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# SECTION **BR** BRAKE SYSTEM

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# PRECAUTIONS

## PRECAUTIONS

PFP:00001

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

EFS00639

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.

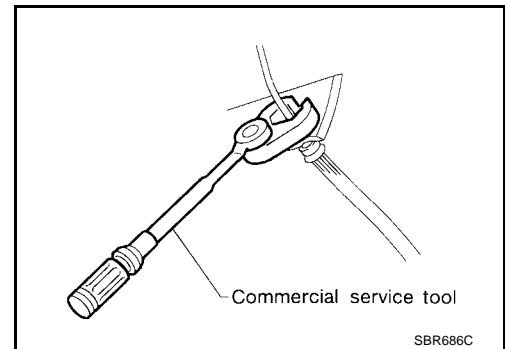
### Precautions for Brake System

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- Recommended fluid is Genuine NISSAN Super Heavy Duty Brake Fluid or equivalent. Refer to [MA-11, "Fluids and Lubricants"](#).
- Do not 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.
- Do not 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 check tightening torque when installing brake lines.
- Before working, turn ignition switch to OFF and disconnect connectors for ABS actuator and electric unit (control unit) or battery terminals.
- 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"](#).

#### **WARNING:**

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



# PREPARATION

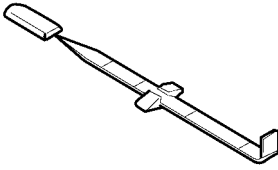
## PREPARATION

PFP:00002

### Special Service Tool

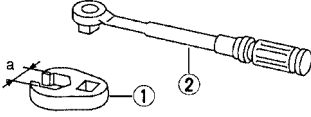
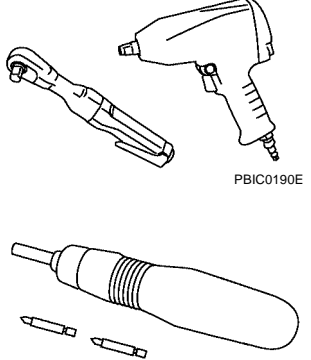
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The actual shapes of Kent-Moore tools may differ from those of special service tools illustrated here.

Tool number (Kent-Moore No.) Tool name	Description
<p>— (J-46532) Brake and clutch pedal height measurement tool</p>  <p style="text-align: right; font-size: small;">LFIA0227E</p>	<p>Measuring brake pedal height</p>

### Commercial Service Tools

EFS0063C

Tool name	Description
<p>1. Flare nut crowfoot 2. Torque wrench</p>  <p style="text-align: right; font-size: small;">S-NT360</p>	<p>Removing and installing each brake piping <b>a: 10 mm (0.39 in) / 12 mm (0.47 in)</b></p>
<p>Power tool</p>  <p style="text-align: right; font-size: small;">PBIC0190E PBIC0191E</p>	<p>Removing nuts, bolts and screws</p>

# NOISE, VIBRATION, AND HARSHNESS (NVH) TROUBLESHOOTING

## NOISE, VIBRATION, AND HARSHNESS (NVH) TROUBLESHOOTING

FPF:00003

### NVH Troubleshooting Chart

EF50063D

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

Symptom	Possible cause and SUSPECTED PARTS	Reference page																											
		BR-23, BR-30	BR-23, BR-30	BR-24, BR-31	BR-28, BR-34	BR-28, BR-34	BR-28, BR-34	BR-28, BR-34	BR-28, BR-34	BR-28, BR-34	BR-28, BR-34	BR-29, BR-35	BR-29, BR-35	PR-3, "NVH Troubleshooting Chart"	FFD-6, "NVH Troubleshooting Chart" (FFD), RFD-7, "NVH Troubleshooting Chart" (RFD)	FAX-4, "NVH Troubleshooting Chart" (FAX), RAX-4, "NVH Troubleshooting Chart" (RAX)	FSU-4, "NVH Troubleshooting Chart" (FSU), RSU-4, "NVH Troubleshooting Chart" (RSU)	WT-4, "NVH Troubleshooting Chart"	PS-5, "NVH Troubleshooting Chart"										
Noise	Pads - damaged	x																											
Noise	Pads - uneven wear	x																											
Noise	Shims damaged	x																											
Noise	Rotor imbalance				x																								
Noise	Rotor damage				x																								
Noise	Rotor runout				x																								
Noise	Rotor deformation				x																								
Noise	Rotor deflection				x																								
Noise	Rotor rust				x																								
Noise	Rotor thickness variation				x																								
Noise	PROPELLER SHAFT												x																
Noise	DIFFERENTIAL													x															
Noise	DRIVESHAFT																												
Noise	SUSPENSION																												
Noise	TIRES AND ROAD WHEEL																												
Noise	STEERING																												
Shake	Rotor imbalance				x																								
Shake	Rotor damage				x																								
Shake	Rotor runout				x																								
Shake	Rotor deformation				x																								
Shake	Rotor deflection				x																								
Shake	Rotor rust				x																								
Shake	Rotor thickness variation				x																								
Shake	PROPELLER SHAFT												x																
Shake	DIFFERENTIAL																												
Shake	DRIVESHAFT																												
Shake	SUSPENSION																												
Shake	TIRES AND ROAD WHEEL																												
Shake	STEERING																												
Shimmy, Shudder	Rotor imbalance				x																								
Shimmy, Shudder	Rotor damage				x																								
Shimmy, Shudder	Rotor runout				x																								
Shimmy, Shudder	Rotor deformation				x																								
Shimmy, Shudder	Rotor deflection				x																								
Shimmy, Shudder	Rotor rust				x																								
Shimmy, Shudder	Rotor thickness variation				x																								
Shimmy, Shudder	PROPELLER SHAFT																												
Shimmy, Shudder	DIFFERENTIAL																												
Shimmy, Shudder	DRIVESHAFT																												
Shimmy, Shudder	SUSPENSION																												
Shimmy, Shudder	TIRES AND ROAD WHEEL																												
Shimmy, Shudder	STEERING																												

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# BRAKE PEDAL

## BRAKE PEDAL

PFP:46501

### Inspection and Adjustment INSPECTION

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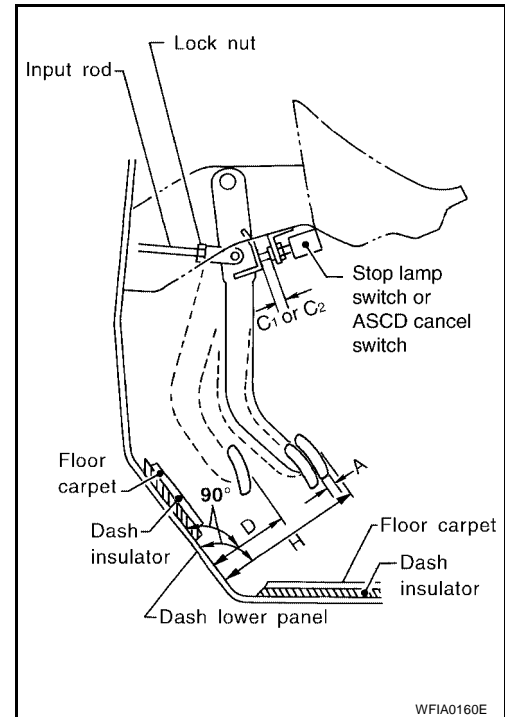
1. Inspect the brake pedal free height "H" from dash lower panel using Tool.

**Tool** : — (J-46532)

2. Adjust the height referring to the following specifications.

**CAUTION:**

The adjustable pedal must be in the frontmost (closest to the floor) position for pedal height measurement.



WFIA0160E

Unit: mm (in)

Free height "H"	: 182.1 - 192.1 (7.17 - 7.56)
Depressed pedal height ("D" [under a force of 490 N (50 kg, 110 lb) with engine running])	: 105 - 115 (4.13 - 4.53)
Clearance between pedal stopper and threaded end of stop lamp switch and ASCD cancel switch "C1 " or "C2 "	: 0.74 - 1.96 (0.029 - 0.077)
Pedal play "A"	: 3 - 11 (0.12 - 0.43)

### ADJUSTMENT

1. Loosen the stop lamp switch and ASCD cancel switch by turning 45° counterclockwise.
2. Loosen lock nut on the input rod, then turn input rod to adjust the pedal to specified height. When finished adjusting, tighten lock nut.

**CAUTION:**

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

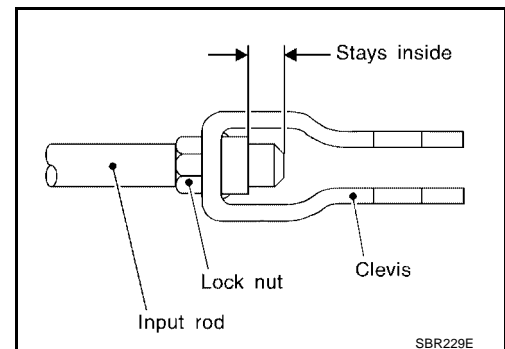
**Lock nut** : 18.6 N·m (1.9 kg·m, 14 ft·lb)

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

**CAUTION:**

Make sure that the gap "C1 or C2 " between the rubber stops and switch ends are within specification.

5. Check the pedal play.



SBR229E

# BRAKE PEDAL

**CAUTION:**

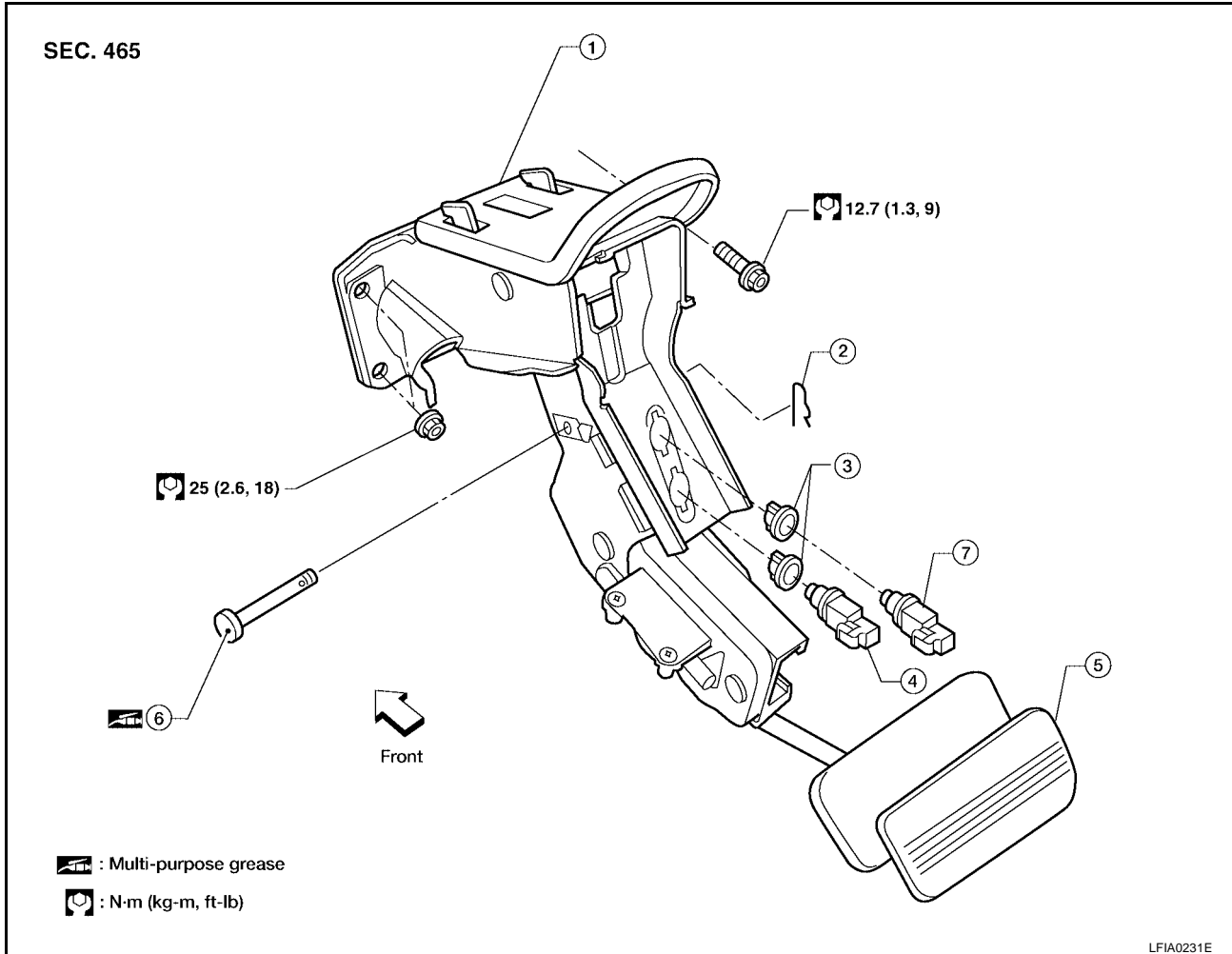
Make sure that the stop lamp goes off when the pedal is released.

