

SECTION BR
BRAKE SYSTEM

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PRECAUTIONS

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PRECAUTION

PRECAUTIONS

Precaution for Supplemental Restraint System (SRS) "AIR BAG" and "SEAT BELT PRE-TENSIONER"

INFOID:000000008986640

The Supplemental Restraint System such as "AIR BAG" and "SEAT BELT PRE-TENSIONER", used along with a front seat belt, helps to reduce the risk or severity of injury to the driver and front passenger for certain types of collision. Information necessary to service the system safely is included in the SR and SB section of this Service Manual.

WARNING:

- To avoid rendering the SRS inoperative, which could increase the risk of personal injury or death in the event of a collision which would result in air bag inflation, all maintenance must be performed by an authorized NISSAN/INFINITI dealer.
- Improper maintenance, including incorrect removal and installation of the SRS, can lead to personal injury caused by unintentional activation of the system. For removal of Spiral Cable and Air Bag Module, see the SR section.
- Do not use electrical test equipment on any circuit related to the SRS unless instructed to in this Service Manual. SRS wiring harnesses can be identified by yellow and/or orange harnesses or harness connectors.

PRECAUTIONS WHEN USING POWER TOOLS (AIR OR ELECTRIC) AND HAMMERS

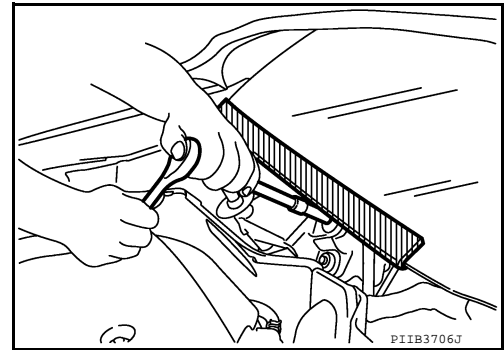
WARNING:

- When working near the Airbag Diagnosis Sensor Unit or other Airbag System sensors with the Ignition ON or engine running, DO NOT use air or electric power tools or strike near the sensor(s) with a hammer. Heavy vibration could activate the sensor(s) and deploy the air bag(s), possibly causing serious injury.
- When using air or electric power tools or hammers, always switch the Ignition OFF, disconnect the battery and wait at least 3 minutes before performing any service.

Precaution for Procedure without Cowl Top Cover

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When performing the procedure after removing cowl top cover, cover the lower end of windshield with urethane, etc to prevent damage to windshield.



Precaution for Brake System

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WARNING:

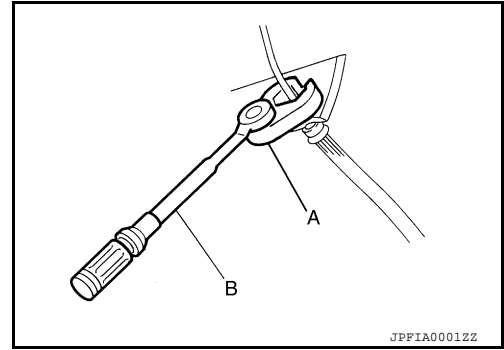
Clean any dust from the front brake and rear brake with a vacuum dust collector. Never blow with compressed air.

- Brake fluid: Refer to [MA-12. "Fluids and Lubricants"](#).
- Do not reuse drained brake fluid.
- Do not spill or splash brake fluid on painted surfaces. Brake fluid may damage paint. If brake fluid is splashed on painted areas, wash it away with water immediately.
- Always confirm the specified tightening torque when installing the brake pipes.
- After pressing the brake pedal more deeply or harder than normal driving, such as air bleeding, check each item of brake pedal. Adjust brake pedal if it is outside the standard value.
- Always clean with new brake fluid when cleaning the brake caliper and other components.
- Never use mineral oils such as gasoline or light oil to clean. They may damage rubber parts and cause improper operation.

PRECAUTIONS

< PRECAUTION >

- Always loosen the brake tube flare nut with a flare nut wrench.
- Tighten the brake tube flare nut to the specified torque with a crow-foot (A) and torque wrench (B).
- Brake system is an important safety part. If a brake fluid leak is detected, always disassemble the affected part. If a malfunction is detected, replace part with a new one.
- Always connect the battery terminals when moving the vehicle.
- Turn the ignition switch OFF and disconnect the hydraulic booster assembly harness connector or the battery negative terminal before performing the work.
- Check that no brake fluid leakage is present after replacing the parts.
- Burnish the brake contact surfaces after refinishing or replacing rotors, after replacing pads, or if a soft pedal occurs at very low mileage.
 - Front disc brake: Refer to [BR-18, "Brake Burnishing"](#).
 - Rear drum brake: Refer to [BR-19, "Brake Burnishing"](#).
 - Rear disc brake: Refer to [BR-20, "Brake Burnishing"](#).



PREPARATION

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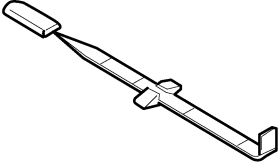
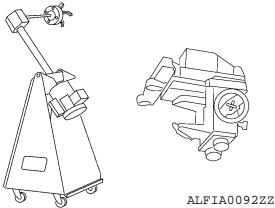
PREPARATION

PREPARATION

Special Service Tool

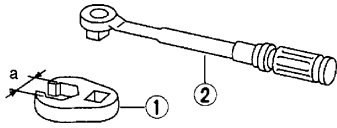
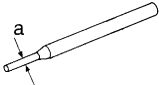

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The actual shapes of Kent-Moore tools may differ from those of special service tools illustrated here.

Tool number (Kent-Moore No.) Tool name	Description
<p>— (J-46532) Brake and clutch pedal height measurement tool</p>  <p style="text-align: center;">LFIA0227E</p>	<p>Measuring brake pedal height</p>
<p>38-PFM90.5 (—) Pro-Cut PFM 90 On-Car Brake Lathe</p>  <p style="text-align: center;">ALFIA00922Z</p>	<p>Turning rotors</p>

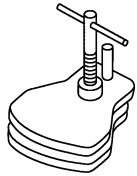

Commercial Service Tool

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Tool name	Description
<p>1. Flare nut crowfoot 2. Torque wrench</p>  <p style="text-align: center;">NT360</p>	<p>Removing and installing brake pipe and hose flare nuts a: 10 mm (0.39 in)/12 mm (0.47 in)</p>
<p>Pin punch a: 4 mm (0.16 in)</p>  <p style="text-align: center;">NT410</p>	<p>Removing and installing reservoir tank a: 4 mm (0.16 in)</p>
<p>Vacuum pump</p>  <p style="text-align: center;">ZZC1313D</p>	<ul style="list-style-type: none"> • Air tight • Inspection of check valve

PREPARATION

< PREPARATION >

Tool name	Description
Brake caliper wrench  NNFIA0040ZZ	Return the piston
Power tool  PIIB1407E	Loosening nuts, screws and bolts

NOISE, VIBRATION AND HARSHNESS (NVH) TROUBLESHOOTING

< SYSTEM DESCRIPTION >

SYSTEM DESCRIPTION

NOISE, VIBRATION AND HARSHNESS (NVH) TROUBLESHOOTING

NVH Troubleshooting Chart

INFOID:000000008769061

Use the chart below to find the cause of the symptom. If necessary, repair or replace these parts.

Symptom	BRAKE	Noise Shake Shimmy, Shudder	Possible cause and SUSPECTED PARTS																	
			Pads or lining damaged	Pads or lining uneven wear	Shims damaged	Rotor imbalance	Rotor or drum damage	Rotor runout	Rotor deformation	Rotor or drum deflection	Rotor or drum rust	Rotor thickness variation	AXLE AND SUSPENSION	TIRE	ROAD WHEEL	DRIVE SHAFT	STEERING			
				BR-12, "BRAKE PAD : Inspection" , BR-13, "BRAKE LINING : Inspection" , BR-14, "BRAKE PAD : Inspection"	BR-12, "BRAKE PAD : Inspection" , BR-13, "BRAKE LINING : Inspection" , BR-14, "BRAKE PAD : Inspection"	BR-12, "BRAKE PAD : Inspection" , BR-13, "BRAKE LINING : Inspection" , BR-14, "BRAKE PAD : Inspection"	BR-12, "DISC ROTOR : Inspection" , BR-14, "DISC ROTOR : Inspection"	BR-12, "DISC ROTOR : Inspection" , BR-13, "BRAKE DRUM : Inspection" , BR-14, "DISC ROTOR : Inspection"	BR-12, "DISC ROTOR : Inspection" , BR-14, "DISC ROTOR : Inspection"	BR-12, "DISC ROTOR : Inspection" , BR-14, "DISC ROTOR : Inspection"	BR-12, "DISC ROTOR : Inspection" , BR-13, "BRAKE DRUM : Inspection" , BR-14, "DISC ROTOR : Inspection"	BR-12, "DISC ROTOR : Inspection" , BR-13, "BRAKE DRUM : Inspection" , BR-14, "DISC ROTOR : Inspection"	BR-12, "DISC ROTOR : Inspection" , BR-14, "DISC ROTOR : Inspection"	FAX-5, "NVH Troubleshooting Chart" RAX-4, "NVH Troubleshooting Chart" FSU-4, "NVH Troubleshooting Chart" RSU-4, "NVH Troubleshooting Chart"	WT-43, "NVH Troubleshooting Chart"	WT-43, "NVH Troubleshooting Chart"	FSU-4, "NVH Troubleshooting Chart"	ST-10, "NVH Troubleshooting Chart"		
			x	x	x									x	x	x	x	x	x	x

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BRAKE PEDAL

< BASIC INSPECTION >

BASIC INSPECTION

BRAKE PEDAL

Inspection

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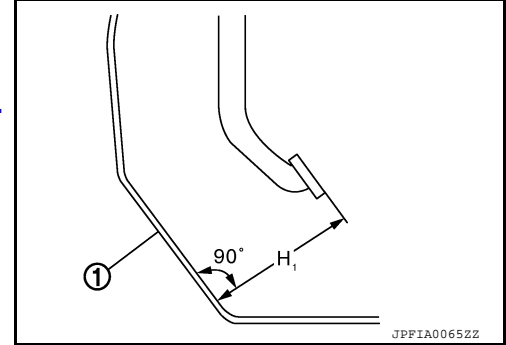
BRAKE PEDAL HEIGHT

Check the brake pedal height (H₁) between the dash lower panel (1) and the brake pedal upper surface.

Brake pedal height (H₁) : Refer to [BR-53, "Brake Pedal"](#).

CAUTION:

Check the brake pedal height with the floor trim removed.



STOP LAMP SWITCH AND BRAKE PEDAL POSITION SWITCH

Check the clearance (A) between the switch assembly bracket (3), the stop lamp switch (2) and the brake pedal position switch (1).

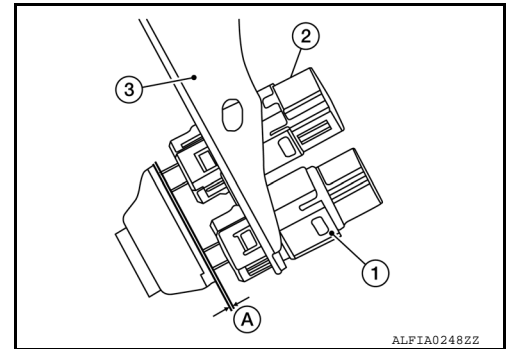
Clearance (A) : Refer to [BR-53, "Brake Pedal"](#).

CAUTION:

The stop lamp must turn off when the brake pedal is released.

NOTE:

Pull the brake pedal pad to check that both the stop lamp switch (2) and brake pedal position switch (1) contact ends to brake pedal bracket (3) clearance (A) are within specification.



BRAKE PEDAL PLAY

Check that brake pedal play does not exist.

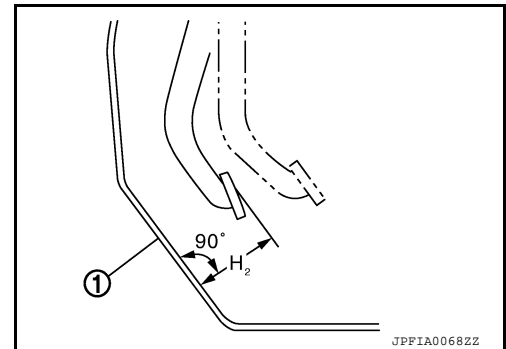
DEPRESSED BRAKE PEDAL HEIGHT

Check the brake pedal height (H₂) between the dash lower panel (1) and the brake pedal upper surface when depressing the brake pedal at 490 N (50 kg, 110 lb) while turning engine ON.

Depressed brake pedal height (H₂) : Refer to [BR-53, "Brake Pedal"](#).

CAUTION:

Check the depressed brake pedal height with the floor trim removed.



BRAKE FLUID

< BASIC INSPECTION >

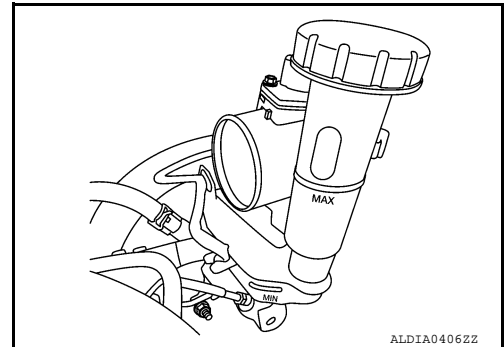
BRAKE FLUID

Inspection

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BRAKE FLUID LEVEL

- Make sure that the brake fluid level in the reservoir tank is between the MAX and MIN lines.
- Visually check around the reservoir tank for brake fluid leakage.
- If the brake fluid level is excessively low, check the brake system for leakage.
- If brake warning lamp remains illuminated after parking brake pedal is released, check the brake system for brake fluid leakage.

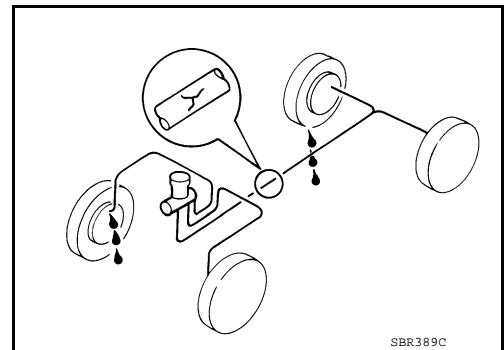


BRAKE LINE

1. Check brake line (tubes and hoses) for cracks, deterioration or other damage. Replace any damaged parts.
2. Check for brake fluid leakage by depressing brake pedal under a force of 785 N (80 kg-f, 177 lb-ft) for approximately 5 seconds while engine is running.

CAUTION:

If brake fluid leakage occurs around joints, retighten or replace damaged parts as necessary.



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BRAKE MASTER CYLINDER

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BRAKE MASTER CYLINDER

Inspection

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Check for brake fluid leakage at the following areas:

- Master cylinder mounting face
- Reservoir tank mounting face
- Brake tube and brake tube connections
- Brake hose and brake hose connections

If any brake fluid leakage is found, repair as necessary.

On Board Inspection

INFOID:000000009018271

LEAK INSPECTION

Check for leaks in the master cylinder installation surface, reservoir tank installation surface, and brake pipe and hose connections.

BRAKE BOOSTER

< BASIC INSPECTION >

BRAKE BOOSTER

Inspection

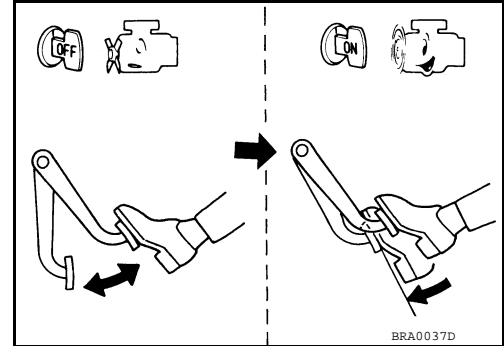
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Operation

Depress the brake pedal several times at five second intervals with the engine stopped. Start the engine with the brake pedal fully depressed. Check that the clearance between brake pedal and dash lower panel decreases.

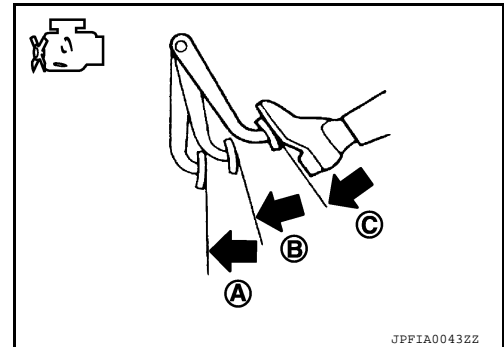
NOTE:

A slight impact with a small click may be felt on the pedal when the brake pedal is fully depressed. This is normal brake system operation.



Vacuum Inspection

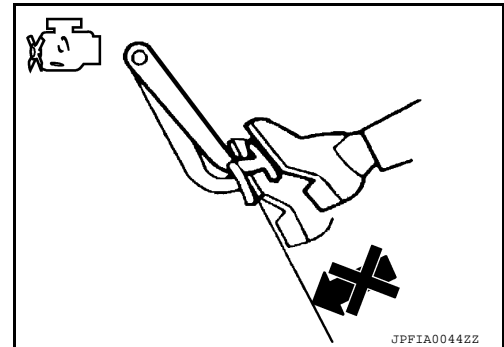
Idle the engine for one minute to apply vacuum to the brake booster. Stop the engine. Depress the brake pedal several times at five second intervals until the accumulated vacuum is released to atmospheric pressure. Check that the clearance between brake pedal and dash lower panel gradually increases (A → B → C) each time the brake pedal is depressed during this operation.



Depress the brake pedal with the engine running. Then stop the engine while holding down the brake pedal. Check that the brake pedal stroke does not change after holding down the brake pedal for 30 seconds or more.

NOTE:

A slight impact with a small click may be felt on the pedal when the brake pedal is fully depressed. This is normal brake system operation.



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FRONT DISC BRAKE

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FRONT DISC BRAKE

BRAKE PAD

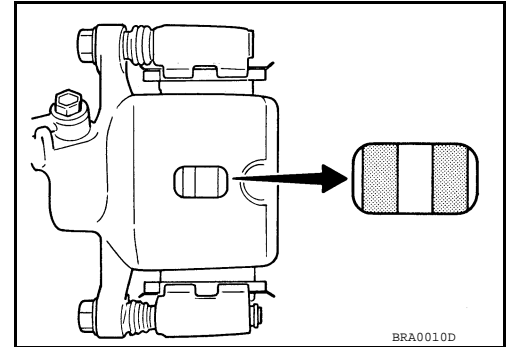
BRAKE PAD : Inspection

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PAD WEAR

Check brake pad thickness from an inspection hole on caliper body.
Check using a scale if necessary.

