

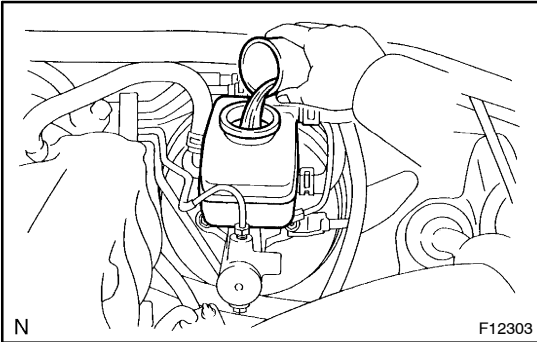
BRAKE FLUID BLEEDING

HINT:

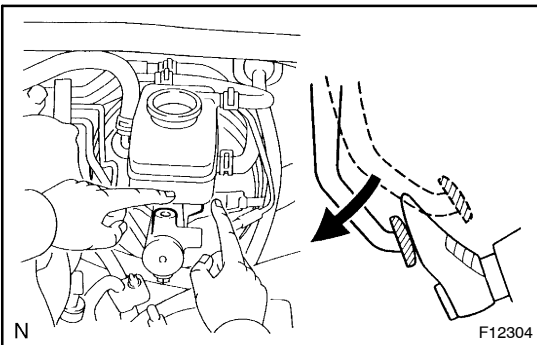
If any work is done on the brake system or if air in the brake lines is suspected, bleed the air from the system.

NOTICE:

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



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

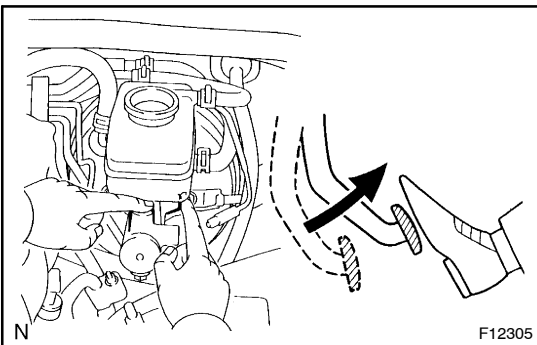


2. **BLEED MASTER CYLINDER**

HINT:

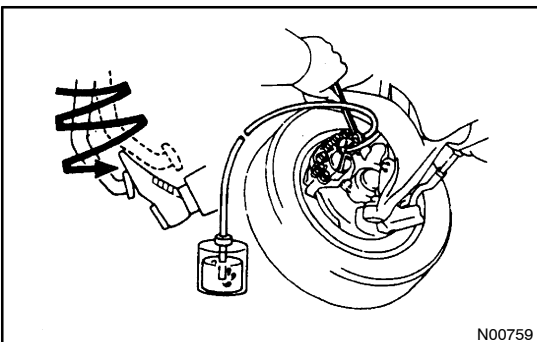
If the master cylinder has been disassembled or if the reservoir becomes empty, bleed the master cylinder of the air.

- (a) Disconnect the brake lines from the master cylinder.
SST 09023-00100
- (b) Slowly depress the brake pedal and hold it.



- (c) Block off the outer holes with your fingers, and release the brake pedal.
- (d) Repeat (b) and (c) 3 or 4 times.
- (e) Connect the brake lines to the master cylinder.
SST 09023-00100

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

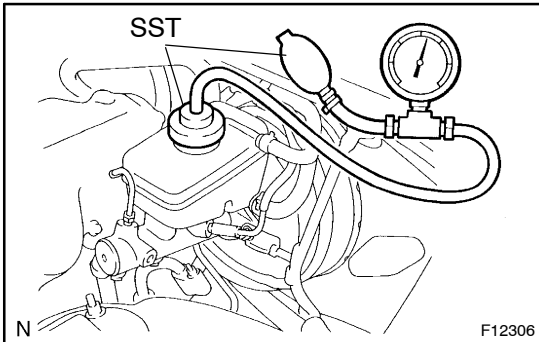


3. **BLEED BRAKE LINE**

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

- (e) Repeat the procedure on the previous page to bleed the brake line for each wheel.

Torque: 11 N·m (110 kgf·cm, 8 ft·lbf)



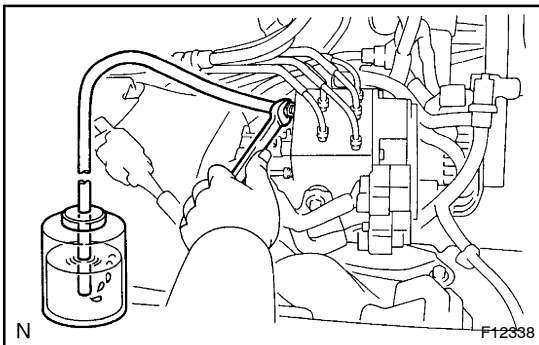
4. BLEED ABS & TRC / VSC ACTUATOR

CAUTION:

When repairing the brake master cylinder or ABS & TRC / VSC actuator, bleed the ABS & TRC / VSC actuator of the air.

- (a) Install the SST to the reservoir.

SST 09992-00242, 09992-00350



- (b) Connect the vinyl tube to the ABS & TRC / VSC actuator, and loosen the bleeder plug.

- (c) Using SST, apply pressure to the reservoir.

Pressure: 98.1 kpa (1.0 kgf/cm², 14.2 psi)

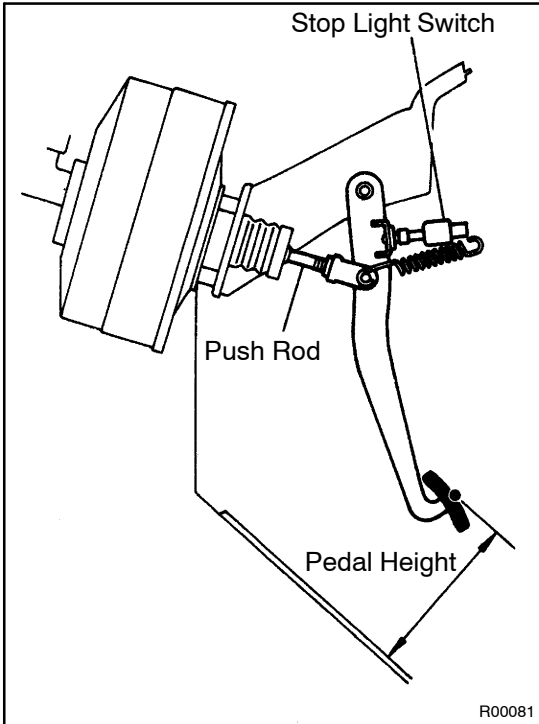
- (d) Bleed the ABS & TRC / VSC actuator of the air, tighten the bleeder plug.

Torque: 8.3 N·m (85 kgf·cm, 74 in·lbf)

5. CHECK FLUID LEVEL IN RESERVOIR

Check the fluid level and add fluid if necessary.

Fluid: SAE J1703 or FMVSS NO. 116 DOT3



BRAKE PEDAL ON-VEHICLE INSPECTION

BROMK-06

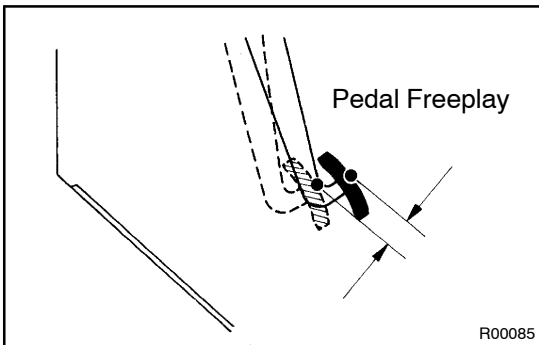
1. CHECK PEDAL HEIGHT

Pedal height from asphalt sheet:

154 – 164 mm (6.063 – 6.457 in.)