6. Start the engine and check the height of the brake pedal when depressing it.

## Removal and Installation COMPONENTS

EFS0063F

### Adjustable Brake Pedal

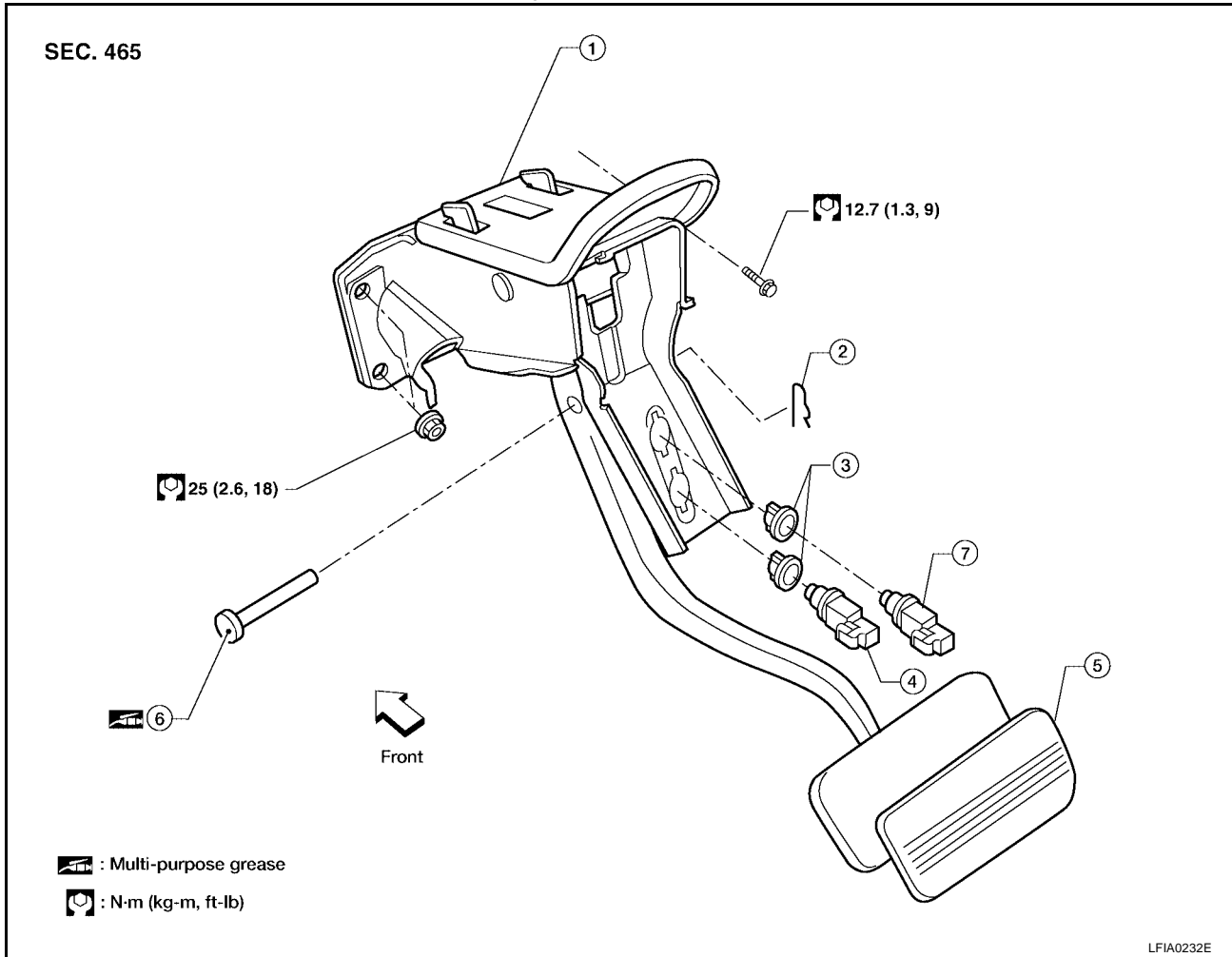


- |                         |              |               |
|-------------------------|--------------|---------------|
| 1. Brake pedal assembly | 2. Snap pin  | 3. Clip       |
| 4. Stop lamp switch     | 5. Pedal pad | 6. Clevis pin |
| 7. ASCD cancel switch   |              |               |

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# BRAKE PEDAL

## Non-adjustable Brake Pedal



- |                         |              |               |
|-------------------------|--------------|---------------|
| 1. Brake pedal assembly | 2. Snap pin  | 3. Clip       |
| 4. Stop lamp switch     | 5. Pedal pad | 6. Clevis pin |
| 7. ASCD cancel switch   |              |               |

## REMOVAL FOR ADJUSTABLE BRAKE PEDAL

### WARNING:

Do not deform the brake tube.

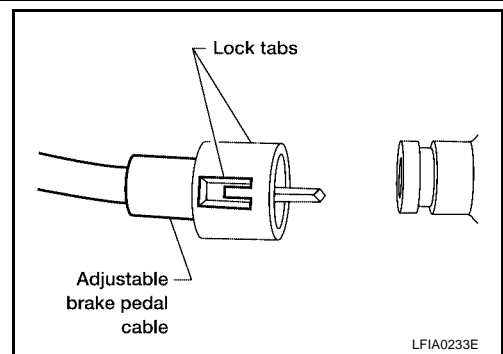
### CAUTION:

- Before removal and installation the accelerator and brake pedals must be in the forward most position (closest to the floor). This is to align the base position of the accelerator and brake pedals.
  - Do not disassemble the brake pedal adjusting mechanism.
  - Avoid damage from dropping the brake pedal assembly during handling.
  - Keep the brake pedal assembly away from water.
1. Remove the lower driver instrument panel. Refer to [IP-10, "Removal and Installation"](#).
  2. Remove the stop lamp switch and ASCD cancel switch from the pedal assembly.



# BRAKE PEDAL

3. Disconnect the adjustable brake pedal cable from the adjustable pedal.
  - Release the two lock tabs, then pull the adjustable brake pedal cable to disconnect it from the adjustable brake pedal.



4. Remove snap pin and clevis pin from the clevis of the brake booster.
5. Remove mounting nuts and the pedal assembly.
  - Temporarily install the nuts by hand to support the booster.

### CAUTION:

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

## REMOVAL FOR NON-ADJUSTABLE BRAKE PEDAL

### WARNING:

Do not deform the brake tube.

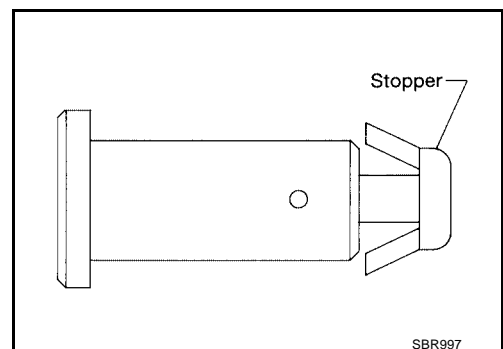
### CAUTION:

- Do not disassemble the brake pedal assembly.
  - Avoid damage from dropping the brake pedal assembly during handling.
  - Keep the brake pedal assembly away from water.
1. Remove the lower driver instrument panel. Refer to [IP-10, "Removal and Installation"](#).
  2. Remove the stop lamp switch and ASCD cancel switch from the pedal assembly.
  3. Remove snap pin and clevis pin from the clevis of the brake booster.
  4. Remove mounting nuts and the pedal assembly.
    - Temporarily install the nuts by hand to support the booster.

## INSPECTION AFTER REMOVAL

Check brake pedal for following items.

- Crack or deformation of clevis pin stopper
- Clevis pin deformation
- Crack of any welded portion
- Brake pedal bend



## INSTALLATION

1. Installation is in the reverse order of removal.
  - Check the brake pedal for smooth operation. There should be no binding or sticking when applying or releasing the brake pedal.
  - On models equipped with adjustable brake pedal, check the adjustable feature for smooth operation. There should be no binding or sticking when adjusting the brake pedal forward and backward.

## BRAKE PEDAL

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- After installing the brake pedal assembly in the vehicle, be sure to adjust it. Refer to [BR-6, "Inspection and Adjustment"](#) .

# BRAKE FLUID

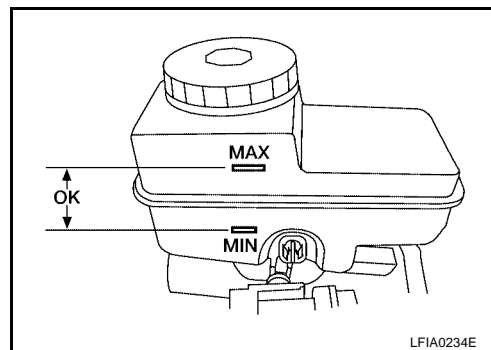
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## BRAKE FLUID

### On-board Inspection LEVEL CHECK

- Check that the brake fluid level in the reservoir tank is within specification, between the MAX and MIN lines as shown.
- Visually check around reservoir tank for fluid leaks.
- If fluid level is excessively low, check brake system for leaks.
- If brake warning lamp remains illuminated after the parking brake pedal is released, check the brake system for any brake fluid leaks.

