SECTION BR
BRAKE SYSTEM

CONTENTS

PRECAUTION

PRECAUTIONS

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

INFOID:0000000003081104

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 SR and SB section of this Service Manual.

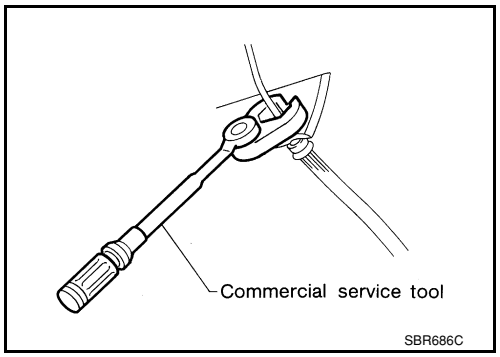
WARNING:

- **To avoid rendering the SRS inoperative, which could increase the risk of personal injury or death in the event of a collision which would result in air bag inflation, all maintenance must be performed by an authorized NISSAN/INFINITI dealer.**
- **Improper maintenance, including incorrect removal and installation of the SRS, can lead to personal injury caused by unintentional activation of the system. For removal of Spiral Cable and Air Bag Module, see the SR section.**
- **Do not use electrical test equipment on any circuit related to the SRS unless instructed to in this Service Manual. SRS wiring harnesses can be identified by yellow and/or orange harnesses or harness connectors.**

Precaution for Brake System

INFOID:0000000003081105

- Recommended fluid is Genuine NISSAN Super Heavy Duty Brake Fluid or equivalent. Refer to MA-10, "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 negative terminal.
- Burnish the brake contact surfaces after refinishing or replacing drums or rotors, after replacing pads or linings, or if a soft pedal occurs at very low mileage.
  Refer to BR-29, "Brake Burnishing".



WARNING:

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

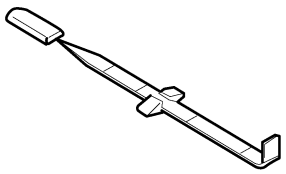
PREPARATION

PREPARATION

Special Service Tool

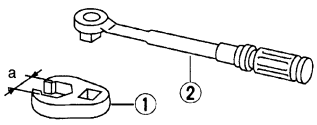
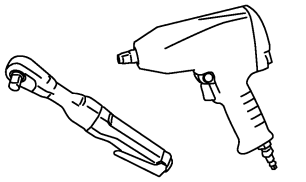
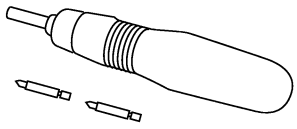
INFOID:0000000003248850

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
— (J-46532) Brake and clutch pedal height measurement tool  LFIA0227E	Measuring brake pedal height

Commercial Service Tool

INFOID:0000000003248851

Tool name	Description
1. Flare nut crowfoot 2. Torque wrench  S-NT360	Removing and installing each brake piping **a: 10 mm (0.39 in) / 12 mm (0.47 in)**
Power tool  PBIC0190E  PBIC0191E	Removing nuts, bolts and screws

FUNCTION DIAGNOSIS

NOISE, VIBRATION AND HARSHNESS (NVH) TROUBLESHOOTING

NVH Troubleshooting Chart

INFOID:0000000003248852

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

Possible cause and SUSPECTED PARTS	Reference page
Pads - damaged	BR-8, BR-8
Pads - uneven wear	BR-8, BR-8
Shims damaged	BR-33, BR-40
Rotor imbalance	BR-34, BR-37
Rotor damage	BR-34, BR-37
Rotor runout	BR-34, BR-37
Rotor deformation	BR-34, BR-37
Rotor deflection	BR-34, BR-37
Rotor rust	BR-34, BR-37
Rotor thickness variation	BR-34, BR-37
PROPELLER SHAFT	DLN-128, "NVH Troubleshooting Chart"
DIFFERENTIAL	DLN-158, "NVH Troubleshooting Chart" (FFD), DLN-192, "NVH Troubleshooting Chart" (RFD, C200), DLN-226, "NVH Troubleshooting Chart" (RFD, M226 without LD), DLN-257, "NVH Troubleshooting Chart" (RFD, M226 with LD)
DRIVESHAFT	FAX-4, "NVH Troubleshooting Chart" (FAX), RAX-7, "NVH Troubleshooting Chart" (RAX, C200), RAX-19, "NVH Troubleshooting Chart" (RAX, M226)
SUSPENSION	FSU-4, "NVH Troubleshooting Chart" (FSU), RSU-4, "NVH Troubleshooting Chart" (RSU)
TIRES AND ROAD WHEEL	WT-37, "NVH Troubleshooting Chart"
STEERING	ST-5, "NVH Troubleshooting Chart"

Symptom	Noise	×	×	×								×	×	×	×	×	×
	Shake				×							×		×	×	×	×
	Shimmy, Shudder				×	×	×	×	×	×	×			×	×	×	×

×: Applicable

BASIC INSPECTION

INSPECTION AND ADJUSTMENT

Inspection and Adjustment

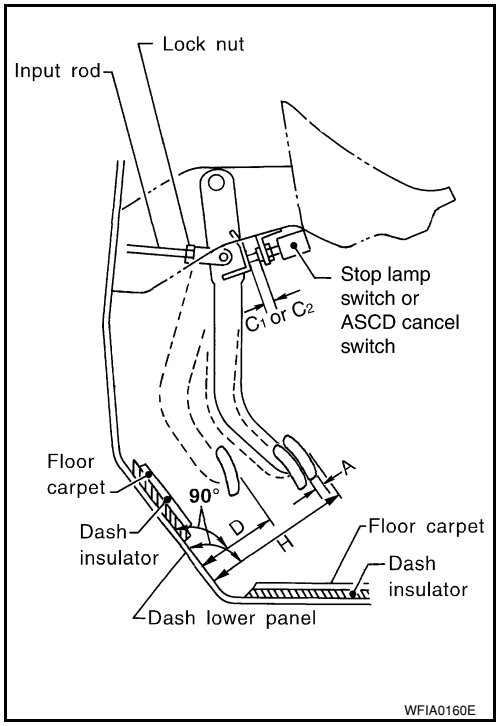
INFOID:0000000003248855

INSPECTION

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.



Unit: mm (in)

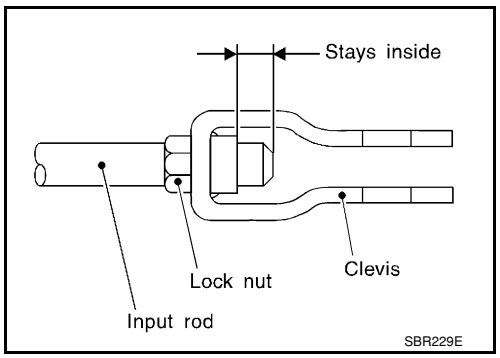
Free height "H"	**: 182.1 - 192.1 (7.17 - 7.56)**
Depressed pedal height ("D" [under a force of 490 N (50 kg, 110 lb) with engine running]	**: 105 - 115 (4.13 - 4.53)**
Clearance between pedal stopper and threaded end of stop lamp switch and ASCD switch "C_1" or "C_2"	**: 0.74 - 1.96 (0.029 - 0.077)**
Pedal play "A"	**: 3 - 11 (0.12 - 0.43)**

ADJUSTMENT

1. Loosen the stop lamp switch and ASCD 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 switch in until threaded ends contact pedal arm.
4. With the threaded ends of the stop lamp switch and ASCD switch contacting the pedal arm, turn the switches 45° clockwise to lock in place.

CAUTION:

Make sure that the gap "C_1 or C_2" between the rubber stops and switch ends are within specification.

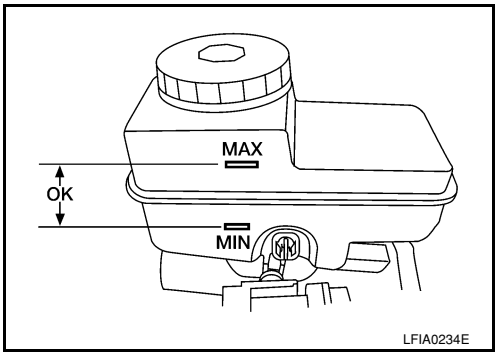
5. Check the pedal play.
   CAUTION:
   Make sure that the stop lamp goes off when the pedal is released.
6. Start the engine and check the height of the brake pedal when depressing it.

On Board Inspection

INFOID:0000000003248856

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.



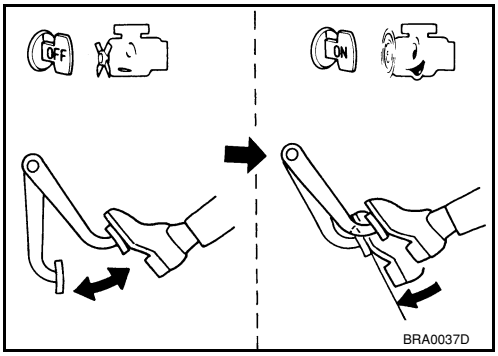
On-Vehicle Service

INFOID:0000000003248904

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.

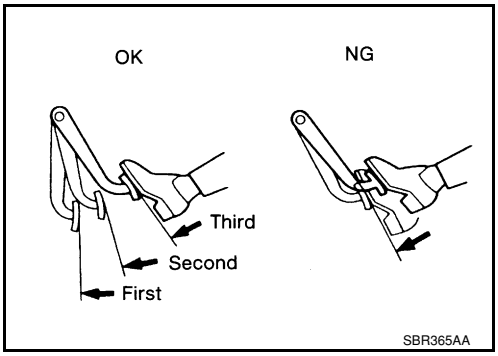
CAUTION:
Depressing pedal interval is approximately 5 seconds.



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.

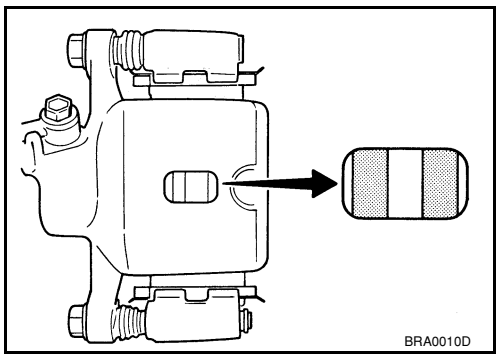


Pad Wear Inspection

INFOID:0000000003081112

PAD WEAR INSPECTION

- Inspect the thickness of pad through cylinder body inspection hole. Use a scale for inspection if necessary. Refer to BR-42, "Front Disc Brake" (Front), BR-42, "Rear Disc Brake" (Rear).