2. IF NECESSARY, ADJUST PEDAL HEIGHT

- Remove the lower finish panel (See page BO-56).
 - Disconnect the connector from the stop light switch.
 - Loosen the stop light switch lock nut and remove the stop light switch.
 - Loosen the push rod lock nut.
 - Adjust the pedal height by turning the pedal push rod.
 - Tighten the push rod lock nut.
- Torque: 25 N·m (260 kgf·cm, 19 ft·lbf)**
- Install the stop light switch and turn it until it slightly contacts the pedal stopper.
 - Connect the connector to the stop light switch.
 - Push in the brake pedal 5 – 10 mm (0.20 – 0.39 in.), turn the stop light switch to lock the nut in a position where the stop light goes off.
 - After installation, push in the brake pedal 5 – 10 mm (0.20 – 0.39 in.), check that stop light lights up.
 - After adjusting the pedal height, check the pedal freeplay.
 - Install the lower finish panel (See page BO-56).



3. CHECK PEDAL FREEPLAY

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

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

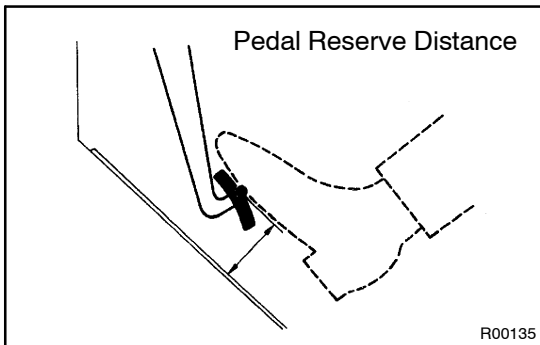
HINT:

The freeplay to the 1st resistance is due to the play between the clevis and pin. This is magnified up to 2.0 – 4.5 mm (0.08 – 0.18 in.) at the pedal.

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

Stop light switch clearance:

1.5 – 2.5 mm (0.059 – 0.098 in.)



4. CHECK PEDAL RESERVE DISTANCE

Release the parking brake lever.

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

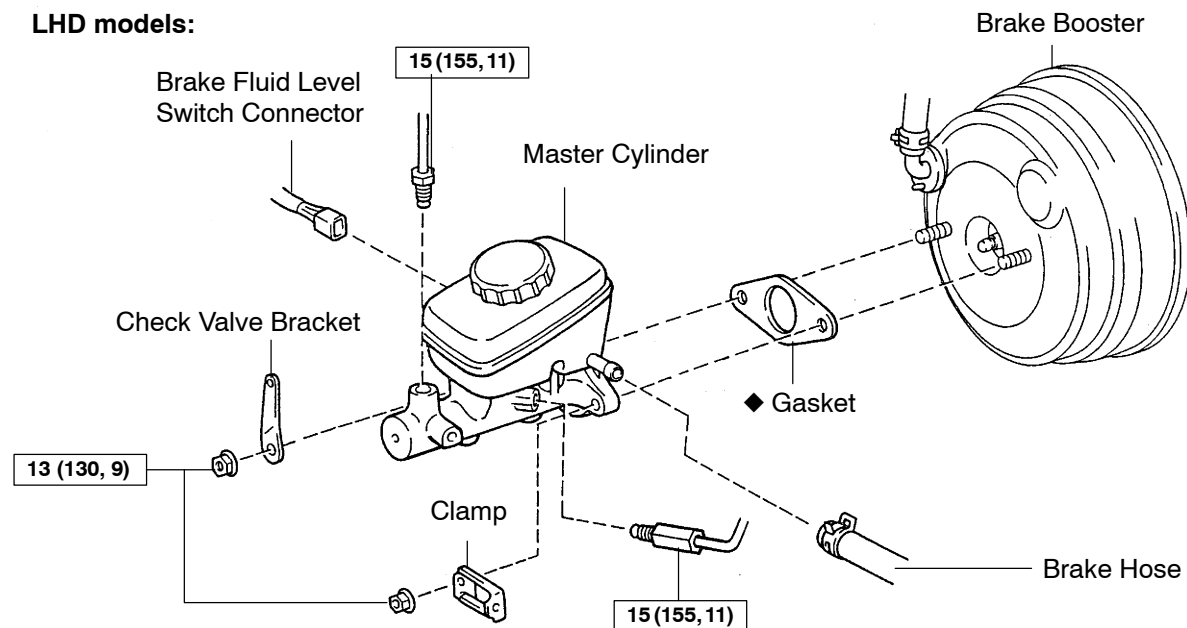
Pedal reserve distance from asphalt sheet at 490 N (50 Kgf, 110.2 lbf): More than 99 mm (3.90 in.)

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

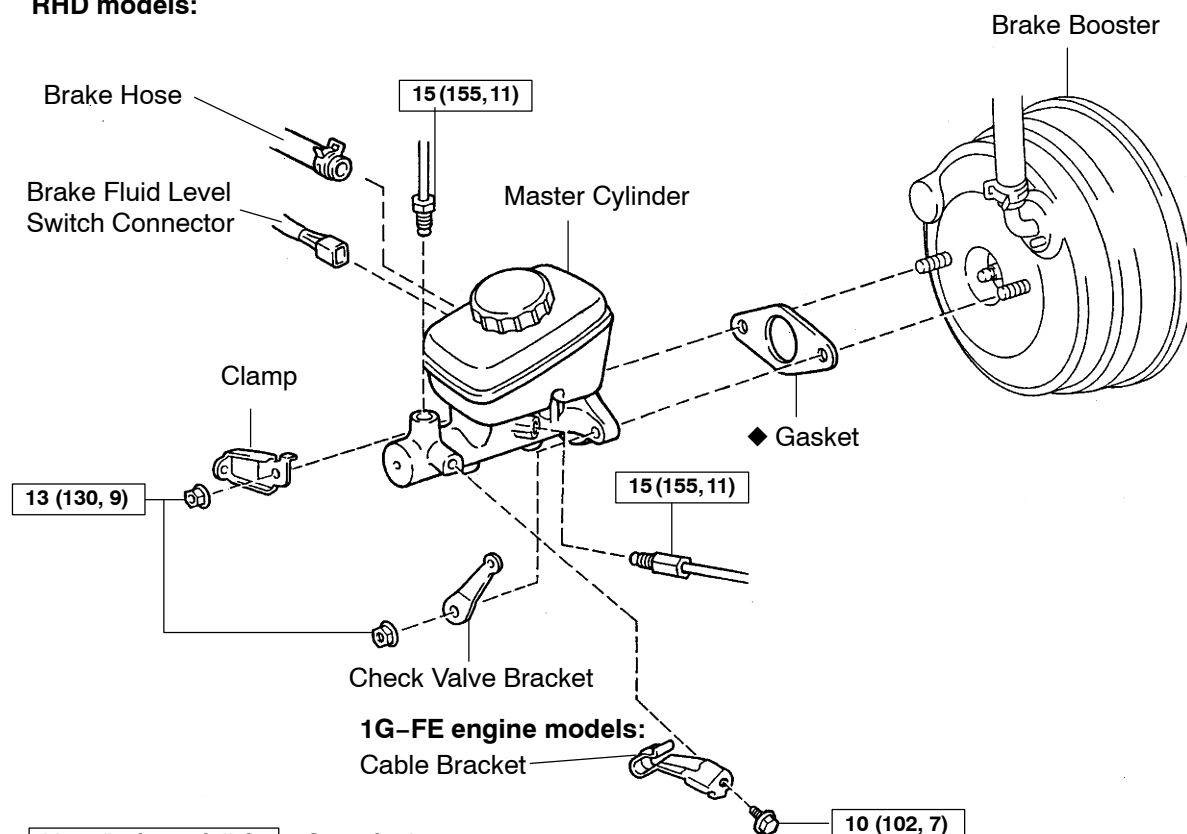
BRAKE MASTER CYLINDER COMPONENTS

BR1QW-01

LHD models:



