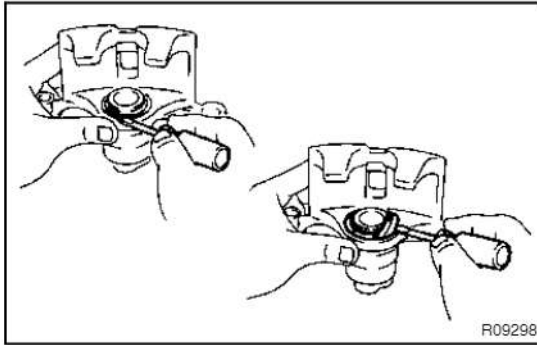
- (a) Hold the sliding pin and remove the 2 installation bolts.

Torque: 34 N·m (350 kgf·cm, 25 ft·lbf)

- (b) Remove the caliper from the torque plate.

4. REMOVE 2 PADS WITH ANTI-SQUEAL SHIMS

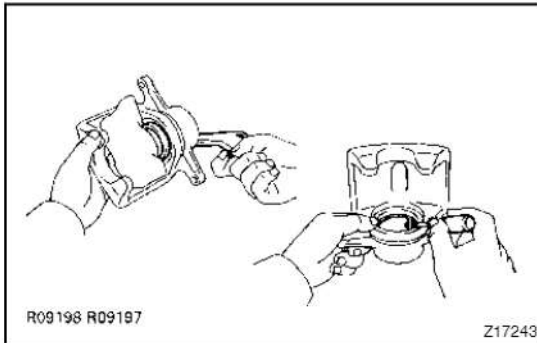
5. REMOVE 2 PAD SUPPORT PLATES



DISASSEMBLY

1. REMOVE SET RING AND CYLINDER BOOT

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



2. REMOVE PISTON

- Place a piece of cloth or similar, between the piston and the caliper.
- 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.

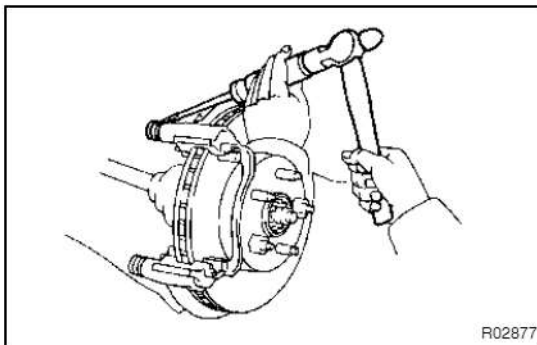
3. REMOVE PISTON SEAL

Using a screwdriver, remove the piston seal from the cylinder.

4. REMOVE BLEEDER PLUG CAP AND BLEEDER PLUG

5. REMOVE SLIDING PINS AND DUST BOOTS

- Remove the 2 sliding pins from the torque plate.



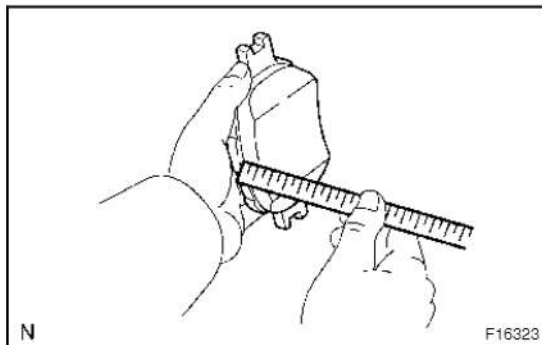
- Using a screwdriver and hammer, tap out the 2 dust boots.

HINT:

At the time of reassembly, use a 19 mm socket wrench and tap in 2 new dust boots into the torque plate.

NOTICE:

At the time of reassembly, check that the metal plate portion of the dust boot fits snugly in the torque plate.



INSPECTION

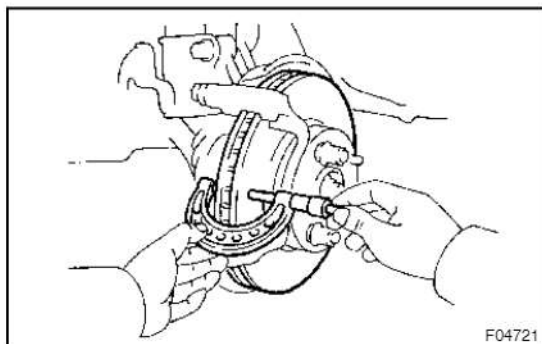
1. MEASURE PAD LINING THICKNESS

Using a ruler, measure the pad lining thickness.

Standard thickness: 11.5 mm (0.453 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.



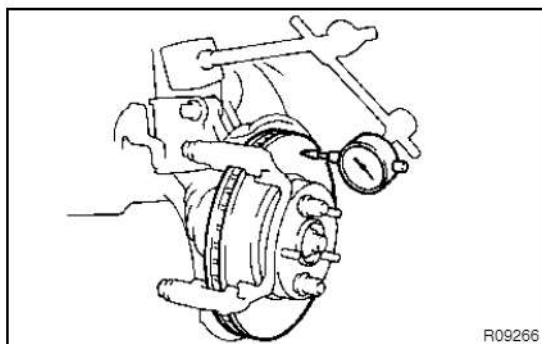
2. MEASURE DISC THICKNESS

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

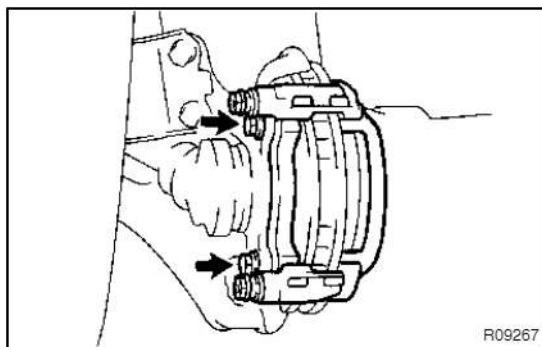


3. MEASURE DISC RUNOUT

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

Maximum disc runout: 0.05 mm (0.0020 in.)

If the disc's runout is maximum value or greater, check the bearing play in the axial direction and check the axle hub runout (See page SA-13). If the bearing play and axle hub runout are not abnormal, adjust the disc runout or grind it on a "On-car" brake lathe.



4. IF NECESSARY, ADJUST DISC RUNOUT

- Remove the 2 bolts and torque plate from the knuckle.
- 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: 103 N·m (1,050 kgf·cm, 76 ft·lbf)

Remeasure the disc runout. Make a note of the runout and the disc's position on the hub.

- Repeat (b) until the disc has been 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.
 - Install the torque plate and torque the mounting bolts.
- Torque: 107 N·m (1,090 kgf·cm, 79 ft·lbf)**

REASSEMBLY

Reassembly is in the reverse order of disassembly (See page BR-24).

NOTICE:

Apply lithium soap base glycol grease to the parts indicated by arrows (See page BR-22).

INSTALLATION

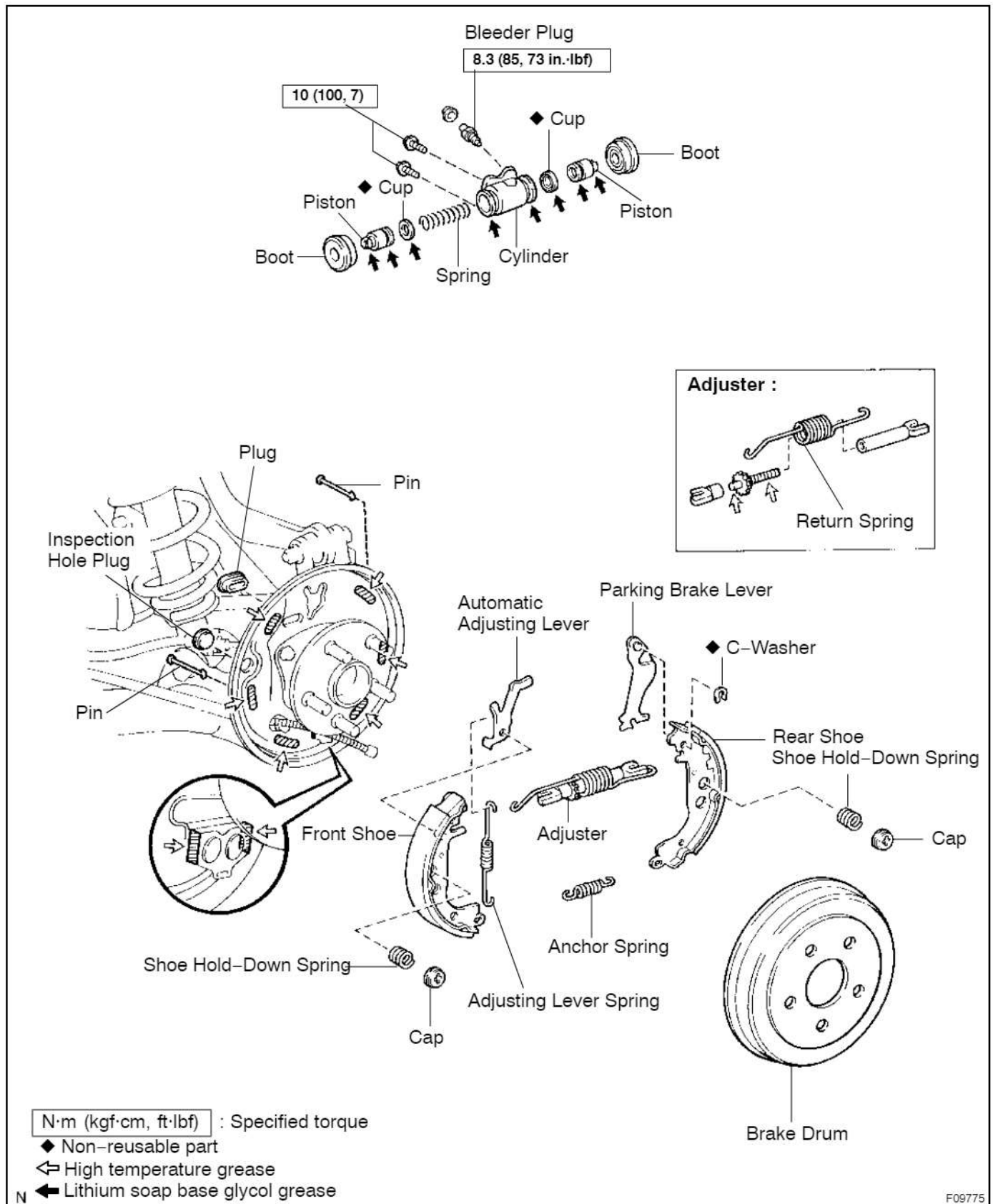
Installation is in the reverse order of removal (See page BR-23).