Wear limit thickness : Refer to [BR-54, "Front Disc Brake"](#).



DISC ROTOR

DISC ROTOR : Inspection

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APPEARANCE

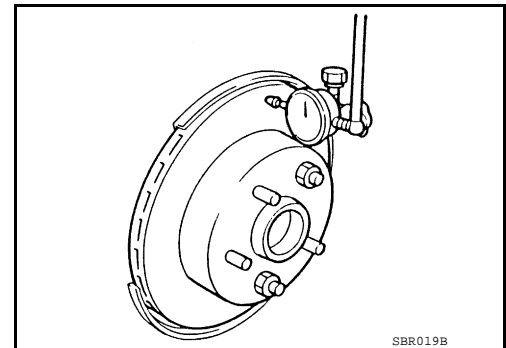
Check surface of disc rotor for uneven wear, cracks or damage. Replace if any abnormal conditions exist.

RUNOUT

1. Check the wheel bearing axial end play before the inspection. Refer to [FAX-6, "Inspection"](#).
2. Secure the disc rotor to the wheel hub and bearing assembly with wheel nuts at two wheel nut locations.
3. Inspect the runout with a dial gauge, measured at 10 mm (0.39 in) inside the disc edge.

Runout : Refer to [BR-54, "Front Disc Brake"](#).

4. Find the installation position with a minimum runout by shifting the disc rotor-to-wheel hub and bearing assembly installation position by one hole at a time if the runout exceeds the limit value.
5. Refinish the disc rotor if the runout is outside the limit even after performing the above operation. When refinishing, use Tool.



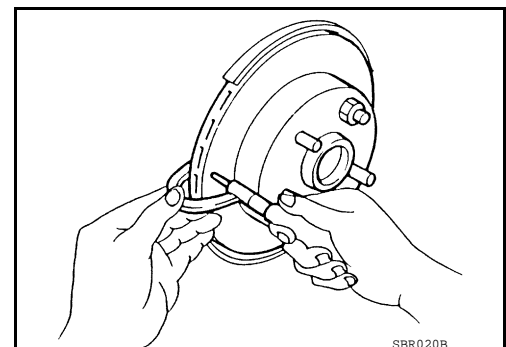
Tool number : 38-PFM90.5 (—)

THICKNESS

Check the thickness of the disc rotor using a micrometer. Replace the disc rotor if the thickness is below the wear limit.

Wear thickness : Refer to [BR-54, "Front Disc Brake"](#).

Thickness variation : Refer to [BR-54, "Front Disc Brake"](#).



REAR DRUM BRAKE

< BASIC INSPECTION >

REAR DRUM BRAKE

BRAKE LINING

BRAKE LINING : Inspection

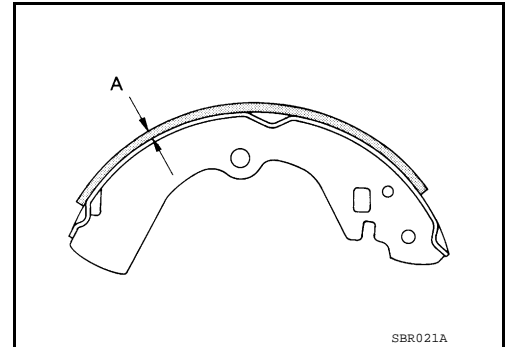
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INSPECTION

Brake Lining

1. Check brake lining wear thickness (A). Check using a scale if necessary.

Lining wear thickness (A) : Refer to [BR-54, "Rear Drum Brake"](#).



BRAKE DRUM

BRAKE DRUM : Inspection

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INSPECTION

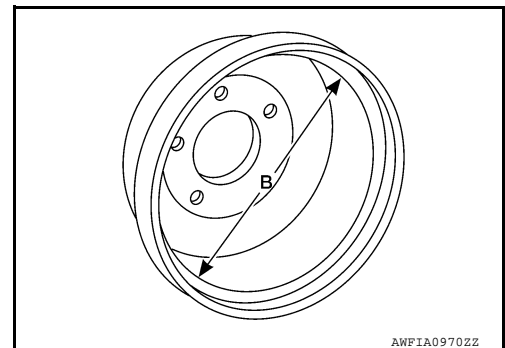
Appearance

Check surface of brake drum for uneven wear, cracks and serious damage. Replace it if necessary. Refer to [BR-41, "Removal and Installation"](#).

Brake Drum Inner Diameter

Check inner diameter (B) of the brake drum using suitable tool.

Brake drum inner diameter (B) : Refer to [BR-54, "Rear Drum Brake"](#).



REAR DISC BRAKE

< BASIC INSPECTION >

REAR DISC BRAKE

BRAKE PAD

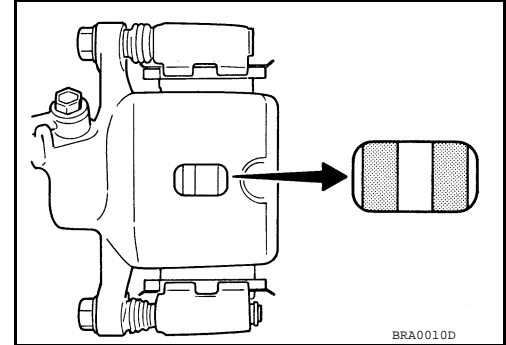
BRAKE PAD : Inspection

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PAD WEAR

Check pad thickness from an inspection hole on caliper body. Check using a scale if necessary.

Wear limit thickness : Refer to [BR-54, "Rear Disc Brake"](#).



DISC ROTOR

DISC ROTOR : Inspection

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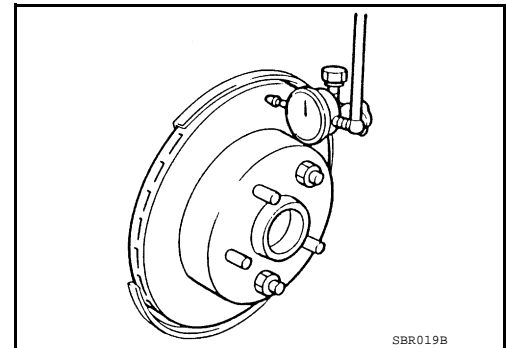
APPEARANCE

Check surface of disc rotor for uneven wear, cracks or damage. Replace if any abnormal conditions exist.

RUNOUT

1. Check the wheel bearing axial end play before the inspection. Refer to [RAX-5, "Inspection"](#).
2. Secure the disc rotor to the wheel hub and bearing assembly with wheel nuts at two wheel nut locations.
3. Inspect the runout with a dial gauge, measured at 10 mm (0.39 in) inside the disc edge.

Runout : Refer to [BR-54, "Rear Disc Brake"](#).



4. Find the installation position with a minimum runout by shifting the disc rotor-to-wheel hub and bearing assembly installation position by one hole at a time if the runout exceeds the limit value.
5. Refinish the disc rotor if the runout is outside the limit even after performing the above operation. When refinishing, use Tool.

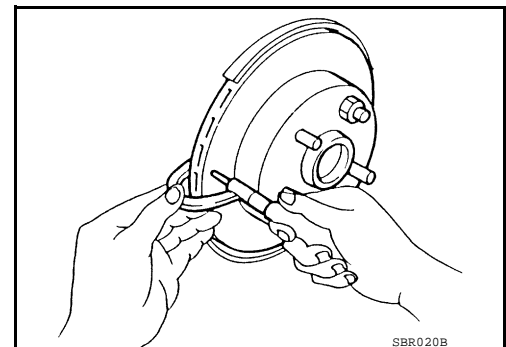
Tool number : 38-PFM90.5 (—)

Thickness

Check the thickness of the disc rotor using a micrometer. Replace the disc rotor if the thickness is below the minimum thickness.

Minimum thickness : Refer to [BR-54, "Rear Disc Brake"](#).

Thickness variation : Refer to [BR-54, "Rear Disc Brake"](#).



BRAKE PEDAL

< PERIODIC MAINTENANCE >

PERIODIC MAINTENANCE

BRAKE PEDAL

Adjustment

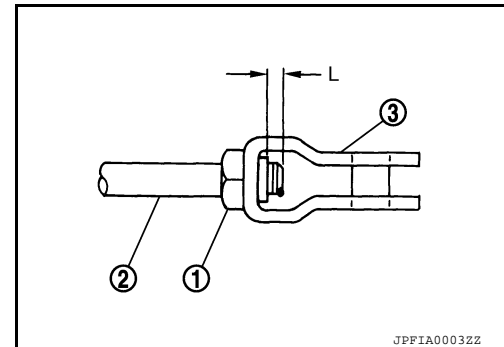
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BRAKE PEDAL HEIGHT

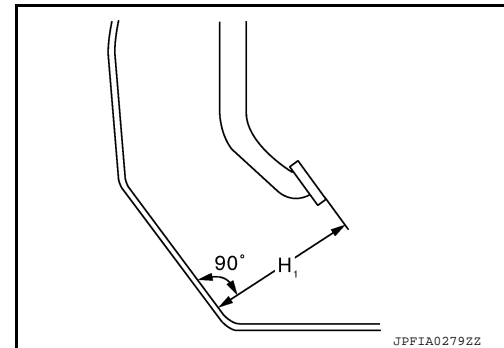
1. Remove instrument lower panel LH. Refer to [IP-21, "Removal and Installation"](#).
2. Disconnect the stop lamp switch and brake pedal position switch harness connectors.
3. Turn the stop lamp switch and brake pedal position switch 45° counterclockwise.
4. Loosen the input rod lock nut (1). Adjust the brake pedal height to the specification.

CAUTION:

- Check the height with the floor trim removed.
- The threaded end of the input rod (2) must project to the inner side (L) of the clevis (3).



Brake pedal height (H₁) : Refer to [BR-53, "Brake Pedal"](#).



5. Tighten the input rod lock nut to specification. Refer to [BR-33, "Exploded View"](#).
6. Check the brake pedal for smooth operation.

CAUTION:

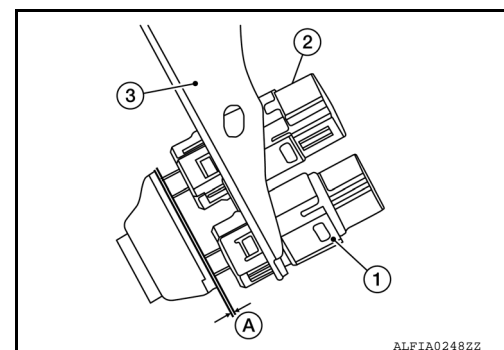
The stop lamp must turn off when the brake pedal is released.

STOP LAMP SWITCH AND BRAKE PEDAL POSITION SWITCH

1. Remove instrument lower panel LH. Refer to [IP-21, "Removal and Installation"](#).
2. Disconnect the stop lamp switch and brake pedal position switch harness connectors.
3. Turn the stop lamp switch and brake pedal position switch 45° counterclockwise.
4. With the threaded ends of the stop lamp switch (2) and brake pedal position switch (1) contacting the pedal bracket (3), turn the switches 45° clockwise to lock in place. Check that both the stop lamp switch (2) and brake pedal position switch (1) contact ends to brake pedal bracket (3) clearance (A) are within specification.

CAUTION:

- Make sure that the clearance (A) between the brake pedal bracket (3), stop lamp switch (2) and the brake pedal position switch (1) contact ends are within specification.
- The stop lamp must turn off when the brake pedal is released.



Clearance (A) : Refer to [BR-53, "Brake Pedal"](#).

BRAKE FLUID

< PERIODIC MAINTENANCE >

BRAKE FLUID

Drain and Refill

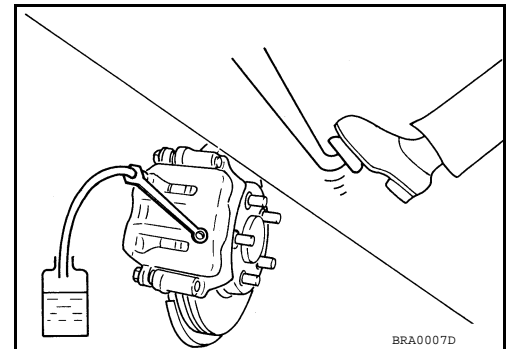
INFOID:000000009018299

CAUTION:

- Do not spill or splash brake fluid on painted surfaces. Brake fluid may damage paint. If brake fluid is splashed on painted areas, wash it away with water immediately.
- Prior to repair, turn the ignition switch OFF, disconnect the ABS actuator and electric unit (control unit) connector or negative battery terminal. Refer to [PG-50, "Exploded View"](#).
- Refill brake system with new brake fluid. Refer to [MA-12, "Fluids and Lubricants"](#).
- Do not reuse drained brake fluid.

DRAINING

1. Turn ignition switch OFF and disconnect ABS actuator and electric unit (control unit) connector or negative battery terminal. Refer to [PG-50, "Exploded View"](#).
2. Connect a vinyl tube to bleeder valve.
3. Depress brake pedal, loosen bleeder valve, and gradually remove brake fluid.



REFILLING

1. Make sure no foreign material exists in the reservoir and refill with new brake fluid.

CAUTION:

Do not reuse drained brake fluid.

2. Refill the brake system as follows:
 - Depress the brake pedal.
 - Loosen bleeder valve.
 - Slowly depress brake pedal to 2/3 of the brake pedal full stroke.
 - Tighten bleeder valve.
 - Release brake pedal.

Repeat this operation at intervals of two or three seconds until all old brake fluid is discharged. Add new brake fluid to master cylinder reservoir sub tank frequently.

CAUTION:

Do not allow master cylinder reservoir to empty as this may cause damage to master cylinder internal components.

3. Bleed the air out of the brake hydraulic system. Refer to [BR-16, "Bleeding Brake System"](#).

Bleeding Brake System

INFOID:000000009018300

CAUTION:

- Do not spill or splash brake fluid on painted surfaces. Brake fluid may damage paint. If brake fluid is splashed on painted areas, wash it away with water immediately.
- While bleeding, pay attention to master cylinder fluid level.
- Before working, disconnect ABS actuator and electric unit (control unit) connectors or negative battery terminal. Refer to [PG-50, "Exploded View"](#).

1. Turn ignition switch OFF and disconnect ABS actuator and electric unit (control unit) connector or negative battery terminal. Refer to [PG-50, "Exploded View"](#).
2. Connect a vinyl tube to rear right brake bleeder valve.
3. Fully depress brake pedal 4 or 5 times.
4. With brake pedal depressed, loosen bleeder valve to bleed air in brake line, and then tighten it immediately.

BRAKE FLUID

< PERIODIC MAINTENANCE >

5. Repeat steps 3 and 4 until all of the air is out of the brake line.
6. Tighten the bleeder valve to the specified torque. Refer to [BR-39. "BRAKE CALIPER ASSEMBLY : Exploded View"](#) (front disc brake), [BR-41. "Exploded View"](#) (rear drum brake) [BR-45. "BRAKE CALIPER ASSEMBLY : Exploded View"](#) (rear disc brake).
7. Repeat steps 2 through 6, with master cylinder reservoir tank filled at least halfway. Bleed the air in the following order: front right brake → front left brake → rear right brake → rear left brake.

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FRONT DISC BRAKE

< PERIODIC MAINTENANCE >

FRONT DISC BRAKE

Brake Burnishing

INFOID:000000009018313

CAUTION:

- **Burnish contact surfaces between brake pads and disc rotor according to the following procedure after refinishing the disc rotor, replacing brake pads or if a soft pedal occurs at very low mileage.**
 - **Be careful of vehicle speed. Brakes do not operate firmly/securely until pads and disc rotor are securely seated.**
 - **Only perform this procedure under safe road and traffic conditions. Use extreme caution.**
1. Drive the vehicle on straight, flat road.
 2. Depress the brake pedal until the vehicle stops.
 3. Release the brake pedal for a few minutes to allow the brake components to cool.
 4. Repeat steps 1 to 3 until pad and disc rotor are securely seated.

REAR DRUM BRAKE

< PERIODIC MAINTENANCE >

REAR DRUM BRAKE

Brake Burnishing

INFOID:000000008979867

CAUTION:

- **Burnish contact surfaces between brake drum and brake lining according to the following procedure after refinishing or replacing brake drum, or if a soft pedal occurs at very low mileage.**
 - **Be careful of vehicle speed because the brake does not operate firmly/securely until brake drum and brake lining are securely fitted.**
 - **Only perform this procedure under safe road and traffic conditions. Use extreme caution.**
1. Drive the vehicle on straight, flat road.
 2. Depress the brake pedal until the vehicle stops.
 3. Release the brake pedal for a few minutes to allow the brake components to cool.
 4. Repeat steps 1 to 3 until pad and disc rotor are securely seated.

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REAR DISC BRAKE

< PERIODIC MAINTENANCE >

REAR DISC BRAKE

Brake Burnishing

INFOID:000000009018316

CAUTION:

- **Burnish contact surfaces between brake pads and disc rotor according to the following procedure after refinishing the disc rotor, replacing brake pads or if a soft pedal occurs at very low mileage.**
 - **Be careful of vehicle speed. Brakes do not operate firmly/securely until pads and disc rotor are securely seated.**
 - **Only perform this procedure under safe road and traffic conditions. Use extreme caution.**
1. Drive the vehicle on straight, flat road.
 2. Depress the brake pedal until the vehicle stops.
 3. Release the brake pedal for a few minutes to allow the brake components to cool.
 4. Repeat steps 1 to 3 until pad and disc rotor are securely seated.

