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SECTION **BR** BRAKE SYSTEM

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PRECAUTIONS

PRECAUTIONS

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

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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.

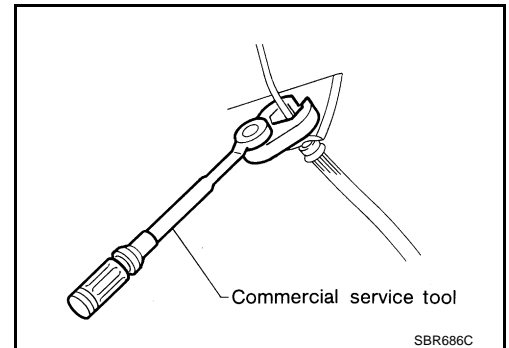
Precautions for Brake System

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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 the VDC actuator or the battery cables.
- 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-30. "Brake Burnishing Procedure"](#).

WARNING:

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



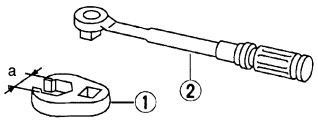
PREPARATION

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) 2. Torque wrench</p>  <p>S-NT360</p>	<p>Removing and installing each brake piping</p>

NOISE, VIBRATION AND HARSHNESS (NVH) TROUBLESHOOTING

NOISE, VIBRATION AND HARSHNESS (NVH) TROUBLESHOOTING

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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	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	Drum out of round	PROPELLER SHAFT	DIFFERENTIAL	AXLE AND SUSPENSION		TIRES	ROAD WHEEL	DRIVE SHAFT	STEERING
	Noise	X	X	X																BR-24, BR-31
	Shake				X															BR-24, BR-31
	Shimmy, Judder				X	X	X	X	X	X										BR-24, BR-31
																				—
																				—
																				BR-29, BR-36
																				—
																				BR-30, BR-36
																				—
																				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

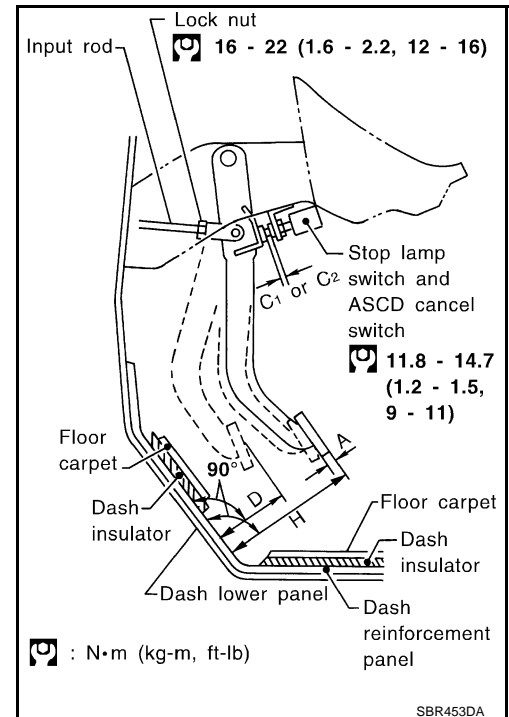
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Inspection and Adjustment

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PLAY AND CLEARANCE BETWEEN THE BRAKE PEDAL AND FLOOR PANEL WITH PEDAL DEPRESSED

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



H	: Brake pedal height	174 - 184 mm (6.85 - 7.24 in)
D	: Depressed pedal height [under a force of 490 N (50 kg, 110 lb) with the engine running]	90 mm (3.54 in) or more
C1 or C2	: Clearance between the stopper rubber and the threaded end of the stop lamp switch, brake switch or 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 the stop lamp switch, brake switch and ASCD cancel switch by rotating it counterclockwise by 45°.
2. Loosen the lock nut (A) on the input rod, then rotate the input rod to set the pedal to the specified height, and tighten the lock nut (A).

CAUTION:

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

Lock nut (A):

 : 16 - 21 N·m (1.7 - 2.1 kg-m, 12 - 15 in-lb)

3. With the pedal pulled and held by hand, press the stop lamp switch and brake switch (or ASCD cancel switch) with their threaded end contacts the stopper rubber.
4. With the threaded end of the stop lamp switch contacting the stopper rubber brake switch and ASCD cancel switch, rotate the switch clockwise by 45° to secure.

CAUTION:

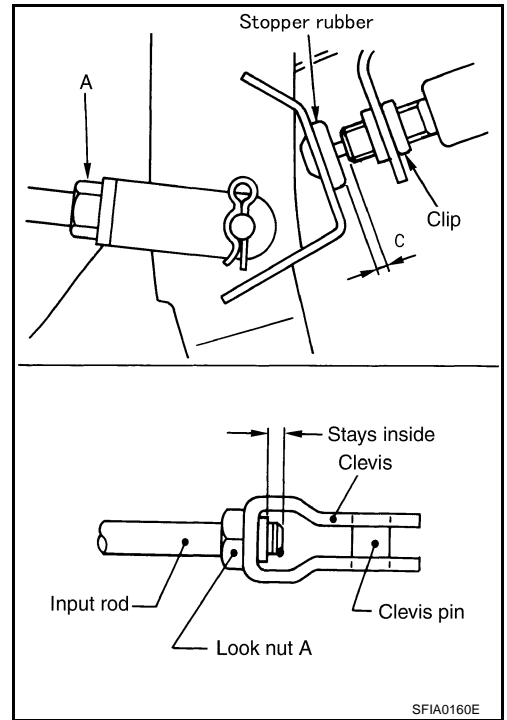
Make sure that the clearance (C) between the stopper rubber and threaded end of the stop lamp switch, brake switch or ASCD cancel switch is within the standard.

5. Check the pedal play.

CAUTION:

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

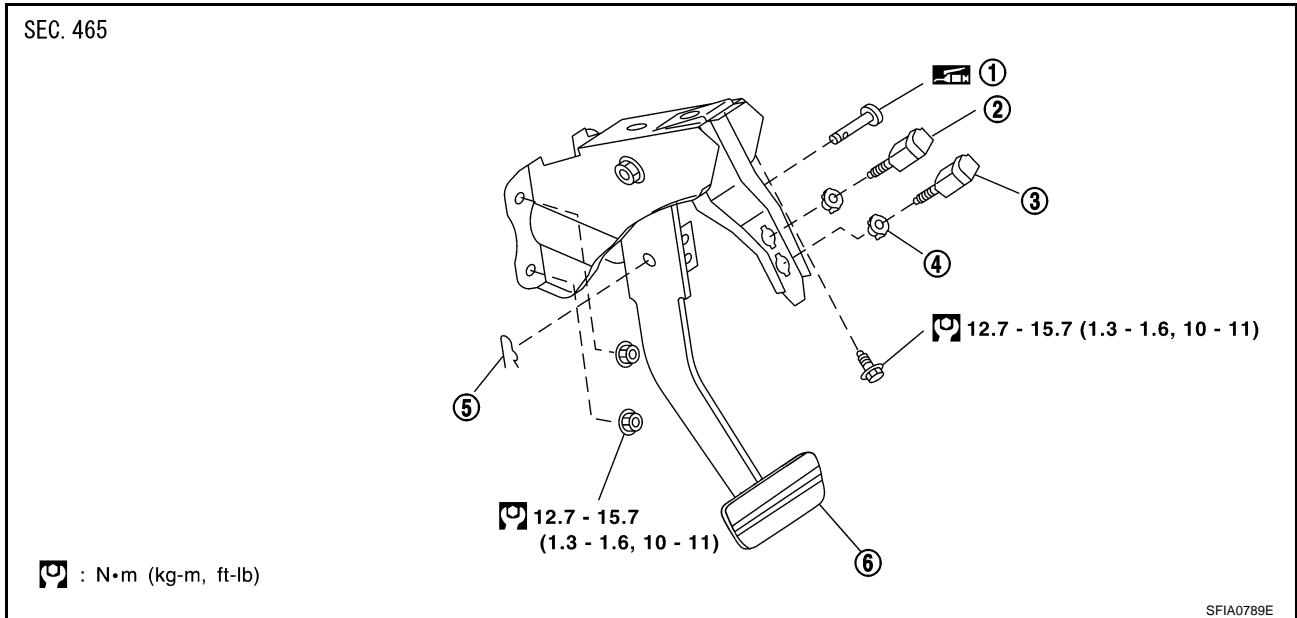
6. Start the engine to check the brake pedal's depressed height.



Removal and Installation

COMPONENT PARTS DRAWING

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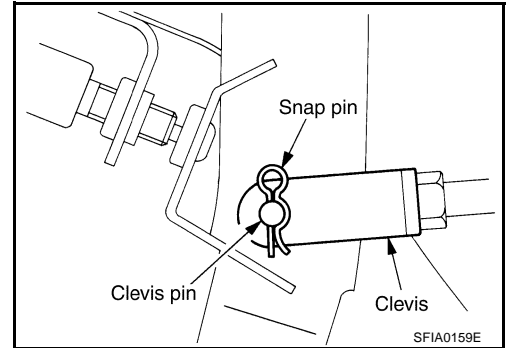


- | | | |
|---------------|---------------------|--|
| 1. Clevis pin | 2. Stop lamp switch | 3. Brake switch (Models with ACC)
ASCD cancel switch (Models with ASCD) |
| 4. Clip | 5. Snap pin | 6. Brake pedal |

BRAKE PEDAL

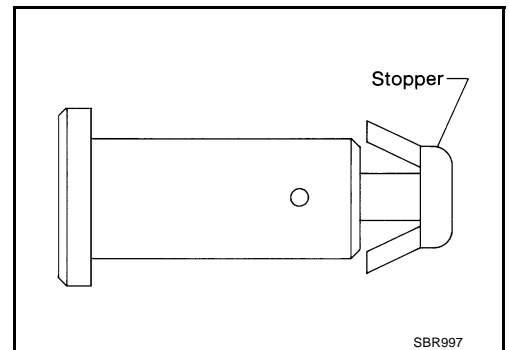
REMOVAL

1. Remove the instrument lower driver panel. Refer to [IP-10. "INSTRUMENT PANEL ASSEMBLY"](#)
2. Remove the stop lamp switch and brake switch (or ASCD cancel switch) from the pedal assembly.
3. Remove the snap pin and clevis pin from the brake booster clevis.
4. Remove the mounting nuts and bolts from the bracket, and remove the pedal assembly from the vehicle.



INSPECTION AFTER REMOVAL

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



INSTALLATION

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

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

BRAKE FLUID

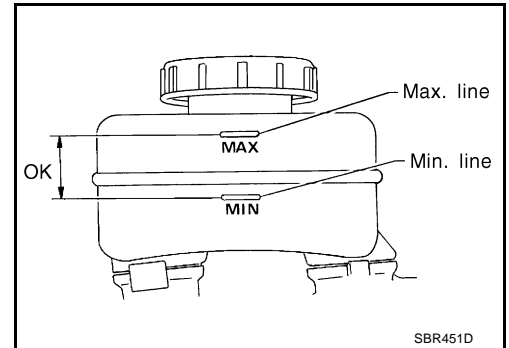
BRAKE FLUID

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Checking Brake Fluid Level

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- Check that the fluid level in the reservoir tank is within the standard (between MAX and MIN lines).
- Visually check around the reservoir tank for fluid leaks.
- If fluid level is excessively low, check brake system for leaks.
- If warning lamp remains illuminated after parking lever is released, check brake system for fluid leakage.

