# BRAKE FLUID

BR12E-07

## BLEEDING

HINT:

- If any work is done on the brake system or if air in the brake lines is suspected, bleed the air from the system.
- When bleeding, keep the amount of the fluid within the line of reservoir between Min. and Max.

**NOTICE:**

- **Do not let brake fluid remain on painted surfaces. Wash it off immediately.**
- **With the reservoir cap removed, when depressing the brake pedal, the fluid will spray.**

**1. FILL RESERVOIR WITH BRAKE FLUID**
**Fluid: SAE J1703 or FMVSS NO. 116 DOT3**

**2. In case of using TOYOTA hand-held tester:**
**BLEED HYDRAULIC BRAKE BOOSTER**

HINT:

If the hydraulic brake booster has been disassembled, disconnect the brake line from the hydraulic brake booster or if the reservoir becomes empty, bleed the hydraulic brake booster.

(a) Turn the ignition switch OFF, depress the brake pedal more than 40 times.

HINT:

When a pressure in power supply system is released, reaction force becomes light and stroke becomes longer.

(b) Turn the ignition switch ON, check that the pump stops after approx. 30 to 40 sec.

**NOTICE:**

**When the pump does not stop, repeat step (a) and (b) again.**

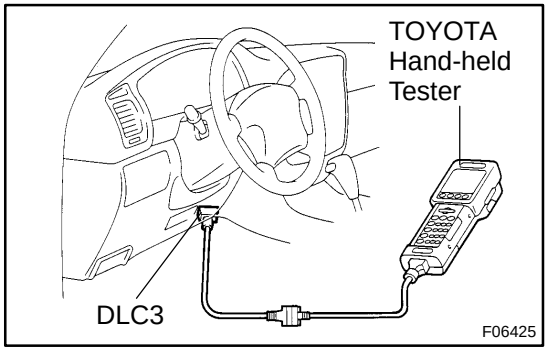
(c) With the ignition switch remained ON, depress the brake pedal more than 20 times.

(d) Observe the procedure in step 4 and bleed the right and left front brake caliper.

(e) Holding the brake pedal depressed, bleed the right and left rear brake caliper.

HINT:

It is not necessary to depress the pedal continuously, as brake fluid flows out by first depressing.




(f) Connect TOYOTA hand-held tester.

(1) Turn the ignition switch OFF, connect the TOYOTA hand-held tester to DLC3.

(2) Turn the ignition switch ON and select ”AIR BLEEDING” on the TOYOTA hand-held tester.

HINT:

Please refer to the TOYOTA hand-held tester operator’s manual for further details.

(g) Bleed right front brake line.
  (1) Select ”FR LINE” on the TOYOTA hand-held tester.
  (2) With ”FR LINE” turned ON with the TOYOTA hand-held tester, depress the brake pedal and hold it to bleed the right front brake caliper.
  (3) Repeat step (2) until there are no more air bubbles in the fluid.

(h) Bleed left front brake line.
  (1) Select ”FL LINE” on the TOYOTA hand-held tester.
  (2) With ”FL LINE” turned ON with the TOYOTA hand-held tester, depress the brake pedal and hold it to bleed the left front brake caliper.
  (3) Repeat step (2) until there are no more air bubbles in the fluid.

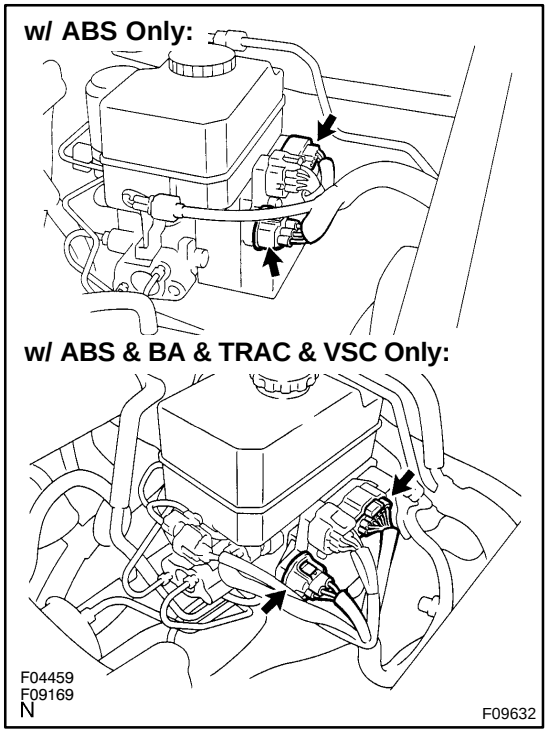
(i) w/ ABS & TRAC & VSC only:
Bleed rear brake line.
  (1) Select ”RR LINE” on the TOYOTA hand-held tester.
  (2) With ”RR LINE” turned ON with the TOYOTA hand-held tester, bleed the left and right rear brake caliper.

(j) Disconnect the TOYOTA hand-held tester from DLC3.

(k) Clear the DTC (See page DI-505 ).

**3. In case of using ABS actuator checker (SST): BLEED HYDRAULIC BRAKE BOOSTER**

HINT:
If the hydraulic brake booster has been disassembled, disconnect the brake line from the hydraulic brake booster or if the reservoir becomes empty, bleed the hydraulic brake booster.

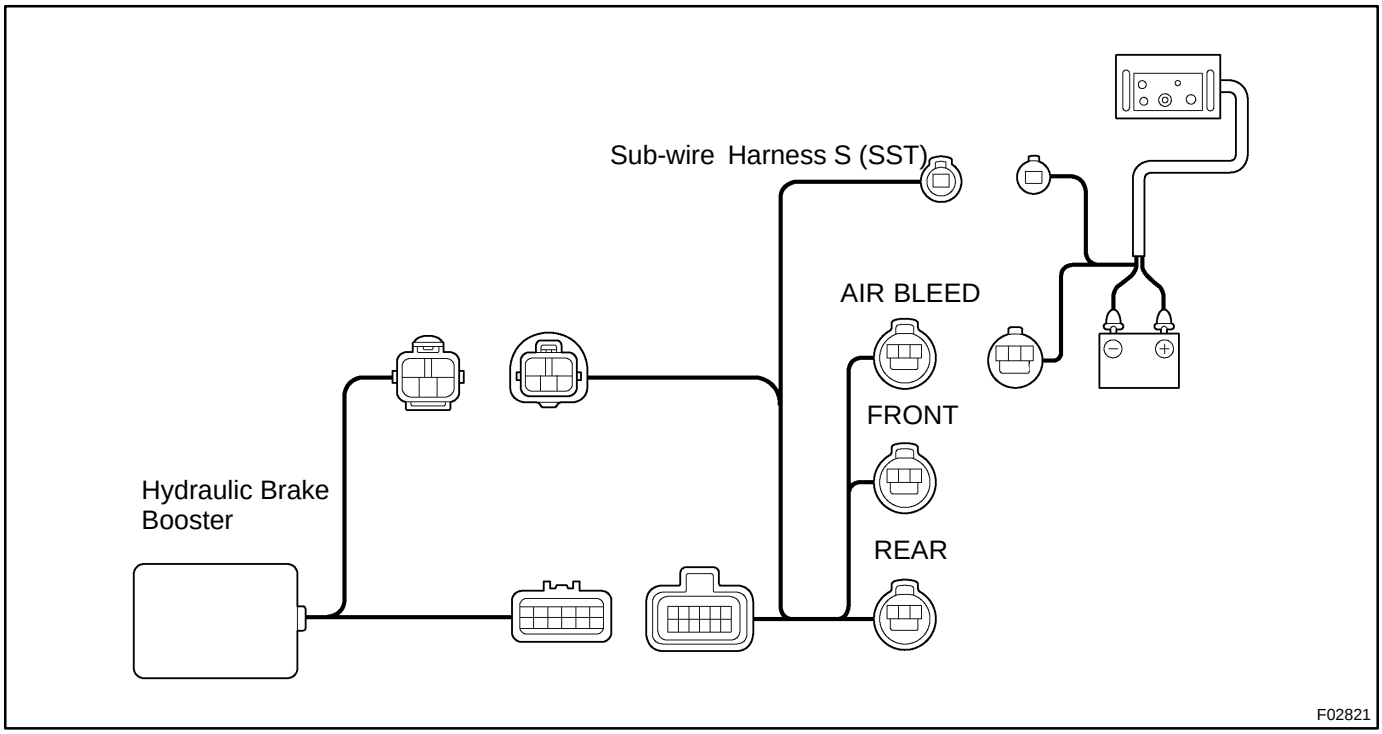



(a) Disconnect the 2 connectors from the hydraulic brake booster.

(b) Connect the actuator checker (SST) to the hydraulic brake booster side wire harness via the sub-wire harness (SST), as shown in the chart below.
SST 09990-00150, 09990-00480

HINT:
Connect the connector with the label of "AIR BLEED" attached to the connector of actuator checker.

(c) Connect the red cable of the checker to the battery positive (+) terminal and the black cable to the negative (-) terminal.




(d) Turn the ignition switch OFF, depress the brake pedal more than 40 times.

HINT:
When a pressure in power supply system is released, reaction force becomes light and stroke becomes longer.

(e) Turn the ignition switch ON, check that the pump stops after 30 to 40 sec.

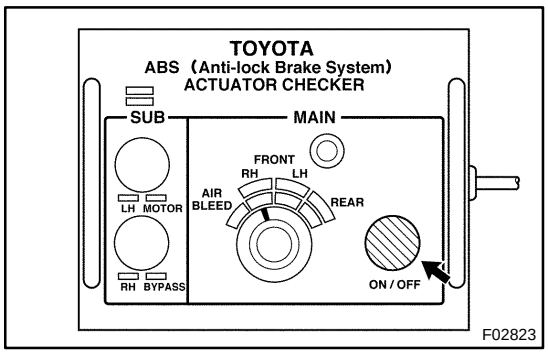
**NOTICE:**
**When the pump does not stop, repeat step (d) and (e) again.**

(f) With the ignition switch remained ON, depress the brake pedal more than 20 times.

(g) Observe the procedure in step 4 and bleed the right and left front wheel caliper.

(h) Holding the brake pedal depressed, bleed the right and left rear brake caliper.

HINT:
It is not necessary to depress the pedal continuously, as brake fluid flows out by first depressing.




(i) Bleed right front brake line.

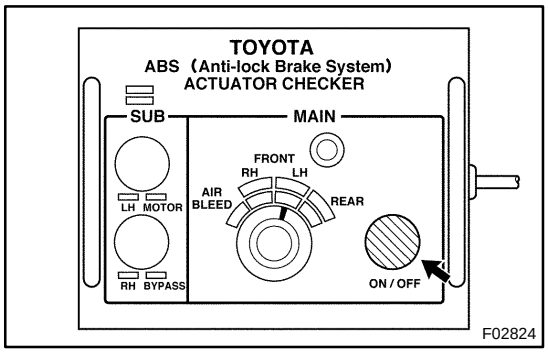
(1) Turn the selector switch of the actuator checker to the ”FRONT RH” position.

(2) Push and hold in MAIN push switch, depress the brake pedal and hold it to bleed the right front brake caliper.

**NOTICE:**

**Do not keep the MAIN switch pushed in for more than 10 sec. When operating it continuously, set the interval of more than 20 sec.**

(3) Repeat step (2) until there are no more air bubbles in the fluid.




(j) Bleed left front brake line.

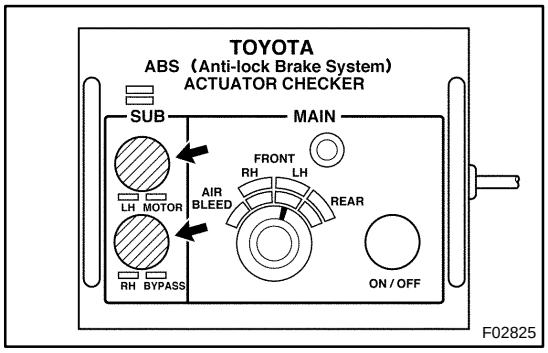
(1) Turn the selector switch of the actuator checker to the ”FRONT LH” position.

(2) Push and hold in the MAIN push switch, depress the brake pedal and hold it to bleed the left front brake caliper.

**NOTICE:**

**Do not keep the MAIN switch pushed in for more than 10 sec. When operating it continuously, set the interval of more than 20 sec.**

(3) Repeat step (2) until there are no more air bubbles in the fluid.




(k) w/ ABS & TRAC & VSC only:

Bleed right rear brake line.

(1) Push and hold in the ”SUB LH” and ”SUB RH” switches, bleed the right rear brake caliper.

**NOTICE:**

**Do not keep the MAIN switch pushed in for more than 10 sec. When operating it continuously, set the interval of more than 20 sec.**

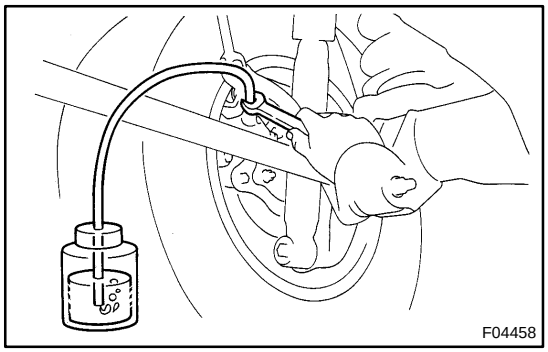
(2) Repeat step (1) until there are no more air bubbles in the fluid.

(l) Observe the procedure in step (k) and bleed left rear brake line.

(m) Disconnect the actuator checker (SST) and sub-wire harness (SST) from the actuator.
SST 09990-00150, 09990-00480

(n) Connect the 2 connectors to the hydraulic brake booster.

(o) Clear the DTC (See page DI-505 ).




**4. BLEED BRAKE LINE**

(a) Connect the vinyl tube to the brake 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 brake line for each wheel.
**Torque: 11 N·m (110 kgf·cm, 8 ft·lbf)**

**5. CHECK FLUID LEVEL IN RESERVOIR**

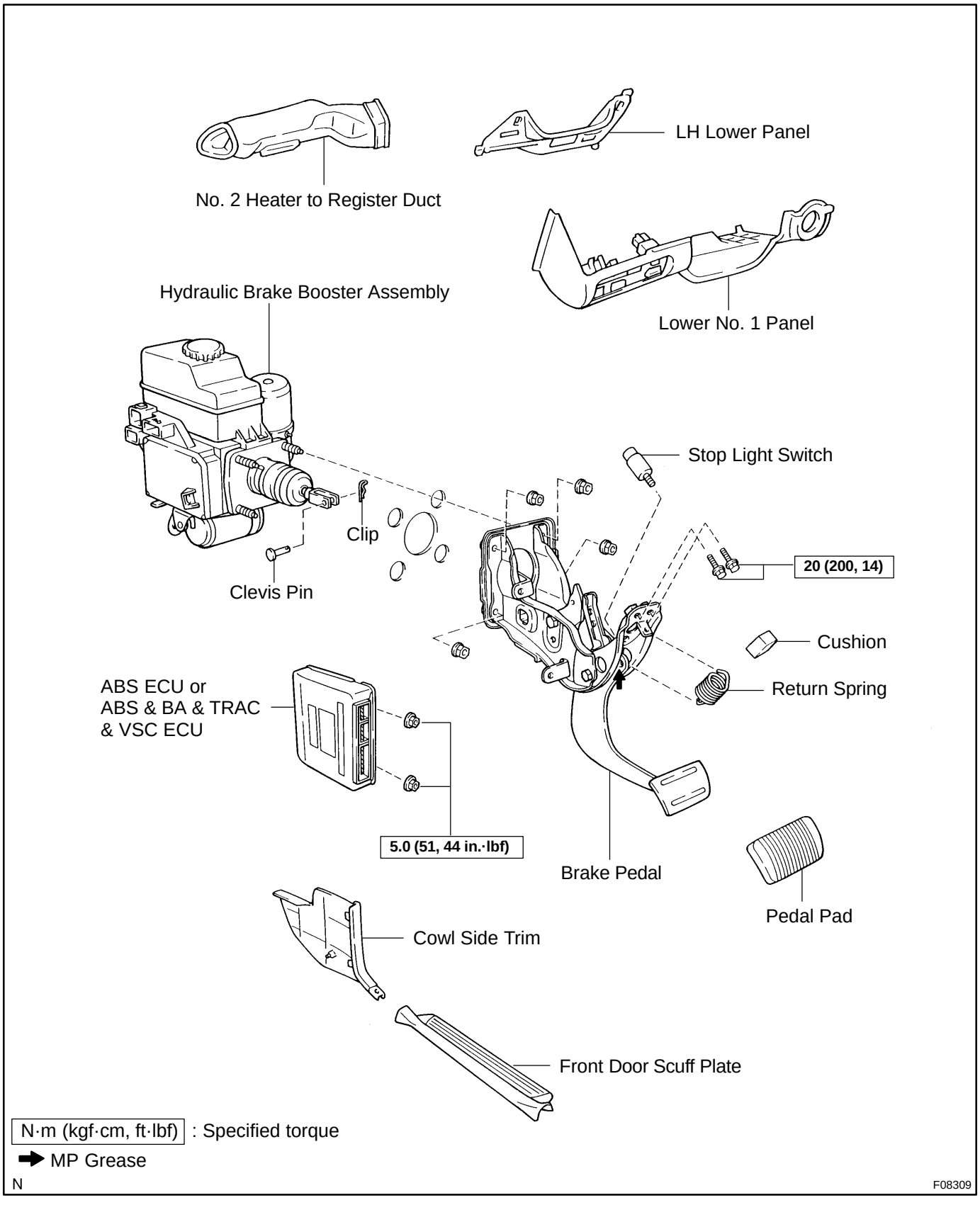
(a) With the ignition switch OFF, depress the brake pedal more than 40 times.

HINT:
When a pressure in power supply system is released, reaction force becomes light and stroke becomes longer.

(b) Remove the reservoir cap. Add brake fluid up to the ”MAX” line.
**Fluid: SAE J1703 or FMVSS NO. 116 DOT3**

BR0X9-02

# COMPONENTS



BR0XB-02

# INSTALLATION

**1. REASSEMBLY BRAKE PEDAL**

(a) Install the pedal pad.

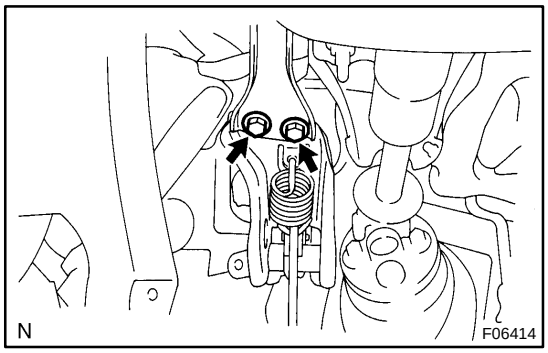
(b) Install the stop light switch cushion.

(c) Temporarily install the stop light switch to the pedal bracket.

(d) Install the return spring with cushion and pedal pad.

HINT:

Apply MP grease to the parts indicates by arrow (See page BR-1 1).




**2. INSTALL BRAKE PEDAL ASSEMBLY**

Install the brake pedal assembly and temporarily fasten the 2 bolts.

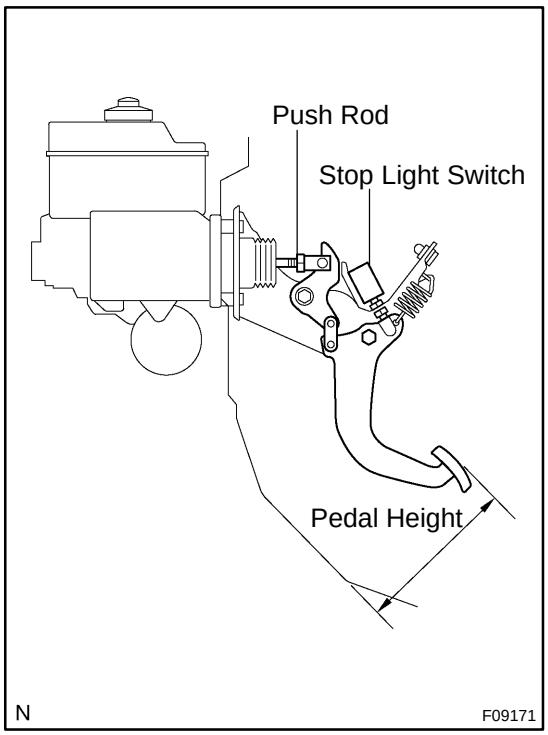
**3. INSTALL HYDRAULIC BRAKE BOOSTER**
**(See page BR-67 )**

**4. TIGHTEN 2 BOLTS OF BRAKE PEDAL BRACKET**
**Torque: 20 N·m (200 kgf·cm, 14 ft·lbf)**

**5. AFTER INSTALLATION, FILL BRAKE RESERVOIR WITH BRAKE FLUID AND BLEED BRAKE SYSTEM**
**(See page BR-4 )**

**6. CHECK FOR LEAKS**

**7. CHECK AND ADJUST BRAKE PEDAL**
**(See page BR-9 )**




# BRAKE PEDAL

BR0JB-08

## ON-VEHICLE INSPECTION

**1. CHECK PEDAL HEIGHT**

**Pedal height from asphalt sheet:**
**183.7 - 193.7 mm (7.232 - 7.626 in.)**

If the pedal height is incorrect, adjust it.

**2. IF NECESSARY, ADJUST PEDAL HEIGHT**

(a) Remove the scuff plate, cowl side trim, lower No. 1 panel, LH lower panel and No. 2 heater to register duct (See page BO-81 ).

(b) Remove the steering wheel pad, steering wheel lower No. 2 and No. 3 covers, steering wheel, combination switch, column upper and lower covers, steering column assembly and thrust stopper (See page SR-14 or SR-29 ).

(c) Disconnect the connector from the stop light switch.

(d) Loosen the stop light switch lock nut and remove the stop light switch.

(e) Loosen the push rod lock nut.

(f) Adjust the pedal height by turning the pedal push rod.

(g) Tighten the push rod lock nut.

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

(h) Install the stop light switch.

(i) Connect the connector to the stop light switch.

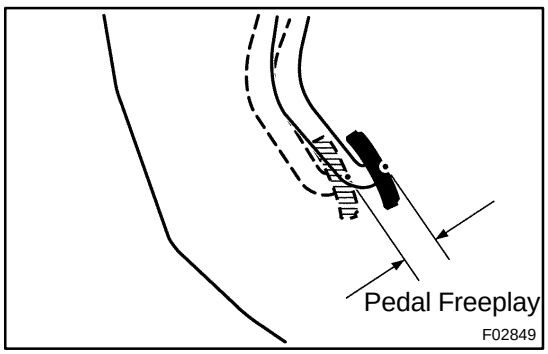
(j) Push in the brake pedal 5 - 15 mm (0.20 - 0.59 in.), turn the stop light switch to lock the nut in the position where the stop light goes off.

(k) After installation, push in the brake pedal 5 - 15 mm (0.20 - 0.59 in.), check that stop light lights up.

(l) After adjusting the pedal height, check the pedal freeplay.

(m) Install the thrust stopper, steering column assembly, column upper and lower covers, combination switch, steering wheel, steering wheel lower No. 2 and No. 3 covers, and steering wheel pad (See page SR-14 or SR-29 ).

(n) Install the No. 2 heater to register duct, LH lower panel, lower No. 1 panel, cowl side trim and scuff plate (See page BO-81 ).