HINT:

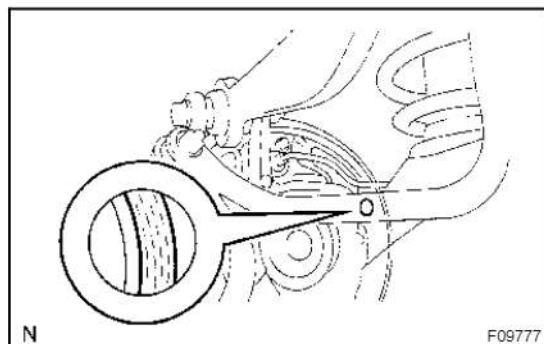
- After installation, fill the brake reservoir with brake fluid and bleed brake system (See page BR-4).
- Check for leaks.

REAR DRUM BRAKE COMPONENTS

BR14A-03



F09775



REMOVAL

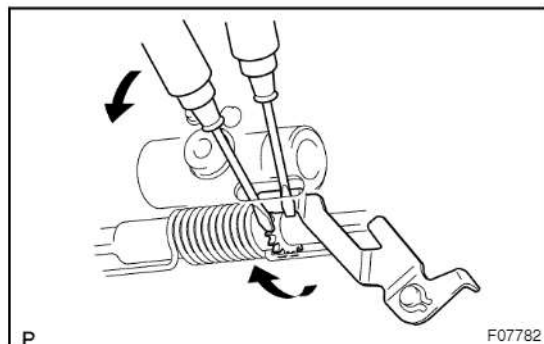
1. INSPECT SHOE LINING THICKNESS

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

- (a) Release the parking brake lever, and remove the brake drum.

HINT:

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

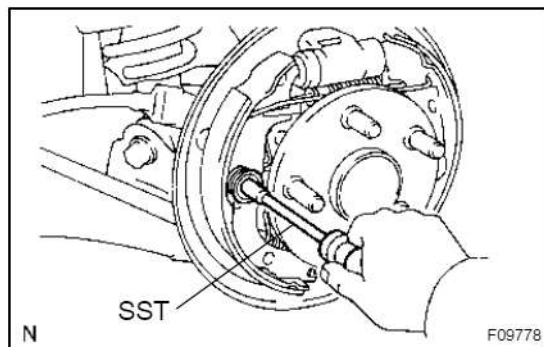
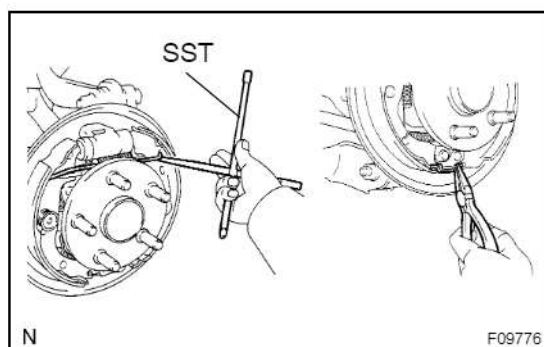
- (b) Remove the plug and insert a screwdriver through the hole in the backing plate.
- (c) Using another screwdriver, reduce the brake shoe adjuster by turning the adjusting wheel.

4. REMOVE FRONT SHOE

- (a) Using SST, disconnect the adjuster spring from the rear shoe.

SST 09703-30010

- (b) Using needle-nose pliers, remove the anchor spring.



- (c) Using SST, remove the cap, shoe hold-down spring and pin from the front shoe.

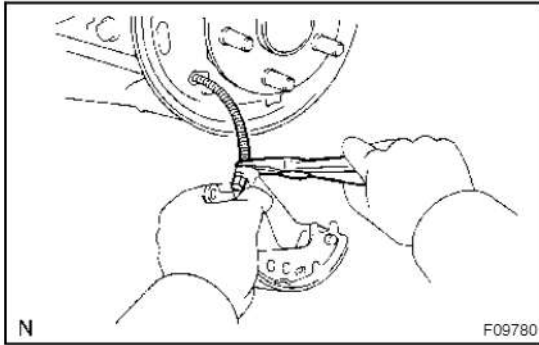
SST 09718-00010

- (d) Remove the adjuster and adjuster spring together with the front shoe.
- (e) Remove the adjuster together with the adjuster spring from the front shoe.
- (f) Using needle-nose pliers, remove the adjusting lever spring.
- (g) Remove the automatic adjusting lever from the front shoe.

5. REMOVE REAR SHOE

- (a) Using SST, remove the cap, shoe hold-down spring and pin.

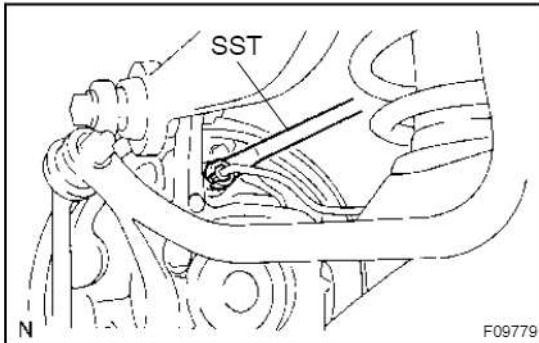
SST 09718-00010



- (b) Using needle-nose pliers, disconnect the parking brake cable from the parking brake lever, and remove the rear shoe.

6. REMOVE PARKING BRAKE LEVER

- (a) Remove the C-washer.
(b) Remove the parking lever from the rear shoe.



7. REMOVE WHEEL CYLINDER

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

SST 09751-36011

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

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

Torque: 10 N·m (100 kgf·cm, 7 ft·lbf)

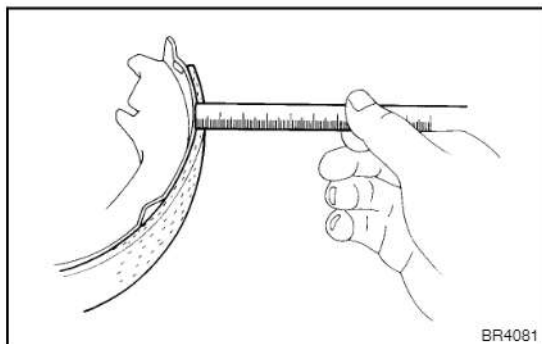
8. DISASSEMBLE WHEEL CYLINDER

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

INSPECTION

1. INSPECT DISASSEMBLED PARTS

Inspect the disassembled parts for wear, rust or damage.



BR4081

2. MEASURE BRAKE SHOE LINING THICKNESS

Using a ruler, measure the shoe lining thickness.

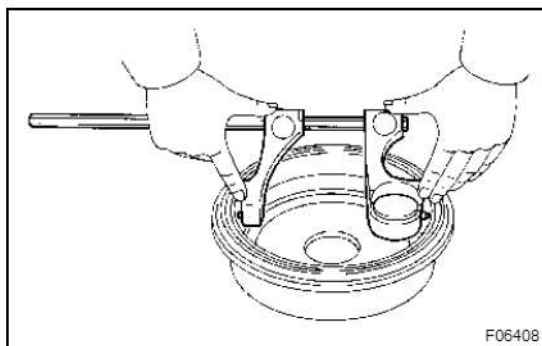
Standard thickness: 4.0 mm (0.157 in.)

Minimum thickness: 1.0 mm (0.039 in.)

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

HINT:

If brake shoes need to be replaced, they must be replaced as a set.



F06408

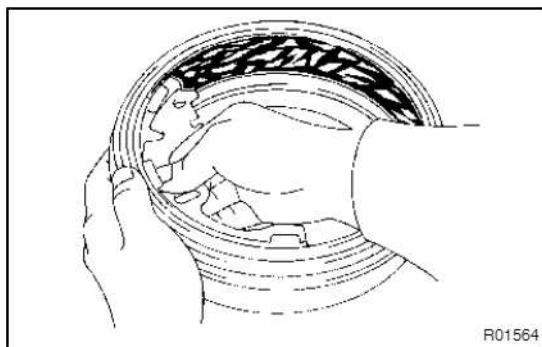
3. MEASURE BRAKE DRUM INSIDE DIAMETER

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

Standard inside diameter: 200.0 mm (7.874 in.)

Maximum inside diameter: 201.0 mm (7.913 in.)

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



R01564

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.

INSTALLATION

Installation is in the reverse order of removal (See page BR-29).

NOTICE:

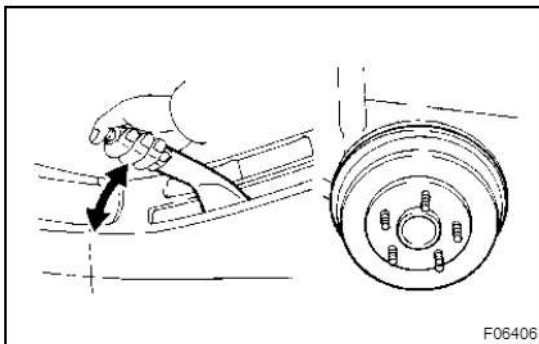
Apply lithium soap base glycol grease and high temperature grease to the parts indicated by the arrows (See page BR-28).

1. CHECK OPERATION OF AUTOMATIC ADJUSTING MECHANISM

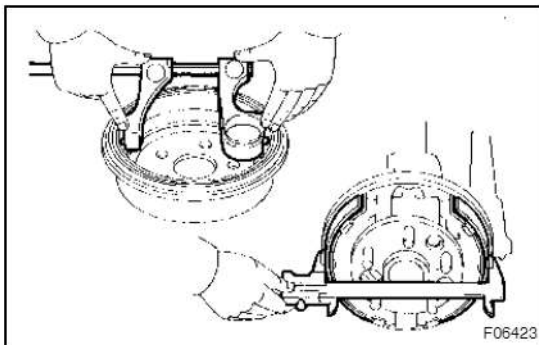
- (a) Move the parking brake lever of the rear shoe back and forth. Check that the adjuster turns.

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

- (b) Adjust the adjuster length to the as short as possible.



- (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.

- (c) Install the brake drum.