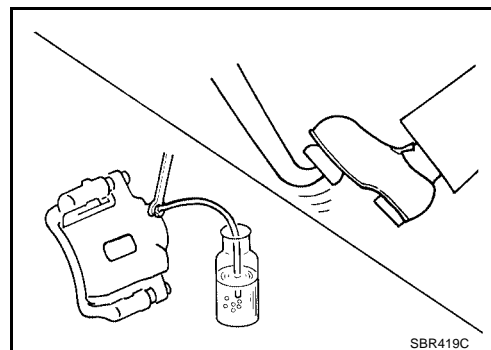


### Drain and Refill

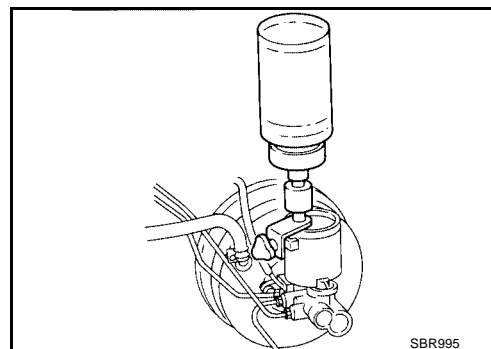
EFS0063H

#### CAUTION:

- Refill with new brake fluid. Refer to [MA-11, "Fluids and Lubricants"](#).
  - Do not reuse drained brake fluid.
  - Do not let brake fluid splash on the painted surfaces of the body. This might damage the paint, so when splashing it, immediately wipe off the area and wash away with water.
  - Before servicing, disconnect battery negative cable.
1. Connect a vinyl tube to each bleed valve.
  2. Depress brake pedal, loosen each bleed valve, and gradually remove brake fluid.



3. Make sure there is no foreign material in reservoir tank, and refill with new brake fluid.
4. Rest foot on brake pedal. Loosen bleed valve. Slowly depress pedal until it stops. Tighten bleed valve. 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 from brake system. Refer to [BR-12, "Bleeding Brake System"](#).



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## Bleeding Brake System

EFS0063I

### **CAUTION:**

**While bleeding, monitor the master cylinder brake fluid level.**

1. Turn ignition switch OFF and disconnect battery negative cable.
2. Connect a vinyl tube to the rear right bleed valve.
3. Fully depress brake pedal 4 to 5 times.
4. With brake pedal depressed, loosen bleed valve to let the air out, and then tighten it immediately.
5. Repeat steps 3 and 4 until no more air comes out.
6. Tighten bleed valve to the specified torque. Refer to [BR-24, "Components"](#) (front disc brake), [BR-31, "Components"](#) (rear disc brake).
7. Perform steps 2 to 6 at each wheel, with master cylinder reservoir tank filled at least half way, bleed air from the front left, rear left, and front right bleed valve, in that order.

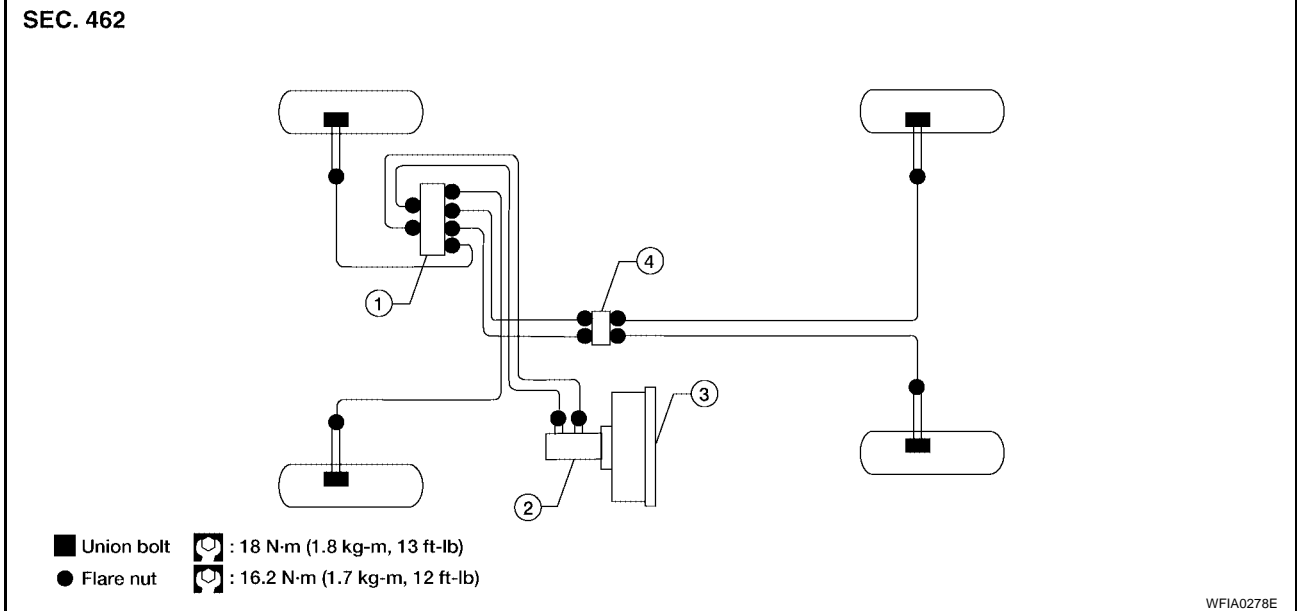
# BRAKE PIPING AND HOSE

PFP:46210

## BRAKE PIPING AND HOSE

### Hydraulic Circuit

EFS0063J



#### CAUTION:

- All hoses and piping (tubes) must be free from excessive bending, twisting and pulling.
- Make sure there is no interference with other parts when turning steering both clockwise and counterclockwise.
- The brake piping is an important safety part. If a brake fluid leak is detected, always disassemble the parts. Replace applicable part with a new one, if necessary.
- 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.
- Do not bend or twist brake hose sharply, or strongly pull it.
- When removing components, cover connections so that no dirt, dust, or other foreign matter gets in.
- Refill with new brake fluid. Refer to [MA-11, "Fluids and Lubricants"](#).
- Do not reuse drained brake fluid.

## Removal and Installation of Front Brake Piping and Brake Hose

EFS0063K

### REMOVAL

1. Drain brake fluid. Refer to [BR-11, "Drain and Refill"](#).
2. Using a flare nut wrench, remove brake tube from brake hose.
3. Remove lock plate and brake hose from bracket.
4. Remove union bolt and then remove brake hose from caliper assembly.

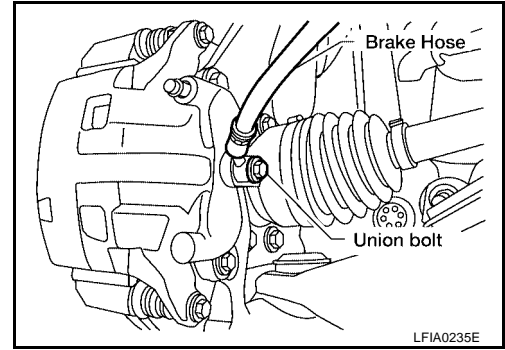
# BRAKE PIPING AND HOSE

## INSTALLATION

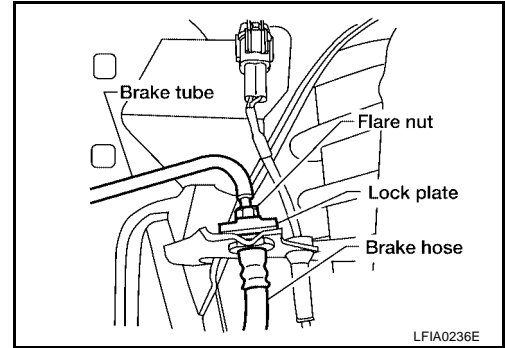
1. Install brake hose by aligning with the protrusion on caliper assembly, and tighten union bolt to the specified torque. Refer to [BR-13, "Hydraulic Circuit"](#) .

### NOTE:

Do not reuse copper washer.



2. Insert brake hose end through bracket, then secure it to bracket with lock plate.
3. Install brake tube to brake hose, then tighten flare nut to the specified torque using a flare nut wrench.
4. Refill brake fluid and bleed air. Refer to [BR-12, "Bleeding Brake System"](#) .



## Removal and Installation of Rear Brake Piping and Brake Hose

EFS0063L

### REMOVAL

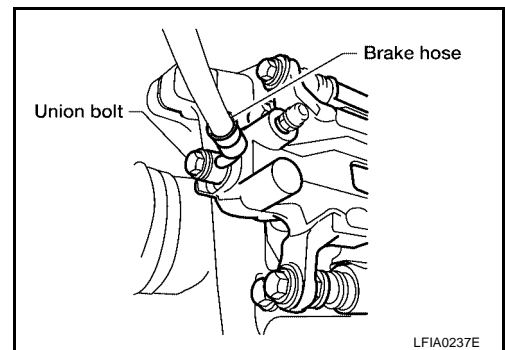
1. Drain brake fluid. Refer to [BR-11, "Drain and Refill"](#) .
2. Using a flare nut wrench, remove brake tube from brake hose.
3. Remove lock plate and brake hose from bracket.
4. Remove union bolt, and then remove brake hose from caliper assembly.

### INSTALLATION

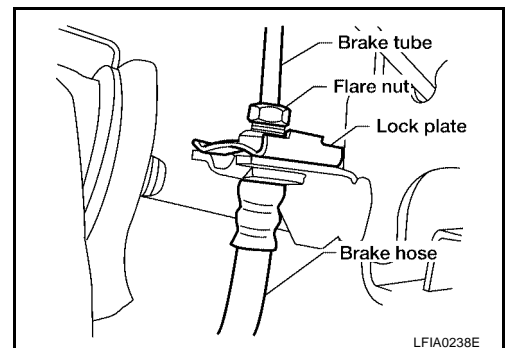
1. Install brake hose by aligning with the protrusion on caliper assembly, and tighten union bolt to the specified torque. Refer to [BR-13, "Hydraulic Circuit"](#) .

### NOTE:

Do not reuse copper washer.



2. Insert brake hose end through bracket, then secure it to bracket with lock plate.
3. Install brake tube to brake hose, then tighten flare nut to the specified torque using a flare nut wrench.
4. Refill brake fluid and bleed air. Refer to [BR-12, "Bleeding Brake System"](#) .



# BRAKE PIPING AND HOSE

## Inspection After Installation

EFS0063M

### **CAUTION:**

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

1. Check brake lines (tubes and hoses), and connections for fluid leaks, damage, twist, deformation, contact with other parts, and loose connections. Replace any damaged parts.
2. While depressing brake pedal under a force of 785 N (80 kg-f, 177 lb-f) with engine running for approximately 5 seconds, check for fluid leaks from each part.