BRAKE PEDAL

< REMOVAL AND INSTALLATION >

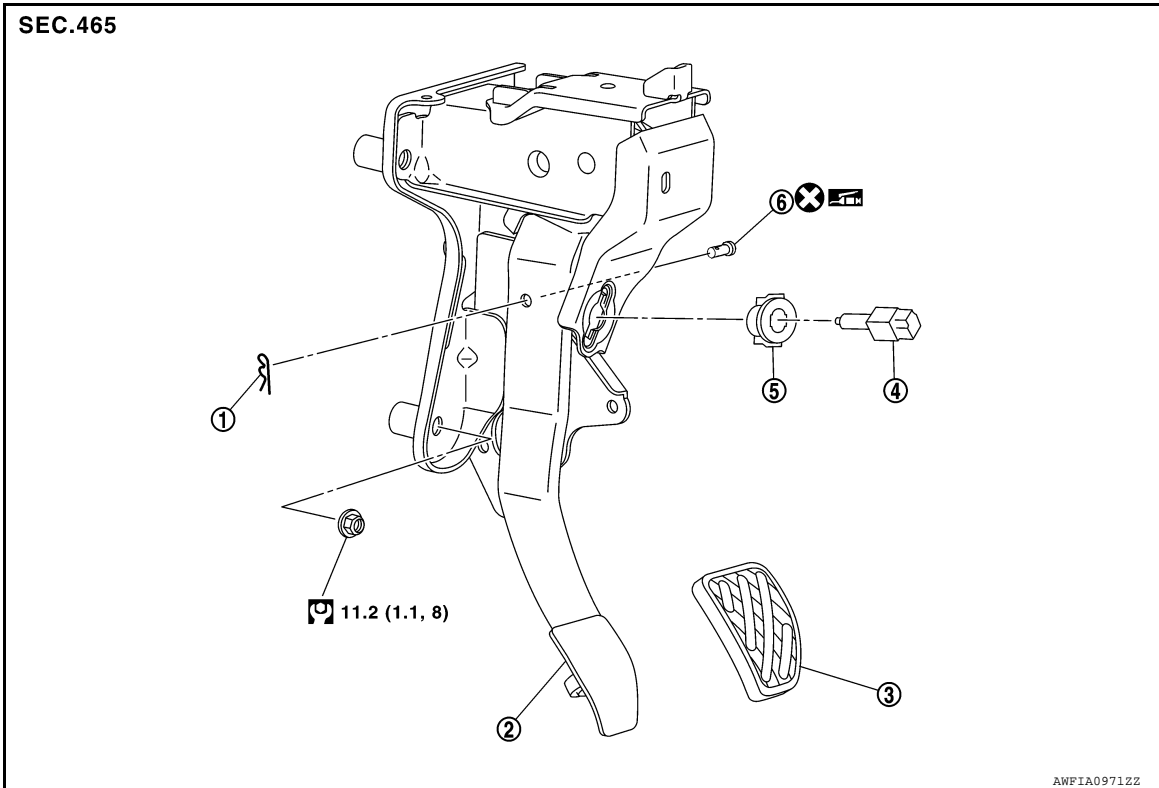
REMOVAL AND INSTALLATION

BRAKE PEDAL


Exploded View

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WITHOUT BRAKE PEDAL POSITION SWITCH



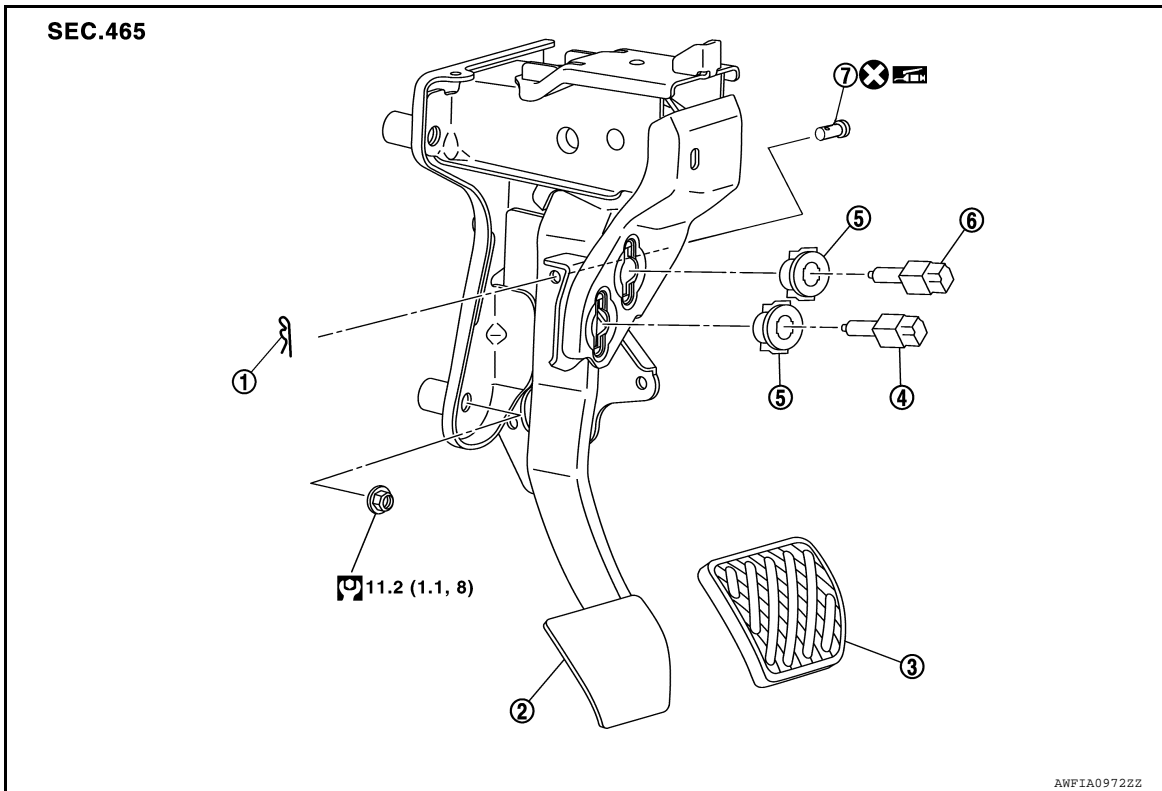
- | | | |
|---------------------|-------------------------|--------------------|
| 1. Snap pin | 2. Brake pedal assembly | 3. Brake pedal pad |
| 4. Stop lamp switch | 5. Clip | 6. Clevis pin |

 Apply multi-purpose grease.


WITH BRAKE PEDAL POSITION SWITCH

BRAKE PEDAL

< REMOVAL AND INSTALLATION >



1. Snap pin
2. Brake pedal assembly
3. Brake pedal pad
4. Brake pedal position switch
5. Clip
6. Stop lamp switch
7. Clevis pin

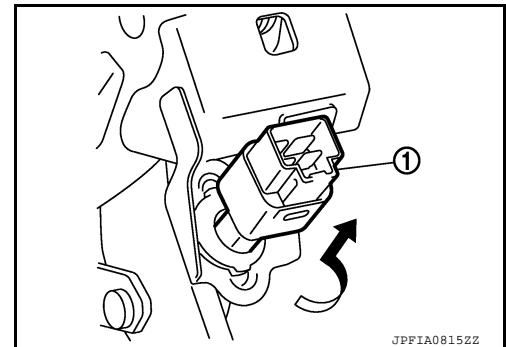
 Apply multi-purpose grease.

Removal and Installation

INFOID:000000008769074

REMOVAL

1. Remove instrument lower panel LH. Refer to [IP-21, "Removal and Installation"](#).
2. Remove steering column lower cover. Refer to [IP-16, "Removal and Installation"](#).
3. Disconnect the stop lamp switch and/or the brake pedal position switch harness connectors.
4. Rotate the stop lamp switch and/or the brake pedal position switch (1) counter clockwise to remove.



5. Disconnect the accelerator pedal harness connector and harness clip.
6. Remove snap pin and clevis pin from clevis on brake booster.
7. Remove the brake pedal assembly.

CAUTION:

Secure the brake booster and brake master cylinder to avoid damage to components.

8. Remove accelerator pedal from brake pedal assembly. Refer to [ACC-3, "Removal and Installation"](#).

INSPECTION AFTER REMOVAL

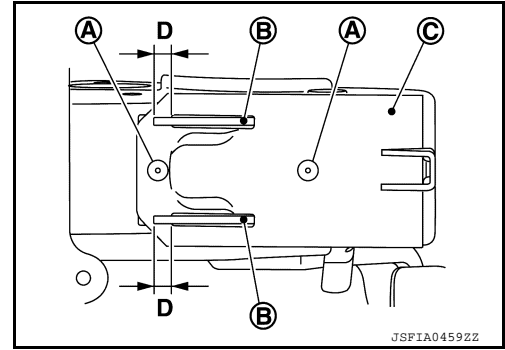
BRAKE PEDAL

< REMOVAL AND INSTALLATION >

Check for the following items and replace the brake pedal assembly, if necessary.

- Check the brake pedal upper rivet (A) for damage or wear.
- Check the brake pedal for bend, damage, and cracks on the welded parts.
- Check the lapping length (D) of sub-bracket (B) and slide plate (C).

Lapping length (D) : 6.5 mm (0.256 in) or more



INSTALLATION

Installation is in the reverse order of removal.

CAUTION:

- **Do not reuse the clevis pin.**
- **Install the clevis pin in the proper direction. Refer to [BR-21, "Exploded View"](#).**
- Apply multi-purpose grease to the clevis pin and the mating faces, if necessary.

ADJUSTMENT AFTER INSTALLATION

- Adjust each item of brake pedal after installing the brake pedal assembly to the vehicle. Refer to [BR-15, "Adjustment"](#).
- Perform the release position learning of the accelerator pedal. Refer to [EC-137, "Work Procedure"](#).

BRAKE PIPING

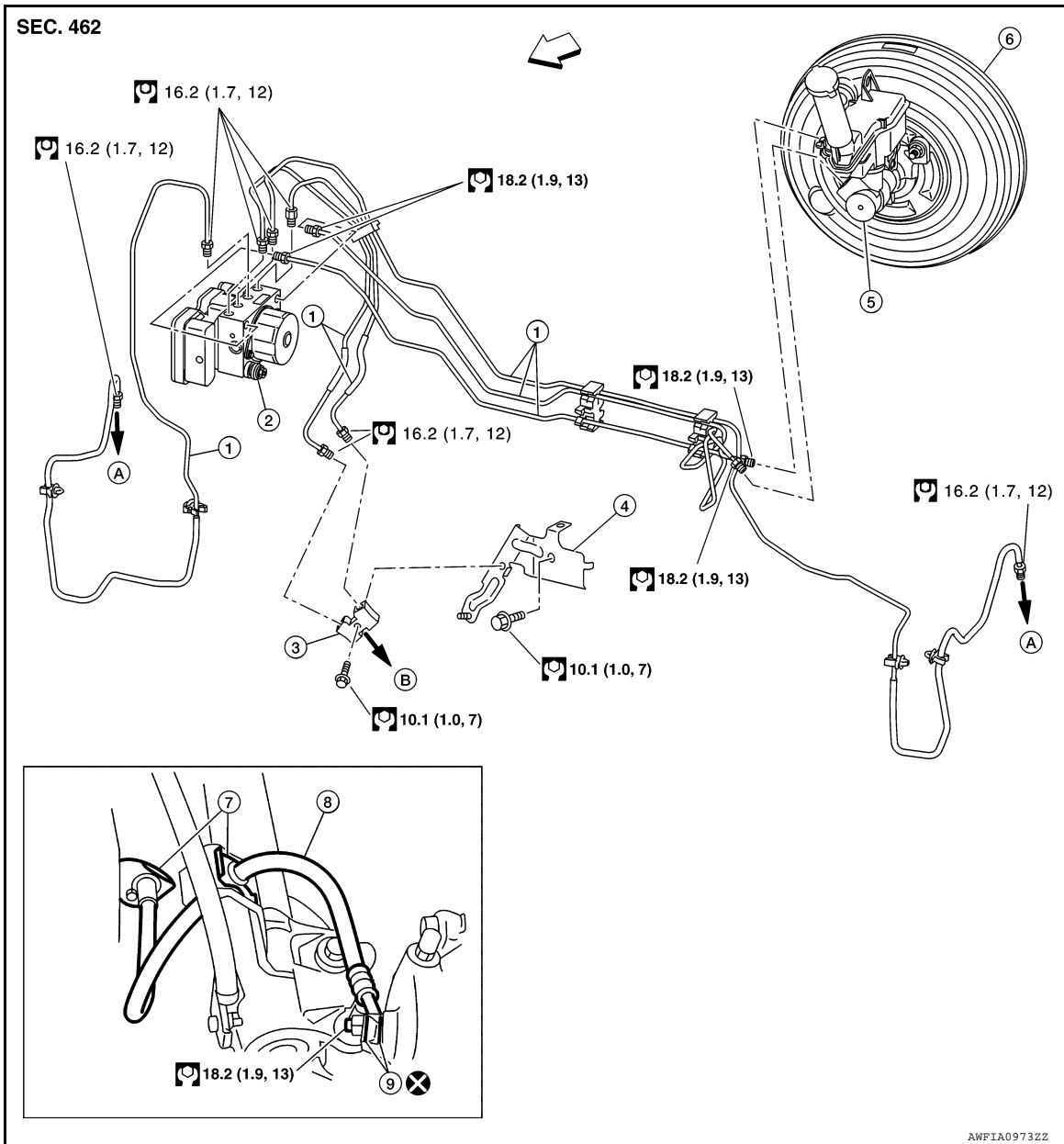
< REMOVAL AND INSTALLATION >

BRAKE PIPING

FRONT

FRONT : Exploded View

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- | | | |
|------------------------|--|--------------------------|
| 1. Brake tube | 2. ABS actuator and electric unit (control unit) | 3. Connector |
| 4. Connector bracket | 5. Master cylinder assembly | 6. Brake booster |
| 7. Lock plate | 8. Brake hose | 9. Copper sealing washer |
| A. To front brake hose | B. To rear brake pipe | ⇐ Front |

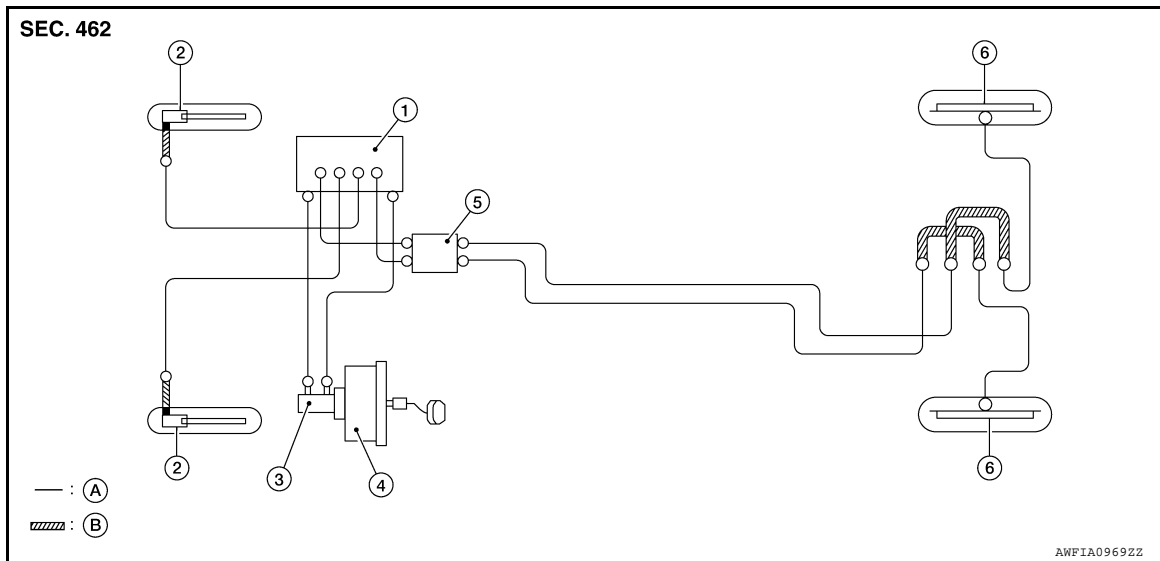
BRAKE PIPING

< REMOVAL AND INSTALLATION >

FRONT : Hydraulic Piping

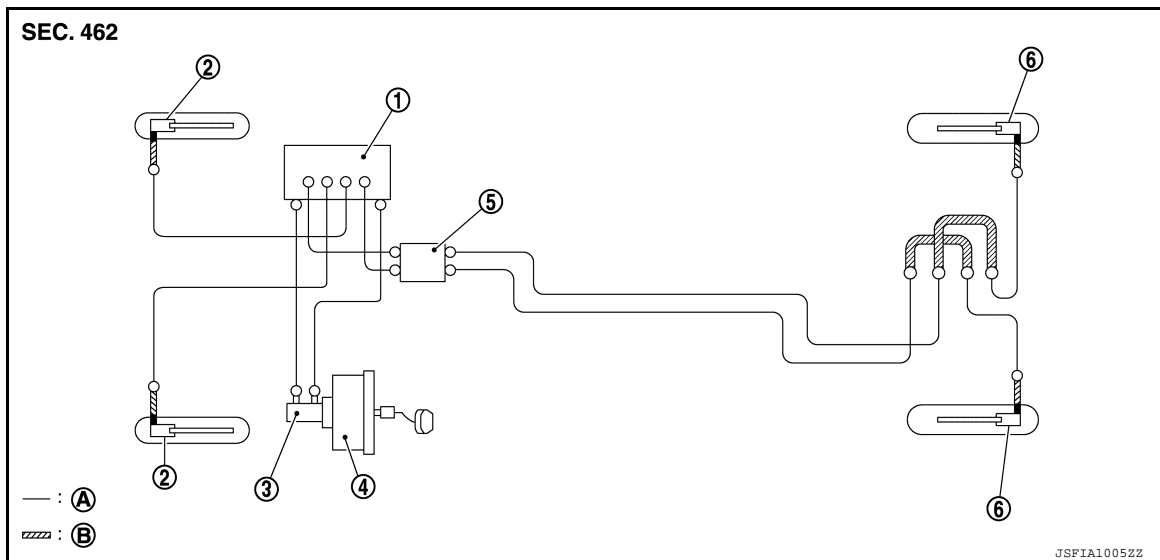
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Drum Brake



- | | | |
|--|---------------------|-----------------------------|
| 1. ABS actuator and electric unit (control unit) | 2. Front disc brake | 3. Master cylinder assembly |
| 4. Brake booster | 5. Connector | 6. Rear drum brake |
| A. Brake tube | B. Brake hose | |
| ○ Flare nut | | |
| ■ Union bolt | | |

Disc Brake



- | | | |
|--|---------------------|-----------------------------|
| 1. ABS actuator and electric unit (control unit) | 2. Front disc brake | 3. Master cylinder assembly |
| 4. Brake booster | 5. Connector | 6. Rear disc brake |
| A. Brake tube | B. Brake hose | |
| ○ Flare nut | | |
| ■ Union bolt | | |

CAUTION:

- All hoses and piping (tubes) must be free from excessive bending, twisting and pulling.

BRAKE PIPING

< REMOVAL AND INSTALLATION >

- Make sure there is no interference with other parts when turning steering wheel both clockwise and counterclockwise.
- The brake piping is an important safety part. If a brake fluid leak is detected, always disassemble the parts. Replace applicable part with a new one, if necessary.
- Do not spill or splash brake fluid on painted surfaces. Brake fluid may damage paint. If brake fluid is splashed on painted areas, wash it away with water immediately.
- Do not bend or twist brake hose sharply, or strongly pull it.
- When removing components, cover connections so that no dirt, dust, or other foreign matter gets in.
- Do not reuse drained brake fluid.
- After installation of the ABS actuator and electric unit (control unit), refill brake system with new brake fluid. Then bleed the air from the system. Refer to [BR-16, "Bleeding Brake System"](#).