RHD models:



1G-FE engine models:

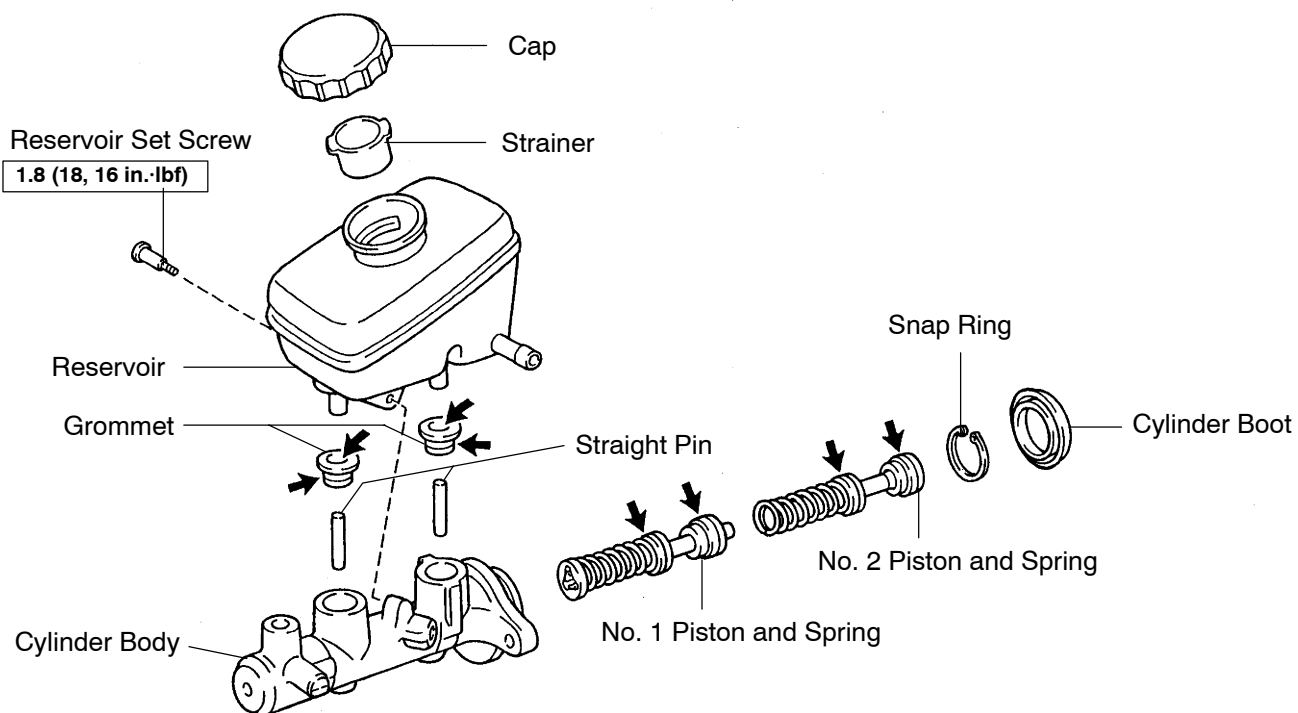
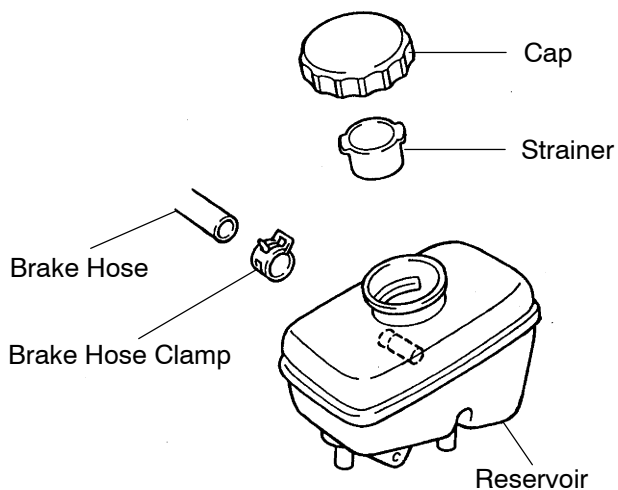
Cable Bracket

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

◆ Non-reusable part

N ← Lithium soap base glycol grease

F14146

LHD models:**RHD models:**

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

← Lithium soap base glycol grease

N

F14147

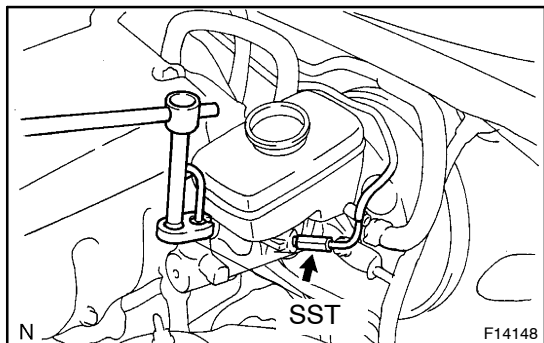
REMOVAL

1. TAKE OUT FLUID WITH SYRINGE

NOTICE:

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

2. DISCONNECT BRAKE FLUID LEVEL SWITCH CONNECTOR

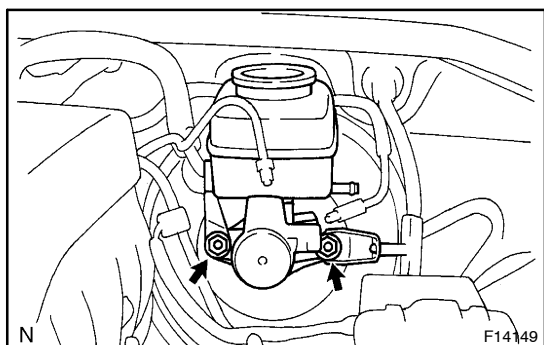


3. DISCONNECT BRAKE LINES

Using SST, disconnect the 2 brake lines.

SST 09023-00100

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



4. REMOVE MASTER CYLINDER

(a) 1G-FE engine RHD models:

Remove the bolt and cable bracket.

Torque: 10 N·m (102 kgf·cm, 7 ft·lbf)

(b) Disconnect the brake hose.

(c) Remove the 2 nuts, and pull out the check valve bracket, clamp, master cylinder and gasket.

Torque: 13 N·m (130 kgf·cm, 9 ft·lbf)

DISASSEMBLY

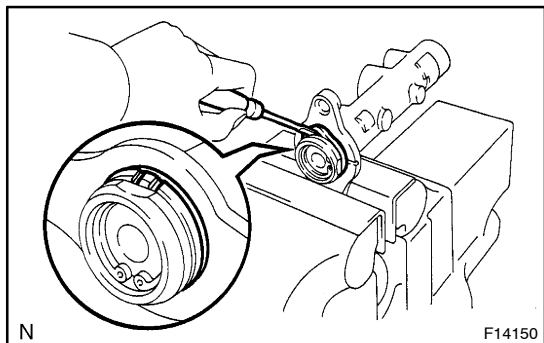
1. REMOVE RESERVOIR

Remove the set screw and pull out the reservoir.