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# BRAKE MASTER CYLINDER

PF0:46010

EFS0063N

## BRAKE MASTER CYLINDER

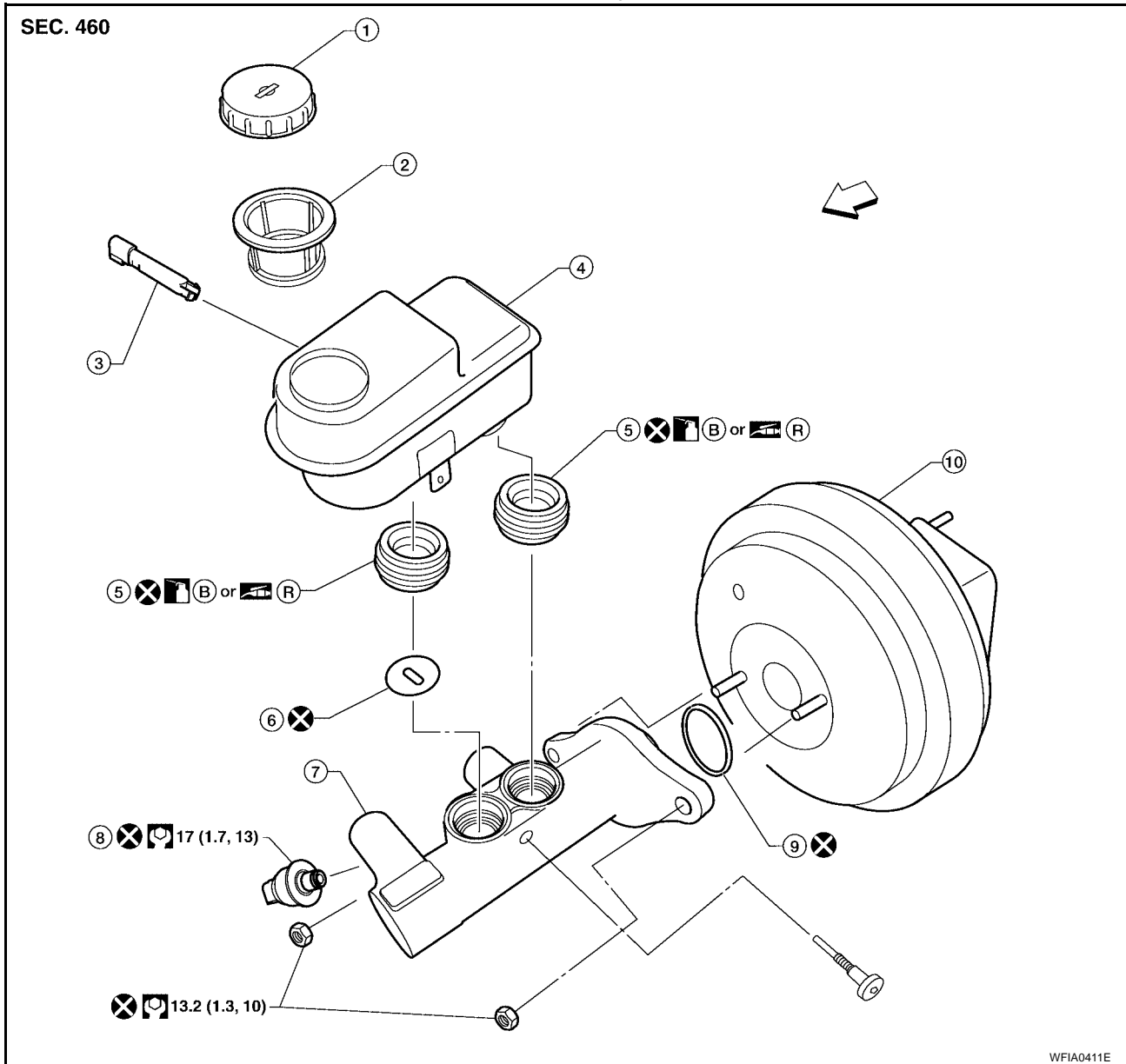
### On-board Inspection LEAK INSPECTION

- Check for leaks at master cylinder to brake booster attachment point, reservoir tank, and brake tube connections.

### Removal and Installation

EFS0063O

#### Brake Master Cylinder



- |                                 |                          |                       |
|---------------------------------|--------------------------|-----------------------|
| 1. Reservoir cap                | 2. Strainer              | 3. Fluid level sensor |
| 4. Reservoir tank               | 5. Grommet               | 6. Restriction washer |
| 7. Master cylinder sub-assembly | 8. Fluid pressure sensor | 9. O-ring             |
| 10. Brake booster               | ← Front                  |                       |

### 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.

### REMOVAL

1. Drain brake fluid. Refer to [BR-11, "Drain and Refill"](#).
2. Disconnect harness connectors for fluid level sensor and pressure sensor.



# BRAKE MASTER CYLINDER

- Using a flare nut wrench, disconnect brake tube from master cylinder assembly.
- Remove master cylinder assembly mounting nuts and master cylinder assembly.

## INSTALLATION

- Installation is in the reverse order of removal.
- Refill brake fluid and bleed air. Refer to [BR-12, "Bleeding Brake System"](#).

### CAUTION:

- Refill using recommended brake fluid. Refer to [MA-11, "RECOMMENDED FLUIDS AND LUBRICANTS"](#).
- Do not reuse drained brake fluid.
- Adjust brake pedal. Refer to [BR-6, "Inspection and Adjustment"](#).

## Disassembly and Assembly

EFS0063P

### DISASSEMBLY

#### CAUTION:

- Master cylinder cannot be disassembled.
- Remove reservoir tank only when absolutely necessary.

Pull reservoir tank off master cylinder sub-assembly, then remove grommets from master cylinder sub-assembly body.

### ASSEMBLY

#### CAUTION:

- Never use mineral oils such as kerosene, gasoline during the cleaning and assembly process.
  - Do not drop parts. If a part is dropped, do not use it.
- Apply brake fluid or rubber grease to new grommets, then insert into master cylinder sub-assembly. Refer to [GI-47, "RECOMMENDED CHEMICAL PRODUCTS AND SEALANTS"](#).

#### CAUTION:

Do not reuse grommet.

- Install reservoir tank onto master cylinder assembly.

# BRAKE BOOSTER

PFP:47200

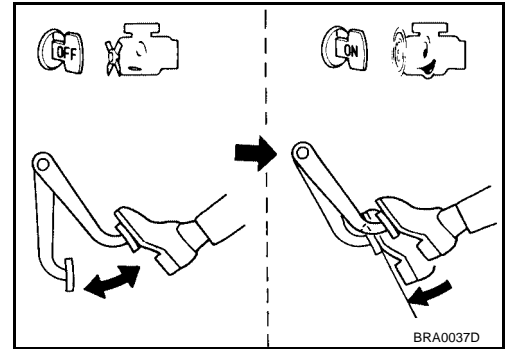
EFS00630

## BRAKE BOOSTER

### On-Vehicle Service OPERATING CHECK

With 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, make sure the clearance between brake pedal and floor panel decreases.

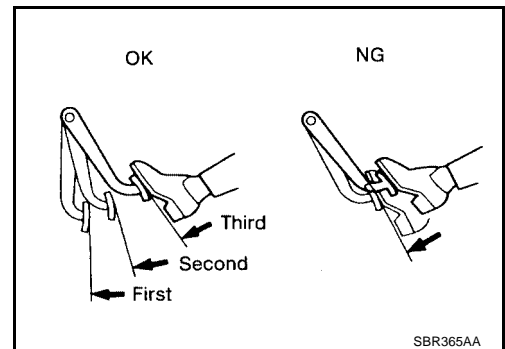
**CAUTION:**  
Depressing pedal interval is approximately 5 seconds.



### 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. Make sure 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.



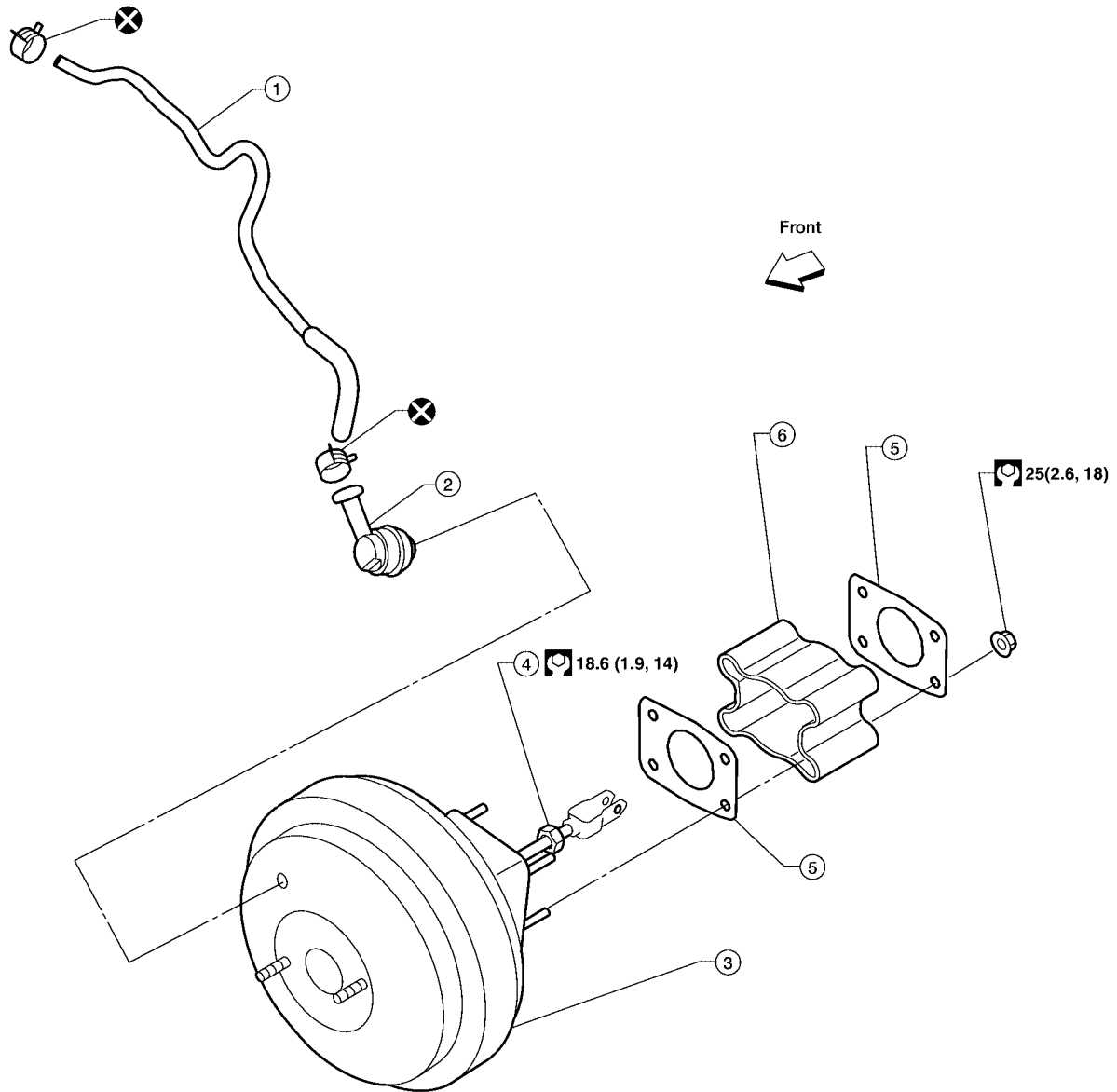
# BRAKE BOOSTER


EFS0063R


## Removal and Installation

### Brake Booster

SEC. 470



 : N·m (kg-m, ft-lb)

 : Always replace after every disassembly.

- |                       |                                     |                  |
|-----------------------|-------------------------------------|------------------|
| 1. Brake booster hose | 2. Brake booster vacuum check valve | 3. Brake booster |
| 4. Lock nut           | 5. Gasket                           | 6. Spacer block  |

LFIA0241E

## REMOVAL

### 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.
  - Attach the check valve in the correct direction.
1. Remove actuator and electric unit. Refer to [BRC-62, "Removal and Installation"](#).
  2. Remove brake piping from brake master cylinder.