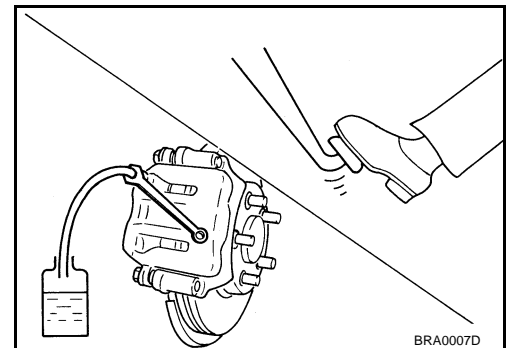


Drain and Refill

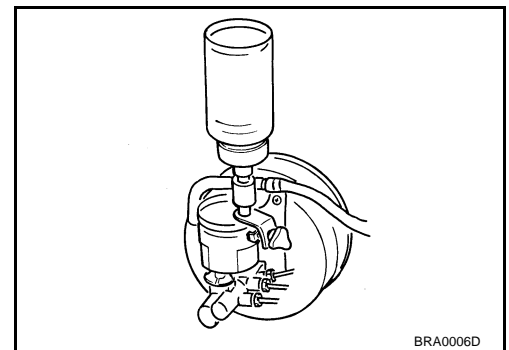
AFS000K0

CAUTION:

- Refill with new brake fluid "DOT 3".
 - 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 air bleeder.
 2. Depress the brake pedal, loosen the air bleeder, and gradually remove the brake fluid.



3. Make sure there is no foreign material in the reservoir tank, and refill with new brake fluid.
4. 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-9, "Bleeding Brake System"](#).



Bleeding Brake System

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CAUTION:

While bleeding, pay attention to master cylinder fluid level.

1. Turn the ignition switch to the OFF position.
2. Connect a vinyl tube to the rear left air bleeder.
3. Fully depress brake pedal 4 to 5 times.
4. With the brake pedal depressed, loosen the air bleeder to let the air out, and then tighten it immediately.
5. Repeat steps 3, 4 until no more air comes out.
6. Tighten the air bleeder to the specified torque. Refer to [BR-24, "FRONT DISC BRAKE"](#), [BR-31, "REAR DISC BRAKE"](#).

BRAKE FLUID

7. In steps 2 to 6 below, with the master cylinder reservoir tank filled at least half way, bleed air from the front right, rear right, and front left tires, in that order.

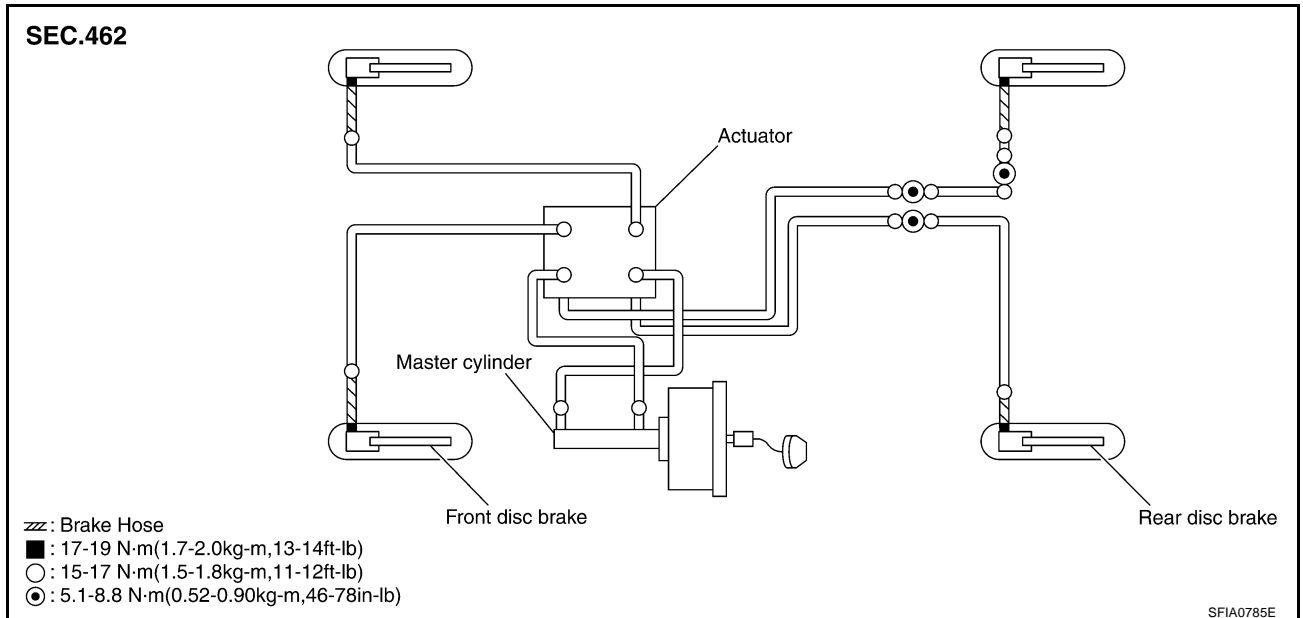
BRAKE PIPING AND HOSE

BRAKE PIPING AND HOSE

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Hydraulic Circuit

AFS000K2



CAUTION:

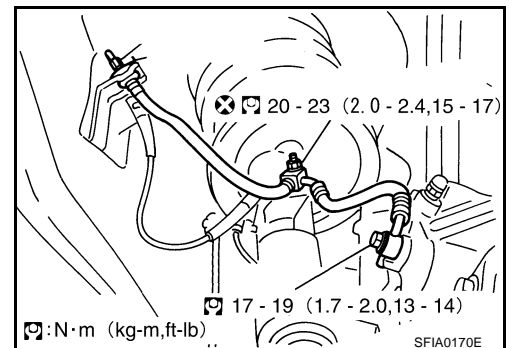
- When installing, check for twist and fracture.
- Make sure that there is no interference with other parts when turning the steering clockwise or counterclockwise.
- The brake piping is an important safety part. If a brake fluid leak is detected, always disassemble the parts. Replace the applicable part with a new one.

Front Brake Piping and Hose

AFS000K3

REMOVAL

1. Connect a vinyl tube to the air bleeder.
2. Drain brake fluid gradually from the air bleeder of each wheel while depressing the brake pedal.
3. Cover the brake line connection to prevent foreign material such as dust or dirt from entering into the connection.
4. Using a flare nut wrench, remove the brake tube from the brake hose. Remove the union bolt, and remove the brake hose from the caliper assembly.
5. Remove the lock plate.
6. Remove the mounting nuts, and remove the brake hose from the vehicle.



INSTALLATION

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

CAUTION:

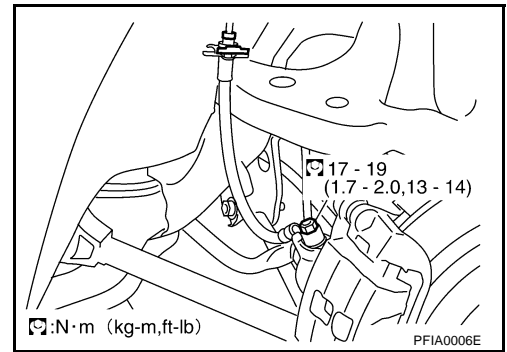
- Do not reuse the copper washer.
2. Install the brake hose to the brake tube on the vehicle, and temporarily tighten the flare nut by hand until it stops to install the bracket. Fix it with the lock plate, and tighten it to the specified torque.
 3. Install the brake hose to the vehicle, and tighten the mounting nuts to the specified torque.
 4. After the work, bleed air. Refer to [BR-9, "Bleeding Brake System"](#).

BRAKE PIPING AND HOSE

Rear Brake Piping and Hose REMOVAL

AFS000K4

1. Connect a vinyl tube to the air bleeder.
2. Drain brake fluid gradually from the air bleeder of each wheel while depressing the brake pedal.
3. Cover the brake line connection to prevent foreign material such as dust or dirt from entering into the connection.
4. Using a flare nut wrench, remove the brake tube from the brake hose.
5. Remove the union bolts, and then remove the brake hose from the caliper assembly.
6. Remove the brake hose mounting bolts, and remove the brake hose from the vehicle.



INSTALLATION

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

CAUTION:

- Do not reuse the copper washer.
 - Refill with new brake fluid "DOT 3".
 - Never reuse drained brake fluid.
2. Fix the brake hose to the vehicle. Temporarily tighten the flare nut by hand until it stops, and tighten it to the specified torque.
 3. After the work, bleed air. Refer to [BR-9, "Bleeding Brake System"](#) .

Inspection

AFS000K5

CAUTION:

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

1. Check the 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.

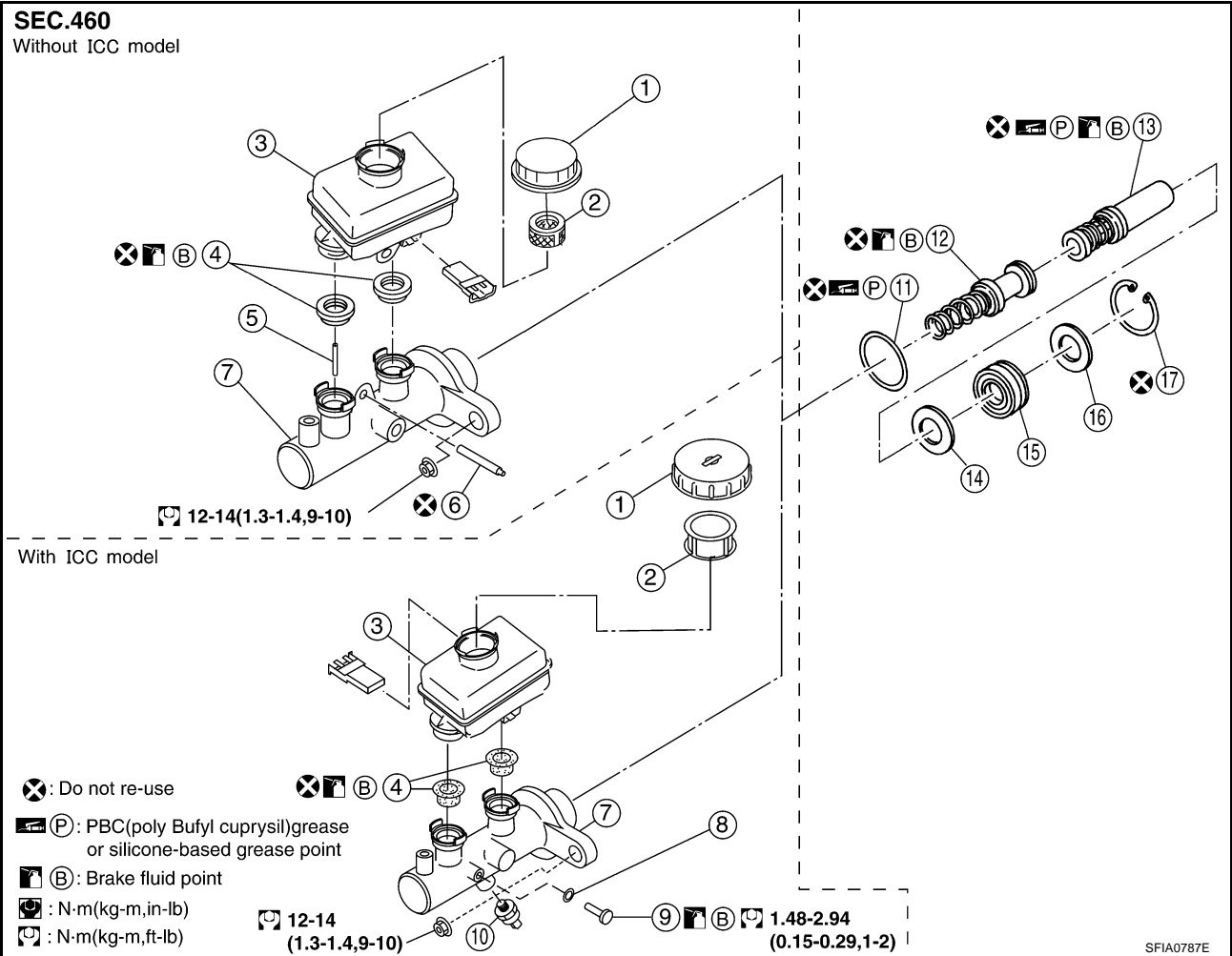
BRAKE MASTER CYLINDER

BRAKE MASTER CYLINDER

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Components

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- | | | |
|--|-------------------|-------------------------------|
| 1. Reservoir cap | 2. Oil filter | 3. Reservoir tank |
| 4. Seal | 5. Piston stopper | 6. Pin |
| 7. Cylinder body | 8. O-ring | 9. Piston stopper |
| 10. Pressure sensor | 11. O-ring | 12. Secondary piston assembly |
| 13. Primary piston assembly | 14. Plate | 15. Guide assembly |
| 16. Plate (Not inserted in some vehicles.) | 17. Snap ring | |

Removal and Installation

REMOVAL

1. Drain brake fluid.
2. Remove the harness connectors for the fluid level sensor and pressure sensor (with ICC models).
3. Using a flare nut wrench, remove the brake tube from the master cylinder.
4. Remove the mounting nuts, and remove the master cylinder assembly from the vehicle.

