

SECTION BR
BRAKE SYSTEM

A
 B
 C
 D
 E
 BR
 G
 H
 I
 J
 K
 L
 M
 N
 O
 P

CONTENTS

SERVICE INFORMATION	2	BRAKE BOOSTER	21
PRECAUTIONS	2	On-Vehicle Service	21
Precaution for Supplemental Restraint System (SRS) "AIR BAG" and "SEAT BELT PRE-TEN- SIONER"	2	Removal and Installation	21
Precaution for Brake System	2	VACUUM LINES	23
Wiring Diagram and Trouble Diagnosis	2	Removal and Installation	23
PREPARATION	3	Inspection	23
Special Service Tool	3	FRONT DISC BRAKE	25
Commercial Service Tool	3	Component	25
NOISE, VIBRATION, AND HARSHNESS (NVH) TROUBLESHOOTING	4	On Board Inspection	26
NVH Troubleshooting Chart	4	Removal and Installation of Brake Pad	26
BRAKE PEDAL	5	Removal and Installation of Caliper Assembly and Disc Rotor	27
Inspection and Adjustment	5	Disassembly and Assembly of Caliper Assembly....	28
Removal and Installation	7	Brake Burnishing	30
BRAKE FLUID	10	REAR DISC BRAKE	32
Checking Brake Fluid Level	10	Component	32
Changing Brake Fluid	10	On Board Inspection	33
Bleeding Brake System	10	Removal and Installation of Brake Pad	33
BRAKE PIPING AND HOSE	11	Removal and Installation of Caliper Assembly and Disc Rotor	34
Hydraulic Circuit	11	Disassembly and Assembly of Caliper Assembly....	35
Front Brake Piping and Hose	11	Brake Burnishing	37
Rear Brake Piping and Hose	12	SERVICE DATA AND SPECIFICATIONS (SDS)	39
Inspection	13	General Specification	39
BRAKE MASTER CYLINDER	14	Brake Pedal	39
On Board Inspection	14	Check Valve	40
Removal and Installation	14	Brake Booster	40
Disassembly and Assembly	15	Disc Brake	40

PRECAUTIONS

< SERVICE INFORMATION >

SERVICE INFORMATION

PRECAUTIONS

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

INFOID:000000004695546

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. This system includes seat belt switch inputs and dual stage front air bag modules. The SRS system uses the seat belt switches to determine the front air bag deployment, and may only deploy one front air bag, depending on the severity of a collision and whether the front occupants are belted or unbelted. Information necessary to service the system safely is included in the SRS and SB section of this Service Manual.

WARNING:

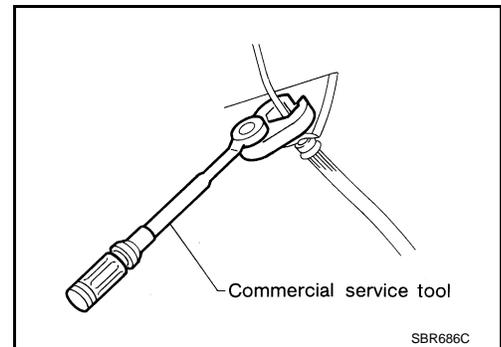
- To avoid rendering the SRS inoperative, which could increase the risk of personal injury or death in the event of a collision which would result in air bag inflation, all maintenance must be performed by an authorized NISSAN/INFINITI dealer.
- Improper maintenance, including incorrect removal and installation 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 SRS 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.

Precaution for Brake System

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CAUTION:

- Recommended fluid is brake fluid. Refer to [MA-12, "Fluids and Lubricants"](#).
- Never reuse drained brake fluid.
- Be careful not to 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.
- To clean or wash all parts of master cylinder and disc brake caliper, use clean brake fluid.
- Never use mineral oils such as gasoline or kerosene. They will ruin rubber parts of the hydraulic system.
- Use flare nut wrench when removing and installing brake tube.
- If a brake fluid leak is found, the part must be disassembled without fail. Then it has to be replaced with a new one if a defect exists.
- Turn the ignition switch OFF and remove the connector of the ABS actuator control unit or the battery terminal before performing the work.
- Always tighten brake lines to specified torque when installing.
- Burnish the brake contact surfaces after refinishing or replacing rotors, after replacing pads, or if a soft pedal occurs at very low mileage.



Refer to [BR-30, "Brake Burnishing"](#) (front disc brakes) or [BR-37, "Brake Burnishing"](#) (rear disc brakes).

WARNING:

- Clean brake pads and shoes with a waste cloth, then wipe with a dust collector.

Wiring Diagram and Trouble Diagnosis

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For wiring diagrams or trouble diagnosis relating to the brake system, refer to BRC section.

PREPARATION

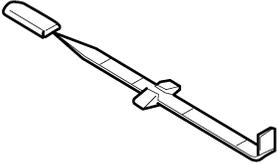
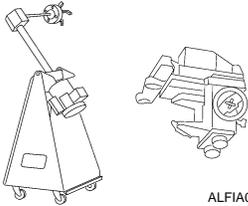
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PREPARATION

Special Service Tool

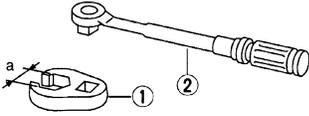
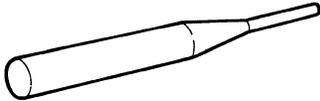
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The actual shapes of Kent-Moore tools may differ from those of special service tools illustrated here.

Tool number (Kent-Moore No.) Tool name	Description
<p>— (J-46532) Brake and clutch pedal height measurement tool</p>  <p style="text-align: right;">LFIA0227E</p>	Measuring brake pedal height
<p>38-PFM90.5 (—) Pro-Cut PFM 90 On-Car Brake Lathe</p>  <p style="text-align: right;">ALFIA0092ZZ</p>	Turning rotors

Commercial Service Tool

INFOID:000000004278893

Tool name	Description
<p>1 Flare nut crowfoot 2 Torque wrench</p>  <p style="text-align: right;">S-NT360</p>	Removing and installing each brake piping a: 10 mm (0.39 in)
<p>Power tool</p>  <p style="text-align: right;">PIIB1407E</p>	Loosening bolts and nuts
<p>Pin punch</p>  <p style="text-align: right;">ZZA0515D</p>	Removing and installing reservoir tank pin Tip diameter: 4 mm (0.16 in) diameter

NOISE, VIBRATION, AND HARSHNESS (NVH) TROUBLESHOOTING

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NOISE, VIBRATION, AND HARSHNESS (NVH) TROUBLESHOOTING

NVH Troubleshooting Chart

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

Symptom		Possible cause and SUSPECTED PARTS															
		Pads - damaged	Pads - uneven wear	Shims damaged	Rotor imbalance	Rotor damage	Rotor runout	Rotor deformation	Rotor deflection	Rotor rust	Rotor thickness variation	DRIVE SHAFT	AXLE	SUSPENSION	TIRES	ROAD WHEEL	STEERING
Reference page	Noise	×	×	×								×	×	×	×	×	×
	Shake				×							×	×	×	×	×	×
	Shimmy				×	×	×	×	×	×		×	×	×	×	×	×
	Shudder				×	×	×	×	×	×	×	×	×	×	×	×	×
		BR-25 , BR-32	BR-26 , BR-33	BR-25 , BR-32	BR-28 , BR-35	BR-25 , BR-32	BR-28 , BR-35	BR-28 , BR-35	BR-28 , BR-35	BR-30 , BR-37	BR-28 , BR-35	FAX-4 , "NVH Troubleshooting Chart"	FAX-4 , "NVH Troubleshooting Chart" , RAX-4 , "NVH Troubleshooting Chart"	FSU-5 , "NVH Troubleshooting Chart" , RSU-4 , "NVH Troubleshooting Chart"	WT-4 , "NVH Troubleshooting Chart"	WT-4 , "NVH Troubleshooting Chart"	PS-5 , "NVH Troubleshooting Chart"

×: Applicable

BRAKE PEDAL

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BRAKE PEDAL

Inspection and Adjustment

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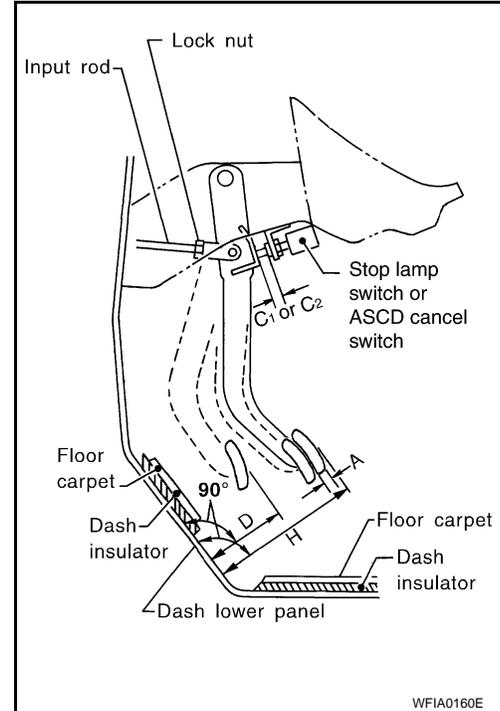
INSPECTION

1. If equipped with adjustable pedals, move the brake pedal to the forward most position (closest to the floor).
2. Inspect the brake pedal height, play, and switch clearance from the dash lower panel as shown.

CAUTION:

When equipped with adjustable pedals, the brake pedal must be set in the forward most position (closest to the floor) for checking the brake pedal specifications.

Tool number : — (J-46532)



Free height "H"	156.3 - 166.3 mm (6.15 - 6.55 in)
Depressed pedal height "D" under a force of 490 N (50 kg, 110 lb) with engine running	More than 90.3 mm (3.55 in)
Clearance between pedal stopper and threaded end of stop lamp switch and ASCD cancel switch "C1" or "C2"	0.74 - 1.96 mm (0.029 - 0.077 in)
Pedal play "A"	3 - 11 mm (0.12 - 0.43 in)

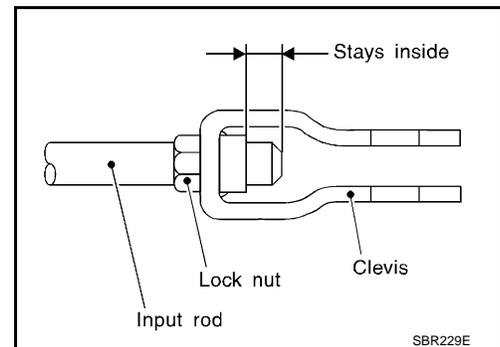
3. Adjust the brake pedal as necessary.

ADJUSTMENT

1. Loosen the stop lamp switch and ASCD cancel switch by turning 45° counterclockwise.
2. Loosen the lock nut on the input rod.

CAUTION:

Make sure that the screw portion of the end of input rod is located inside the clevis as shown.

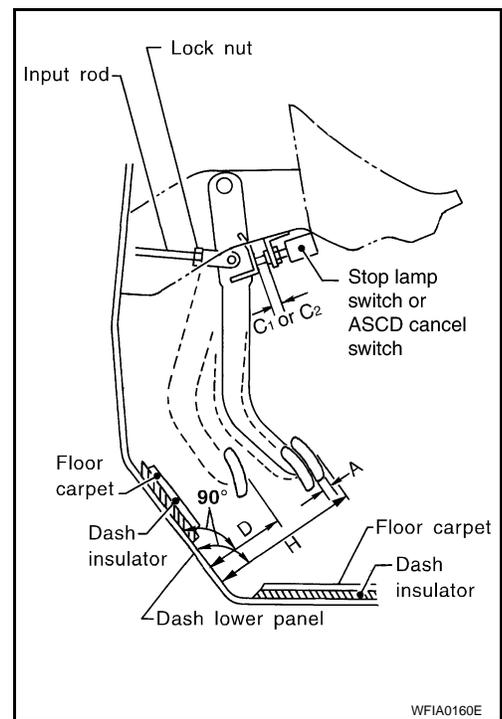


BRAKE PEDAL

< SERVICE INFORMATION >

- Turn input rod to adjust the brake pedal to the specified height. When the brake pedal is adjusted to specification, tighten the lock nut to specification. Refer to [BR-21. "Removal and Installation"](#).

Tool number : — (J-46532)



WFIA0160E

Free height "H"	156.3 - 166.3 mm (6.15 - 6.55 in)
Depressed pedal height "D" under a force of 490 N (50 kg, 110 lb) with engine running	More than 90.3 mm (3.55 in)
Clearance between pedal stopper and threaded end of stop lamp switch and ASCD cancel switch "C1" or "C2"	0.74 - 1.96 mm (0.029 - 0.077 in)
Pedal play "A"	3 - 11 mm (0.12 - 0.43 in)

- With the pedal pulled up and held by hand, press the stop lamp switch and the ASCD cancel switch in until the threaded ends contact the rubber stops.
- With the threaded ends of the stop lamp switch and ASCD cancel switch contacting the rubber stops, turn the switches 45° clockwise to lock them in place.

CAUTION:
Make sure that the gap "C1" and "C2" between the rubber stops and switch ends are within specification.
- Check the pedal play "A".

CAUTION:
Make sure that the stop lamp goes off when the pedal is released.
- Start the engine and check the height of the brake pedal when depressing it.