# BRAKE BOOSTER

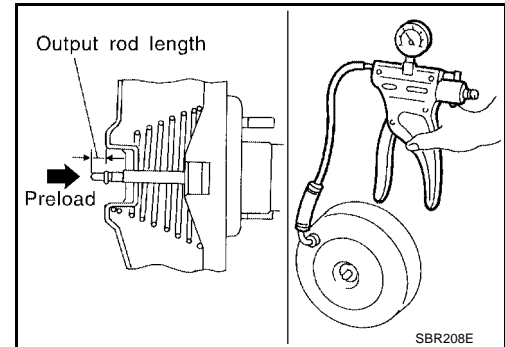
3. Remove brake master cylinder. Refer to [BR-16, "Removal and Installation"](#) .
4. Remove vacuum hose from brake booster. Refer to [BR-21, "VACUUM LINES"](#) .
5. Remove brake pedal attachment snap pin and clevis pin from inside the vehicle.
6. Remove nuts on brake booster and brake pedal assembly.
7. Remove brake booster assembly from dash panel.

## INSPECTION AFTER REMOVAL

### Output Rod Length Inspection

1. Using a suitable 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) : 15.6 – 15.9 mm (0.614 – 0.626 in)**

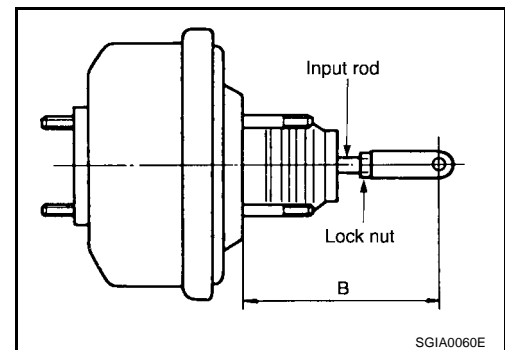


## INSTALLATION

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

**Length "B" : 150 mm (5.91 in)**

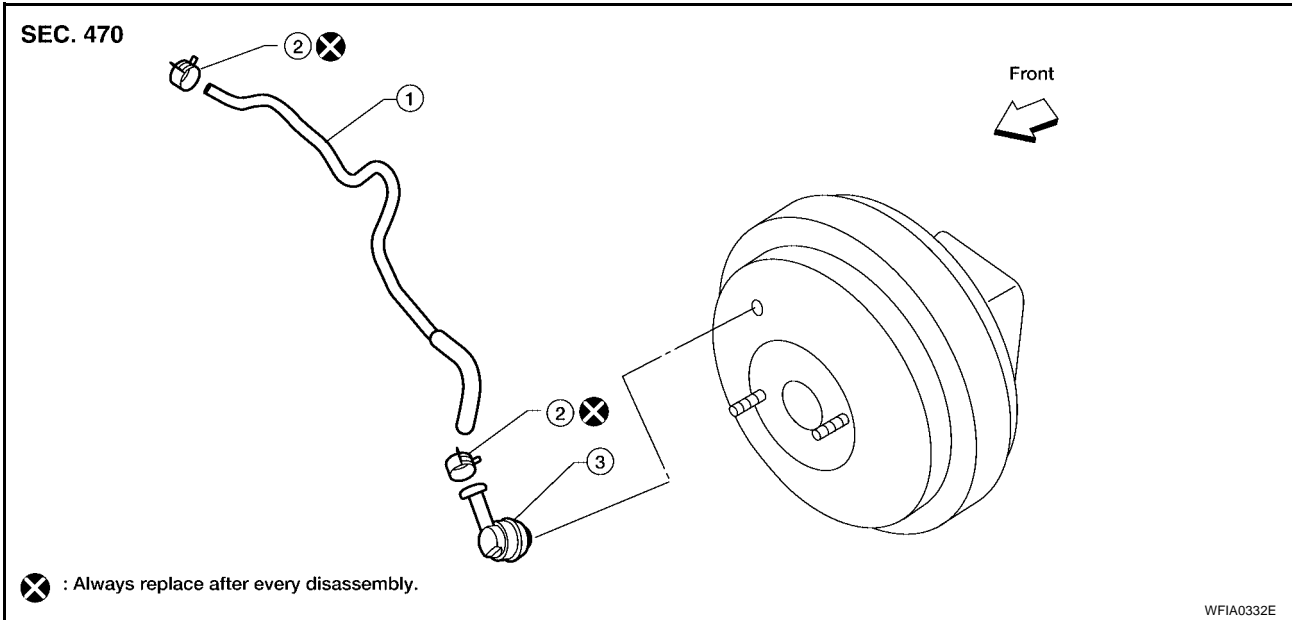
2. After adjusting "B", temporarily tighten lock nut and install booster assembly to the vehicle.
  - Install a gaskets and spacer block between booster assembly and the dash panel.
3. Connect brake pedal with clevis of input rod.
4. Install brake booster nuts.
5. Install brake piping from brake master cylinder to actuator and electric unit. Refer to [BR-13, "Hydraulic Circuit"](#) .
6. Connect vacuum hose to brake booster.
7. Install master cylinder to booster assembly. Refer to [BR-19, "Removal and Installation"](#) .
8. Adjust the height of brake pedal. Refer to [BR-6, "Inspection and Adjustment"](#) .
9. Tighten input rod lock nut.
10. Refill new brake fluid and bleed air. Refer to [BR-12, "Bleeding Brake System"](#) .



## VACUUM LINES

### Removal and Installation

#### Brake Booster Vacuum Hose

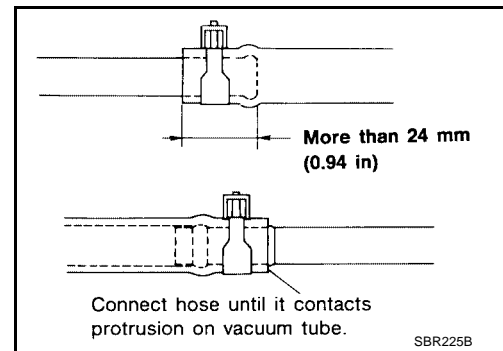


- 1. Brake booster hose
- 2. Brake booster hose clip
- 3. Brake booster vacuum check valve

1. Disconnect brake booster hose from hose clip mounted on bracket.
2. Release clips and disconnect brake booster hose.
3. Remove check valve from brake booster.
4. Installation is in the reverse order of removal.

**CAUTION:**

- Insert vacuum hose for at least 24 mm (0.94 in).
- Do not use lubricating oil during assembly.



### Inspection VISUAL INSPECTION

Check for improper assembly, damage and deterioration.

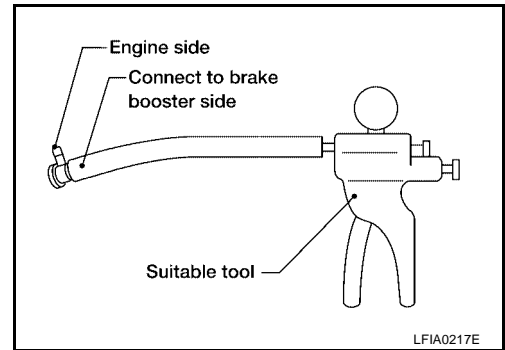
# VACUUM LINES

## CHECK VALVE INSPECTION

### Airtightness Inspection

Use a suitable vacuum pump to check. Connect to brake booster side of check valve.

**Check valve specification** : 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)



# FRONT DISC BRAKE

## FRONT DISC BRAKE

PFP:41000

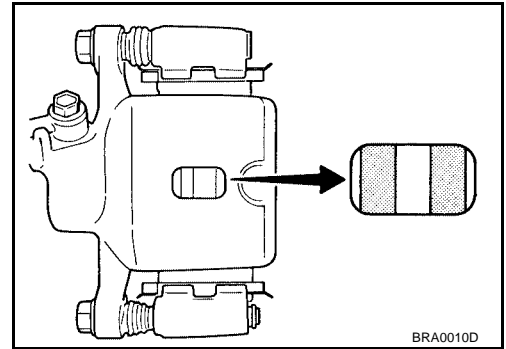
### On-vehicle Inspection PAD WEAR INSPECTION

EFS0063U

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

**Standard thickness : 11.88 mm (0.468 in)**

**Repair limit thickness : 1.0 mm (0.039 in)**



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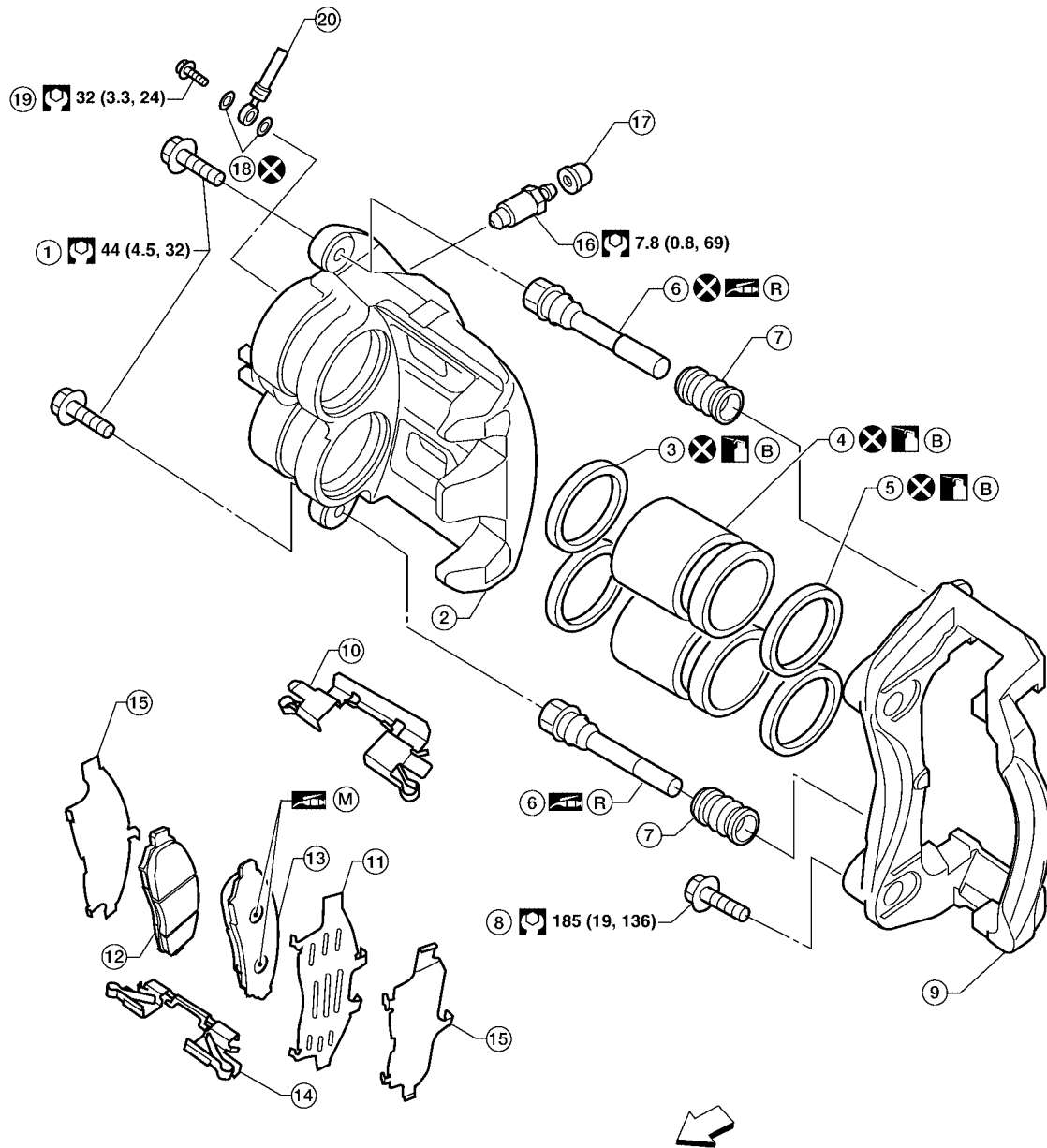
# FRONT DISC BRAKE

