

SECTION **BR**
BRAKE SYSTEM

A
B
C
D
E

CONTENTS

LHD	
PRECAUTION	4
PRECAUTIONS	4
Precaution for Supplemental Restraint System (SRS) "AIR BAG" and "SEAT BELT PRE-TENSIONER"	4
Precaution Necessary for Steering Wheel Rotation after Battery Disconnect	4
Precaution for Procedure without Cowl Top Cover.....	5
Precaution for Brake System	5
PREPARATION	7
PREPARATION	7
Commercial Service Tool	7
SYMPTOM DIAGNOSIS	8
NOISE, VIBRATION AND HARSHNESS (NVH) TROUBLESHOOTING	8
NVH Troubleshooting Chart	8
PERIODIC MAINTENANCE	9
BRAKE PEDAL	9
Inspection and Adjustment	9
BRAKE FLUID	12
Inspection	12
Draining	12
Refilling	12
Bleeding Brake System	13
BRAKE MASTER CYLINDER	14
Inspection	14
BRAKE BOOSTER	15
Inspection	15
FRONT DISC BRAKE	16
BRAKE PAD	16
BRAKE PAD : Inspection and Adjustment	16
DISC ROTOR	16
DISC ROTOR : Inspection and Adjustment	16
REAR DISC BRAKE	18
BRAKE PAD	18
BRAKE PAD : Inspection and Adjustment	18
DISC ROTOR	18
DISC ROTOR : Inspection and Adjustment	18
REMOVAL AND INSTALLATION	20
BRAKE PEDAL	20
Exploded View	20
Removal and Installation	21
Inspection and Adjustment	22
BRAKE PIPING	24
FRONT	24
FRONT : Exploded View	24
FRONT : Hydraulic Piping	26
FRONT : Removal and Installation	29
FRONT : Inspection	30
REAR	30
REAR : Exploded View	30
REAR : Hydraulic Piping	33
REAR : Removal and Installation	35
REAR : Inspection	39
BRAKE MASTER CYLINDER	41
Exploded View	41
Removal and Installation	42
Disassembly and Assembly	44
Inspection	45
BRAKE BOOSTER	46
Exploded View	46

BR

G

H

I

J

K

L

M

N

O

P

Removal and installation	46
Inspection and Adjustment	47
VACUUM LINES	49
MR16DDT	49
MR16DDT : Exploded View	49
MR16DDT : Removal and Installation	49
MR16DDT : Inspection	49
HR16DE	50
HR16DE : Exploded View	50
HR16DE : Removal and Installation	50
HR16DE : Inspection	51
K9K	51
K9K : Exploded View	51
K9K : Removal and Installation	52
K9K : Inspection	52
FRONT DISC BRAKE	53
BRAKE PAD	53
BRAKE PAD : Exploded View	53
BRAKE PAD : Removal and Installation	54
BRAKE PAD : Inspection	55
BRAKE CALIPER ASSEMBLY	56
BRAKE CALIPER ASSEMBLY : Exploded View ...	56
BRAKE CALIPER ASSEMBLY : Removal and Installation	57
BRAKE CALIPER ASSEMBLY : Disassembly and Assembly	58
BRAKE CALIPER ASSEMBLY : Inspection	60
REAR DISC BRAKE	62
BRAKE PAD	62
BRAKE PAD : Exploded View	62
BRAKE PAD : Removal and Installation	62
BRAKE PAD : Inspection	64
BRAKE CALIPER ASSEMBLY	64
BRAKE CALIPER ASSEMBLY : Exploded View ...	64
BRAKE CALIPER ASSEMBLY : Removal and Installation	65
BRAKE CALIPER ASSEMBLY : Disassembly and Assembly	66
BRAKE CALIPER ASSEMBLY : Inspection	68
SERVICE DATA AND SPECIFICATIONS (SDS)	70
SERVICE DATA AND SPECIFICATIONS (SDS)	70
General Specifications	70
Brake Pedal	70
Brake Booster	70
Front Disc Brake	71
Rear Disc Brake	71

RHD

PRECAUTION	72
PRECAUTIONS	72
Precaution for Supplemental Restraint System (SRS) "AIR BAG" and "SEAT BELT PRE-TENSIONER"	72
Precaution Necessary for Steering Wheel Rotation after Battery Disconnect	72
Precaution for Procedure without Cowl Top Cover... ..	73
Precaution for Brake System	73
PREPARATION	75
PREPARATION	75
Commercial Service Tool	75
SYMPTOM DIAGNOSIS	76
NOISE, VIBRATION AND HARSHNESS (NVH) TROUBLESHOOTING	76
NVH Troubleshooting Chart	76
PERIODIC MAINTENANCE	77
BRAKE PEDAL	77
Inspection and Adjustment	77
BRAKE FLUID	80
Inspection	80
Draining	80
Refilling	80
Bleeding Brake System	81
BRAKE MASTER CYLINDER	82
Inspection	82
BRAKE BOOSTER	83
Inspection	83
FRONT DISC BRAKE	84
BRAKE PAD	84
BRAKE PAD : Inspection and Adjustment	84
DISC ROTOR	84
DISC ROTOR : Inspection and Adjustment	84
REAR DISC BRAKE	86
BRAKE PAD	86
BRAKE PAD : Inspection and Adjustment	86
DISC ROTOR	86
DISC ROTOR : Inspection and Adjustment	86
REMOVAL AND INSTALLATION	88
BRAKE PEDAL	88
Exploded View	88
Removal and Installation	89
Inspection and Adjustment	90
BRAKE PIPING	91

FRONT	91	FRONT DISC BRAKE	119	A
FRONT : Exploded View	91	BRAKE PAD	119	B
FRONT : Hydraulic Piping	94	BRAKE PAD : Exploded View	119	B
FRONT : Removal and Installation	95	BRAKE PAD : Removal and Installation	120	B
FRONT : Inspection	97	BRAKE PAD : Inspection	121	B
REAR	97	BRAKE CALIPER ASSEMBLY	122	C
REAR : Exploded View	97	BRAKE CALIPER ASSEMBLY : Exploded View ..	122	C
REAR : Hydraulic Piping	100	BRAKE CALIPER ASSEMBLY : Removal and In-	123	D
REAR : Removal and Installation	101	stallation	123	D
REAR : Inspection	105	BRAKE CALIPER ASSEMBLY : Disassembly and	124	D
BRAKE MASTER CYLINDER	107	Assembly	124	D
Exploded View	107	BRAKE CALIPER ASSEMBLY : Inspection	126	D
Removal and Installation	108	REAR DISC BRAKE	128	E
Disassembly and Assembly	109	BRAKE PAD	128	E
Inspection	110	BRAKE PAD : Exploded View	128	E
BRAKE BOOSTER	111	BRAKE PAD : Removal and Installation	128	BR
Exploded View	111	BRAKE PAD : Inspection	130	BR
Removal and installation	112	BRAKE CALIPER ASSEMBLY	130	G
Inspection and Adjustment	113	BRAKE CALIPER ASSEMBLY : Exploded View ..	130	G
VACUUM LINES	115	BRAKE CALIPER ASSEMBLY : Removal and In-	131	H
MR16DDT	115	stallation	131	H
MR16DDT : Exploded View	115	BRAKE CALIPER ASSEMBLY : Disassembly and	132	H
MR16DDT : Removal and Installation	115	Assembly	132	H
MR16DDT : Inspection	115	BRAKE CALIPER ASSEMBLY : Inspection	134	I
HR16DE	116	SERVICE DATA AND SPECIFICATIONS		I
HR16DE : Exploded View	116	(SDS)	136	J
HR16DE : Removal and Installation	116	SERVICE DATA AND SPECIFICATIONS		J
HR16DE : Inspection	117	(SDS)	136	K
K9K	117	General Specifications	136	K
K9K : Exploded View	117	Brake Pedal	136	K
K9K : Removal and Installation	117	Brake Booster	136	L
K9K : Inspection	118	Front Disc Brake	137	L
		Rear Disc Brake	137	L
				M
				N
				O
				P

PRECAUTION

PRECAUTIONS

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

INFOID:000000006710376

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. Information necessary to service the system safely is included in the "SRS AIR BAG" and "SEAT BELT" of this Service Manual.

The vehicle may be equipped with a passenger air bag deactivation switch. Because no rear seat exists where a rear-facing child restraint can be placed, the switch is designed to turn off the passenger air bag so that a rear-facing child restraint can be used in the front passenger seat. The switch is located in the center of the instrument panel, near the ashtray. When the switch is turned to the ON position, the passenger air bag is enabled and could inflate for certain types of collision. When the switch is turned to the OFF position, the passenger air bag is disabled and will not inflate. A passenger air bag OFF indicator on the instrument panel lights up when the passenger air bag is switched OFF. The driver air bag always remains enabled and is not affected by the passenger air bag deactivation switch.

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 AIR BAG".
- 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.
- The vehicle may be equipped with a passenger air bag deactivation switch which can be operated by the customer. When the passenger air bag is switched OFF, the passenger air bag is disabled and will not inflate. When the passenger air bag is switched ON, the passenger air bag is enabled and could inflate for certain types of collision. After SRS maintenance or repair, make sure the passenger air bag deactivation switch is in the same position (ON or OFF) as when the vehicle arrived for service.

PRECAUTIONS WHEN USING POWER TOOLS (AIR OR ELECTRIC) AND HAMMERS

WARNING:

- When working near the Air Bag Diagnosis Sensor Unit or other Air Bag System sensors with the ignition ON or engine running, DO NOT use air or electric power tools or strike near the sensor(s) with a hammer. Heavy vibration could activate the sensor(s) and deploy the air bag(s), possibly causing serious injury.
- When using air or electric power tools or hammers, always switch the ignition OFF, disconnect the battery, and wait at least 3 minutes before performing any service.

Precaution Necessary for Steering Wheel Rotation after Battery Disconnect

INFOID:000000006710377

NOTE:

- Before removing and installing any control units, first turn the ignition switch to the LOCK position, then disconnect both battery cables.
- After finishing work, confirm that all control unit connectors are connected properly, then re-connect both battery cables.
- Always use CONSULT-III to perform self-diagnosis as a part of each function inspection after finishing work. If a DTC is detected, perform trouble diagnosis according to self-diagnosis results.

For vehicle with steering lock unit, if the battery is disconnected or discharged, the steering wheel will lock and cannot be turned.

If turning the steering wheel is required with the battery disconnected or discharged, follow the operation procedure below before starting the repair operation.

PRECAUTIONS

< PRECAUTION >

[LHD]

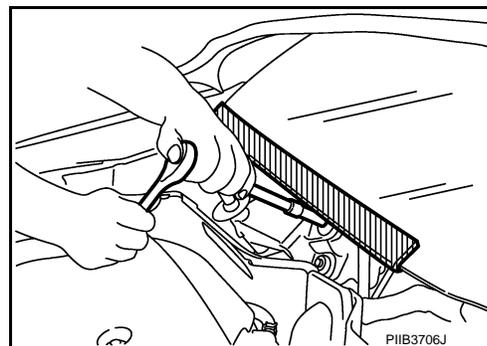
OPERATION PROCEDURE

1. Connect both battery cables.
NOTE:
Supply power using jumper cables if battery is discharged.
2. Turn the ignition switch to ACC position.
(At this time, the steering lock will be released.)
3. Disconnect both battery cables. The steering lock will remain released with both battery cables disconnected and the steering wheel can be turned.
4. Perform the necessary repair operation.
5. When the repair work is completed, re-connect both battery cables. With the brake pedal released, turn the ignition switch from ACC position to ON position, then to LOCK position. (The steering wheel will lock when the ignition switch is turned to LOCK position.)
6. Perform self-diagnosis check of all control units using CONSULT-III.

Precaution for Procedure without Cowl Top Cover

INFOID:000000006708012

When performing the procedure after removing cowl top cover, cover the lower end of windshield with urethane, etc.



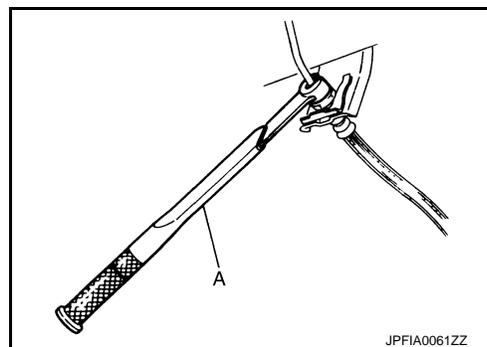
Precaution for Brake System

INFOID:000000006502156

WARNING:

Clean any dust from the front brake and rear brake with a vacuum dust collector. Never blow with compressed air.

- Brake fluid use refer to [MA-13, "Fluids and Lubricants"](#).
 - Never reuse drained brake fluid.
 - Never spill or splash brake fluid on painted surfaces. Brake fluid may seriously damage paint. Wipe it off immediately and wash with water if it gets on a painted surface. For brake component parts, never wash them with water.
 - Always confirm the specified tightening torque when installing the brake pipes.
 - After pressing the brake pedal more deeply or harder than normal driving, such as air bleeding, check each item of brake pedal. Adjust brake pedal if it is outside the standard value.
 - Always clean with new brake fluid when cleaning the master cylinder, brake caliper and other components.
 - Never use mineral oils such as gasoline or light oil to clean. They may damage rubber parts and cause improper operation.
 - Always loosen the brake tube flare nut with a flare nut wrench.
 - Tighten the brake tube flare nut to the specified torque with a flare nut torque wrench (A).
 - Turn the ignition switch OFF and disconnect the ABS actuator and electric unit (control unit) harness connector or the battery negative terminal before performing the work.
 - Check that no brake fluid leakage is present after replacing the parts.
 - Burnish the brake contact surfaces after refinishing or replacing rotors, after replacing pads, or if a soft pedal occurs at very low mileage.
- Front brake pad: Refer to [BR-16, "BRAKE PAD : Inspection and Adjustment"](#).
- Front disc rotor: Refer to [BR-16, "DISC ROTOR : Inspection and Adjustment"](#).
- Rear brake pad: Refer to [BR-18, "BRAKE PAD : Inspection and Adjustment"](#).



PRECAUTIONS

< PRECAUTION >

[LHD]

-
- Rear disc rotor: Refer to [BR-18, "DISC ROTOR : Inspection and Adjustment"](#).

PREPARATION

< PREPARATION >

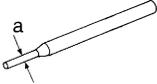
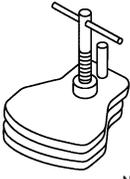
[LHD]

PREPARATION

PREPARATION

Commercial Service Tool

INFOID:000000006502157

Tool name	Description
<p>Pin punch a: 4 mm (0.16 in)</p>  <p>NT410</p>	<p>Removing and installing reservoir tank</p>
<p>Handy vacuum pump</p>  <p>ZZC1313D</p>	<ul style="list-style-type: none"> • Air tight • Inspection of check valve
<p>Brake caliper wrench</p>  <p>NNFIA0040ZZ</p>	<p>Return the piston</p>

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

NOISE, VIBRATION AND HARSHNESS (NVH) TROUBLESHOOTING

< SYMPTOM DIAGNOSIS >

[LHD]

SYMPTOM DIAGNOSIS

NOISE, VIBRATION AND HARSHNESS (NVH) TROUBLESHOOTING

NVH Troubleshooting Chart

INFOID:000000006502158

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

Symptom	BRAKE	Noise	Possible cause and SUSPECTED PARTS																		
			Pads damaged	Pads uneven wear	Shims damaged	Rotor imbalance	Rotor damage	Rotor runout	Rotor deformation	Rotor deflection	Rotor rust	Rotor thickness variation	Drum out of round	PROPELLER SHAFT	DIFFERENTIAL	AXLE AND SUSPENSION	TIRE	ROAD WHEEL	DRIVE SHAFT	STEERING	
		Shimmy, Judder				×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	
		Shake																			
		Noise	×	×	×																
Reference page																					

×: Applicable

PERIODIC MAINTENANCE

BRAKE PEDAL

Inspection and Adjustment

INFOID:000000006502159

INSPECTION

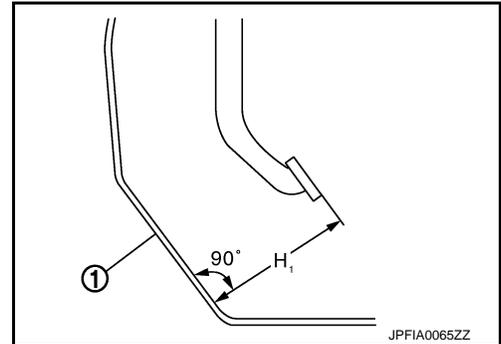
Brake Pedal Height

Check the height (H₁) between the dash lower panel (1) and the brake pedal upper surface.

H₁ : Refer to [BR-70, "Brake Pedal"](#).

CAUTION:

Remove the floor trim.



Stop Lamp Switch

Check the clearance (C) among the brake pedal lever (1) and the stop lamp switch (2) threaded end.

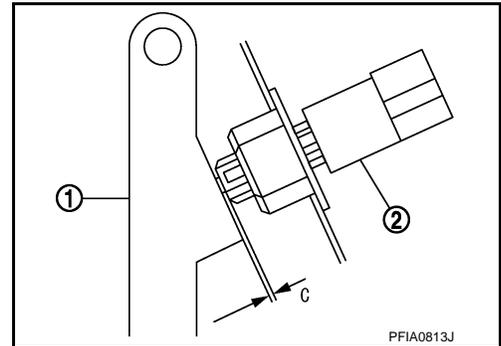
C : Refer to [BR-70, "Brake Pedal"](#).

CAUTION:

The stop lamp must turn off when the brake pedal is released.

NOTE:

Pull the brake pedal pad to make the clearance between the stop lamp switch threaded end and the brake pedal lever.



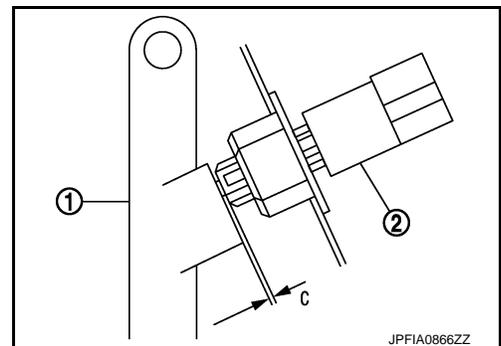
Brake Switch/Brake Pedal Position Switch

Check the clearance (C) among the brake pedal lever (1) and the brake switch/brake pedal position switch (2) threaded end.

C : Refer to [BR-70, "Brake Pedal"](#).

NOTE:

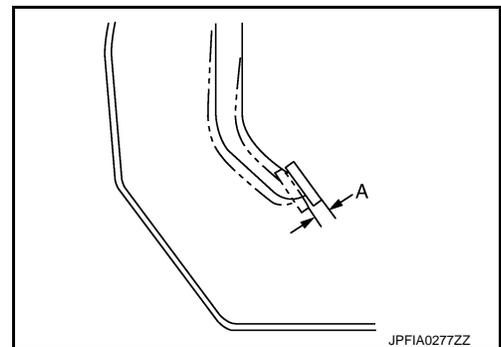
Pull the brake pedal pad to make the clearance between the brake switch/brake pedal position switch threaded end and the brake pedal lever.



Brake Pedal Play

Press the brake pedal. Check the brake pedal play (A) (stroke until fluid pressure occurs).

A : Refer to [BR-70, "Brake Pedal"](#).



Depressed Brake Pedal Height

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

BRAKE PEDAL

[LHD]

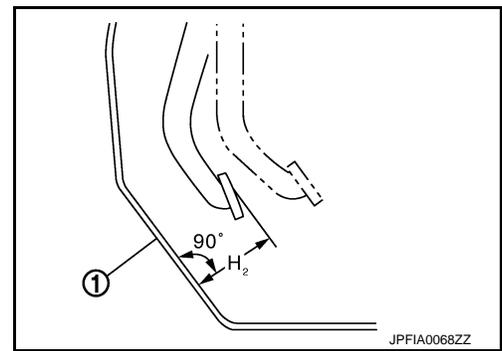
< PERIODIC MAINTENANCE >

Check the height between the dash lower panel (1) and the brake pedal upper surface (H_2) when depressing the brake pedal at 490 N (50 kg, 110 lb) while turning engine ON.

H_2 : Refer to [BR-70, "Brake Pedal"](#).

CAUTION:

Remove the floor trim.



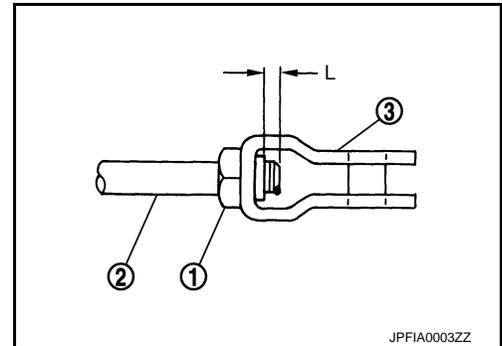
ADJUSTMENT

Brake Pedal Height

1. Remove instrument lower panel. Refer to [IP-13, "Removal and Installation"](#).
2. Disconnect the stop lamp switch and brake switch/brake pedal position switch harness connector.
3. Loosen the stop lamp switch and brake switch/brake pedal position switch 45° counterclockwise.
4. Loosen the lock nut (2) of input rod (1).
5. Rotate the input rod, adjust the brake pedal to the specified height (H_1).

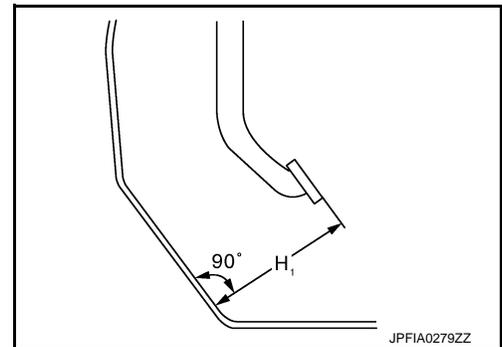
CAUTION:

The threaded end of the input rod must project to the inner side (L) of the clevis (3).



H_1 : Refer to [BR-70, "Brake Pedal"](#).

6. Tighten the lock nut. Refer to [BR-46, "Exploded View"](#).
7. Adjust the clearance between the brake pedal and the stop lamp switch and brake switch/brake pedal position switch threaded end after adjusting the brake pedal height.



Stop Lamp Switch

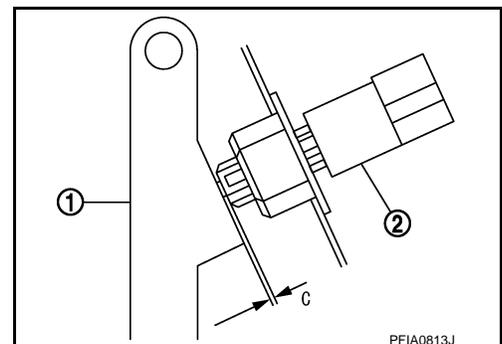
1. Remove instrument lower panel. Refer to [IP-13, "Removal and Installation"](#).
2. Disconnect the harness connector from stop lamp switch.
3. Loosen the stop lamp switch 45° counterclockwise.
4. Press-fit the stop lamp switch (2) until the stop lamp switch hits the brake pedal lever (1) 45° clockwise while pulling the brake pedal pad slightly.

CAUTION:

- The clearance (C) between the brake pedal lever and stop lamp switch threaded end must be the specified value.

C : Refer to [BR-70, "Brake Pedal"](#).

- The stop lamp must be turned off when the brake pedal is released.



Brake Switch/Brake Pedal Position Switch

BRAKE PEDAL

[LHD]

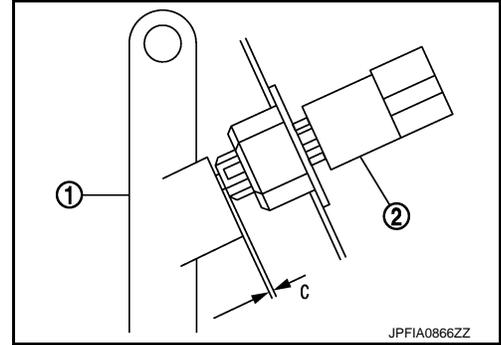
< PERIODIC MAINTENANCE >

1. Remove instrument lower panel. Refer to [IP-13, "Removal and Installation"](#).
2. Disconnect the harness connector from brake switch/brake pedal position switch.
3. Loosen the brake switch/brake pedal position switch 45° counterclockwise.
4. Press-fit the brake switch/brake pedal position switch (2) until the brake switch/brake pedal position switch hits the brake pedal lever (1) 45° clockwise while pulling the brake pedal pad slightly.

CAUTION:

The clearance (C) between the brake pedal lever and brake switch/brake pedal position switch threaded and must be the specified value.

C : Refer to [BR-70, "Brake Pedal"](#).



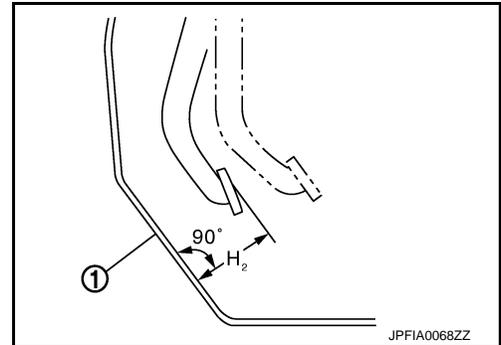
Depressed Brake Pedal Height

1. Perform the air bleeding. Refer to [BR-13, "Bleeding Brake System"](#).
2. Check the height between the dash lower panel (1) and the brake pedal upper surface (H₂) when depressing the brake pedal at 490 N (50 kg, 110 lb) while turning engine ON.

H₂ : Refer to [BR-70, "Brake Pedal"](#).

CAUTION:

Remove the floor trim.



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

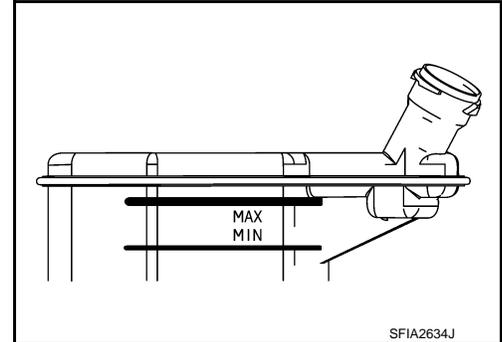
BRAKE FLUID

Inspection

INFOID:000000006502160

BRAKE FLUID LEVEL

- Check that the fluid level in the reservoir tank is within the specified range (MAX – MIN lines).
- Visually check for any brake fluid leakage around the reservoir tank.
- Check the brake system for any leakage if the fluid level is extremely low (lower than MIN).
- Check the brake system for fluid leakage if the warning lamp remains illuminated even after the parking brake is released.
- Check the reservoir tank for the mixing of foreign matter (e.g. dust) and oils other than brake fluid.



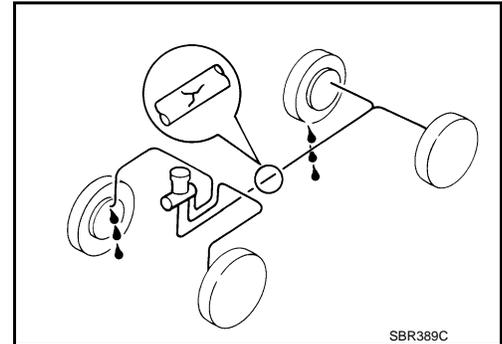
SFIA2634J

BRAKE LINE

1. Check brake line (tubes and hoses) for cracks, deterioration or other damage. Replace any damaged parts.
2. Depress the brake pedal with a force of 785 N (80 kg, 176 lb) and hold down the pedal for approximately 5 seconds with the engine running. Check for any fluid leakage.

CAUTION:

Retighten the applicable connection to the specified torque and repair any abnormal (damaged, worn or deformed) part if any brake fluid leakage is present.



SBR389C

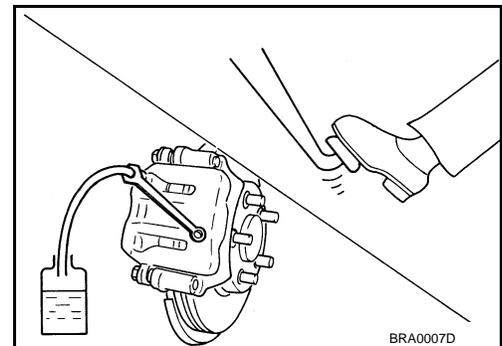
Draining

INFOID:000000006502161

CAUTION:

- Never spill or splash brake fluid on painted surfaces. Brake fluid may seriously damage paint. Wipe it off immediately and wash with water if it gets on a painted surface. For brake component parts, never wash them with water.
- Turn the ignition switch OFF and disconnect the ABS actuator and electric unit (control unit) harness connector or the battery negative terminal before performing work.

1. Connect a vinyl tube to the bleed valve.
2. Depress the brake pedal and loosen the bleeder valve to gradually discharge brake fluid.



BRA0007D

Refilling

INFOID:000000006502162

CAUTION:

- Turn the ignition switch OFF and disconnect the ABS actuator and electric unit (control unit) harness connector or the battery negative terminal before performing work.

BRAKE FLUID

< PERIODIC MAINTENANCE >

[LHD]

- **Never spill or splash brake fluid on painted surfaces. Brake fluid may seriously damage paint. Wipe it off immediately and wash with water if it gets on a painted surface. For brake component parts, never wash them with water.**
1. Check that there is no foreign material in the reservoir tank, and refill with new brake fluid.
CAUTION:
 - **Never reuse drained brake fluid.**
 - **Never allow foreign matter (e.g. dust) and oils other than brake fluid to enter the reservoir tank.**
 2. Loosen the bleeder valve, slowly depress the brake pedal to the full stroke, and then release the pedal. Repeat this operation at intervals of 2 or 3 seconds until new brake fluid is discharged. Then close the bleeder valve with the brake pedal depressed. Repeat the same work on each wheel.
 3. Perform the air bleeding. Refer to [BR-13. "Bleeding Brake System"](#).

Bleeding Brake System

INFOID:000000006502163

CAUTION:

- **Turn the ignition switch OFF and disconnect the ABS actuator and electric unit (control unit) harness connector or the battery negative terminal before performing the work.**
- **Monitor the fluid level in the reservoir tank while performing the air bleeding**
- **Never spill or splash brake fluid on painted surfaces. Brake fluid may seriously damage paint. Wipe it off immediately and wash with water if it gets on a painted surface. For brake component parts, never wash them with water.**

1. Check that there is no foreign material in the reservoir tank, and refill with new brake fluid.
CAUTION:
 - **Never reuse drained brake fluid.**
 - **Never allow oils other than brake fluid to enter the reservoir tank.**
2. Connect a vinyl tube to the bleeder valve of the rear right brake.
3. Fully depress the brake pedal 4 to 5 times.
4. Loosen the bleeder valve and bleed air with the brake pedal depressed, and then quickly tighten the bleeder valve.
5. Repeat steps 3 and 4 until all of the air is out of the brake line.
6. Tighten the bleeder valve to the specified torque.
 - Front disc brake: refer to [BR-56. "BRAKE CALIPER ASSEMBLY : Exploded View"](#).
 - Rear disc brake: refer to [BR-64. "BRAKE CALIPER ASSEMBLY : Exploded View"](#).
7. Perform steps 2 to 6. Occasionally fill with the brake fluid in order to keep it in the reservoir tank at least half of MAX line. Bleed air in the following order: rear right brake → front left brake → rear left brake → and front right brake in order.
8. Check that the fluid level in the reservoir tank is within the specified range after air bleeding. Refer to [BR-12. "Inspection"](#).
9. Check each item of brake pedal. Adjust it if the measurement value is not the standard. Refer to [BR-9. "Inspection and Adjustment"](#).