ON-VEHICLE MAINTENANCE

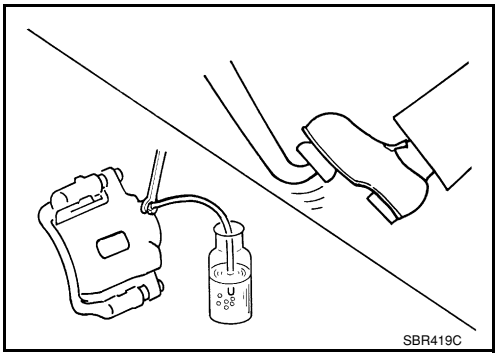
BRAKE FLUID

Drain and Refill

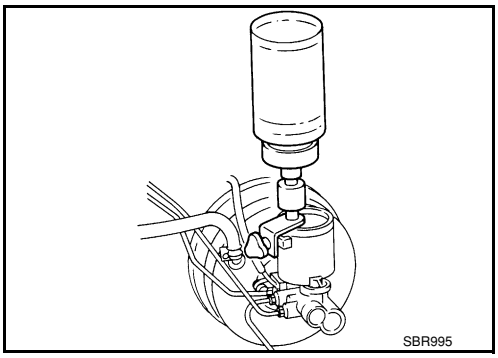
INFOID:0000000003248857

CAUTION:
- **Refill with new brake fluid. Refer to MA-10, "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 actuator connector or battery negative cable.**

1. Connect a vinyl tube to each bleed valve.
2. Depress brake pedal, then loosen each bleed valve using a flare nut wrench or suitable tool and gradually remove brake fluid.


SBR419C

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-10, "Bleeding Brake System".


SBR995

Bleeding Brake System

INFOID:0000000003248860

CAUTION:
While bleeding, monitor the master cylinder brake fluid level.

1. Turn ignition switch OFF and disconnect ABS actuator and electric unit (control unit) connector or 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 and using a flare nut wrench or suitable tool, loosen the bleed valve to let air out, then tighten bleed valve immediately.
5. Repeat steps 3 and 4 until no more air comes out.
6. Tighten bleed valve to the specified torque. Refer to BR-33, "Component" (front disc brake), BR-40, "Component" (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.

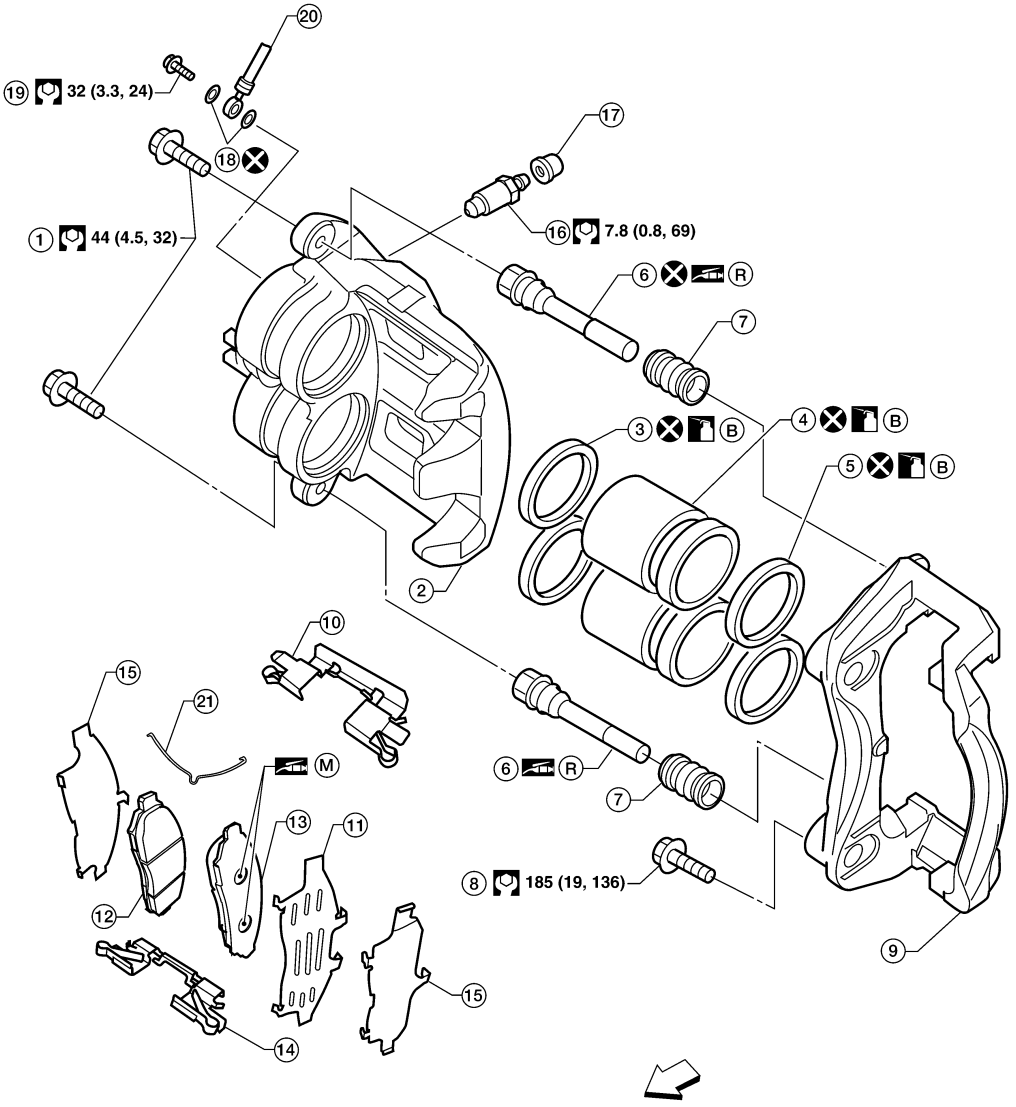
FRONT DISC BRAKE

Component

INFOID:0000000003248861

Front Disc Brake Caliper and Pads

SEC. 440



WFIA0537E

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. Pad retainer	11. Inner shim	12. Inner brake pad
13. Outer brake pad	14. Pad retainer	15. Outer shim
16. Bleed valve	17. Cap	18. Copper washers
19. Union bolt	20. Brake hose	21. Pad retaining spring
⇐ : Front		

WARNING:
Clean dust on cylinder and brake pad with a vacuum dust collector to minimize the hazard of airborne particles or other materials.
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-34, "Disassembly and Assembly of Brake Caliper".**

Removal and Installation of Brake Pad

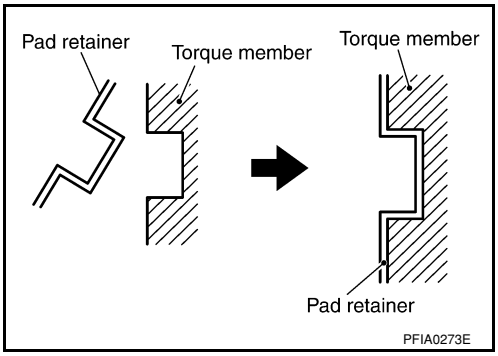
INFOID:0000000003248866

REMOVAL

1. Remove wheel and tire from vehicle 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 pad retaining spring, pads, shims and retainers from torque member.

INSTALLATION

1. Apply Molykote M-77 grease between brake pad plate and shim, then attach shims to brake pads. Refer to MA-10.
2. Attach pad retainer to torque member, then install brake pads, shims and pad retaining spring.
   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), makes it easier to push in the piston.
   CAUTION:
   By pushing in piston, brake fluid returns to master cylinder reservoir tank. Watch the level of the surface of reservoir tank.



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-33, "Component".
6. Check brake for drag.
7. Inspect fluid level, then install master cylinder reservoir cap.
8. Install wheel and tire. Refer to WT-40, "Rotation".

Removal and Installation of Brake Caliper and Disc Rotor

INFOID:0000000003248867

REMOVAL

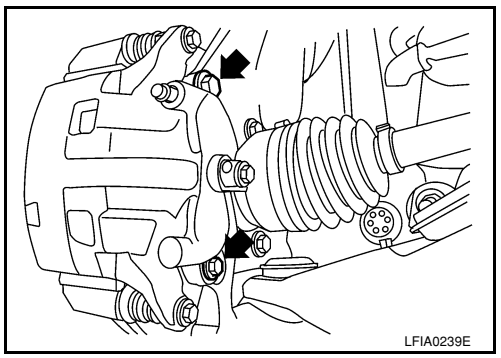
1. Remove wheel and tire from vehicle using power tool.
2. Drain brake fluid as necessary. Refer to BR-10, "Drain and Refill".
   NOTE:
   Do not remove union bolt unless removing cylinder body from vehicle.
3. Remove union bolt as necessary and torque member bolts, then remove cylinder body from the vehicle.
   NOTE:
   - Position cylinder body aside using suitable wire, as necessary.
   - When servicing cylinder body, remove sliding pin bolts and cylinder body from torque member.
4. Remove torque member.
5. Remove disc rotor.

INSTALLATION

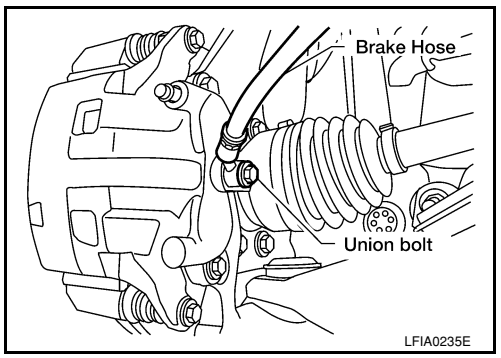
CAUTION:

- **Refill with new brake fluid. Refer to MA-10, "Fluids and Lubricants".**
- **Do not reuse drained brake fluid.**

1. Install disc rotor.
2. Install torque member and tighten to specification. Refer to BR-33, "Component".
3. Install sliding pin bolts, if removed.
4. Install cylinder body, then tighten sliding pin bolts to the specified torque. Refer to BR-33, "Component".
   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-33, "Component".
   CAUTION:
   - **Do not reuse copper washers for union bolt.**
   - **Attach brake hose to cylinder body together with union bolt and washers.**



6. Refill new brake fluid and bleed air. Refer to BR-10, "Bleeding Brake System".
7. Install wheel and tire. Refer to WT-40, "Rotation".

Brake Burnishing

INFOID:0000000003081118

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.

