

SECTION **BR**
BRAKE SYSTEM

A
B
C
D
E

CONTENTS

PRECAUTION	3	BRAKE PAD	13	BR
PRECAUTIONS	3	BRAKE PAD : Inspection	13	
Precaution for Supplemental Restraint System (SRS) "AIR BAG" and "SEAT BELT PRE-TEN- SIONER"	3	DISC BRAKE ROTOR	13	G
Precaution for Procedure without Cowl Top Cover.....	3	DISC BRAKE ROTOR : Inspection	13	
Precaution for Brake System	3	PERIODIC MAINTENANCE	15	H
PREPARATION	5	BRAKE PEDAL	15	
PREPARATION	5	Adjustment	15	I
Special Service Tool	5	BRAKE FLUID	16	
Commercial Service Tool	5	Drain and Refill	16	J
SYMPTOM DIAGNOSIS	6	Bleeding Brake System	16	
NOISE, VIBRATION AND HARSHNESS (NVH) TROUBLESHOOTING	6	FRONT DISC BRAKE	18	K
NVH Troubleshooting Chart	6	Brake Burnishing	18	
BASIC INSPECTION	7	REAR DISC BRAKE	19	L
BRAKE PEDAL	7	Brake Burnishing	19	
Inspection	7	REMOVAL AND INSTALLATION	20	M
BRAKE FLUID	8	BRAKE PEDAL	20	
Inspection	8	Exploded View	20	N
BRAKE MASTER CYLINDER	9	Removal and Installation	20	
Inspection	9	BRAKE PIPING	22	O
BRAKE BOOSTER	10	FRONT	22	
Inspection	10	FRONT : Exploded View	22	P
FRONT DISC BRAKE	11	FRONT : Hydraulic Piping	23	
BRAKE PAD	11	FRONT : Removal and Installation	23	
BRAKE PAD : Inspection	11	REAR	24	
DISC BRAKE ROTOR	11	REAR : Exploded View	24	
DISC BRAKE ROTOR : Inspection	11	REAR : Hydraulic Piping	25	
REAR DISC BRAKE	13	REAR : Removal and Installation	25	
		BRAKE MASTER CYLINDER	27	
		Exploded View	27	
		Removal and Installation	27	
		Disassembly and Assembly	28	

BRAKE BOOSTER	30	BRAKE CALIPER ASSEMBLY	42
Exploded View	30	BRAKE CALIPER ASSEMBLY : Exploded View ...	42
Removal and installation	30	BRAKE CALIPER ASSEMBLY : Removal and In-	
VACUUM LINES	32	stallation	43
Exploded View	32	UNIT DISASSEMBLY AND ASSEMBLY ...	45
Removal and Installation	32	FRONT DISC BRAKE	45
FRONT DISC BRAKE	33	BRAKE CALIPER ASSEMBLY (1 PISTON TYPE)...	45
BRAKE PAD (1 PISTON TYPE)	33	BRAKE CALIPER ASSEMBLY (1 PISTON TYPE)	
BRAKE PAD (1 PISTON TYPE) : Exploded View...	33	: Exploded View	45
BRAKE PAD (1 PISTON TYPE) : Removal and In-		BRAKE CALIPER ASSEMBLY (1 PISTON TYPE)	
stallation	33	: Disassembly and Assembly	45
BRAKE CALIPER ASSEMBLY (1 PISTON TYPE)...	34	BRAKE CALIPER ASSEMBLY (2 PISTON TYPE)...	47
BRAKE CALIPER ASSEMBLY (1 PISTON TYPE)		BRAKE CALIPER ASSEMBLY (2 PISTON TYPE)	
: Exploded View	35	: Exploded View	47
BRAKE CALIPER ASSEMBLY (1 PISTON TYPE)		BRAKE CALIPER ASSEMBLY (2 PISTON TYPE)	
: Removal and Installation	35	: Disassembly and Assembly	48
BRAKE PAD (2 PISTON TYPE)	36	REAR DISC BRAKE	51
BRAKE PAD (2 PISTON TYPE) : Exploded View...	37	Exploded View	51
BRAKE PAD (2 PISTON TYPE) : Removal and In-		Disassembly and Assembly	51
stallation	37	SERVICE DATA AND SPECIFICATIONS	
BRAKE CALIPER ASSEMBLY (2 PISTON TYPE)...	38	(SDS)	54
BRAKE CALIPER ASSEMBLY (2 PISTON TYPE)		SERVICE DATA AND SPECIFICATIONS	
: Exploded View	39	(SDS)	54
BRAKE CALIPER ASSEMBLY (2 PISTON TYPE)		General Specifications	54
: Removal and Installation	39	Brake Pedal	54
REAR DISC BRAKE	41	Brake Booster	55
BRAKE PAD	41	Front Disc Brake	55
BRAKE PAD : Exploded View	41	Rear Disc Brake	55
BRAKE PAD : Removal and Installation	41		

PRECAUTIONS

< PRECAUTION >

PRECAUTION

PRECAUTIONS

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

INFOID:000000010310344

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

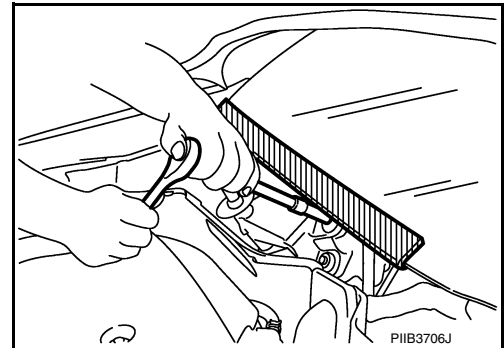
WARNING:

- 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 three minutes before performing any service.

Precaution for Procedure without Cowl Top Cover

INFOID:000000010310342

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

INFOID:000000010310343

WARNING:

Clean any dust from the front brake and rear brake with a vacuum dust collector. Do not blow with compressed air.

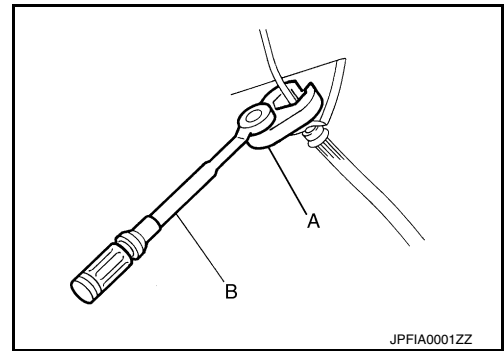
CAUTION:

- Brake fluid use refer to [MA-11. "Fluids and Lubricants"](#).
- Do not reuse drained brake fluid.
- Do not spill or splash brake fluid on painted surfaces. Brake fluid may seriously damage paint. Wipe it off immediately and wash with water if it gets on a painted surface.
- Always clean with new brake fluid when cleaning the master cylinder, brake caliper and other components.
- Do not use mineral oils such as gasoline or light oil to clean. They may damage rubber parts and cause improper operation.
- Always loosen the brake tube flare nut with a flare nut wrench.

PRECAUTIONS

< PRECAUTION >

- Tighten the brake tube flare nut to the specified torque with flare nut crowfoot (A) and torque wrench (B).
- Always confirm the specified tightening torque when installing the brake pipes.
- Turn the ignition switch OFF and disconnect the ABS actuator and electric unit (control unit) connector or the battery negative terminal before performing the work.
- Always connect the battery terminal when moving the vehicle.
- Check that no brake fluid leakage is present after replacing the parts.
- Check for bends, cracks and damage to the brake pedal. Adjust brake pedal if it is outside the standard value.
- Burnish the brake contact surfaces after refinishing or replacing rotors, after replacing pads, or if a soft pedal occurs at very low mileage.
- Front brake: refer to [BR-18, "Brake Burnishing"](#).
- Rear brake: refer to [BR-19, "Brake Burnishing"](#).



PREPARATION

< PREPARATION >

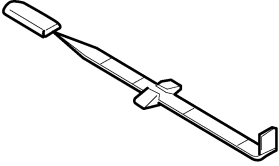
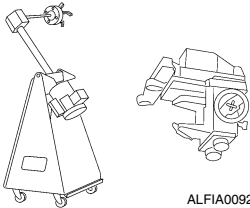
PREPARATION

PREPARATION

Special Service Tool

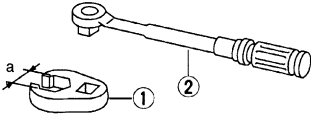

INFOID:0000000010330251

The actual shape of the tools may differ from those illustrated here.

Tool number (TechMate No.) Tool name	Description
<p>— (J-46532) Brake height tool</p>  <p style="text-align: center;">LFIA0227E</p>	Measuring brake pedal height
<p>38-PFM92 (—) ProCut™ PFM Series Lathe</p>  <p style="text-align: center;">ALFIA0092ZZ</p>	Refinishing rotors

Commercial Service Tool

INFOID:0000000010330252

Tool name	Description
<p>1. Flare nut crowfoot 2. Torque wrench</p>  <p style="text-align: center;">S-NT360</p>	Installing brake piping a: 10 mm (0.39 in)/12 mm (0.47 in)
<p>Power tool</p>  <p style="text-align: center;">PIIB1407E</p>	Loosening nuts, screws and bolts

NOISE, VIBRATION AND HARSHNESS (NVH) TROUBLESHOOTING

< SYMPTOM DIAGNOSIS >

SYMPTOM DIAGNOSIS

NOISE, VIBRATION AND HARSHNESS (NVH) TROUBLESHOOTING

NVH Troubleshooting Chart

INFOID:000000009795721

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

Symptom		BRAKE	Possible cause and SUSPECTED PARTS										Reference page								
			Brake pad - damaged	Brake pad - uneven wear	Shims damaged	Disc brake rotor imbalance	Disc brake rotor damage	Disc brake rotor runout	Disc brake rotor deformation	Disc brake rotor deflection	Disc brake rotor rust	Disc brake rotor thickness variation	PROPELLER SHAFT	DIFFERENTIAL	SUSPENSION	TIRE	WHEEL	DRIVE SHAFT	STEERING		
Noise	x	x	x	x																	BR-11, BR-13 BR-11, BR-13 BR-11, BR-13 BR-11, BR-13 BR-11, BR-13 BR-11, BR-13 BR-11, BR-13 BR-11, BR-13 BR-11, BR-13 DLN-97 DLN-110 FAX-6, FAX-3Z RAX-5, RAX-13 FSU-5 RSU-4 WT-55 WT-55 FAX-6, FAX-3Z RAX-5, RAX-13 ST-6
					x							x		x	x	x	x				
					x	x	x	x	x	x	x			x	x	x					

x: Applicable

BRAKE PEDAL

< BASIC INSPECTION >

BASIC INSPECTION

BRAKE PEDAL

Inspection

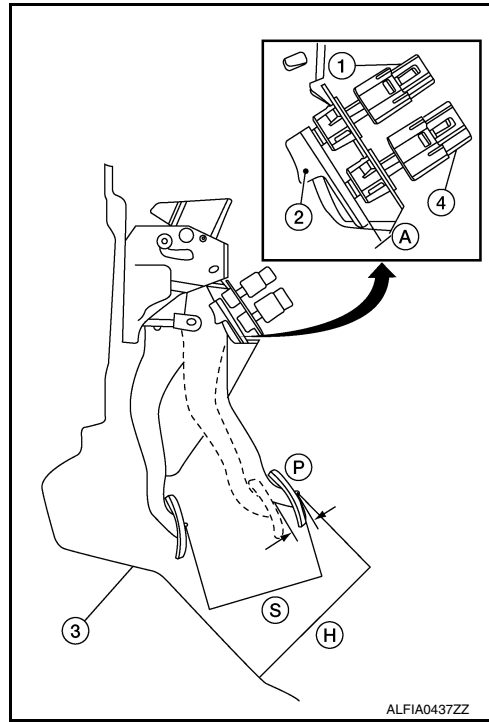
INFOID:0000000010310330

BRAKE PEDAL HEIGHT

Check the brake pedal height (H) between the dash lower panel (3) and the brake pedal upper surface.

CAUTION:

Check the brake pedal height with the floor trim removed.



Brake pedal height (H) from dash lower panel (3)	Refer to BR-54, "Brake Pedal" .
Clearance (A) between brake pedal stopper bracket (2), stop lamp switch (4) and brake pedal position switch (1) contact ends	Refer to BR-54, "Brake Pedal" .
Brake pedal full stroke (S)	Refer to BR-54, "Brake Pedal" .
Brake pedal play (P)	Refer to BR-54, "Brake Pedal" .

BRAKE FLUID

< BASIC INSPECTION >

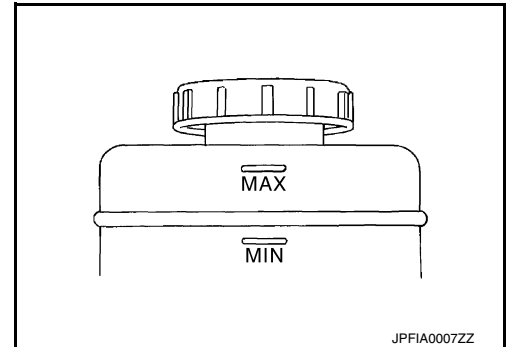
BRAKE FLUID

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.

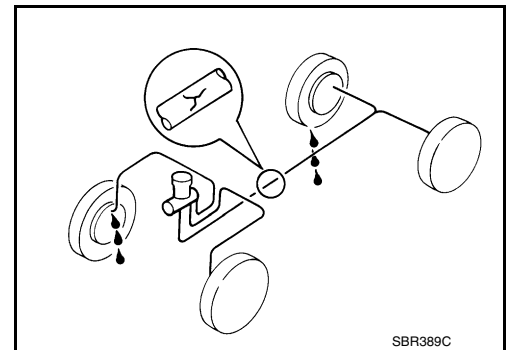


BRAKE LINE

1. Check brake line (tubes and hoses) for cracks, deterioration or other damage. Replace any damaged parts.
2. Check for brake fluid leakage by fully depressing brake pedal while engine is running.

CAUTION:

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



BRAKE MASTER CYLINDER

< BASIC INSPECTION >

BRAKE MASTER CYLINDER

Inspection

INFOID:000000009795734

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.

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BRAKE BOOSTER

< BASIC INSPECTION >

BRAKE BOOSTER

Inspection

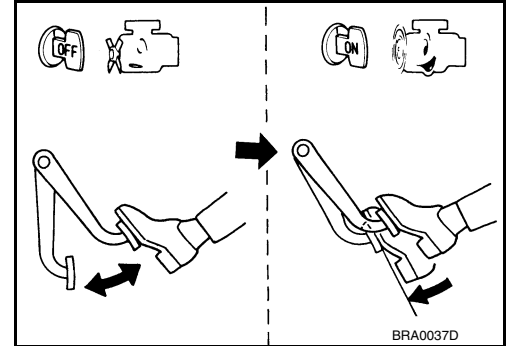
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Operation

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.

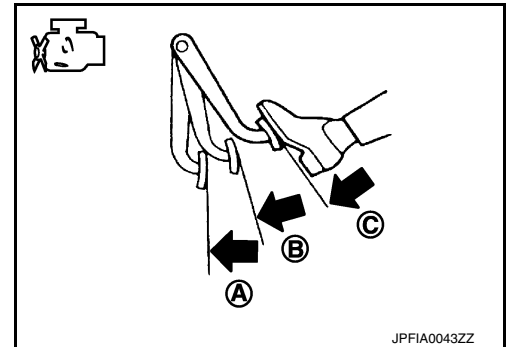
NOTE:

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

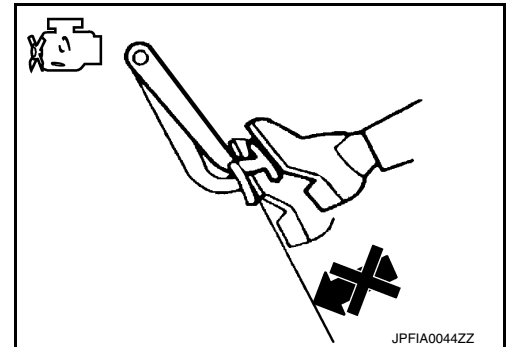
Idle the engine for one minute to apply vacuum to the brake booster. Stop the engine. Depress the brake pedal several times at five second intervals until the accumulated vacuum is released to atmospheric pressure. Check that the clearance between brake pedal and dash lower panel gradually increases (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.



FRONT DISC BRAKE

< BASIC INSPECTION >

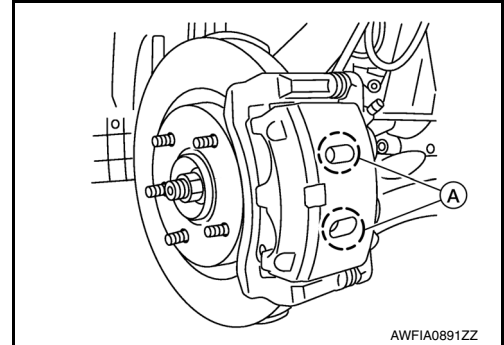
FRONT DISC BRAKE BRAKE PAD

BRAKE PAD : Inspection

INFOID:000000009795736

Check brake pad wear thickness from an inspection hole (A) on cylinder body. Check using a scale if necessary.

Wear thickness : Refer to [BR-55, "Front Disc Brake"](#).



