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# SECTION **BR** BRAKE SYSTEM

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# PRECAUTIONS

## PRECAUTIONS

PPF:00001

### Precautions for Supplemental Restraint System (SRS) “AIR BAG” and “SEAT BELT PRE-TENSIONER”

AFS00279

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.

### Precautions for Battery Service

AFS00214

Before disconnecting the battery, lower both the driver and passenger windows. This will prevent any interference between the window edge and the vehicle when the door is opened/closed. During normal operation, the window slightly raises and lowers automatically to prevent any window to vehicle interference. The automatic window function will not work with the battery disconnected.

### Precautions for Brake System

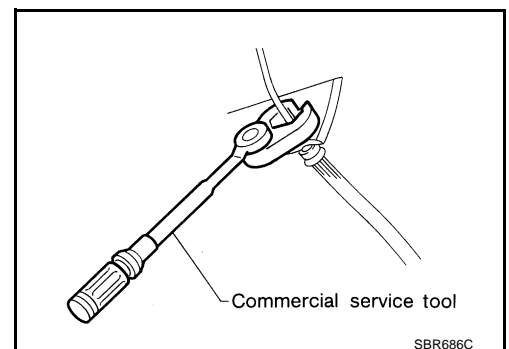
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- Recommended fluid is brake fluid “DOT 3”.
- Never reuse drained brake fluid.
- Be careful not to splash brake fluid on painted areas.
- To clean or wash all parts of master cylinder, disc brake caliper and wheel cylinder, use clean brake fluid.
- 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.
- Always torque brake lines when installing.
- Before working, turn the ignition switch OFF and disconnect the connectors for VDC actuator or battery negative terminal.
- Burnish the brake contact surfaces after refinishing or replacing drums or rotors, after replacing pads or linings, or if a soft pedal occurs at very low mileage.

Refer to [BR-29, "Brake Burnishing Procedure"](#) (CLZ25VD type), [BR-36, "BRAKE BURNISHING PROCEDURE"](#) (OPB27VA type).

#### **WARNING:**

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



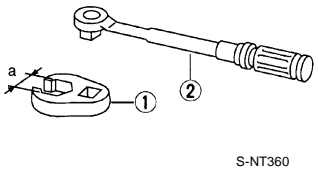
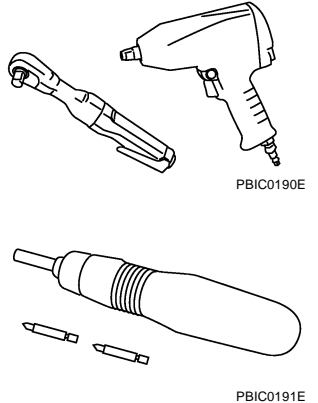
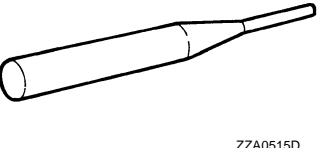
# PREPARATION

## PREPARATION

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### Commercial Service Tools

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Tool name	Description
<p>1. Flare nut crowfoot  a:10 mm (0.39 in) (Other)  a:12 mm (0.47 in) (Between VDC actuator and master cylinder)</p> <p>2. Torque wrench</p>	 <p>Removing and installing each brake piping</p>
<p>Power tool</p>	 <p>Removing front and rear caliper assembly</p>
<p>Pin punch  Tip diameter:4 mm (0.16in)dia</p>	 <p>Removing and installing reservoir tank pin</p>

# NOISE, VIBRATION AND HARSHNESS (NVH) TROUBLESHOOTING

## NOISE, VIBRATION AND HARSHNESS (NVH) TROUBLESHOOTING

PFP:00003

### NVH Troubleshooting Chart

AFS00120

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

Symptom	BRAKE	Possible cause and SUSPECTED PARTS														Reference page			
		Pads - damaged	Pads - uneven wear	Shims damaged	Rotor imbalance	Rotor damage	Rotor runout	Rotor deformation	Rotor deflection	Rotor rust	Rotor thickness variation	PROPELLER SHAFT	DIFFERENTIAL	AXLE AND SUSPENSION	TIRES		ROAD WHEEL	DRIVE SHAFT	STEERING
	Noise	x	x	x															BR-23, BR-30, BR-37, BR-43
	Shake				x														BR-23, BR-30, BR-37, BR-43
	Shimmy, Judder				x	x	x	x	x	x									BR-23, BR-30, BR-37, BR-43
																			—
																			—
																			BR-28, BR-35, BR-41, BR-49
																			—
																			BR-29, BR-36, BR-42, BR-49
																			NVH in PR section
																			NVH in RFD section
																			NVH in FAX, RAX and FSU, RSU section
																			NVH in WT section
																			NVH in WT section
																			NVH in RAX section
																			NVH in PS section

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# BRAKE PEDAL

## BRAKE PEDAL

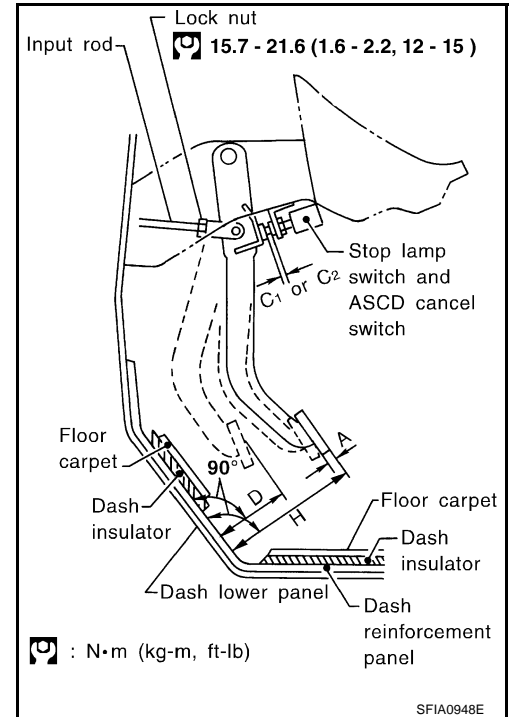
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### Inspection and Adjustment

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#### PLAY AND CLEARANCE BETWEEN BRAKE PEDAL AND FLOOR PANEL WITH PEDAL DEPRESSED.

1. Check brake pedal free height from the dash floor panel.
2. Adjust the height referring to the following specifications.



H	Brake pedal free height (from dash panel top surface)	M/T model	154 - 164 mm (6.06- 6.46 in)
		A/T model	162 - 172 mm (6.38 - 6.77 in)
D	Brake pedal depressed height (under a force of 490 N (50 kg, 110 lb) with the engine running)	M/T model	More than 90 mm (3.54 in)
		A/T model	More than 95 mm (3.74 in)
C1 or C2	Clearance between stopper rubber and the threaded end of stop lamp switch and ASCD cancel switch.		0.74 - 1.96 mm (0.0291 - 0.0772 in)
A	Pedal play		3 - 11 mm (0.12 - 0.43 in)

# BRAKE PEDAL

## ADJUSTMENT

1. Loosen stop lamp switch and ASCD cancel switch by rotating it counterclockwise by 45°.
2. Loosen lock nut (A) on the input rod, then rotate input rod to set pedal to the specified height, and tighten lock nut (A).

### CAUTION:

Check that the threaded end of the input rod stays inside the clevis.

Lock nut (A) :

15.7 - 21.6 N·m (1.6 - 2.2 kg·m, 12 - 15 in-lb)

3. With pedal pulled and held by hand, press stop lamp switch and ASCD cancel switch until its threaded end contacts stopper rubber.
4. With the threaded end of the stop lamp switch contacting stopper rubber and ASCD cancel switch, rotate the switch clockwise by 45° to secure.

### CAUTION:

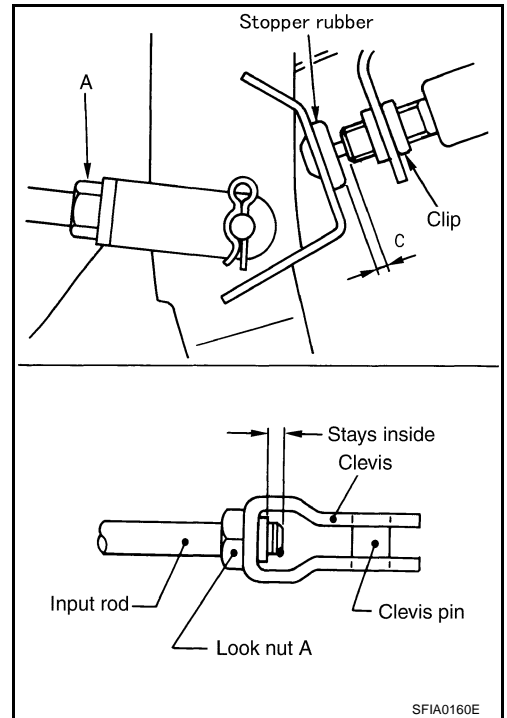
Make sure that the clearance (C) between stopper rubber and threaded end of the stop lamp switch and ASCD cancel switch is within the standard.

5. Check pedal play.

### CAUTION:

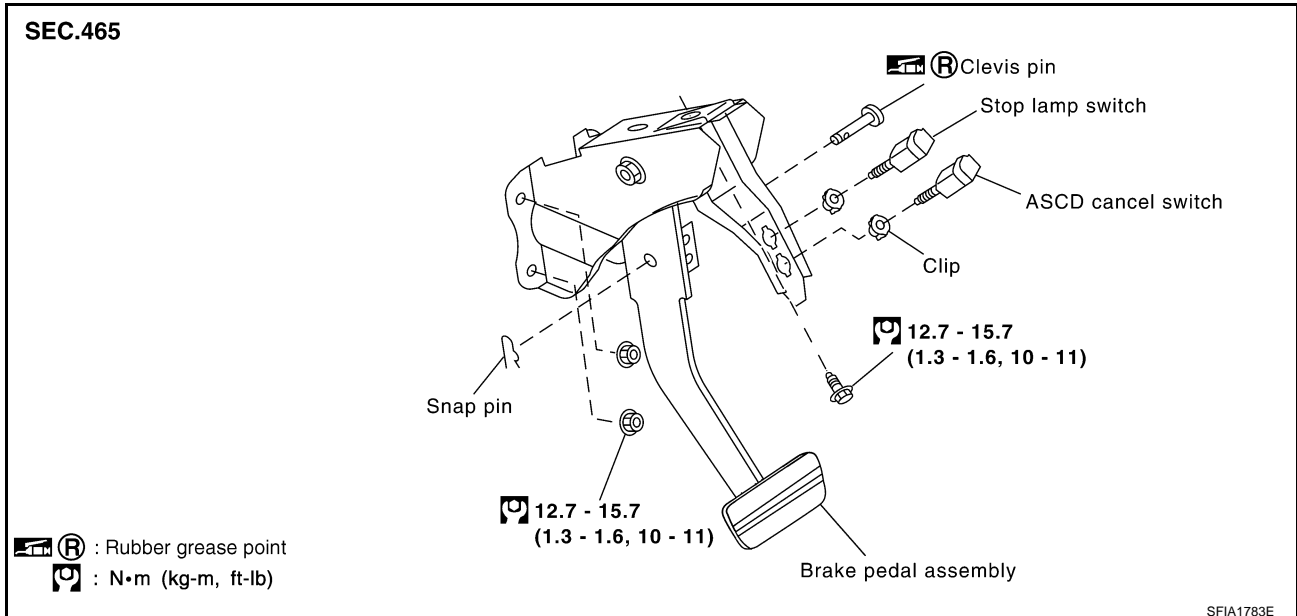
Make sure that the stop lamps go off when the pedal is released.

6. Start engine to check brake pedal's depressed height.



## Removal and Installation COMPONENT PARTS LOCATION

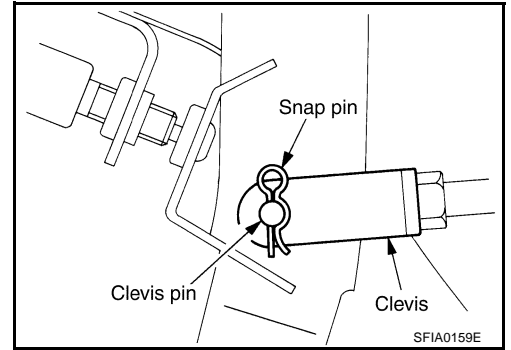
AFS00167



# BRAKE PEDAL

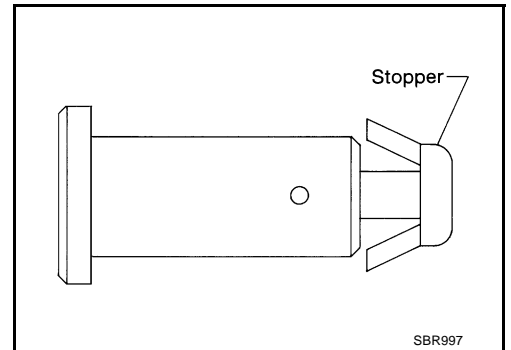
## REMOVAL

1. Remove instrument lower driver panel. Refer to [IP-12. "\(C\) Instrument Lower Driver Panel"](#) .
2. Remove VDC/TCS/ABS control unit. Refer to [BRC-62. "VDC/TCS/ABS CONTROL UNIT"](#) .
3. Remove stop lamp switch and ASCD cancel switch from pedal assembly.
4. Remove snap pin and clevis pin from brake booster clevis.
5. Remove mounting nuts and bolts from bracket, and remove pedal assembly from vehicle.



## INSPECTION AFTER REMOVAL

- Check brake pedal for bend, damage, and cracks on the welded parts. Replace the applicable part if a failure is detected.
- Check clevis pin and resin stopper for damage and deformation. If a failure is detected, replace clevis pin.



## INSTALLATION

Paying attention to the following items, install in the reverse order of removal.

- After installing brake pedal assembly to vehicle, adjust brake pedal.



# BRAKE FLUID

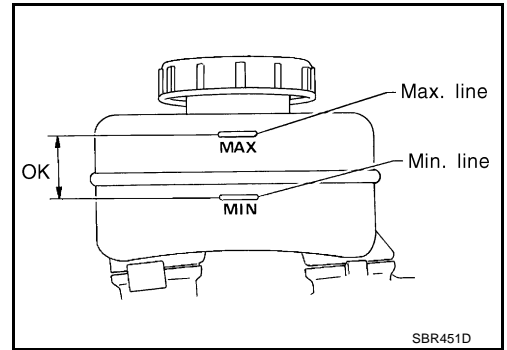
## BRAKE FLUID

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### Checking Brake Fluid Level

AFS00123

- Check fluid level in reservoir tank. It should be between Max and Min lines on reservoir tank.
- If fluid level is extremely low, check brake system for leaks.
- Release parking brake lever or pedal, and then see if brake warning lamp goes off. If not, check brake system for leaks.



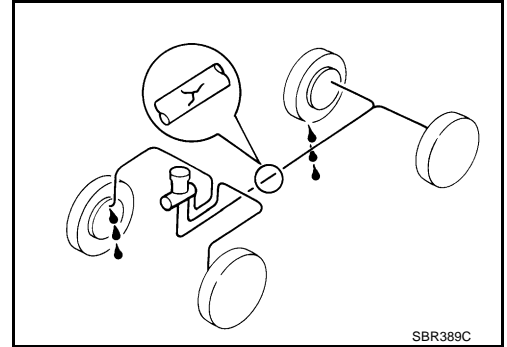
### Checking Brake Line

AFS00124

#### CAUTION:

If leakage occurs around joints, retighten or, if necessary, replace damaged parts.

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



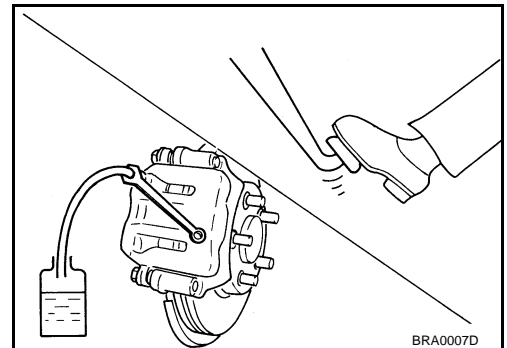
### Drain and Refill

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#### CAUTION:

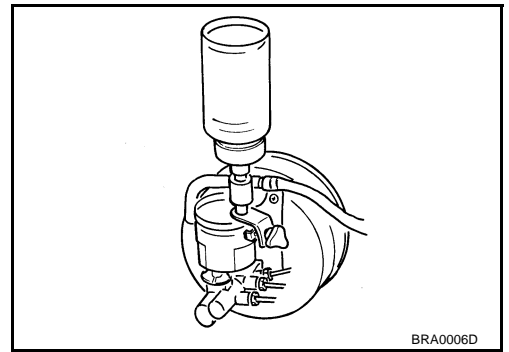
- Refill with new brake fluid "DOT3".
- Never reuse drained brake fluid.
- Do not let brake fluid come in contact with painted surfaces on the body. This might damage the paint, so if it does come in contact, immediately wipe area and wash off with water.

1. Connect a vinyl tube to bleed valve.
2. Depress the brake pedal, loosen bleed valve, and gradually remove brake fluid.
3. Turn the key switch to the off position and remove battery negative cable.



# BRAKE FLUID

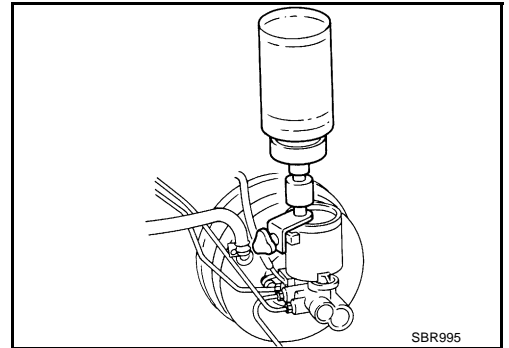
4. Make sure there is no foreign material in the reservoir tank, and refill with new brake fluid.
5. Rest foot on brake pedal. Loosen air bleeder. Slowly depress pedal until it stops. Tighten air bleeder. Release brake pedal. Repeat this process a few times, then pause to add new brake fluid to master cylinder. Continue until new brake fluid flows out. Bleed Air. Refer to [BR-10, "Bleeding Brake System"](#).



