

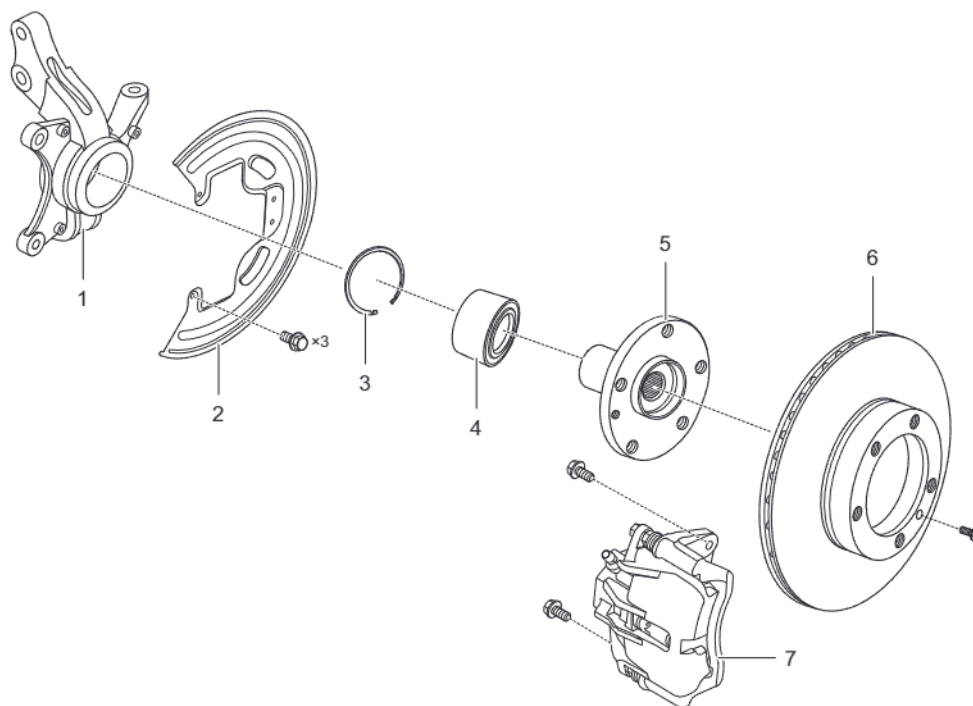
BRAKE

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GENERAL INFORMATION

Description

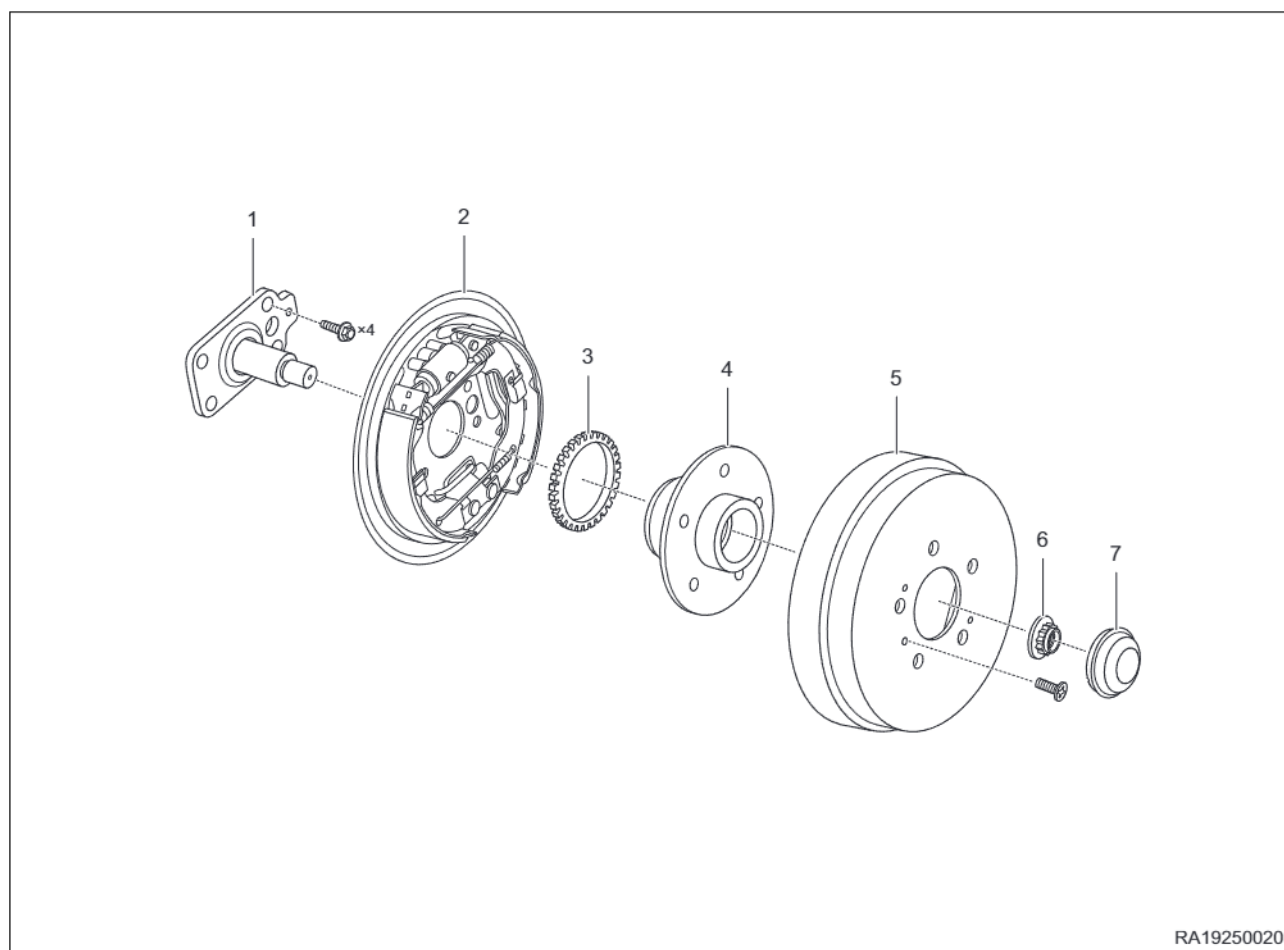
Front Disc Brake Assembly



RA19250010

1 - Front Steering Knuckle	2 - Front Dust Guard
3 - Hub Bearing Retainer	4 - Front Hub Bearing
5 - Front Hub Assembly	6 - Front Brake Disc
7 - Front Brake Caliper Assembly	

Rear Drum Brake Assembly



RA19250020

1 - Rear Hub Shaft	2 - Rear Drum Brake Assembly
3 - Rear Hub Ring Gear	4 - Rear Hub Assembly
5 - Rear Brake Drum	6 - Rear Shaft Locking Nut
7 - Rear Bearing End Cover	

The brake system uses the following configuration: disc brake is used for front wheels, and drum brake, double as parking brake, is used for rear wheels.

Using the lever principle, the brake pedal pushes the pushrod into the vacuum booster, which boosts the force of the pushrod by using the vacuum and then transmits the force to the brake master cylinder assembly. The hydraulic pressure, produced in the brake master cylinder assembly, is transmitted to the ABS Hydraulic Control Unit (HCU) through the brake tube, and then distributed to individual brake calipers and wheel cylinders. The brake calipers apply force to the brake linings and shoes using hydraulic pressure. The brake linings and shoes will cause the wheel speed to decrease or stop depending on the amount of brake pressure applied.

Specifications

Torque Specifications

Description	Torque (N·m)
Wheel Mounting Bolt	110 ± 10
Coupling Plug Between Brake Master Cylinder Assembly and Brake Pipe	18 ± 2
Coupling Nut Between Brake Master Cylinder Assembly and Vacuum Booster	13 - 17
Coupling Nut Between Vacuum Booster Assembly and Brake Pedal Assembly	25 ± 4
Coupling Bolt Between Instrument Panel Crossmember Assembly and Brake Pedal Assembly	25 ± 4
Coupling Bolt Between Front Brake Caliper Assembly and Front Brake Hose Assembly	25 ± 4
Coupling Bolt Between Front Brake Caliper Assembly and Front Steering Knuckle Assembly	100 ± 10
Front Brake Disc Fixing Screw	7 - 9
Front Brake Caliper Bleeder Plug	5.88 - 9.8
Locating Bolt Between Brake Caliper Fixing Bracket and Brake Cylinder Assembly	25 ± 4
Coupling Plug Between Front Brake Hose Assembly and Front Brake Pipe	18 ± 2
Coupling Bolt Between Front Shock Absorber Assembly and Front Brake Hose Assembly	25 ± 4
Rear Drum Brake Positioning Screw	10 ± 1
Rear Brake Wheel Cylinder Bleeder Plug	5.88 - 9.8
Coupling Plug Between Rear Brake Wheel Cylinder and Rear Brake Pipe	18 ± 2
Coupling Bolt Between Rear Brake Bottom Board and Rear Shaft Assembly	60 ± 5
Coupling Plug Between Rear Part of Rear Brake Hose Assembly and Rear Brake Pipe	18 ± 2
Coupling Plug Between Front Part of Rear Brake Hose Assembly and Rear Brake Pipe	18 ± 2

Front Disc Brake

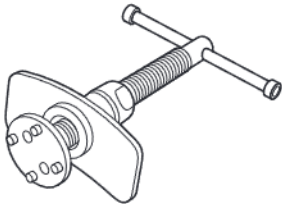
Description	Standard Thickness (mm)	Minimum Thickness (mm)	Maximum Runout (mm)
Front Brake Disc	18	16	0.025
Front Brake Lining	10.5	2	-

Rear Drum Brake

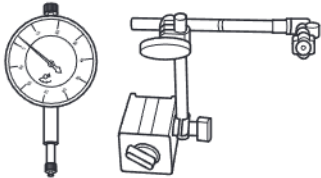
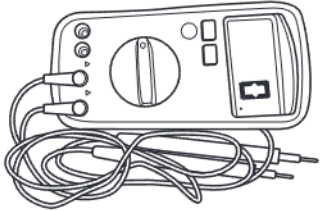
Description	Standard Thickness (mm)	Minimum Thickness (mm)
Rear Brake Shoe Lining	5	1

Description	Standard Inner Diameter (mm)	Maximum Inner Diameter (mm)	Maximum Runout (mm)
Rear Brake Drum	220	221.4	0.05

Tools**Special Tool**

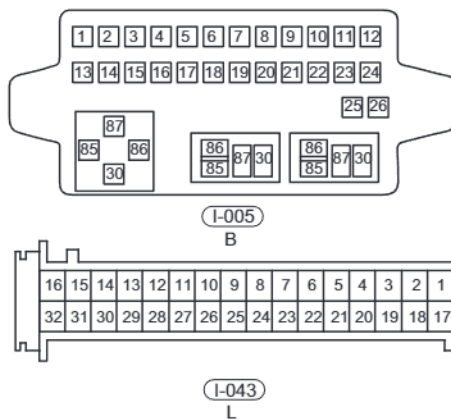
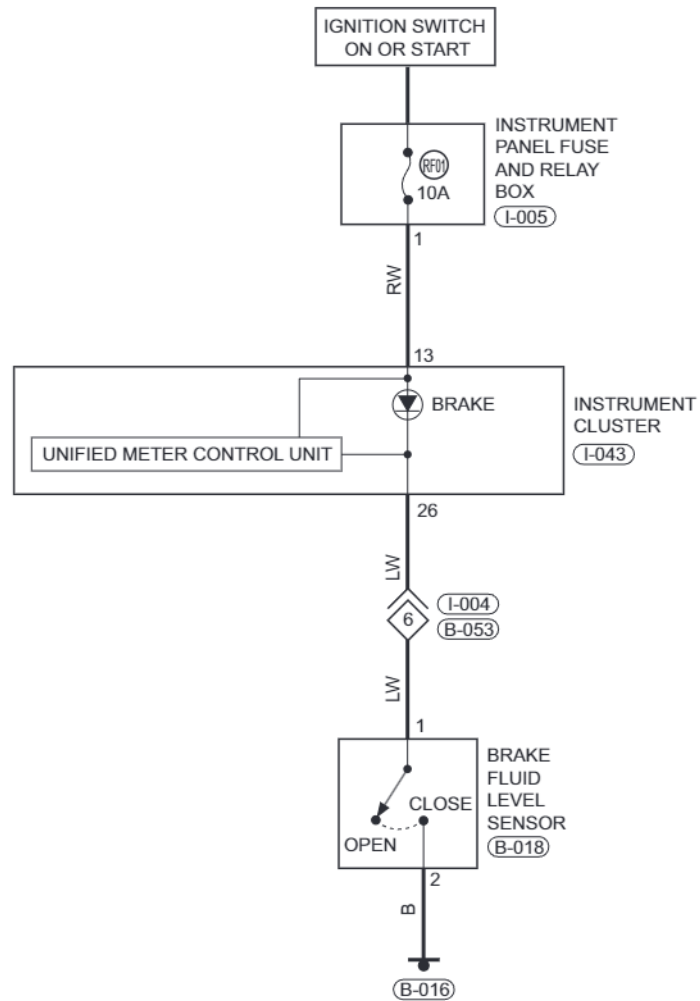
Brake Caliper Piston Pressing Tool	 RCH0000053
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General Tools

Dial Indicator and Magnetic Holder	 RCH0000023
Vernier Caliper	 RCH0000019
Digital Multimeter	 RCH0000002

Circuit Diagram

Brake System



EA19250010

DIAGNOSIS & TESTING

Problem Symptoms Table

HINT:

Use the table below to help determine the cause of problem symptoms. Check each suspected area in sequence. Repair or replace the faulty components, or adjust them as necessary.