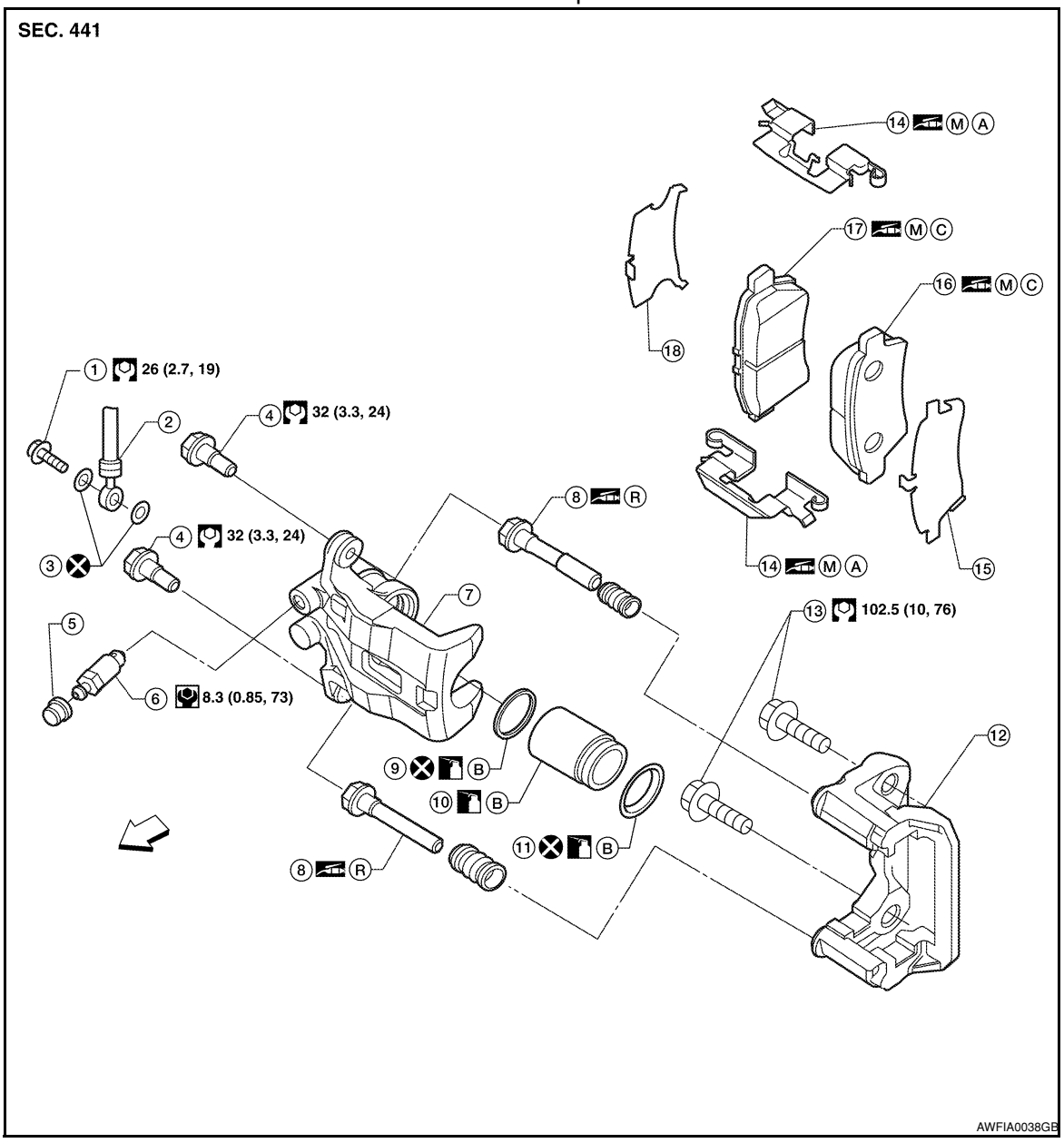
1. Drive the vehicle on a straight smooth road at 50 km/h (31 MPH).
2. Use medium brake pedal/foot effort to bring the vehicle to a complete stop from 50 km/h (31 MPH). Adjust brake pedal/foot pressure such that vehicle stopping time equals 3 to 5 seconds.
3. To cool brake system, drive the vehicle at 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.

REAR DISC BRAKE

Component

INFOID:0000000003081119

Rear Disc Brake Caliper and Pads



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
A.	Molykote 7439 Refer to BR-15 for application areas	B.	Brake fluid	C.	Molykote 77
R.	Rubber grease	⇐	: Front		

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

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 it a soft pedal occurs at very low mileage. Refer to BR-16, "Brake Burnishing".**

Removal and Installation of Brake Pad

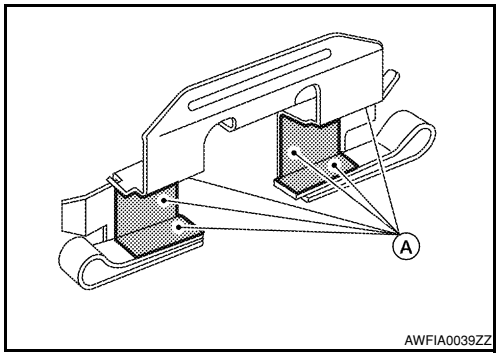
INFOID:0000000003081120

REMOVAL

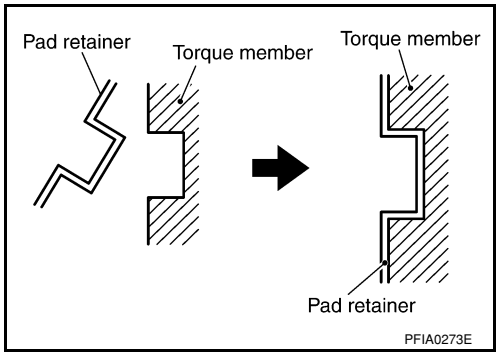
1. Remove wheel and tire using power tool.
2. Remove master cylinder reservoir cap.
3. Remove lower sliding pin bolt using power tool.
4. Suspend cylinder body with a wire and remove pads, shims and retainers from torque member.

INSTALLATION

1. Apply Molykote M-77 grease between outer brake pad plate and shim, then attach shims to brake pads. Refer to MA-10, "Fluids and Lubricants".
2. Apply Molykote 7439 to pad retainers (A) as shown



3. 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.



4. Using a suitable tool push piston into cylinder body.
   NOTE:
   Using a disc brake piston tool (commercial service tool), etc., makes it easier to push piston into cylinder body.
   CAUTION:
   By pushing in piston, brake fluid returns to master cylinder reservoir tank. Watch the level of the surface of reservoir tank.
5. Remove wire then swing cylinder body down over brake pad assemblies.
6. Install lower sliding pin bolt and tighten to specification. Refer to BR-14, "Component".
7. Check brake for drag.
8. Inspect fluid level, then install master cylinder reservoir cap.
9. Install wheel and tire. Refer to WT-40, "Rotation".

Brake Burnishing

INFOID:0000000003081121

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.

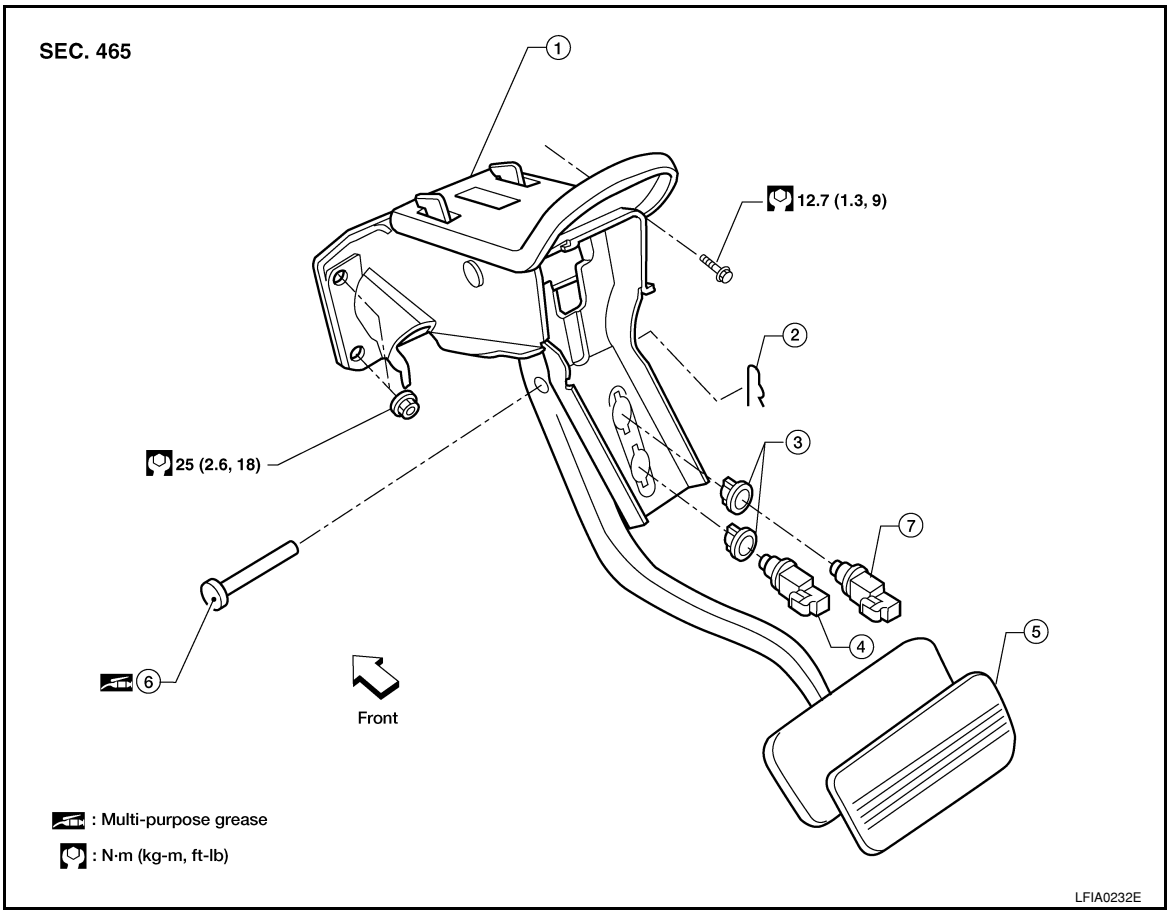
REMOVAL AND INSTALLATION

BRAKE PEDAL

Removal and Installation

INFOID:0000000003248872

COMPONENTS



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

REMOVAL

WARNING:

Do not deform the brake tube.