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

2. REMOVE 2 GROMMETS

3. PLACE CYLINDER IN VISE

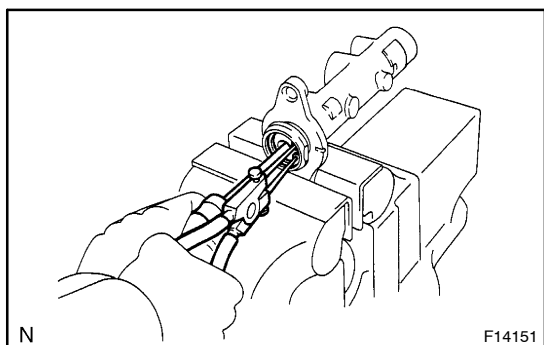


4. REMOVE MASTER CYLINDER BOOT

Using a screwdriver, remove the master cylinder boot.

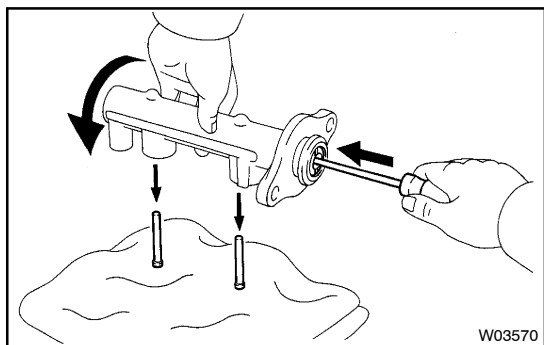
HINT:

At the time of reassembly, please refer to the following item.
With the UP mark on the master cylinder boot facing upwards, install the cylinder boot on the master cylinder.



5. REMOVE 2 PISTONS AND SPRINGS

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

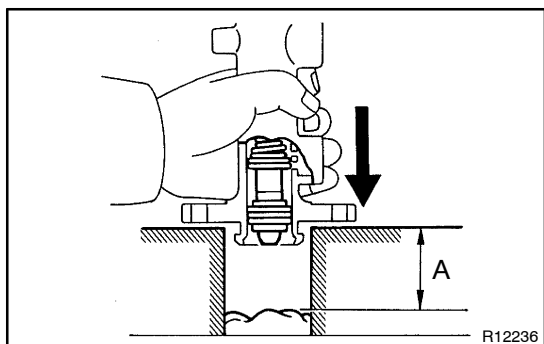


- (b) Push in the piston with a screwdriver, and remove the 2 straight pins by turning over the cylinder body.

HINT:

Tape the screwdriver tip before use.

- (c) Remove the 2 pistons and springs by hand, pulling straight out, not at angle.



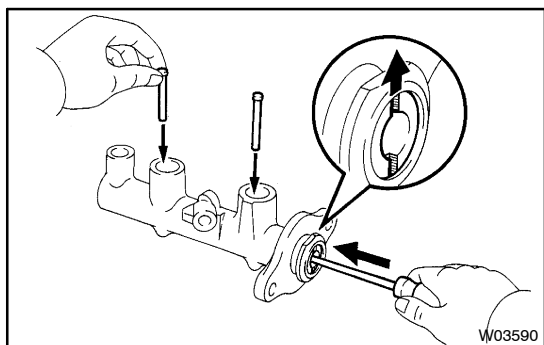
- (d) Place a rag and 2 wooden blocks on the work table and lightly tap the cylinder flange against the block edges until the piston drops out of the cylinder.

HINT:

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

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.

**HINT:**

At the time of reassembly, insert the pistons with elliptic hole facing vertically.

INSPECTION

HINT:

Clean the disassembled parts with compressed air.

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

If necessary, clean or replace the cylinder.

REASSEMBLY

Reassembly is in the reverse order of disassembly (See page BR-8).

HINT:

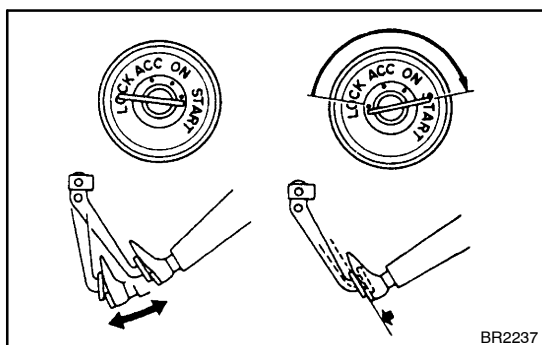
Apply lithium soap base glycol grease to the rubber parts indicated by the arrows (See page BR-5).

INSTALLATION

Installation is in the reverse order of removal (See page BR-7).

HINT:

- Before installation, adjust length of brake booster push rod (See page BR-18).
- After installation, fill the brake reservoir with brake fluid, bleed brake system (See page BR-1), and check for leaks.
- Check and adjust brake pedal (See page BR-3).



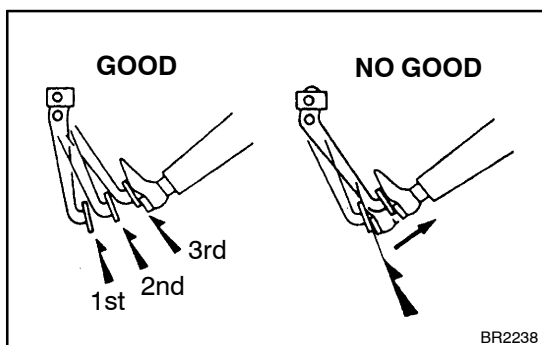
BR2237

BRAKE BOOSTER ASSEMBLY ON-VEHICLE INSPECTION

BR10Y-01

1. OPERATING CHECK

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



BR2238

2. AIR TIGHTNESS CHECK

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

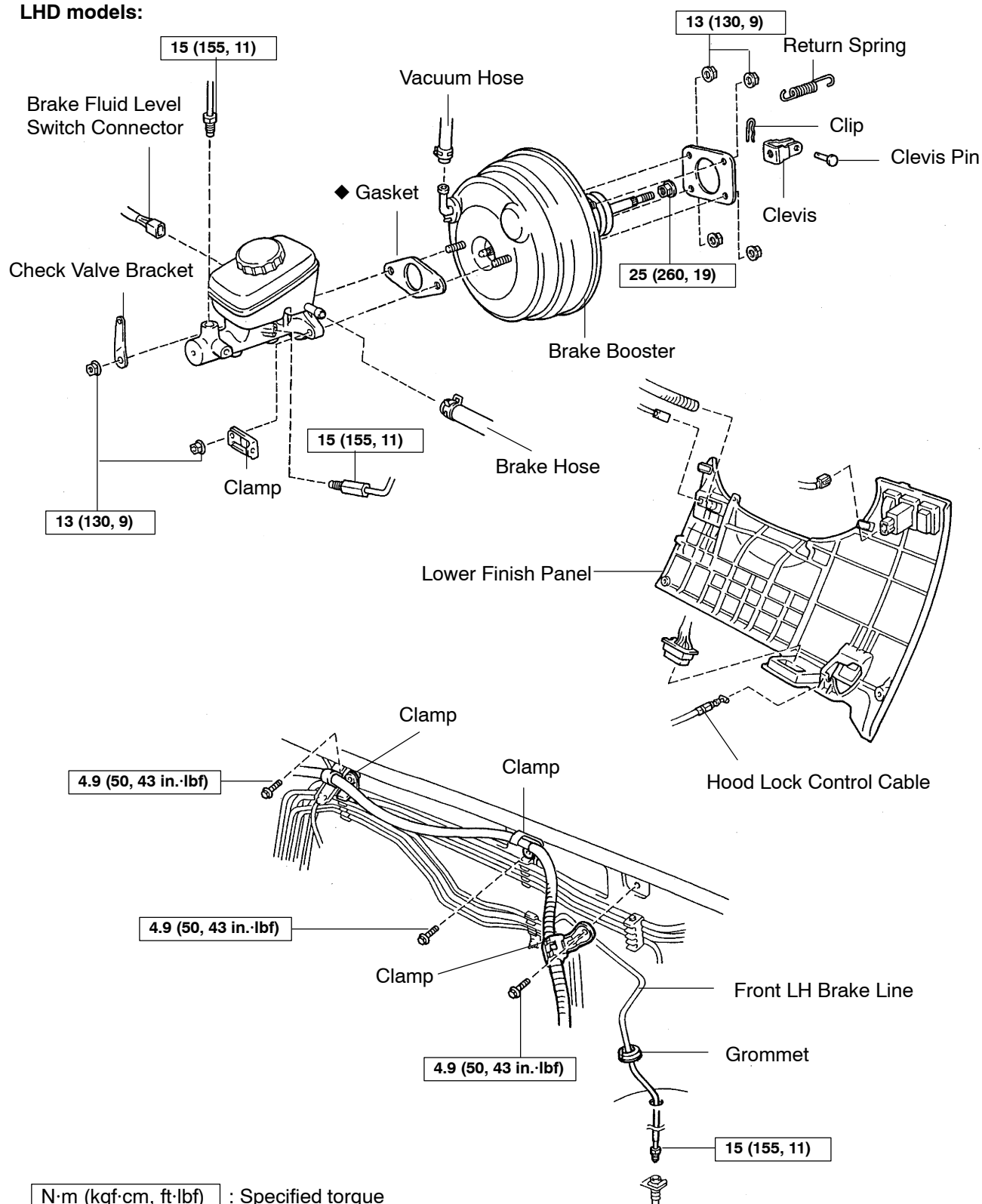
If the pedal goes down the farthest the 1st time, but gradually rises after the 2nd or 3rd time, the booster is air-tight.