3. FILL BRAKE RESERVOIR WITH BRAKE FLUID

4. BLEED BRAKE SYSTEM (See page BR-4)

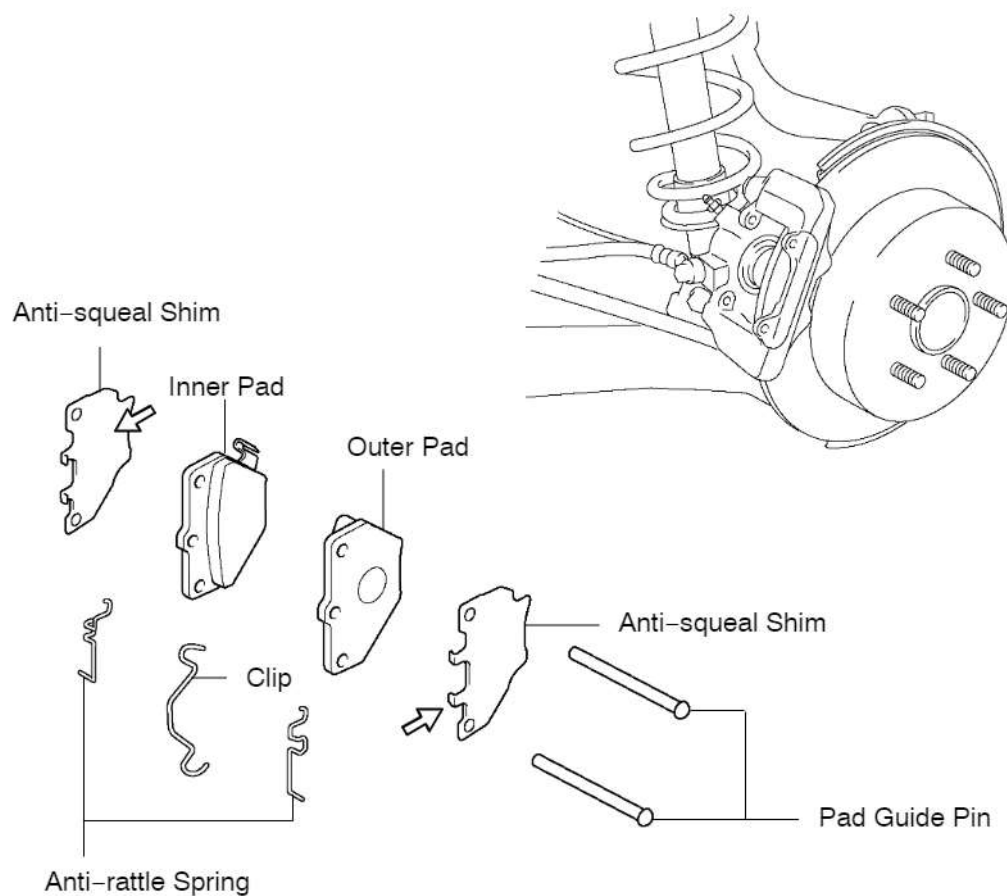
5. CHECK FOR LEAKS

6. INSTALL REAR WHEEL

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

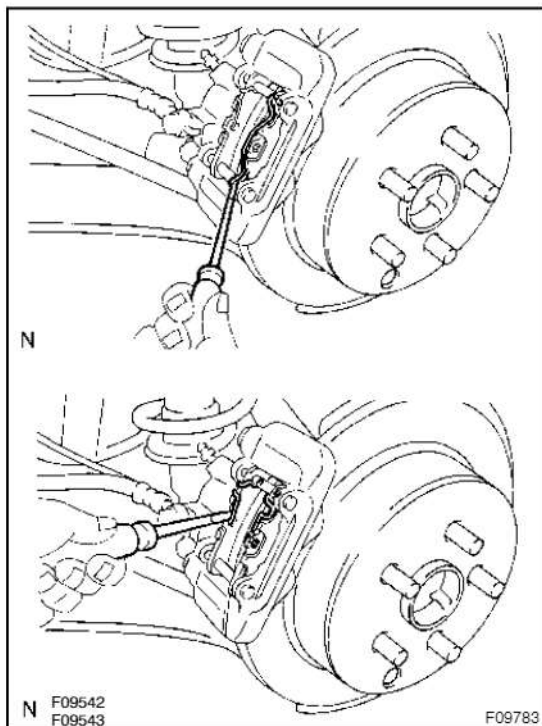
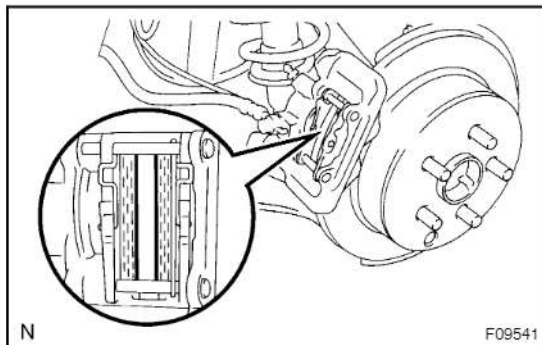
REAR BRAKE PAD COMPONENTS

BR00J-09



N ← Disc brake grease

F09540



REPLACEMENT

1. REMOVE REAR WHEEL
2. INSPECT PAD LINING THICKNESS

Check the pad thickness.

Minimum thickness: 1.0 mm (0.039 in.)

3. REMOVE CLIP, 2 ANTI-RATTLE SPRINGS AND 2 PAD GUIDE PINS

- (a) Using a screwdriver, remove the clip and 2 anti-rattle springs.

NOTICE:

- Do not deform the clip and anti-rattle spring.
- The clip and anti-rattle spring 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.

- (b) Remove the 2 pad guide pins.

4. REMOVE PADS AND ANTI-SQUEAL SHIMS

- (a) Remove the 2 pads.
- (b) Remove the anti-squeal shim from each pad.

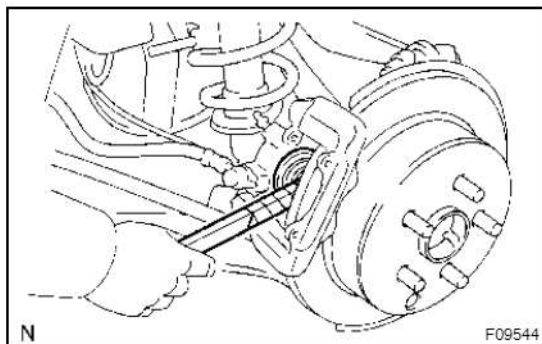
5. CHECK DISC THICKNESS AND RUNOUT (See page BR-39)

6. INSTALL NEW PADS

NOTICE:

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

- (a) Apply disc brake grease to inside of anti-squeal shims (See page BR-33).
- (b) Install the anti-squeal shim on each pad.



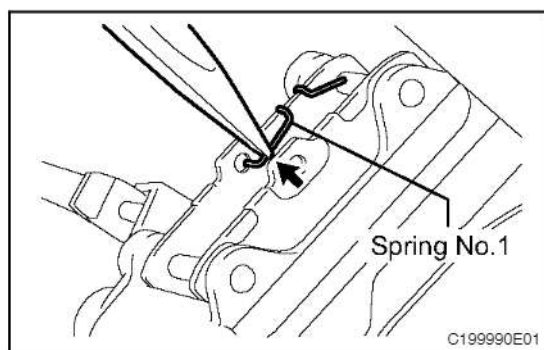
- (c) Draw out a small amount of brake fluid from the reservoir.
- (d) Press in the piston with a hammer handle or equivalent.

HINT:

- Tape the hammer 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.

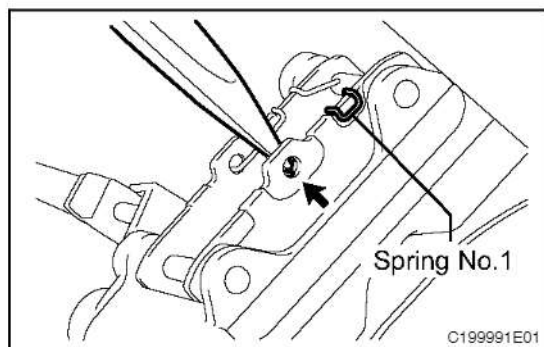
- (e) Install the two brake pads with the anti-squeal shims to the brake caliper.

- (f) Install the two guide pins to fix the brake pads.



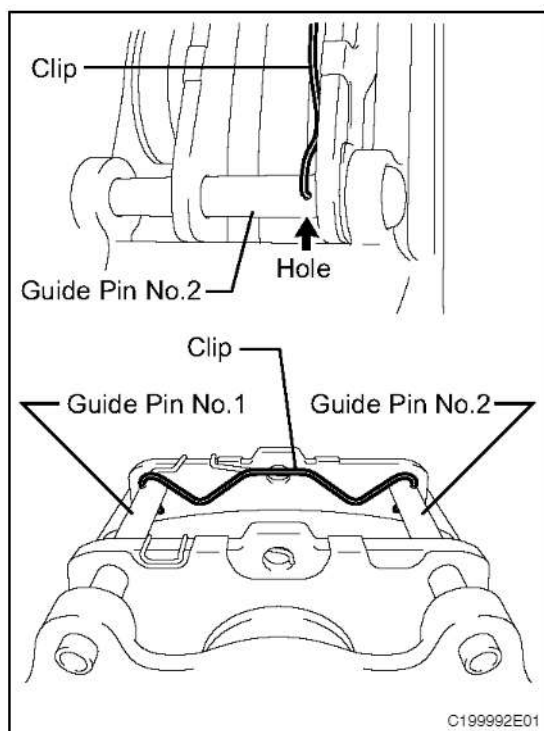
7. INSTALL SPRING NO.1

- (a) Hook the spring upper portion to the guide pin No.1.
- (b) Hook the spring lower portion to the center hole of the brake pad.



8. INSTALL SPRING NO.2

- (a) Hook the spring upper portion to the guide pin No.1.
- (b) Hook the spring lower portion to the center hole of the brake pad.



9. FIX GUIDE PINS WITH CLIP

- (a) Insert the clip end into the hole of the guide pin No.1.
- (b) Insert the other clip end into the hole of the guide pin No.2.

NOTICE:

The clip should be fully inserted into the guide pin No.1 and No.2. If not, the guide pins will come off and the brake caliper will be broken.