DISC BRAKE ROTOR

DISC BRAKE ROTOR : Inspection

INFOID:000000009795737

APPEARANCE

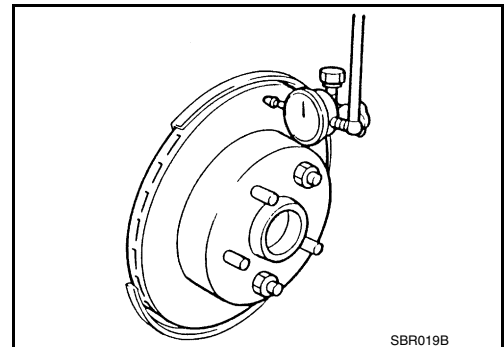
Check surface of disc brake rotor for uneven wear, cracks or damage. Replace if any abnormal conditions exist.

RUNOUT

1. Check the wheel bearing axial end play before the inspection. Refer to [FAX-7, "Inspection"](#)(FWD) or [FAX-38, "Inspection"](#)(AWD).
2. Secure the disc brake rotor to the wheel hub and bearing 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 brake rotor edge.

Runout : Refer to [BR-55, "Front Disc Brake"](#).

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



Tool number : 38-PFM92

CAUTION:

- Check in advance that the thickness of the disc brake rotor is wear thickness + 0.3 mm (0.012 in) or more.
- If the thickness is less than wear thickness + 0.3 mm (0.012 in), replace the disc brake rotor.

Wear thickness : Refer to [BR-55, "Front Disc Brake"](#).

THICKNESS

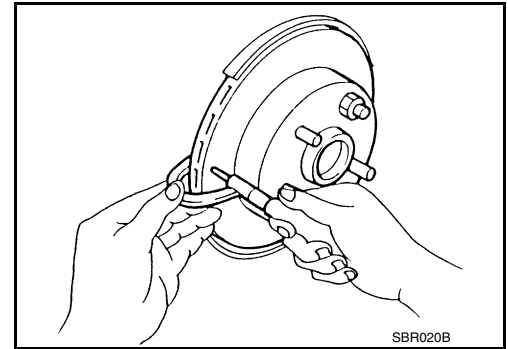
FRONT DISC BRAKE

< BASIC INSPECTION >

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

Wear thickness : Refer to [BR-55, "Front Disc Brake"](#).

Thickness variation : Refer to [BR-55, "Front Disc Brake"](#).



REAR DISC BRAKE

< BASIC INSPECTION >

REAR DISC BRAKE BRAKE PAD

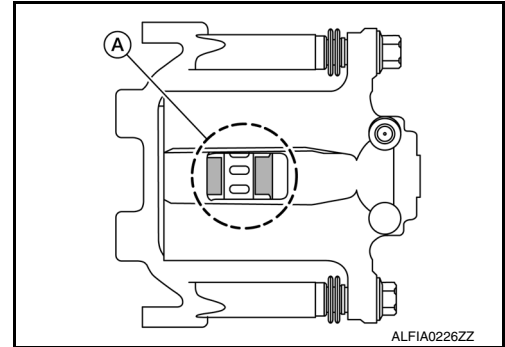
BRAKE PAD : Inspection

INFOID:000000009795738

INSPECTION

Check brake pad wear thickness from an inspection hole (A) on cylinder body. Check using a scale if necessary.

Wear thickness : Refer to [BR-55, "Rear Disc Brake"](#).



DISC BRAKE ROTOR

DISC BRAKE ROTOR : Inspection

INFOID:000000009795739

Appearance

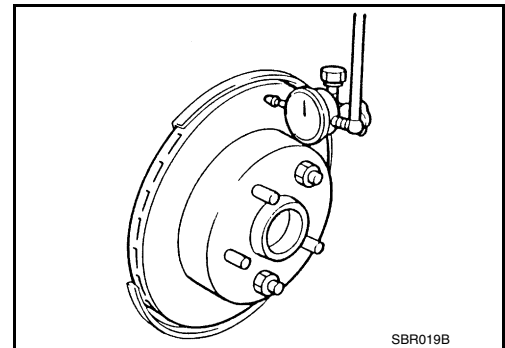
Check surface of disc brake rotor for uneven wear, cracks or damage. Replace if any abnormal conditions exist.

Runout

1. Check the wheel bearing axial end play before the inspection. Refer to [RAX-6, "Inspection"](#)(FWD) or [RAX-14, "Inspection"](#)(AWD).
2. Secure the disc brake rotor to the wheel hub and bearing with wheel nuts at two wheel nut locations.
3. Measure the runout with a dial gauge 10 mm (0.39 in) from the disc brake rotor edge.

Runout : Refer to [BR-55, "Rear Disc Brake"](#).

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



Tool number : 38-PFM92

CAUTION:

- Check in advance that the thickness of the disc brake rotor is wear thickness + 0.3 mm (0.012 in) or more.
- If the thickness is less than wear thickness + 0.3 mm (0.012 in), replace the disc brake rotor.

Wear thickness : Refer to [BR-55, "Rear Disc Brake"](#).

Thickness

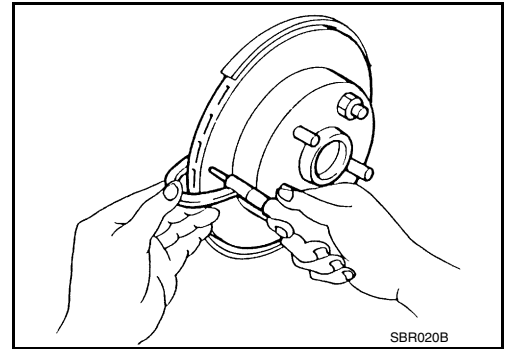
REAR DISC BRAKE

< BASIC INSPECTION >

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

Minimum thickness : Refer to [BR-55, "Rear Disc Brake"](#).

Thickness variation : Refer to [BR-55, "Rear Disc Brake"](#).



BRAKE PEDAL

< PERIODIC MAINTENANCE >

PERIODIC MAINTENANCE

BRAKE PEDAL

Adjustment

INFOID:000000009795729

BRAKE PEDAL HEIGHT

1. Remove instrument lower panel LH. Refer to [IP-22, "Removal and Installation"](#).
2. Disconnect the harness connectors from the stop lamp switch and brake pedal position switch.
3. Turn the stop lamp switch and brake pedal position switch 45° counterclockwise.
4. Check that the brake pedal height meets the specification by checking the brake pedal and brake booster for damage and replace parts as necessary. Refer to [BR-54, "Brake Pedal"](#).
5. Turn the stop lamp switch and brake pedal position switch 45° clockwise.
6. Connect the harness connectors to the stop lamp switch and brake pedal position switch.
7. Check the brake pedal for smooth operation.

CAUTION:

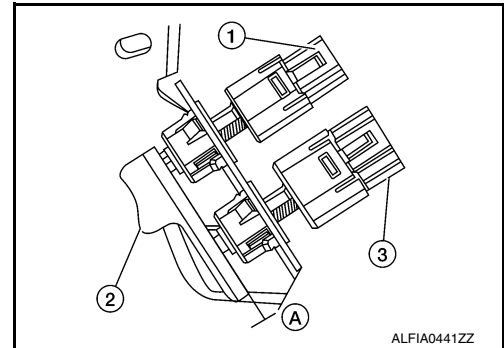
The stop lamp must turn off when the brake pedal is released.

STOP LAMP SWITCH AND BRAKE PEDAL POSITION SWITCH

1. Remove instrument lower panel LH. Refer to [IP-22, "Removal and Installation"](#).
2. Disconnect the harness connectors from the stop lamp switch and brake pedal position switch.
3. Turn the stop lamp switch and brake pedal position switch 45° counterclockwise.
4. With the threaded ends of the stop lamp switch (3) and brake pedal position switch (1) contacting the brake pedal stopper bracket (2), turn the switches 45° clockwise to lock in place. Check that both the stop lamp switch (3) and brake pedal position switch (1) contact ends to brake pedal stopper bracket (2) clearance (A) are within specification.

CAUTION:

- Make sure that the clearance (A) between the brake pedal stopper bracket (2), stop lamp switch (3) 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-54, "Brake Pedal"](#).

BRAKE FLUID

< PERIODIC MAINTENANCE >

BRAKE FLUID

Drain and Refill

INFOID:000000009795732

CAUTION:

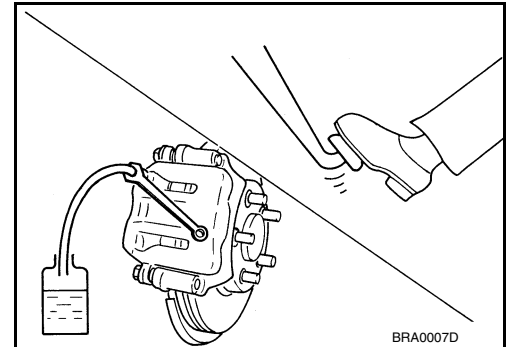
- Do not spill or splash brake fluid on painted surfaces. Brake fluid may damage paint. If brake fluid is splashed on painted areas, wash it away with water immediately.
- Prior to repair, turn the ignition switch OFF, disconnect the ABS actuator and electric unit (control unit) connector or negative battery terminal. Refer to [PG-75, "Removal and Installation \(Battery\)"](#).
- Refill brake system with new brake fluid. Refer to [MA-11, "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-75, "Removal and Installation \(Battery\)"](#).
2. Connect a vinyl tube to bleeder valve.
3. Depress brake pedal, loosen bleeder valve, and gradually remove brake fluid.

CAUTION:

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



REFILLING

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

CAUTION:

Do not reuse drained brake fluid.

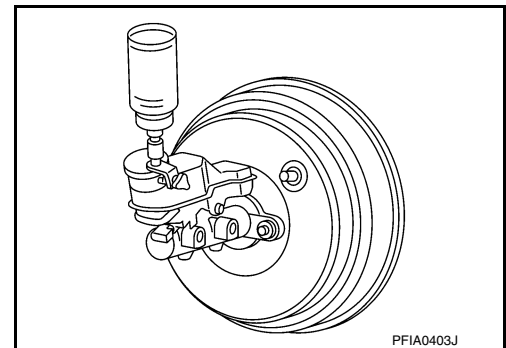
2. Refill the brake system as follows:
 - Depress the brake pedal.
 - Loosen bleeder valve.
 - Slowly depress brake pedal to 2/3 of the brake pedal full stroke.
 - Tighten bleeder valve.
 - Release brake pedal.

Repeat this operation at intervals of two or three seconds until all old brake fluid is discharged. Add new brake fluid frequently.

CAUTION:

Do not allow master cylinder reservoir tank 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:000000009795733

CAUTION:

- While bleeding, pay attention to the brake fluid level.
- Do not allow master cylinder reservoir tank to empty as this may cause damage to master cylinder internal components.
- Before working, disconnect ABS actuator and electric unit (control unit) connectors or negative battery terminal. Refer to [PG-75, "Removal and Installation \(Battery\)"](#).

1. Turn ignition switch OFF and disconnect ABS actuator and electric unit (control unit) connector or negative battery terminal. Refer to [PG-75, "Removal and Installation \(Battery\)"](#).
2. Connect a vinyl tube to front (RH) brake caliper bleeder valve.
3. Fully depress brake pedal 4 or 5 times.

BRAKE FLUID

< PERIODIC MAINTENANCE >

4. With brake pedal depressed, loosen bleeder valve to bleed air in brake line, and then tighten it immediately.
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-45. "BRAKE CALIPER ASSEMBLY \(1 PISTON TYPE\) : Exploded View"](#) (front disc brake), [BR-51. "Exploded View"](#) (rear disc brake).
7. Repeat steps 2 through 6, with the reservoir tank filled at least halfway. Bleed the air in the following order: front (RH), front (LH), rear (RH), rear (LH).

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FRONT DISC BRAKE

< PERIODIC MAINTENANCE >

FRONT DISC BRAKE

Brake Burnishing

INFOID:000000009795742

CAUTION:

- **Burnish contact surfaces between brake pads and disc brake rotor according to the following procedure after refinishing the disc brake 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 brake 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 brake rotor are securely seated.

REAR DISC BRAKE

< PERIODIC MAINTENANCE >

REAR DISC BRAKE

Brake Burnishing

INFOID:000000009795770

CAUTION:

- **Burnish contact surfaces between brake pads and disc brake rotor according to the following procedure after refinishing the disc brake 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 brake 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 brake rotor are securely seated.

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BR

BRAKE PEDAL

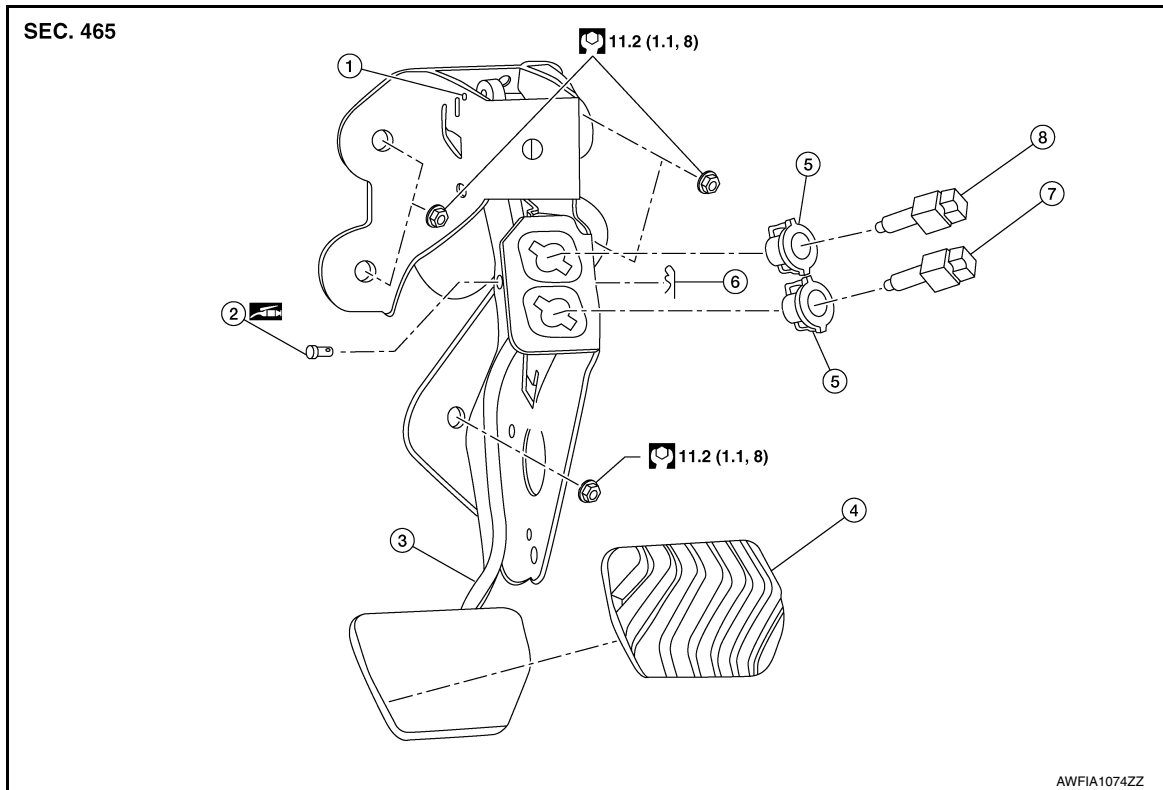
< REMOVAL AND INSTALLATION >

REMOVAL AND INSTALLATION

BRAKE PEDAL

Exploded View

INFOID:000000009795740



- | | | |
|---------------------|--------------------------------|----------------|
| 1. Rivet | 2. Clevis pin | 3. Brake pedal |
| 4. Brake pedal pad | 5. Clip | 6. Snap pin |
| 7. Stop lamp switch | 8. Brake pedal position switch | |

Removal and Installation

INFOID:000000009795741

REMOVAL

1. Remove instrument lower panel LH. Refer to [IP-22, "Removal and Installation"](#).
2. Remove the knee protector. Refer to [IP-14, "Exploded View"](#).
3. Remove snap pin and clevis pin from clevis of brake booster.
4. Disconnect the harness connectors from the stop lamp switch and brake pedal position switch.
5. Remove the accelerator pedal. Refer to [ACC-3, "Removal and Installation"](#).
6. Remove the brake pedal.

CAUTION:

Support the brake booster and master cylinder to prevent contact with other components.

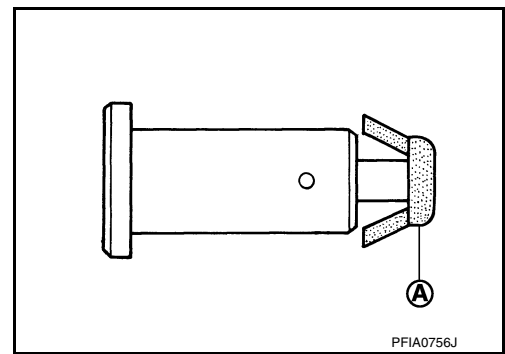
INSPECTION AFTER REMOVAL

- Check the following items and replace the brake pedal assembly if necessary.
 - Check the brake pedal rivet for deformation or damage.
 - Check the brake pedal for bend, damage, and cracks on the welded parts.

BRAKE PEDAL

< REMOVAL AND INSTALLATION >

- Check clevis pin and plastic stopper (A) for damage and deformation. If any damage is found, replace clevis pin.