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

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

COMPONENTS

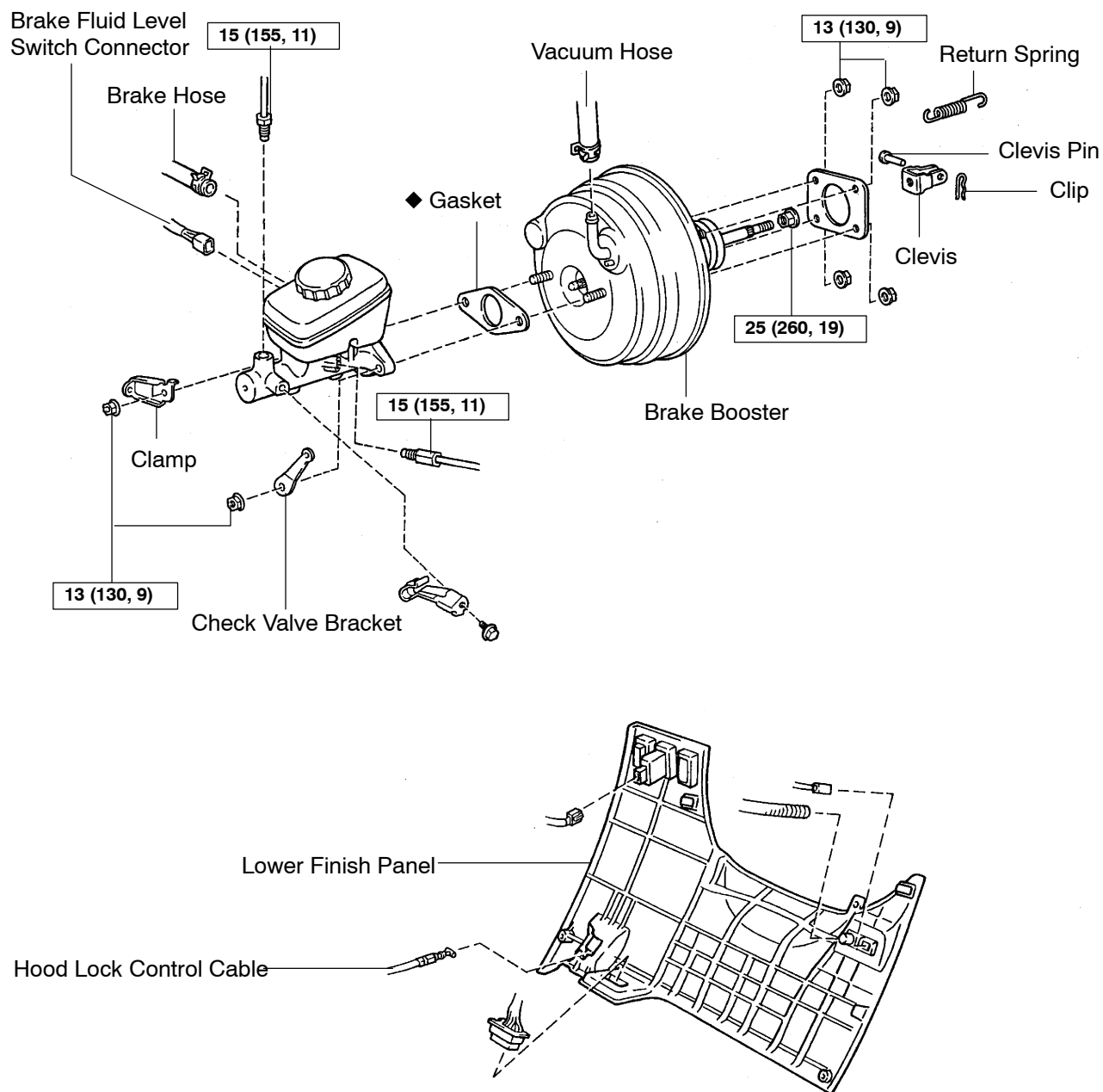
LHD models:



N

F14155

RHD models:



N

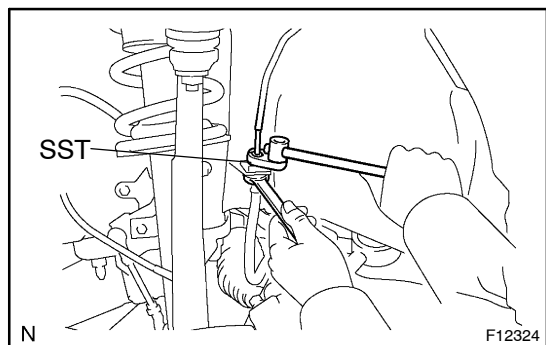
N·m (kgf·cm, ft·lbf) : Specified torque

◆ Non-reusable part

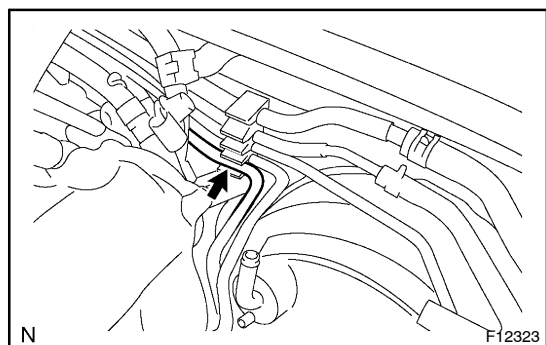
F14156

REMOVAL

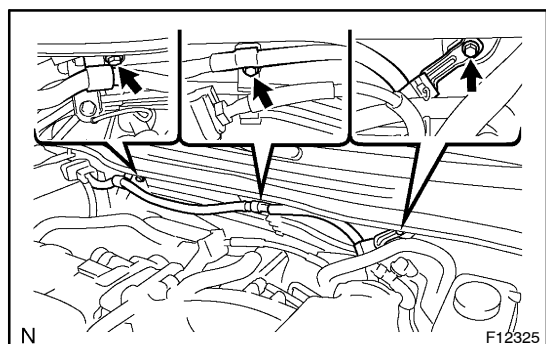
1. **REMOVE FRONT LH WHEEL**
Torque: 103 N·m (1,050 kgf·cm, 76 ft·lbf)
2. **REMOVE MASTER CYLINDER** (See page BR-7)
3. **DISCONNECT VACUUM HOSE FROM BRAKE BOOSTER**