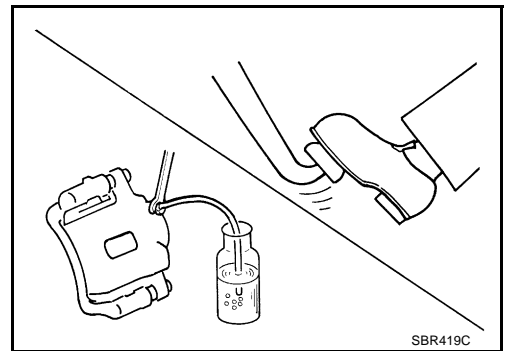
## Bleeding Brake System

### CAUTION:

- Carefully monitor brake fluid level at master cylinder during bleeding operation.
- Fill reservoir with new brake fluid "DOT 3". Make sure it is full at all times while bleeding air out of system.
- Place a container under master cylinder to avoid spillage of brake fluid.
- For models with VDC, turn ignition switch OFF and disconnect VDC actuator connectors or battery negative terminal.



- Bleed air in the following order. Right rear brake → Left front brake → Left rear brake → Right front brake
1. Connect a transparent vinyl tube to bleed valve.
  2. Fully depress brake pedal several times.
  3. With brake pedal depressed, open bleed valve to release air.
  4. Close bleed valve.
  5. Release brake pedal slowly.
  6. Repeat steps 2, through 5, until clear brake fluid comes out of bleed valve.



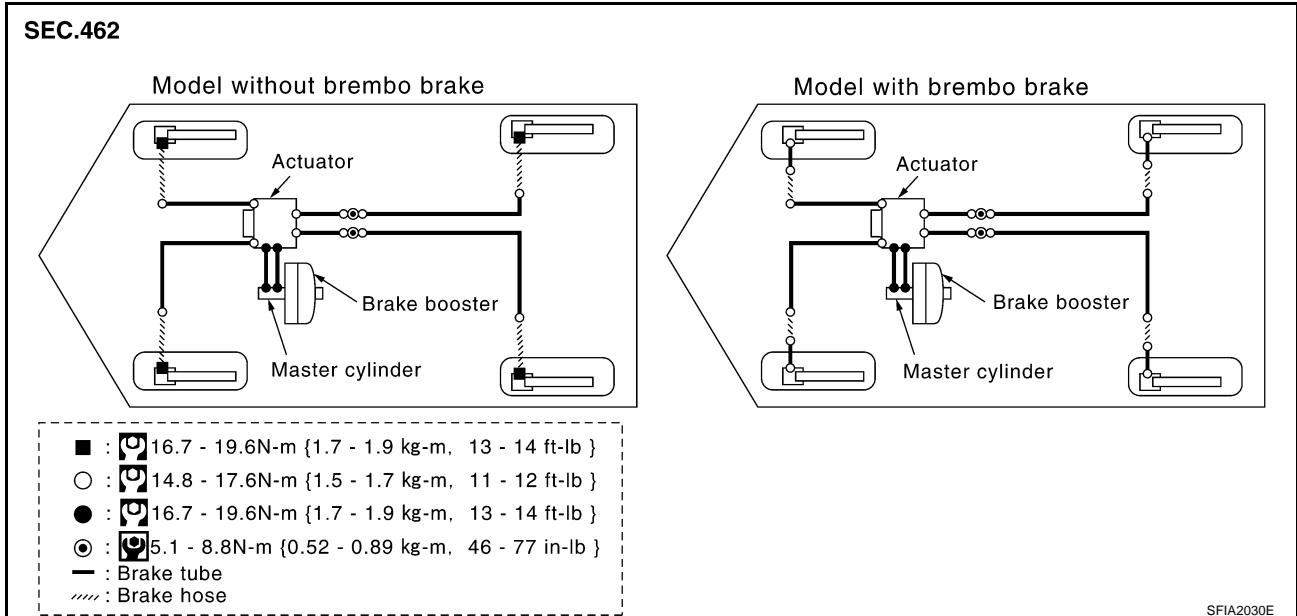
# BRAKFE PIPING AND HOSE

## BRAKFE PIPING AND HOSE

PPF:46210

### Hydraulic Circuit

AFS00126



### CAUTION:

- When installing, check for twist and fracture.
- Make sure that there is no interference with other parts when turning the steering clockwise or counterclockwise.
- Brake piping is an important safety part. If a brake fluid leak is detected, always disassemble parts. Replace the applicable part with a new one.
- Refill with new brake fluid "DOT3".
- Never reuse drained brake fluid.
- When removing components, cover connections so that no dirt, dust, or other foreign matter gets in.

## Front Brake Piping and Hose (Vehicles With CLZ25VD Calipers)

AFS00127

### REMOVAL

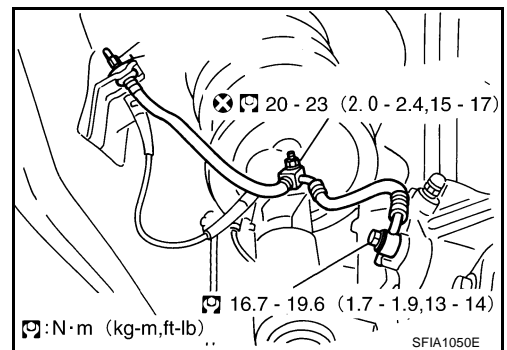
1. Drain brake fluid. Refer to [BR-9, "Drain and Refill"](#).
2. Using a flare nut wrench, remove brake tube from brake hose. Remove union bolt, and remove brake hose from caliper assembly.
3. Remove lock plate.
4. Remove mounting nuts, and remove brake hose from vehicle.

### INSTALLATION

1. Install brake hose by aligning with the protrusion on the caliper assembly, and tighten union bolts to the specified torque.

### CAUTION:

- Do not reuse copper washer.
2. Install brake hose to the brake tube on the vehicle, and temporarily tighten flare nut by hand until it stops to install bracket. Fix it with lock plate, and tighten it to the specified torque with flare nut wrench.
  3. Install brake hose to the vehicle, and tighten mounting nuts to the specified torque.
  4. After the work, bleed air. Refer to [BR-10, "Bleeding Brake System"](#).



# BRAKFE PIPING AND HOSE

## Front Brake Piping Brake Hose (Vehicles With Brembo OPB27VA Calipers)

AFS00151


### REMOVAL

1. Drain brake fluid. Refer to [BR-9, "Drain and Refill"](#) .
2. Using a flare nut wrench, remove brake tube from brake hose.
3. Using a flare nut wrench, remove caliper-side brake tube from brake hose.
4. Remove lock plate and nut, and remove brake hose from vehicle.


### INSTALLATION

1. Install brake hose to the vehicle and tighten nut to the specified torque.

 **Nut : 19.6 - 23.5 N·m (2.0 - 2.3 kg-m, 15 - 17 ft-lb)**


 **Bolt : 10.8 - 15.6 N·m (1.1 - 1.5 kg-m, 8 - 11 ft-lb)**

2. Install caliper-side brake tube to the brake hose, partially tighten flare nut as far as possible by hand, then tighten it to the specified torque with flare nut torque wrench.

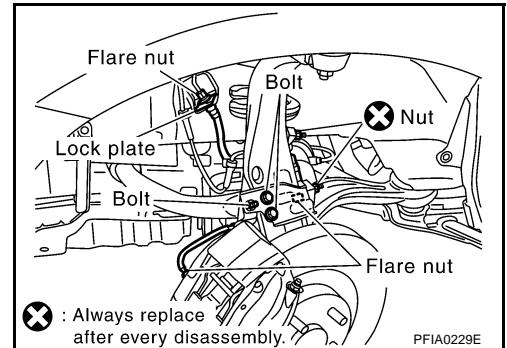
 **: 14.8 - 17.6 N·m (1.5 - 1.7kg-m, 11 - 12ft-lb)**

3. Install brake hose to the brake tube, partially tighten flare nut as far as possible by hand, then secure to the bracket with lock plate.

4. Using a flare nut torque wrench, tighten flare nut to the specified torque with flare nut torque.

 **: 14.8 -17.6 N·m (1.5 - 1.7 kg-m, 11 - 12ft-lb)**

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

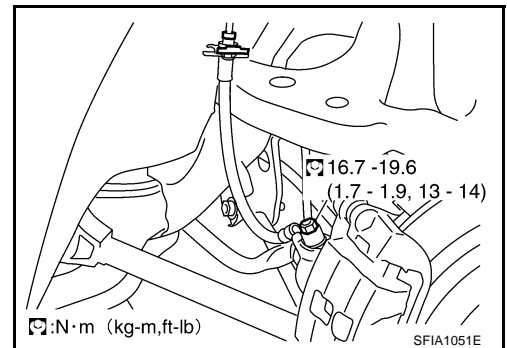


## Rear Brake Piping and Hose (Vehicles With AD14VE Calipers)

AFS00128

### REMOVAL

1. Drain brake fluid. Refer to [BR-9, "Drain and Refill"](#) .
2. Using a flare nut wrench, remove brake tube from brake hose.
3. Remove union bolts, and then remove brake hose from caliper assembly.
4. Remove lock plate and remove brake hose from vehicle.



### INSTALLATION

1. Install brake hose by aligning with the protrusion on the caliper assembly, and tighten union bolts to the specified torque.

#### CAUTION:

- Do not reuse copper washer.

2. Install brake hose to the brake tube on the vehicle, and temporarily tighten flare nut by hand until it stops to install bracket. Fix it with lock plate, and tighten it to the specified torque with flare nut wrench.
3. After the work, bleed air. Refer to [BR-10, "Bleeding Brake System"](#) .

## Rear Brake Piping Brake Hose (Vehicles With Brembo OPB13VB Calipers)

AFS00152

### REMOVAL

1. Drain brake fluid. Refer to [BR-9, "Drain and Refill"](#) .
2. Using a flare nut wrench, remove brake tube from brake hose.
3. Using a flare nut wrench, remove caliper-side brake tube from brake hose.
4. Remove lock plate and bolt, and remove brake hose from vehicle.


# BRAKFE PIPING AND HOSE

## INSTALLATION

1. Install brake hose to the vehicle and tighten bolt to the specified torque.


 : 19.6 - 23.5 N·m (2.0 - 2.3 kg·m, 15 - 17 ft·lb)

2. Install caliper-side brake tube to brake hose, partially tighten flare nut as far as possible by hand, then tighten it to the specified torque with flare nut torque wrench.

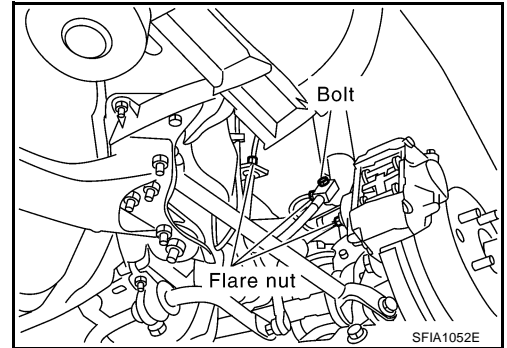
 : 14.8 - 17.6 N·m (1.5 - 1.7kg·m, 11 - 12 ft·lb)

3. Install brake hose to the brake tube, partially tighten flare nut as far as possible by hand, then secure to the bracket with lock plate.

4. Using a flare nut torque wrench, tighten flare nut to the specified torque.

 : 14.8 - 17.6 N·m (1.5 - 1.7 kg·m, 11 - 12 ft·lb)

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



## Inspection After Installation.

AFS00129

### CAUTION:

If leak is detected at the connections, retighten it or replace the damaged part if necessary.

1. Check brake hose, tube, and connections for fluid leaks, damage, twist, deformation, contact with other parts, and loose connections.
2. While depressing the pedal under the force of 785 N (80 kg, 177 lb) with the engine running for approximately 5 seconds, check for fluid leak from each part.

# BRAKE MASTER CYLINDER

PFP:46010

## BRAKE MASTER CYLINDER

### Removal and Installation

#### REMOVAL

1. Drain brake fluid. Refer to [BR-9, "Drain and Refill"](#) .
2. Remove harness connectors for the brake fluid level switch.
3. Using a flare nut wrench, remove brake tube from the master cylinder.
4. Remove mounting nuts, and remove master cylinder assembly from vehicle. Refer to [BR-19, "Removal and Installation"](#) .

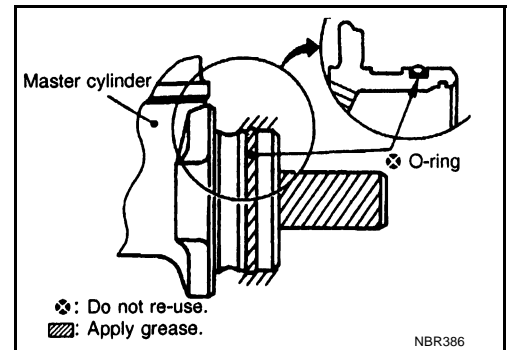
#### INSTALLATION

##### CAUTION:

- Refill with new brake fluid "DOT3".
  - Never reuse drained brake fluid.
1. Temporarily tighten flare nuts on the brake tube to master cylinder by hand.
  2. Install master cylinder to the brake booster assembly, and tighten mounting nuts to the specified torque. Refer to [BR-19, "Removal and Installation"](#) .

##### CAUTION:

- Do not damage and stain rod of the primary piston.
- Do not reuse O-ring seal, and primary piston.
- Apply silicon grease for the O-ring seal and primary piston.



3. Using a flare nut crow foot and torque wrench, tighten flare nut on the brake tube to the specified torque.

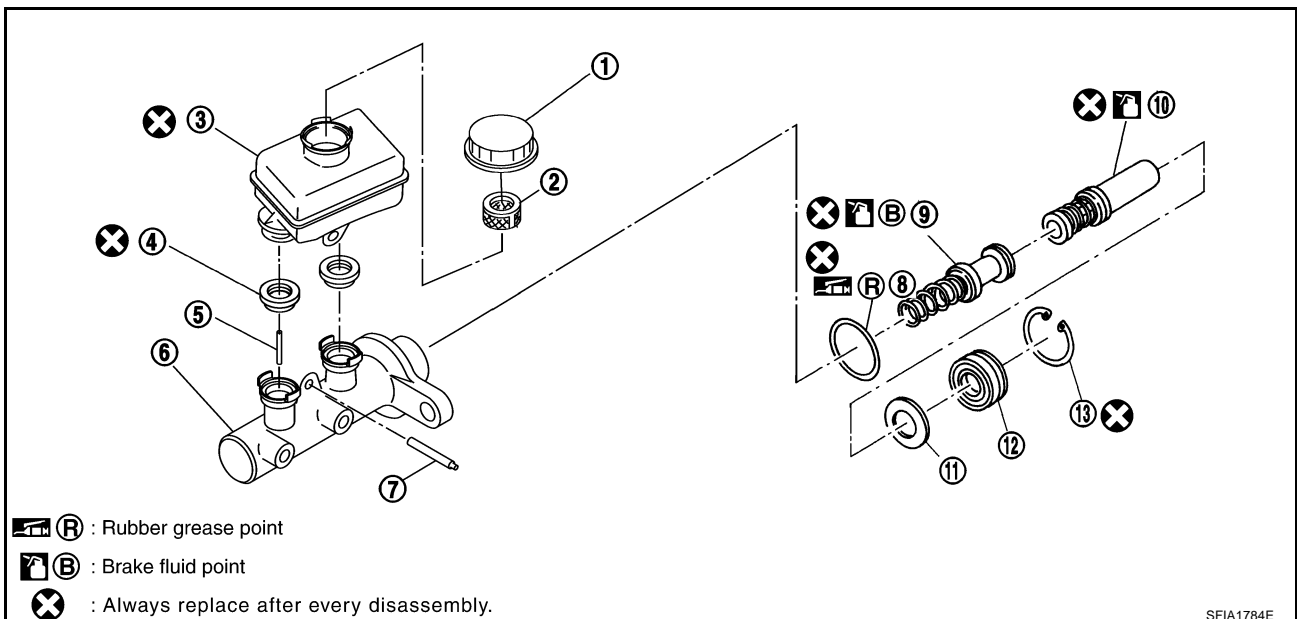
 : 16.7 - 19.6 N·m (1.7 - 1.9 kg·m, 13 - 14 ft·lb)

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

### Disassembly and Assembly

#### COMPONENTS

AFS0012C



# BRAKE MASTER CYLINDER

- |                    |                   |                     |
|--------------------|-------------------|---------------------|
| 1. Reservoir cap   | 2. Oil filter     | 3. Reservoir tank   |
| 4. Grommet         | 5. Piston stopper | 6. Cylinder body    |
| 7. Pin             | 8. O-ring         | 9. Secondary piston |
| 10. Primary piston | 11. Plate         | 12. Guide assembly  |
| 13. Snap ring      |                   |                     |

## DISASSEMBLY

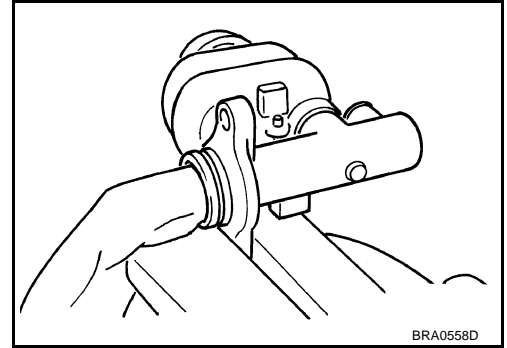
### CAUTION:

Be careful not to damage rod of primary piston with covering cloths in acting.