INSTALLATION

Installation is in the reverse order of removal.

CAUTION:

Replace the brake pedal if it has been dropped or sustained an impact.

- Check that the brake pedal height and brake pedal play meet the specifications by checking the brake pedal and brake booster for damage and replace parts as necessary. Refer to [BR-54, "Brake Pedal"](#).

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BRAKE PIPING

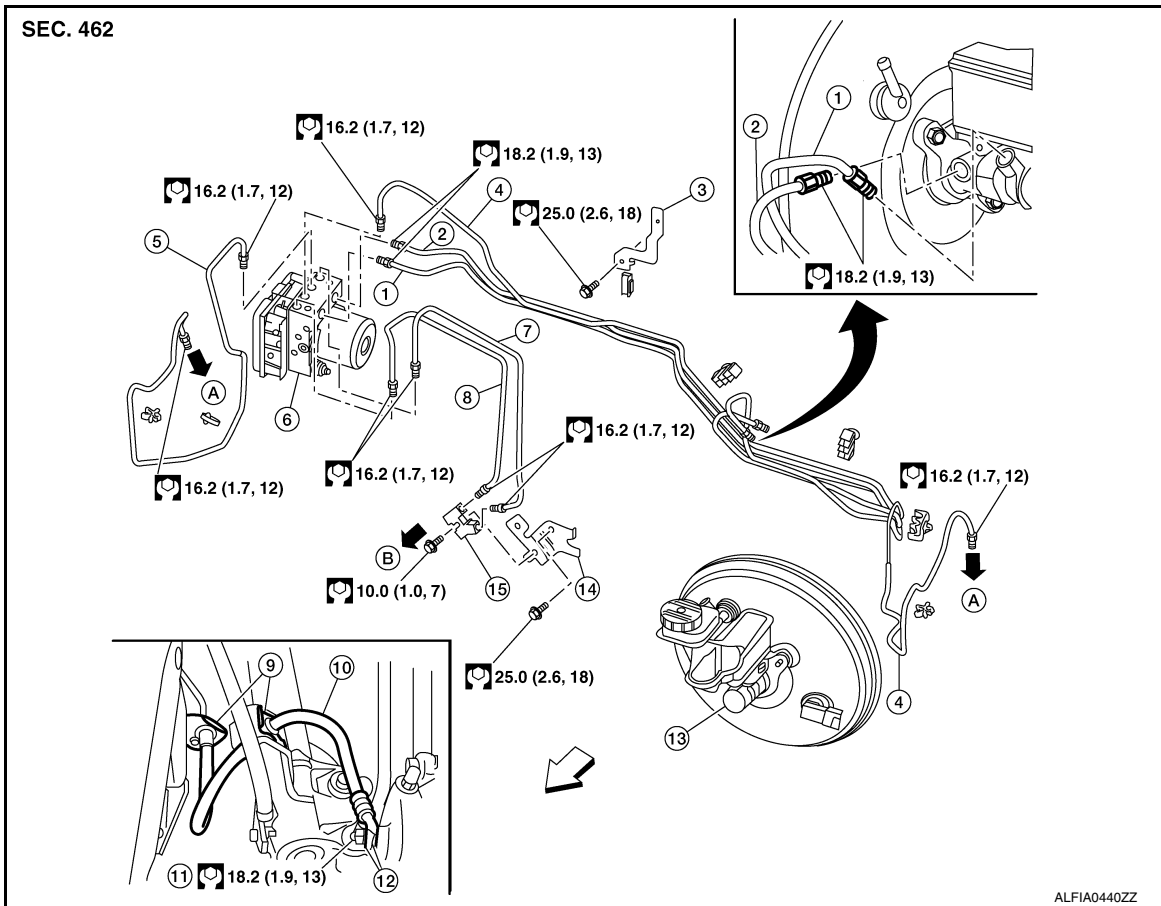
< REMOVAL AND INSTALLATION >

BRAKE PIPING

FRONT

FRONT : Exploded View

INFOID:000000009795743



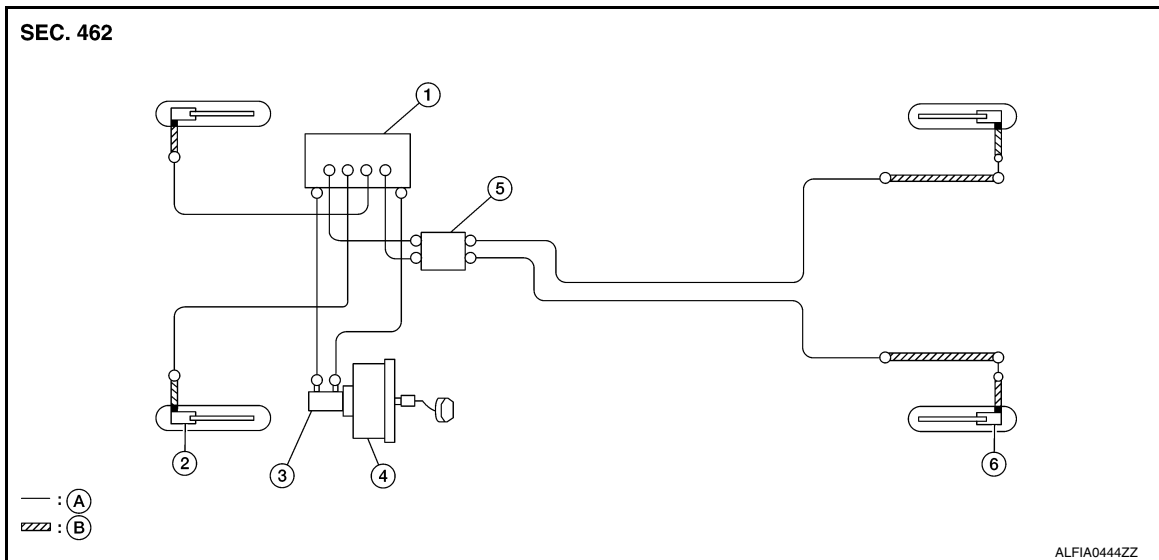
- | | | |
|---|---|--|
| 1. Master cylinder secondary to ABS actuator brake tube | 2. Master cylinder primary to ABS actuator brake tube | 3. Brake tube bracket |
| 4. Brake tube (LH) | 5. Brake tube (RH) | 6. ABS actuator and electric unit (control unit) |
| 7. ABS actuator to connector brake tube (LH) | 8. ABS actuator to connector brake tube (RH) | 9. Lock plate |
| 10. Front brake hose | 11. Union bolt | 12. Copper sealing washers |
| 13. Master cylinder | 14. Connector bracket | 15. Connector |
| A. To front brake hose | B. To rear brake tube | ⇐ Front |

BRAKE PIPING

< REMOVAL AND INSTALLATION >

FRONT : Hydraulic Piping

INFOID:000000009795744



- | | | |
|--|---------------------|-----------------------------|
| 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

FRONT : Removal and Installation

INFOID:000000009795745

CAUTION:

- Do not spill or splash brake fluid on painted surfaces. Brake fluid may seriously damage paint. Wipe it off immediately and wash with water if it gets on a painted surface.
- Do not allow foreign matter (e.g. dust) and oils other than brake fluid to enter the reservoir tank.

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. Loosen the flare nut with a flare nut wrench and separate the brake tube from the hose.

CAUTION:

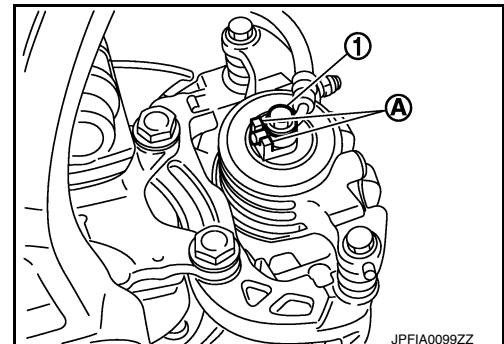
- Do not scratch the flare nut and the brake pipe.
- All brake hoses and pipes must be free from excessive bending, twisting and pulling.

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

CAUTION:

Do not reuse copper sealing washers.

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



INSTALLATION

CAUTION:

BRAKE PIPING

< REMOVAL AND INSTALLATION >

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

1. Assemble the union bolt (1) and the copper washers to the brake hose and install it as an assembly to the brake caliper. Align the brake hose pin to the projection (A) by aligning it with the brake caliper 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 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 with a flare nut crowfoot and a torque wrench.

CAUTION:

Do not scratch the flare nut and the brake pipe.

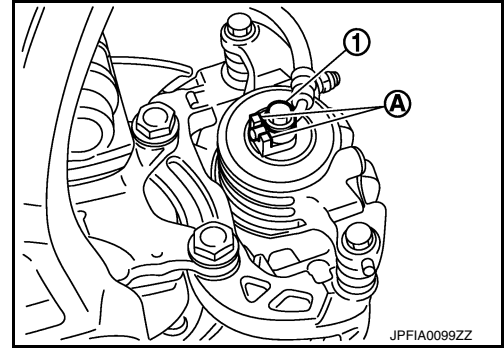
4. Refill with new brake fluid and perform the air bleeding. Refer to [BR-16, "Bleeding Brake System"](#).

CAUTION:

Do not reuse drained brake fluid.

5. Install the wheels and tires. Refer to [WT-60, "Removal and Installation"](#).

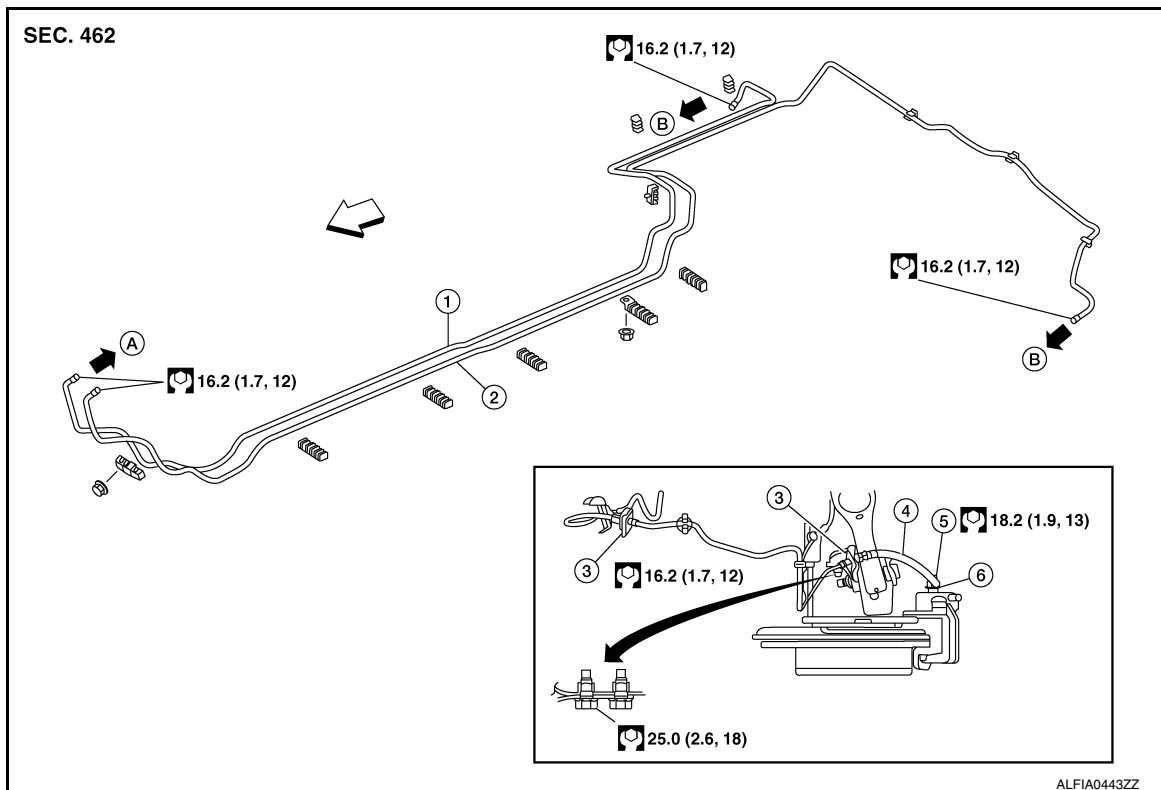
6. Perform inspection after installation. Refer to [BR-8, "Inspection"](#).



REAR

REAR : Exploded View

INFOID:000000009795747



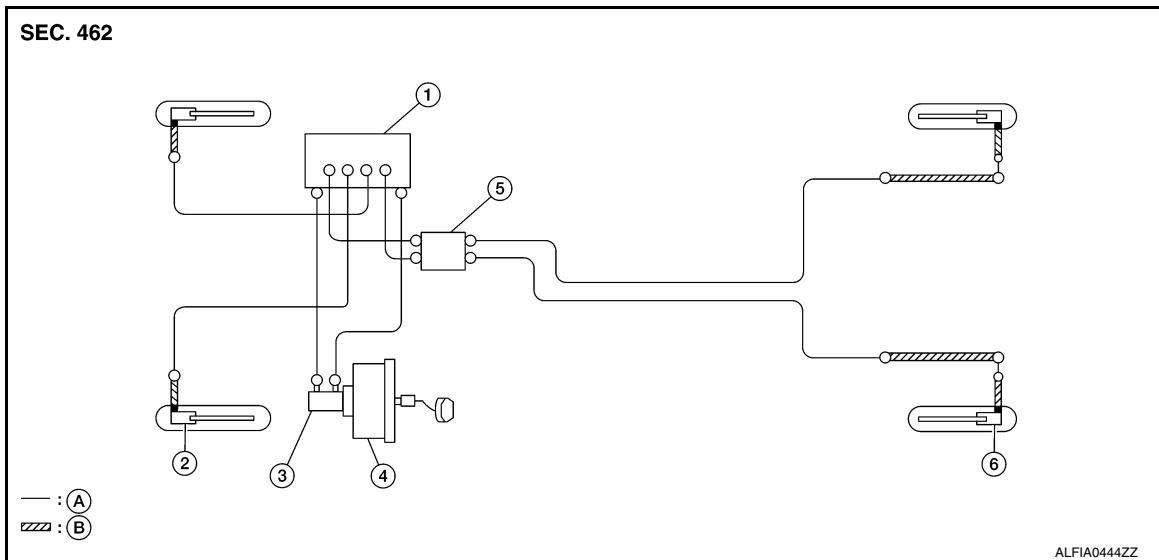
- | | | |
|----------------------------------|----------------------------------|---------------------------|
| 1. Rear brake pipe assembly (RH) | 2. Rear brake pipe assembly (LH) | 3. Lock plate |
| 4. Rear brake hose | 5. Union bolt | 6. Copper sealing washers |
| A. To brake pipe connector | B. To rear brake hose | ↩ Front |

BRAKE PIPING

< REMOVAL AND INSTALLATION >

REAR : Hydraulic Piping

INFOID:000000009795748



- | | | |
|--|---------------------|-----------------------------|
| 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

REAR : Removal and Installation

INFOID:000000009795749

CAUTION:

- Do not spill or splash brake fluid on painted surfaces. Brake fluid may seriously damage paint. Wipe it off immediately and wash with water if it gets on a painted surface.
- Do not allow foreign matter (e.g. dust) and oils other than brake fluid to enter the reservoir tank.

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. Loosen the flare nut with a flare nut wrench and separate the brake tube from the hose.

CAUTION:

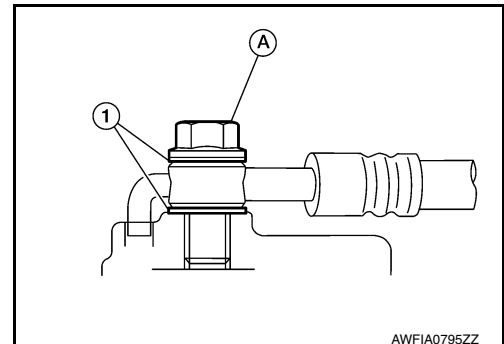
- Do not scratch the flare nut and the brake pipe.
- All brake hoses and pipes must be free from excessive bending, twisting and pulling.

3. 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.

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



INSTALLATION

CAUTION:

BRAKE PIPING

< REMOVAL AND INSTALLATION >

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 with a flare nut crowfoot and a torque wrench.

CAUTION:

Do not scratch the flare nut and the brake pipe.

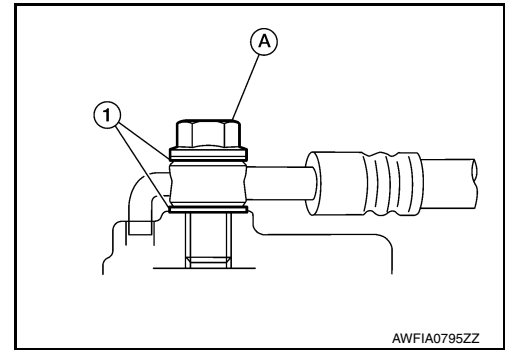
4. Refill with new brake fluid and perform the air bleeding. Refer to [BR-16, "Bleeding Brake System"](#).

CAUTION:

Do not reuse drained brake fluid.