EFS0063V

## Components

### Front Disc Brake Caliper and Pads

SEC. 440



- |                        |                        |                     |
|------------------------|------------------------|---------------------|
| 1. Sliding pin bolt    | 2. Cylinder body       | 3. Piston seal      |
| 4. Piston              | 5. Piston boot         | 6. Sliding pin      |
| 7. Sliding pin boot    | 8. Torque member bolt  | 9. Torque member    |
| 10. Upper pad retainer | 11. Outer shim         | 12. Inner brake pad |
| 13. Outer brake pad    | 14. Lower pad retainer | 15. Shim cover      |
| 16. Bleed valve        | 17. Cap                | 18. Copper washers  |
| 19. Union bolt         | 20. Brake hose         | ← Front             |

WFIA0461E

### WARNING:

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



# FRONT DISC BRAKE

## CAUTION:

- While removing cylinder body never depress brake pedal because piston will pop out.
- It is not necessary to remove bolts on torque member and brake hose except for disassembly or replacement of cylinder body. In this case, hang cylinder body with a wire so as not to stretch brake hose.
- Do not damage piston boot.
- Burnish brake contact surface after refinishing or replacing rotors, after replacing pads, or if a soft pedal occurs at very low mileage. Refer to [BR-29, "Brake Burnishing"](#) .

## Removal and Installation of Brake Pad

EFS0063W

### REMOVAL

1. Remove wheel and tire using power tool.
2. Remove master cylinder reservoir cap.
3. Remove lower sliding pin bolt using power tool.
4. Suspend cylinder body with a wire and remove pads, shim, shim covers, and retainers from torque member.

### INSTALLATION

1. Apply Molykote AS880N grease between outer brake pad plate and shim, then attach shim and shim covers to brake pads. Refer to [MA-11, "RECOMMENDED FLUIDS AND LUBRICANTS"](#) .

2. Attach pad retainer to torque member, then install brake pad and shim assemblies.

#### CAUTION:

When attaching pad retainer, attach it firmly so that it is flush with torque member, as shown.

3. Push pistons into cylinder body.

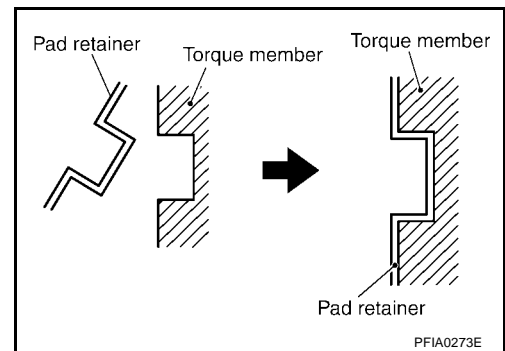
#### NOTE:

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.

4. Remove wire then swing cylinder body down over brake pad assemblies.
5. Install lower sliding pin bolt and tighten to specification. Refer to [BR-24, "Components"](#) .
6. Check brake for drag.
7. Inspect fluid level, then install master cylinder reservoir cap.
8. Install wheel and tire. Refer to [WT-7, "Rotation"](#) .



## Removal and Installation of Brake Caliper and Disc Rotor

EFS0063X

### REMOVAL

1. Remove wheel and tire using power tool.
2. Drain brake fluid as necessary. Refer to [BR-11, "Drain and Refill"](#) .
3. Remove union bolt as necessary and torque member bolts, then remove cylinder body from the vehicle.

#### NOTE:

- Position cylinder body aside using suitable wire, as necessary.
- When servicing brake caliper, remove sliding pin bolts and caliper from torque member.

4. Remove torque member.
5. Remove disc rotor.

### INSTALLATION

#### CAUTION:

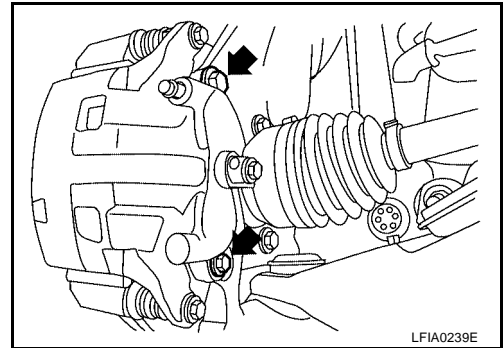
- Refill with new brake fluid. Refer to [MA-11, "Fluids and Lubricants"](#) .
- Do not reuse drained brake fluid.

# FRONT DISC BRAKE

1. Install disc rotor.
2. Install torque member and tighten to specification. Refer to [BR-24, "Components"](#) .
3. Install sliding pin bolts, if removed.
4. Install cylinder body, then tighten sliding pin bolts to the specified torque. Refer to [BR-24, "Components"](#) .

**CAUTION:**

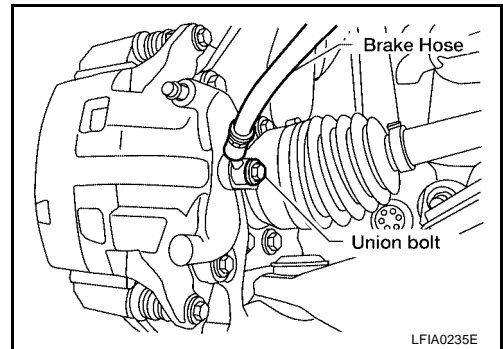
When attaching cylinder body to the vehicle, wipe any oil off knuckle spindle, washers and cylinder body attachment surfaces.



5. Install brake hose to cylinder body, if removed, then tighten union bolt to the specified torque. Refer to [BR-24, "Components"](#) .

**CAUTION:**

- Do not reuse copper washers for union bolt.
- Attach brake hose to cylinder body together with union bolt and washers.



6. Refill with new brake fluid as necessary and bleed air. Refer to [BR-12, "Bleeding Brake System"](#) .
7. Install wheel and tire. Refer to [WT-7, "Rotation"](#) .

## Disassembly and Assembly of Brake Caliper

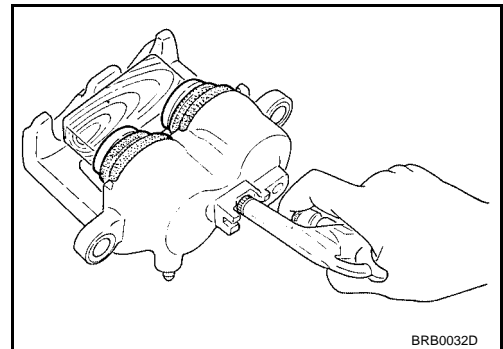
### DISASSEMBLY

EFS0063Y

1. Remove sliding pin bolt, and then remove the pad, shim, shim cover, and pad retainer from the torque member.
2. Remove sliding pins and sliding pin boots from torque member.
3. Place a wooden block as shown, and blow air from union bolt mounting hole to remove pistons and piston boots.

**CAUTION:**

Do not get your fingers caught in piston.

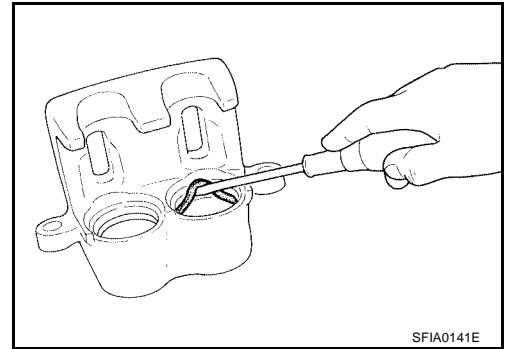


# FRONT DISC BRAKE

- Using a suitable tool, remove piston seal from cylinder body.

**CAUTION:**

- Be careful not to damage cylinder inner wall.
- Do not reuse piston seal.



## CALIPER INSPECTION

### Cylinder Body

**CAUTION:**

- Use new brake fluid for cleaning. Do not use mineral oils such as gasoline or kerosene. Refer to [MA-11, "RECOMMENDED FLUIDS AND LUBRICANTS"](#).
- Check inside surface of cylinder for score, rust, wear, damage or foreign materials. If any of the above conditions are observed, replace cylinder body.
- Minor damage from rust or foreign materials may be eliminated by polishing surface with a fine emery paper. Replace cylinder body if necessary.

### Torque Member

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

### Piston

Check piston for score, rust, wear, damage or presence of foreign materials. Replace if any of the above conditions are observed.

**CAUTION:**

Piston sliding surface is plated, do not polish with emery paper even if rust or foreign materials are stuck to sliding surface.

### Sliding Pins, 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.

**CAUTION:**

Trailing/upper sliding pin must be replaced at each service.

## ASSEMBLY

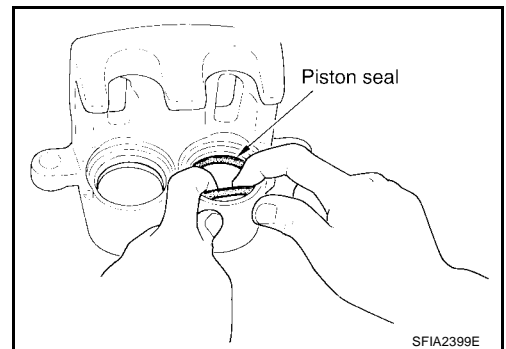
**CAUTION:**

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

- Apply clean brake fluid to new piston seal and insert seal into groove on cylinder body.

**CAUTION:**

Do not reuse piston seal.



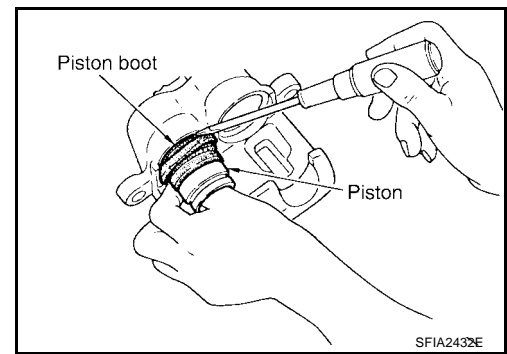
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## FRONT DISC BRAKE

2. Apply clean brake fluid to piston boot. Cover the piston end with piston boot, and then install cylinder side lip on piston boot securely into a groove on cylinder body.