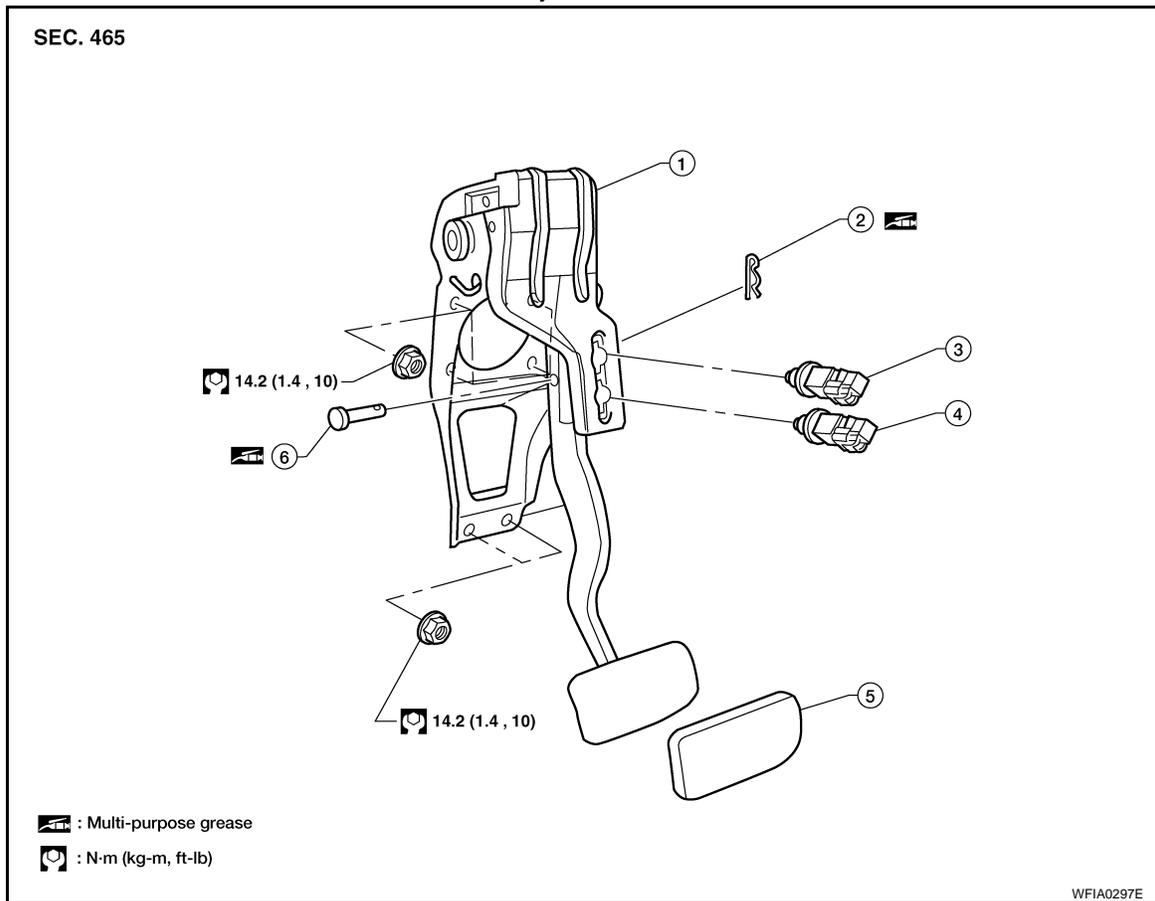
BRAKE PEDAL

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Removal and Installation

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Non-adjustable Pedal



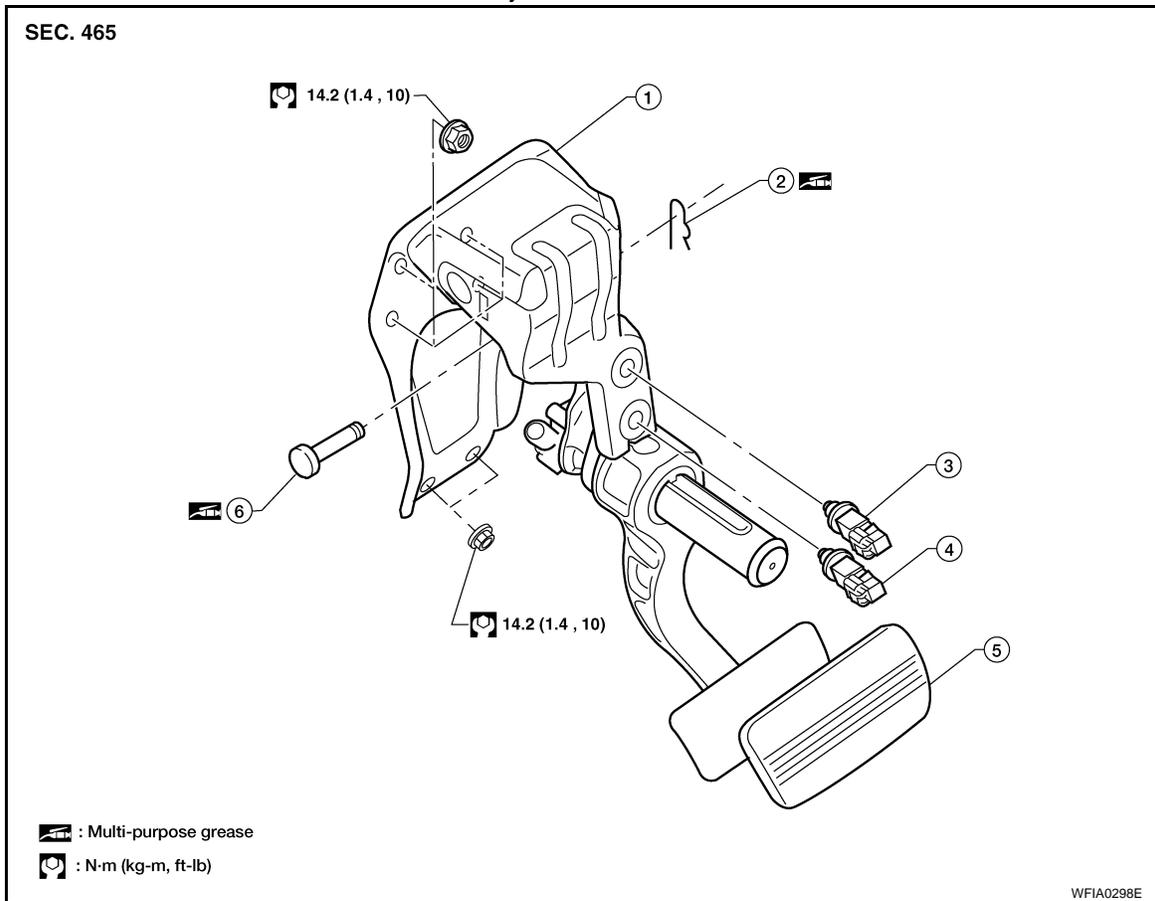
- | | | |
|-------------------------|--------------|-----------------------|
| 1. Brake pedal assembly | 2. Snap pin | 3. ASCD cancel switch |
| 4. Stop lamp switch | 5. Pedal pad | 6. Clevis pin |

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BRAKE PEDAL

< SERVICE INFORMATION >

Adjustable Pedal



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

WARNING:

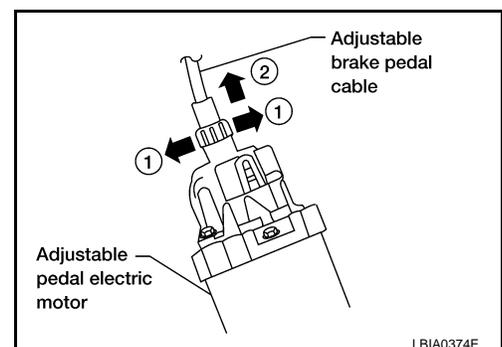
Do not damage the brake tube.

CAUTION:

- Before removal and installation the accelerator and brake pedals (adjustable type only) must be in the forward most position (closest to the floor). This is to align the base position of the accelerator and brake pedals (adjustable type only).
- Do not disassemble the brake pedal adjusting mechanism (adjustable type only).
- Avoid damage from dropping the brake pedal assembly during handling.
- Keep the brake pedal assembly away from water.

REMOVAL

1. Remove the instrument lower panel LH. Refer to [IP-12, "Instrument Lower Panel LH"](#).
2. Remove the stop lamp switch and ASCD cancel switch from the brake pedal assembly by turning 45° degrees.
3. If equipped with the adjustable pedal, disconnect the adjustable brake pedal cable from the adjustable pedal electric motor.
 - Unlock (1) then pull (2) the adjustable brake pedal cable to disconnect it from the adjustable pedal electric motor as shown.



BRAKE PEDAL

< SERVICE INFORMATION >

4. Remove snap pin and clevis pin from the brake booster clevis.
5. Remove nuts and the brake pedal assembly. Support the brake booster and master cylinder at the bulk-head so as not to damage the brake tubes.

CAUTION:

- **Before removal and installation, the accelerator and brake pedals must be in the forward most position (closest to the floor). This is to align the base position of the accelerator and brake pedals (adjustable type only) for installation.**
- **Do not disassemble the brake pedal adjusting mechanism (adjustable type only).**
- **Avoid damage from dropping the brake pedal assembly during handling.**
- **Keep the brake pedal assembly away from water.**

INSPECTION AFTER REMOVAL

Check brake pedal for following items.

- Clevis pin deformation
- Crack of any welded portion
- Brake pedal bent or damaged

INSTALLATION

Installation is in the reverse order of removal.

- Check the brake pedal for smooth operation. There should be no binding or sticking when applying or releasing the brake pedal.
- If equipped, check the brake pedal adjustable feature for smooth operation. There should be no binding or sticking when adjusting the brake pedal forward or backward.
- After installing the brake pedal assembly, adjust as necessary. Refer to [BR-5, "Inspection and Adjustment"](#).

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BRAKE FLUID

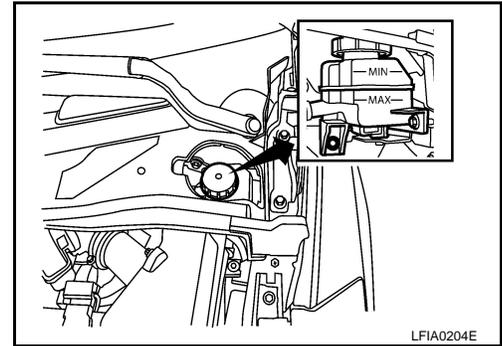
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BRAKE FLUID

Checking Brake Fluid Level

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- Check fluid level in the sub tank. It should be between “MAX” and “MIN” lines on the sub tank.
- Visually check around the reservoir tank and sub tank for leaks.
- If fluid level is extremely low, check brake system for leaks.
- Release parking brake lever and see if brake warning lamp goes off. If not, check brake system for leaks.



Changing Brake Fluid

INFOID:000000004278898

CAUTION:

- Refill with new brake fluid. Refer to [MA-12, "Fluids and Lubricants"](#).
- Always keep fluid level higher than “MIN” line on sub tank.
- Never reuse drained brake fluid.
- Be careful not to 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.

1. Connect a vinyl tube and container to the air bleeder.
2. Depressing the brake pedal, drain the brake fluid gradually from the air bleeder of each wheel.
3. Turn the ignition switch to OFF. Disconnect the ABS actuator and control unit connector or negative battery terminal.
4. Clean the inside of the sub tank, and refill the sub tank with new brake fluid.
5. Bleed the brake system refilling the system with new fluid. Refer to [BR-10, "Bleeding Brake System"](#).

Bleeding Brake System

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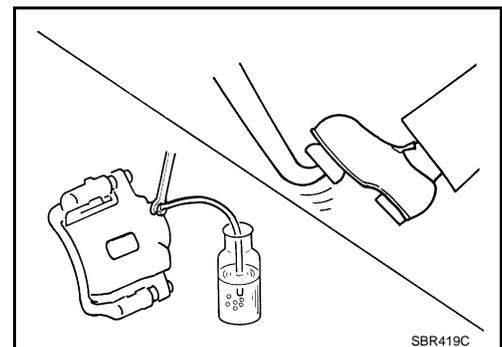
CAUTION:

- Carefully monitor brake fluid level at the sub tank during bleeding operation.
- Fill the sub tank with new brake fluid. Refer to [MA-12, "Fluids and Lubricants"](#). Make sure it is full at all times while bleeding the air out of system.
- Place a container under the sub tank to avoid spilling brake fluid.
- Do not loosen the line fittings at the ABS actuator during air bleeding.

1. Turn ignition switch OFF and disconnect ABS actuator and control unit connector or negative battery terminal.
2. Connect a transparent vinyl tube and container to air bleeder valve.
3. Fully depress brake pedal several times.
4. With brake pedal depressed, open air bleeder valve to release air.
5. Close air bleeder valve.
6. Release brake pedal slowly.
7. Tighten air bleeder valve to specification.

Air bleeder valve : Refer to [BR-25, "Component" \(front\)](#), [BR-32, "Component" \(rear\)](#).

8. Repeat steps 2 through 7 until no more air bubbles come out of air bleeder valve.
9. Bleed the brake hydraulic system air bleeder valves in the following order:
Right rear brake → Left front brake → Left rear brake → Right front brake



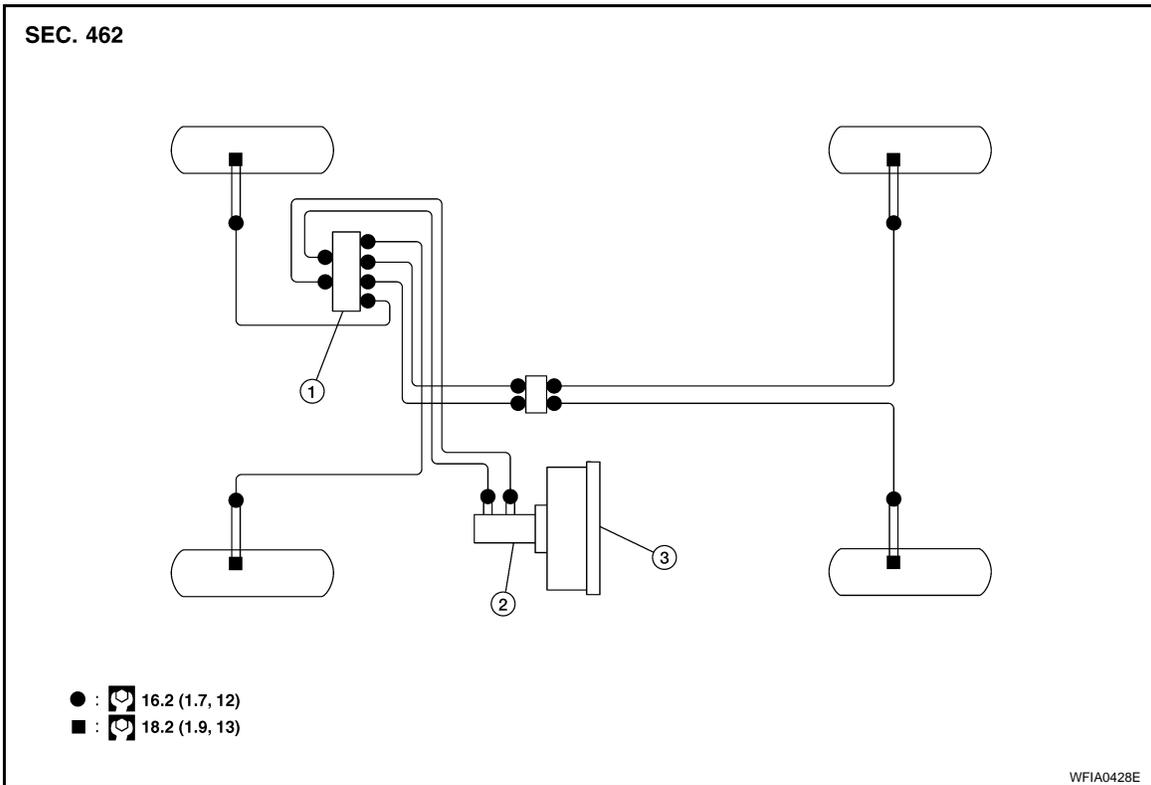
BRAKE PIPING AND HOSE

< SERVICE INFORMATION >

BRAKE PIPING AND HOSE

Hydraulic Circuit

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1. Actuator
● Flare nut
2. Master Cylinder
■ Union Bolt
3. Brake Booster

Front Brake Piping and Hose

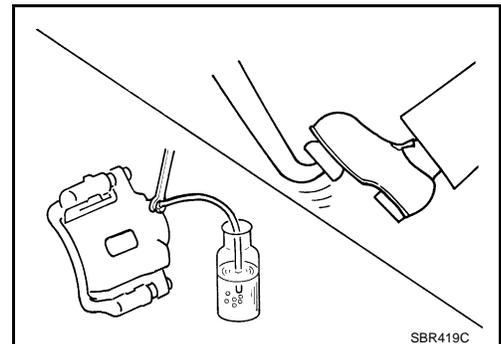
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REMOVAL

CAUTION:

- Be careful not to 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.
- All hoses must be free from excessive bending, twisting and pulling.
- Cover the open end of lines and hoses when disconnecting to prevent entrance of dirt.

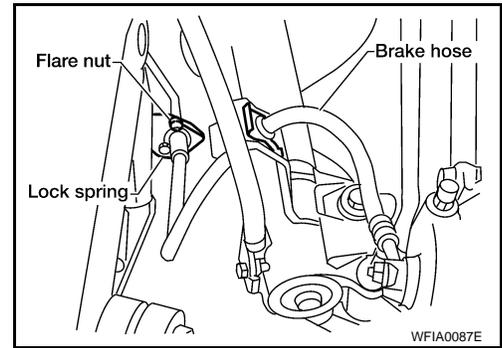
1. Connect vinyl tube and container to air bleeder valve.
2. Drain brake fluid from each air bleeder valve by depressing brake pedal.



BRAKE PIPING AND HOSE

< SERVICE INFORMATION >

3. Remove the flare nut connecting the brake tube and hose, then withdraw the lock spring.
4. Remove the connecting bolt and disconnect the brake hose from the caliper assembly.
5. Remove lock springs from the mounting portion of the brake tube and the mounting portion of the strut.



INSTALLATION

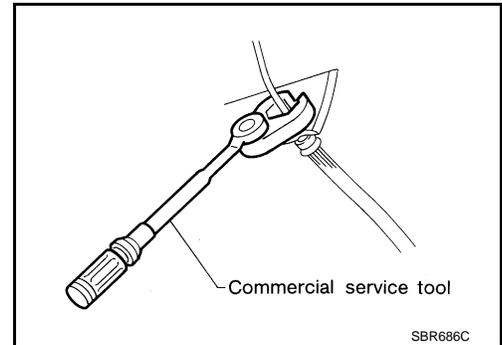
CAUTION:

- Refill with new brake fluid. Refer to [MA-12, "Fluids and Lubricants"](#).
- Never reuse drained brake fluid.