**3. CHECK PEDAL FREEPLAY**

(a) Stop the engine and depress the brake pedal more than 40 times until there is no more pressure left in the booster.

(b) Push in the pedal by hand until the second point of resistance begins to be felt, then measure the distance, as shown.

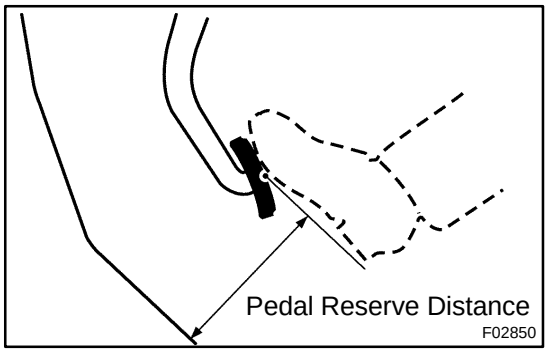
**Pedal freeplay: 1.0 - 6.0 mm (0.039 - 0.236 in.)**

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

**Stop light switch clearance: 1.9 mm (0.075 in.)**

HINT:

The freeplay to the 1st point of resistance is due to the play between the clevis, pedal link and pin. It is 1.0 - 6.0 mm (0.039 - 0.236 in.) on the pedal.




**4. CHECK PEDAL RESERVE DISTANCE**

(a) Remove the floor carpet.

(b) Release the parking brake.

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

**Pedal reserve distance at 490 N (50 kgf, 110.1 lbf): More than 116 mm (4.57 in.)**

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

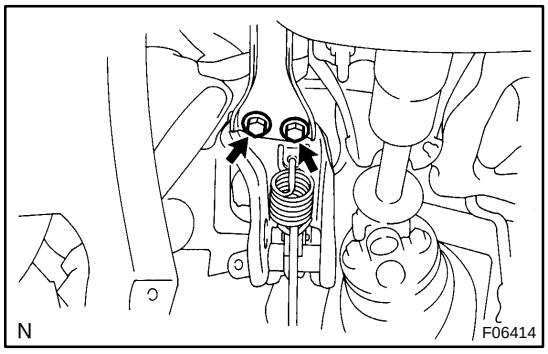
BR0XA-02

# REMOVAL

**1. REMOVE HYDRAULIC BRAKE BOOSTER ASSEMBLY (See page BR-60 )**

**2. REMOVE BRAKE PEDAL ASSEMBLY**

(a) Disconnect the connector from the stop light switch.




(b) Remove the 2 bolts.

(c) Remove the brake pedal assembly.

**3. DISASSEMBLY BRAKE PEDAL ASSEMBLY**

(a) Remove the return spring with cushion.

(b) Remove the stop light switch.

(c) Remove the pedal pad.

# BRAKE SYSTEM

BR12F-01

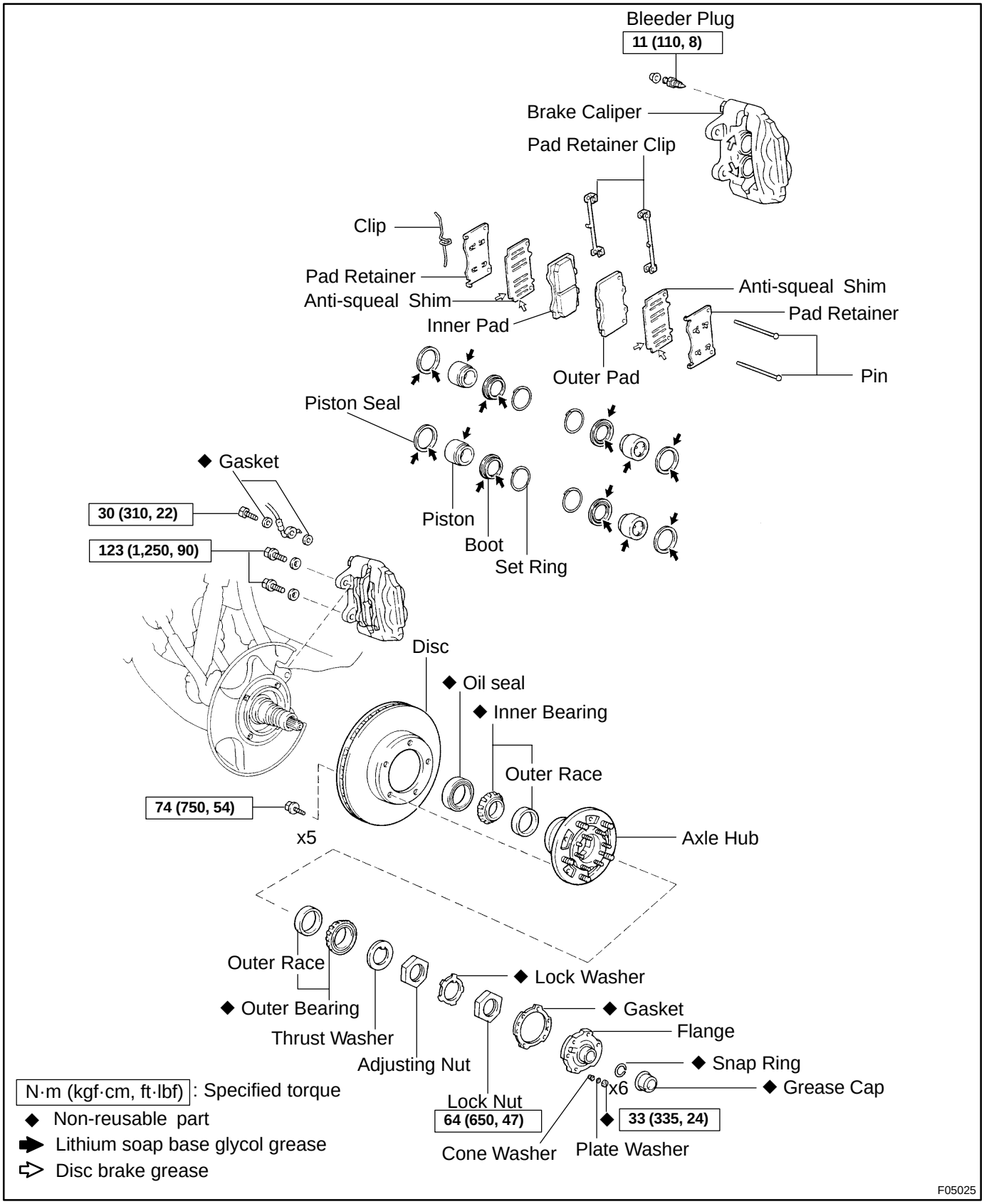
## PRECAUTION

- **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 precautions in the IN section.**

# FRONT BRAKE CALIPER

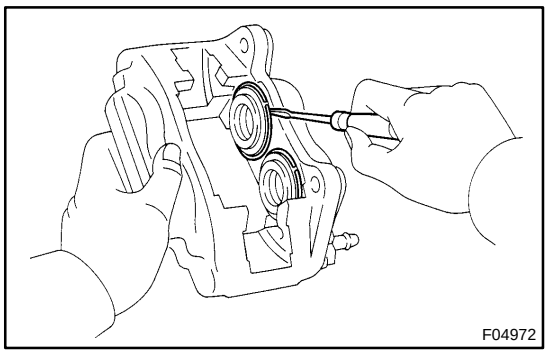
BR0JJ-06

## COMPONENTS



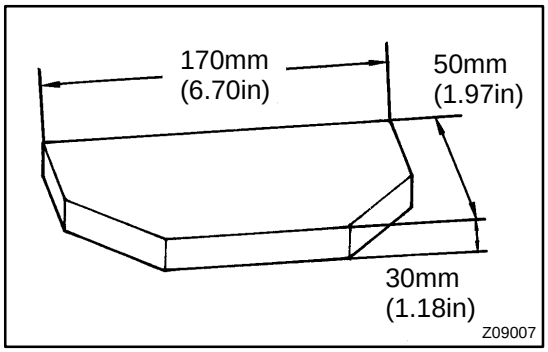
BR0JL-03

# DISASSEMBLY



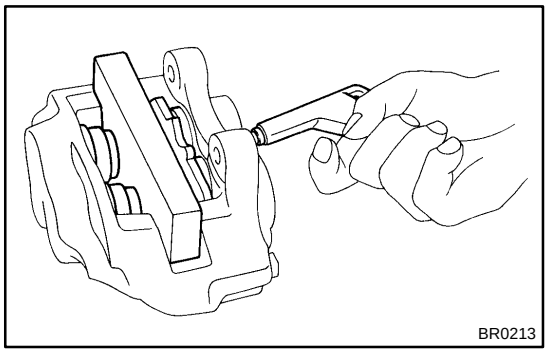

**1. REMOVE CYLINDER BOOT SET RINGS AND CYLINDER BOOTS**

Using a screwdriver, remove the 4 cylinder boot set rings and 4 cylinder boots from the caliper.




**2. REMOVE PISTONS FROM CYLINDER**

(a) Prepare the wooden plate to hold the pistons.

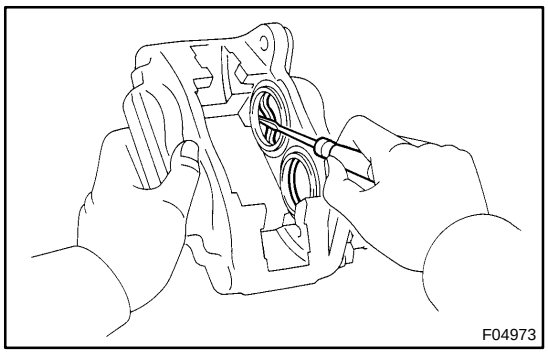



(b) Place the plate between the pistons and insert a pad at one side.

(c) Use compressed air to remove the pistons alternately from the cylinder.

**CAUTION:**

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

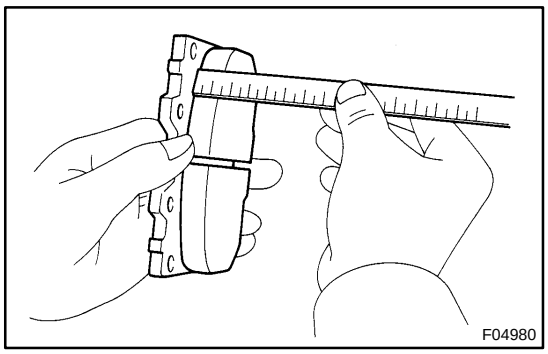



**3. REMOVE PISTON SEALS FROM BRAKE CYLINDER**

Using a screwdriver, remove the 4 piston seals from the cylinder.

BR0JM-06

# INSPECTION



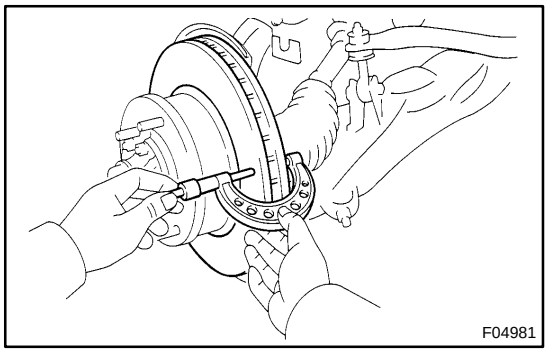

**1. MEASURE PAD LINING THICKNESS**

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 or if it shows signs of uneven wear.



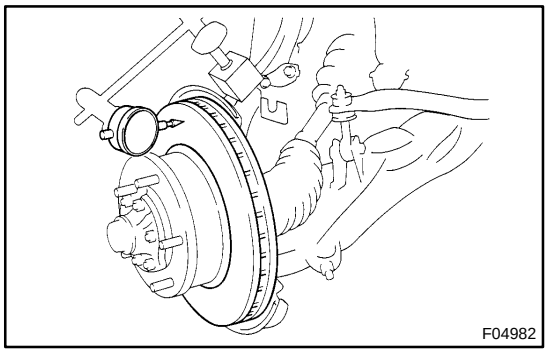

**2. MEASURE DISC THICKNESS**

Using a micrometer, measure the disc thickness.

**Standard thickness: 32.0 mm (1.260 in.)**

**Minimum thickness: 30.0 mm (1.181 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.




**3. MEASURE DISC RUNOUT**

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

**Maximum disc runout: 0.07 mm (0.0028 in.)**

If the bearing play and axle hub runout are not abnormal, replace the disc or grind it on an "On-Car brake lathe".

HINT:

Before measuring the runout, confirm that the front bearing preload is within the specification (See page SA-16 ).

**4. IF NECESSARY, REPLACE DISC**

(a) Remove the front axle hub (See page SA-12 ).

(b) Remove the disc from the axle hub (See pageSA-13 ).

(c) Install a new disc and torque the 5 bolts.

**Torque: 74 N·m (750 kgf·cm, 54 ft·lbf)**

(d) Install the axle hub and adjust the front bearing preload (See page SA-16 ).

BR0JO-06

# INSTALLATION

**Installation is in the reverse order of removal (See page BR-19 ).**

HINT:

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

BR0JN-04

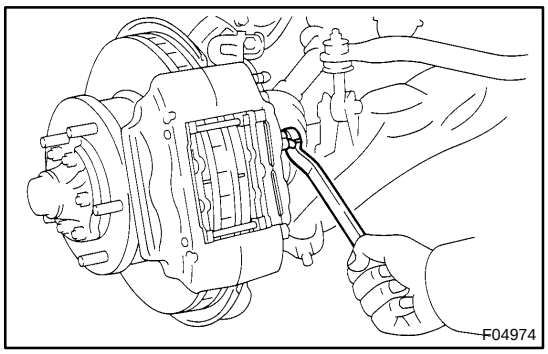
# REASSEMBLY

**Reassembly is in the reverse order of disassembly (See page BR-20 ).**

HINT:

Apply lithium soap base glycol grease to the parts indicated by the arrows (See page BR-18 ).

BR0TA-04




# REMOVAL

**1. REMOVE FRONT WHEEL**

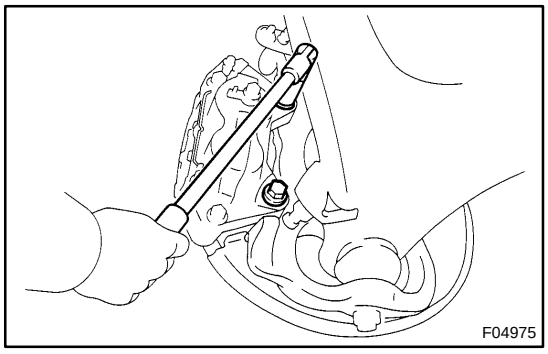
**Torque: 103 N·m (1,050 kgf·cm, 76 ft·lbf)**

**2. DISCONNECT BRAKE LINE**

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

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

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




**3. REMOVE CALIPER**

Remove the 2 mounting bolts and remove the caliper.

**Torque: 123 N·m (1,250 kgf·cm, 90 ft·lbf)**

**4. REMOVE CLIP AND 2 PINS**

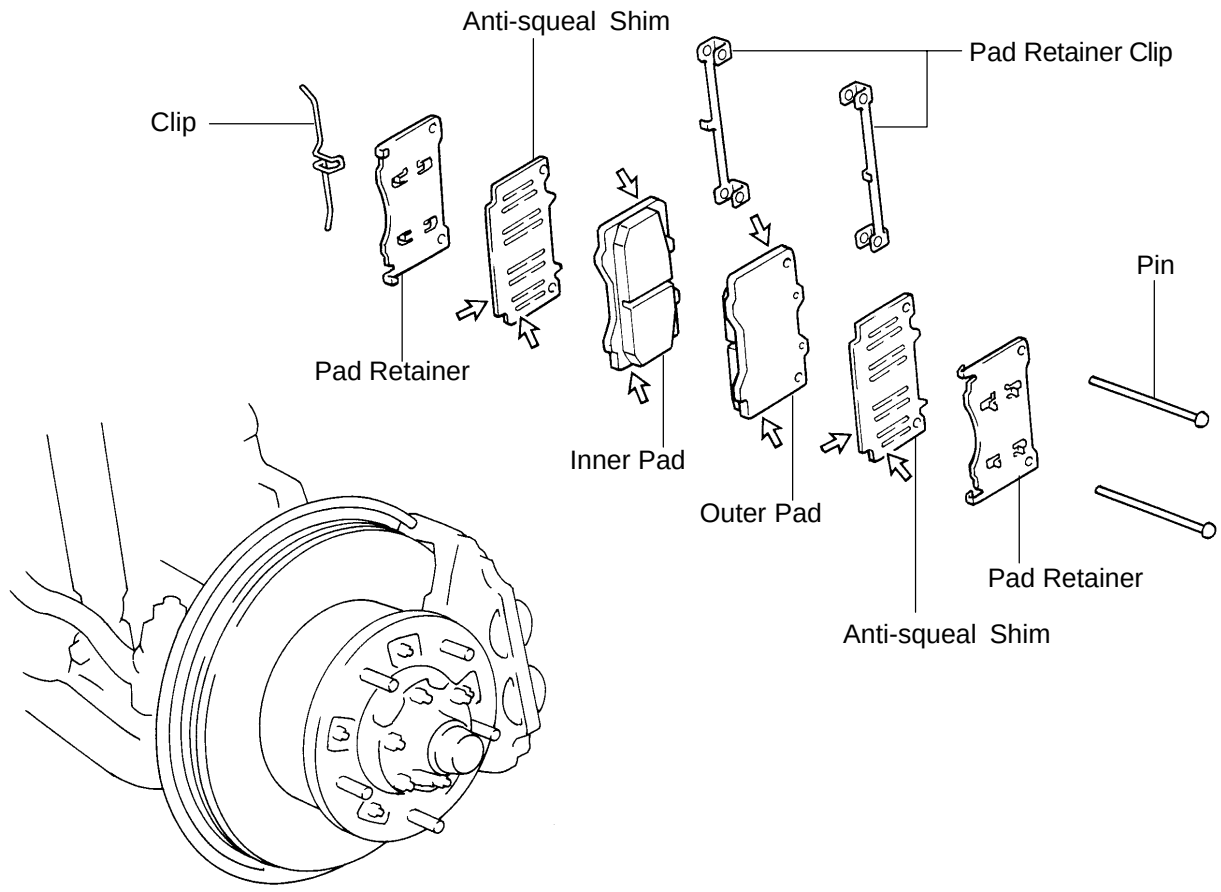
**5. REMOVE 2 PAD RETAINER CLIPS**

**6. REMOVE 2 PADS, ANTI-SQUEAL SHIMS AND PAD RETAINERS**

# FRONT BRAKE PAD

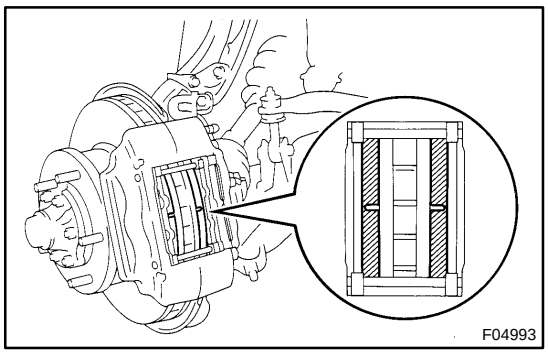
BR0JH-03

## COMPONENTS



BR0JI-11

# REPLACEMENT

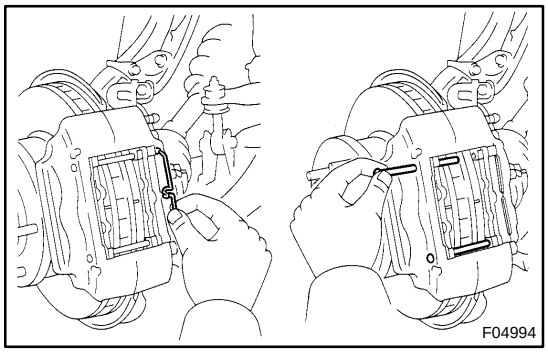



**1. REMOVE FRONT WHEEL**

**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. REMOVE CLIP AND 2 PINS**

**4. REMOVE 2 PAD RETAINER CLIPS**

**5. REMOVE 2 PADS, ANTI-SQUEAL SHIMS AND PAD RETAINERS**

**NOTICE:**

**The pad retainer clip and clip 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 DISC RUNOUT**

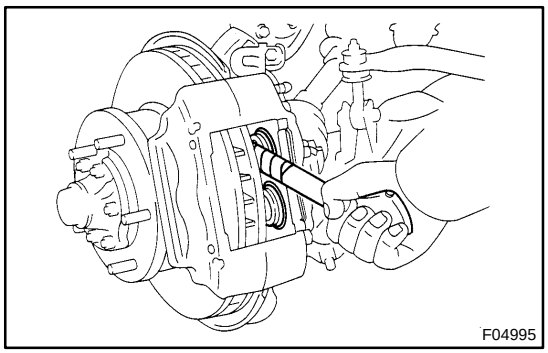
**(See page BR-21 )**

**7. INSTALL NEW PADS**

**NOTICE:**

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

(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:

- Always change the pads on one wheel at a time as there is a possibility of opposite piston fling out.
- 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 2 pad retainers to each caliper piston.

(d) Install the anti-squeal shim to each pad.

HINT:

Apply disc brake grease to both sides of the anti-squeal shims (See page BR-15 ).

(e) Install the 2 pads.

HINT:

Apply disc brake grease to the pads indicated by the arrows (See page BR-15 ).