BRAKE MASTER CYLINDER

< PERIODIC MAINTENANCE >

[LHD]

BRAKE MASTER CYLINDER

Inspection

INFOID:000000006502164

FLUID LEAK

Check for brake fluid leakage from the master cylinder mounting face, reservoir tank mounting face and brake tube connections.

BRAKE BOOSTER

< PERIODIC MAINTENANCE >

[LHD]

BRAKE BOOSTER

Inspection

INFOID:000000006502165

OPERATION

Depress the brake pedal several times at 5-second intervals with the engine stopped. Start the engine with the brake pedal fully depressed. Check that the clearance between brake pedal and dash lower panel decreases.

NOTE:

A slight impact with a small click may be felt on the pedal when the brake pedal is fully depressed. This is a normal phenomenon due to the brake system operation.

AIR TIGHT

1. Run the engine at idle for 1 minute to apply vacuum to the brake booster, and stop the engine.
2. Depress the brake pedal several times at 5-second intervals until the accumulated vacuum is released to atmospheric pressure. Check that the clearance between brake pedal and dash lower panel gradually increases each time the brake pedal is depressed when performing this operation.
3. Depress the brake pedal with the engine running. Then stop the engine while holding down the brake pedal. Check that the brake pedal stroke does not change after holding down the brake pedal for 30 seconds or more.

A

B

C

D

E

BR

G

H

I

J

K

L

M

N

O

P

FRONT DISC BRAKE

[LHD]

< PERIODIC MAINTENANCE >

FRONT DISC BRAKE BRAKE PAD

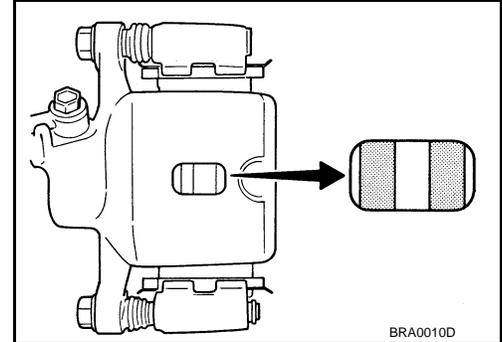
BRAKE PAD : Inspection and Adjustment

INFOID:000000006502221

INSPECTION

Check brake pad wear thickness from an inspection hole on cylinder body. Check using a scale if necessary.

Wear thickness : Refer to [BR-71, "Front Disc Brake"](#).



ADJUSTMENT

Burnish contact surfaces between disc rotor and brake pads according to the following procedure after refinishing or replacing brake pads, or if a soft pedal occurs at very low mileage.

CAUTION:

- Be careful of vehicle speed because the brake does not operate firmly/securely until pads and disc rotor are securely fitted.
 - Only perform this procedure under safe road and traffic conditions. Use extreme caution.
1. Drive vehicle on straight, flat road.
 2. Depress brake pedal with the power to stop vehicle within 3 to 5 seconds until the vehicle stops.
 3. Drive without depressing brake for a few minutes to cool the brake.
 4. Repeat steps 1 to 3 until pad and disc rotor are securely fitted.

DISC ROTOR

DISC ROTOR : Inspection and Adjustment

INFOID:000000006502222

INSPECTION

Appearance

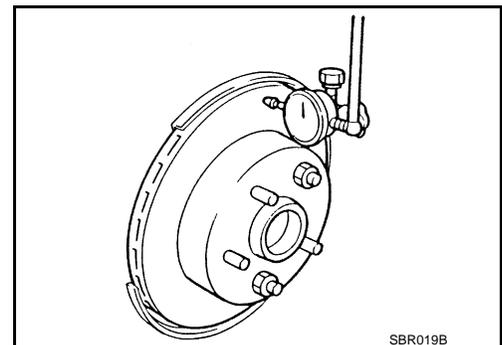
Check surface of disc rotor for uneven wear, cracks, and serious damage. Replace it if necessary.

- MR16DDT: Refer to [FAX-11, "Removal and Installation"](#).
- HR16DE: Refer to [FAX-43, "Removal and Installation"](#).
- K9K: Refer to [FAX-68, "Removal and Installation"](#).

Runout

1. Fix the disc rotor to the wheel hub and bearing assembly with wheel nuts (2 points at least).
2. Check the wheel bearing axial end play before the inspection.
 - MR16DDT: Refer to [FAX-9, "Inspection"](#).
 - HR16DE: Refer to [FAX-41, "Inspection"](#).
 - K9K: Refer to [FAX-66, "Inspection"](#).
3. Inspect the runout with a dial indicator to measure at 10 mm (0.39 in) inside the disc edge.

Runout (with it attached to the vehicle) : Refer to [BR-71, "Front Disc Brake"](#).



4. Find the installation position that has a minimum runout by shifting the disc rotor-to-wheel hub and bearing assembly installation position by one hole at a time if the runout exceeds the limit value.
- Refinish the disc rotor if the runout is outside the limit even after performing the above operation.

CAUTION:

FRONT DISC BRAKE

[LHD]

< PERIODIC MAINTENANCE >

- Check in advance that the thickness of the disc rotor is wear thickness + 0.3 mm (0.012 in) or more.
- If the thickness is less than wear thickness + 0.3 mm (0.012 in), replace the disc rotor.
- MR16DDT: Refer to [FAX-11, "Removal and Installation"](#).
- HR16DE: Refer to [FAX-43, "Removal and Installation"](#).
- K9K: Refer to [FAX-68, "Removal and Installation"](#).

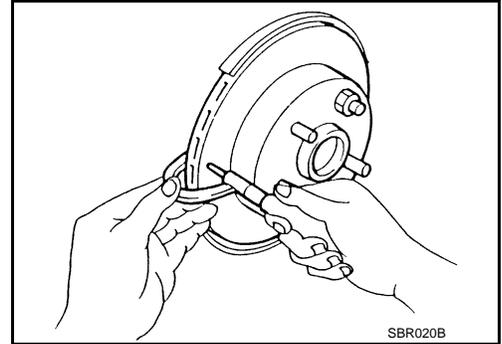
Wear thickness : Refer to [BR-71, "Front Disc Brake"](#).

Thickness

Check the thickness of the disc rotor using a micrometer. Replace the disc rotor if the thickness is below the wear limit.

- MR16DDT: Refer to [FAX-11, "Removal and Installation"](#).
- HR16DE: Refer to [FAX-43, "Removal and Installation"](#).
- K9K: Refer to [FAX-68, "Removal and Installation"](#).

Wear thickness : Refer to [BR-71, "Front Disc Brake"](#).



ADJUSTMENT

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

CAUTION:

- Be careful of vehicle speed because the brake does not operate firmly/securely until pad and disc rotor are securely fitted.
 - Only perform this procedure under safe road and traffic conditions. Use extreme caution.
1. Drive vehicle on straight, flat road.
 2. Depress brake pedal with the power to stop vehicle within 3 to 5 seconds until the vehicle stops.
 3. Drive without depressing brake for a few minutes to cool the brake.
 4. Repeat steps 1 to 3 until pad and disc rotor are securely fitted.

REAR DISC BRAKE

< PERIODIC MAINTENANCE >

[LHD]

REAR DISC BRAKE

BRAKE PAD

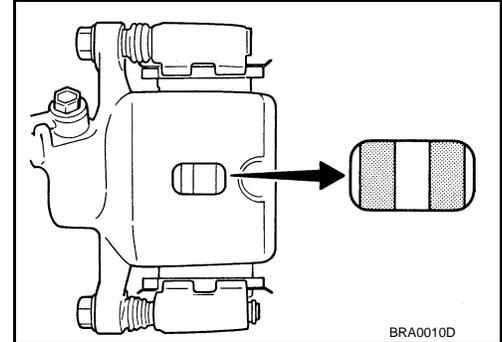
BRAKE PAD : Inspection and Adjustment

INFOID:000000006502166

INSPECTION

Check brake pad wear thickness from an inspection hole on cylinder body. Check using a scale if necessary.

Wear thickness : Refer to [BR-71, "Rear Disc Brake"](#).



ADJUSTMENT

Burnish contact surfaces between disc rotor and brake pads according to the following procedure after refinishing or replacing brake pads, or if a soft pedal occurs at very low mileage.

CAUTION:

- Be careful of vehicle speed because the brake does not operate firmly/securely until pads and disc rotor are securely fitted.
- Only perform this procedure under safe road and traffic conditions. Use extreme caution.

1. Drive vehicle on straight, flat road.
2. Depress brake pedal with the power to stop vehicle within 3 to 5 seconds until the vehicle stops.
3. Drive without depressing brake for a few minutes to cool the brake.
4. Repeat steps 1 to 3 until pad and disc rotor are securely fitted.

DISC ROTOR

DISC ROTOR : Inspection and Adjustment

INFOID:000000006502167

INSPECTION

Appearance

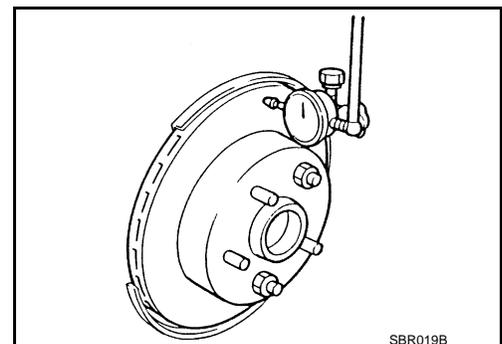
Check surface of disc rotor for uneven wear, cracks, and serious damage. Replace it if necessary.

- 2WD: Refer to [RAX-5, "Removal and Installation"](#).
- 4WD: Refer to [RAX-14, "Removal and Installation"](#).

Runout

1. Fix the disc rotor to the wheel hub and bearing assembly with wheel nuts (2 points at least).
2. Check the wheel bearing axial end play before the inspection.
 - 2WD: Refer to [RAX-4, "Inspection"](#).
 - 4WD: Refer to [RAX-12, "Inspection"](#).
3. Inspect the runout with a dial indicator to measure at 10 mm (0.39 in) inside the disc edge.

Runout (with it attached to the vehicle) : Refer to [BR-71, "Rear Disc Brake"](#).



4. Find the installation position that has a minimum runout by shifting the disc rotor-to-wheel hub and bearing assembly installation position by one hole at a time if the runout exceeds the limit value.

- Refinish the disc rotor if the runout is outside the limit even after performing the above operation.

CAUTION:

- Check in advance that the thickness of the disc rotor is wear thickness + 0.3 mm (0.012 in) or more.

REAR DISC BRAKE

< PERIODIC MAINTENANCE >

[LHD]

- If the thickness is less than wear thickness + 0.3 mm (0.012 in), replace the disc rotor.
- 2WD: Refer to [RAX-5, "Removal and Installation"](#).
- 4WD: Refer to [RAX-14, "Removal and Installation"](#).

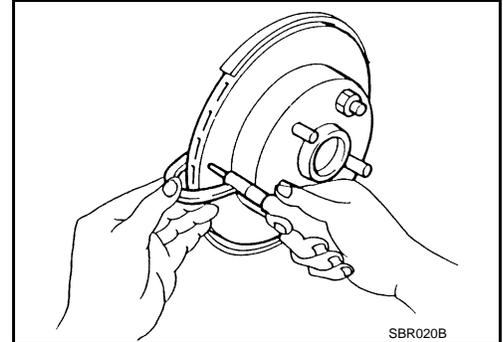
Wear thickness : Refer to [BR-71, "Rear Disc Brake"](#).

Thickness

Check the thickness of the disc rotor using a micrometer. Replace the disc rotor if the thickness is below the wear limit.

- 2WD: Refer to [RAX-5, "Removal and Installation"](#).
- 4WD: Refer to [RAX-14, "Removal and Installation"](#).

Wear thickness : Refer to [BR-71, "Rear Disc Brake"](#).



ADJUSTMENT

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

CAUTION:

- **Be careful of vehicle speed because the brake does not operate firmly/securely until pad and disc rotor are securely fitted.**
 - **Only perform this procedure under safe road and traffic conditions. Use extreme caution.**
1. Drive vehicle on straight, flat road.
 2. Depress brake pedal with the power to stop vehicle within 3 to 5 seconds until the vehicle stops.
 3. Drive without depressing brake for a few minutes to cool the brake.
 4. Repeat steps 1 to 3 until pad and disc rotor are securely fitted.

BRAKE PEDAL

< REMOVAL AND INSTALLATION >

[LHD]

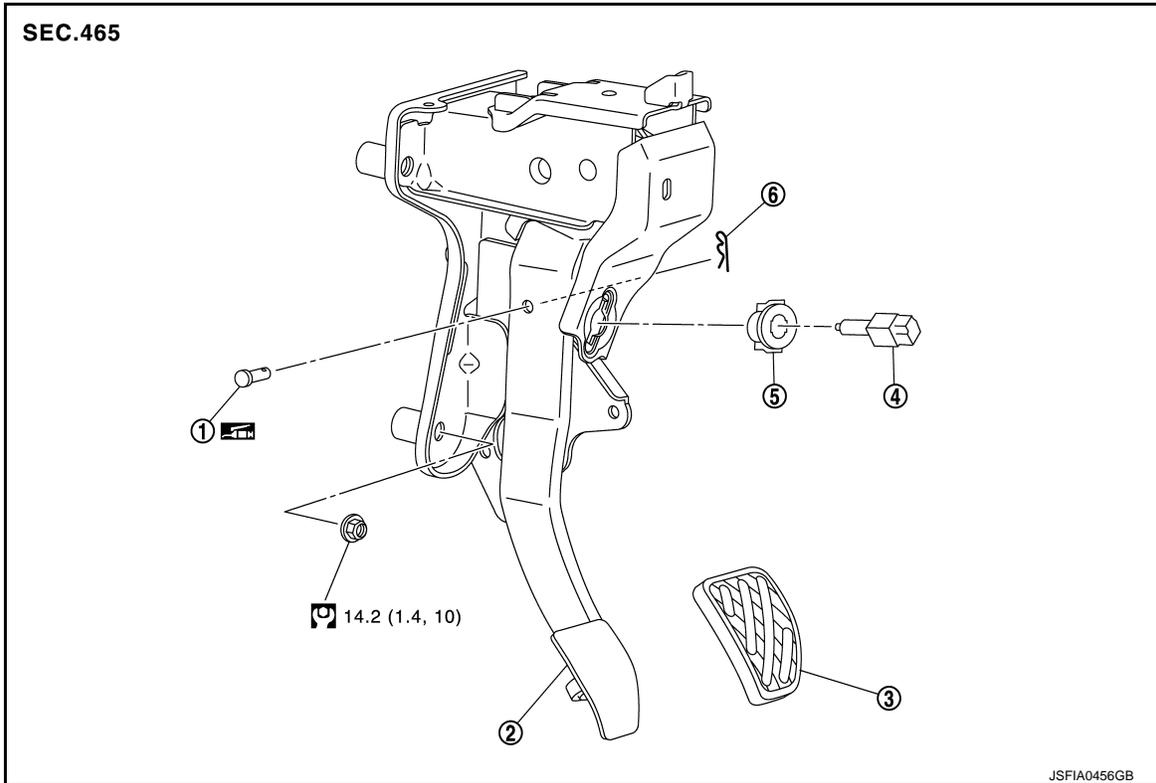
REMOVAL AND INSTALLATION

BRAKE PEDAL

Exploded View

INFOID:000000006502170

WITHOUT ESP



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

: Apply multi-purpose grease.

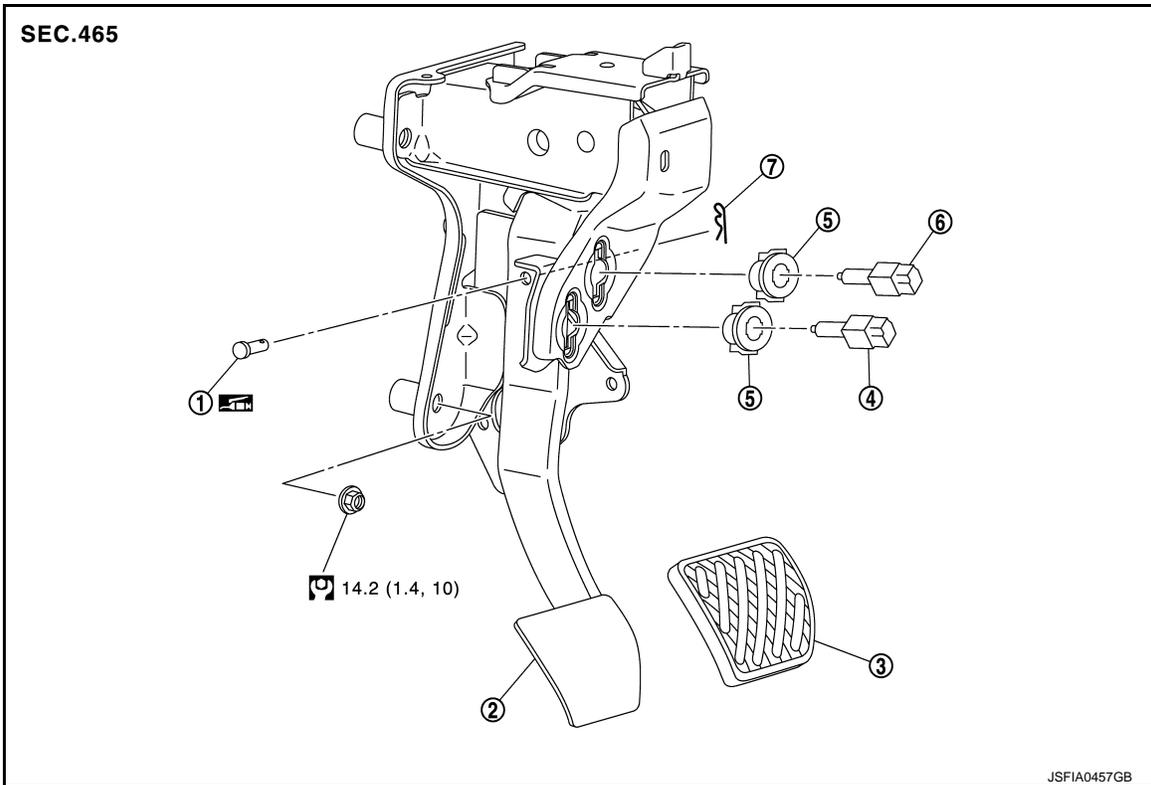
: N-m (kg-m, ft-lb)

WITH ESP

BRAKE PEDAL

< REMOVAL AND INSTALLATION >

[LHD]



- 1. Clevis pin
- 2. Brake pedal assembly
- 3. Brake pedal pad
- 4. Brake switch/brake pedal position switch
- 5. Clip
- 6. Stop lamp switch
- 7. Snap pin

: Apply multi-purpose grease.

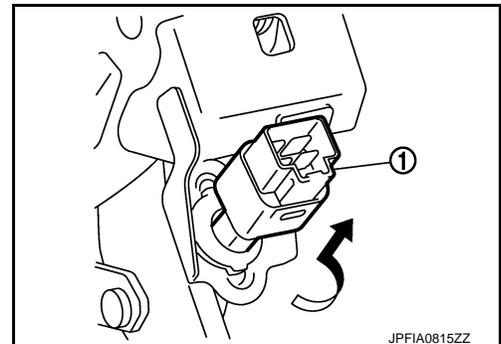
: N·m (kg-m, ft-lb)

Removal and Installation

INFOID:000000006502171

REMOVAL

1. Remove instrument lower panel. Refer to [IP-13. "Removal and Installation"](#).
2. Disconnect the stop lamp switch and the brake switch/brake pedal position switch harness connectors.
3. Rotate the stop lamp switch and the brake switch/brake pedal position switch (1) counter clockwise to remove.
4. Disconnect the accelerator pedal harness connector and harness clip.

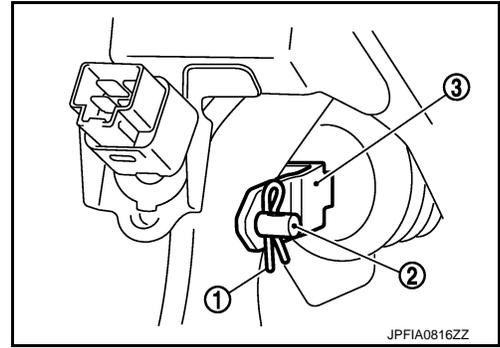


BRAKE PEDAL

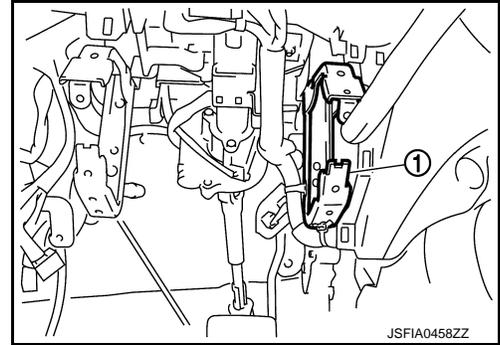
[LHD]

< REMOVAL AND INSTALLATION >

5. Remove snap pin (1) and clevis pin (2) from clevis (3) of brake booster.



6. Remove the steering member stay (1).
7. Remove the brake pedal assembly.
CAUTION:
Hold the brake booster and master cylinder assembly so as not to drop out or contact them other parts.
8. Remove accelerator pedal from brake pedal assembly. Refer to [ACC-3. "Removal and Installation"](#).
9. Perform inspection after removal. Refer to [BR-22. "Inspection and Adjustment"](#).



INSTALLATION

Note the following, and install in the reverse order of removal.

- Apply the multi-purpose grease to the clevis pin and the mating faces. (Not necessary if grease has been already applied)

NOTE:

The clevis pin may be inserted in either direction.

- Perform adjustment after installation. Refer to [BR-22. "Inspection and Adjustment"](#).

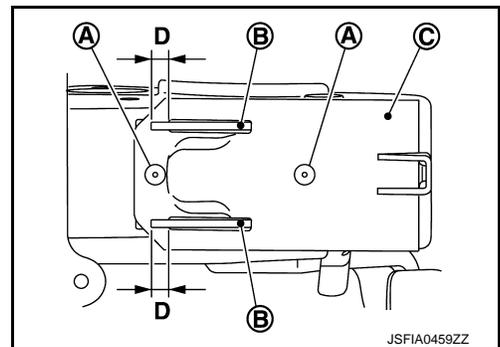
Inspection and Adjustment

INFOID:000000006502172

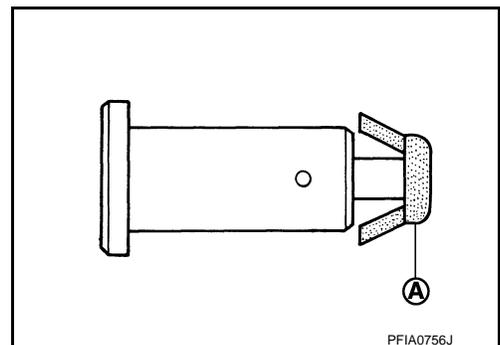
INSPECTION AFTER REMOVAL

- Check for the following items and replace the brake pedal assembly if necessary.
 - Check the brake pedal upper rivet (made by aluminum) (A) for deformation.
 - Check the brake pedal for bend, damage, and cracks on the welded parts.
 - Check the lapping length (D) of sub-bracket (B) and slide plate (C).

D : 6.5 mm (0.256 in) or more



- Check clevis pin and plastic stopper (A) for damage and deformation. If any is found, replace clevis pin.



BRAKE PEDAL

< REMOVAL AND INSTALLATION >

[LHD]

ADJUSTMENT AFTER INSTALLATION

- Adjust each item of brake pedal after installing the brake pedal assembly to the vehicle. Refer to [BR-9](#), "[Inspection and Adjustment](#)".
- Perform the release position learning of the accelerator pedal.
- MR16DDT: Refer to [EC-134](#), "[Work Procedure](#)".
- HR16DE: Refer to [EC-542](#), "[Work Procedure](#)".

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

BR

BRAKE PIPING

< REMOVAL AND INSTALLATION >

[LHD]

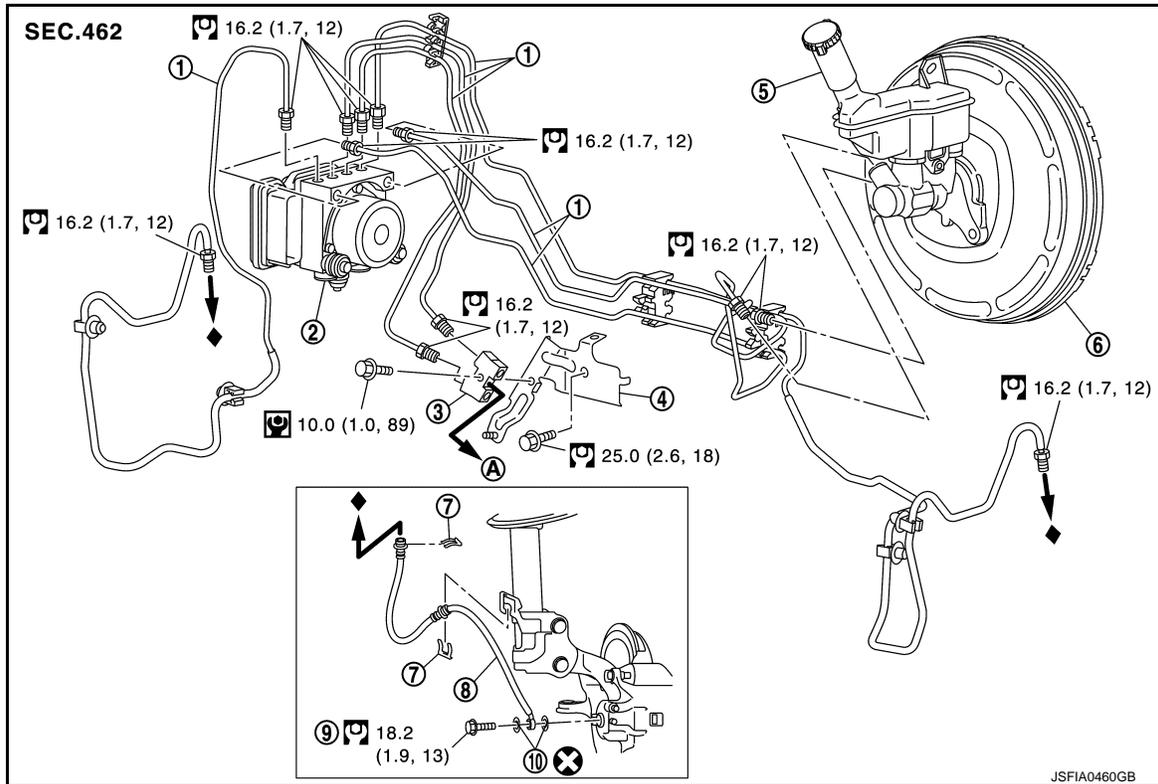
BRAKE PIPING

FRONT

FRONT : Exploded View

INFOID:000000006502173

WITHOUT ESP



- | | | |
|-----------------------|--|------------------|
| 1. Brake tube | 2. ABS actuator and electric unit (control unit) | 3. Connector |
| 4. Connector bracket | 5. Master cylinder assembly | 6. Brake booster |
| 7. Lock plate | 8. Brake hose | 9. Union bolt |
| 10. Copper washer | | |
| A. To rear brake tube | | |

: N·m (kg-m, ft-lb)

: N·m (kg-m, in-lb)

: Always replace after every disassembly.

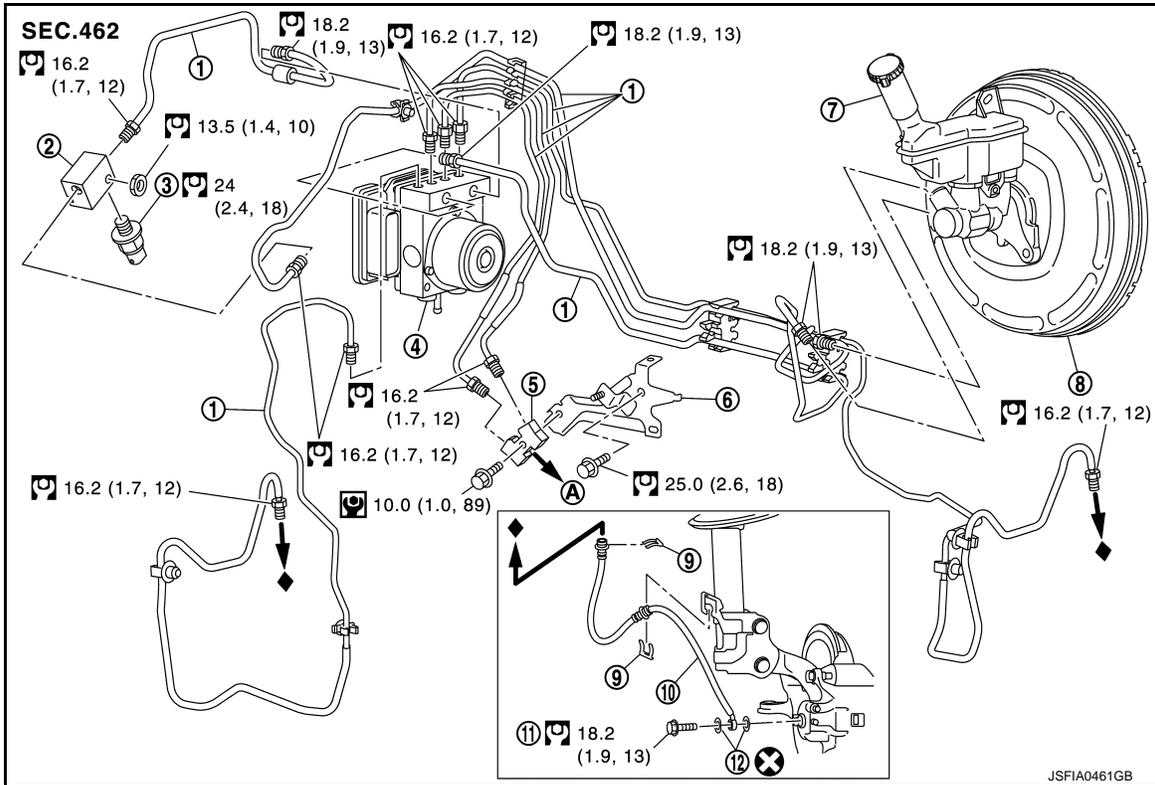
WITH ESP

BRAKE PIPING

< REMOVAL AND INSTALLATION >

[LHD]

MR16DDT, HR16DE



- | | | |
|--|------------------------------|----------------------|
| 1. Brake tube | 2. Pressure sensor connector | 3. Pressure sensor |
| 4. ABS actuator and electric unit (control unit) | 5. Connector | 6. Connector bracket |
| 7. Master cylinder assembly | 8. Brake booster | 9. Lock plate |
| 10. Brake hose | 11. Union bolt | 12. Copper washer |
| A. To rear brake tube | | |

: N·m (kg-m, ft-lb)

: N·m (kg-m, in-lb)

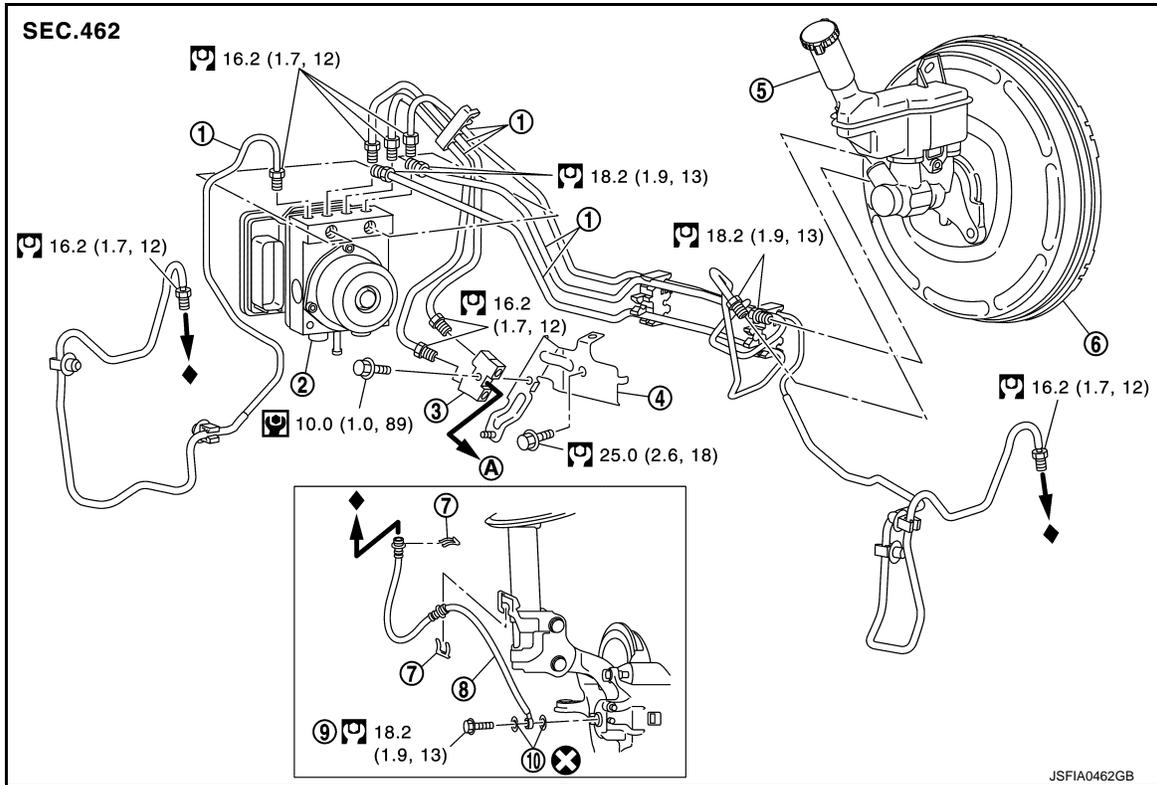
: Always replace after every disassembly.