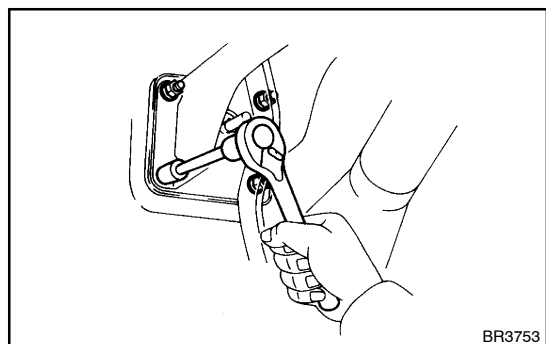
4. **LHD models:**
DISCONNECT FRONT LH BRAKE LINE
 - (a) Using SST and spanner, disconnect the brake line from the flexible hose of front LH brake.
SST 09023-00100
 - (b) Separate the grommet from body through the brake line.



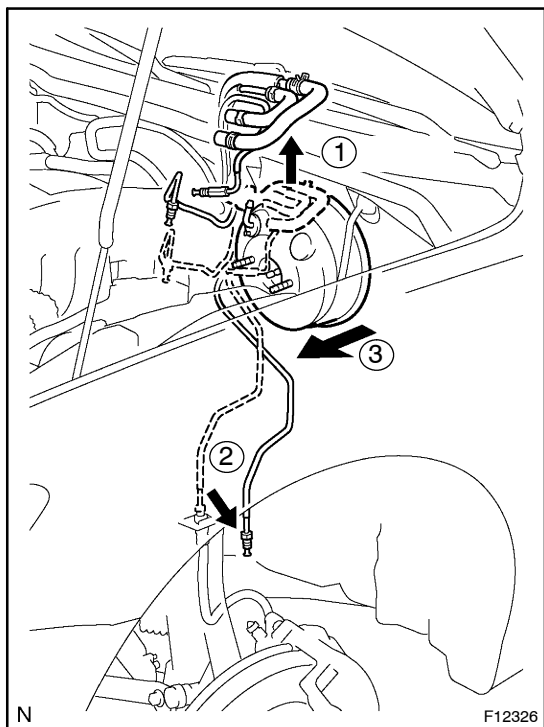
- (c) Disconnect the front LH brake line from the clamp.



5. **REMOVE BRAKE BOOSTER**
 - (a) LHD models:
Remove the 3 bolts and disconnect the 3 clamps.
 - (b) **Remove the lower finish panel** (See page BO-56).
 - (c) Remove the return spring, clip and clevis pin.



- (d) Remove the clevis and 4 nuts.

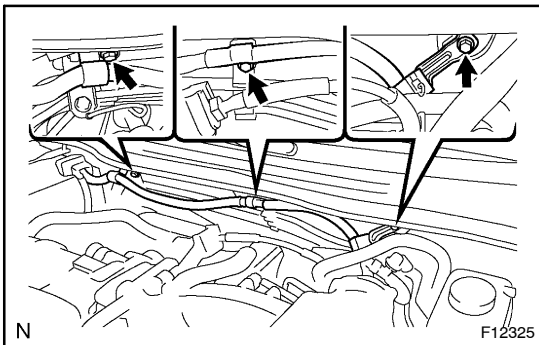


- (e) LHD models:
Move the brake line as illustrated and ensure sufficient space.
- (f) Pull out the booster and gasket.

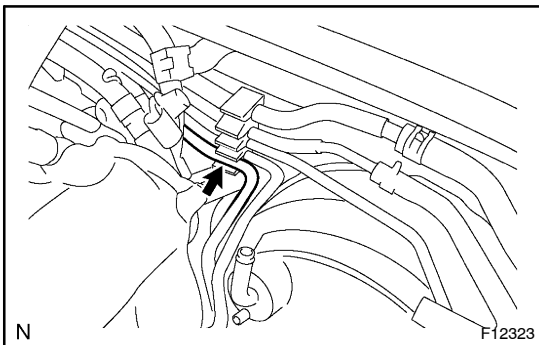
INSTALLATION

1. INSTALL BRAKE BOOSTER

- (a) Install a new gasket to the booster.
- (b) Install the booster.
- (c) Install and torque the booster installation nuts.
Torque: 13 N·m (130 kgf·cm, 9 ft·lbf)
- (d) Install the clevis to the operating rod.
- (e) Insert the clevis pin into the clevis and brake pedal, and install the clip to the clevis pin.
- (f) Install the pedal return spring.



- (g) LHD models:
Install the 3 clamps with 3 bolts.
Torque: 4.9 N·m (50 kgf·cm, 43 in·lbf)



2. LHD models:

CONNECT FRONT LH BRAKE LINE

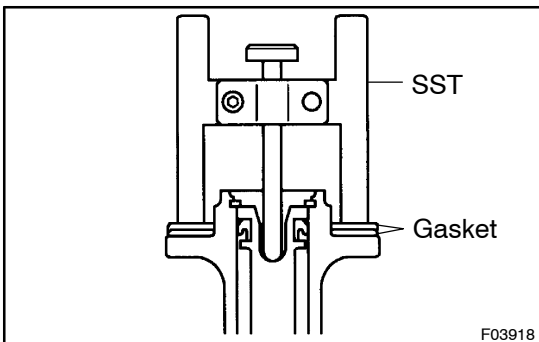
- (a) Connect the front LH brake line to the clamp.
- (b) Using SST and spanner, connect the brake line to the flexible hose of front LH brake.

SST 09023-00100

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

- (c) Attach the grommet to body through the brake line.

3. CONNECT VACUUM HOSE TO BRAKE BOOSTER



4. ADJUST LENGTH OF BOOSTER PUSH ROD

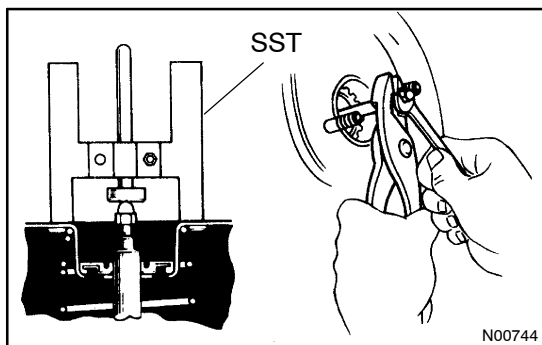
NOTICE:

When adjusting the length of the booster push rod, install 2 new gaskets to the master cylinder. When installing the master cylinder, remove one gasket before installing the master cylinder.

- (a) Install 2 new gaskets on the master cylinder.
- (b) Set the SST on the gasket, and lower the pin until its tip slightly touches the piston.

SST 09737-00011

- (c) Turn the SST upside down, and set it on the booster.
SST 09737-00011
- (d) Measure the clearance between the booster push rod and pin head (SST).
Clearance: 0 mm (0 in.)