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

**8. INSTALL 2 PAD RETAINER CLIPS AND 2 PINS**

**9. INSTALL CLIP**

**10. INSTALL FRONT WHEEL**
**Torque: 103 N·m (1,050 kgf·cm, 76 ft·lbf)**

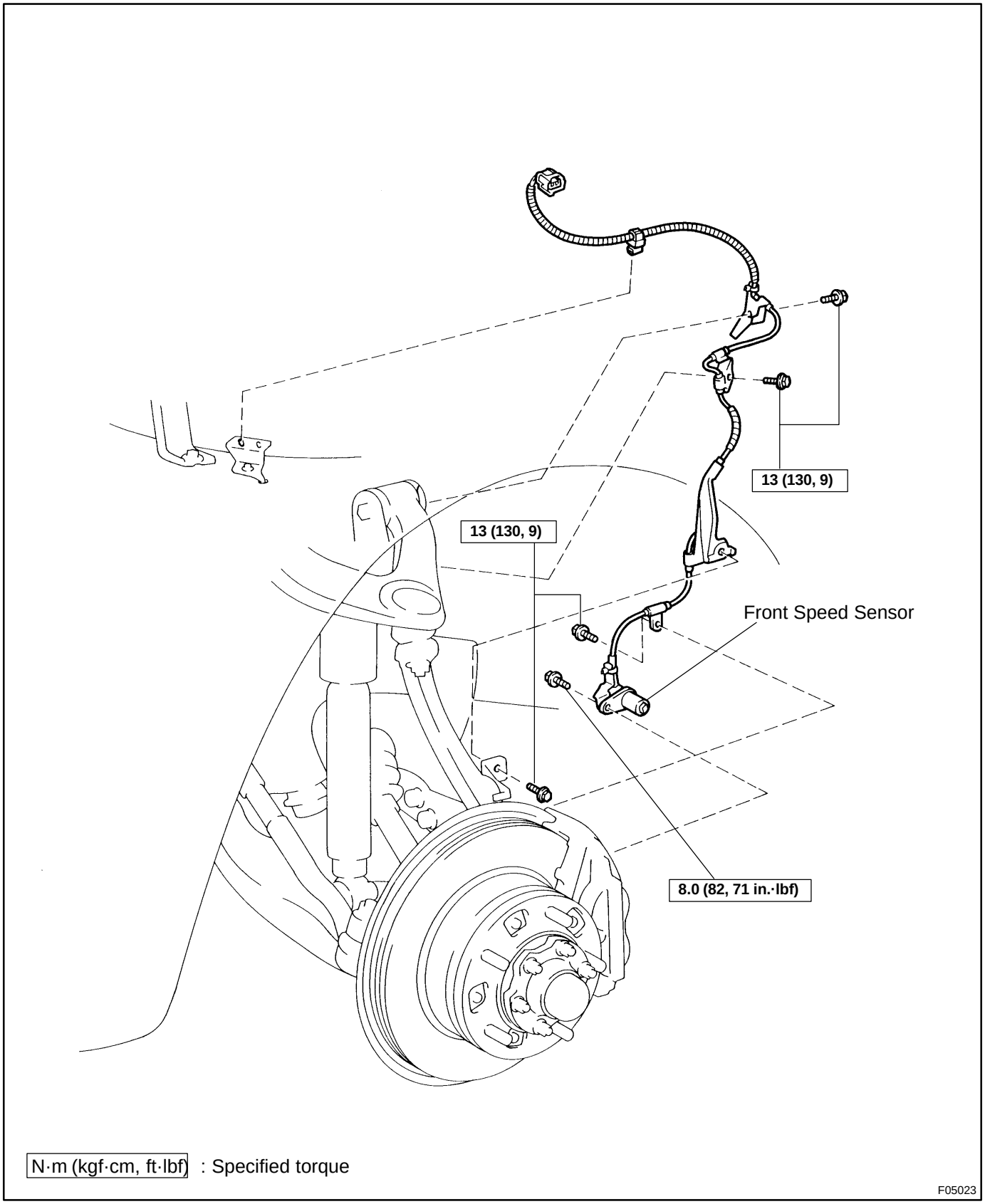
**11. DEPRESS BRAKE PEDAL SEVERAL TIMES**

**12. CHECK THAT FLUID LEVEL IS AT MAX LINE**

# FRONT SPEED SENSOR

## COMPONENTS

BR0K1-06



BR0K3-13

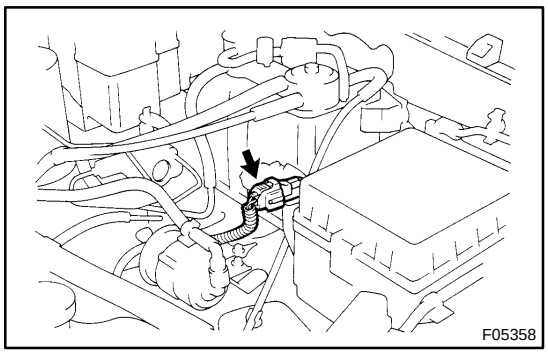
# INSTALLATION

**Installation is in the reverse order of removal (See page BR-69 ).**

HINT:

After installation, check the speed sensor signal (See page DI-505 ).

BR0K2-03

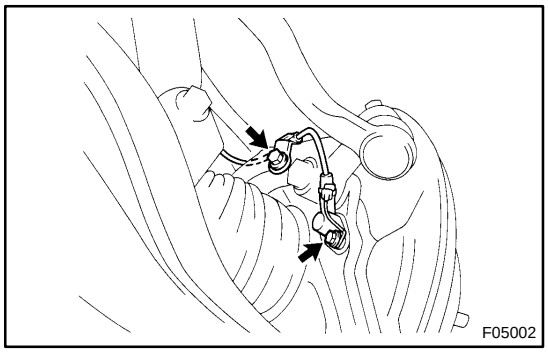



# REMOVAL

## REMOVE SPEED SENSOR

(a) Disconnect the speed sensor connector.

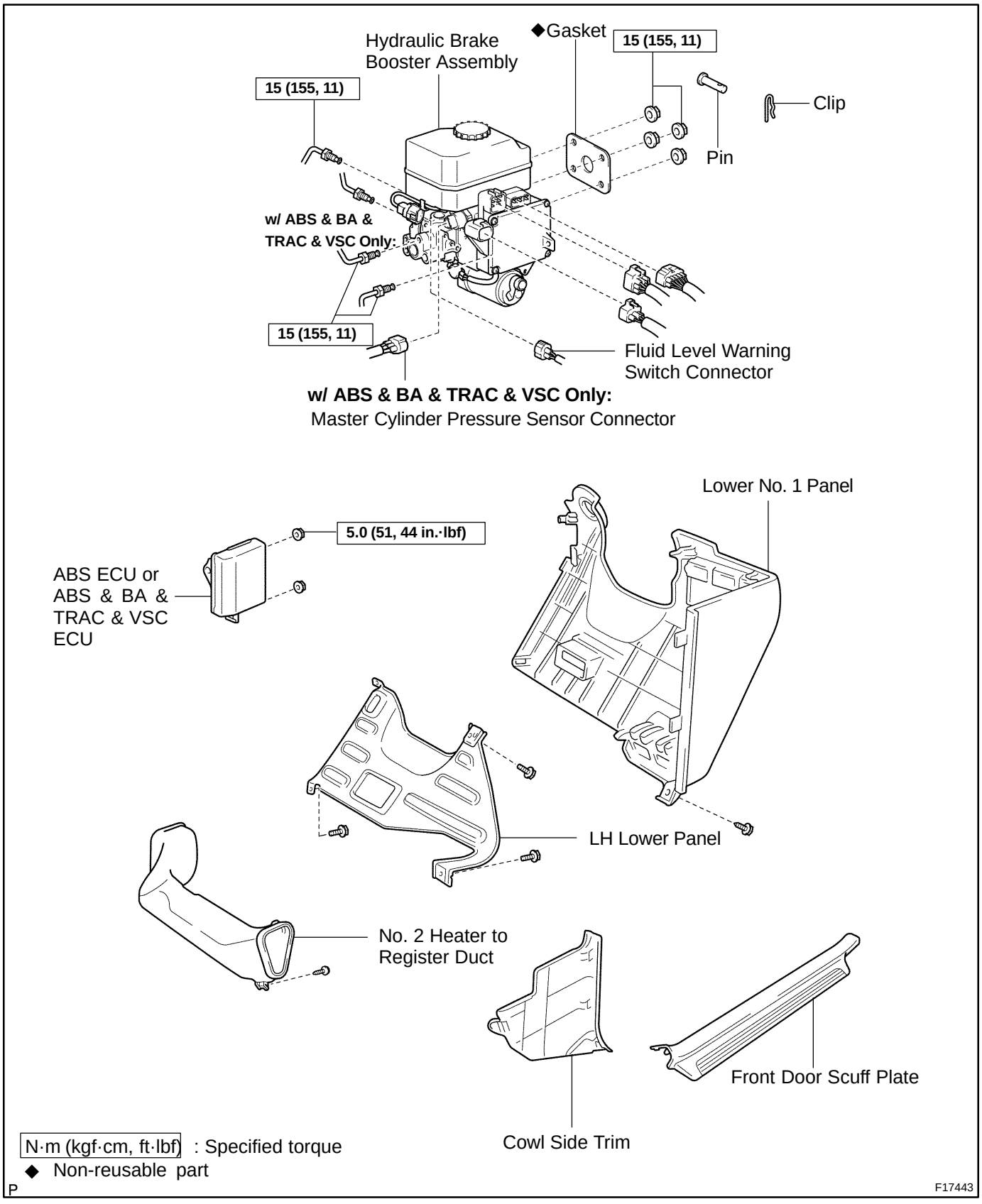
(b) Remove the resin clip and 4 clamp bolts holding the sensor harness from the steering knuckle and upper arm.
**Torque: 13 N·m (130 kgf·cm, 9 ft·lbf)**

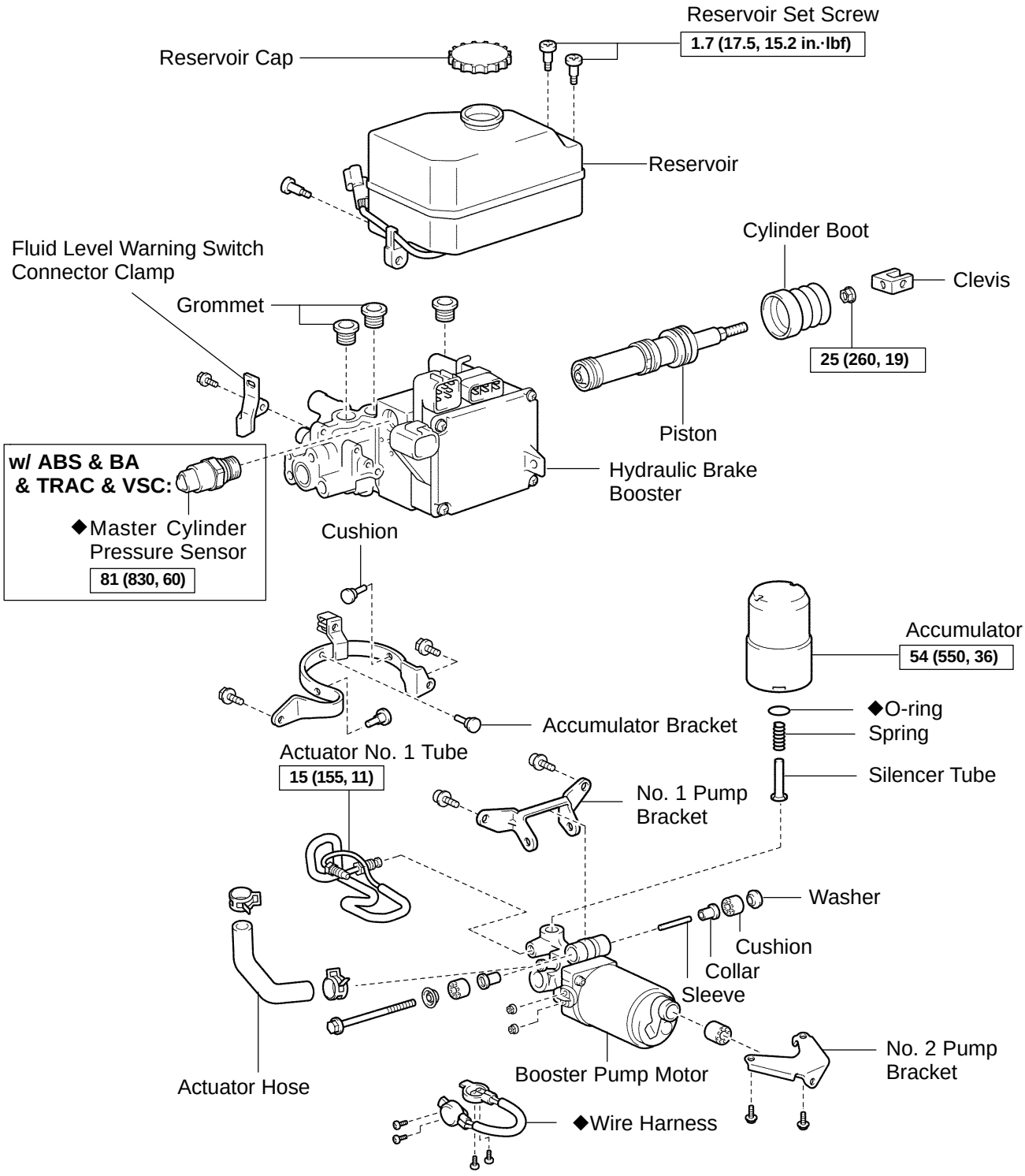



(c) Remove the speed sensor installation bolt and speed sensor from the steering knuckle.
**Torque: 8.0 N·m (82 kgf·cm, 71 in.·lbf)**

BR0K8-20

# COMPONENTS



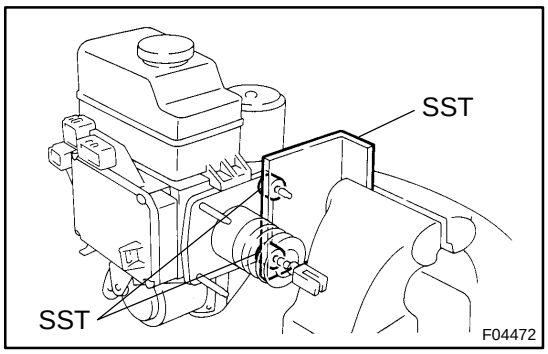



N·m (kgf·cm, ft·lbf) : Specified torque
◆ Non-reusable part

P F13209

BR12D-05

# DISASSEMBLY




**1. PLACE HYDRAULIC BRAKE BOOSTER IN VISE**

Using SST, set the hydraulic brake booster in vise.

SST 09630-00014 (09631-00142),
09950-60010 (09951-00180, 09951-00190)

**2. REMOVE FLUID LEVEL WARNING SWITCH CONNECTOR CLAMP**

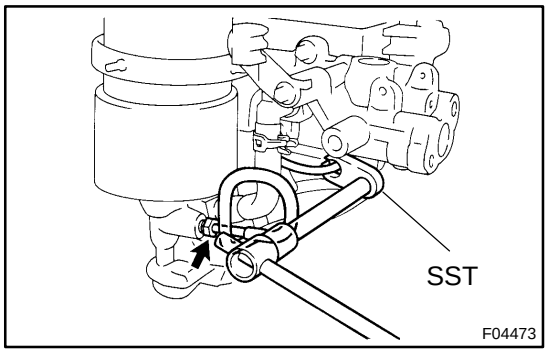
(a) Disconnect the connector.
(b) Remove the bolt and clamp.

**3. REMOVE RESERVOIR AND GROMMETS**

(a) Remove reservoir cap.
(b) Remove the 3 set screws and pull out the reservoir.
**Torque: 1.7 N·m (17.5 kgf·cm, 15.2 in.·lbf)**
(c) Remove the 3 grommets.

**4. REMOVE CLEVIS AND CYLINDER BOOT**

(a) Loosen the lock nut, then remove the clevis and lock nut.
**Torque: 25 N·m (260 kgf·cm, 19 ft·lbf)**
(b) Remove the cylinder boot.



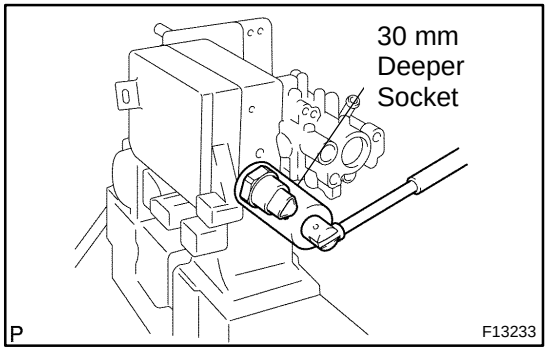

**5. REMOVE BRAKE ACTUATOR TUBE NO. 1**

Using SST, remove the brake actuator tube No. 1.

SST 09023-00100
**Torque: 15 N·m (155 kgf·cm, 11 ft·lbf)**

**6. REMOVE BOOSTER PUMP AND ASSEMBLY**

(a) Remove the actuator hose.
(b) Remove the 4 screws and wire harness from the booster and pump.
(c) Remove the 2 bolts, accumulator bracket.
(d) Remove the 2 bolts and booster pump motor assembly.
(e) Remove the bolt and No. 1 pump bracket.
(f) Remove the 2 washers, 2 cushions, 2 collars and sleeve.
(g) Remove the 2 bolts and No. 2 pump bracket.
(h) Remove the cushion from No. 2 pump bracket.




**7. ABS & BA & TRAC & VSC only:**
**REMOVE MASTER CYLINDER PRESSURE SENSOR**

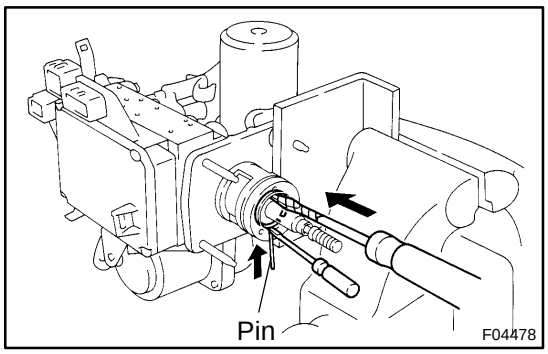
Using 30 mm deeper socket wrench and remove the oil pressure sensor.

**Torque: 81 N·m (830 kgf·cm, 60 ft·lbf)**

**NOTICE:**

**If replacing the master cylinder pressuer sensor, since the sensor is non-reusable, use a sensor of the supply part No shown below.**

**PART NO: 89637-30050**



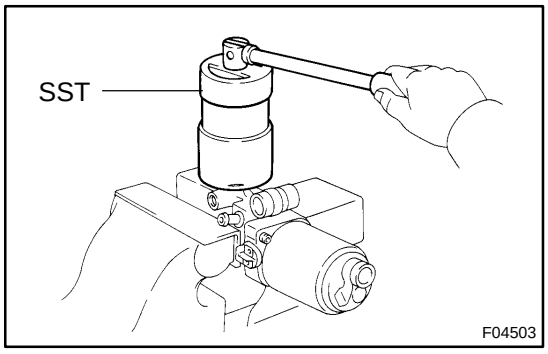

**8. REMOVE PISTON**

(a) Pressing the piston in with a screwdriver, use a pin or an equivalent to push the snap ring from the hole in the body then remove it with another screwdriver.

(b) Remove the piston, pulling straight out, not at an angle.

**NOTICE:**

- **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.**




**9. REMOVE ACCUMULATOR FROM BOOSTER PUMP**

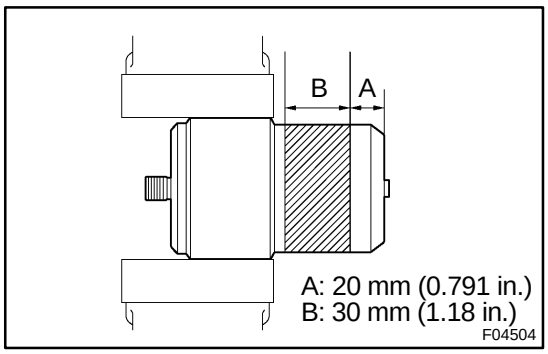
(a) Using SST, remove the accumulator.

SST 09318-12010

**Torque: 54 N·m (550 kgf·cm, 36 ft·lbf)**

(b) Remove the silencer tube, spring and O-ring.

BR0TH-09




# DISPOSAL

## DISPOSAL METHOD OF ACCUMULATOR

(a) Place the accumulator in a vise, cover it with a cloth over.

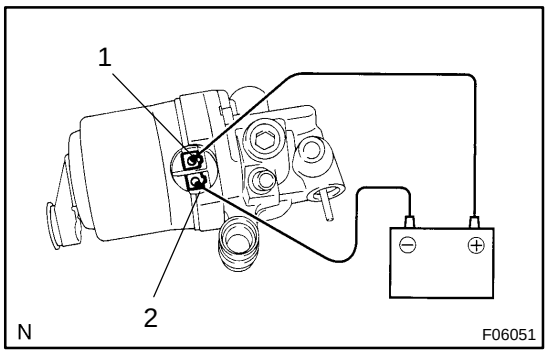
(b) Using a saw, then cut the accumulator body slowly.

**CAUTION:**

**Do not cut at a place except a stretch.**

(c) When the outer body of the accumulator is cut, gas discharges.

BR120-08




# INSPECTION

## INSPECT HYDRAULIC BRAKE BOOSTER PUMP MOTOR OPERATION

(a) Connct the positive (+) lead from the battery to terminal 1 of pump motor, and the negative (-) lead to terminal 2.

(b) Check that the pump motor operation.

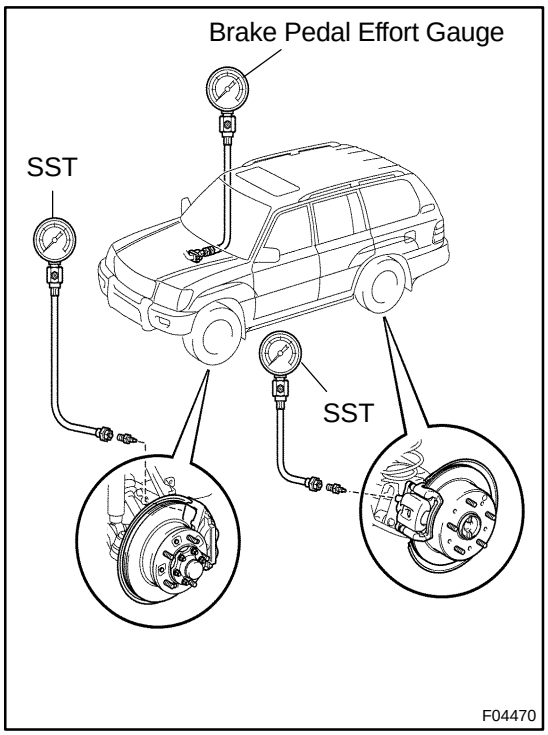
BR0KD-04

# INSTALLATION

**Installation is in the reverse order of removal (See page BR-60 ).**

HINT:

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




# HYDRAULIC BRAKE BOOSTER

BR12B-07

## ON-VEHICLE INSPECTION

**1. CHECK HYDRAULIC BRAKE BOOSTER FLUID PRESSURE CHANGE**

(a) Inspect the battery positive voltage.

**Battery positive voltage: 10 - 14 V**

(b) Turn the ignition switch OFF, depress the brake pedal more than 40 times.

HINT:

When a pressure in power supply system is released, reaction force becomes light and stroke becomes longer.

(c) Install LSPV gauge (SST) and brake pedal effort gauge, bleed air.

SST 09709-29018

(d) When booster does not operate:

Depress the brake pedal and check fluid pressure.

**At 245 N (25 kgf, 55 lbf):**

| Front brake pressure | Rear brake pressure |
|---|---|
| 2,700 kPa (27.5 kgf/cm$^2$, 391 psi) or more | 0 kPa (0 kgf/cm$^2$, 0 psi) |

**At 343 N (35 kgf, 77 lbf):**

| Front brake pressure | Rear brake pressure |
|---|---|
| 3,950 kPa (40 kgf/cm$^2$, 568 psi) or more | 0 kPa (0 kgf/cm$^2$, 0 psi) |

(e) w/ ABS only, when booster operate:

(1) Turn the ignition switch ON and wait until the pump motor has stopped.

(2) Depress the brake pedal and check fluid pressure.

**At 49 N (5 kgf, 11 lbf):**

| Front brake pressure | Rear brake pressure |
|---|---|
| 1,618 - 2,795kPa (16.5 - 28.5 kgf/cm$^2$, 234 - 405 psi) | 1,716 - 2,893 kPa (17.5 - 29.5 kgf/cm$^2$, 249 - 419 psi) |

**At 98 N (10 kgf, 22 lbf):**

| Front brake pressure | Rear brake pressure |
|---|---|
| 4,413 - 5,624 kPa (45 - 57 kgf/cm$^2$, 639 - 809 psi) | 3,187 - 4,364 kPa (32.5 - 44.5 kgf/cm$^2$, 462 - 632 psi) |

**At 147 N (15 kgf, 33 lbf):**

| Front brake pressure | Rear brake pressure |
|---|---|
| 7,208 - 8,436 kPa (73.5 - 85.5 kgf/cm$^2$, 1,043 - 1,214 psi) | 4,609 - 5,786 kPa (47 - 59 kgf/cm$^2$, 667 - 838 psi) |

**At 196 N (20 kgf, 44 lbf):**

| Front brake pressure | Rear brake pressure |
|---|---|
| 9,905 - 11,082 kPa (101 - 113 kgf/cm$^2$, 1,434 - 1,604 psi) | 6,031 - 7,208 kPa (61.5 - 73.5 kgf/cm$^2$, 873 - 1,044 psi) |

(f) w/ ABS & TRAC & VSC ECU only, when booster operate:

(1) Turn the ignition switch ON and wait until the pump motor has stopped.