Symptom	Suspected Area	See page
Noise in brake	Front brake lining (cracked, deformed, dirty or burnished)	25-28
	Rear brake shoe lining (cracked, deformed, dirty or burnished)	25-41
	Front disc brake locating bolt guide pin (worn)	25-28
	Front disc brake fixing bolt (loose)	25-27
	Front brake disc (scored)	25-27
	Excessive brake disc runout	25-27
	Rear brake drum (scored)	25-41
	Brake shoe regulating device (damaged)	25-41
	Brake shoe return tension spring (damaged or insufficient elasticity)	25-41
	Foreign matter on brake disc	-
	Foreign matter on rear brake drum	-
Hard pedal but brake inefficient	Front brake lining (worn, cracked, deformed, oily or burnished)	25-28
	Rear brake shoe lining (worn, cracked, deformed, oily or burnished)	25-41
	Front brake disc (unevenly worn)	25-27
	Rear brake drum (unevenly worn)	25-40
	Vacuum booster pushrod position (incorrect)	25-18
	Vacuum leaks in booster system	25-21
Hard pedal (firm-depress unable to lock-up wheels)	Vacuum booster (bounce)	25-18
Pedal overtravel (vehicle stops normally)	Air in brake system	25-12
Pedal pulsates/bounces during braking	Brake disc (unevenly worn)	25-27

Symptom	Suspected Area	See page
Low or spongy pedal	Air in brake system	25-12
	Leak in brake system	-
	Front brake piston seal (worn or damaged)	25-28
	Rear brake piston seal (worn or damaged)	25-41
	Brake master cylinder assembly (malfunction)	25-16
	Vacuum booster pushrod position (incorrect)	25-18
Vehicle pulls during braking	Front brake piston (stuck or frozen)	25-28
	Rear brake piston (stuck or frozen)	25-41
	Front brake lining (dirty, cracked or deformed)	25-28
	Rear brake shoe lining (dirty, cracked or deformed)	25-41
	Front brake disc (unevenly worn)	25-27
	Rear brake drum (unevenly worn)	25-40
Brake stuck	Brake pedal free play (minimum)	25-22
	Parking brake lever stroke (in need of adjustment)	26-7
	Parking brake cable (stuck)	26-14
	Parking brake shoe clearance (in need of adjustment)	26-7
	Front brake lining (cracked or deformed)	25-28
	Rear brake shoe lining (cracked or deformed)	25-41
	Front brake piston (stuck or frozen)	25-28
	Rear brake piston (stuck or frozen)	25-41
	Brake shoe return tension spring (loose or damaged)	25-41
	Vacuum booster pushrod position (incorrect)	25-18
	Vacuum leaks in booster system	25-21
	Brake master cylinder assembly (malfunction)	25-16

Inspection

CAUTION

- Use the tightly sealed brake fluid DOT4 or equivalent. DO NOT use oily solution, or the brake system seal may be damaged.
- Brake fluid may damage the paint surface. If the brake fluid spills on the paint surface, wash it off immediately with water.
- DO NOT use gasoline, kerosene, alcohol, engine oil, transmission oil or any other fluid that contains mineral oil to clean the system components. These kinds of fluid will damage the rubber cover and seal.
- During servicing, make sure to clean the grease or other foreign matter on the outer surface of the brake caliper assembly, brake lining, brake disc and wheel hub.
- When operating the brake disc and the brake caliper, be careful to prevent damaging the brake disc and the brake caliper or scratching or cutting the brake shoe linings.

1. Check the conditions of the tires and wheels. Damaged or worn wheels and tires can cause a pull, shudder, vibration and a condition similar to sudden braking.
2. If noise occurs while braking, check the suspension components. Bounce the vehicle up and down several times and check the suspension or steering components for any looseness, wear or damage.
3. Check the brake fluid level and condition.
 - a. If the brake fluid level is low, check the ABS control unit assembly, brake wheel cylinder, brake caliper, brake line, brake master cylinder assembly and brake fluid reservoir, etc. for leakage.
 - b. If the brake fluid is contaminated, drain certain amount of fluid to check. Replace it with new fluid as necessary.

HINT:

It's normal that the brake fluid will become dark after being used for a period of time. Do not mistake this for contamination.

ON-VEHICLE SERVICE

Brake Bleeding

WARNING

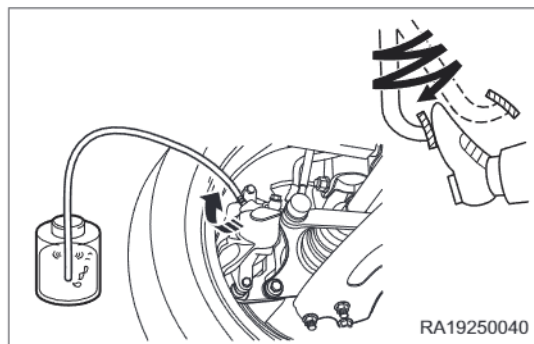
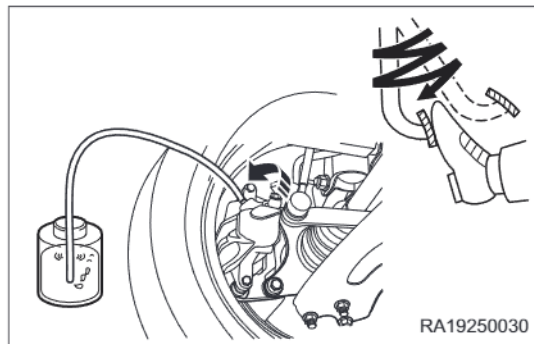
- When bleeding the brake system, wear safety glasses.
- Be careful when bleeding air, as the brake fluid at high pressure may spray out from the bleeder plug.

CAUTION

- Before removing the brake fluid reservoir, wipe it off to prevent dust and other foreign matter from dropping into the brake fluid reservoir.
- Use fresh, clear and tightly sealed brake fluid of specified type or equivalent.
- DO NOT allow the brake fluid to adhere to any paint surface, such as vehicle body. If brake fluid leaks onto any paint surface, immediately wash it off.
- During bleeding, do not depress the brake pedal repeatedly at any time with the bleeder plug open; otherwise, the amount of air in the system will increase, and further bleeding is needed.
- DO NOT drain the brake fluid in the brake fluid reservoir while bleeding the brake system.

HINT:

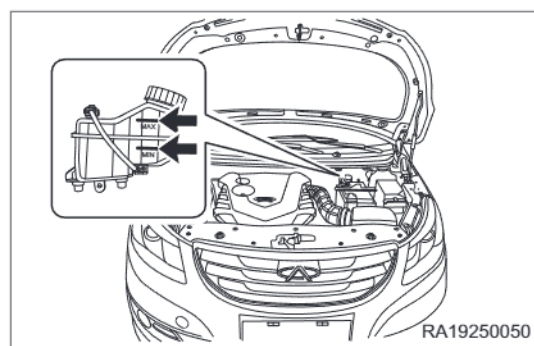
- An assistant will be required to assist when bleeding the brake system.
 - Open the service cover of the front windshield lower garnish sub-assembly to fill the brake fluid expediently.
1. Fill the brake fluid reservoir with the brake fluid to the proper level.
 2. Loosen the bleeder plug cap and connect a clear plastic hose to the bleeder plug. Submerge the end of the hose into the clear container filled with new brake fluid.
 3. Have an assistant depress the brake pedal 3 to 4 times repeatedly; depress and hold the brake pedal to a lower position. Then loosen the bleeder plug, and rotate it at least one turn.
 4. Tighten the bleeder plug every time the brake pedal moves down quickly. Then release the brake pedal.



5. Repeat the above steps, and bleed the brake lines of each wheel in the same manner in the order of rear left wheel, front right wheel, rear right wheel and front left wheel, until all the air is bled from the brake line. Empty sign: a stream of fresh brake fluid flows into the clear container without bubbles.

HINT:

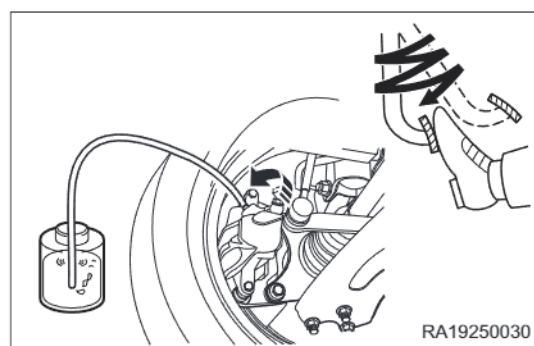
During bleeding the brake system, make sure the brake fluid level is always near the "MAX" mark. Check the brake fluid level at all times during bleeding. Add brake fluid as necessary.



6. Check and adjust the brake fluid level to the "MAX" mark.
7. Check the brake pedal effect. If the braking effect is improper or the pedal is spongy, air may still exist in the system. Perform the bleeding procedures for the brake system again as necessary.
8. Have the vehicle tested to confirm that the brake operates properly and the pedal feel is correct.

Brake Fluid Replacement

1. Drain the brake fluid.
 - a. Start the engine and run it at idle.
 - b. Remove the filler cap of the brake fluid reservoir assembly. Remove the bleeder plug cap and connect a clear plastic hose to the bleeder plug, and submerge the end of the hose into the clear container filled with new brake fluid.
 - c. Loosen the bleeder plug, and depress the brake pedal continuously until the brake fluid stops coming out.



2. Add brake fluid.
 - a. Tighten the bleeder plug after confirming that the brake fluid is drained. Fill the brake fluid reservoir with new brake fluid to the proper level.
3. Perform bleeding procedures.
 - a. After replacing with the new brake fluid, make sure to bleed the brake system for normal operation. [See page 25-12](#) for detail information about brake bleeding.

Brake Fluid Reservoir Assembly

On-vehicle Inspection

1. Check the brake fluid level warning switch.
 - a. Remove the brake fluid reservoir filler cap.
 - b. Disconnect the brake fluid level warning switch wire harness connector.
 - c. Using the ohm band of digital multimeter, check for continuity between the brake fluid level warning switch terminals according to the conditions shown in the table below.

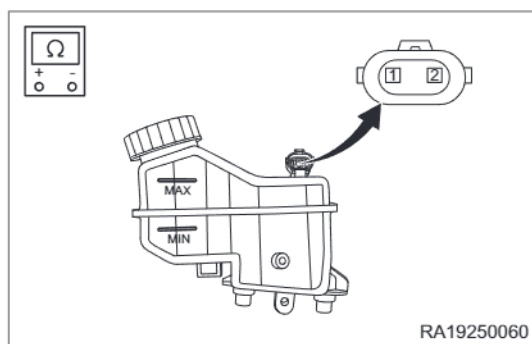
Standard Condition

Multimeter Connection	Condition	Specified Condition
Terminal 1 - Terminal 2	Float upward (switch ON)	No continuity
Terminal 1 - Terminal 2	Float downward (switch OFF)	Continuity

HINT:

- There is a float in the fluid reservoir. The position of the float changes according to the increasing or decreasing brake fluid level.
- If the result is not as specified, replace the brake fluid reservoir assembly.

- d. Add brake fluid to the "MAX" mark.



Removal

1. Drain the brake fluid ([See page 25-13](#)).

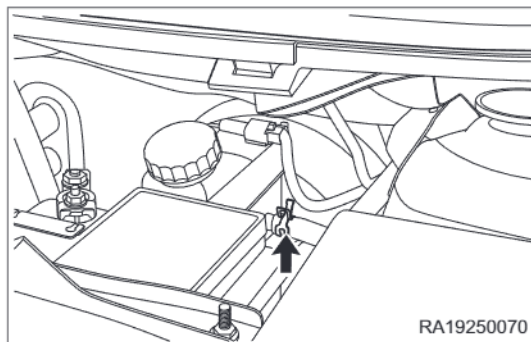
CAUTION

- Wash off the brake fluid immediately if it comes in contact with any paint surface.

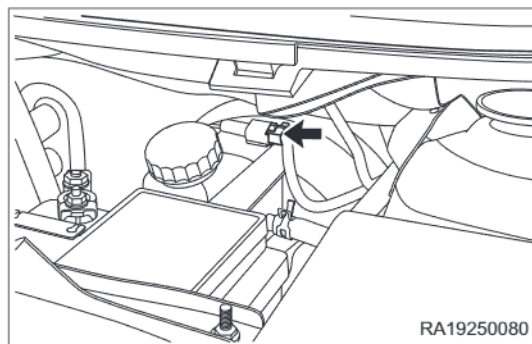
ENVIRONMENTAL PROTECTION

- The drained brake fluid should be well kept in a container. Never discard it at will.

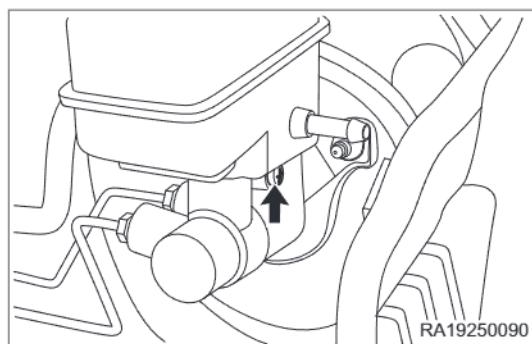
2. Remove the brake fluid reservoir assembly.
 - a. Loosen the brake hose fixing clamp (arrow) and disengage the brake hose from the brake fluid reservoir assembly.



