
BRAKE

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BRAKE SYSTEM

BR061-04

PRECAUTION

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



TROUBLESHOOTING

PROBLEM SYMPTOMS TABLE

BR062-06

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
Lower pedal or spongy pedal	4. Brake system (Fluid leaks) 5. Brake system (Air in) 6. Piston seals (Worn or damaged) 7. Master cylinder (Faulty) 8. Booster push rod (Out of adjustment)	DI-302 BR-4 BR-32 BR-43 BR-14 BR-27
Brake drag	1. Brake pedal freeplay (Minimal) 2. Parking brake pedal travel (Out of adjustment) 3. Parking brake wire (Sticking) 4. Rear brake shoe clearance (Out of adjustment) 5. Pad (Cracked or distorted) 6. Piston (Stuck) 7. Piston (Frozen) 8. Tension or return spring (Faulty) 9. Booster push rod (Out of adjustment) 10. Vacuum leaks for booster system 11. Master cylinder (Faulty)	BR-6 BR-8 – BR-52 BR-29 BR-40 BR-32 BR-43 BR-32 BR-43 BR-49 BR-27 BR-24 BR-14
Brake pull	1. Piston (Stuck) 2. Pad (Oily) 3. Piston (Frozen) 4. Disc (Scored) 5. Pad (Cracked or distorted)	BR-32 BR-43 BR-29 BR-40 BR-32 BR-43 BR-32 BR-43 BR-29 BR-40
Hard pedal but brake inefficient	1. Brake system (Fluid leaks) 2. Brake system (Air in) 3. Piston (Stuck) 4. Pad (Cracked or distorted) 5. Pad (Oily) 6. Pad (Glazed) 7. Disc (Scored) 8. Booster push rod (Out of adjustment) 9. Vacuum leaks for booster system	DI-302 BR-4 BR-32 BR-43 BR-29 BR-40 BR-29 BR-40 BR-29 BR-40 BR-32 BR-43 BR-27 BR-24

BRAKE – TROUBLESHOOTING

Symptom	Suspect Area	See page
Noise from brake	1. Pad (Cracked or distorted)	BR-29
		BR-40
	2. Installation bolt (Loosen)	BR-32
		BR-43
	3. Disc (Scored)	BR-32
		BR-43
	4. Pad support plate (Loosen)	BR-29
		BR-40
	5. Sliding pin (Worn)	BR-32
		BR-43
	6. Pad (Dirty)	BR-29
		BR-40
	7. Pad (Glazed)	BR-29
		BR-40
	8. Tension or return spring (Faulty)	BR-49
	9. Anti-squeal shim (Damage)	BR-32
		BR-43
	10. Hold-down spring (Damage)	BR-49

BRAKE FLUID BLEEDING

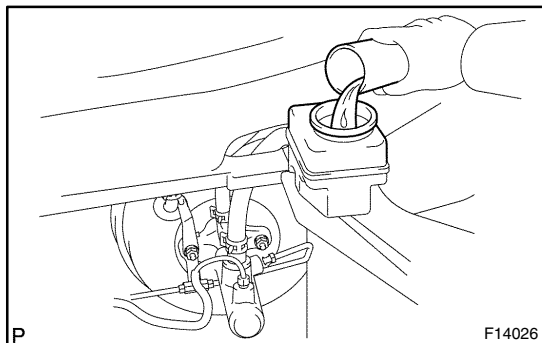
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HINT:

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

NOTICE:

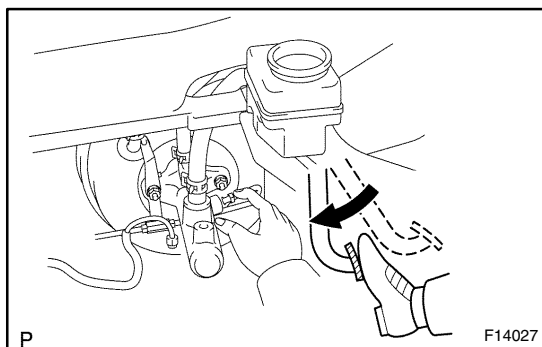
Do not let brake fluid remain on a painted surface. Wash it off immediately.



1. FILL BRAKE RESERVOIR WITH BRAKE FLUID

Check the fluid level in the reservoir after bleeding each wheel. Add fluid, if necessary.

Fluid: SAE J1703 or FMVSS No. 116 DOT3

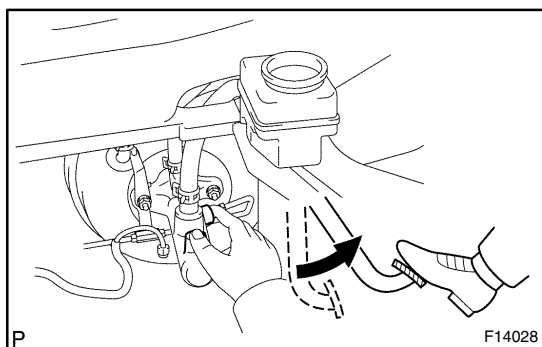


2. BLEED MASTER CYLINDER

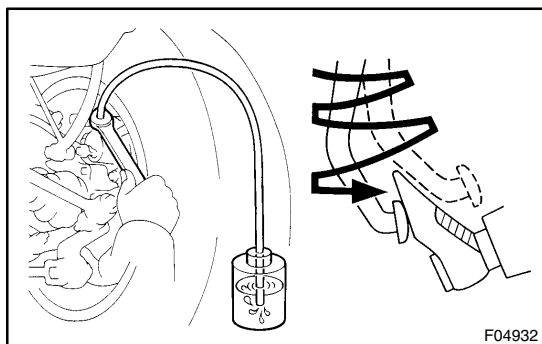
HINT:

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

- Disconnect the brake lines from the master cylinder.
SST 09751-36011
- Slowly depress the brake pedal and hold it.



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



3. CONNECT VINYL TUBE TO BRAKE CALIPER BLEEDER PLUG

Insert the other end of the tube in a half-full container of brake fluid.

NOTICE:

Bleed air of the rear brake first. If front brake is bled first, rear brake air cannot be bled.

4. BLEED BRAKE LINE

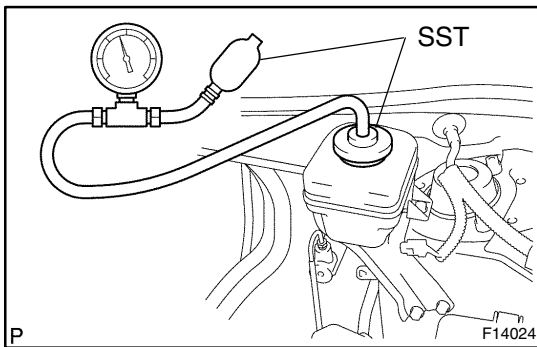
- (a) Slowly depress the brake pedal several times.
- (b) While an assistant depresses the pedal, loosen the bleeder plug until fluid starts to run out. Then tighten the bleeder plug.
- (c) Repeat this procedure until there are no more air bubbles in the fluid.

Torque: (Bleeder plug)

8.3 N·m (85 kgf·cm, 74 in·lbf)

5. REPEAT PROCEDURE FOR EACH WHEEL**6. CHECK FLUID LEVEL IN BRAKE RESERVOIR**

Check the fluid level and add fluid if necessary.

**7. BLEED BRAKE ACTUATOR**

- (a) Remove the reservoir cap.
- (b) Install the SST to the reservoir.
SST 09992-00242, 09992-00350
- (c) Connect the vinyl tube to the bleeder plug of the brake actuator.
- (d) Using SST, apply the pressure described below to the reservoir.

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

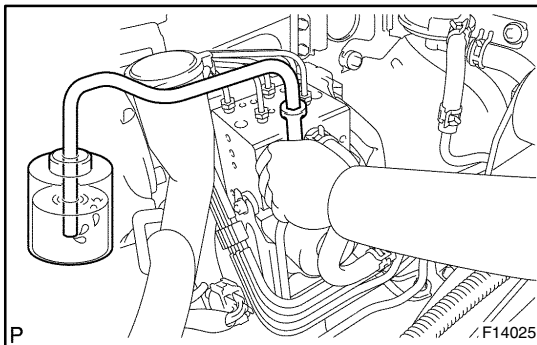
- (e) Loosen the bleeder plug.
- (f) Bleed the air from the brake actuator, tighten the bleeder plug.

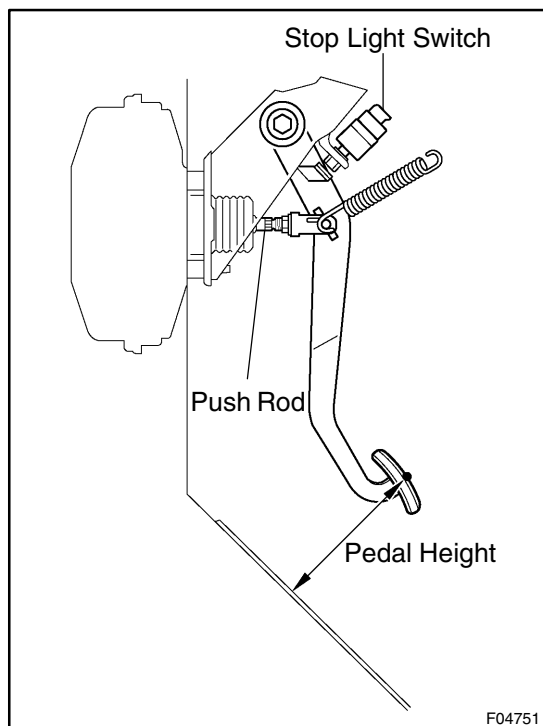
Torque: 8.3 N·m (85 kgf·cm, 74 in·lbf)

8. CHECK FLUID LEVEL IN RESERVOIR

Check the fluid level and fluid if necessary.

Fluid: SAE J1703 or FMVSS NO. 116 DOT3





BRAKE PEDAL ON-VEHICLE INSPECTION

BR017-04

1. CHECK PEDAL HEIGHT

Pedal height from asphalt sheet:

LHD: 193.0 – 203.0 mm (7.598 – 7.992 in.)

RHD: 199.0 – 209.0 mm (7.834 – 8.228 in.)

If the pedal height is incorrect, adjust it.

2. IF NECESSARY, ADJUST PEDAL HEIGHT

- Remove the lower finish panel (See page BO-123).
- 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: 26 N·m (265 kgf·cm, 19 ft·lbf)**
- Install the stop light switch.
- Connect the connector to the stop light switch.
- Push the brake pedal in 5 – 10 mm (0.20 – 0.39 in.), turn the stop light switch to lock the nut in the position where the stop light goes off.
- Push the brake pedal in 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.

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, as shown.

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

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

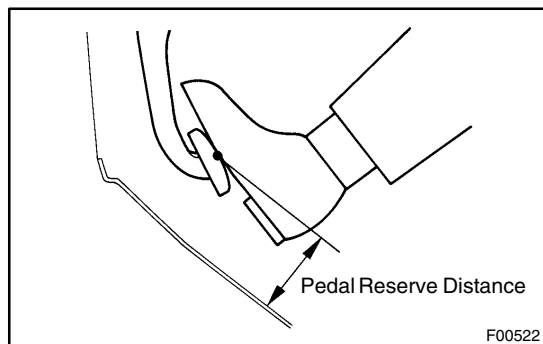
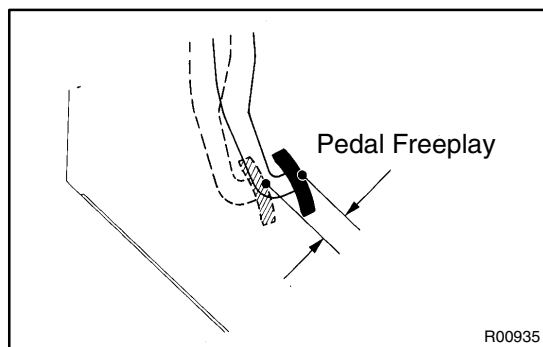
Stop light switch clearance:

0.5 – 2.4 mm (0.020 – 0.094 in.)

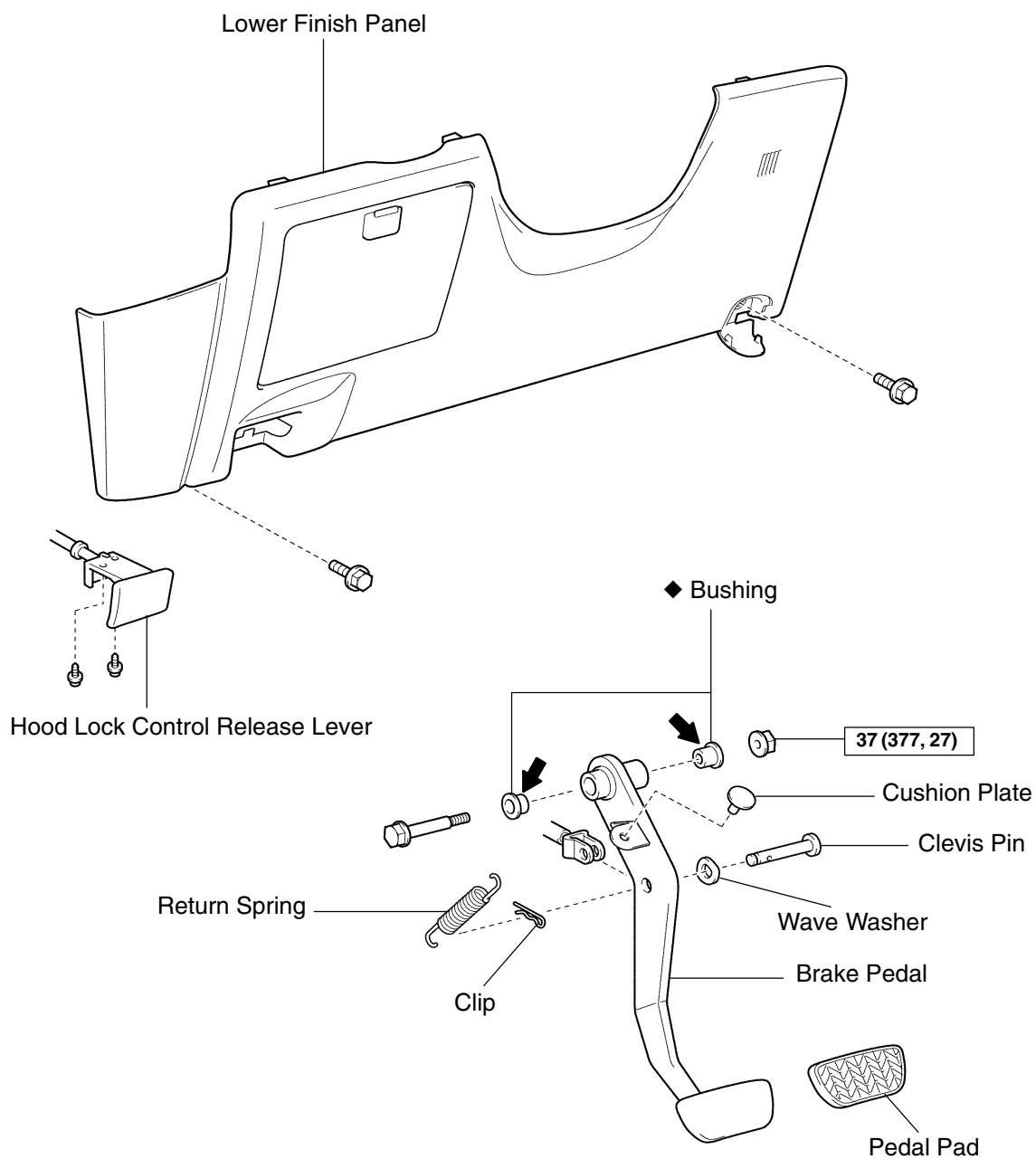
4. CHECK PEDAL RESERVE DISTANCE

- Release the parking brake.
 - With the engine running, depress the brake pedal and measure the pedal reserve distance, as shown.
- Pedal reserve distance from asphalt sheet at 490 N (50 kgf, 110.2 lbf):**
- LHD: More than 122 mm (4.80 in.)**
- RHD: More than 133 mm (5.24 in.)**

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



COMPONENTS

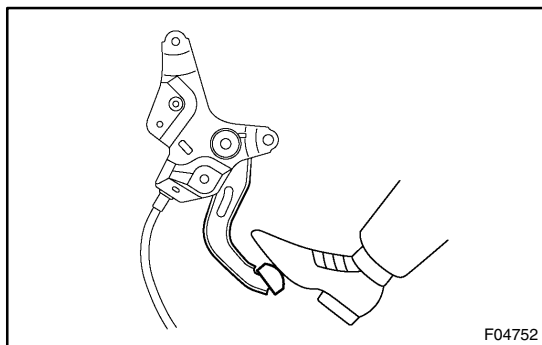


^P N·m (kgf·cm, ft·lbf) : Specified torque

◆ Non-reusable part

◀ Lithium soap base glycol grease

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PARKING BRAKE PEDAL ON-VEHICLE INSPECTION

BR0TK-02

1. CHECK PARKING BRAKE PEDAL TRAVEL

Slowly depress the parking brake pedal all the way, and count the number of clicks.

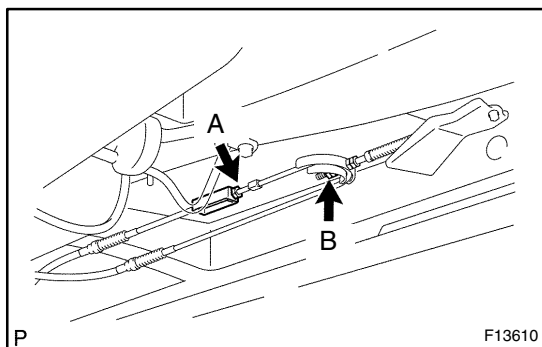
**Parking brake pedal travel at 294 N (30 kgf, 66 lbf):
5 – 7 clicks**

If incorrect, adjust the parking brake.

2. IF NECESSARY, ADJUST PARKING BRAKE PEDAL TRAVEL

HINT:

- Before adjusting the parking brake, make sure that the rear brake shoe clearance has been adjusted.
- For shoe clearance adjustment, see step 1 on page BR-52.
- There is the parking brake adjuster under the floor on the left side of the vehicle.



- Confirm that the parking pedal is released.
- Fix the turn buckle and loosen the lock nut "A".
- Rotate the turn buckle to adjust the parking brake pedal travel to the specification.
- Fix the turn buckle and tighten the lock nut "A".

Torque:

Nut A: 5.0 N·m (51 kgf·cm, 44 in.-lbf)

- After operating the parking brake several times, check the parking brake pedal travel.

If adjustment cannot be done by loosening the nut "A", adjust the travel by loosening the nut "B".