(2) Depress the brake pedal and check fluid pressure.

**At 49 N (5 kgf, 11 lbf):**

| Front brake pressure | Rear brake pressure |
|---|---|
| 1,618 - 2,795kPa (16.5 - 28.5 kgf/cm$^2$, 234 - 405 psi) | 1,716 - 2,893 kPa (17.5 - 29.5 kgf/cm$^2$, 249 - 419 psi) |

**At 98 N (10 kgf, 22 lbf):**

| Front brake pressure | Rear brake pressure |
|---|---|
| 4,413 - 5,624 kPa (45 - 57 kgf/cm$^2$, 639 - 809 psi) | 4,609 - 5,786 kPa (47 - 59 kgf/cm$^2$, 668 - 839 psi) |

**At 147 N (15 kgf, 33 lbf):**

| Front brake pressure | Rear brake pressure |
|---|---|
| 7,208 - 8,436 kPa (73.5 - 85.5 kgf/cm$^2$, 1,043 - 1,214 psi) | 7,502 - 8,679 kPa (76.5 - 88.5 kgf/cm$^2$, 1,088 - 1,259 psi) |

**At 196 N (20 kgf, 44 lbf):**

| Front brake pressure | Rear brake pressure |
|---|---|
| 9,905 - 11,082 kPa (101 - 113 kgf/cm$^2$, 1,434 - 1,604 psi) | 10,346 - 11,523 kPa (105.5 - 117.5 kgf/cm$^2$, 1,501 - 1,671 psi) |

**2. w/ ABS only,**

**In case of using TOYOTA hand-held tester:**

**INSPECT HYDRAULIC BRAKE BOOSTER OPERATION**

(a) Inspect the battery positive voltage.

**Battery positive voltage: 10 - 14 V**

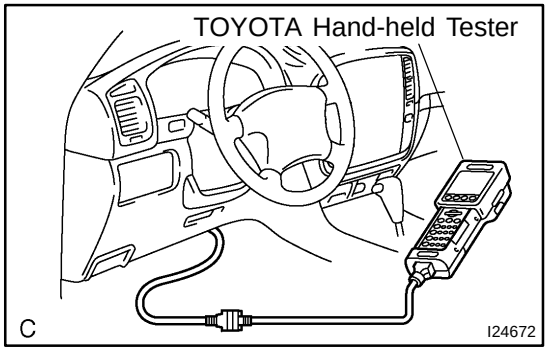
(b) Turn the ignition switch OFF, depress the brake pedal more than 40 times.

HINT:

When a pressure in power supply system is released, reaction force becomes light and stroke becomes longer.

(c) Turn the ignition switch ON, check the pump motor operation noise.

If the pump motor does not operate, check and replace the wire harness and pump motor (See page BR-64 ).




(d) Connect the TOYOTA hand-held tester.

(1) Connect the TOYOTA hand- held tester to the DLC3.

(2) Turn the ignition switch ON.

(3) 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.

◆ To protect the solenoids, TOYOTA hand-held tester turns OFF automatically for 2 sec. after every solenoid has been turned ON.

(e) Inspect the front ABS switching solenoid operation.
   (1) Select ”SA1” and ”SA2” on the TOYOTA hand-held tester.
   (2) With ”SA1” and ”SA2” turned ON simultaneously with the TOYOTA hand-held tester, depress the brake pedal with stable force and check that the pedal cannot be depressed.

HINT:
To protect the solenoids, TOYOTA hand-held tester turns OFF automatically for 2 sec. after every solenoid has been turned ON.

If the pedal can be depressed, replace the hydraulic brake booster.

**NOTICE:**
**When operating it continuously, set the interval of more than 20 sec.**

   (3) Once, release the brake pedal.
   (4) When the solenoids are OFF, after depressing the brake pedal again and check that the brake pedal can be depressed.

If the pedal cannot be depressed, replace the hydraulic brake booster.

(f) Inspect the front ABS solenoid operation.
   (1) Select ”SFRH” and ”SFLH” on the TOYOTA hand-held tester.
   (2) With ”SFRH” and ”SFLH” turned ON simultaneously with the TOYOTA hand-held tester, depress the brake pedal with stable force and check that the brake pedal cannot be depressed.

HINT:
To protect the solenoids, TOYOTA hand-held tester turns OFF automatically for 2 sec. after every solenoid has been turned ON.

If the pedal can be depressed, replace the hydraulic brake booster.

   (3) Once, release the brake pedal when the solenoids are OFF, check that the brake pedal can be depressed.

If the pedal cannot be depressed, replace the hydraulic brake booster.

   (4) Once, release the brake pedal. After depressing and holding the brake pedal with stable force, turn the SFRH and SFRR solenoids ON simultaneously.

HINT:
To protect the solenoids, TOYOTA hand-held tester turns OFF automatically for 2 sec. after every solenoid has been turned ON.

(5) When the solenoids are OFF, check that the brake pedal can be depressed.

If the pedal cannot be depressed, replace the hydraulic brake booster.

(6) Once, release the brake pedal. After depressing and holding the brake pedal with stable force, turn the SFLH and SFLR solenoids ON simultaneously.

HINT:

To protect the solenoids, TOYOTA hand-held tester turns OFF automatically for 2 sec. after every solenoid has been turned ON.

(7) Once release the brake pedal when the solenoids are OFF, check that the brake pedal can be depressed.

If the pedal cannot be depressed, replace the hydraulic brake booster.

(g) Jack up and support the vehicle.

(h) Release the parking brake lever.

(i) Inspect the rear ABS solenoid.

(1) Select the ”SRH” on the TOYOTA hand-held tester.

(2) Turn the ”SRH” ON with the TOYOTA hand-held tester and depress the brake pedal with stable force, and rotate the right rear wheel by hand and check it.

HINT:

- To protect the solenoids, TOYOTA hand-held tester turns OFF automatically for 2 sec. after every solenoid has been turned ON.
- When rotating the wheel fast, the fail-safe function is activated and judgement cannot be made properly. So rotate the wheel as slowly as possible.
- When solenoid is OFF, the wheel might stop temporarily. However if the wheel rotates again, the function works normally.

If the rear wheels stop, replace the hydraulic brake booster.

(3) Once, release the brake pedal and turn the ”SRH” OFF, after depressing the brake pedal with stable force and stop the rear right wheel by hand and check it.

If the rear wheel rotate, replace the hydraulic brake booster.

(4) Depress the pedal with stable force, then turn the ”SRH” and ”SRR” ON simultaneously.

(5) When the solenoids are ON, rotate the rear wheel by hand and check it.

HINT:

- To protect the solenoids, TOYOTA hand-held tester turns OFF automatically for 2 sec. after every solenoid has been turned ON.

◆ When rotating the wheel fast, the fail-safe function is activated and judgement cannot be made properly. So rotate the wheel as slowly as possible.

(j) Lower the vehicle.

(k) Disconnect the TOYOTA hand-held tester.

**3. w/ ABS & TRAC & VSC only,**
**In case of using TOYOTA hand-held tester:**
**INSPECT HYDRAULIC BRAKE BOOSTER OPERATION**

(a) Inspect the battery positive voltage.
**Battery positive voltage: 10 - 14 V**

(b) Turn the ignition switch OFF, depress the brake pedal more than 40 times.

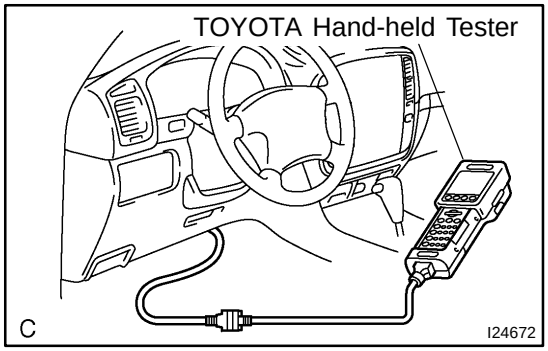
HINT:
When a pressure in power supply system is released, reaction force becomes light and stroke becomes longer.

(c) Check that the brake pedal becomes light to depress.

If the pedal does not become to be light to depress, check and replace the brake line and hydraulic brake booster.

(d) Turn the ignition switch ON, check the pump motor operation noise.

If the pump motor does not operate, check and replace the wire harness and pump motor (See page BR-64 ).




(e) Connect the TOYOTA hand-held tester.
(1) Connect the TOYOTA hand- held tester to the DLC3.
(2) Turn the ignition switch ON.
(3) 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.
◆ To protect the solenoids, TOYOTA hand-held tester turns OFF automatically 2 sec. after every solenoid has been turned ON.

(f) Inspect the front TRAC & VSC solenoid operation.
(1) Select ”SA1” and ”SA2” on the TOYOTA hand-held tester.
(2) With ”SA1” and ”SA2” turned ON simultaneously with the TOYOTA hand-held tester, depress the brake pedal with stable force and check that the pedal cannot be depressed.

HINT:
To protect the solenoids, TOYOTA hand-held tester turns OFF automatically 2 sec. after every solenoid has been turned ON. If the pedal can be depressed, replace the hydraulic brake booster.

**NOTICE:**
**When operating it continuously, set the interval of more than 20 sec.**

(3) Once, release the brake pedal.
(4) When the solenoids are OFF, after depressing the brake pedal again and check that the brake pedal can be depressed.

If the pedal cannot be depressed, replace the hydraulic brake booster.

(g) Inspect the front ABS solenoid operation.
(1) Select ”SFRH” and ”SFLH” on the TOYOTA hand-held tester.
(2) With ”SFRH” and ”SFLH” turned ON simultaneously with the TOYOTA hand-held tester, depress the brake pedal with stable force and check that the brake pedal cannot be depressed.

HINT:
To protect the solenoids, TOYOTA hand-held tester turns OFF automatically 2 sec. after every solenoid has been turned ON. If the pedal can be depressed, replace the hydraulic brake booster.

(3) Once, release the brake pedal when the solenoids are OFF, check that the brake pedal can be depressed.

If the pedal cannot be depressed, replace the hydraulic brake booster.

(4) Once, release the brake pedal. After depressing and holding the brake pedal with stable force, turn the SFRH and SFRR solenoids ON simultaneously.

HINT:
To protect the solenoids, TOYOTA hand-held tester turns OFF automatically 2 sec. after every solenoid has been turned ON.

(5) When the solenoids are OFF, check that the brake pedal can be depressed.

If the pedal cannot be depressed, replace the hydraulic brake booster.

(6) Once, release the brake pedal. After depressing and holding the brake pedal with stable force, turn the SFLH and SFLR solenoids ON simultaneously.

HINT:
To protect the solenoids, TOYOTA hand-held tester turns OFF automatically 2 sec. after every solenoid has been turned ON.

(7) When the solenoids are OFF, check that the brake pedal can be depressed.

If the pedal cannot be depressed, replace the hydraulic brake booster.

(h) Jack up and support the vehicle.

(i) Release the parking brake lever.

(j) Shift the transfer shift lever to ”N” position and check that the rear wheels by rotating them by hand.

(k) Inspect the rear TRAC & VSC solenoid operation.

(1) Select the ”SA3” and ”STR” on the TOYOTA hand-held tester.

(2) Turn the ”SA3” and ”STR” ON simultaneously with the TOYOTA hand-held tester, and check that the rear wheel does not rotate by hand.

HINT:

When rotating the wheel fast, the fail-safe function is activated and judgement cannot be made properly. So rotate the wheel as slowly as possible.

If the rear wheels rotate, replace the hydraulic brake booster.

(3) Turn the ”SA3” and ”STR” OFF simultaneously, and check that the rear wheels by rotating them by hand.

HINT:

- To protect the solenoids, TOYOTA hand-held tester turns OFF automatically 2 sec. after every solenoid has been turned ON.
- When rotating the wheel fast, the fail-safe function is activated and judgement cannot be made properly. So rotate the wheel as slowly as possible.

**NOTICE:**

**When operating it continuously, set the interval of more than 20 sec.**

If the rear wheels stop, replace the hydraulic brake booster.

(l) Inspect the right rear ABS solenoid.

(1) Select the ”SA3”, ”STR” and ”SRRH”, on the TOYOTA hand-held tester.

(2) Turn the ”SA3”, ”STR” and ”SRRH” ON simultaneously with the TOYOTA hand-held tester, and check that the right rear wheel by rotating it by hand.

HINT:

- To protect the solenoids, TOYOTA hand-held tester turns OFF automatically 2 sec. after every solenoid has been turned ON.
- When rotating the wheel fast, the fail-safe function is activated and judgement cannot be made properly. So rotate the wheel as slowly as possible.
- When solenoid is OFF, the wheel might stop temporarily. However if the wheel rotates again, the function works normally.

If the rear wheels stop, replace the hydraulic brake booster.

(3) Turn the ”SA3”, ”STR” and ”SRRH” OFF, and check that the right rear wheel by rotating it by hand.

HINT:

- To protect the solenoids, TOYOTA hand-held tester turns OFF automatically 2 sec. after every solenoid has been turned ON.
- When rotating the wheel fast, the fail-safe function is activated and judgement cannot be made properly. So rotate the wheel as slowly as possible.

If the right rear wheel stop, replace the hydraulic brake booster.

(4) Depress the pedal with stable force, then turn the ”SRRH” and ”SRRR” ON simultaneously.

(5) When the solenoids are ON, check that the right rear wheel by rotating it by hand.

(m) Inspect the left rear ABS solenoid operation.

(1) Select the ”SA3”, ”STR” and ”SRLH” on the TOYOTA hand-held tester.

(2) Turn the ”SA3”, ”STR” and ”SRLH” ON with TOYOTA hand-held tester, and check that the left rear wheel by rotating it by hand.

HINT:

When rotating the wheel fast, the fail-safe function is activated and judgement cannot be made properly. So rotate the wheel as slowly as possible.

If the rear wheels stop, replace the hydraulic brake booster.

(3) Turn the ”SA3”, ”STR” and ”SRLH” OFF and check that the left rear wheel by rotating it by hand.

HINT:

- To protect the solenoids, TOYOTA hand-held tester turns OFF automatically 2 sec. after every solenoid has been turned ON.
- When rotating the wheel fast, the fail-safe function is activated and judgement cannot be made properly. So rotate the wheel as slowly as possible.
- When solenoid is OFF, the wheel might stop temporarily. However if the wheel rotates again, the function works normally.

If the left rear wheel stop, replace the hydraulic brake booster.

(4) Depress the pedal with stable force, then turn the ”SRLH” and ”SRLR” ON simultaneously.

HINT:

To protect the solenoids, TOYOTA hand-held tester turns OFF automatically 2 sec. after every solenoid has been turned ON.

(5) When the solenoids are ON, check that the left rear wheel by rotating it by hand.

HINT:

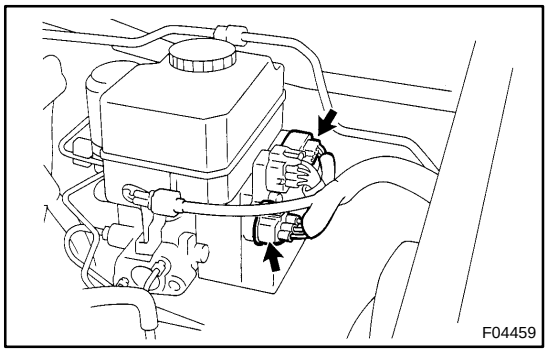
When rotating the wheel fast, the fail-safe function is activated and judgement cannot be made properly. So rotate the wheel as slowly as possible.

(n) Lower the vehicle.

(o) Disconnect the TOYOTA hand-held tester.

**4. w/ ABS only,**
**In case of using ABS actuator checker (SST):**
**INSPECT HYDRAULIC BRAKE BOOSTER OPERATION**

(a) Inspect the battery positive voltage.
**Battery positive voltage: 10 - 14 V**

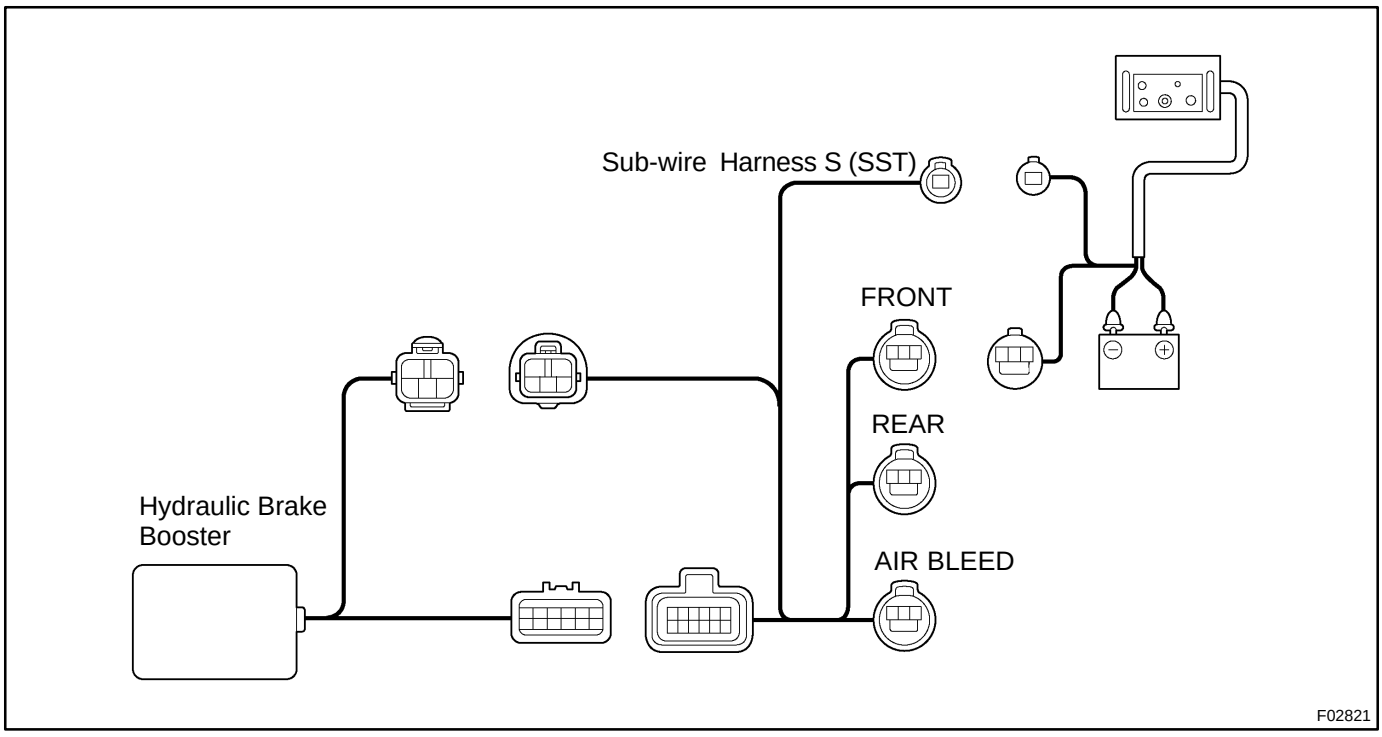



(b) Disconnect the 2 connectors from hydraulic brake booster.

(c) Connect the actuator checker (SST) to the hydraulic brake booster side wire harness via the sub-wire harness (SST), as shown in the following chart.
SST 09990-00150, 09990-00480

HINT:
Connect the connector with the label of "FRONT" attached to the connector of actuator checker.

(d) Connect the red cable of the checker to the battery positive (+) terminal and the black cable to the negative (-) terminal.



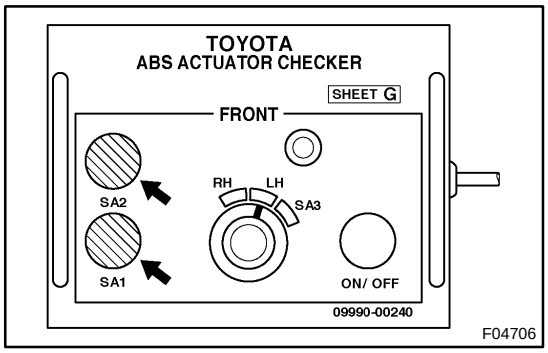
(e) Place "SHEET G" (SST) of "FRONT" on actuator checker.
SST 09990-00240

(f) Turn the ignition switch OFF, depress the brake pedal more than 40 times.

HINT:
When a pressure in power supply system is released, reaction force becomes light and stroke becomes longer.

(g) Turn the ignition switch ON, check the pump motor operation noise.

If the pump motor does not operate, check and replace the wire harness and pump motor (See page BR-64 ).




(h) Inspect the front switching solenoid operation.

(1) Push in and hold the "SA1" and "SA2" switches simultaneously, depress strongly and hold the brake pedal with stable force.

**NOTICE:**
**Do not keep the "SA1" and "SA2" pushed down for more than 10 sec. When operating it continuously, set the interval of more than 20 sec.**

(2) Check that the brake pedal cannot be depressed.

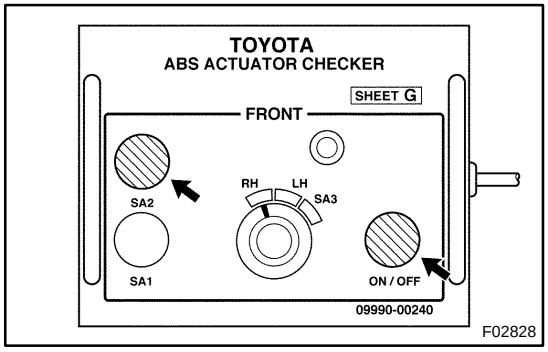
If the pedal can be depressed, replace the hydraulic brake booster.

(3) Release the "SA1" switch and check that the brake pedal can be depressed.

If the pedal can not be depressed, replace the hydraulic brake booster.

(4) Release the "SA2" switch and check that the brake pedal can be depressed.

If the pedal can not be depressed, replace the hydraulic brake booster.




(i) Inspect the right front solenoid operation.

(1) Turn the selector switch to "RH" position.

(2) Push and hold in the MAIN push switch and "SA2" switch simultaneously depress and hold the brake pedal with stable force.

**NOTICE:**
**Do not keep the MAIN push switch and "SA2" switch pushed down for more than 10 sec. When operating it continuously, set the interval of more than 20 sec.**

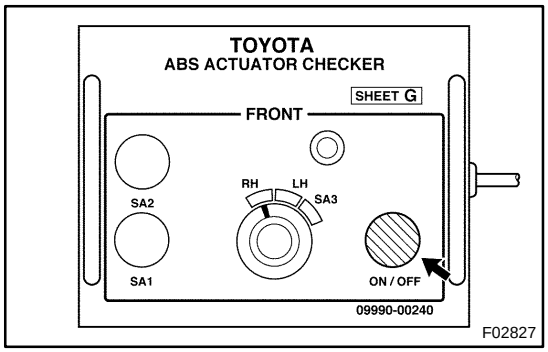
(3) Check that the brake pedal cannot be depressed.