FRONT : Removal and Installation

INFOID:000000008769078

NOTE:

When removing components such as hoses, tubes/lines, etc., cap or plug openings to prevent fluid from spilling.

REMOVAL

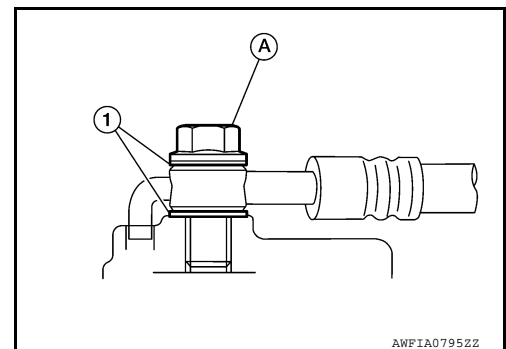
1. Remove wheels and tires using power tool.
2. Drain brake fluid. Refer to [BR-16, "Drain and Refill"](#).
3. Loosen the flare nut with suitable tool and separate the brake pipe from the hose.
CAUTION:
 - Do not scratch the flare nut and the brake pipe.
 - All brake hoses and pipes must be free from excessive bending, twisting and pulling.
4. Remove the union bolt and the brake hose from the brake caliper assembly. Remove and discard the copper sealing washers.
CAUTION:
Do not reuse copper sealing washers.
5. Remove the lock plate and remove the brake hose.

INSTALLATION

CAUTION:

Never allow foreign matter (e.g. dust) and oils other than brake fluid to enter the reservoir tank.

1. Assemble the union bolt (A) and the copper sealing washers (1) to the brake hose and install it as an assembly to the caliper. Align the brake hose L-pin by aligning it with the brake caliper assembly hole, and tighten the union bolt (1) to the specified torque.
CAUTION:
Do not reuse copper sealing washers.
2. Install the brake pipe to the brake hose, temporarily tighten the flare nut by hand until it does not rotate further, and secure the brake hose to the bracket with the lock plate.
CAUTION:
Check that the brake hoses and pipes are not bent or twisted.
3. Tighten the flare nut to the specified torque with a flare nut torque wrench.
CAUTION:
Do not scratch the flare nut and the brake tube.
4. Refill with new brake fluid and perform the air bleeding. Refer to [BR-16, "Bleeding Brake System"](#).
CAUTION:
Do not reuse drained brake fluid.
5. Install the wheels and tires. Refer to [WT-45, "Removal and Installation"](#).



REAR

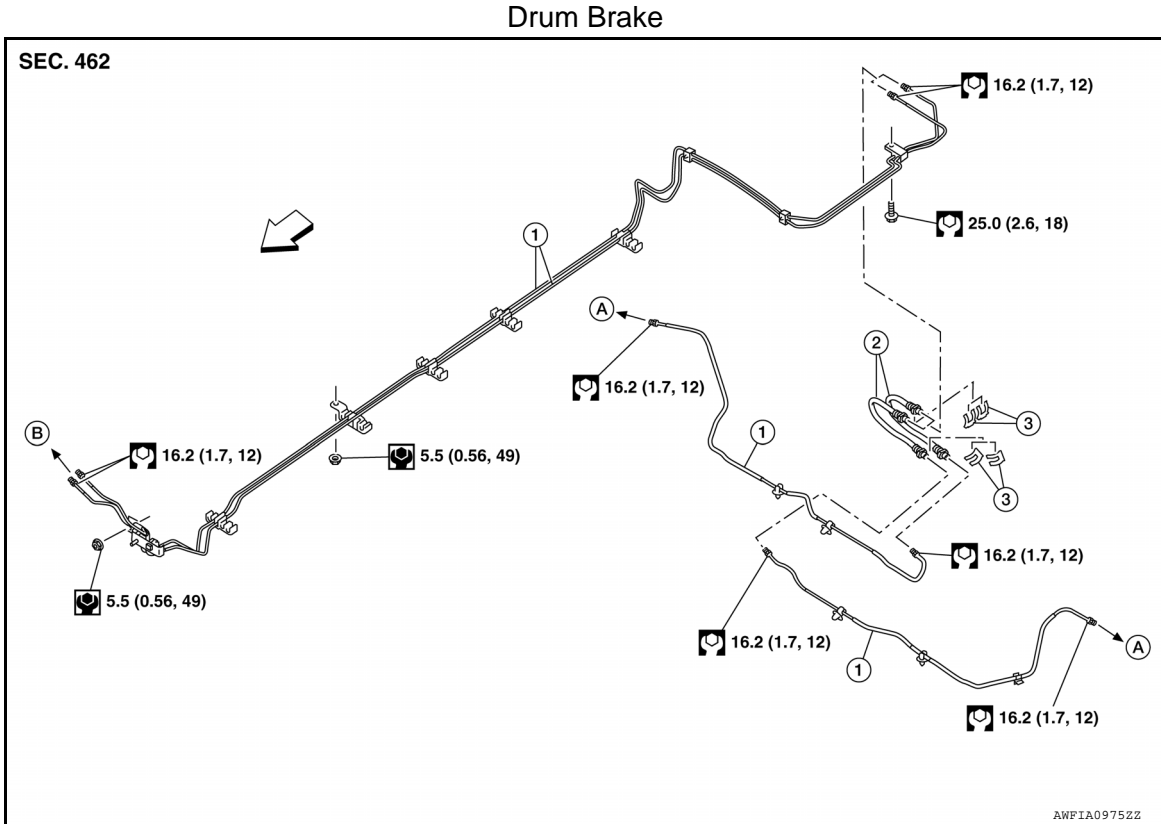
BRAKE PIPING

< REMOVAL AND INSTALLATION >

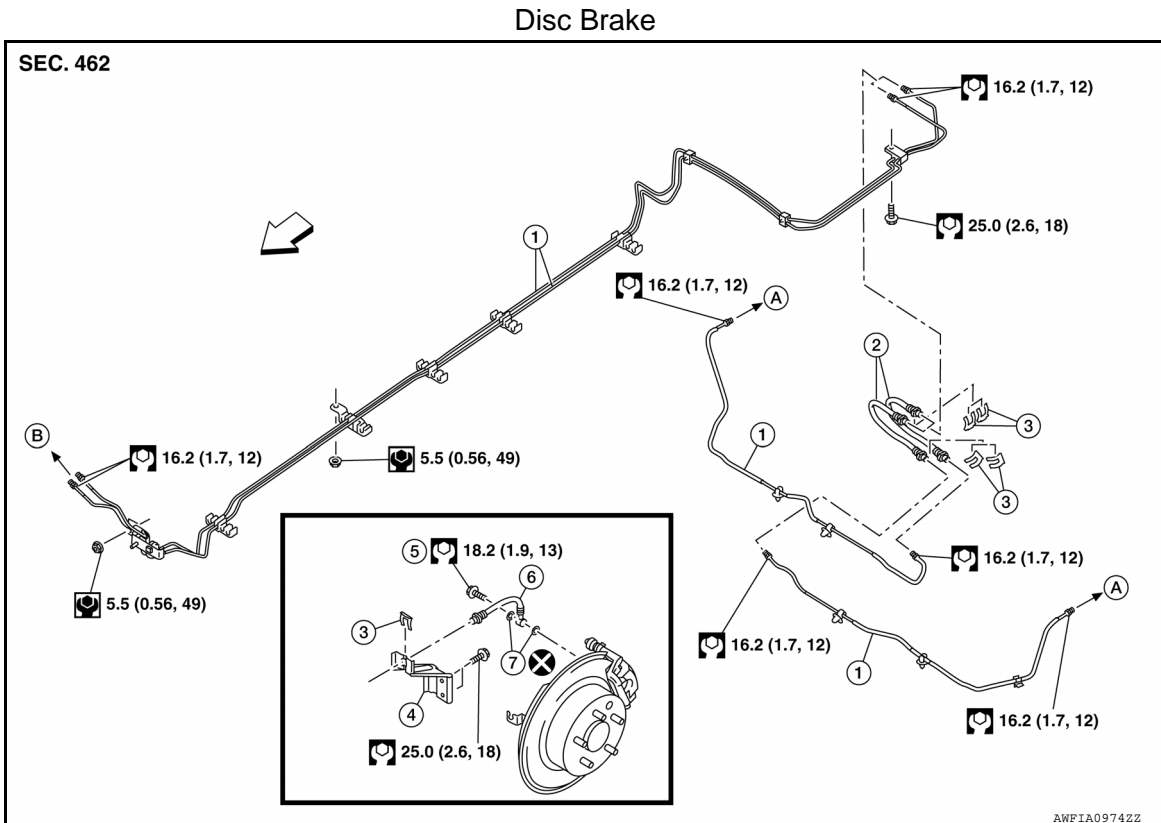
REAR : Exploded View

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| 1. Brake tube | 2. Brake hose | 3. Lock plate |
| A. To drum brake | B. To brake pipe connector | ← Front |



BRAKE PIPING

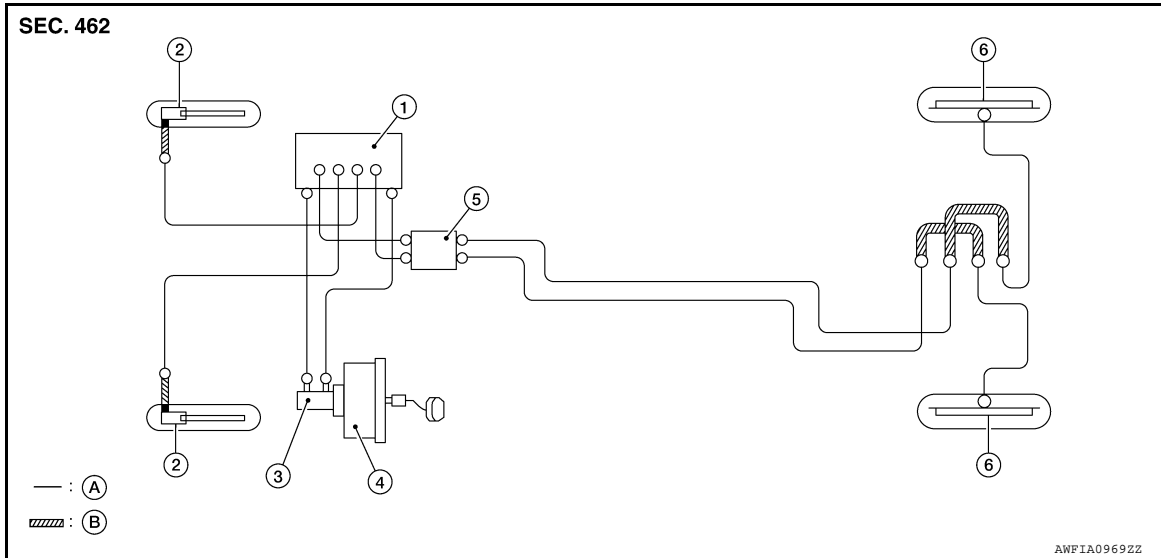
< REMOVAL AND INSTALLATION >

- | | | |
|--------------------------|------------------|----------------------------|
| 1. Brake tube | 2. Brake hose | 3. Lock plate |
| 4. Brake hose bracket | 5. Union bolt | 6. Rear brake hose |
| 7. Copper sealing washer | A. To disc brake | B. To brake pipe connector |
- ⇐ Front

REAR : Hydraulic Piping

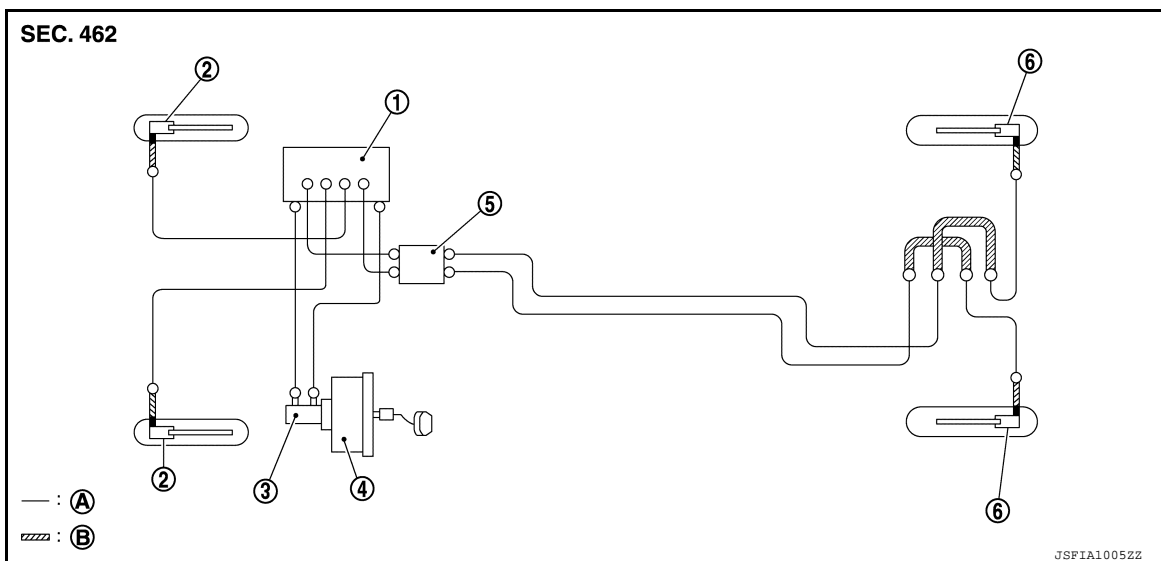
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Drum Brake



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|--|---------------------|-----------------------------|
| 1. ABS actuator and electric unit (control unit) | 2. Front disc brake | 3. Master cylinder assembly |
| 4. Brake booster | 5. Connector | 6. Rear drum brake |
| A. Brake tube | B. Brake hose | |
| ○ Flare nut | | |
| ■ Union bolt | | |



Disc Brake



- | | | |
|--|---------------------|-----------------------------|
| 1. ABS actuator and electric unit (control unit) | 2. Front disc brake | 3. Master cylinder assembly |
| 4. Brake booster | 5. Connector | 6. Rear disc brake |
| A. Brake tube | B. Brake hose | |

BRAKE PIPING

< REMOVAL AND INSTALLATION >

-  Flare nut
-  Union bolt

CAUTION:

- All hoses and piping (tubes) must be free from excessive bending, twisting and pulling.
- Make sure there is no interference with other parts.
- The brake piping is an important safety part. If a brake fluid leak is detected, always disassemble the parts. Replace applicable part with a new one, if necessary.
- Do not spill or splash brake fluid on painted surfaces. Brake fluid may damage paint. If brake fluid is splashed on painted areas, wash it away with water immediately.
- Do not bend or twist brake hose sharply, or strongly pull it.
- When removing components, cover connections so that no dirt, dust, or other foreign matter gets in.
- Do not reuse drained brake fluid.
- After installation of the ABS actuator and electric unit (control unit), refill brake system with new brake fluid. Then bleed the air from the system. Refer to [BR-16, "Bleeding Brake System"](#).

REAR : Removal and Installation

INFOID:000000008769082

DRUM BRAKES

NOTE:

When removing components such as hoses, tubes/lines, etc., cap or plug openings to prevent fluid from spilling.

Removal

CAUTION:

Do not spill or splash brake fluid on painted surfaces. Brake fluid may damage paint. If brake fluid is splashed on painted areas, wash it away with water immediately.

1. Remove wheels and tires using power tool.
2. Drain brake fluid. Refer to [BR-16, "Drain and Refill"](#).
3. Loosen the flare nut with suitable tool and separate the brake pipe from the brake hose.

CAUTION:

- Do not scratch the flare nut and the brake pipe.
- All brake hoses and pipes must be free from excessive bending, twisting and pulling.

4. Remove the lock plate and remove the brake hose from the vehicle.
5. Loosen the flare nut with a flare nut wrench and separate the brake pipe from the wheel cylinder, and remove the brake pipe.

Installation

1. Connect the brake pipe to the wheel cylinder, temporarily tighten the flare nut by hand until it does not rotate further.
2. Connect the brake hose to the brake pipe, temporarily tighten the flare nut by hand until it does not rotate further, and secure the brake hose to the bracket with the lock plate.

CAUTION:

Check that the brake hoses and pipes are not bent or twisted.

3. Tighten the flare nut to the specified torque using suitable tool.

CAUTION:

Do not scratch the flare nut and the brake tube.

4. Refill with new brake fluid and perform the air bleeding. Refer to [BR-16, "Bleeding Brake System"](#).

CAUTION:

Do not reuse drained brake fluid.

5. Install the wheels and tires. Refer to [WT-45, "Removal and Installation"](#).

DISC BRAKES

NOTE:

When removing components such as hoses, tubes/lines, etc., cap or plug openings to prevent fluid from spilling.

Removal

1. Remove the wheels and tires using power tool.

BRAKE PIPING

< REMOVAL AND INSTALLATION >

2. Drain brake fluid. Refer to [BR-16. "Drain and Refill"](#).
3. Loosen the flare nut with suitable tool and separate the brake tube from the hose.

CAUTION:

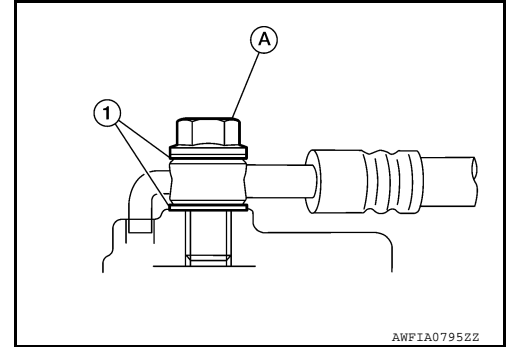
- Do not scratch the flare nut and the brake pipe.
- All brake hoses and pipes must be free from excessive bending, twisting and pulling.

4. Remove the union bolt (A) and the brake hose from the brake caliper. Remove and discard the copper sealing washers (1).

CAUTION:

Do not reuse copper sealing washers.

5. Remove the lock plate and remove the brake hose.



Installation

CAUTION:

Do not allow foreign matter (e.g. dust) and oils other than brake fluid to enter the reservoir tank.

1. Assemble the union bolt (A) and the copper sealing washers (1) to the brake hose and install it as an assembly to the brake caliper. Align the brake hose L-pin by aligning it with the brake caliper hole, and tighten the union bolt (A) to the specified torque.

CAUTION:

Do not reuse copper sealing washers.

2. Install the brake pipe to the brake hose, temporarily tighten the flare nut by hand until it does not rotate further, and attach the brake hose to the bracket with the lock plate.

CAUTION:

Check that the brake hoses and pipes are not bent or twisted.