1. Attach the brake hose to the caliper assembly, then temporarily tighten the connecting bolt by hand.

CAUTION:

- Correctly attach the brake hose to the cylinder body.
 - The copper washers of the connecting bolt have to be replaced with new ones every time the fitting is disconnected.
2. Attach the brake hose to the strut, then secure it with a lock spring.
 3. Attach the brake hose to the brake tube and temporarily tighten the flare nut as much as possible by hand, then secure it with a lock spring.
 4. Tighten all flare nuts and connecting bolts to specification. Refer to [BR-11, "Hydraulic Circuit"](#).
 5. Refill until new brake fluid comes out of each air bleeder valve.
 6. Bleed air from the brake system. Refer to [BR-10, "Bleeding Brake System"](#).



Rear Brake Piping and Hose

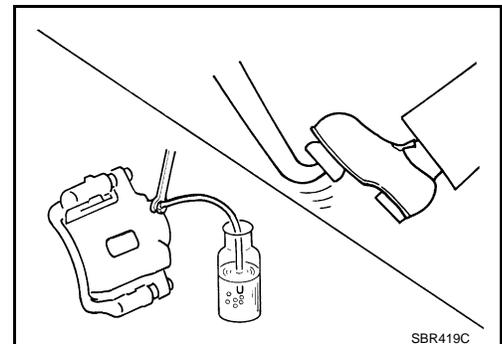
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REMOVAL

CAUTION:

- Be careful not to 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.
- All hoses must be free from excessive bending, twisting and pulling.
- Cover the open end of lines and hoses when disconnecting to prevent entrance of dirt.

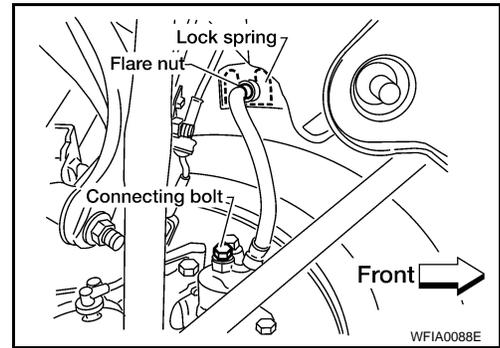
1. Connect vinyl tube and container to air bleeder valve.
2. Drain brake fluid from each air bleeder valve by depressing brake pedal.



BRAKE PIPING AND HOSE

< SERVICE INFORMATION >

3. Remove flare nut connecting brake tube and hose, then withdraw lock spring.
4. Remove connecting bolt and disconnect brake hose from caliper assembly.

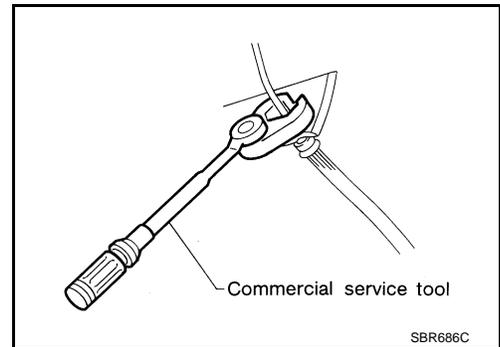


INSTALLATION

CAUTION:

- Refill with new brake fluid. Refer to [MA-12, "Fluids and Lubricants"](#).
- Never reuse drained brake fluid.

1. Attach the brake hose to the brake tube and temporarily tighten the flare nut as much as possible by hand.
2. Attach the brake hose with a lock spring, then tighten the connecting bolt and flare nut using a torque wrench to specification. Refer to [BR-11, "Hydraulic Circuit"](#).
3. Refill until new brake fluid comes out of each air bleeder valve.
4. Bleed air from the brake system. Refer to [BR-10, "Bleeding Brake System"](#).

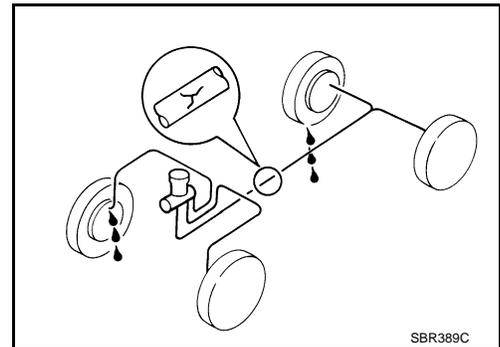


Inspection

CAUTION:

If leakage occurs around hose and tube connections, retighten or, if necessary, replace damaged parts.

1. Check brake lines (tubes and hoses) for leaks, cracks, distortion, deformation, without interfering with other parts or loosening connecting parts, deterioration or other damage. Replace any damaged parts.
2. Apply a stepping force of 784 N (80 kg-f, 176 lb-f) to the brake pedal with the engine running and keep it for about 5 seconds, then check each part for leaks.



BRAKE MASTER CYLINDER

< SERVICE INFORMATION >

BRAKE MASTER CYLINDER

On Board Inspection

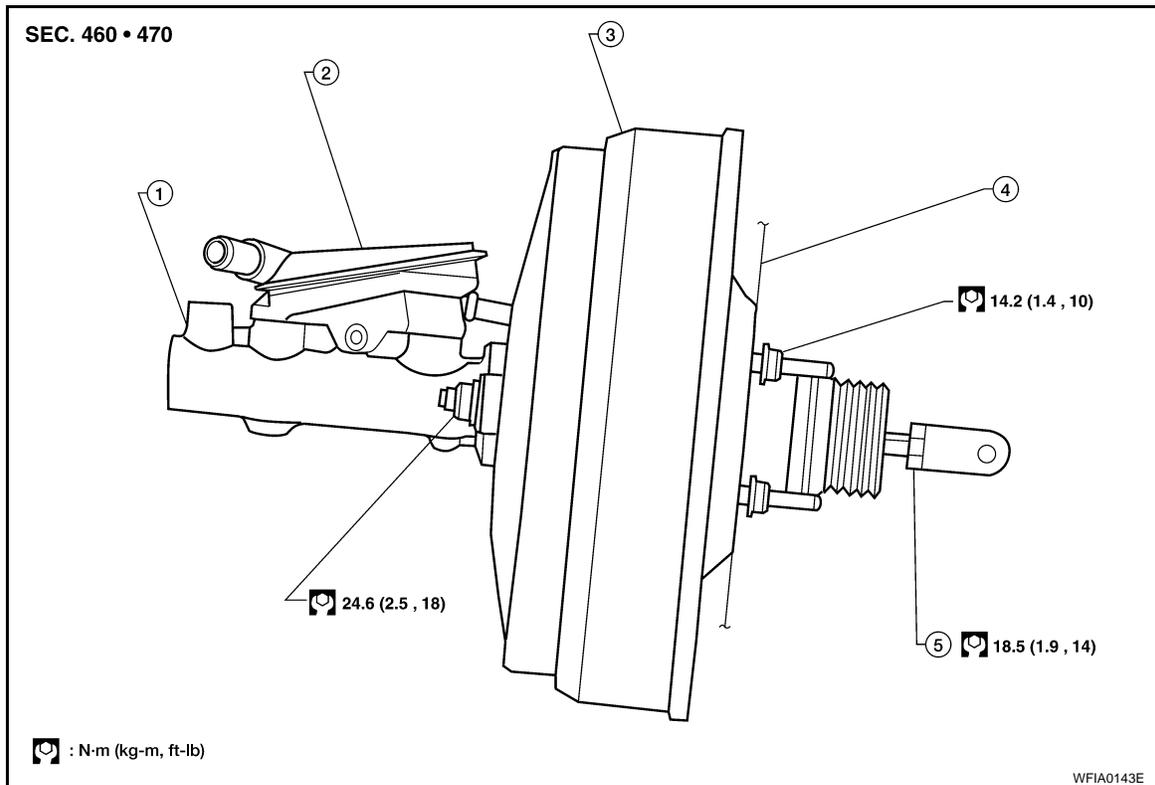
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LEAK INSPECTION

- Check for leaking in the master cylinder installation surface, the reservoir tank installation surface, the reservoir hose connections, and the brake tube connections.

Removal and Installation

INFOID:000000004278905



1. Master cylinder
2. Reservoir tank
3. Brake booster
4. Gasket
5. Lock nut

CAUTION:

Be careful not to splash brake fluid on painted areas, it may cause damage. If brake fluid is splashed on painted areas, wash it away with water immediately.

REMOVAL

1. Remove the cowl top and cowl top extension. Refer to [EI-18. "Removal and Installation"](#).
2. Drain the brake fluid. Refer to [BR-10. "Changing Brake Fluid"](#).
3. Remove the air cleaner to electric throttle control actuator tube attached to air cleaner case (upper). Refer to [EM-15. "Removal and Installation"](#).
4. Disconnect the harness connector for the brake fluid level switch.
5. Disconnect the master cylinder brake tubes and the hose from the reservoir tank to the sub tank using a suitable tool.
6. Remove the master cylinder nuts and remove the master cylinder.

INSTALLATION

CAUTION:

- Refill with new brake fluid. Refer to [MA-12. "Fluids and Lubricants"](#).
- Never reuse drained brake fluid.

1. Place master cylinder onto brake booster and tighten the master cylinder nuts to specification.

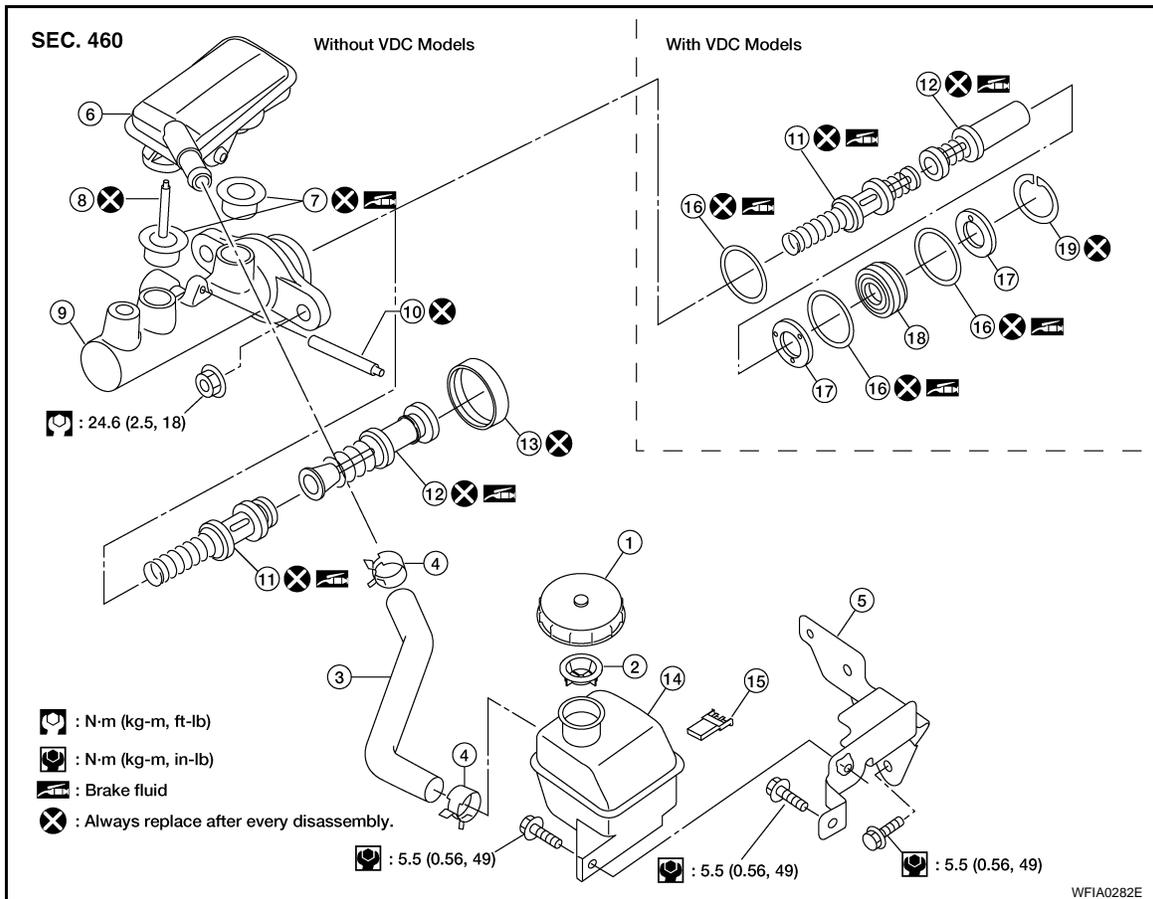
BRAKE MASTER CYLINDER

< SERVICE INFORMATION >

2. Connect the sub tank hose to the master cylinder reservoir tank and fill the sub tank with new brake fluid.
3. Plug all ports on master cylinder with your fingers to prevent air suction while releasing brake pedal.
4. Have an assistant depress brake pedal slowly several times until no air comes out of the master cylinder.
 - Install and tighten brake tube flare nuts to specification. Refer to [BR-11, "Hydraulic Circuit"](#).
 - Refill the brake system fluid and bleed the air from the brake system. Refer to [BR-10, "Bleeding Brake System"](#).
5. Installation of the remaining components is in reverse order of removal.

Disassembly and Assembly

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- | | | |
|------------------|-------------------------------|------------------------------|
| 1. Reservoir cap | 2. Oil strainer | 3. Hose |
| 4. Clamp | 5. Bracket | 6. Reservoir tank |
| 7. Grommet | 8. Piston stopper | 9. Cylinder body |
| 10. Pin | 11. Secondary piston assembly | 12. Primary piston assembly |
| 13. Stopper cap | 14. Sub tank | 15. Brake fluid level switch |
| 16. O-ring | 17. Plate | 18. Guide |
| 19. Snap ring | | |

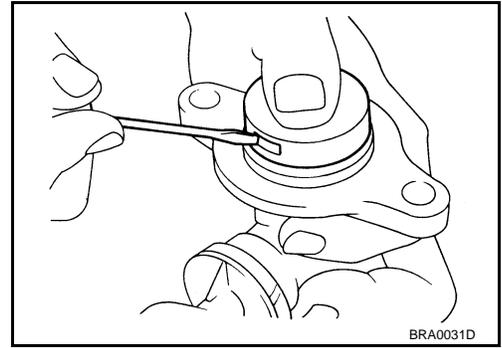
WITHOUT VDC MODELS

Disassembly

BRAKE MASTER CYLINDER

< SERVICE INFORMATION >

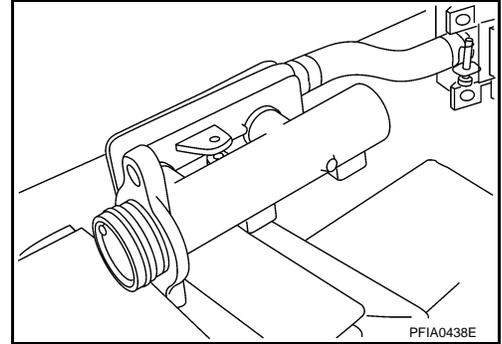
1. Lift up the tabs on the stopper cap and remove it from the master cylinder using a suitable tool as shown. The piston inside the master cylinder might pop out when this is done, so hold the stopper cap down at the same time.



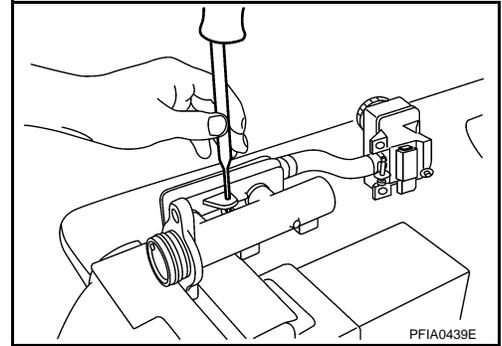
2. Place the side flange of cylinder body with chamfering around the pin insertion hole facing up, and firmly set master cylinder assembly in a vise.