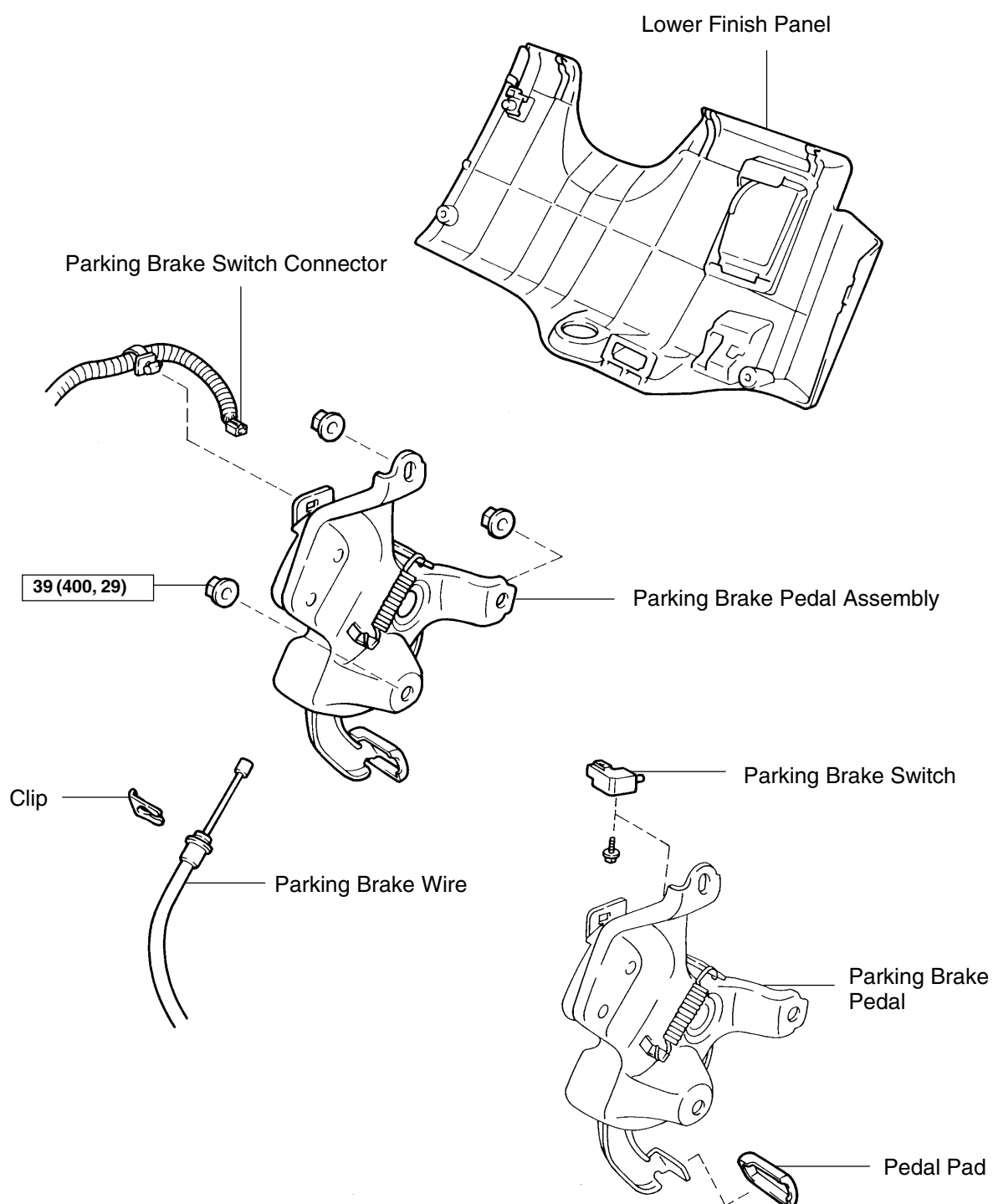
Torque:

Nut B: 12.5 N·m (127 kgf·cm, 9 ft.-lbf)

- Check whether parking brake drags or not.
- When operating the parking brake pedal, check that the parking brake pedal indicator light lights up.

COMPONENTS

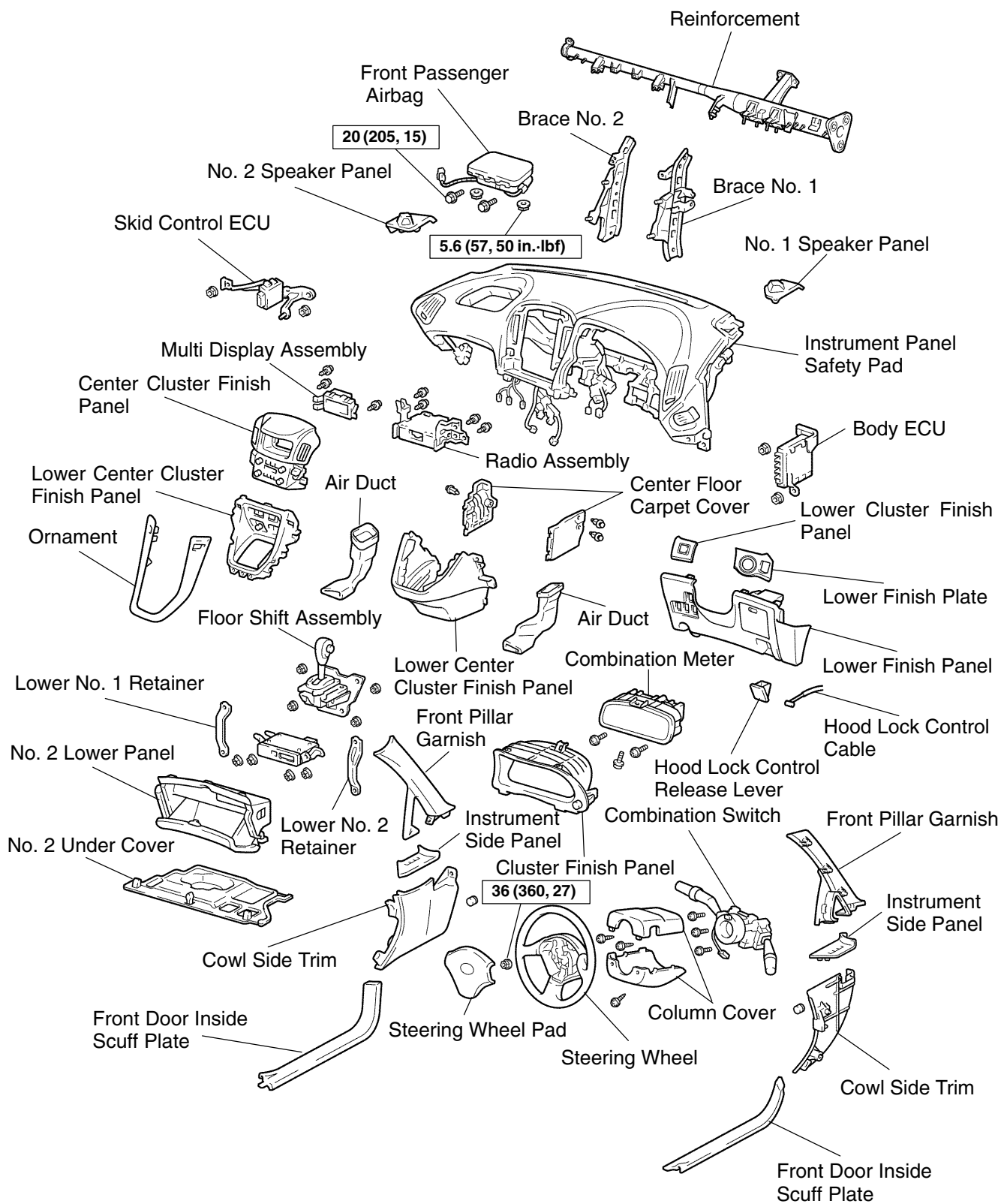
LHD:



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

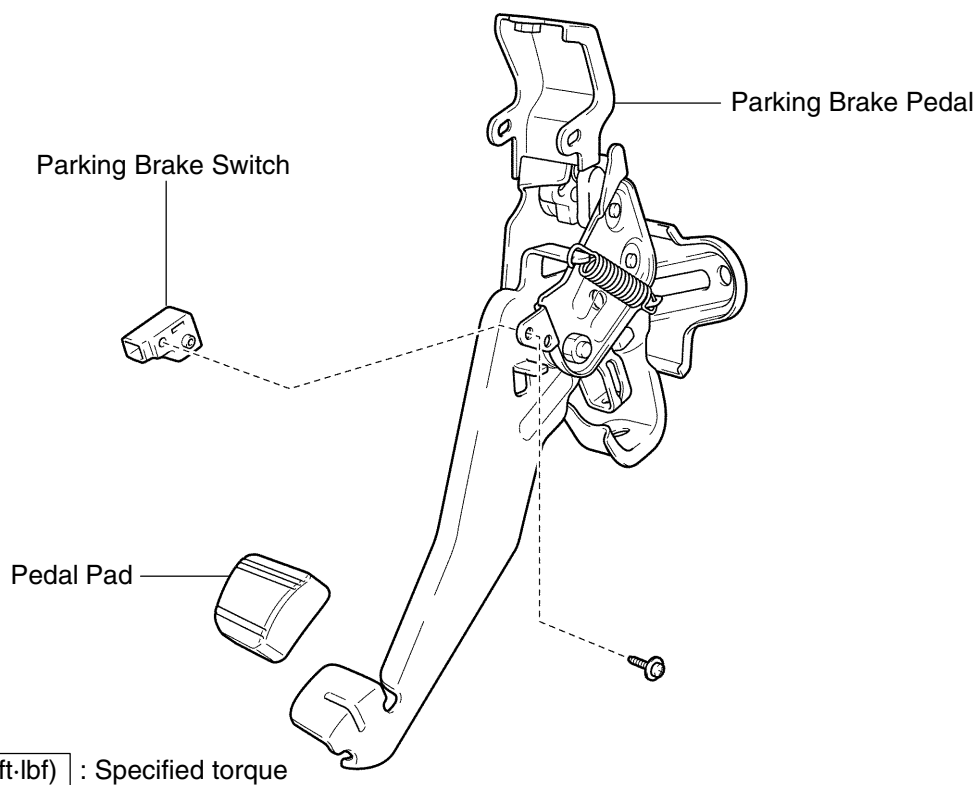
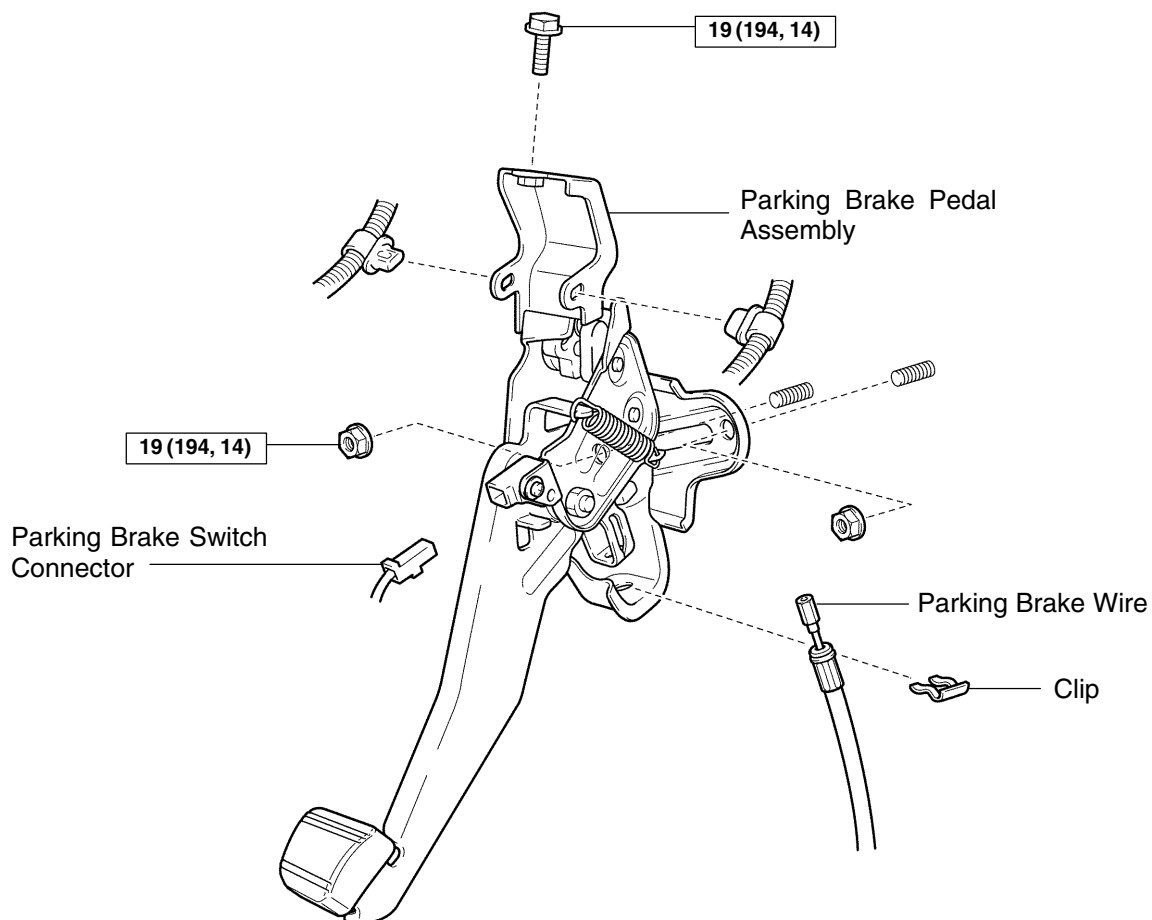
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RHD:



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

RHD:

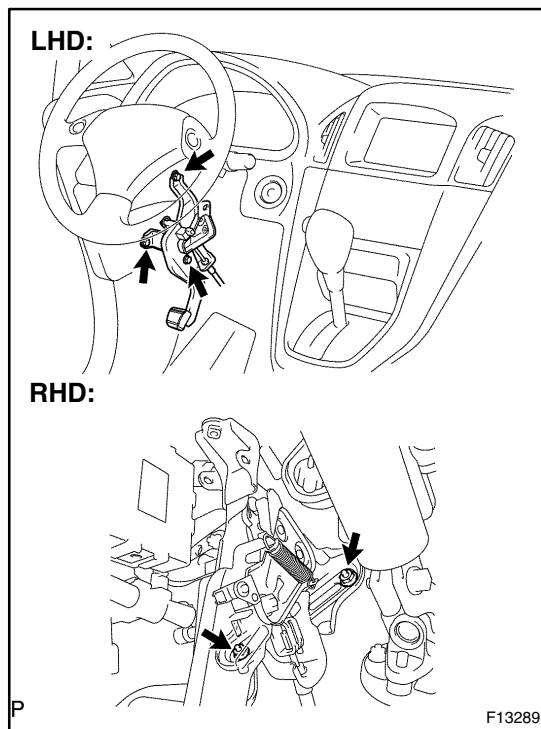


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REMOVAL

1. **LHD:**
REMOVE LOWER FINISH PANEL
2. **RHD:**
REMOVE INSTRUMENT PANEL SAFETY PAD AND REINFORCEMENT (See page BO-123)
3. **RELEASE PARKING BRAKE PEDAL**
4. **DISCONNECT PARKING BRAKE SWITCH CONNECTOR AND CLAMP**
 - (a) Disconnect the parking brake switch connector.
 - (b) **RHD:**
Disconnect the 2 wire harness clamps from the bracket.
 - (c) **LHD:**
Disconnect the wire harness clamp from the bracket.



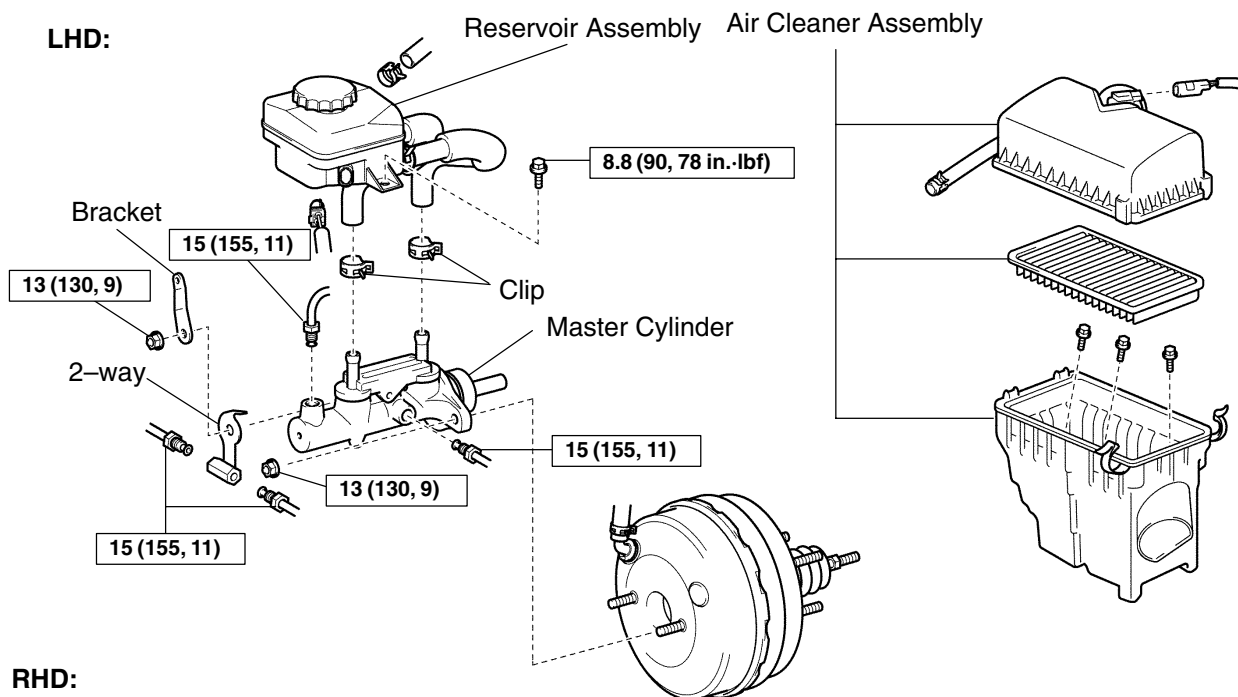
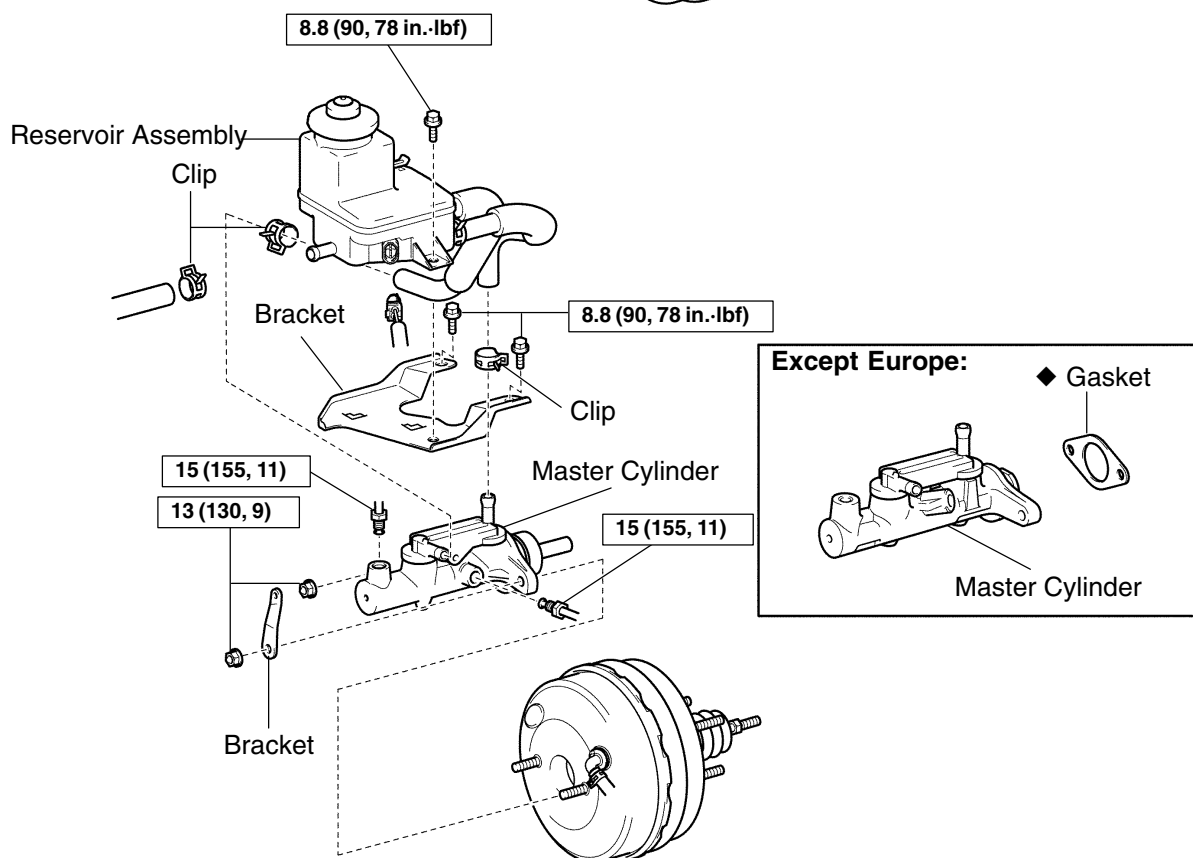
5. **REMOVE PARKING BRAKE PEDAL ASSEMBLY**
 - (a) **LHD:**
Remove the 3 nuts and parking brake pedal assembly.
Torque: 39 N·m (400 kgf·cm, 29 ft·lbf)
 - (b) **RHD:**
Remove the 2 nuts and parking brake pedal assembly.
Torque: 19 N·m (194 kgf·cm, 14 ft·lbf)
 - (c) Remove the clip and disconnect the parking brake wire.
6. **REMOVE PARKING BRAKE SWITCH**
Remove the screw and parking brake switch.
7. **REMOVE PEDAL PAD FROM PARKING BRAKE PEDAL**

INSTALLATION

Installation is in the reverse order of removal (See page BR-12).