BRAKE PIPING

< REMOVAL AND INSTALLATION >

[LHD]

K9K



- | | | |
|----------------------|--|------------------|
| 1. Brake tube | 2. ABS actuator and electric unit (control unit) | 3. Connector |
| 4. Connector bracket | 5. Master cylinder assembly | 6. Brake booster |
| 7. Lock plate | 8. Brake hose | 9. Union bolt |
| 10. Copper washer | | |
- A. To rear brake tube

: N·m (kg-m, ft-lb)

: N·m (kg-m, in-lb)

: Always replace after every disassembly.

FRONT : Hydraulic Piping

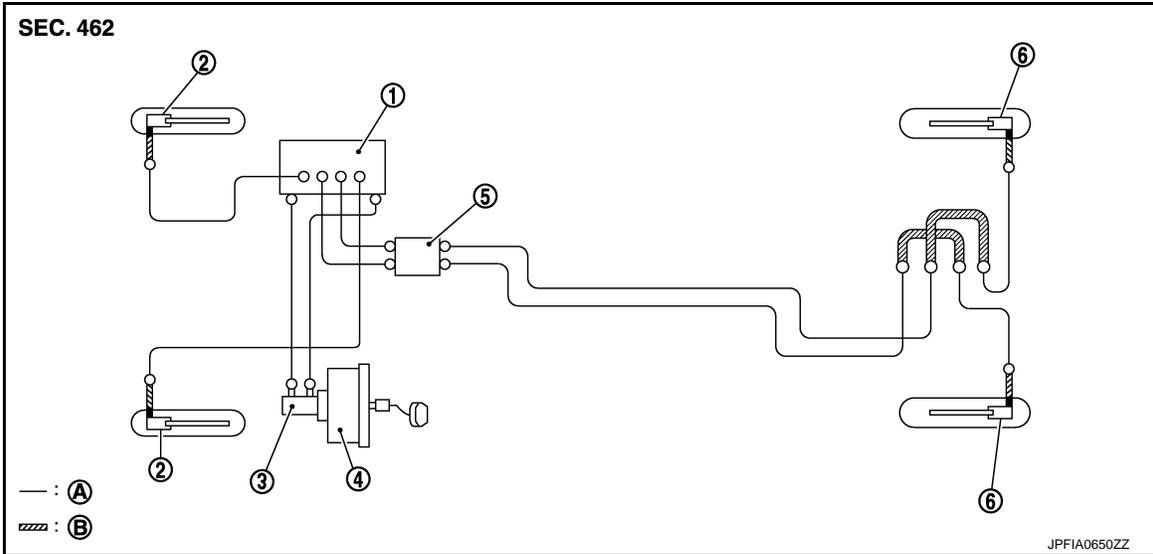
INFOID:000000006502174

WITHOUT ESP

BRAKE PIPING

< REMOVAL AND INSTALLATION >

[LHD]



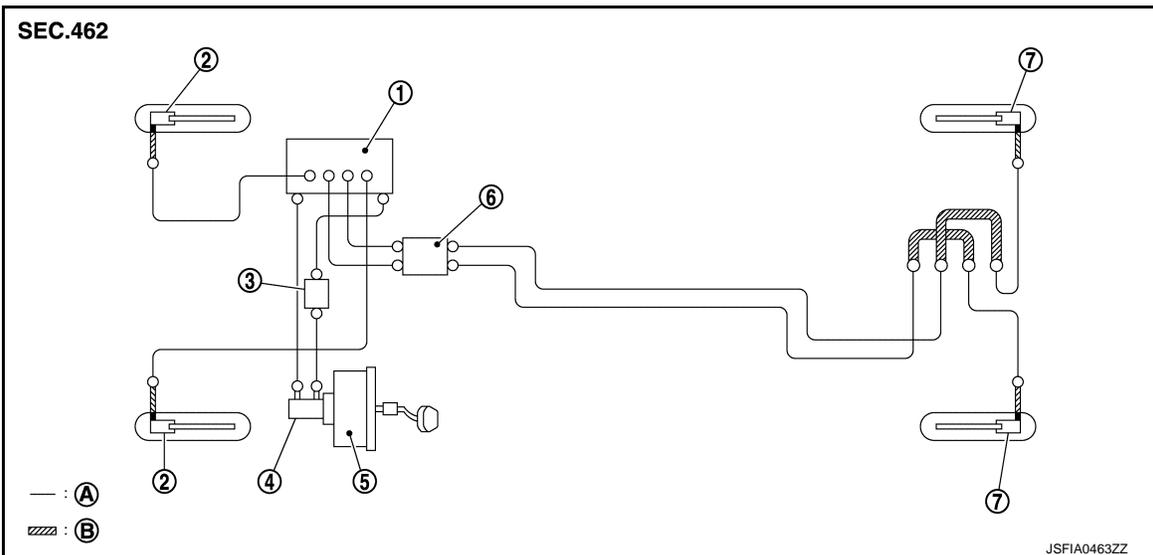
- | | | |
|--|---------------------|-----------------------------|
| 1. ABS actuator and electric unit (control unit) | 2. Front disc brake | 3. Master cylinder assembly |
| 4. Brake booster | 5. Connector | 6. Rear disc brake |
| A. Brake tube | B. Brake hose | |

- : Flare nut
 ■ : Union bolt

WITH ESP

2WD

MR16DDT, HR16DE



- | | | |
|--|---------------------|--------------------|
| 1. ABS actuator and electric unit (control unit) | 2. Front disc brake | 3. Pressure sensor |
| 4. Master cylinder assembly | 5. Brake booster | 6. Connector |
| 7. Rear disc brake | | |
| A. Brake tube | B. Brake hose | |

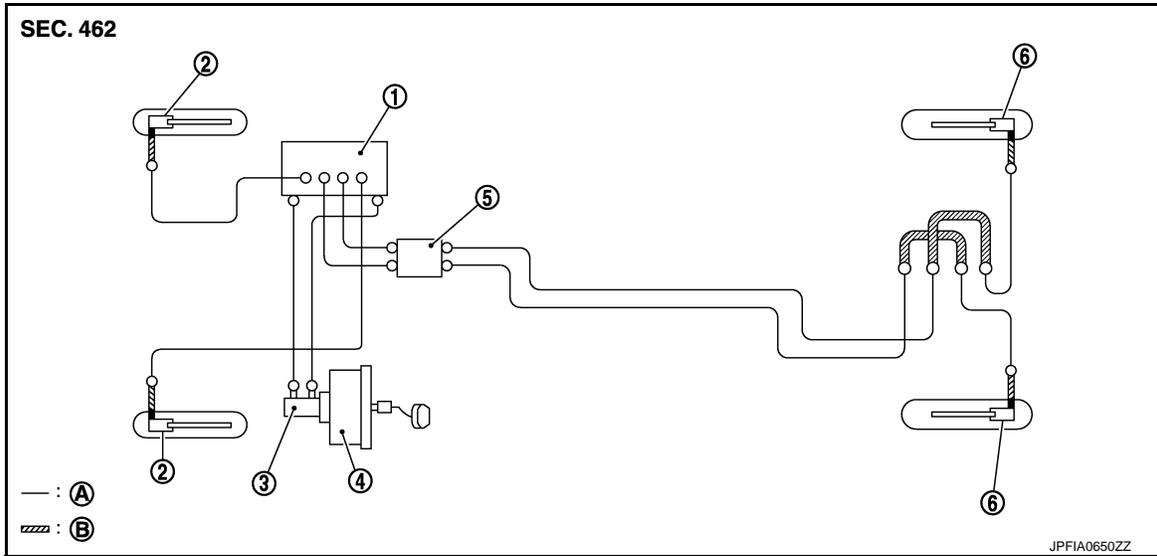
- : Flare nut
 ■ : Union bolt

BRAKE PIPING

< REMOVAL AND INSTALLATION >

[LHD]

K9K

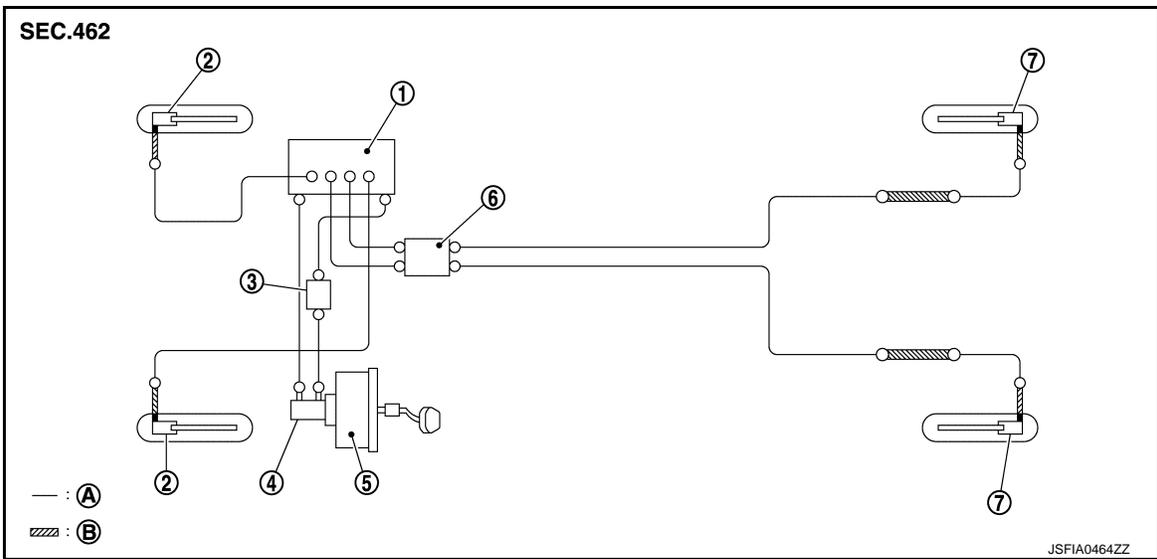


- | | | |
|--|---------------------|-----------------------------|
| 1. ABS actuator and electric unit (control unit) | 2. Front disc brake | 3. Master cylinder assembly |
| 4. Brake booster | 5. Connector | 6. Rear disc brake |
| A. Brake tube | B. Brake hose | |

○: Flare nut

■: Union bolt

4WD



- | | | |
|--|---------------------|--------------------|
| 1. ABS actuator and electric unit (control unit) | 2. Front disc brake | 3. Pressure sensor |
| 4. Master cylinder assembly | 5. Brake booster | 6. Connector |
| 7. Rear disc brake | | |
| A. Brake tube | B. Brake hose | |

○: Flare nut

■: Union bolt

BRAKE PIPING

< REMOVAL AND INSTALLATION >

[LHD]

FRONT : Removal and Installation

INFOID:00000006502175

REMOVAL

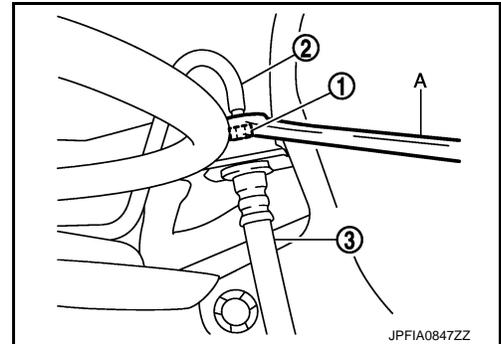
CAUTION:

- Never spill or splash brake fluid on painted surfaces. Brake fluid may seriously damage paint. Wipe it off immediately and wash with water if it gets on a painted surface. For brake component parts, never wash them with water.
- Never depress the brake pedal while removing the brake hose or brake tube. If this is not complied with, brake fluid may splash.

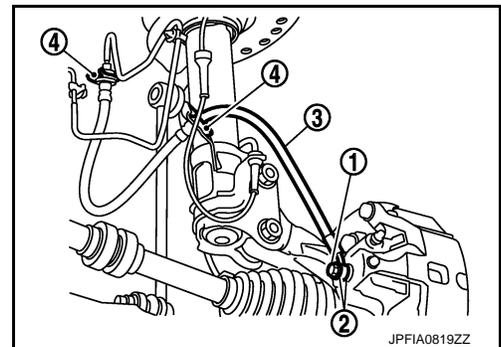
1. Remove tires.
2. Drain brake fluid. Refer to [BR-12, "Draining"](#).
3. Loosen the flare nut (1) with a flare nut wrench (A) and separate the brake tube (2) from the brake hose (3).

CAUTION:

- Never scratch the flare nut and the brake tube.
- Never bend sharply, twist or strongly pull out the brake hoses and tubes.
- Cover open end of brake tubes and hoses when disconnecting to prevent entrance of dirt.



4. Remove the union bolt (1) and copper washers (2), and remove the brake hose (3) from the brake caliper assembly.
5. Remove the lock plate (4) and remove the brake hose.



INSTALLATION

CAUTION:

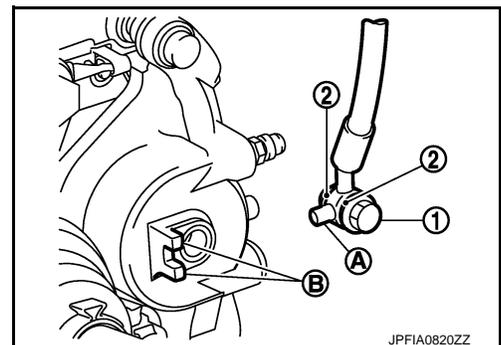
- Never spill or splash brake fluid on painted surfaces. Brake fluid may seriously damage paint. Wipe it off immediately and wash with water if it gets on a painted surface. For brake component parts, never wash them with water.
- Never depress the brake pedal while removing the brake hose or brake tube. If this is not complied with, brake fluid may splash.

1. Assemble the union bolt (1) and the copper washer (2) to the brake hose.

CAUTION:

Never reuse the copper washer.

2. Align the brake hose pin (A) with the brake caliper assembly projection (B), and tighten the union bolt (1) to the specified torque.



BRAKE PIPING

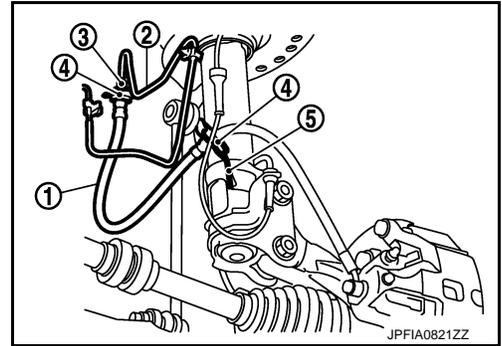
[LHD]

< REMOVAL AND INSTALLATION >

3. Install the brake tube (2) to the brake hose (1), temporarily tighten the flare nut (3) by hand until it does not rotate further, and fix the brake hose to the bracket (5) with the lock plate (4).

CAUTION:

Check that all brake hoses and brake tubes are not twisted and bent.



4. Tighten the flare nut to the specified torque with a flare nut torque wrench (A).

CAUTION:

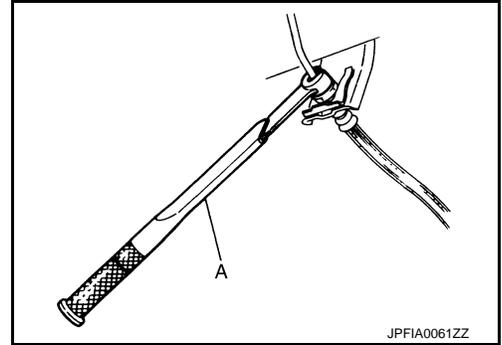
Never scratch the flare nut and the brake tube.

5. Refill with new brake fluid and perform the air bleeding. Refer to [BR-13, "Bleeding Brake System"](#).

CAUTION:

Never reuse drained brake fluid.

6. Install tires. Refer to [WT-7, "Exploded View"](#).
7. Perform inspection after installation. Refer to [BR-30, "FRONT : Inspection"](#).



FRONT : Inspection

INFOID:000000006502176

INSPECTION AFTER INSTALLATION

1. Check the brake hoses and tubes for the following: no scratches; no twist and deformation; no interference with other components when steering the steering wheel; no looseness at connections.
2. Depress the brake pedal with a force of 785 N (80 kg, 176 lb) and hold down the pedal for approximately 5 seconds with the engine running. Check for any fluid leakage.

CAUTION:

Retighten the applicable connection to the specified torque and repair any abnormal (damaged, worn or deformed) part if any brake fluid leakage is present.

REAR

REAR : Exploded View

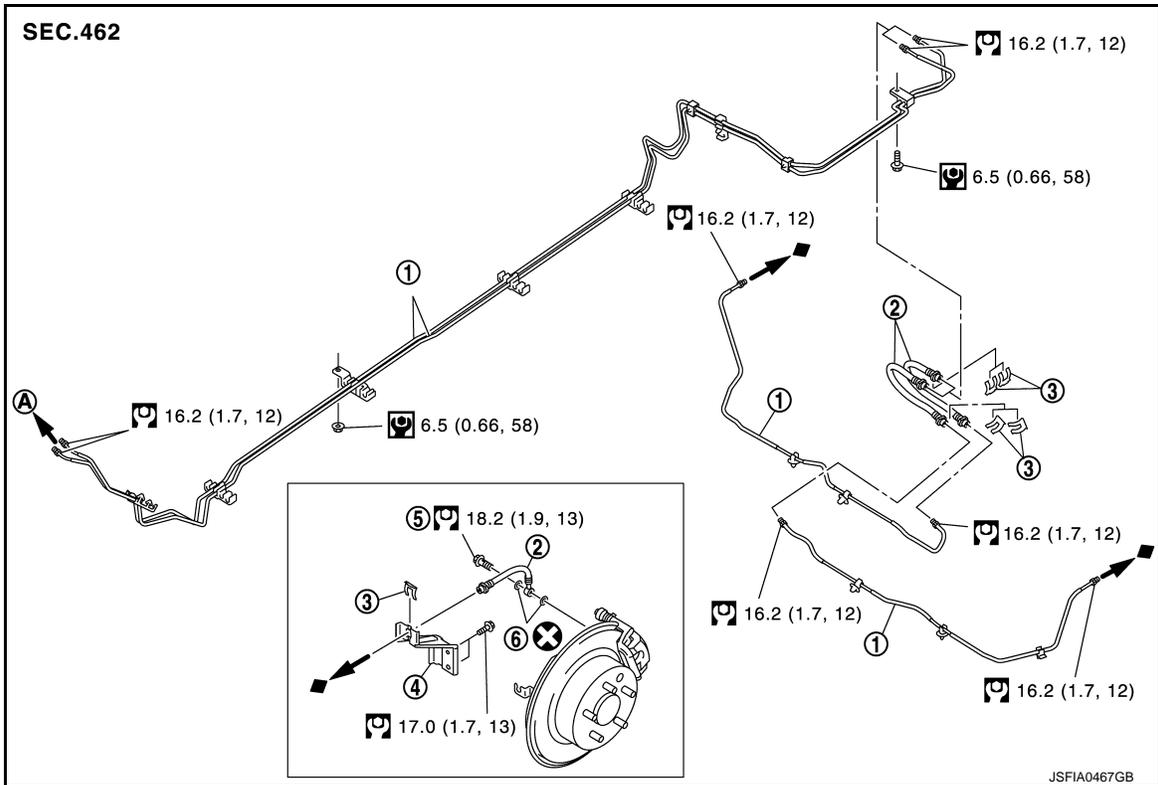
INFOID:000000006502177

2WD (MR16DDT, HR16DE)

BRAKE PIPING

< REMOVAL AND INSTALLATION >

[LHD]



- | | | |
|-----------------------|-----------------|-----------------|
| 1. Brake tube | 2. Brake hose A | 3. Lock plate |
| 4. Brake hose bracket | 5. Union bolt | 6. Brake hose B |
| 7. Copper washer | | |
| A. To connector | | |

: N·m (kg·m, ft·lb)

: N·m (kg·m, in·lb)

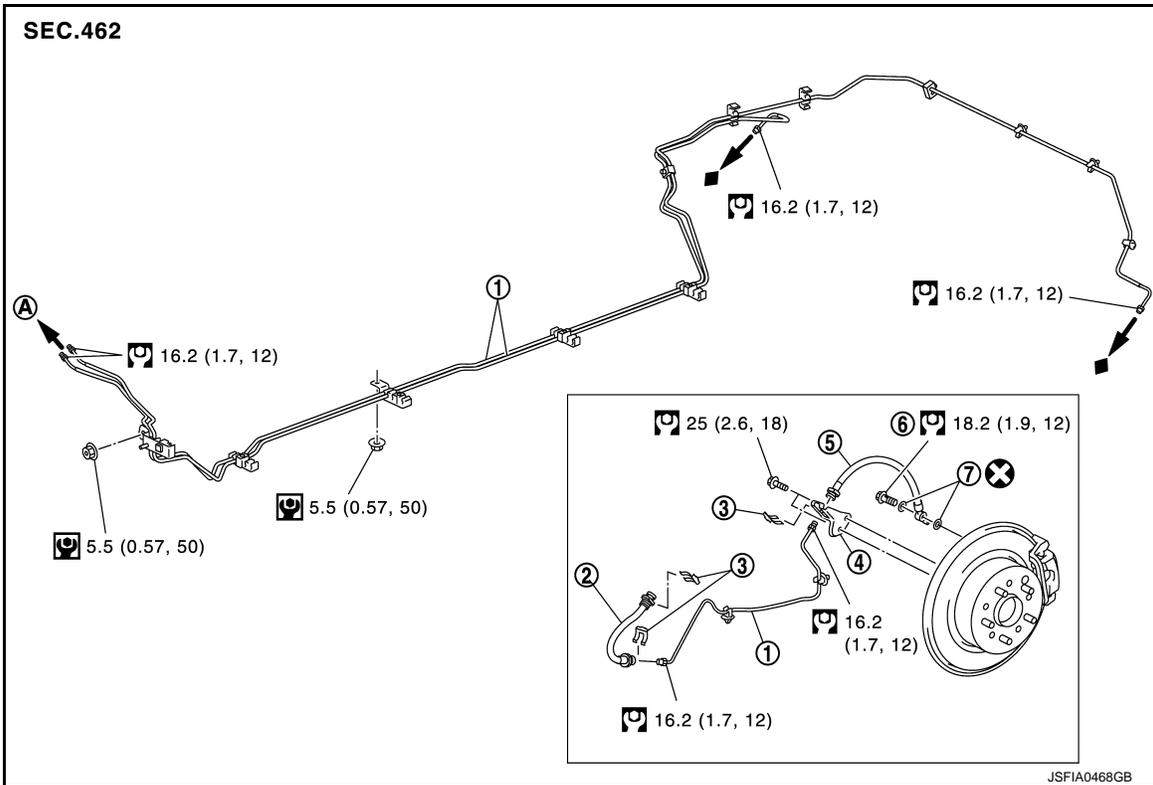
: Always replace after every disassembly.

4WD

BRAKE PIPING

< REMOVAL AND INSTALLATION >

[LHD]



- 1. Brake tube
- 2. Brake hose A
- 3. Lock plate
- 4. Brake hose bracket
- 5. Brake hose B
- 6. Union bolt
- 7. Copper washer
- A. To connector

: N·m (kg-m, ft-lb)

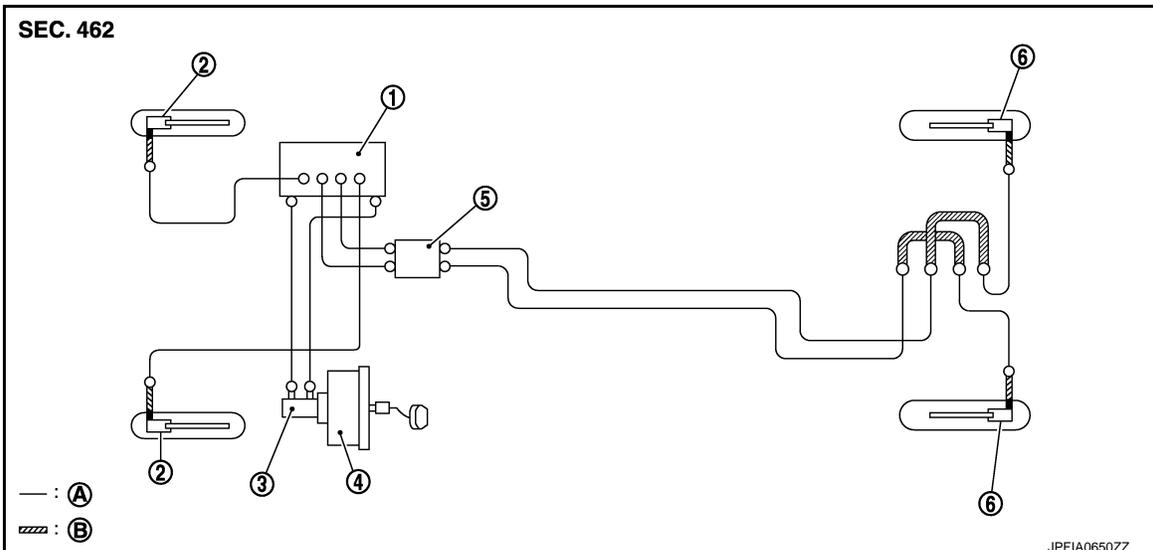
: N·m (kg-m, in-lb)

: Always replace after every disassembly.