5. Install the wheels and tires. Refer to [WT-60, "Removal and Installation"](#).

6. Perform inspection after installation. Refer to [BR-8, "Inspection"](#).



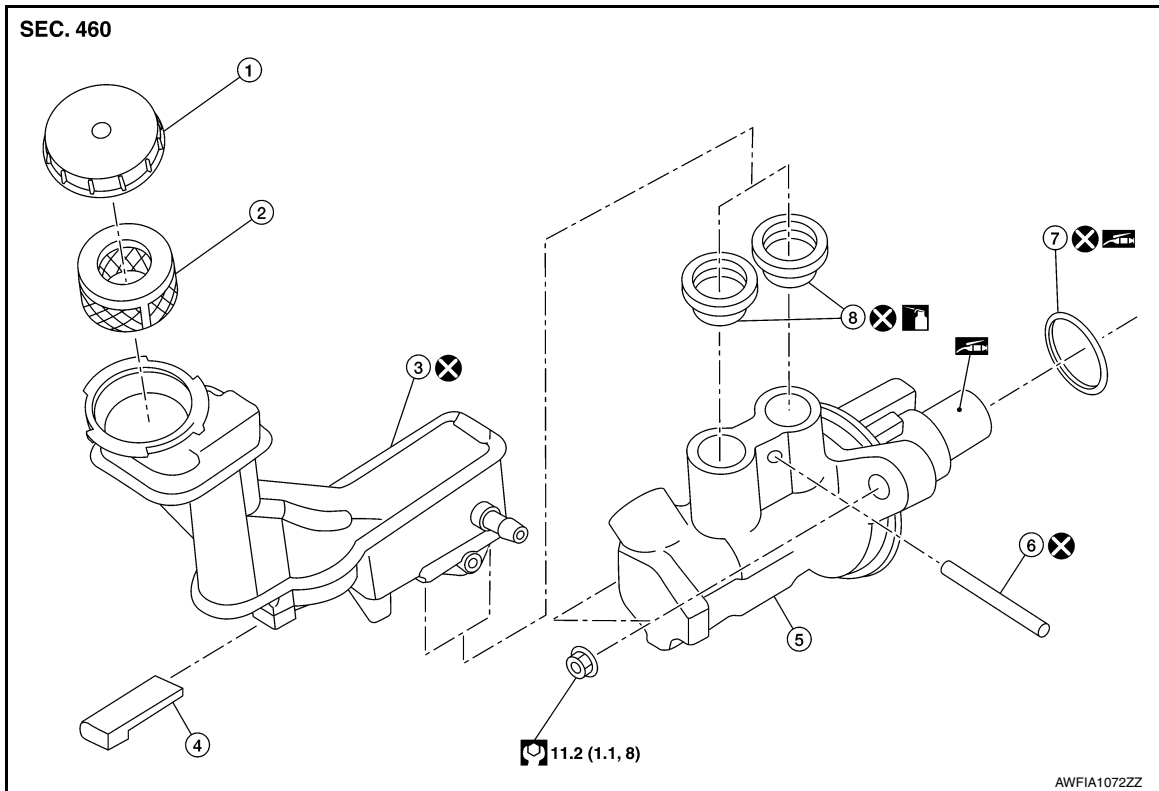
BRAKE MASTER CYLINDER

< REMOVAL AND INSTALLATION >


BRAKE MASTER CYLINDER


Exploded View

INFOID:000000009795751



- | | | |
|-----------------------------|------------------|-------------------|
| 1. Reservoir cap | 2. Oil strainer | 3. Reservoir tank |
| 4. Brake fluid level sensor | 5. Cylinder body | 6. Pin |
| 7. O-ring | 8. Grommet | |

: Apply PBC (Poly Butyl Cuprysil) grease or silicone-based grease.

: Apply brake fluid.

Removal and Installation

INFOID:000000009795752

REMOVAL

CAUTION:

- Do not spill or splash brake fluid on painted areas; it may cause paint damage. If brake fluid is splashed on painted areas, wash it away with water immediately.
- Do not reuse drained brake fluid.
- 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 air duct assembly to the electronic throttle control actuator and air cleaner case (upper). Refer to [EM-24, "Removal and Installation"](#).
2. Disconnect the harness connector from the brake fluid level sensor.
3. Disconnect the hose from the reservoir tank.
4. Disconnect the brake pipes from the master cylinder assembly with a flare nut wrench.
CAUTION:
Do not scratch the flare nut or the brake pipe.
5. Remove the master cylinder assembly.
CAUTION:

BRAKE MASTER CYLINDER

< REMOVAL AND INSTALLATION >

Do not depress the brake pedal after the master cylinder assembly is removed.

INSTALLATION

CAUTION:

- Do not spill or splash brake fluid on painted areas; it may cause paint damage. If brake fluid is splashed on painted areas, wash it away with water immediately.
- Do not reuse O-ring.

Installation is in the reverse order of removal.

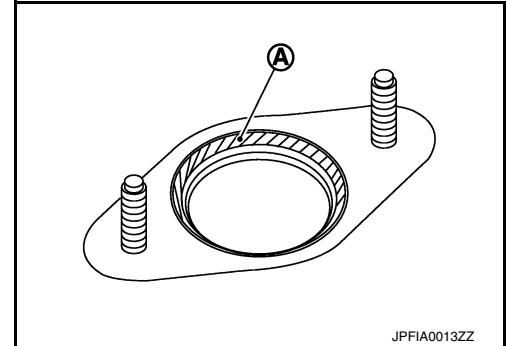
- Apply PBC (Poly Butyl Cuprysil) silicone-based grease to the brake booster (A) when installing the master cylinder assembly to the brake booster.

- Temporarily tighten the brake tube flare nut to the master cylinder assembly by hand. Then tighten it to the specified torque with a flare nut crowfoot and torque wrench. Refer to [BR-27, "Exploded View"](#).

CAUTION:

Do not scratch the flare nut or the brake pipe.

- After installation, perform the air bleeding. Refer to [BR-16, "Bleeding Brake System"](#).



INFOID:000000009795753

Disassembly and Assembly

DISASSEMBLY

CAUTION:

- Do not disassemble the cylinder body.
- Remove the reservoir tank only when necessary.
- Do not drop removed parts. The parts must not be reused if they are dropped.

1. Secure the master cylinder assembly in a vise.

CAUTION:

Always use copper plates or cloth between vise and cylinder body. Do not overtighten the vise.

2. Remove the reservoir tank pin using suitable tools.

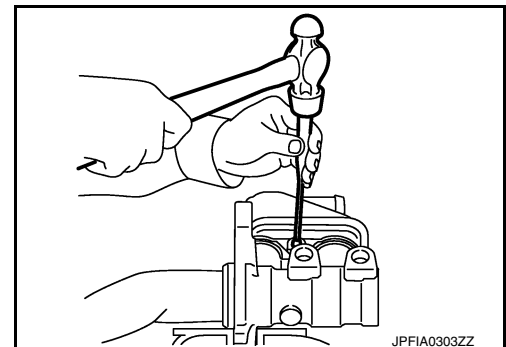
CAUTION:

Do not reuse the pin.

3. Remove the reservoir tank and grommets from the cylinder body. Discard the grommets.

CAUTION:

- Do not drop parts. Dropped parts must not be reused.
- Do not reuse the grommets.



ASSEMBLY

1. Apply new brake fluid to the grommets and install them to the cylinder body.

CAUTION:

Do not use mineral oil such as gasoline or light oil.

2. Install the reservoir tank to the cylinder body.

CAUTION:

Do not drop the parts during installation. The parts must not be reused if they are dropped.

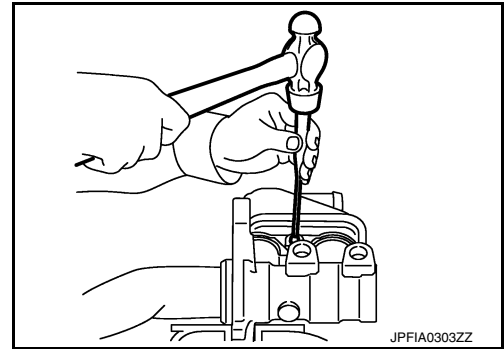
BRAKE MASTER CYLINDER

< REMOVAL AND INSTALLATION >

3. Tilt the reservoir tank so that the pin can be inserted. Insert a pin using suitable tools.

CAUTION:

Do not reuse the pin.



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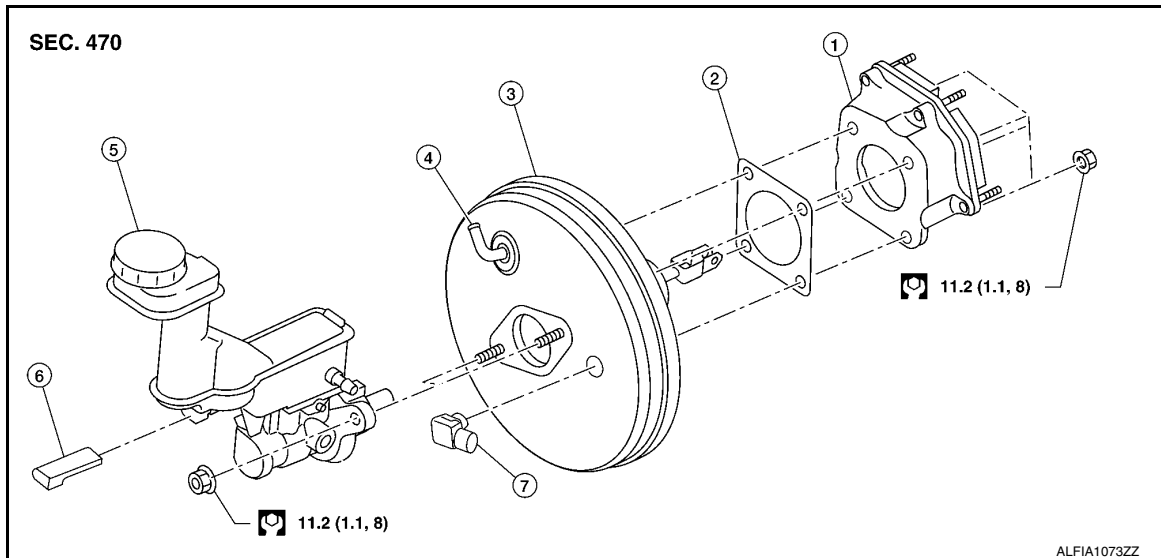
BRAKE BOOSTER

< REMOVAL AND INSTALLATION >

BRAKE BOOSTER

Exploded View

INFOID:000000009795755



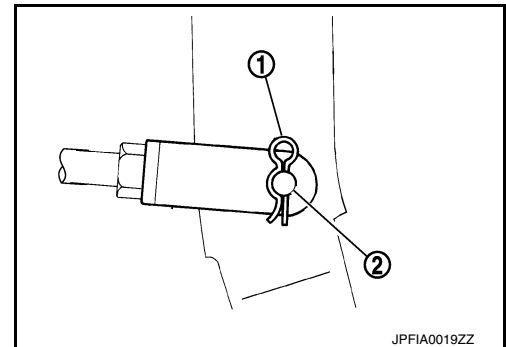
- | | | |
|----------------------------------|-------------------|-----------------------------|
| 1. Spacer | 2. Gasket | 3. Brake booster |
| 4. Check valve | 5. Reservoir tank | 6. Brake fluid level sensor |
| 7. Brake booster pressure sensor | | |

Removal and installation

INFOID:000000009795756

REMOVAL

1. Remove the cowl top. Refer to [EXT-25, "Removal and Installation"](#).
2. Remove the instrument lower panel LH. Refer to [IP-22, "Removal and Installation"](#).
3. Remove the knee protector. Refer to [IP-14, "Exploded View"](#).
4. Remove the snap pin (1) and clevis pin (2) from the brake pedal.



5. Disconnect vacuum hose from brake booster. Refer to [BR-32, "Exploded View"](#).
6. Remove master cylinder assembly. Refer to [BR-27, "Removal and Installation"](#).
7. Disconnect the harness connector from the brake booster pressure sensor.
8. Remove the brake booster pressure sensor.
9. Remove the nuts on the brake booster and brake pedal.
CAUTION:
Secure the brake booster to avoid damage to components.
10. Remove the brake booster.
CAUTION:
Do not deform or bend the brake pipes.

INSTALLATION

BRAKE BOOSTER

< REMOVAL AND INSTALLATION >

1. Install a new gasket between the brake booster and dash panel.

CAUTION:

Do not reuse the gasket.

2. Install the brake booster to the dash panel from the engine room side.

CAUTION:

Do not damage brake booster stud bolt threads during installation.

3. Install the nuts to the brake booster and brake pedal. Refer to [BR-30, "Exploded View"](#).

4. Install the brake booster pressure sensor.

5. Connect the harness connector to the brake booster pressure sensor.

6. Install master cylinder assembly. Refer to [BR-27, "Removal and Installation"](#).

7. Connect vacuum hose to brake booster. Refer to [BR-32, "Exploded View"](#).

8. Install the clevis pin and snap pin to the brake pedal.

9. Adjust the brake pedal. Refer to [BR-15, "Adjustment"](#).

10. Install the knee protector. Refer to [IP-14, "Exploded View"](#).

11. Install instrument lower panel LH. Refer to [IP-22, "Removal and Installation"](#).

12. Bleed the brake system. Refer to [BR-16, "Bleeding Brake System"](#).

13. Inspect the brake booster. Refer to [BR-10, "Inspection"](#).

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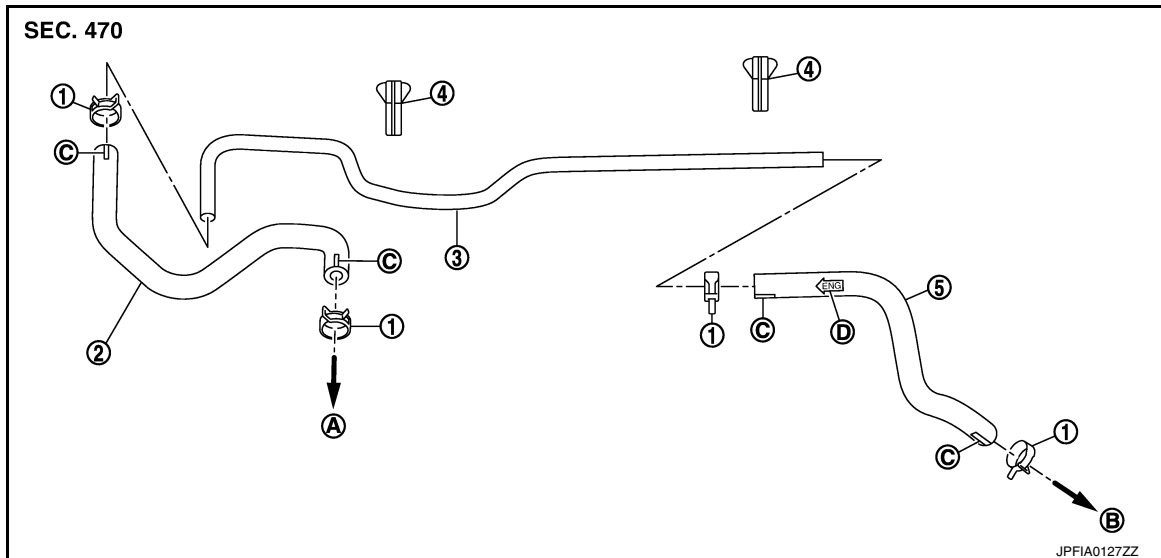
VACUUM LINES

< REMOVAL AND INSTALLATION >

VACUUM LINES

Exploded View

INFOID:000000009795758



- | | | |
|--------------------------------------|---------------------|----------------|
| 1. Clamp | 2. Vacuum hose | 3. Vacuum tube |
| 4. Clip | 5. Vacuum hose | |
| A. To intake manifold | B. To brake booster | C. Paint mark |
| D. Stamp indicating engine direction | | |

Removal and Installation

INFOID:000000009795759

REMOVAL

1. Remove the cowl top. Refer to [EXT-25, "Removal and Installation"](#).
2. Remove the air duct assembly to the electric throttle control actuator. Refer to [EM-24, "Exploded View"](#).
3. Disconnect the vacuum hose from the engine intake manifold.
4. Disconnect the vacuum hose from the brake booster.
5. Disconnect the vacuum hose from the clip.
6. Remove the vacuum hoses.

INSPECTION AFTER REMOVAL

Visual Inspection

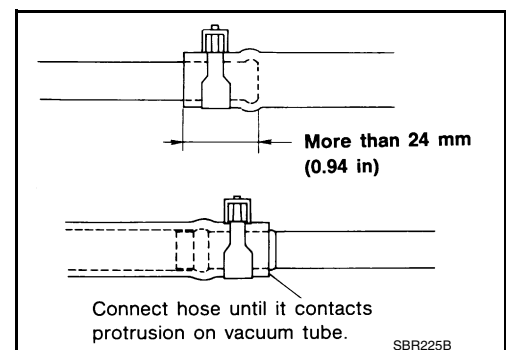
Check for correct installation, damage and deterioration of the vacuum hoses and pipe.

INSTALLATION

Installation is in the reverse order of removal.

CAUTION:

- Insert the vacuum pipe into the vacuum hose at least 24 mm (0.94 in) as shown.
- Do not use lubricating oil during installation.