BRAKE MASTER CYLINDER COMPONENTS

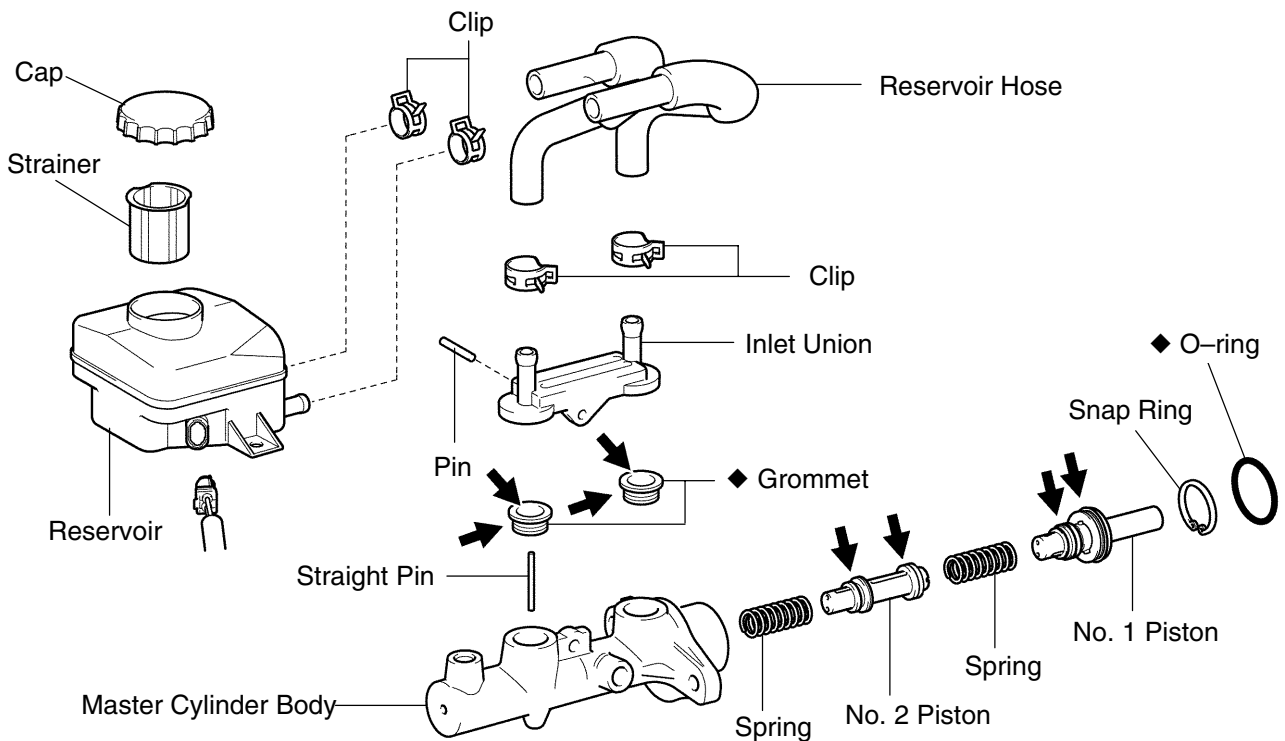
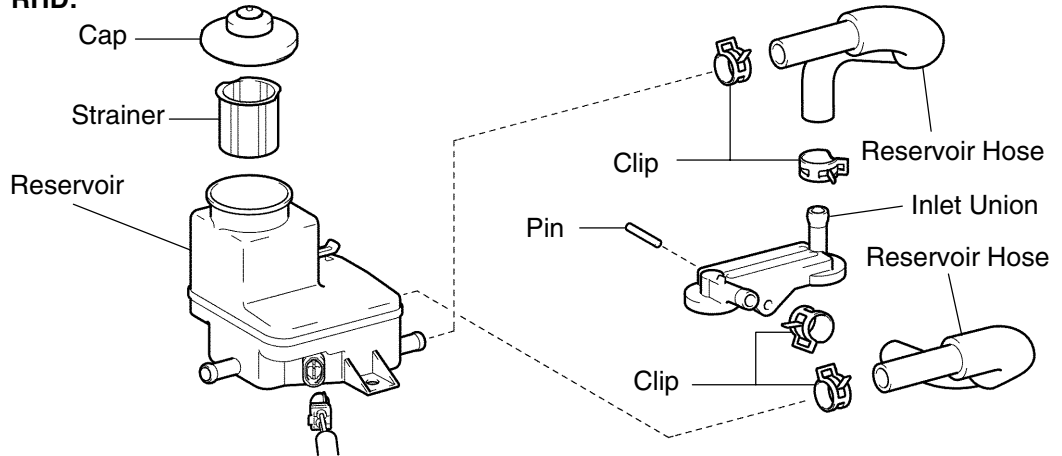
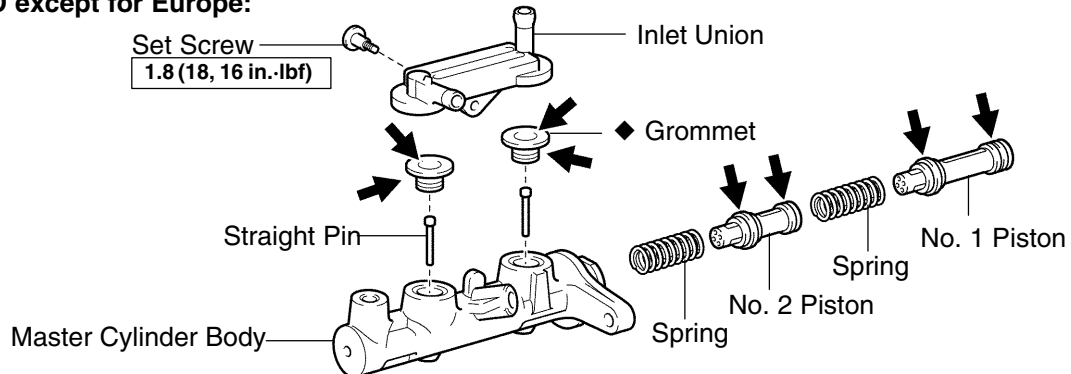
BR069-06

LHD:**RHD:**

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

◆ Non-reusable part

F13278

LHD:**RHD:****RHD except for Europe:**

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

◆ Non-reusable part

◀ Lithium soap base glycol grease

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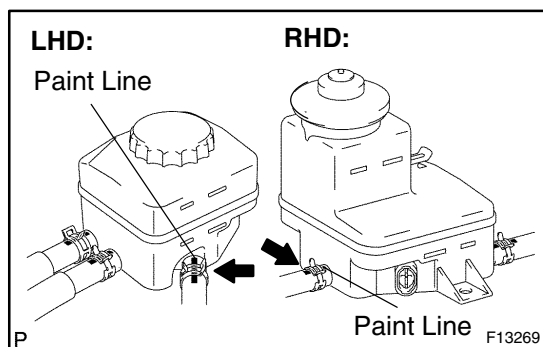
REMOVAL

1. LHD:
REMOVE AIR CLEANER ASSEMBLY
2. TAKE OUT FLUID WITH SYRINGE

NOTICE:

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

3. DISCONNECT LEVEL WARNING SWITCH CONNECTOR

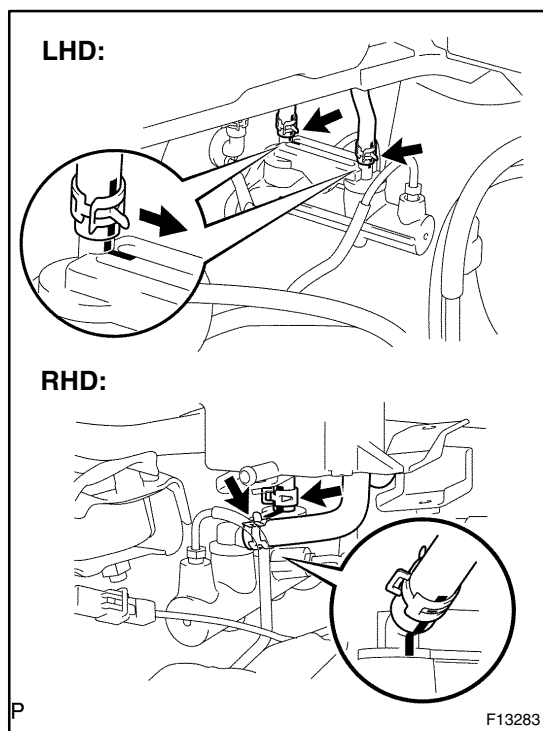


4. DISCONNECT BRAKE HOSE FROM RESERVOIR ASSEMBLY

Using pliers, slide the clip and disconnect the reservoir hose from the reservoir, and remove the clip.

HINT:

At the time of installation, install the brake hose with a paint line on the hose facing upward.



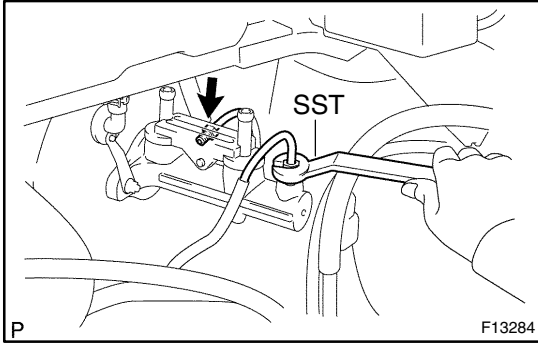
5. REMOVE RESERVOIR ASSEMBLY WITH BRACKET AND HOSES

- (a) LHD:
Remove the bolt and disconnect the reservoir assembly from bracket.
Torque: 8.8 N·m (90 kgf·cm, 78 in.-lbf)
- (b) RHD:
Remove the 2 bolts and reservoir assembly with bracket.
Torque: 8.8 N·m (90 kgf·cm, 78 in.-lbf)
- (c) Using pliers, slide the 2 clips to the direction of the reservoir.
- (d) Disconnect the 2 reservoir hoses from the master cylinder and remove the clips.

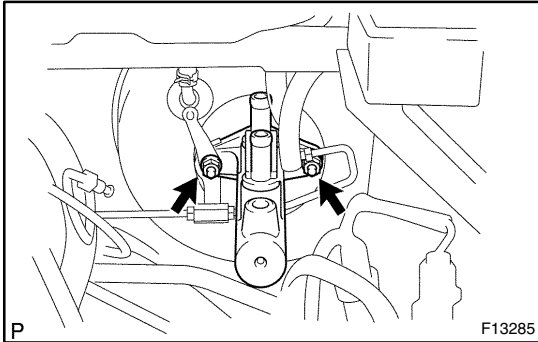
HINT:

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

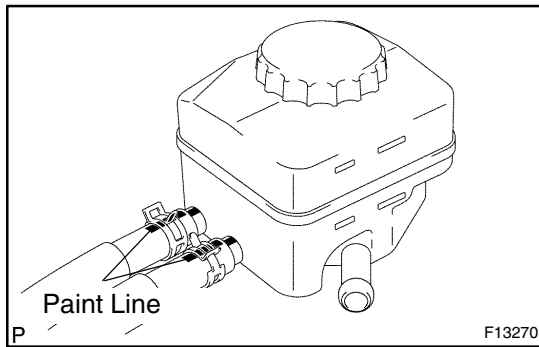
- LHD:
Connect the reservoir hose with a paint line on the hose facing forward.
 - RHD:
Connect the reservoir hose with a paint line on the hose facing downward.
- (e) RHD:
Remove the bolt and disconnect the reservoir assembly from bracket.
Torque: 8.8 N·m (90 kgf·cm, 78 in.-lbf)

**6. REMOVE MASTER CYLINDER**

- (a) Using SST, disconnect the 2 brake lines.
SST 09751-36011
Torque: 15 N·m (155 kgf·cm, 11 ft·lbf)



- (b) LHD:
Remove the 2 nuts, bracket, 2-way and pull out the master cylinder.
Torque: 13 N·m (130 kgf·cm, 9 ft·lbf)
- (c) Europe RHD:
Remove the 2 nuts, bracket and pull out the master cylinder.
Torque: 13 N·m (130 kgf·cm, 9 ft·lbf)
- (d) RHD except for Europe:
Remove the 2 nuts, bracket and pull out the master cylinder and gasket.



DISASSEMBLY

1. REMOVE RESERVOIR

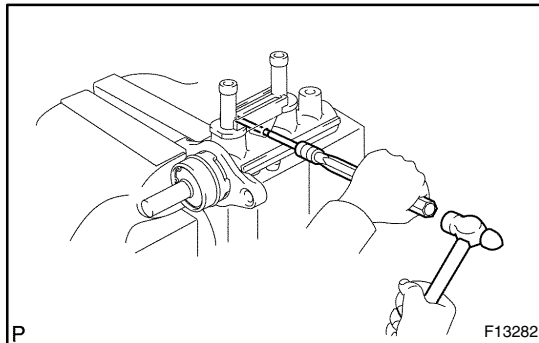
- (a) Using pliers, slide the 2 clips and remove the reservoir hoses and clips from the reservoir.

HINT:

At the time of reassembly, install the reservoir hose with a paint line facing upward.

- (b) Remove the cap, strainer from the reservoir.

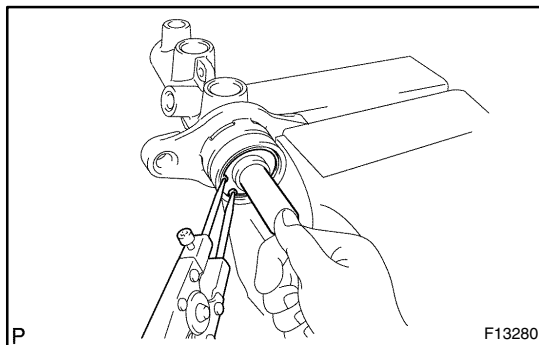
2. PLACE MASTER CYLINDER IN VISE



3. REMOVE INLET UNION

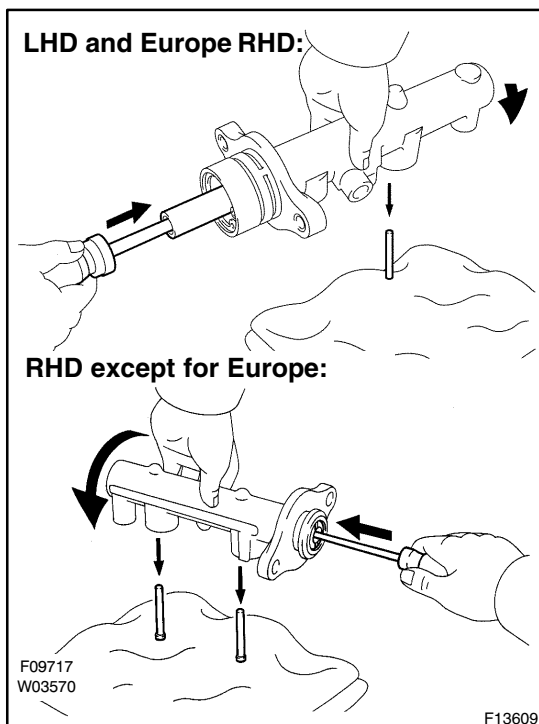
- (a) LHD and Europe RHD:
Using a pin punch (5 mm) and hammer, remove the pin from the cylinder body.
- (b) RHD except for Europe:
Remove the set screw.
- (c) Pull out the inlet union.

4. REMOVE 2 GROMMETS



5. REMOVE 2 PISTONS AND SPRING

- (a) LHD and Europe RHD:
Push in the No. 1 piston by hand, remove the snap ring with snap ring pliers.



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

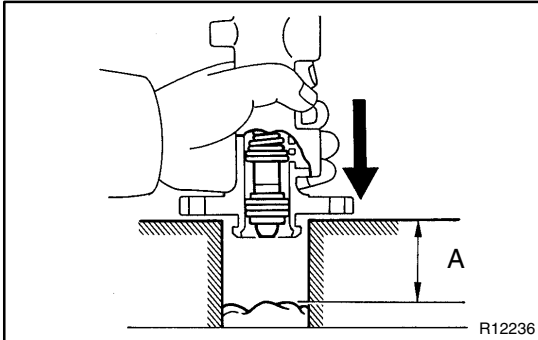
HINT:

Tape the screwdriver tip before use.

- (c) Remove the No. 1 piston and spring by hand, 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.



- (d) Place a rag and 2 wooden blocks on the work table, and lightly tap the cylinder flange against the block edges until the No. 2 piston and spring drops out of the cylinder.

HINT:

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

**6. LHD and Europe RHD:
REMOVE O-RING FROM CYLINDER BODY**

INSPECTION

HINT:

Clean the disassembled parts with compressed air.

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

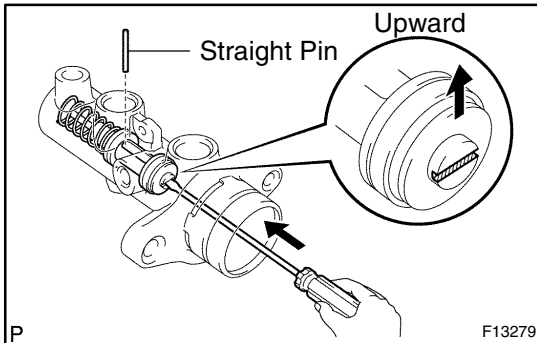
If necessary, clean or replace the cylinder.

REASSEMBLY

NOTICE:

Apply lithium soap base glycol grease to the rubber parts indicated by the arrows (See page BR-14).

1. PLACE CYLINDER IN VISE



2. LHD and Europe RHD:

INSTALL SPRING AND NO. 2 PISTON

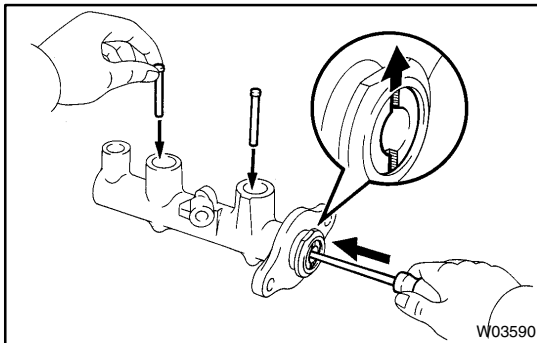
- Install the spring and No. 2 piston into the cylinder body.
- Push in the piston with a screwdriver, and install the straight pin to the cylinder body.

HINT:

- Tape the screwdriver tip before use.
- Insert the piston with elliptic hole facing horizontally.