10. INSTALL REAR WHEEL

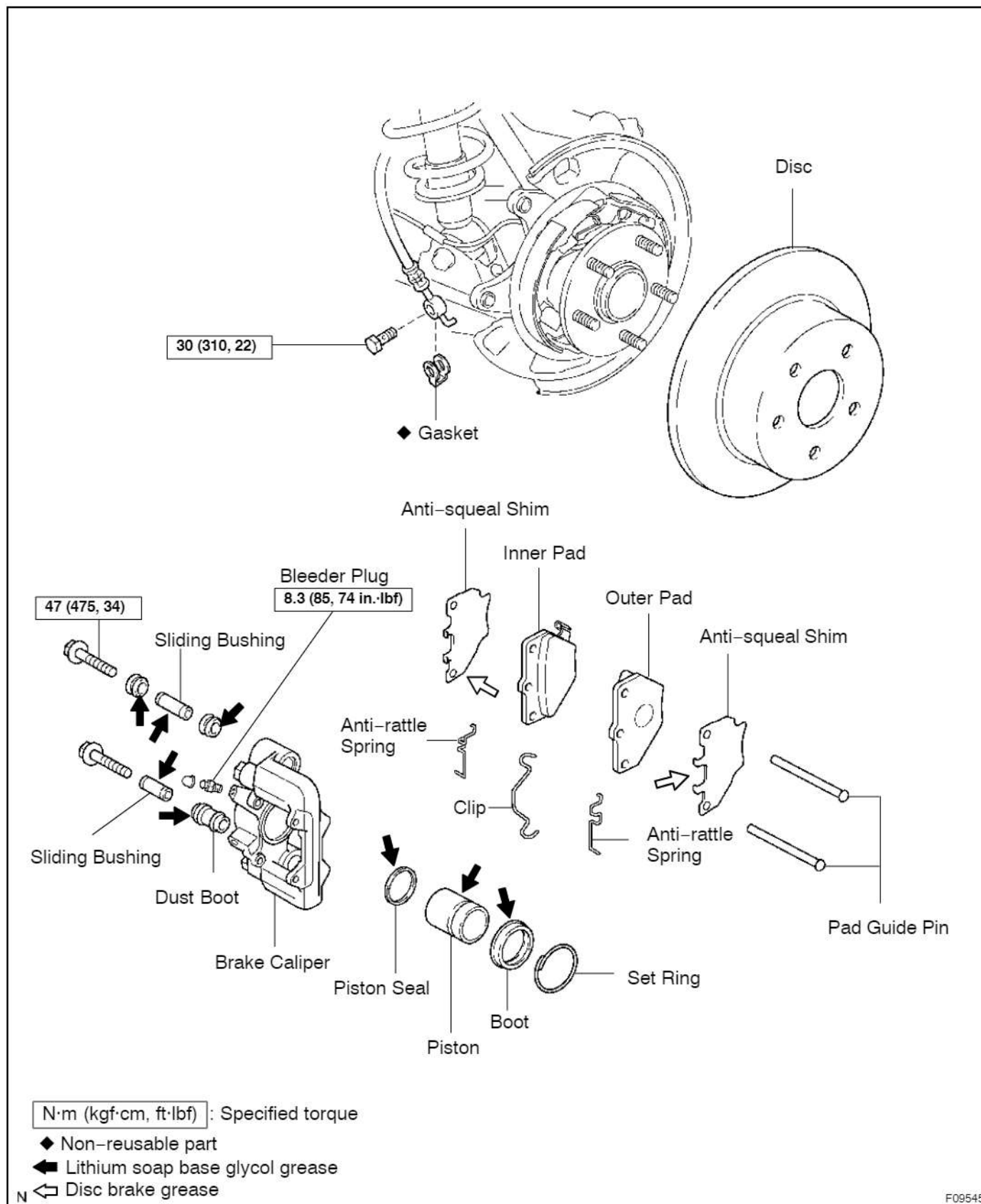
Torque: 103 N·m (1,050 kgf·cm, 76 ft·lbf)

11. DEPRESS BRAKE PEDAL SEVERAL TIMES

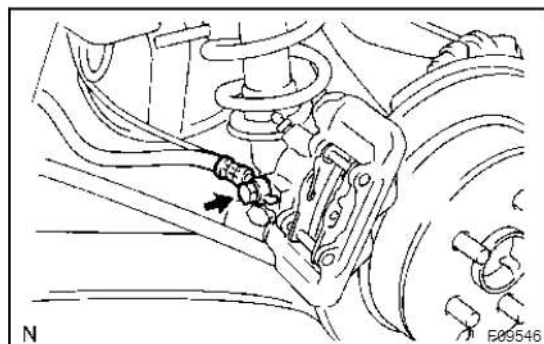
12. CHECK THAT FLUID LEVEL IS AT MAX LINE

REAR BRAKE CALIPER COMPONENTS

BR00L-09



F09545



REMOVAL

1. REMOVE REAR WHEEL

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

2. DISCONNECT FLEXIBLE HOSE

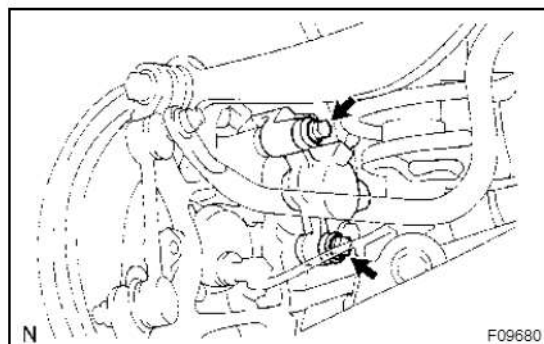
- (a) Remove the union bolt and gasket from the caliper, then disconnect the flexible hose from the caliper.

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

HINT:

At the time of installation, insert the flexible hose lock securely in the lock hole in the caliper.

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



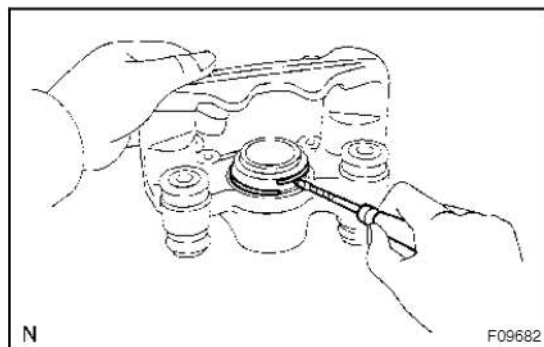
3. REMOVE CALIPER

- (a) Remove the 2 installation bolts and caliper.

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

- (b) Remove the caliper from the torque plate.

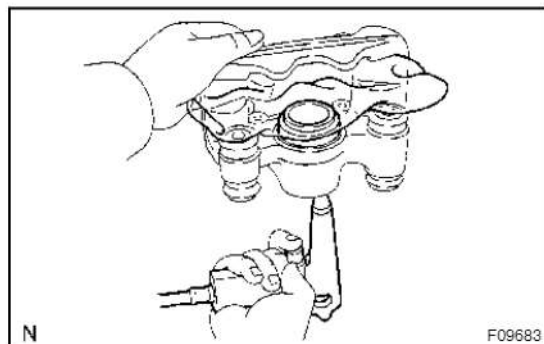
4. REMOVE 2 PADS WITH ANTI-SQUEAL SHIMS



DISASSEMBLY

1. REMOVE SET RING AND CYLINDER BOOT

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

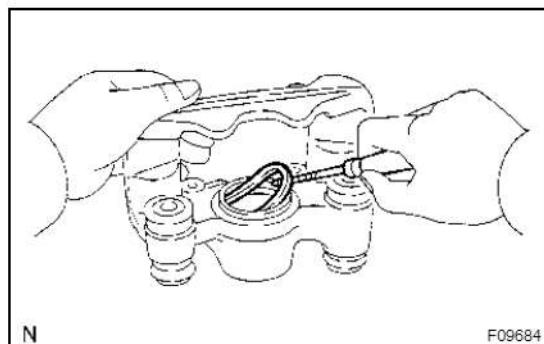


2. REMOVE PISTON

- (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:

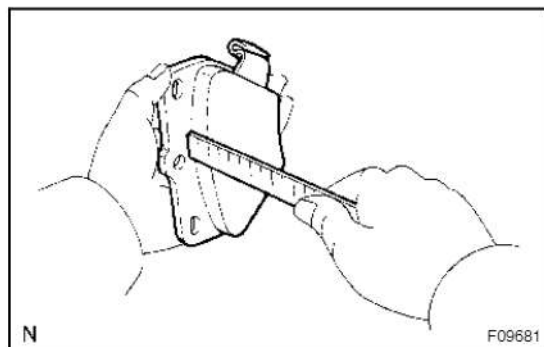
Do not place your fingers in front of the piston when using compressed air.



3. REMOVE PISTON SEAL FROM CYLINDER

Using a screwdriver, remove the piston seal.

4. REMOVE 2 SLIDING BUSHINGS AND 3 DUST BOOTS



INSPECTION

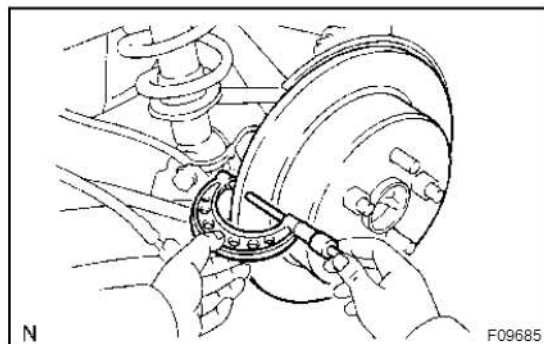
1. MEASURE PAD LINING THICKNESS

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.



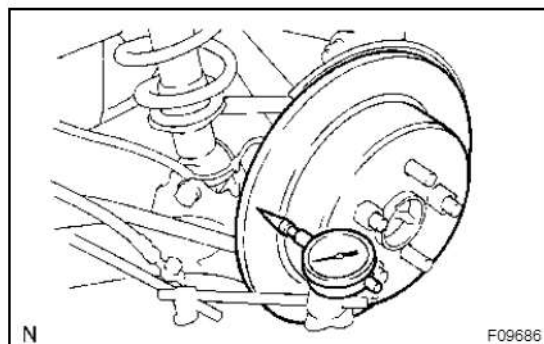
2. MEASURE DISC THICKNESS

Using a micrometer, measure the disc thickness.

Standard thickness: 9.0 mm (0.354 in.)

Minimum thickness: 7.5 mm (0.295 in.)

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



3. MEASURE DISC RUNOUT

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

Maximum disc runout: 0.15 mm (0.0059 in.)

If the disc's runout is at the maximum value or greater, check the bearing play is in the axial direction and check the axle hub runout (See page SA-56). If the bearing play and axle hub runout are not abnormal, adjust the disc runout or grind it on a "On-car" brake lathe.

4. IF NECESSARY, ADJUST DISC RUNOUT

- (a) 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: 103 N·m (1,050 kgf·cm, 76 ft·lbf)

Remeasure the disc runout. Make a note of the runout and the disc's position on the hub.

- (b) Repeat (a) until the disc has been installed on the 3 remaining hub positions.
- (c) If the minimum runout recorded in (a) and (b) is less than 0.15 mm (0.0059 in.), install the disc in that position.
- (d) If the minimum runout recorded in (a) and (b) is greater than 0.15 mm (0.0059 in.), replace the disc and repeat step 3.

REASSEMBLY

Reassembly is in the reverse order of disassembly (See page BR-38).

NOTICE:

Apply lithium soap base glycol grease to the parts indicated by the arrows (See page BR-36).