If the pedal can be depressed, replace the hydraulic brake booster.

(4) Release the MAIN push switch and "SA2" switch simultaneously and check that the brake pedal can be depressed.

If the pedal cannot be depressed, replace the hydraulic brake booster.

(5) Release the brake pedal.




(6) Depress and hold the brake pedal with stable force, push and hold in MAIN push switch.

**NOTICE:**

**Do not keep the MAIN push switch pushed down for more than 10 sec. When operating it continuously, set the interval of more than 20 sec.**

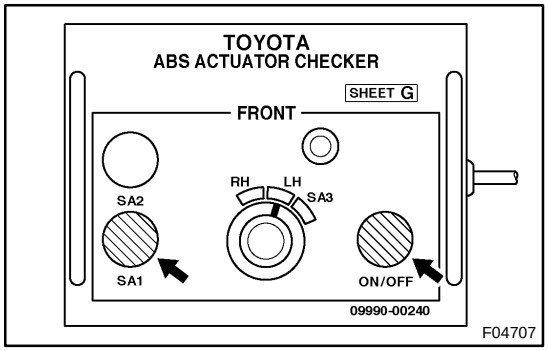
(7) Check that the brake pedal cannot be depressed.

If the pedal can be depressed, replace the hydraulic brake booster.

(8) Release the MAIN push switch, and check that the brake pedal can be depressed.

If the pedal cannot be depressed, replace the hydraulic brake booster.

(9) Release the brake pedal.




(j) Inspect the left front solenoid operation.

(1) Turn the selector switch to "LH" position.

(2) Push and hold in the MAIN push switch and "SA1" switch simultaneously, depress and hold the brake pedal with stable force.

**NOTICE:**

**Do not keep the MAIN push switch and "SA1" switch pushed down for more than 10 sec. When operating it continuously, set the interval of more than 20 sec.**

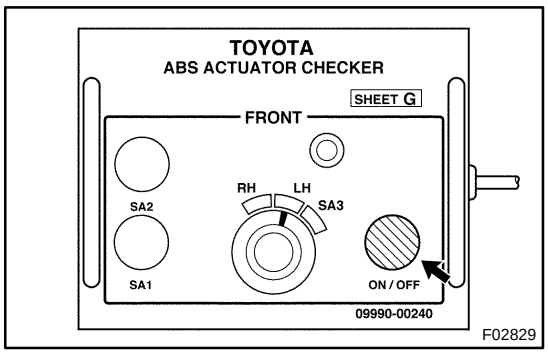
(3) Check that the brake pedal cannot be depressed.

If the pedal can be depressed, replace the hydraulic brake booster.

(4) Release the MAIN push switch and "SA1" switch simultaneously, and check that the brake pedal can be depressed.

If the pedal cannot be depressed, replace the hydraulic brake booster.

(5) Release the brake pedal.




(6) Depress and hold the brake pedal with stable force, push and hold in MAIN push switch.

**NOTICE:**

**Do not keep the MAIN push switch pushed down for more than 10 sec. When operating it continuously, set the interval of more than 20 sec.**

(7) Check that the brake pedal cannot be depressed.

If the pedal can be depressed, replace the hydraulic brake booster.

(8) Release the MAIN push switch, and check that the brake pedal can be depressed.

If the pedal cannot be depressed, replace the hydraulic brake booster.

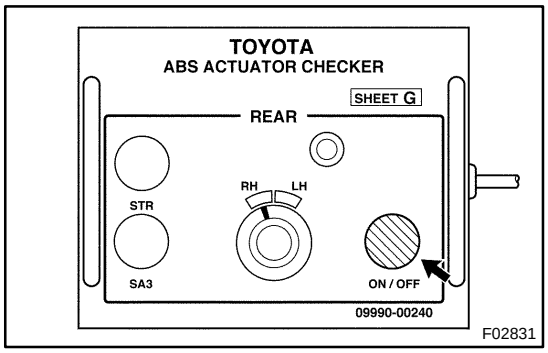
(9) Release the brake pedal.

(k) Turn the ignition switch OFF, then reconnect the connector of sub- wire harness from the one with label of ”FRONT” to ”REAR”.

(l) Place ”SHEET G” of ”REAR” on the actuator checker.

(m) Jack up and support the vehicle.

(n) Start the engine and run it at idle.




(o) Inspect the rear solenoid operation.

(1) Turn the selector switch to ”RH” position.

(2) Depress the brake pedal several times and release the pedal when the pump begins rotating. Wait until the pump stops.

(3) Turn the ignition switch OFF.

(4) Depress the brake pedal with a force of 343 N (35 kgf, 77 lbf), record the fluid surface in the reservoir tank of the hydraulic brake booster.

(5) Press the MAIN push switch for 10 sec., and check that the fluid surface in the reservoir tank of the hydraulic brake booster dose not rise up at this time.

If the fluid surface level rises up, replace the hydraulic brake booster.

**NOTICE:**

**Do not press MAIN push switch for more than 10 sec. When operating the switch continuously, do it an interval of more than 20 sec.**

(6) Release the brake pedal and check that brake pedal is not hard to depress.

If pedal is hard to depress, replace the hydraulic brake booster.

(7) Start the engine and run it at idle.

(8) Depress the brake pedal.

(9) Release the parking brake lever and shift the shift lever to ”L” position.

(10) Once, release the brake pedal. After depressing the brake pedal with stable force, then push and hold MAIN push switch.

(11) Check that the right rear wheel rotates.

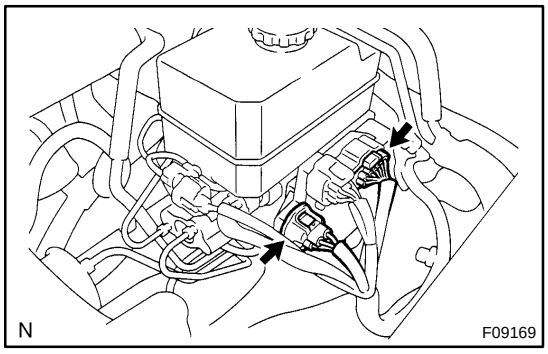
If the right rear wheels stops, replace the hydraulic brake booster.

(p) Stop the engine and lower the vehicle.

(q) Remove the "SHEET G" (SST) and disconnect the actuator checker (SST) and sub-wire harness (SST) from the hydraulic brake booster.

(r) Connect the 2 connectors to the actuator.

(s) Clear the DTC (See page DI-505 ).




**5. w/ ABS & TRAC & VSC only,**
**In case of using ABS actuator checker (SST):**
**INSPECT HYDRAULIC BRAKE BOOSTER OPERATION**

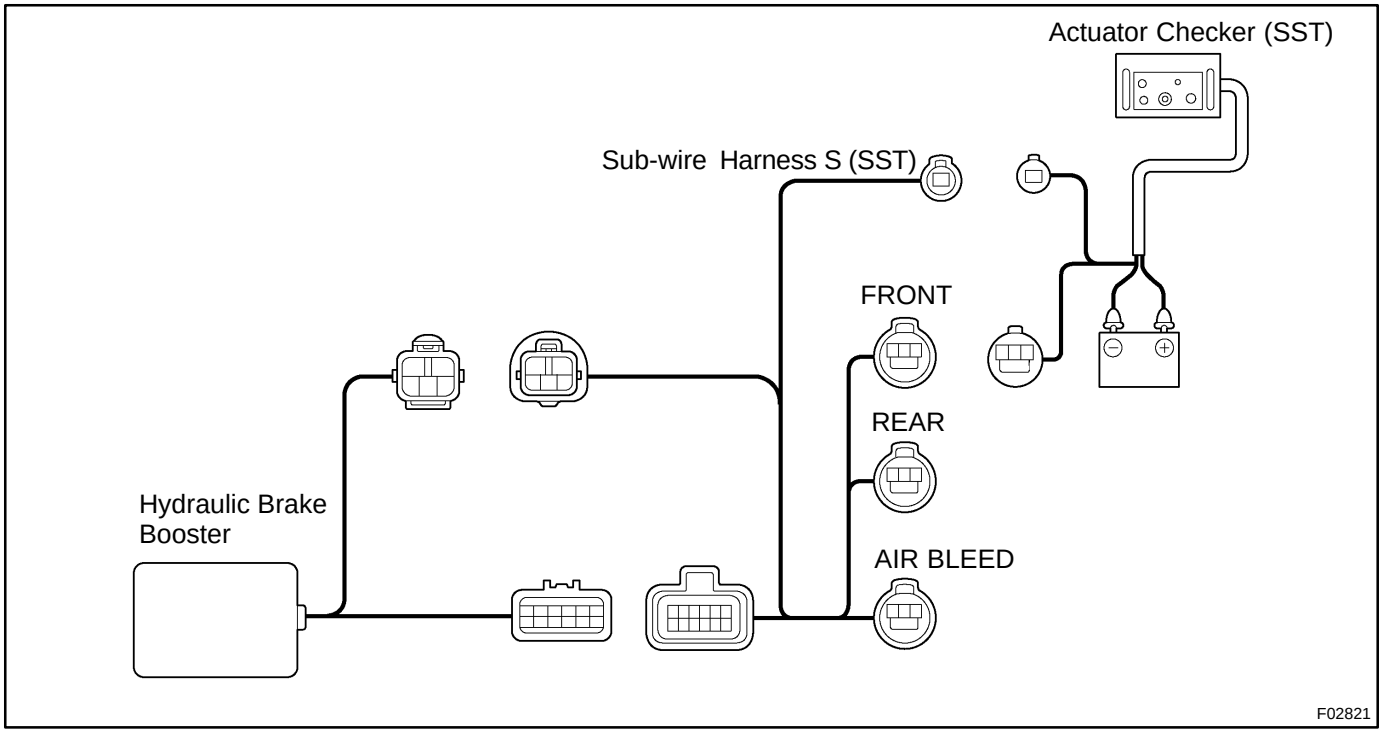
(a) Inspect the battery positive voltage.
**Battery positive voltage: 10 - 14 V**

(b) Disconnect the 2 connectors from hydraulic brake booster.

(c) Connect the actuator checker (SST) to the hydraulic brake booster side wire harness via the sub-wire harness S (SST), as shown in the following chart.
SST 09990-00150, 09990-00480

HINT:
Connect the connector with the label of "FRONT" attached to the connector of actuator checker.

(d) Connect the red cable of the checker to the battery positive (+) terminal and the black cable to the negative (-) terminal.



(e) Place "SHEET G" (SST) of "FRONT" on actuator checker.
SST 09990-00240

(f) Turn the ignition switch OFF, depress the brake pedal more than 40 times.

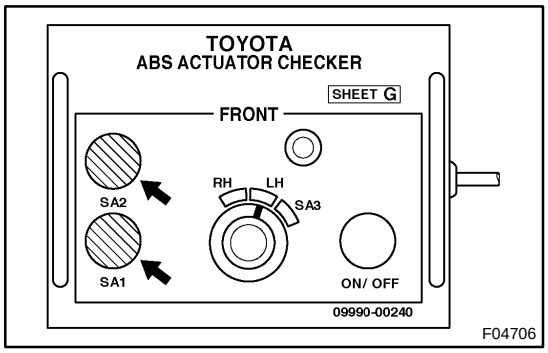
HINT:
When a pressure in power supply system is released, reaction force becomes light and stroke becomes longer.

(g) Check that the brake pedal becomes light to depress.

If the pedal does not become to be light to depress, check and replace the brake line and hydraulic brake booster.

(h) Turn the ignition switch ON, check the pump motor operation noise.

If the pump motor does not operate, check and replace the wire harness and pump motor (See page BR-64 ).




(i) Inspect the front TRAC & VSC solenoid operation.

(1) Push in and hold the "SA1" and "SA2" switches simultaneously, depress strongly and hold the brake pedal with stable force.

**NOTICE:**
**Do not keep the "SA1" and "SA2" pushed down for more than 10 sec. When operating it continuously, set the interval of more than 20 sec.**

(2) Check that the brake pedal cannot be depressed.

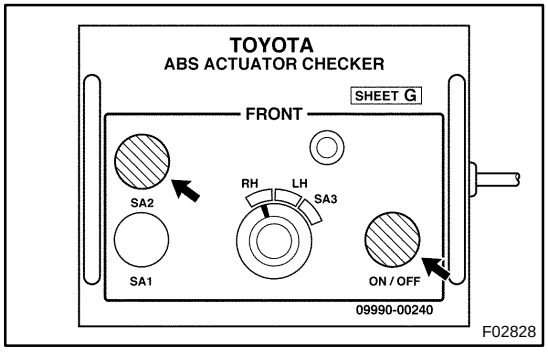
If the pedal can be depressed, replace the hydraulic brake booster.

(3) Release the "SA1" switch and check that the brake pedal can be depressed.

If the pedal cannot be depressed, replace the hydraulic brake booster.

(4) Release the "SA2" switch and check that the brake pedal can be depressed.

If the pedal cannot be depressed, replace the hydraulic brake booster.




(j) Inspect the right front ABS solenoid operation.

(1) Turn the selector switch to "RH" position.

(2) Push and hold in the MAIN push switch and "SA2" switch simultaneously, depress and hold the brake pedal with stable force.

**NOTICE:**
**Do not keep the MAIN push switch and "SA2" switch pushed down for more than 10 sec. When operating it continuously, set the interval of more than 20 sec.**

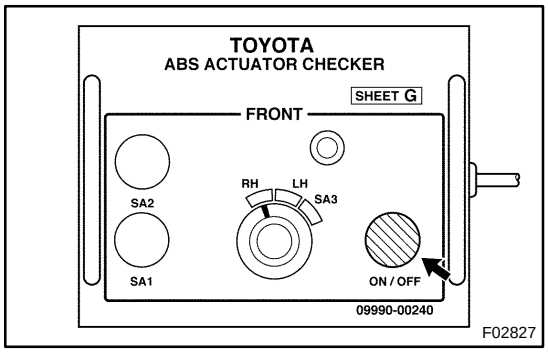
(3) Check that the brake pedal cannot be depressed.

If the pedal can be depressed, replace the hydraulic brake booster.

(4) Release the MAIN push switch and "SA2" switch simultaneously and check that the brake pedal can be depressed.

If the pedal cannot be depressed, replace the hydraulic brake booster.

(5) Release the brake pedal.




(6) Depress and hold the brake pedal with stable force, push and hold in MAIN push switch.

**NOTICE:**

**Do not keep the MAIN push switch pushed down for more than 10 sec. When operating it continuously, set the interval of more than 20 sec.**

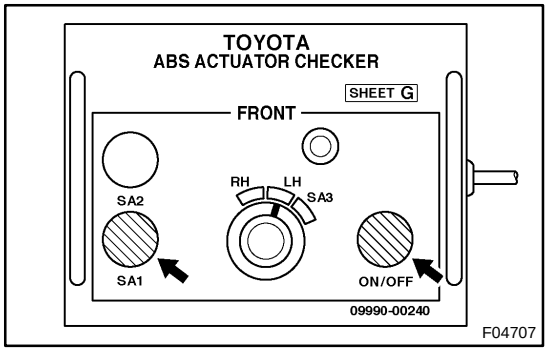
(7) Check that the brake pedal cannot be depressed.

If the pedal can be depressed, replace the hydraulic brake booster.

(8) Release the MAIN push switch, and check that the brake pedal can be depressed.

If the pedal cannot be depressed, replace the hydraulic brake booster.

(9) Release the brake pedal.




(k) Inspect the left front ABS solenoid operation.

(1) Turn the selector switch to "LH" position.

(2) Push and hold in the MAIN push switch and "SA1" switch simultaneously, depress and hold the brake pedal with stable force.

**NOTICE:**

**Do not keep the MAIN push switch and "SA1" switch pushed down for more than 10 sec. When operating it continuously, set the interval of more than 20 sec.**

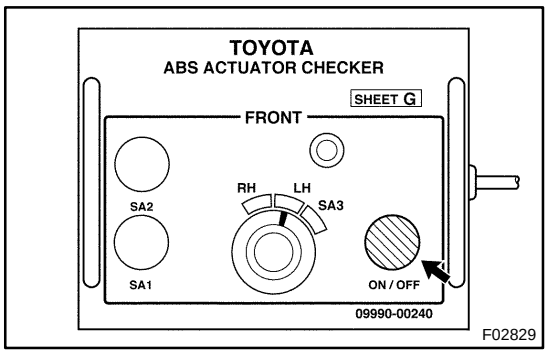
(3) Check that the brake pedal cannot be depressed.

If the pedal can be depressed, replace the hydraulic brake booster.

(4) Release the MAIN push switch and "SA1" switch simultaneously, and check that the brake pedal can be depressed.

If the pedal cannot be depressed, replace the hydraulic brake booster.

(5) Release the brake pedal.




(6) Depress and hold the brake pedal with stable force, push and hold in MAIN push switch.

**NOTICE:**

**Do not keep the MAIN push switch pushed down for more than 10 sec. When operating it continuously, set the interval of more than 20 sec.**

(7) Check that the brake pedal cannot be depressed.

If the pedal can be depressed, replace the hydraulic brake booster.

(8) Release the MAIN push switch, and check that the brake pedal can be depressed.

If the pedal cannot be depressed, replace the hydraulic brake booster.

(9) Release the brake pedal.

(l) Turn the ignition switch OFF, then reconnect the connector of sub- wire harness from the one with label of ”FRONT” to ”REAR”.

(m) Place ”SHEET G” of ”REAR” on the actuator checker.

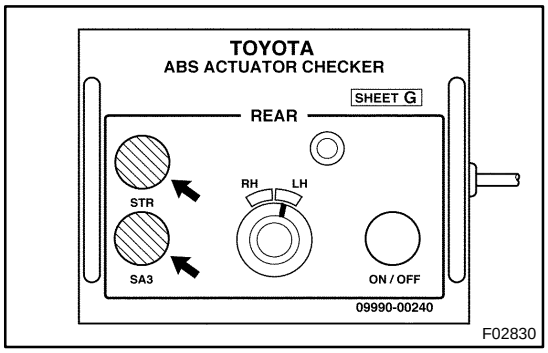
(n) Jack up and support the vehicle.

(o) Start the engine and run it at idle.

(p) Inspect the rear TRAC & VSC solenoid.

(1) Release the parking brake lever and shift the shift lever to ”L” position.

(2) Push and hold the ”SA3” switch and ”STR” switch simultaneously.




**NOTICE:**

- **Do not keep the ”STR” switch pushed down for more than 10 sec.**
- **Do not keep the ”SA3” switch pushed down for more than 5 sec.**
- **When operating it continuously, set the interval of more than 20 sec.**

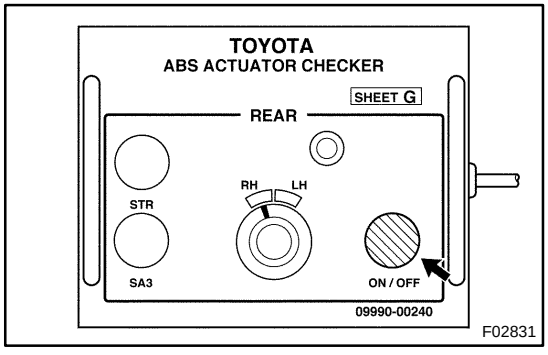
(3) Check that the rear wheels stop.

If the rear wheels rotate, replace the hydraulic brake booster.

(4) Release the ”SA3” switch and ”STR” switch simultaneously.

(5) Check that the rear wheels rotate.

If the rear wheels stop, replace the hydraulic brake booster.




(q) Inspect the right rear ABS solenoid.

(1) Turn the selector switch to ”RH” position.

(2) Depress the brake pedal several times and release the brake pedal when the pump begins rotating. Wait until the pump stops.

(3) Turn the ignition switch OFF.

(4) Depress the brake pedal with a force of 343 N (35 kgf, 77 lbf), record the fluid surface in the reservoir tank of the hydraulic brake booster.

(5) Press the MAIN push switch for 10 sec., and check that the fluid surface in the reservoir tank of the hydraulic brake booster does not rise up at this time.

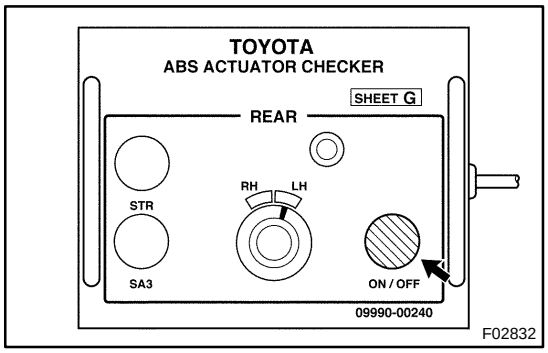
If the fluid surface level rises up, replace the hydraulic brake booster.

**NOTICE:**

**Do not press MAIN push switch for more than 10 sec. When operating the switch continuously, do it an interval of more than 20 sec.**

(6) Start the engine and run it at idle.
(7) Depress the brake pedal.
(8) Release the parking brake lever and shift the shift lever to ”L” position.
(9) Once, release the brake pedal. After depressing the brake pedal with stable force, then push and hold MAIN push switch.
(10) Check that the right rear wheel rotates.

If the right rear wheel stops, replace the hydraulic brake booster.




(r) Inspect the left rear ABS solenoid.
(1) Turn the selector switch to ”LH” position.
(2) Depress the brake pedal several times and release the brake pedal when the pump begins rotating. Wait until the pump stops.
(3) Turn the ignition switch OFF.
(4) Depress the brake pedal with a force of 343 N (35 kgf, 77 lbf), record the fluid surface in the reservoir tank of the hydraulic brake booster.
(5) Press the MAIN push switch for 10 sec., and check that the fluid surface in the reservoir tank of the hydraulic brake booster does not rise up at this time.

If the fluid surface level rises up, replace the hydraulic brake booster.

**NOTICE:**

**Do not press MAIN push switch for more than 10 sec. When operating the switch continuously, do it an interval of more than 20 sec.**

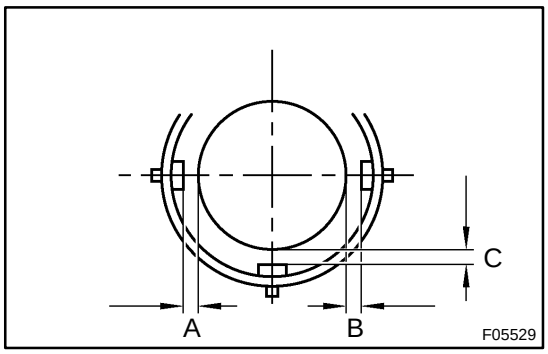
(6) Start the engine and run it at idle.
(7) Depress the brake pedal.
(8) Release the parking brake lever and shift the shift lever to ”L” position.
(9) Once, release the brake pedal. After depressing the brake pedal with stable force, then push and hold MAIN push switch.
(10) Check that the left rear wheel rotates.

If the left rear wheel stops, replace the hydraulic brake booster.

(s) Stop the engine and lower the vehicle.

(t) Remove the ”SHEET G” (SST) and disconnect the actuator checker (SST) and sub-wire harness S (SST) from the hydraulic brake booster.
(u) Connect the 2 connectors to the actuator.
(v) Clear the DTC (See page DI-505 ).