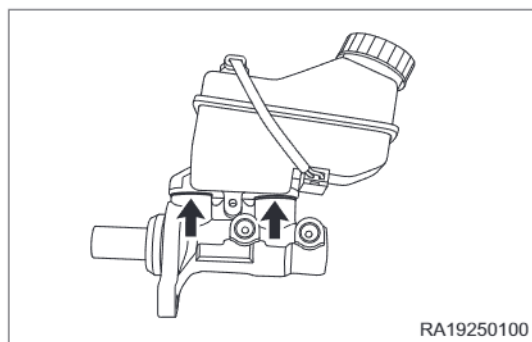
- b. Disconnect the brake fluid level warning switch connector (arrow).



- c. Loosen the coupling bolt (arrow) between brake fluid reservoir assembly and brake master cylinder assembly.
(Tightening torque: 1.5 - 5 N·m)



- d. Using a screwdriver wrapped with tape, pry the sealing parts (arrow) between brake fluid reservoir assembly and brake master cylinder assembly, and separate them.



- e. Remove the brake fluid reservoir assembly.

Installation

Installation is in the reverse order of removal.

HINT:

Perform the bleeding procedures for the brake system and add brake fluid to the proper level after completing installation.

Brake Master Cylinder Assembly

Removal

CAUTION

- Remove the vacuum in the vacuum booster before removing the brake master cylinder assembly to avoid damaging the brake master cylinder assembly and prevent the booster from sucking in any pollutant.
- When the engine is not running, remove the vacuum by depressing the brake pedal repeatedly until the brake pedal can be depressed firmly.
- When removing the brake line, sealing measures should be taken to prevent foreign matter from entering.

1. Drain the brake fluid (See page 25-13).

CAUTION

- Wash off the brake fluid immediately if it comes in contact with any paint surface.

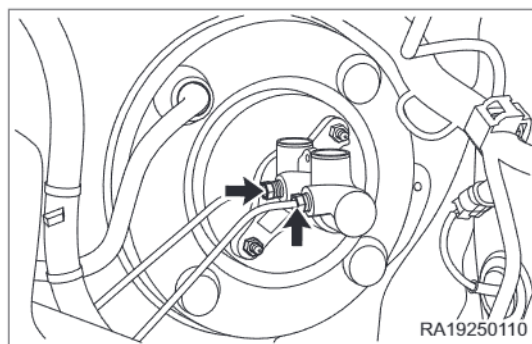
ENVIRONMENTAL PROTECTION

- The drained brake fluid should be well kept in a container. Never discard it at will.

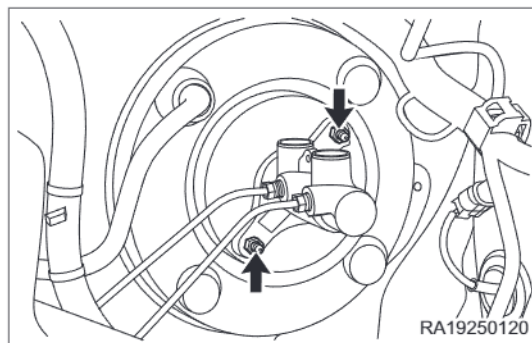
2. Remove the brake fluid reservoir assembly (See page 25-14).

3. Remove the brake master cylinder assembly.

- a. Loosen 2 fixing plugs (arrow) between brake master cylinder assembly and brake pipes.
(Tightening torque: 18 ± 2 N·m)



- b. Loosen 2 fixing nuts and washers (arrow) between brake master cylinder assembly and vacuum booster.
(Tightening torque: 25 ± 4 N·m)



- c. Slide the brake master cylinder assembly vertically out of the vacuum booster carefully.

 CAUTION

- The design of brake master cylinder assembly and piston makes the piston fall out easily. To prevent this, make sure that the brake master cylinder is horizontal or the end surface is placed upside down (piston surface facing upward) when handling.
- Make sure that no foreign matter adheres to the brake master cylinder assembly piston. If foreign matter adheres, clean it off with a piece of clean cloth. Then, apply grease to the entire outer edge contact surface of the master cylinder piston.
- The master cylinder should be handled carefully. Avoid any impact to the master cylinder, such as falling. The fallen master cylinder cannot be reused.
- DO NOT tap or pinch the master cylinder piston, and avoid damaging the master cylinder piston in any other ways.

Installation

Installation is in the reverse order of removal.

 CAUTION

- Make sure to tighten the fixing plugs and nuts to the specified torque during installation.
- Perform the bleeding procedures for the brake system and add brake fluid to the proper level after completing installation.

Vacuum Booster with Brake Master Cylinder Assembly

On-vehicle Inspection

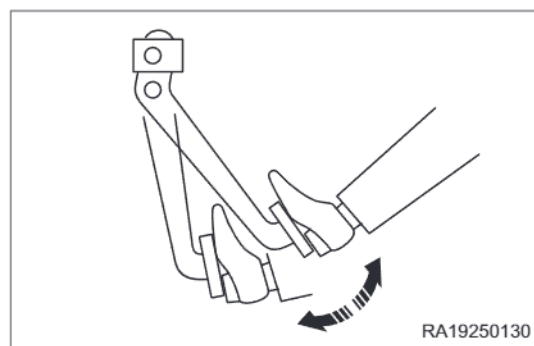
1. Check the vacuum booster assembly.

a. Air tightness check.

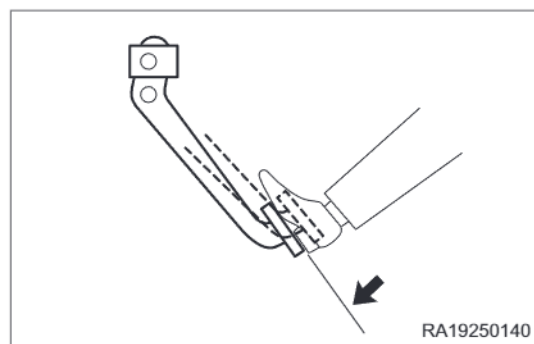
- Start the engine and stop it after 1 or 2 minutes. Slowly depress the brake pedal several times.
- Make sure that the booster is airtight. Check that the distance every time the pedal is depressed is decreased gradually compared to the previous time.
If the pedal operation is not as specified, check the check valve. If the check valve is normal, replace the vacuum booster assembly.
- Start the engine. Depress and hold the pedal, and then stop the engine.
- Make sure that the booster is airtight. Depress and hold the pedal for 30 seconds, and check that the pedal reserve distance does not change.
If the pedal operation is not as specified, check the check valve. If the check valve is normal, replace the vacuum booster assembly.

b. Operation check.

- Stop the engine.
- Depress the pedal several times and check that the pedal reserve distance does not change.



- Depress and hold the pedal, and then start the engine. Check that the pedal can only be depressed lightly.



If the pedal operation is not as specified, check the check valve. If the check valve is normal, replace the vacuum booster assembly.

Removal

1. Drain the brake fluid ([See page 25-13](#)).

CAUTION

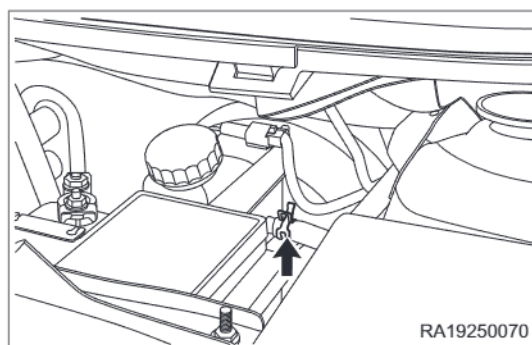
- Wash off the brake fluid immediately if it comes in contact with any paint surface.

ENVIRONMENTAL PROTECTION

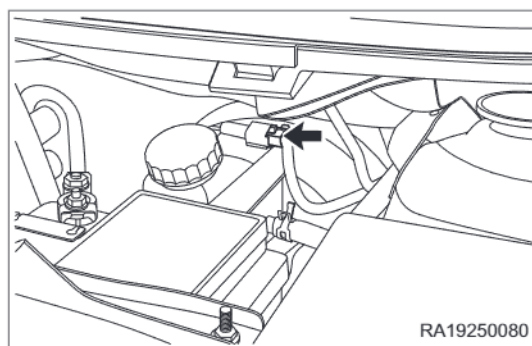
- The drained brake fluid should be well kept in a container. Never discard it at will.

2. Remove the battery ([See page 16-7](#)).
3. Remove the vacuum booster with brake master cylinder assembly.

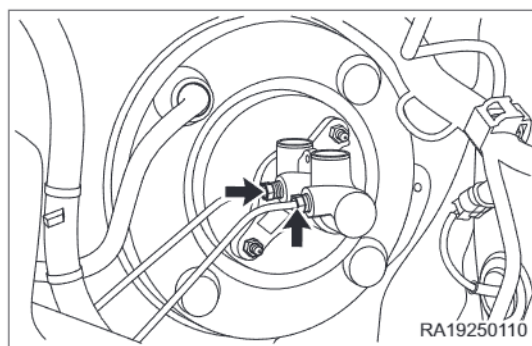
- a. Loosen the brake hose fixing clamp (arrow) and disengage the brake hose from the brake fluid reservoir assembly.



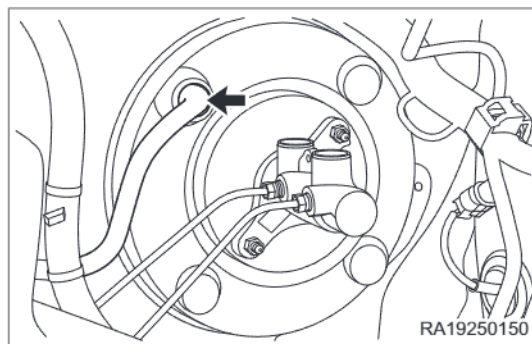
- b. Disconnect the brake fluid level warning switch connector (arrow).



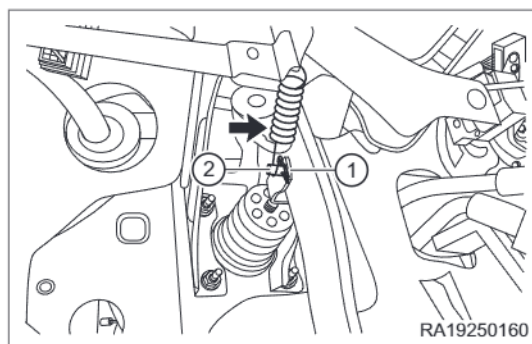
- c. Loosen 2 fixing plugs (arrow) between brake master cylinder assembly and brake pipes. (Tightening torque: 18 ± 2 N·m)



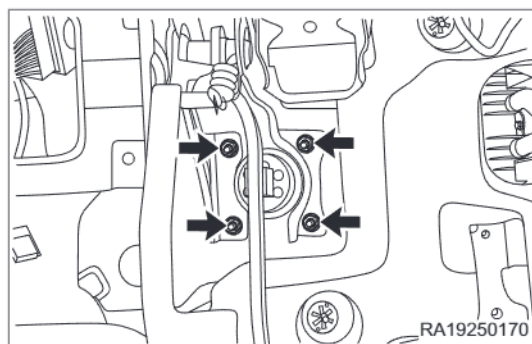
- d. Disengage the vacuum hose assembly with check valve (arrow) from the vacuum booster assembly.



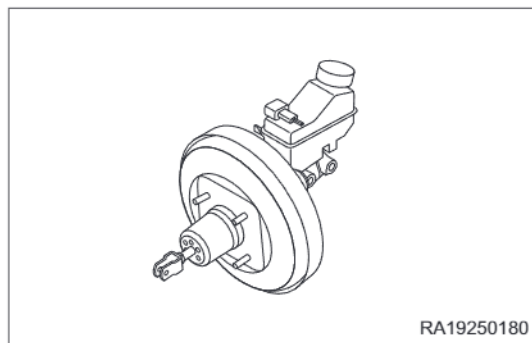
- e. Using the needle-nose pliers, remove the return spring (arrow), locking pin (1) and the pushrod pin (2) from the vacuum booster pushrod and detach the brake pedal assembly.



- f. Remove 4 fixing nuts (arrow) between vacuum booster assembly and brake pedal assembly. (Tightening torque: 25 ± 4 N·m)

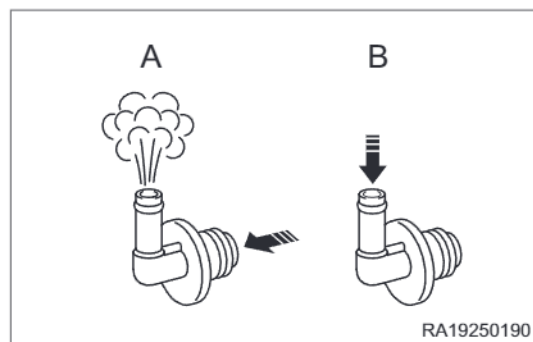


- g. Remove the vacuum booster with brake master cylinder assembly from the engine compartment.



Inspection

1. Check the check valve.
 - a. Remove the check valve from the vacuum hose assembly.
 - b. Check that there is airflow (A) from the vacuum booster to the engine, and no airflow (B) from the engine to the vacuum booster.



If the result is not as specified, replace the vacuum hose assembly.

Installation

Installation is in the reverse order of removal.

CAUTION

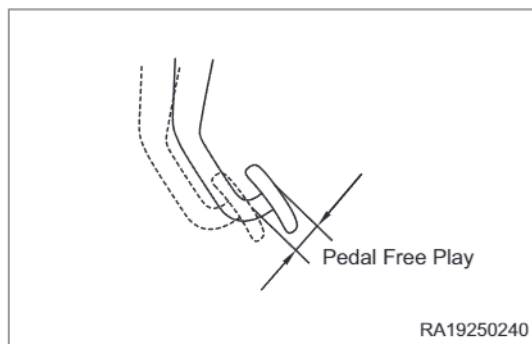
- Make sure to tighten the fixing plugs and nuts to the specified torque during installation.
- Perform the bleeding procedures for the brake system and add brake fluid to the proper level after completing installation.