CAUTION:

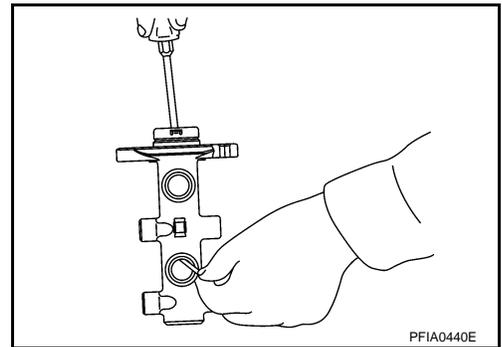
- When setting the master cylinder assembly with the vise, be sure not to over-tighten.
- When securing with a vise, use copper plates or cloth to protect the flange.



3. Remove pin on the reservoir tank, using a suitable tool [commercial service tool: diameter approx. 4 mm (0.16 in)].
4. Remove master cylinder assembly from the vise.
5. Remove reservoir tank and grommets from cylinder body.



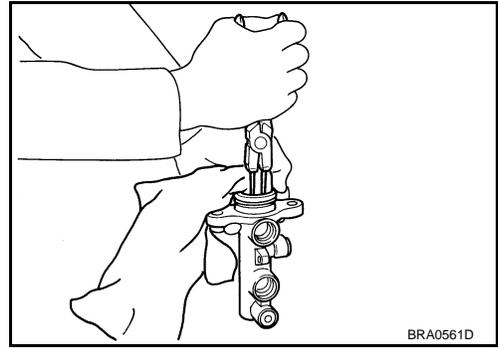
6. Remove brake fluid level switch from reservoir tank, if necessary.
7. Push in the piston and remove the piston stopper from the cylinder body using a suitable tool.



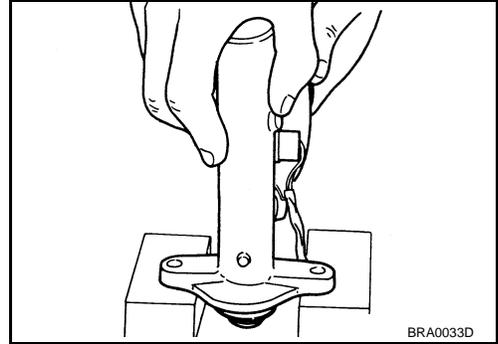
BRAKE MASTER CYLINDER

< SERVICE INFORMATION >

8. Carefully pull the primary piston assembly straight out to prevent cylinder inner wall from being damaged using a suitable tool.



9. Tap flange using a soft block such as wood, and carefully pull the secondary piston assembly straight out to prevent cylinder inner wall from being damaged.



Inspection After Disassembly

Master cylinder

Check that there is no damage, friction, rusting, or pinholes on the cylinder inner wall, and replace if there are any non-standard conditions.

Piston

Check cup for damage. Replace the piston if damage is found.

Assembly

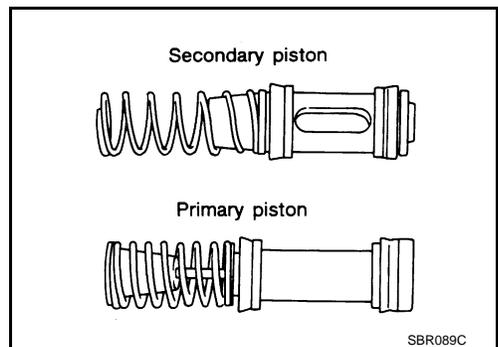
CAUTION:

- Never use mineral oils such as kerosene, gasoline during the cleaning and assembly process.
- Make sure there is no foreign matter such as dirt or dust attached to the inner cylinder walls, the piston, or the cap seal, and use care to avoid damaging parts with the assembly tools.
- Do not drop parts. If a part is dropped, do not use it.

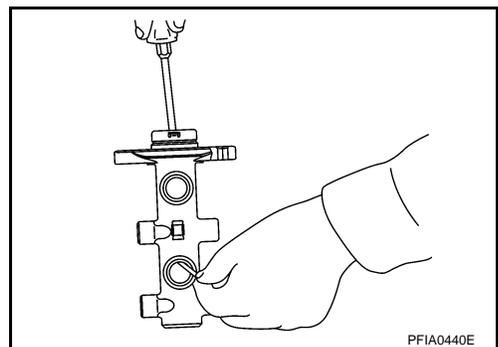
1. Apply fluid to cylinder inner wall body and contact surface of the piston assembly. Then insert secondary piston assembly and primary piston assembly into cylinder body in this order.

CAUTION:

- Do not reuse the primary and secondary piston assemblies.
- Be sure to replace the assembly without disassembling the new inner kit.
- Pay attention to the orientation of the piston cup, and insert straight to prevent the cup from being caught by cylinder inner wall.



2. Perform a visual inspection of the secondary piston slit through the tank boss hole on the secondary side of the cylinder body, and install the piston stopper using a suitable tool.



BRAKE MASTER CYLINDER

< SERVICE INFORMATION >

3. Holding down the piston with the stopper cap, push the stopper cap tabs so they are firmly into the cylinder grooves, then attach the stopper cap.

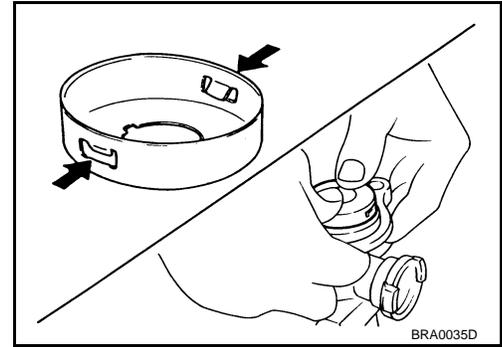
CAUTION:

Do not reuse the stopper cap.

4. Apply brake fluid to the grommets and attach to the cylinder body.

CAUTION:

Do not reuse the grommets.

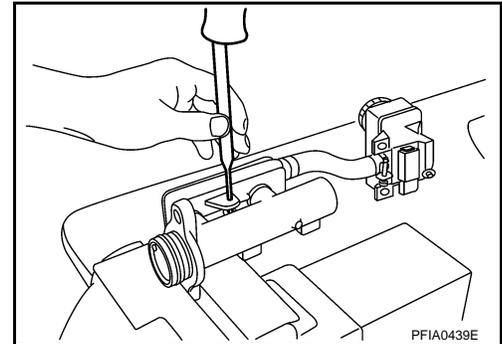


5. Place master cylinder assembly in a vise as described in disassembly step 2.

6. Install the reservoir tank pin so that the pin is evenly seated on both sides of the reservoir, using a suitable tool [commercial service tool: diameter approx. 4 mm (0.16 in)].

CAUTION:

Do not reuse reservoir tank grommets and pin.



7. If necessary, install brake fluid level switch.

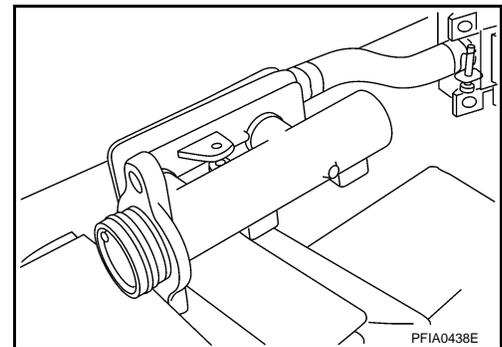
WITH VDC MODELS

Disassembly

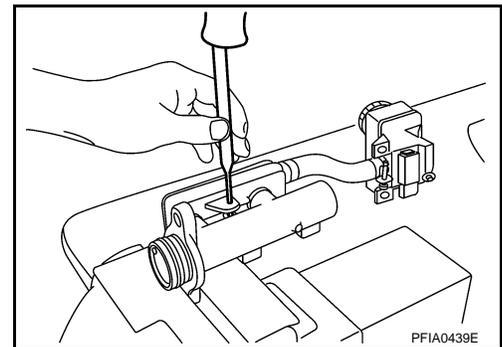
1. Place the side flange of cylinder body with chamfering around the pin insertion hole facing up, and firmly set master cylinder assembly in a vise.

CAUTION:

- When setting the master cylinder assembly with the vise, be sure not to over-tighten.
- When securing with a vise, use copper plates or cloth to protect the flange.



2. Remove pin on the reservoir tank, using a suitable tool [commercial service tool: diameter approx. 4 mm (0.16 in)].
3. Remove master cylinder assembly from the vise.
4. Remove reservoir tank and grommets from cylinder body.



5. Remove brake fluid level switch from reservoir tank, if necessary.

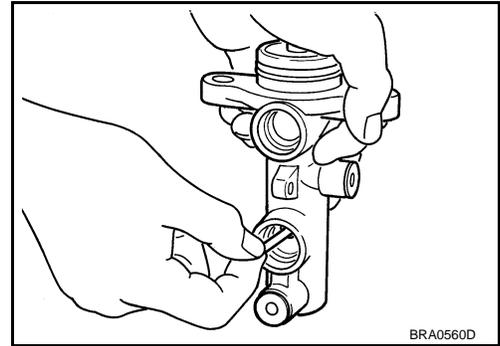
BRAKE MASTER CYLINDER

< SERVICE INFORMATION >

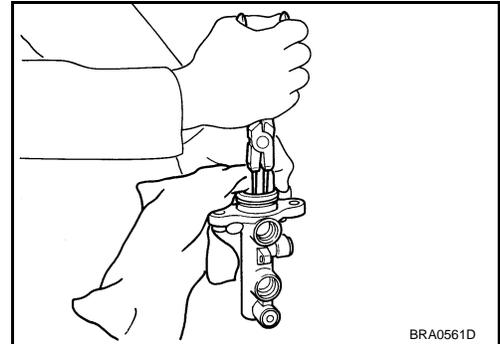
6. Push in the primary piston and remove the piston stopper from the cylinder body.

CAUTION:

Be careful not to damage the inner wall of the cylinder.



7. Carefully pull the primary piston assembly straight out to prevent cylinder inner wall from being damaged using a suitable tool.



8. Holding the rod of the primary piston, remove the primary piston assembly, the plate and the guide.

CAUTION:

Pull components straight out to prevent cylinder inner wall from being damaged.

9. Remove the plate and guide from the primary piston.

CAUTION:

Be careful not to damage the rod on the inner wall of the plate.

Inspection After Disassembly

Master cylinder

Check that there is no damage, friction, rusting, or pinholes on the cylinder inner wall, and replace if there are any non-standard conditions.

Piston

Check cup for damage. Replace the piston if damage is found.

Assembly

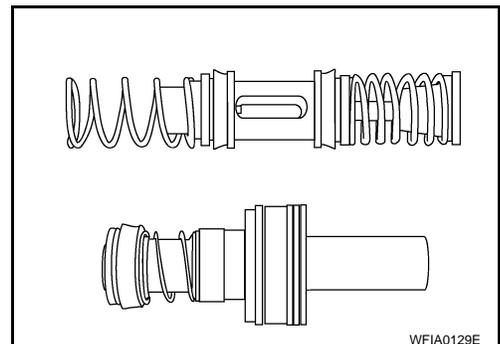
CAUTION:

- Never use mineral oils such as kerosene, gasoline during the cleaning and assembly process.
- Make sure there is no foreign matter such as dirt or dust attached to the inner cylinder walls, the piston, or the cap seal, and use care to avoid damaging parts with the assembly tools.
- Do not drop parts. If a part is dropped, do not use it.

1. Apply fluid to cylinder inner wall body and contact surface of the piston assembly. Then insert secondary piston assembly and primary piston assembly into cylinder body.

CAUTION:

- Pay attention to the orientation of the piston cups. Also, insert pistons squarely to prevent scratching the cylinder inner wall.
- Always replace the inner kit as an assembly.

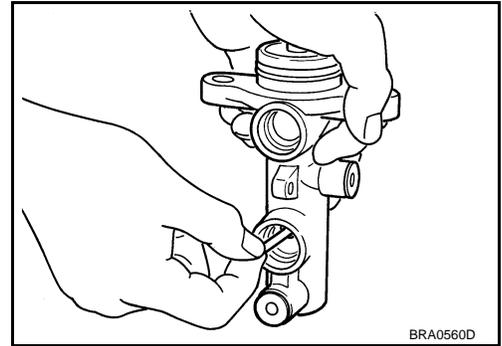


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BRAKE MASTER CYLINDER

< SERVICE INFORMATION >

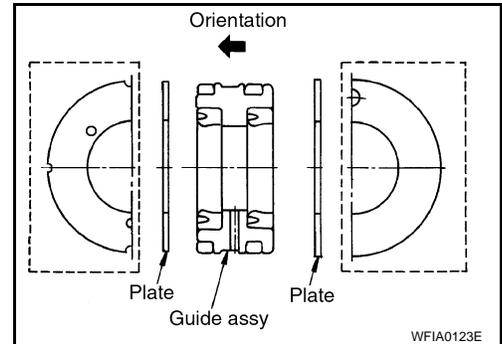
- Align the slit in the center of the secondary piston with the axial direction of the piston stopper. Visually check the secondary piston slit from the piston stopper hole and install the piston stopper.



- Insert the plates and the guide into the cylinder body as shown.

CAUTION:

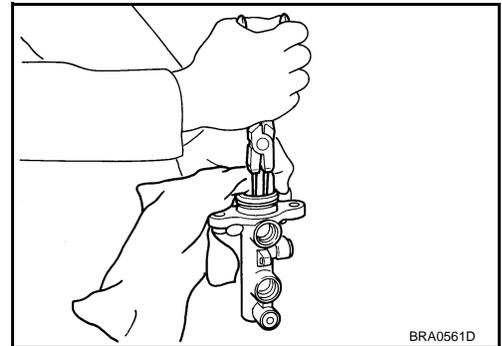
- Be careful not to damage the primary piston rod.
- Pay attention to the orientation of the guide.



- Press in the primary piston and install a new snap ring.

CAUTION:

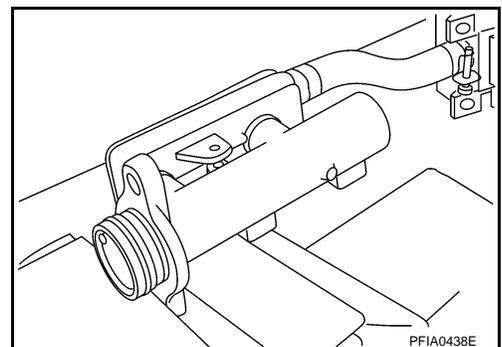
- Make sure snap ring is fully inserted in the snap ring groove.
- Do not reuse snap ring.



- Place the side flange of cylinder body with chamfering around the pin insertion hole facing up, and firmly set master cylinder assembly in a vise.

CAUTION:

- When setting the master cylinder assembly with the vise, be sure not to over-tighten.
- When securing with a vise, use copper plates or cloth to protect the flange.

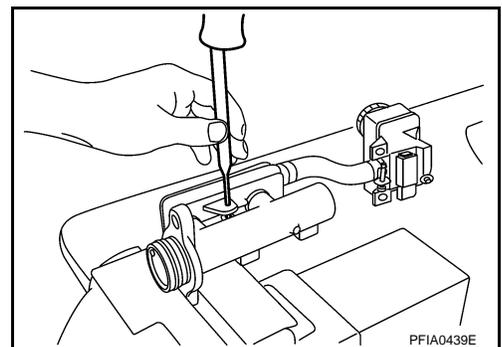


- Using a pin punch [commercial service tool: diameter approx. 4 mm (0.16 in)], attach the reservoir tank mounting pin so that the attachment side and the opposite side are identical.

CAUTION:

Do not reuse reservoir tank grommets and pin.

- If necessary, install brake fluid level switch.