3. Tighten the flare nut to the specified torque using suitable tool.

CAUTION:

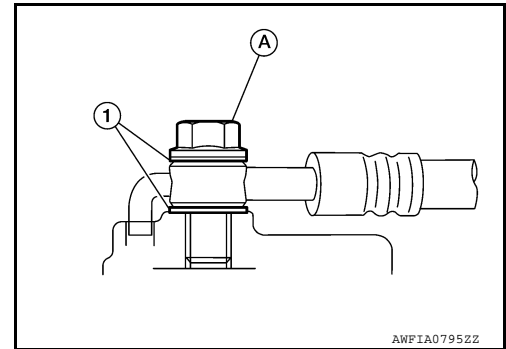
Do not scratch the flare nut and the brake pipe.

4. Refill with new brake fluid and perform the air bleeding. Refer to [BR-16. "Bleeding Brake System"](#).

CAUTION:

Do not reuse drained brake fluid.

5. Install the wheels and tires. Refer to [WT-45. "Removal and Installation"](#).



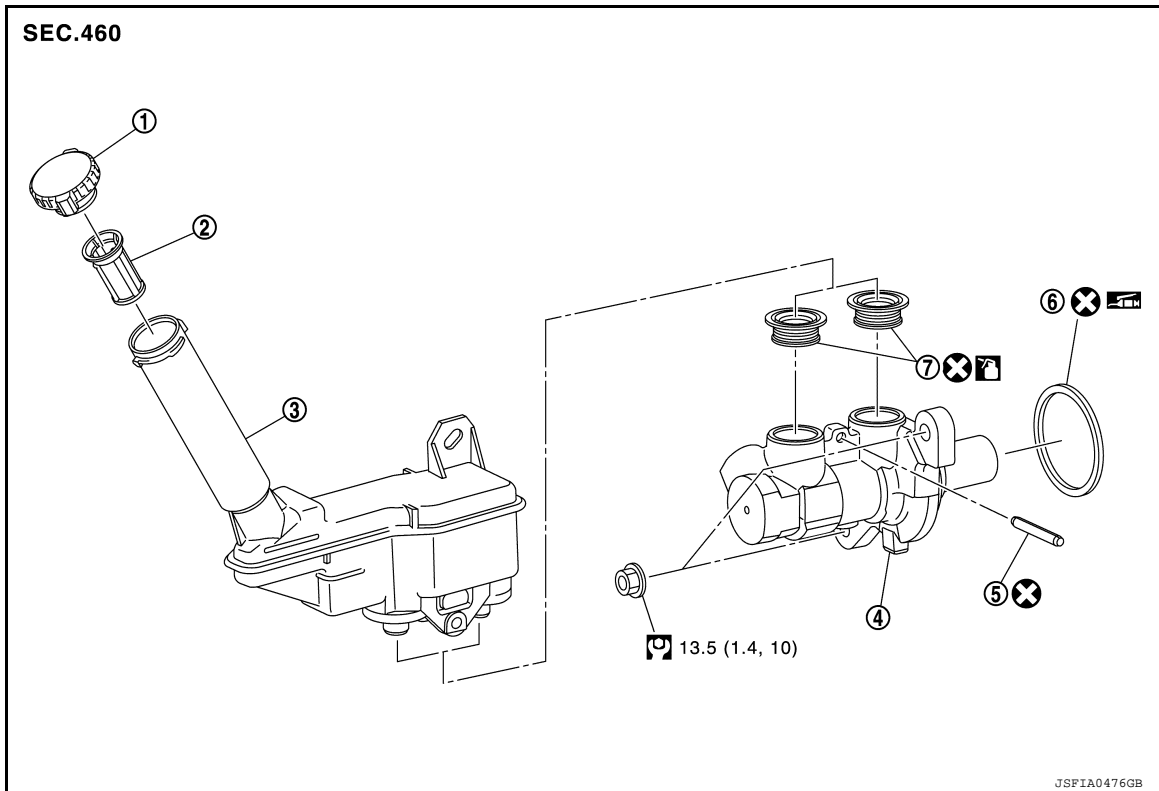
BRAKE MASTER CYLINDER



< REMOVAL AND INSTALLATION >

BRAKE MASTER CYLINDER

Exploded View

INFOID:000000008769084



- | | | |
|------------------|---|---|
| 1. Reservoir cap | 2. Oil strainer | 3. Reservoir tank |
| 4. Cylinder body | 5. Pin | 6. O-ring |
| 7. Grommet |  Apply brake fluid |  PBC (Poly Butyl Cuprysil) grease or silicone-based grease |

Removal and Installation

INFOID:000000008769085

REMOVAL

CAUTION:

- Do not spill or splash brake fluid on painted surfaces. Brake fluid may damage paint. If brake fluid is splashed on painted areas, wash it away with water immediately.
- Do not scratch the piston of master cylinder when installing/removing because the piston is exposed. Check for any dust on the piston, and wash with brake fluid if needed.
- Hold the master cylinder body when handling the master cylinder assembly. Do not hold the piston because the piston might become detached if pulled strongly.
- Refill the reservoir tank with new brake fluid "DOT 3".
- Do not reuse drained brake fluid.
- Do not reuse master cylinder O-ring.

NOTE:

When removing components such as hoses, tubes/lines, etc., cap or plug openings to prevent fluid from spilling.

1. Partially drain brake fluid. Refer to [BR-16, "Drain and Refill"](#).
2. Disconnect the brake fluid level switch harness connector.
3. Remove air duct and air cleaner case. Refer to [EM-25, "Removal and Installation"](#).
4. Remove the engine room insulator and position aside.
5. Separate the brake tube from master cylinder assembly with a suitable tool.

CAUTION:

BRAKE MASTER CYLINDER

< REMOVAL AND INSTALLATION >

Do not scratch the flare nut and the brake tube.

6. Disconnect the clutch hose (if equipped).
7. Remove the master cylinder assembly.

CAUTION:

- Do not deform or bend the brake tubes.
- Do not depress the brake pedal after the master cylinder assembly is removed.
- The piston of the master cylinder assembly is exposed. Do not damage the piston when removing the master cylinder.
- The piston may drop off when pulled out strongly. Do not hold the piston. Hold the cylinder body when handling the master cylinder assembly.

8. Remove and discard the O-ring.

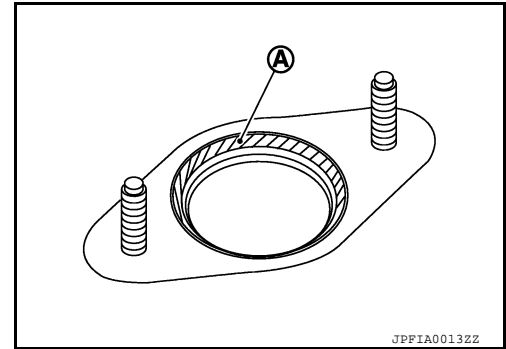
CAUTION:

Do not reuse O-ring.

INSTALLATION

Installation is in the reverse order of removal.

- Apply PBC (Poly Butyl Cuprysil) grease or equivalent to the brake booster (A) when installing the master cylinder assembly to the brake booster.



- Temporarily tighten the brake tube flare nut to the master cylinder assembly by hand. Then tighten it to the specified torque. Refer to [BR-24. "FRONT : Exploded View"](#).
- Perform the air bleeding. Refer to [BR-16. "Bleeding Brake System"](#).

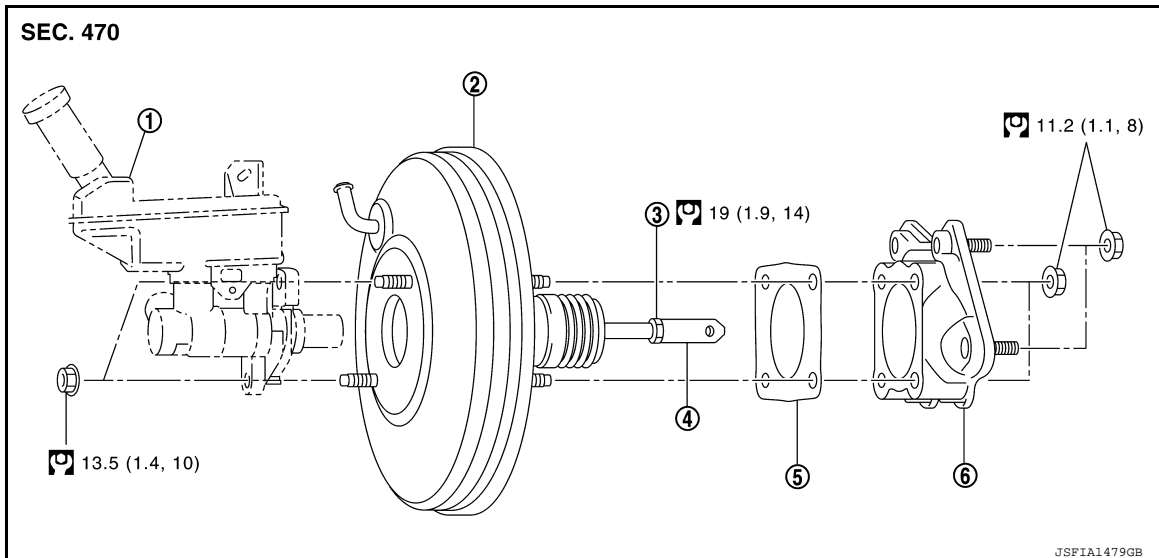
BRAKE BOOSTER

< REMOVAL AND INSTALLATION >

BRAKE BOOSTER

Exploded View

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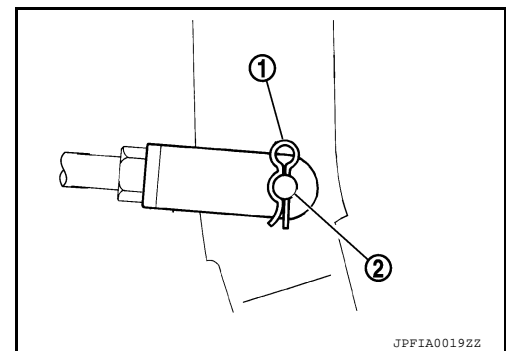
- | | | |
|-----------------------------|------------------|-------------|
| 1. Master cylinder assembly | 2. Brake booster | 3. Lock nut |
| 4. Clevis | 5. Gasket | 6. Spacer |

Removal and installation

INFOID:000000008769089

REMOVAL

1. Remove cowl top and cowl top extension. Refer to [EXT-26, "Removal and Installation"](#).
2. Remove air duct and air cleaner case. Refer to [EM-25, "Removal and Installation"](#).
3. Remove brake master cylinder assembly. Refer to [BR-31, "Removal and Installation"](#).
4. Remove vacuum hose from brake booster. Refer to [BR-35, "Removal and Installation"](#).
5. Remove the instrument lower panel LH. Refer to [IP-21, "Removal and Installation"](#).
6. Remove snap pin (1) and clevis pin (2). Refer to [BR-21, "Exploded View"](#).



7. Remove nuts on brake booster and brake pedal assembly.
CAUTION:
Secure the brake booster to avoid damage to components.
8. Remove brake booster and spacer.
CAUTION:
Do not deform or bend brake pipes.
NOTE:
If removing brake booster is difficult, remove clevis from brake booster.
9. Remove vacuum pipe from brake booster.
10. Remove spacer from brake booster.

BRAKE BOOSTER

< REMOVAL AND INSTALLATION >

INSTALLATION

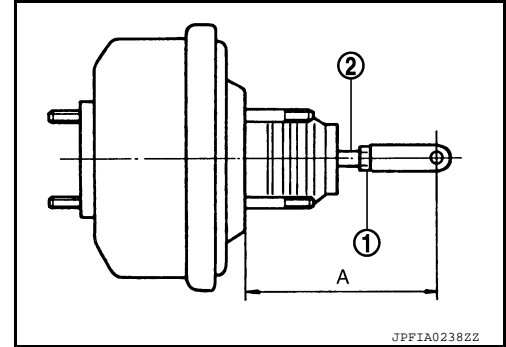
Installation is in the reverse order of removal.

CAUTION:

- Be careful not to damage brake booster stud bolt threads. If brake booster is tilted during installation, the dash panel may damage the threads.
 - Do not deform or bend the brake tubes when installing the brake booster.
 - Always use a gasket between the brake booster and the spacer.
 - Do not reuse the clevis pin.
-
- Loosen the lock nut (1) and adjust the input rod (2) to the specified length (A). Tighten the lock nut to the specified torque.

Length (A) : Refer to [BR-54, "Brake Booster"](#).

- Perform the air bleeding. Refer to [BR-16, "Bleeding Brake System"](#).
- Check each item of brake pedal. Adjust it if the measurement value is not the standard. Refer to [BR-11, "Inspection"](#).



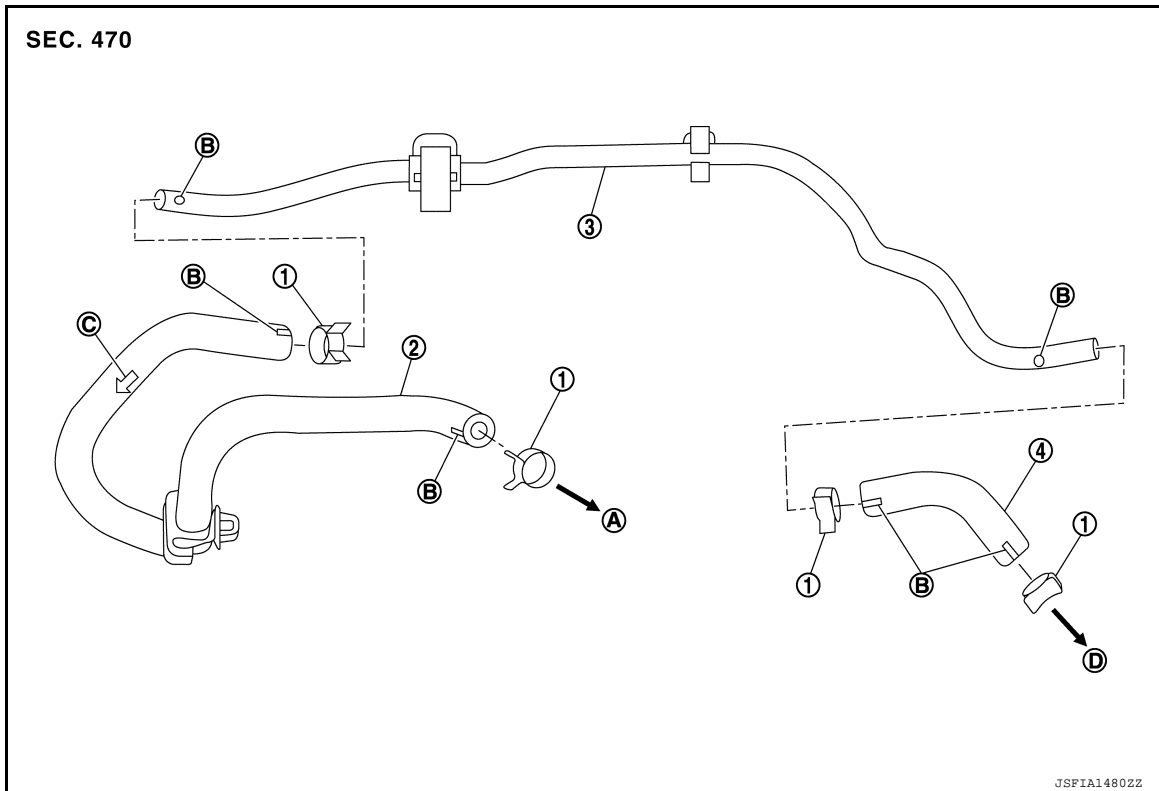
VACUUM LINES

< REMOVAL AND INSTALLATION >

VACUUM LINES

Exploded View

INFOID:000000008769091



- | | | |
|--------------------------------------|---------------------------------------|------------------|
| 1. Clamp | 2. Vacuum hose (built-in check valve) | 3. Vacuum piping |
| 4. Vacuum hose | A. To intake manifold side | B. Paint mark |
| C. Stamp indicating engine direction | D. To brake booster | |

Removal and Installation

INFOID:000000008769092

REMOVAL

1. Remove air duct and air cleaner case. Refer to [EM-25. "Removal and Installation"](#).
2. Remove the vacuum hoses and vacuum piping.

INSPECTION AFTER REMOVAL

Visual Inspection

Check for correct installation, damage and deterioration of the vacuum hoses and pipe.

Valve Air-tightness Check

- Connect a suitable tool at each end of the vacuum hose with built-in check valve to inspect the check valve operation.

Vacuum applied at booster end : Refer to [BR-53. "Check Valve"](#).

Vacuum applied at intake manifold end : Refer to [BR-53. "Check Valve"](#).

- Replace the vacuum hose with built-in check valve if out of specification.

INSTALLATION

Installation is in the reverse order of removal.

VACUUM LINES

< REMOVAL AND INSTALLATION >

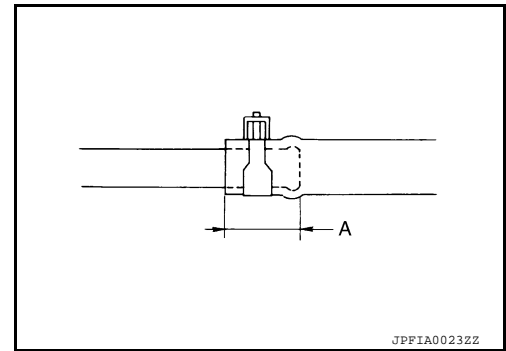
- When installing vacuum hose, insert it until its tip reaches the back-end of length (A) or further as shown.

CAUTION:

Do not use lubricating oil during assembly.

Length (A) : 24 mm (0.95 in) or more

- Face the paint mark of vacuum hose (build-in check valve) (intake manifold side) to vehicle right side to assemble.
- Face the paint mark of vacuum hose (build-in check valve) (brake booster side) to vehicle front side to assemble.
- Face the paint mark of vacuum piping (intake manifold side) to vehicle front side to assemble.
- Face the paint mark of vacuum piping (brake booster side) to downward to assemble.
- Face the paint mark of vacuum hose (intake manifold side) to downward to assemble.
- Face the paint mark of vacuum hose (brake booster side) to vehicle front side to assemble.
- For clamp mounting direction (the orientation of pawl), refer to [BR-35. "Exploded View"](#).