REAR : Hydraulic Piping

INFOID:000000006502178

WITHOUT ESP



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

BRAKE PIPING

< REMOVAL AND INSTALLATION >

[LHD]

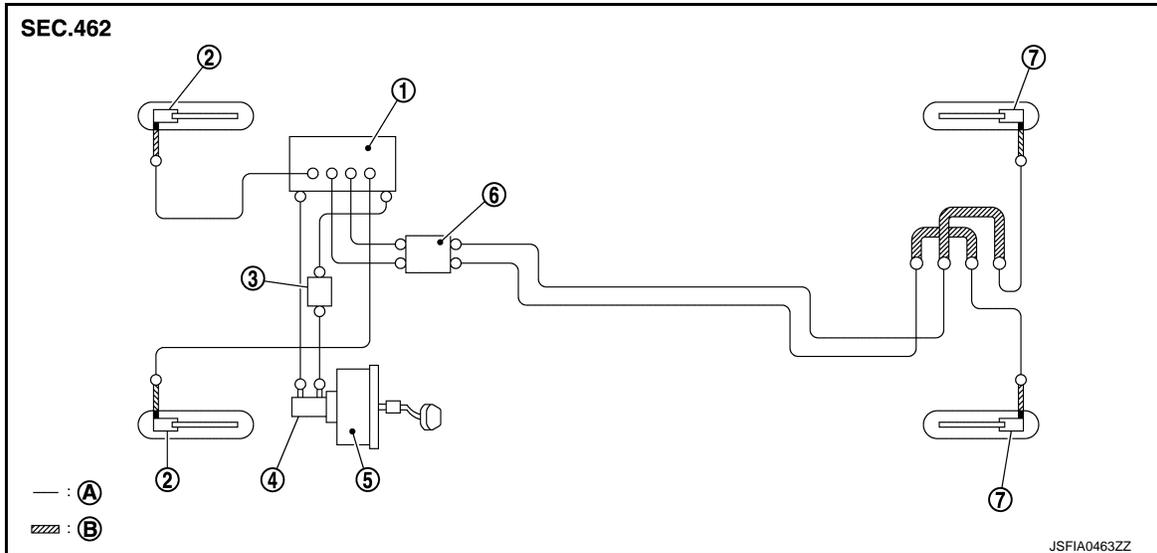
- | | | |
|--|---------------------|-----------------------------|
| 1. ABS actuator and electric unit (control unit) | 2. Front disc brake | 3. Master cylinder assembly |
| 4. Brake booster | 5. Connector | 6. Rear disc brake |
| A. Brake tube | B. Brake hose | |

- : Flare nut
 ■: Union bolt

WITH ESP

2WD

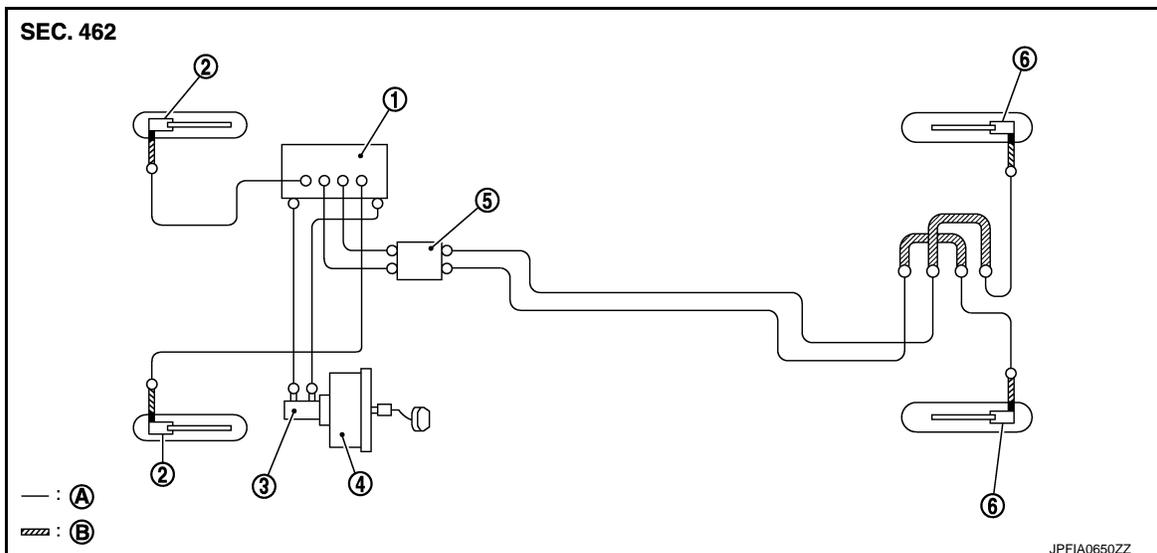
MR16DDT, HR16DE



- | | | |
|--|---------------------|--------------------|
| 1. ABS actuator and electric unit (control unit) | 2. Front disc brake | 3. Pressure sensor |
| 4. Master cylinder assembly | 5. Brake booster | 6. Connector |
| 7. Rear disc brake | B. Brake hose | |

- : Flare nut
 ■: Union bolt

K9K



BRAKE PIPING

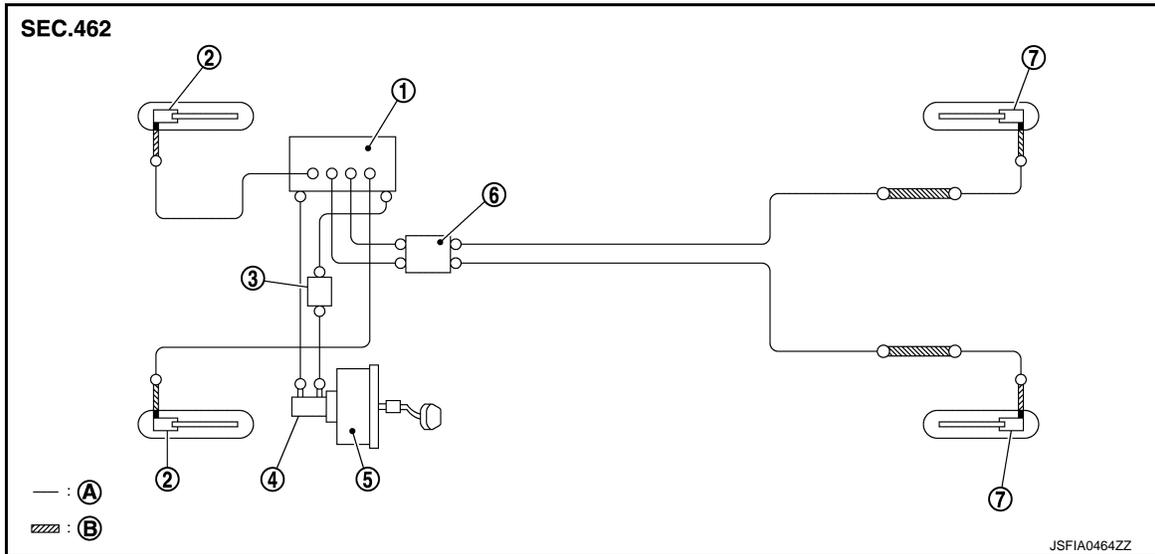
< REMOVAL AND INSTALLATION >

[LHD]

- | | | |
|--|---------------------|-----------------------------|
| 1. ABS actuator and electric unit (control unit) | 2. Front disc brake | 3. Master cylinder assembly |
| 4. Brake booster | 5. Connector | 6. Rear disc brake |
| A. Brake tube | B. Brake hose | |

- : Flare nut
 ■ : Union bolt

4WD



- | | | |
|--|---------------------|--------------------|
| 1. ABS actuator and electric unit (control unit) | 2. Front disc brake | 3. Pressure sensor |
| 4. Master cylinder assembly | 5. Brake booster | 6. Connector |
| 7. Rear disc brake | | |
| A. Brake tube | B. Brake hose | |

- : Flare nut
 ■ : Union bolt

REAR : Removal and Installation

INFOID:0000000006502179

REMOVAL

2WD

CAUTION:

- Never spill or splash brake fluid on painted surfaces. Brake fluid may seriously damage paint. Wipe it off immediately and wash with water if it gets on a painted surface. For brake component parts, never wash them with water.
- Never depress the brake pedal while removing the brake hose or brake tube. If this is not complied with, brake fluid may splash.

1. Remove tires.
2. Drain brake fluid. Refer to [BR-12, "Draining"](#).

BRAKE PIPING

[LHD]

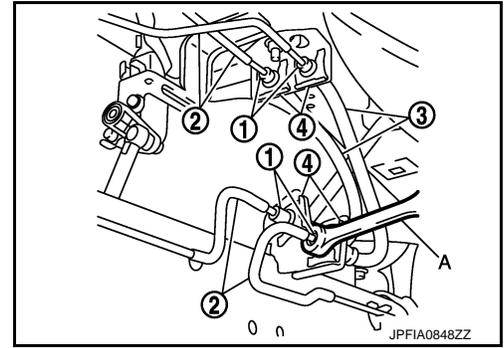
< REMOVAL AND INSTALLATION >

- Loosen the flare nut (1) with a flare nut wrench (A) and separate the brake tube (2) from the brake hose A (3).

CAUTION:

- Never scratch the flare nut and the brake tube.
- Never bend sharply, twist or strongly pull out the brake hoses and tubes.
- Cover open end of brake tubes and hoses when disconnecting to prevent entrance of dirt.

- Remove the lock plate (4) and remove the brake hose A.

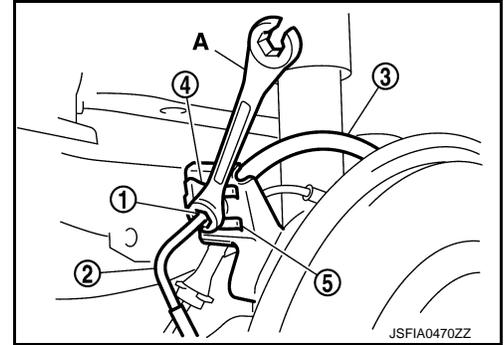


- Loosen the flare nut (1) with a flare nut wrench (A) and separate the brake tube (2) from the hose B (3).

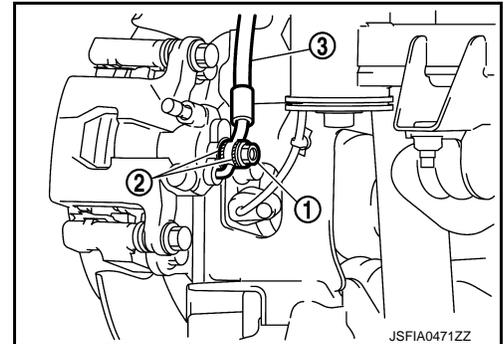
CAUTION:

- Never scratch the flare nut and the brake tube.
- Never bend sharply, twist or strongly pull out the brake hoses and tubes.
- Cover open end of brake tubes and hoses when disconnecting to prevent entrance of dirt.

- Remove the lock plate (4) from brake hose bracket (5).



- Remove the union bolt (1) and copper washers (2), and remove the brake hose B (3) from the brake caliper assembly.



4WD

CAUTION:

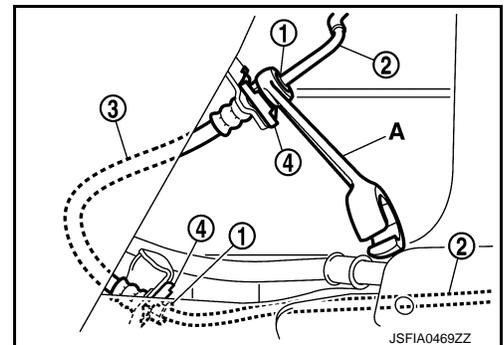
- Never spill or splash brake fluid on painted surfaces. Brake fluid may seriously damage paint. Wipe it off immediately and wash with water if it gets on a painted surface. For brake component parts, never wash them with water.
- Never depress the brake pedal while removing the brake hose or brake tube. If this is not complied with, brake fluid may splash.

- Remove tires.
- Drain brake fluid. Refer to [BR-12, "Draining"](#).
- Loosen the flare nut (1) with a flare nut wrench (A) and separate the brake tube (2) from the hose A (3).

CAUTION:

- Never scratch the flare nut and the brake tube.
- Never bend sharply, twist or strongly pull out the brake hoses and tubes.
- Cover open end of brake tubes and hoses when disconnecting to prevent entrance of dirt.

- Remove the lock plate (4) and remove the brake hose A.



BRAKE PIPING

[LHD]

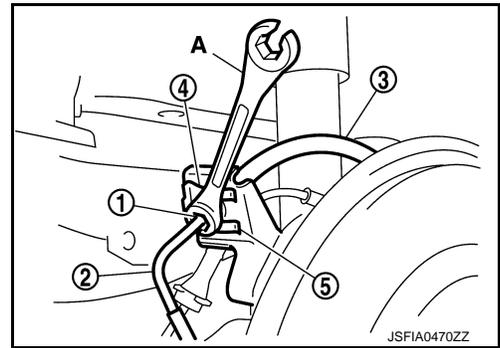
< REMOVAL AND INSTALLATION >

5. Loosen the flare nut (1) with a flare nut wrench (A) and separate the brake tube (2) from the hose B (3).

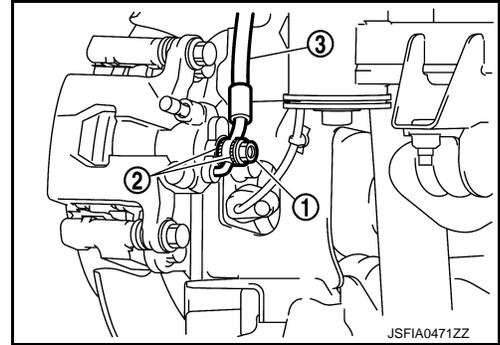
CAUTION:

- Never scratch the flare nut and the brake tube.
- Never bend sharply, twist or strongly pull out the brake hoses and tubes.
- Cover open end of brake tubes and hoses when disconnecting to prevent entrance of dirt.

6. Remove the lock plate (4) from brake hose bracket (5).



7. Remove the union bolt (1) and copper washers (2), and remove the brake hose B (3) from the brake caliper assembly.



INSTALLATION

2WD

CAUTION:

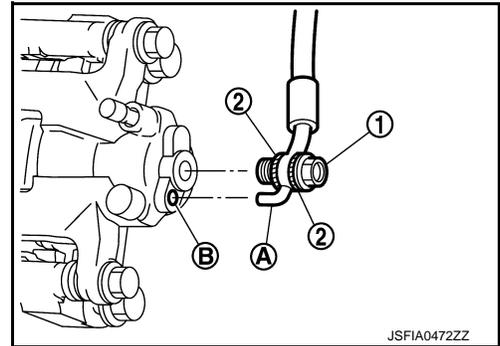
- Never spill or splash brake fluid on painted surfaces. Brake fluid may seriously damage paint. Wipe it off immediately and wash with water if it gets on a painted surface. For brake component parts, never wash them with water.
- Never depress the brake pedal while removing the brake hose or brake tube. If this is not complied with, brake fluid may splash.

1. Assemble the union bolt (1) and the copper washer (2) to the brake hose B.

CAUTION:

Never reuse the copper washer.

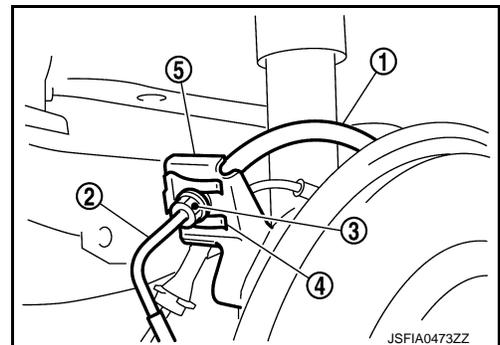
2. Align the brake hose B L-pin (A) with the brake caliper assembly hole (B), and tighten the union bolt (1) to the specified torque.



3. Install the brake tube (2) to the brake hose B (1), temporarily tighten the flare nut (3) by hand until it does not rotate further, and fix the brake hose B to the brake hose bracket (5) with the lock plate (4).

CAUTION:

Check that all brake hoses and brake tubes are not twisted and bent.



BRAKE PIPING

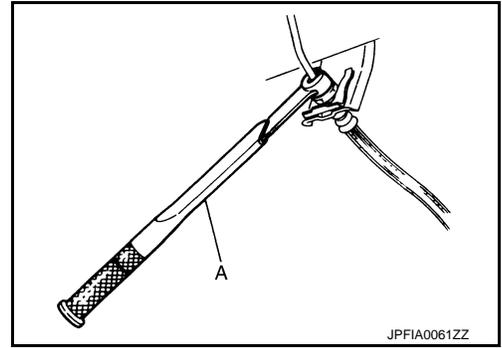
[LHD]

< REMOVAL AND INSTALLATION >

4. Tighten the flare nut to the specified torque with a flare nut torque wrench (A).

CAUTION:

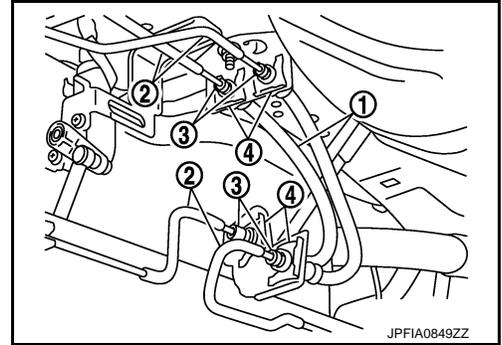
Never scratch the flare nut and the brake tube.



5. Install the brake tube (2) to the brake hose A (1), temporarily tighten the flare nut (3) by hand until it does not rotate further, and fix the brake hose with the lock plate (4).

CAUTION:

Check that all brake hoses and brake tubes are not twisted and bent.



6. Tighten the flare nut to the specified torque with a flare nut torque wrench (A).

CAUTION:

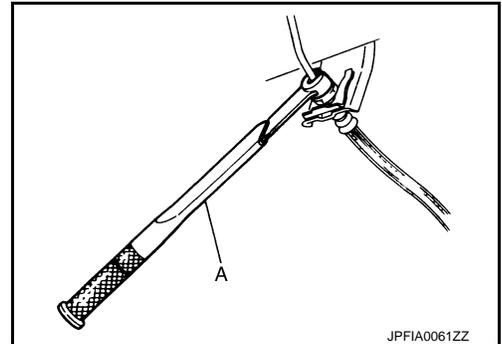
Never scratch the flare nut and the brake tube.

7. Refill with new brake fluid and perform the air bleeding. Refer to [BR-13, "Bleeding Brake System"](#).

CAUTION:

Never reuse drained brake fluid.

8. Install tires. Refer to [WT-7, "Exploded View"](#).
9. Perform inspection after installation. Refer to [BR-39, "REAR : Inspection"](#).



4WD

CAUTION:

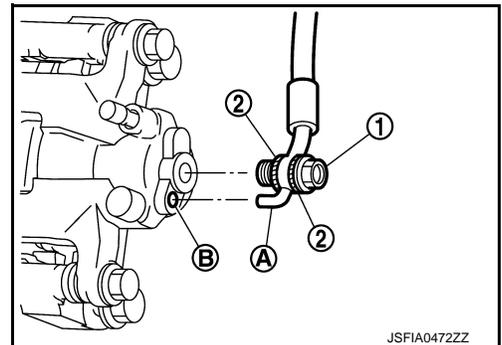
- **Never spill or splash brake fluid on painted surfaces. Brake fluid may seriously damage paint. Wipe it off immediately and wash with water if it gets on a painted surface. For brake component parts, never wash them with water.**
- **Never depress the brake pedal while removing the brake hose or brake tube. If this is not complied with, brake fluid may splash.**

1. Assemble the union bolt (1) and the copper washer (2) to the brake hose B.

CAUTION:

Never reuse the copper washer.

2. Align the brake hose B L-pin (A) with the brake caliper assembly hole (B), and tighten the union bolt (1) to the specified torque.



BRAKE PIPING

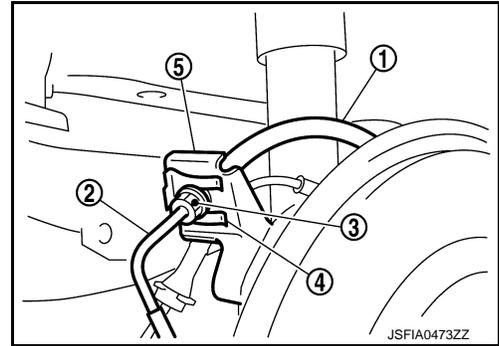
< REMOVAL AND INSTALLATION >

[LHD]

3. Install the brake tube (2) to the brake hose B (1), temporarily tighten the flare nut (3) by hand until it does not rotate further, and fix the brake hose B to the brake hose bracket (5) with the lock plate (4).

CAUTION:

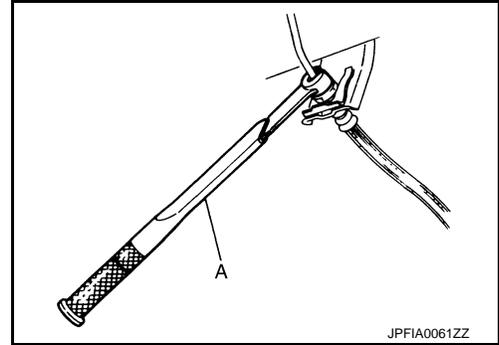
Check that all brake hoses and brake tubes are not twisted and bent.



4. Tighten the flare nut to the specified torque with a flare nut torque wrench (A).

CAUTION:

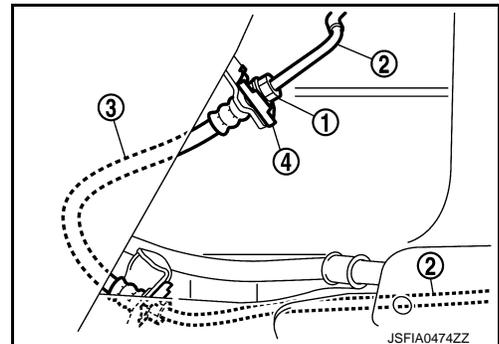
Never scratch the flare nut and the brake tube.



5. Install the brake tube (2) to the brake hose A (3), temporarily tighten the flare nut (1) by hand until it does not rotate further, and fix the brake hose A to the bracket with the lock plate (4).

CAUTION:

Check that all brake hoses and brake tubes are not twisted and bent.



6. Tighten the flare nut to the specified torque with a flare nut torque wrench (A).

CAUTION:

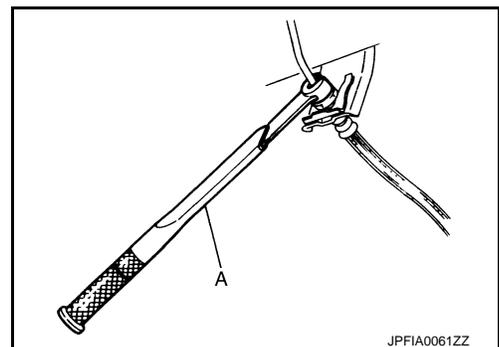
Never scratch the flare nut and the brake tube.

7. Refill with new brake fluid and perform the air bleeding. Refer to [BR-13, "Bleeding Brake System"](#).

CAUTION:

Never reuse drained brake fluid.

8. Install tires. Refer to [WT-7, "Exploded View"](#).
9. Perform inspection after installation. Refer to [BR-39, "REAR : Inspection"](#).



REAR : Inspection

INFOID:0000000006502180

INSPECTION AFTER INSTALLATION

1. Check the brake hoses and tubes for the following: no scratches; no twist and deformation; no looseness at connections.
2. Depress the brake pedal with a force of 785 N (80kg, 176 lb) and hold down the pedal for approximately 5 seconds with the engine running. Check for any fluid leakage.

CAUTION:

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

BRAKE PIPING

< REMOVAL AND INSTALLATION >

[LHD]

Retighten the applicable connection to the specified torque and repair any abnormal (damaged, worn or deformed) part if any brake fluid leakage is present.

BRAKE MASTER CYLINDER

< REMOVAL AND INSTALLATION >

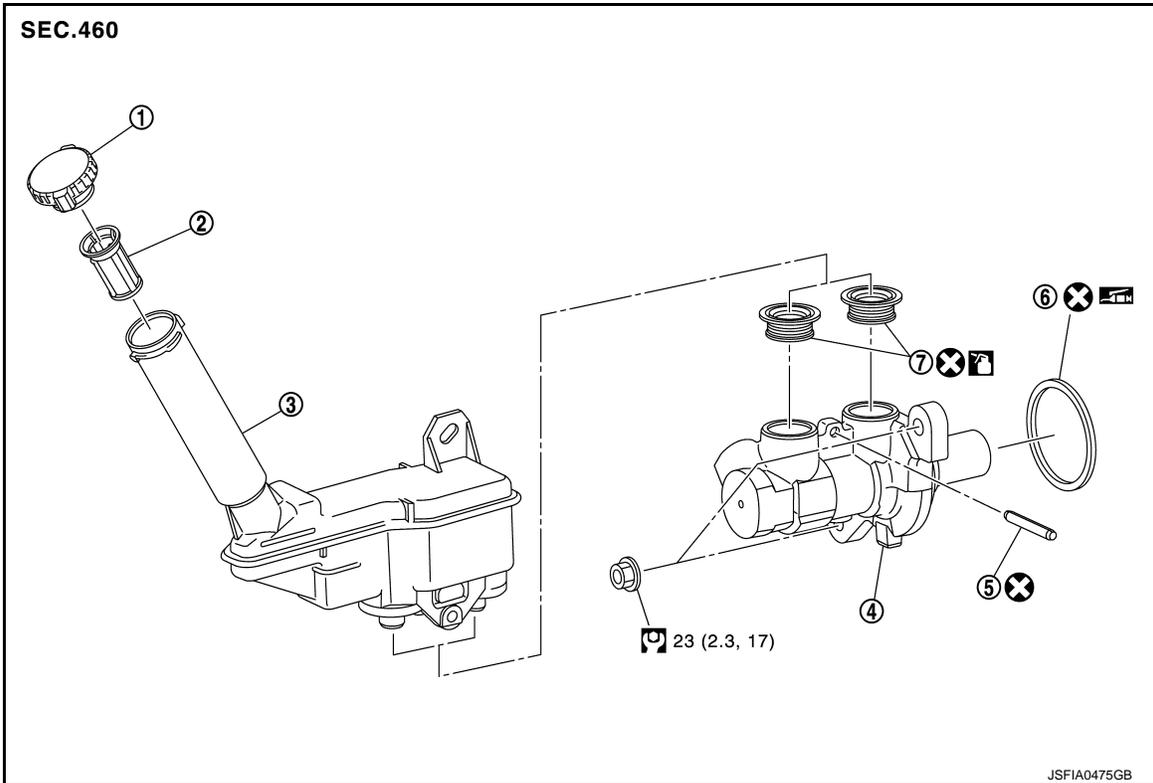
[LHD]

BRAKE MASTER CYLINDER

Exploded View

INFOID:000000006502181

2WD



1. Reservoir cap

2. Oil strainer

3. Reservoir tank

4. Cylinder body

5. Pin

6. O-ring

7. Grommet

: Apply polyglycol ether based lubricant.

: Apply brake fluid.

: N·m (kg·m, ft·lb)

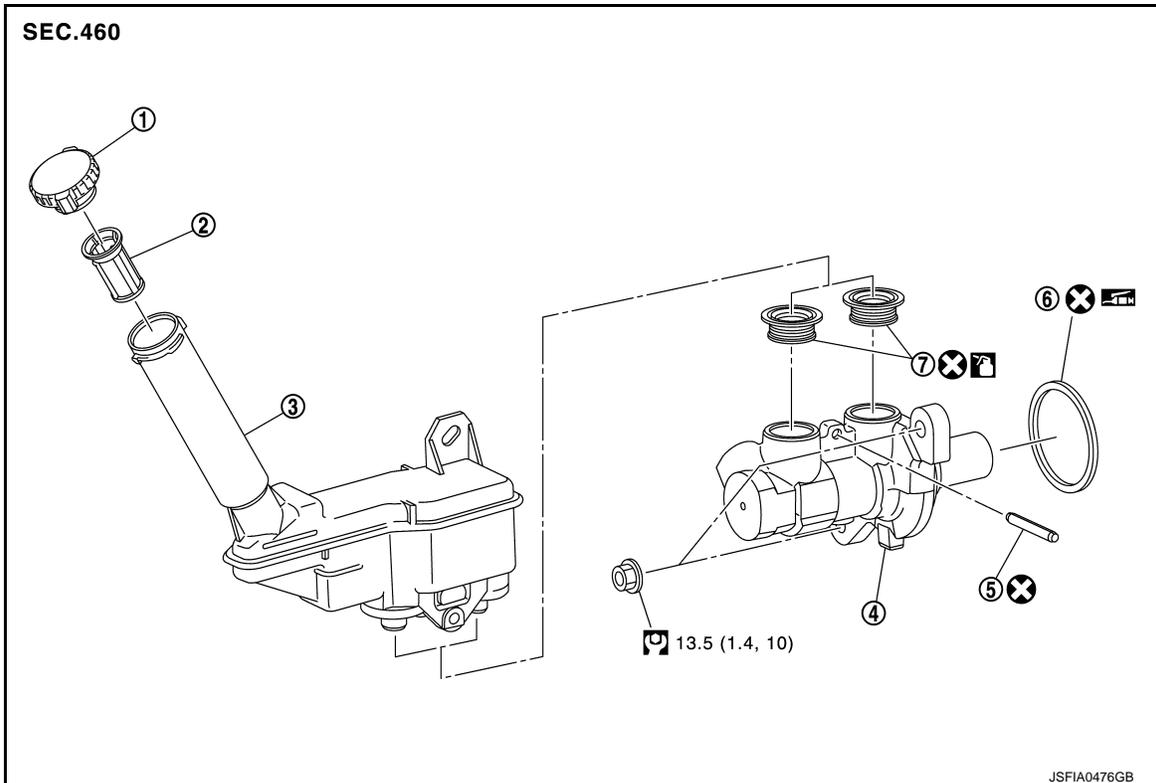
: Always replace after every disassembly.

4WD

BRAKE MASTER CYLINDER

< REMOVAL AND INSTALLATION >

[LHD]



- | | | |
|------------------|-----------------|-------------------|
| 1. Reservoir cap | 2. Oil strainer | 3. Reservoir tank |
| 4. Cylinder body | 5. Pin | 6. O-ring |
| 7. Grommet | | |

: Apply polyglycol ether based lubricant.

: Apply brake fluid.

: N·m (kg·m, ft·lb)

: Always replace after every disassembly.

Removal and Installation

INFOID:00000006502182

REMOVAL

CAUTION:

- Never spill or splash brake fluid on painted surfaces. Brake fluid may seriously damage paint. Wipe it off immediately and wash with water if it gets on a painted surface. For brake component parts, never wash them with water.
- Never depress the brake pedal while removing the brake tube. If this is not complied with, brake fluid may splash.

1. Perform inspection before removal. Refer to [BR-45, "Inspection"](#).
2. Depress the brake pedal several times to release the vacuum pressure from the brake booster.
3. Drain brake fluid. Refer to [BR-12, "Draining"](#).
4. Disconnect the brake fluid level switch harness connector.
5. Remove air duct and air cleaner case.
 - MR16DDT: Refer to [EM-26, "Removal and Installation"](#).
 - HR16DE: Refer to [EM-161, "Removal and Installation"](#).
 - K9K: Refer to [EM-280, "Removal and Installation"](#).

BRAKE MASTER CYLINDER

[LHD]

< REMOVAL AND INSTALLATION >

6. Separate the brake tube from master cylinder assembly with a flare nut wrench (A).

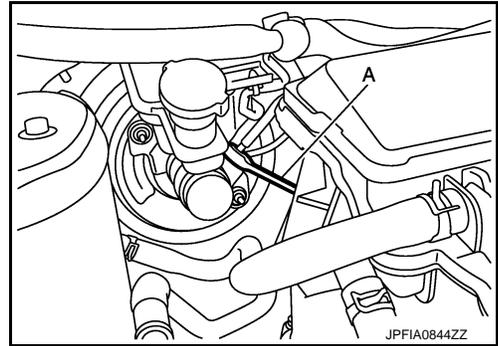
CAUTION:

Never scratch the flare nut and the brake tube.

7. Remove the master cylinder assembly.

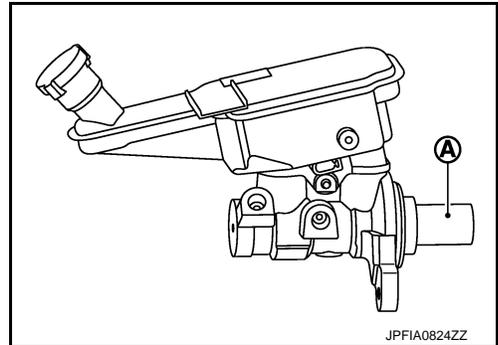
CAUTION:

- **Never deform or bend the brake tubes.**
- **Never depress the brake pedal after the master cylinder assembly is removed.**



- **The piston (A) of the master cylinder assembly is exposed. Never damage it when removing the master cylinder.**
- **The piston may drop off when pulled out strongly. Never hold the piston. Hold the cylinder body when handling the master cylinder assembly.**

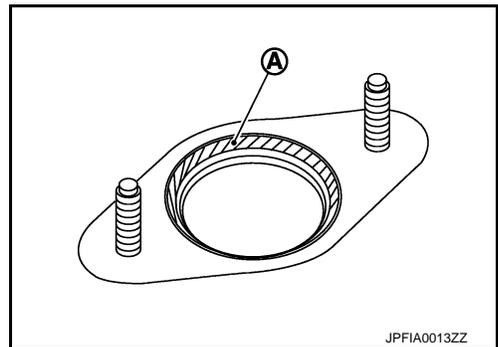
8. Remove the O-ring.



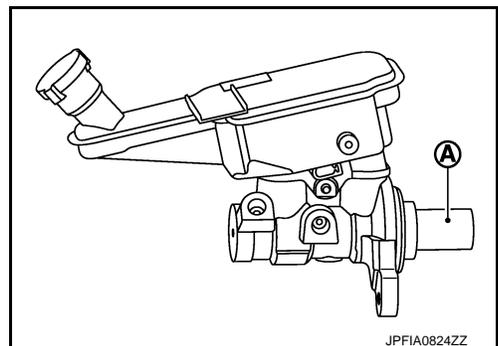
INSTALLATION

Note the following, and install in the reverse order of removal.

- Never spill or splash brake fluid on painted surfaces. Brake fluid may seriously damage paint. Wipe it off immediately and wash with water if it gets on a painted surface. For brake component parts, never wash them with water.
- Never depress the brake pedal while removing the brake tube. If this is not complied with, brake fluid may splash.
- Never depress the brake pedal after the master cylinder assembly is removed.
- Apply polyglycol ether based lubricant to the brake booster [see (A) in the figure] when installing the master cylinder assembly to the brake booster.



- The piston (A) of the master cylinder assembly is exposed. Never damage it when handling the master cylinder.
- Check that no dirt and dust are present on the piston before installation. Clean it with new brake fluid if necessary.
- The piston may drop off when pulled strongly. Never hold the piston. Hold the cylinder body when handling the master cylinder assembly.
- Never reuse the O-ring.
- Never deform or bend the brake tubes.