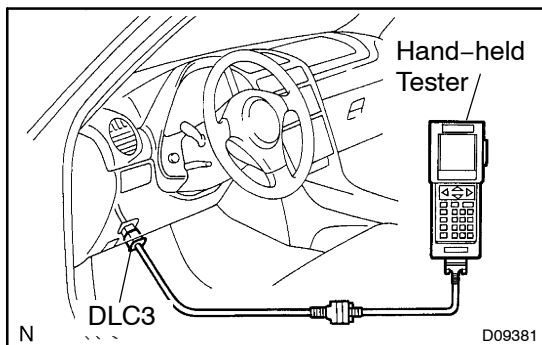


- (e) Adjust the booster push rod length until the push rod slightly touches the pin head.

HINT:

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

5. **INSTALL BRAKE MASTER CYLINDER**
(See page BR-12)
6. **FILL BRAKE RESERVOIR WITH BRAKE FLUID AND BLEED BRAKE SYSTEM** (See page BR-1)
7. **CHECK FOR FLUID LEAKAGE**
8. **CHECK AND ADJUST BRAKE PEDAL**
(See page BR-3)
9. **INSTALL LOWER FINISH PANEL** (See page BO-56)
10. **DO OPERATIONAL CHECK** (See page BR-13)



BRAKE ACTUATOR ON-VEHICLE INSPECTION

BR1R2-01

1. INSPECT ABS & TRC / VSC ACTUATOR OPERATION

- (a) Connect the hand-held tester.
 - (1) Connect the hand-held tester to the DLC3.
 - (2) Start the engine and run it at idle.
 - (3) Select the ACTIVE TEST mode on the hand-held tester.

HINT:

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

- (b) Inspect the actuator motor operation.
 - (1) With the motor relay ON, check the actuator motor operation noise.
 - (2) Turn the motor relay OFF.
 - (3) Depress the brake pedal and hold it for about 15 seconds. Check that the brake pedal cannot be depressed.
 - (4) With the motor relay ON, check that the pedal does not pulsate.

NOTICE:

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

- (5) Turn the motor relay OFF and release the brake pedal.
- (c) Inspect the right front wheel operation.

NOTICE:

Never turn ON the solenoid which is not described below.

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

NOTICE:

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

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

NOTICE:

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

- (5) Turn the motor relay OFF and release the brake pedal.

- (d) Inspect other wheel operation.
As in the same procedure, check the solenoids of other wheels.

HINT:

Left front wheel: SFLH, SFLR

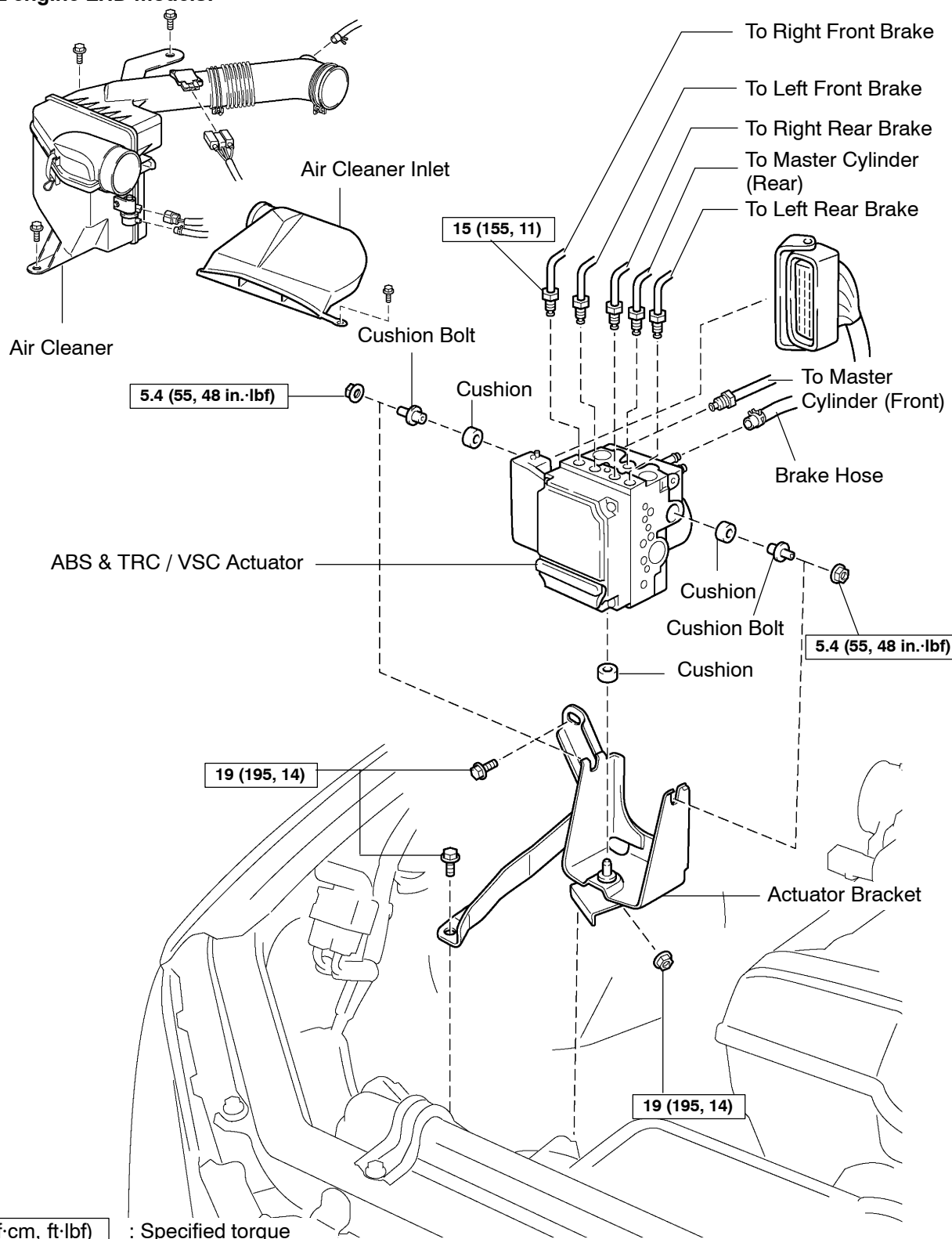
Right rear wheel: SRRH, SRRR

Left rear wheel: SRLH, SRLR

- (e) Clear the DTC ([See page DI-251](#) or [DI-318](#)).