FRONT DISC BRAKE

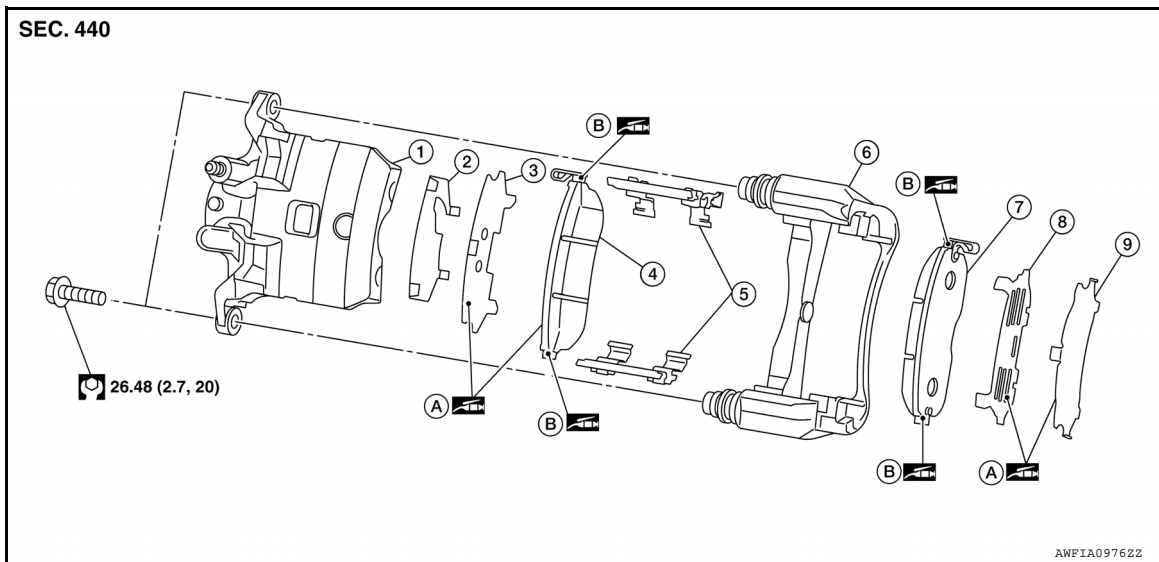
< REMOVAL AND INSTALLATION >

FRONT DISC BRAKE

BRAKE PAD

BRAKE PAD : Exploded View

INFOID:000000008769097



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|-------------------------------------|---------------------|---------------------|
| 1. Cylinder body | 2. Inner shim cover | 3. Inner shim |
| 4. Inner pad (with pad wear sensor) | 5. Pad retainer | 6. Torque member |
| 7. Outer pad | 8. Outer shim | 9. Outer shim cover |
| A. Molykote AS880N | B. Molykote 7439 | |

BRAKE PAD : Removal and Installation

INFOID:000000008769098

REMOVAL

WARNING:

Clean dust on brake caliper and brake pad with a vacuum dust collector to minimize the hazards of airborne particles or other material.

CAUTION:

- Do not depress the brake pedal while removing the brake pads because the pistons may pop out.
- It is not necessary to remove bolts on torque member and brake hose except for disassembly or replacement of brake caliper. For brake pad removal, hang brake caliper with a wire so as not to stretch brake hose.
- If brake fluid or grease adheres to the brake caliper or disc rotor, quickly wipe it off.

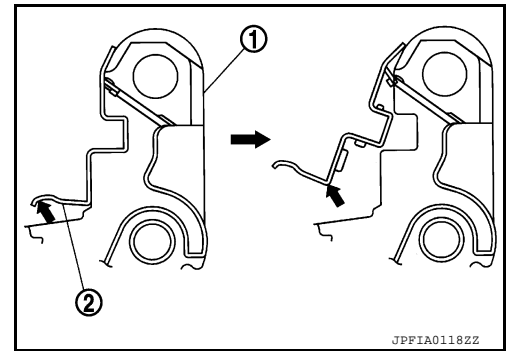
1. Partially drain brake fluid from the master cylinder. Refer to [BR-16. "Drain and Refill"](#).
2. Remove front wheels and tires using power tool.
3. Remove sliding pin bolts.
4. Remove the brake caliper from the torque member. Leaving brake hose attached, reposition the brake caliper aside with wire.
5. Remove the brake pads, shims, shim covers and pad retainers from the torque member.

CAUTION:

FRONT DISC BRAKE

< REMOVAL AND INSTALLATION >

- Do not deform the pad retainer (2) when removing the pad retainer from the torque member (1).
- Do not damage the piston boot.
- Do not drop the brake pads, shims, and the shim covers.
- Note the position of components during removal to aid with installation.

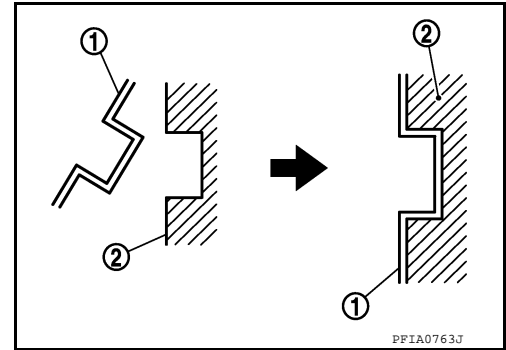


INSTALLATION

1. Install the pad retainers (1) to the torque member (2) if the pad retainers have been removed.

CAUTION:

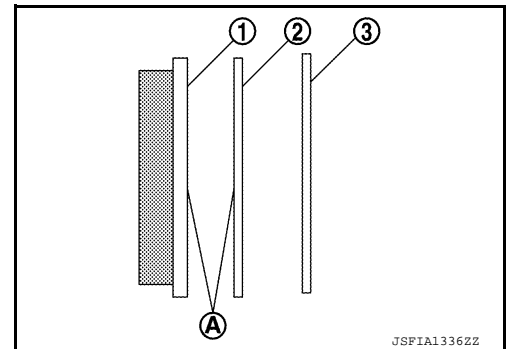
- Do not deform brake pad retainers.
- Verify pad retainers are secured properly to torque member.



2. Apply Molykote AS880N or equivalent to the mating faces (A) between the inner pad (1) and the inner shim (2), and install the inner shim and inner shim cover (3) to the inner pad.

CAUTION:

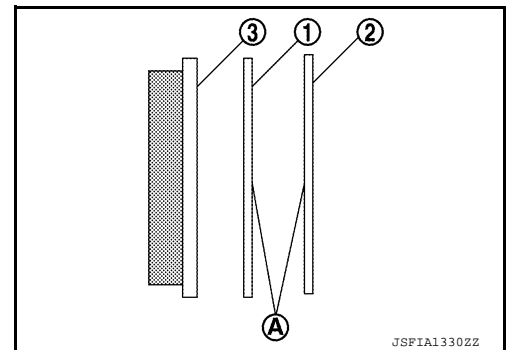
Always replace the shim and shim cover when replacing the brake pad.



3. Apply Molykote AS880N or silicone-based grease to the mating faces (A) between the outer shim (1) and the outer shim cover (2), and install the outer shim and outer shim cover to the outer pad (3).

CAUTION:

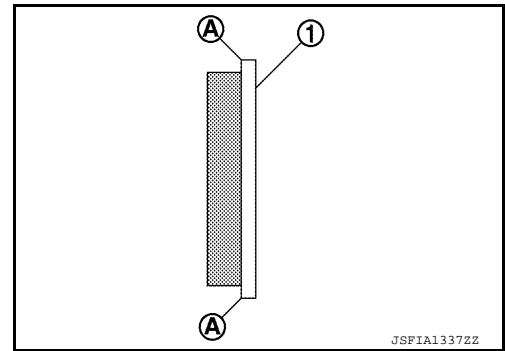
Always replace the shim and shim cover when replacing the brake pad.



FRONT DISC BRAKE

< REMOVAL AND INSTALLATION >

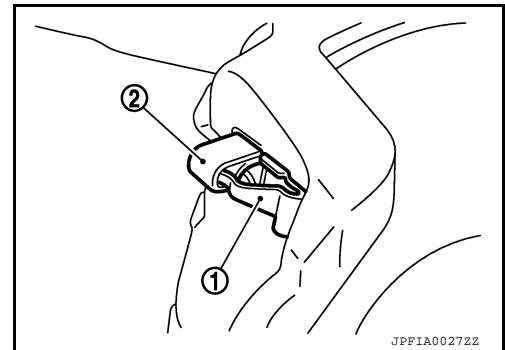
4. Apply Molykote 7439 or equivalent to the mating faces (A) between the brake pads (1) and the pad retainers.



5. Install the brake pads to the torque member.

CAUTION:

- Both inner and outer pads have a pad return system on the pad retainer. Install pad return lever (1) securely to pad retainer (2).
- Do not deform the pad retainers.



6. Using a suitable tool, press piston into the brake caliper.

CAUTION:

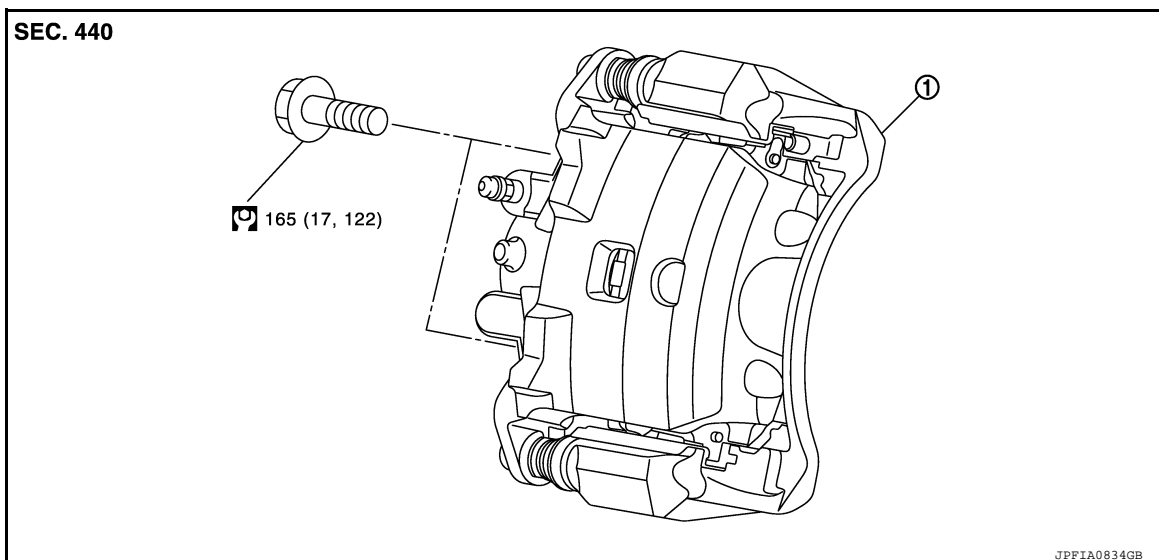
Do not damage the piston boot.

7. Install cylinder body to torque member.
8. Install the sliding pin bolts and tighten them to specified torque.
9. Depress the brake pedal several times to verify that drag does not exist.
10. Install front wheels and tires. Refer to [WT-45. "Removal and Installation"](#).

BRAKE CALIPER ASSEMBLY

BRAKE CALIPER ASSEMBLY : Exploded View

INFOID:000000008769100



1. Brake caliper assembly

FRONT DISC BRAKE

< REMOVAL AND INSTALLATION >

BRAKE CALIPER ASSEMBLY : Removal and Installation

INFOID:000000008769101

REMOVAL

WARNING:

Clean dust on brake caliper and brake pad with a vacuum dust collector to minimize the hazard of airborne particles or other materials.

CAUTION:

- Do not depress the brake pedal.
- Do not spill or splash brake fluid on painted surfaces. Brake fluid may damage paint. If brake fluid is splashed on painted areas, wash it away with water immediately.
- Do not bend, twist or pull the brake hoses and piping.
- Do not reuse drained brake fluid.

NOTE:

When removing components such as hoses, tubes/lines, etc., cap or plug openings to prevent fluid from spilling.

1. Remove front wheel and tires using power tools.
2. Secure the disc rotor using wheel nuts.
3. Remove union bolt, copper sealing washers, and disconnect brake hose from brake caliper. Discard the copper sealing washers.

CAUTION:

Do not reuse copper sealing washers.

4. Remove sliding pin bolts and the brake caliper.

CAUTION:

Do not drop brake pads or caliper.

INSTALLATION

1. Position the brake caliper to torque member and install the sliding pin bolts. Tighten to specification.
2. Assemble the union bolt (A) and the copper sealing washers (1) to the brake hose and install it as an assembly to the brake caliper. Align the brake hose L-pin by aligning it with the brake caliper hole, and tighten the union bolt (A) to the specified torque.

CAUTION:

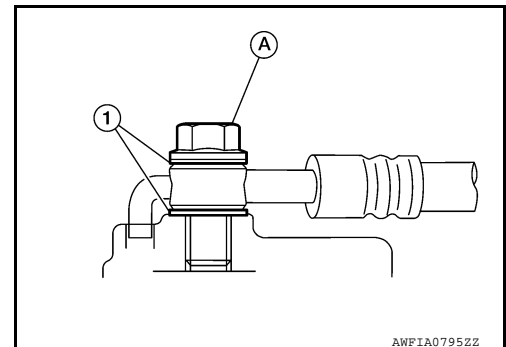
Do not reuse copper sealing washers.

3. Refill with new brake fluid and perform the air bleeding. Refer to [BR-16. "Bleeding Brake System"](#).

CAUTION:

- Do not reuse drained brake fluid.
- Do not spill or splash brake fluid on the disc rotor.

4. Check the front disc brakes for drag. If drag exists, refer to [BR-12. "BRAKE PAD : Inspection"](#).
5. Install the front wheels and tires. Refer to [WT-45. "Removal and Installation"](#).



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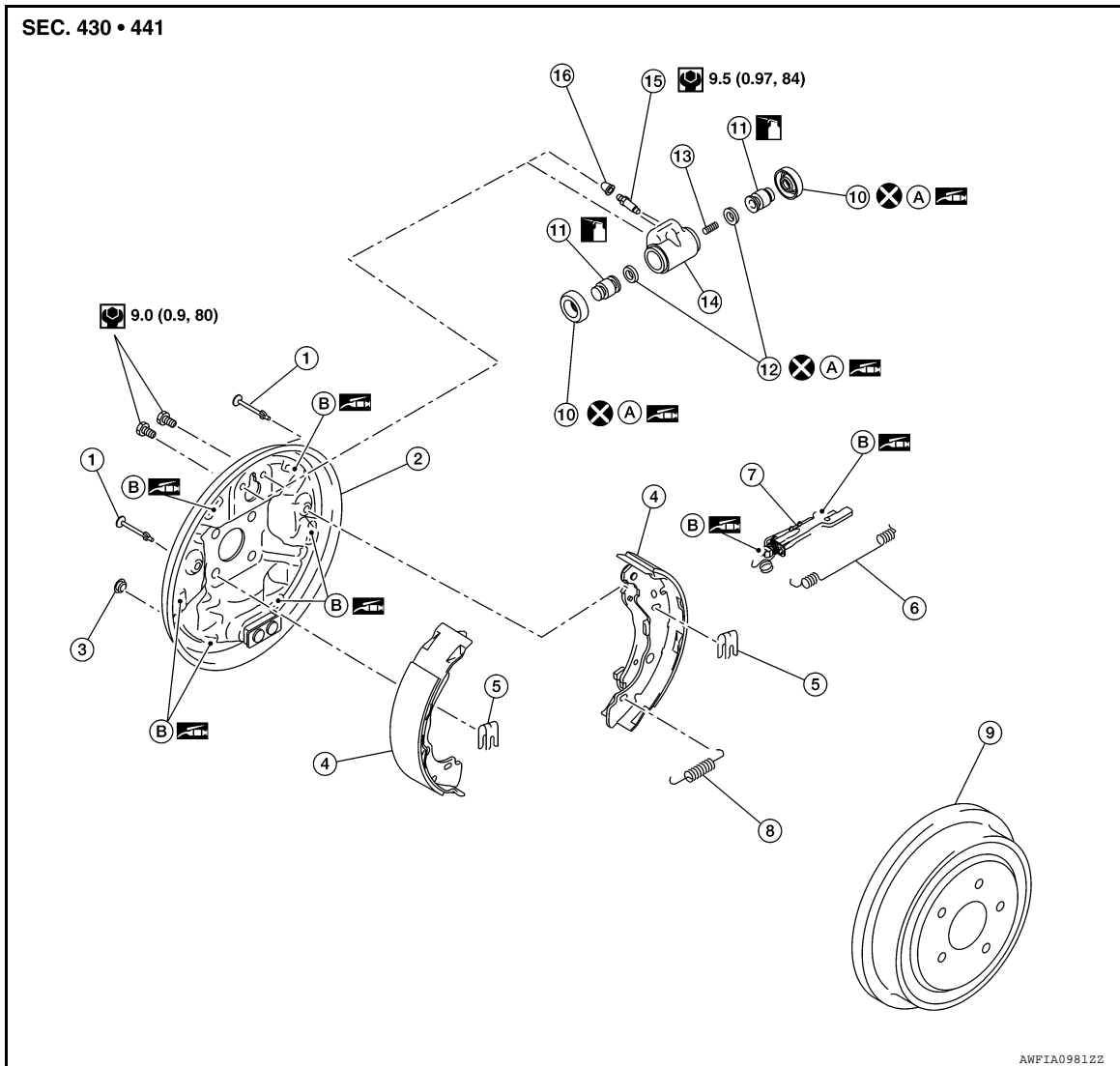
REAR DRUM BRAKE

< REMOVAL AND INSTALLATION >


REAR DRUM BRAKE

Exploded View

INFOID:000000008979868



- | | | |
|------------------|------------------------|--|
| 1. Shoe hold pin | 2. Back plate | 3. Plug |
| 4. Brake shoe | 5. Spring | 6. Upper spring |
| 7. Adjuster | 8. Return spring | 9. Brake drum |
| 10. Boot | 11. Piston | 12. Piston cup |
| 13. Spring | 14. Wheel cylinder | 15. Bleeder valve |
| 16. Cap | A. Apply rubber grease | B. Apply PBC (Poly Butyl Cuprysil) grease or silicone-based grease |

 Apply brake fluid

Removal and Installation

INFOID:000000008979869

WARNING:

Clean dust from brake drum and shoe assembly with a vacuum dust collector to minimize the hazard of air borne particles or other materials.

CAUTION:

- Do not depress the brake pedal while removing the brake drum because the pistons may pop out.
- Do not drop the removed parts.

REAR DRUM BRAKE

< REMOVAL AND INSTALLATION >

- Do not spill or splash brake fluid on painted surfaces. Brake fluid may damage paint. If brake fluid is splashed on painted areas, wash it away with water immediately.
- Do not spill or splash brake fluid on the brake drum.

REMOVAL

NOTE:

When removing components such as hoses, tubes/lines, etc., cap or plug openings to prevent fluid from spilling.