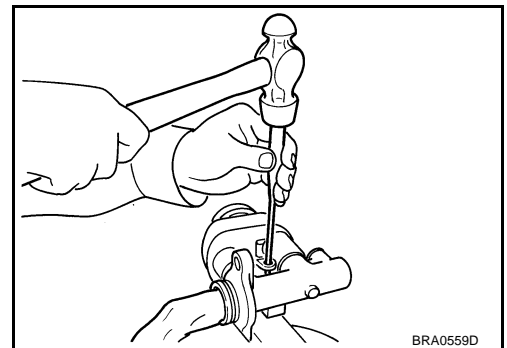
1. Tighten the flange of the cylinder body in base in the figure.

### CAUTION:

- Pay attention to the orientation of master cylinder body.
- Use copper plate or closes for fixing body in the vise.



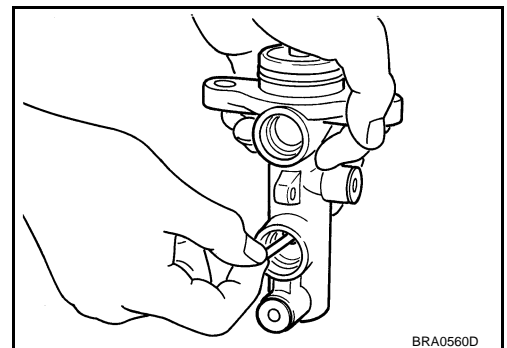
2. Using pin-punch [commercial service tool: dia approx. 4mm (0.16in)], remove pin form reservoir tank.
3. Remove master cylinder assembly from the vise.
4. Remove reservoir tank and grommet from the cylinder body.



5. Push primary piston and remove piston stopper from secondary tank boss hole in the cylinder body.

### CAUTION:

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



6. Remove snap ring in pushing primary piston.

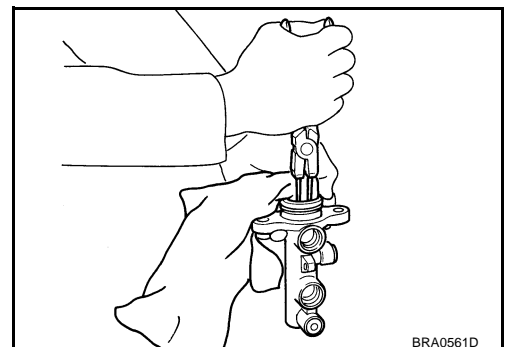
### CAUTION:

Be careful not to put out piston.

7. Holding rod of the primary piston, remove primary piston assembly, plate and guide assembly with pulling straight to prevent cup from being caught by the inner wall of the cylinder.
8. Remove plate and guide assembly from the primary piston.

### CAUTION:

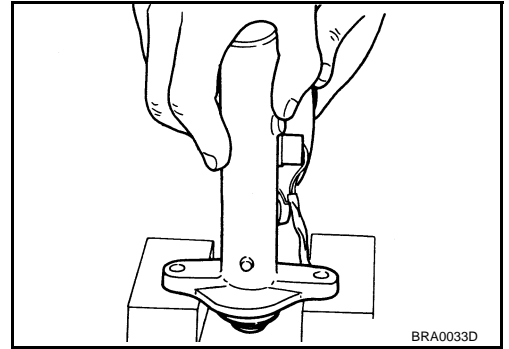
Be careful not to damage rod from the inner wall of the plate.



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# BRAKE MASTER CYLINDER

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



## INSPECTION AFTER DISASSEMBLY

Inspect the next items.

### Cylinder Body

- Check the inner wall of the cylinder for damage, wear, corrosion, and pin holes. Replace the cylinder if a malfunction is detected.

## ASSEMBLY

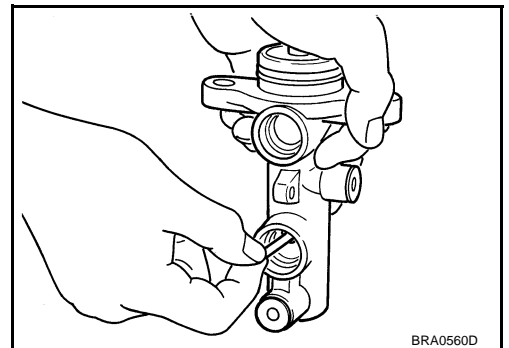
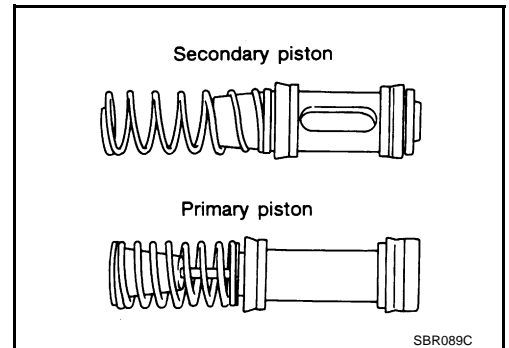
### CAUTION:

- **Never use mineral oils such as kerosene or gasoline during the cleaning and assembly processes.**
- **Make sure that there is no foreign material such as dirt and dust on the inner wall of the cylinder, piston, and cup seal. Be careful not to damage parts with a service tool when assembling.**
- **Do not drop parts. Do not use any dropped parts.**

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

### CAUTION:

- **Do not reuse primary and secondary piston assemblies.**
  - **Always replace inner kit as an assembly.**
  - **Pay attention to the orientation of the piston cup, and insert straight to prevent cup from being caught by the inner wall of the cylinder.**
3. Align the slit in the center of secondary piston with the axial direction of the piston stopper to assemble. Visually check secondary piston slit from the piston stopper mounting hole, and install piston stopper.



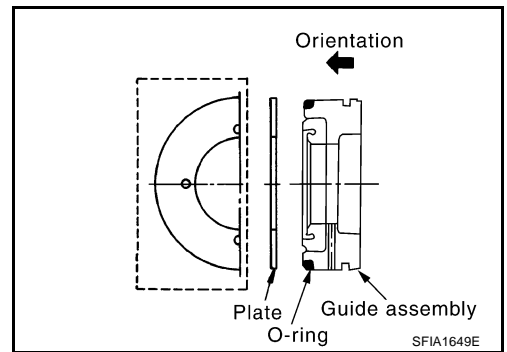


# BRAKE MASTER CYLINDER

4. Insert plate and guide assembly into the cylinder body.

**CAUTION:**

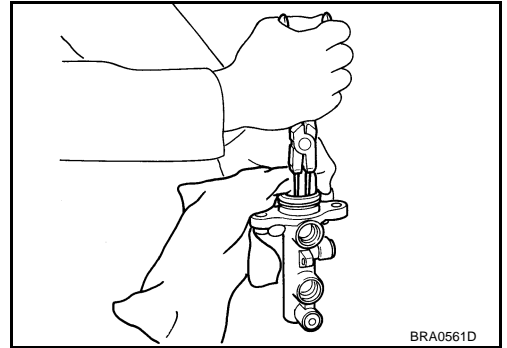
- Be careful not to damage rod of the primary piston.
- Pay attention to the orientation of the guide assembly.
- Do not drop O-ring.
- Be careful the guide and / or plate are not inserted at an angle.



5. Be careful not to damage rod of the primary piston with covering the close. Then insert snap ring to cylinder with pushing primary piston.

**CAUTION:**

- Be careful to check snap ring in the inner tip of the cylinder body.
- Do not reuse snap ring.



6. Apply brake fluid to a grommet, and press it into master cylinder to install.

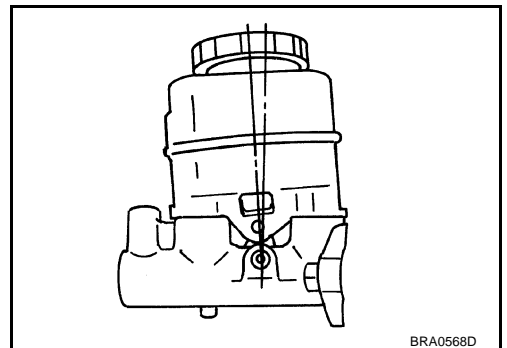
**CAUTION:**

**Do not reuse grommet.**

7. Install reservoir tank to the master cylinder.

**CAUTION:**

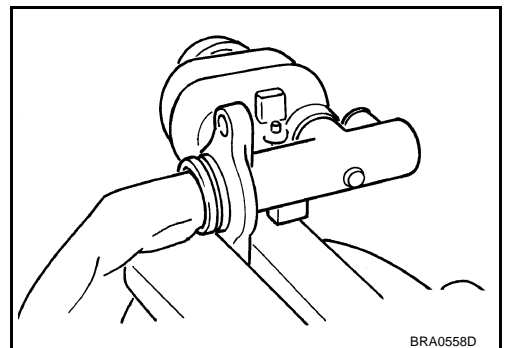
**Do not reuse reservoir tank.**



8. Tithing flange of the cylinder body in the figure.

**CAUTION:**

- Using copper plate or closes to cover flange for fixing base.
- Pay attention to the orientation of the cylinder body.



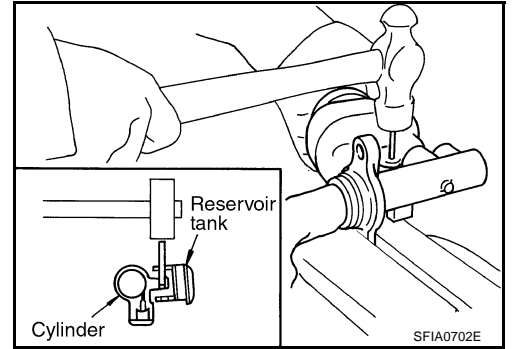
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## BRAKE MASTER CYLINDER

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

**CAUTION:**

**Do not reuse mounting pin.**



# BRAKE BOOSTER

## BRAKE BOOSTER

PF0:47200

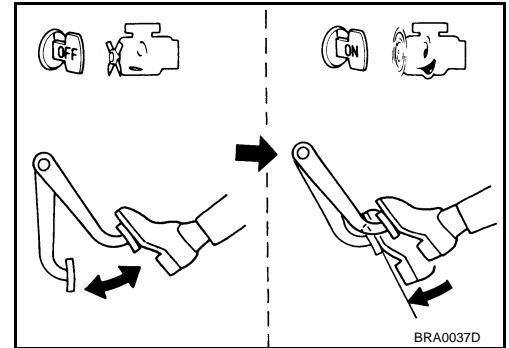
### On-Vehicle Service OPERATING CHECK

AFS0012D

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

#### CAUTION:

Depressing pedal interval is approximately 5 seconds.

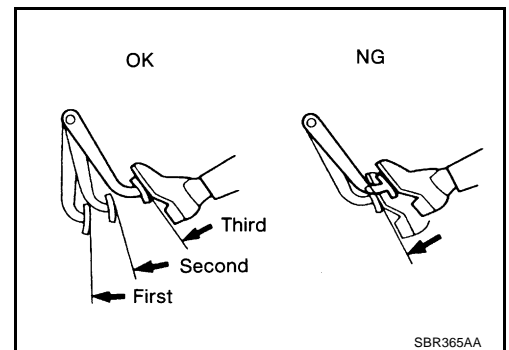


### AIRTIGHT CHECK

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

#### CAUTION:

Depressing pedal interval is approximately 5 seconds.



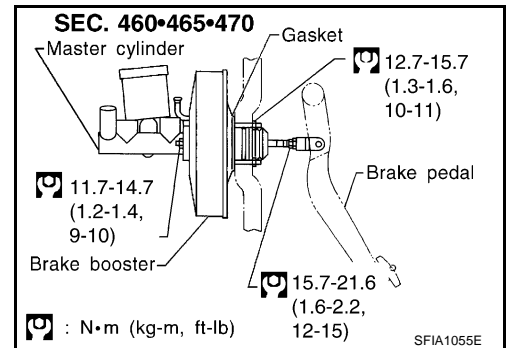
### Removal and Installation REMOVAL

AFS0012E

#### CAUTION:

- Be careful not to deform or bend brake piping while removing and installing 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, dash panel may damage the threads.
- Be sure to install check valve in the correct orientation.

1. Remove vacuum hose from brake booster.
2. Remove master cylinder. Refer to [BR-14, "Removal and Installation"](#).
3. Remove snap pin and clevis pin on clevis in the passenger compartment, and remove input rod from brake pedal. Refer to [BR-7, "COMPONENT PARTS LOCATION"](#).
4. Remove mounting nuts on pedal bracket.
5. Remove booster assembly from the engine compartment.

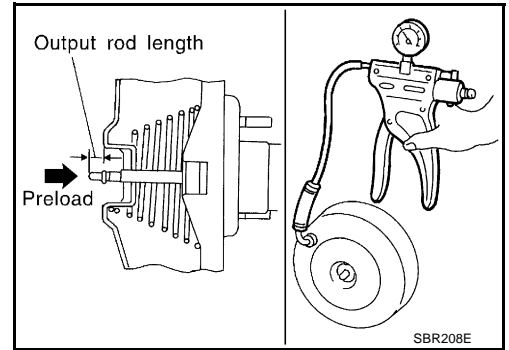


# BRAKE BOOSTER

## INSPECTION AFTER REMOVAL

### Output Rod Length Inspection

1. Using a handy vacuum pump, apply a vacuum of  $-66.7$  kPa ( $-500$  mmHg,  $19.69$  inHg) to brake booster.
2. Check output rod length.



Standard dimension when vacuum  $-66.7$  kPa ( $-500$  mmHg,  $-19.69$  inHg):

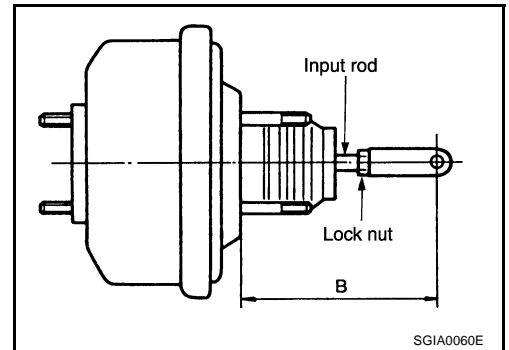
:  $-6.2$  mm ( $-0.244$  in)

## INSTALLATION

1. Loosen lock nut to adjust the input rod length so that the length B (shown in the figure) satisfies the specified value.

Length "B" :  $125$  mm ( $4.92$  in)

2. After adjusting "B", temporarily tighten lock nut to install booster assembly to vehicle. At this time, make sure to install a gasket between booster assembly and vehicle.
3. Connect brake pedal with clevis of input rod.
4. Install pedal bracket mounting nuts and tighten them to the specified torque.
5. Install master cylinder to booster assembly. Refer to [BR-14, "Removal and Installation"](#).
6. Adjust the height and play of brake pedal. Refer to [BR-6, "Inspection and Adjustment"](#).
7. Tighten lock nut of input rod to the specified torque.
8. Bleed air. Refer to [BR-10, "Bleeding Brake System"](#).



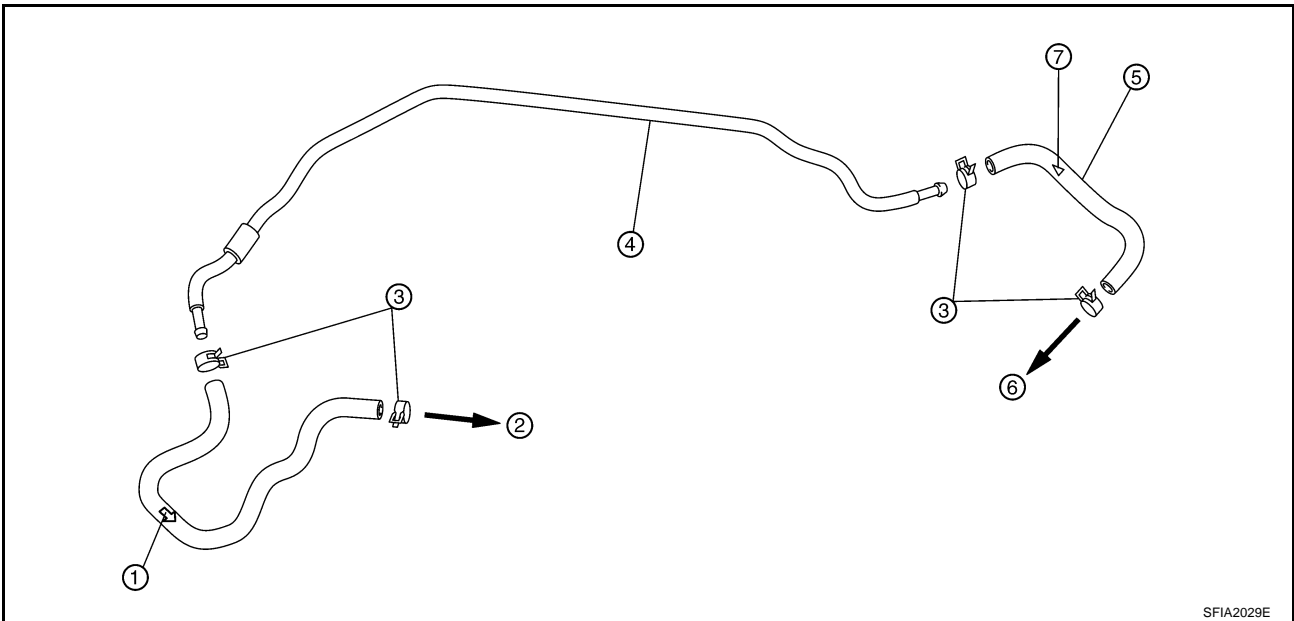
# VACUUM LINES

## VACUUM LINES

PFP:41920

### Removal and Installation

AFS0012F

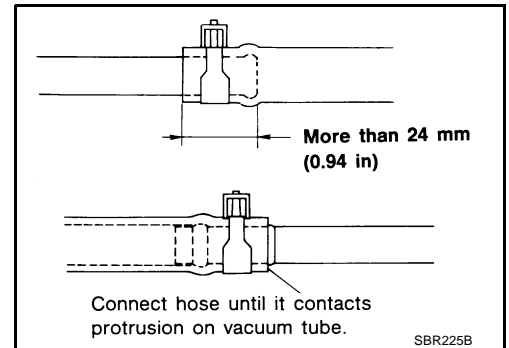


SFIA2029E

- |   |                        |                      |
|---|------------------------|----------------------|
| 1. Check valve inclusion position stamp | 2. For intake manifold | 3. Clamp             |
| 4. Vacuum piping                        | 5. Vacuum hose         | 6. For brake booster |
| 7. Orifice mark(A/T models)             |                        |                      |

### 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.



Connect hose until it contacts protrusion on vacuum tube.