BRAKE BOOSTER

< SERVICE INFORMATION >

BRAKE BOOSTER

On-Vehicle Service

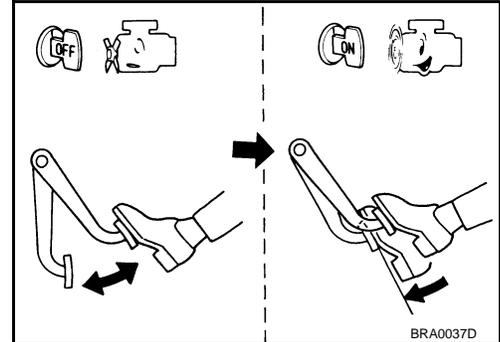
INFOID:000000004278907

OPERATING CHECK

With the engine stopped, change the vacuum to the atmospheric pressure by depressing the brake pedal several times. Then with brake pedal fully depressed, start the engine and when the vacuum pressure reaches the standard, check that the clearance between the brake pedal and floor panel decreases.

CAUTION:

Depressing pedal interval is approximately 5 seconds.

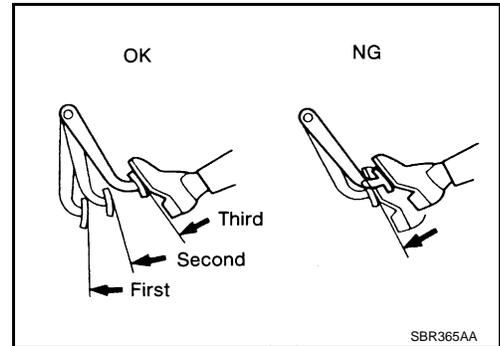


AIRTIGHT CHECK

- Run the engine at idle for approximately 1 minute, and stop it after applying vacuum to the booster. Depress the brake pedal normally to change the vacuum to the atmospheric pressure. Check that distance between the brake pedal and floor panel gradually increases.
- Depress the brake pedal while the engine is running, then stop the engine with the pedal depressed. The pedal stroke should not change after holding pedal down for 30 seconds.

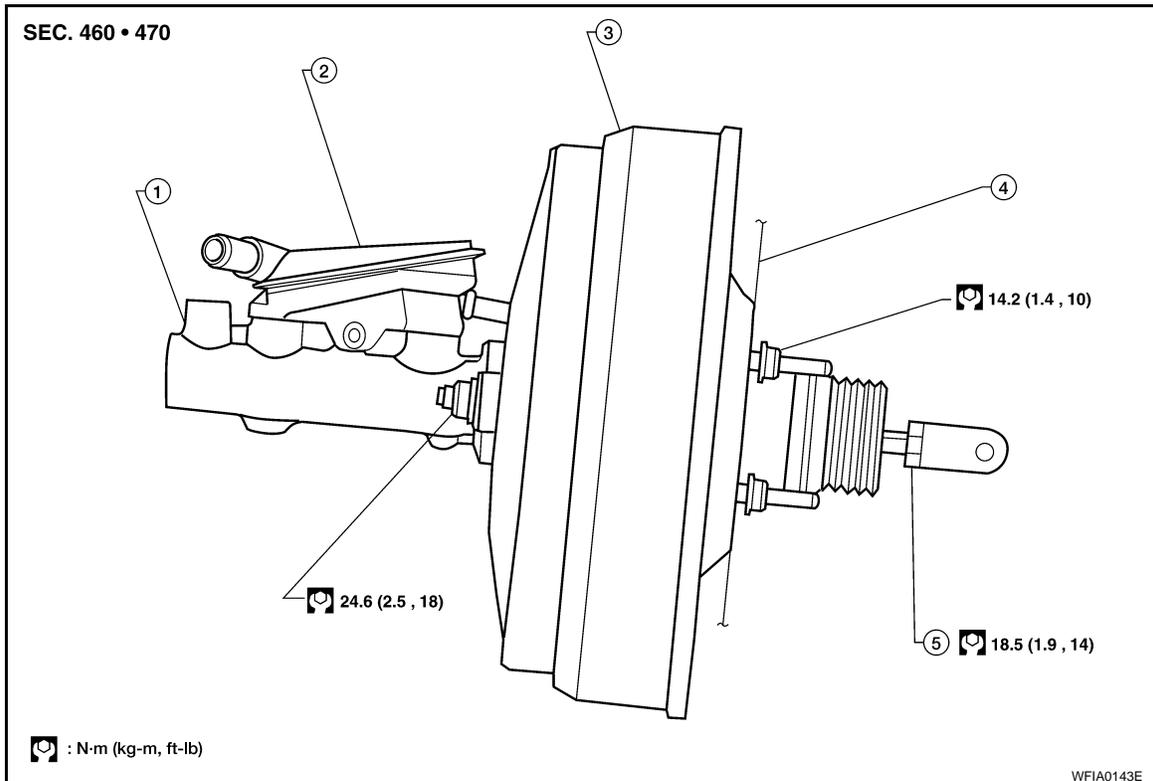
CAUTION:

Depressing pedal interval is approximately 5 seconds.



Removal and Installation

INFOID:000000004278908



BRAKE BOOSTER

< SERVICE INFORMATION >

1. Master cylinder
2. Reservoir tank
3. Brake booster
4. Gasket
5. Lock nut

REMOVAL

CAUTION:

- Be careful not to deform or bend brake piping while removing and installing the brake booster.
- Replace clevis pin if it is damaged.
- Be careful not to damage brake booster stud bolt threads. If brake booster is tilted or inclined during installation, the dash panel may damage the threads.
- Attach the check valve in the correct orientation.

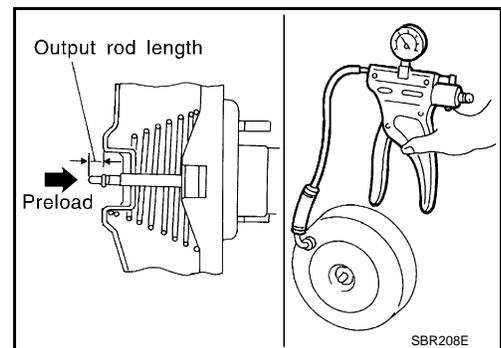
1. Remove the cowl top and cowl top extension. Refer to [EI-18, "Removal and Installation"](#).
2. Remove the brake master cylinder. Refer to [BR-14, "Removal and Installation"](#).
3. Remove vacuum hose from the brake booster. Refer to [BR-23, "Removal and Installation"](#).
4. Remove instrument lower panel LH. Refer to [IP-12, "Instrument Lower Panel LH"](#).
5. Remove the brake pedal attachment snap pin and clevis pin from inside the vehicle.
6. Remove the nuts on the brake booster and brake pedal assembly.
7. Remove brake booster assembly from the engine compartment side.

INSPECTION AFTER REMOVAL

Output Rod Length Inspection

Apply specified vacuum to the brake booster. Then check output rod length, using a suitable tool.

Standard dimension at vacuum of (-66.7 kPa) [(-500 mmHg), (-19.69 inHg)] : 10.275 – 10.525 mm (0.4045 – 0.4144 in)

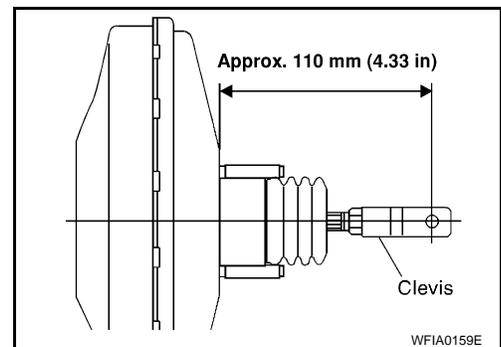


INSTALLATION

1. Loosen the lock nut to adjust the input rod length so that the dimension shown satisfies the specified value.

Standard value : 110 mm (4.33 in)

2. After adjusting, temporarily tighten the lock nut to install the booster assembly to the vehicle. At this time, make sure to install a gasket between the booster assembly and the vehicle.
3. Connect the brake pedal with the clevis of the input rod while installing brake pedal assembly onto brake booster studs.
4. Install nuts to secure brake pedal assembly to brake booster and tighten to specification.
5. Install the brake piping from the brake master cylinder to ABS actuator. Refer to [BR-11, "Hydraulic Circuit"](#).
6. Install the brake master cylinder to the brake booster. Refer to [BR-14, "Removal and Installation"](#).
7. Adjust the height and play of the brake pedal.
8. Tighten the lock nut of the input rod to the specification.
9. Adjust brake pedal. Refer to [BR-5, "Inspection and Adjustment"](#).
10. Refill new brake fluid and bleed air. Refer to [BR-10, "Bleeding Brake System"](#).



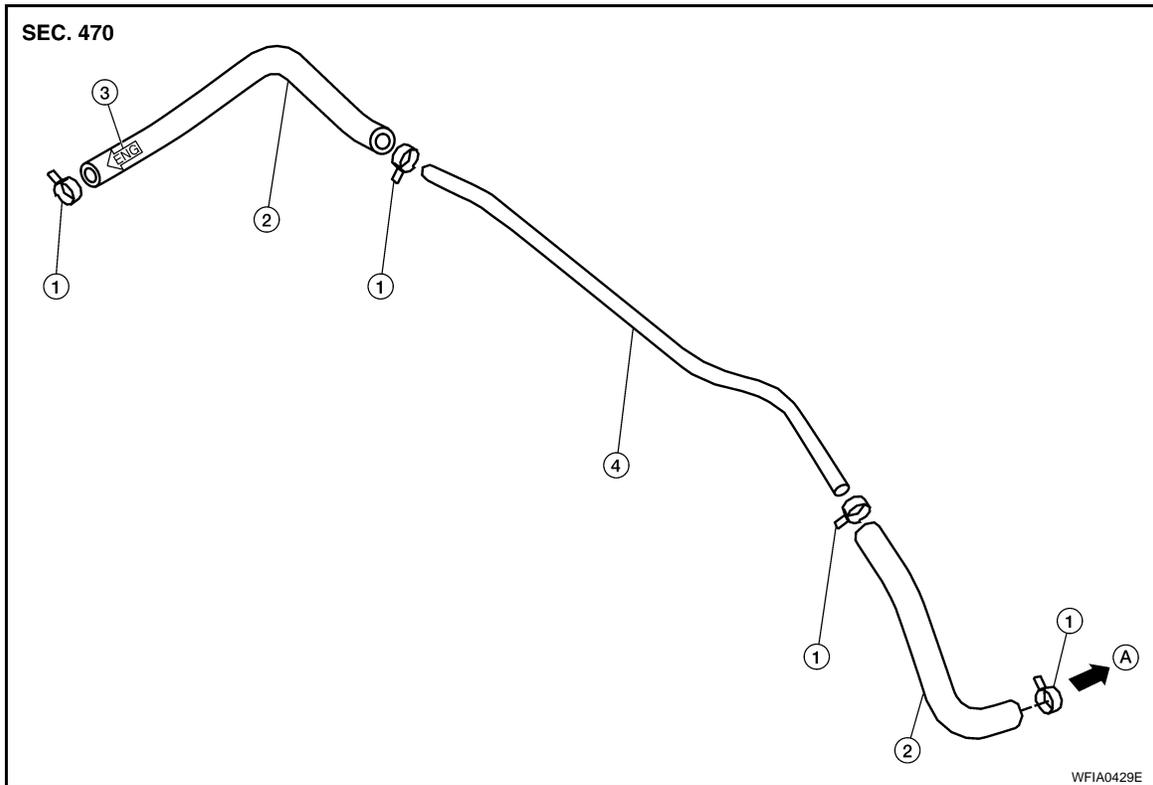
VACUUM LINES

< SERVICE INFORMATION >

VACUUM LINES

Removal and Installation

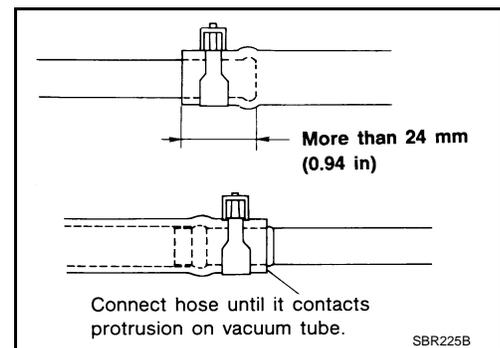
INFOID:000000004278909



- 1. Clamp
- 2. Vacuum hose
- 3. Check valve inclusion position stamp
- 4. Vacuum piping
- A Brake booster

CAUTION:

- Because vacuum hose contains a check valve, it must be installed in the correct orientation. Refer to the stamp or label to confirm correct installation. The brake booster will not operate normally if the hose is installed in the wrong direction.
- Insert the vacuum hose for at least 24 mm (0.94 in).
- Never use lubricating oil during assembly.



Inspection

INFOID:000000004278910

VISUAL INSPECTION

Check for improper assembly, damage and deteriorate.

CHECK VALVE INSPECTION

Airtightness Inspection

VACUUM LINES

< SERVICE INFORMATION >

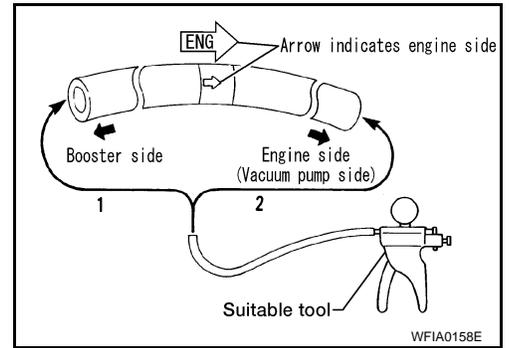
Use a suitable tool to check.

When connected to booster side (1):

Vacuum decrease should be within 1.3 kPa
(10 mmHg, 0.39 inHg) for 15 seconds under
a vacuum of (-66.7 kPa) [(-500 mmHg),
(-19.69 inHg)]

When connected to engine side (2):

No vacuum will be applied



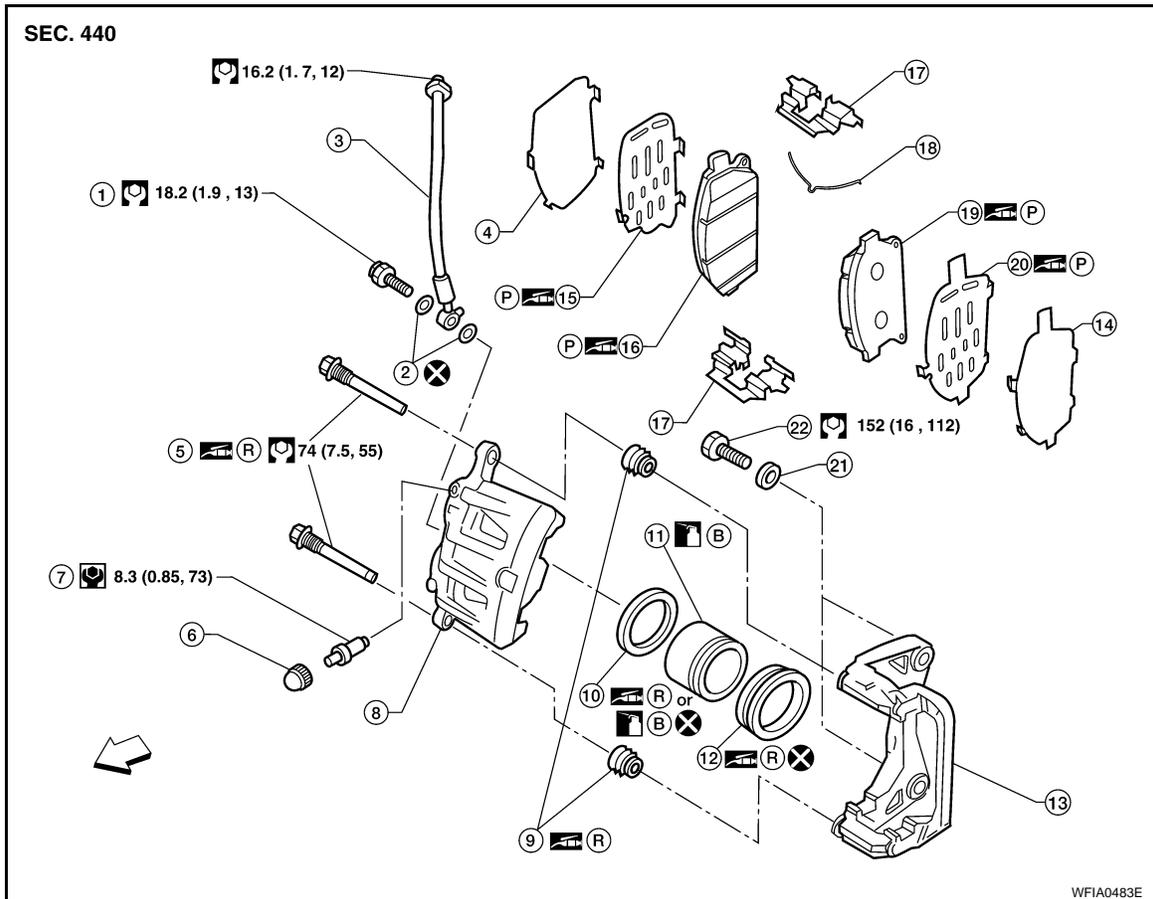
FRONT DISC BRAKE

< SERVICE INFORMATION >

FRONT DISC BRAKE

Component

INFOID:000000004278911



- | | | |
|-------------------------|----------------------|------------------------------|
| 1. Union bolt | 2. Copper washers | 3. Brake hose |
| 4. Inner shim cover | 5. Sliding pin | 6. Cap |
| 7. Air bleeder | 8. Cylinder body | 9. Sliding pin boot |
| 10. Piston seal | 11. Piston | 12. Piston boot |
| 13. Torque member | 14. Outer shim cover | 15. Inner shim |
| 16. Inner pad | 17. Pad retainer | 18. Pad retainer |
| 19. Outer pad | 20. Outer shim | 21. Lock washer |
| 22. Torque member bolts | B. Brake fluid | P. PBC (Poly Butyl Cuprysil) |
| R. Rubber grease | ← Front | |

WARNING:

Clean dust on caliper and brake pad with a vacuum dust collector. Do not blow with compressed air.