CAUTION:

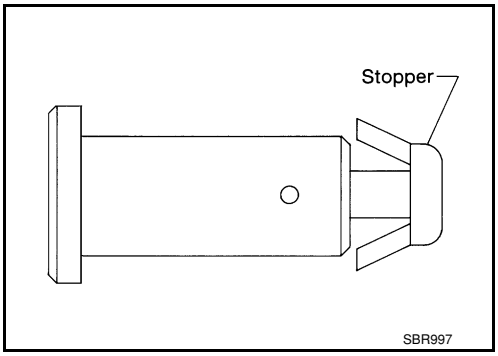
- **Do not disassemble the brake pedal assembly.**
- **Avoid damage from dropping the brake pedal assembly during handling.**
- **Keep the brake pedal assembly away from water.**

1. Remove the lower driver instrument panel. Refer to IP-10, "Exploded View".
2. Remove the stop lamp switch and ASCD switch from the pedal assembly.
3. Remove snap pin and clevis pin from the clevis of the brake booster.
4. Remove 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



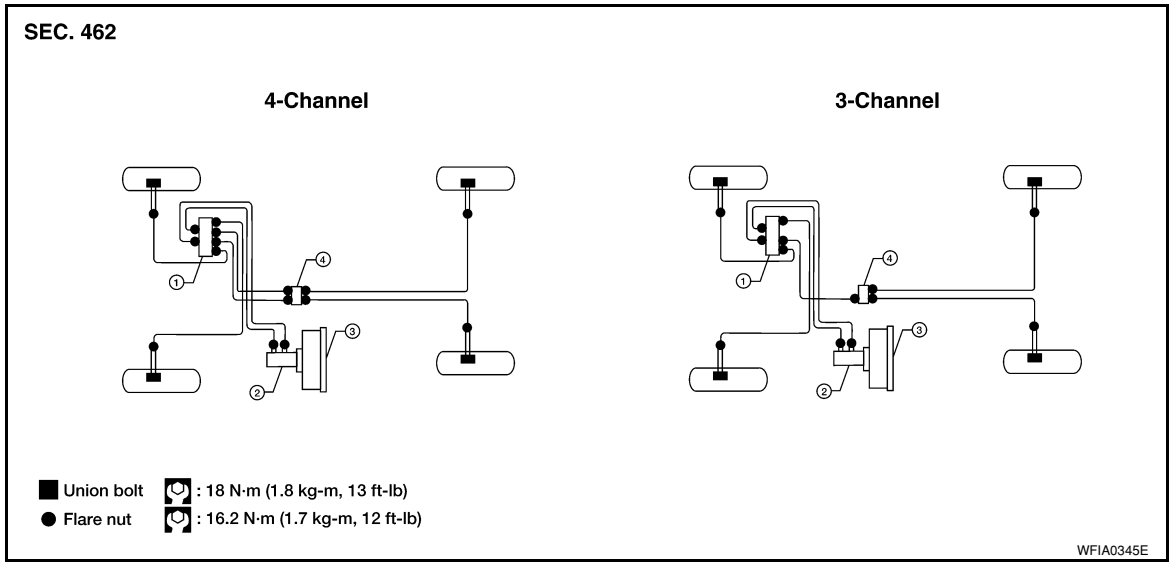
INSTALLATION

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.
   - After installing the brake pedal assembly in the vehicle, be sure to adjust it. Refer to BR-7, "Inspection and Adjustment".

BRAKE PIPING AND HOSE

Hydraulic Circuit

INFOID:0000000003248912



1. Actuator
2. Master cylinder
3. Brake booster
4. Connector

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 way 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-10, "Fluids and Lubricants".**
- **Do not reuse drained brake fluid.**

Removal and Installation of Front Brake Piping and Brake Hose

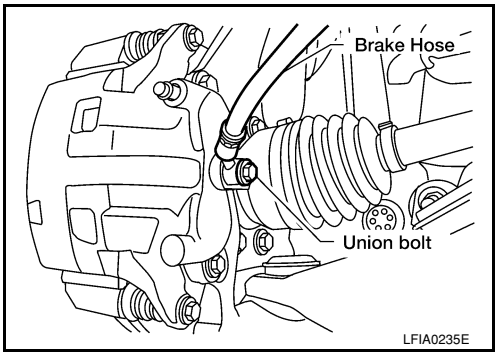
INFOID:0000000003248880

REMOVAL

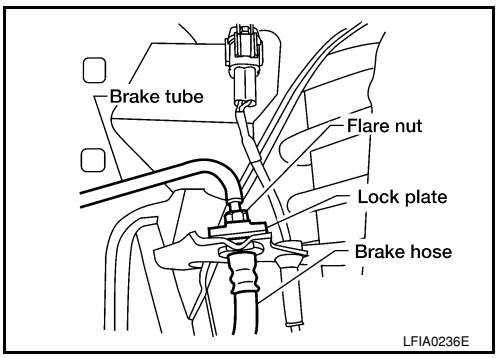
1. Drain brake fluid. Refer to BR-10, "Drain and Refill".
2. Using a flare nut wrench or suitable tool, remove brake tube from brake hose.
3. Remove lock plate and brake hose from bracket.
4. Remove union bolt and then remove brake hose from caliper assembly.

INSTALLATION

1. Install brake hose by aligning with the protrusion on caliper assembly, and tighten union bolt to the specified torque. Refer to BR-19, "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-10, "Bleeding Brake System".



Removal and Installation of Rear Brake Piping and Brake Hose

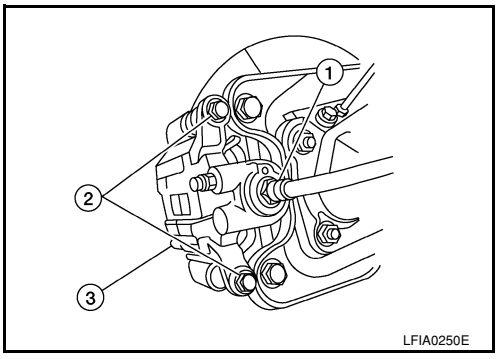
INFOID:0000000003248881

REMOVAL

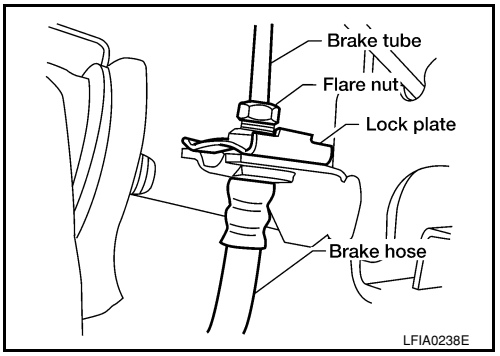
1. Drain brake fluid. Refer to BR-10, "Drain and Refill".
2. Using a flare nut wrench or suitable tool, remove brake tube from brake hose.
3. Remove lock plate and brake hose from bracket.
4. Remove the brake hose from caliper assembly.

INSTALLATION

1. Install brake hose and tighten to the specified torque. Refer to BR-19, "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 or suitable tool.
4. Refill brake fluid and bleed air. Refer to BR-10, "Bleeding Brake System".



Inspection After Installation

INFOID:0000000003248882

CAUTION:

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

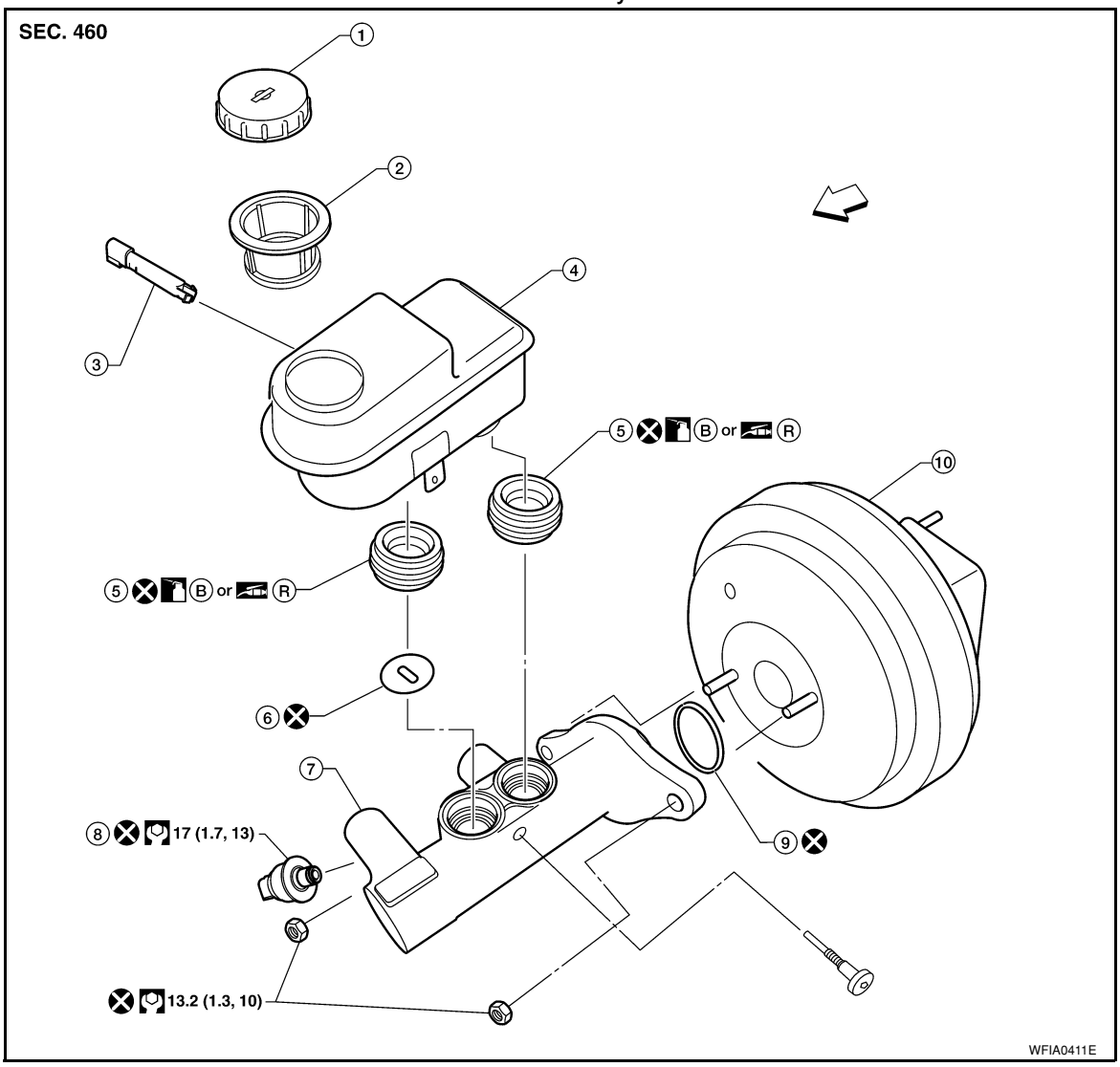
1. Check brake lines (tubes and hoses), and connections for fluid leaks, damage, twist, deformation, contact with other parts, and loose connections. Replace any damaged parts.
2. While depressing brake pedal under a force of 785 N (80 kg, 177 lb) with engine running for approximately 5 seconds, check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

BRAKE MASTER CYLINDER

Removal and Installation

INFOID:0000000003248883

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-10, "Drain and Refill".
2. Disconnect harness connectors for fluid level sensor and pressure sensor.
3. Using a flare nut wrench or suitable tool, disconnect brake tube from master cylinder assembly.
4. Remove master cylinder assembly nuts and master cylinder assembly.

INSTALLATION

Installation is in the reverse order of removal.