SBR225B

AFS0012G

### Inspection VISUAL INSPECTION

Check for improper assembly, damage and aging.

# VACUUM LINES

## CHECK VALVE INSPECTION

### Airtightness Inspection

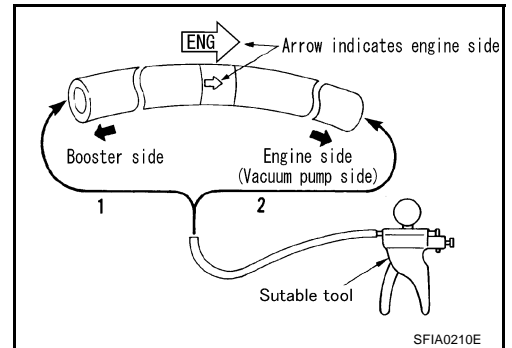
Use a hand-held vacuum pump to check.

#### 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 (CLZ25VD TYPE)

## FRONT DISC BRAKE (CLZ25VD TYPE)

PFP:41000

### On-board Inspection PAD WEAR INSPECTION

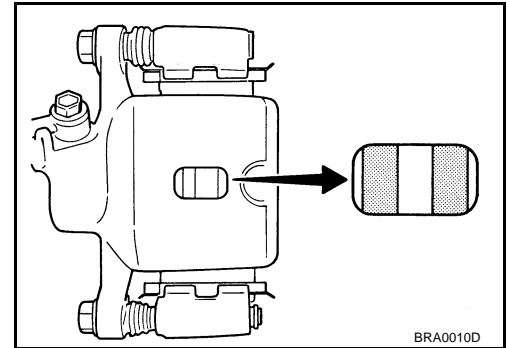
AFS0016I

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

#### Standard

Standard thickness : 11.0 mm (0.433 in)

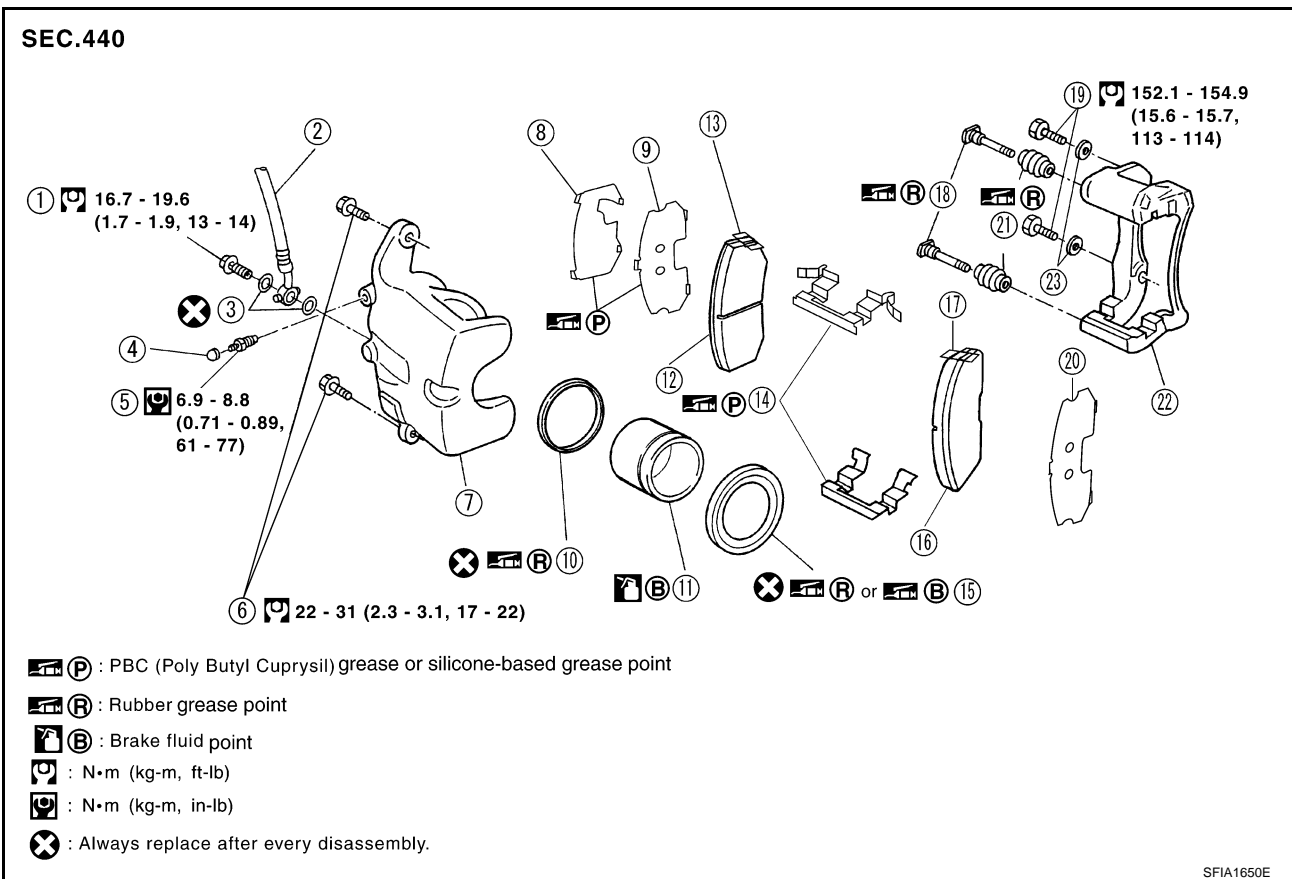
Repair limit thickness : 2.0 mm (0.079 in)



BRA0010D

### Components

AFS0016J



SFIA1650E

- |                         |                     |                     |
|-------------------------|---------------------|---------------------|
| 1. Union bolt           | 2. Brake hose       | 3. Copper washer    |
| 4. Cap                  | 5. Bleed valve      | 6. Sliding pin bolt |
| 7. Cylinder body        | 8. Inner shim cover | 9. Inner shim       |
| 10. Piston seal         | 11. Piston          | 12. Inner pad       |
| 13. Pad wear sensor     | 14. Pad retainer    | 15. Piston boot     |
| 16. Outer pad           | 17. Pad wear sensor | 18. Sliding pin     |
| 19. Torque member bolts | 20. Outer shim      | 21. Slide pin boot  |
| 22. Torque member       | 23. Washer          |                     |

#### CAUTION:

- Clean dust on caliper and brake pad with a vacuum dust collector. Do not blow with compressed air.
- While brake pad and cylinder body are separated, piston may suddenly jump out, so do not depress brake pedal.

# FRONT DISC BRAKE (CLZ25VD TYPE)

- It is not necessary to remove bolts on torque member and brake hose except for disassembly or replacement of caliper assembly. 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 rotor from brake fluid.

## Removal and Installation of Brake Pad

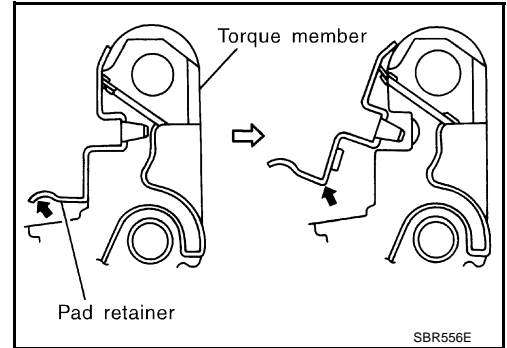
AFS0016K

### REMOVAL

1. Remove tires from vehicle with power tool.
2. Remove lower sliding pin bolt.
3. Hang cylinder body with a wire and remove pad and shim from torque member.

#### CAUTION:

When removing pad retainer from torque member, lift pad retainer in the direction shown by the arrow (shown in the figure) so as not to deform it.

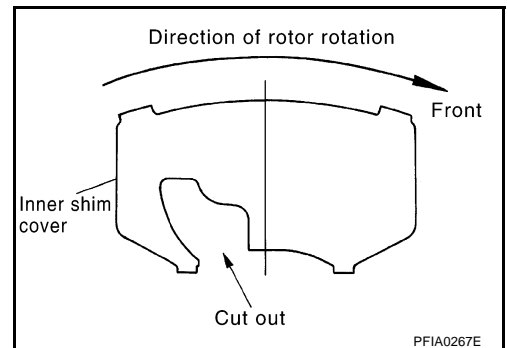


### INSTALLATION

1. Apply PBC (Poly Butyl Cuprysil) grease or silicone -based grease between inner shim cover, inner shim and outer shim.
2. Install inner shim and shim cover to inner pad and outer shim to outer pad.

#### CAUTION:

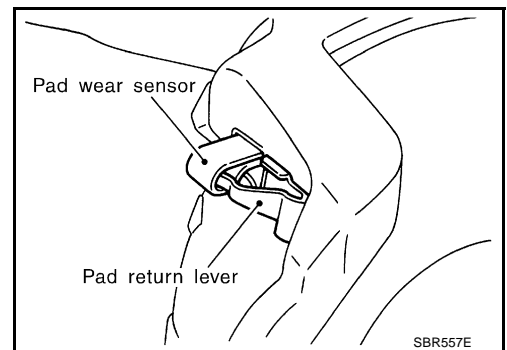
Install inner shim cover in the direction shown in the figure.



3. Apply PBC (Poly Butyl Cuprysil) grease or silicone -based grease to the contact surface of pad retainer and install pad retainer and pad to torque member.

#### CAUTION:

Since both the inner and outer pads have pad return mechanisms on upper pad retainer, when attaching a pad, make sure pad return lever is firmly attached to pad wear sensor.



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

#### NOTE:

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

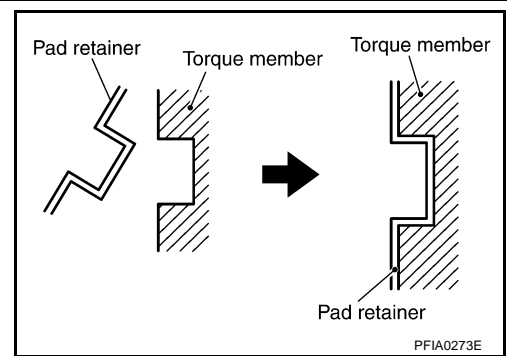
#### CAUTION:

- By pushing in piston, brake fluid returns to master cylinder reservoir tank. Watch the level of the surface of reservoir tank.



## FRONT DISC BRAKE (CLZ25VD TYPE)

- When attaching pad retainer, attach it firmly so that it does not float up higher than torque member, as shown in the figure.
5. Install lower sliding pin bolt, and tighten it to the specified torque.
  6. Check brake for drag.
  7. Install tires to vehicle.



AFS0016L

### Removal and Installation of Caliper Assembly REMOVAL


1. Remove tires from vehicle with power tool.
2. Drain brake fluid. Refer to [BR-9, "Drain and Refill"](#).
3. Remove union bolts and torque member bolts, and remove caliper assembly.
4. Remove disc rotor.

### INSTALLATION

#### CAUTION:

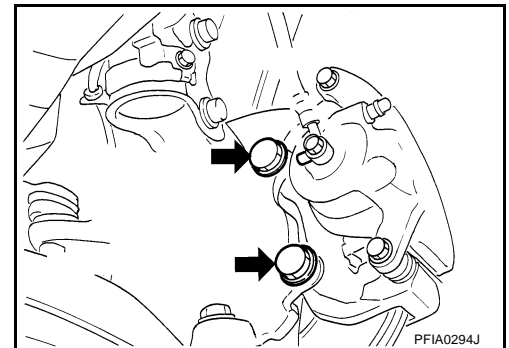
- Refill with new brake fluid "DOT3"
- Never reuse drained brake fluid.

1. Install disc rotor.
2. Install caliper assembly to vehicle, and tighten bolts to the specified torque.

 : 152.1 - 154.9 N-m (15.6 - 15.7 kg-m, 113 - 114 ft - lb)

#### CAUTION:

When installing the caliper assembly to vehicle, wipe any oil off knuckle spindle and caliper assembly attachment surfaces.

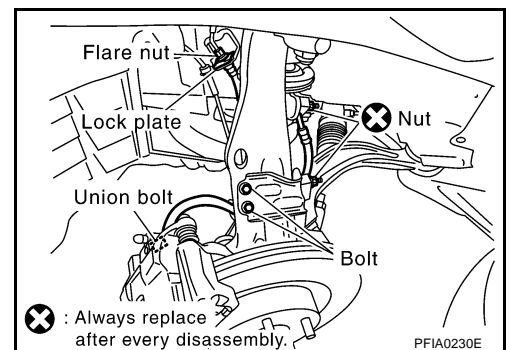


3. Install brake hose to the caliper assembly, and tighten union bolts to the specified torque.

 : 16.7 - 19.6 N-m (1.7 - 1.9 kg-m, 13 - 14 ft-lb)

#### CAUTION:

- Do not reuse copper washer for union bolts.
- Install brake hose to the protrusion on the caliper assembly attachment part.



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

# FRONT DISC BRAKE (CLZ25VD TYPE)

AFS0016M

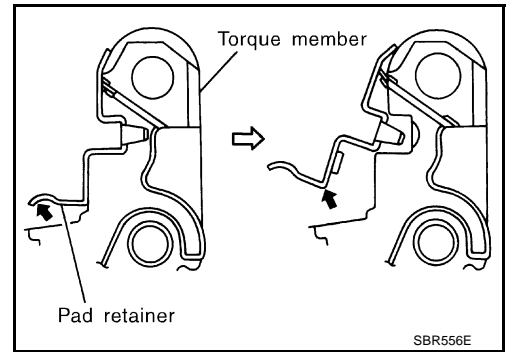
## Disassembly and Assembly of Caliper Assembly DISASSEMBLY

1. Remove slide pin bolts, and then remove pad, shim, shim cover, and pad retainer from torque member.

### CAUTION:

When removing pad retainer from torque member, lift it in the direction indicated by the arrow in the figure so that it does not deform.

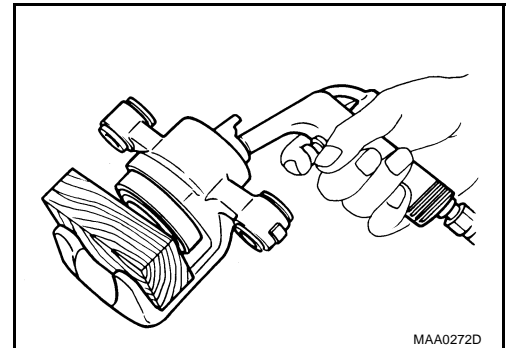
2. Remove sliding pins and sliding pin boots from torque member.



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

### CAUTION:

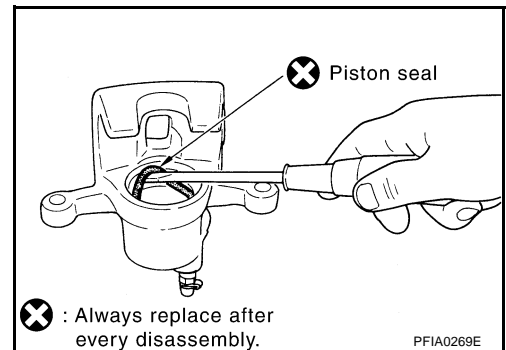
Do not get your fingers caught in piston.



4. Using a flat-bladed screwdriver, remove piston seal from cylinder body.

### CAUTION:

Be careful not to damage cylinder inner wall.



## CALIPER INSPECTION

### 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 caliper if there are any non-standard conditions.
- Minor flaws caused by corrosion or a foreign material can be removed by polishing the surface with a fine sandpaper. Replace 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 pin and sliding pin boot for wear, damage, and cracks. If damage or deformation is present, replace the affected part.

# FRONT DISC BRAKE (CLZ25VD TYPE)

## ASSEMBLY

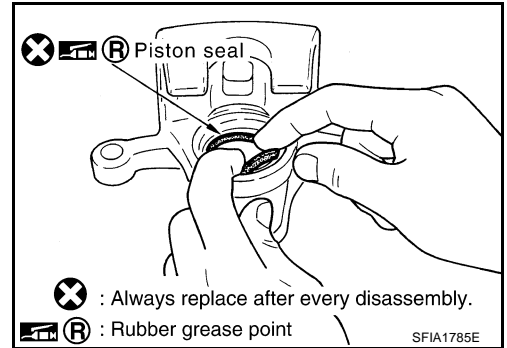
### CAUTION:

Do not use Nissan Rubber Grease (KRE00 00010, KRE00 00010 01) when assembling.