CAUTION:

- While the brake pad and cylinder body are separated, the piston may suddenly jump out, so do not depress the brake pedal.
- It is not necessary to remove bolts on torque member and brake hose except for disassembly or replacement of the cylinder body. In this case, hang cylinder body with a wire so that brake hose is not under tension.
- Do not damage piston boot.
- If any shim is subject to serious corrosion, replace it with a new one.
- Always replace shims and shim covers as a set when replacing brake pads.
- Keep the rotor clean of brake fluid.
- Burnish the brake contact surfaces when refinishing or replacing brake rotors, after replacing pads or linings, or if a soft pedal occurs at very low mileage. Refer to [BR-30, "Brake Burnishing"](#).

FRONT DISC BRAKE

< SERVICE INFORMATION >

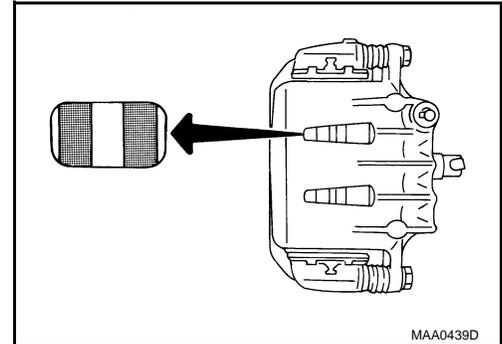
On Board Inspection

INFOID:000000004278912

PAD WEAR INSPECTION

- Inspect the thickness of the pad through the cylinder body inspection hole. Use a scale for inspection if necessary.

Standard thickness : 10 mm (0.394 in)
Wear limit : 2.0 mm (0.079 in)



Removal and Installation of Brake Pad

INFOID:000000004278913

WARNING:

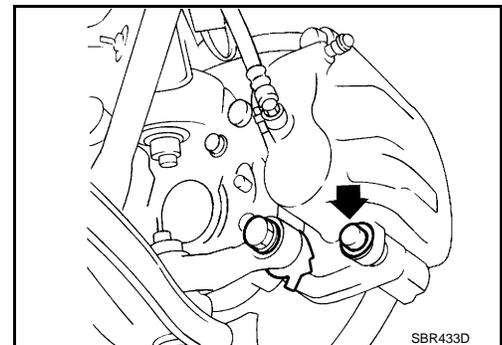
Clean brake pads with a vacuum dust collector to minimize a hazard of airborne particles or other materials.

CAUTION:

- While removing pad assemblies, do not depress brake pedal because piston will pop out.
- Be careful not to damage piston boot or get oil on disc rotor. Always replace shims when replacing pads.
- If shims are rusted or show peeling of rubber coat, replace them with new shims.
- It is not necessary to remove torque member mounting bolt except for disassembly or replacement of cylinder body. In this case, suspend cylinder body with wire so as not to stretch brake hose.
- Carefully monitor brake fluid level because brake fluid will return to reservoir when pushing back piston.
- Burnish the brake pads (or linings) and disc rotor mutually contacting surfaces after refinishing or replacing drums or rotors, after replacing pads or linings, or if a soft pedal occurs at a very low mileage. Refer to [BR-30, "Brake Burnishing"](#).

REMOVAL

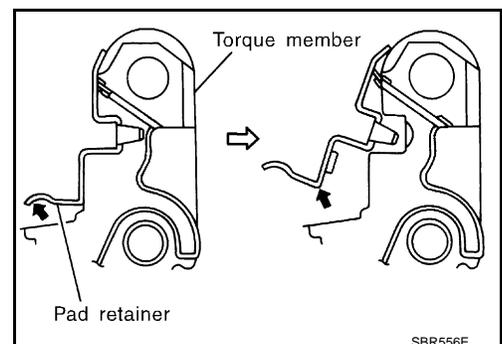
- Remove wheel and tire using power tool.
- Remove lower sliding pin.



- Hang the cylinder body with a wire and remove the pad and shim assemblies, then pad retainers from the torque member.

CAUTION:

- Do not damage piston boot.
- When removing pad retainer from torque member, lift pad retainer in the direction of arrow as shown so as not to deform it.
- Keep rotor clean and free from brake fluid.



INSTALLATION

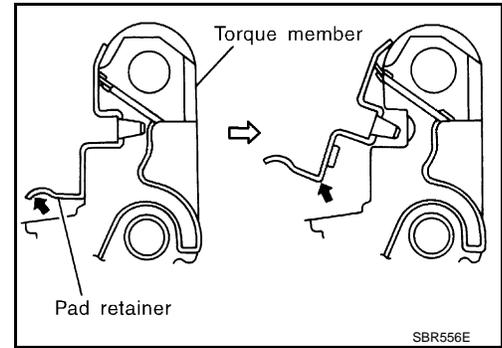
FRONT DISC BRAKE

< SERVICE INFORMATION >

1. Apply PBC (Poly Butyl Cuprysil) or equivalent, to the pad back plate and inner shim sides. Install inner shims and outer shim covers to inner and outer pads.
2. Install pad retainers and pad assemblies to the torque member.

CAUTION:

When attaching the pad retainer, attach it firmly so that it does not float up higher than the torque member, as shown.



3. Push the piston in so that the pad is firmly attached, and install the cylinder body to the torque member.
- CAUTION:**
By pushing in the piston, the brake fluid returns to the master cylinder reservoir tank and sub tank. Watch the level of the fluid in the sub tank.

NOTE:

Using a disc brake piston tool (commercial service tool), makes it easier to push in the piston.

4. Install the sliding pin and tighten to specification. Refer to [BR-25, "Component"](#).
5. Check brake for drag.
6. Install wheel and tire. Refer to [WT-6, "Conventional Tire and Wheel"](#).

CAUTION:

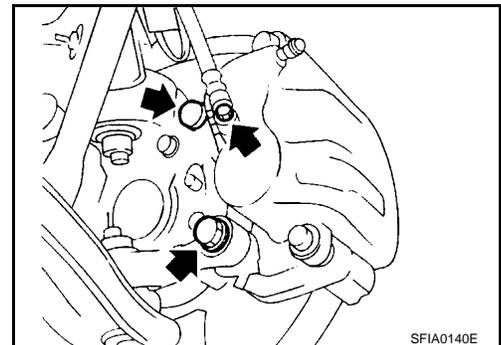
Burnish the brake contact surfaces when refinishing or replacing brake rotors, after replacing pads or linings, or if a soft pedal occurs at very low mileage. Refer to [BR-30, "Brake Burnishing"](#).

Removal and Installation of Caliper Assembly and Disc Rotor

INFOID:000000004278914

REMOVAL

1. Remove wheel and tire using power tool.
2. Drain brake fluid. Refer to [BR-10, "Changing Brake Fluid"](#).
3. Remove union bolt and torque member bolts using power tool, then remove cylinder body.



4. Remove disc rotor.

CAUTION:

Put matching marks on both disc rotor and wheel hub when removing disc rotor.

INSTALLATION

CAUTION:

- Refill with new brake fluid. Refer to [MA-12, "Fluids and Lubricants"](#).
- Never reuse drained brake fluid.

1. Install disc rotor.

CAUTION:

Align matching marks made during removal when reusing disc rotor.

FRONT DISC BRAKE

< SERVICE INFORMATION >

2. Install cylinder body to the vehicle, and tighten torque member bolts to specification. Refer to [BR-25, "Component"](#).

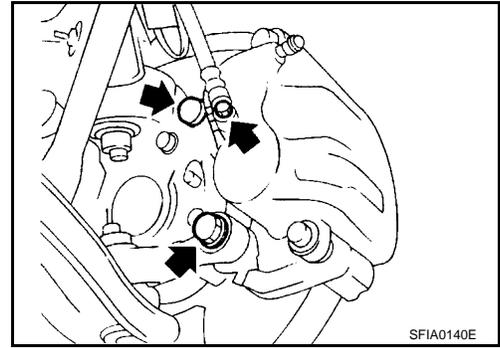
CAUTION:

Before installing the cylinder body to the vehicle, wipe any oil off the knuckle spindle washers and cylinder body attachment surfaces.

3. Install brake hose to the cylinder body, and tighten union bolt to the specification. Refer to [BR-25, "Component"](#).

CAUTION:

- Do not reuse the copper washer for union bolts.
- Attach the brake hose to the protrusion on the cylinder body attachment part.



4. Refill new brake fluid and bleed air. Refer to [BR-10, "Bleeding Brake System"](#).

5. Install wheel and tire. Refer to [WT-6, "Conventional Tire and Wheel"](#).

CAUTION:

Burnish the brake contact surfaces when refinishing or replacing brake rotors, after replacing pads or linings, or if a soft pedal occurs at very low mileage. Refer to [BR-30, "Brake Burnishing"](#).

Disassembly and Assembly of Caliper Assembly

INFOID:000000004278915

NOTE:

Do not remove torque member, pads, shims, shim covers or pad retainers, when disassembling or assembling cylinder body.

DISASSEMBLY

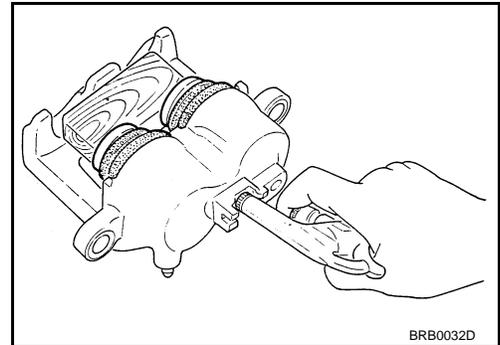
1. Remove caliper assembly. Refer to [BR-27, "Removal and Installation of Caliper Assembly and Disc Rotor"](#).

2. Remove cylinder body from torque member, then sliding pin boots from torque member.

3. Place a wooden block as shown, and blow air from union bolt mounting hole to remove pistons and piston boots.

WARNING:

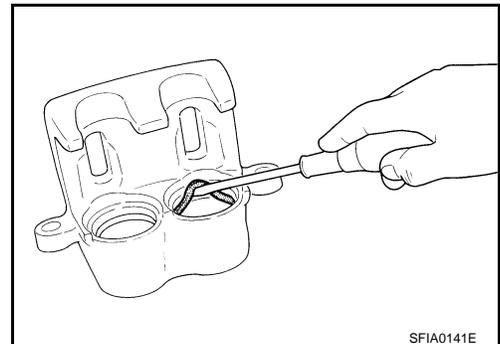
Do not get your fingers caught in the piston.



4. Remove the piston seal from the cylinder body using a suitable tool.

CAUTION:

Be careful not to damage cylinder inner wall.



INSPECTION AFTER DISASSEMBLY

Cylinder Body

CAUTION:

- Use new brake fluid to clean. Never use mineral oils such as gasoline or kerosene.
- Check for corrosion, wear, or damage to the cylinder inner wall, and replace the caliper if there are any non-standard conditions.

FRONT DISC BRAKE

< SERVICE INFORMATION >

- **Minor flaws caused by corrosion or a foreign material can be removed by polishing the surface with a fine sandpaper. Replace the cylinder body, if necessary.**

Torque Member

Check for wear, cracks, and damage. If damage or deformation is present, replace the affected part.

Piston

CAUTION:

- **Since the piston surface is plated, do not repair using sandpaper.**
- **Check piston surface for corrosion, wear, and damage. If any non-standard condition is detected, replace applicable part.**

Sliding Pins, Sliding Pin Bolts, and Sliding Pin Boots

Check sliding pins, sliding pin bolts, and sliding pin boot for wear, damage, and cracks. If damage or deformation is present, replace the affected part.

DISC ROTOR INSPECTION

Visual Inspection

Check surface of the disc rotor for uneven wear, cracks, and serious damage. If any non-standard condition is detected, replace applicable part.

Runout Inspection

1. Using wheel nuts, secure disc rotor to the wheel hub in 2 or more positions.
2. Inspect runout using a dial gauge.

Measurement point	: At a point 10 mm (0.39 in) from outer edge of the disc
Maximum runout (with it attached to the vehicle)	: 0.04 mm (0.0016 in) or less

CAUTION:

Before measuring, make sure the axle end play is 0 mm (0 in). Refer to FAX-5, "On-Vehicle Inspection and Service".

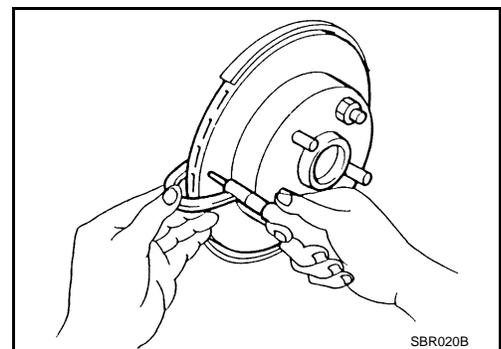
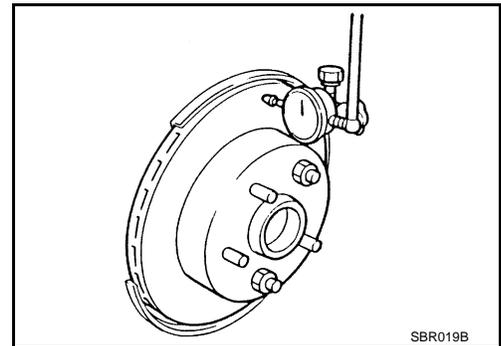
3. If runout is outside the limit, find the minimum runout point by shifting mounting positions of the disc rotor and wheel hub by one hole.
4. If runout is outside the specified value after performing the above operation, turn the disc rotor using Tool.

Tool number : 38-PFM90.5

Thickness Inspection

Using a micrometer, check thickness of the disc rotor. If thickness does not meet specification, replace disc rotor.