**CAUTION:**

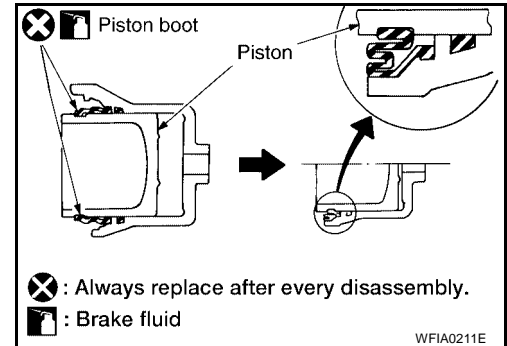
**Do not reuse piston boot.**



3. Apply brake fluid to piston, then install piston into cylinder body and insert piston boot side lip into groove of piston as shown.

**CAUTION:**

**Press the piston evenly to prevent damage to cylinder wall.**



4. Insert into cylinder body by hand and insert 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.**

5. Install sliding pins and sliding pin boots to torque member.

**CAUTION:**

**Trailing/upper sliding pin must be replaced at each service.**

6. Install cylinder body. Tighten sliding pin bolt to the specified torque. Refer to [BR-24, "Components"](#).

### DISC ROTOR INSPECTION

#### Visual Inspection

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

#### Runout Inspection

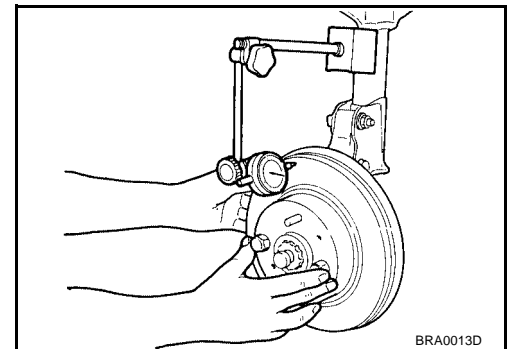
1. Using wheel nuts, fix disc rotor to wheel hub in two or more positions.
2. Inspect runout using a dial gauge. [Measured at 10 mm (0.39 in) inside the disc edge.]

**Runout limit (on vehicle) : 0.05 mm (0.0020 in)**

**NOTE:**

Make sure that wheel bearing axial end play is within the specifications before measuring runout. Refer to [FAX-5, "WHEEL BEARING INSPECTION"](#).

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 runout still out of specification, turn rotor with on-car brake lathe.

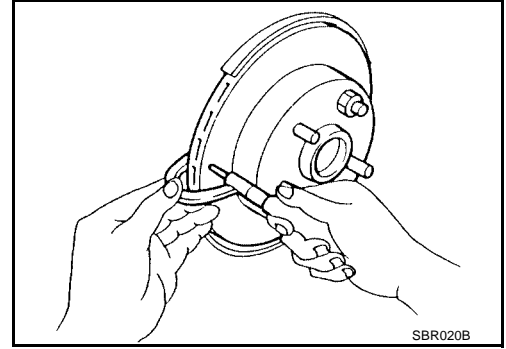


# FRONT DISC BRAKE

## Thickness Inspection

Using a micrometer, check thickness of disc rotor. If thickness is either at or below the wear limit, or exceeds maximum uneven wear, replace disc rotor.

<b>Standard thickness</b>	<b>: 28.0 mm (1.102 in)</b>
<b>Repair limit thickness</b>	<b>: 26.0 mm (1.024 in)</b>
<b>Maximum uneven wear (Measured at 8 positions)</b>	<b>: 0.015 mm (0.0006 in)</b>



## Brake Burnishing

EFS006G8

Burnish 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 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 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.

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# REAR DISC BRAKE

## REAR DISC BRAKE

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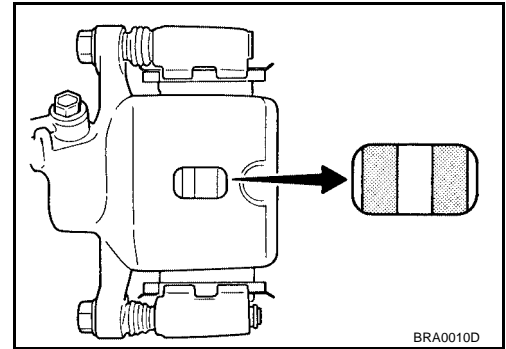
### On-vehicle Inspection PAD WEAR INSPECTION

EFS0063Z

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

**Standard thickness : 12.13 mm (0.478 in)**

**Repair limit thickness : 1.0 mm (0.039 in)**



BRA0010D

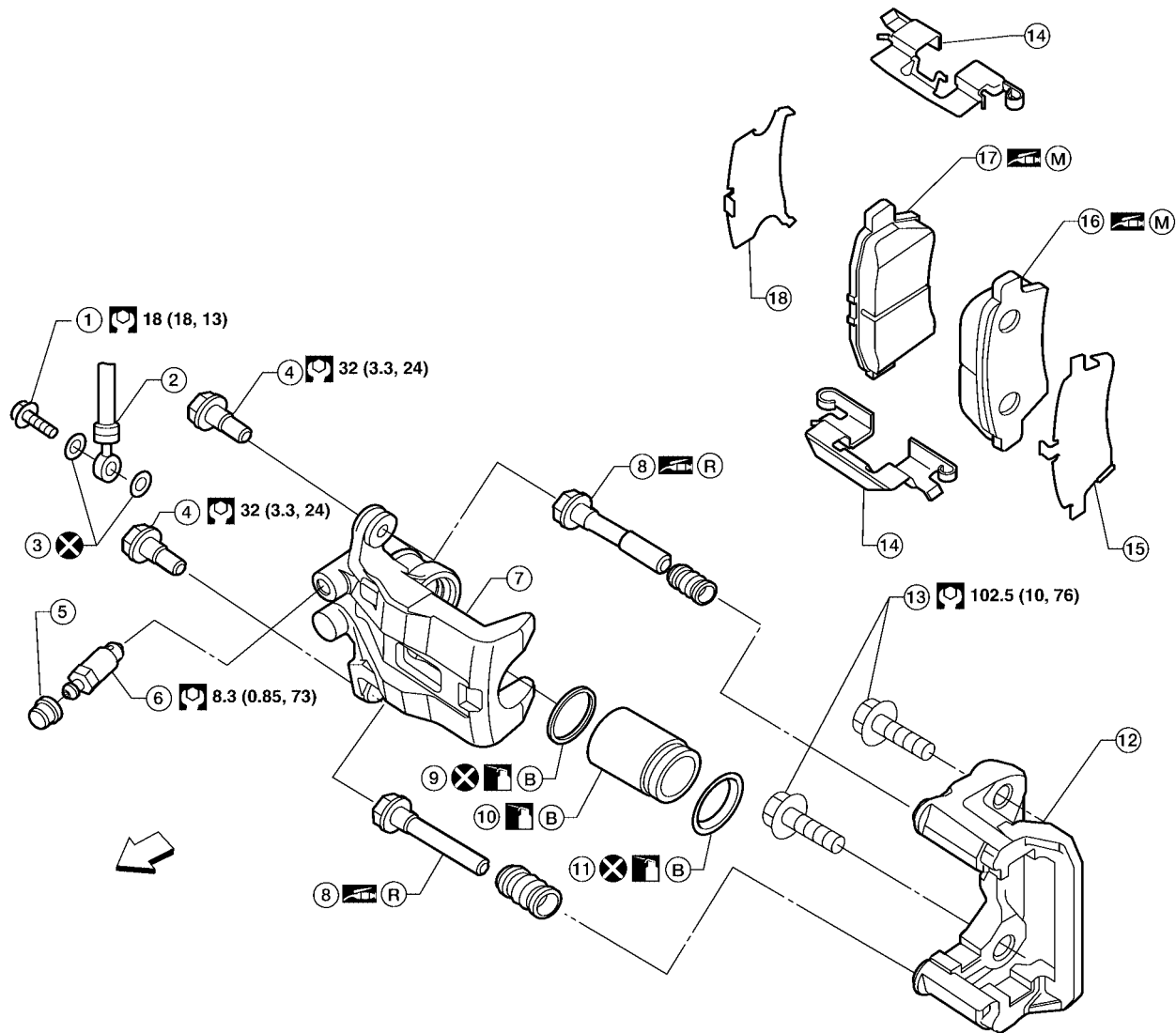
# REAR DISC BRAKE

## Components

EFS00640

### Rear Disc Brake Caliper and Pads

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| 1. Union bolt          | 2. Brake hose       | 3. Copper washers |
| 4. Sliding pin bolt    | 5. Cap              | 6. Bleed valve    |
| 7. Cylinder body       | 8. Sliding pin      | 9. Piston seal    |
| 10. Piston             | 11. Piston boot     | 12. Torque member |
| 13. Torque member bolt | 14. Pad retainer    | 15. Outer shim    |
| 16. Outer brake pad    | 17. Inner brake pad | 18. Inner shim    |
- ← Front

WFIA0462E

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

# REAR DISC BRAKE

## CAUTION:

- While removing cylinder body, never depress brake pedal because piston will pop out.
- It is not necessary to remove bolts on torque member and brake hose except for disassembly or replacement of cylinder body. In this case, hang cylinder body with a wire so as not to stretch brake hose.
- Do not damage piston boot.
- Burnish brake contact surface after refinishing or replacing rotors, after replacing pads, or if a soft pedal occurs at very low mileage. Refer to [BR-35, "Brake Burnishing"](#) .

## Removal and Installation of Brake Pad

EFS00641

### REMOVAL

1. Remove wheel and tire using power tool.
2. Remove master cylinder reservoir cap.
3. Remove lower sliding pin bolt using power tool.
4. Suspend cylinder body with a wire and remove pads, shims and retainers from torque member.

### INSTALLATION

1. Apply Molykote AS880N grease between brake pad plate and shim, then attach shims to brake pads. Refer to [MA-11, "RECOMMENDED FLUIDS AND LUBRICANTS"](#) .

2. Attach pad retainer to torque member, then install brake pad and shim assemblies.

#### CAUTION:

When attaching pad retainer, attach it firmly so that it is flush with torque member, as shown.

3. Push piston into cylinder body.

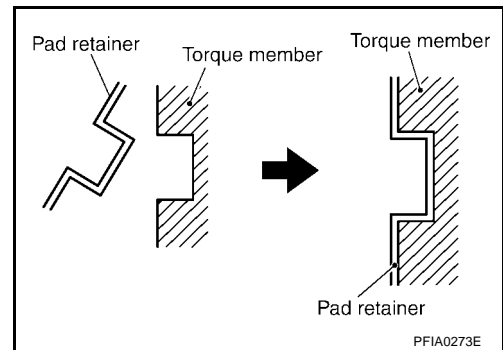
#### NOTE:

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.

4. Remove wire then swing cylinder body down over brake pad assemblies.
5. Install lower sliding pin bolt and tighten to specification. Refer to [BR-31, "Components"](#) .
6. Check brake for drag.
7. Inspect fluid level, then install master cylinder reservoir cap.
8. Install wheel and tire. Refer to [WT-7, "Rotation"](#) .