Brake Pedal Assembly

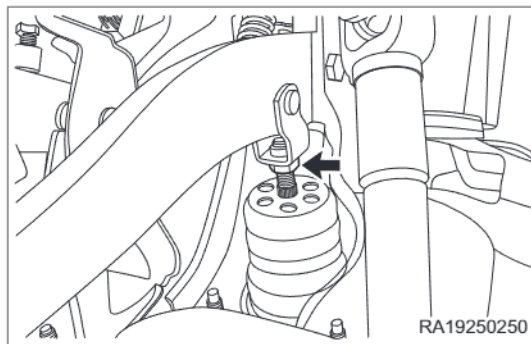
On-vehicle Inspection

1. Check the brake pedal free play.
 - a. Stop the engine. Depress the brake pedal several times until no vacuum is left in the vacuum booster, then release the brake pedal.
 - b. Depress the brake pedal until the resistance is felt.
 - c. As shown in the illustration, check the brake pedal free play by measuring the distance between pedal position in the above step and pedal position when it is released.

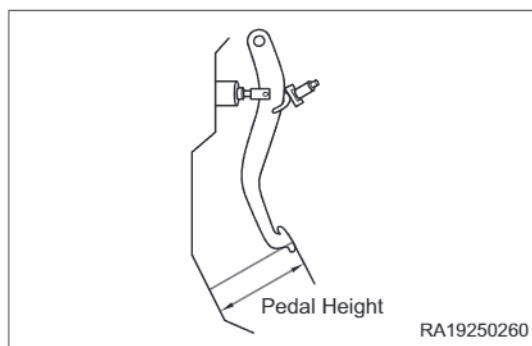
Standard brake pedal free play: 1 - 9 mm



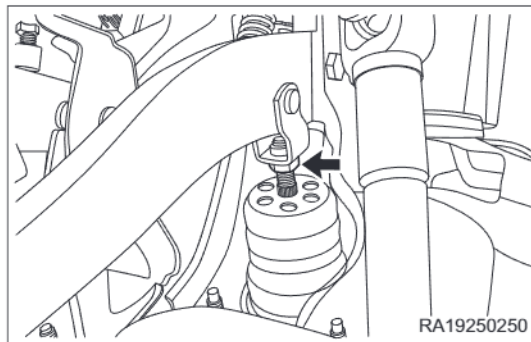
2. Adjust the brake pedal free play.
 - a. As shown in the illustration, loosen the vacuum booster pushrod locking nut (arrow) and rotate the vacuum booster pushrod clockwise or counterclockwise to adjust the brake pedal free play to the specified value.



3. Check the brake pedal height.
 - a. As shown in the illustration, turn over the carpet and measure the distance between brake pedal center and dash panel, which is the brake pedal height.
- Standard brake pedal height: 139.9 mm

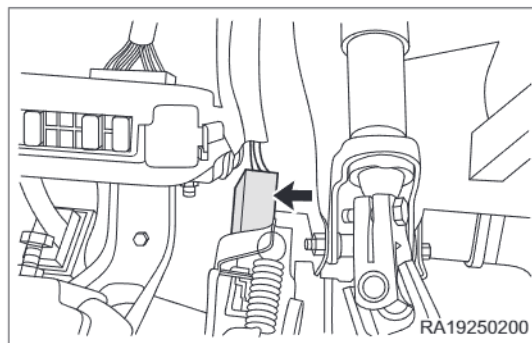


4. Adjust the brake pedal height.
 - a. As shown in the illustration, loosen the vacuum booster pushrod locking nut (arrow) and rotate the vacuum booster pushrod clockwise or counterclockwise to adjust the brake pedal height to the specified value.

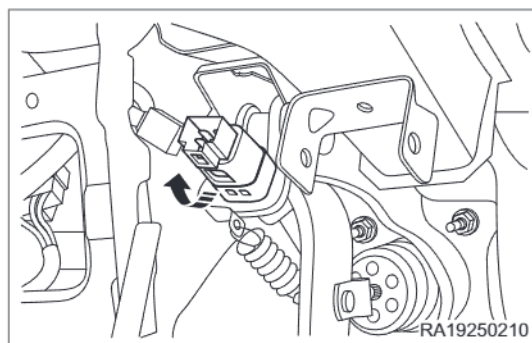


Removal

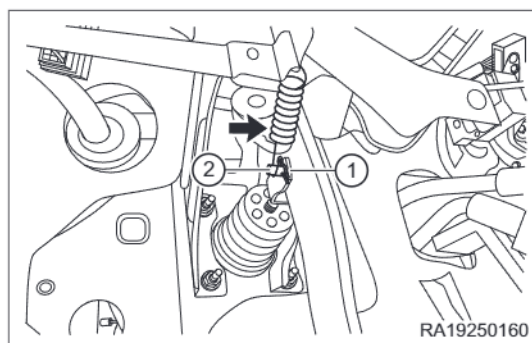
1. Remove the brake light switch assembly.
 - a. Disconnect the brake light switch assembly wire harness connector (arrow).



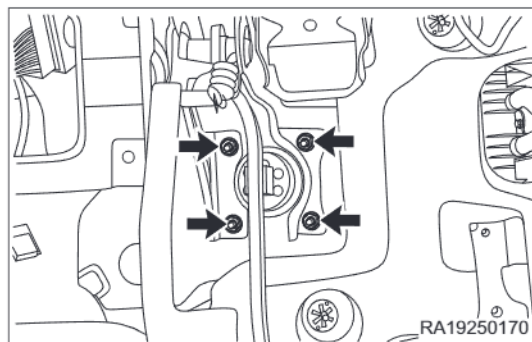
- b. Remove the brake light switch assembly by rotating it 90° clockwise or counterclockwise.



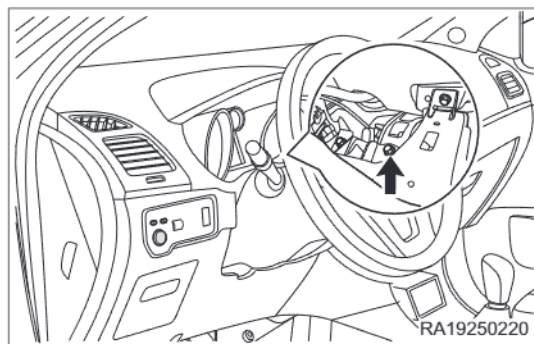
2. Remove the brake pedal assembly.
 - a. Using the needle-nose pliers, remove the return spring (arrow), locking pin (1) and the pushrod pin (2) from the vacuum booster pushrod and detach the brake pedal assembly.



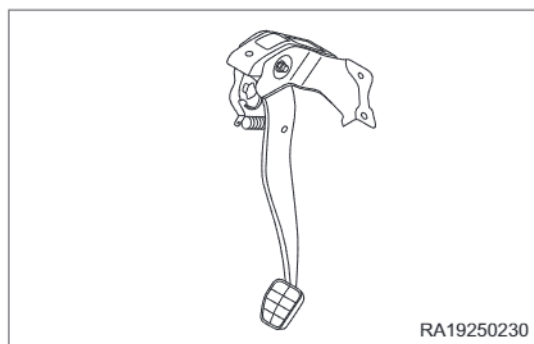
- b. Remove 4 fixing nuts (arrow) between vacuum booster assembly and brake pedal assembly. (Tightening torque: 25 ± 4 N·m)



- c. Remove the fixing bolt (arrow) between instrument panel crossmember and brake pedal assembly.
(Tightening torque: 25 ± 4 N·m)



- d. Remove the brake pedal assembly from the inside of the vehicle.



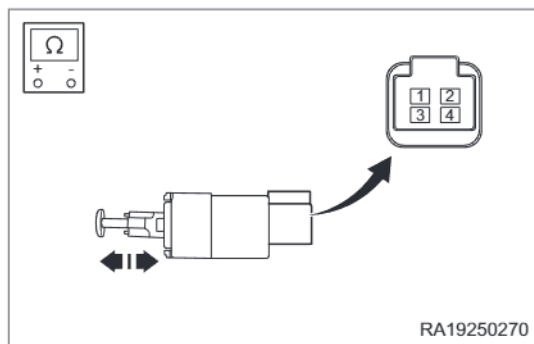
Inspection

1. Check the brake light switch assembly.
 - a. Using the ohm band of digital multimeter, check for continuity between the brake light switch assembly terminals in accordance with the table below.

Standard Condition

Multimeter Connection	Switch Condition	Specified Condition
Terminal 1 - Terminal 3	Brake pedal depressed (switch pin released)	Continuity
Terminal 2 - Terminal 4	Brake pedal depressed (switch pin released)	No continuity
Terminal 1 - Terminal 3	Brake pedal released (switch pin pushed)	No continuity
Terminal 2 - Terminal 4	Brake pedal released (switch pin pushed)	Continuity

If the result is not as specified, replace the brake light switch assembly.



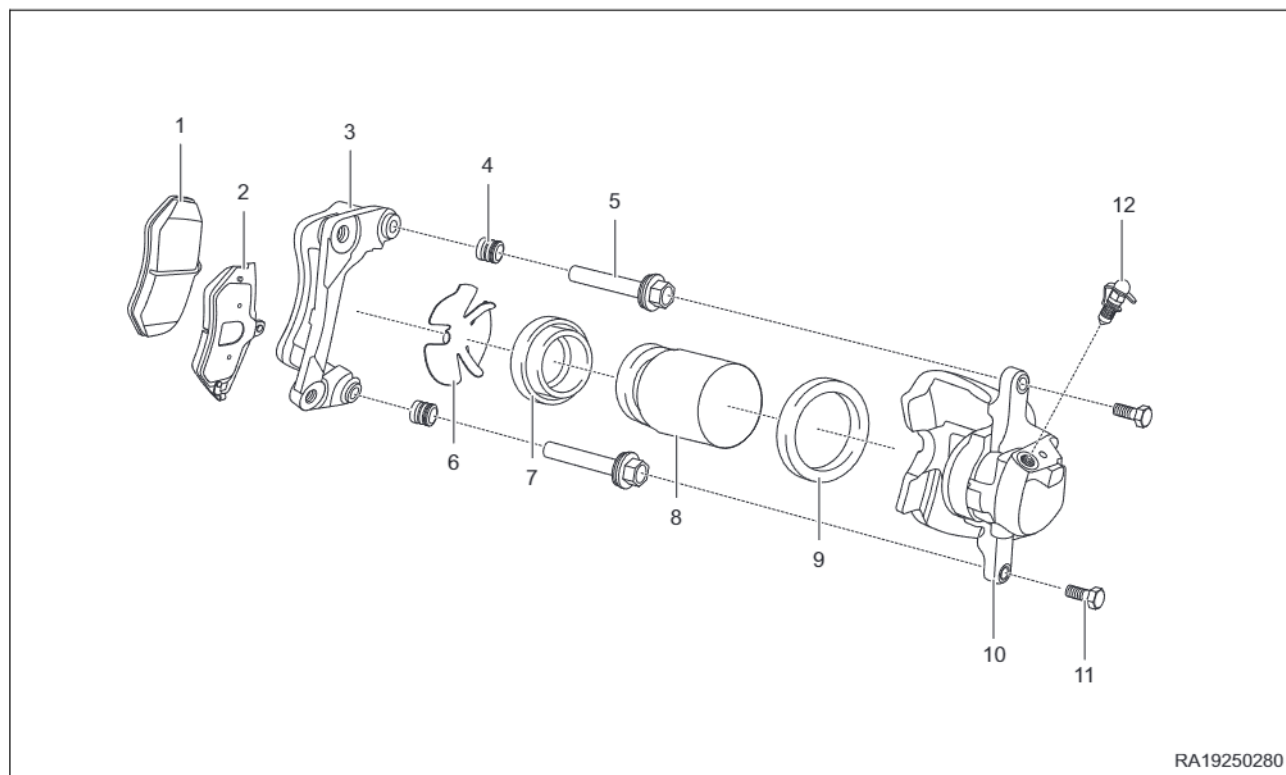
Installation

Installation is in the reverse order of removal.

CAUTION

- Make sure to tighten the fixing bolt and nuts to the specified torque during installation.
- Check that the brake light operates properly after completing installation.

Front Disc Brake Assembly

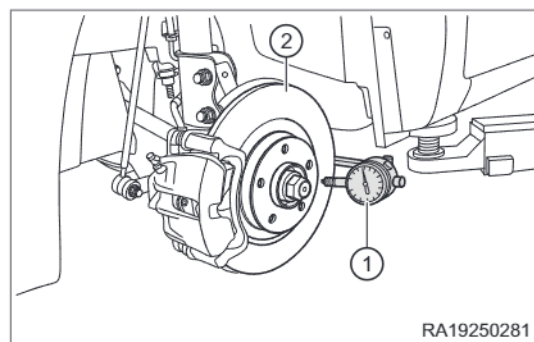


RA19250280

1 - Outer Brake Lining	2 - Inner Brake Lining
3 - Front Disc Brake Caliper Fixing Bracket	4 - Brake Caliper Guide Pin Rubber Dust Boot
5 - Brake Caliper Locating Bolt Guide Pin	6 - Brake Cylinder Assembly Retainer Plate
7 - Front Disc Brake Piston Dust Boot	8 - Front Disc Brake Piston
9 - Front Disc Brake Piston Seal Ring	10 - Front Disc Brake Cylinder
11 - Brake Caliper Locating Bolt	12 - Front Disc Brake Bleeder Plug

On-vehicle Inspection

1. Check the brake disc runout.
 - a. Remove the front wheel (See page 23-10).
 - b. Secure the dial indicator (1) to the proper position. Position the dial indicator pointer approximately 10 mm from the outer edge of the brake disc.
 - c. Slowly rotate the brake disc (2) and check the runout. Mark the lowest and highest points and record these measurements.