NOTICE:

Be careful not to damage the rubber lips on the pistons.



3. RHD except for Europe:

INSTALL SPRINGS AND PISTONS

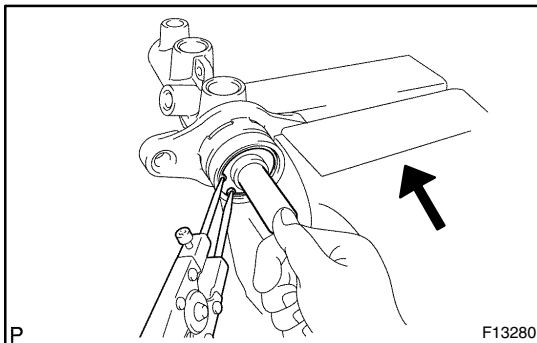
- Install the 2 springs and pistons to the cylinder body.
- Push in the piston with a screwdriver, and install the 2 straight pins to the cylinder body.

HINT:

- Tape the screwdriver tip before use.
- Insert the piston with elliptic hole facing vertically.

NOTICE:

Be careful not to damage the rubber lips on the pistons.

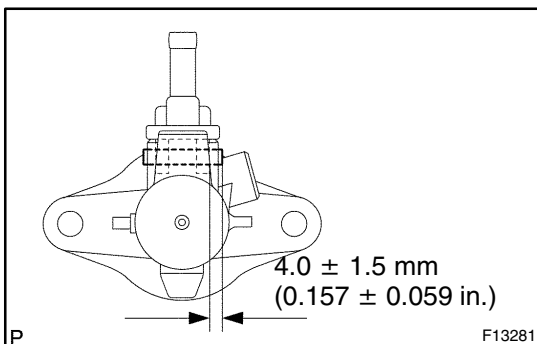


4. LHD and Europe RHD:

INSTALL NO. 1 PISTON AND SPRING

- Install the No. 1 piston and spring into the cylinder body.
- Push in the piston by hand, install the snap ring with snap ring pliers.

5. INSTALL 2 GROMMETS



6. INSTALL INLET UNION

- Install the inlet union to the cylinder body.
- LHD and Europe RHD:
Using a pin punch (5 mm) and hammer, drive in the pin.
- RHD except for Europe:
Install the set screw.

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

7. LHD and Europe RHD:

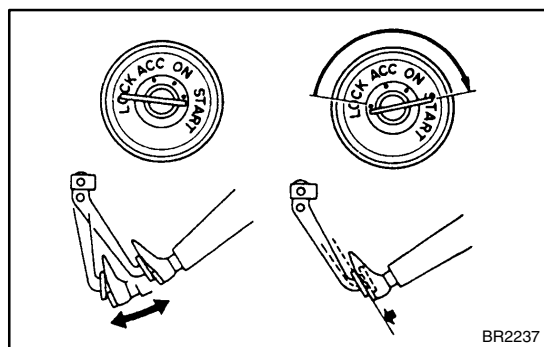
INSTALL O-RING TO CYLINDER BODY

INSTALLATION

Installation is in the reverse order of removal (See page BR-16).

HINT:

- Before installation, adjust length of brake booster push rod (See page BR-27).
- After installation, fill the brake reservoir with brake fluid and bleed brake system (See page BR-4), and check for leaks.
- Check and adjust brake pedal (See page BR-8).

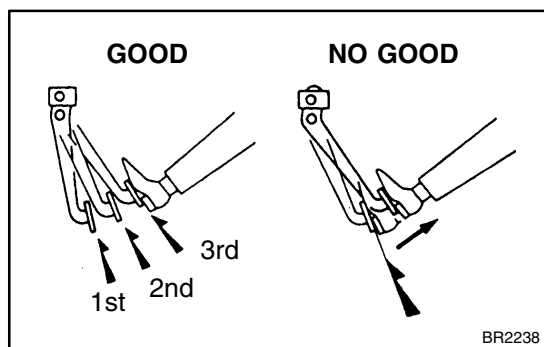


BRAKE BOOSTER ASSEMBLY ON-VEHICLE INSPECTION

BR06F-05

1. OPERATING CHECK

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



2. AIR TIGHTNESS CHECK

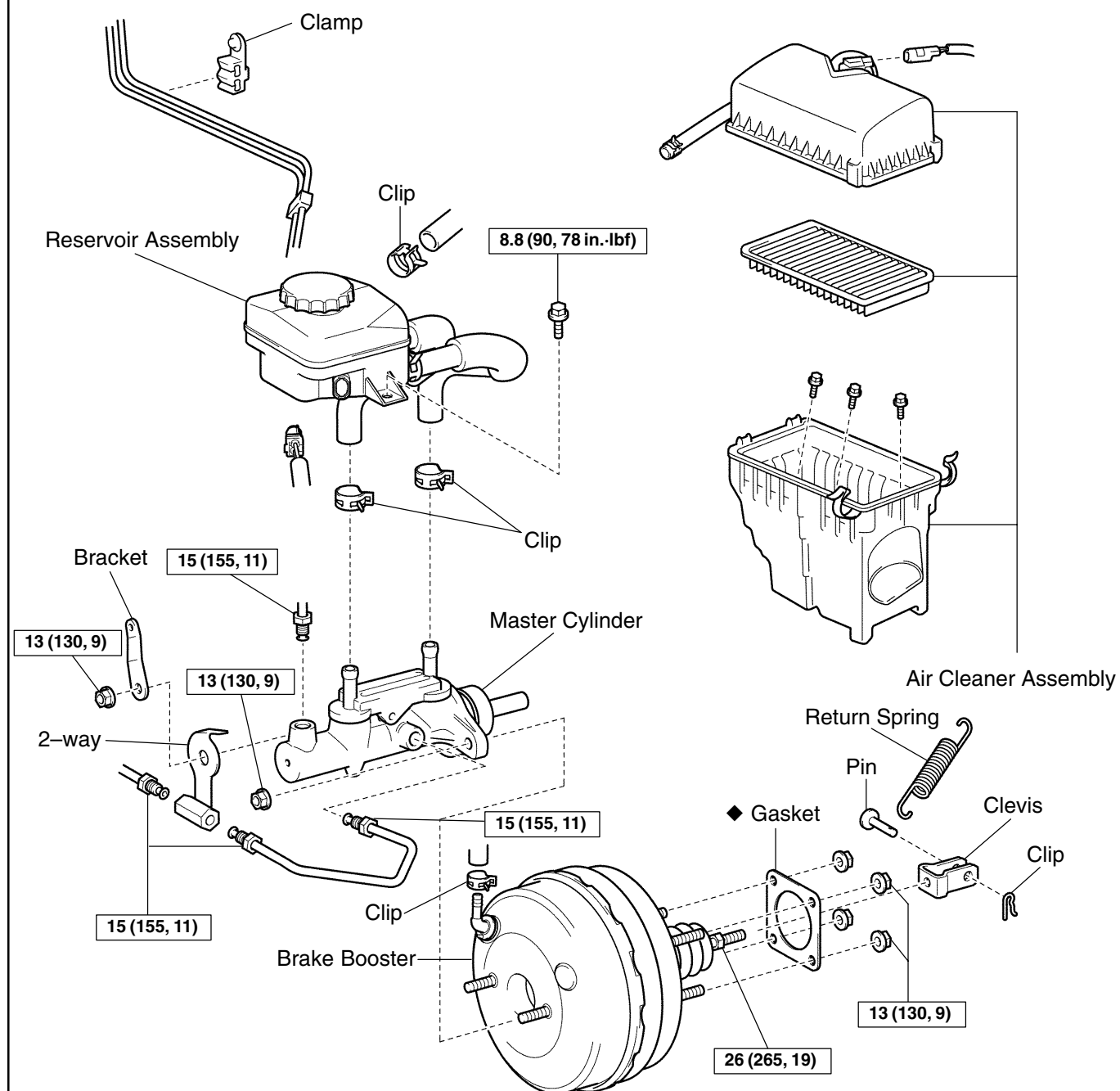
- (a) Start the engine and stop it after 1 or 2 minutes. Depress the brake pedal several times slowly.

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

- (b) Depress the brake pedal while the engine is running, and stop the engine with the pedal depressed. If there is no change in the pedal reserve travel after holding the pedal for 30 seconds, the booster is air-tight.

COMPONENTS

LHD:

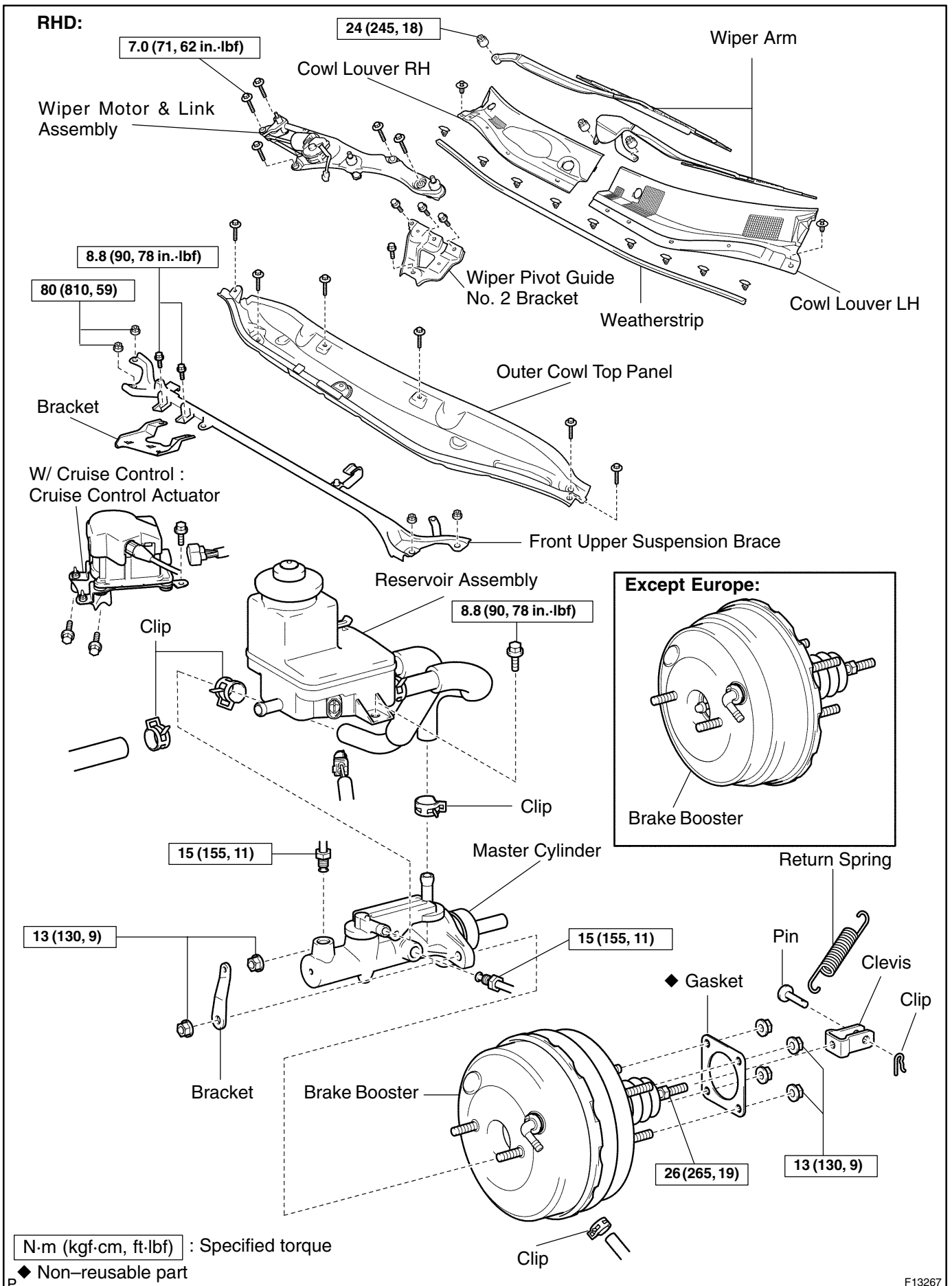


N·m (kgf·cm, ft·lbf) : Specified torque

◆ Non-reusable part

P

F13364



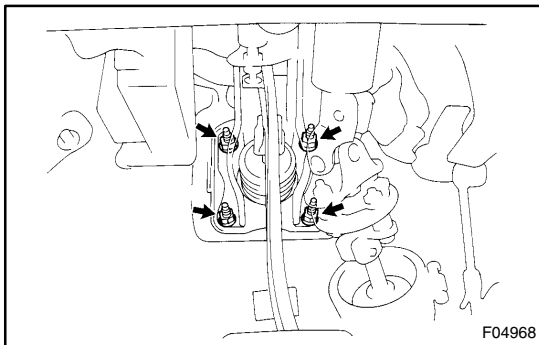
F13267

REMOVAL

1. **RHD:**
REMOVE OUTER COWL TOP PANEL (See page BO-57)
2. **RHD w/ CRUISE CONTROL:**
REMOVE CRUISE CONTROL ACTUATOR
 - (a) Disconnect the cable from the throttle body.
 - (b) Disconnect the connector and clamp.
 - (c) Remove the 3 bolts and actuator.
3. **REMOVE MASTER CYLINDER (See page BR-16)**
4. **RHD:**
REMOVE FRONT UPPER SUSPENSION BRACE

Remove the 4 nuts and front upper suspension brace.
Torque: 80 N·m (810 kgf·cm, 59 ft·lbf)
5. **DISCONNECT VACUUM HOSE FROM BRAKE BOOSTER**

Using pliers, slide the clip and disconnect the vacuum hose from the brake booster and remove the clip.
6. **LHD:**
DISCONNECT 2 BRAKE LINES FROM CLAMP
7. **REMOVE RETURN SPRING**
8. **REMOVE CLIP AND CLEVIS PIN**



9. **REMOVE BRAKE BOOSTER, GASKET AND CLEVIS**
 - (a) Remove the 4 nuts and clevis.
 - (b) Pull out the brake booster and gasket.

INSTALLATION

1. INSTALL BRAKE BOOSTER

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

Torque: 13 N·m (130 kgf·cm, 9 ft·lbf)

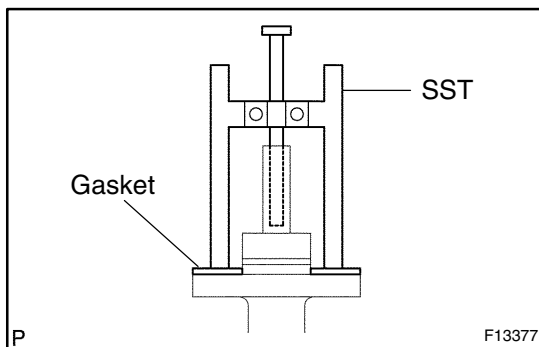
- Install the clevis pin into the clevis and brake pedal, and install the clip to the clevis pin.
- Install the pedal return spring.

2. LHD and Europe RHD:

ADJUST LENGTH OF BOOSTER PUSH ROD

NOTICE:

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



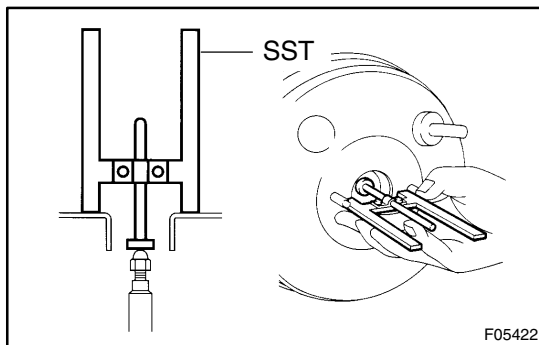
- Install a new gasket on the master cylinder.

Parts No.:

Gasket: 47275-12020

- Set the SST on the gasket, and lower the pin until its tip slightly touches the piston.

SST 09737-00011



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

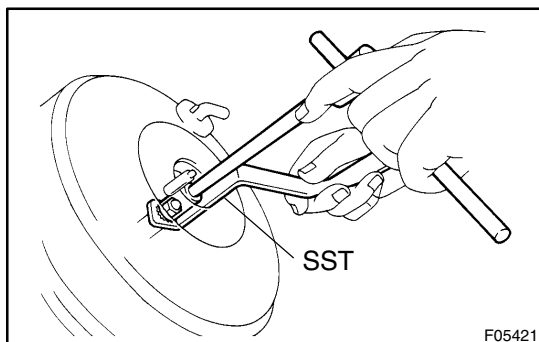
SST 09737-00011

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

Clearance: 0 mm (0 in.)

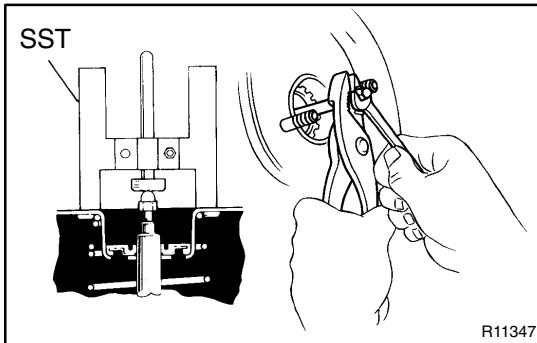
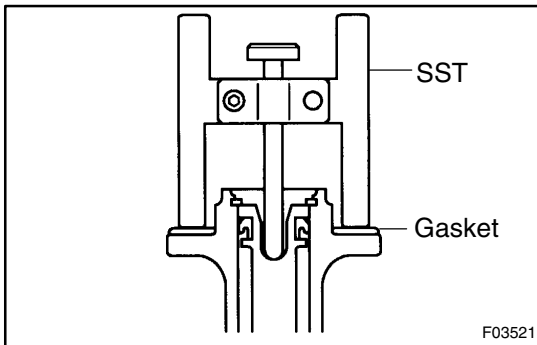
HINT:

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



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

SST 09737-00020



3. RHD except for Europe:

ADJUST LENGTH OF BOOSTER PUSH ROD

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

SST 09737-00010

- (c) Turn the SST upside down, and set it on the booster.
- (d) Measure the clearance between the booster push rod and pin head (SST).
- (e) Adjust the booster push rod length until the push rod lightly touches the pin head.

Clearance: 0 mm (0 in.)

NOTICE:

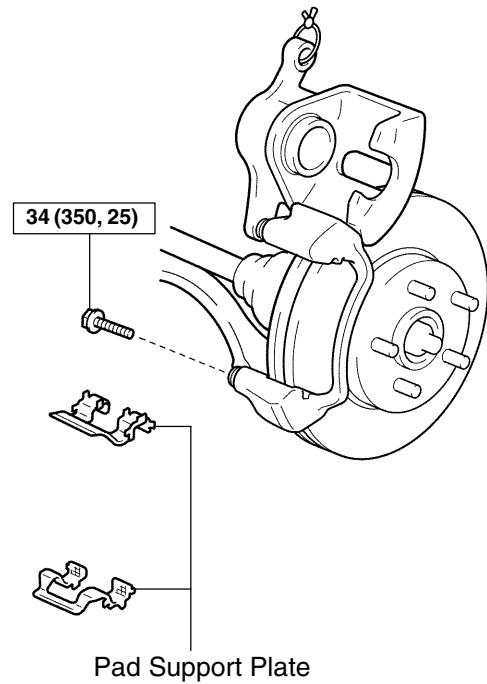
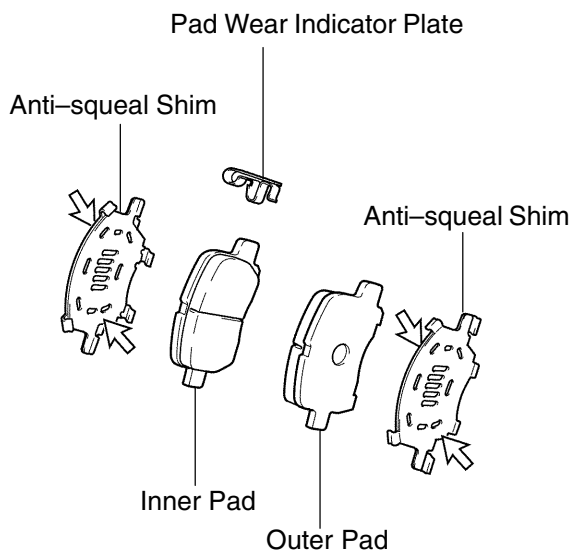
Adjust the clearance with no negative pressure applied inside the booster. (With the engine stopped, press the brake pedal several times to set the pressure inside the booster to the atmospheric pressure.)