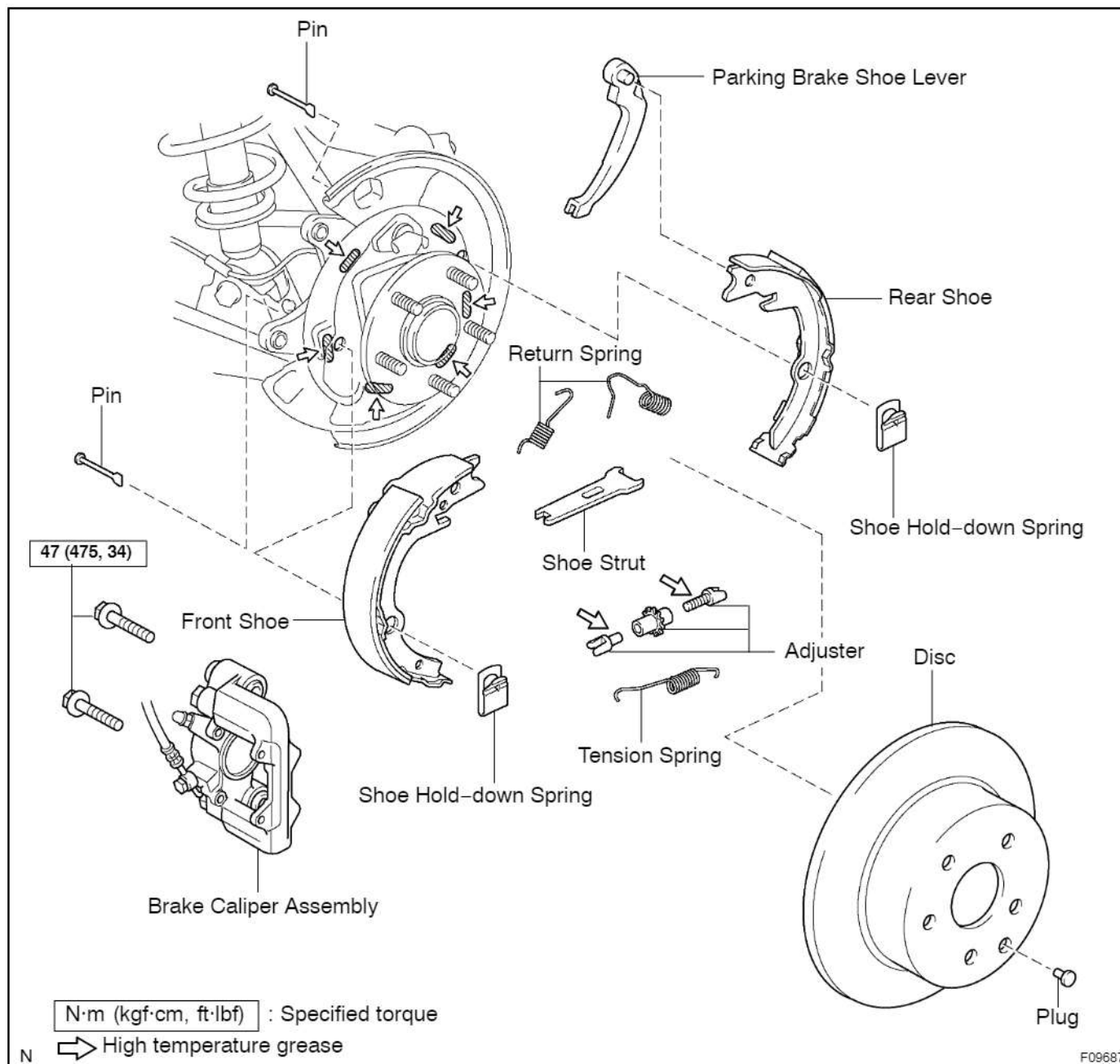
INSTALLATION

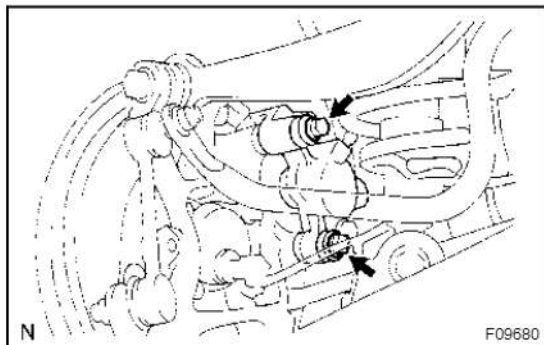
Installation is in the reverse order of removal (See page BR-37).

HINT:

- After installation, fill the brake reservoir with brake fluid and bleed the brake system (See page BR-4).
- Check for leaks.

PARKING BRAKE COMPONENTS





DISASSEMBLY

1. REMOVE REAR WHEEL

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

2. REMOVE REAR DISC BRAKE ASSEMBLY

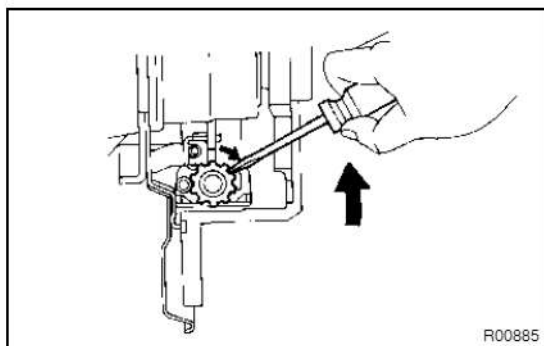
- (a) Remove the 2 installation bolts and rear brake caliper.

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

HINT:

Do not disconnect the flexible hose from the brake caliper.

- (b) Suspend the disc brake securely. Ensure that the hose is not stretched.

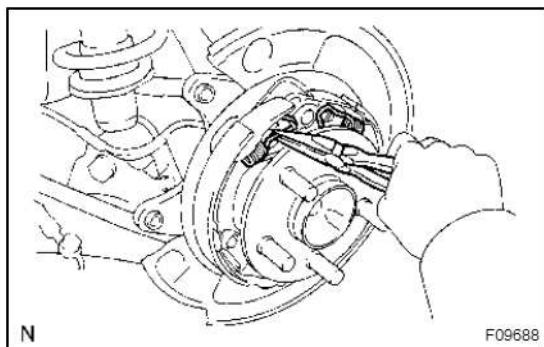


3. REMOVE DISC

Release the parking brake lever, and remove the disc.

HINT:

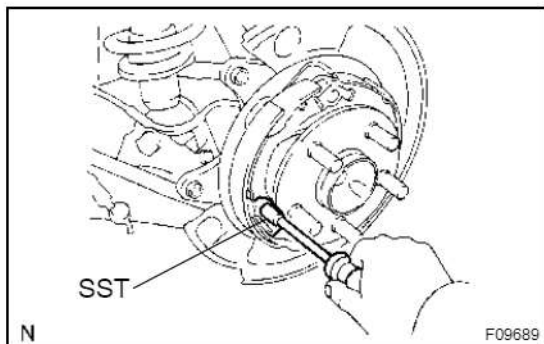
If the disc cannot be removed easily, turn the shoe adjuster until the wheel turns freely.



4. REMOVE SHOE RETURN SPRINGS AND TENSION SPRING

Using needle-nose pliers, remove the 2 shoe return springs and tension spring.

5. REMOVE SHOE STRUT



6. REMOVE FRONT SHOE AND ADJUSTER

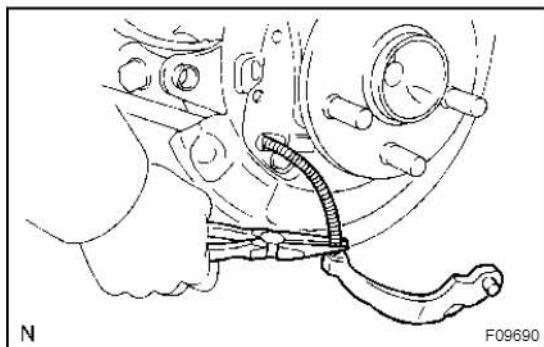
- (a) Using SST, remove the shoe hold-down spring and pin from the front shoe.

SST 09718-00010

- (b) Remove the front shoe and adjuster.

7. REMOVE REAR SHOE

- (a) Using SST, remove the shoe hold-down spring and pin from the rear shoe.
SST 09718-00010
- (b) Disconnect the rear shoe from the parking brake shoe lever, and remove rear shoe.

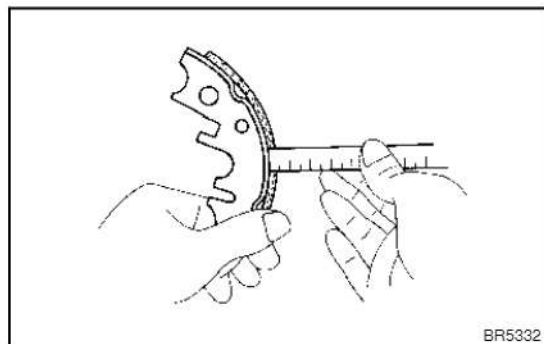
**8. REMOVE PARKING BRAKE SHOE LEVER**

Using needle-nose pliers, disconnect the parking brake cable from the parking brake shoe lever.

INSPECTION

1. INSPECT DISASSEMBLED PARTS

Inspect the disassembled parts for wear, rust or damage.



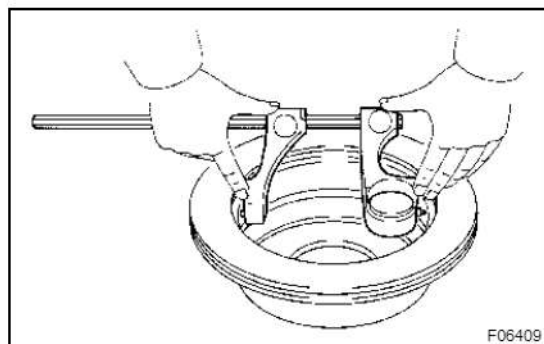
2. MEASURE BRAKE SHOE LINING THICKNESS

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

Standard thickness: 2.0 mm (0.079 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.



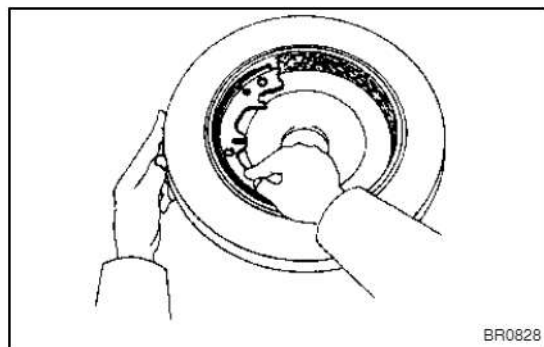
3. MEASURE DISC INSIDE DIAMETER

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

Standard inside diameter: 173.0 mm (6.811 in.)

Maximum inside diameter: 174.0 mm (6.850 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.



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.

REASSEMBLY

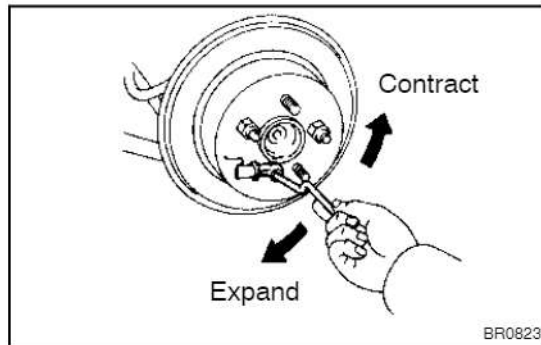
Reassembly is in the reverse order of disassembly (See page BR-43).