INSTALLATION

CAUTION:

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

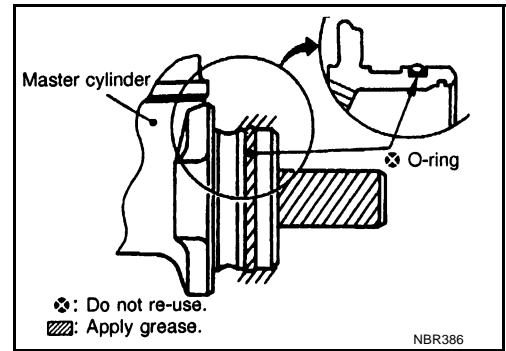
1. Temporarily tighten the flare nuts on the brake tube to master cylinder by hand.
2. Install the master cylinder to the brake booster assembly, and tighten the mounting nuts to the specified torque.

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BRAKE MASTER CYLINDER

CAUTION:

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



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

 : 15 - 17 N·m (1.5 - 1.8 kg-m, 11 - 12 ft-lb)

4. Refill the new brake fluid and bleed air. Refer to [BR-9, "Bleeding Brake System"](#) .

Disassembly and Assembly

DISASSEMBLY

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Models without ICC

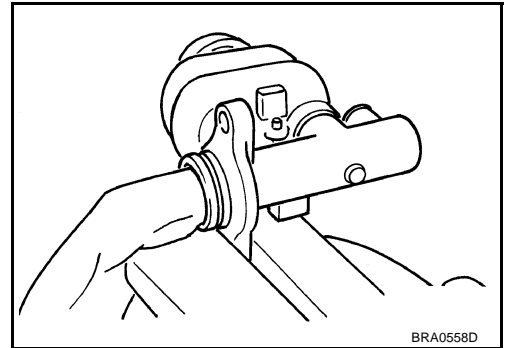
CAUTION:

Be careful not to damage the primary piston rod. Covering with cloth is recommended.

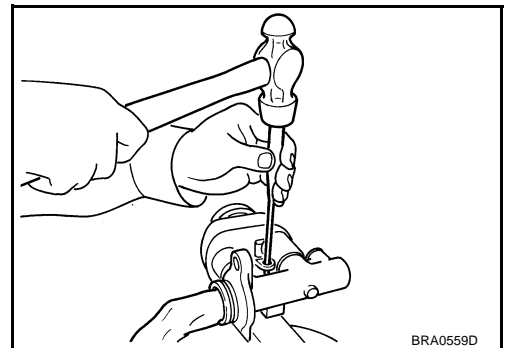
1. Tighten the flange of the cylinder body in the vise as shown in the figure.

CAUTION:

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



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

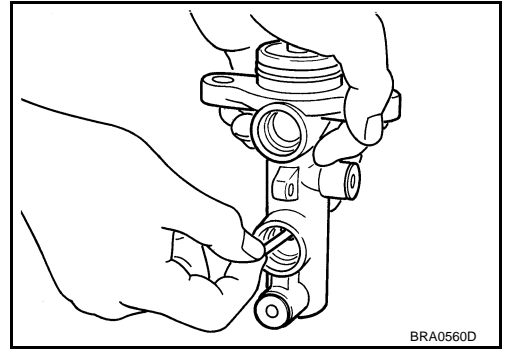


BRAKE MASTER CYLINDER

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

CAUTION:

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



6. Remove the snap ring in pushing primary piston.

CAUTION:

Be careful not to put out the piston.

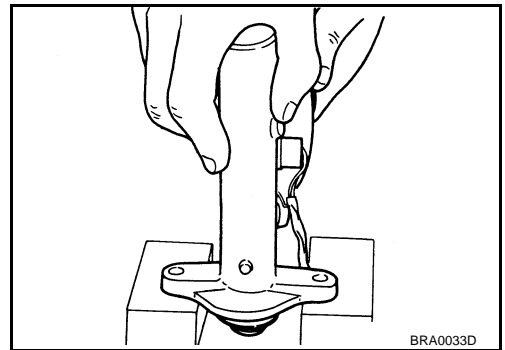
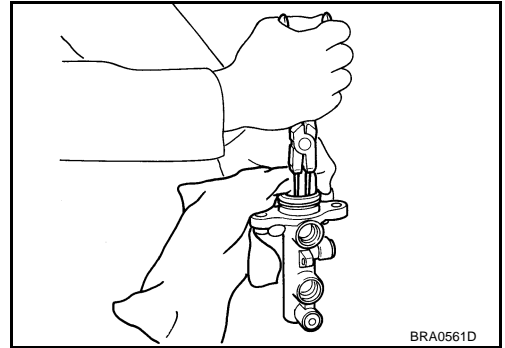
7. Holding the rod of the primary piston, remove the primary piston assembly, the plate and the guide assembly with pulling straight to prevent the cup from being caught by the inner wall of the cylinder.

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

CAUTION:

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

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.



Models with ICC

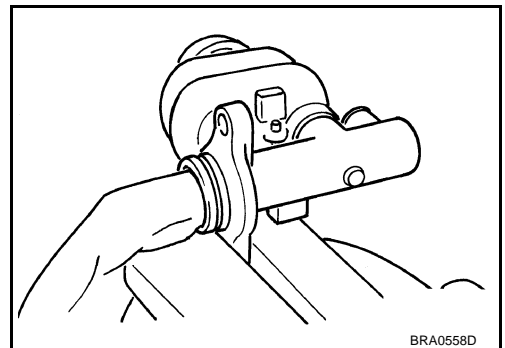
CAUTION:

Be careful not to damage the primary piston rod. Covering with cloth is recommended.

1. Tighten the flange of the cylinder body in the vise as shown in the figure.

CAUTION:

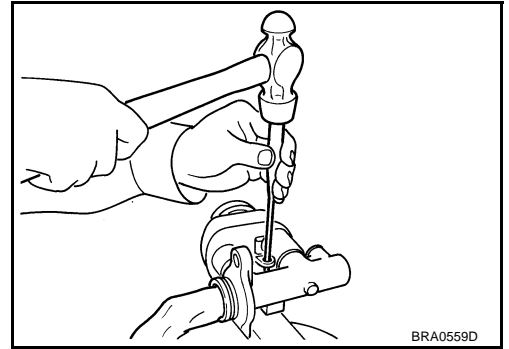
- Pay attention to the orientation of master cylinder body.
- Use the copper plate or cloth for fixing the body in the vise.



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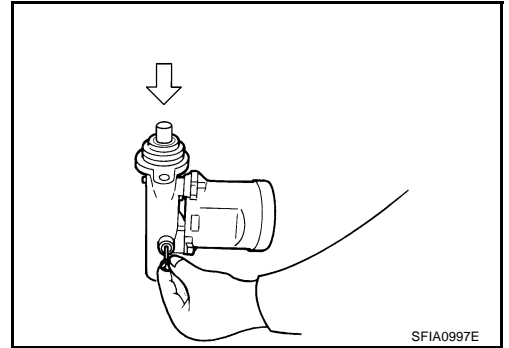
BRAKE MASTER CYLINDER

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



- Push the primary piston and remove the piston stopper from cylinder body.

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

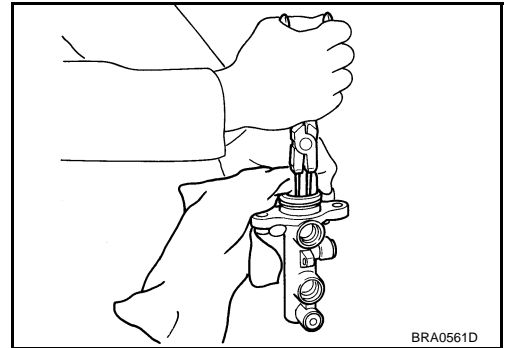


- Remove the snap ring in pushing primary piston.

CAUTION:
Be careful not to put out the piston.

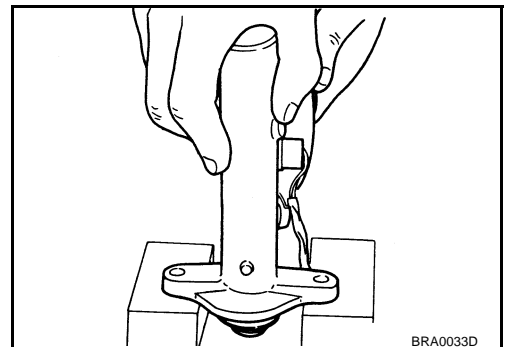
- Holding the rod of the primary piston, remove the primary piston assembly, the plate and the guide assembly with pulling straight to prevent the cup from being caught by the inner wall of the cylinder.
- Remove the plate and the guide from the primary piston.

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



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

CAUTION:
Remove the reservoir tank only when necessary.



INSPECTION AFTER DISASSEMBLY

Master Cylinder

- 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 the parts with a service tool when assembling.
- Do not drop the parts. Do not use any dropped parts.

BRAKE MASTER CYLINDER

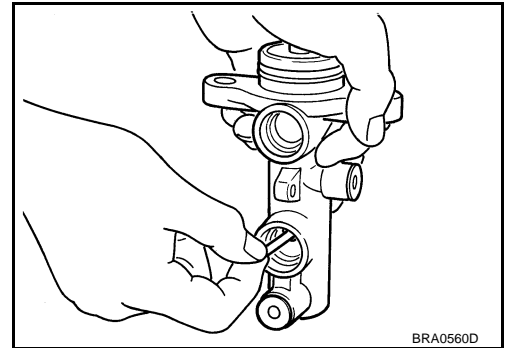
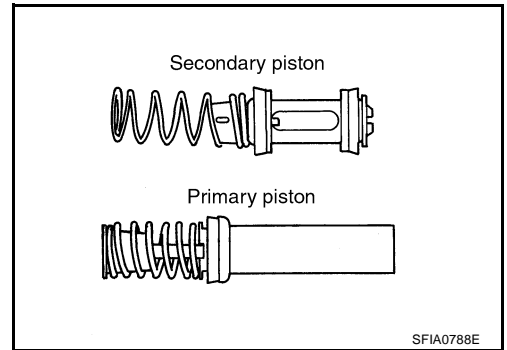
Models without ACC

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.
- Pay attention to the orientation of the piston cup, and insert straight to prevent the cup from being caught by the inner wall of the cylinder.
- Always replace the inner kit as an assembly.