4. **INSTALL MASTER CYLINDER (See page BR-22)**
5. **CONNECT VACUUM HOSE TO BRAKE BOOSTER**
6. **FILL BRAKE RESERVOIR WITH BRAKE FLUID AND BLEED BRAKE SYSTEM (See page BR-4)**
7. **CHECK FOR FLUID LEAKAGE**
8. **CHECK AND ADJUST BRAKE PEDAL (See page BR-6)**
9. **DO OPERATIONAL CHECK (See page BR-23)**

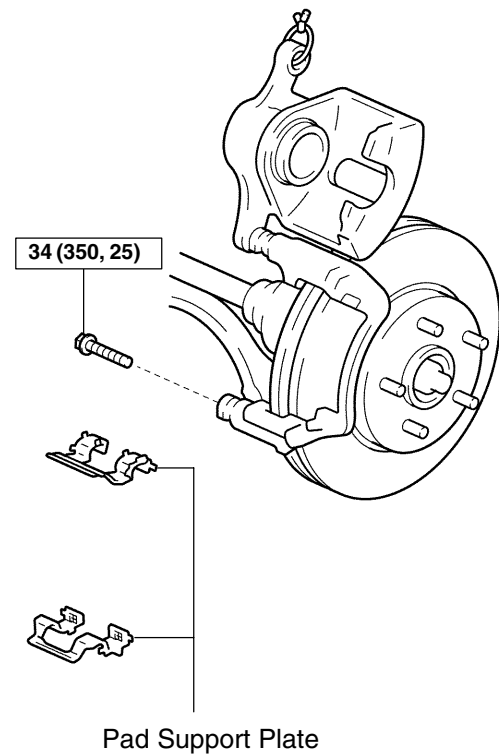
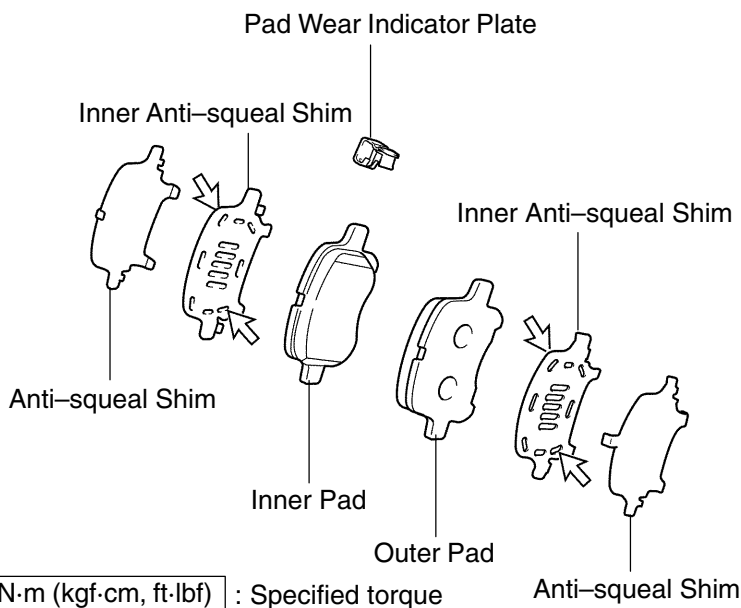
FRONT BRAKE PAD COMPONENTS

BR01M-04

Europe:



Except Europe:



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

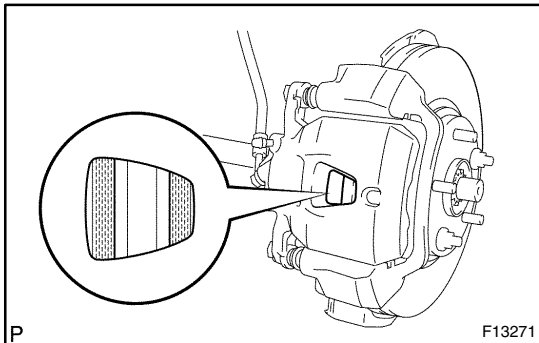
← Disc brake grease

F13286

REPLACEMENT

1. REMOVE FRONT WHEEL

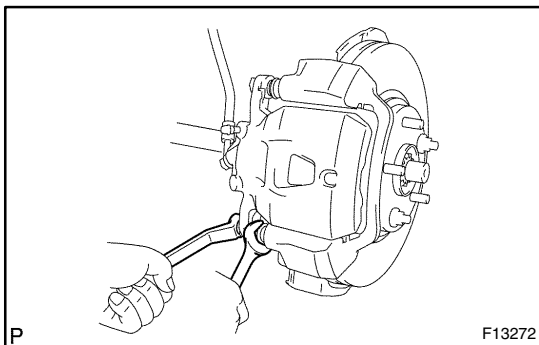
Remove the wheel and temporarily fasten the disc with the hub nuts.



2. INSPECT PAD LINING THICKNESS

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

Minimum thickness: 1.0 mm (0.039 in.)



3. LIFT UP CALIPER

- Hold the sliding pin on the bottom and loosen the installation bolt, and remove the installation bolt.
- Lift up the caliper and suspend it securely.

HINT:

Do not disconnect the flexible hose from the caliper.

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

5. REMOVE 2 PAD SUPPORT PLATES

NOTICE:

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

6. CHECK DISC THICKNESS AND RUNOUT

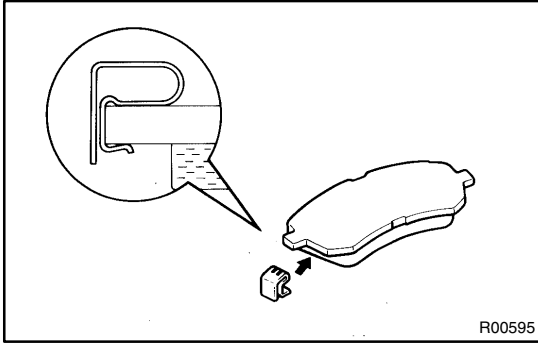
(See page BR-36)

7. INSTALL 2 PAD SUPPORT PLATES

8. INSTALL NEW PADS

NOTICE:

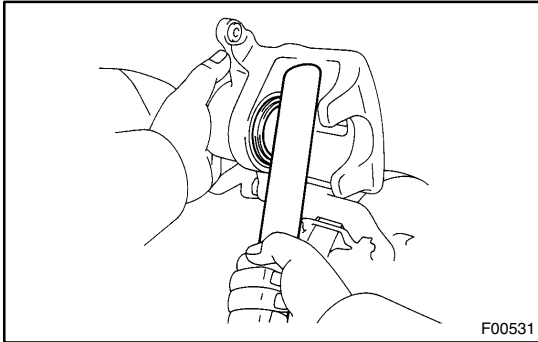
When replacing worn pads, the anti-squeal shims and pad wear indicator plates must be replaced together with the pads.



- (a) Install a pad wear indicator plate on the inner pad.
- (b) Apply disc brake grease to both sides of the inner anti-squeal shims (See page BR-29).
- (c) Install the anti-squeal shims to each pad.
- (d) Install the inner pad with pad wear indicator plate facing upward.
- (e) Install the outer pad.

NOTICE:

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

**9. INSTALL CALIPER**

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

HINT:

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

- (c) Install the caliper.
- (d) Install and torque the installation bolt.

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

10. INSTALL FRONT WHEEL

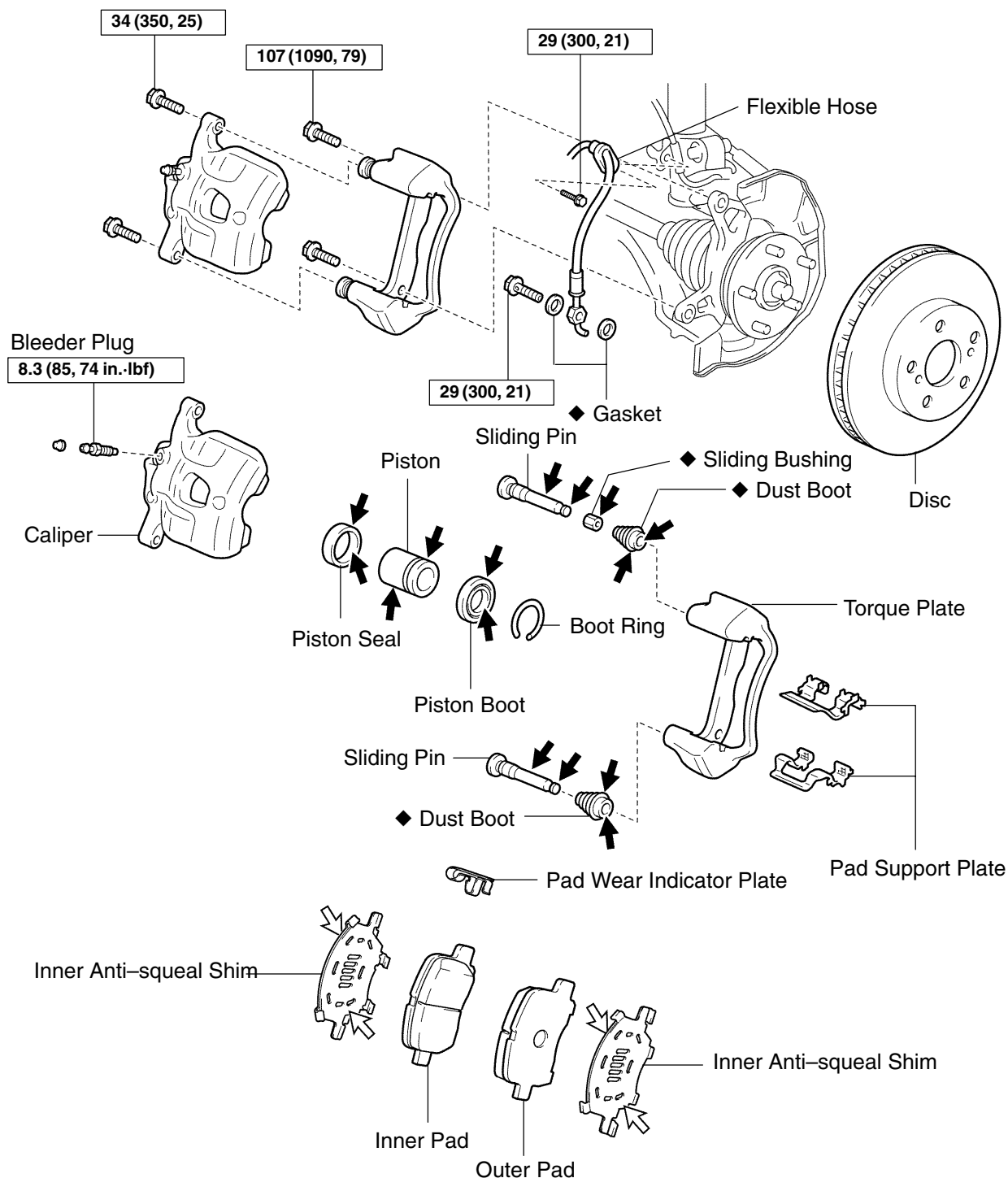
Torque: 103 N·m (1,050 kgf·cm, 76 ft·lbf)

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

FRONT BRAKE CALIPER COMPONENTS

BR1K0-01

Europe:



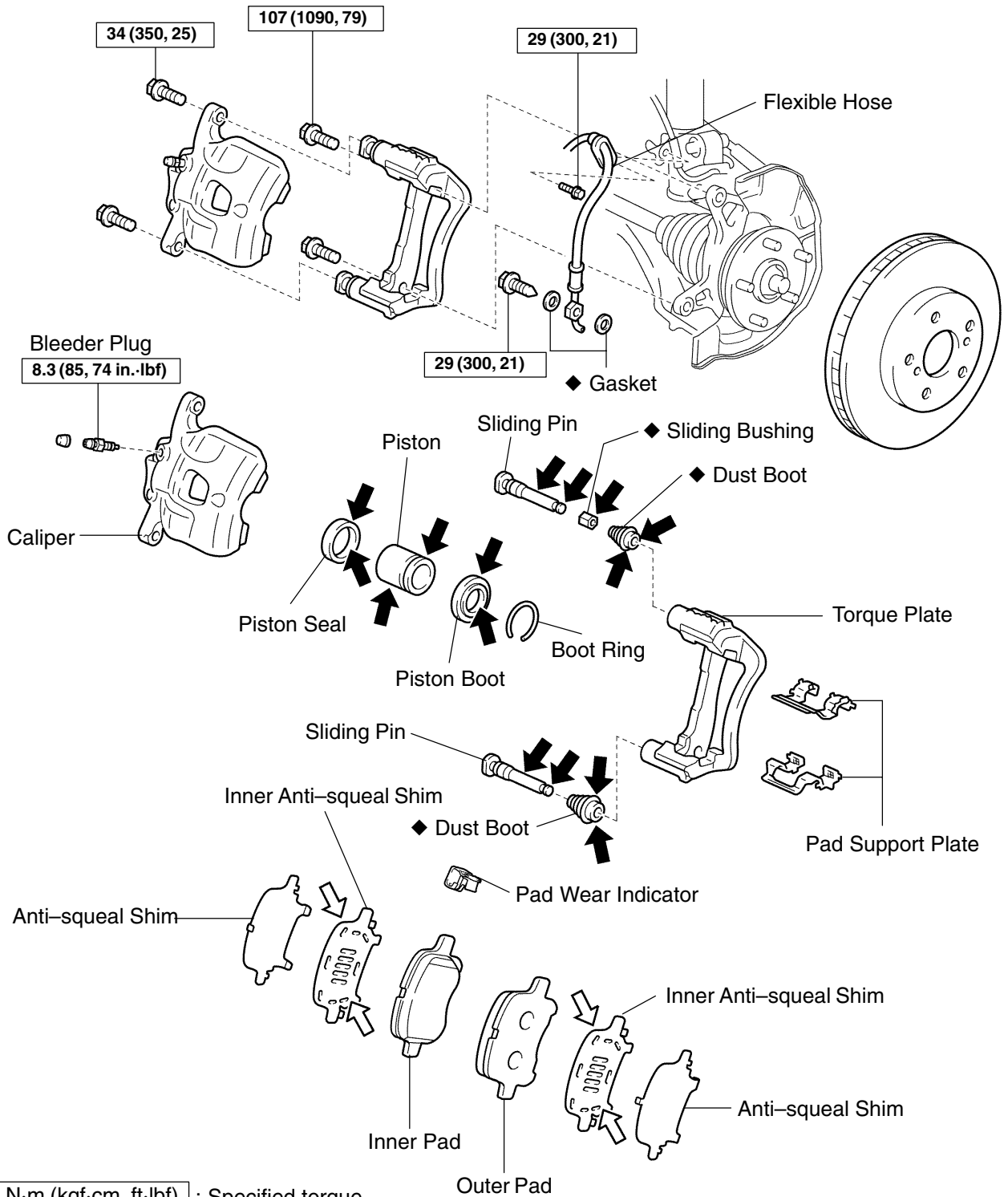
N·m (kgf·cm, ft·lbf) : Specified torque

◆ Non-reusable part

➡ Lithium soap base glycol grease

⤴ Disc brake grease

F13287

Except Europe:

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

◆ Non-reusable part

➡ Lithium soap base glycol grease

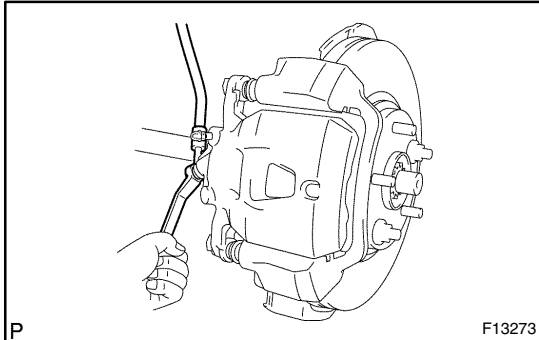
↗ Disc brake grease

F13379

REMOVAL

1. REMOVE FRONT WHEEL

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



2. DISCONNECT FLEXIBLE HOSE

- (a) Remove the flexible hose from the shock absorber.
Torque: 29 N·m (300 kgf·cm, 21 ft·lbf)
- (b) Remove the union bolt and 2 gaskets from the caliper, then disconnect the flexible hose from the caliper.
Torque: 29 N·m (300 kgf·cm, 21 ft·lbf)

HINT:

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

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

3. REMOVE CALIPER

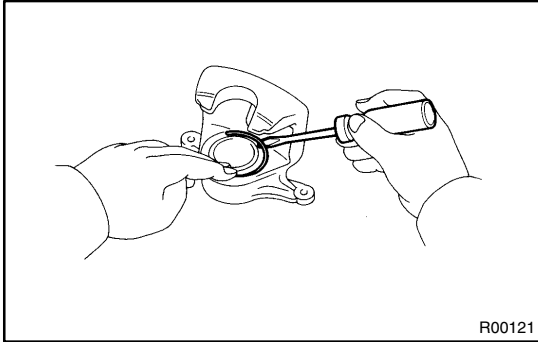
- (a) Remove the 2 installation bolts.
Torque: 34 N·m (350 kgf·cm, 25 ft·lbf)
- (b) Remove the caliper from the torque plate.

4. REMOVE 2 PADS WITH ANTI-SQUEAL SHIMS

5. REMOVE 2 PAD SUPPORT PLATES

NOTICE:

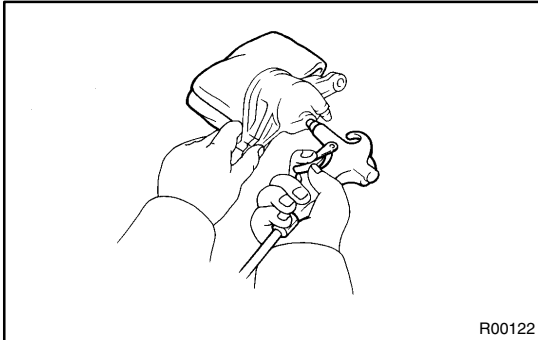
At the time of installation, there should be no oil or grease adhering to the friction surfaces of the pads or disc.



DISASSEMBLY

1. REMOVE BOOT RING AND PISTON BOOT

Using a screwdriver, remove the boot ring and piston boot.

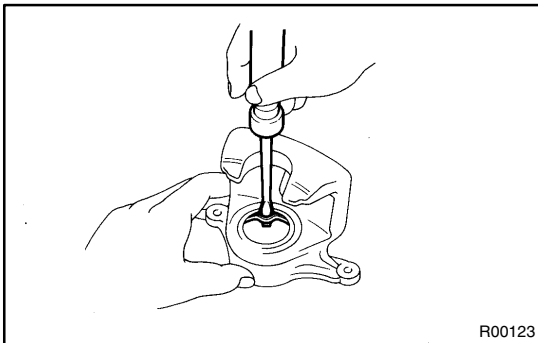


2. REMOVE PISTON FROM CYLINDER

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

CAUTION:

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



3. REMOVE PISTON SEAL FROM CYLINDER

Using a screwdriver, remove the piston seal.

4. REMOVE SLIDING PINS AND DUST BOOTS

- (a) Remove the 2 sliding pins from the torque plate.