BR0TI-09




# REASSEMBLY

**Reassembly is in the reverse order of disassembly (See page BR-62 ).**

**INSTALL ACCUMULATOR BRACKET**

When installing the accumulator bracket, adjust to secure the clearance shown in the illustration on the left.

**Standard clearance:**

**A + B: 4.1 mm (0.161 in.) or less**

**C: 0.3 - 3.8 mm (0.012 - 0.150 in.)**

HINT:

Secure more than 0.3 mm (0.012 in.) clearance for A and B each.

BR12C-05

# REMOVAL

**NOTICE:**

**Before starting the work, make sure that the ignition switch is OFF and depress the brake pedal more than 40 times.**

HINT:

When a pressure in power supply system is released, reaction force becomes light and stroke becomes longer.

**NOTICE:**

- **As high pressure is applied to the brake actuator tube No. 1, never deform it.**
- **Until the work is over, do not turn the ignition switch ON.**

**1. DRAW OUT FLUID WITH SYRINGE**

**NOTICE:**

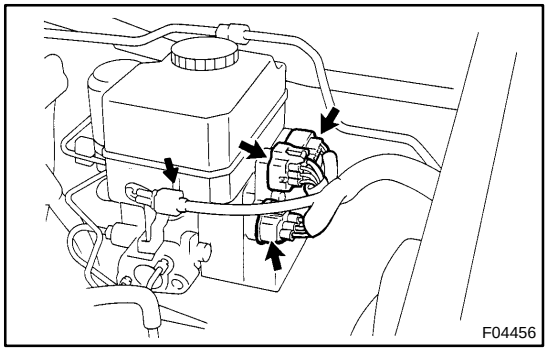
**Do not let brake fluid remain on a painted surface. Wash it off immediately.**

**2. REMOVE SCUFF PLATE, COWL SIDE TRIM, LOWER NO. 1 PANEL, LH LOWER PANEL AND NO. 2 HEATER TO REGISTER DUCT (See page BO-81 )**

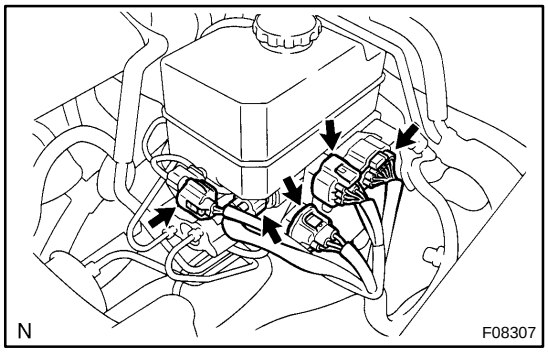
**3. REMOVE ABS OR ABS & TRAC & VSC ECU**

Remove the 2 nuts and ABS or ABS & TRAC & VSC ECU.

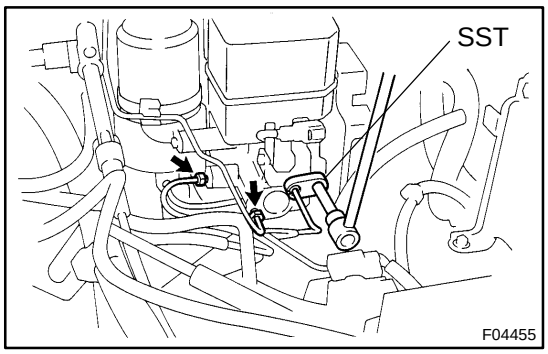
**Torque: 5.0 N·m (51 kgf·cm, 44 in.·lbf)**




**4. w/ ABS only:**
**DISCONNECT 4 CONNECTORS**




**5. w/ ABS & TRAC & VSC only:**
**DISCONNECT 5 CONNECTORS**

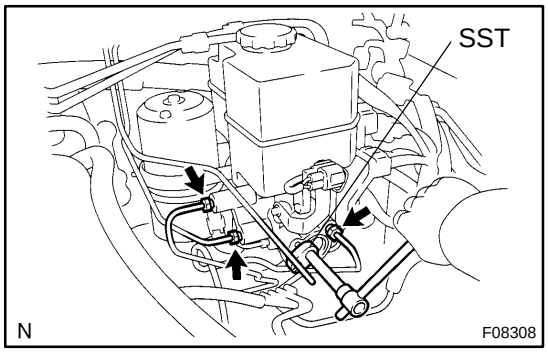



**6. w/ ABS only:**
**DISCONNECT BRAKE LINES**

Using SST, disconnect the 3 brake lines.

SST 09023-00100

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



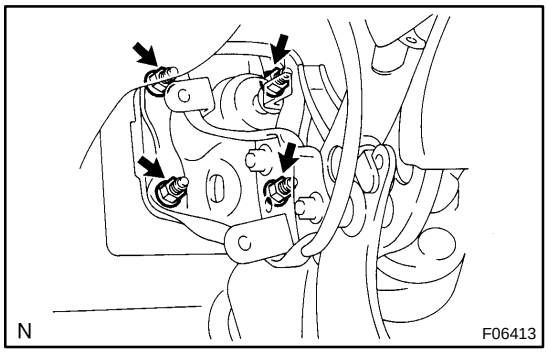

**7. w/ ABS & TRAC & VSC only:**
**DISCONNECT BRAKE LINES**

Using SST, disconnect the 4 brake lines.

SST 09023-00100

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

**8. REMOVE CLIP AND CLEVIS PIN**




**9. REMOVE HYDRAULIC BRAKE BOOSTER ASSEMBLY**

(a) Remove the 4 booster installation nuts.

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

(b) Remove the booster assembly and gasket.

# PROPORTIONING AND BY-PASS VALVE (P & B VALVE)

BR0NC-06

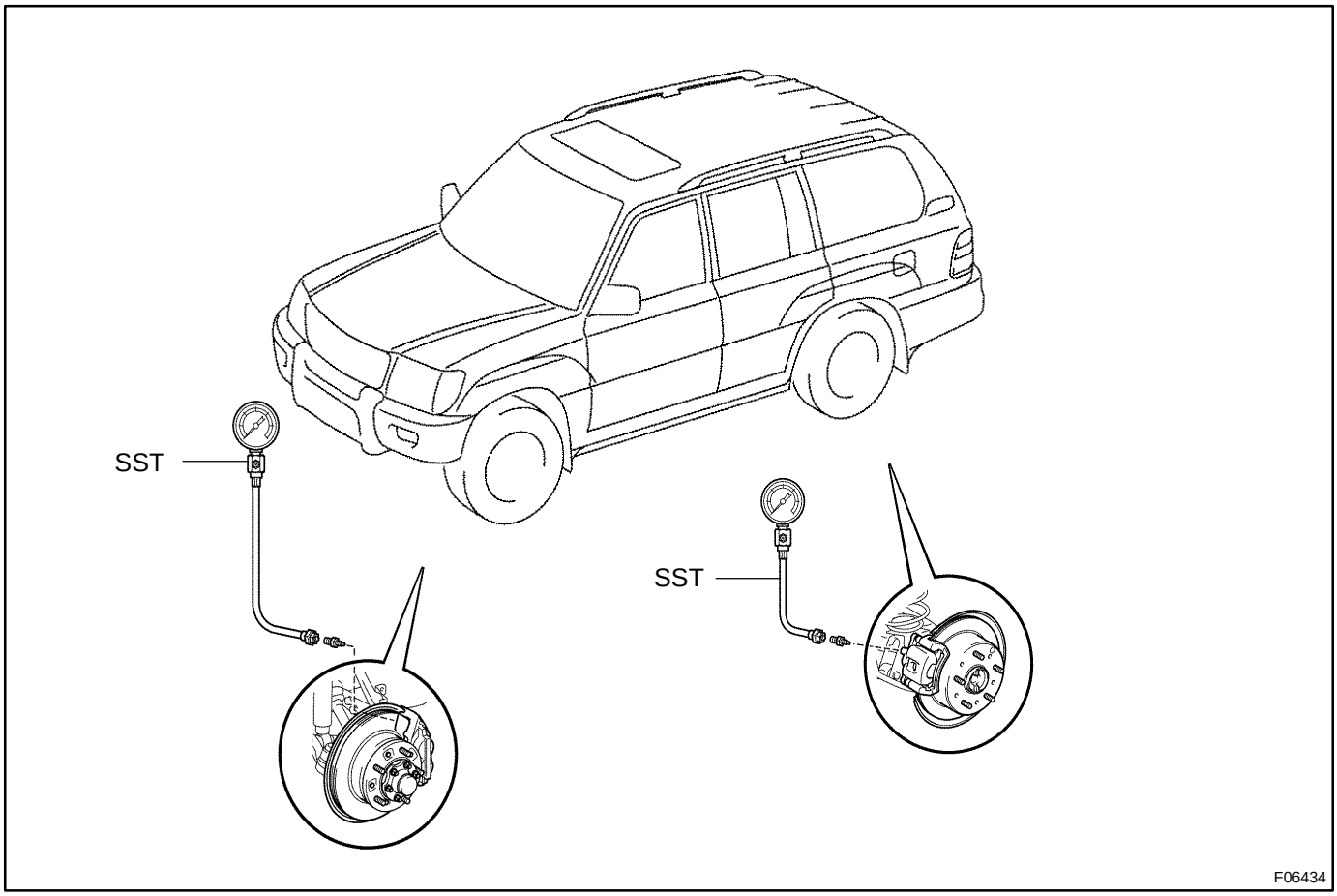
## ON-VEHICLE INSPECTION

**1. INSTALL LSPV GAUGE (SST) AND BLEED AIR**

(a) Turn the ignition switch OFF, depress the brake pedal more than 40 times.

(b) Install the LSPV gauge (SST) and bleed air.

SST 09709-29018




(c) Turn the ignition switch ON, and wait until the pump motor has stopped.

**2. RAISE FRONT BRAKE CALIPER PRESSURE AND CHECK REAR BRAKE CALIPER PRESSURE**

Depress the brake pedal and check fluid pressure.

| Front brake caliper pressure | Rear brake caliper pressure |
|---|---|
| 2,256 kPa (23 kgf·cm$^2$, 327 psi) | 2,452 kPa (25 kgf·cm$^2$, 356 psi) |
| 4,413 kPa (45 kgf·cm$^2$, 640 psi) | 3,334 - 3,727 kPa (34 - 38 kgf·cm$^2$, 484 - 540 psi) |
| 7,845 kPa (80 kgf·cm$^2$, 1,138 psi) | 5,197 kPa (53 kgf·cm$^2$, 754 psi) |

If the rear brake caliper pressure is incorrect, replace the hydraulic brake booster.

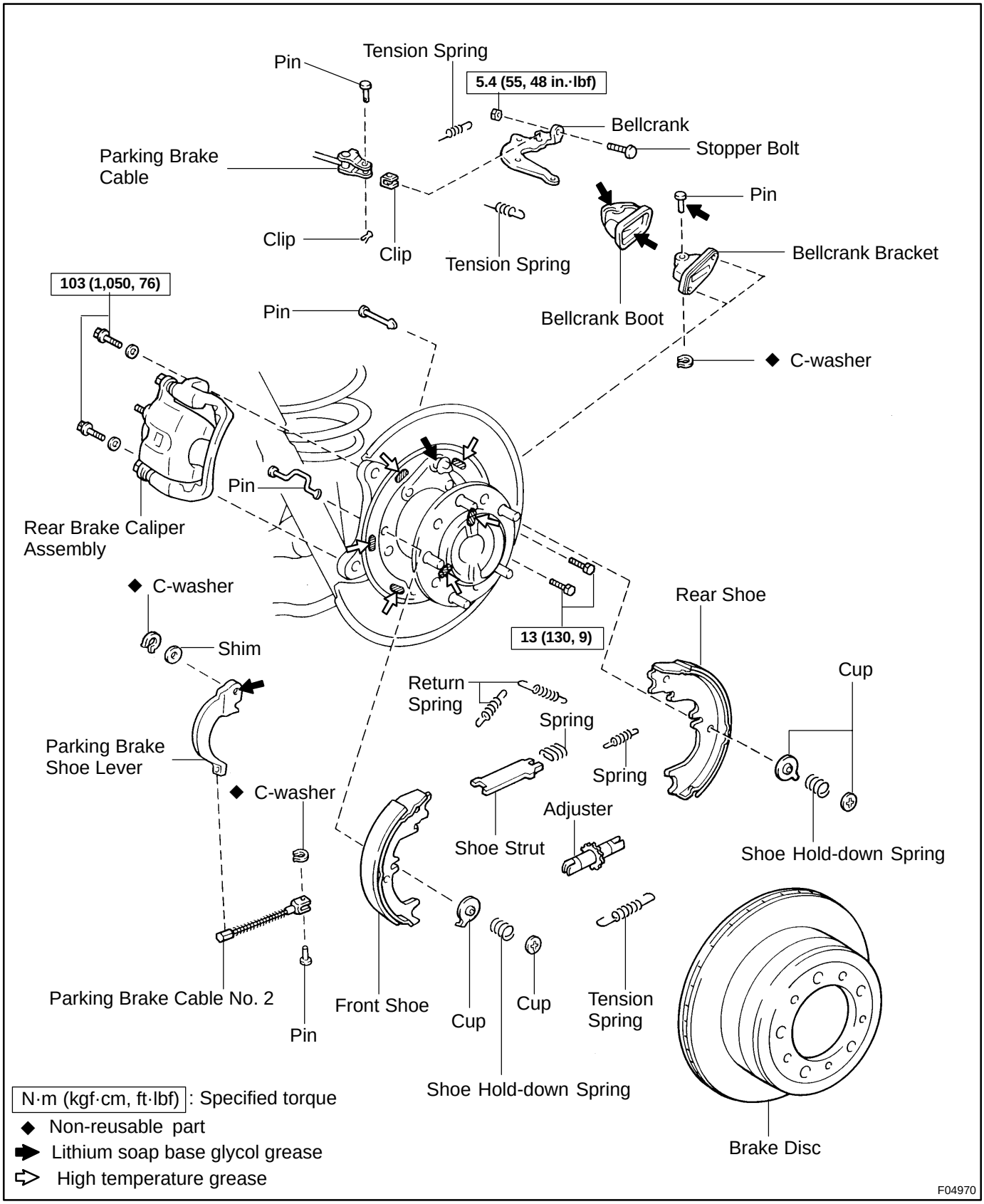
**3. REMOVE LSPV GAUGE (SST) AND BLEED BRAKE SYSTEM (See page BR-4 )**

**4. CHECK FOR FLUID LEAKAGE**

# PARKING BRAKE

BR0JX-05

## COMPONENTS



BR0TD-06

# DISASSEMBLY

**1. REMOVE REAR WHEEL**

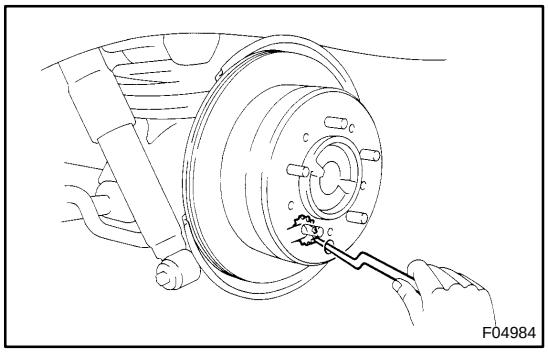
**Torque: 103 N·m (1,050 kgf·cm, 76 ft·lbf)**

**2. REMOVE REAR DISC BRAKE ASSEMBLY**

(a) Remove the 2 mounting bolts and remove the disc brake assembly.

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

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



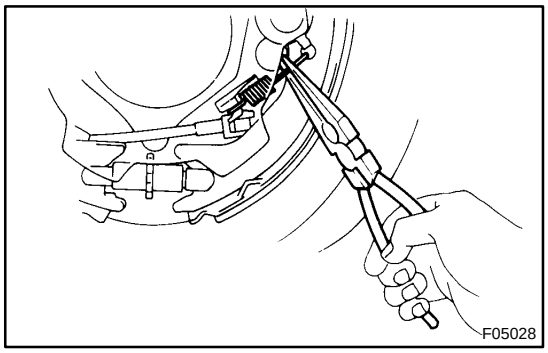

**3. REMOVE DISC**

(a) Place matchmarks on the disc and rear hub.

(b) Remove the disc.

HINT:

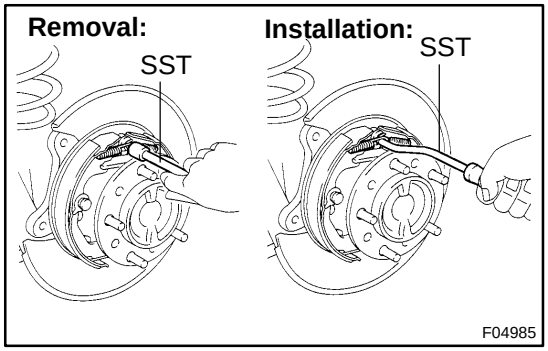
If the disc cannot be removed easily, turn the shoe adjuster until the wheel turns freely.




**4. REMOVE TENSION SPRING**

(a) Using needle-nose pliers, remove the spring from the rear shoe and backing plate.

(b) Remove the lower side tension spring.




**5. REMOVE SHOE RETURN SPRINGS**

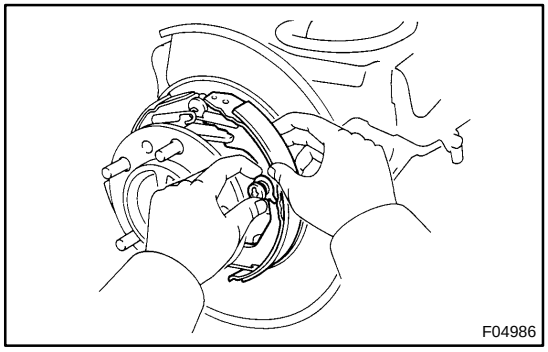
Using SST, remove the 2 shoe return springs.

SST 09717-20010

HINT:

At the time of installation, using SST, install the rear shoe return spring and then install the front shoe return spring.

SST 09718-20010

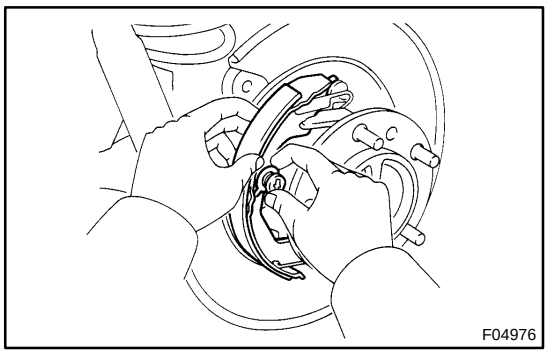



**6. REMOVE SHOE STRUT WITH SPRING**

**7. REMOVE REAR SHOE, ADJUSTER AND TENSION SPRING**

(a) Slide out the rear shoe and remove the adjuster.

(b) Remove the shoe hold-down spring, 2 cups and pin.

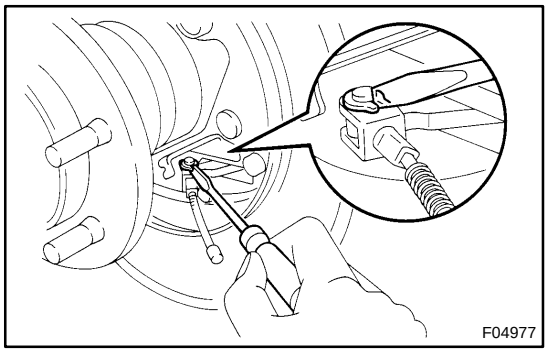



**8. REMOVE FRONT SHOE**

(a) Slide out the front shoe.

(b) Disconnect the parking brake cable No. 2 from the parking brake shoe lever.

(c) Remove the shoe hold-down spring, 2 cups and pin.




**9. IF NECESSARY, REMOVE AND DISASSEMBLE PARKING BRAKE BELLCRANK ASSEMBLY**

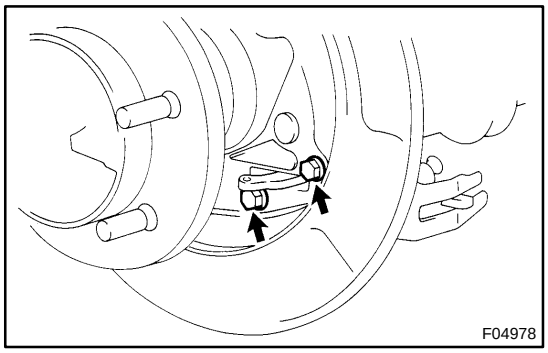
(a) Using a screwdriver, remove the C-washer.

(b) Remove the pin and disconnect the parking brake cable No. 2 from the bellcrank.

(c) Remove the clip and pin.

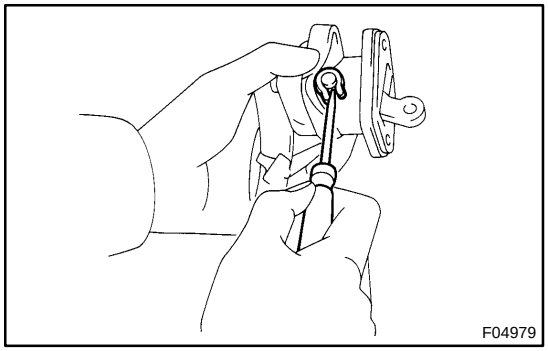
(d) Disconnect the parking brake cable and remove the clip.

(e) Remove the 2 tension springs.




(f) Remove the 2 bolts and parking brake bellcrank assembly.

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




(g) Turn the boot over from parking brake bellcrank bracket.

(h) Using a screwdriver, remove the C-washer and pin.

(i) Remove the parking brake bellcrank from the bellcrank bracket.

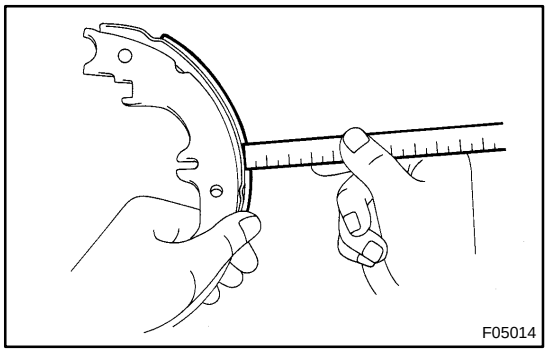
(j) Remove the bellcrank boot from the bellcrank.

BR0HM-06

# INSPECTION

**1. INSPECT DISASSEMBLED PARTS**

Inspect the disassembled parts for wear, rust or damage.



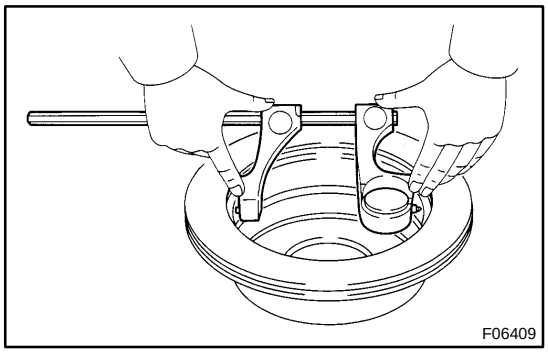

**2. MEASURE BRAKE SHOE LINING THICKNESS**

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

**Standard thickness: 4.0 mm (0.157 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 and uneven wear, replace the brake shoe.