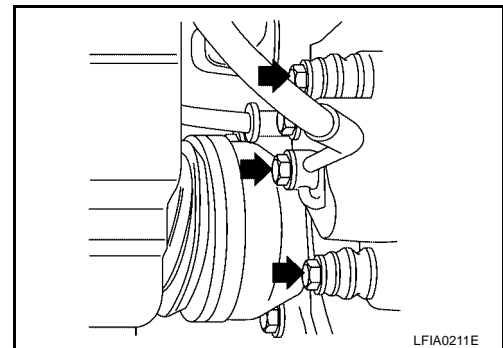


## Removal and Installation of Brake Caliper and Disc Rotor

EFS00642

### REMOVAL

1. Remove wheel and tire using power tool.
2. Drain brake fluid. Refer to [BR-11, "Drain and Refill"](#) .
3. Remove union bolt and mounting bolts, and remove cylinder body.
4. Remove torque member.
5. Remove disc rotor.



### INSTALLATION

#### CAUTION:

- Refill with new brake fluid. Refer to [MA-11, "Fluids and Lubricants"](#) .



# REAR DISC BRAKE

- **Do not reuse drained brake fluid.**

1. Install disc rotor.
2. Install torque member and tighten to specification. Refer to [BR-31, "Components"](#).
3. Install cylinder body to the vehicle, and tighten mounting bolts to specification.

**CAUTION:**

**Before installing cylinder body to the vehicle, wipe off mounting surface of cylinder body.**

4. Install brake hose to cylinder body and tighten union bolt to specification. Refer to [BR-31, "Components"](#).

**CAUTION:**

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

5. Refill new brake fluid and bleed air. Refer to [BR-12, "Bleeding Brake System"](#).
6. Install tires to the vehicle.

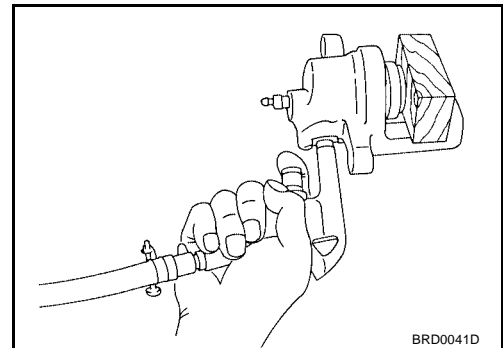
## Disassembly and Assembly of Brake Caliper

EFS00643

1. Remove pads from cylinder body.
2. Remove sliding sleeve and boot from cylinder body.
3. Place a wooden block as shown, and blow air from union bolt mounting hole to remove piston and piston boot.

**CAUTION:**

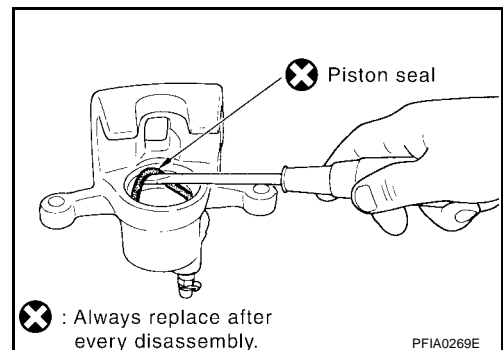
**Do not get your fingers caught in piston.**



4. Using a suitable tool, 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. Do not use mineral oils such as gasoline or kerosene.
- Check inside surface of cylinder for score, rust wear, damage or foreign materials. If any of the above conditions are observed, replace cylinder body.
- Minor damage from rust or foreign materials may be eliminated by polishing surface with a fine emery paper. 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:**

- Piston sliding surface is plated, do not polish with emery paper even if rust or foreign materials are stuck to sliding surface.

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# REAR DISC BRAKE

- Check piston for score, rust, wear, damage or presence of foreign materials. Replace if any of the above conditions are observed.

## Sliding Pin Bolts and Sliding Pin Boots

Make sure there is no wear, damage, or cracks in sliding sleeve and sliding sleeve boots, and if there are, replace them.

## ASSEMBLY

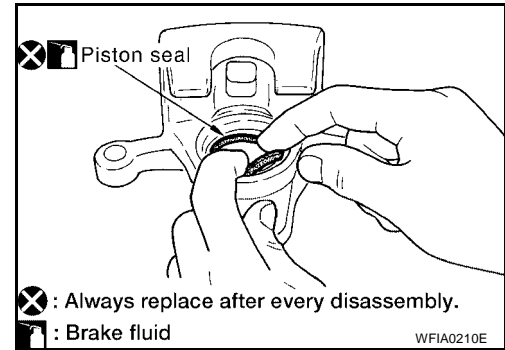
### CAUTION:

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

1. Apply clean brake fluid to new piston seal and insert into groove on cylinder body.

### CAUTION:

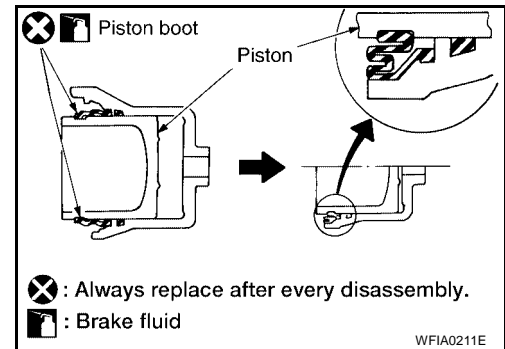
Do not reuse piston seal.



2. Apply brake fluid to piston and to piston boot, then install piston boot into piston groove.

### CAUTION:

Do not reuse piston boot.



3. Insert into cylinder body by hand and insert 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.

4. Install sliding boots and sleeves to cylinder body.

## 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

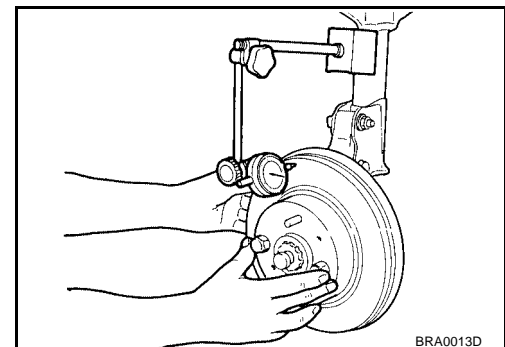
1. Using wheel nuts, install disc rotor to wheel hub in 2 or more positions.
2. Inspect runout using a dial gauge. [Measured at 10 mm (0.39 in) inside disk edge.]

**Runout limit (on vehicle) : 0.07 mm (0.0028 in)**

### NOTE:

Make sure that wheel bearing axial end play is within the specification before measuring runout. Refer to [RAX-5, "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 runout still out of specification, turn rotor with on-car brake lathe.

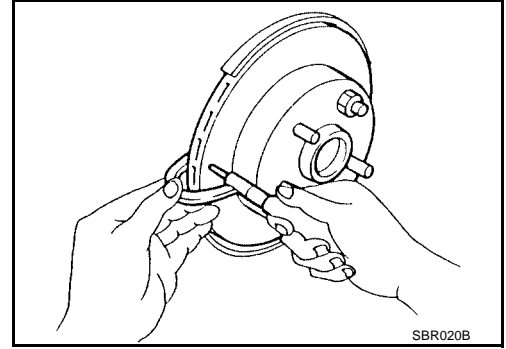


# REAR DISC BRAKE

## Thickness Inspection

Using a micrometer, check thickness of disc rotor. If thickness is either at or below the wear limit, or exceeds maximum uneven wear, replace disc rotor.

<b>Standard thickness</b>	<b>: 18.0 mm (0.709 in)</b>
<b>Wear limit</b>	<b>: 16.0 mm (0.630 in)</b>
<b>Maximum uneven wear (measured at 8 positions)</b>	<b>: 0.015 mm (0.0006 in)</b>



## Brake Burnishing

EFS006G9

Burnish 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 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 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.

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BR

# SERVICE DATA AND SPECIFICATIONS (SDS)

## SERVICE DATA AND SPECIFICATIONS (SDS)

PF0:00030

### General Specifications

EFS00644

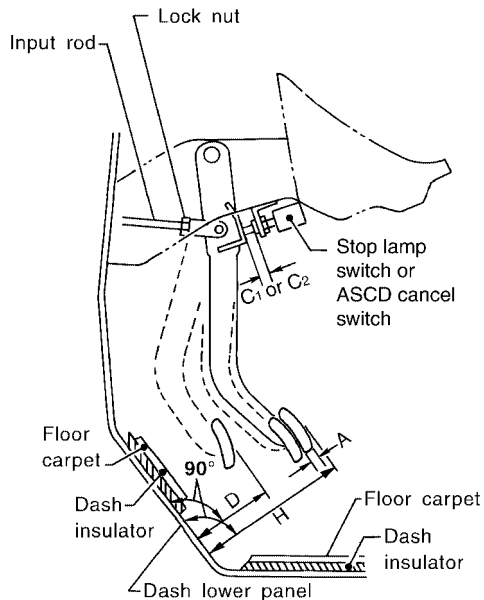
Unit: mm (in)

Front brake	Brake model	CLZ33VB
	Rotor outer diameter × thickness	296 × 28 (11.654 × 1.102)
	Pad Length × width × thickness	111.0 × 73.5 × 10.0 (4.73 × 2.894 × 0.394)
	Cylinder bore diameter (each)	46.4 (1.83)
Rear brake	Brake model	CLZ14VB
	Rotor outer diameter × thickness	308 × 18 (12.126 × 0.709)
	Pad Length × width × thickness	83.0 × 33.0 × 11.0 (3.268 × 1.299 × 0.433)
	Cylinder bore diameter	38.1 (1.50)
Control valve	Valve model	Electric brake force distribution
Brake booster	Booster model	C215T
	Diaphragm diameter	215 (8.46)
Recommended brake fluid		Refer to <a href="#">MA-11, "RECOMMENDED FLUIDS AND LUBRICANTS"</a> .

### Brake Pedal

EFS00645

Unit: mm (in)



WFIA0160E

Free height "H"	182.1 - 192.1 (7.17 - 7.56)
Depressed pedal height ("D" [under a force of 490 N (50 kg, 110 lb) with engine running])	105 - 115 (4.13 - 4.53)
Clearance between pedal stopper and threaded end of stop lamp switch and ASCD switch "C1" or "C2"	0.74 - 1.96 (0.029 - 0.077)
Pedal play "A"	3 - 11 (0.12 - 0.43)

### Brake Booster

EFS00646

Unit: mm (in)

Input rod installation standard dimension	15.6 - 15.9 (0.614 - 0.626)
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# SERVICE DATA AND SPECIFICATIONS (SDS)

## Check Valve

EFS00647

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

EFS00648

Unit: mm (in)

Brake model	CLZ33VB	
Brake pad	Standard thickness (new)	10.0 (0.394)
	Repair limit thickness	2.0 (0.079)
Disc rotor	Standard thickness (new)	28.0 (1.102)
	Repair limit thickness	26.0 (1.024)
	Maximum uneven wear (measured at 8 positions)	0.015 (0.0006)
	Runout limit (with it attached to the vehicle)	0.05 (0.0020)

## Rear Disc Brake

EFS00649

Unit: mm (in)

Brake model	CLZ14VB	
Brake pad	Standard thickness (new)	11.0 mm (0.433 in)
	Repair limit thickness	2.0 mm (0.079 in)
Disc rotor	Standard thickness (new)	18.0 mm (0.709 in)
	Repair limit thickness	16.0 mm (0.630 in)
	Maximum uneven wear (measured at 8 positions)	0.015 mm (0.0006 in)
	Runout limit (with it attached to the vehicle)	0.07 mm (0.0028 in)

# SERVICE DATA AND SPECIFICATIONS (SDS)

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