1. Apply rubber grease to piston seal and insert to cylinder body.

### CAUTION:

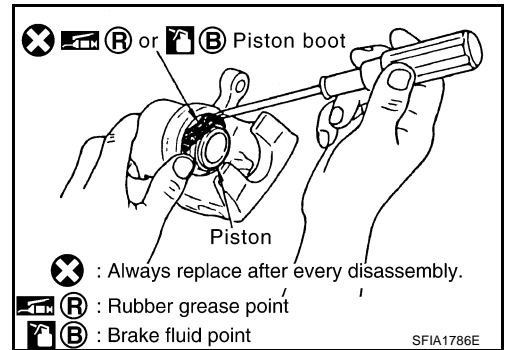
Do not reuse piston seals.



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

### CAUTION:

Do not reuse piston boot.

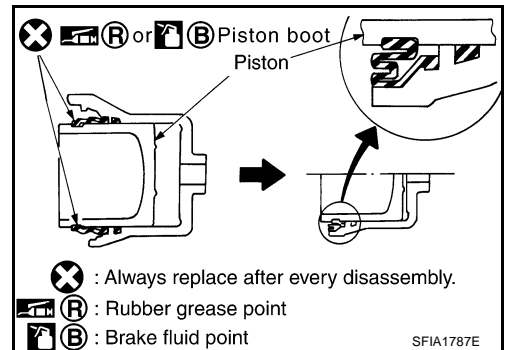


3. Apply brake fluid or rubber grease to piston, insert into cylinder body by hand and firmly attach piston boot piston-side lip into the piston groove.

### 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.

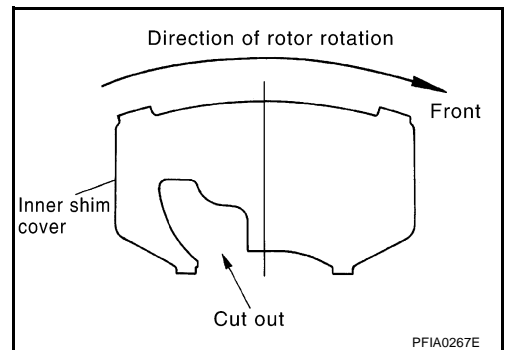


5. Apply PBC (Poly Butyl Cuprysil) grease or silicone -based grease between inner shim cover and inner shim.

6. Insert inner shim and shim cover to inner pad and outer shim to outer pad.

### CAUTION:

Install inner shim cover in the direction shown in the figure.

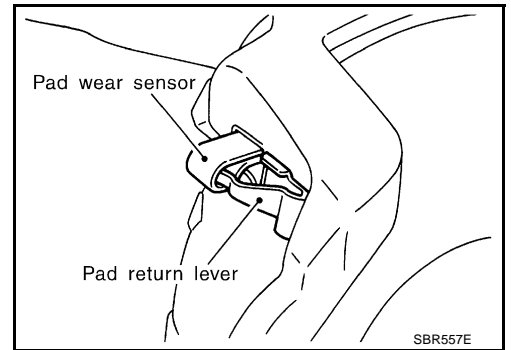


## FRONT DISC BRAKE (CLZ25VD TYPE)

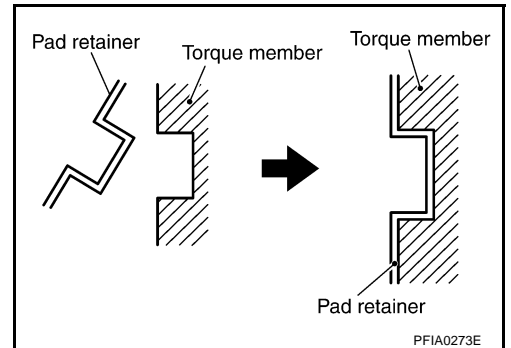
7. Apply PBC (Poly Butyl Cuprysil) grease or silicone -based grease to the contact surface of pad retainer and insert pad retainer and pad to torque member.

### CAUTION:

- Since both the inner and outer pads have pad return mechanisms on upper pad retainer, when attaching a pad, make sure pad return lever is firmly attached to pad wear sensor.



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



8. Install cylinder body. Tighten sliding pin bolt to the specified torque.

## DISC ROTOR INSPECTION

### Visual Inspection

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

### Runout Inspection

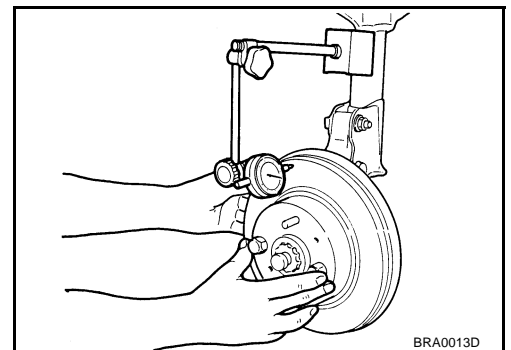
1. Using wheel nuts, fix disc rotor to wheel hub. (2 or more positions)
2. Inspect runout using a dial gauge.

**Standard value**  
(measured at 10 mm (0.39 in) inside the disc edge)

**Runout limit** : 0.035 mm (0.0014 in)  
(with it attached to vehicle) or less

### CAUTION:

Make sure that wheel bearing axial end play is within the specifications before measuring runout. Refer to [FAX-4, "On-Vehicle Inspection and Service"](#).



3. If runout is outside the limit, find the minimum runout point by shifting mounting positions of disc rotor and wheel hub by one hole.
4. If the runout is still out of specification, turn rotor with on-car brake lathe ("MAD DL-8700", "AMMCO 700 and 705" or equivalent).

# FRONT DISC BRAKE (CLZ25VD TYPE)

## Thickness Inspection

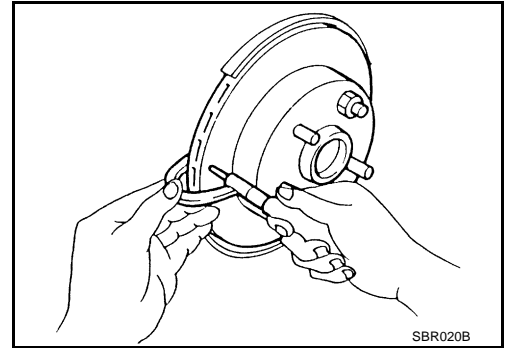
Using a micrometer, check thickness of disc rotor. If thickness is outside the standard, replace disc rotor.

### Standard

**Standard thickness** : 24.0 mm (0.945 in)

**Wear limit** : 22.0 mm (0.866 in)

**Maximum uneven wear (measured at 8 positions)** : 0.015 mm (0.0006 in) or less



## BRAKE BURNISHING PROCEDURE

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.**

1. Drive vehicle on a straight smooth road at 50 km/h (31 MPH).
2. Use medium brake pedal /foot effort to bring 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 vehicle at 50 km/h (31 MPH) for 1 minute without stopping.
4. Repeat steps 1 to 3, 10times or more to complete the burnishing procedure.

# FRONT DISC BRAKE (OPB27VA TYPE)

## FRONT DISC BRAKE (OPB27VA TYPE)

PFP:41000

### On-board Inspection PAD WEAR INSPECTION

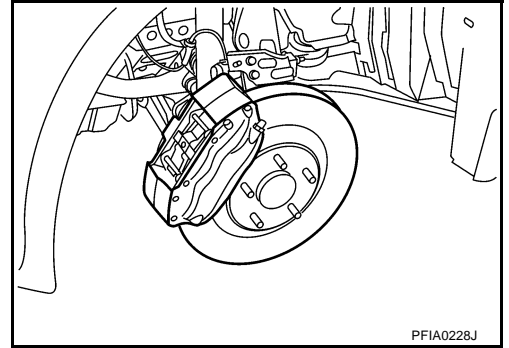
AFS00158

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

#### Standard

Standard thickness : 9.3 mm (0.366 in)

Repair limit thickness : 2.0 mm (0.079 in)



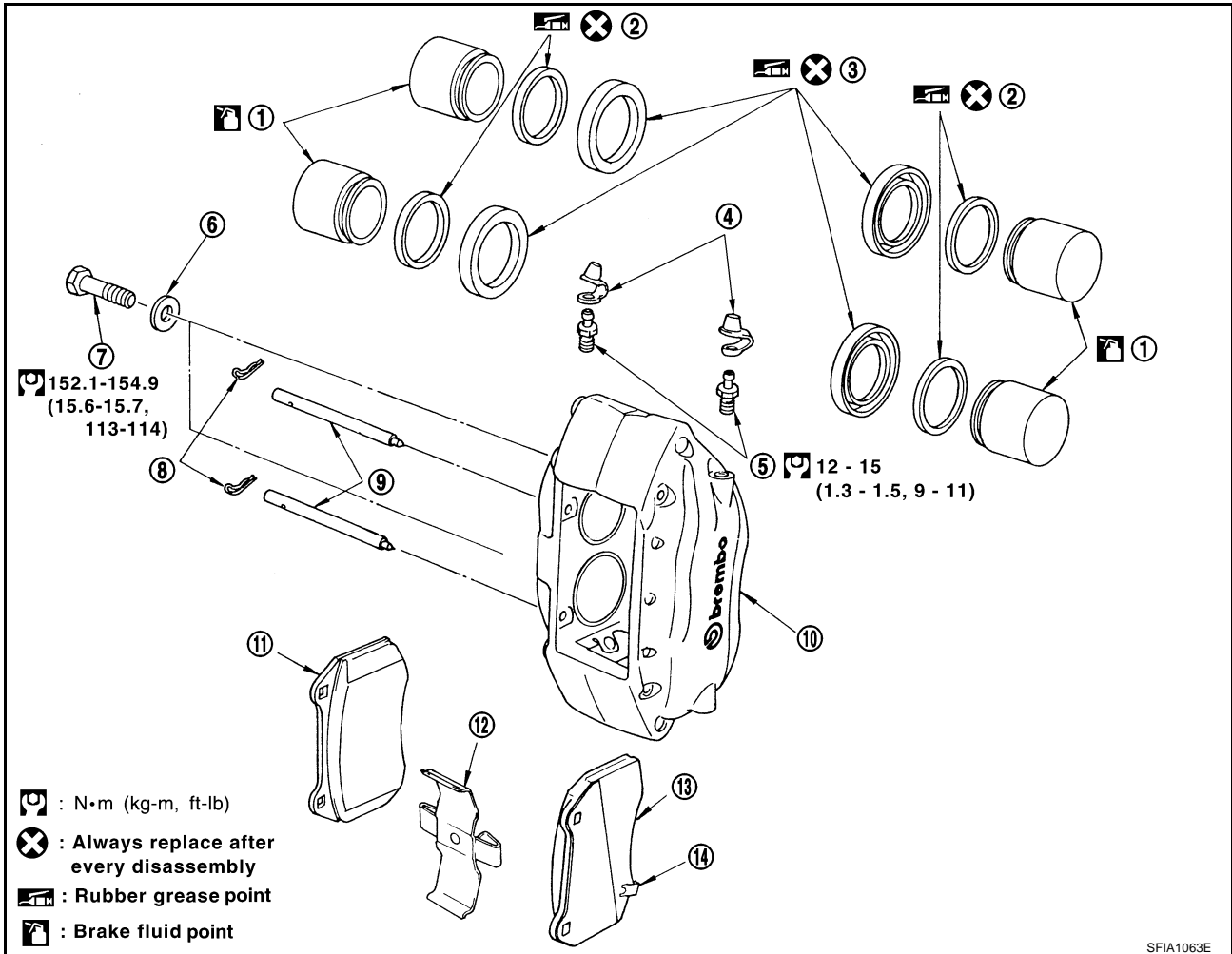
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## Components

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### NOTE:

Refer to [BR-32, "HOW TO APPLY GREASE TO BRAKE PAD"](#) for how to apply grease to brake pads.



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- |               |                     |                  |
|---------------|---------------------|------------------|
| 1. Piston     | 2. Piston seal      | 3. Piston boot   |
| 4. Cap        | 5. Bleed valve      | 6. Washer        |
| 7. Bolt       | 8. Clips            | 9. Pad pins      |
| 10. Caliper   | 11. Inner pad       | 12. Cross spring |
| 13. Outer pad | 14. Pad wear sensor |                  |

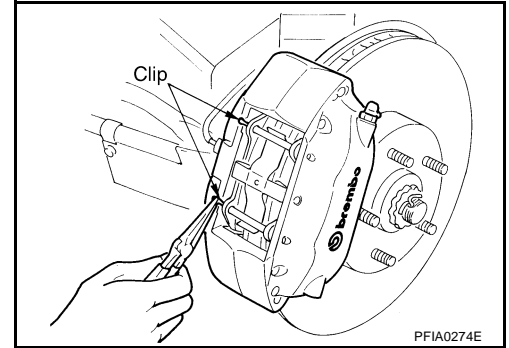
# FRONT DISC BRAKE (OPB27VA TYPE)

## CAUTION:

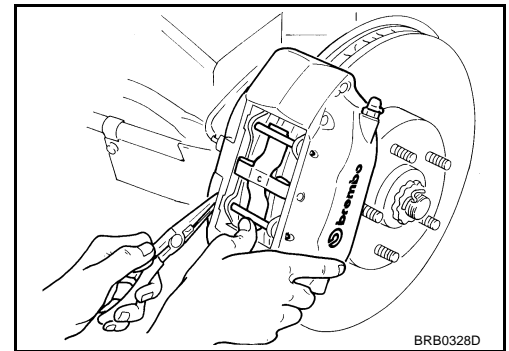
- Clean dust on caliper and brake pad with a vacuum dust collector. Do not blow with compressed air.
- While brake pad and cylinder body are separated, piston may suddenly jump out, so do not depress brake pedal.
- Apart from caliper assembly, disassembly or replacement, there is no need to remove caliper bolts or brake hose or tube.
- Do not damage piston boot.
- Keep the rotor from brake fluid.

## Removal and Installation of Brake Pad REMOVAL

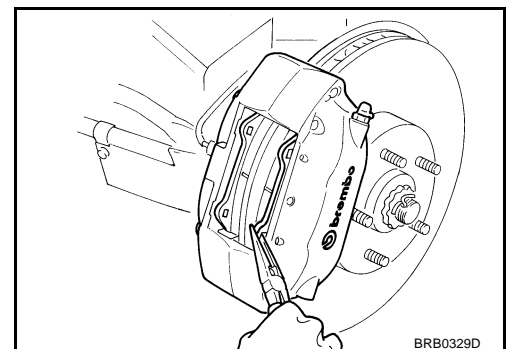
1. Remove tires from vehicle with power tool.
2. Remove clips from pad pin.



3. Remove pad pin while holding down cross spring, then remove cross spring from caliper.



4. Using pliers, remove pad from caliper.



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# FRONT DISC BRAKE (OPB27VA TYPE)

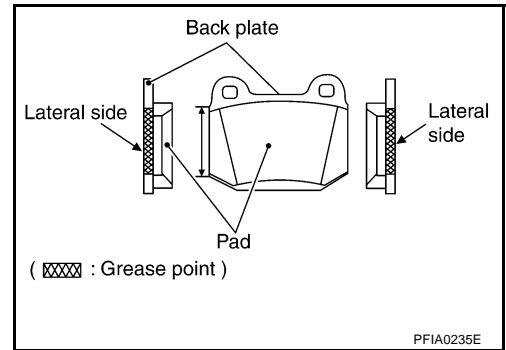
## HOW TO APPLY GREASE TO BRAKE PAD

### Pad Side

Apply PBC (Poly Butyl Cuprysil) grease or silicone-based grease about 0.5 g (0.018 oz) per surface equally to back plate side of Inner Pad and Outer Pad. (Shown in the figure)

### CAUTION:

**Make sure no foreign matter attaches itself to grease.**



## INSTALLATION

1. Apply grease to brake pad back side.
2. Insert piston to position where pad is attached.

### NOTE:

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

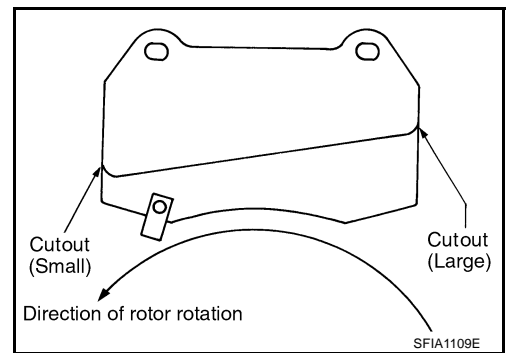
### CAUTION:

**By pushing in piston, the brake fluid returns to master cylinder reservoir tank. Watch the level of the surface of reservoir tank.**

3. Install pad.

### CAUTION:

- Install pad with wear sensor to the outer side.
- The side of pad (shim) with the larger cutouts should be on the entry side of the disc rotor spin.

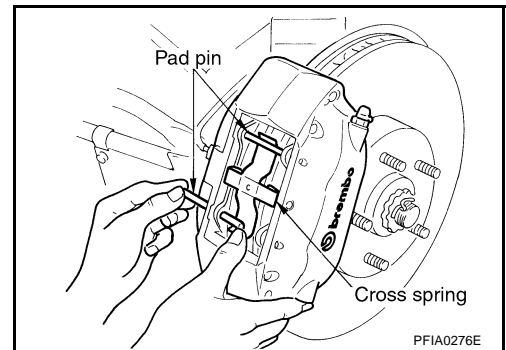


4. Insert upper pad pin from the inner cylinder side, then insert firmly to the outer cylinder side through the hole in the top of pad.
5. As shown in the figure, place the top of the cross spring over the top pad pin, press in cross spring, push lower pad pin from the inner cylinder side to the outer cylinder side, and secure cross spring.
6. Insert clip in the small hole at the end of pad pin.