- Refill brake fluid and bleed air. Refer to BR-10, "Bleeding Brake System".

CAUTION:
- **Refill using recommended brake fluid. Refer to MA-10.**
- **Do not reuse drained brake fluid.**

- Adjust brake pedal. Refer to BR-7, "Inspection and Adjustment".

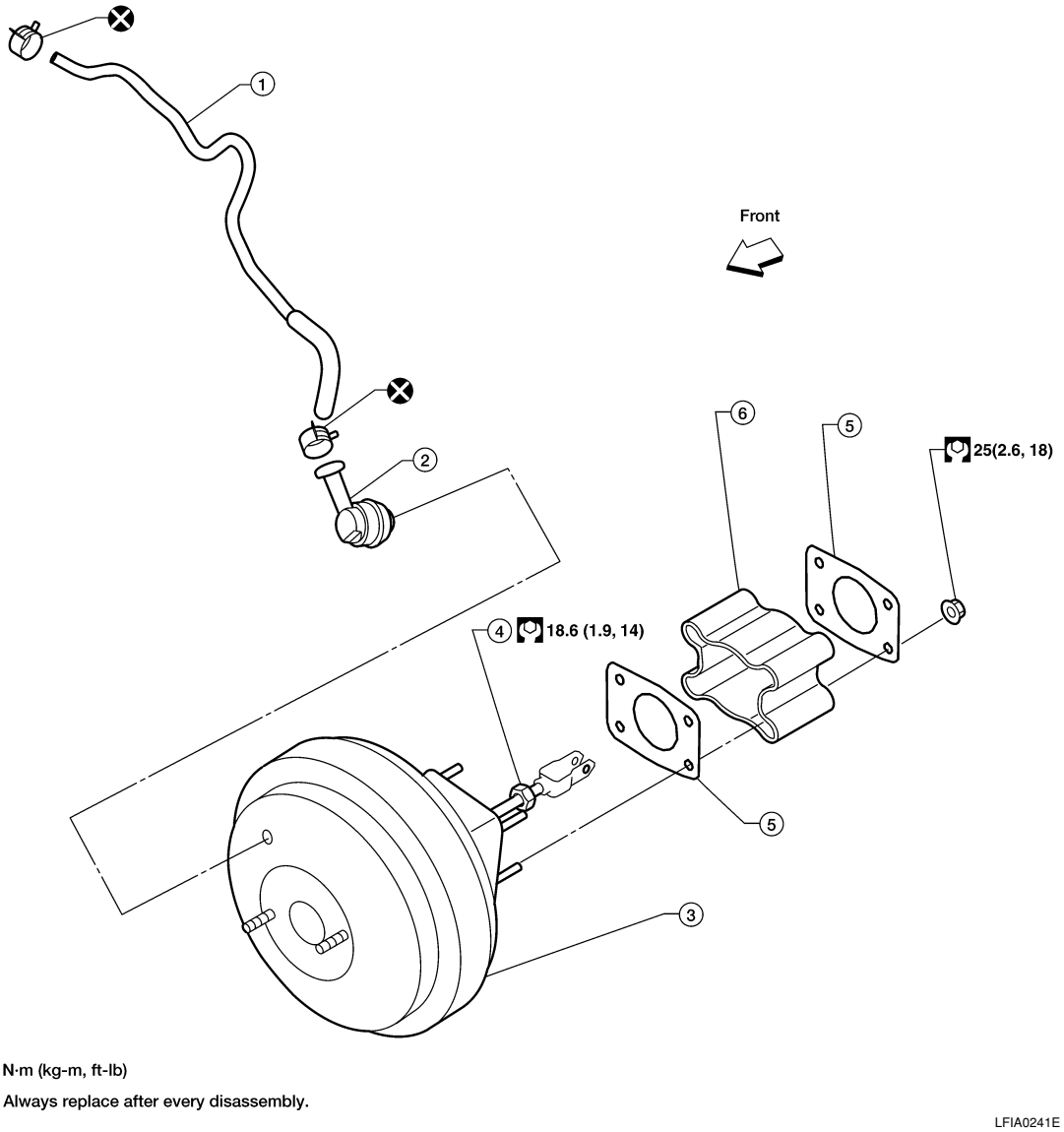
BRAKE BOOSTER

Removal and Installation

INFOID:0000000003248887

Brake Booster

SEC. 470



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

REMOVAL

CAUTION:

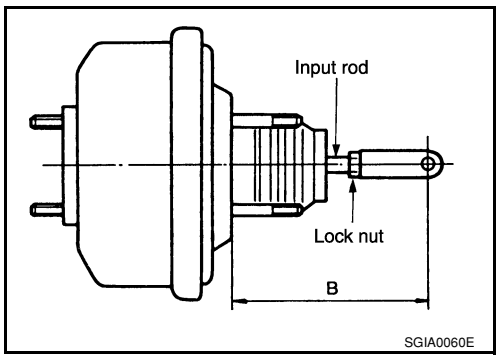
- **Be careful not to deform or bend brake piping while removing and installing brake booster.**
- **Replace clevis pin if it is damaged.**
- **Be careful not to damage brake booster stud bolt threads. If brake booster is tilted or inclined during installation, dash panel may damage the threads.**
-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

1. Remove actuator and electric unit. Refer to BRC-111, "Removal and Installation" (VDC/TCS/ABS), or BRC-218, "Removal and Installation" (HDC/HSA/VDC/TCS/ABS).
2. Remove brake piping from brake master cylinder.

3. Remove brake master cylinder. Refer to BR-22, "Removal and Installation".
4. Remove vacuum hose from brake booster. Refer to BR-26.
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.

INSTALLATION

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



Length "B" : 150 mm (5.91 in)

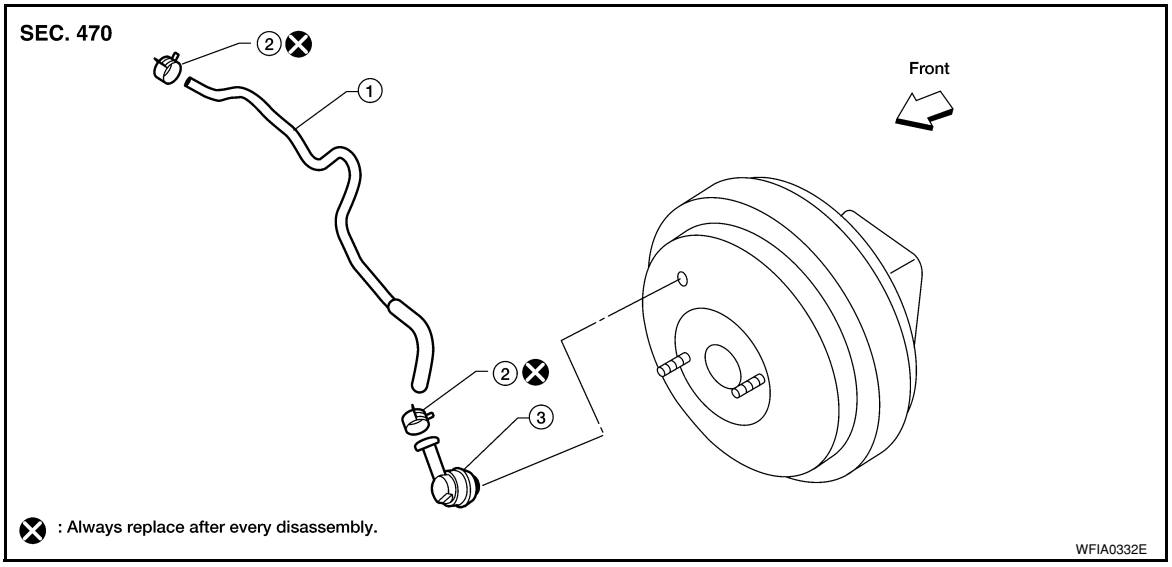
2. After adjusting "B", temporarily tighten lock nut and install booster assembly to the vehicle.
   - Install a gaskets and spacer block between booster assembly and the dash panel.
3. Connect brake pedal to clevis of input rod.
4. Install brake booster nuts.
5. Install brake piping from brake master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

VACUUM LINES

Removal and Installation

INFOID:0000000003248889

Brake Booster Vacuum Hose



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

REMOVAL

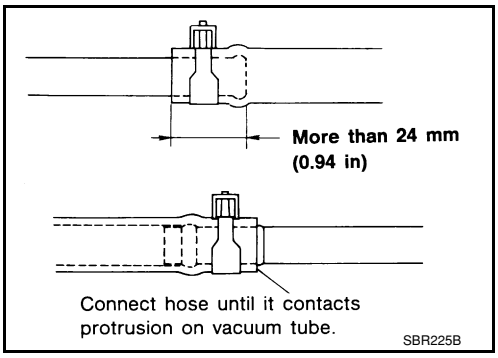
1. Disconnect vacuum hose from hose clip.
2. Release clamps and disconnect vacuum hose.
3. Remove check valve from brake booster.