1. Remove rear wheels and tires using power tool.
2. Drain the brake fluid when removing or disassembling the wheel cylinder is necessary. Refer to [BR-16, "Drain and Refill"](#).
3. Remove the brake drum. Refer to [BR-41, "Exploded View"](#).

NOTE:

- Make sure the parking brake lever is fully released prior to removal of the brake drum.
- The rear wheel hub is housed inside the brake drum.

4. Remove the springs (1) by pushing them inward toward the vehicle and rotating, this will release the shoe hold pins, and the brake shoe assembly (brake shoes, each spring, and adjuster).

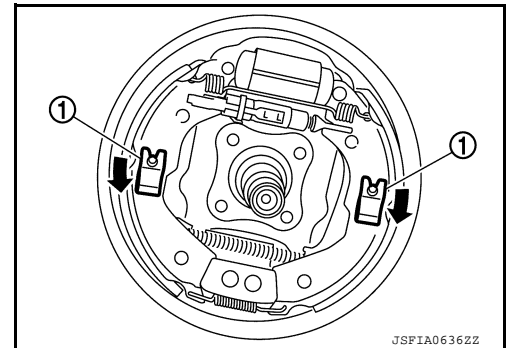
CAUTION:

Do not damage the boot of the wheel cylinder.

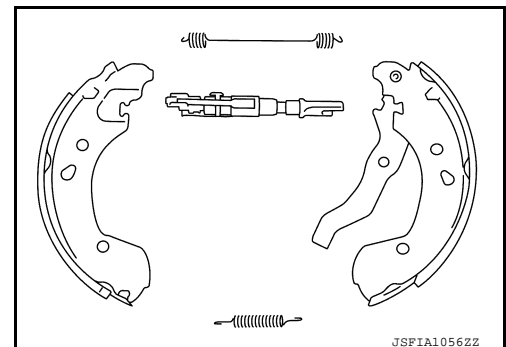
5. Disconnect the parking brake cable from operating lever.

CAUTION:

Do not bend the parking brake lever.



6. Disassemble the brake shoe assembly (brake shoe, each spring, and adjuster).



7. Remove the wheel cylinder with the following procedure.
 - a. Disconnect the brake tube from the wheel cylinder.
 - b. Remove the two bolts and the wheel cylinder from back plate.

INSPECTION AFTER REMOVAL

Check the following items and replace if necessary.

- Check the brake lining for excessive wear, damage, and peeling.
- Check the brake shoe sliding surface for excessive wear and damage.
- Check each spring for settling, excessive wear, damage, and rust.
- Check the adjuster for smoothness, and check it for excessive wear, damage, and rust.
- Check the back plate for damage, cracks, and deformation.
- Check the wheel cylinder for cracks, damage, and leakage of brake fluid.
- Visually check the brake drum for excessive wear, cracks, and damage with a pair of vernier calipers.
- Check the drum brake component parts for excessive wear, damage, and rust.

INSTALLATION

Installation is in the reverse order of removal.

CAUTION:

- Apply lubrication to the directed areas only.
- Do not damage the wheel cylinder.

REAR DRUM BRAKE

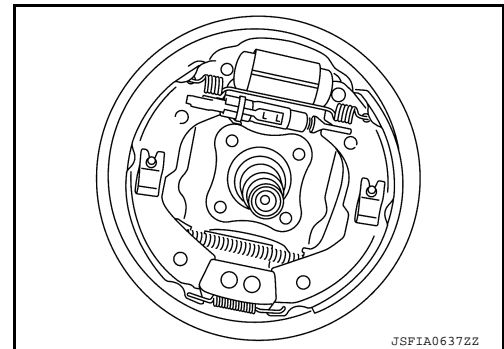
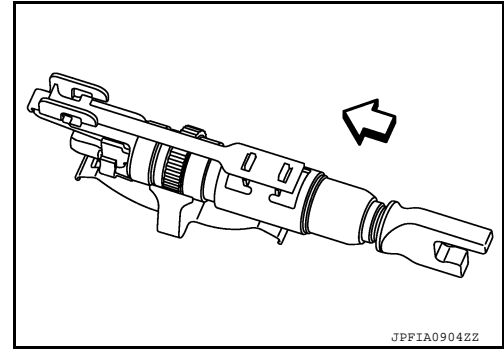
< REMOVAL AND INSTALLATION >

- Check the difference between left and right wheel of adjuster.

⇄: Front

Adjuster	Direction
Left side	Left screw
Right side	Right screw

- Shorten the length of the adjuster by rotating it.
- Apply PBC (Poly Butyl Cuprysil) silicone-based grease to the mating surfaces between the adjusters and the brake shoes.
- Apply PBC (Poly Butyl Cuprysil) silicone-based grease to the mating surfaces between the back plates and the brake shoes.
- Apply PBC (Poly Butyl Cuprysil) silicone-based grease to the mating surfaces between the wheel cylinders and brake shoes.
- Check the component parts of drum brake assembly are installed properly.
- Check the brake shoe sliding surface and brake drum inner surface for grease. Make sure that grease does not contact the lining material.
- Perform the air bleeding when removed or disassembled the wheel cylinder. Refer to [BR-16, "Bleeding Brake System"](#).
- Adjust the brake shoe clearance (parking brake lever stroke) after installation and air bleeding. Refer to [BR-13, "BRAKE LINING : Inspection"](#).



INSPECTION AFTER INSTALLATION

1. Check that the component parts of drum brake assembly are installed properly.
2. Rotate the brake drum and check that there is no drag. Perform the following procedure if necessary.
3. Remove the brake shoe.
4. Push the piston.
CAUTION:
Push both sides of the piston simultaneously.
5. Install the brake shoe.
6. Adjust the brake shoe clearance (parking brake lever stroke). Refer to [BR-13, "BRAKE LINING : Inspection"](#).
7. Check drag of rear drum brake again. If any drag is found, disassemble the wheel cylinder and replace if necessary. Refer to [BR-50, "Disassembly and Assembly"](#).
8. Burnish contact surface between brake lining and brake drum after refinishing or replacing brake lining or brake drum, or if a soft pedal occurs at very low mileage. Refer to [BR-19, "Brake Burnishing"](#).

ADJUSTMENT AFTER INSTALLATION

Adjust the brake shoe clearance (parking brake lever stroke). Refer to [BR-13, "BRAKE LINING : Inspection"](#).

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REAR DISC BRAKE

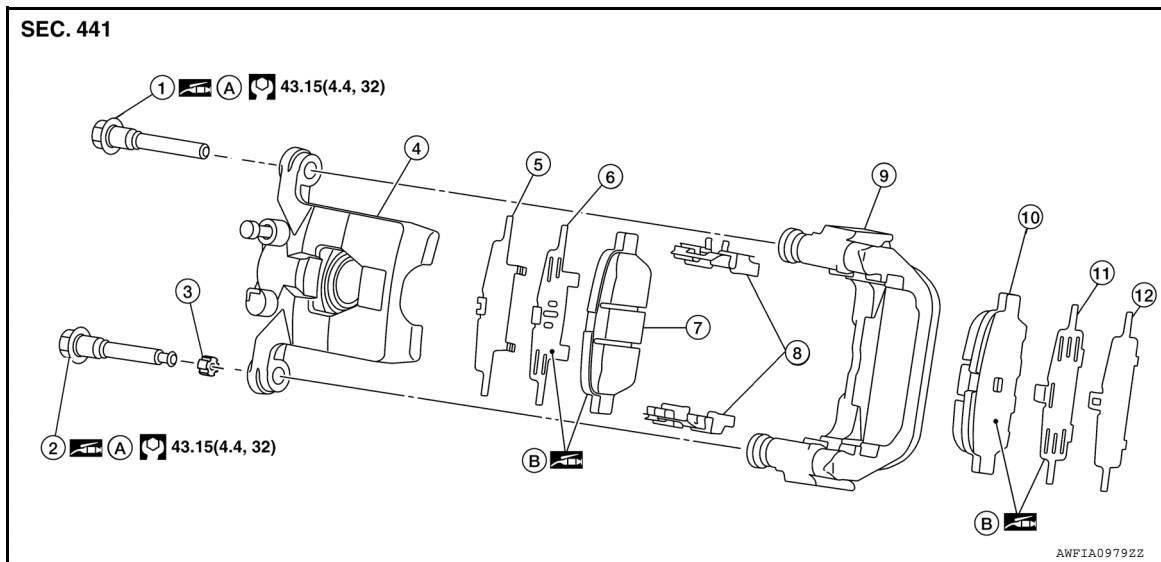
< REMOVAL AND INSTALLATION >

REAR DISC BRAKE

BRAKE PAD

BRAKE PAD : Exploded View

INFOID:000000008769104



- | | | |
|-------------------------------------|---------------------------|----------------------|
| 1. Upper sliding pin bolt | 2. Lower sliding pin bolt | 3. Bushing |
| 4. Cylinder body | 5. Inner shim cover | 6. Inner shim |
| 7. Inner pad (with pad wear sensor) | 8. Pad retainer | 9. Torque member |
| 10. Outer pad | 11. Outer shim | 12. Outer shim cover |
| A. Apply rubber grease | B. Molykote AS880N | |

BRAKE PAD : Removal and Installation

INFOID:000000008769105

REMOVAL

WARNING:

Clean dust on brake caliper and brake pad with a vacuum dust collector to minimize the hazards of airborne particles or other material.

CAUTION:

- Do not depress the brake pedal while removing the brake pads because the pistons may pop out.
- It is not necessary to remove bolts on torque member and brake hose except for disassembly or replacement of brake caliper. For brake pad removal, hang brake caliper with a wire so as not to stretch brake hose.
- If brake fluid or grease adheres to the brake caliper or disc rotor, quickly wipe it off.

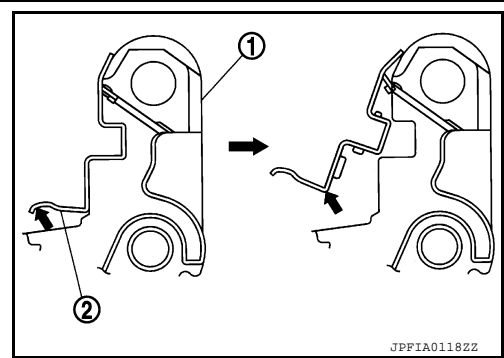
1. Remove rear wheels and tires using power tool.
2. Remove sliding pin bolts.
3. Remove the brake caliper from the torque member. Leaving brake hose attached, reposition the brake caliper aside with wire.
4. Remove the brake pads, shims, shim covers and pad retainers from the torque member.

CAUTION:

REAR DISC BRAKE

< REMOVAL AND INSTALLATION >

- Do not deform the pad retainer (2) when removing the pad retainer from the torque member (1).
- Do not damage the piston boot.
- Do not drop the brake pads, shims, and the shim covers.
- Remember each position of the removed brake pads.

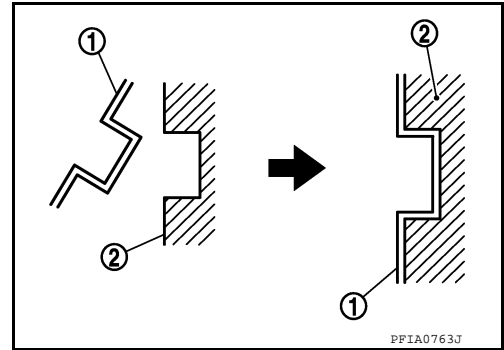


INSTALLATION

1. Install the pad retainers (1) to the torque member (2) if the pad retainers have been removed.

CAUTION:

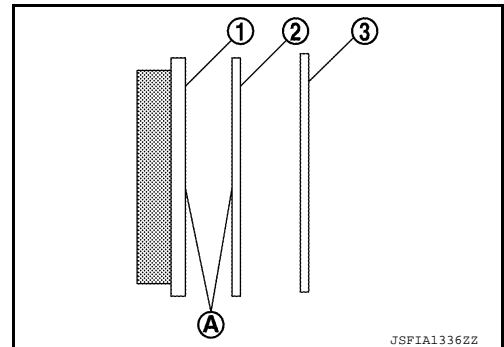
- Securely assemble the pad retainers so that it will not be lifted up from the torque member.
- Never deform the pad retainers.



2. Apply Molykote AS880N or equivalent to the mating faces (A) between the brake pads (1) and the shims (2), and install the shims and shim covers (3) to the brake pad.

CAUTION:

Always replace the shim and shim cover when replacing the brake pad.



3. Install the brake pads to the torque member.
4. Using a suitable tool, press the piston into the brake caliper.
CAUTION:
Do not damage the piston boot.
5. Install brake caliper to torque member.
6. Install the sliding pin bolts and tighten them to the specified torque.
7. Depress the brake pedal several times to verify that drag does not exist.
8. Install rear wheels and tires. Refer to [WT-45, "Removal and Installation"](#).

BRAKE CALIPER ASSEMBLY

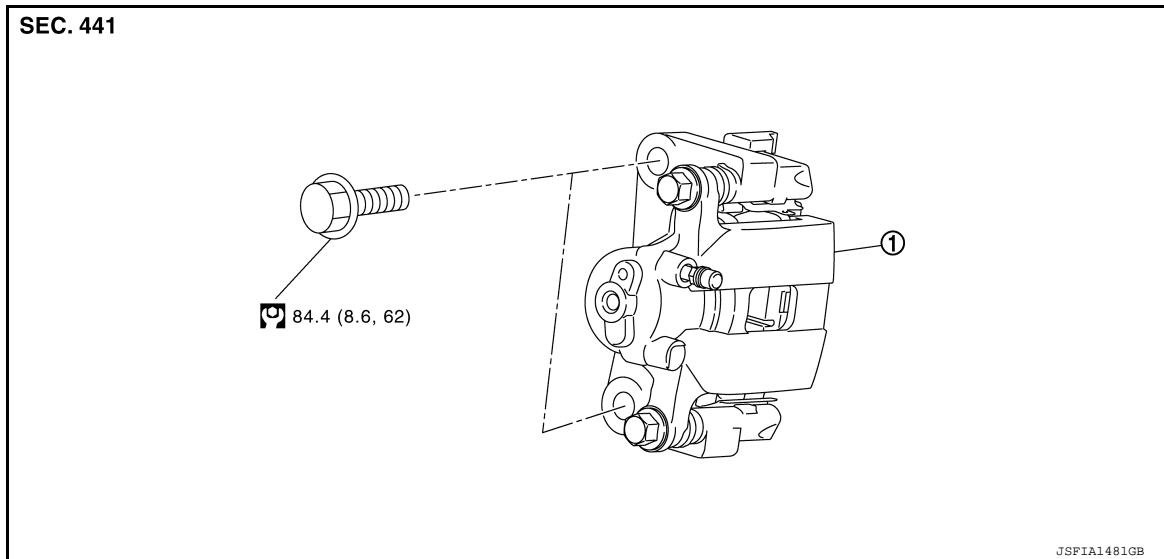
BRAKE CALIPER ASSEMBLY : Exploded View

INFOID:000000008769107

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REAR DISC BRAKE

< REMOVAL AND INSTALLATION >



1. Brake caliper assembly

BRAKE CALIPER ASSEMBLY : Removal and Installation

INFOID:000000008769108

REMOVAL

WARNING:

Clean dust on brake caliper and brake pad with a vacuum dust collector to minimize the hazard of airborne particles or other materials.

CAUTION:

- Do not depress the brake pedal.
- Do not spill or splash brake fluid on painted surfaces. Brake fluid may damage paint. If brake fluid is splashed on painted areas, wash it away with water immediately.
- Do not bend, twist or pull the brake hoses and piping.
- Do not reuse drained brake fluid.

NOTE:

When removing components such as hoses, tubes/lines, etc., cap or plug openings to prevent fluid from spilling.

1. Remove rear wheels and tires using power tool.
2. Secure the disc rotor using wheel nuts.
3. Remove union bolt, copper sealing washers, and disconnect brake hose from brake caliper. Discard the copper sealing washers.

CAUTION:

Do not reuse copper sealing washers.

4. Remove sliding pin bolts, and remove brake caliper assembly.

INSTALLATION

1. Position the brake caliper to torque member and install the sliding pin bolts. Tighten to specification.
2. Position the brake caliper and torque member to the vehicle as an assembly. Install the torque member bolts.

FRONT DISC BRAKE

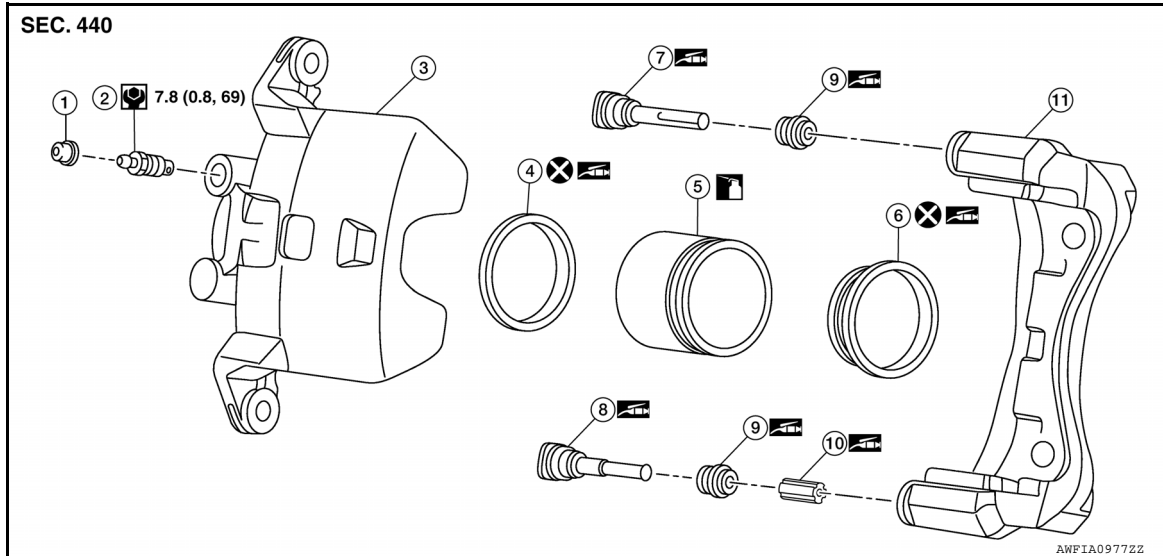
< UNIT DISASSEMBLY AND ASSEMBLY >


UNIT DISASSEMBLY AND ASSEMBLY


FRONT DISC BRAKE

Exploded View

INFOID:000000009000975



- | | | |
|----------------------|----------------------|---|
| 1. Cap | 2. Bleeder valve | 3. Cylinder body |
| 4. Piston seal | 5. Piston | 6. Piston boot |
| 7. Upper sliding pin | 8. Lower sliding pin | 9. Sliding pin boot |
| 10. Bushing | 11. Torque member |  Apply brake fluid |

 Apply rubber grease

Disassembly and Assembly

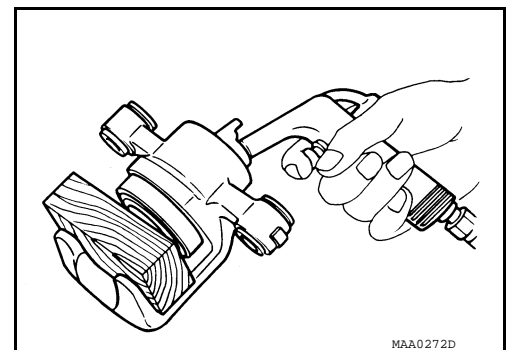
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DISASSEMBLY

1. Place a wooden block as shown, and blow air from union bolt hole to remove piston and piston boot.

WARNING:

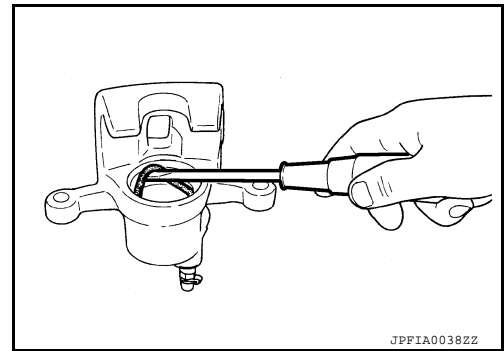
Do not get fingers caught between piston and cylinder body.