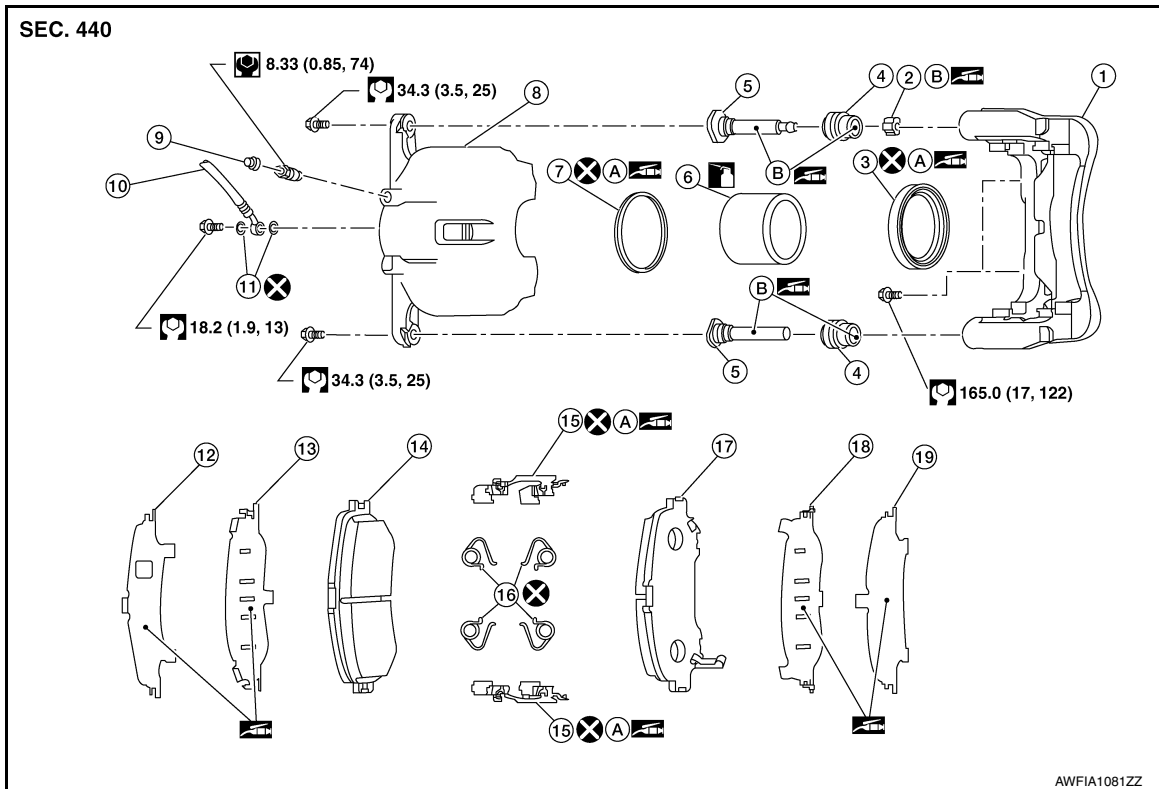
FRONT DISC BRAKE

< REMOVAL AND INSTALLATION >

FRONT DISC BRAKE BRAKE PAD (1 PISTON TYPE)

BRAKE PAD (1 PISTON TYPE) : Exploded View

INFOID:000000009795761



- | | | |
|----------------------|----------------------------|----------------------|
| 1. Torque member | 2. Bushing | 3. Piston boot |
| 4. Slide pin boot | 5. Slide pin | 6. Piston |
| 7. Piston seal | 8. Brake caliper body | 9. Bleeder cap |
| 10. Brake hose | 11. Copper sealing washers | 12. Inner shim cover |
| 13. Inner shim | 14. Inner pad | 15. Pad retainer |
| 16. Anti-rattle clip | 17. Outer pad | 18. Outer shim |
| 19. Outer shim cover | A. Molykote AS-880N | B. Niglube Rx-2 |

Apply brake fluid.

BRAKE PAD (1 PISTON TYPE) : Removal and Installation

INFOID:000000009795762

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 brake rotor, quickly wipe it off.

1. Partially drain brake fluid. Refer to [BR-16. "Drain and Refill"](#).
2. Remove the front wheels and tires using power tool.
3. Remove sliding pin bolts.

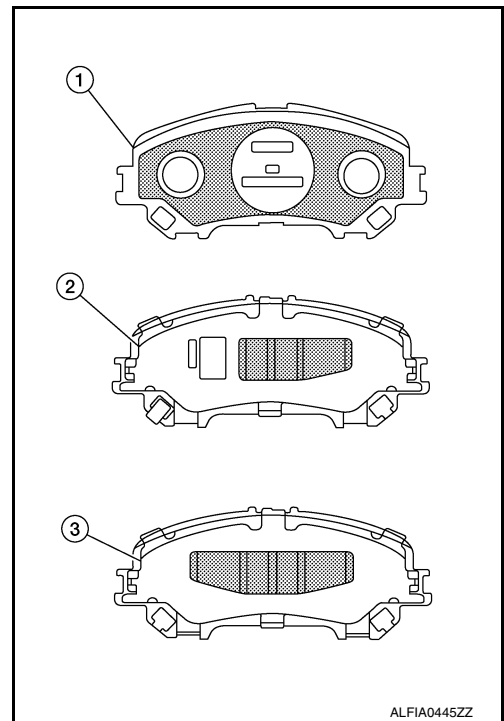
FRONT DISC BRAKE

< REMOVAL AND INSTALLATION >

4. Remove the front 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, pad retainers, and anti-rattle clips from the torque member.
CAUTION:
 - Do not reuse the pad retainers and anti-rattle clips.
 - Do not damage the piston boot.
 - Do not drop the brake pads, shims, or the shim covers.
 - Note the position of components during removal to aid with installation.
6. Compress the front caliper piston.

INSTALLATION

1. Install the new pad retainers and anti-rattle clips to the torque member.
CAUTION:
 - Do not reuse the pad retainers and anti-rattle clips.
 - Do not deform the pad retainers.
 - Verify that the pad retainers are secured properly to the torque member.
2. Apply Rubber grease or equivalent to the mating faces between the brake pads and pad retainers. Refer to [BR-33. "BRAKE PAD \(1 PISTON TYPE\) : Exploded View"](#).
3. Apply Molykote AS-880N grease or equivalent to the mating faces between the brake pads, shims and shim covers, and install them to the brake pad. Refer to [BR-33. "BRAKE PAD \(1 PISTON TYPE\) : Exploded View"](#).
CAUTION:
When installing new brake pads, replace the shims and shim covers.
4. Install the brake pads to the torque member.
5. Using a suitable tool, press the pistons into the brake caliper.
CAUTION:
Do not damage the piston boot.
6. Install the brake caliper to the torque member.
7. Install the sliding pin bolts and tighten to specification. Refer to [BR-33. "BRAKE PAD \(1 PISTON TYPE\) : Exploded View"](#).
8. Depress the brake pedal several times and verify that drag does not exist.
9. Install the front wheels and tires. Refer to [WT-60. "Removal and Installation"](#).
10. Check brake fluid level and refill as necessary. Refer to [BR-8. "Inspection"](#).



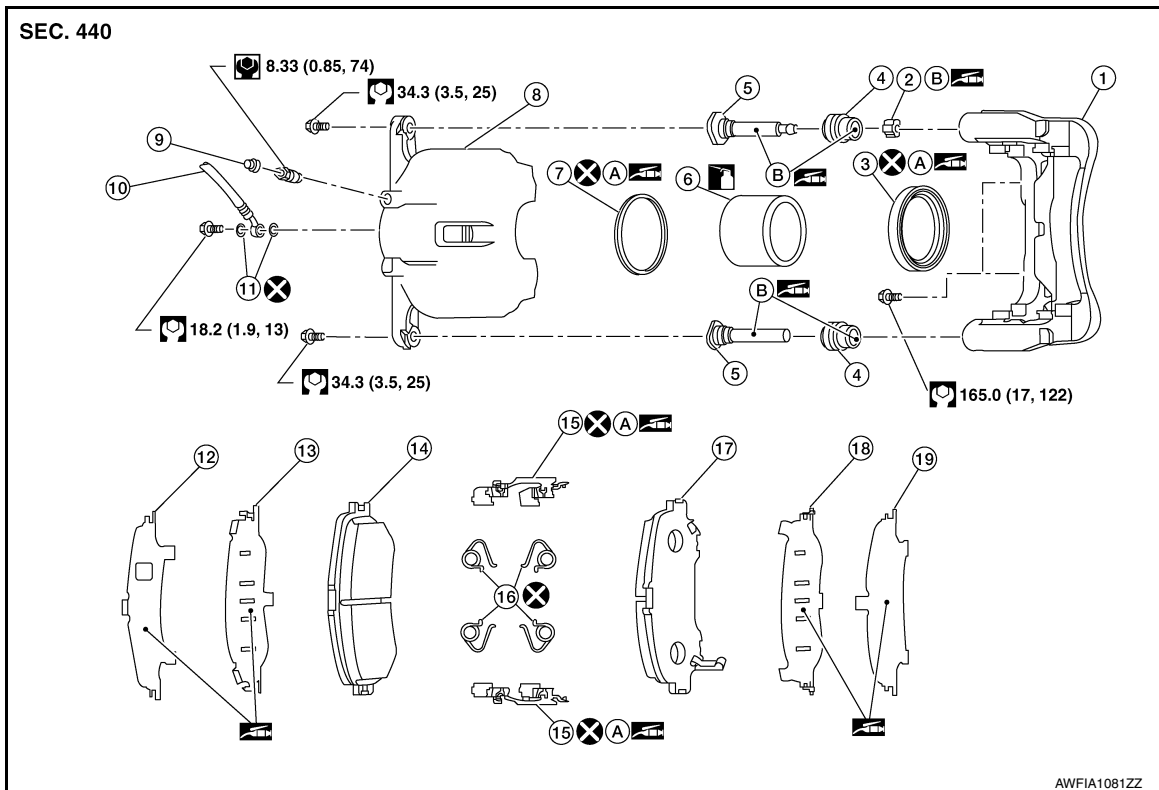
BRAKE CALIPER ASSEMBLY (1 PISTON TYPE)

FRONT DISC BRAKE

< REMOVAL AND INSTALLATION >

BRAKE CALIPER ASSEMBLY (1 PISTON TYPE) : Exploded View

INFOID:000000009795764



- | | | |
|----------------------|----------------------------|----------------------|
| 1. Torque member | 2. Bushing | 3. Piston boot |
| 4. Slide pin boot | 5. Slide pin | 6. Piston |
| 7. Piston seal | 8. Brake caliper body | 9. Bleeder cap |
| 10. Brake hose | 11. Copper sealing washers | 12. Inner shim cover |
| 13. Inner shim | 14. Inner pad | 15. Pad retainer |
| 16. Anti-rattle clip | 17. Outer pad | 18. Outer shim |
| 19. Outer shim cover | A. Molykote AS-880N | B. Niglube Rx-2 |

Apply brake fluid.

BRAKE CALIPER ASSEMBLY (1 PISTON TYPE) : Removal and Installation

INFOID:000000009795765

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 areas; it may cause paint damage. 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.

REMOVAL

1. Remove front wheels and tires using power tool.
2. Secure the disc brake rotor using wheel nuts.

FRONT DISC BRAKE

< REMOVAL AND INSTALLATION >

3. Remove union bolt, copper sealing washers, and disconnect brake hose from brake caliper. Discard the copper sealing washers.

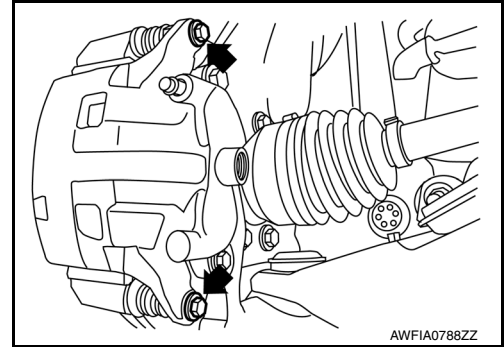
CAUTION:

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

CAUTION:

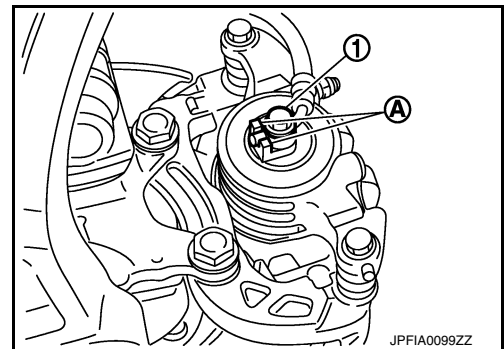
Do not reuse copper sealing washers.

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 brake rotor.

4. Check the front disc brakes for drag.
5. Install the front wheels and tires. Refer to [WT-60, "Removal and Installation"](#).



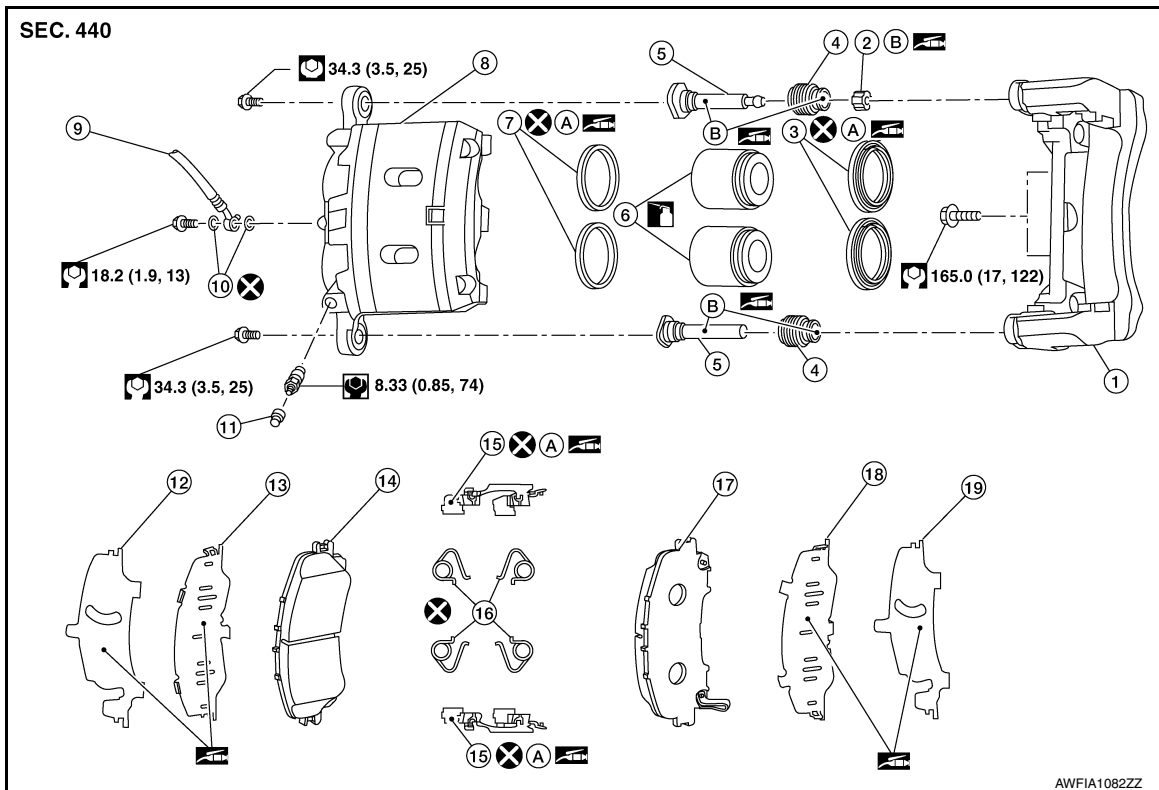
BRAKE PAD (2 PISTON TYPE)

FRONT DISC BRAKE

< REMOVAL AND INSTALLATION >

BRAKE PAD (2 PISTON TYPE) : Exploded View

INFOID:000000010336167



- | | | |
|----------------------|----------------------------|----------------------|
| 1. Torque member | 2. Bushing | 3. Piston boot |
| 4. Slide pin boot | 5. Slide pin | 6. Piston |
| 7. Piston seal | 8. Brake caliper body | 9. Bleeder cap |
| 10. Brake hose | 11. Copper sealing washers | 12. Inner shim cover |
| 13. Inner shim | 14. Inner pad | 15. Pad retainer |
| 16. Anti-rattle clip | 17. Outer pad | 18. Outer shim |
| 19. Outer shim cover | A. Molykote AS-880N | B. Niglube Rx-2 |

: Apply brake fluid.

BRAKE PAD (2 PISTON TYPE) : Removal and Installation

INFOID:000000010336168

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 brake rotor, quickly wipe it off.

1. Partially drain brake fluid. Refer to [BR-16, "Drain and Refill"](#).
2. Remove the 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, pad retainers, and anti-rattle clips from the torque member.

CAUTION:

FRONT DISC BRAKE

< REMOVAL AND INSTALLATION >

- Do not reuse the pad retainers and anti-rattle clips.
- Do not damage the piston boot.
- Do not drop the brake pads, shims, or the shim covers.
- Note the position of components during removal to aid with installation.

6. Compress the front caliper pistons.

INSTALLATION

1. Install the new pad retainers and anti-rattle clips to the torque member.

CAUTION:

- Do not reuse the pad retainers and anti-rattle clips.
- Do not deform the pad retainers.
- Verify that the pad retainers are secured properly to the torque member.