INSTALLATION

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.**



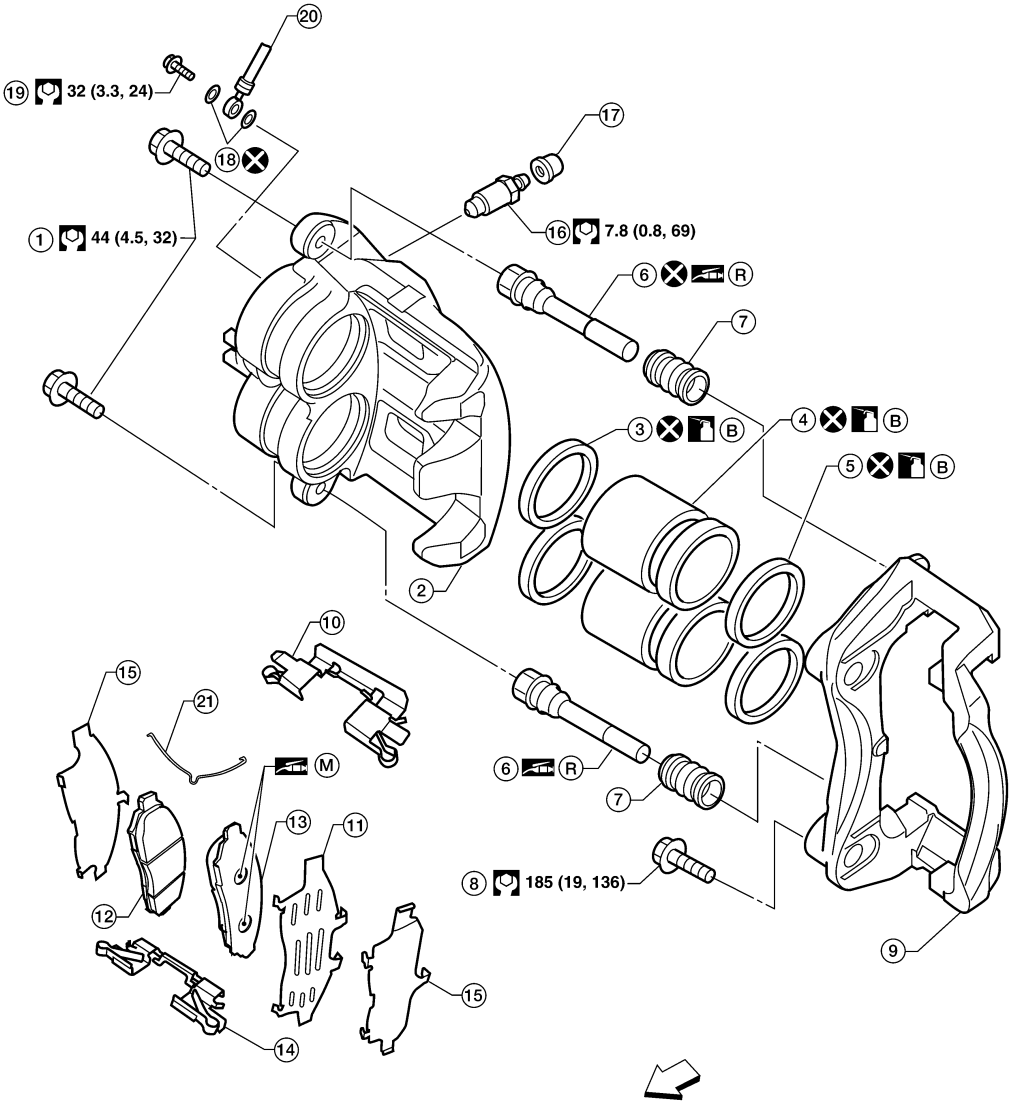
FRONT DISC BRAKE

Component

INFOID:0000000003248890

Front Disc Brake Caliper and Pads

SEC. 440



WFIA0537E

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. Pad retainer	11. Inner shim	12. Inner brake pad
13. Outer brake pad	14. Pad retainer	15. Outer shim
16. Bleed valve	17. Cap	18. Copper washers
19. Union bolt	20. Brake hose	21. Pad retaining spring
⇐ : Front		

WARNING:
Clean dust on cylinder and brake pad with a vacuum dust collector to minimize the hazard of airborne particles or other materials.
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-34, "Disassembly and Assembly of Brake Caliper".**

Removal and Installation of Brake Caliper and Disc Rotor

INFOID:0000000003248891

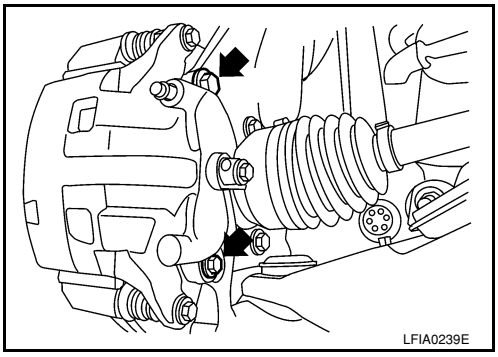
REMOVAL

1. Remove wheel and tire from vehicle using power tool.
2. Drain brake fluid as necessary. Refer to BR-10, "Drain and Refill".
   NOTE:
   Do not remove union bolt unless removing cylinder body from vehicle.
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 cylinder body, remove sliding pin bolts and cylinder body from torque member.
4. Remove torque member.
5. Remove disc rotor.

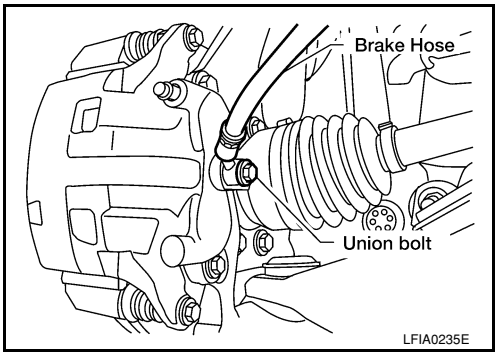
INSTALLATION

CAUTION:
- **Refill with new brake fluid. Refer to MA-10, "Fluids and Lubricants".**
- **Do not reuse drained brake fluid.**

1. Install disc rotor.
2. Install torque member and tighten to specification. Refer to BR-33, "Component".
3. Install sliding pin bolts, if removed.
4. Install cylinder body, then tighten sliding pin bolts to the specified torque. Refer to BR-33, "Component".
   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-33, "Component".
   CAUTION:
   - **Do not reuse copper washers for union bolt.**
   - **Attach brake hose to cylinder body together with union bolt and washers.**



6. Refill new brake fluid and bleed air. Refer to BR-10, "Bleeding Brake System".
7. Install wheel and tire. Refer to WT-40, "Rotation".

Brake Burnishing

INFOID:0000000003081131

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.

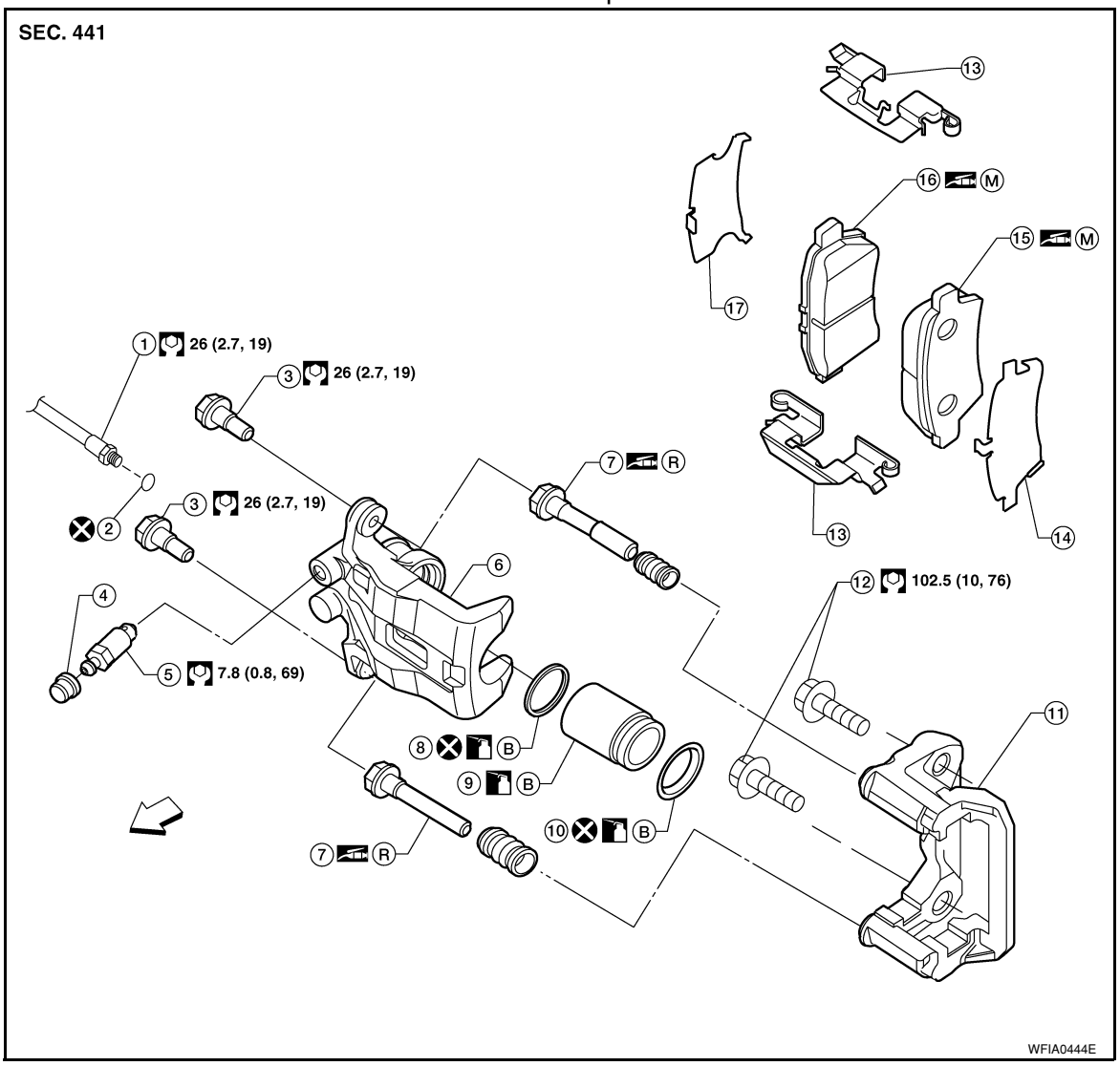
1. Drive the vehicle on a straight smooth road at 50 km/h (31 MPH).
2. Use medium brake pedal/foot effort to bring the vehicle to a complete stop from 50 km/h (31 MPH). Adjust brake pedal/foot pressure such that vehicle stopping time equals 3 to 5 seconds.
3. To cool brake system, drive the vehicle at 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.

REAR DISC BRAKE

Component

INFOID:0000000003248893

Rear Disc Brake Caliper and Pads



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

WARNING:

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

CAUTION:

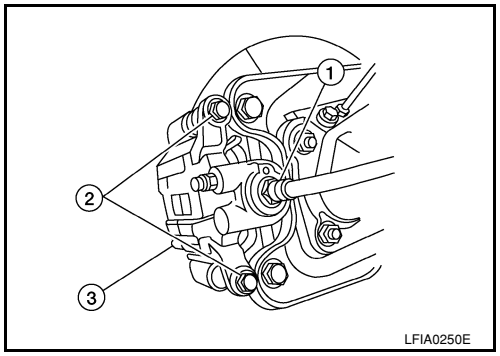
- **While removing cylinder body, never depress brake pedal because piston will pop out.**
- **It is not necessary to remove bolts on torque member and brake hose except for disassembly or replacement of cylinder body. In this case, hang cylinder body with a wire so as not to stretch brake hose.**
- **Do not damage piston boot.**
- **Burnish brake contact surface after refinishing or replacing rotors, after replacing pads, or it a soft pedal occurs at very low mileage. Refer to BR-37, "Disassembly and Assembly of Brake Caliper".**

Removal and Installation of Brake Caliper and Disc Rotor

INFOID:0000000003248894

REMOVAL

1. Remove wheel and tire from vehicle with power tool.
2. Drain brake fluid. Refer to BR-10, "Drain and Refill".
3. Remove brake hose (1) and sliding pin bolts (2), then remove cylinder body (3).
4. Remove torque member.
5. Remove disc rotor.