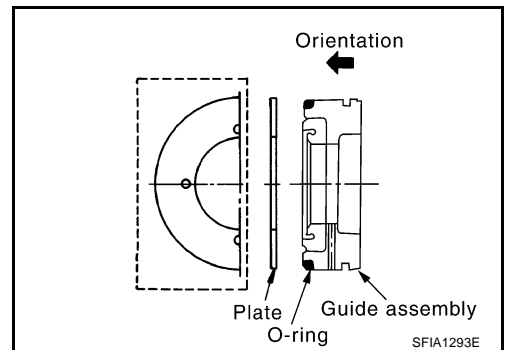
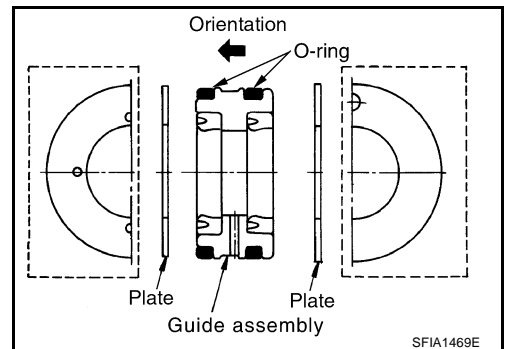
3. Align the slit in the center of the piston with the axial direction of the valve stopper to assemble. Visually check the secondary piston slit from the valve stopper mounting hole, and install the valve stopper.



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

CAUTION:

- There are two kinds of the guide assembly and the plate. Shown in the figure and refer to [BR-13, "Components"](#).
- Be careful not to damage the rod of the primary piston.
- Pay attention to the orientation of the guide assembly.
- Do not drop the O-ring.



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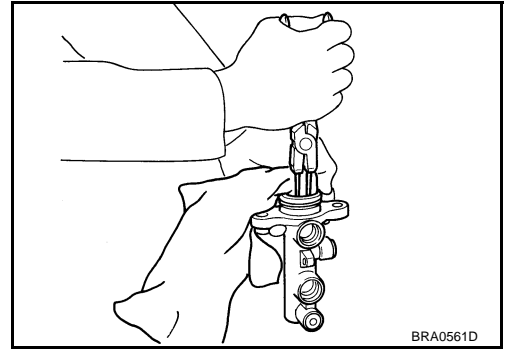
M

BRAKE MASTER CYLINDER

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

CAUTION:

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



6. Tighten the flange of the cylinder body in the vise as shown in the figure.

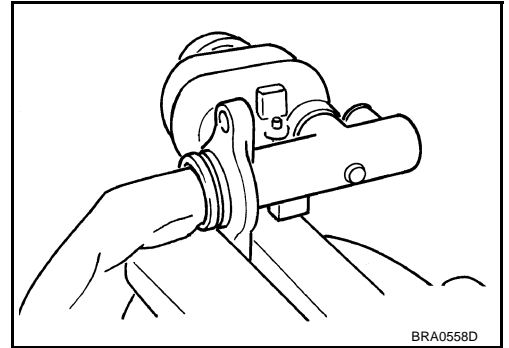
CAUTION:

- Use a copper plate or cloth to cover the flange for fixing base.
- Pay attention to the orientation of the cylinder body.

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

CAUTION:

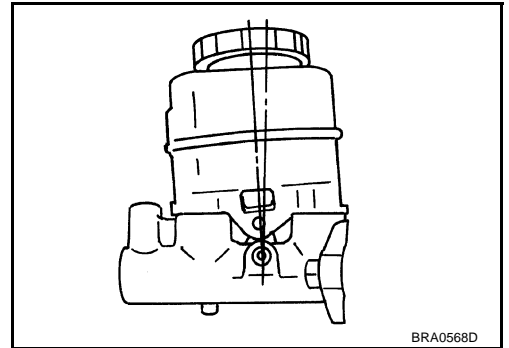
Do not reuse the grommet.



8. Install the reservoir tank to the master cylinder.

CAUTION:

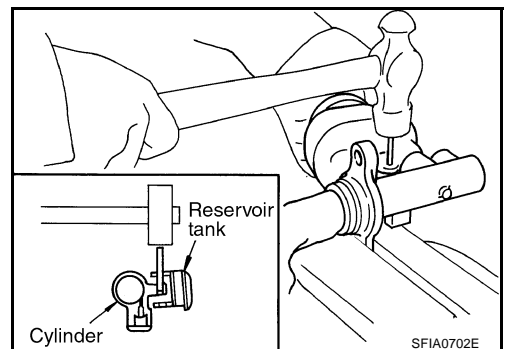
Pay attention to the orientation of the reservoir tank.



9. Set the reservoir tank in the front direction to the cylinder body. Press a new reservoir tank in the cylinder body.

CAUTION:

- Pay attention to the orientation of the piston cup, and insert straight to prevent the cup from being caught by the inner wall of the cylinder.



BRAKE MASTER CYLINDER

Models with ACC

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.
- Pay attention to the orientation of the piston cup, and insert straight to prevent the cup from being caught by the inner wall of the cylinder.
- Always replace the inner kit as an assembly.

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

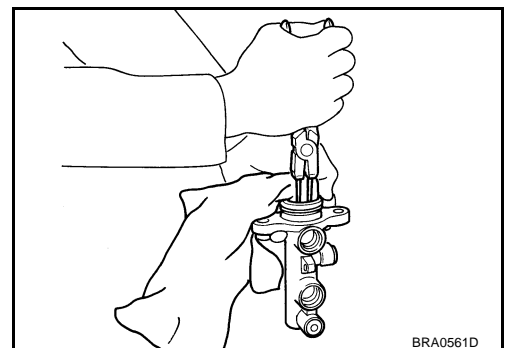
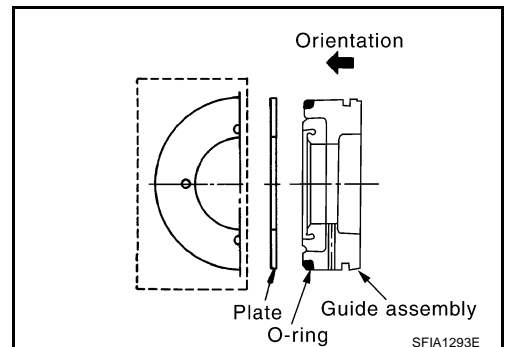
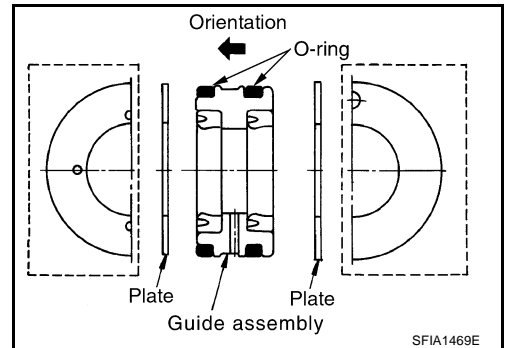
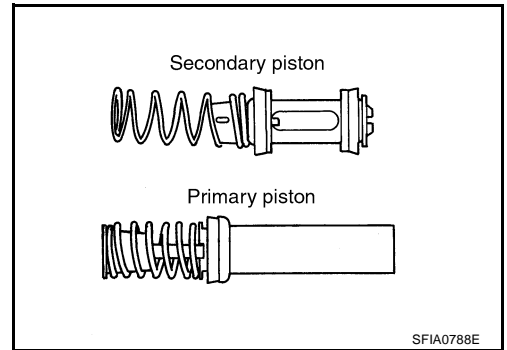
CAUTION:

- There are two kinds of the guide assembly and the plate. Shown in the figure and refer to [BR-13, "Components"](#).
- Be careful not to damage the rod of the primary piston.
- Pay attention to the orientation of the guide assembly.
- Do not drop the O-ring.

4. Be careful not to damage the rod of the primary piston covering it with cloth. Then insert snap ring into cylinder with pushing primary piston.

CAUTION:

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



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BRAKE MASTER CYLINDER

5. Align the slit in the center of the piston with the axial direction of the valve stopper to assemble. Visually check the secondary piston slit from the valve stopper mounting hole, and install the valve stopper.

CAUTION:

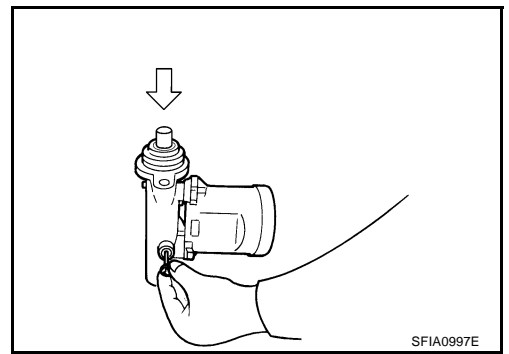
Always replace the O-ring of piston pin with new one in the repair kit.

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

CAUTION:

Do not reuse the grommet.

7. Press a new reservoir tank in the cylinder body.



BRAKE BOOSTER

BRAKE BOOSTER

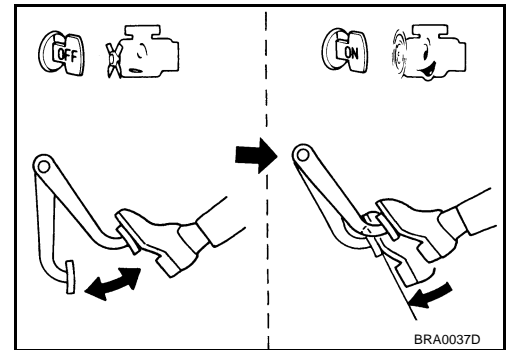
PFP:47200

On-Vehicle Service OPERATING CHECK

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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.

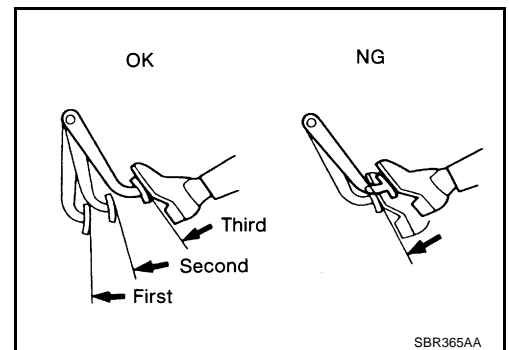
CAUTION:
Depressing pedal interval is approximately 5 seconds.



AIRTIGHT CHECK

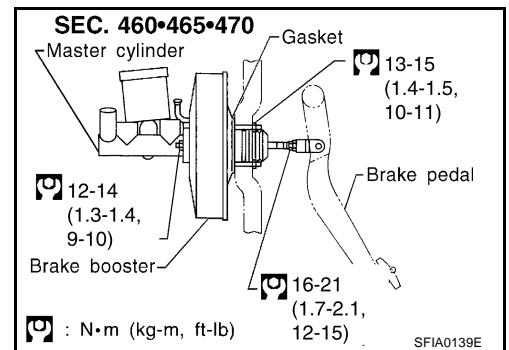
- Run the engine at idle for approximately 1 minute, and stop it after applying vacuum to the booster. Depress the brake pedal normally to change the vacuum to the atmospheric pressure. Check that distance between the brake pedal and floor panel gradually increases.

CAUTION:
Depressing pedal interval is approximately 5 seconds.