2. Apply Rubber grease or equivalent to the mating faces between the brake pads and pad retainers. Refer to [BR-37. "BRAKE PAD \(2 PISTON TYPE\) : Exploded View"](#).

3. Apply Molykote AS-880N grease or equivalent to the mating faces between the brake pads, shims and shim covers, and install them to the brake pad. Refer to [BR-37. "BRAKE PAD \(2 PISTON TYPE\) : Exploded View"](#).

CAUTION:

When installing new brake pads, replace the shims and shim covers.

4. Install the brake pads to the torque member.

5. Using a suitable tool, press the pistons into the brake caliper.

CAUTION:

Do not damage the piston boot.

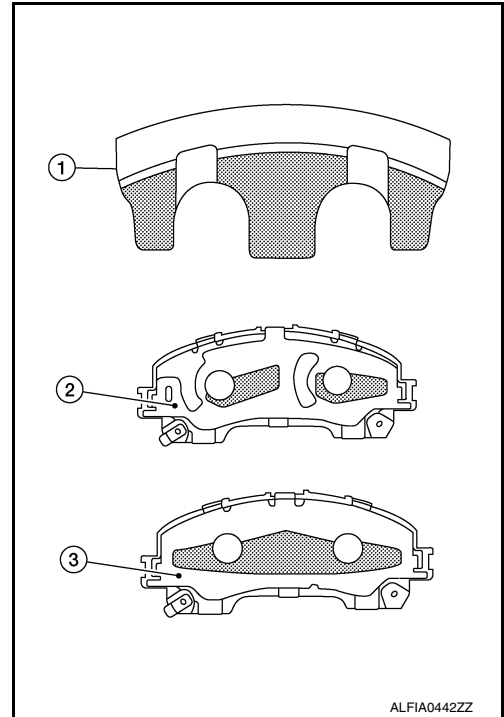
6. Install the brake caliper to the torque member.

7. Install the sliding pin bolts and tighten to specification. Refer to [BR-37. "BRAKE PAD \(2 PISTON TYPE\) : Exploded View"](#).

8. Depress the brake pedal several times and verify that drag does not exist.

9. Install the front wheels and tires. Refer to [WT-60. "Removal and Installation"](#).

10. Check brake fluid level and refill as necessary. Refer to [BR-8. "Inspection"](#).



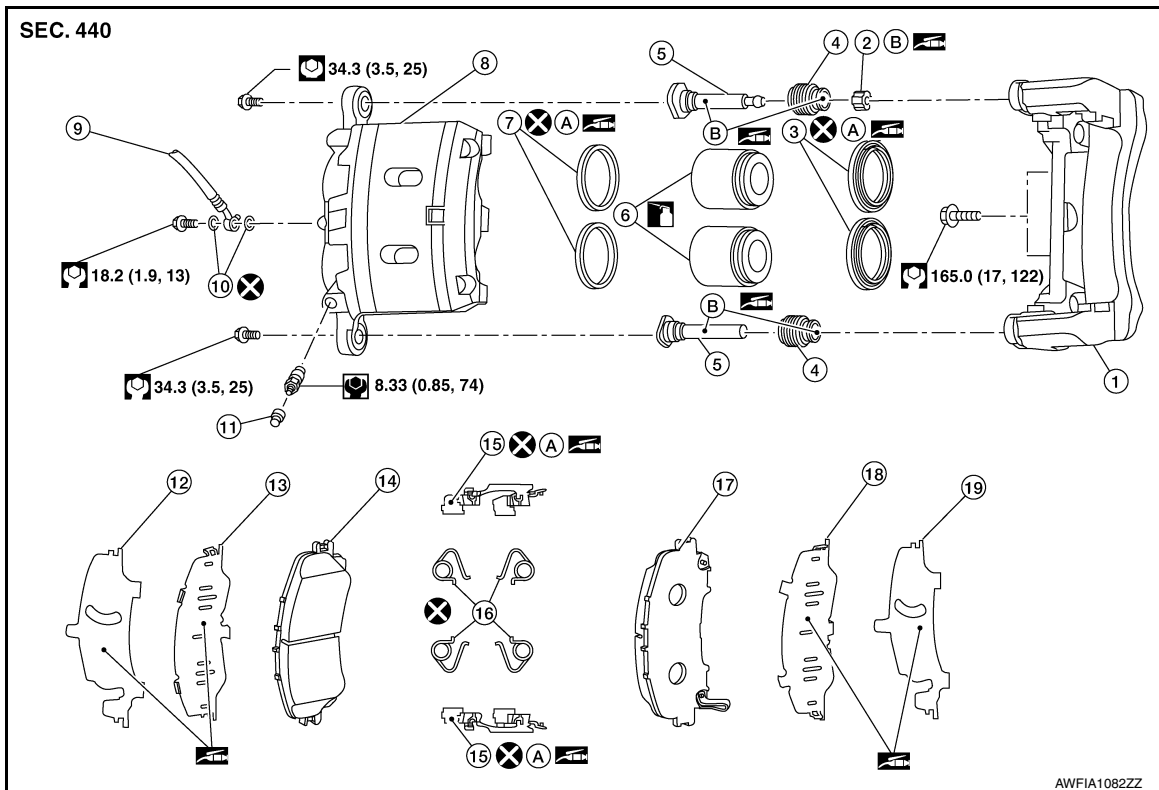
BRAKE CALIPER ASSEMBLY (2 PISTON TYPE)

FRONT DISC BRAKE


< REMOVAL AND INSTALLATION >

BRAKE CALIPER ASSEMBLY (2 PISTON TYPE) : Exploded View

INFOID:000000010336170



- | | | |
|----------------------|----------------------------|----------------------|
| 1. Torque member | 2. Bushing | 3. Piston boot |
| 4. Slide pin boot | 5. Slide pin | 6. Piston |
| 7. Piston seal | 8. Brake caliper body | 9. Bleeder cap |
| 10. Brake hose | 11. Copper sealing washers | 12. Inner shim cover |
| 13. Inner shim | 14. Inner pad | 15. Pad retainer |
| 16. Anti-rattle clip | 17. Outer pad | 18. Outer shim |
| 19. Outer shim cover | A. Molykote AS-880N | B. Niglube Rx-2 |

 Apply brake fluid.

BRAKE CALIPER ASSEMBLY (2 PISTON TYPE) : Removal and Installation

INFOID:000000010336171

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 areas; it may cause paint damage. 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.

REMOVAL

1. Remove front wheels and tires using power tool.
2. Secure the disc brake rotor using wheel nuts.

FRONT DISC BRAKE

< REMOVAL AND INSTALLATION >

3. Remove union bolt, copper sealing washers, and disconnect brake hose from brake caliper. Discard the copper sealing washers.

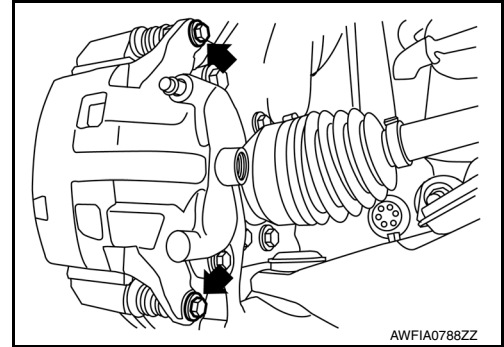
CAUTION:

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

CAUTION:

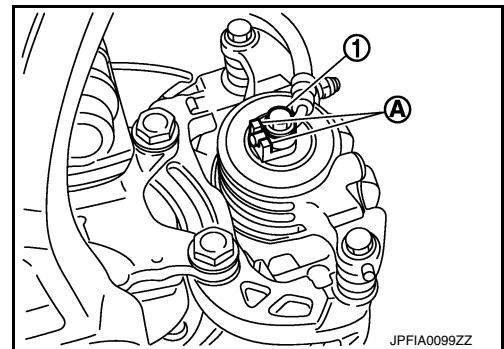
Do not reuse copper sealing washers.

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 brake rotor.

4. Check the front disc brakes for drag.
5. Install the front wheels and tires. Refer to [WT-60, "Removal and Installation"](#).



REAR DISC BRAKE

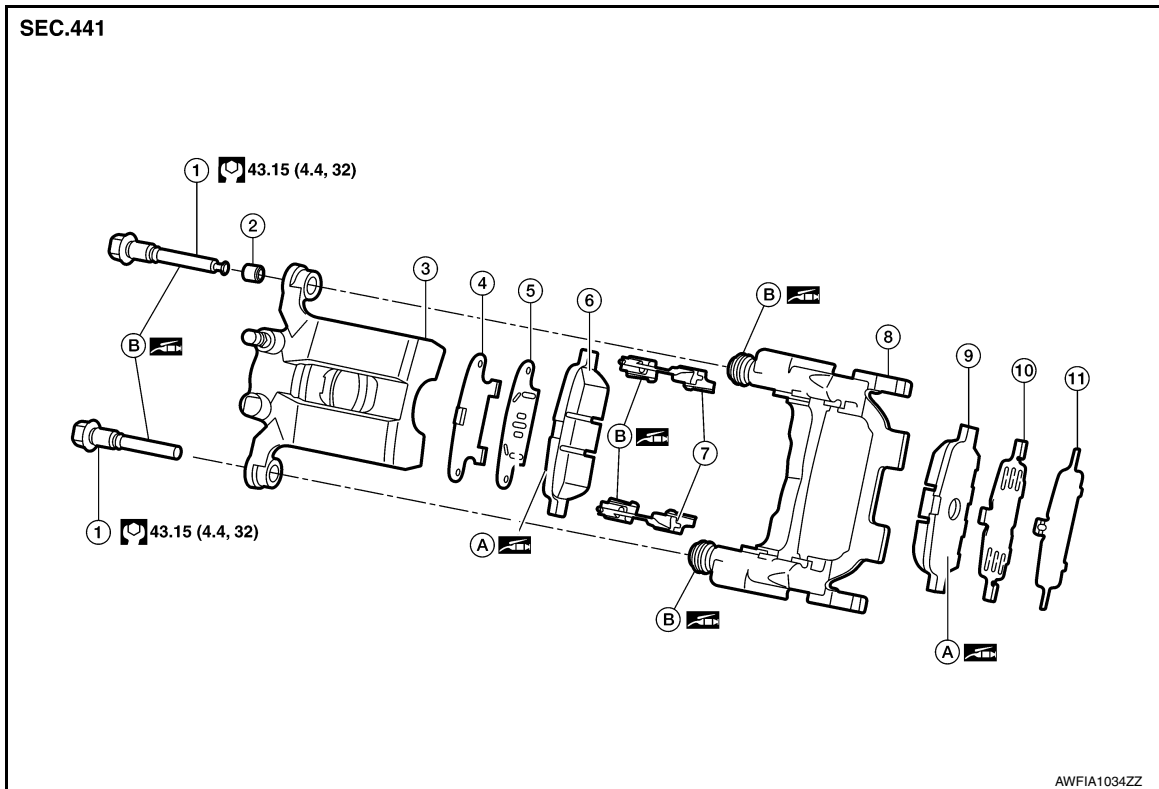
< REMOVAL AND INSTALLATION >

REAR DISC BRAKE

BRAKE PAD

BRAKE PAD : Exploded View

INFOID:000000009795768



- | | | |
|---------------------|------------------------|------------------|
| 1. Sliding pin bolt | 2. Sliding pin bushing | 3. Cylinder body |
| 4. Inner shim cover | 5. Inner shim | 6. Inner pad |
| 7. Pad retainer | 8. Torque member | 9. Outer pad |
| 10. Outer shim | 11. Outer shim cover | |
| A. Molykote AS-880N | B. Niglube Rx-2 | |

BRAKE PAD : Removal and Installation

INFOID:000000009795769

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 brake rotor, quickly wipe it off.

1. Partially drain brake fluid from the reservoir tank. Refer to [BR-16. "Drain and Refill"](#).
2. Remove the rear wheels and tires using power tool.
3. Loosen the upper sliding pin bolt and remove the lower sliding pin bolt.
4. Using the upper sliding pin bolt as a pivot, swing the brake caliper down from the torque member. Leaving the brake hose attached, support the brake caliper with wire.
5. Remove the brake pads, shims, shim covers, pad retainers, and anti-rattle clips from the torque member.

CAUTION:

REAR DISC BRAKE

< REMOVAL AND INSTALLATION >

- Do not reuse the pad retainers and anti-rattle clips.
- Do not damage the piston boot.
- Do not drop the brake pads, shims, or the shim covers.
- Note the position of components during removal to aid with installation.

INSTALLATION

1. Install the new pad retainers anti-rattle clips to the torque member.

CAUTION:

- Do not reuse the pad retainers and anti-rattle clips.
- Do not deform the pad retainers.
- Verify that the pad retainers are secured properly to the torque member.

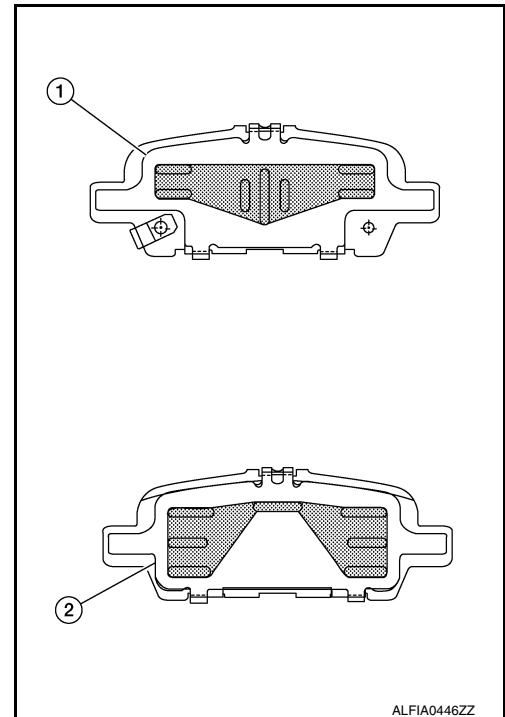
2. Apply rubber grease or equivalent to the mating faces between the brake pads and pad retainers. Refer to [BR-41, "BRAKE PAD : Exploded View"](#).

3. Apply Molykote AS-880N grease or equivalent to the mating faces between the brake pads, shims and shim covers. Install components to the brake pad. Refer to [BR-41, "BRAKE PAD : Exploded View"](#).

CAUTION:

When installing new brake pads, replace the shims and shim covers.

4. Install the brake pads to the torque member.
5. Using a suitable tool, press the pistons into the brake caliper.
CAUTION:
Do not damage the piston boot.
6. Using the upper sliding pin bolt as a pivot, swing the brake caliper up to the torque member.
7. Install the lower sliding pin bolts. Tighten all sliding pin bolts to specification. Refer to [BR-41, "BRAKE PAD : Exploded View"](#).
8. Depress the brake pedal several times and verify that drag does not exist.
9. Install the front wheels and tires. Refer to [WT-60, "Removal and Installation"](#).
10. Check brake fluid level and refill as necessary. Refer to [BR-8, "Inspection"](#).



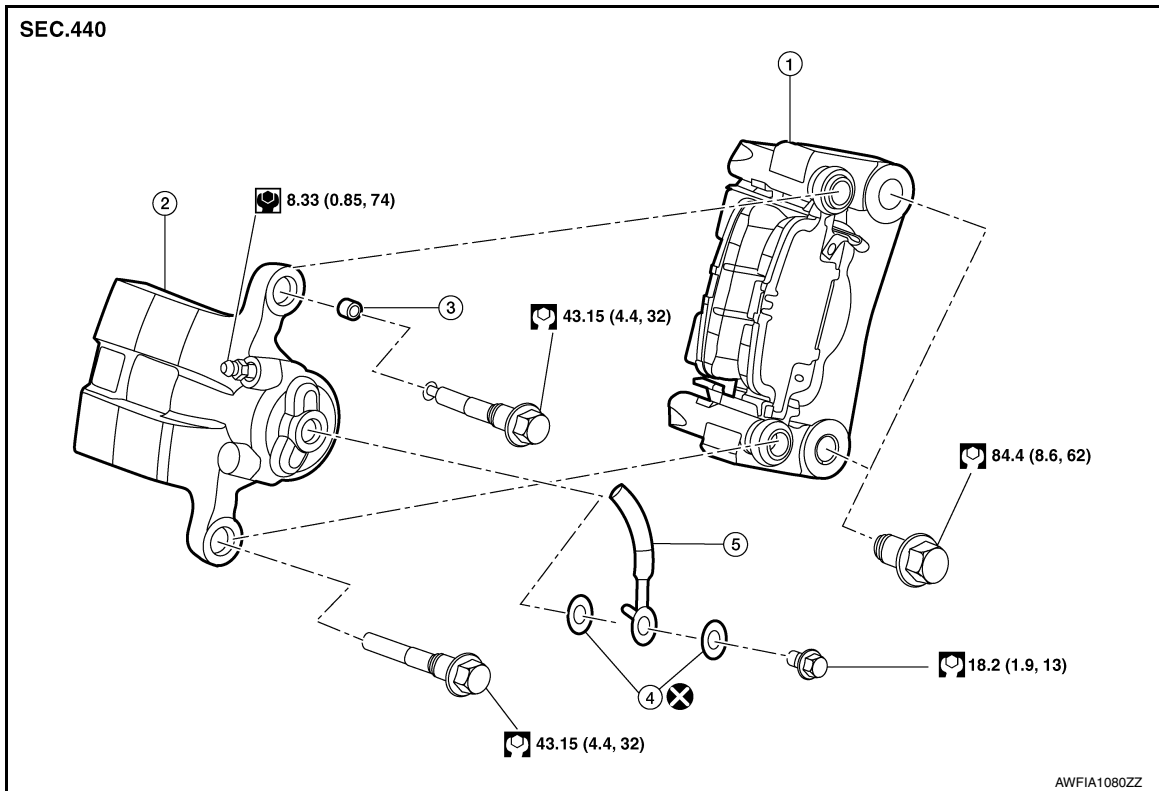
BRAKE CALIPER ASSEMBLY

BRAKE CALIPER ASSEMBLY : Exploded View

INFOID:000000009795771

REAR DISC BRAKE

< REMOVAL AND INSTALLATION >



- | | | |
|---------------------------|-----------------------|------------------------|
| 1. Torque member | 2. Brake caliper body | 3. Sliding pin bushing |
| 4. Copper sealing washers | 5. Brake hose | |

BRAKE CALIPER ASSEMBLY : Removal and Installation

INFOID:000000009795772

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 areas; it may cause paint damage. 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.