Standard thickness	: 28 mm (1.10 in)
Wear limit	: 26 mm (1.02 in)
Maximum thickness variation (measured at 8 positions)	: 0.015 mm (0.0006 in) or less



ASSEMBLY

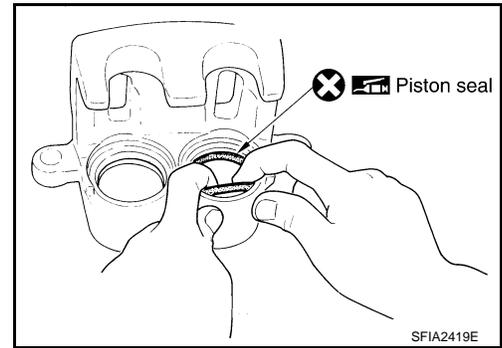
FRONT DISC BRAKE

< SERVICE INFORMATION >

1. Apply rubber grease or brake fluid to the piston seals and install them into cylinder body.

CAUTION:

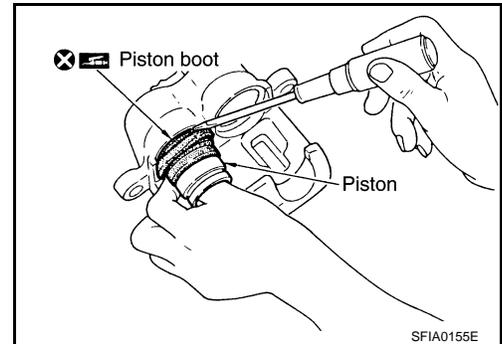
Do not reuse the piston seals.



2. Apply rubber grease to the piston boot, place it on the piston, and firmly insert the piston boot cylinder-side lip into the cylinder body groove.

CAUTION:

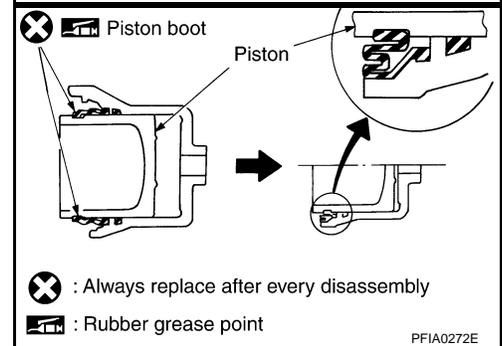
Do not reuse the piston boot.



3. Apply brake fluid to the piston, insert into the cylinder body by hand and firmly attach the piston boot piston-side lip into the piston groove.

CAUTION:

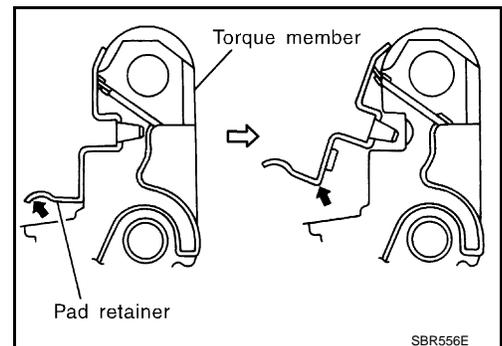
Press the piston evenly and vary the pressing point to prevent cylinder inner wall from being rubbed.



4. Install sliding pins and sliding pin boots to torque member.
5. Apply PBC (Poly Butyl Cuprysil) or equivalent, to the pad back plate and inner shim sides. Install inner shims and outer shim covers to inner and outer pads.
6. Attach the pad retainer to the torque member.

CAUTION:

When attaching the pad retainer, attach it firmly so that it does not float up higher than the torque member, as shown.



7. After assembling the shims and the shim covers to the pad, install it to the torque member.
8. Install cylinder body and tighten sliding pin to the specification. Refer to [BR-25. "Component"](#).

Brake Burnishing

INFOID:000000004278916

Burnish the brake contact surface according to the following procedure after refinishing or replacing rotors, after replacing pads, or if a soft pedal occurs at very low mileage.

CAUTION:

Only perform this procedure under safe road and traffic conditions. Use extreme caution.

FRONT DISC BRAKE

< SERVICE INFORMATION >

1. Drive the vehicle on a straight smooth road at 50 km/h (31 MPH).
2. Use medium brake pedal /foot effort to bring the vehicle to a complete stop from 50 km/h (31 MPH). Adjust brake pedal /foot pressure such that vehicle stopping time equals 3 to 5 seconds.
3. To cool the brake system, drive the vehicle at 50 km/h (31 MPH) for 1 minute without stopping.
4. Repeat steps 1 to 3, 10 times or more to complete the burnishing procedure.

A

B

C

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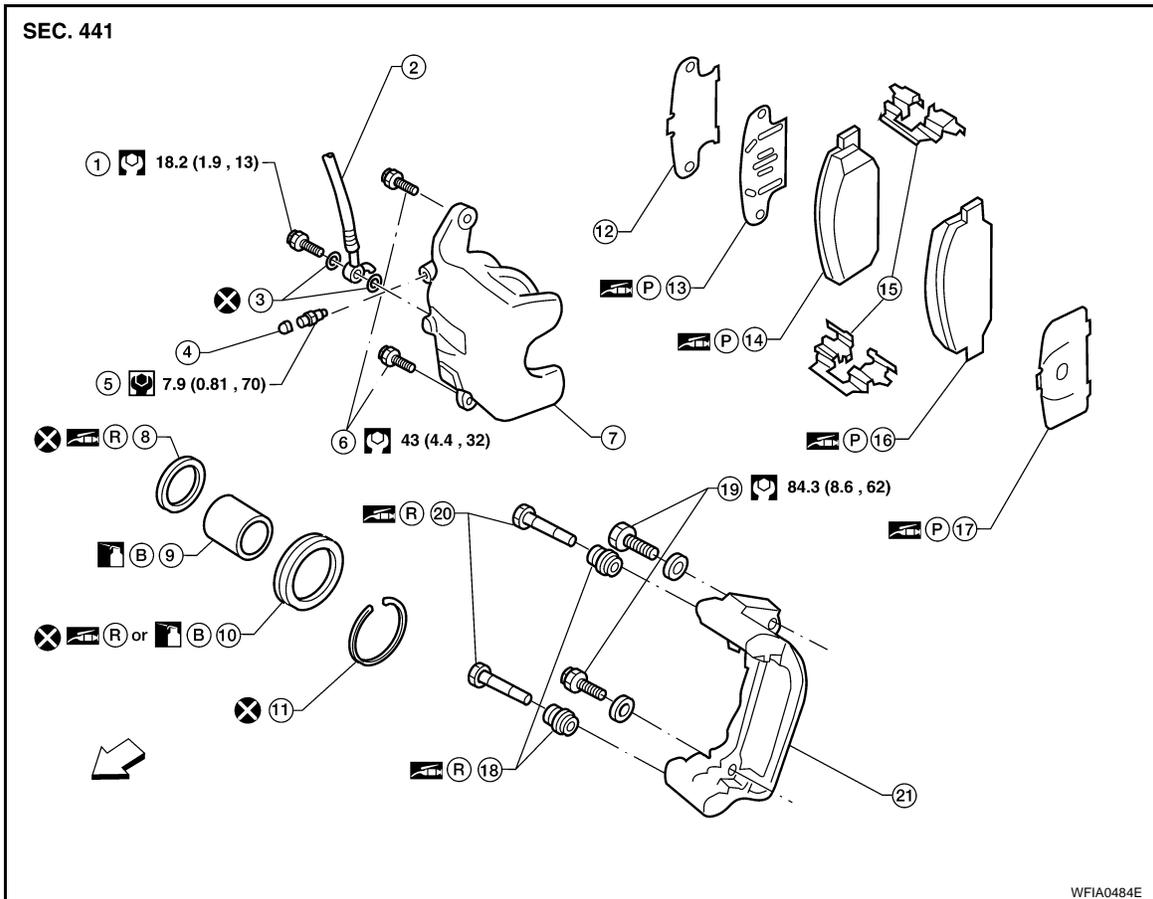
REAR DISC BRAKE

< SERVICE INFORMATION >

REAR DISC BRAKE

Component

INFOID:000000004278917



WFIA0484E

- | | | |
|-------------------------|------------------------------|----------------------|
| 1. Union bolt | 2. Brake hose | 3. Copper washer |
| 4. Cap | 5. Air bleeder | 6. Sliding pin bolt |
| 7. Cylinder body | 8. Piston seal | 9. Piston |
| 10. Piston boot | 11. Retaining ring | 12. Inner shim cover |
| 13. Inner shim | 14. Inner pad | 15. Pad retainer |
| 16. Outer pad | 17. Outer shim | 18. Sliding pin boot |
| 19. Torque member bolts | 20. Sliding pin | 21. Torque member |
| B. Brake fluid | P. PBC (Poly Butyl Cuprysil) | R. Rubber grease |

⇐ Front

WARNING:

Clean dust on caliper and brake pad with a vacuum dust collector. Do not blow with compressed air.

CAUTION:

- While removing cylinder body, never depress the brake pedal because the piston will pop out.
- It is not necessary to remove bolts on torque member and brake hose except for disassembly or replacement of the cylinder body. In this case, hang cylinder body with a wire so that brake hose is not under tension.
- Do not damage piston boot.
- If any shim is subject to serious corrosion, replace it with a new one.
- Always replace shims and shim covers as a set when replacing brake pads.
- Keep the rotor clean of brake fluid.
- Burnish the brake contact surfaces when refinishing or replacing brake rotors, after replacing pads or linings, or if a soft pedal occurs at very low mileage. Refer to [BR-37, "Brake Burnishing"](#).

REAR DISC BRAKE

< SERVICE INFORMATION >

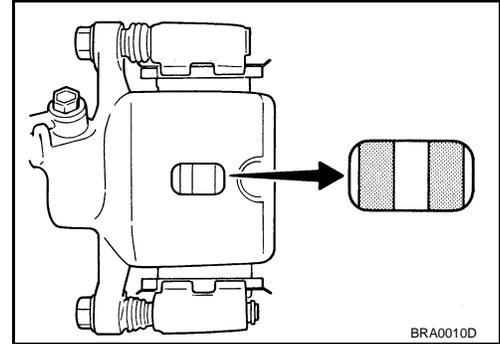
On Board Inspection

INFOID:000000004278918

PAD WEAR INSPECTION

- Inspect the thickness of the pad through the cylinder body inspection hole. Use a scale for inspection if necessary.

Standard thickness : 8.5 mm (0.335 in)
Wear limit : 2.0 mm (0.079 in)



Removal and Installation of Brake Pad

INFOID:000000004278919

WARNING:

Clean brake pads with a vacuum dust collector to minimize a hazard of airborne particles or other materials.

CAUTION:

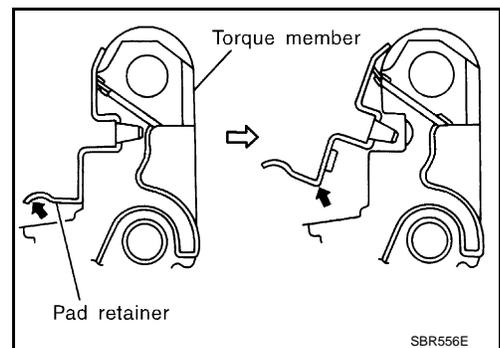
- While removing pad assemblies, do not depress brake pedal because piston will pop out.
- Be careful not to damage piston boot or get oil on disc rotor. Always replace shims when replacing pads.
- If shims are rusted or show peeling of rubber coat, replace them with new shims.
- It is not necessary to remove torque member mounting bolt except for disassembly or replacement of cylinder body. In this case, suspend cylinder body with wire so as not to stretch brake hose.
- Carefully monitor brake fluid level because brake fluid will return to reservoir when pushing back piston.
- Burnish the brake pads (or linings) and disc rotor mutually contacting surfaces after refinishing or replacing drums or rotors, after replacing pads or linings, or if a soft pedal occurs at a very low mileage. Refer to [BR-30, "Brake Burnishing"](#).

REMOVAL

- Remove wheel and tires assemblies using power tool.
- Remove bottom sliding pin bolt.
- Hang the cylinder body with a wire and remove the pad and shim assemblies, then pad retainers from the torque member.

CAUTION:

- Do not damage piston boot.
- When removing pad retainer from torque member, lift pad retainer in the direction of arrow as shown so as not to deform it.
- Keep rotor clean and free from brake fluid.



INSTALLATION

- Apply PBC (Poly Butyl Cuprysil) grease or silicone-based grease to the rear of the pad and to both sides of the shim, and attach the inner shim and shim cover to the inner pad, and the outer shim to the outer pad.

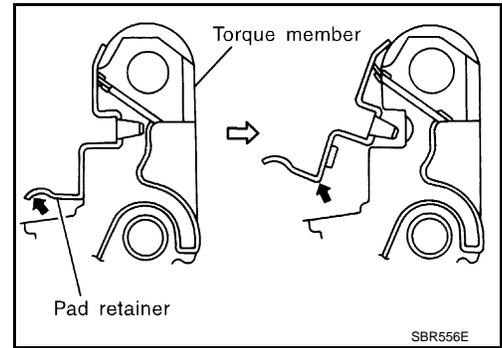
REAR DISC BRAKE

< SERVICE INFORMATION >

2. Attach the pad retainer and pad to the torque member.

CAUTION:

When attaching the pad retainer, attach it firmly so that it does not float up higher than the torque member, as shown.



3. Push the piston in so that the pad is firmly attached and attach the cylinder body to the torque member.

CAUTION:

By pushing in the piston, the brake fluid returns to the master cylinder reservoir tank and the sub tank. Watch the brake fluid level in the sub tank.

NOTE:

Using a disc brake piston tool (commercial service tool), makes it easier to push in the piston.

4. Install the sliding pin bolt and tighten to specification. Refer to [BR-32. "Component"](#).
5. Check the brake for any drag.
6. Install the wheel and tire assemblies. Refer to [WT-6. "Conventional Tire and Wheel"](#).

CAUTION:

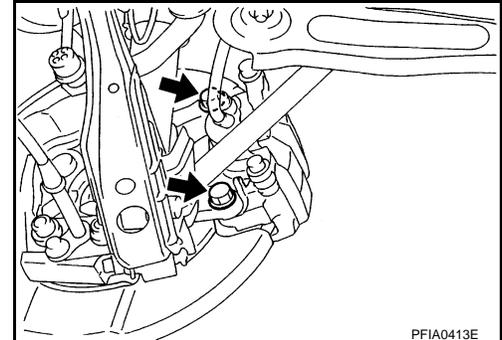
Burnish the brake contact surfaces when refinishing or replacing brake rotors, after replacing pads or linings, or if a soft pedal occurs at very low mileage. Refer to [BR-37. "Brake Burnishing"](#).

Removal and Installation of Caliper Assembly and Disc Rotor

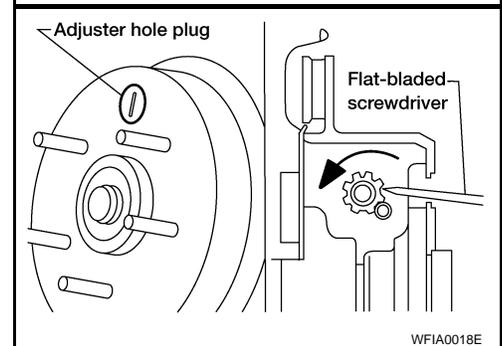
INFOID:000000004278920

REMOVAL

1. Remove the wheel and tire assemblies using power tool.
2. Drain brake fluid. Refer to [BR-10. "Bleeding Brake System"](#).
3. Remove union bolt and torque member bolts using power tool, and remove cylinder body.
4. Remove caliper and disc rotor. If the disc rotor cannot be removed, remove as follows:
 - Make sure parking brake lever is completely disengaged.



- Hold down the disc rotor with the wheel nut and remove the adjuster hole plug.
- Insert a flat-bladed screwdriver through the plug opening and rotate the adjuster in the direction shown to loosen and retract the brake shoes.
- Prior to removing disc rotor, make alignment mark using a marker between the hub and disc rotor.
- Remove wheel nut and rotor.



INSTALLATION

CAUTION:

- Refill with new brake fluid. Refer to [MA-12. "Fluids and Lubricants"](#).
- Never reuse drained brake fluid.

1. Install the disc rotor.
 - Align the marks made during removal on the hub and disc rotor.
2. Install the cylinder body, and tighten the torque member bolts to specification. Refer to [BR-32. "Component"](#).

REAR DISC BRAKE

< SERVICE INFORMATION >

CAUTION:

Before installing cylinder body to the vehicle, wipe off oil and grease on washer seats on axle assembly and mounting surface of cylinder body.