- d. Check the runout on the opposite side of the brake disc in the same way. Mark the lowest and highest points and record these measurements.
- e. Compare the recorded runout value and limit value.
Maximum runout for front brake disc: 0.025 mm
- f. If the runout exceeds the maximum value, replace the brake disc.

Removal

HINT:

- Use the same procedures for the right side and left side.
- The procedures listed below are for the left side.

1. Drain the brake fluid (See page 25-13).

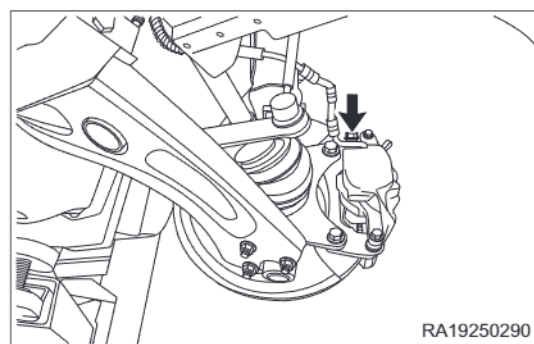
CAUTION

- Wash off the brake fluid immediately if it comes in contact with any paint surface.

ENVIRONMENTAL PROTECTION

- The drained brake fluid should be well kept in a container. Never discard it at will.

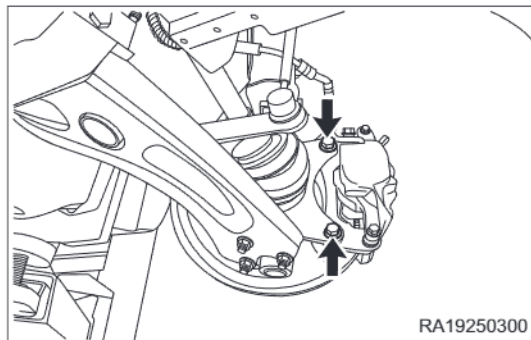
2. Remove the front left wheel (See page 23-10).
3. Remove the front left brake caliper assembly.
 - a. Remove the coupling bolt and washer (arrow) between front left brake caliper assembly and front left brake hose assembly.
(Tightening torque: 25 ± 4 N·m)



CAUTION

- DO NOT allow brake fluid to be sprayed on your clothes or skin when removing the brake hose, as the brake fluid is corrosive.

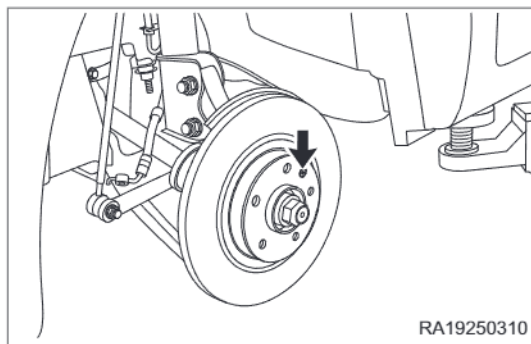
- b. Remove 2 coupling bolts (arrow) between front left brake caliper assembly and front left steering knuckle. (Tightening torque: 100 ± 10 N·m)



- c. Remove the front left brake caliper assembly.

4. Remove the front left brake disc.

- a. Remove the fixing screw (arrow) from the front left brake disc and remove the front left brake disc. (Tightening torque: 7 - 9 N·m)

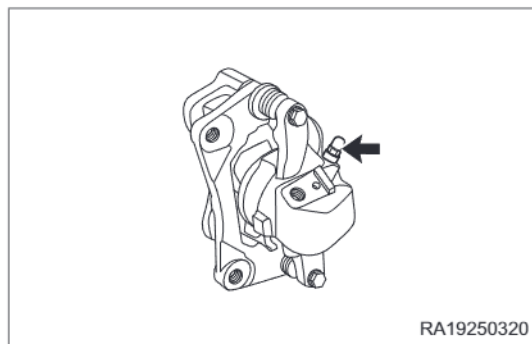
**Disassembly****HINT:**

- Use the same procedures for the right side and left side.
- The procedures listed below are for the left side.

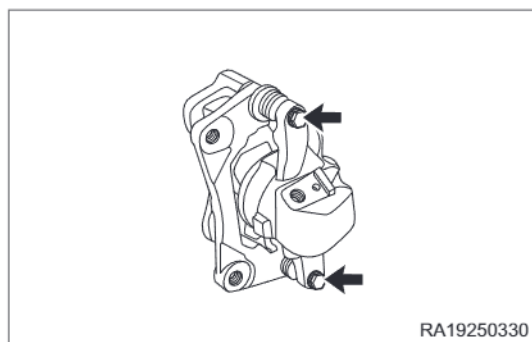
WARNING

- Never use high pressure when removing the piston from the bore of the brake caliper. Otherwise, this may cause personal injuries.
- If it is needed to remove the piston with compressed air, DO NOT face the piston to yourself or place your hands around the brake caliper and piston.

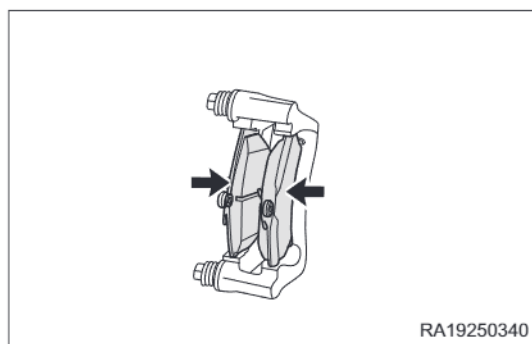
1. Remove the bleeder plug (w/ bleeder plug cap).
 - a. Remove the bleeder plug (w/ bleeder plug cap) (arrow) from the brake caliper assembly. (Tightening torque: 5.88 - 9.8 N·m)



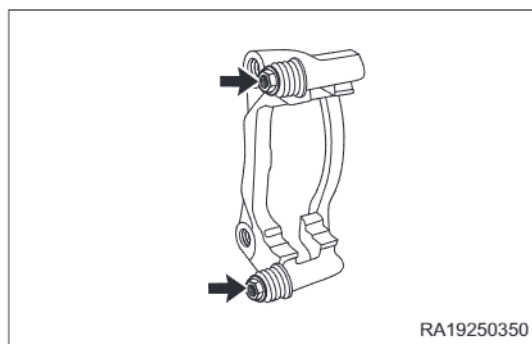
2. Remove the brake cylinder assembly.
 - a. Remove 2 locating bolts (arrow) between brake caliper fixing bracket and brake cylinder assembly. (Tightening torque: 25 ± 4 N·m)



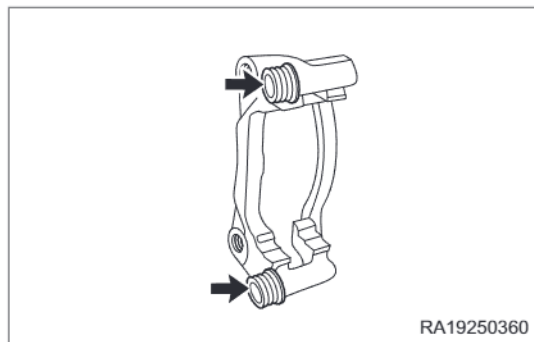
- b. Detach the brake cylinder assembly and brake caliper fixing bracket.
3. Remove the front brake lining.
 - a. Remove the inner brake lining and outer brake lining (arrow) from the brake caliper fixing bracket.



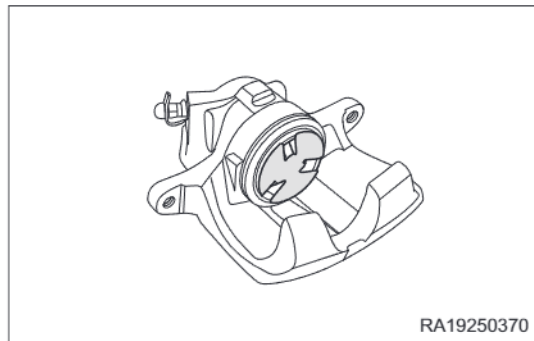
4. Remove the brake caliper locating bolt guide pin.
 - a. Remove 2 brake caliper locating bolt guide pins (arrow) from the brake caliper fixing bracket.



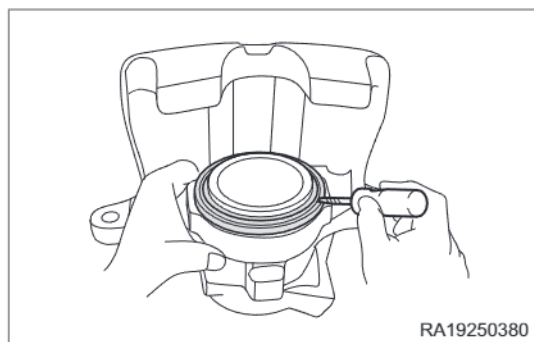
5. Remove the brake caliper guide pin rubber dust boot.
 - a. Remove 2 brake caliper guide pin rubber dust boots (arrow) from the brake caliper fixing bracket.



6. Remove the brake cylinder assembly retainer plate.
 - a. Remove the retainer plate from the brake cylinder assembly.



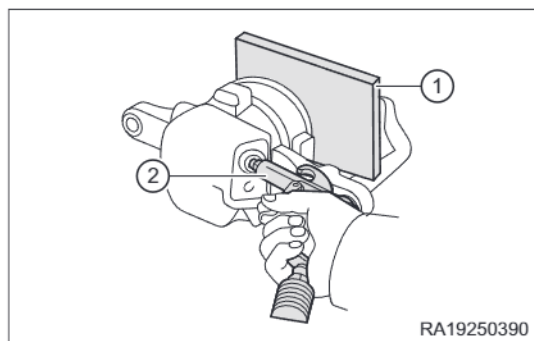
7. Remove the brake cylinder dust boot.
 - a. Using a screwdriver wrapped with protective tape, pry out the dust boot carefully.



CAUTION

- Be careful not to damage the brake piston and the brake cylinder.

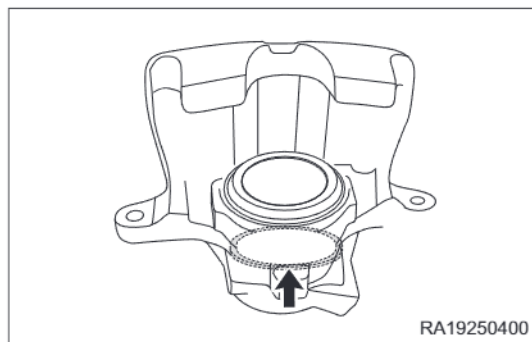
8. Remove the front disc brake piston.
 - a. Place a wooden board (1) between front disc brake piston and front disc brake cylinder.
 - b. Use compressed air (2) to carefully press out the piston from the front disc brake cylinder through the attachment hole.



CAUTION

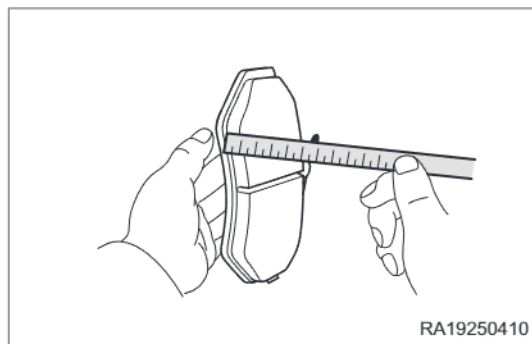
- Be careful not to splash the brake fluid.
- DO NOT hold the piston by hands to prevent injury.
- DO NOT remove or install the brake piston casually, and always perform these operations by the professional.

- c. Clean the piston bore with the alcohol or proper solution. Then wipe it with a piece of lint.
9. Remove the front disc brake piston seal ring.
 - a. Using a screwdriver wrapped with protective tape, carefully pry out the front disc brake piston seal ring (arrow) from the brake cylinder rear ring groove.

**Inspection**

1. Check the brake cylinder and the piston.
 - a. Check the piston and the bore for scratches or corrosion. If there are scratches or corrosion, remove them with fine sand cloth.
 - b. Remove the dirt on the piston with a soft brass wire brush and coarse cloth. Do not clean the piston with polishing cloth or sand cloth, as this may damage its surface. When the surface of piston is damaged, replace it. When the piston is stuck or the bore is worn or corroded, replace the entire brake caliper assembly. Using the polishing cloth, remove the small corrosion points inside the bore.
2. Check the brake caliper fixing bracket and brake caliper guide pin set.
 - a. Clean the brake caliper fixing bracket with brake cleaner. Check for deformation, cracks, rust and foreign matter which is difficult to remove.
 - b. Check the brake caliper guide pin rubber dust boot for deformation, cracks, worn and foreign matter which is difficult to remove.
 - c. Install the brake caliper guide pin and brake caliper guide pin rubber dust boot to the brake caliper fixing bracket. The brake caliper guide pin set should move smoothly without being stuck when pushing it with hand; otherwise replace it.
 - d. After installing the brake lining, check if it is easy to fall out. Replace it as necessary.
3. Check the brake lining.
 - a. Visually check the brake lining for flatness, and also check for excessive wear. If the condition of the lining cannot be confirmed accurately only by visual inspection, a physical check will be used as necessary.

- b. Measure the minimum brake lining thickness. When the minimum thickness of the brake lining is 2 mm or less, replace the brake lining.



- c. When replacing the excessively worn brake linings (inner and outer), it is also necessary to replace the linings on the opposite side of the vehicle as well as the unchecked linings to maintain proper braking performance. If it is unnecessary to replace the brake linings, be sure to reinstall the brake linings to the original positions.