REMOVAL

1. Remove rear wheels and tires using power tool.
2. Secure the disc brake 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 the torque member bolts. Remove the brake caliper and torque member from the vehicle as an assembly.
5. Remove sliding pin bolts and the brake caliper from torque member.

CAUTION:

Do not drop brake pads or brake caliper.

INSTALLATION

A
B
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BR
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P

REAR DISC BRAKE

< REMOVAL AND INSTALLATION >

1. Install the brake caliper to torque member and install the sliding pin bolts. Tighten to specification.
2. Install the brake caliper and torque member to the vehicle as an assembly. Install the torque member bolts.
3. 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:

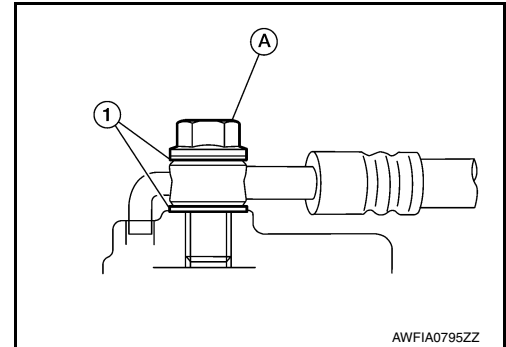
Do not reuse copper sealing washers.

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

5. Check the rear disc brakes for drag.
6. Install the rear wheels and tires. Refer to [WT-60, "Removal and Installation"](#).



FRONT DISC BRAKE

< UNIT DISASSEMBLY AND ASSEMBLY >

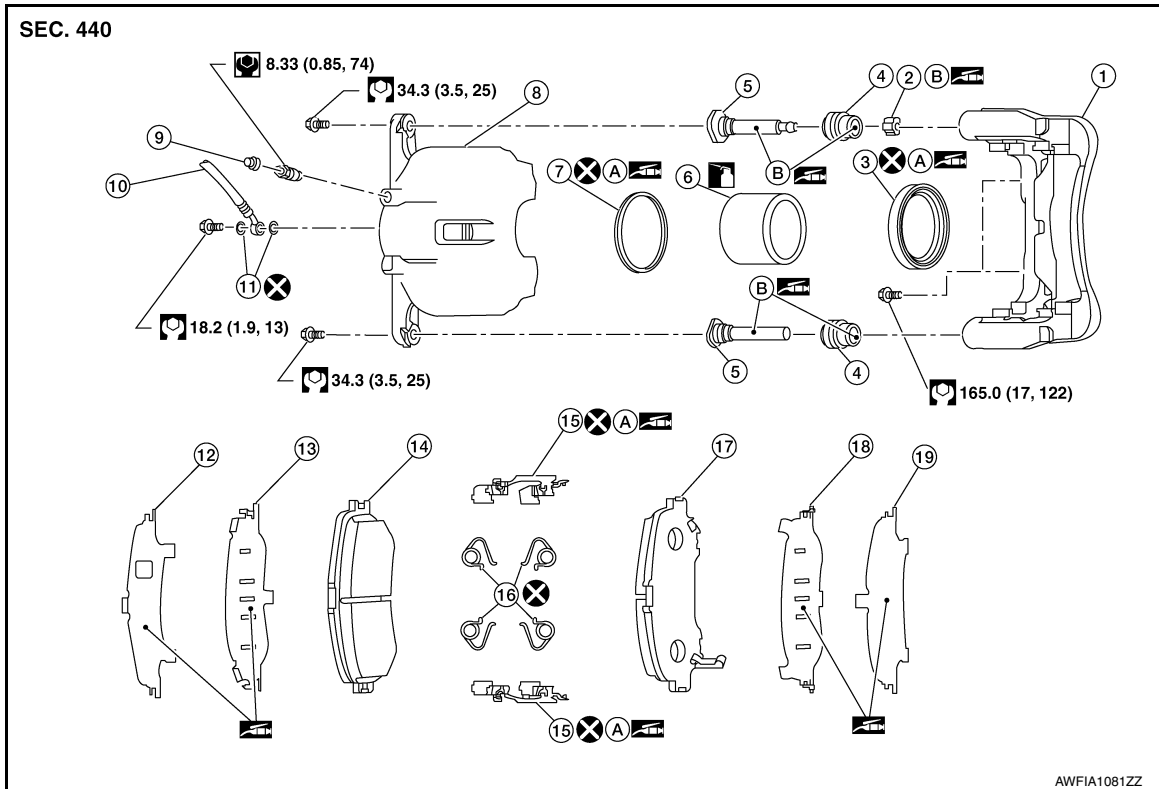
UNIT DISASSEMBLY AND ASSEMBLY

FRONT DISC BRAKE

BRAKE CALIPER ASSEMBLY (1 PISTON TYPE)

BRAKE CALIPER ASSEMBLY (1 PISTON TYPE) : Exploded View

INFOID:000000010310338



- | | | |
|----------------------|----------------------------|----------------------|
| 1. Torque member | 2. Bushing | 3. Piston boot |
| 4. Slide pin boot | 5. Slide pin | 6. Piston |
| 7. Piston seal | 8. Brake caliper body | 9. Bleeder cap |
| 10. Brake hose | 11. Copper sealing washers | 12. Inner shim cover |
| 13. Inner shim | 14. Inner pad | 15. Pad retainer |
| 16. Anti-rattle clip | 17. Outer pad | 18. Outer shim |
| 19. Outer shim cover | A. Molykote AS-880N | B. Niglube Rx-2 |

: Apply brake fluid.

BRAKE CALIPER ASSEMBLY (1 PISTON TYPE) : Disassembly and Assembly

INFOID:000000009795766

DISASSEMBLY

1. Remove the brake caliper from the vehicle. Refer to [BR-35. "BRAKE CALIPER ASSEMBLY \(1 PISTON TYPE\) : Removal and Installation"](#).
2. Remove sliding pins and sliding pin boots from torque member.

FRONT DISC BRAKE

< UNIT DISASSEMBLY AND ASSEMBLY >

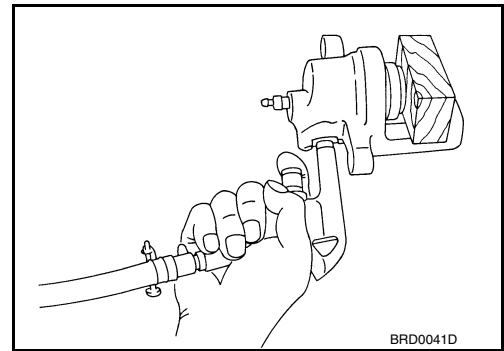
3. Place a wooden block in brake caliper body and blow air from union bolt hole to remove piston and piston boots.

WARNING:

Do not get fingers caught between piston and brake caliper body.

CAUTION:

Do not reuse piston boots.

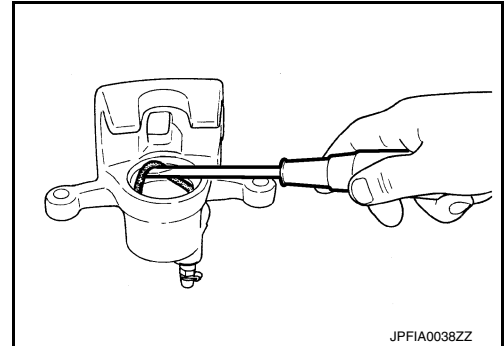


4. Remove piston seals from brake caliper body using suitable tool.

CAUTION:

- Do not damage cylinder inner wall.
- Do not reuse piston seals.

5. Remove bleeder valve and cap.



INSPECTION AFTER DISASSEMBLY

Brake Caliper Body

Check the inner wall of the brake caliper body for rust, wear, cracks or damage. Replace the brake caliper body if any abnormal condition is detected.

CAUTION:

Always clean with new brake fluid. Do not clean with mineral oil such as gasoline and light oil.

Torque Member

Check the torque member for rust, wear, cracks or damage. Replace the torque member if any abnormal condition is detected.

Piston

Check the surface of the piston for rust, wear, cracks or damage. Replace the piston if any abnormal condition is detected.

CAUTION:

Piston sliding surface is plated. Do not polish with sandpaper.

Sliding Pin and Sliding Pin Boot

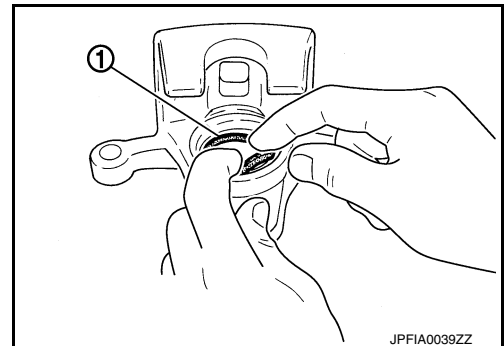
Check the sliding pins and sliding pin boots for rust, wear, cracks or damage. Replace the parts if any abnormal condition is detected.

ASSEMBLY

1. Install bleeder valve and cap.
2. Apply rubber grease to each piston seal (1), and install them to the brake caliper body.

CAUTION:

Do not reuse piston seal.



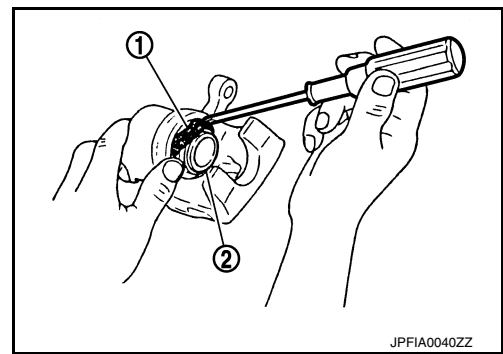
FRONT DISC BRAKE

< UNIT DISASSEMBLY AND ASSEMBLY >

3. Apply rubber grease to the piston boots. Cover each piston end with a piston boot, and then install cylinder side lip on piston boot securely into a groove on brake caliper body.

CAUTION:

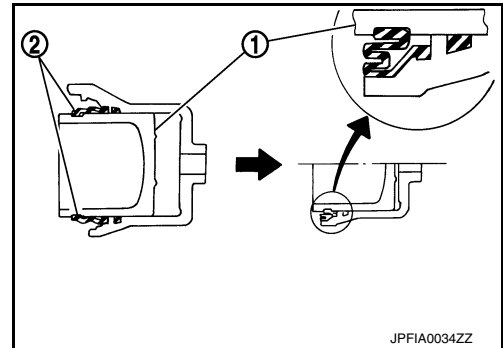
Do not reuse piston boots.



4. Apply brake fluid to each piston (1). Push each 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.



5. Apply rubber grease to bushing; install bushing to sliding pin.
6. Apply rubber grease to sliding pins and sliding pin boots, install sliding pins and sliding pin boots to torque member.
7. Install the brake caliper to the vehicle. Refer to [BR-35. "BRAKE CALIPER ASSEMBLY \(1 PISTON TYPE\) : Removal and Installation"](#).

INSPECTION AFTER INSTALLATION

1. Check the drag of front disc brake. If any drag is found, follow the procedure described below.
2. Remove brake pads.
3. Using a suitable tool, press the piston into the brake caliper body.
CAUTION:
Do not damage the piston boots.
4. Install brake pads.
5. Depress the brake pedal several times.
6. Check the drag of front disc brake again. If any drag is found, disassemble the brake caliper body.
7. Burnish contact surfaces after refinishing or replacing disc rotors or if a soft pedal occurs at very low mileage. Refer to [BR-18. "Brake Burnishing"](#).

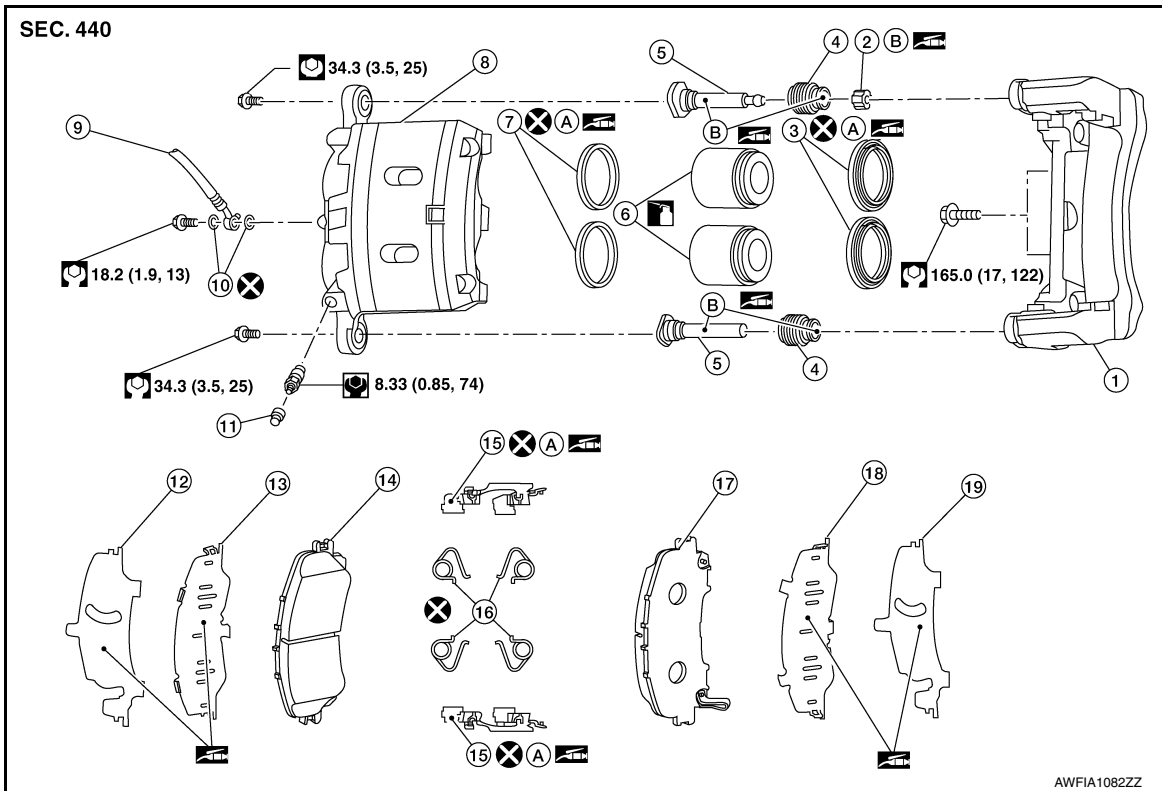
BRAKE CALIPER ASSEMBLY (2 PISTON TYPE)

BRAKE CALIPER ASSEMBLY (2 PISTON TYPE) : Exploded View

INFOID:000000010336449

FRONT DISC BRAKE

< UNIT DISASSEMBLY AND ASSEMBLY >



- | | | |
|----------------------|----------------------------|----------------------|
| 1. Torque member | 2. Bushing | 3. Piston boot |
| 4. Slide pin boot | 5. Slide pin | 6. Piston |
| 7. Piston seal | 8. Brake caliper body | 9. Bleeder cap |
| 10. Brake hose | 11. Copper sealing washers | 12. Inner shim cover |
| 13. Inner shim | 14. Inner pad | 15. Pad retainer |
| 16. Anti-rattle clip | 17. Outer pad | 18. Outer shim |
| 19. Outer shim cover | A. Molykote AS-880N | B. Niglube Rx-2 |

Apply brake fluid.

BRAKE CALIPER ASSEMBLY (2 PISTON TYPE) : Disassembly and Assembly

INFOID:000000010336448

DISASSEMBLY

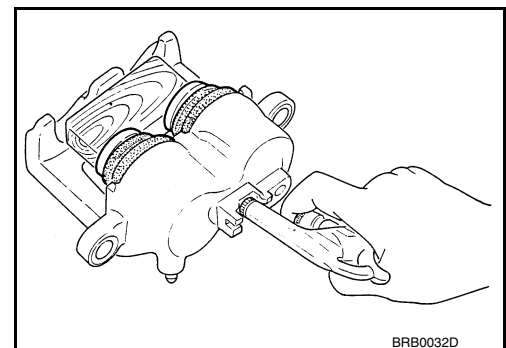
1. Remove the brake caliper from the vehicle. Refer to [BR-39. "BRAKE CALIPER ASSEMBLY \(2 PISTON TYPE\) : Removal and Installation"](#).
2. Remove sliding pins and sliding pin boots from torque member.
3. Place a wooden block in brake caliper body and blow air from union bolt hole to remove pistons and piston boots.