COMPONENTS

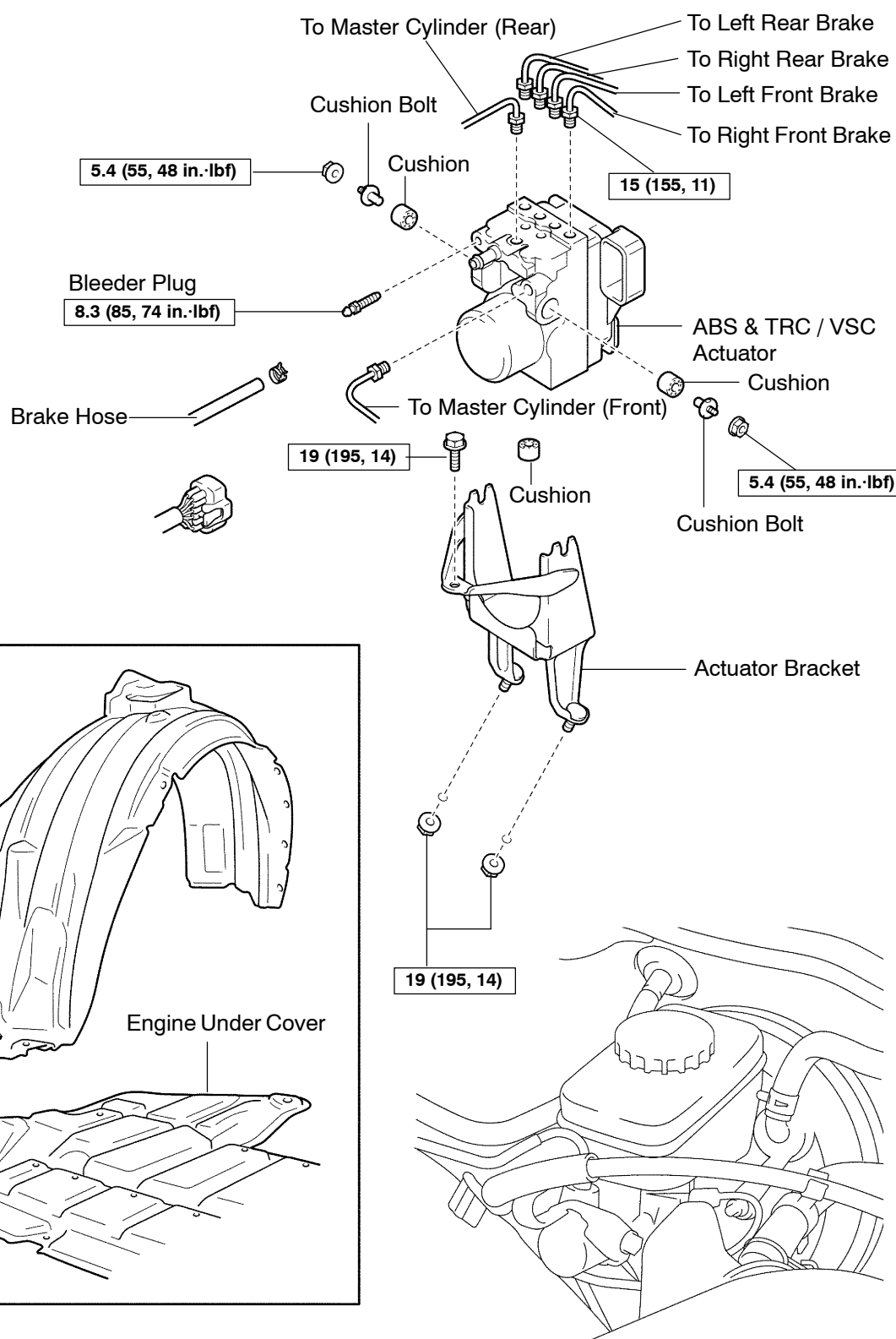
2JZ-GE engine LHD models:



N

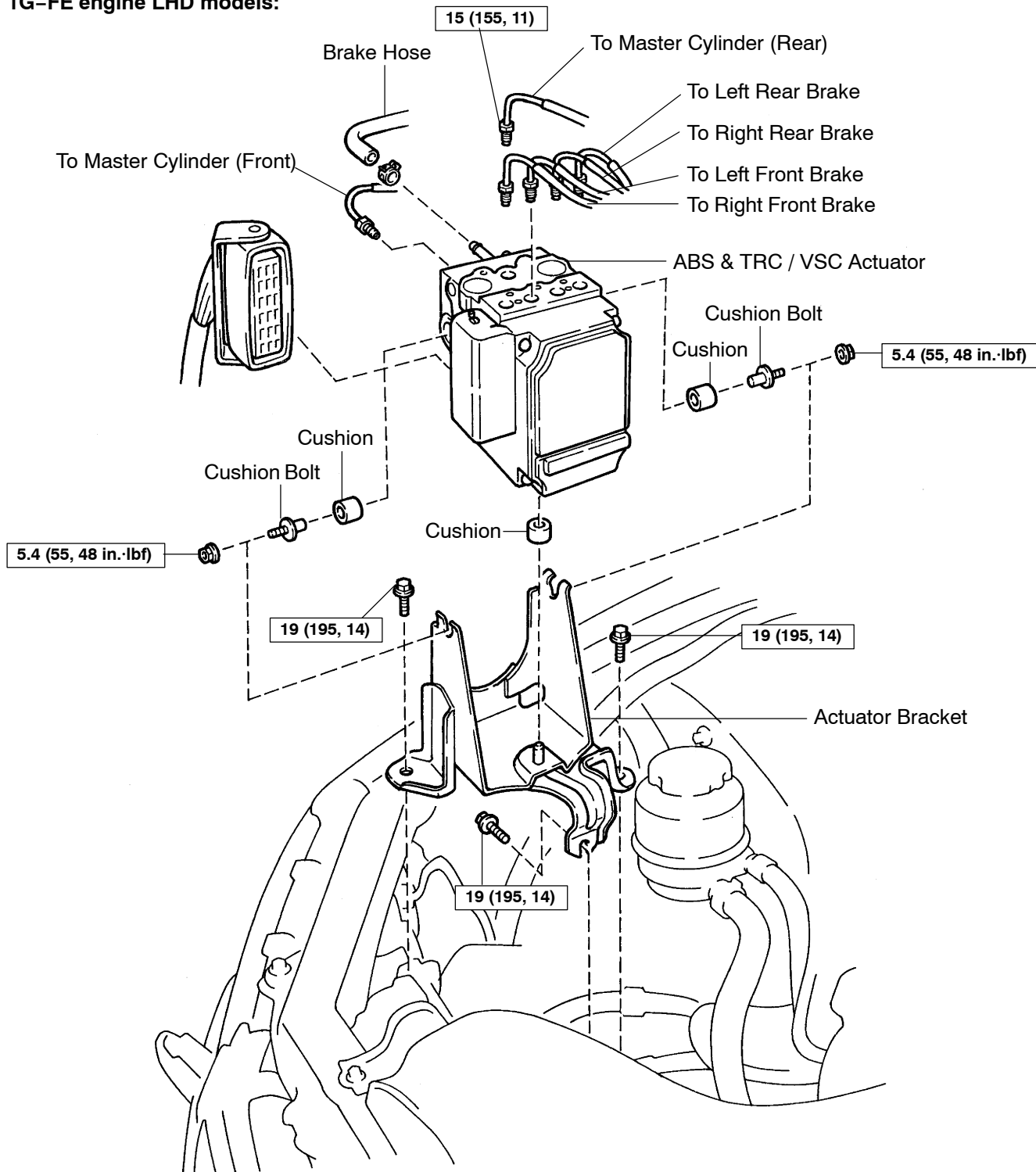
F14154

RHD models:



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

1G-FE engine LHD models:



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

F14153

REMOVAL

1. 2JZ-GE engine LHD models:

REMOVE AIR CLEANER INLET AND AIR CLEANER (See page EM-30)

2. DISCONNECT BRAKE LINES

Using SST, disconnect the 6 brake lines from the ABS & TRC / VSC actuator.

SST 09023-00100

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

HINT:

- When disconnecting the brake lines, use tags or make a memo to identify the place to reconnect.
- At the time of installation, connect each brake line to the correct position (See page BR-22).

3. DISCONNECT BRAKE HOSE AND CONNECTOR

4. REMOVE ABS & TRC / VSC ACTUATOR ASSEMBLY

(a) RHD models:

Remove the engine under cover and fender liner.

(b) RHD models:

Remove the bolt, 2 nuts and ABS & TRC / VSC actuator assembly.

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

(c) 2JZ-GE engine LHD models:

Remove the nut, 2 bolts and ABS & TRC / VSC actuator assembly.

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

(d) 1G-FE engine LHD models:

Remove the 3 bolts and ABS & TRC / VSC actuator assembly.

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

(e) Remove the 2 nuts and ABS & TRC / VSC actuator.

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

(f) Remove the 2 cushion bolts and 3 cushions.

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

INSTALLATION

Installation is in the reverse order of removal (See page BR-25).

HINT:

- After installation, fill the brake reservoir with brake fluid, bleed brake system (See page BR-1).
- Check for leaks.