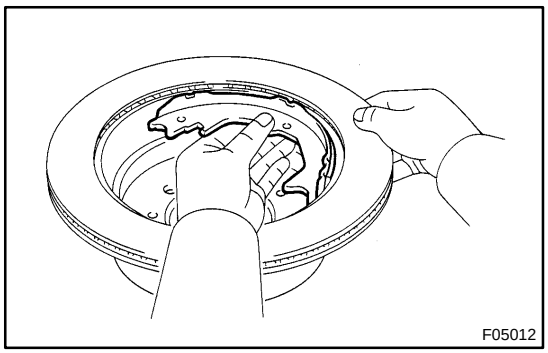

**3. MEASURE BRAKE DISC INSIDE DIAMETER**

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

**Standard inside diameter: 230 mm (9.06 in.)**

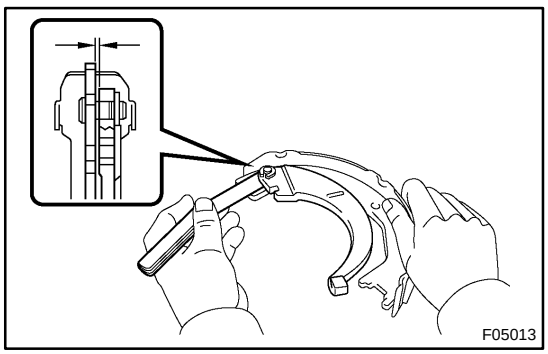
**Maximum inside diameter: 231 mm (9.09 in.)**

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.



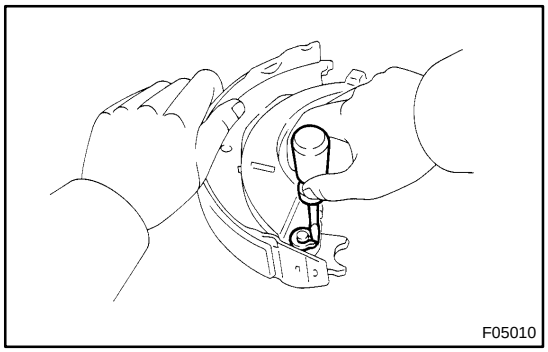

**5. MEASURE CLEARANCE BETWEEN PARKING BRAKE SHOE AND LEVER**

Using a feeler gauge, measure the clearance.

**Standard clearance: Less than 0.25 mm (0.0098 in.)**

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

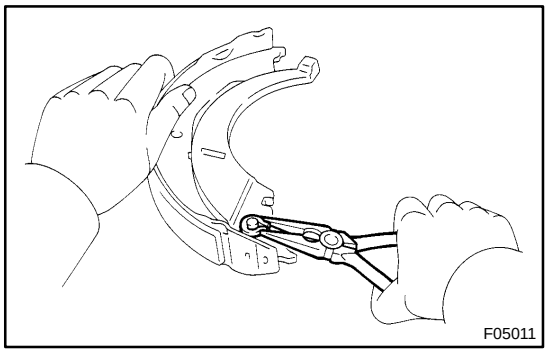
| Thickness mm (in.) | Thickness mm (in.) |
|---|---|
| 0.3 (0.012) | 0.6 (0.024) |
| 0.4 (0.016) | 0.9 (0.035) |
| 0.5 (0.020) | - |




**6. IF NECESSARY, REPLACE SHIM**

(a) Using a screwdriver, remove the C-washer.

(b) Remove the parking brake shoe lever and shim, and install the correct sized shim.




(c) Install the parking brake shoe lever with a new C-washer.

(d) Remeasure the clearance.

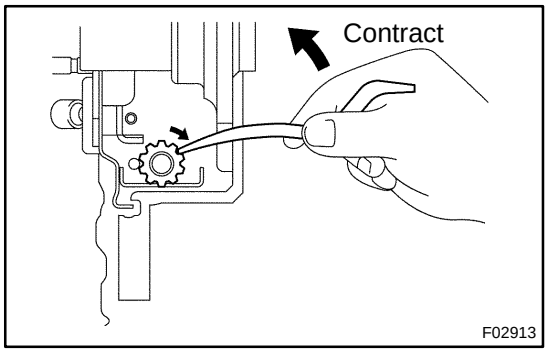
BR0TE-08

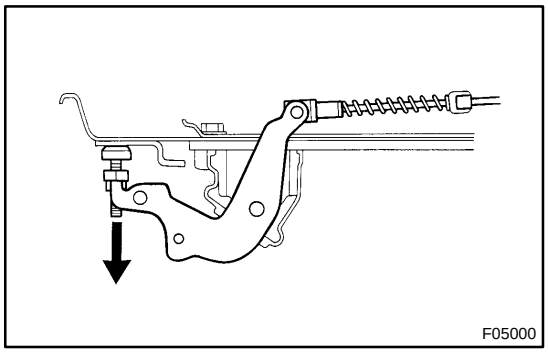
# REASSEMBLY

**Reassembly is in the reverse order of disassembly (See page BR-34 ).**

HINT:

Apply high temperature grease and lithium soap base glycol grease to the parts indicated by the arrows (See page BR-33 ).




**1. ADJUST PARKING BRAKE SHOE CLEARANCE**

(a) Disconnect the parking brake cable from the bellcrank.
(b) Remove the 2 bellcrank tension springs.
(c) Loosen the bellcrank adjusting bolt.
(d) Temporarily install the 3 hub nuts.
(e) Remove the hole plug.
(f) Turn the adjuster and expand the shoes until the disc locks.
(g) Return the adjuster 8 notches.
(h) Install the hole plug.

**2. ADJUST BELLCRANK**

(a) Pull the bellcrank until all play in the interior linkage is taken up.
(b) Screw in the bellcrank adjusting bolt to where it contacts on the dust seal.
(c) Loosen it one turn, and lock it at that position with the lock nut.

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

(d) Install the 2 bellcrank tension springs.
(e) Connect the parking brake cable.
(f) Remove the 3 hub nuts.

**3. 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 88 N (9 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.

**4. RECHECK AND ADJUST PARKING BRAKE LEVER TRAVEL (See page BR-14 )**

# PARKING BRAKE LEVER

BR0XC-01

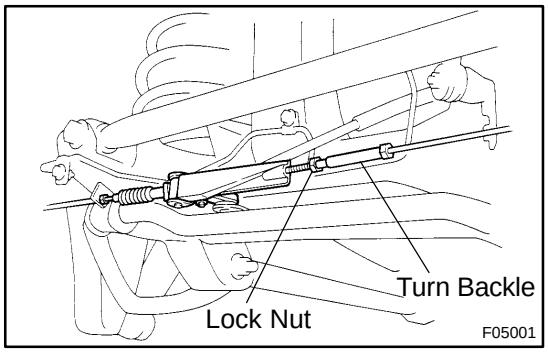
## ON-VEHICLE INSPECTION

### 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): 4 - 6 clicks**

If incorrect, adjust the parking brake.




### 2. IF NECESSARY, ADJUST PARKING BRAKE

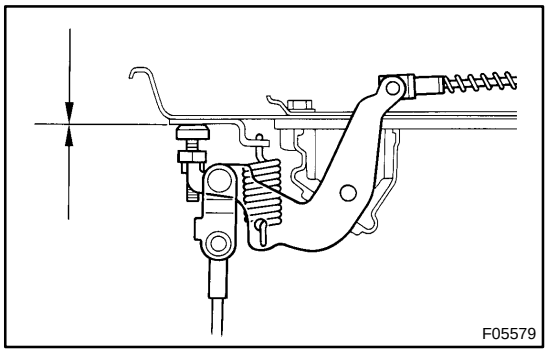
HINT:

Before adjusting the parking brake, make sure that the rear brake shoe clearance has been adjusted. For shoe clearance adjustment see page BR-38 .

(a) Loosen the lock nut and turn the turn backle until the lever travel is correct.

(b) Tighten the lock nut.

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




### 3. CHECK BELLCRANK

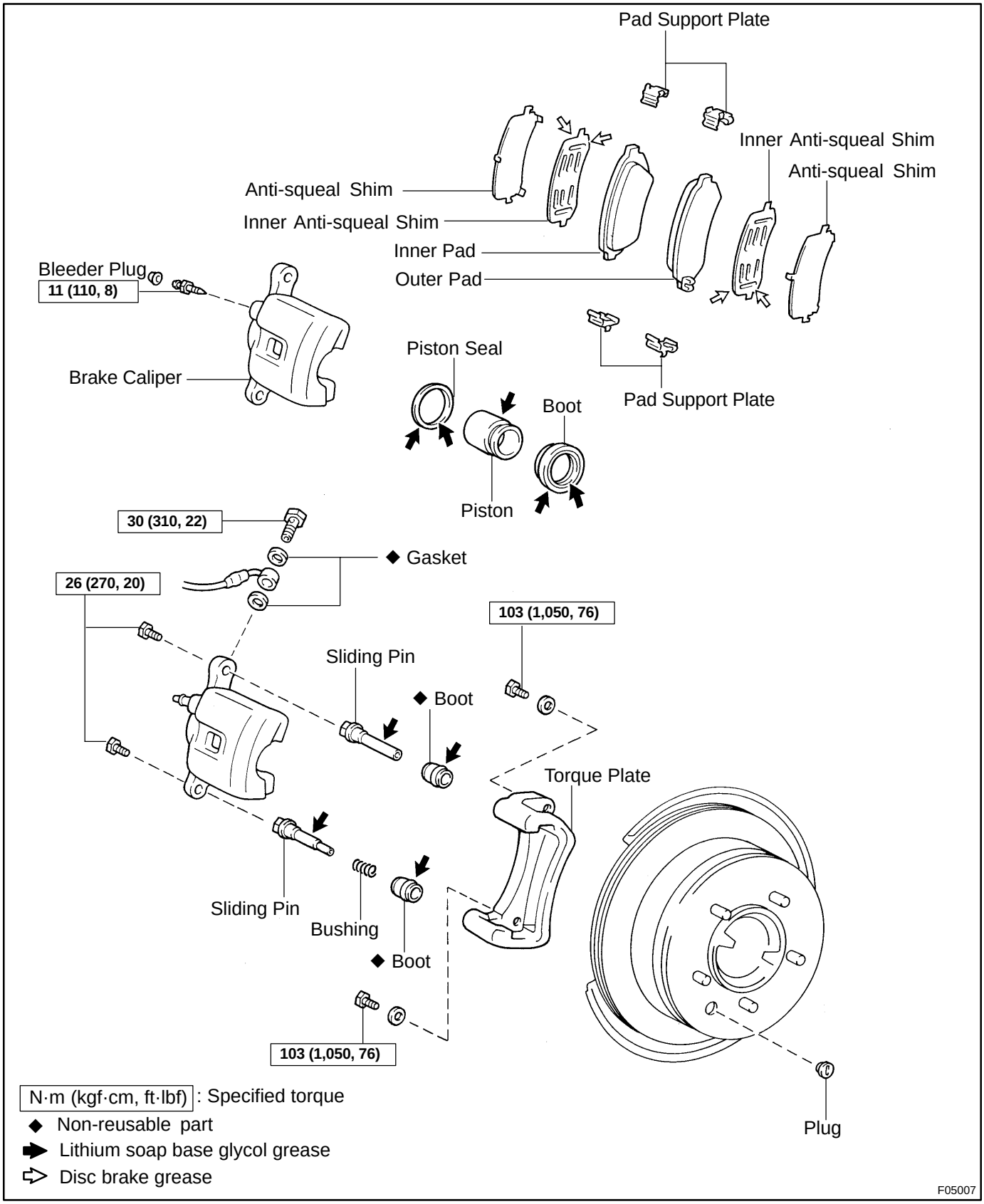
(a) Check that the adjusting bolt on the bellcrank is not apart from the backing plate.

(b) When the adjusting bolt on the bellcrank is apart from the backing plate adjust the parking brake cable once again.

# REAR BRAKE CALIPER

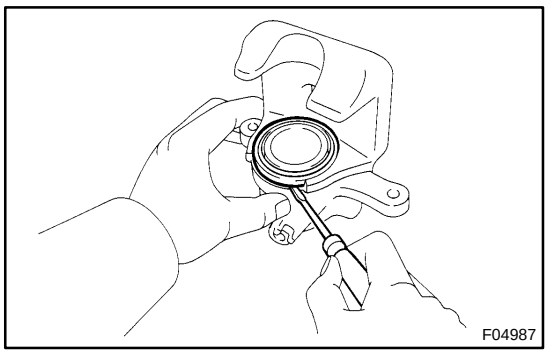
BR0JR-06

## COMPONENTS



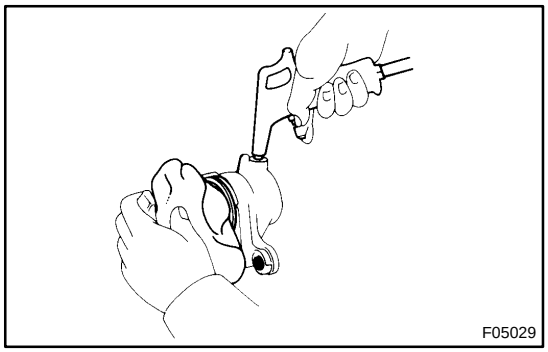
BR0TC-04

# DISASSEMBLY




**1. REMOVE CYLINDER BOOTS**

Using a screwdriver, remove the cylinder boot from the caliper.



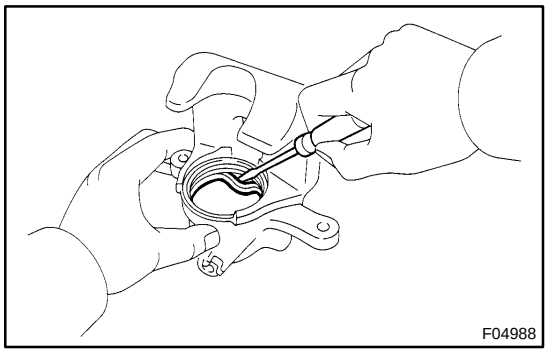

**2. REMOVE PISTON**

(a) Place a piece of cloth or a similar, object 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 SEALS FROM BRAKE CYLINDER**

Using a screwdriver, remove the piston seals from the caliper.

**4. REMOVE PIN BOOT AND SLIDING BUSHING**

Using a screwdriver, pull out sliding pin, pin boot and sliding bushing.

HINT:

Tape the screwdriver tip before use.

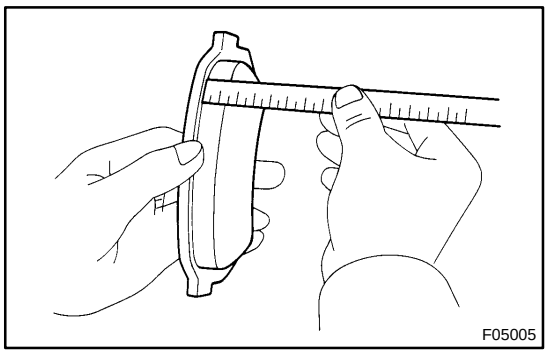
**NOTICE:**

**At the time of reassembly, please refer to the following item.**

**Insert the sliding pin with sliding bushing into the lower part, and insert the sliding pin without sliding bushing into the upper part.**

BR0JU-03

# INSPECTION



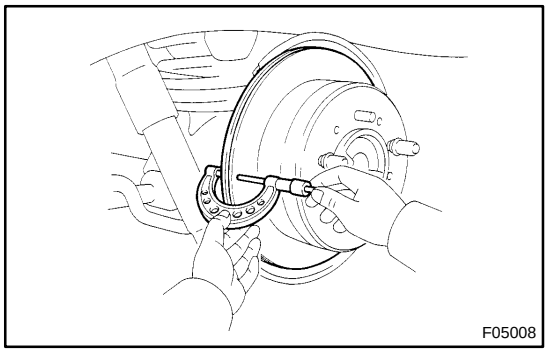

**1. MEASURE PAD LINING THICKNESS**

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 or if it shows signs of uneven wear.




**2. MEASURE DISC THICKNESS**

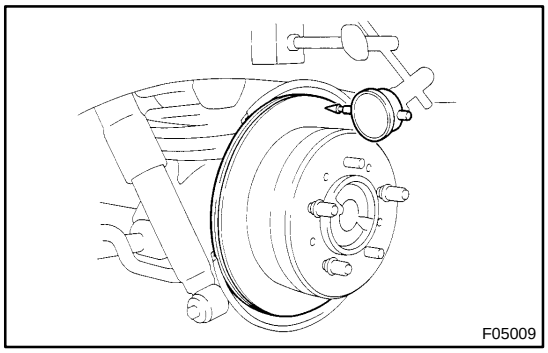
(a) Temporarily fasten the disc with the 3 hub nuts.

(b) Using a micrometer, measure the disc thickness.

**Standard thickness: 18.0 mm (0.709 in.)**

**Minimum thickness: 16.0 mm (0.611 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.




**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: 0.1 mm (0.0040 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-84 ). If the bearing play and axle hub runout are not abnormal, adjust the disc runout or grind it on an "On-Car" brake lathe.

**4. IF NECESSARY, ADJUST DISC RUNOUT**

(a) Remove the torque plate from the backing plate.

(b) Remove the hub nuts and the disc. Reinstall the disc rotating 1/5 of a turn 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.

(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 0.1 mm (0.0040 in.), install the disc in that position.

(e) If the minimum runout recorded in (b) and (c) is greater than 0.1 mm (0.0040 in.), replace the disc and repeat step 3.

(f) Install the torque plate and tighten the 2 bolts.

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

BR0JW-03

# INSTALLATION

**Installation is in the reverse order of removal (See page BR-28 ).**

HINT:

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

BR0JV-03

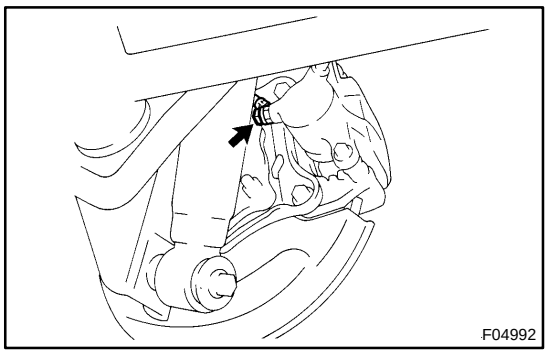
# REASSEMBLY

**Reassembly is in the reverse order of disassembly (See page BR-29 ).**

HINT:

Apply lithium soap base glycol grease to the parts indicated by the arrows (See page BR-27 ).

BR0JS-03




# REMOVAL

**1. DISCONNECT FLEXIBLE HOSE**

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

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

HINT:

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

Install the flexible hose lock securely in the lock hole in the caliper.

**2. REMOVE CALIPER**

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

**Torque: 26 N·m (270 kgf·cm, 20 ft·lbf)**

(b) Remove the 2 installation bolts.

(c) Remove the caliper from the torque plate.

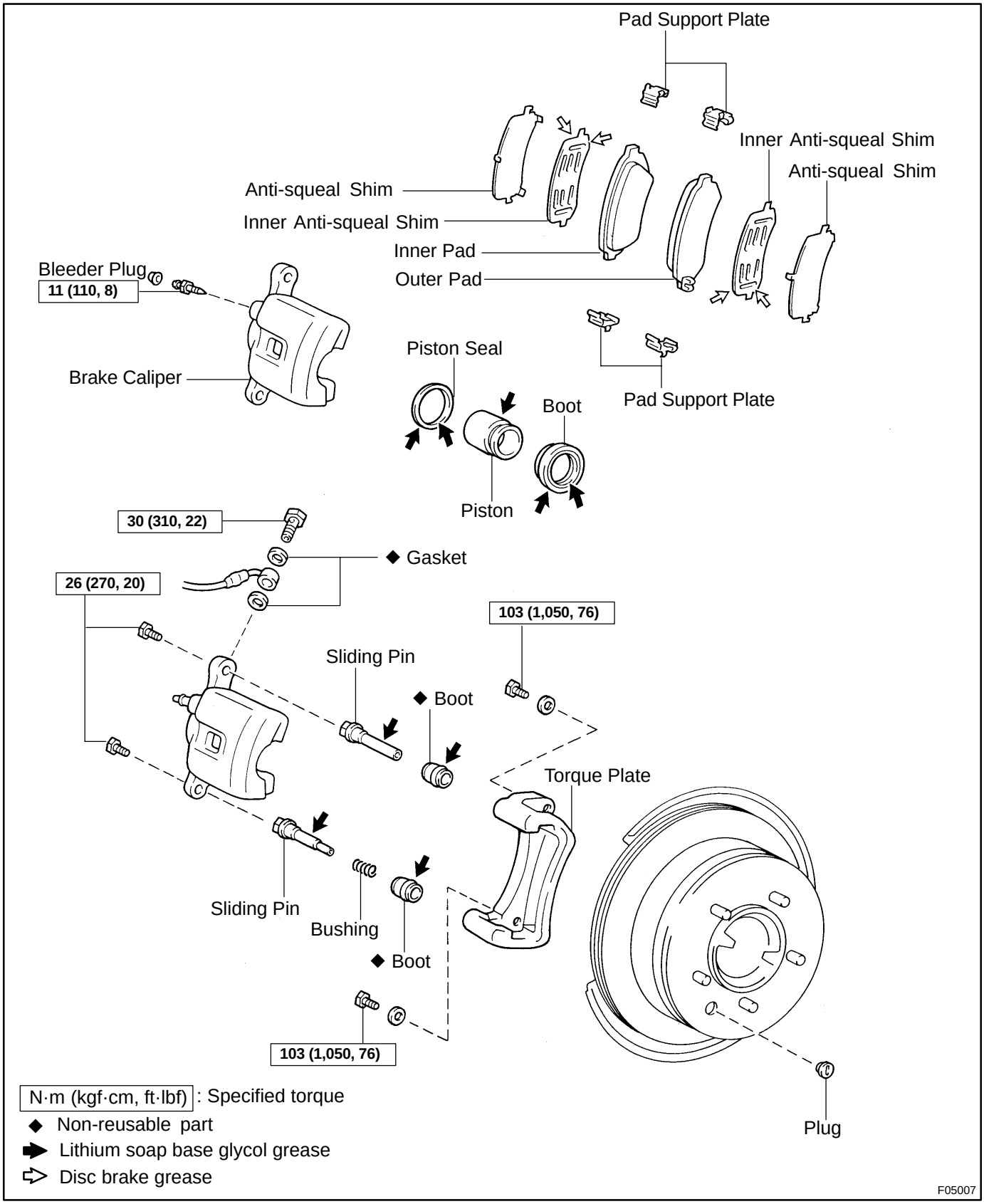
**3. REMOVE 2 BRAKE PADS WITH ANTI- SQUEAL SHIMS**

**4. REMOVE 4 PAD SUPPORT PLATES**

# REAR BRAKE CALIPER

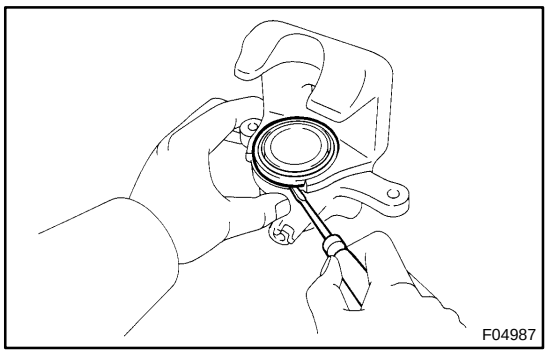
BR0JR-06

## COMPONENTS



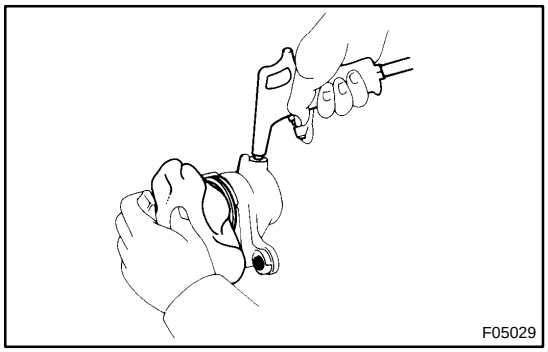
BR0TC-04

# DISASSEMBLY




**1. REMOVE CYLINDER BOOTS**

Using a screwdriver, remove the cylinder boot from the caliper.