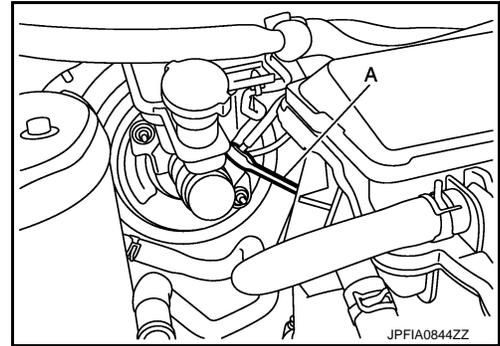
A
B
C
D
E
BR
G
H
I
J
K
L
M
N
O
P

BRAKE MASTER CYLINDER

[LHD]

< REMOVAL AND INSTALLATION >

- Temporarily tighten the brake tube flare nut to the master cylinder assembly by hand. Then tighten it to the specified torque with a flare nut torque wrench (A). Refer to [BR-24, "FRONT : Exploded View"](#).
- Perform the air bleeding. Refer to [BR-13, "Bleeding Brake System"](#)
- Perform inspection after installation. Refer to [BR-45, "Inspection"](#).



Disassembly and Assembly

INFOID:000000006502183

DISASSEMBLY

CAUTION:

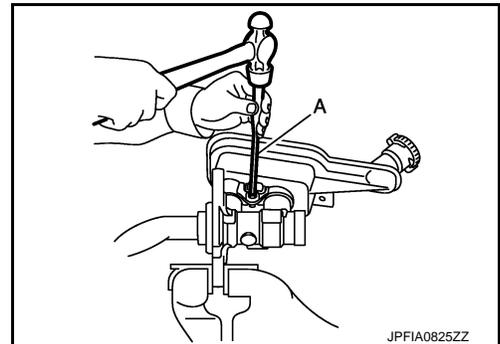
- Never disassemble the cylinder body.
- Remove the reservoir tank only when necessary.

1. Fix the master cylinder assembly to a vise.

CAUTION:

- Always set copper plates or cloth between vise grips when fixing the cylinder body to a vise.
- Never overtighten the vise.

2. Remove the reservoir tank mounting pin with a pin punch (A) [4 mm (0.157 in)].
3. Remove the reservoir tank and grommet from the cylinder body.



ASSEMBLY

CAUTION:

- Never use mineral oils such as kerosene or gasoline and rubber grease during the cleaning and assembly process.
- Never allow foreign matter (e.g. dust) and oils other than brake fluid to enter the reservoir tank.
- Never drop the when installing. The parts must not be reused if they are dropped.

1. Apply new brake fluid to the grommet and install it to the cylinder body.

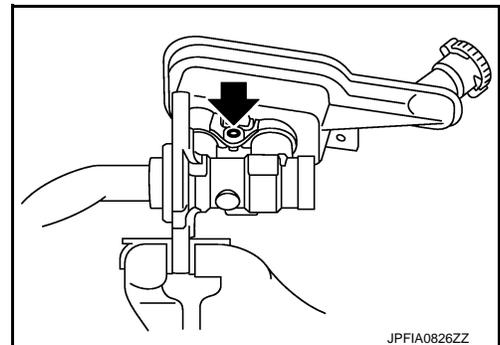
CAUTION:

Never reuse the grommets.

2. Install the reservoir tank to the cylinder body.
3. Fix the cylinder body to a vise.

CAUTION:

- Place the reservoir tank with the chamfered pin hole (←) facing up.
- Always set copper plates or cloth between vise grips when fixing the cylinder body to a vise.
- Never overtighten the vise.



BRAKE MASTER CYLINDER

[LHD]

< REMOVAL AND INSTALLATION >

4. Tilt the reservoir tank so that a mounting pin can be inserted. Insert a mounting pin. Return the reservoir tank to the horizontal position. Insert another mounting pin into the pin hole on the opposite side in the same manner after the mounting pin passes through the cylinder body pin hole.

CAUTION:

Never reuse the mounting pin.

Inspection

INFOID:000000006502184

INSPECTION BEFORE REMOVAL

Check the brake fluid level switch.

- Without ESP: Refer to [BRC-73, "Component Inspection"](#).
- With ESP: Refer to [BRC-194, "Component Inspection"](#).

INSPECTION AFTER INSTALLATION

Check the following items and replace if necessary.

- Check the master cylinder for deformation, twist, contact with other parts or looseness of connection.
- Check for fluid leakage from connection. Refer to [BR-30, "FRONT : Inspection"](#).

CAUTION:

If the fluid leakage is present, retighten to the specified torque. Replace if necessary.

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

BR

BRAKE BOOSTER

< REMOVAL AND INSTALLATION >

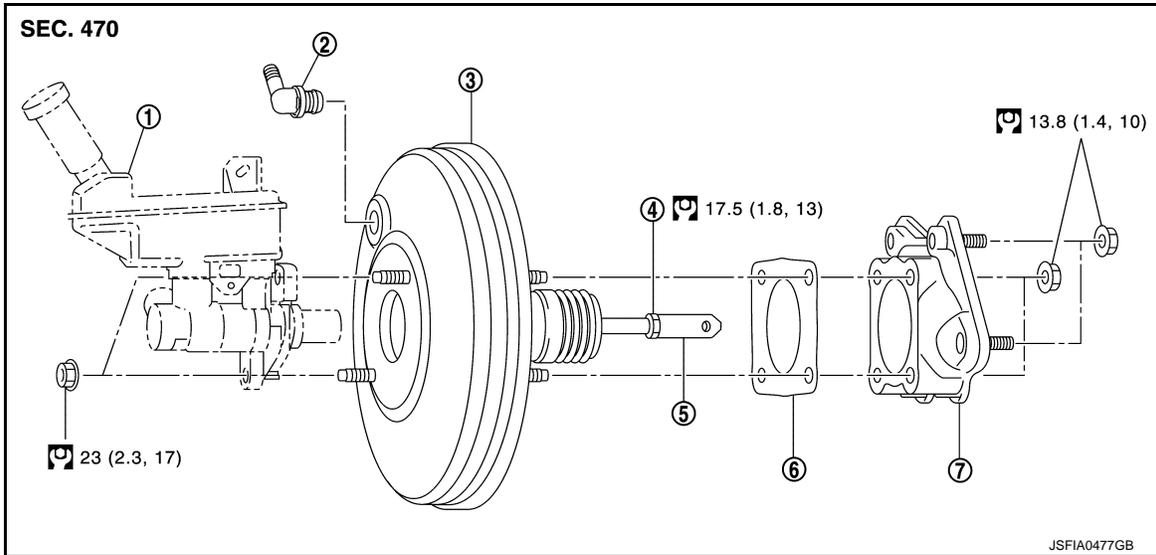
[LHD]

BRAKE BOOSTER

Exploded View

INFOID:000000006502185

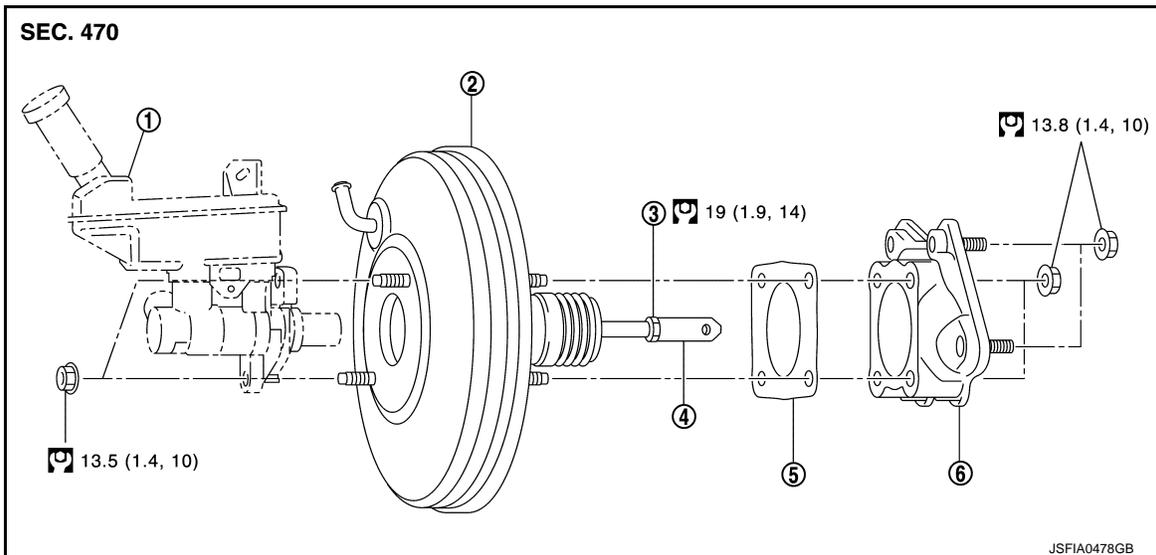
2WD



- | | | |
|-----------------------------|----------------|------------------|
| 1. Master cylinder assembly | 2. Vacuum pipe | 3. Brake booster |
| 4. Lock nut | 5. Clevis | 6. Gasket |
| 7. Spacer | | |

: N·m (kg·m, ft·lb)

4WD



- | | | |
|-----------------------------|------------------|-------------|
| 1. Master cylinder assembly | 2. Brake booster | 3. Lock nut |
| 4. Clevis | 5. Gasket | 6. Spacer |

: N·m (kg·m, ft·lb)

Removal and installation

INFOID:000000006502186

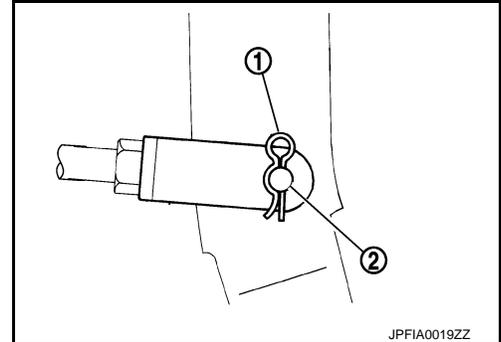
REMOVAL

BRAKE BOOSTER

[LHD]

< REMOVAL AND INSTALLATION >

1. Perform inspection before removal. Refer to [BR-47, "Inspection and Adjustment"](#).
2. Remove cowl top and cowl top extension. Refer to [EXT-20, "Removal and Installation"](#).
3. Remove air duct and air cleaner case.
 - MR16DDT: Refer to [EM-26, "Removal and Installation"](#).
 - HR16DE: Refer to [EM-161, "Removal and Installation"](#).
 - K9K: Refer to [EM-280, "Removal and Installation"](#).
4. Remove brake master cylinder assembly. Refer to [BR-42, "Removal and Installation"](#).
5. Remove vacuum hose from brake booster.
 - MR16DDT: Refer to [BR-49, "MR16DDT : Removal and Installation"](#).
 - HR16DE: Refer to [BR-50, "HR16DE : Removal and Installation"](#).
 - K9K: Refer to [BR-52, "K9K : Removal and Installation"](#).
6. Remove snap pin (1) and clevis pin (2). Refer to [BR-20, "Exploded View"](#).
7. Remove nuts on brake booster and brake pedal assembly.
CAUTION:
Hold the brake booster so as to avoid dropping out.
8. Remove brake booster and spacer.
CAUTION:
Never deform or bend the brake tubes.
NOTE:
If removing brake booster is difficult, remove clevis from brake booster.
9. Remove vacuum pipe from brake booster. (2WD)
10. Remove spacer from brake booster.
11. Perform inspection after removal. Refer to [BR-47, "Inspection and Adjustment"](#).



INSTALLATION

CAUTION:

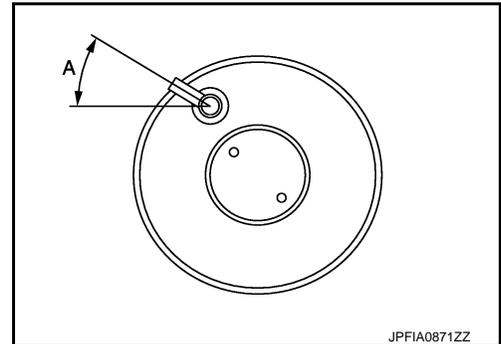
Never spill or splash brake fluid on painted surfaces. Brake fluid may seriously damage paint. Wipe it off immediately and wash with water if it gets on a painted surface.

Note the following, and install in the reverse order of removal.

- Set vacuum pipe angle (A) as shown in the figure. (2WD)

A : 50 – 60°

- Be careful not to damage brake booster stud bolt threads. If brake booster is tilted during installation, the dash panel may damage the threads.
- Never deform or bend the brake tubes when installing the brake booster.
- Always use a gasket between the brake booster and the spacer.
- Replace the clevis pin if it is damaged. Refer to [BR-22, "Inspection and Adjustment"](#).
- Perform the air bleeding. Refer to [BR-13, "Bleeding Brake System"](#).
- Check each item of brake pedal. Adjust it if the measurement value is not the standard. Refer to [BR-9, "Inspection and Adjustment"](#).



Inspection and Adjustment

INFOID:000000006502187

INSPECTION BEFORE REMOVAL

Air Tight

CAUTION:

Check the air tight condition when the master cylinder and the brake booster is installed.

1. Check the air tight use a handy vacuum pump.

At vacuum of –66.7 kPa (–500 mmHg, –19.69 inHg, –0.067 bar)

: Vacuum should decrease within 3.3 kPa (24.8 mmHg, 0.98 inHg, 0.033 bar) for 15 seconds.

BRAKE BOOSTER

[LHD]

< REMOVAL AND INSTALLATION >

2. If the air tight condition cannot be maintained, perform the following operation.
 - a. Check the no dirt and dust are present on the brake booster and brake master cylinder mating faces. Clean it if necessary.
 - b. Check the O-ring on the master cylinder. If anything is found, replace the O-ring. Refer to [BR-42, "Removal and Installation"](#).
 - c. Check the air tight condition again. If the condition still cannot be maintained, replace the brake booster.

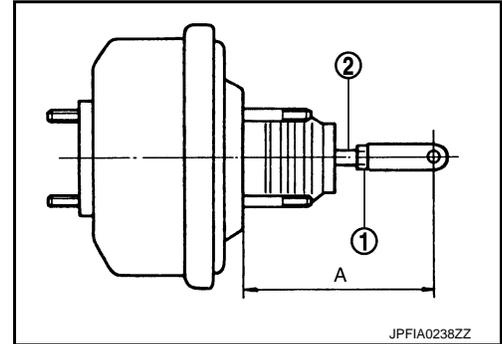
INSPECTION AFTER REMOVAL

Input Rod Length Inspection

1. Loosen the lock nut (1) and adjust the input rod (2) to the specified length (A).

A : Refer to [BR-70, "Brake Booster"](#).

2. Tighten the lock nut to the specified torque.



INSPECTION AFTER INSTALLATION

Operation

Depress the brake pedal several times at 5-second intervals with the engine stopped. Start the engine with the brake pedal fully depressed. Check that the clearance between brake pedal and dash lower panel decreases.

NOTE:

A slight impact with a small click may be felt on the pedal when the brake pedal is fully depressed. This is a normal phenomenon due to the brake system operation.

Air Tight

1. Run the engine at idle for 1 minute to apply vacuum to the brake booster, and stop the engine.
2. Depress the brake pedal several times at 5-second intervals until the accumulated vacuum is released to atmospheric pressure. Check that the clearance between brake pedal and dash lower panel gradually increases each time the brake pedal is depressed when performing this operation.
3. Depress the brake pedal with the engine running. Then stop the engine while holding down the brake pedal. Check that the brake pedal stroke does not change after holding down the brake pedal for 30 seconds or more.

ADJUSTMENT AFTER INSTALLATION

Perform the brake pedal adjustment after installing the brake pedal assembly. Refer to [BR-9, "Inspection and Adjustment"](#).

VACUUM LINES

< REMOVAL AND INSTALLATION >

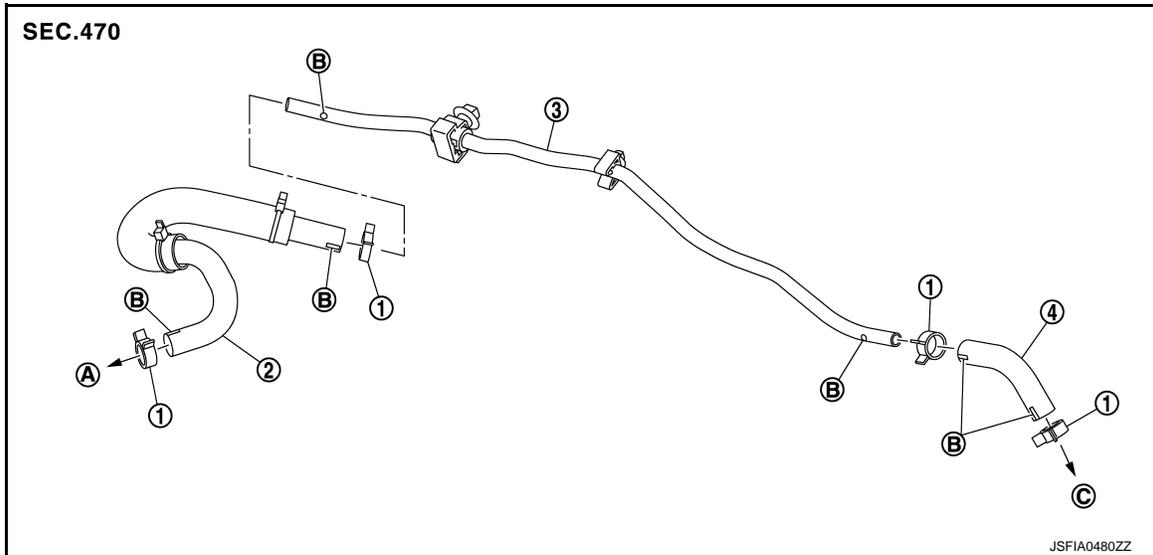
[LHD]

VACUUM LINES

MR16DDT

MR16DDT : Exploded View

INFOID:000000006578472



- | | | |
|-------------------|------------------|---------------------|
| 1. Clamp | 2. Vacuum hose A | 3. Vacuum piping |
| 4. Vacuum hose B | | |
| A. To engine side | B. Paint mark | C. To brake booster |

MR16DDT : Removal and Installation

INFOID:000000006578473

REMOVAL

1. Remove air duct and air cleaner case. Refer to [EM-161, "Removal and Installation"](#).
2. Remove the vacuum hose and vacuum piping.
3. Perform inspection after removal. Refer to [BR-49, "MR16DDT : Inspection"](#).

INSTALLATION

Note the following, install the vacuum hose.

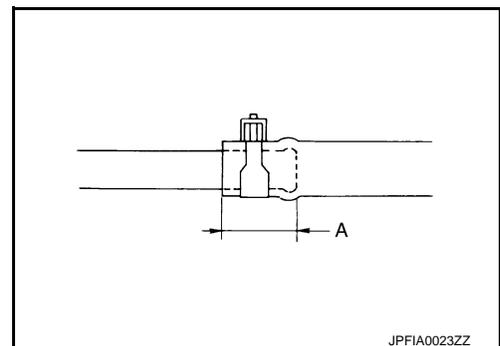
- When installing vacuum hose, insert it until its tip reaches the back-end of length (A) or further as shown in the figure.

CAUTION:

Never use lubricating oil during assembly.

A : 24 mm (0.95 in) or more

- Face the paint mark of vacuum hose A (engine side) upward to assemble.
- Face the other paint marks to vehicle front side to assemble.
- For clamp mounting direction (the orientation of pawl), refer to [BR-49, "MR16DDT : Exploded View"](#).



MR16DDT : Inspection

INFOID:000000006578474

INSPECTION AFTER REMOVAL

Appearance

Check for correct assembly, damage and deterioration.

Check Valve Airtightness

VACUUM LINES

[LHD]

< REMOVAL AND INSTALLATION >

- Use a handy vacuum pump (A) to check.

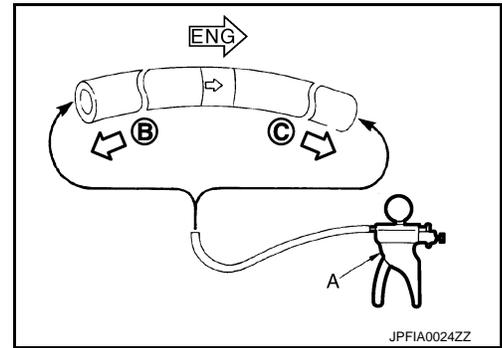
When connected to the booster side (B):

Vacuum should decrease within 1.3 kPa (9.8 mmHg, 0.38 inHg, 0.013 bar) for 15 seconds under a vacuum of -66.7 kPa (-500 mmHg, -19.70 inHg, -0.667 bar).

When connected to the engine side (C):

Vacuum should not exist.

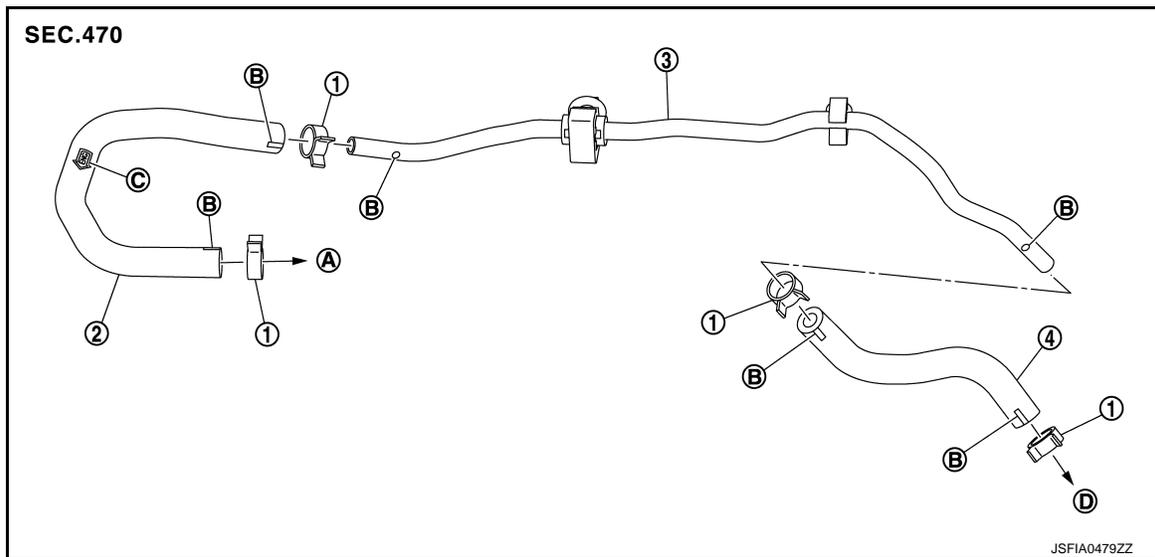
- Replace vacuum hose if vacuum hose is malfunctioning.



HR16DE

HR16DE : Exploded View

INFOID:000000006502188



- | | | |
|-----------------------|---------------------------------------|--------------------------------------|
| 1. Clamp | 2. Vacuum hose (built-in check valve) | 3. Vacuum piping |
| 4. Vacuum hose | | |
| A. To intake manifold | B. Paint mark | C. Stamp indicating engine direction |
| D. To brake booster | | |

HR16DE : Removal and Installation

INFOID:000000006502189

REMOVAL

1. Remove air duct and air cleaner case. Refer to [EM-161, "Removal and Installation"](#).
2. Remove the vacuum hose and vacuum piping.
3. Perform inspection after removal. Refer to [BR-51, "HR16DE : Inspection"](#).

INSTALLATION

Note the following, install the vacuum hose.

VACUUM LINES

[LHD]

< REMOVAL AND INSTALLATION >

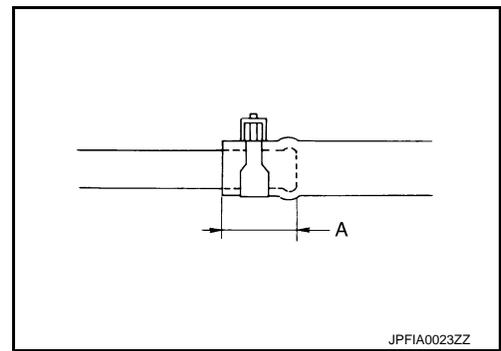
- When installing vacuum hose, insert it until its tip reaches the back-end of length (A) or further as shown in the figure.

CAUTION:

Never use lubricating oil during assembly.

A : 24 mm (0.95 in) or more

- Face the paint mark of vacuum hose (built-in check valve, intake manifold side) upward to assemble.
- Face the other paint marks to vehicle front side to assemble.
- For clamp mounting direction (the orientation of pawl), refer to [BR-50, "HR16DE : Exploded View"](#).



INFOID:0000000006502190

HR16DE : Inspection

INSPECTION AFTER REMOVAL

Appearance

Check for correct assembly, damage and deterioration.

Check Valve Airtightness

- Use a handy vacuum pump (A) to check.

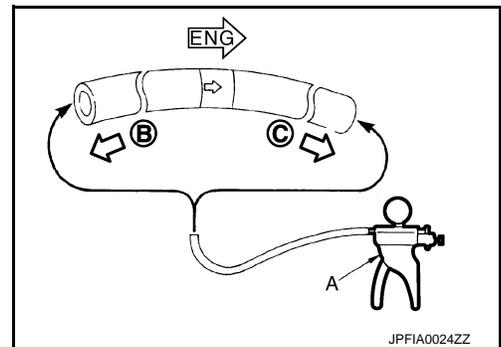
When connected to the booster side (B):

Vacuum should decrease within 1.3 kPa (9.8 mmHg, 0.013 bar) for 15 seconds under a vacuum of -66.7 kPa (-500 mmHg, -19.70 inHg, -0.667 bar).

When connected to the engine side (C):

Vacuum should not exist.

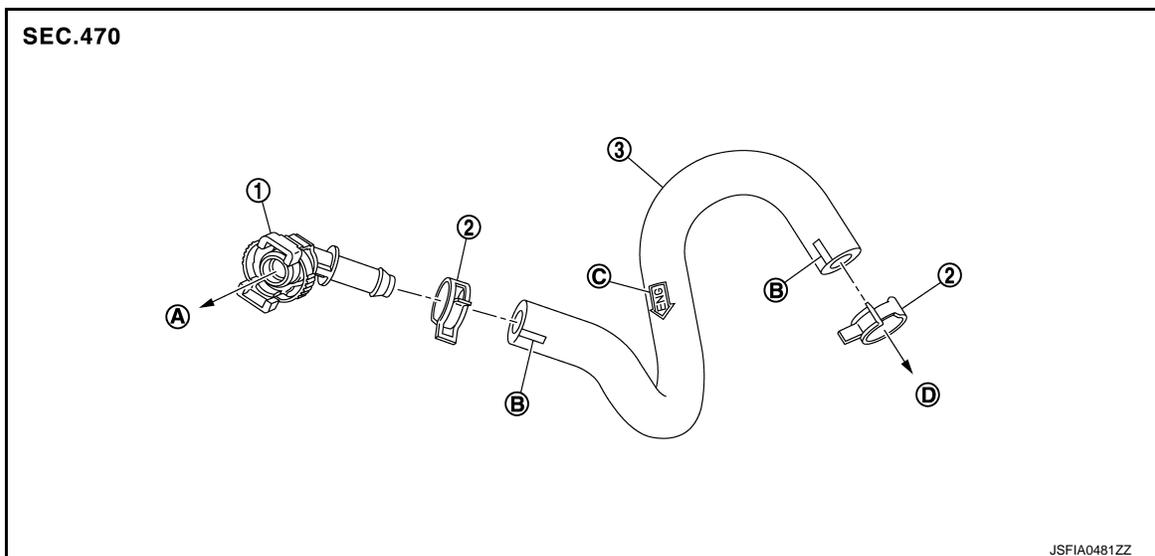
- Replace vacuum hose assembly if vacuum hose and check valve are malfunctioning.



INFOID:0000000006578478

K9K

K9K : Exploded View



- | | | |
|---------------------|---------------|---------------------------------------|
| 1. Connector | 2. Clamp | 3. Vacuum hose (built-in check valve) |
| A. To vacuum pump | B. Paint mark | C. Stamp indicating engine direction |
| D. To brake booster | | |

VACUUM LINES

< REMOVAL AND INSTALLATION >

[LHD]

K9K : Removal and Installation

INFOID:000000006578479

REMOVAL

1. Remove air duct and air cleaner case. Refer to [EM-161, "Removal and Installation"](#).
2. Remove the vacuum hose and connector.
3. Perform inspection after removal. Refer to [BR-52, "K9K : Inspection"](#).

INSTALLATION

Note the following, install the vacuum hose.

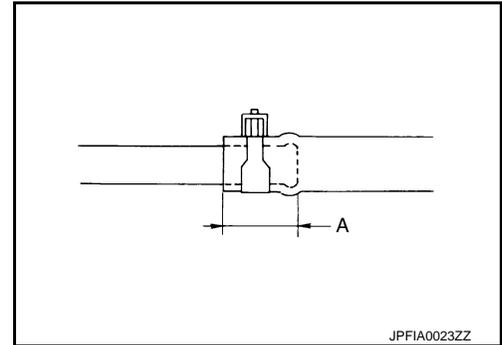
- When installing vacuum hose, insert it until its tip reaches the back-end of length (A) or further as shown in the figure.

CAUTION:

Never use lubricating oil during assembly.

A : 24 mm (0.95 in) or more

- Face the paint mark of vacuum hose (built-in check valve, connector side) to the vehicle left side to assemble.
- Face the paint mark of vacuum hose (built-in check valve, brake booster side) to the front side to assemble.
- For clamp mounting direction (the orientation of pawl), refer to [BR-51, "K9K : Exploded View"](#).



K9K : Inspection

INFOID:000000006578480

INSPECTION AFTER REMOVAL

Appearance

Check for correct assembly, damage and deterioration.

Check Valve Airtightness

- Use a handy vacuum pump (A) to check.

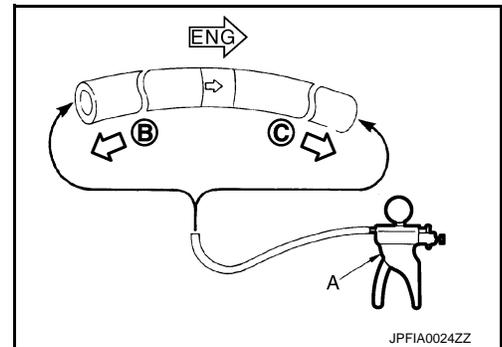
When connected to the booster side (B):

Vacuum should decrease within 1.3 kPa (9.8 mmHg, 0.38 inHg, 0.013 bar) for 15 seconds under a vacuum of -66.7 kPa (-500 mmHg, -19.70 inHg, -0.667 bar).

When connected to the engine side (C):

Vacuum should not exist.

- Replace vacuum hose assembly if vacuum hose and check valve are malfunctioning.