NOTICE:

At the time of reassembly, insert the sliding pin with sliding bushing into the upper part, and insert the sliding pin without sliding bushing into the lower part.

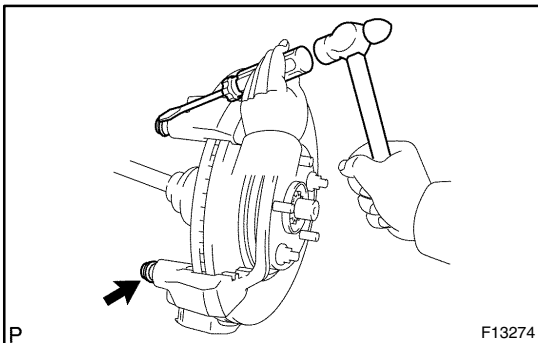
- (b) Remove the sliding bushing from the upper side of the sliding pin.
- (c) Using a screwdriver and hammer, tap the 2 dust boots.

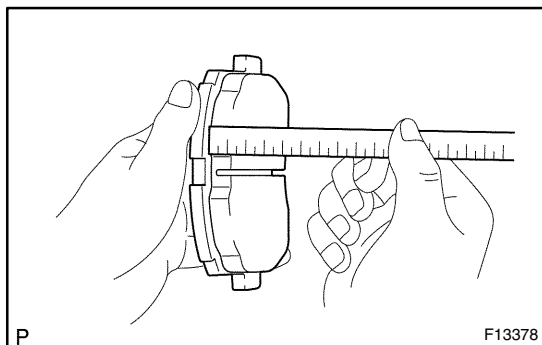
HINT:

At the time of reassembly, use a 24 mm socket and hammer, tap in the 2 new dust boots.

NOTICE:

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





INSPECTION

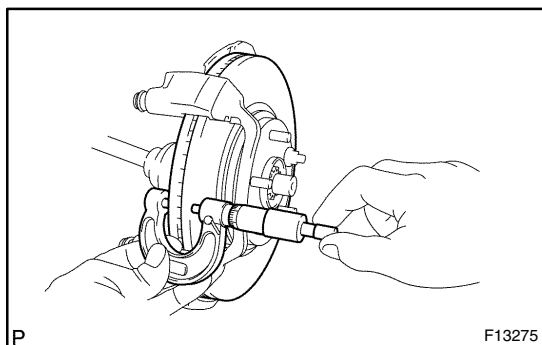
1. MEASURE PAD LINING THICKNESS

Using a ruler, measure the pad lining thickness.

Standard thickness: 11.0 mm (0.433 in.)

Minimum thickness: 1.0 mm (0.039 in.)

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



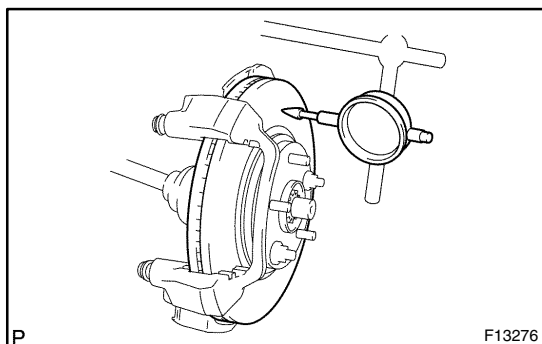
2. MEASURE DISC THICKNESS

Using a micrometer, measure the disc thickness.

Standard thickness: 28.0 mm (1.102 in.)

Minimum thickness: 26.0 mm (1.024 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.

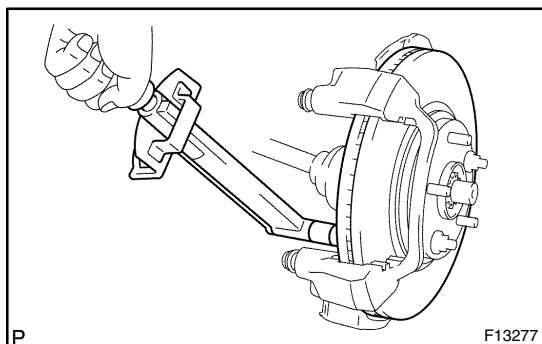
Europe:

Maximum disc runout: 0.035 mm (0.0020 in.)

Except Europe:

Maximum disc runout: 0.05 mm (0.0020 in.)

If the disc's runout is at the maximum value or greater, check the bearing play in the axial direction and check the axle hub runout (See page SA-10). If the bearing play and axle hub runout are not abnormal, adjust the disc runout or grind it on a "On-car" brake lathe.



4. IF NECESSARY, ADJUST DISC RUNOUT

- Remove the 2 bolts and torque plate from the knuckle.
- Remove the hub nuts and the disc. Reinstall the disc 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 down of the runout and the disc's position on the hub.

- (d) Europe:
Repeat (b) and (c) until the disc has been installed on the 3 remaining hub positions.
- If the minimum runout recorded in (c) and (d) is less than 0.035 mm (0.0020 in.), install the disc in that position.
 - If the minimum runout recorded in (c) and (d) is greater than 0.035 mm (0.0020 in.), replace the disc and repeat step 3.
- (e) Except Europe:
Repeat (b) and (c) until the disc has been installed on the 3 remaining hub positions.
- If the minimum runout recorded in (c) and (d) is less than 0.05 mm (0.0020 in.), install the disc in that position.
 - If the minimum runout recorded in (c) and (d) is greater than 0.05 mm (0.0020 in.), replace the disc and repeat step 3.
- (f) Install the torque plate and torque the mounting bolts.
Torque: 107 N·m (1,090 kgf·cm, 79 ft·lbf)

REASSEMBLY

Reassembly is in the reverse order of disassembly (See page BR-35).

NOTICE:

Apply lithium soap base glycol grease to the parts indicated by the arrows (See page BR-32).

INSTALLATION

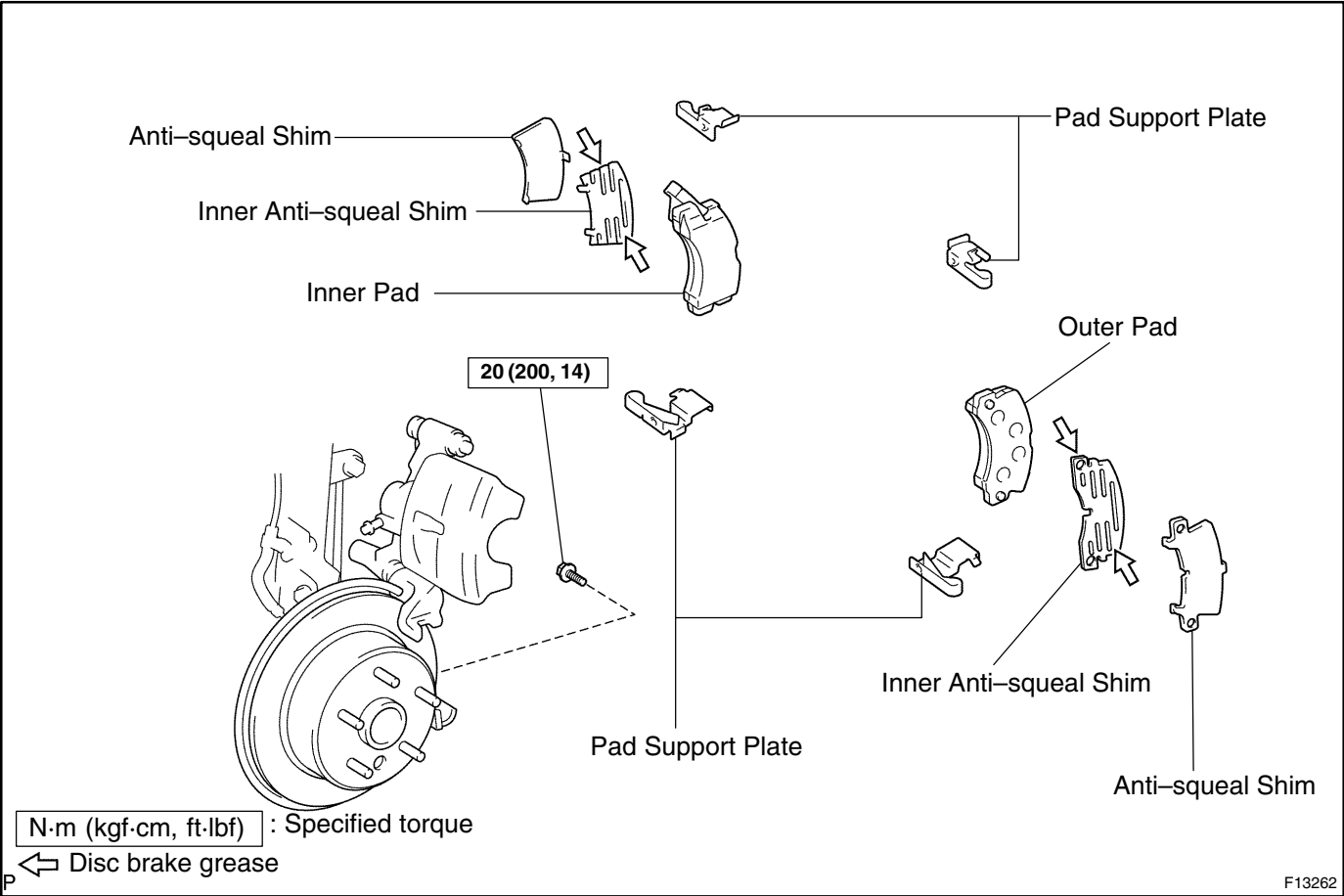
Installation is in the reverse order of removal (See page BR-34).

HINT:

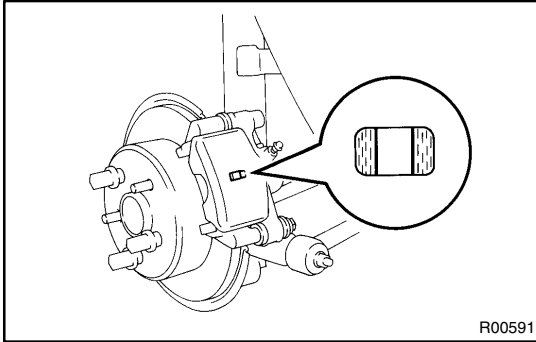
- After installation fill the brake reservoir with brake fluid, bleed brake system (See page BR-4).
- Check for leaks.

REAR BRAKE PAD COMPONENTS

BR06R-05



F13262



R00591

REPLACEMENT

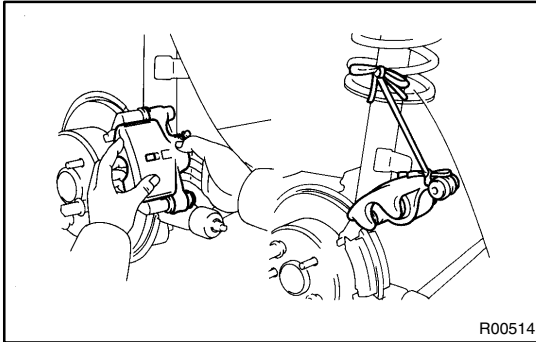
1. REMOVE REAR WHEEL

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

2. INSPECT PAD LINING THICKNESS

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

Minimum thickness: 1.0 mm (0.039 in.)



R00514

3. LIFT UP CALIPER

(a) Remove the installation bolt from the torque plate.

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

HINT:

Do not disconnect the flexible hose.

4. REMOVE 2 PADS WITH 4 ANTI-SQUEAL SHIMS

5. REMOVE 4 PAD SUPPORT PLATES

NOTICE:

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

6. CHECK DISC THICKNESS AND RUNOUT

(See page BR-46)

7. INSTALL 4 PAD SUPPORT PLATES

8. INSTALL NEW PADS

NOTICE:

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

(a) Apply disc brake grease to both sides of the inner anti-squeal shims (See page BR-40).

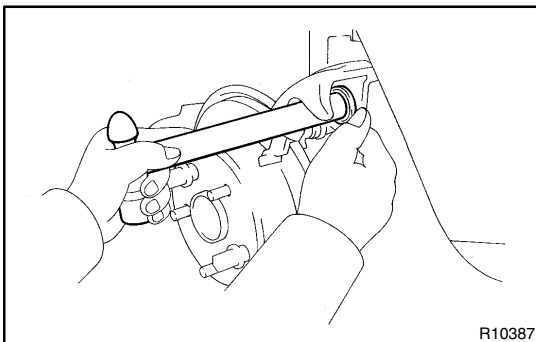
(b) Install the 2 anti-squeal shims on each pad.

(c) Install the inner pad with the pad wear indicator plate facing upward.

(d) Install the outer pad.

NOTICE:

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



R10387

9. INSTALL CALIPER

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

(b) Press in the piston with a hammer handle or similar implement.

HINT:

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

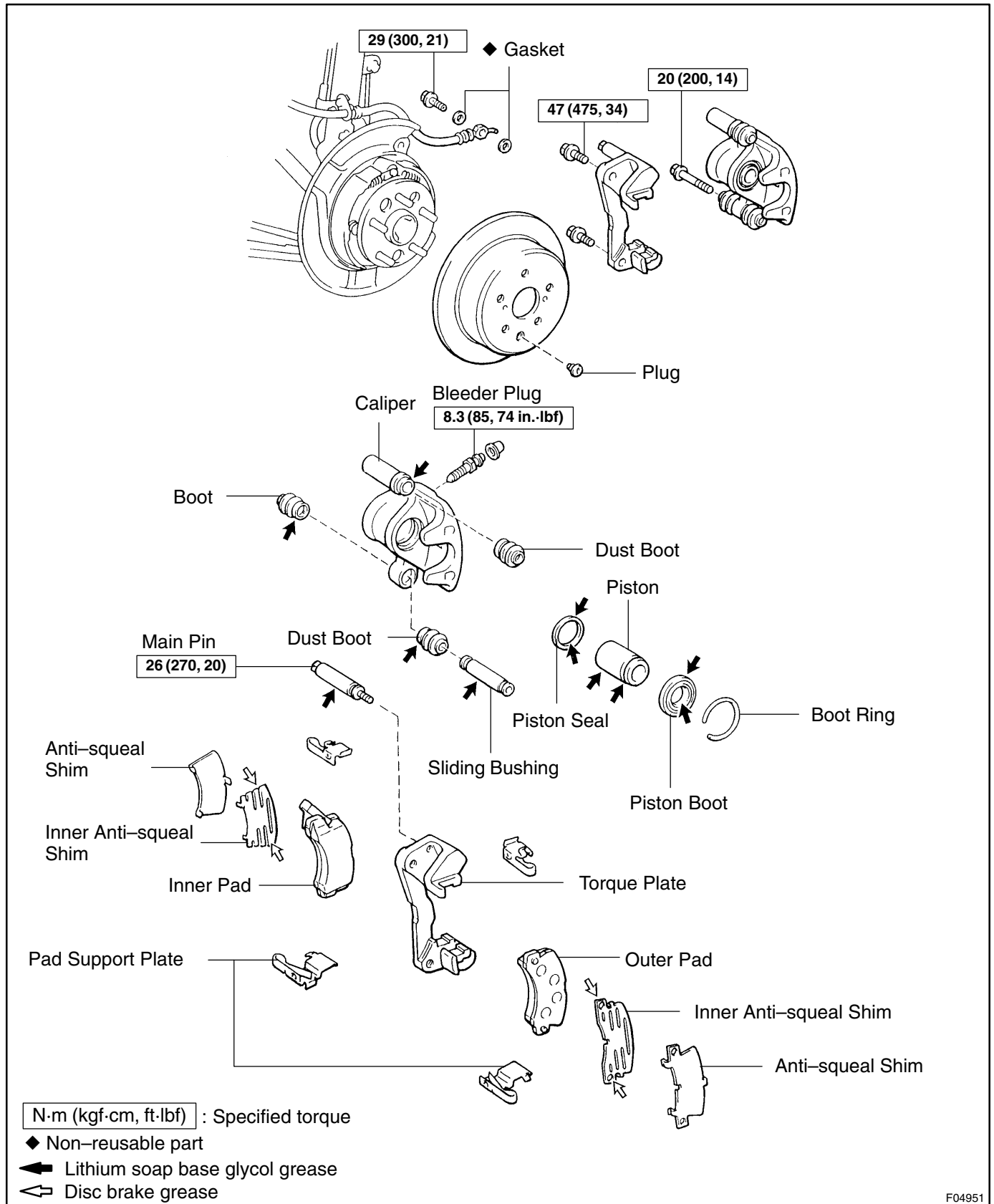
(c) Install the caliper and torque the installation bolt.

Torque: 20 N·m (200 kgf·cm, 14 ft·lbf)

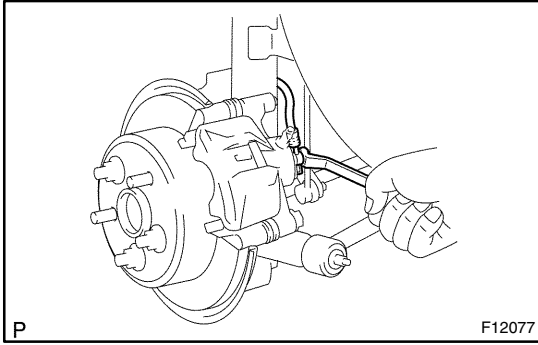
- 10. INSTALL REAR WHEEL**
Torque: 103 N·m (1,050 kgf·cm, 76 ft·lbf)
- 11. CHECK THAT FLUID LEVEL IS AT MAX LINE**
- 12. DEPRESS BRAKE PEDAL SEVERAL TIMES**

REAR BRAKE CALIPER COMPONENTS

BR06T-06



F04951



REMOVAL

1. REMOVE REAR WHEEL

2. DISCONNECT FLEXIBLE HOSE

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

Torque: 29 N·m (300 kgf·cm, 21 ft·lbf)

HINT:

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

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

3. REMOVE CALIPER

- (a) Remove the installation bolt.

Torque: 20 N·m (200 kgf·cm, 14 ft·lbf)

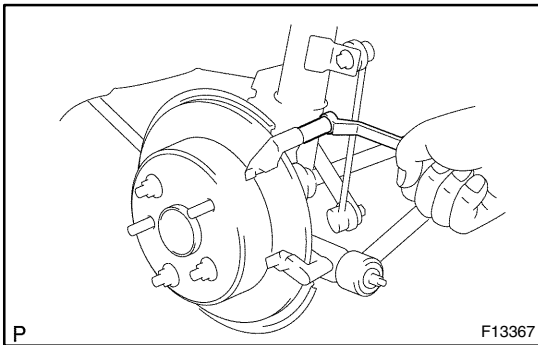
- (b) Remove the caliper from the torque plate.

4. REMOVE 2 PADS WITH 4 ANTI-SQUEAL SHIMS

5. REMOVE 4 PAD SUPPORT PLATES

NOTICE:

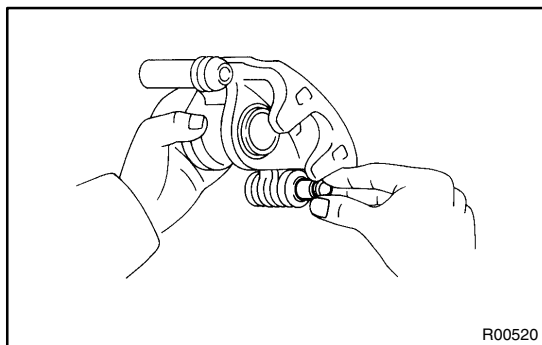
At the time of installation, there should be no oil or grease adhering to the friction surfaces of the pads or disc.



6. REMOVE MAIN PIN

Remove the main pin.