### CAUTION:

**If clip is not fully attached, pad pin or the pad could fall out while vehicle is in motion.**

7. Install tires to vehicle.



## Removal and Installation of Caliper Assembly REMOVAL

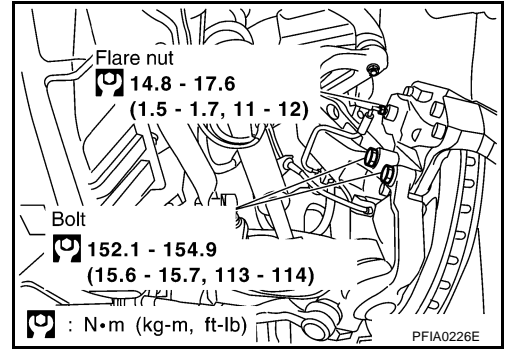
AFS0015B

1. Remove tires from vehicle with power tool.
2. Drain brake fluid. Refer to [BR-9, "Drain and Refill"](#) .
3. Remove brake pad. Refer to [BR-31, "Removal and Installation of Brake Pad"](#) .



## FRONT DISC BRAKE (OPB27VA TYPE)

4. Remove brake tube flare nut using a flare wrench.
5. Remove brake tube bracket from knuckle spindle.
6. Remove caliper bolt and remove the caliper assembly from vehicle.
7. Remove disc rotor.



### INSTALLATION

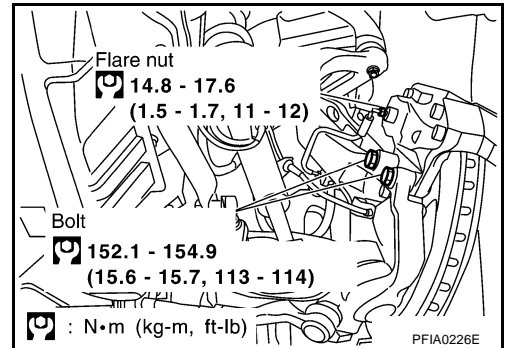
#### CAUTION:

- Refill with new brake fluid "DOT3"
- Never reuse drained brake fluid.

1. Install disc rotor.
2. Install caliper assembly to vehicle, and tighten bolts to the specified torque.

#### CAUTION:

When attaching the caliper assembly to vehicle, wipe any oil off knuckle spindle washers and caliper assembly attachment surfaces.



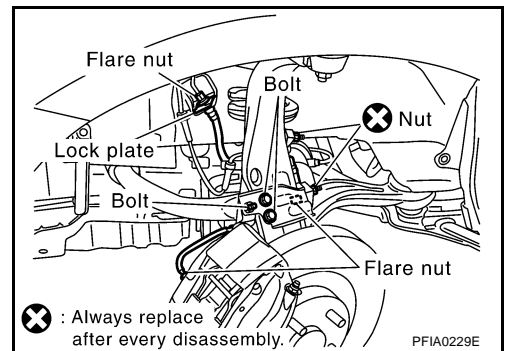
3. Install brake tube to the caliper assembly and partially tighten flare nut.
4. Install brake tube bracket to knuckle spindle and tighten to the specified torque.

$\square$  : 10.8 - 15.6 N-m (1.1 - 1.5 kg-m, 8 - 11 ft-lb)

5. Using a flare nut torque wrench, tighten the caliper assembly and brake tube connection flare nut to the specified torque.

$\square$  : 14.8 - 17.6 N-m (1.5 - 1.7 kg-m, 11 - 12 ft-lb)

6. Install brake pad. Refer to [BR-31, "Removal and Installation of Brake Pad"](#).
7. Refill new brake fluid and bleed air. Refer to [BR-10, "Bleeding Brake System"](#).
8. Install tires to vehicle.



# FRONT DISC BRAKE (OPB27VA TYPE)

AFS0015C

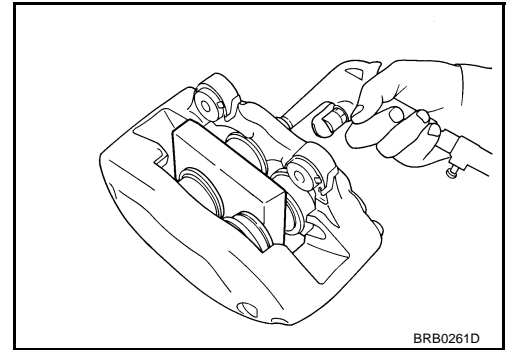
## Disassembly and Assembly of Caliper Assembly DISASSEMBLY

1. Insert a piece of wood as shown in the figure, blow air in through the flare nut mounting hole, and remove piston and piston boot. If four pistons do not all come out at the same time, press pistons that have come out a ways into cylinder body and blow air in again.

### CAUTION:

**Do not get your fingers caught in piston.**

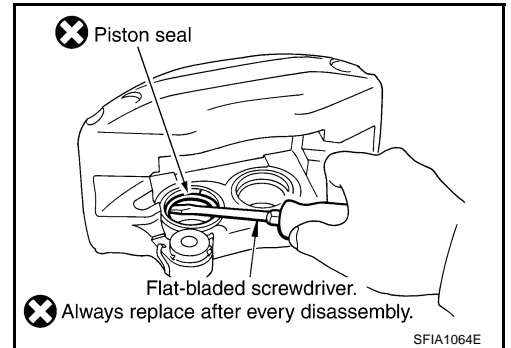
2. Remove piston boot from piston.



3. Using a flat-bladed screwdriver, remove piston seal.

### CAUTION:

- Be careful not to damage cylinder inner wall.
- Never remove four bolts from the inner and outer sides of caliper. Do not tighten them further, either.



## CALIPER INSPECTION

### Caliper

### 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 caliper if there are any non-standard conditions.

### 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.

## ASSEMBLY

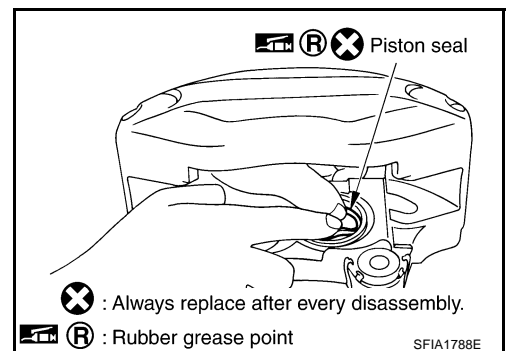
### CAUTION:

**Do not use Nissan Rubber Grease (KRE00 00010, KRE00 00010 01) when assembling.**

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

### CAUTION:

**Do not reuse piston seals.**



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

## FRONT DISC BRAKE (OPB27VA TYPE)

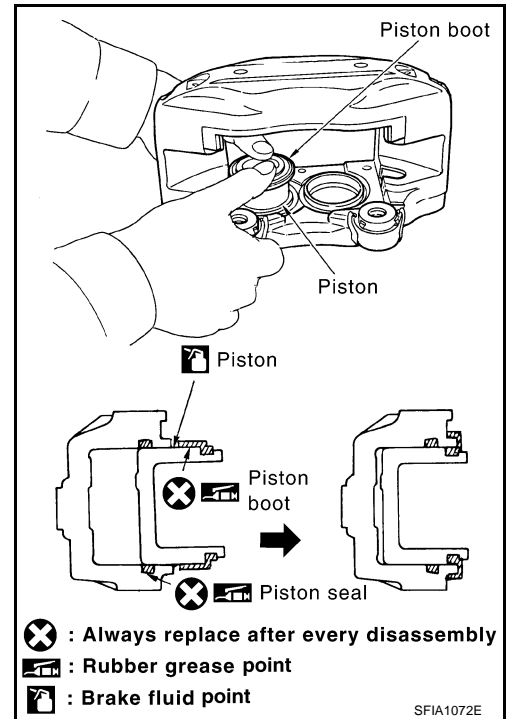
### CAUTION:

**DO not reuse piston boot.**

3. Insert the piston into 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.**



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## DISC ROTOR INSPECTION

### Visual Inspection

Check surface of 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, fix disc rotor to wheel hub. (2 or more positions)
2. Inspect runout using a dial gauge.

#### Standard value

(measured at 10 mm (0.39 in) inside the disc edge)

#### Runout limit

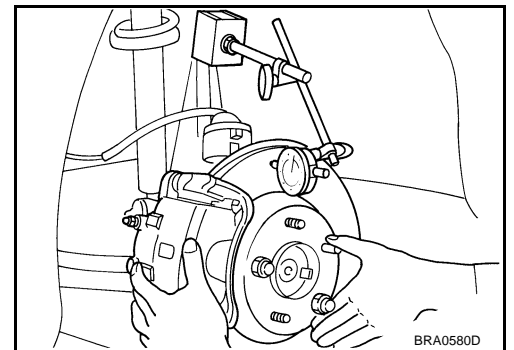
: 0.040 mm (0.0016 in) or less

(with it attached to vehicle)

### CAUTION:

**Make sure that wheel bearing axial end play is within the specifications before measuring runout. Refer to [FAX-4, "On-Vehicle Inspection and Service"](#).**

3. If runout is outside the limit, find the minimum runout point by shifting mounting positions of disc rotor and wheel hub by one hole.
4. If the runout is still out of specification, turn rotor with on-car brake lathe ("MAD DL-8700", "AMMCO 700 and 705" or equivalent).



## FRONT DISC BRAKE (OPB27VA TYPE)

### Thickness Inspection

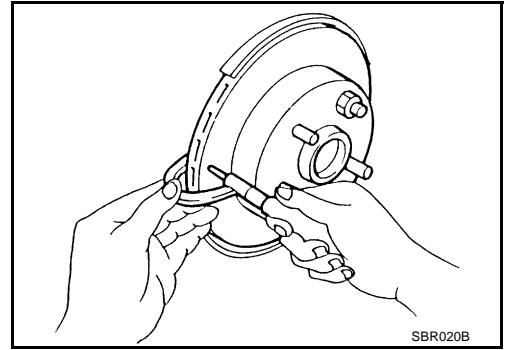
Using a micrometer, check thickness of disc rotor. If thickness is outside the standard, replace disc rotor.

#### Standard

**Standard thickness** : 30.0 mm (1.18 in)

**Wear limit** : 28.4 mm (1.118 in)

**Maximum uneven wear  
(measured at 8 positions)** : 0.015 mm (0.0006 in) or  
less



### BRAKE BURNISHING PROCEDURE

Refer to [BR-29, "Brake Burnishing Procedure"](#) .

# REAR DISC BRAKE (AD14VE TYPE)

## REAR DISC BRAKE (AD14VE TYPE)

PF0:44000

### On-board Inspection PAD WEAR INSPECTION

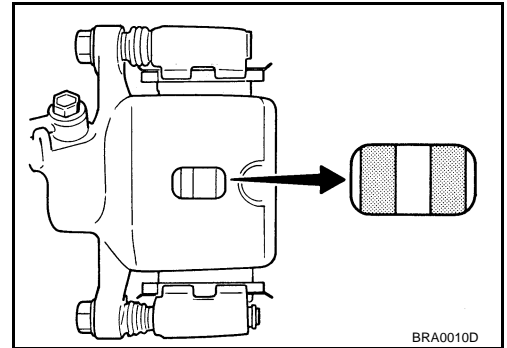
AFS0015Y

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

#### Standard

**Standard thickness : 8.5 mm (0.335 in)**

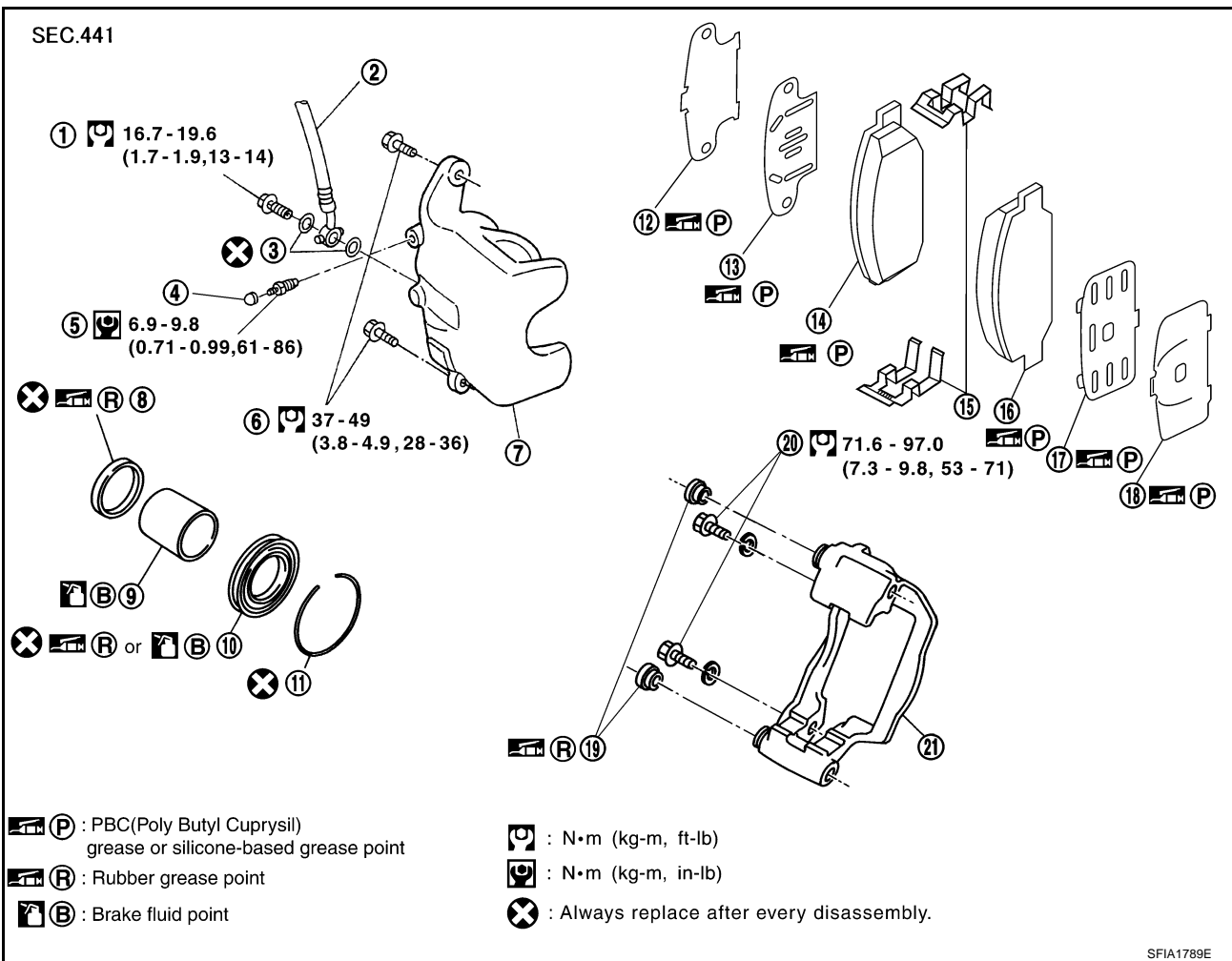
**Repair limit thickness : 2.0 mm (0.079 in)**



BRA0010D

## Components

AFS0015Z



SFIA1789E

- |                    |                         |                      |
|--------------------|-------------------------|----------------------|
| 1. Union bolt      | 2. Brake hose           | 3. Copper washer     |
| 4. Cap             | 5. Bleed valve          | 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. Outer shim cover |
| 19. Slide pin bolt | 20. Torque member bolts | 21. Torque member    |

# REAR DISC BRAKE (AD14VE TYPE)

## CAUTION:

- Clean dust on caliper and brake pad with a vacuum dust collector. Do not blow with compressed air.
- While removing cylinder body, never depress 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 caliper assembly. In this case, hang cylinder body with a wire so that brake hose is not under tension.
- Do not damage piston boot.
- Always replace shims and shim covers as a set when replacing brake pads.
- Keep the rotor from brake fluid.

## Removal and Installation of Brake Pad

AFS00160

### REMOVAL

1. Remove tires from vehicle with power tool.
2. Remove sliding pin bolt (one on top).
3. Hang cylinder body with a wire, and remove pads, pad retainers, shims and shim covers from torque member.

### INSTALLATION

1. Apply PBC (Poly Butyl Cuprysil) grease or silicon- based grease to the rear of pad and to both sides of shim, and attach inner shim and inner shim cover to inner pad, and outer shim and outer shim cover to outer pad.
2. Install pad retainer and pad to torque member.
3. Push piston in so that pad is firmly attached and attach cylinder body to torque member.

#### NOTE:

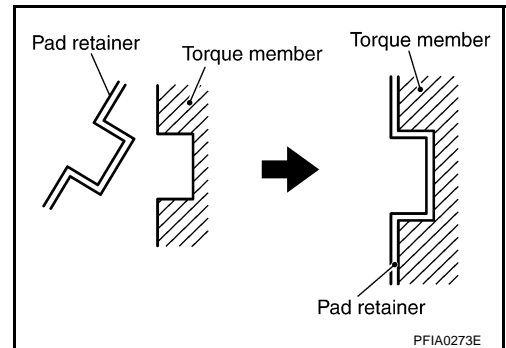
Using a disc brake piston tool (commercial service tool), etc., makes it easier to push in the piston.

#### CAUTION:

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

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

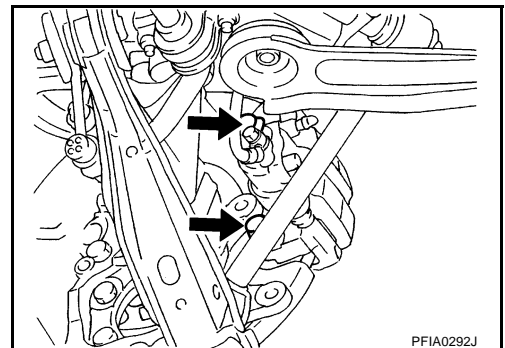
4. Install sliding pin bolt (one on top) and tighten to the specified torque. Refer to [BR-37, "Components"](#) .
5. Check brake for drag.
6. Install tires to vehicle.