FRONT DISC BRAKE

[LHD]

< REMOVAL AND INSTALLATION >

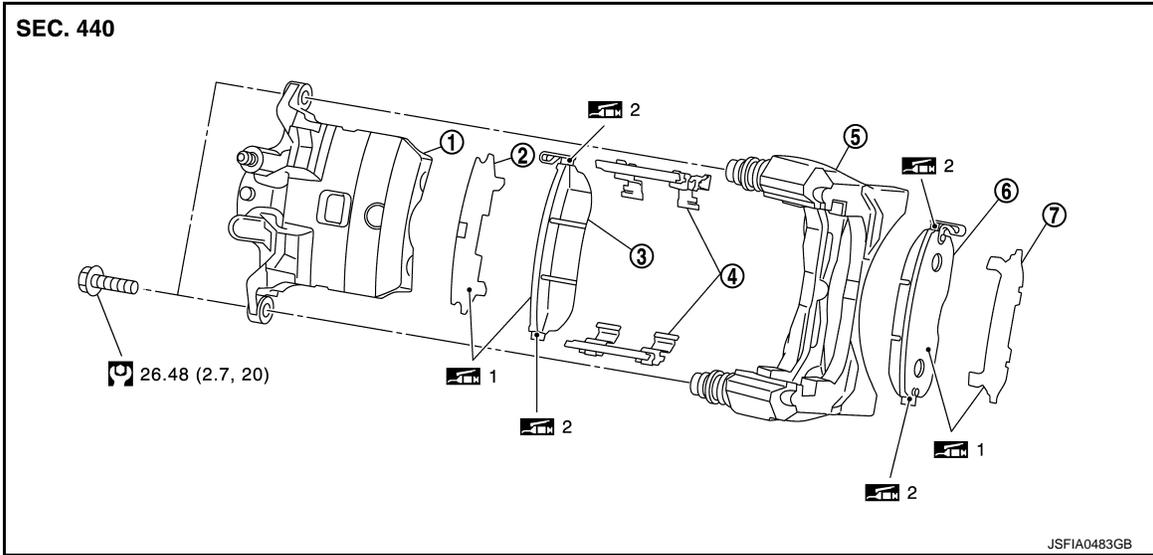
FRONT DISC BRAKE

BRAKE PAD

BRAKE PAD : Exploded View

INFOID:000000006502191

MR16DDT



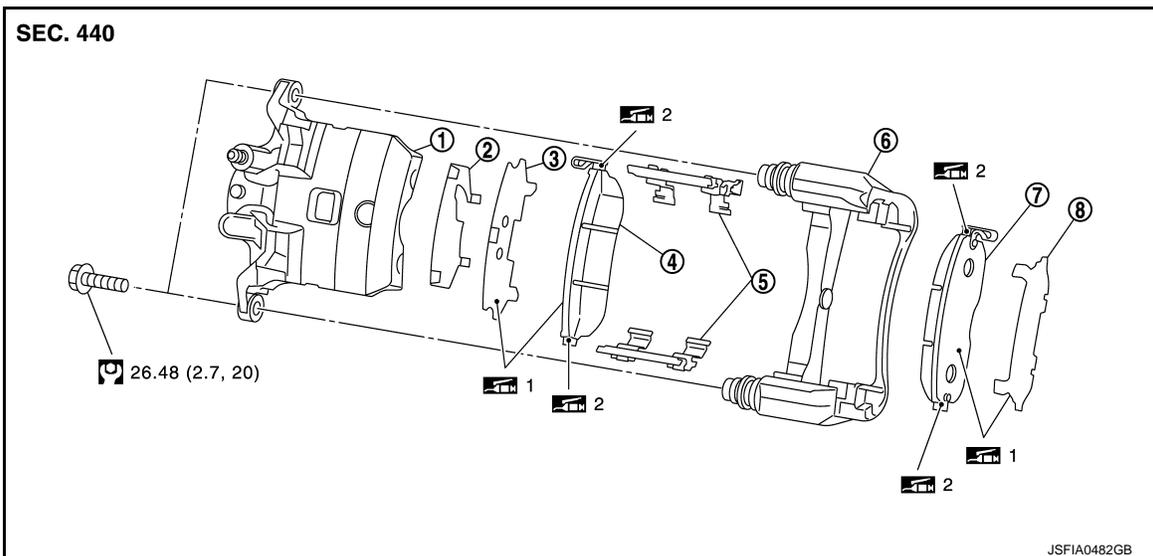
- | | | |
|------------------|------------------|-------------------------------------|
| 1. Cylinder body | 2. Inner shim | 3. Inner pad (with pad wear sensor) |
| 4. Pad retainer | 5. Torque member | 6. Outer pad |
| 7. Outer shim | | |

1: Apply MOLYKOTE® AS880N or silicone-based grease.

2: Apply MOLYKOTE® 7439 or equivalent.

: N·m (kg·m, ft·lb)

HR16DE, K9K



- | | | |
|-------------------------------------|---------------------|------------------|
| 1. Cylinder body | 2. Inner shim cover | 3. Inner shim |
| 4. Inner pad (with pad wear sensor) | 5. Pad retainer | 6. Torque member |
| 7. Outer pad | 8. Outer shim | |

FRONT DISC BRAKE

< REMOVAL AND INSTALLATION >

[LHD]

 1: Apply MOLYKOTE® AS880N or silicone-based grease.

 2: Apply MOLYKOTE® 7439 or equivalent.

 : N·m (kg·m, ft·lb)

BRAKE PAD : Removal and Installation

INFOID:000000006502192

REMOVAL

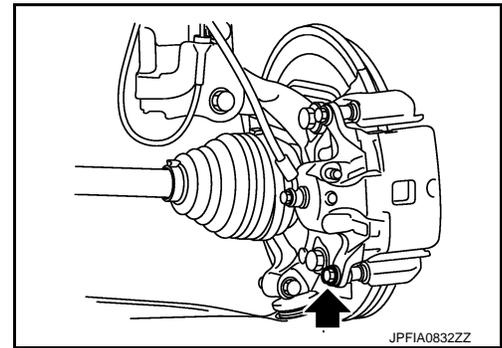
WARNING:

Clean any dust from the brake caliper and brake pads with a vacuum dust collector. Never blow with compressed air.

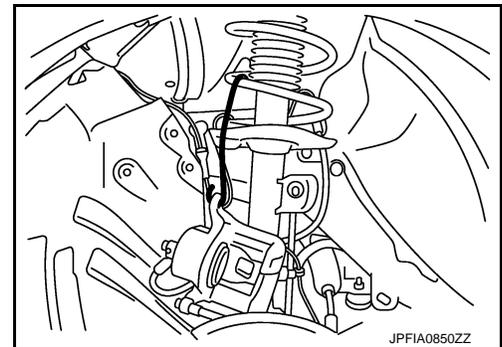
CAUTION:

- Never depress the brake pedal while removing the brake pads because the piston may pop out.
- If the brake fluid or grease adheres to the disc rotor, quickly wipe it off.

1. Remove tires.
2. Remove lower sliding pin bolt.



3. Suspend the cylinder body with suitable wire so that the brake hose will not stretch.

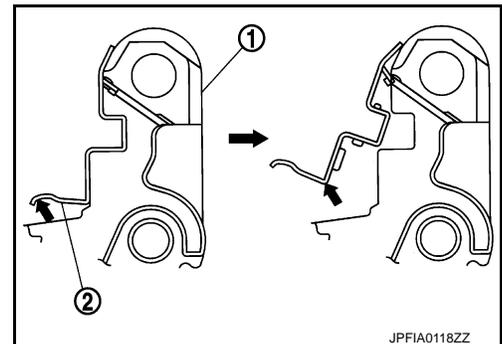


4. Remove the brake pads, shims, shim covers and pad retainers from the torque member.

CAUTION:

- Never deform the pad retainer (2) when removing the pad retainer from the torque member (1).
- Never damage the piston boot.
- Never drop the brake pads, shims, and the shim covers.
- Remember each position of the removed brake pads.

5. Perform inspection after removal. Refer to [BR-55. "BRAKE PAD : Inspection"](#).



INSTALLATION

WARNING:

Clean any dust from the brake caliper and brake pads with a vacuum dust collector. Never blow with compressed air.

CAUTION:

FRONT DISC BRAKE

[LHD]

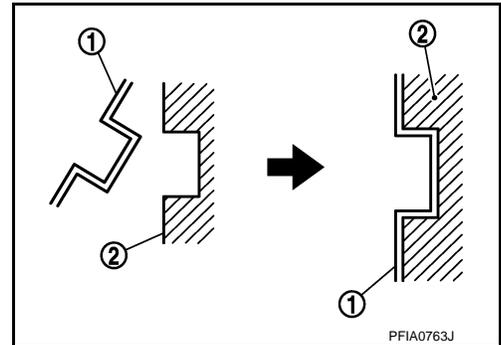
< REMOVAL AND INSTALLATION >

- Never depress the brake pedal while removing the brake pads or the cylinder body because the piston may pop out.
- If the brake fluid or grease adheres to the disc rotor, quickly wipe it off.

1. Install the pad retainers (1) to the torque member (2) if the pad retainers has been removed.

CAUTION:

- Securely assemble the pad retainers so that it will not be lifted up from the torque member.
- Never deform the pad retainers.

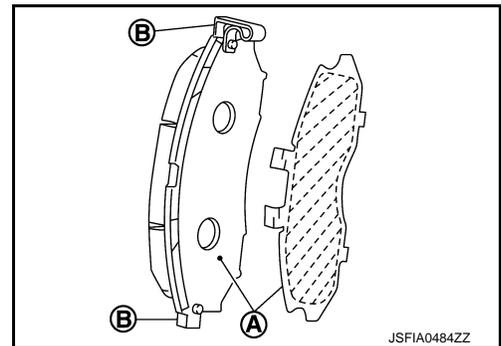


2. Apply MOLYKOTE® AS880N or silicone-based grease to the mating faces (A) between the brake pads and the shims, and install the shims to the brake pad.

CAUTION:

Always replace the shim together with the shim cover when replacing the brake pad.

3. Apply MOLYKOTE® 7439 or equivalent to the mating faces (B) between the brake pads and the pad retainers.



4. Install the brake pads to the torque member.

CAUTION:

- Both inner and outer pads have a pad return system on the pad retainer. Install pad return lever (1) securely to pad retainer (2).
- Never deform the pad retainers.

5. Install cylinder body to torque member.

CAUTION:

- Never damage the piston boot.
- When replacing brake pad with new one, check a brake fluid level in the reservoir tank because brake fluid returns to master cylinder reservoir tank when pressing piston in.

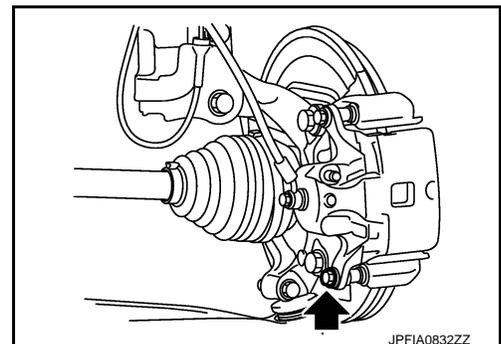
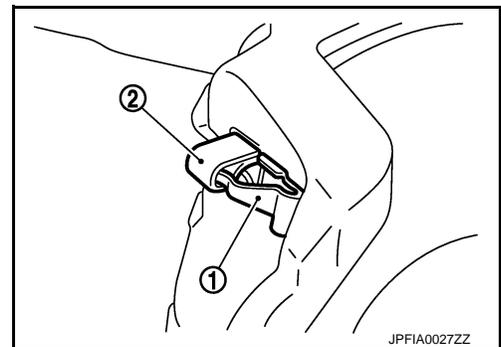
NOTE:

Use a disc brake piston tool to easily press piston.

6. Install the lower sliding pin bolt and tighten it to the specified torque.

7. Depress the brake pedal several times to check that no drag feel is present for the front disc brake. Refer to [BR-55, "BRAKE PAD : Inspection"](#).

8. Install tires. Refer to [WT-7, "Exploded View"](#).



BRAKE PAD : Inspection

INFOID:000000006502193

INSPECTION AFTER REMOVAL

- Replace the shims and the shim covers if rust is excessively attached.

FRONT DISC BRAKE

[LHD]

< REMOVAL AND INSTALLATION >

- Eliminate rust on the pad retainers and the torque member. Replace them if rust is excessively attached.

INSPECTION AFTER INSTALLATION

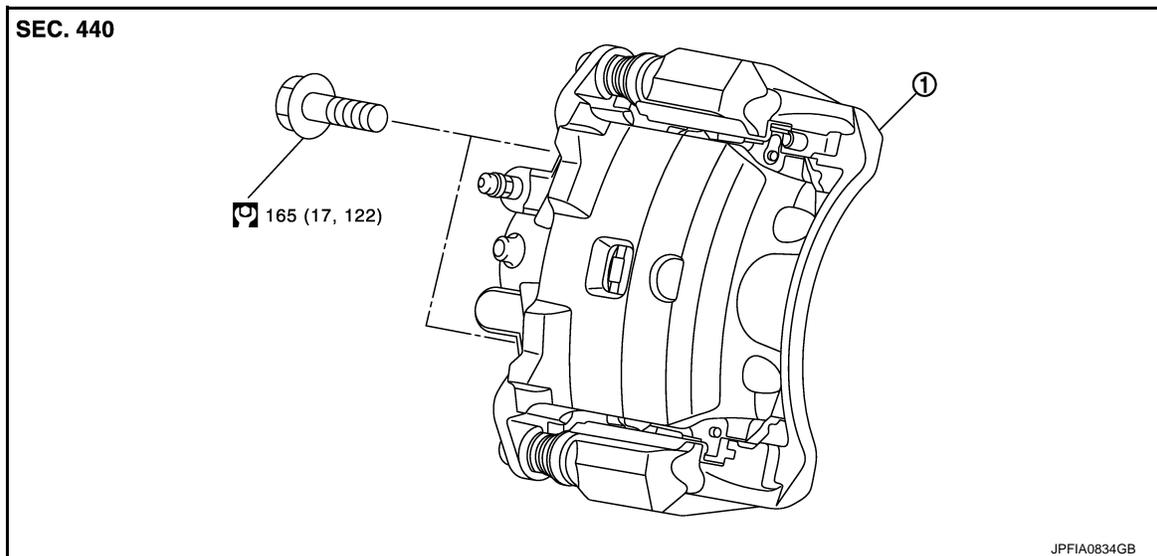
1. Check a drag of rear disc brake. If any drag is found, follow the procedure described below.
2. Remove brake pads. Refer to [BR-62. "BRAKE PAD : Removal and Installation"](#).
3. Press the pistons. Refer to [BR-62. "BRAKE PAD : Removal and Installation"](#).
4. Install brake pads. Refer to [BR-62. "BRAKE PAD : Removal and Installation"](#).
5. Securely depress the brake pedal several times.
6. Check a drag of rear disc brake again. If any drag is found, disassemble the cylinder body and replace if necessary. Refer to [BR-66. "BRAKE CALIPER ASSEMBLY : Disassembly and Assembly"](#)
7. Burnish contact surfaces brake pads and disc rotor after refinishing or replacing brake pads, or if a soft pedal occurs at very low mileage. Refer to [BR-18. "BRAKE PAD : Inspection and Adjustment"](#).

BRAKE CALIPER ASSEMBLY

BRAKE CALIPER ASSEMBLY : Exploded View

INFOID:000000006502194

REMOVAL



1. Brake caliper assembly

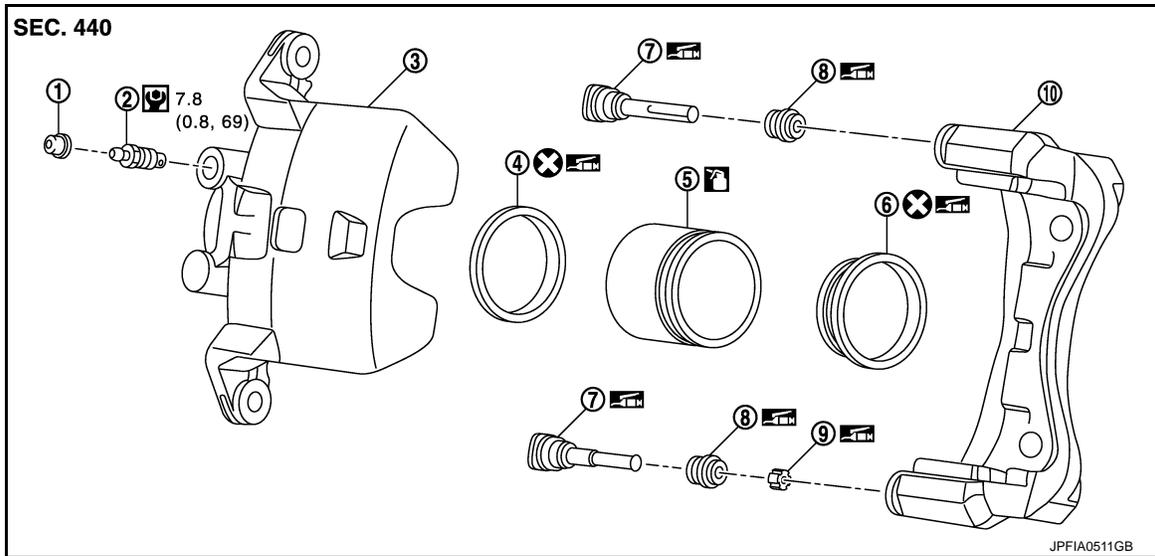
: N·m (kg·m, ft·lb)

DISASSEMBLY

FRONT DISC BRAKE

< REMOVAL AND INSTALLATION >

[LHD]



- | | | |
|-------------------|---------------------|------------------|
| 1. Cap | 2. Bleeder valve | 3. Cylinder body |
| 4. Piston seal | 5. Piston | 6. Piston boot |
| 7. Sliding pin | 8. Sliding pin boot | 9. Bushing |
| 10. Torque member | | |

: Apply rubber grease.

: Apply brake fluid.

: N·m (kg·m, in·lb)

: Always replace after every disassembly.

BRAKE CALIPER ASSEMBLY : Removal and Installation

INFOID:000000006502195

REMOVAL

WARNING:

Clean any dust from the brake caliper and brake pads with a vacuum dust collector. Never blow with compressed air.

CAUTION:

- Never spill or splash brake fluid on painted surfaces. Brake fluid may seriously damage paint. Wipe it out immediately and wash with water if it gets on a protect surface. For brake component parts, never wash them with water.
- Never depress the brake pedal while removing the brake hose. If this is not complied with, brake fluid may splash.
- Never drop removed parts.
- If the brake fluid or grease adheres to the disc rotor, quickly wipe it off.

1. Remove tires.
2. Fix the disc rotor using wheel nuts.
3. Drain brake fluid. Refer to [BR-12. "Draining"](#).
4. Separate brake hose from caliper assembly. Refer to [BR-29. "FRONT : Removal and Installation"](#).

FRONT DISC BRAKE

[LHD]

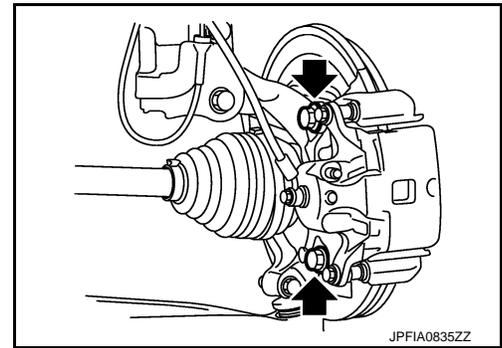
< REMOVAL AND INSTALLATION >

5. Remove torque member mounting bolts, and remove brake caliper assembly.

CAUTION:

Never drop brake pad and caliper assembly.

6. When removing disc rotor.
 - MR16DDT: Refer to [FAX-11, "Removal and Installation"](#).
 - HR16DE: Refer to [FAX-43, "Removal and Installation"](#).
 - K9K: Refer to [FAX-68, "Removal and Installation"](#).



INSTALLATION

WARNING:

Clean any dust from the brake caliper and brake pads with a vacuum dust collector. Never blow with compressed air.

CAUTION:

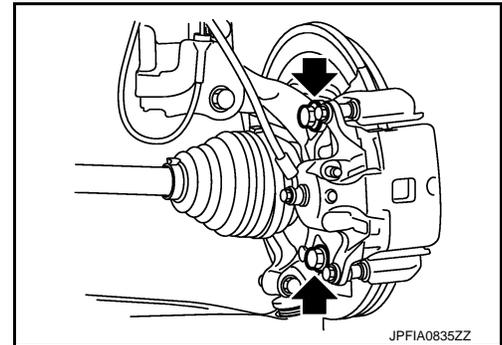
- Never spill or splash brake fluid on painted surfaces. Brake fluid may seriously damage paint. Wipe it out immediately and wash with water if it gets on a protect surface. For brake component parts, never wash them with water.
- Never depress the brake pedal while removing the brake hose. If this is not complied with, brake fluid may splash.
- If the brake fluid or grease adheres to the disc rotor, quickly wipe it off.

1. Install disc rotor.
 - MR16DDT: Refer to [FAX-11, "Removal and Installation"](#).
 - HR16DE: Refer to [FAX-43, "Removal and Installation"](#).
 - K9K: Refer to [FAX-68, "Removal and Installation"](#).
2. Install the brake caliper assembly to the steering knuckle and tighten the torque member mounting bolts to the specified torque.

CAUTION:

Never spill or splash any grease and moisture on the brake caliper assembly mounting face, threads, mounting bolts and washers. Wipe out any grease and moisture.

3. Install brake hose. Refer to [BR-29, "FRONT : Removal and Installation"](#).
4. Perform the air bleeding. Refer to [BR-13, "Bleeding Brake System"](#).
5. Check a drag of front disc brake. If any drag is found, refer to [BR-60, "BRAKE CALIPER ASSEMBLY : Inspection"](#).
6. Install tires. Refer to [WT-7, "Exploded View"](#).
7. Perform inspection after installation. Refer to [BR-60, "BRAKE CALIPER ASSEMBLY : Inspection"](#).



BRAKE CALIPER ASSEMBLY : Disassembly and Assembly

INFOID:000000006502196

DISASSEMBLY

NOTE:

Never remove the torque member, brake pad and pad retainers when disassembling and assembling the cylinder body.

1. Remove the sliding pin bolt, and remove the cylinder body from the torque member. Refer to [BR-54, "BRAKE PAD : Removal and Installation"](#).

CAUTION:

Fix the brake pad at suitable tape so that the brake pad will not drop.

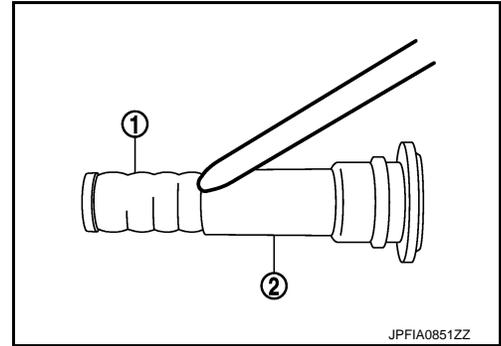
2. Remove sliding pins and sliding pin boots from torque member.

FRONT DISC BRAKE

< REMOVAL AND INSTALLATION >

[LHD]

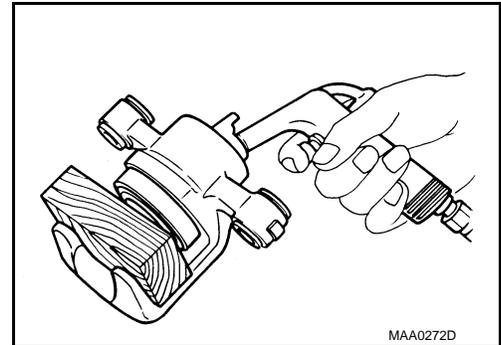
3. Remove bushing (1) from sliding pin (2).



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

CAUTION:

Never get fingers caught in the pistons.



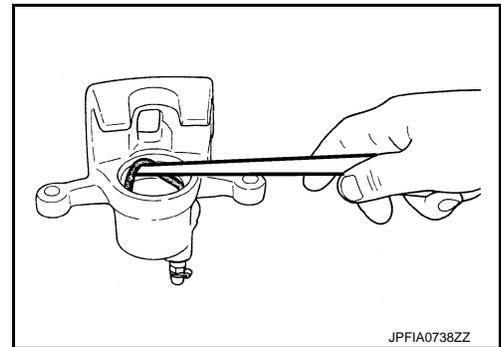
5. Remove piston seal from cylinder body using seal pick tool.

CAUTION:

Be careful not to damage a cylinder inner wall.

6. Remove bleeder valve and cap.

7. Perform inspection after disassembly. Refer to [BR-60. "BRAKE CALIPER ASSEMBLY : Inspection"](#).



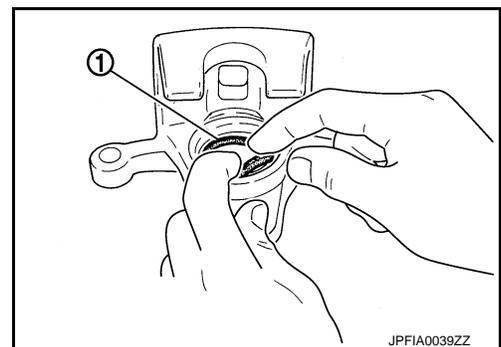
ASSEMBLY

1. Install bleeder valve and cap.

2. Apply rubber grease to piston seals (1), and install them to cylinder body.

CAUTION:

Never reuse piston seals.



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

FRONT DISC BRAKE

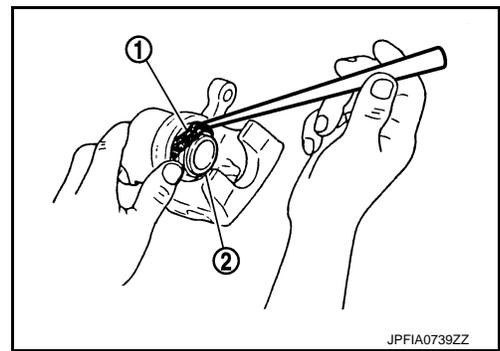
[LHD]

< REMOVAL AND INSTALLATION >

3. Apply rubber grease to piston boots (1). Cover the piston (2) end with piston boot, and then install cylinder side lip on piston boot securely into a groove on cylinder body.

CAUTION:

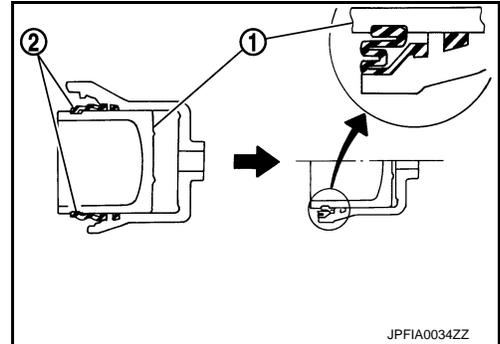
Never reuse piston boots.



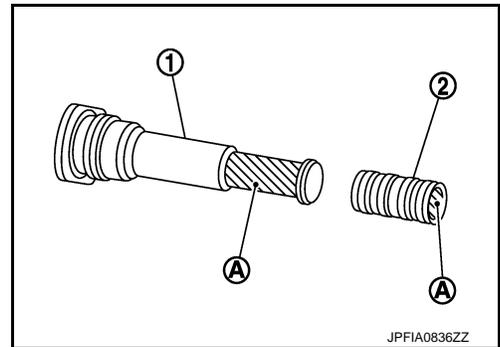
4. Apply new brake fluid to pistons (1). Push piston into cylinder body by hand and push piston boot (2) piston-side lip into the piston groove.

CAUTION:

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

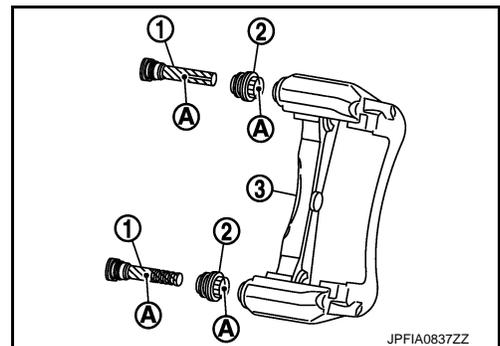


5. Apply rubber grease to mating faces (A) between sliding pin (1) and bushing (2), and install bushing to sliding pin.



6. Apply rubber grease to mating faces (A) between sliding pin (1) and sliding pin boot (2), and install sliding pin and sliding pin boot to sliding torque member (3).

7. Install the cylinder body to tighten cylinder body mounting bolts to the specified torque. Refer to [BR-53, "BRAKE PAD : Exploded View"](#).



BRAKE CALIPER ASSEMBLY : Inspection

INFOID:000000006502197

INSPECTION AFTER DISASSEMBLY

Check the following items and replace if necessary.

Cylinder Body

Check the inner wall of the cylinder for rust, wear, cracks or damage.

CAUTION:

Always clean with new brake fluid. Never clean with mineral oil such as gasoline and light oil.

Torque Member

Check the torque member for rust, wear, cracks or damage.

FRONT DISC BRAKE

< REMOVAL AND INSTALLATION >

[LHD]

Pistons

Check the surface of the piston for rust, wear, cracks or damage.

CAUTION:

A piston sliding surface is plated. Never polish with sandpaper.

Sliding Pin, Sliding Pin Boot and Bushing

Check the sliding pins, sliding boots and bushing for rust, wear, cracks or damage.

INSPECTION AFTER INSTALLATION

1. Check a drag of front disc brake. If any drag is found, follow the procedure described below.
2. Remove brake pads. Refer to [BR-54, "BRAKE PAD : Removal and Installation"](#).
3. Press the pistons. Refer to [BR-54, "BRAKE PAD : Removal and Installation"](#).
4. Install brake pads. Refer to [BR-54, "BRAKE PAD : Removal and Installation"](#).
5. Securely depress the brake pedal several times.
6. Check a drag of front disc brake again. If any drag is found, disassemble the cylinder body and replace if necessary. Refer to [BR-58, "BRAKE CALIPER ASSEMBLY : Disassembly and Assembly"](#).
7. Burnish contact surface between disc rotor and brake pads after refinishing or replacing disc rotor, or if a soft pedal occurs at very low mileage. Refer to [BR-18, "DISC ROTOR : Inspection and Adjustment"](#).

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

REAR DISC BRAKE

[LHD]

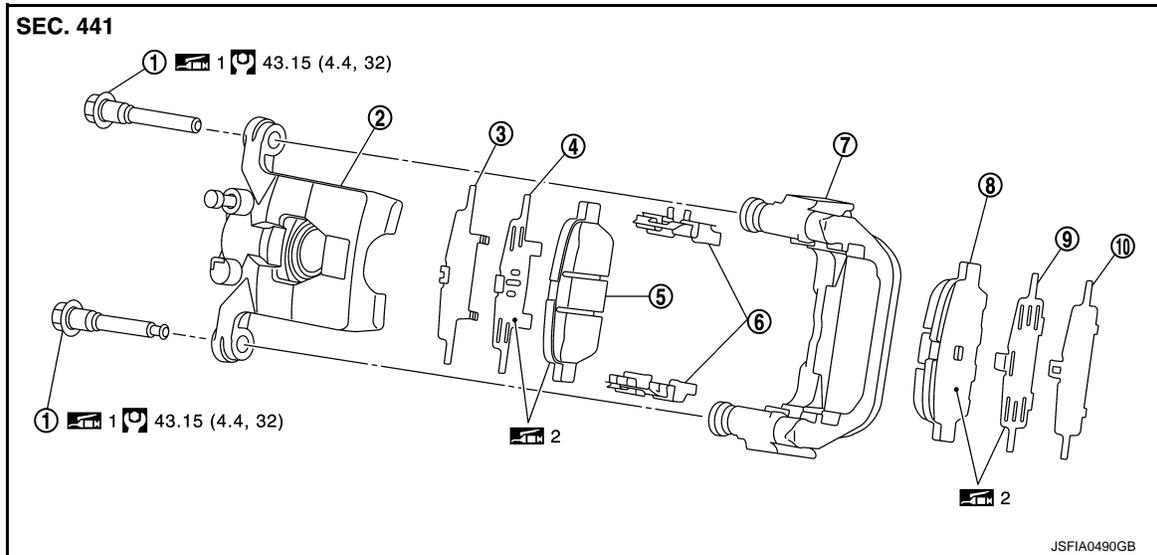
< REMOVAL AND INSTALLATION >

REAR DISC BRAKE

BRAKE PAD

BRAKE PAD : Exploded View

INFOID:000000006502224



- | | | |
|----------------------|-------------------------------------|---------------------|
| 1. Sliding pin bolt | 2. Cylinder body | 3. Inner shim cover |
| 4. Inner shim | 5. Inner pad (with pad wear sensor) | 6. Pad retainer |
| 7. Torque member | 8. Outer pad | 9. Outer shim |
| 10. Outer shim cover | | |

 1 Apply rubber grease.

 2: Apply MOLYKOTE® AS880N or silicone-based grease.