4. Check the brake disc.

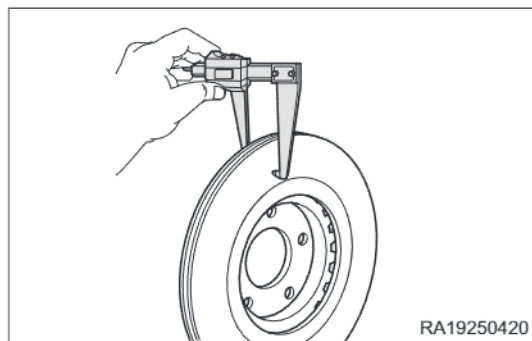
- Minor scratch or wear on the brake disc surface is acceptable. If severe scratch or deformation exists, the brake disc must be replaced.
- Excessive wear of the brake disc may cause poor contact between brake lining and surface of brake disc. If the protrusion on the disc is not removed before installing the new brake lining, abnormal wear of the brake disc will be caused.
- It is normal that the surface of brake disc is worn when replacing the brake lining. If cracks or burned spots exist, the brake disc must be replaced.

5. Check the brake disc thickness.

- Using a vernier caliper, measure the brake disc thickness at the center of the brake lining contact surface as shown in the illustration.

Standard thickness: 18 mm

Minimum thickness: 16 mm



- If it is less than the minimum thickness due to the wear of brake disc, replace the brake disc.

CAUTION

- DO NOT machine the brake disc, because it may make the brake disc thickness less than the minimum thickness.

Assembly

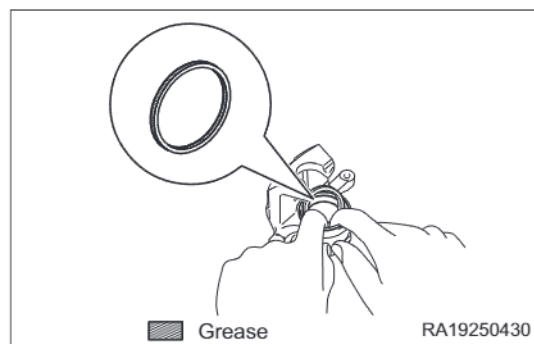
HINT:

- Use the same procedures for the right side and left side.
- The procedures listed below are for the left side.

CAUTION

- When assembling the brake caliper assembly, always keep your hands clean.
- When assembling the brake caliper assembly, always use clean new brake fluid.
- Never use the used front disc brake piston seal ring.

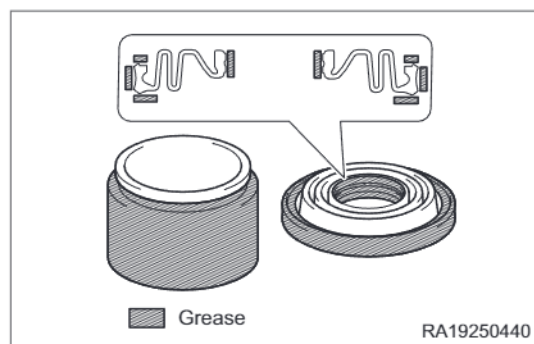
1. Install the front disc brake piston seal ring.
 - a. Apply a light coat of grease to the entire inner and outer circumferences of the new front disc brake piston seal ring.
 - b. Install the front disc brake piston seal ring onto the brake cylinder.



CAUTION

- Securely install the front disc brake piston seal ring into the rear groove of the brake cylinder.

2. Install the front disc brake piston.
 - a. Apply a light coat of grease to the inner and outer circumferences, and entire periphery of outer flange top/bottom surfaces of the new brake cylinder dust boot as shown in the illustration.
 - b. Apply a light coat of grease to the entire outer circumference (the part contacting with the brake cylinder dust boot and the front disc brake cylinder) of the front disc brake piston.

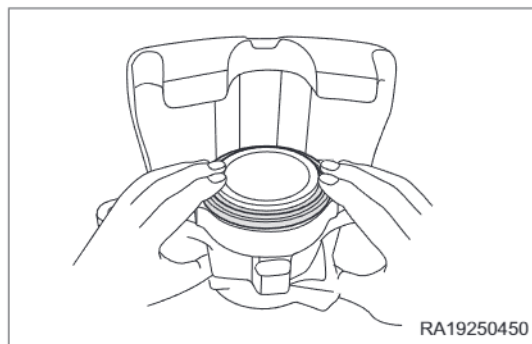


- c. Install the brake cylinder dust boot onto the front disc brake piston.
3. Install the brake cylinder dust boot.
 - a. Install the front disc brake piston to the front disc brake cylinder.

CAUTION

- DO NOT install the piston forcibly to the brake cylinder.

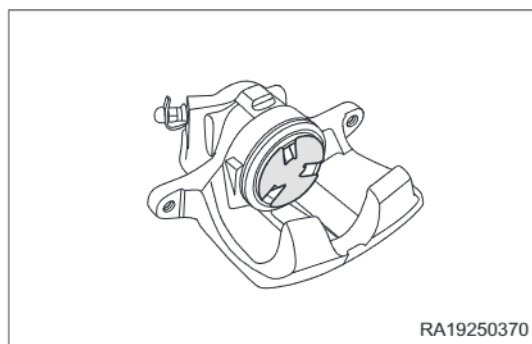
- b. Install the brake cylinder dust boot to the brake cylinder.



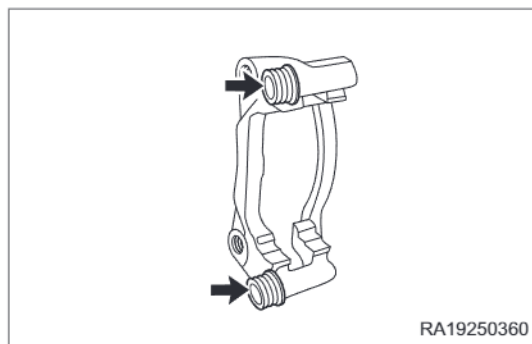
CAUTION

- Securely install the brake cylinder dust boot into the front groove of the disc brake cylinder.
- DO NOT damage the brake cylinder dust boot.

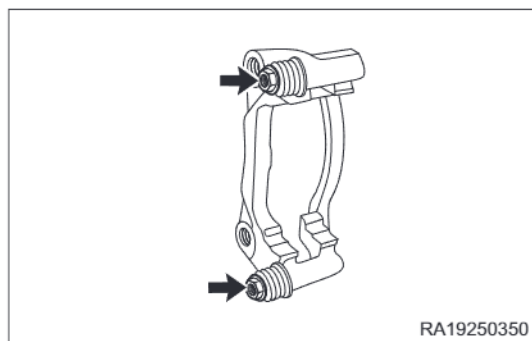
4. Install the brake cylinder assembly retainer plate.
 - a. Correctly install the retainer plate to the brake cylinder assembly.



5. Install the front brake caliper guide pin rubber dust boot.
 - a. Apply a small amount of grease to the contact surface between the guide pin rubber dust boot and the locating bolt guide pin, and securely install the dust boot to the brake caliper fixing bracket.

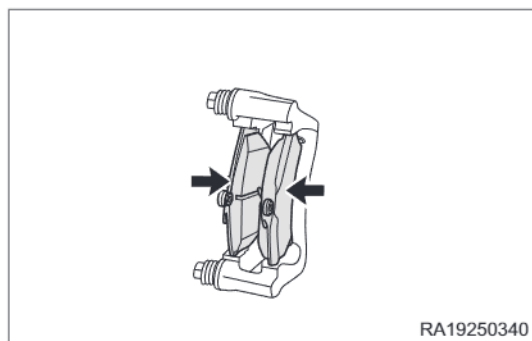


6. Install the front brake caliper locating bolt guide pin.
 - a. Apply a small amount of grease to the contact surface between the locating bolt guide pin and the guide pin rubber dust boot, and securely install them to the brake caliper fixing bracket.



7. Install the front brake lining.

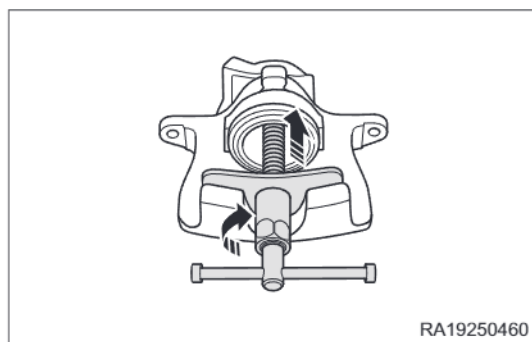
- a. Securely install the inner brake lining and the outer brake lining onto the brake caliper fixing bracket. Make sure they are clamped in place.


CAUTION

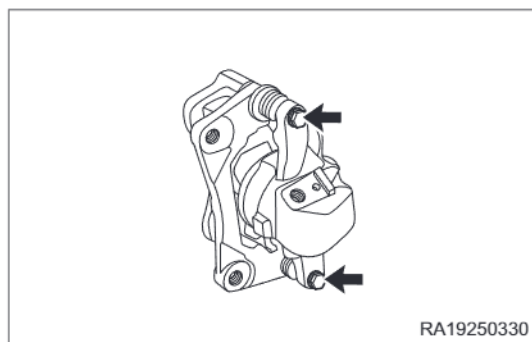
- Make sure the contact surface of the lining and the brake disc is free of oil and grease.

8. Install the brake cylinder assembly.

- a. Using the brake cylinder piston pressing tool, slightly retract the brake cylinder piston.

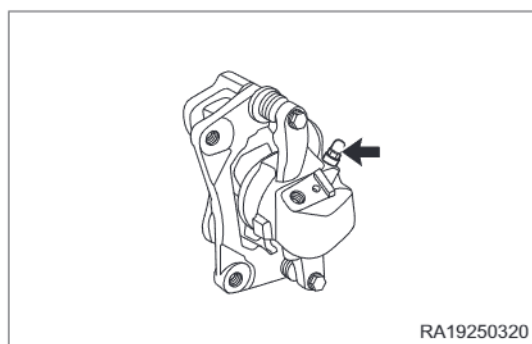


- b. Align the brake caliper locating bolts (arrow) with the guide pin holes and securely install the brake cylinder assembly. (Tightening torque: $25 \pm 4 \text{ N}\cdot\text{m}$)



9. Install the bleeder plug (w/ bleeder plug cap).

- a. Securely install the bleeder plug (w/ bleeder plug cap) (arrow) to the front brake caliper assembly. (Tightening torque: $5.88 - 9.8 \text{ N}\cdot\text{m}$)



Installation

Installation is in the reverse order of removal.

CAUTION

- Make sure to tighten the fixing bolts and nuts to the specified torque during installation.
- Before installing the brake linings, completely retract the brake caliper piston back into the bore of the brake caliper.
- Depress the brake pedal several times to secure the brake linings to the brake disc in order to ensure safety after installing the brake linings and before moving the vehicle.
- Replace the brake linings in pairs. DO NOT replace it alone.
- DO NOT install the inner brake lining and outer brake lining reversely.
- Be sure to check the brake system for leakage after installation. Repair or replace the malfunctioning parts as necessary.
- Be sure to perform the bleeding procedures for the brake system after installation.
- Be sure to add brake fluid to the proper level after installation.

Front Brake Hose Assembly

Removal

CAUTION

- Be sure to wear the necessary safety equipment when repairing to prevent accidents.
- Try to prevent the body paint surface from being scratched during removal and installation.

HINT:

- Use the same procedures for the right side and left side.
 - The procedures listed below are for the left side.
1. Remove the front left wheel (See page 23-10).
 2. Drain the brake fluid (See page 25-13).

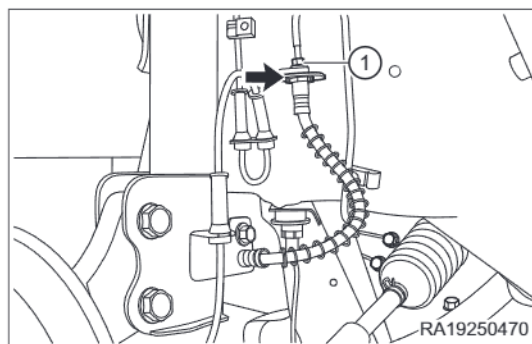
CAUTION

- Wash off the brake fluid immediately if it comes in contact with any paint surface.

ENVIRONMENTAL PROTECTION

- The drained brake fluid should be well kept in a container. Never discard it at will.

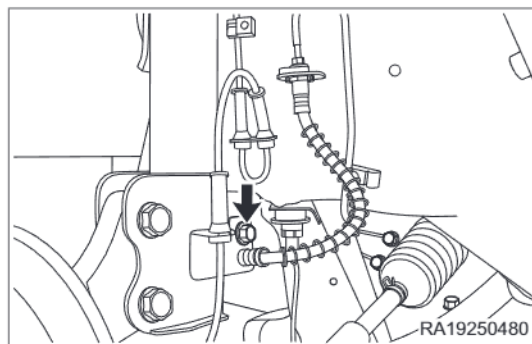
3. Remove the front left brake hose assembly.
 - a. Disengage the fixing clamp (arrow) and loosen the coupling plug (1) between front left brake hose assembly and front left brake pipe.
(Tightening torque: 18 ± 2 N·m)



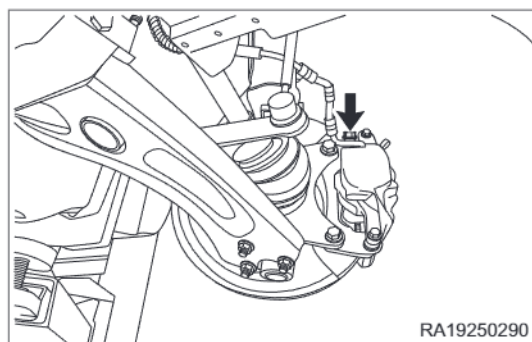
CAUTION

- DO NOT bend or damage the brake tube.
- DO NOT allow any foreign matter such as dirt and dust to enter the brake tube from the joint parts.
- After removing the brake line, perform sealing treatment to prevent foreign matter from entering.