FRONT DISC BRAKE

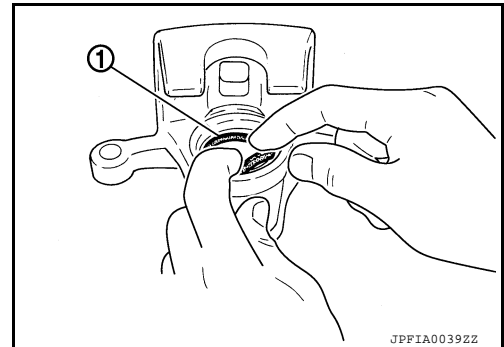
< UNIT DISASSEMBLY AND ASSEMBLY >

2. Remove piston seal from cylinder body using suitable tool.
CAUTION:
Do not damage cylinder inner wall.
3. Remove bleeder valve and cap.

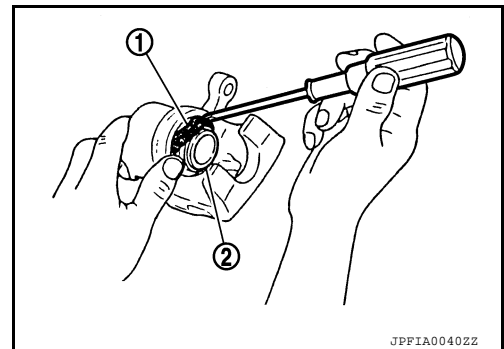


ASSEMBLY

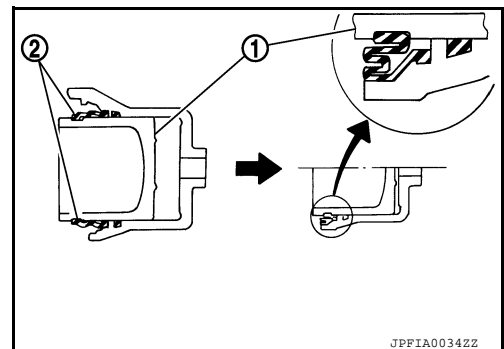
1. Install bleeder valve and cap.
2. Apply rubber grease to piston seal (1), and install to cylinder body.
CAUTION:
Do not reuse piston seal.



3. Apply rubber grease to piston boot (1). Cover the piston (2) end with piston boot, and install cylinder side lip on piston boot securely into a groove on cylinder body.
CAUTION:
Do not reuse piston boot.



4. Apply new brake fluid to piston (1). Push piston into cylinder body by hand and push piston boot (2) piston-side lip into the piston groove.
CAUTION:
Press the piston evenly and vary the pressing point to prevent cylinder inner wall from being rubbed.



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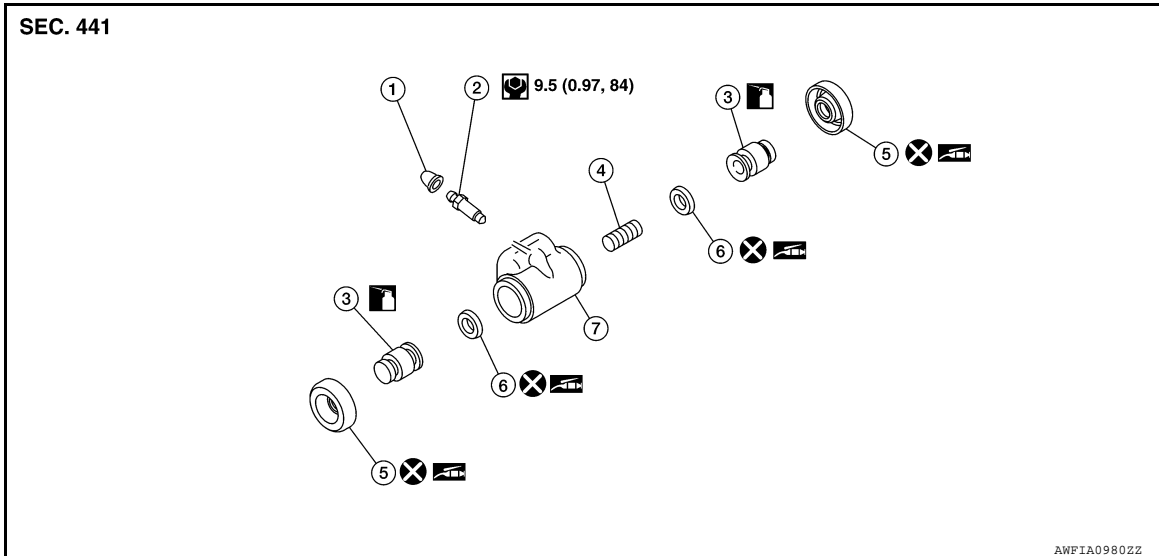
REAR DRUM BRAKE

< UNIT DISASSEMBLY AND ASSEMBLY >

REAR DRUM BRAKE

Exploded View

INFOID:000000009021214



- | | | |
|-------------------|---------------------|-------------------|
| 1. Cap | 2. Bleeder valve | 3. Piston |
| 4. Spring | 5. Boot | 6. Piston cup |
| 7. Wheel cylinder | Apply rubber grease | Apply brake fluid |

Disassembly and Assembly

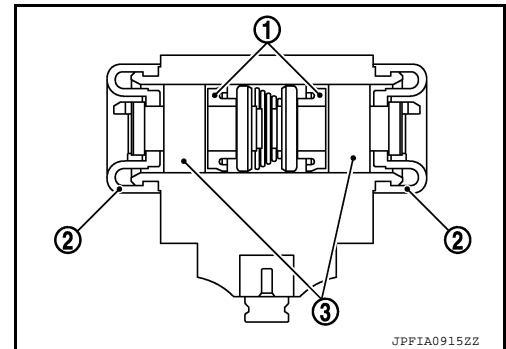
INFOID:000000009001034

DISASSEMBLY

1. Remove the boot from wheel cylinder. Refer to [BR-50, "Exploded View"](#).
2. Remove the piston, piston cup and spring from wheel cylinder.
CAUTION:
Pull the piston out from the wheel cylinder to prevent the wheel cylinder inner wall from being damaged.
3. Remove piston cup from piston.

ASSEMBLY

1. Apply rubber grease to the piston cup (1) and boot (2).
2. Install piston cup and boot to piston (3).
CAUTION:
 - Do not mistake the direction.
 - Do not reuse piston cup and boot.
3. Apply new brake fluid to piston and wheel cylinder inner wall, and install spring, piston cover, piston to wheel cylinder.
CAUTION:
Do not damage the wheel cylinder inner wall.
4. Install the boot to wheel cylinder. Refer to [BR-50, "Exploded View"](#).



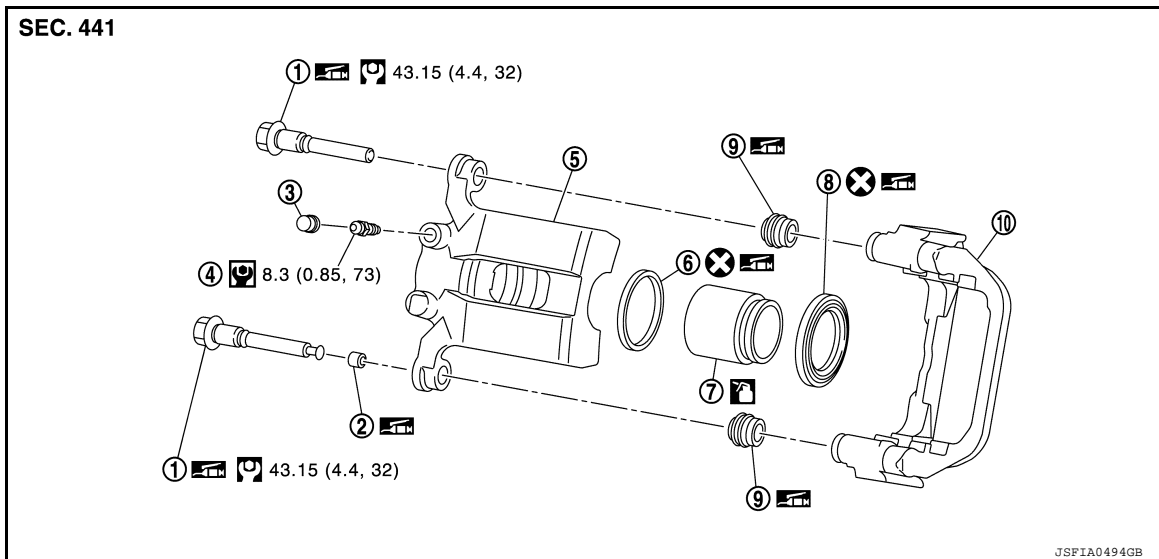
REAR DISC BRAKE

< UNIT DISASSEMBLY AND ASSEMBLY >

REAR DISC BRAKE

Exploded View

INFOID:000000009000977



- | | | |
|---------------------|---------------------|---------------------|
| 1. Sliding pin bolt | 2. Bushing | 3. Cap |
| 4. Bleeder valve | 5. Cylinder body | 6. Piston seal |
| 7. Piston | 8. Piston boot | 9. Sliding pin boot |
| 10. Torque member | Apply rubber grease | Apply brake fluid |

Disassembly and Assembly

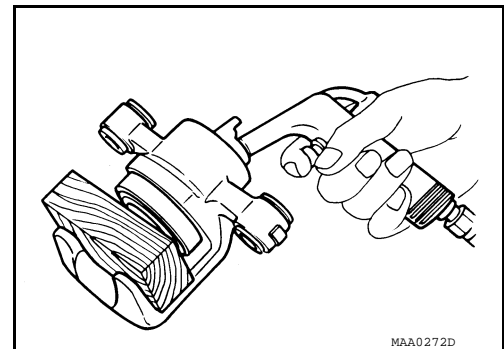
INFOID:000000008769109

DISASSEMBLY

1. Place a wooden block as shown, and blow air from union bolt hole to remove piston and piston boot.

WARNING:

Do not get fingers caught between piston and cylinder body.

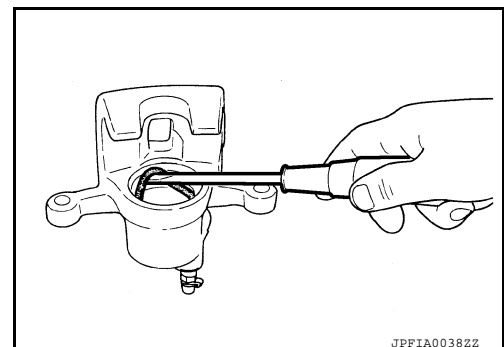


2. Remove piston seal from cylinder body using suitable tool.

CAUTION:

Do not damage cylinder inner wall.

3. Remove bleeder valve and cap.



REAR DISC BRAKE

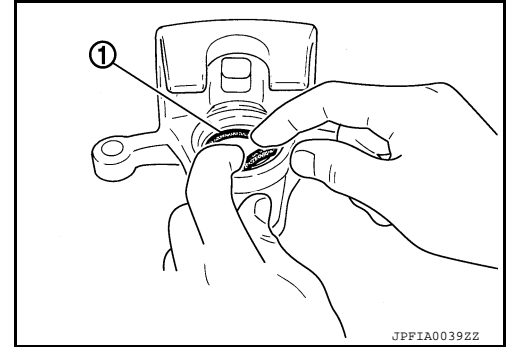
< UNIT DISASSEMBLY AND ASSEMBLY >

ASSEMBLY

1. Install bleeder valve and cap.
2. Apply rubber grease to piston seal (1), and install to cylinder body.

CAUTION:

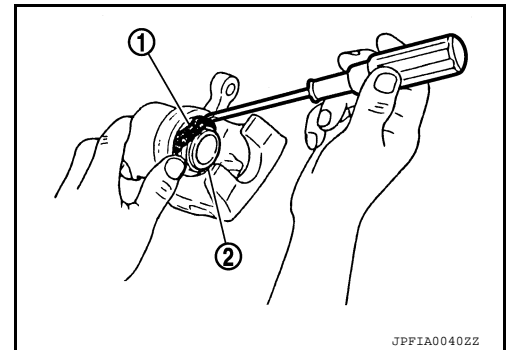
Do not reuse piston seal.



3. Apply rubber grease to piston boot (1). Cover the piston (2) end with piston boot, and install cylinder side lip on piston boot securely into a groove on cylinder body.

CAUTION:

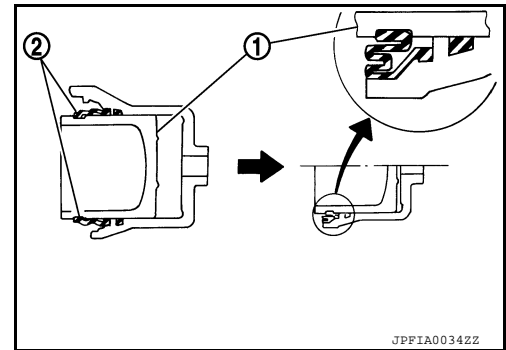
Do not reuse piston boot.



4. Apply new brake fluid to piston (1). Push piston into cylinder body by hand and push piston boot (2) piston-side lip into the piston groove.

CAUTION:

Press the piston evenly and vary the pressing point to prevent cylinder inner wall from being rubbed.



SERVICE DATA AND SPECIFICATIONS (SDS)

< SERVICE DATA AND SPECIFICATIONS (SDS)

SERVICE DATA AND SPECIFICATIONS (SDS)

SERVICE DATA AND SPECIFICATIONS (SDS)

General Specifications

INFOID:000000008769111

Unit: mm (in)

Front brake	Cylinder bore diameter	57.2 (2.252)
	Pad length × width × thickness	123.6 × 50.0 × 11.0 (4.866 × 1.969 × 0.433)
	Rotor outer diameter × thickness	280 × 24.0 (11.024 × 0.945)
Rear brake - drum	Cylinder bore diameter	19.05 (0.750)
	Lining length × width × thickness	Leading: 183.2 × 40 × 4.9 (7.213 × 1.575 × 0.193) Trailing: 219 × 40 × 4.9 (8.622 × 1.575 × 0.193)
	Drum inner diameter - new	228 (8.976)
Rear brake - disc	Cylinder bore diameter	34.93 (1.375)
	Pad length × width × thickness	83.0 × 33.0 × 8.5 (3.268 × 1.299 × 0.335)
	Rotor outer diameter × thickness	292 × 9.0 (11.496 × 0.354)
Master cylinder	Cylinder bore diameter	23.81 (0.937)
Control valve	Valve type	Electric brake force distribution
Brake booster	Diaphragm diameter	257 (10.118)
Recommended brake fluid		Refer to MA-12, "Fluids and Lubricants" .

Brake Pedal

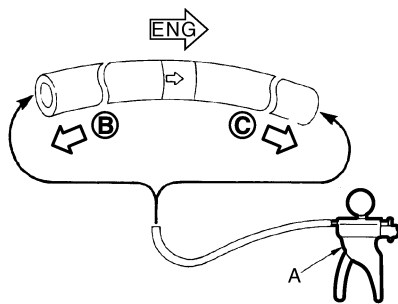
INFOID:000000008769112

Unit: mm (in)

Item	Standard
Brake pedal height	160.4 – 170.4 (6.31 – 6.71)
Depressed brake pedal height [Depressing 490 N (50 kg, 110 lb) while turning the engine ON]	70.0 (2.756) or more
Clearance between stop lamp switch and brake pedal position switch (with brake pedal position switch) threaded end and the brake pedal lever	0.74 – 1.96 (0.03 – 0.08)
Brake pedal play	3 – 11 (0.12 – 0.43)

Check Valve

INFOID:000000009001021



JPFIA00242Z

When suitable tool (A) is connected to booster side (B)	1.3 kPa (9.8 mmHg, 0.38 inHg) maximum vacuum loss for 15 seconds at vacuum of -66.7 kPa (-500 mmHg, -19.69 inHg)
When suitable tool (A) is connected to engine side (C)	No vacuum should exist.

SERVICE DATA AND SPECIFICATIONS (SDS)

< SERVICE DATA AND SPECIFICATIONS (SDS)

Brake Booster

INFOID:000000008769113

Unit: mm (in)

Item	Standard
Input rod length	156.5 – 157.5 (6.16 – 6.20)

Front Disc Brake

INFOID:000000008769114

Unit: mm (in)

Item	Limit	
Brake pad	Wear thickness	2.0 (0.079)
	Wear thickness	22.0 (0.866)
Disc rotor	Thickness variation (measured at 8 positions)	0.008 (0.0003)
	Runout (with it attached to the vehicle)	0.035 (0.0014)

Rear Drum Brake

INFOID:000000008979872

Unit: mm (in)

Item	Limit	
Brake lining	Wear thickness	1.0 (0.039)
Brake drum	Wear inner diameter- maximum	230 (9.055)

Rear Disc Brake

INFOID:000000008769115

Unit: mm (in)

Item	Limit	
Brake pad	Wear thickness	1.0 (0.039)
	Wear thickness	8.0 (0.315)
Disc rotor	Thickness variation (measured at 8 positions)	0.016 (0.0006)
	Runout (with it attached to the vehicle)	0.1 (0.0039)