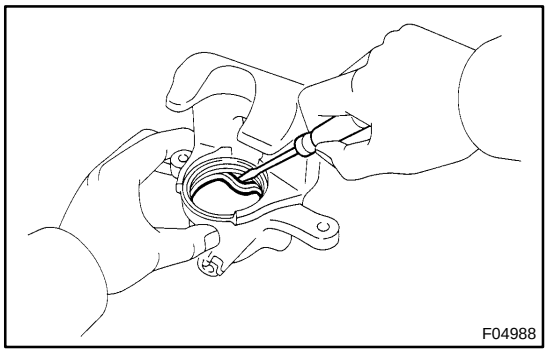

**2. REMOVE PISTON**

(a) Place a piece of cloth or a similar, object 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 SEALS FROM BRAKE CYLINDER**

Using a screwdriver, remove the piston seals from the caliper.

**4. REMOVE PIN BOOT AND SLIDING BUSHING**

Using a screwdriver, pull out sliding pin, pin boot and sliding bushing.

HINT:

Tape the screwdriver tip before use.

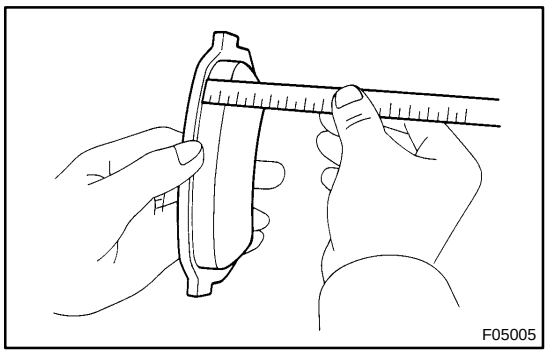
**NOTICE:**

**At the time of reassembly, please refer to the following item.**

**Insert the sliding pin with sliding bushing into the lower part, and insert the sliding pin without sliding bushing into the upper part.**

BR0JU-03

# INSPECTION



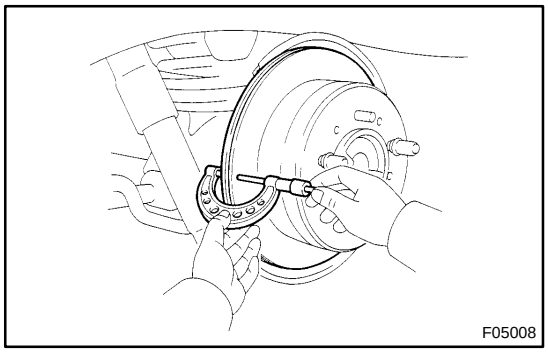

**1. MEASURE PAD LINING THICKNESS**

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 or if it shows signs of uneven wear.




**2. MEASURE DISC THICKNESS**

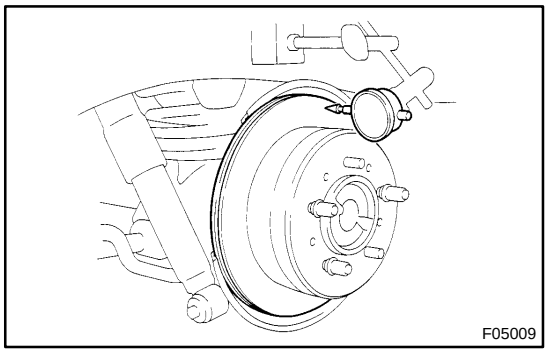
(a) Temporarily fasten the disc with the 3 hub nuts.

(b) Using a micrometer, measure the disc thickness.

**Standard thickness: 18.0 mm (0.709 in.)**

**Minimum thickness: 16.0 mm (0.611 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.




**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: 0.1 mm (0.0040 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-84 ). If the bearing play and axle hub runout are not abnormal, adjust the disc runout or grind it on an "On-Car" brake lathe.

**4. IF NECESSARY, ADJUST DISC RUNOUT**

(a) Remove the torque plate from the backing plate.

(b) Remove the hub nuts and the disc. Reinstall the disc rotating 1/5 of a turn 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.

(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 0.1 mm (0.0040 in.), install the disc in that position.

(e) If the minimum runout recorded in (b) and (c) is greater than 0.1 mm (0.0040 in.), replace the disc and repeat step 3.

(f) Install the torque plate and tighten the 2 bolts.

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

BR0JW-03

# INSTALLATION

**Installation is in the reverse order of removal (See page BR-28 ).**

HINT:

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

BR0JV-03

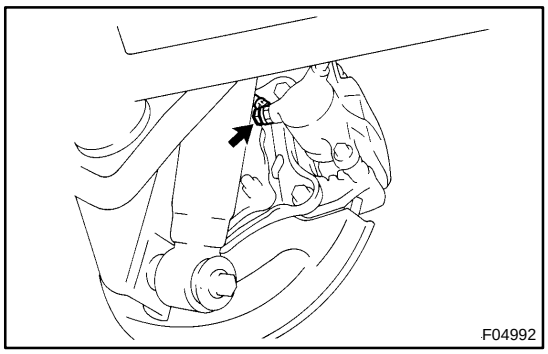
# REASSEMBLY

**Reassembly is in the reverse order of disassembly (See page BR-29 ).**

HINT:

Apply lithium soap base glycol grease to the parts indicated by the arrows (See page BR-27 ).

BR0JS-03




# REMOVAL

**1. DISCONNECT FLEXIBLE HOSE**

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

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

HINT:

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

Install the flexible hose lock securely in the lock hole in the caliper.

**2. REMOVE CALIPER**

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

**Torque: 26 N·m (270 kgf·cm, 20 ft·lbf)**

(b) Remove the 2 installation bolts.

(c) Remove the caliper from the torque plate.

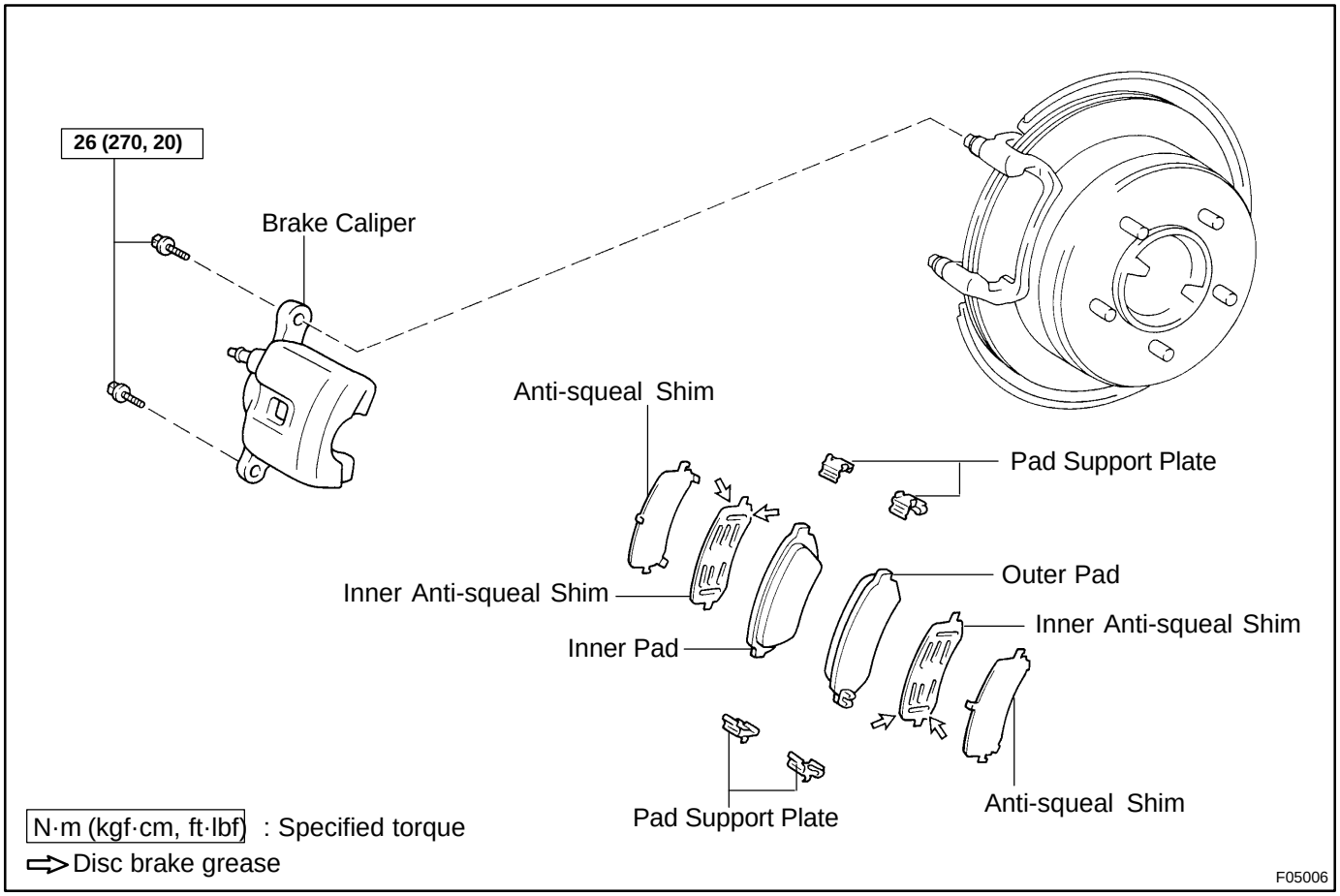
**3. REMOVE 2 BRAKE PADS WITH ANTI- SQUEAL SHIMS**

**4. REMOVE 4 PAD SUPPORT PLATES**

# REAR BRAKE PAD

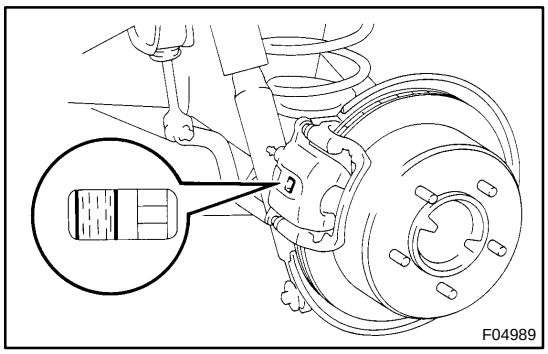
## COMPONENTS

BR0JP-07



BR0TB-04

# REPLACEMENT

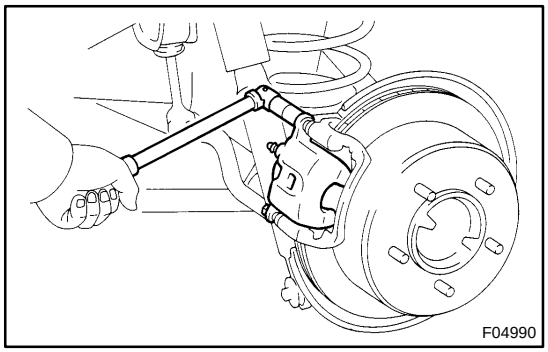



**1. REMOVE REAR WHEEL**

**2. INSPECT PAD LINING THICKNESS**

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

**Minimum thickness: 1.0 mm (0.039 in.)**




**3. REMOVE BRAKE CALIPER**

(a) Remove the 2 mounting bolts.

(b) Remove the caliper and suspend it so the hose is not stretched.

HINT:

Do not disconnect the flexible hose.

**4. REMOVE 2 PADS AND 4 ANTI-SQUEAL SHIMS**

**5. REMOVE 4 PAD SUPPORT PLATES**

**NOTICE:**

**The pad 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-30 )**

**7. INSTALL PAD SUPPORT PLATES**

**8. INSTALL NEW PADS**

**NOTICE:**

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

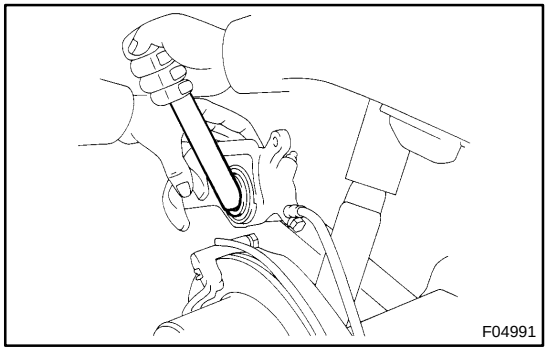
Install the 4 anti-squeal shims to the pads.

HINT:

Apply disc brake grease to both sides of the inner anti-squeal shims (See page BR-24 ).

**NOTICE:**

**Do not allow oil or grease to get on the rubbing face.**




**9. INSTALL CALIPER**

(a) Draw out a small amount of brake fluid from the reservoir.

(b) Press in the pistons with a hammer handle or an equivalent.

HINT:

- Always change the pads on one wheel at a time as there is a possibility of the opposite piston flying out.
- If the piston is difficult to push in, loosen the bleeder plug and push in the piston while letting some fluid escape.

(c) Install the caliper carefully so the boot is not wedged.

(d) Install 2 mounting bolts.

**Torque: 26 N·m (270 kgf·cm, 20 ft·lbf)**

**10. INSTALL REAR WHEEL**

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

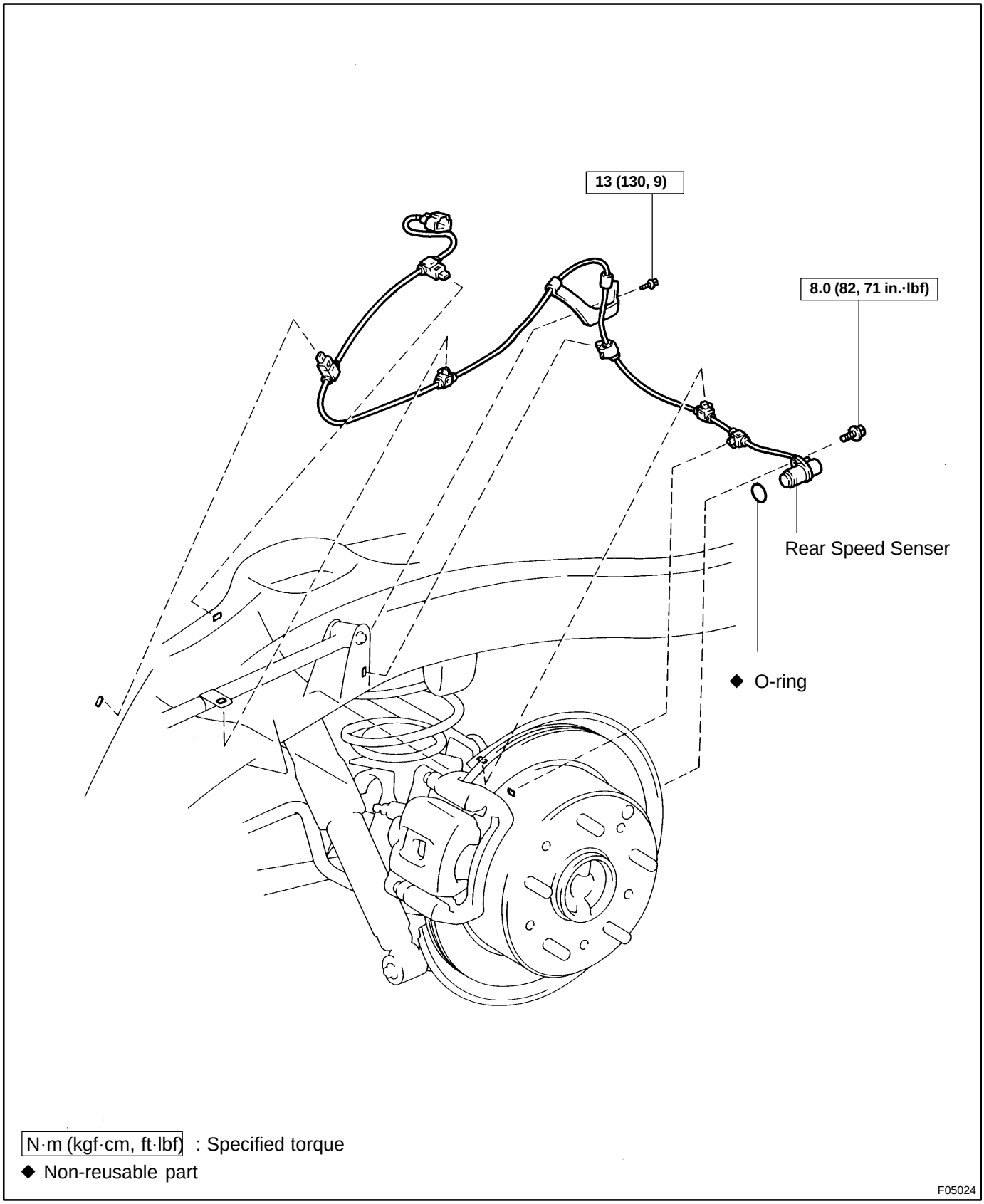
**11. DEPRESS BRAKE PEDAL SEVERAL TIMES**

**12. CHECK THAT FLUID LEVEL IS AT MAX LINE**

# REAR SPEED SENSOR

## COMPONENTS

BR0K4-06



BR0K6-13

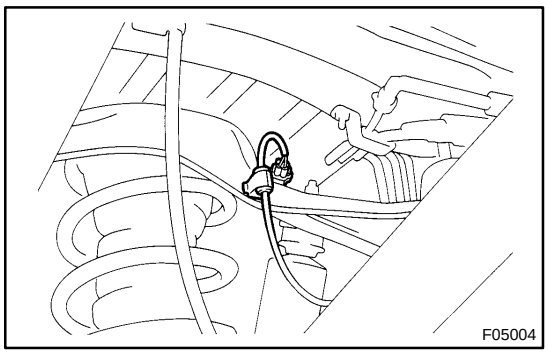
# INSTALLATION

**Installation is in the reverse order of removal (See page BR-72 ).**

HINT:

After installation, check the speed sensor signal (See page DI-505 ).

BR0K5-06



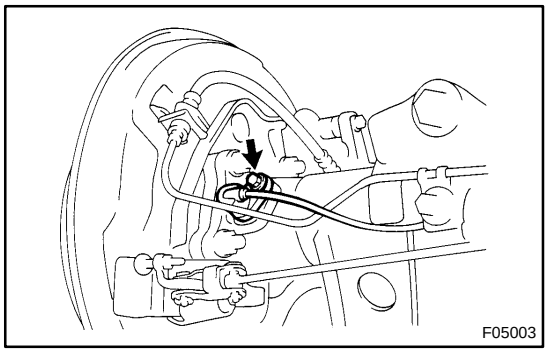

# REMOVAL

## REMOVE SPEED SENSOR

(a) Disconnect the speed sensor connector.

(b) Remove the clamp bolt from the upper control bracket.
**Torque: 13 N·m (130 kgf·cm, 9 ft·lbf )**

(c) Remove the 6 resin clips, holding the sensor wire harness from the frame, upper control arm and axle housing.




(d) Remove the mounting bolt and speed sensor.
**Torque: 8.0 N·m (82 kgf·cm, 71 in.·lbf)**

(e) Remove the O-ring from the speed sensoe.

# TROUBLESHOOTING

## PROBLEM SYMPTOMS TABLE

BR0JA-17

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 | 1. Fluid leaks for brake system | DI-655 |
| | 2. Air in brake system | BR-4 |
| | 3. Piston seals (Worn or damaged) | BR-18 |
| | | BR-27 |
| | 4. Hydraulic brake booster (Faulty) | BR-40 |
| Brake drags | 1. Brake pedal freeplay (Minimum) | BR-9 |
| | 2. Parking brake lever travel (Out of adjustment) | BR-14 |
| | 3. Parking brake wire (Sticking) | - |
| | 4. Parking brake (Shoe clearance out of adjustment) | BR-33 |
| | 5. Pad (Cracked or distorted) | BR-15 |
| | | BR-24 |
| | 6. Piston (Stuck) | BR-18 |
| | | BR-27 |
| | 7. Piston (Frozen) | BR-18 |
| | | BR-27 |
| | 8. Tension or return spring (Faulty) | BR-33 |
| | 9. Hydraulic brake booster (Faulty) | BR-40 |
| Brake pulls | 1. Piston (Stuck) | BR-18 |
| | | BR-27 |
| | 2. Pad (Cracked or distorted) | BR-15 |
| | | BR-24 |
| | 3. Piston (Frozen) | BR-18 |
| | | BR-27 |
| | 4. Disc (Scored) | BR-21 |
| | | BR-30 |
| | 5. Hydraulic brake booster (Faulty) | BR-40 |
| Hard pedal but brake inefficient | 1. Fluid leaks for brake system | DI-655 |
| | 2. Air in brake system | BR-4 |
| | 3. Pad (Worn) | BR-15 |
| | | BR-24 |
| | 4. Pad (Cracked or distorted) | BR-15 |
| | | BR-24 |
| | 5. Pad (Oily) | BR-15 |
| | | BR-24 |
| | 6. Pad (Glazed) | BR-15 |
| | | BR-24 |
| | 7. Disc (Scored) | BR-21 |
| | | BR-30 |
| | 8. Hydraulic brake booster (Faulty) | BR-40 |

| | | |
|---|---|---|
| Noise from brakes | 1. Pad (Cracked or distorted)<br>2. Installation bolt (Loose)<br>3. Disc (Scored)<br>4. Pad support plate (Loose)<br>5. Sliding pin (Worn)<br>6. Pad (Dirty)<br>7. Pad (Glazed)<br>8. Tension or return spring (Faulty)<br>9. Anti-squeal shim (Damaged)<br>10.Shoe hold-down spring (Damaged) | BR-15<br>BR-24<br>BR-18<br>BR-27<br>BR-21<br>BR-30<br>BR-24<br>BR-27<br>BR-15<br>BR-24<br>BR-15<br>BR-24<br>BR-33<br>BR-15<br>BR-24<br>BR-33 |
| Noise from hydraulic brake booster<br>(Abnormal pump motor operation noise) | Accumulator bracket clearance (Out of adjustment) | BR-66 |
| Brake warning light lights up*1<br>(Parking brake pedal released) | 1. Brake fluid level<br>2. Hydraulic brake booster power supply system (Faulty) | -<br>BR-40 |
| Brake warning light lights up and brake warning buzzer sounds*2 | Hydraulic brake booster power supply system (Faulty) | BR-40 |
| ABS warning light lights up*3 | 1. Anti - lock brake system (Faulty)<br>2. Hydraulic brake booster power supply system (Faulty) | -<br>BR-40 |

*1, *3: The light may stay on for about 60 seconds after the engine is started. It is normal if it goes out after a while.

*2, *3: Depressing the brake pedal repeatedly may turn on the warning light and buzzer. It is normal if the light goes off and the buzzer stops sounding after a few seconds.

*3: While ABS warning light is ON.