WARNING:

Do not get fingers caught between pistons and brake caliper body.

CAUTION:

Do not reuse piston boots.



BRB0032D

FRONT DISC BRAKE

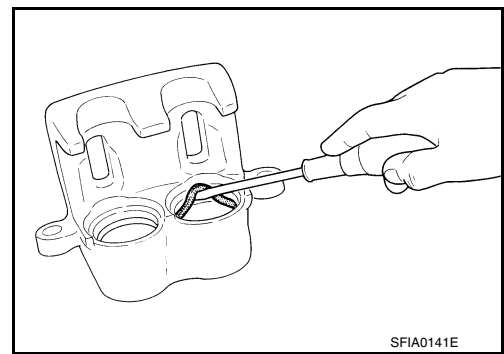
< UNIT DISASSEMBLY AND ASSEMBLY >

4. Remove piston seals from brake caliper body using suitable tool.

CAUTION:

- Do not damage cylinder inner wall.
- Do not reuse piston seals.

5. Remove bleeder valve and cap.



INSPECTION AFTER DISASSEMBLY

Brake Caliper Body

Check the inner wall of the brake caliper body for rust, wear, cracks or damage. Replace the brake caliper body if any abnormal condition is detected.

CAUTION:

Always clean with new brake fluid. Do not clean with mineral oil such as gasoline and light oil.

Torque Member

Check the torque member for rust, wear, cracks or damage. Replace the torque member if any abnormal condition is detected.

Piston

Check the surface of the piston for rust, wear, cracks or damage. Replace the piston if any abnormal condition is detected.

CAUTION:

Piston sliding surface is plated. Do not polish with sandpaper.

Sliding Pin and Sliding Pin Boot

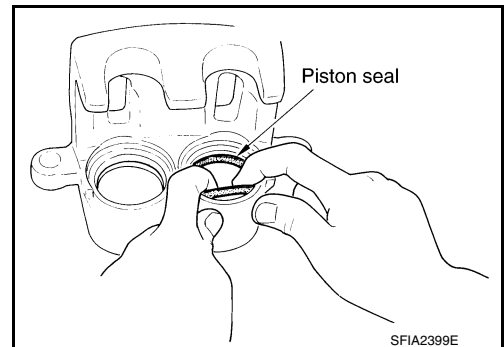
Check the sliding pins and sliding pin boots for rust, wear, cracks or damage. Replace the parts if any abnormal condition is detected.

ASSEMBLY

1. Install bleeder valve and cap.
2. Apply rubber grease to each piston seal (1), and install them to the brake caliper body.

CAUTION:

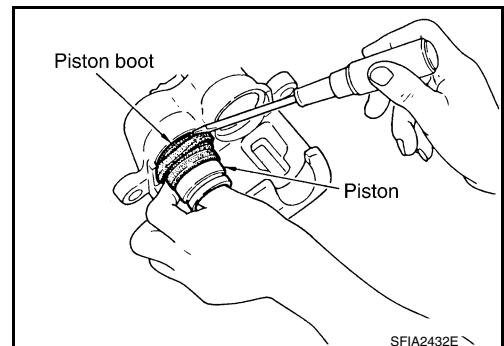
Do not reuse piston seal.



3. Apply rubber grease to the piston boots. Cover each piston end with a piston boot, and then install cylinder side lip on piston boot securely into a groove on brake caliper body.

CAUTION:

Do not reuse piston boots.



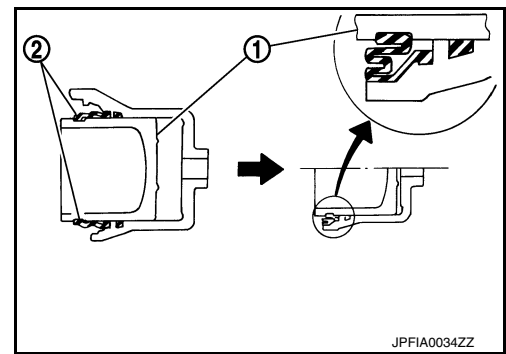
FRONT DISC BRAKE

< UNIT DISASSEMBLY AND ASSEMBLY >

4. Apply brake fluid to each piston (1). Push each 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.



5. Apply rubber grease to bushing; install bushing to sliding pin.
6. Apply rubber grease to sliding pins and sliding pin boots, install sliding pins and sliding pin boots to torque member.
7. Install the brake caliper to the vehicle. Refer to [BR-39, "BRAKE CALIPER ASSEMBLY \(2 PISTON TYPE\) : Removal and Installation"](#).

INSPECTION AFTER INSTALLATION

1. Check the drag of front disc brake. If any drag is found, follow the procedure described below.
2. Remove brake pads.
3. Using a suitable tool, press the pistons into the brake caliper body.
CAUTION:
Do not damage the piston boots.
4. Install brake pads.
5. Depress the brake pedal several times.
6. Check the drag of front disc brake again. If any drag is found, disassemble the brake caliper body.
7. Burnish contact surfaces after refinishing or replacing disc rotors or if a soft pedal occurs at very low mileage. Refer to [BR-18, "Brake Burnishing"](#).

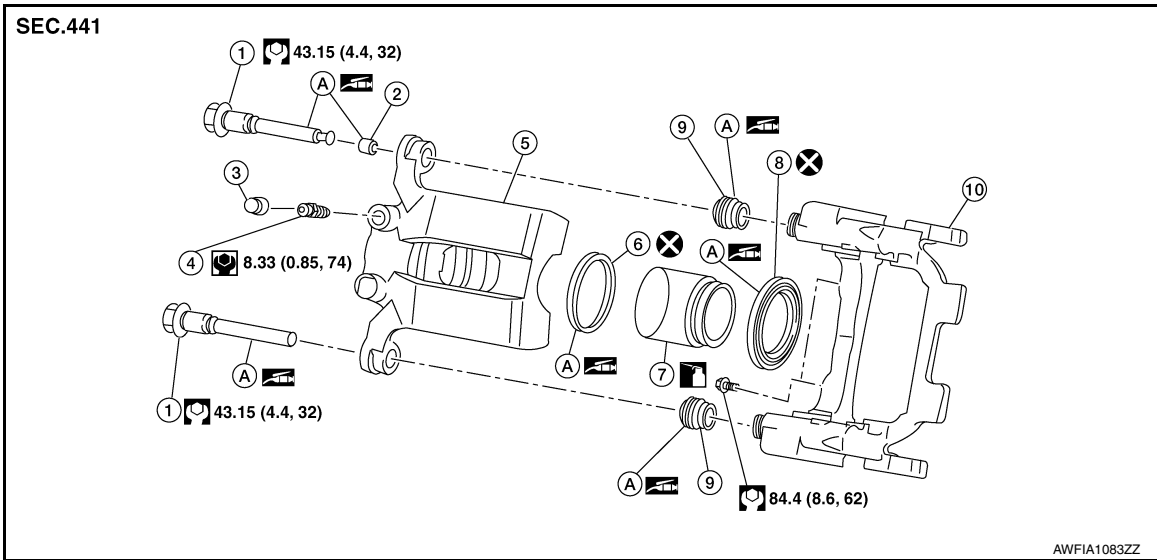
REAR DISC BRAKE

< UNIT DISASSEMBLY AND ASSEMBLY >

REAR DISC BRAKE

Exploded View

INFOID:000000010310340



- | | | |
|---------------------|-----------------------------|---------------------|
| 1. Sliding pin bolt | 2. Sliding pin bolt bushing | 3. Cap |
| 4. Bleeder valve | 5. Brake caliper body | 6. Piston seal |
| 7. Piston | 8. Piston boot | 9. Sliding pin boot |
| 10. Torque member | | |
| A. Rubber grease | | |
| Apply brake fluid | | |

Disassembly and Assembly

INFOID:000000009795773

DISASSEMBLY

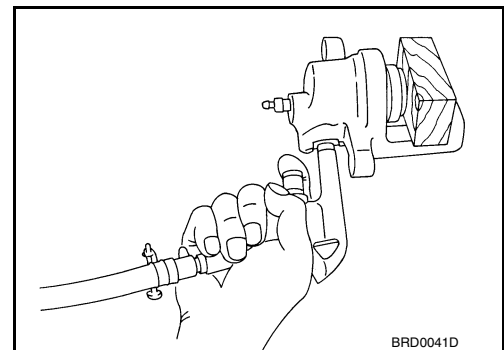
1. Remove the brake caliper from the vehicle. Refer to [BR-43, "BRAKE CALIPER ASSEMBLY : Removal and Installation"](#).
2. Remove sliding pin boots from torque member.
3. Remove sliding pin bolt bushing from sliding pin bolt.
4. Place a wooden block in the cylinder body and blow air from union bolt hole to remove piston and piston boot.

WARNING:

Do not get fingers caught between pistons and brake caliper body.

CAUTION:

Do not reuse piston boot.



REAR DISC BRAKE

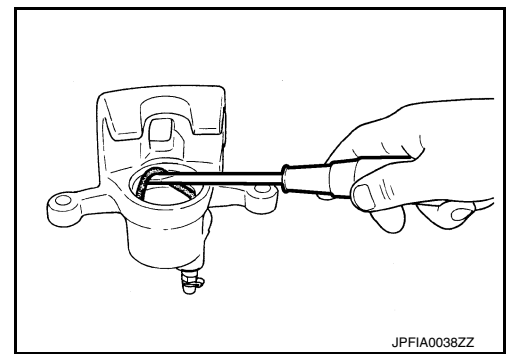
< UNIT DISASSEMBLY AND ASSEMBLY >

5. Remove piston seal from brake caliper body using suitable tool.

CAUTION:

- Do not damage cylinder inner wall.
- Do not reuse piston seal.

6. Remove bleeder valve and cap.



INSPECTION AFTER DISASSEMBLY

Brake Caliper Body

Check the inner wall of the brake caliper body for rust, wear, cracks or damage. Replace the brake caliper body if any abnormal condition is detected.

CAUTION:

Always clean with new brake fluid. Do not clean with mineral oil such as gasoline and light oil.

Torque Member

Check the torque member for rust, wear, cracks or damage. Replace the torque member if any abnormal condition is detected.

Piston

Check the surface of the piston for rust, wear, cracks or damage. Replace the piston if any abnormal condition is detected.

CAUTION:

Piston sliding surface is plated. Do not polish with sandpaper.

Sliding Pin and Sliding Pin Bolt Boot

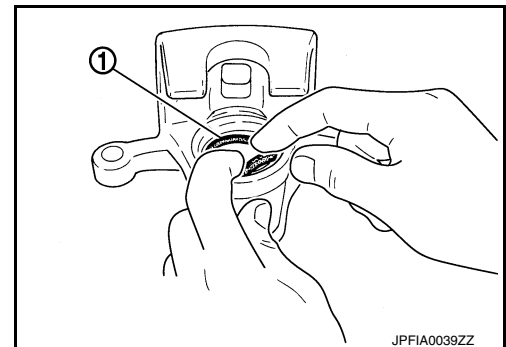
Check the sliding pins and sliding pin bolt boots for rust, wear, cracks or damage. Replace the parts if any abnormal condition is detected.

ASSEMBLY

1. Install bleeder valve and cap.
2. Apply rubber grease to piston seal (1), and install it to the brake caliper body.

CAUTION:

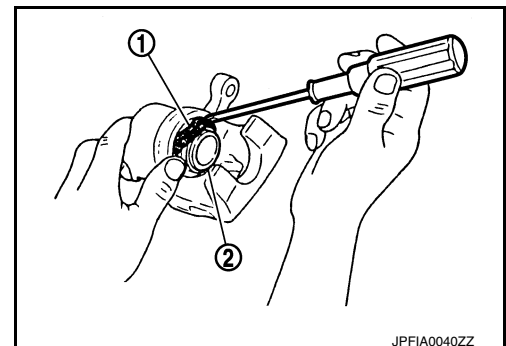
Do not reuse piston seal.



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

CAUTION:

Do not reuse piston boot.



REAR DISC BRAKE

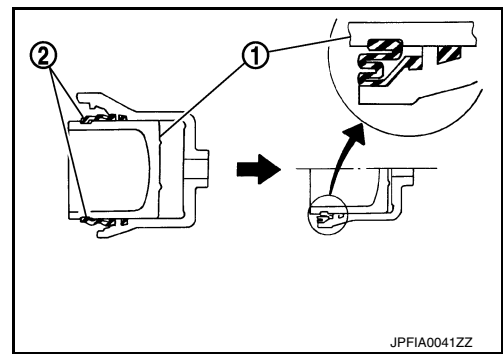
< UNIT DISASSEMBLY AND ASSEMBLY >

4. Apply brake fluid to piston (1). Push piston into brake caliper 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 contact.

5. Apply rubber grease to bushing; install bushing to sliding pin bolt.
6. Install sliding pin boots to torque member.
7. Install the brake caliper to the vehicle. Refer to [BR-43. "BRAKE CALIPER ASSEMBLY : Removal and Installation"](#).



INSPECTION AFTER INSTALLATION

1. Check the drag of rear disc brake. If any drag is found, follow the procedure described below.
2. Remove brake pads.
3. Using a suitable tool, press the pistons into the brake caliper body.
CAUTION:
Do not damage the piston boots.
4. Install brake pads.
5. Depress the brake pedal several times.
6. Check the drag of rear disc brake again. If any drag is found, disassemble the brake caliper body.
7. Burnish contact surfaces after refinishing or replacing disc rotors or if a soft pedal occurs at very low mileage. Refer to [BR-19. "Brake Burnishing"](#).

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SERVICE DATA AND SPECIFICATIONS (SDS)

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SERVICE DATA AND SPECIFICATIONS (SDS)

General Specifications

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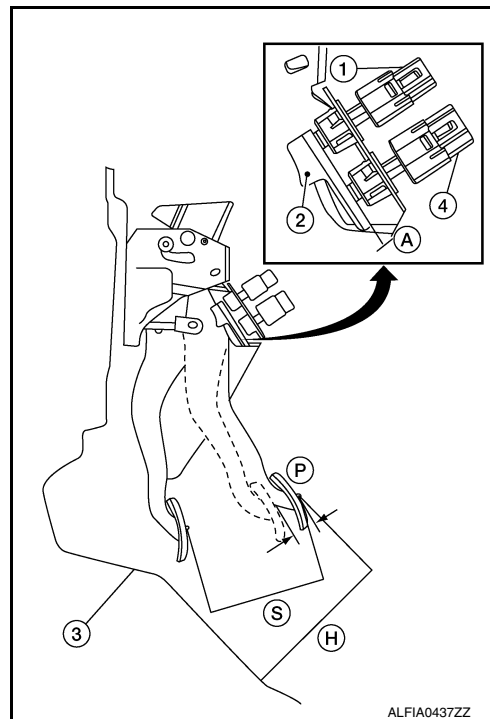
Unit: mm (in)

Front disc brake (One piston caliper)	Cylinder bore diameter	60.33 (2.375)
	Pad length × width × thickness	123.6 × 46.5 × 11.0 (4.87 × 1.870 × 0.433)
	Disc brake rotor outer diameter × thickness	296 × 26.0 (11.65 × 1.024)
Front disc brake (Two piston caliper)	Cylinder bore diameter	60.33 (2.375)
	Pad length × width × thickness	133.6 × 47.5 × 11.0 (5.26 × 1.909 × 0.433)
	Disc brake rotor outer diameter × thickness	320 × 28.0 (12.60 × 1.102)
Rear disc brake	Cylinder bore diameter	38.1 (1.5)
	Pad length × width × thickness	83.0 × 31.9 × 8.5 (3.268 × 1.256 × 0.335)
	Disc brake rotor outer diameter × thickness	292 × 16.0 (11.50 × 0.630)
Master cylinder	Cylinder bore diameter	23.8 (15/16)
Control valve	Valve type	Electric brake force distribution
Recommended brake fluid		Refer to MA-11. "Fluids and Lubricants"

Brake Pedal

INFOID:000000009795776

Unit: mm (in)



Item	Standard
Brake pedal height (H)	175.9 – 185.9 (9.63 – 7.32)
Clearance (A) between brake pedal stopper bracket (2), stop lamp switch (4) and brake pedal position switch (1) contact ends	0.20 – 1.96 (0.0079 – 0.0772)
Brake pedal full stroke (S)	135.1 (5.32)
Brake pedal play	—

SERVICE DATA AND SPECIFICATIONS (SDS)

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Brake Booster

INFOID:000000009795777

Unit: mm (in)

Item	Standard
Input rod length	Pre-adjusted by supplier

Front Disc Brake

INFOID:000000009795778

Unit: mm (in)

Item	Limit	
Brake pad Wear limit thickness	2.0 (0.079)	
Disc brake rotor Wear limit thickness	24.0 (0.945)	
	Thickness variation (measured at 8 positions)	0.020 (0.0008)
	Runout limit (with it attached to the vehicle)	0.035 (0.0014)

Rear Disc Brake

INFOID:000000009795779

Unit: mm (in)

Item	Limit	
Brake pad Wear limit thickness	1.5 (0.059)	
Disc brake rotor Wear limit thickness	14.0 (0.551)	
	Thickness variation (measured at 8 positions)	0.020 (0.0008)
	Runout limit (with it attached to the vehicle)	0.070 (0.0028)

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