## Removal and Installation of Caliper Assembly

### REMOVAL

1. Remove tires from vehicle with power tool.
2. Drain brake fluid. Refer to [BR-9, "Drain and Refill"](#) .
3. Remove union bolts and torque member bolts, and remove caliper assembly.
4. Remove disc rotor.



### INSTALLATION

#### CAUTION:

- Refill with new brake fluid "DOT 3".

# REAR DISC BRAKE (AD14VE TYPE)

- **Never reuse drained brake fluid.**

1. Install disc rotor.
2. Install caliper assembly to vehicle, and tighten bolts to the specified torque. Refer to [BR-37, "Components"](#).

**CAUTION:**

**Before installing caliper assembly to vehicle, wipe off oil and grease on axle assembly and mounting surface of caliper assembly.**

3. Install brake hose to caliper assembly and tighten union bolts to the specified torque. Refer to [BR-37, "Components"](#).

**CAUTION:**

- **Do not reuse copper washer for union bolts.**
- **Securely attach brake hose to protrusion on caliper assembly.**

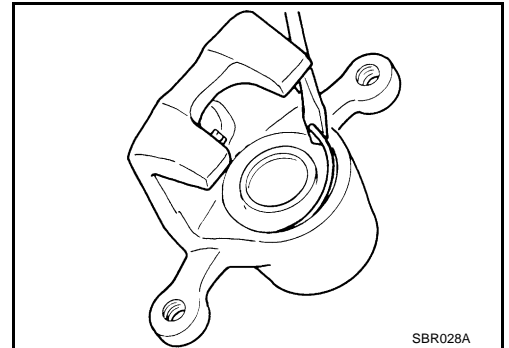
4. Refill new brake fluid and bleed air. Refer to [BR-10, "Bleeding Brake System"](#).
5. Install tires to vehicle.

## Disassembly and Assembly of Caliper Assembly

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### DISASSEMBLY

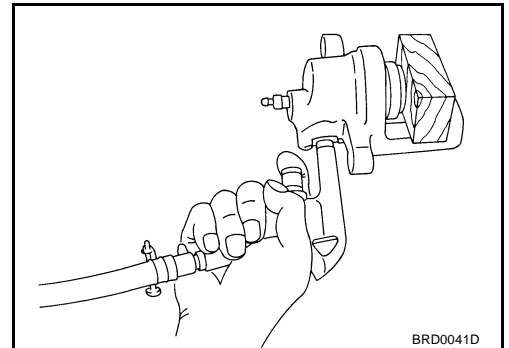
1. Remove slide pin bolt, and then remove pad, shim, shim cover, and pad retainer from torque member and cylinder.
2. Remove sliding pin boot from torque member.
3. As shown in the figure, using a flat-bladed screwdriver, remove the retaining ring from cylinder body.



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

**CAUTION:**

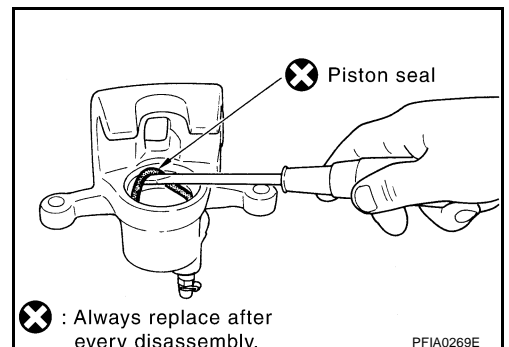
**Do not get your fingers caught in the piston.**



5. Using a flat-bladed screwdriver, remove piston seals from cylinder body.

**CAUTION:**

**Be careful not to damage cylinder inner wall.**



# REAR DISC BRAKE (AD14VE TYPE)

## CALIPER INSPECTION

### 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 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

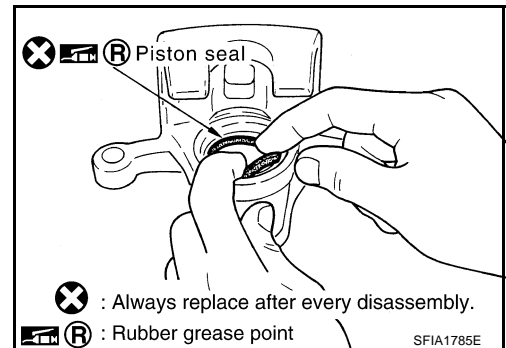
#### CAUTION:

Do not use Nissan Rubber Grease (KRE00 00010, KRE00 00010 01) when assembling.

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

#### CAUTION:

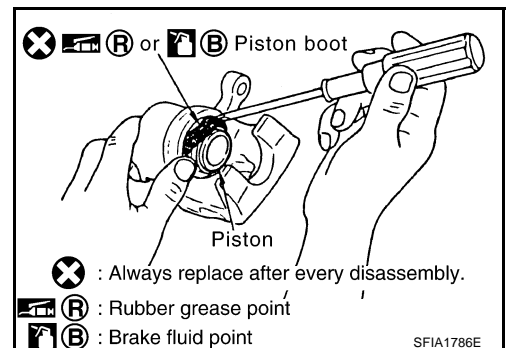
Do not reuse piston seals.



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

#### CAUTION:

Do not reuse piston boot.



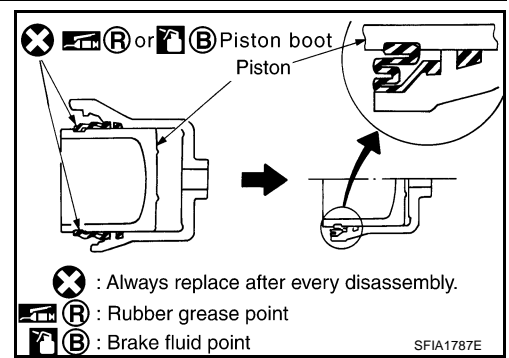


## REAR DISC BRAKE (AD14VE TYPE)

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

### CAUTION:

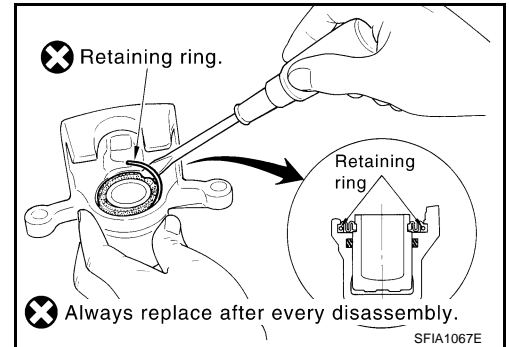
Press piston evenly and vary the pressing point to prevent cylinder inner wall from being rubbed.



4. Fix piston boot with retaining ring.

### CAUTION:

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



5. Install sliding pin bolt and sliding pin boot to torque member.

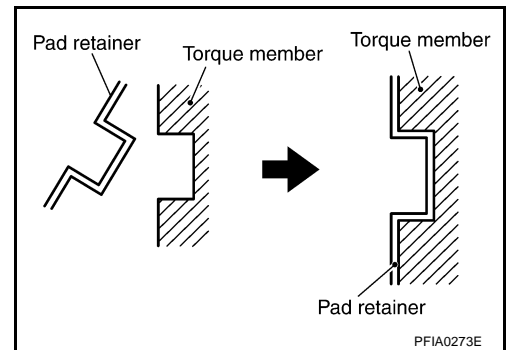
6. Apply PBC (Poly Butyl Cuprysil) grease or silicon- based grease to the rear of pad and to both sides of shim, and attach inner shim and inner shim cover to inner pad, and outer shim and outer shim cover to outer pad.

7. Install pad retainer and pad to torque member.

### CAUTION:

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

8. After assembling shims and shim covers to pad, install it to torque member.
9. Install cylinder body. Tighten sliding pin bolts to the specified torque.
10. Install brake hose to cylinder body and tighten union bolts to the specified torque.



### CAUTION:

- Assemble brake hose securely to the protrusions on the cylinder body.
- Do not reuse copper washer on the union bolts.

## DISC ROTOR INSPECTION

### Visual Inspection

Check surface of 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, fix disc rotor to wheel hub. (2 or more positions)

## REAR DISC BRAKE (AD14VE TYPE)

2. Inspect runout using a dial gauge.

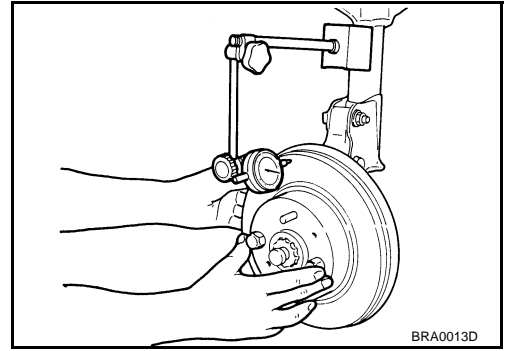
**Standard value**  
(measured at 10 mm (0.39 in) inside disc edge)

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

**Runout limit (with it attached to vehicle)** : 0.10 mm (0.0039 in) or less

**CAUTION:**

Make sure that wheel bearing axial end play is within the specification before measuring runout. Refer to [RAX-6, "On-Vehicle Inspection and Service"](#).



3. If runout is outside the limit, find the minimum runout point by shifting mounting positions of disc rotor and wheel hub by one hole.
4. If the runout is still out of specification, turn rotor with on-car brake lathe ("MAD DL-8700", "AMMCO 700 and 705" or equivalent).

### Thickness Inspection

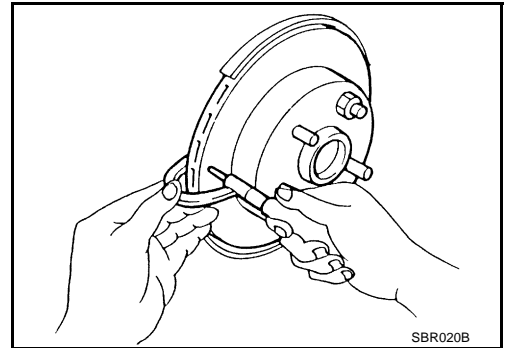
Using a micrometer, check thickness of disc rotor. If thickness is outside the standard, replace disc rotor.

**Standard**

**Standard thickness** : 16.0 mm (0.630 in)

**Wear limit** : 14.0 mm (0.551 in)

**Maximum uneven wear (measured at 8 positions)** : 0.015 mm (0.0006 in) or less



# REAR DISC BRAKE (OPB13VB TYPE)

## REAR DISC BRAKE (OPB13VB TYPE)

PFPA:44000

### On-board Inspection PAD WEAR INSPECTION

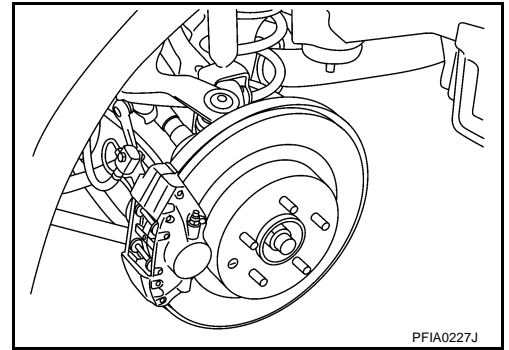
AFS0015I

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

#### Standard

**Standard thickness : 9.1 mm (0.358 in)**

**Repair limit thickness : 2.0 mm (0.079 in)**

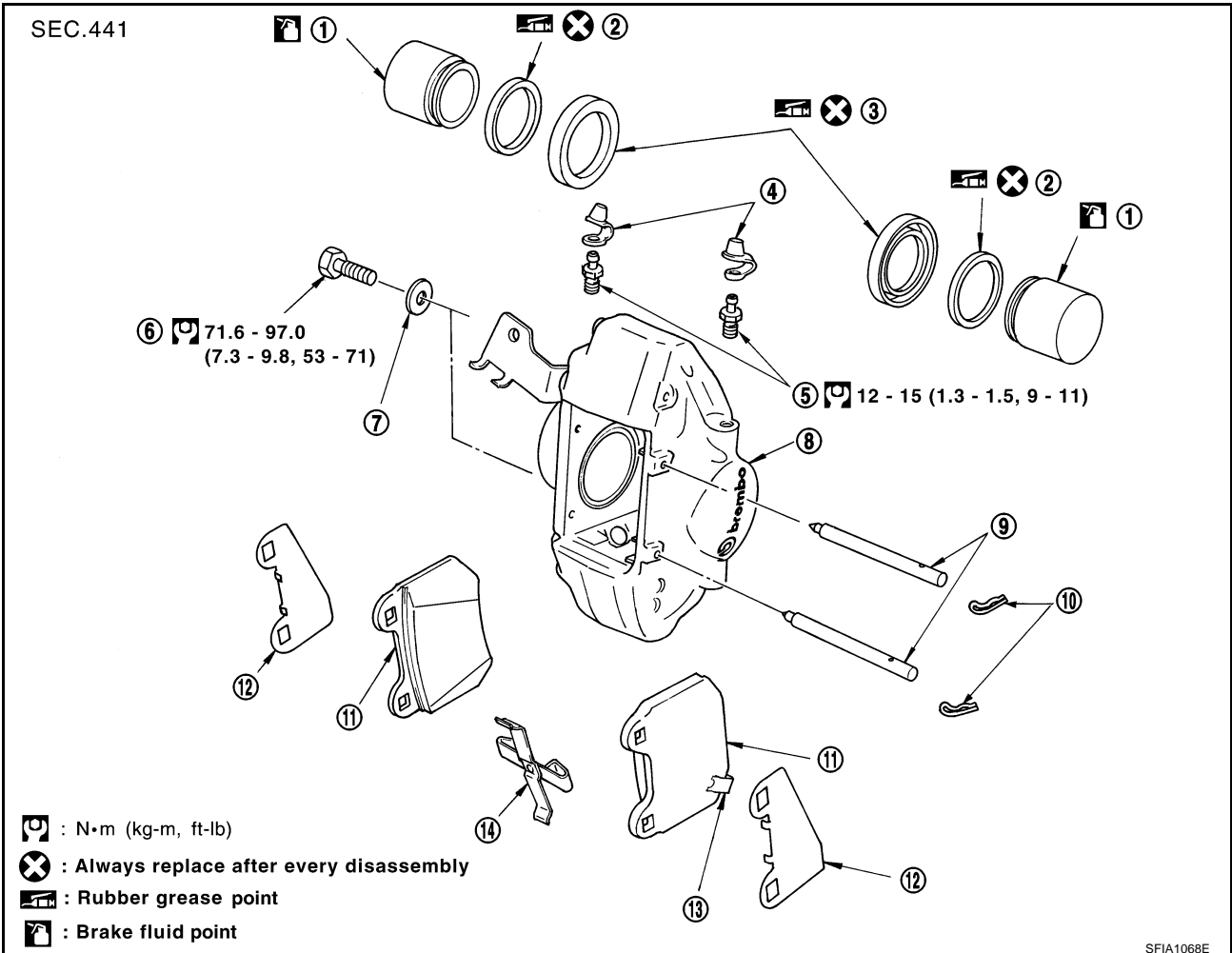


## Components

AFS0015J

### NOTE:

Refer to [BR-45. "HOW TO APPLY GREASE TO BRAKE PAD"](#) for how to apply grease to brake pads.



- |                     |                  |                |
|---------------------|------------------|----------------|
| 1. Piston           | 2. Piston seal   | 3. Piston boot |
| 4. Cap              | 5. Air bleeder   | 6. Bolt        |
| 7. Washer           | 8. Caliper       | 9. Pad pins    |
| 10. Clips           | 11. Brake pad    | 12. Shim       |
| 13. Pad wear sensor | 14. Cross spring |                |

## REAR DISC BRAKE (OPB13VB TYPE)

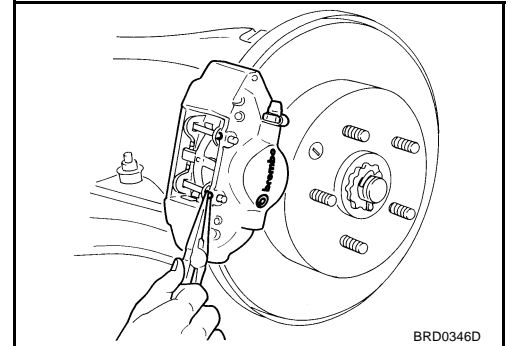
### CAUTION:

- Clean dust on caliper and brake pad with a vacuum dust collector. Do not blow with compressed air.
- While removing cylinder body, never depress brake pedal because the piston will pop out.
- Apart from caliper assembly, disassembly or replacement, there is no need to remove caliper bolts or brake hose or tube.
- Do not damage piston boot.
- Always replace shim as a set when replacing brake pads.
- Keep rotor clean of brake fluid.

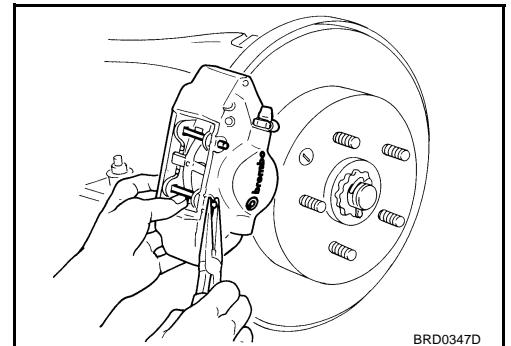
### Removal and Installation of Brake Pad

#### REMOVAL

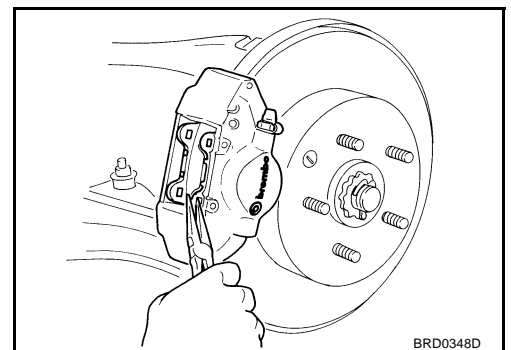
1. Remove tires from vehicle with power tool.
2. Remove clip from pad pin.