NOTICE:

Apply high temperature grease to the parts indicated by the arrows (See page BR-42).

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.
- (d) Return the adjuster 8 notches.
- (e) Install the hole plug.



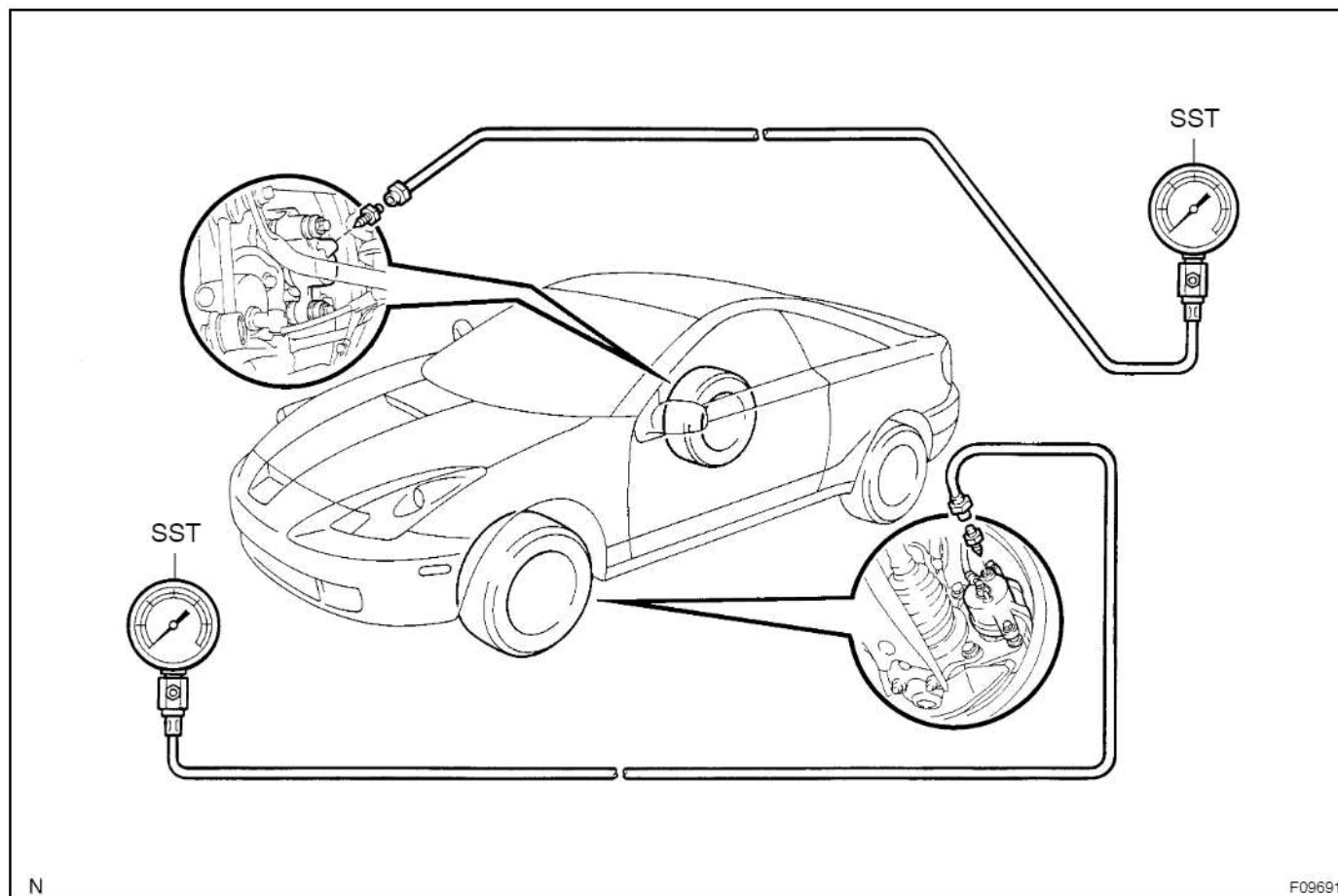
2. SETTLING PARKING BRAKE SHOES AND DISC

- (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 page BR-9)

PROPORTIONING VALVE (P VALVE) ON-VEHICLE INSPECTION

BR00V-07



N

F09691

1. **INSTALL LSPV GAUGE (SST) AND BLEED AIR**
SST 09709-29018
2. **BLEED AIR FROM FLUID PRESSURE GAUGE**
3. **RAISE MASTER CYLINDER PRESSURE AND CHECK REAR WHEEL CYLINDER OR REAR BRAKE CALIPER PRESSURE**

1ZZ-FE engine:

Master cylinder fluid pressure	Rear wheel cylinder fluid pressure
2,450 kPa (25.0 kgf/cm ² , 355 psi)	2,450 kPa (25.0 kgf/cm ² , 355 psi)
7,850 kPa (80.0 kgf/cm ² , 1,139 psi)	3,800 kPa (38.8 kgf/cm ² , 551 psi)

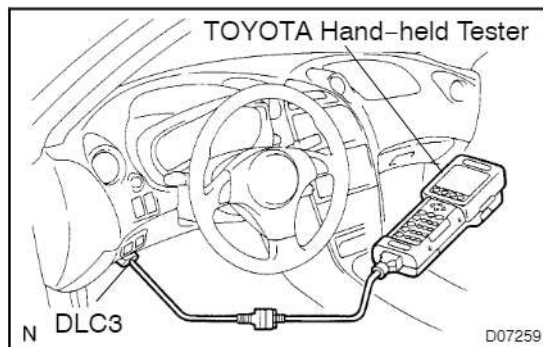
2ZZ-GE engine:

Master cylinder fluid pressure	Rear brake caliper fluid pressure
2,450 kPa (25.0 kgf/cm ² , 355 psi)	2,450 kPa (25.0 kgf/cm ² , 355 psi)
7,850 kPa (80.0 kgf/cm ² , 1,139 psi)	4,450 kPa (45.4 kgf/cm ² , 646 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 fluid pressure is incorrect, replace the P valve assembly.

4. **BLEED BRAKE SYSTEM (See page BR-4)**
5. **CHECK FOR LEAKS**



ABS ACTUATOR ON-VEHICLE INSPECTION

BR1U1-02

1. CONNECT TOYOTA HAND-HELD TESTER:

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

HINT:

Please refer to the TOYOTA 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.

NOTICE:

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

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

3. INSPECT RIGHT FRONT WHEEL OPERATION

NOTICE:

Never turn ON the solenoid which is not described below.

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

NOTICE:

Do not keep solenoid ON for more than 10 seconds continuously. When operating it continuously, set the interval of more than 20 seconds.

- Turn the SFRH and SFRR solenoid OFF simultaneously, and check that the pedal can be depressed.
- Turn the motor relay ON, and check that the pedal returns.

NOTICE:

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

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

4. INSPECT OTHER WHEEL OPERATION

As in the same procedure, check the solenoids of other wheels.

HINT:

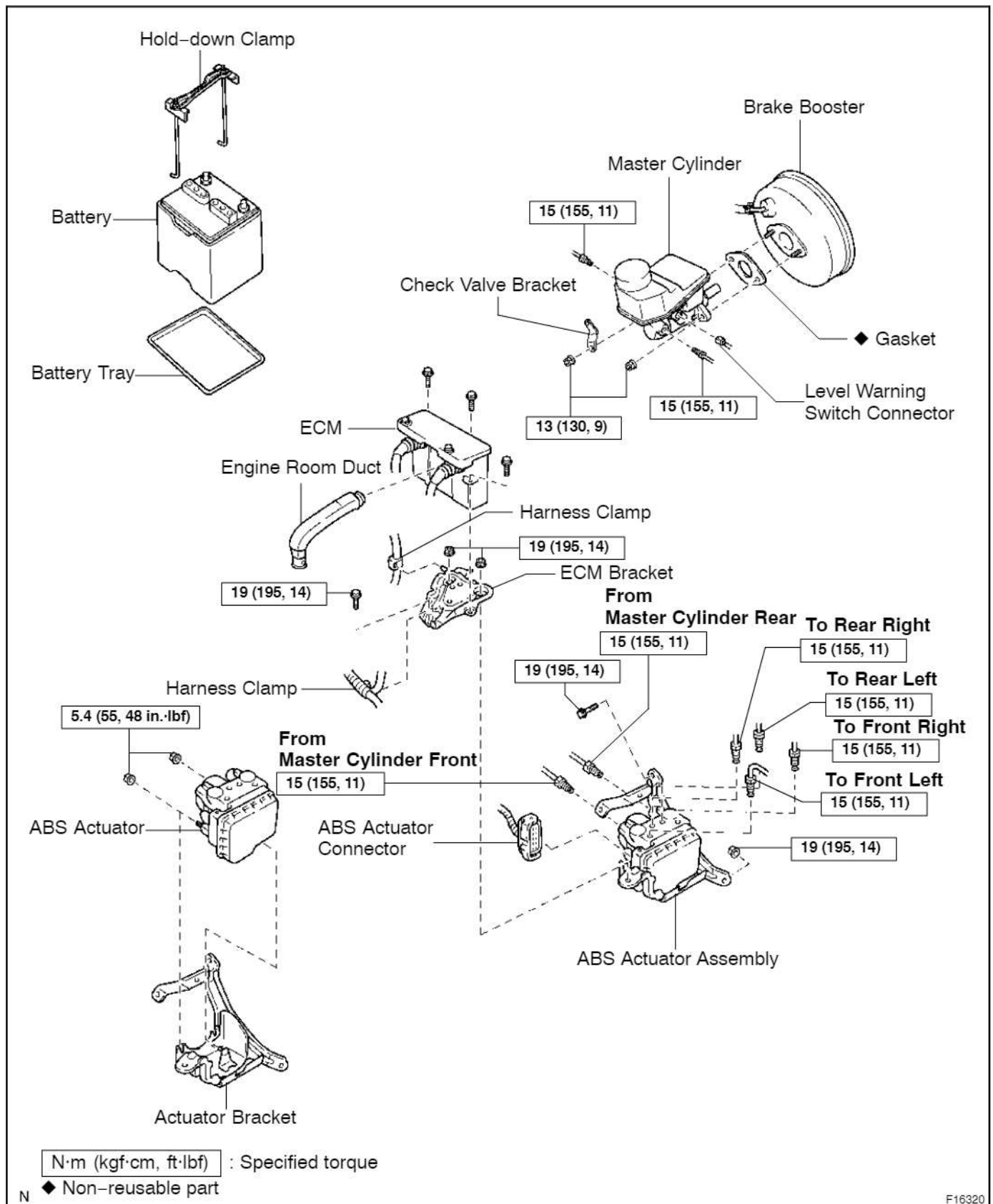
Left front wheel: SFLH, SFLR

Right rear wheel: SRRH, SRRR

Left rear wheel: SRLH, SRLR

5. CLEAR DTC (See page DI-836)

COMPONENTS



F16320

REMOVAL

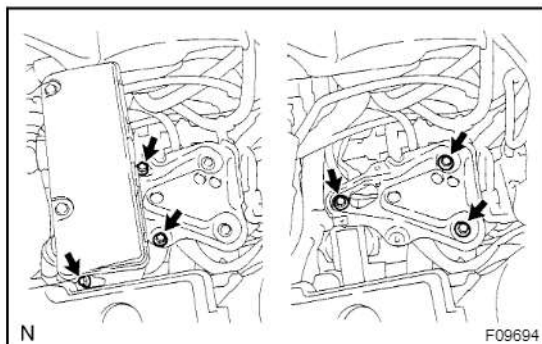
1. REMOVE BATTERY

Remove the hold-down clamp, battery and battery tray.