3. Install brake hose to cylinder body and tighten union bolt to specification. Refer to [BR-32. "Component"](#).

CAUTION:

- Do not reuse the copper washer for the union bolts.
- Securely attach the brake hose to the protrusion on the cylinder body.

4. Add new brake fluid and bleed the air. Refer to [BR-10. "Bleeding Brake System"](#).
5. Adjust the parking brake. Refer to [PB-4. "On-Vehicle Service"](#).
6. Install the wheel and tire assemblies. Refer to [WT-6. "Conventional Tire and Wheel"](#).

CAUTION:

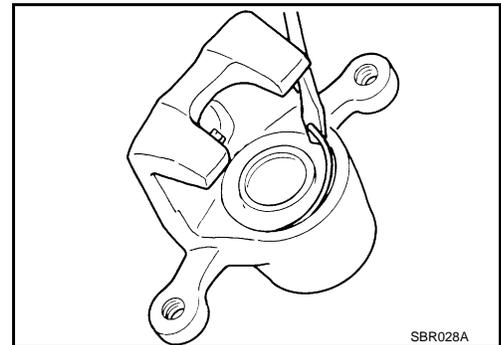
Burnish the brake contact surfaces when refinishing or replacing brake rotors, after replacing pads, or if a soft pedal occurs at very low mileage. Refer to [BR-37. "Brake Burnishing"](#).

Disassembly and Assembly of Caliper Assembly

INFOID:000000004278921

DISASSEMBLY

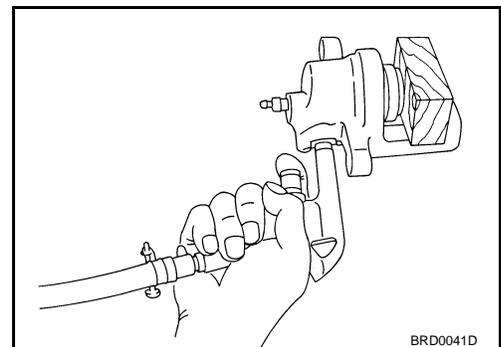
1. Remove the sliding pin bolt, and then remove the pad, shim, shim cover, and pad retainer from the torque member and cylinder.
2. Remove the sliding pin and the sliding pin boot from the torque member.
3. Remove the retaining ring from the cylinder body using a screwdriver or suitable tool, as shown.



4. Place a wooden block as shown, and blow air from union bolt mounting hole to remove pistons and piston boots.

WARNING:

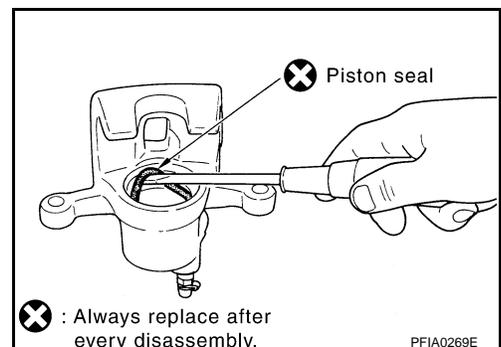
Do not place your finger in front of piston.



5. Remove piston seals from cylinder body using a screwdriver or suitable tool, as shown.

CAUTION:

Be careful not to damage cylinder inner wall.



CALIPER INSPECTION

REAR DISC BRAKE

< SERVICE INFORMATION >

Cylinder Body

CAUTION:

- Use new brake fluid to clean. Never use mineral oils such as gasoline or kerosene.
- Check inner wall of cylinder for corrosion, wear, and damage. If any non-standard condition is detected, replace cylinder body.
- Minor flaws caused by corrosion or a foreign material can be removed by polishing the surface with a fine sandpaper. Replace the cylinder body, if necessary.

Torque Member

Check for wear, cracks, and damage. If damage or deformation is present, replace the affected part.

Piston

CAUTION:

Since the piston surface is plated, do not repair using sandpaper.

Check piston surface for corrosion, wear, and damage. If any non-standard condition is detected, replace applicable part.

Sliding Pin Bolts and Sliding Pin Boots

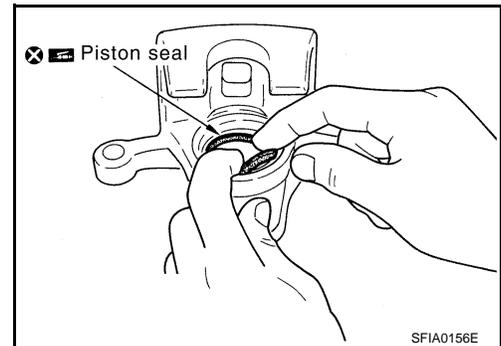
Check that there is no wear, damage, or cracks in the sliding pin bolts and sliding pin boots, and if there are, replace them.

ASSEMBLY

1. Apply a rubber grease to the piston seal and attach to cylinder body.

CAUTION:

Do not reuse the piston seals.



2. Apply brake fluid or rubber grease to the piston boot, place it on the piston, and firmly insert the piston boot cylinder-side lip into the cylinder body groove.

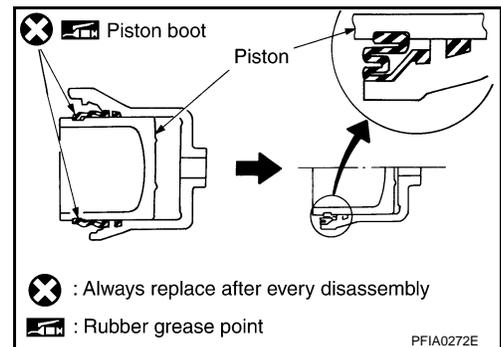
CAUTION:

Do not reuse the piston boot.

3. Apply a brake fluid to the piston, insert into the cylinder body by hand and firmly attach the piston boot piston-side lip into the piston boot.

CAUTION:

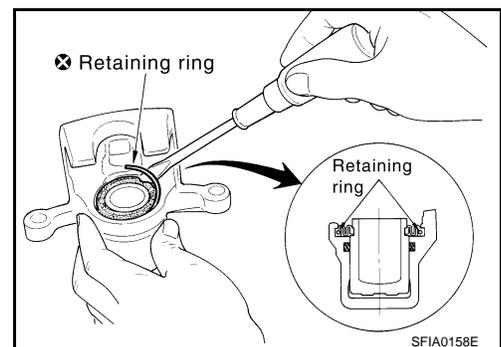
Press the piston evenly and vary the pressing point to prevent cylinder inner wall from being rubbed.



4. Install the piston boot with a new retaining ring.

CAUTION:

- Make sure the boot is firmly in the cylinder body groove.
- Do not reuse the retaining ring.

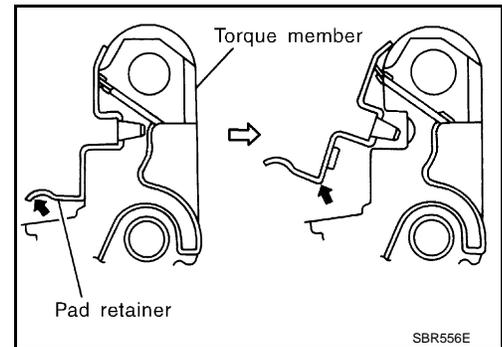


5. Apply rubber grease and attach the sliding pin and sliding pin boot to the torque member.

REAR DISC BRAKE

< SERVICE INFORMATION >

- Apply PBC (Poly Butyl Cuprysil) grease or silicone-based grease, or equivalent, refer to [MA-12](#) to the rear of the pad and to both sides of the shim, and attach the inner shim and shim cover to the inner pad, and the outer shim and outer shim cover to the outer pad.
- Attach the pad retainer and pad to the torque member.
CAUTION:
When attaching the pad retainer, attach it firmly so that it does not float up higher than the torque member, as shown.
- After assembling shims and shim covers to pad, install it to the torque member.
- Install cylinder body. Tighten sliding pin bolts to specification. Refer to [BR-32, "Component"](#).



DISC ROTOR INSPECTION

Visual Inspection

Check surface of the disc rotor for uneven wear, cracks, and serious damage. If any non-standard condition is detected, replace applicable part.

Runout Inspection

- Using wheel nuts, secure disc rotor to the wheel hub. (2 or more positions)
- Inspect runout using a dial gauge.

Measurement position : At a point 10 mm (0.39 in) from outer edge of the disc

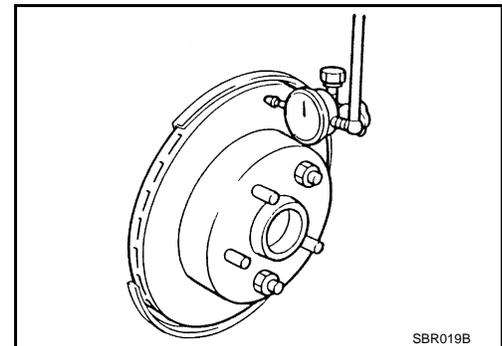
Maximum runout (with it attached to the vehicle) : 0.05 mm (0.0020 in) or less

CAUTION:

Before measuring, make sure the axle end play is 0 mm (0 in). Refer to [RAX-5, "On-Vehicle Inspection and Service"](#).

- If runout is outside the limit, find the minimum runout point by shifting mounting positions of the disc rotor and wheel hub by one hole.
- If runout is outside the specified value after performing the above operation, turn the disc rotor using Tool.

Tool number : 38-PFM90.5



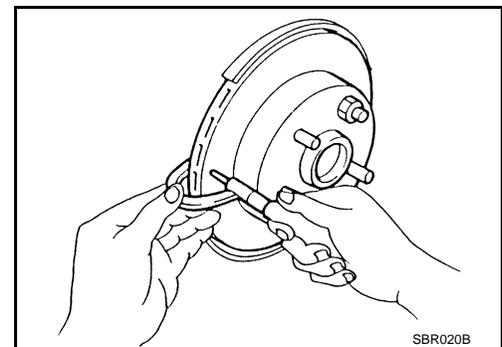
Thickness Inspection

Using a micrometer, check thickness of the disc rotor. If thickness is not within specification, replace disc rotor.

Standard thickness : 16.0 mm (0.630 in)

Wear limit : 14.0 mm (0.551 in)

Maximum thickness variation (measured at 8 positions) : 0.015 mm (0.0006 in) or less



Brake Burnishing

INFOID:000000004278922

Burnish the brake contact surface according to the following procedure after refinishing or replacing rotors, after replacing pads, or if a soft pedal occurs at very low mileage.

CAUTION:

Only perform this procedure under safe road and traffic conditions. Use extreme caution.

- Drive the vehicle on a straight smooth road at 50 km/h (31 MPH).

REAR DISC BRAKE

< SERVICE INFORMATION >

2. Use medium brake pedal /foot effort to bring the vehicle to a complete stop from 50 km/h (31 MPH). Adjust brake pedal /foot pressure such that vehicle stopping time equals 3 to 5 seconds.
3. To cool the brake system, drive the vehicle at 50 km/h (31 MPH) for 1 minute without stopping.
4. Repeat steps 1 to 3, 10 times or more to complete the burnishing procedure.

SERVICE DATA AND SPECIFICATIONS (SDS)

< SERVICE INFORMATION >

SERVICE DATA AND SPECIFICATIONS (SDS)

General Specification

INFOID:000000004278923

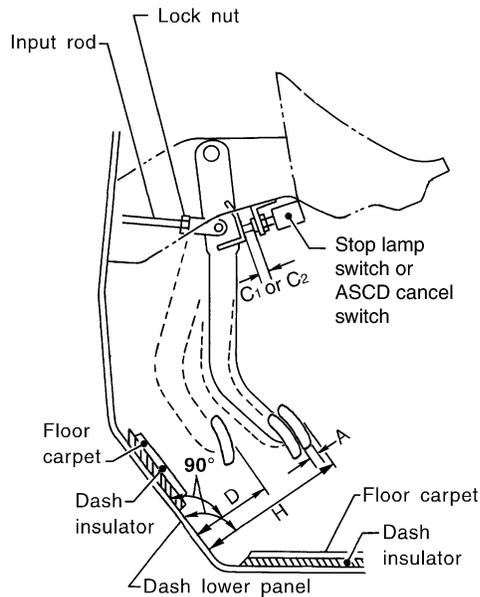
Unit: mm (in)

Front brake	Brake model		AD35VB disc brake
	Cylinder bore diameter		47.62 (1.87)
	Pad Length × width × thickness		132.0 × 53.5 × 10 (5.20 × 2.11 × 0.394)
	Rotor outer diameter × thickness		290 × 28 (11.42 × 1.10)
Rear brake	Brake model		AD14VE disc brake
	Cylinder bore diameter		42.86 (1.69)
	Pad Length × width × thickness		83.0 × 33.0 × 8.5 (3.27 × 1.30 × 0.335)
	Rotor outer diameter × thickness		308 × 16.0 (12.13 × 0.630)
Master cylinder	Cylinder bore diameter		25.4 (1.00)
Brake booster	Booster model		M245T
	Diaphragm diameter	Primary	252 (9.92)
		Secondary	230 (9.06)
Recommended brake fluid			Genuine NISSAN Super Heavy Duty Brake Fluid or equivalent, DOT 3 (US FMVSS No. 116)

Brake Pedal

INFOID:000000004278925

Unit: mm (in)



WFIA0160E

Free height "H" *	156.3 - 166.3 (6.15 - 6.55)
Depressed pedal height "D" [under a force of 490 N (50 kg, 110 lb) with engine running] *	more than 90.3 (3.55)
Clearance "C1" or "C2" between pedal stopper and threaded end of stop lamp switch or ASCD switch	0.74 - 1.96 (0.029 - 0.077)
Pedal play "A"	3 - 11 (0.12 - 0.43)

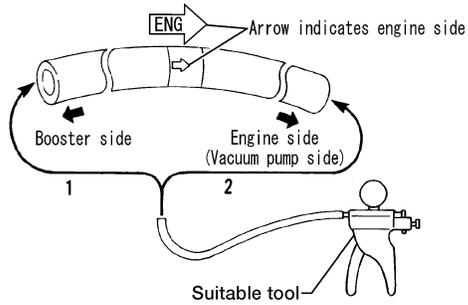
*: Measured from surface of dash lower panel to surface of pedal pad

SERVICE DATA AND SPECIFICATIONS (SDS)

< SERVICE INFORMATION >

Check Valve

INFOID:000000004688006



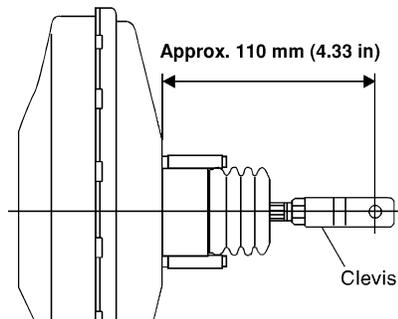
WFIA0158E

When connected to booster side (1)	Vacuum decrease should be within 1.3 kPa (10 mmHg, 0.39 inHg) for 15 seconds under a vacuum of (-66.7 kPa) [(-500 mmHg), (-19.69 inHg)]
When connected to engine side (2)	No vacuum will be applied

Brake Booster

INFOID:000000004278926

Unit: mm (in)



WFIA0159E

Clevis length	110 (4.33)
Output rod length Standard dimension at vacuum of (-66.7 kPa) [(-500 mmHg), (-19.69 inHg)]	10.275 - 10.525 (0.4045 - 0.4144)

Disc Brake

INFOID:000000004278924

Unit: mm (in)

Brake model		AD35VB (Front)	AD14VE (Rear)
Pads	Standard thickness	10 (0.394)	8.5 (0.335)
	Wear limit	2.0 (0.079)	2.0 (0.079)
Rotors	Standard thickness	28 (1.10)	16.0 (0.630)
	Wear limit	26 (1.02)	14.0 (0.551)
	Maximum runout (With it attached to the vehicle)	0.04 (0.0016)	0.05 (0.0020)
	Maximum thickness variation* (Measured at 8 positions)	0.015 (0.0006) or less	0.015 (0.0006) or less

* Measured position at a point 10 mm (0.39 in) from outer edge of the disc.