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



DISASSEMBLY

1. REMOVE SLIDING BUSHING AND 2 DUST BOOTS
2. REMOVE MAIN PIN DUST BOOT

NOTICE:

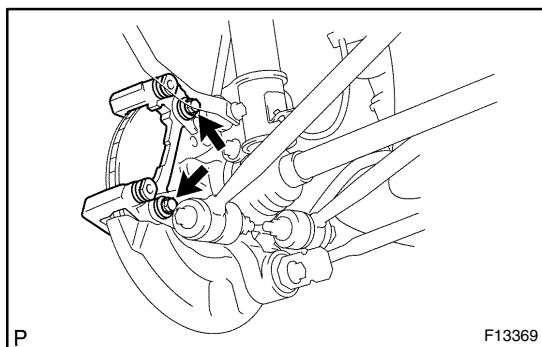
Ensure that the boots are secured firmly to the bushing and caliper grooves.

3. REMOVE BOOT RING AND PISTON BOOT
(See step 1 on page BR-35)
4. REMOVE PISTON (See step 2 on page BR-35)
5. REMOVE PISTON SEAL (See step 3 on page BR-35)

INSPECTION

1. **MEASURE PAD LINING THICKNESS**
(See step 1 on page BR-36)
Standard thickness: 10.0 mm (0.394 in.)
Minimum thickness: 1.0 mm (0.039 in.)
2. **MEASURE DISC THICKNESS**
(See step 2 on page BR-36)
Standard thickness: 10.0 mm (0.394 in.)
Minimum thickness: 8.5 mm (0.354 in.)
3. **MEASURE DISC RUNOUT**
(See step 3 on page BR-36)
Maximum disc runout: 0.15 mm (0.0059 in.)

If the disc's runout is maximum value or greater, check the bearing play in the axial direction and check the axle hub runout (See page SA-45). If the bearing play and axle hub runout are not abnormal, adjust the disc runout or grind it on a "On-car" brake lathe.



4. **IF NECESSARY, ADJUST DISC RUNOUT**
 - (a) Remove the 2 bolts and torque 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)
 - (c) Remeasure the disc runout. Make a note of the runout and the disc's position on the hub.
 - (d) Repeat (b) and (c) until the disc has been installed on the 3 remaining hub positions.
 - If the minimum runout recorded in (c) and (d) is less than 0.15 mm (0.0059 in.), install the disc in that position.
 - If the minimum runout recorded in (c) and (d) is greater than 0.15 mm (0.0059 in.), replace the disc and repeat step 3.
 - (e) Install the torque plate and torque the mounting bolts.
Torque: 47 N·m (475 kgf·cm, 34 ft·lbf)

REASSEMBLY

Reassembly is in the reverse order of disassembly (See page BR-45).

NOTICE:

Apply lithium soap base glycol grease to the parts indicated by the arrows (See page BR-43).

INSTALLATION

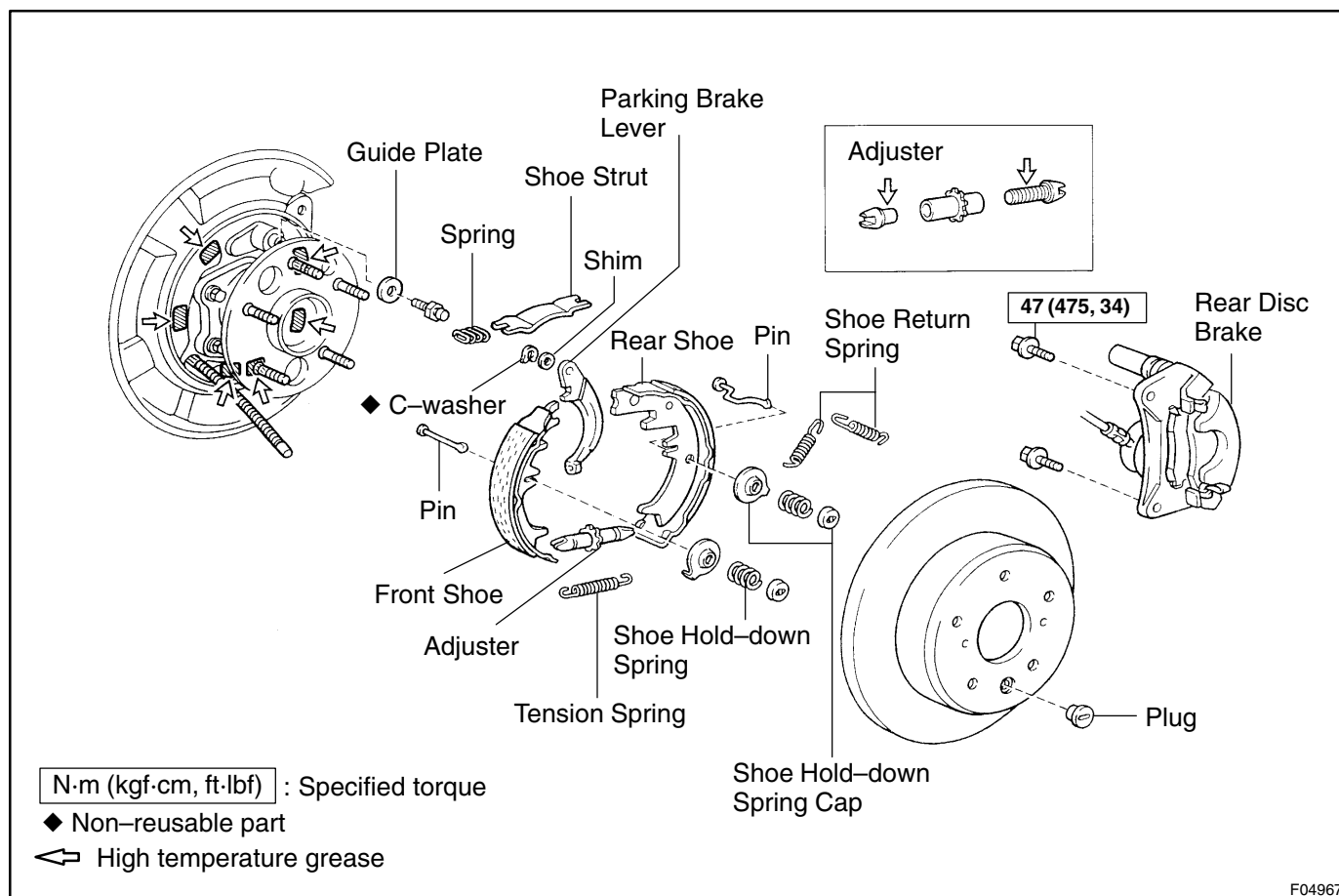
Installation is in the reverse order of removal (See page BR-44).

HINT:

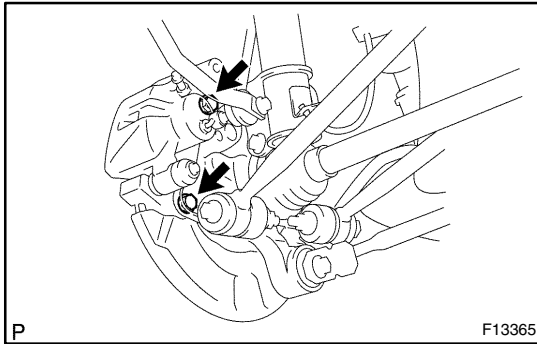
- After installation, fill the brake reservoir with brake fluid and bleed brake system (See page BR-4).
- Check for leaks.

PARKING BRAKE COMPONENTS

BR06Z-06



F04967



DISASSEMBLY

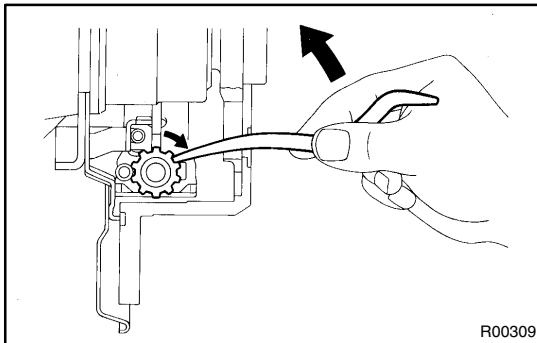
1. REMOVE REAR WHEEL

2. REMOVE REAR DISC BRAKE ASSEMBLY

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

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

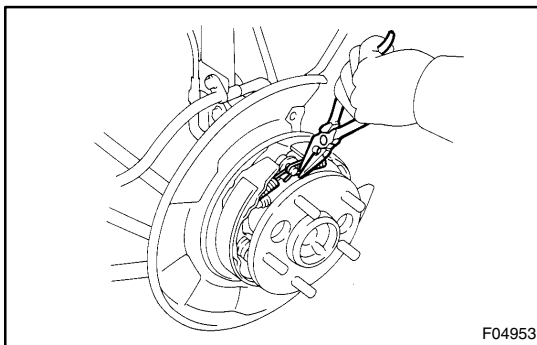
- (b) Suspend the disc brake securely. Ensure that the hose is not stretched.



3. REMOVE DISC

HINT:

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

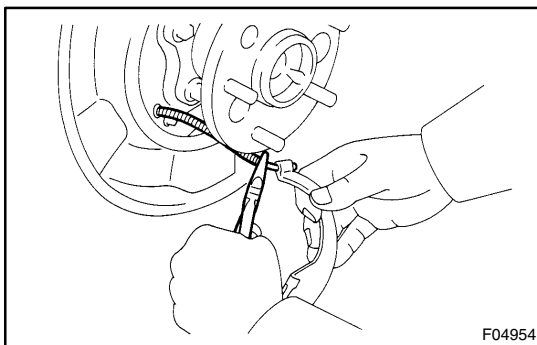


4. REMOVE SHOE RETURN SPRINGS

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

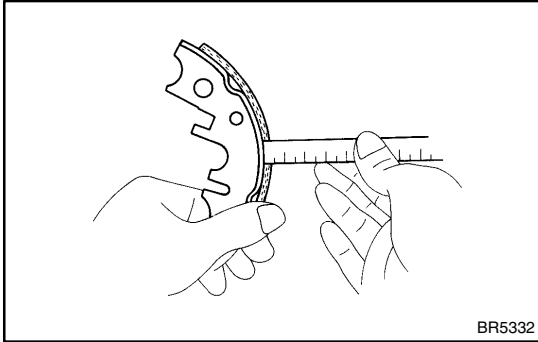
5. REMOVE FRONT SHOE

- (a) Slide out the front shoe and remove the adjuster.
 (b) Remove the shoe strut with the spring.
 (c) Remove the shoe hold-down spring caps, spring and pin.
 (d) Disconnect the tension spring and remove the front shoe.



6. REMOVE REAR SHOE

- (a) Slide out the rear shoe.
 (b) Remove the tension spring from the rear shoe.
 (c) Remove the shoe hold-down spring caps, spring and pin.
 (d) Using needle-nose pliers, disconnect the parking brake cable from the parking brake shoe lever.



INSPECTION

1. INSPECT DISASSEMBLED PARTS

Inspect the disassembled parts for wear, rust or damage.

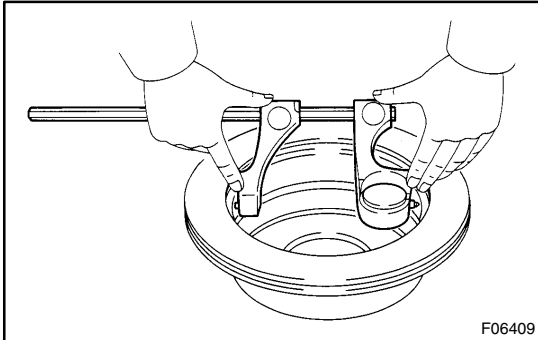
2. MEASURE BRAKE SHOE LINING THICKNESS

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

Standard thickness: 2.0 mm (0.079 in.)

Minimum thickness: 1.0 mm (0.039 in.)

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



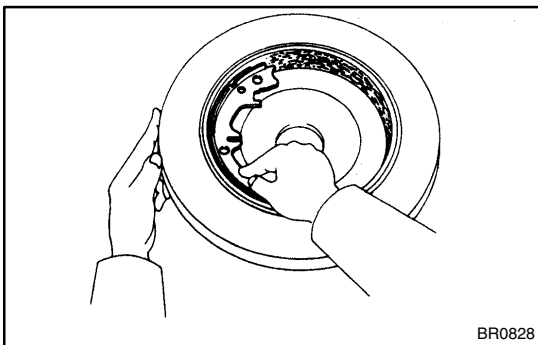
3. MEASURE DISC INSIDE DIAMETER

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

Standard inside diameter: 170 mm (6.69 in.)

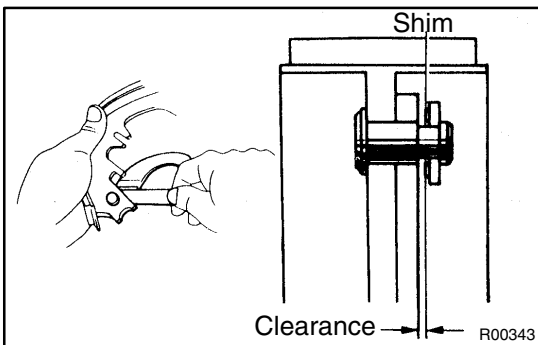
Maximum inside diameter: 171 mm (6.73 in.)

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.



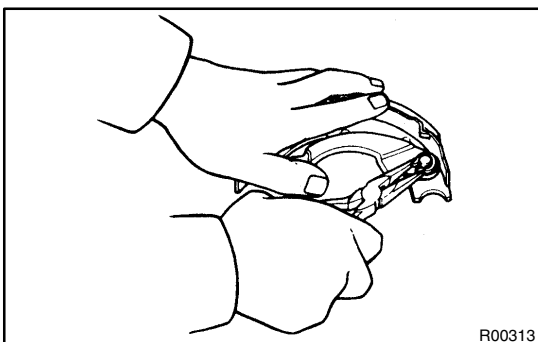
5. MEASURE CLEARANCE BETWEEN PARKING BRAKE SHOE AND LEVER

Using a feeler gauge, measure the clearance.

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

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

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



6. IF NECESSARY, REPLACE SHIM

- Using a screwdriver, remove the C-washer and shim.
- Install the correct size shim.
- Using needle-nose pliers, install the parking brake lever with a new C-washer.
- Remeasure the clearance.

REASSEMBLY

Reassembly is in the reverse order of disassembly (See page BR-50).

NOTICE:

Apply high temperature grease to the parts indicated by the arrows (See page BR-49).

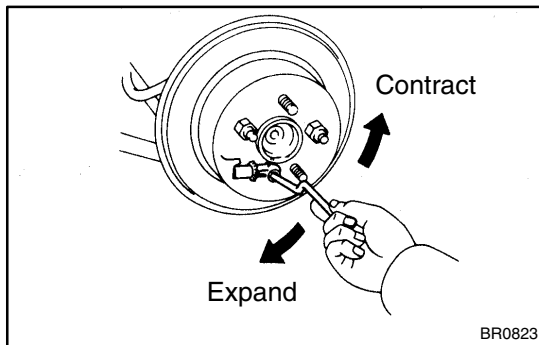
1. ADJUST PARKING BRAKE SHOE CLEARANCE

- (a) Temporarily install the hub nuts.
- (b) Remove the hole plug.
- (c) Turn the adjuster and expand the shoes until the disc locks.
- (d) Return the adjuster 8 notches.
- (e) Install the hole plug.

2. SETTLE PARKING BRAKE SHOES AND DISC

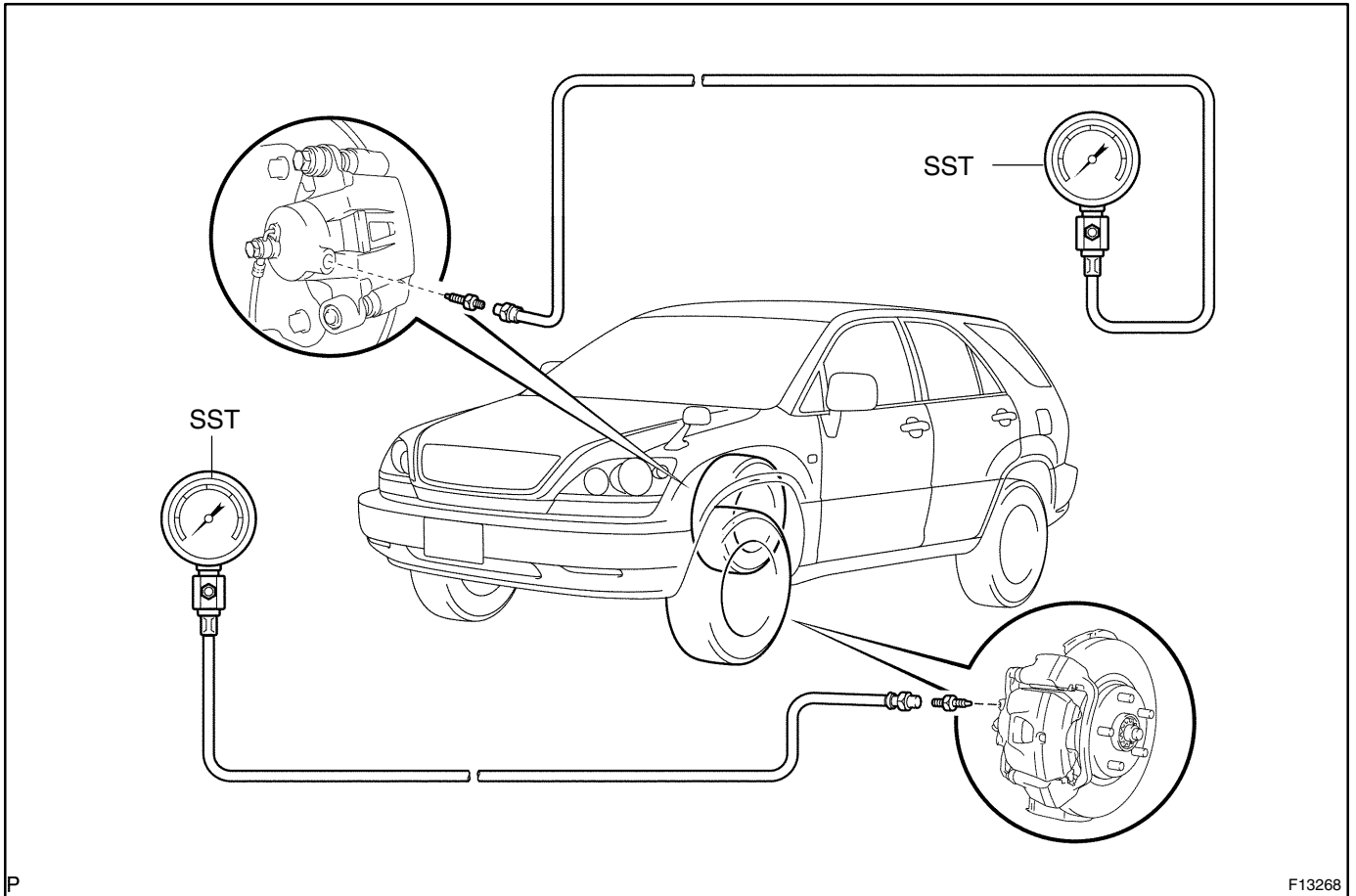
- (a) Depress the parking brake pedal with 147 N (15 kgf, 33 lbf).
- (b) Drive the vehicle at about 50 km/h (31 mph) on a safe, level and dry road for about 400 meters (0.25 mile) in this condition.
- (c) Repeat this procedure 2 or 3 times.