Removal and Installation 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.
 - Be careful not to deform or bend brake pipes, during removal of booster.
- Remove the vacuum hose from the brake booster.
 - Remove the master cylinder. Refer to [BR-13, "Components"](#).
 - Remove the snap pin and clevis pin on the clevis in the passenger compartment, and remove the input rod from the brake pedal.
 - Remove the mounting nuts on the pedal bracket.
 - Remove the booster assembly from the engine room.

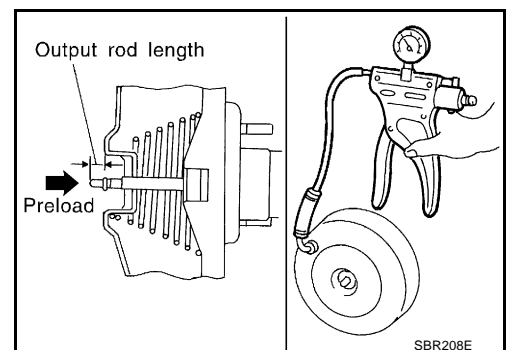


INSPECTION AFTER REMOVAL

Output Rod Length Inspection

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

Standard dimension when vacuuming : -2 mm (-0.08 in)
 -66.7 kPa (-500 mmHg, -19.69 inHg)



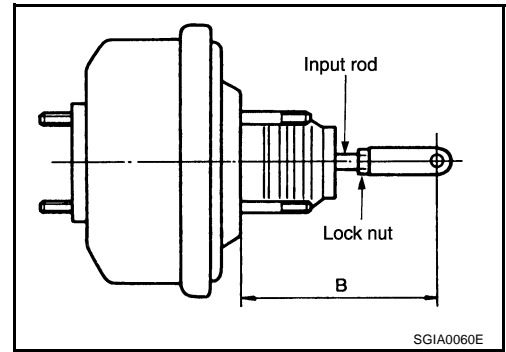
BRAKE BOOSTER

INSTALLATION

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

Length "B" : 125 mm (4.92 in)

2. After adjusting "B", 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.
4. Install the pedal bracket mounting nuts and tighten them to the specified torque.
5. Install the master cylinder to the booster assembly. Refer to [BR-13, "Components"](#).
6. Adjust the height and play of the brake pedal.
7. Tighten the lock nut of the input rod to the specified torque.
8. Bleed air. Refer to [BR-9, "Bleeding Brake System"](#).



VACUUM LINES

VACUUM LINES

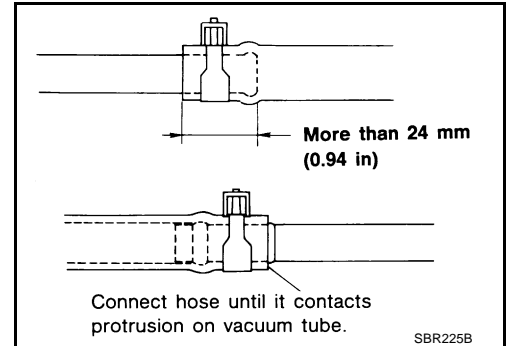
PFP:41920

Inspection

AFS001KV

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.



VISUAL INSPECTION

Check for improper assembly, damage and deteriorate.

CHECK VALVE INSPECTION

Airtightness Inspection

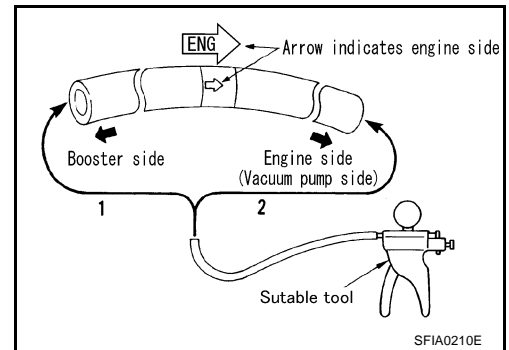
Use a hand-held vacuum pump to check.

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

FRONT DISC BRAKE

PFP:41000

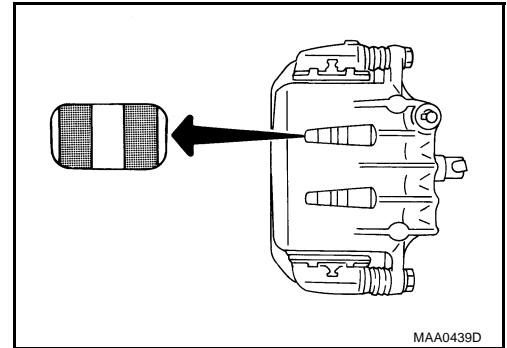
On-board Inspection PAD WEAR INSPECTION

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- Remove the wheel with the vehicle lifted to check the pad thickness from the check hole on the cylinder body. If necessary, use a scale to check.

Standard thickness : 10.0 mm (0.394 in)

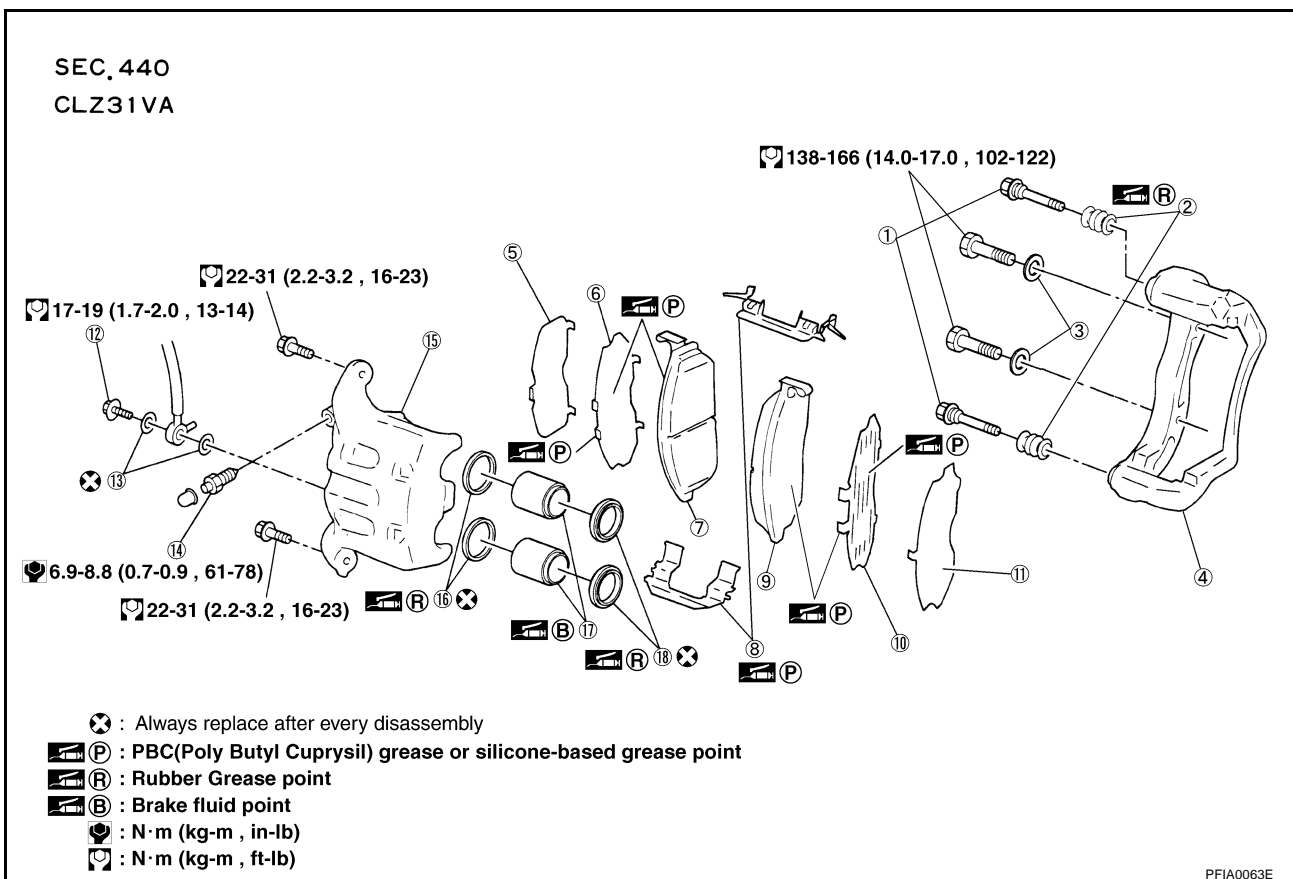
Repair limit thickness : 2.0 mm (0.079 in)



MAA0439D

Components (CLZ31VA Type)

AFS000K9



PFIA0063E

- | | | |
|---------------------|----------------------|-------------------|
| 1. Sliding pin bolt | 2. Pin boot | 3. Washer |
| 4. Torque member | 5. Inner shim cover | 6. Inner shim |
| 7. Inner pad | 8. Pad retainer | 9. Outer pad |
| 10. Outer shim | 11. Outer shim cover | 12. Union bolt |
| 13. Copper washer | 14. Bleed valve | 15. Cylinder body |
| 16. Piston seal | 17. Piston | 18. Piston boot |

CAUTION:

- Clean dust on the caliper and brake pad with a vacuum dust collector. Do not blow with compressed air.
- While removing the cylinder body, never depress the brake pedal because the piston will pop out.
- It is not necessary to remove the mounting bolts on the torque member and brake hose except for disassembly or replacement of the caliper assembly. In this case, hang the cylinder body with a wire so that the brake hose is not under tension.

FRONT DISC BRAKE

- Do not damage the piston boot.
- Always replace the shims and shim covers as a set when replacing the brake pads.
- Keep the rotor clean away from brake fluid.

Pad Replacement REMOVAL

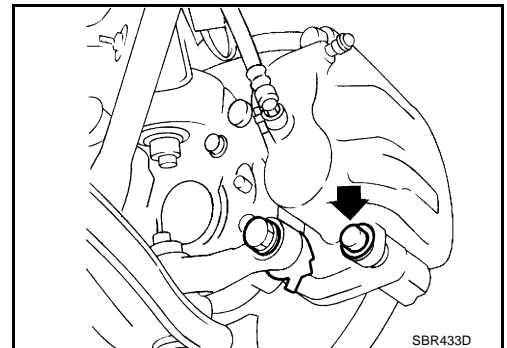
AFS000KB

WARNING:

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

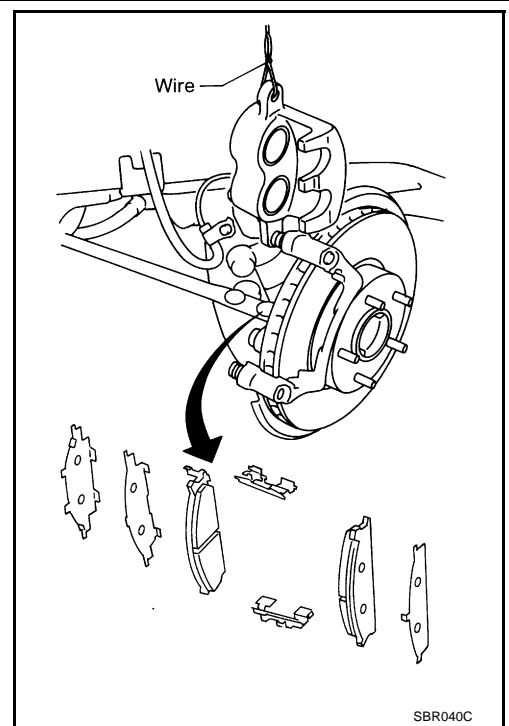
CAUTION:

- When cylinder body is open, do not depress brake pedal because the piston will pop out.
 - Be careful not to damage piston boot or get oil on 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 connecting bolt except for disassembly or replacement of caliper assembly. 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 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-30, "Brake Burnishing Procedure"](#).
1. Remove tire from vehicle.
 2. Remove master cylinder reservoir cap.
 3. Remove the lower sliding pin bolt.