3. Remove pad pin while holding down cross spring, then remove cross spring from caliper.



4. Using pliers, remove pad and shim from caliper.



# REAR DISC BRAKE (OPB13VB TYPE)

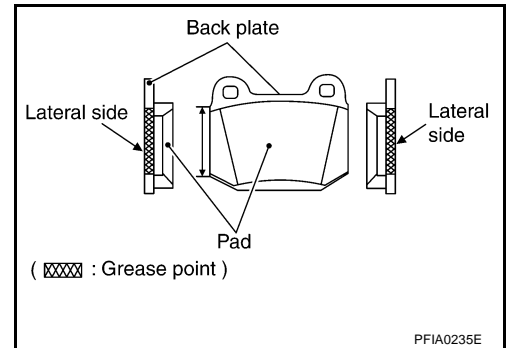
## HOW TO APPLY GREASE TO BRAKE PAD

### Pad Side

Apply PBC (Poly Butyl Cuprysil) grease or silicone-based grease about 0.5 g (0.018 oz) per surface equally to back plate side of Inner Pad and Outer Pad. (Shown in the figure)

#### CAUTION:

**Make sure no foreign matter attaches itself to grease.**

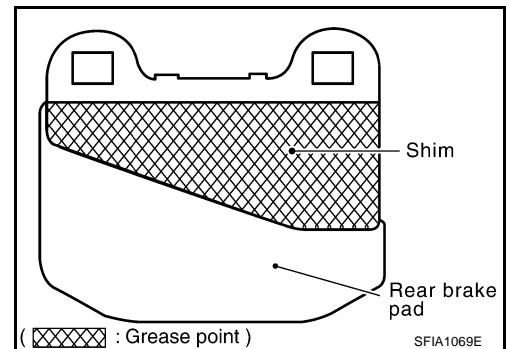


### Pad Rear

Apply approximately 1.5 g (0.053 oz) of PBC (Poly Butyl Cuprysil) grease or silicone-based grease between shim and pad.

#### CAUTION:

**Make sure no foreign matter attaches itself to grease.**



## INSTALLATION

1. Apply grease to brake pad back side.
2. Insert piston to position where pad is attached.

#### NOTE:

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

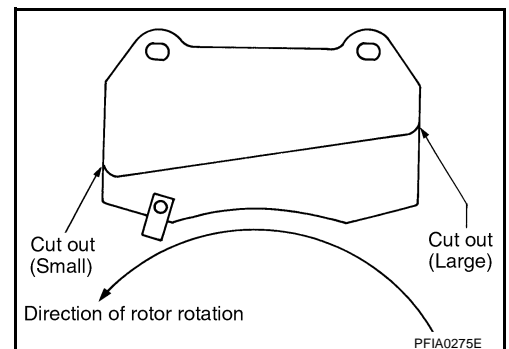
#### CAUTION:

**Pushing piston in will make brake fluid return to master cylinder reservoir tank, so watch the level of the surface of reservoir tank.**

3. Install pad and shim.

#### CAUTION:

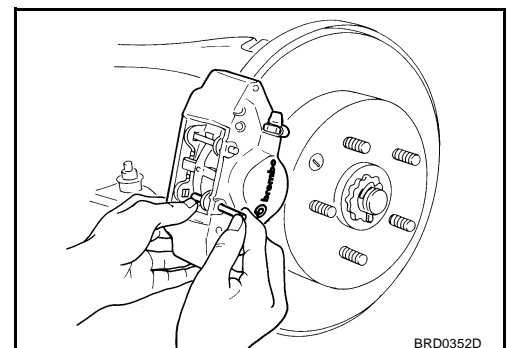
- Install pad with wear sensor to the outer side.
- The side of shim with the larger cutouts should be on the entry side of the disc rotor spin.



4. Insert upper pad pin from the outer cylinder side, then insert firmly to the inner cylinder side through the hole in the top of pad.
5. As shown in the figure, place the top of cross spring over top pad pin, press in cross spring, push lower pad pin from the outer cylinder side to the inner cylinder side, and secure cross spring.
6. Insert clip in the small hole at the end of pad pin.

#### CAUTION:

**If clip is not fully attached, pad pin or pad could fall out while vehicle is in motion.**



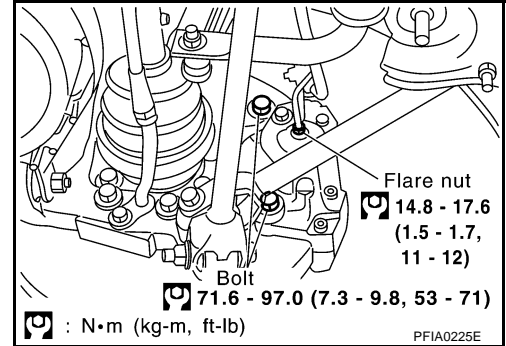
# REAR DISC BRAKE (OPB13VB TYPE)

7. Install tires to vehicle.

## Removal and Installation of Caliper Assembly REMOVAL

AFS0015L

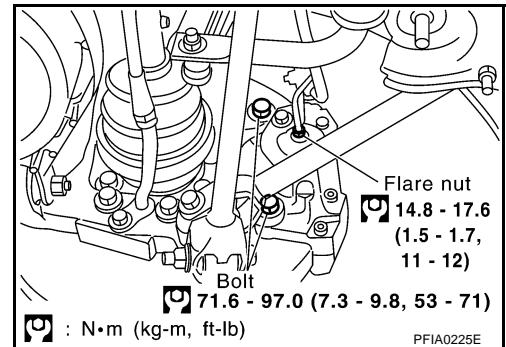
1. Remove tires from vehicle with power tool.
2. Drain brake fluid. Refer to [BR-9, "Drain and Refill"](#) .
3. Remove brake pad. Refer to [BR-44, "Removal and Installation of Brake Pad"](#) .
4. Remove brake tube flare nut using a flare wrench.
5. Remove brake hose bolt, move brake hose.
6. Remove caliper bolt and remove caliper assembly from vehicle.
7. Remove disc rotor.



## INSTALLATION

### CAUTION:

- Refill with new brake fluid "DOT3".
  - Never reuse drained brake fluid.
1. Install disc rotor.
  2. Install brake tube to caliper assembly and partially tighten flare nut.
  3. Install caliper assembly to vehicle and tighten bolt to the specified torque.
  4. Tighten flare nut to the specified torque.
  5. Install brake hose bolt.
  6. Install brake pad and shim. Refer to [BR-45, "INSTALLATION"](#) .
  7. Refill new brake fluid and bleed air. Refer to [BR-10, "Bleeding Brake System"](#) .
  8. Install tires to vehicle.



## Disassembly and Assembly of Caliper Assembly DISASSEMBLY

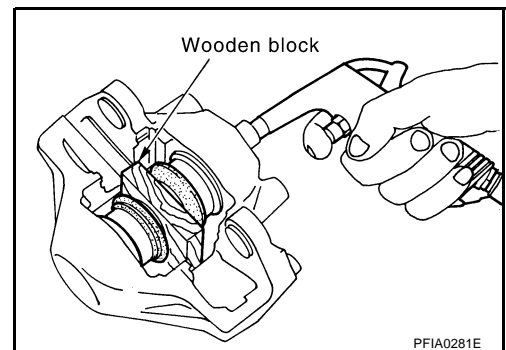
AFS0015M

1. Insert a piece of wood as shown in the figure, blow air in through flare nut mounting hole, and remove piston and piston boot.

### CAUTION:

**Do not get your fingers caught in piston.**

2. Remove piston boot from piston.

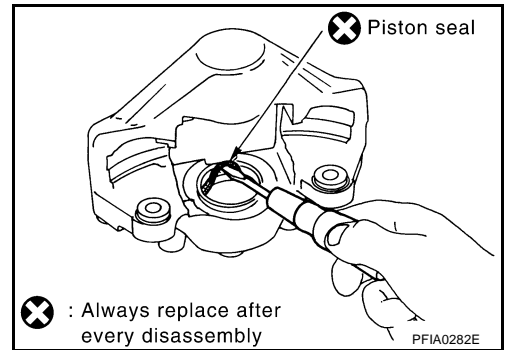


## REAR DISC BRAKE (OPB13VB TYPE)

- Using a flat-bladed screwdriver, remove piston seal.

### CAUTION:

- Be careful not to damage cylinder inner wall.
- Never remove four bolts from the inner and outer sides of caliper. Do not tighten them further, either.



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## CALIPER INSPECTION

### Caliper

### 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 caliper if there are any non-standard conditions.

### 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.

## ASSEMBLY

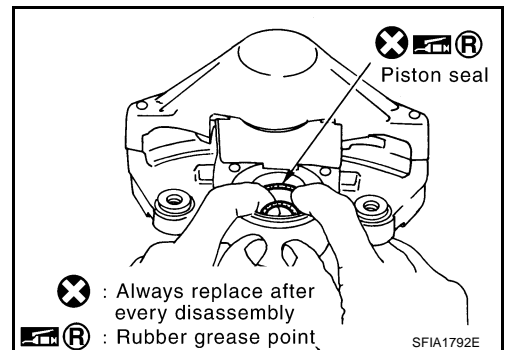
### CAUTION:

Do not use Nissan rubber grease (KRE00 00010, KRE00 00010 01) during assembly.

- Apply a rubber grease to piston seals, and install them to cylinder body.

### CAUTION:

Do not reuse piston seals.



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## REAR DISC BRAKE (OPB13VB TYPE)

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

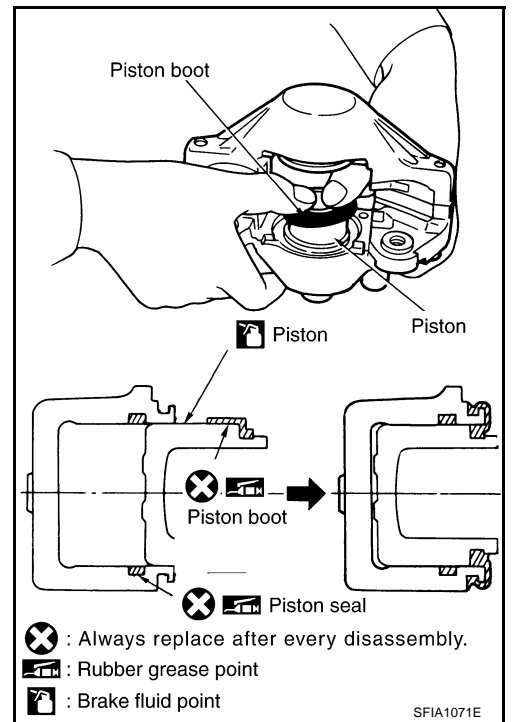
**CAUTION:**

**Do not reuse piston seals.**

3. Insert piston into the cylinder body by hand and firmly attach the piston boot piston-side lip into piston groove.

**CAUTION:**

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





# REAR DISC BRAKE (OPB13VB TYPE)

## DISC ROTOR INSPECTION

### Visual Inspection

Check surface of 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, fix disc rotor to wheel hub. (2 or more positions)
2. Inspect runout using a dial gauge.

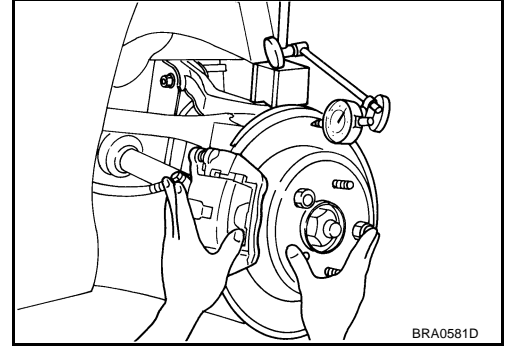
**Standard value (measured at 10 mm (0.39 in) inside the disc edge)**

**Runout limit (with it attached to vehicle) : 0.07 mm (0.0028 in) or less**

#### **CAUTION:**

**Make sure that wheel bearing axial end play is within the specification before measuring runout. Refer to [RAX-6, "On-Vehicle Inspection and Service"](#) .**

3. If runout is outside the limit, find the minimum runout point by shifting mounting positions of disc rotor and wheel hub by one hole.
4. If the runout is still out of specification, turn rotor with on-car brake lathe ("MAD DL-8700", "AMMCO 700 and 705" or equivalent).



### Thickness Inspection

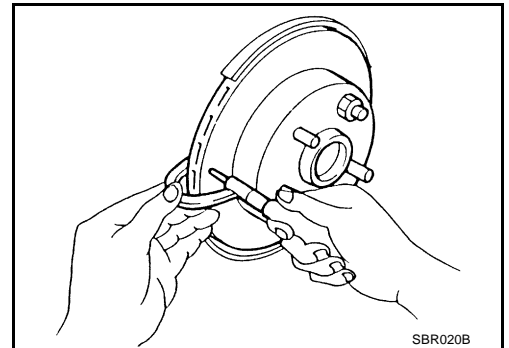
Using a micrometer, check thickness of disc rotor. If thickness is outside the standard, replace disc rotor.

#### **Standard**

**Standard thickness : 22.0 mm (0.866 in)**

**Wear limit : 20.2 mm (0.795 in)**

**Maximum uneven wear (measured at 8 positions) : 0.015 mm (0.0020 in) or less**



# SERVICE DATA AND SPECIFICATIONS (SDS)

## SERVICE DATA AND SPECIFICATIONS (SDS)

PFP:00030

### General Specifications

AFS0015N

Unit: mm (in)

Front brake	Brake model	OPB27VA	CLZ25VD
	Rotor outer diameter × thickness	324 × 30 (12.76 × 1.18)	296 × 24.0 (11.65 × 0.945)
	Pad Length × width × thickness	117.1 × 53.3 × 9.3 (4.16 × 2.098 × 0.366)	125.6 × 46.0 × 11.0 (4.94 × 1.811 × 0.43)
	Cylinder bore diameter	38 (1.5) × 2 + 44 (1.73) × 2	57.2 (2.252)
Rear brake	Brake model	OPB13VB	AD14VE
	Rotor outer diameter × thickness	322 × 22 (13.07 × 0.87)	292 × 16 (11.50 × 0.63)
	Pad Length × width × thickness	76.6 × 45 × 9.1 (3.016 × 1.77 × 0.358)	83.0 × 33.0 × 8.5 (3.268 × 1.299 × 0.335)
	Cylinder bore diameter	40.0 × 2 (1.575)	42.86 (1.6874)
Master cylinder	Cylinder bore diameter	26.99 (1.0626in)	25.4 (1in)
Control valve	Valve model	Electric brake force distribution	
Brake booster	Booster model	M215T	V255
	Diaphragm diameter	205 (8.07) / 230 (9.06)	255 (10.04)
Recommended brake fluid		DOT 3	

### Brake Pedal

AFS0015O

Brake pedal height (from dash panel top surface)	M/T Model	154 - 164 mm (6.06 - 6.46 in)
	A/T Model	162 - 172 mm (6.38 - 6.77 in)
Depressed pedal height (under a force of 490 N (50 kg, 110 lb) with the engine running)	M/T Model	90 mm (3.54 in) or more
	A/T Model	95 mm (3.74 in) or more
Clearance between the stopper rubber and the threaded end of the stop lamp switch.		0.74 - 1.96 mm (0.0291 - 0.0772 in)
Pedal play		3 - 11 mm (0.12 - 0.43 in)

### Brake Booster

AFS0015P

#### Vacuum type

Vacuum leakage [at vacuum of - 66.7 kPa (- 500 mmHg, - 19.69 inHg)]	Within 3.3 kPa (25 mmHg, 0.98 inHg) of vacuum for 15 seconds
Input rod installation standard dimension	125 mm (4.92 in)

### Check Valve

AFS0015Q

Vacuum leakage [at vacuum of - 66.7 kPa(- 500 mmHg, - 19.69 inHg)]	within 1.3 kPa (10 mmHg, 0.39 inHg) of vacuum for 15 seconds
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### Front Disc Brake

AFS0015R

Brake model		OPB27VA	CLZ25VD
Brake pad	Standard thickness (new)	9.3 mm (0.366 in)	11.0 mm (0.433 in)
	Repair limit thickness	2.0 mm (0.079 in)	2.0 mm (0.079 in)
Disc rotor	Standard thickness (new)	30.0 mm (1.18 in)	24.0 mm (0.945 in)
	Repair limit thickness	28.4 mm (1.118 in)	22.0 mm (0.866 in)
	Maximum uneven wear (measured at 8 positions)	0.015 mm (0.0006 in) or less	0.015 mm (0.0006 in) or less
	Runout limit (with it attached to the vehicle)	0.040 mm (0.0016 in) or less	0.035 mm (0.0014 in) or less

# SERVICE DATA AND SPECIFICATIONS (SDS)

## Rear Disc Brake

AFS0015S

Brake model		OPB13VB	AD14VE
Brake pad	Standard thickness (new)	9.1 mm (0.358 in)	8.5 mm (0.335 in)
	Repair limit thickness	2.0 mm (0.079 in)	2.0 mm (0.079 in)
Disc rotor	Standard thickness (new)	22.0 mm (0.866 in)	16.0 mm (0.630 in)
	Repair limit thickness	20.2 mm (0.795 in)	14.0 mm (0.551 in)
	Maximum uneven wear (measured at 8 positions)	0.015 mm (0.0006 in) or less	0.015 mm (0.0006 in) or less
	Runout limit thickness (with it attached to the vehicle)	0.07 mm (0.0028 in) or less	0.10 mm (0.0039 in) or less

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# SERVICE DATA AND SPECIFICATIONS (SDS)

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