- b. Remove the coupling bolt (arrow) between front left shock absorber assembly and front left brake hose assembly.
(Tightening torque: 25 ± 4 N·m)



- c. Remove the coupling bolt and washer (arrow) between front left brake caliper assembly and front left brake hose assembly.
(Tightening torque: 25 ± 4 N·m)



CAUTION

- DO NOT allow brake fluid to be sprayed on your clothes or skin when removing the brake hose, as the brake fluid is corrosive.

- d. Remove the front left brake hose assembly.

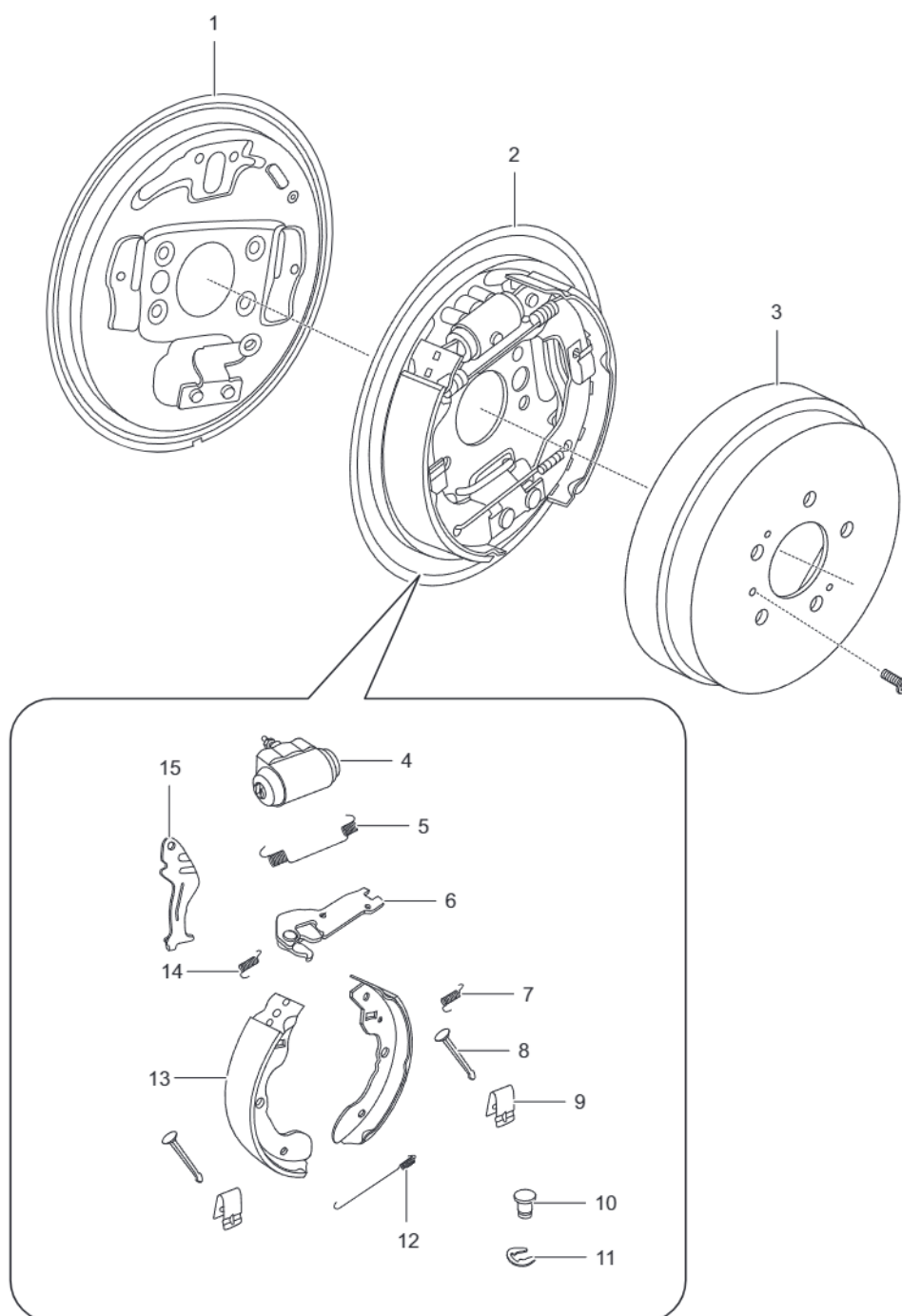
Installation

Installation is in the reverse order of removal.

CAUTION

- Make sure to tighten the fixing bolts and plug to the specified torque during installation.
- Be sure to check the brake system for leakage after installation. Repair or replace the malfunctioning parts as necessary.
- Be sure to perform the bleeding procedures for the brake system after installation.
- Be sure to add brake fluid to the proper level after installation.

Rear Drum Brake Assembly

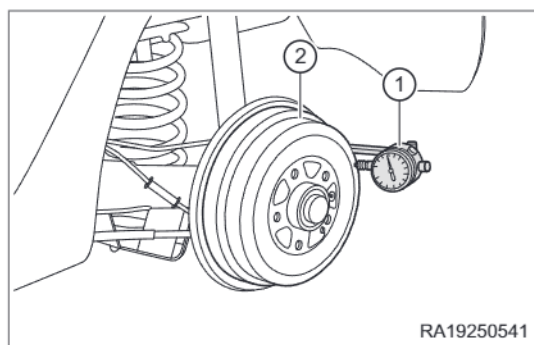


RS19250540

1 - Rear Brake Bottom Board	2 - Rear Drum Brake Assembly
3 - Rear Brake Drum	4 - Rear Brake Wheel Cylinder
5 - Brake Shoe Return Tension Spring (Upper)	6 - Brake Shoe Adjusting Unit
7 - Brake Shoe Adjusting Unit Return Tension Spring	8 - Brake Shoe Stopper Pin
9 - Brake Shoe Stopper Spring Blade	10 - Brake Shoe Link Rod Dowel Pin
11 - Clevis	12 - Brake Shoe Return Tension Spring (Lower)
13 - Brake Shoe Lining	14 - Brake Shoe Pushrod Return Tension Spring
15 - Brake Shoe Link Rod	

On-vehicle Inspection

1. Check the rear brake drum runout.
 - a. Remove the rear wheel (See page 23-10).
 - b. Secure the dial indicator (1) to the proper position. Position the dial indicator pointer approximately 10 mm from the outer edge of the rear brake drum.
 - c. Slowly rotate the rear brake drum (2) and check the runout. Mark the lowest and highest points and record these measurements.



- d. Check the runout on the opposite side of the rear brake drum in the same way. Mark the lowest and highest points and record these measurements.
- e. Compare the recorded runout value and limit value.
Maximum runout for rear brake drum: 0.05 mm
- f. If the runout exceeds the maximum value, replace the rear brake drum.

Removal

CAUTION

- Be sure to wear the necessary safety equipment when repairing to prevent accidents.
- Try to prevent the body paint surface from being scratched during removal and installation.

- Use the same procedures for the right side and left side.
 - The procedures listed below are for the left side.
1. Remove the rear left wheel (See page 23-10).
 2. Drain the brake fluid (See page 25-13).

CAUTION

- Wash off the brake fluid immediately if it comes in contact with any paint surface.

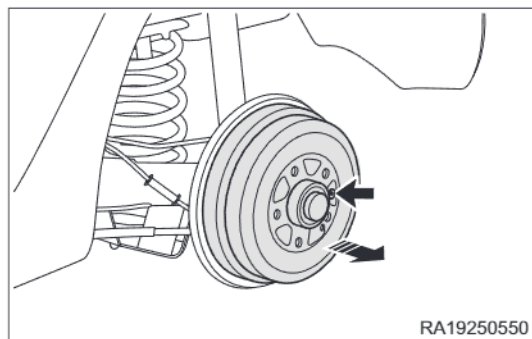


ENVIRONMENTAL PROTECTION

- The drained brake fluid should be well kept in a container. Never discard it at will.

3. Remove the rear brake drum.

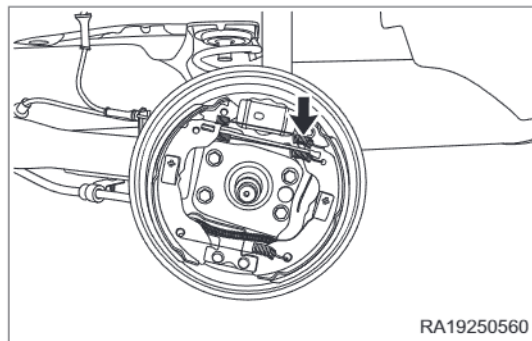
- Completely release the parking brake lever. Remove the fixing screw (arrow) from the rear brake drum and remove the rear brake drum by pulling it out. (Tightening torque: 10 ± 1 N·m)



RA19250550

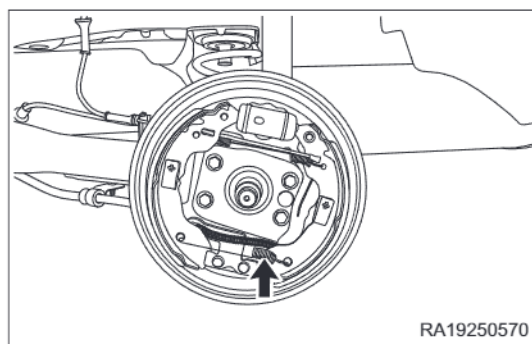
Disassembly

- Remove the rear bearing end cover (See page 21-19).
- Remove the rear shaft assembly locking nut (See page 21-19).
- Remove the rear axle hub assembly (See page 21-19).
- Remove the brake shoe return tension spring (upper).
 - Using the needle-nose pliers, remove the brake shoe return tension spring (upper) as shown in the illustration.



RA19250560

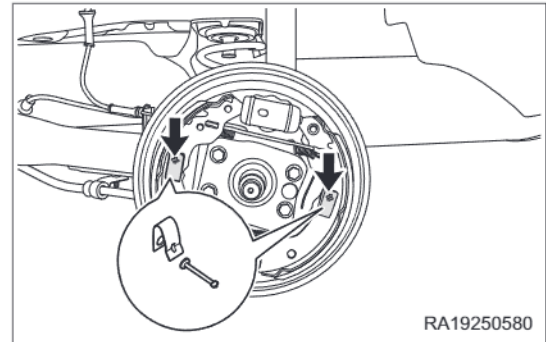
- Remove the brake shoe return tension spring (lower).
 - Using the needle-nose pliers, remove the brake shoe return tension spring (lower) as shown in the illustration.



RA19250570

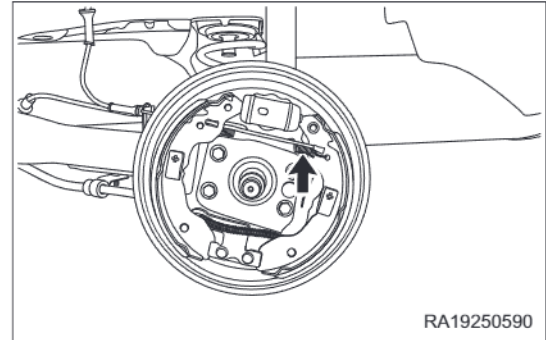
6. Remove the brake shoe stopper spring set.

- a. Using the needle-nose pliers, press the brake shoe stopper spring blade and rotate the brake shoe stopper pin clockwise or counterclockwise to remove the brake shoe stopper spring set on both sides as shown in the illustration.



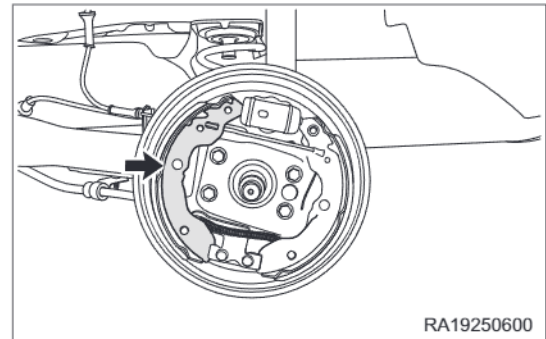
7. Remove the brake shoe pushrod return tension spring.

- a. Using the needle-nose pliers, remove the brake shoe pushrod return tension spring (arrow) as shown in the illustration.



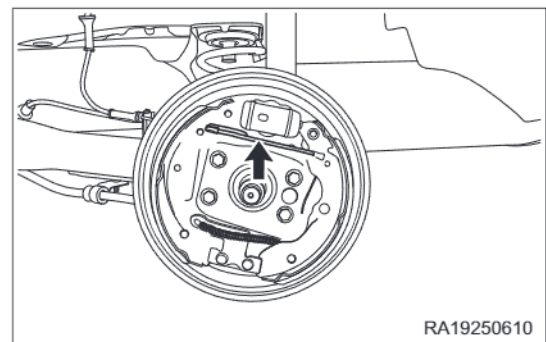
8. Remove the left brake shoe lining.

- a. Disengage the left brake shoe lining from the brake shoe adjusting unit as shown in the illustration.