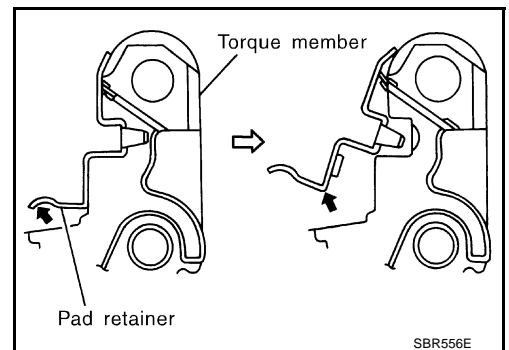
FRONT DISC BRAKE

4. Hang the cylinder body with a wire, and remove the pads, pad retainers, shims and shim cover from the torque member.



CAUTION:

- When removing the pad retainer from the torque member, lift the pad retainer in the direction shown by the arrow (shown in the figure) so as not to deform it.
- Do not damage the piston boot.
- Keep the rotor clean away from brake fluid.



INSTALLATION

1. Apply grease to the back of the pad and both sides of the shim, install the inner shim to the inner pad, and the outer shim and outer shim cover to the outer pad.
2. Apply grease to the pad contact surface on the pad retainer, and install the pad retainers and pads to the torque member.

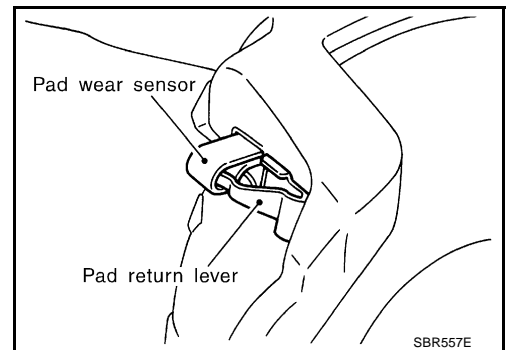
CAUTION:

The CLZ31VA inner pad and outer pad have the pad-return mechanism on the upper side of the pad retainer. When installing the CLZ31VA pad to the torque member, be sure to install the pad return lever to the pad wear sensor securely.

3. Install the cylinder body to the torque member.

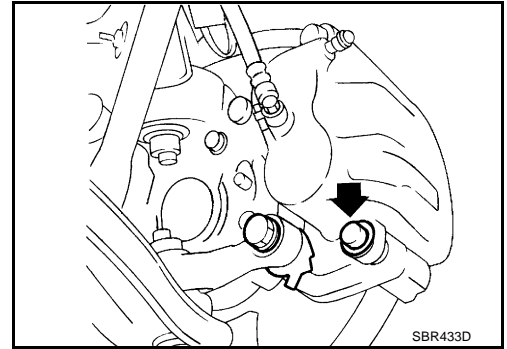
CAUTION:

When replacing the pads with new ones, press in the piston until the pads can be installed. In this case, carefully monitor the brake fluid level in the reservoir tank because the brake fluid will return to the reservoir tank of the master cylinder.



FRONT DISC BRAKE

4. Install the lower sliding pin bolt, and tighten it to the specified torque.
5. Check the brake for drag.
6. Attach the tire to the vehicle.

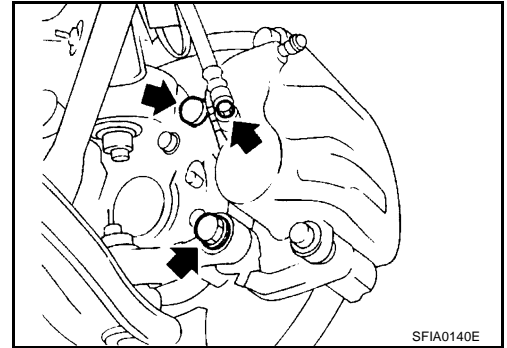


AFS000KC

Removal and Installation of Caliper Assembly

REMOVAL

1. Remove tire from vehicle.
2. Connect a vinyl tube to the air bleeder.
3. Drain brake fluid gradually from the air bleeder while depressing the brake pedal.
4. Remove the union bolts, and then remove the brake hose from the caliper assembly.
5. Remove the mounting bolts from the torque member, and remove the caliper assembly from the vehicle.
6. Remove the disc rotor.



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INSTALLATION

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

CAUTION:

Before installing the caliper assembly to the vehicle, wipe oil and grease on the washer seats on the knuckle spindle and mounting surface of the torque member.

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

CAUTION:

- Do not reuse the copper washer for union bolts.
- Assemble the brake hose securely to the protrusions on caliper assembly.

4. Refill with new brake fluid and bleed air. Refer to [BR-9, "Bleeding Brake System"](#).

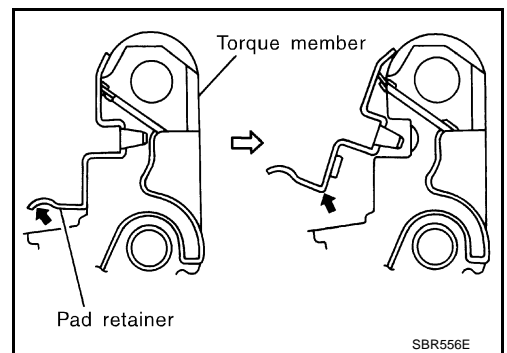
Disassembly and Assembly of Caliper Assembly

DISASSEMBLY

1. Remove the sliding pin bolts from the cylinder body, and remove the pads, shims, shim covers and pad retainers from the torque member.

CAUTION:

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



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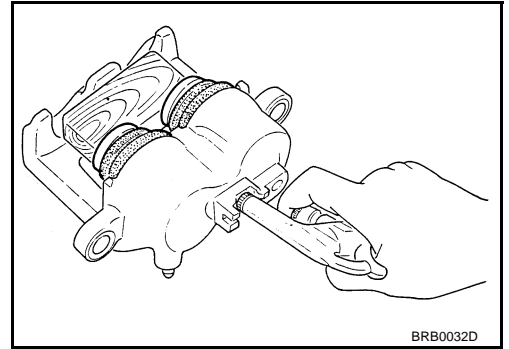
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FRONT DISC BRAKE

2. Remove the sliding pins and sliding pin boots from the torque member.
3. Place a wooden block as shown in the figure, and blow air from the union bolt mounting hole to remove the pistons and piston boots.

CAUTION:

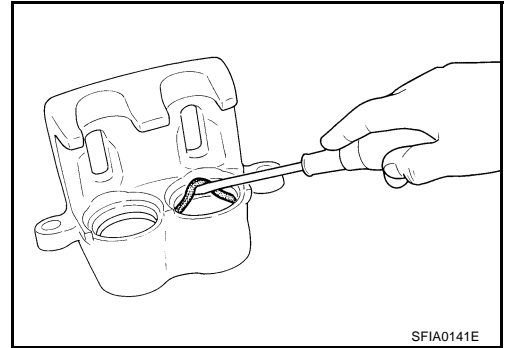
Do not get fingers caught in the piston.



4. Using a screwdriver, remove the piston seals from the cylinder body.

CAUTION:

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



CALIPER INSPECTION

Cylinder Body

CAUTION:

Use new brake fluid to clean. Never use mineral oils such as gasoline or kerosene.

- Check the inner wall of the cylinder for corrosion, wear, and damage. If a malfunction is detected, replace the 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 a malfunction is detected, replace the applicable part.

Piston

CAUTION:

The piston sliding surface is plated. Do not polish with sandpaper.

Check the piston surface for corrosion, wear, and damage. If a malfunction is detected, replace the applicable part.

Sliding Pin, Pin Bolt, and Pin Boot

Check the sliding pin and sliding pin boot for wear, damage, and cracks. If a malfunction is detected, replace the applicable part.

ASSEMBLY

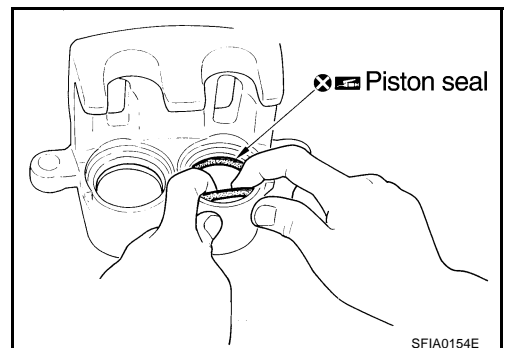
CAUTION:

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

1. Apply rubber grease to the piston seals, and install them to the cylinder body.

CAUTION:

Do not reuse the piston seals.

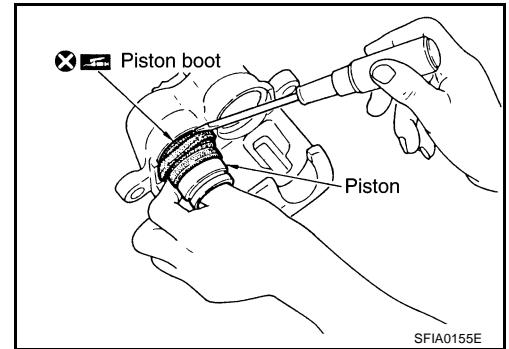


FRONT DISC BRAKE

2. Apply brake fluid to the piston boots. Cover the piston end with the piston boot, and install the cylinder-side lip on the piston boot properly into the groove on the cylinder body.

CAUTION:

Do not reuse the piston boot.

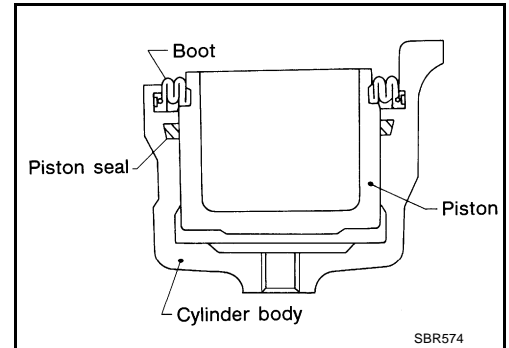


3. Apply brake fluid to the piston, and press the piston into the cylinder body by hand to assemble the piston-side lip on the piston boot properly into the groove on the piston.

CAUTION:

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

4. Install the sliding pins and sliding pin boots to the torque member.



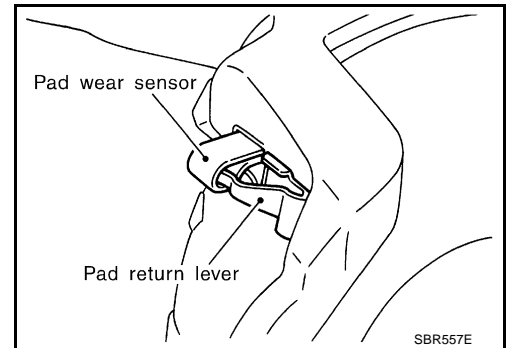
5. Apply grease to the back of the pad and both sides of the shim, install the inner shim to the inner pad, and the outer shim and outer shim cover to the outer pad.

6. Apply grease to the pad contact surface on the pad retainer, and install the pad retainers and pads to the torque member.

CAUTION:

The inner pad and outer pad have the pad-return mechanism on the upper side of the pad retainer. When installing the CLZ31VA pad to the torque member, be sure to install the pad return lever to the pad wear sensor securely.

7. Install the cylinder body, and tighten the sliding pin bolt to the specified torque.



DISC ROTOR INSPECTION

Visual Inspection

Check the surface of the disc rotor for uneven wear, cracks, and serious damage. If a malfunction is detected, replace the applicable part.