2. REMOVE MASTER CYLINDER (See page BR-11)

3. REMOVE ECM AND ECM BRACKET

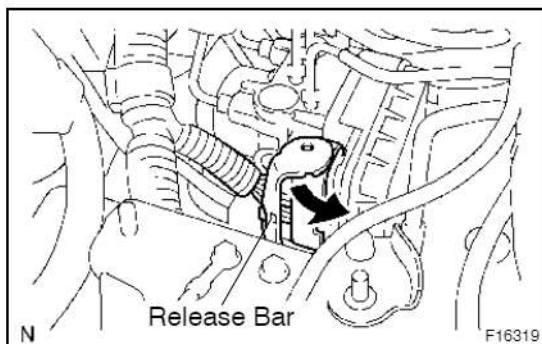
(a) Remove the engine room duct.



(b) Remove the 3 bolts, and move the ECM aside.

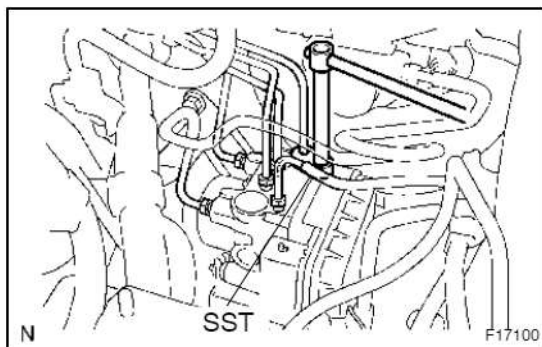
(c) Disconnect the 2 harness clamps, and remove the bolt, 2 nuts and ECM bracket.

Torque: 19 N·m (195 kgf·cm, 14 ft·lbf)



4. DISCONNECT ABS ACTUATOR CONNECTOR

Pull the release bar and disconnect the ABS actuator connector.



5. DISCONNECT BRAKE LINES

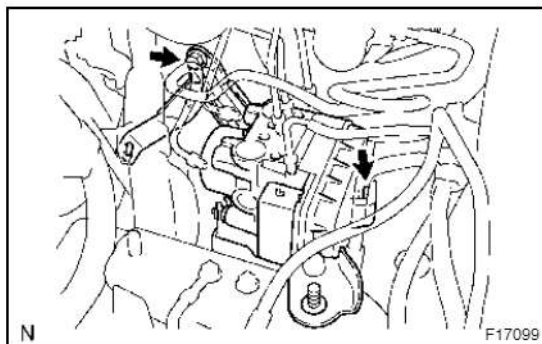
Using SST, disconnect the 6 brake lines.

SST 09023-00101

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

HINT:

- When disconnecting the brake lines, Use tags or make a memo to identify the place to reconnect (See page BR-50).
- At the time of installation, connect each brake line to the correct position (See page BR-50).



6. REMOVE ABS ACTUATOR

(a) Remove the bolt, nut and ABS actuator assembly.

Torque: 19 N·m (195 kgf·cm, 14 ft·lbf)

(b) Remove the 2 nuts and ABS actuator from the actuator bracket.

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

INSTALLATION

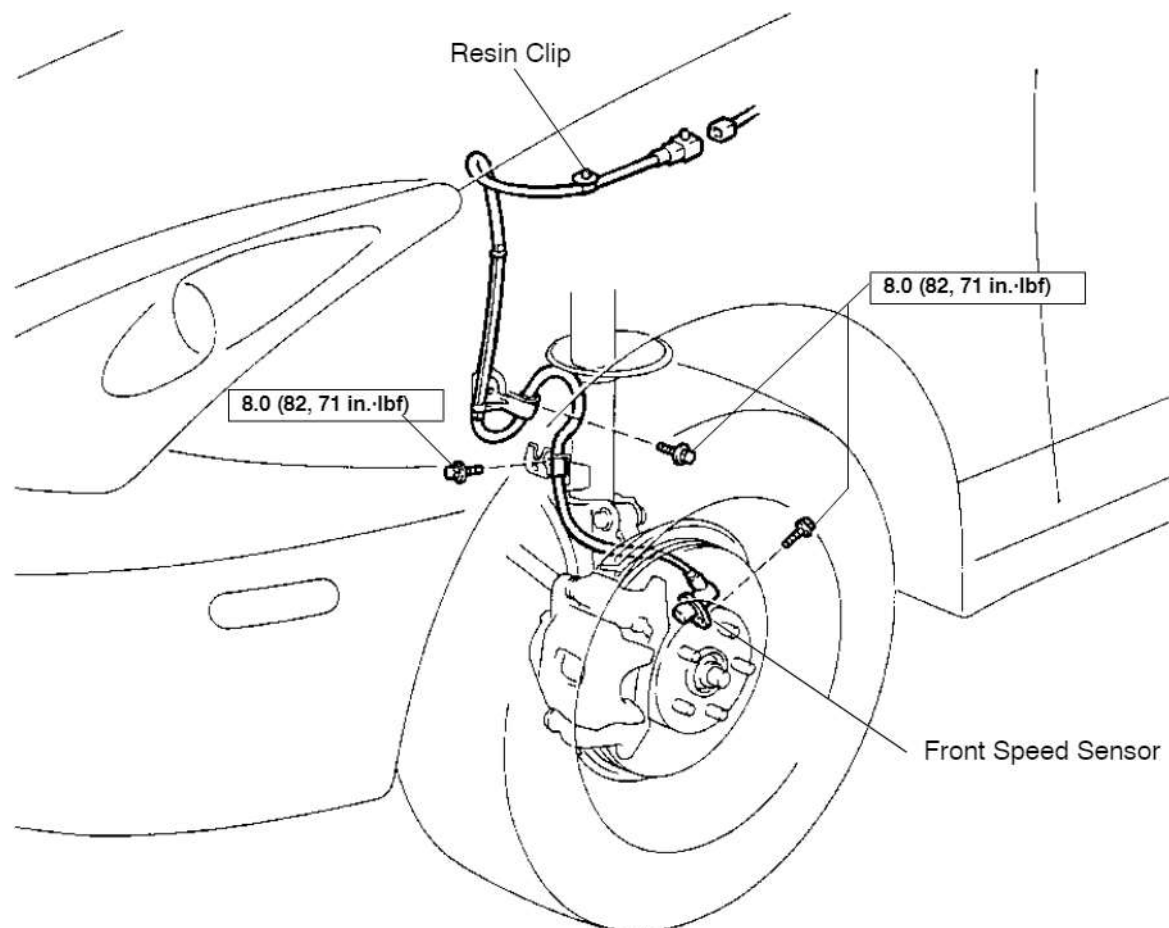
Installation is in the reverse order of removal (See page BR-51).

HINT:

- After installation, fill the brake reservoir with brake fluid and bleed brake system (See page BR-4).
- Check for leaks.

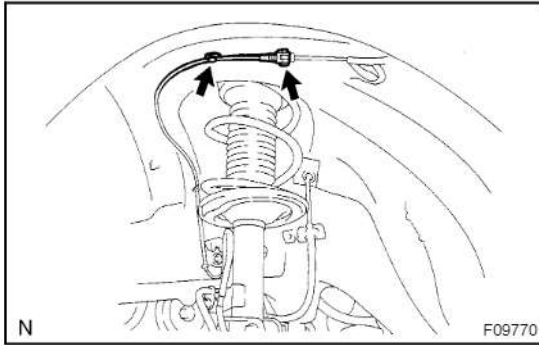
FRONT SPEED SENSOR COMPONENTS

BR000-08



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

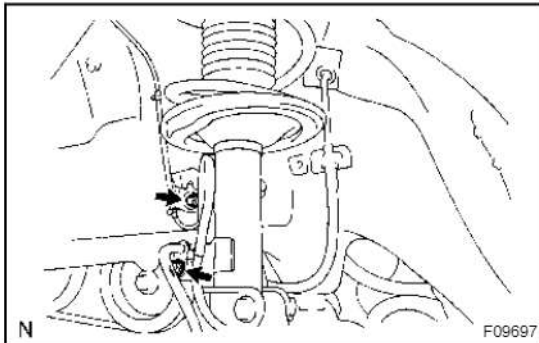
F09768



REMOVAL

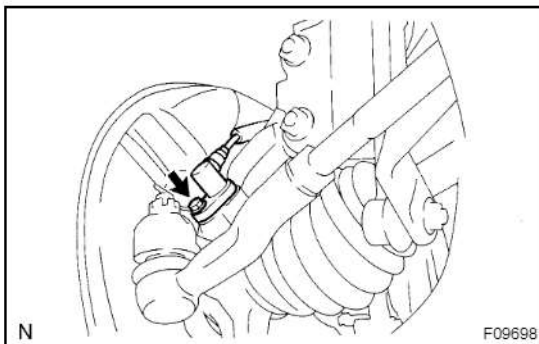
1. DISCONNECT SPEED SENSOR CONNECTOR

- (a) Remove the front wheel.
Torque: 103 N·m (1,050 kgf·cm, 76 ft·lbf)
- (b) Remove the fender liner.
- (c) Disconnect the speed sensor connector and resin clip.



2. REMOVE SPEED SENSOR

- (a) Remove the 2 clamp bolts holding the sensor harness from the body and shock absorber.
Torque: 8.0 N·m (82 kgf·cm, 71 in·lbf)



- (b) Remove the speed sensor installation bolt from the steering knuckle.
Torque: 8.0 N·m (82 kgf·cm, 71 in·lbf)

NOTICE:

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

- There are no foreign objects on the sensor or the part of the knuckle to which the sensor is to be installed.
- The sensor is installed flat against the knuckle when you tighten the bolt.