3. RECHECK AND ADJUST PARKING BRAKE PEDAL TRAVEL (See page BR-8)



PROPORTIONING VALVE (P VALVE) ON-VEHICLE INSPECTION

BR073-06

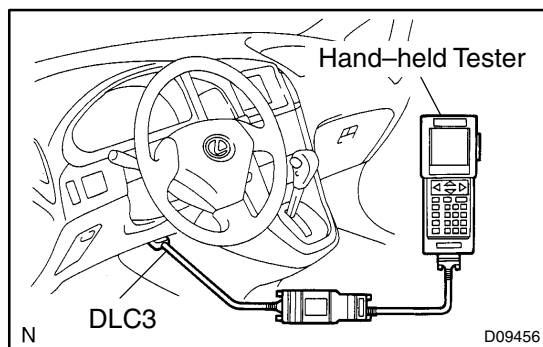


1. **INSTALL LSPV GAUGE (SST) AND BLEED AIR**
SST 09709-29018
2. **BLEED AIR FROM FLUID PRESSURE GAUGE**
3. **RAISE MASTER CYLINDER PRESSURE AND CHECK REAR CALIPER PRESSURE**

Master cylinder fluid pressure	Rear brake caliper fluid pressure
2,942 kPa (30 kgf/cm ² , 427 psi)	2,942 kPa (30 kgf/cm ² , 427 psi)
7,845 kPa (80 kgf/cm ² , 1,138 psi)	5,884 kPa (60 kgf/cm ² , 853 psi)

If the rear brake caliper pressure is incorrect, replace the P valve assembly.

4. **REMOVE LSPV GAUGE (SST)**
SST 09709-29018
5. **BLEED BRAKE SYSTEM (See page BR-4)**
6. **CHECK FOR LEAKS**



BRAKE ACTUATOR ON-VEHICLE INSPECTION

BR1KP-01

1. CONNECT HAND-HELD TESTER

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

HINT:

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

2. INSPECT ACTUATOR MOTOR OPERATION

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

NOTICE:

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

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

3. INSPECT RIGHT FRONT WHEEL OPERATION

NOTICE:

Never turn ON the solenoid which is not described below.

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

NOTICE:

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

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

NOTICE:

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

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

4. INSPECT OTHER WHEELS OPERATION

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

HINT:

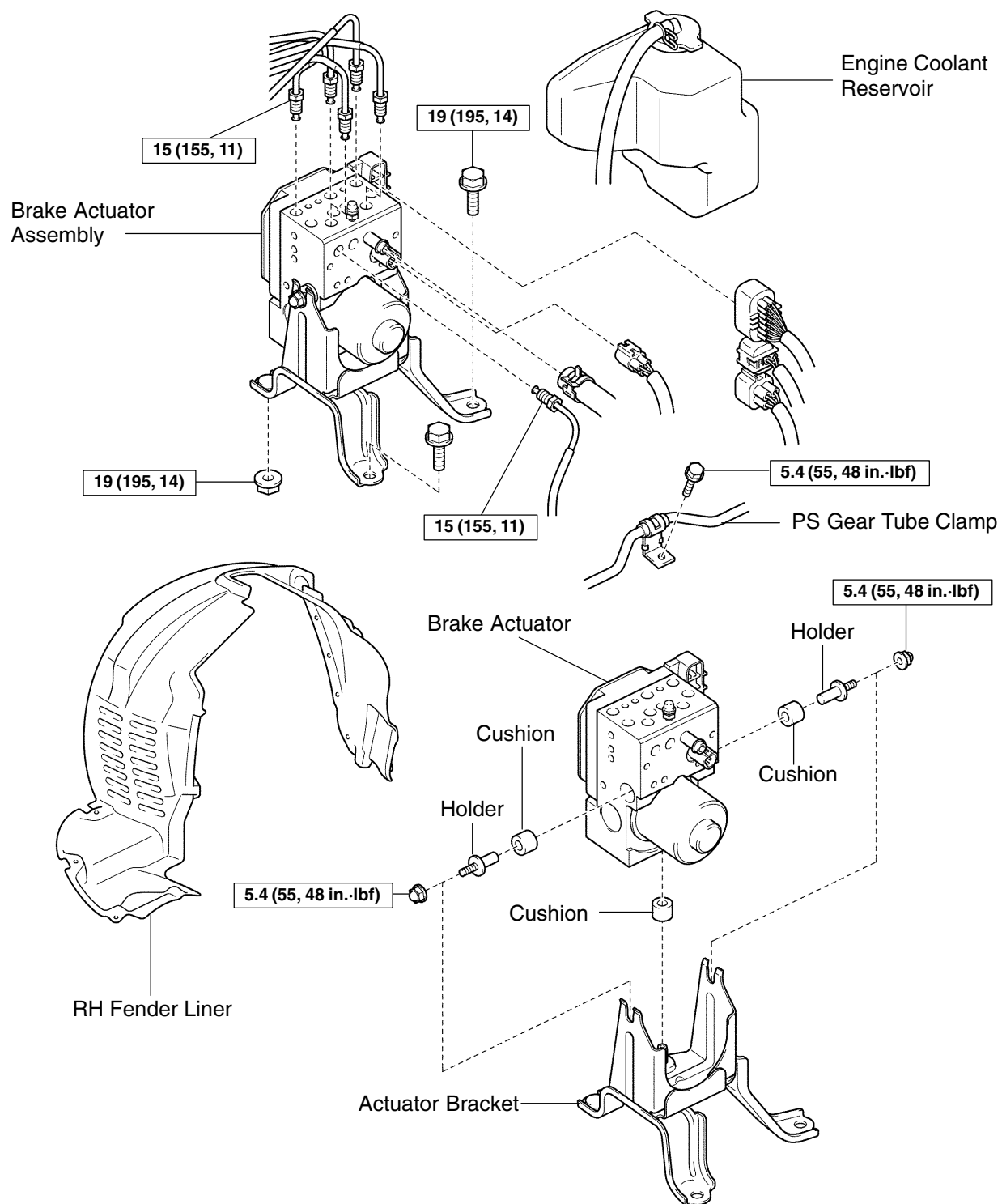
Left front wheel: SFLH, SFLR

Right rear wheel: SRRH, SRRR

Left rear wheel: SRLH, SRLR

5. CLEAR DTC (See page DI-205)

COMPONENTS



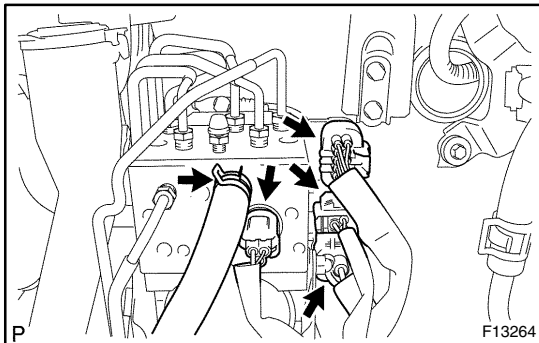
N·m (kgf·cm, ft·lbf) : Specified torque

F13263

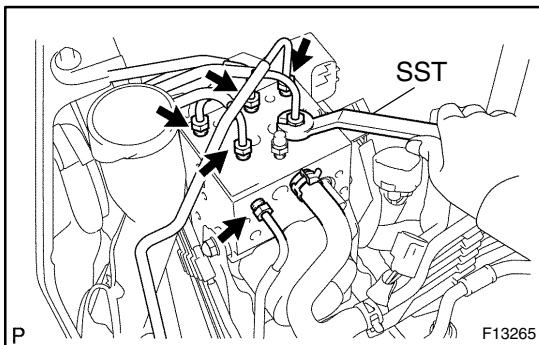
REMOVAL

1. **REMOVE RIGHT FRONT WHEEL AND FRONT FENDER LINER**
2. **REMOVE PS GEAR TUBE CLAMP BOLT**
Torque: 5.4 N·m (55 kgf·cm, 48 in.-lbf)
3. **DISCONNECT ENGINE COOLANT RESERVOIR**

Slide the engine coolant reservoir upward and remove it from the bracket.



4. **DISCONNECT 4 CONNECTORS AND BRAKE HOSE FROM BRAKE ACTUATOR ASSEMBLY**

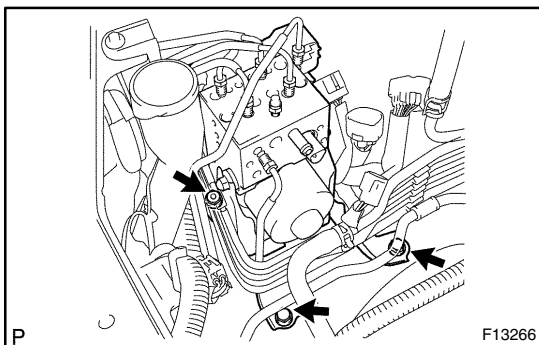


5. **DISCONNECT BRAKE LINES**

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

SST 09751-36011

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



6. **REMOVE BRAKE ACTUATOR ASSEMBLY**

Remove the 2 bolts, nut and brake actuator assembly.

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

7. **REMOVE BRAKE ACTUATOR**

- (a) Remove the 2 nuts and brake actuator from actuator bracket.

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

- (b) Remove the 2 holders and 3 cushions from the brake actuator.

INSTALLATION

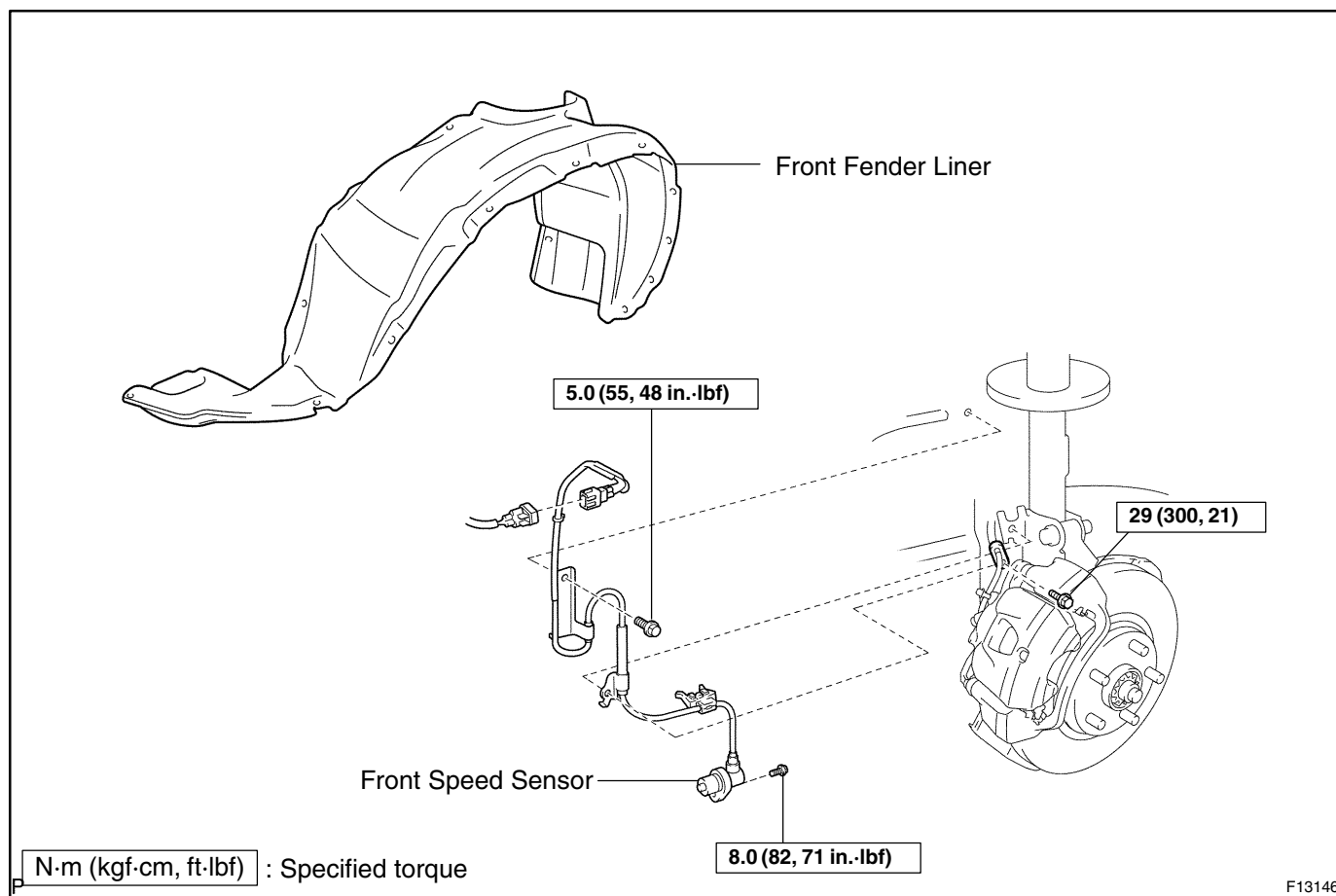
Installation is in the reverse order of removal (See page BR-56).

HINT:

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

FRONT SPEED SENSOR COMPONENTS

BR07C-06

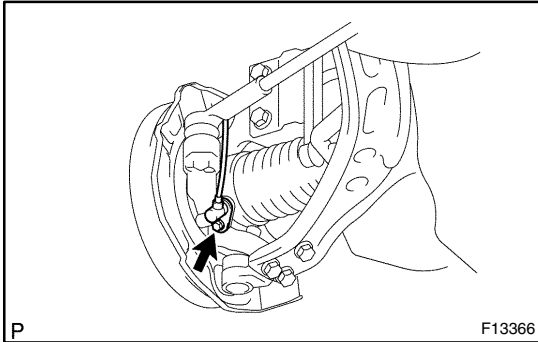




REMOVAL

1. DISCONNECT SPEED SENSOR CONNECTOR

- (a) Remove the front wheel and front fender liner.
- (b) Disconnect the speed sensor connector.



2. REMOVE SPEED SENSOR

- (a) Remove the bolt, flexible hose and speed sensor harness clamp from the shock absorber.

Torque: 29 N·m (300 kgf·cm, 21 ft·lbf)

- (b) Remove the resin clip from the shock absorber.
- (c) Remove the bolt and speed sensor harness clamp from the body.

Torque: 5.0 N·m (55 kgf·cm, 48 in·lbf)

- (d) Remove the bolt and speed sensor from the steering knuckle.

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

INSTALLATION

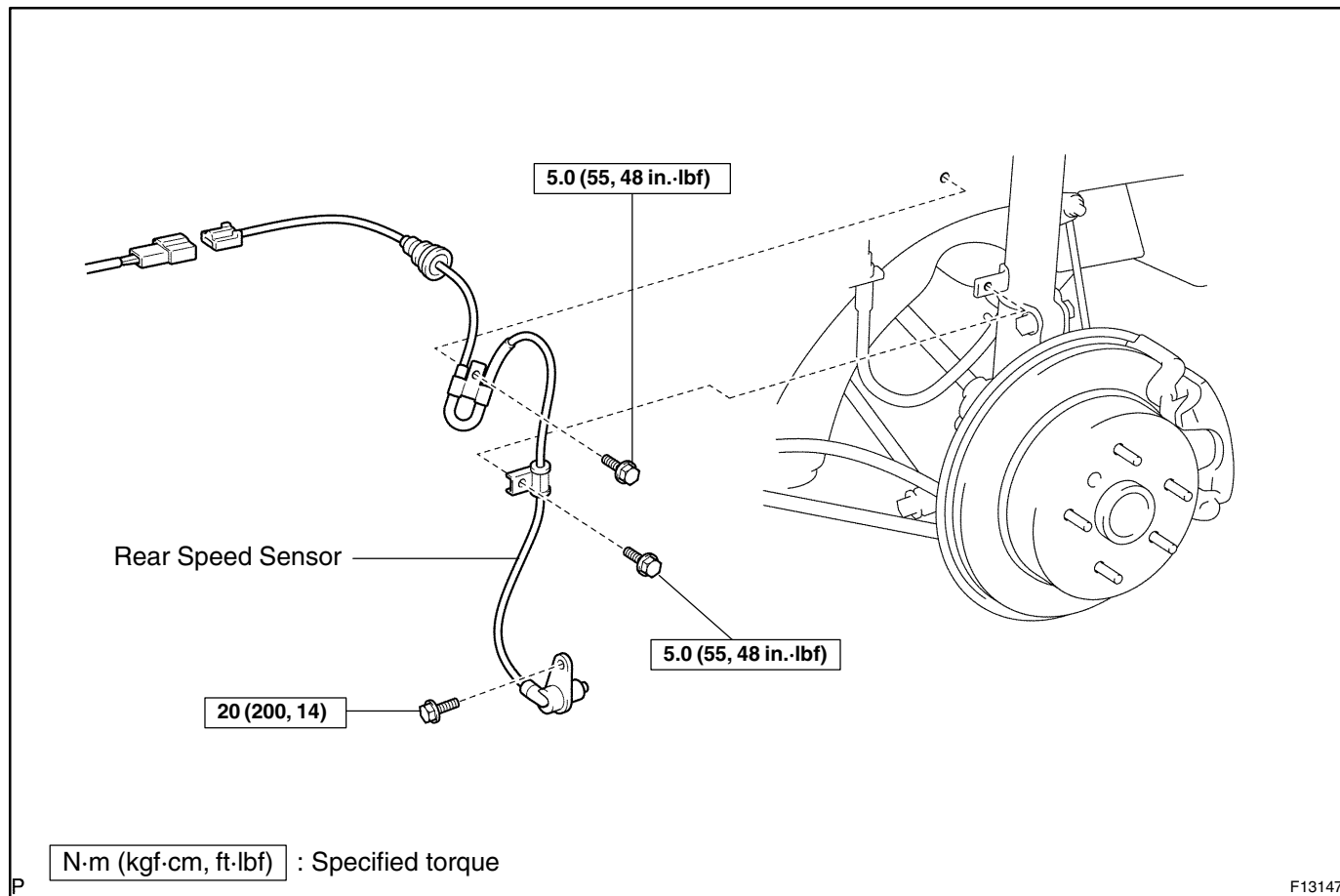
Installation is in the reverse order of removal (See page BR-59).

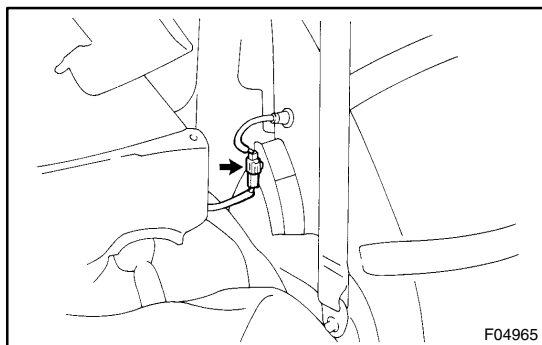
HINT:

After installation, check speed sensor signal (See page DI-205).

REAR SPEED SENSOR COMPONENTS

BR07F-06

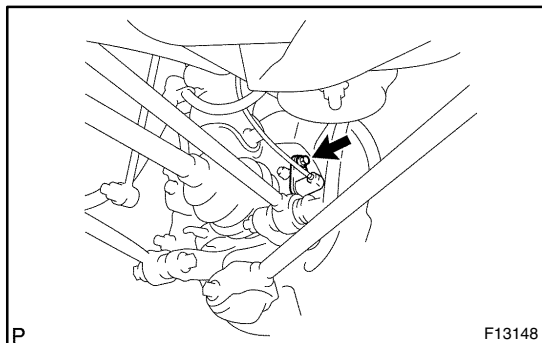




REMOVAL

1. DISCONNECT SPEED SENSOR CONNECTOR

- (a) Remove the rear seat, scuff plate and rear seat side garnish.
- (b) Disconnect the speed sensor connector, and pull out the sensor wire harness with the grommet.



2. REMOVE SPEED SENSOR

- (a) Remove the 2 clamp bolts holding the sensor wire harness from the body and shock absorber.
Torque: 5.0 N·m (55 kgf·cm, 48 in·lbf)
- (b) Remove the bolt and speed sensor from the axle carrier.
Torque: 20 N·m (200 kgf·cm, 14 ft·lbf)

INSTALLATION

Installation is in the reverse order of removal (See page BR-62).

HINT:

After installation, check speed sensor signal (See page DI-205)