INSTALLATION

CAUTION:

- **Refill with new brake fluid. Refer to MA-10, "Fluids and Lubricants".**
- **Do not reuse drained brake fluid.**

1. Install disc rotor.
2. Install torque member and tighten bolts to specification. Refer to BR-40, "Component".
3. Install cylinder body to the vehicle, and tighten bolts to specification. Refer to BR-40, "Component".
   CAUTION:
   Before installing cylinder body to the vehicle, wipe off mating surface of cylinder body.
4. Install brake hose to cylinder body and tighten to specification. Refer to BR-40, "Component".
   CAUTION:
   - **Do not reuse copper washer for brake hose.**
   - **Securely attach brake hose to protrusion on cylinder body.**
5. Refill new brake fluid and bleed air. Refer to BR-10, "Bleeding Brake System".
6. Install tires to the vehicle.

Brake Burnishing

INFOID:0000000003081134

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.

DISASSEMBLY AND ASSEMBLY

BRAKE MASTER CYLINDER

Disassembly and Assembly

INFOID:0000000003248895

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.**

1. Apply brake fluid or rubber grease to new grommets, then insert into master cylinder sub-assembly. Refer to MA-10.
   CAUTION:
   Do not reuse grommet.
2. Install reservoir tank onto master cylinder assembly.

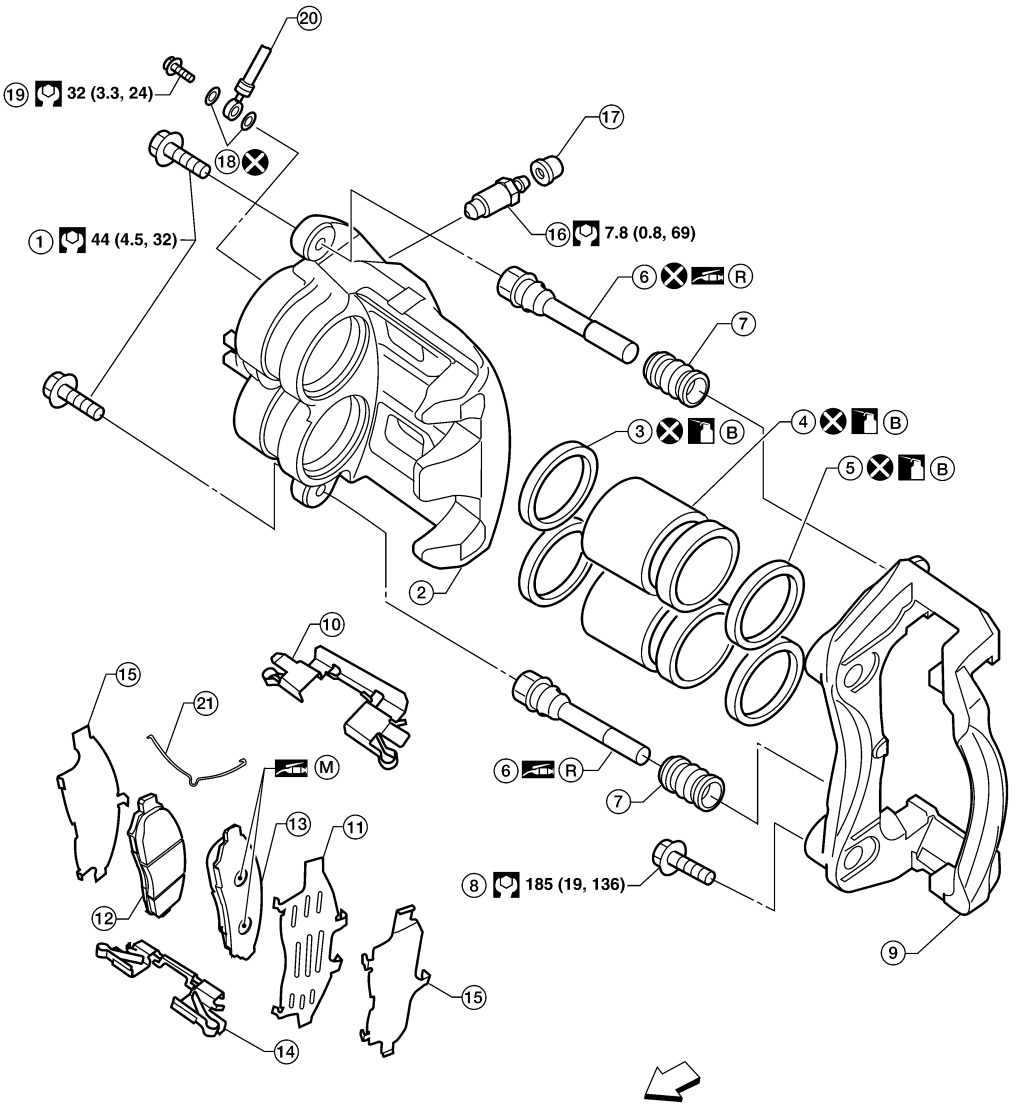
FRONT DISC BRAKE

Component

INFOID:0000000003248911

Front Disc Brake Caliper and Pads

SEC. 440



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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. Pad retainer
11. Inner shim
12. Inner brake pad
13. Outer brake pad
14. Pad retainer
15. Outer shim
16. Bleed valve
17. Cap
18. Copper washers
19. Union bolt
20. Brake hose
21. Pad retaining spring

⇐ : Front

WARNING:
Clean dust on cylinder and brake pad with a vacuum dust collector to minimize the hazard of airborne particles or other materials.
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-34, "Disassembly and Assembly of Brake Caliper".**

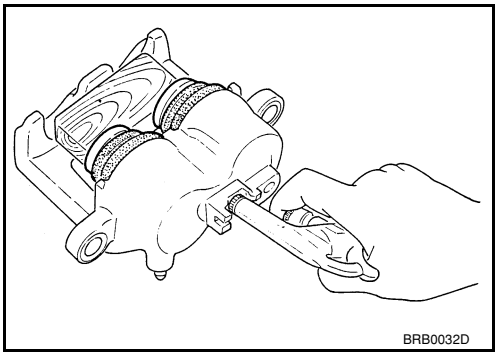
Disassembly and Assembly of Brake Caliper

INFOID:0000000003248869

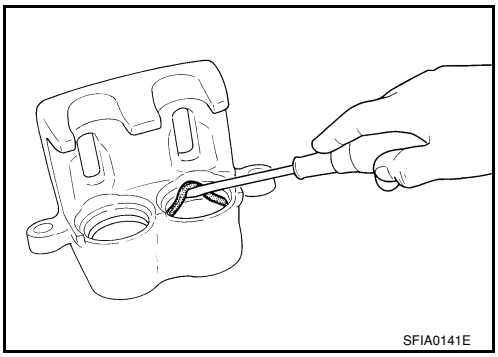
DISASSEMBLY

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 hole to remove pistons and piston boots.
   CAUTION:
   Do not get your fingers caught in piston.



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

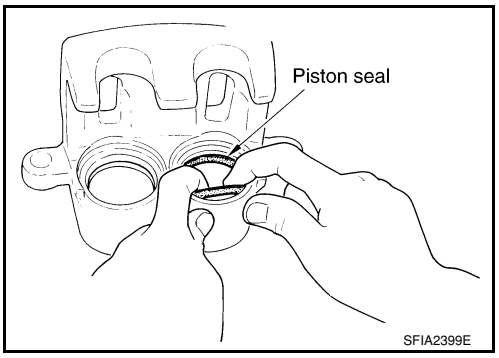
Check sliding pin and sliding pin boot for wear, damage, and cracks. If damage or deformation is present, replace the affected part.

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

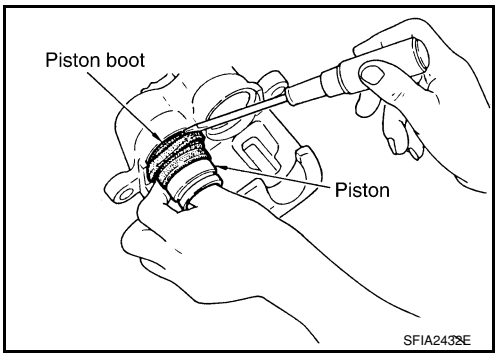
ASSEMBLY

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

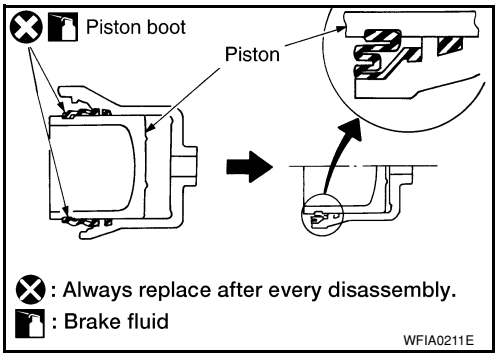
1. Apply clean brake fluid to new piston seal and insert seal into groove on cylinder body.
   CAUTION:
   Do not reuse piston seal.



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-33, "Component".

DISC ROTOR INSPECTION

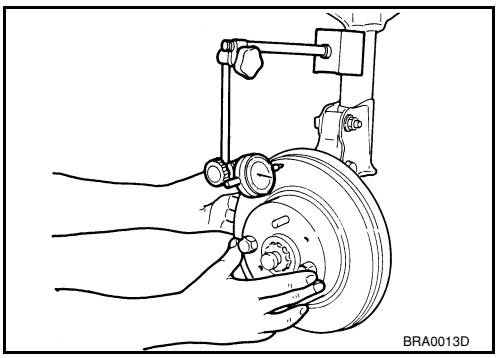
Visual Inspection

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. (two or more positions.)

2. Inspect runout using a dial gauge. [Measured at 10 mm (0.39 in) inside the disc edge.]



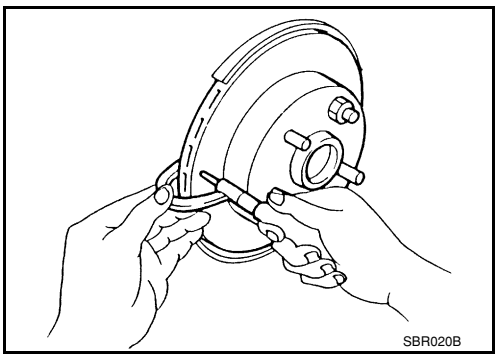
Runout limit (on vehicle) : 0.05 mm (0.0020 in)

NOTE:
Make sure that wheel bearing axial end play is within the specifications before measuring runout. Refer to FAX-5, "On-Vehicle Inspection and Service".

3. If runout is outside the limit, find the minimum runout point by shifting mating positions of disc rotor and wheel hub by one hole.
4. If runout still out of specification, turn rotor with on-car brake lathe.

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.



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

BRAKE BURNISHING PROCEDURE

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.