 : N·m (kg·m, ft·lb)

BRAKE PAD : Removal and Installation

INFOID:000000006502225

REMOVAL

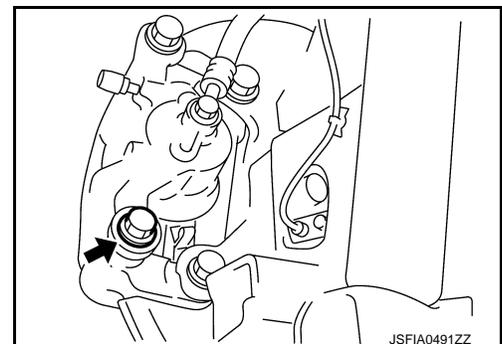
WARNING:

Clean any dust from the brake caliper and brake pads with a vacuum dust collector. Never blow with compressed air.

CAUTION:

- Never depress the brake pedal while removing the brake pads because the piston may pop out.
- If the brake fluid or grease adheres to the disc rotor, quickly wipe it off.

1. Remove tires.
2. Remove lower sliding pin bolt.

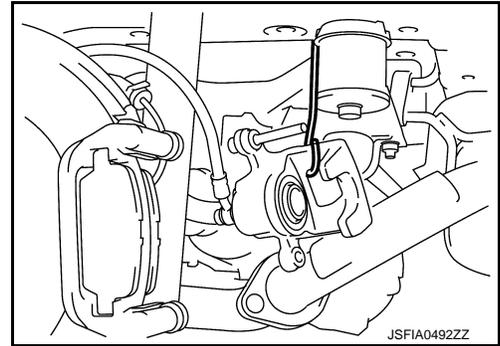


REAR DISC BRAKE

[LHD]

< REMOVAL AND INSTALLATION >

- Suspend the cylinder body with suitable wire so that the brake hose will not stretch.

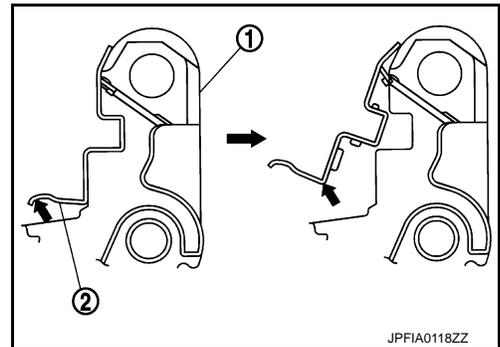


- Remove the brake pads, shims, shim covers and pad retainers from the torque member.

CAUTION:

- Never deform the pad retainer (2) when removing the pad retainer from the torque member (1).
- Never damage the piston boot.
- Never drop the brake pads, shims, and the shim covers.
- Remember each position of the removed brake pads.

- Perform inspection after removal. Refer to [BR-55, "BRAKE PAD : Inspection"](#).



INSTALLATION

WARNING:

Clean any dust from the brake caliper and brake pads with a vacuum dust collector. Never blow with compressed air.

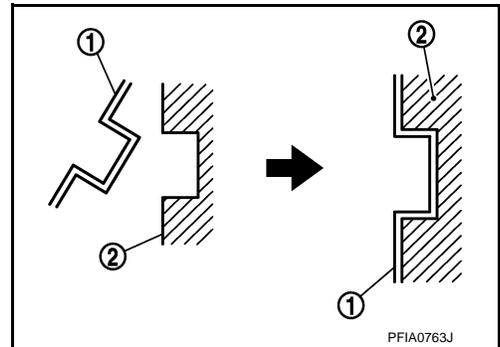
CAUTION:

- Never depress the brake pedal while removing the brake pads or the cylinder body because the piston may pop out.
- If the brake fluid or grease adheres to the disc rotor, quickly wipe it off.

- Install the pad retainers (1) to the torque member (2) if the pad retainers has been removed.

CAUTION:

- Securely assemble the pad retainers so that it will not be lifted up from the torque member.
- Never deform the pad retainers.



- Apply MOLYKOTE® AS880N or silicone-based grease to the mating faces (A) between the brake pads and the shims, and install the shims to the brake pad.

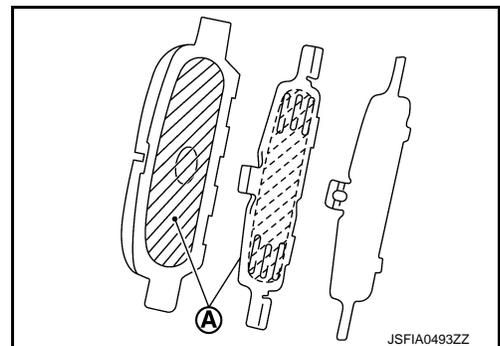
CAUTION:

Always replace the shim together with the shim cover when replacing the brake pad.

- Install the brake pads to the torque member.
- Install cylinder body to torque member.

CAUTION:

- Never damage the piston boot.
- When replacing brake pad with new one, check a brake fluid level in the reservoir tank because brake fluid



REAR DISC BRAKE

< REMOVAL AND INSTALLATION >

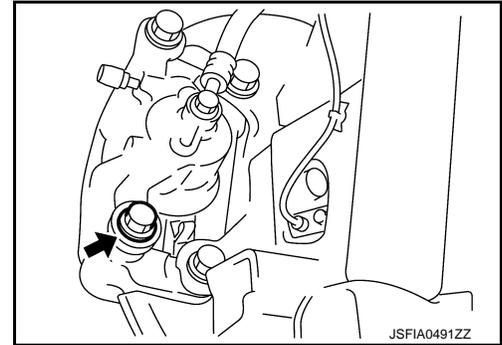
[LHD]

returns to master cylinder reservoir tank when pressing piston in.

NOTE:

Use a disc brake piston tool to easily press piston.

5. Install the lower sliding pin bolt and tighten it to the specified torque.
6. Depress the brake pedal several times to check that no drag feel is present for the front disc brake. Refer to [BR-55, "BRAKE PAD : Inspection"](#).
7. Install tires. Refer to [WT-7, "Exploded View"](#).



BRAKE PAD : Inspection

INFOID:000000006502226

INSPECTION AFTER REMOVAL

- Replace the shims and the shim covers if rust is excessively attached.
- Eliminate rust on the pad retainers and the torque member. Replace them if rust is excessively attached.

INSPECTION AFTER INSTALLATION

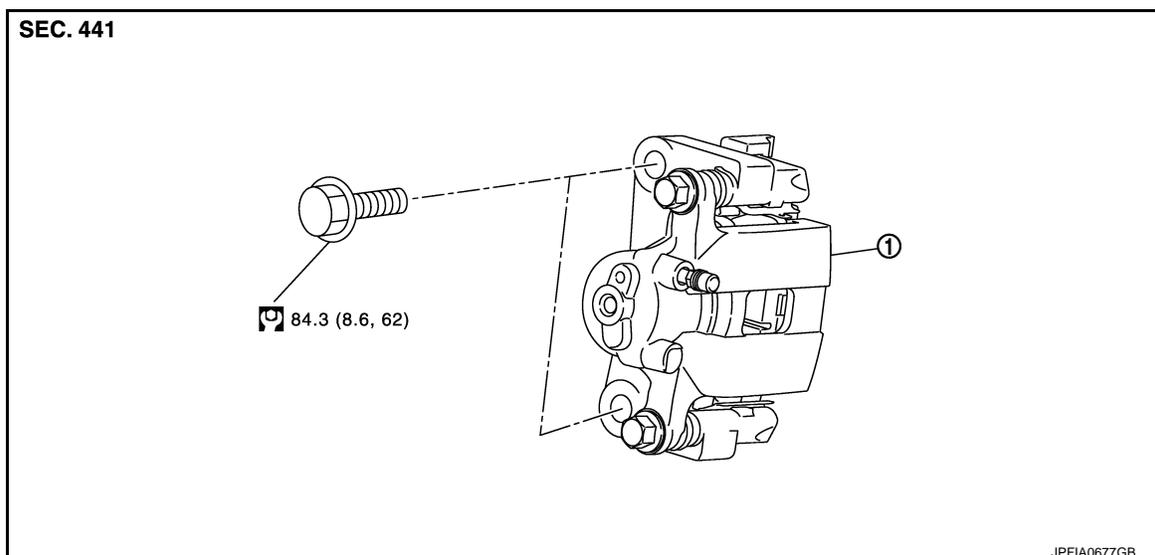
1. Check a drag of front disc brake. If any drag is found, follow the procedure described below.
2. Remove brake pads. Refer to [BR-62, "BRAKE PAD : Removal and Installation"](#).
3. Press the pistons. Refer to [BR-62, "BRAKE PAD : Removal and Installation"](#).
4. Install brake pads. Refer to [BR-62, "BRAKE PAD : Removal and Installation"](#).
5. Securely depress the brake pedal several times.
6. Check a drag of front disc brake again. If any drag is found, disassemble the cylinder body and replace if necessary. Refer to [BR-66, "BRAKE CALIPER ASSEMBLY : Disassembly and Assembly"](#).
7. Burnish contact surfaces brake pads and disc rotor after refinishing or replacing brake pads, or if a soft pedal occurs at very low mileage. Refer to [BR-18, "BRAKE PAD : Inspection and Adjustment"](#).

BRAKE CALIPER ASSEMBLY

BRAKE CALIPER ASSEMBLY : Exploded View

INFOID:000000006502227

REMOVAL



REAR DISC BRAKE

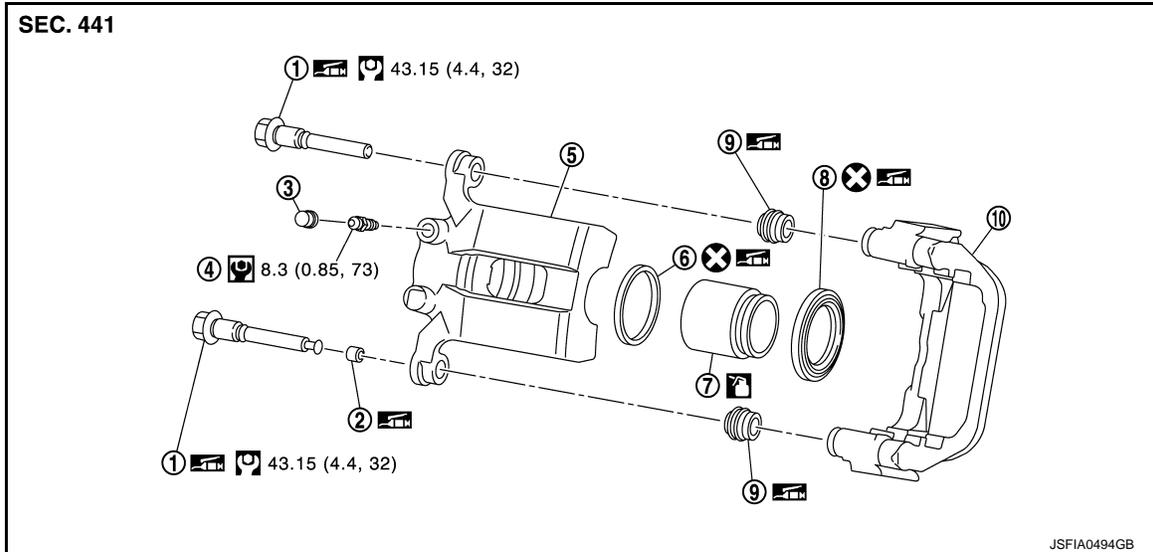
< REMOVAL AND INSTALLATION >

[LHD]

1. Brake caliper assembly

: N·m (kg·m, ft·lb)

DISASSEMBLY



- | | | |
|---------------------|------------------|---------------------|
| 1. Sliding pin bolt | 2. Bushing | 3. Cap |
| 4. Bleeder valve | 5. Cylinder body | 6. Piston seal |
| 7. Piston | 8. Piston boot | 9. Sliding pin boot |
| 10. Torque member | | |

: Apply rubber grease.

: Apply brake fluid.

: N·m (kg·m, ft·lb)

: N·m (kg·m, in·lb)

: Always replace after every disassembly.

BRAKE CALIPER ASSEMBLY : Removal and Installation

INFOID:000000006502228

REMOVAL

WARNING:

Clean any dust from the brake caliper and brake pads with a vacuum dust collector. Never blow with compressed air.

CAUTION:

- Never spill or splash brake fluid on painted surfaces. Brake fluid may seriously damage paint. Wipe it out immediately and wash with water if it gets on a protect surface. For brake component parts, never wash them with water.
- Never depress the brake pedal while removing the brake hose. If this is not complied with, brake fluid may splash.
- Never drop removed parts.
- If the brake fluid or grease adheres to the disc rotor, quickly wipe it off.

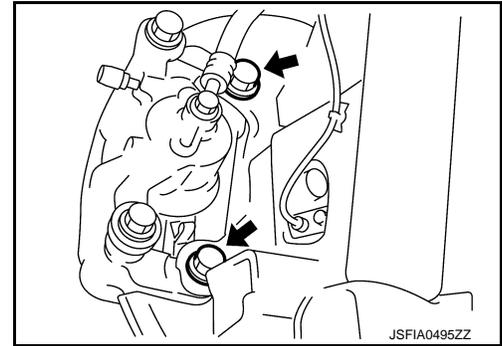
1. Remove tires.
2. Fix the disc rotor using wheel nuts.
3. Drain brake fluid. Refer to [BR-12, "Draining"](#).
4. Separate brake hose from caliper assembly. Refer to [BR-35, "REAR : Removal and Installation"](#).

REAR DISC BRAKE

[LHD]

< REMOVAL AND INSTALLATION >

5. Remove torque member mounting bolts, and remove brake caliper assembly.
CAUTION:
Never drop brake pad and caliper assembly.
6. When removing disc rotor.
 - 2WD: Refer to [RAX-5, "Removal and Installation"](#).
 - 4WD: Refer to [RAX-14, "Removal and Installation"](#).



INSTALLATION

WARNING:

Clean any dust from the brake caliper and brake pads with a vacuum dust collector. Never blow with compressed air.

CAUTION:

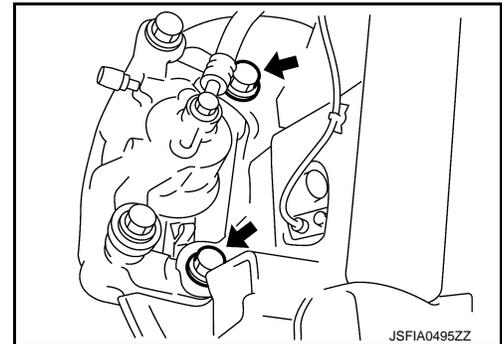
- Never spill or splash brake fluid on painted surfaces. Brake fluid may seriously damage paint. Wipe it out immediately and wash with water if it gets on a protect surface. For brake component parts, never wash them with water.
- Never depress the brake pedal while removing the brake hose. If this is not complied with, brake fluid may splash.
- If the brake fluid or grease adheres to the disc rotor, quickly wipe it off.

1. Install disc rotor.
 - 2WD: Refer to [RAX-5, "Removal and Installation"](#).
 - 4WD: Refer to [RAX-14, "Removal and Installation"](#).
2. Install the brake caliper assembly to the axle housing and tighten the torque member mounting bolts to the specified torque.

CAUTION:

Never spill or splash any grease and moisture on the brake caliper assembly mounting face, threads, mounting bolts and washers. Wipe out any grease and moisture.

3. Install brake hose. Refer to [BR-35, "REAR : Removal and Installation"](#).
4. Perform the air bleeding. Refer to [BR-13, "Bleeding Brake System"](#).
5. Check a drag of rear disc brake. If any drag is found, refer to [BR-64, "BRAKE PAD : Inspection"](#).
6. Install tires. Refer to [WT-7, "Exploded View"](#).
7. Perform inspection after installation. Refer to [BR-68, "BRAKE CALIPER ASSEMBLY : Inspection"](#).



BRAKE CALIPER ASSEMBLY : Disassembly and Assembly

INFOID:000000006502229

DISASSEMBLY

NOTE:

Never remove the torque member, brake pad and pad retainers when disassembling and assembling the cylinder body.

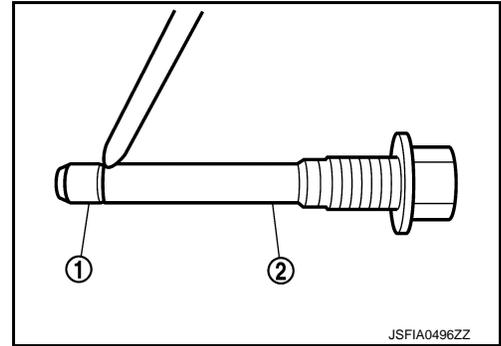
1. Remove the sliding pin bolt, and remove the cylinder body from the torque member. Refer to [BR-62, "BRAKE PAD : Removal and Installation"](#).
CAUTION:
Fix the brake pad at suitable tape so that the brake pad will not drop.
2. Remove sliding pin boots from torque member.

REAR DISC BRAKE

[LHD]

< REMOVAL AND INSTALLATION >

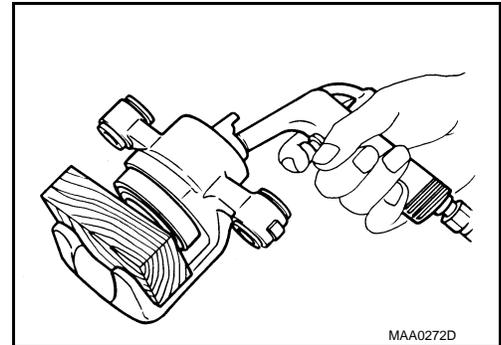
3. Remove bushing (1) from sliding pin bolt (2).



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

CAUTION:

Never get fingers caught in the pistons.



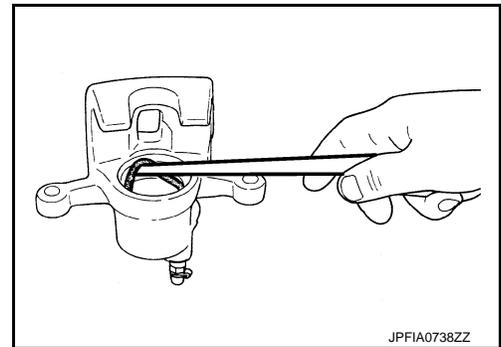
5. Remove piston seal from cylinder body using seal pick tool.

CAUTION:

Be careful not to damage a cylinder inner wall.

6. Remove bleeder valve and cap.

7. Perform inspection after disassembly. Refer to [BR-60. "BRAKE CALIPER ASSEMBLY : Inspection"](#).



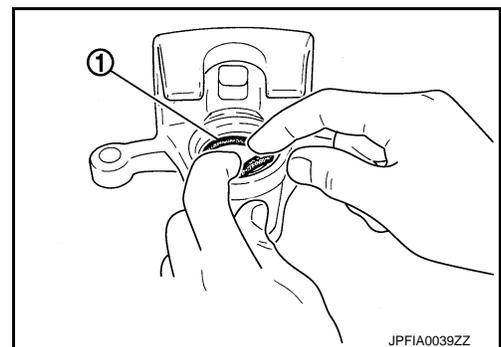
ASSEMBLY

1. Install bleeder valve and cap.

2. Apply rubber grease to piston seals (1), and install them to cylinder body.

CAUTION:

Never reuse piston seals.



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

REAR DISC BRAKE

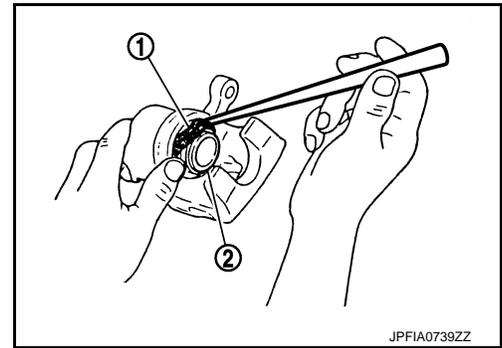
[LHD]

< REMOVAL AND INSTALLATION >

3. Apply rubber grease to piston boots (1). Cover the piston (2) end with piston boot, and then install cylinder side lip on piston boot securely into a groove on cylinder body.

CAUTION:

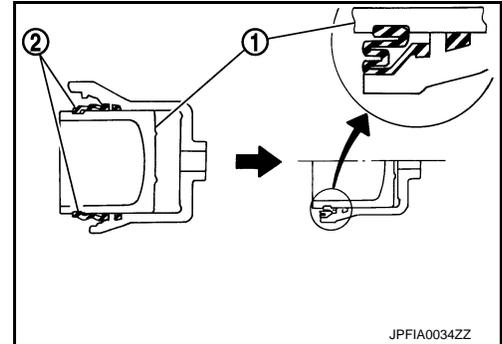
Never reuse piston boots.



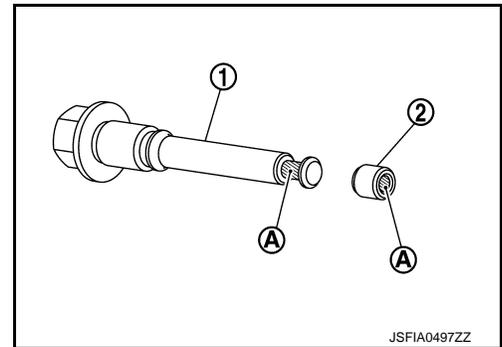
4. Apply new brake fluid to pistons (1). Push piston into cylinder body by hand and push piston boot (2) piston-side lip into the piston groove.

CAUTION:

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

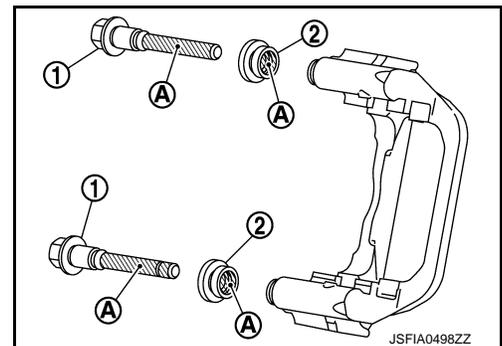


5. Apply rubber grease to mating faces (A) between sliding pin bolt (1) and bushing (2), and install bushing to sliding pin.



6. Apply rubber grease to mating faces (A) between sliding pin bolt (1) and sliding pin boot (2), and install sliding pin and sliding pin boot to sliding torque member.

7. Install the cylinder body to tighten sliding pin bolts to the specified torque. Refer to [BR-62, "BRAKE PAD : Exploded View"](#).



BRAKE CALIPER ASSEMBLY : Inspection

INFOID:000000006502230

INSPECTION AFTER DISASSEMBLY

Check the following items and replace if necessary.

Cylinder Body

Check the inner wall of the cylinder for rust, wear, cracks or damage.

CAUTION:

Always clean with new brake fluid. Never clean with mineral oil such as gasoline and light oil.

Torque Member

Check the torque member for rust, wear, cracks or damage.

REAR DISC BRAKE

< REMOVAL AND INSTALLATION >

[LHD]

Pistons

Check the surface of the piston for rust, wear, cracks or damage.

CAUTION:

A piston sliding surface is plated. Never polish with sandpaper.

Sliding Pin, Sliding Pin Boot and Bushing

Check the sliding pins, sliding boots and bushing for rust, wear, cracks or damage.

INSPECTION AFTER INSTALLATION

1. Check a drag of front disc brake. If any drag is found, follow the procedure described below.
2. Remove brake pads. Refer to [BR-54, "BRAKE PAD : Removal and Installation"](#).
3. Press the pistons. Refer to [BR-54, "BRAKE PAD : Removal and Installation"](#).
4. Install brake pads. Refer to [BR-54, "BRAKE PAD : Removal and Installation"](#).
5. Securely depress the brake pedal several times.
6. Check a drag of front disc brake again. If any drag is found, disassemble the cylinder body and replace if necessary. Refer to [BR-58, "BRAKE CALIPER ASSEMBLY : Disassembly and Assembly"](#).
7. Burnish contact surface between disc rotor and brake pads after refinishing or replacing disc rotor, or if a soft pedal occurs at very low mileage. Refer to [BR-18, "DISC ROTOR : Inspection and Adjustment"](#).

A

B

C

D

E

BR

G

H

I

J

K

L

M

N

O

P

SERVICE DATA AND SPECIFICATIONS (SDS)

< SERVICE DATA AND SPECIFICATIONS (SDS)

[LHD]

SERVICE DATA AND SPECIFICATIONS (SDS)

SERVICE DATA AND SPECIFICATIONS (SDS)

General Specifications

INFOID:000000006381493

MR16DDT

Unit: mm (in)

Front brake	Cylinder bore diameter		57.2 (2.252)
	Pad length × width × thickness		109.0 × 45.8 × 11.0 (4.29 × 1.803 × 0.433)
	Rotor outer diameter × thickness		296 × 26.0 (11.65 × 1.024)
Rear brake	Cylinder bore diameter		34.93 (1.3752)
	Pad length × width × thickness		83.0 × 31.9 × 8.5 (3.268 × 1.256 × 0.335)
	Rotor outer diameter × thickness		292 × 9.0 (11.50 × 0.354)
Master cylinder	Cylinder bore diameter		23.8 (15/16)
Control valve	Valve type		Electric brake force distribution
Brake booster	Diaphragm diameter	2WD	257 (10)
		4WD	256 (10)
Recommended brake fluid			Refer to MA-13, "Fluids and Lubricants" .

HR16DE, K9K

Unit: mm (in)

Front brake	Cylinder bore diameter		57.2 (2.252)
	Pad length × width × thickness		109.0 × 45.8 × 11.0 (4.29 × 1.803 × 0.433)
	Rotor outer diameter × thickness		280 × 24.0 (11.02 × 0.495)
Rear brake	Cylinder bore diameter		34.93 (1.3752)
	Pad length × width × thickness		83.0 × 31.9 × 8.5 (3.268 × 1.256 × 0.335)
	Rotor outer diameter × thickness		292 × 9.0 (11.50 × 0.354)
Master cylinder	Cylinder bore diameter		23.8 (15/16)
Control valve	Valve type		Electric brake force distribution
Brake booster	Diaphragm diameter	2WD	257 (10)
		4WD	256 (10)
Recommended brake fluid			Refer to MA-13, "Fluids and Lubricants" .

Brake Pedal

INFOID:000000006381278

Unit: mm (in)

Item		Standard
Brake pedal height		160.4 – 170.4 (6.31 – 6.71)
Depressed brake pedal height [Depressing 490 N (50 kg, 110 lb) while turning the engine ON]	MR16DDT	70.0 (2.756) or more
	HR16DE and K9K	65.0 (2.559) or more
Clearance between stop lamp switch and brake switch/brake pedal position switch threaded end and the brake pedal lever		0.74 – 1.96 (0.0291 – 0.0772)
Brake pedal play		3 – 11 (0.12 – 0.43)

Brake Booster

INFOID:000000006381279

2WD

SERVICE DATA AND SPECIFICATIONS (SDS)

< SERVICE DATA AND SPECIFICATIONS (SDS)

[LHD]

Unit: mm (in)

Item	Standard
Input rod length	156.25 – 157.75 (6.15 – 6.21)

4WD

Unit: mm (in)

Item	Standard
Input rod length	156.5 – 157.5 (6.16 – 6.20)

Front Disc Brake

INFOID:000000006381280

MR16DDT

Unit: mm (in)

Item	Limit
Brake pad	Wear thickness 2.0 (0.079)
Disc rotor	Wear thickness 24.0 (0.945)
	Thickness variation (measured at 8 positions) 0.008 (0.0003)
	Runout (with it attached to the vehicle) 0.035 (0.0014)

HR16DE, K9K

Unit: mm (in)

Item	Limit
Brake pad	Wear thickness 2.0 (0.079)
Disc rotor	Wear thickness 22.0 (0.866)
	Thickness variation (measured at 8 positions) 0.008 (0.0003)
	Runout (with it attached to the vehicle) 0.035 (0.0014)

Rear Disc Brake

INFOID:000000006381410

Unit: mm (in)

Item	Limit
Brake pad	Wear thickness 2.0 (0.079)
Disc rotor	Wear thickness 8.0 (0.315)
	Thickness variation (measured at 8 positions) 0.016 (0.0006)
	Runout (with it attached to the vehicle) 0.1 (0.004)

PRECAUTION

PRECAUTIONS

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

INFOID:000000006710506

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. Information necessary to service the system safely is included in the "SRS AIR BAG" and "SEAT BELT" of this Service Manual.

The vehicle may be equipped with a passenger air bag deactivation switch. Because no rear seat exists where a rear-facing child restraint can be placed, the switch is designed to turn off the passenger air bag so that a rear-facing child restraint can be used in the front passenger seat. The switch is located in the center of the instrument panel, near the ashtray. When the switch is turned to the ON position, the passenger air bag is enabled and could inflate for certain types of collision. When the switch is turned to the OFF position, the passenger air bag is disabled and will not inflate. A passenger air bag OFF indicator on the instrument panel lights up when the passenger air bag is switched OFF. The driver air bag always remains enabled and is not affected by the passenger air bag deactivation switch.

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 AIR BAG".
- 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.
- The vehicle may be equipped with a passenger air bag deactivation switch which can be operated by the customer. When the passenger air bag is switched OFF, the passenger air bag is disabled and will not inflate. When the passenger air bag is switched ON, the passenger air bag is enabled and could inflate for certain types of collision. After SRS maintenance or repair, make sure the passenger air bag deactivation switch is in the same position (ON or OFF) as when the vehicle arrived for service.

PRECAUTIONS WHEN USING POWER TOOLS (AIR OR ELECTRIC) AND HAMMERS

WARNING:

- When working near the Air Bag Diagnosis Sensor Unit or other Air Bag System sensors with the ignition ON or engine running, DO NOT use air or electric power tools or strike near the sensor(s) with a hammer. Heavy vibration could activate the sensor(s) and deploy the air bag(s), possibly causing serious injury.
- When using air or electric power tools or hammers, always switch the ignition OFF, disconnect the battery, and wait at least 3 minutes before performing any service.

Precaution Necessary for Steering Wheel Rotation after Battery Disconnect

INFOID:000000006710507

NOTE:

- Before removing and installing any control units, first turn the ignition switch to the LOCK position, then disconnect both battery cables.
- After finishing work, confirm that all control unit connectors are connected properly, then re-connect both battery cables.
- Always use CONSULT-III to perform self-diagnosis as a part of each function inspection after finishing work. If a DTC is detected, perform trouble diagnosis according to self-diagnosis results.

For vehicle with steering lock unit, if the battery is disconnected or discharged, the steering wheel will lock and cannot be turned.

If turning the steering wheel is required with the battery disconnected or discharged, follow the operation procedure below before starting the repair operation.