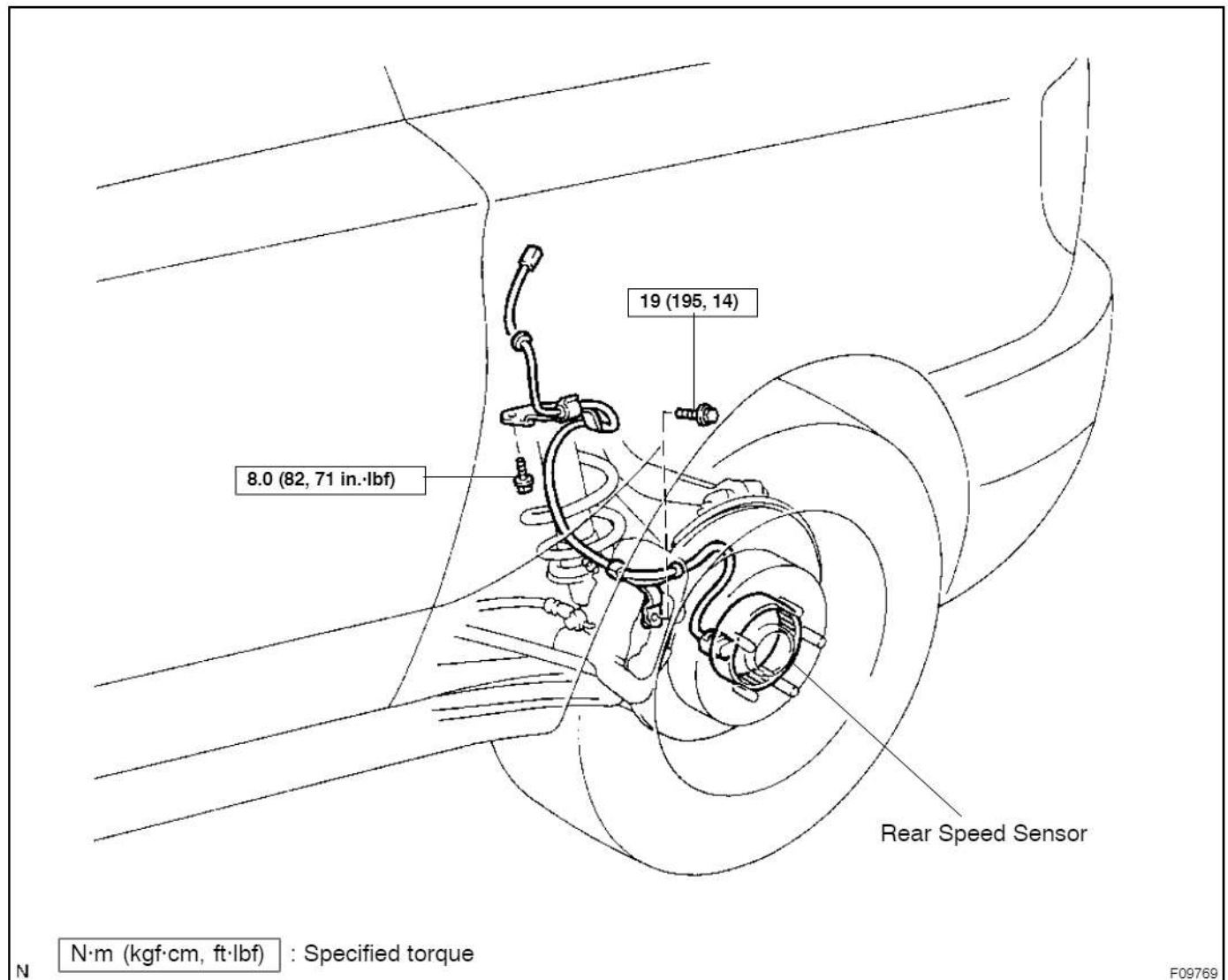
INSTALLATION

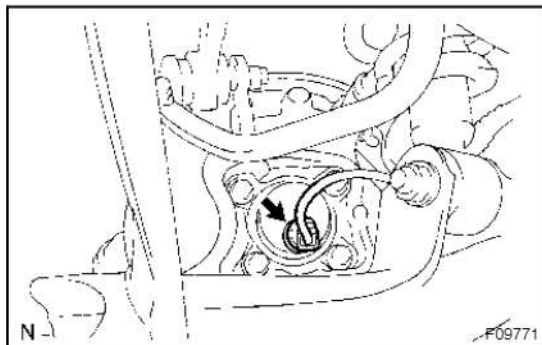
Installation is in the reverse order of removal (See page BR-54).

AFTER INSTALLATION, CHECK SPEED SENSOR SIGNAL (See page DI-836)

REAR SPEED SENSOR COMPONENTS

BR0R3-08

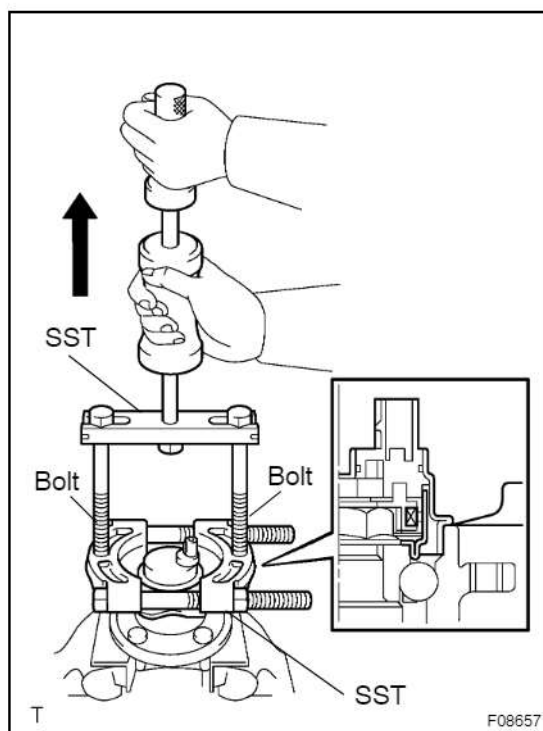




REMOVAL

1. **REMOVE REAR WHEEL**
2. **DISCONNECT SPEED SENSOR CONNECTOR**
Disconnect the connector from the speed sensor.
3. **REMOVE SPEED SENSOR WITH REAR AXLE HUB**
(See Page SA-56)
4. **REMOVE SPEED SENSOR**
 - (a) Using a pin punch and hammer, drive out the 2 pins and remove the 2 attachments from SST.

SST 09520-00031



- (b) Mount the rear axle hub in a soft jaw vise.

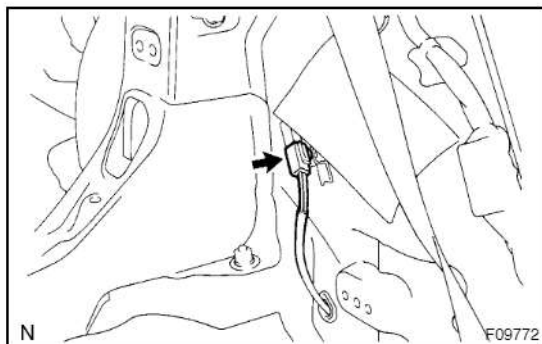
NOTICE:

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

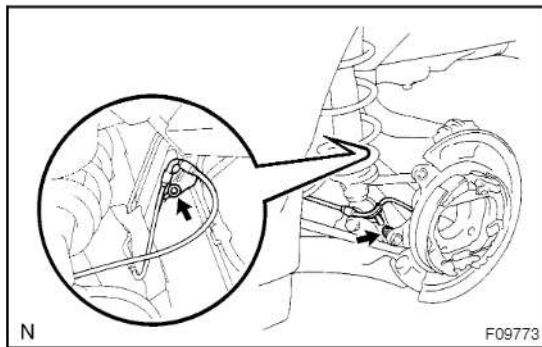
- (c) Using SST and 2 bolts (Diameter: 12 mm, Pitch: 1.5 mm), remove the speed sensor.
SST 09520-00031 (09520-00040, 09521-00020), 09950-00020

NOTICE:

- If a damage is inflicted to the sensor rotor, replace the axle hub assembly.
- Do not scratch the contacting surface of axle hub and speed sensor.



5. **IF NECESSARY, REPLACE SPEED SENSOR WIRE HARNESS**
 - (a) Remove the seat cushion, seatback and quarter trim (See page BO-88).
 - (b) Disconnect the speed sensor wire harness connector.



- (c) Remove the 2 clamp bolts holding the sensor harness from the lower arm and body.

Torque:

Lower arm side: 19 N·m (195 kgf·cm, 14 ft·lbf)

Body side: 8.0 N·m (82 kgf·cm, 71 in·lbf)

- (d) Replace the sensor wire harness with the grommet.

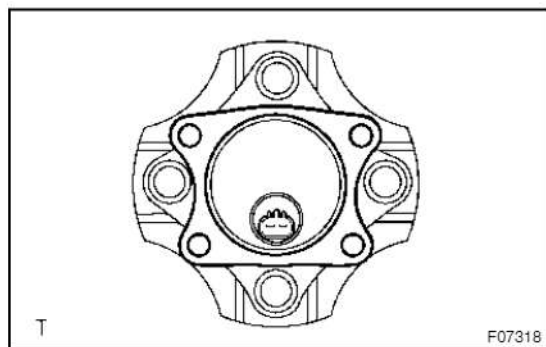
INSTALLATION

1. INSTALL NEW SPEED SENSOR

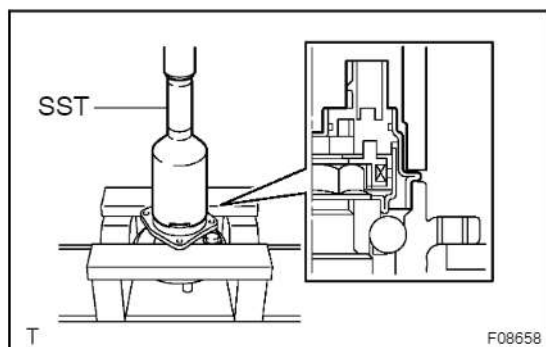
- (a) Clean the contacting surface of the axle hub and a new speed sensor.

NOTICE:

Do not stick any foreign objects to the sensor rotor.



- (b) Place the speed sensor on the axle hub so that the connector makes the most downward position under the on-vehicle condition.



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

SST 09214-76011

NOTICE:

- Do not tap the speed sensor with a hammer directly.
 - Check that there should be no foreign objects on the speed sensor detection portion.
 - Press in the speed sensor straight and slowly.
2. INSTALL SPEED SENSOR WITH REAR AXLE
(See page SA-60)
 3. CONNECT SPEED SENSOR CONNECTOR
 4. INSTALL REAR WHEEL
Torque: 103 N·m (1,050 kgf·cm, 76 ft·lbf)
 5. CHECK SPEED SENSOR SIGNAL (See page DI-836)