Runout Inspection

1. Using wheel nuts, fix the disc rotor to the wheels hub. (2 or more positions)
2. Using a dial indicator, check the runout.

Measurement point:

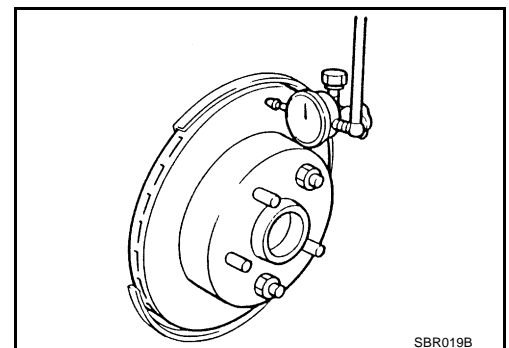
At a point 10 mm (0.394 in) from the outer edge of the disc

Maximum runout : 0.07 mm (0.0028 in) or less

CAUTION:

Before measuring, make sure that the axle end play is 0 mm (0 in).

3. If the runout is outside the limit, find the minimum runout point by shifting the mounting positions of the disc rotor and wheel hub by one hole.



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FRONT DISC BRAKE

Thickness Inspection

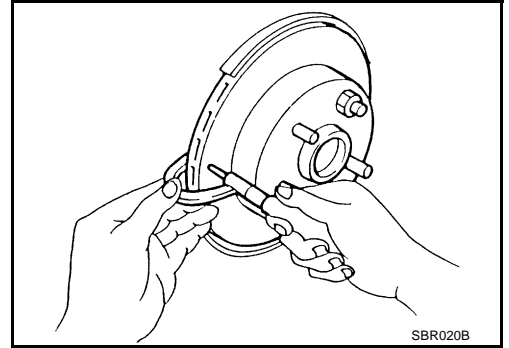
1. Using a micrometer, check the thickness of the disc rotor. If the thickness is outside the standard, replace the disc rotor.

Standard thickness : 28.0 mm (1.10 in)

Wear limit : 26.0 mm (1.02 in)

**Maximum uneven wear (measured at 8 positions):
0.015 mm (0,0006 in) or less**

2. If the runout is still out of specification, turn rotor with on-car brake lathe ("MAD, DL-8700", "AMMCO 700 and 705" or equivalent).



Brake Burnishing Procedure

AFS000KE

Burnish the brake contact surfaces according to the following procedure after refinishing or replacing drums or rotors, after replacing pads or linings, 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 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.

REAR DISC BRAKE

REAR DISC BRAKE

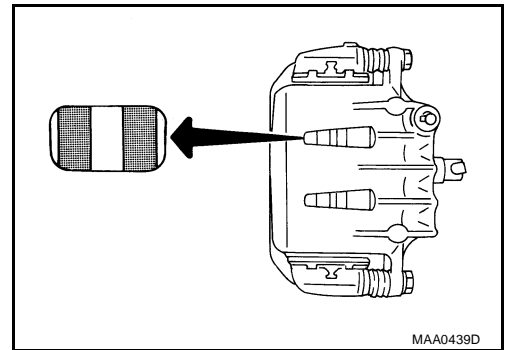
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On-board Inspection PAD WEAR INSPECTION

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- Remove the wheel with the vehicle lifted to check the pad thickness from the check hole on the cylinder body. If necessary, use a scale to check.

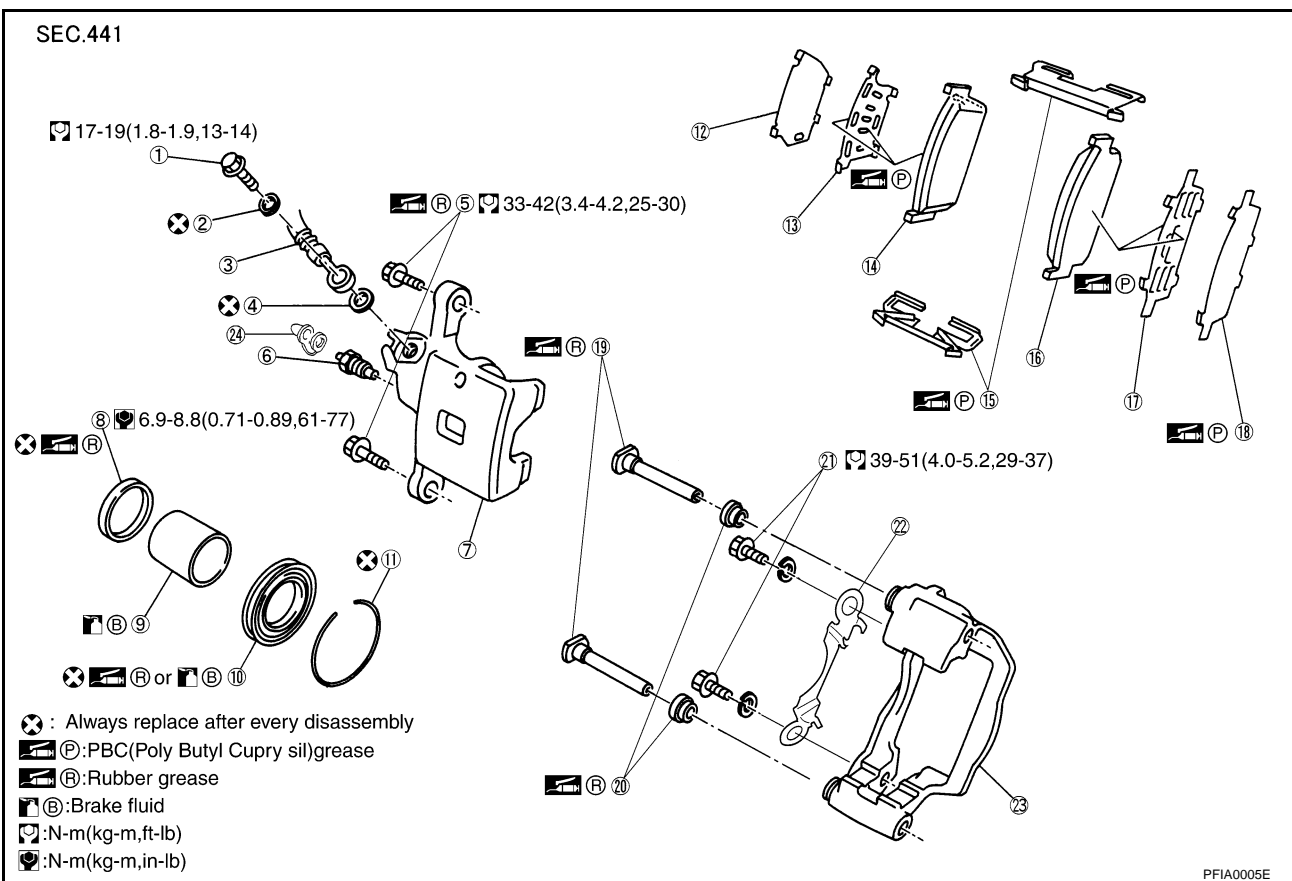
Standard thickness : 9.8 mm (0.386 in)
Repair limit thickness : 2.0 mm (0.079 in)



MAA0439D

Component (AD14VD Type)

AFS000KK



PFIA0005E

- | | | |
|---|----------------------|----------------------------------|
| 1. Union bolt | 2. Copper washer | 3. Brake hose |
| 4. Copper washer | 5. Sliding pin bolt | 6. Air bleeder |
| 7. Cylinder body | 8. Piston seal | 9. Piston |
| 10. Piston boot | 11. Retaining ring | 12. Inner shim cover |
| 13. Inner shim | 14. Inner brake pad | 15. Pad retainer |
| 16. Outer brake pad | 17. Outer shim | 18. Outer shim cover |
| 19. Sliding pin | 20. Sliding pin boot | 21. Torque member mounting bolts |
| 22. Decrement shim (Not inserted in some vehicles.) | 23. Torque member | 24. Cap |

CAUTION:

- Clean dust on the caliper and brake pad with a vacuum dust collector. Do not blow with compressed air.
- While removing the cylinder body, never depress the brake pedal because the piston will pop out.

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- It is not necessary to remove the mounting bolts on the torque member and brake hose except for disassembly or replacement of the caliper assembly. In this case, hang the cylinder body with a wire so that the brake hose is not under tension.
- Do not damage the piston boot.
- Always replace the shims and shim covers as a set when replacing the brake pads.
- Keep the rotor clean away from brake fluid.

Pad Replacement REMOVAL

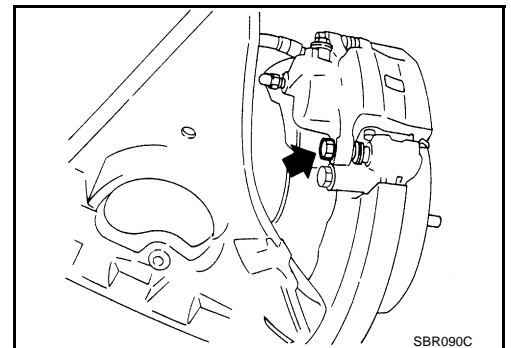
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WARNING:

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

CAUTION:

- While cylinder body is open, do not depress brake pedal, otherwise piston will pop out.
 - Be careful not to damage piston boot or get oil on 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 connecting bolt except for disassembly or replacement of caliper assembly. 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 contact surfaces after refinishing or replacing drums or rotor, after replacing pads or linings, or if a soft pedal occurs at very low mileage. Refer to [BR-30, "Brake Burnishing Procedure"](#).
1. Remove tire from vehicle.
 2. Remove master cylinder reservoir cap.
 3. Remove the lower sliding pin bolt.

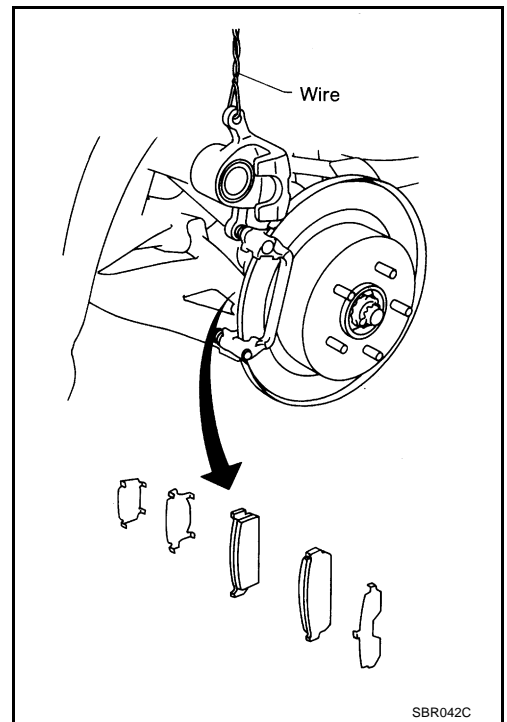


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4. Hang the cylinder body with a wire, and remove the pads, pad retainers, shims and shim covers from the torque member.

CAUTION:

- Do not damage the piston boot.
- Keep the rotor clean away from brake fluid.



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INSTALLATION

1. Apply grease to the back of the pad and both sides of the shim, and install the inner shim and shim cover to the inner pad, and outer shim and outer shim cover to the pad.
2. Apply grease to the pad contact surface on the pad retainer, and install the pad retainers and pads to the torque member.
3. Install the cylinder body to the torque member.