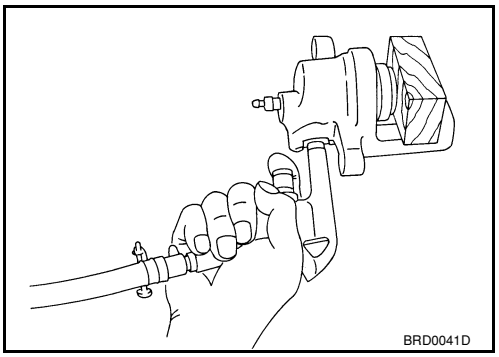
REAR DISC BRAKE

Disassembly and Assembly of Brake Caliper

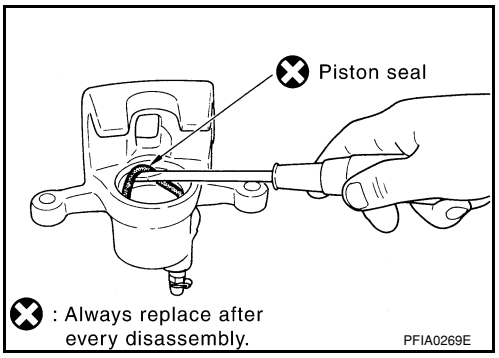
INFOID:0000000003248897

DISASSEMBLY

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 brake hose hole to remove piston and piston boot.
   CAUTION:
   Do not get your fingers caught in piston.



4. Remove piston seal from cylinder body using suitable tool.
   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.**
- **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

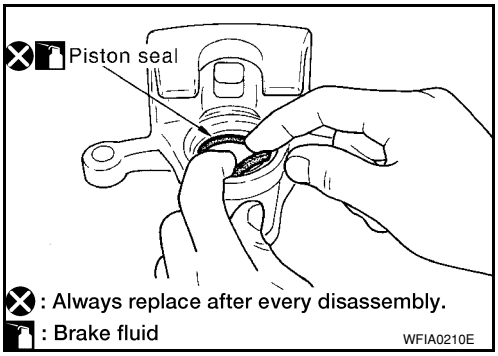
Make sure there is no wear, damage, or cracks in sliding sleeve and sliding sleeve boots, and if there are, replace them.

ASSEMBLY

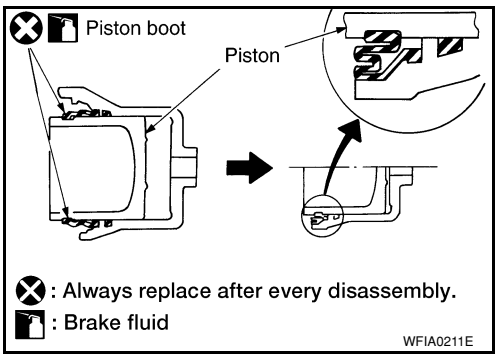
CAUTION:

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

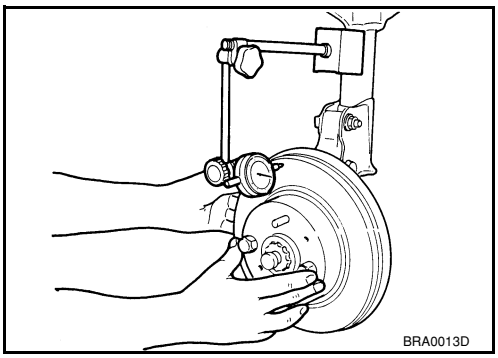
Check surface of disc rotor for uneven wear, cracks, and serious damage. If any non-standard condition is detected, replace applicable part.

Runout Inspection

1. Using wheel nuts, install disc rotor to wheel hub. (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) : 0.05 mm (0.0020 in)

   NOTE:
   Make sure that wheel bearing axial end play is within the specification before measuring runout. Refer to RAX-8, "Rear Axle Bearing".

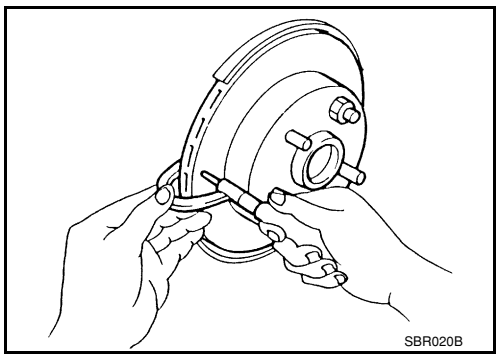


3. If runout is outside the limit, find the minimum runout point by shifting mating positions of disc rotor and wheel hub by one hole.
4. If runout still out of specification, turn rotor with on-car brake lathe.

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.

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



BRAKE BURNISHING PROCEDURE

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:

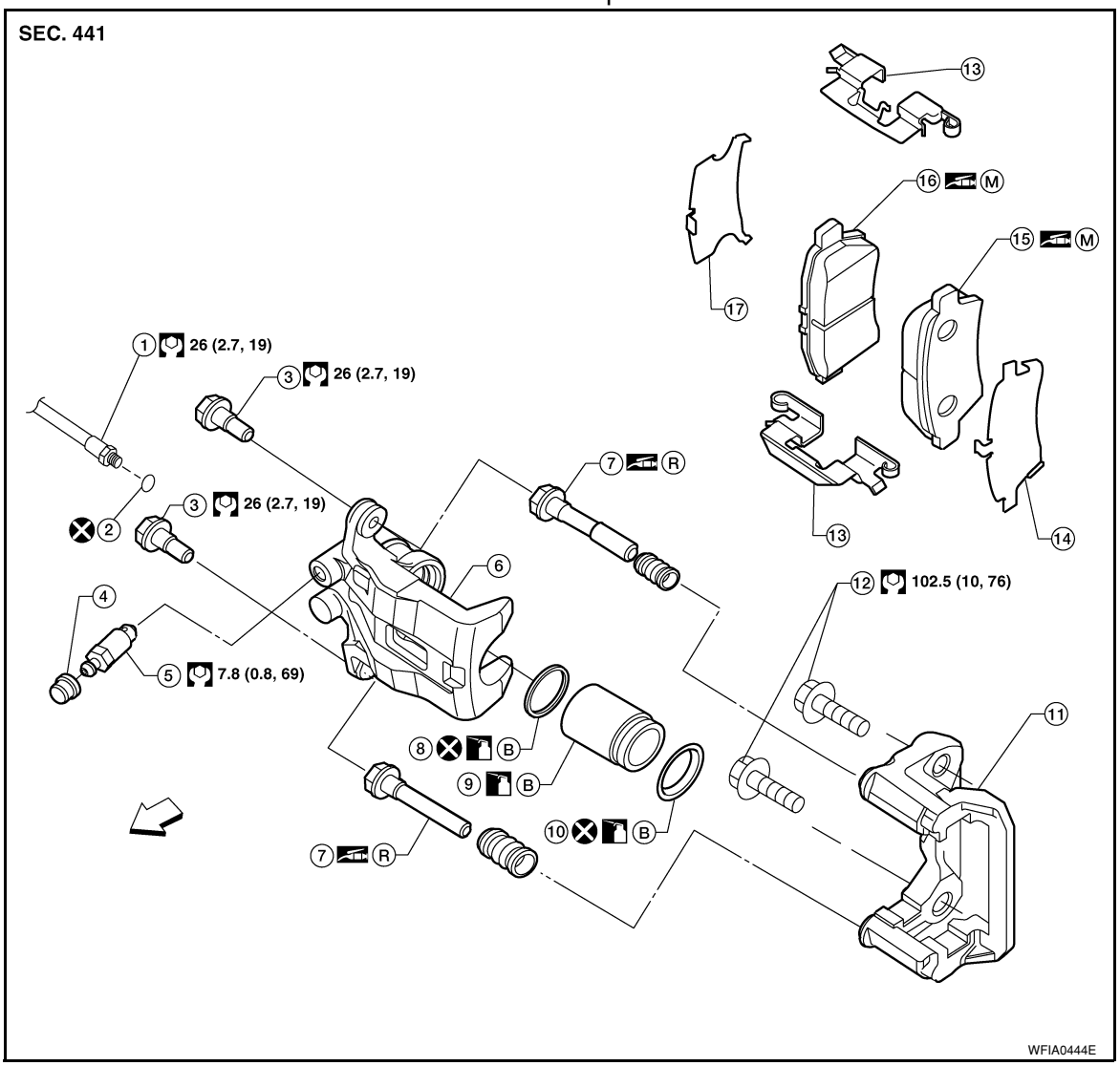
Only perform this procedure under safe road and traffic conditions. Use extreme caution.

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.

Component

INFOID:0000000003248896

Rear Disc Brake Caliper and Pads



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

WARNING:

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

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 it a soft pedal occurs at very low mileage. Refer to BR-37, "Disassembly and Assembly of Brake Caliper".**

SERVICE DATA AND SPECIFICATIONS (SDS)

SERVICE DATA AND SPECIFICATIONS (SDS)

General Specification

INFOID:0000000003248898

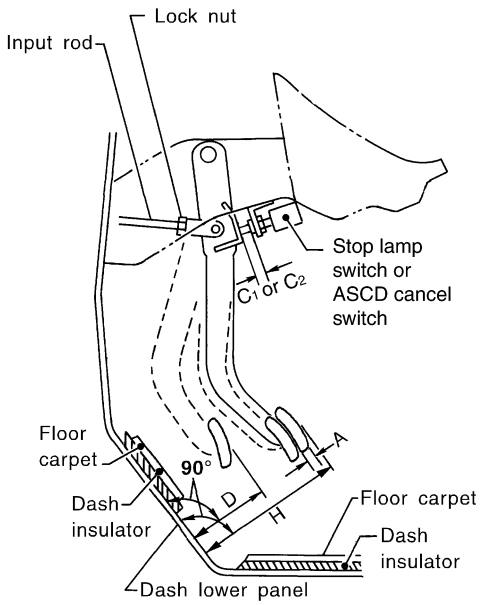
Unit: mm (in)

Front brake	Brake model	CLZ33VB
	Rotor outer diameter × thickness	296 × 28 (11.654 × 1.102)
	Pad Length × width × thickness	111.0 × 73.5 × 11.88 (4.73 × 2.894 × 0.468)
	Cylinder bore diameter	51 (2.01)
Rear brake	Brake model	CLZ14VB
	Rotor outer diameter × thickness	286 × 18.0 (11.260 × 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 MA-10.

Brake Pedal

INFOID:0000000003248899

Unit: mm (in)



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Free height "H"	182.1 - 192.1 (7.17 - 7.56)
Depressed pedal height ("D" [under a force of 490 N (50 kg-f, 110 lb-f) 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

INFOID:0000000003248900

Unit: mm (in)

Input rod installation standard dimension	150 (5.91)

Check Valve

INFOID:0000000003248901

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

Front Disc Brake

INFOID:0000000003248902

Unit: mm (in)

Brake model		CLZ33VB
Brake pad	Standard thickness (new)	11.88 (0.468)
	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

INFOID:0000000003248903

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)	0.05 mm (0.0020 in)