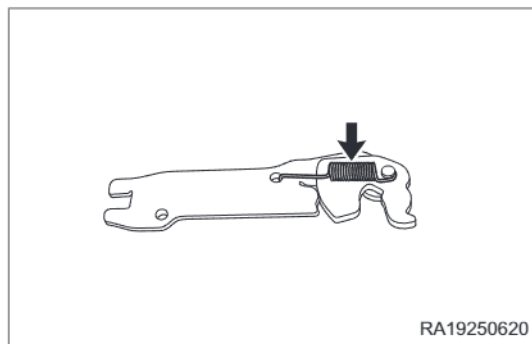


9. Remove the brake shoe adjusting unit.

- a. Disengage the brake shoe adjusting unit from the right brake shoe lining as shown in the illustration.

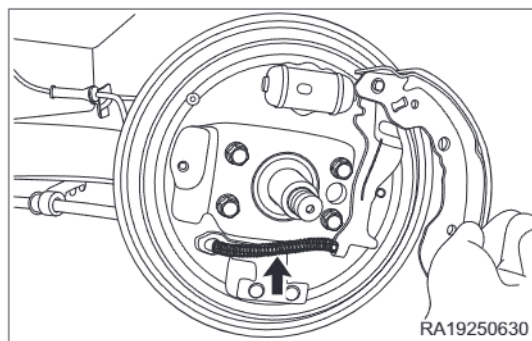


- b. Using the needle-nose pliers, remove the return tension spring (arrow) from the brake shoe adjusting unit as shown in the illustration.

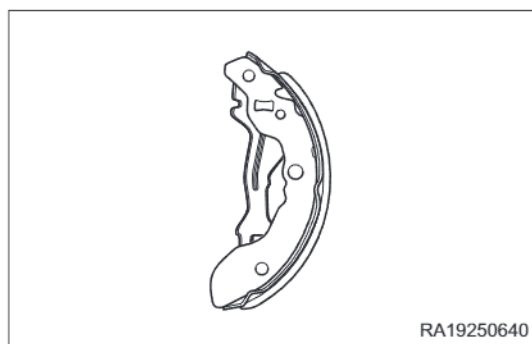


10. Remove the right brake shoe lining.

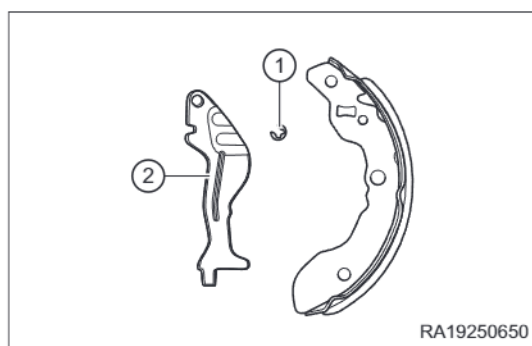
- a. Using the needle-nose pliers, tighten the return spring (arrow) on the end of parking brake rear cable and disengage it from the brake shoe link rod as shown in the illustration.



- b. Remove the right brake shoe lining with brake shoe link rod as shown in the illustration.

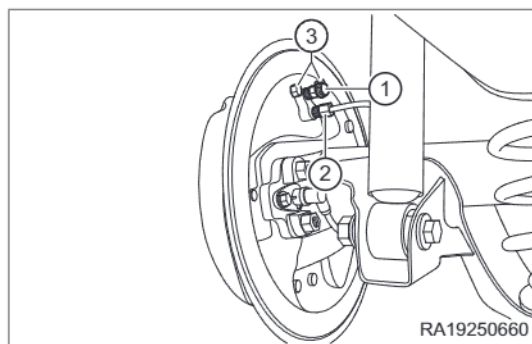


- c. Remove the clevis (1) as shown in the illustration.
d. Remove the brake shoe link rod (2) from the right brake shoe lining as shown in the illustration.



11. Remove the rear brake wheel cylinder.

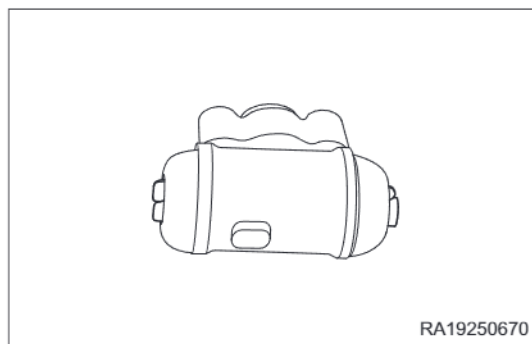
- a. Unscrew the bleeder plug cap and remove the bleeder plug (1) as shown in the illustration.
(Tightening torque: 5.88 - 9.8 N·m)
- b. Loosen the coupling plug (2) of rear wheel brake pipe as shown in the illustration.
(Tightening torque: 18 ± 2 N·m)
- c. Remove the coupling bolts (3) between rear brake wheel cylinder and rear brake bottom board as shown in the illustration.



CAUTION

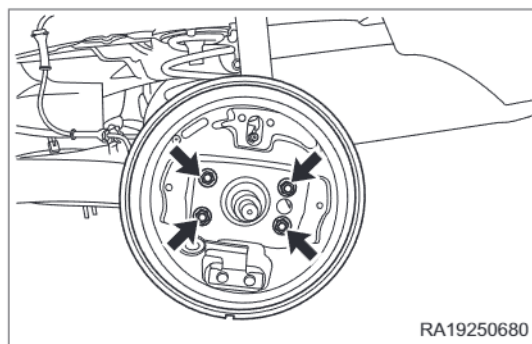
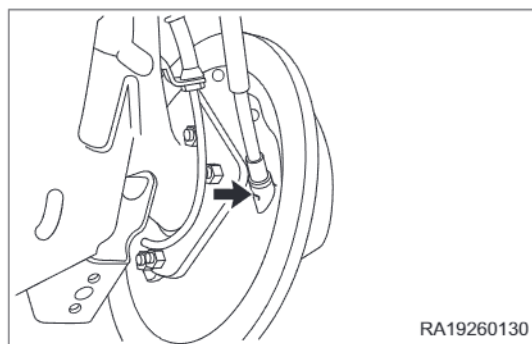
- After removing the brake line, perform sealing treatment to prevent foreign matter from entering.

d. Remove the rear brake wheel cylinder.



12. Remove the rear brake bottom board.

- a. Using the needle-nose pliers, remove the parking brake rear cable assembly fixing wire (arrow) and disengage the parking brake rear cable assembly from the rear brake bottom board as shown in the illustration.
- b. Remove 4 coupling bolts (arrow) between rear brake bottom board and rear shaft assembly as shown in the illustration.
(Tightening torque: 60 ± 5 N·m)

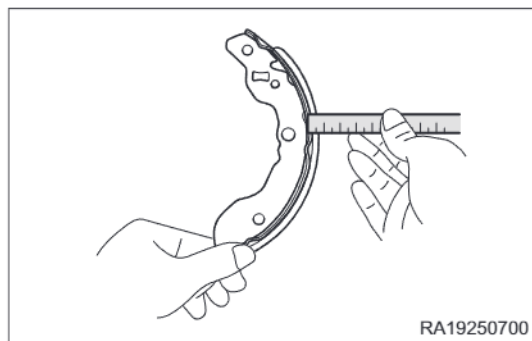


- c. Remove the rear brake bottom board.



Inspection

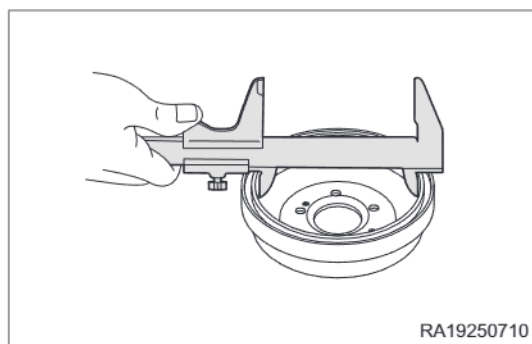
1. Check the thickness of brake shoe lining.
 - a. Using a ruler, measure the thickness of the brake shoe lining as shown in the illustration.
Standard thickness: 5 mm
Minimum thickness: 1 mm
 - b. If the thickness of brake shoe lining is not more than the minimum value, replace the brake shoe lining.



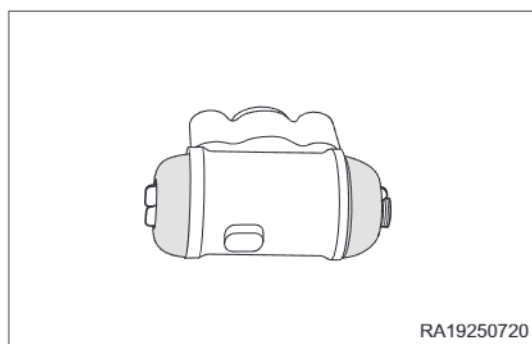
CAUTION

- Replace the brake shoe linings in pairs. DO NOT replace it alone.

2. Check the rear brake drum inner diameter.
 - a. Using a vernier caliper or equivalent, measure the rear brake drum inner diameter.
Standard inner diameter: 220 mm
Maximum inner diameter: 221.4 mm



- b. If the rear brake drum inner diameter is more than the maximum value, replace the rear brake drum.
3. Check the brake wheel cylinder.
 - a. Check the dust boots on both sides of rear brake wheel cylinder for fluid leakage as shown in the illustration.



- b. If there is fluid leakage, replace the rear brake wheel cylinder.
- 4. Check other components.
 - a. Check if the brake shoe return tension spring (upper) is broken, bent, damaged or weak elasticity. Replace it as necessary.
 - b. Check if the brake shoe return tension spring (lower) is broken, bent, damaged or weak elasticity. Replace it as necessary.
 - c. Check if the brake shoe pushrod return tension spring is broken, bent, damaged or weak elasticity. Replace it as necessary.
 - d. Check if the brake shoe adjusting unit return tension spring is broken, bent, damaged or weak elasticity. Replace it as necessary.
 - e. Check if the parking brake rear cable assembly return spring is broken, bent, damaged or weak elasticity. Replace it as necessary.
 - f. Check if the brake shoe adjusting unit is struck, rusted, damaged or slides off. Replace it as necessary.

Assembly

Assembly is in the reverse order of disassembly.

CAUTION

- The rear brake shoe of this vehicle is equipped with gear type automatic adjusting mechanism. There is no need to adjust brake shoe clearance manually. Depress the brake pedal and the brake shoe clearance can be adjusted by the auto-adjust unit installed between the two brake linings, when the brake shoe clearance is beyond some certain value.

Installation

Installation is in the reverse order of removal.

HINT:

Adjust the parking brake lever stroke after replacing the brake shoe. Check if the parking brake is functioning properly after completing adjustment.

CAUTION

- Make sure to tighten the fixing bolts and nuts to the specified torque during installation.
- Be sure to check the brake system for leakage after installation. Repair or replace the malfunctioning parts as necessary.
- Be sure to perform the bleeding procedures for the brake system after installation.
- Be sure to add brake fluid to the proper level after installation.

Rear Brake Hose Assembly

Removal

CAUTION

- Be sure to wear the necessary safety equipment when repairing to prevent accidents.
- Try to prevent the body paint surface from being scratched during removal and installation.

HINT:

- Use the same procedures for the right side and left side.
- The procedures listed below are for the left side.

1. Drain the brake fluid (See page 25-13).

CAUTION

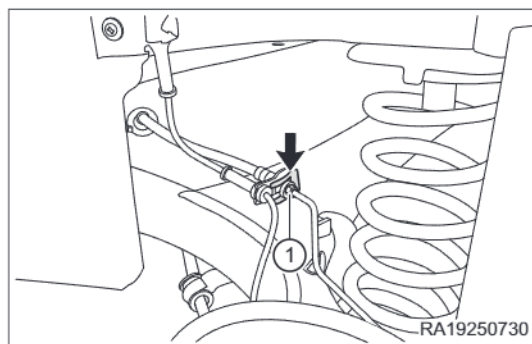
- Wash off the brake fluid immediately if it comes in contact with any paint surface.

ENVIRONMENTAL PROTECTION

- The drained brake fluid should be well kept in a container. Never discard it at will.

2. Remove the rear left brake hose assembly.

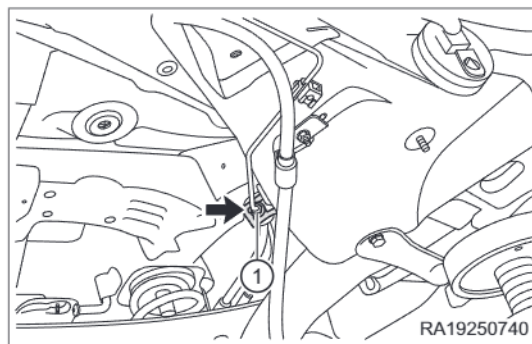
- Disengage the fixing clamp (arrow) and loosen the coupling plug (1) between rear part of rear brake hose assembly and brake pipe.
(Tightening torque: 18 ± 2 N·m)



CAUTION

- DO NOT bend or damage the brake tube.
- DO NOT allow any foreign matter such as dirt and dust to enter the brake tube from the joint parts.
- After removing the brake line, perform sealing treatment to prevent foreign matter from entering.

- b. Disengage the fixing clamp (arrow) and loosen the coupling plug (1) between front part of rear brake hose assembly and brake pipe.
(Tightening torque: 18 ± 2 N·m)



CAUTION

- DO NOT bend or damage the brake tube.
- DO NOT allow any foreign matter such as dirt and dust to enter the brake tube from the joint parts.
- After removing the brake line, perform sealing treatment to prevent foreign matter from entering.

- c. Remove the rear brake hose assembly.

Installation

Installation is in the reverse order of removal.

CAUTION

- Make sure to tighten the brake pipe plug in place.
- Be sure to check the brake system for leakage after installation. Repair or replace the malfunctioning parts as necessary.
- Be sure to perform the bleeding procedures for the brake system after installation.
- Be sure to add brake fluid to the proper level after installation.