CAUTION:

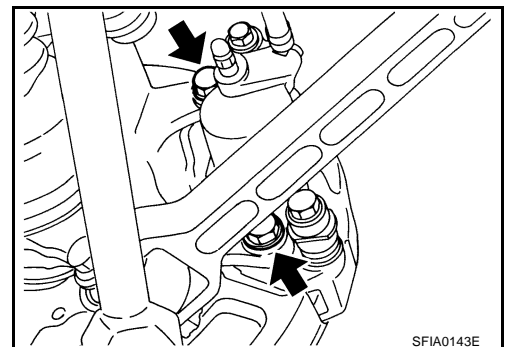
When replacing the pads with new ones, press in the piston until the pads can be installed. In this case, carefully monitor the brake fluid level in the reservoir tank because the brake fluid will return to the reservoir tank of the master cylinder.

4. Insert the lower sliding pin bolt to tighten to the specified torque.
5. Check the brake for drag.
6. Attach the tires to the vehicle.

Removal and Installation of Caliper Assembly

REMOVAL

1. Remove tire from vehicle.
2. Connect a vinyl tube to the air bleeder.
3. Drain brake fluid gradually from the air bleeder while depressing the brake pedal.
4. Remove the union bolts, and then remove the brake hose from the caliper assembly.
5. Remove the mounting bolts from the torque member, and remove the caliper assembly from the vehicle.
6. Remove the disc rotor.



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INSTALLATION

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

CAUTION:

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

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

CAUTION:

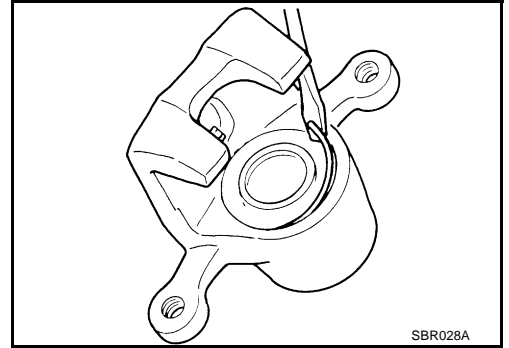
- Do not reuse the copper washer for union bolts.
- Assemble the brake hose securely to the protrusion on caliper assembly.

4. After installing the caliper assembly, refill with new brake fluid and bleed air.
5. Attach the tires to the vehicle.

Disassembly and Assembly of Caliper Assembly DISASSEMBLY

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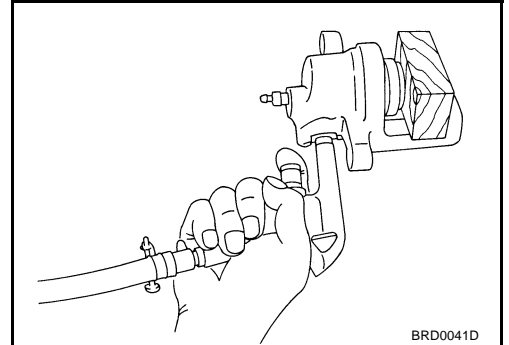
1. Remove the sliding pins. Then remove the pads, shims, and shim covers from the caliper assembly, and remove the pad retainers from the cylinder body.
2. Remove the sliding pin boot from the torque member.
3. Using a flat-bladed screwdriver as shown in the figure, remove the retaining ring from the cylinder body.



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

CAUTION:

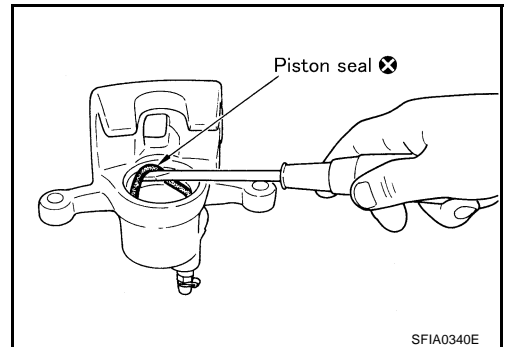
Do not get fingers caught in the piston.



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

CAUTION:

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



REAR DISC BRAKE

INSPECTION AFTER DISASSEMBLY

Cylinder body

CAUTION:

Use new brake fluid to clean. Never use mineral oils such as gasoline or kerosene.

- Check the inner wall of the cylinder for corrosion, wear, and damage. If a malfunction is detected, replace the cylinder body.
- Minor flaws caused by corrosion or 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 a malfunction is detected, replace the applicable part.

Piston

CAUTION:

The piston sliding surface is plated. Do not polish with sandpaper.

Check the piston surface for corrosion, wear, and damage. If a malfunction is detected, replace the applicable part.

Sliding pin, pin bolt, and pin boot

Check the sliding pin and sliding pin boot for wear, damage, and cracks. If a malfunction is detected, replace the applicable part.

ASSEMBLY

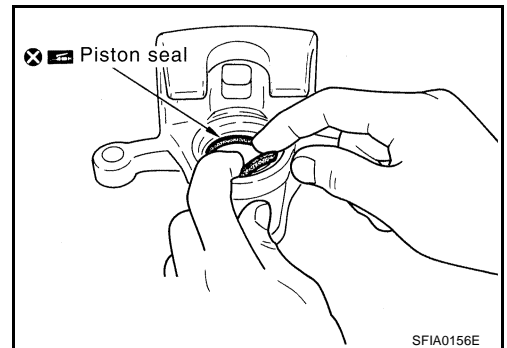
CAUTION:

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

1. Apply brake grease to the piston seals, and install them to the cylinder body.

CAUTION:

Do not reuse the piston seals.



2. Apply brake fluid to piston boots. Cover the piston end with the piston boot, and install the cylinder-side lip on the piston boots properly into the groove on the cylinder body.

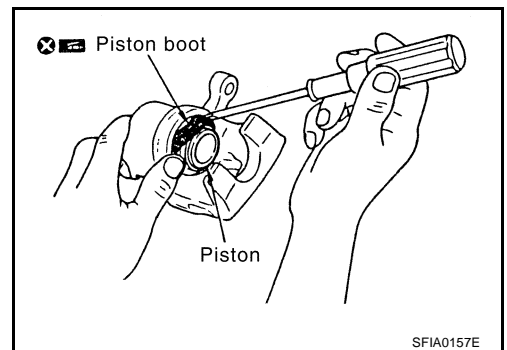
CAUTION:

Do not reuse the piston boot.

3. Press the piston into the cylinder body by hand to assemble the piston-side lip on the piston boot properly into the groove on the piston.

CAUTION:

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



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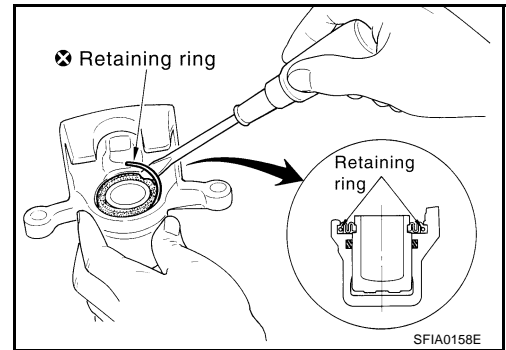
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- Fix the piston boot with the retaining ring.

CAUTION:

- Make sure that the boot is securely engaged in the groove on the cylinder body.
- Do not reuse the retaining ring.

- Install the sliding pins and sliding pin boots to the torque member.
- Install the pad retainers to the torque member.
- After assembling the shims and shim covers to the pads, assemble it to the torque member.
- Install the cylinder body, and tighten the sliding pin bolts to the specified torque.



DISC ROTOR INSPECTION

Visual inspection

Check the surface of the disc rotor for uneven wear, cracks, and serious damage. If a malfunction is detected, replace the applicable part.

Runout inspection

- Using wheel nuts, fix the disc rotor to the wheels hub. (2 or more positions)
- Using a dial indicator, check the runout.

Measurement point:

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

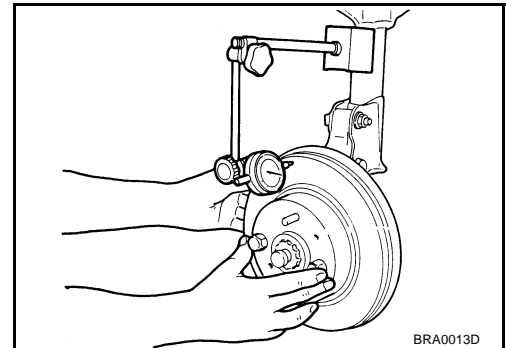
Maximum runout:

0.10 mm (0.0039 in) or less

CAUTION:

Before measuring, make sure that the axle end play is 0 mm (0 in).

- If the runout is outside the limit, find the minimum runout point by shifting the mounting positions of the disc rotor and wheel hub by one hole.



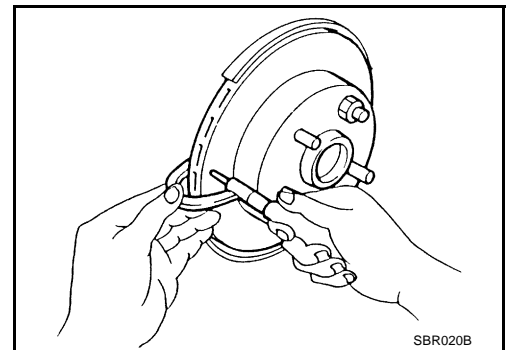
Thickness inspection

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

Standard thickness : 16.0 mm (0.63 in)

Wear limit : 14.0 mm (0.55 in)

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



SERVICE DATA AND SPECIFICATIONS (SDS)

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PF0:00030

General Specifications

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Unit: mm (in)

Front brake	Brake model		CLZ31VA
	Cylinder bore diameter		45.0 (1.77) × 2
	Pad Length × width × thickness		127.0 × 56.0 × 10.0 (5.00 × 2.20 × 0.374)
	Rotor outer diameter × thickness		290 × 28 (11.42 × 1.10)
Rear brake	Brake model		AD14VD
	Cylinder bore diameter		43.86 (1.727)
	Pad Length × width × thickness		97.4 × 33.9 × 9.8 (3.835 × 1.335 × 0.39)
	Rotor outer diameter × thickness		292 × 16 (11.50 × 0.63)
Master cylinder	Cylinder bore diameter		25.4 (1)
Control valve	Valve model		Electric brake force distribution
Brake booster	Booster model		R215T
	Diaphragm diameter	Primary	230 (9.06)
		Secondary	205 (8.07)
Recommended brake fluid			DOT 3

Brake pedal

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Free play (at pedal top surface)	3 - 11 mm (0.12 - 0.43 in)
Brake pedal height (from dash panel top surface)	174 - 184 mm (6.85 - 7.24 in)
Depressed pedal height under force of 490 N (50 kg, 110 lb) (from dash panel top surface)	90 mm (3.54 in) or more
Clearance between the stopper rubber and the threaded end of the stop lamp switch/Brake switch/ASCD cancel switch	0.74 - 1.96 mm (0.0291 - 0.0772 in)

Check valve

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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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Brake booster Vacuum type

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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)

Front disc brake

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Brake model		CLZ31VA
Brake pad	Standard thickness (new)	10 mm (0.394 in)
	Repair limit thickness	2.0 mm (0.079 in)
Disc rotor	Standard thickness (new)	28.0 mm (1.102 in)
	Repair limit thickness	26.0 mm (1.024 in)
	Maximum runout	0.07 mm (0.0028 in) or less

Rear disc brake

AFS000KU

Brake model		AD14VD
Brake pad	Standard thickness (new)	9.8 mm (0.386 in)
	Repair limit thickness	2.0 mm (0.079 in)

SERVICE DATA AND SPECIFICATIONS (SDS)

Brake model		AD14VD
Disc rotor	Standard thickness (new)	16.0 mm (0.630 in)
	Repair limit thickness	14.0 mm (0.551 in)
	Maximum runout	0.10 mm (0.0039 in) or less