PRECAUTIONS

[RHD]

< PRECAUTION >

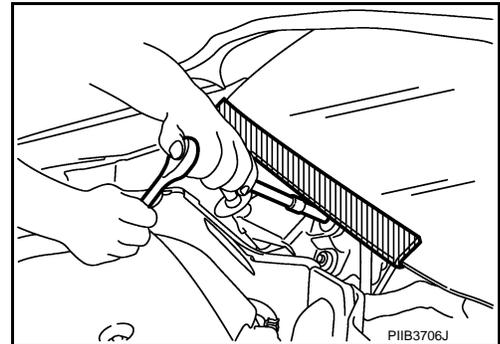
OPERATION PROCEDURE

1. Connect both battery cables.
NOTE:
Supply power using jumper cables if battery is discharged.
2. Turn the ignition switch to ACC position.
(At this time, the steering lock will be released.)
3. Disconnect both battery cables. The steering lock will remain released with both battery cables disconnected and the steering wheel can be turned.
4. Perform the necessary repair operation.
5. When the repair work is completed, re-connect both battery cables. With the brake pedal released, turn the ignition switch from ACC position to ON position, then to LOCK position. (The steering wheel will lock when the ignition switch is turned to LOCK position.)
6. Perform self-diagnosis check of all control units using CONSULT-III.

Precaution for Procedure without Cowl Top Cover

INFOID:000000006708015

When performing the procedure after removing cowl top cover, cover the lower end of windshield with urethane, etc.



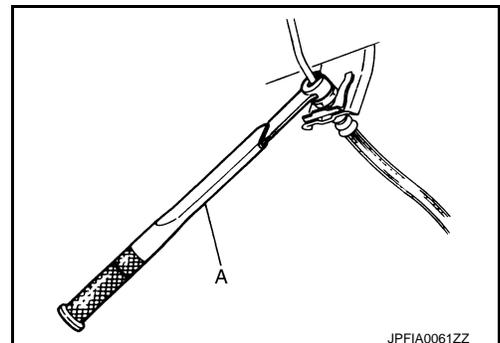
Precaution for Brake System

INFOID:000000006589782

WARNING:

Clean any dust from the front brake and rear brake with a vacuum dust collector. Never blow with compressed air.

- Brake fluid use refer to [MA-13, "Fluids and Lubricants"](#).
 - Never reuse drained brake fluid.
 - Never spill or splash brake fluid on painted surfaces. Brake fluid may seriously damage paint. Wipe it off immediately and wash with water if it gets on a painted surface. For brake component parts, never wash them with water.
 - Always confirm the specified tightening torque when installing the brake pipes.
 - After pressing the brake pedal more deeply or harder than normal driving, such as air bleeding, check each item of brake pedal. Adjust brake pedal if it is outside the standard value.
 - Always clean with new brake fluid when cleaning the master cylinder, brake caliper and other components.
 - Never use mineral oils such as gasoline or light oil to clean. They may damage rubber parts and cause improper operation.
 - Always loosen the brake tube flare nut with a flare nut wrench.
 - Tighten the brake tube flare nut to the specified torque with a flare nut torque wrench (A).
 - Turn the ignition switch OFF and disconnect the ABS actuator and electric unit (control unit) harness connector or the battery negative terminal before performing the work.
 - Check that no brake fluid leakage is present after replacing the parts.
 - Burnish the brake contact surfaces after refinishing or replacing rotors, after replacing pads, or if a soft pedal occurs at very low mileage.
- Front brake pad: Refer to [BR-84, "BRAKE PAD : Inspection and Adjustment"](#).
- Front disc rotor: Refer to [BR-84, "DISC ROTOR : Inspection and Adjustment"](#).
- Rear brake pad: Refer to [BR-86, "BRAKE PAD : Inspection and Adjustment"](#).



PRECAUTIONS

< PRECAUTION >

[RHD]

-
- Rear disc rotor: Refer to [BR-86, "DISC ROTOR : Inspection and Adjustment"](#).

PREPARATION

< PREPARATION >

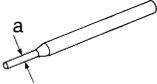
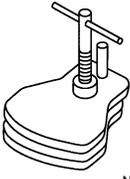
[RHD]

PREPARATION

PREPARATION

Commercial Service Tool

INFOID:000000006589783

Tool name	Description
<p>Pin punch a: 4 mm (0.16 in)</p>  <p>NT410</p>	<p>Removing and installing reservoir tank</p>
<p>Handy vacuum pump</p>  <p>ZZC1313D</p>	<ul style="list-style-type: none">• Air tight• Inspection of check valve
<p>Brake caliper wrench</p>  <p>NNFIA0040ZZ</p>	<p>Return the piston</p>

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

PERIODIC MAINTENANCE

BRAKE PEDAL

Inspection and Adjustment

INFOID:000000006589785

INSPECTION

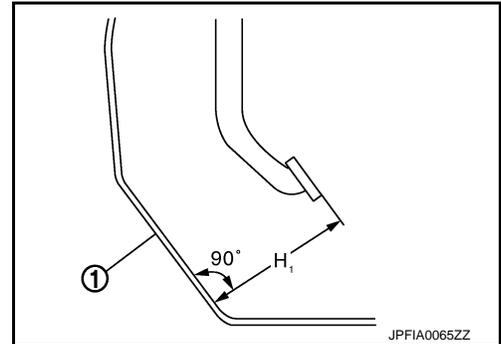
Brake Pedal Height

Check the height (H₁) between the dash lower panel (1) and the brake pedal upper surface.

H₁ : Refer to [BR-136, "Brake Pedal"](#).

CAUTION:

Remove the floor trim.



Stop Lamp Switch

Check the clearance (C) among the brake pedal lever (1) and the stop lamp switch (2) threaded end.

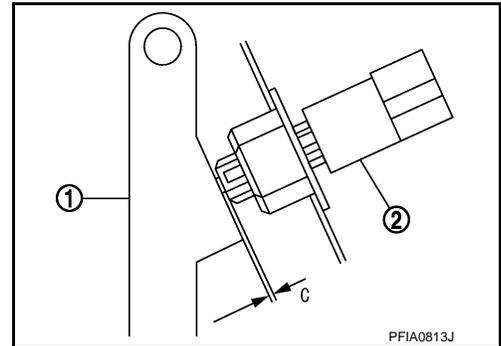
C : Refer to [BR-136, "Brake Pedal"](#).

CAUTION:

The stop lamp must turn off when the brake pedal is released.

NOTE:

Pull the brake pedal pad to make the clearance between the stop lamp switch threaded end and the brake pedal lever.



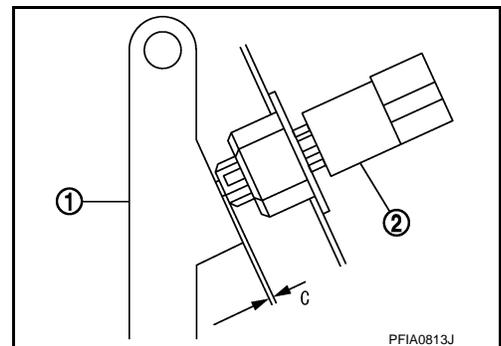
Brake Switch/Brake Pedal Position Switch

Check the clearance (C) among the brake pedal lever (1) and the brake switch/brake pedal position switch (2) threaded end.

C : Refer to [BR-136, "Brake Pedal"](#).

NOTE:

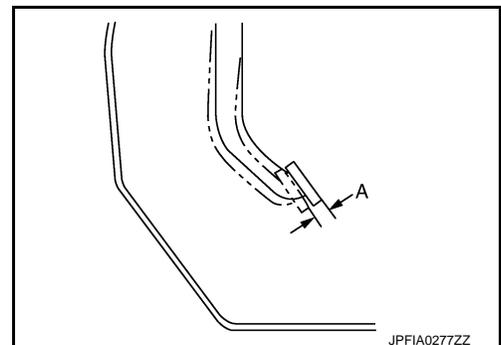
Pull the brake pedal pad to make the clearance between the brake switch/brake pedal position switch threaded end and the brake pedal lever.



Brake Pedal Play

Press the brake pedal. Check the brake pedal play (A) (stroke until fluid pressure occurs).

A : Refer to [BR-136, "Brake Pedal"](#).



Depressed Brake Pedal Height

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

BRAKE PEDAL

[RHD]

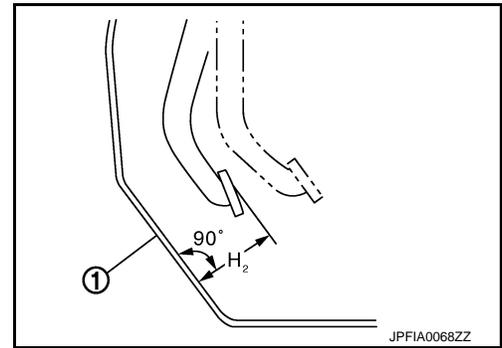
< PERIODIC MAINTENANCE >

Check the height between the dash lower panel (1) and the brake pedal upper surface (H₂) when depressing the brake pedal at 490 N (50 kg, 110 lb) while turning engine ON.

H₂ : Refer to [BR-136, "Brake Pedal"](#).

CAUTION:

Remove the floor trim.



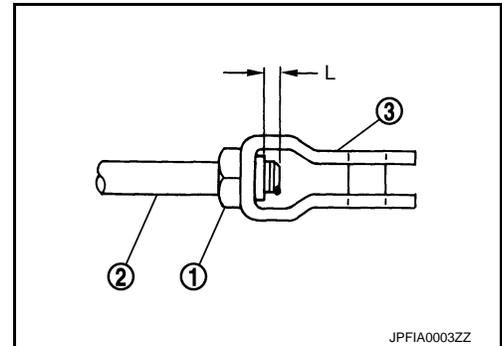
ADJUSTMENT

Brake Pedal Height

1. Remove instrument lower panel. Refer to [IP-13, "Removal and Installation"](#).
2. Disconnect the stop lamp switch and brake switch/brake pedal position switch harness connector.
3. Loosen the stop lamp switch and brake switch/brake pedal position switch 45° counterclockwise.
4. Loosen the lock nut (2) of input rod (1).
5. Rotate the input rod, adjust the brake pedal to the specified height (H₁).

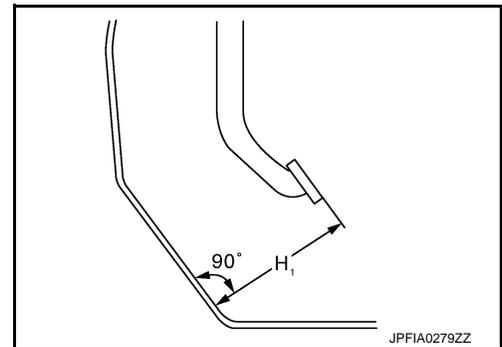
CAUTION:

The threaded end of the input rod must project to the inner side (L) of the clevis (3).



H₁ : Refer to [BR-136, "Brake Pedal"](#).

6. Tighten the lock nut. Refer to [BR-111, "Exploded View"](#).
7. Adjust the clearance between the brake pedal lever and the stop lamp switch and brake switch/brake pedal position switch threaded end after adjusting the brake pedal height.



Stop Lamp Switch

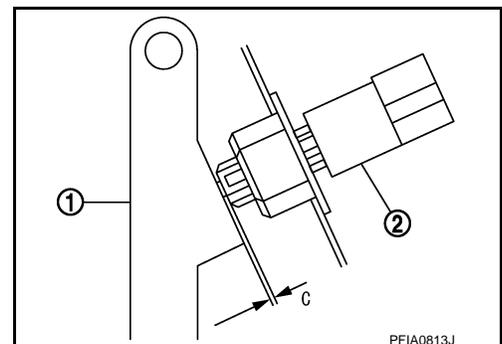
1. Remove instrument lower panel. Refer to [IP-13, "Removal and Installation"](#).
2. Disconnect the harness connector from stop lamp switch.
3. Loosen the stop lamp switch 45° counterclockwise.
4. Press-fit the stop lamp switch (2) until the stop lamp switch hits the brake pedal lever (1) 45° clockwise while pulling the brake pedal pad slightly.

CAUTION:

• The clearance (C) between the brake pedal lever and stop lamp switch threaded end and must be the specified value.

C : Refer to [BR-136, "Brake Pedal"](#).

• The stop lamp must be turned off when the brake pedal is released.



Brake Switch/Brake Pedal Position Switch

BRAKE PEDAL

[RHD]

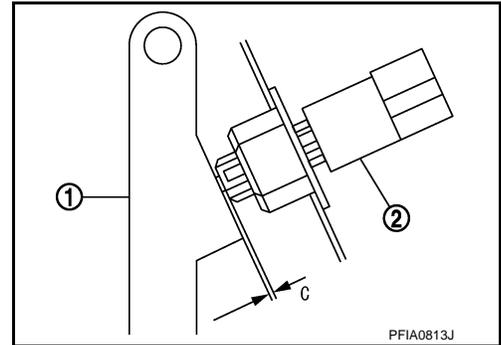
< PERIODIC MAINTENANCE >

1. Remove instrument lower panel. Refer to [IP-13, "Removal and Installation"](#).
2. Disconnect the harness connector from brake switch/brake pedal position switch.
3. Loosen the brake switch/brake pedal position switch 45° counterclockwise.
4. Press-fit the brake switch/brake pedal position switch (2) until the brake switch/brake pedal position switch hits the brake pedal lever (1) 45° clockwise while pulling the brake pedal pad slightly.

CAUTION:

The clearance (C) between the brake pedal lever and brake switch/brake pedal position switch threaded and must be the specified value.

C : Refer to [BR-136, "Brake Pedal"](#).



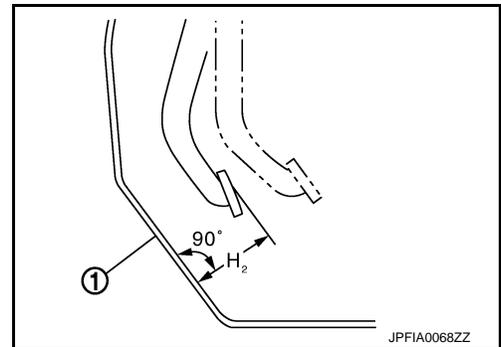
Depressed Brake Pedal Height

1. Perform the air bleeding. Refer to [BR-81, "Bleeding Brake System"](#).
2. Check the height between the dash lower panel (1) and the brake pedal upper surface (H₂) when depressing the brake pedal at 490 N (50 kg, 110 lb) while turning engine ON.

H₂ : Refer to [BR-136, "Brake Pedal"](#).

CAUTION:

Remove the floor trim.



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

BRAKE FLUID

< PERIODIC MAINTENANCE >

[RHD]

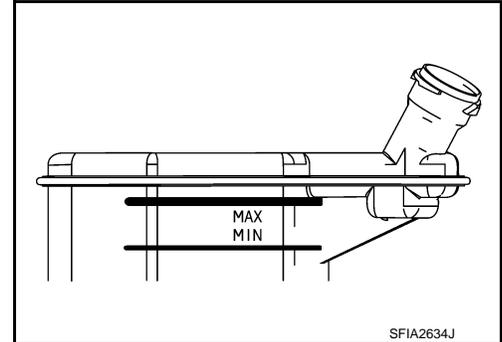
BRAKE FLUID

Inspection

INFOID:000000006589786

BRAKE FLUID LEVEL

- Check that the fluid level in the reservoir tank is within the specified range (MAX – MIN lines).
- Visually check for any brake fluid leakage around the reservoir tank.
- Check the brake system for any leakage if the fluid level is extremely low (lower than MIN).
- Check the brake system for fluid leakage if the warning lamp remains illuminated even after the parking brake is released.
- Check the reservoir tank for the mixing of foreign matter (e.g. dust) and oils other than brake fluid.

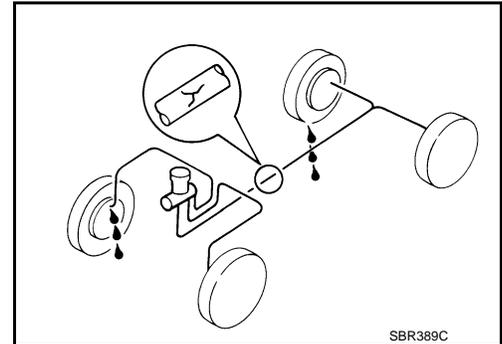


BRAKE LINE

1. Check brake line (tubes and hoses) for cracks, deterioration or other damage. Replace any damaged parts.
2. Depress the brake pedal with a force of 785 N (80 kg, 176 lb) and hold down the pedal for approximately 5 seconds with the engine running. Check for any fluid leakage.

CAUTION:

Retighten the applicable connection to the specified torque and repair any abnormal (damaged, worn or deformed) part if any brake fluid leakage is present.



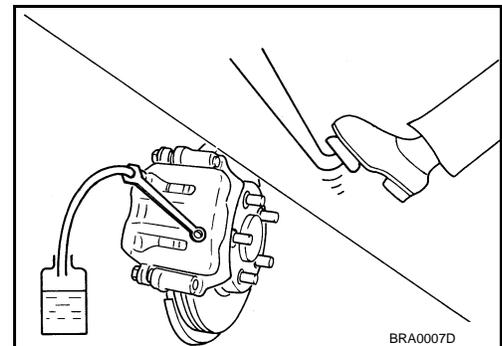
Draining

INFOID:000000006589787

CAUTION:

- **Never spill or splash brake fluid on painted surfaces. Brake fluid may seriously damage paint. Wipe it off immediately and wash with water if it gets on a painted surface. For brake component parts, never wash them with water.**
- **Turn the ignition switch OFF and disconnect the ABS actuator and electric unit (control unit) harness connector or the battery negative terminal before performing work.**

1. Connect a vinyl tube to the bleed valve.
2. Depress the brake pedal and loosen the bleeder valve to gradually discharge brake fluid.



Refilling

INFOID:000000006589788

CAUTION:

- **Turn the ignition switch OFF and disconnect the ABS actuator and electric unit (control unit) harness connector or the battery negative terminal before performing work.**

BRAKE FLUID

[RHD]

< PERIODIC MAINTENANCE >

- **Never spill or splash brake fluid on painted surfaces. Brake fluid may seriously damage paint. Wipe it off immediately and wash with water if it gets on a painted surface. For brake component parts, never wash them with water.**
1. Check that there is no foreign material in the reservoir tank, and refill with new brake fluid.
CAUTION:
 - **Never reuse drained brake fluid.**
 - **Never allow foreign matter (e.g. dust) and oils other than brake fluid to enter the reservoir tank.**
 2. Loosen the bleeder valve, slowly depress the brake pedal to the full stroke, and then release the pedal. Repeat this operation at intervals of 2 or 3 seconds until new brake fluid is discharged. Then close the bleeder valve with the brake pedal depressed. Repeat the same work on each wheel.
 3. Perform the air bleeding. Refer to [BR-81, "Bleeding Brake System"](#).

Bleeding Brake System

INFOID:000000006589789

CAUTION:

- **Turn the ignition switch OFF and disconnect the ABS actuator and electric unit (control unit) harness connector or the battery negative terminal before performing the work.**
- **Monitor the fluid level in the reservoir tank while performing the air bleeding**
- **Never spill or splash brake fluid on painted surfaces. Brake fluid may seriously damage paint. Wipe it off immediately and wash with water if it gets on a painted surface. For brake component parts, never wash them with water.**

1. Check that there is no foreign material in the reservoir tank, and refill with new brake fluid.
CAUTION:
 - **Never reuse drained brake fluid.**
 - **Never allow oils other than brake fluid to enter the reservoir tank.**
2. Connect a vinyl tube to the bleeder valve of the rear left brake.
3. Fully depress the brake pedal 4 to 5 times.
4. Loosen the bleeder valve and bleed air with the brake pedal depressed, and then quickly tighten the bleeder valve.
5. Repeat steps 3 and 4 until all of the air is out of the brake line.
6. Tighten the bleeder valve to the specified torque.
 - Front disc brake: refer to [BR-122, "BRAKE CALIPER ASSEMBLY : Exploded View"](#).
 - Rear disc brake: refer to [BR-130, "BRAKE CALIPER ASSEMBLY : Exploded View"](#).
7. Perform steps 2 to 6. Occasionally fill with the brake fluid in order to keep it in the reservoir tank at least half of MAX line. Bleed air in the following order: rear left brake → front right brake → rear right brake → and front left brake in order.
8. Check that the fluid level in the reservoir tank is within the specified range after air bleeding. Refer to [BR-80, "Inspection"](#).
9. Check each item of brake pedal. Adjust it if the measurement value is not the standard. Refer to [BR-77, "Inspection and Adjustment"](#).

BRAKE MASTER CYLINDER

< PERIODIC MAINTENANCE >

[RHD]

BRAKE MASTER CYLINDER

Inspection

INFOID:000000006589790

FLUID LEAK

Check for brake fluid leakage from the master cylinder mounting face, reservoir tank mounting face and brake tube connections.

BRAKE BOOSTER

< PERIODIC MAINTENANCE >

[RHD]

BRAKE BOOSTER

Inspection

INFOID:000000006589791

OPERATION

Depress the brake pedal several times at 5-second intervals with the engine stopped. Start the engine with the brake pedal fully depressed. Check that the clearance between brake pedal and dash lower panel decreases.

NOTE:

A slight impact with a small click may be felt on the pedal when the brake pedal is fully depressed. This is a normal phenomenon due to the brake system operation.

AIR TIGHT

1. Run the engine at idle for 1 minute to apply vacuum to the brake booster, and stop the engine.
2. Depress the brake pedal several times at 5-second intervals until the accumulated vacuum is released to atmospheric pressure. Check that the clearance between brake pedal and dash lower panel gradually increases each time the brake pedal is depressed when performing this operation.
3. Depress the brake pedal with the engine running. Then stop the engine while holding down the brake pedal. Check that the brake pedal stroke does not change after holding down the brake pedal for 30 seconds or more.

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

FRONT DISC BRAKE

[RHD]

< PERIODIC MAINTENANCE >

FRONT DISC BRAKE BRAKE PAD

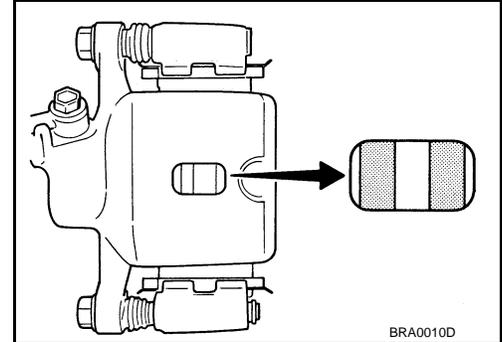
BRAKE PAD : Inspection and Adjustment

INFOID:000000006589792

INSPECTION

Check brake pad wear thickness from an inspection hole on cylinder body. Check using a scale if necessary.

Wear thickness : Refer to [BR-137, "Front Disc Brake"](#).



ADJUSTMENT

Burnish contact surfaces between disc rotor and brake pads according to the following procedure after refinishing or replacing brake pads, or if a soft pedal occurs at very low mileage.

CAUTION:

- Be careful of vehicle speed because the brake does not operate firmly/securely until pads and disc rotor are securely fitted.
 - Only perform this procedure under safe road and traffic conditions. Use extreme caution.
1. Drive vehicle on straight, flat road.
 2. Depress brake pedal with the power to stop vehicle within 3 to 5 seconds until the vehicle stops.
 3. Drive without depressing brake for a few minutes to cool the brake.
 4. Repeat steps 1 to 3 until pad and disc rotor are securely fitted.

DISC ROTOR

DISC ROTOR : Inspection and Adjustment

INFOID:000000006589793

INSPECTION

Appearance

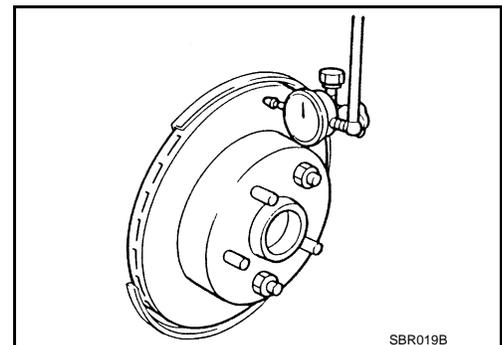
Check surface of disc rotor for uneven wear, cracks, and serious damage. Replace it if necessary.

- MR16DDT: Refer to [FAX-11, "Removal and Installation"](#).
- HR16DE: Refer to [FAX-43, "Removal and Installation"](#).
- K9K: Refer to [FAX-68, "Removal and Installation"](#).

Runout

1. Fix the disc rotor to the wheel hub and bearing assembly with wheel nuts (2 points at least).
2. Check the wheel bearing axial end play before the inspection.
 - MR16DDT: Refer to [FAX-9, "Inspection"](#).
 - HR16DE: Refer to [FAX-41, "Inspection"](#).
 - K9K: Refer to [FAX-66, "Inspection"](#).
3. Inspect the runout with a dial indicator to measure at 10 mm (0.39 in) inside the disc edge.

Runout (with it attached to the vehicle) : Refer to [BR-137, "Front Disc Brake"](#).



4. Find the installation position that has a minimum runout by shifting the disc rotor-to-wheel hub and bearing assembly installation position by one hole at a time if the runout exceeds the limit value.
- Refinish the disc rotor if the runout is outside the limit even after performing the above operation.

CAUTION:

FRONT DISC BRAKE

[RHD]

< PERIODIC MAINTENANCE >

- Check in advance that the thickness of the disc rotor is wear thickness + 0.3 mm (0.012 in) or more.
- If the thickness is less than wear thickness + 0.3 mm (0.012 in), replace the disc rotor.
- MR16DDT: Refer to [FAX-11, "Removal and Installation"](#).
- HR16DE: Refer to [FAX-43, "Removal and Installation"](#).
- K9K: Refer to [FAX-68, "Removal and Installation"](#).

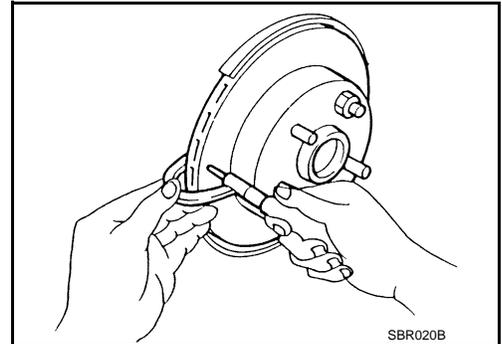
Wear thickness : Refer to [BR-137, "Front Disc Brake"](#).

Thickness

Check the thickness of the disc rotor using a micrometer. Replace the disc rotor if the thickness is below the wear limit.

- MR16DDT: Refer to [FAX-11, "Removal and Installation"](#).
- HR16DE: Refer to [FAX-43, "Removal and Installation"](#).
- K9K: Refer to [FAX-68, "Removal and Installation"](#).

Wear thickness : Refer to [BR-137, "Front Disc Brake"](#).



ADJUSTMENT

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

CAUTION:

- Be careful of vehicle speed because the brake does not operate firmly/securely until pad and disc rotor are securely fitted.
 - Only perform this procedure under safe road and traffic conditions. Use extreme caution.
1. Drive vehicle on straight, flat road.
 2. Depress brake pedal with the power to stop vehicle within 3 to 5 seconds until the vehicle stops.
 3. Drive without depressing brake for a few minutes to cool the brake.
 4. Repeat steps 1 to 3 until pad and disc rotor are securely fitted.

REAR DISC BRAKE

< PERIODIC MAINTENANCE >

[RHD]

REAR DISC BRAKE

BRAKE PAD

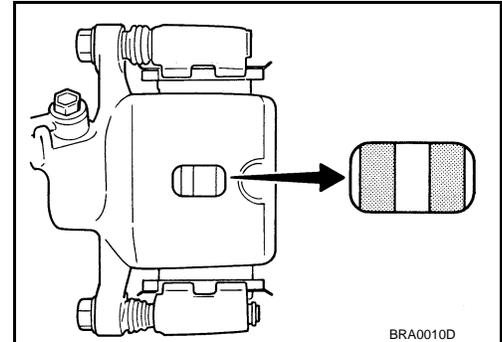
BRAKE PAD : Inspection and Adjustment

INFOID:000000006589794

INSPECTION

Check brake pad wear thickness from an inspection hole on cylinder body. Check using a scale if necessary.

Wear thickness : Refer to [BR-137, "Rear Disc Brake"](#).



ADJUSTMENT

Burnish contact surfaces between disc rotor and brake pads according to the following procedure after refinishing or replacing brake pads, or if a soft pedal occurs at very low mileage.

CAUTION:

- Be careful of vehicle speed because the brake does not operate firmly/securely until pads and disc rotor are securely fitted.
- Only perform this procedure under safe road and traffic conditions. Use extreme caution.

1. Drive vehicle on straight, flat road.
2. Depress brake pedal with the power to stop vehicle within 3 to 5 seconds until the vehicle stops.
3. Drive without depressing brake for a few minutes to cool the brake.
4. Repeat steps 1 to 3 until pad and disc rotor are securely fitted.

DISC ROTOR

DISC ROTOR : Inspection and Adjustment

INFOID:000000006589795

INSPECTION

Appearance

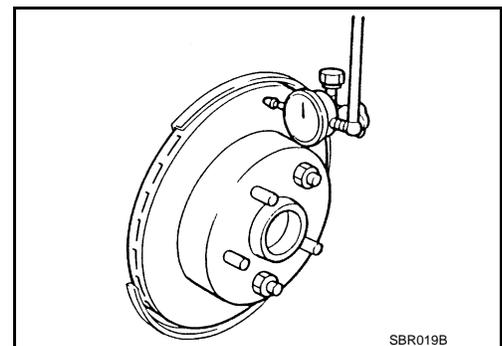
Check surface of disc rotor for uneven wear, cracks, and serious damage. Replace it if necessary.

- 2WD: Refer to [RAX-5, "Removal and Installation"](#).
- 4WD: Refer to [RAX-14, "Removal and Installation"](#).

Runout

1. Fix the disc rotor to the wheel hub and bearing assembly with wheel nuts (2 points at least).
2. Check the wheel bearing axial end play before the inspection.
 - 2WD: Refer to [RAX-4, "Inspection"](#).
 - 4WD: Refer to [RAX-12, "Inspection"](#).
3. Inspect the runout with a dial indicator to measure at 10 mm (0.39 in) inside the disc edge.

Runout (with it attached to the vehicle) : Refer to [BR-137, "Rear Disc Brake"](#).



4. Find the installation position that has a minimum runout by shifting the disc rotor-to-wheel hub and bearing assembly installation position by one hole at a time if the runout exceeds the limit value.

- Refinish the disc rotor if the runout is outside the limit even after performing the above operation.

CAUTION:

- Check in advance that the thickness of the disc rotor is wear thickness + 0.3 mm (0.012 in) or more.

REAR DISC BRAKE

[RHD]

< PERIODIC MAINTENANCE >

- If the thickness is less than wear thickness + 0.3 mm (0.012 in), replace the disc rotor.
- 2WD: Refer to [RAX-5, "Removal and Installation"](#).
- 4WD: Refer to [RAX-14, "Removal and Installation"](#).

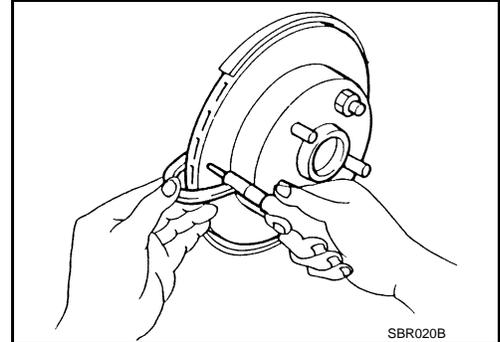
Wear thickness : Refer to [BR-137, "Rear Disc Brake"](#).

Thickness

Check the thickness of the disc rotor using a micrometer. Replace the disc rotor if the thickness is below the wear limit.

- 2WD: Refer to [RAX-5, "Removal and Installation"](#).
- 4WD: Refer to [RAX-14, "Removal and Installation"](#).

Wear thickness : Refer to [BR-137, "Rear Disc Brake"](#).



ADJUSTMENT

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

CAUTION:

- **Be careful of vehicle speed because the brake does not operate firmly/securely until pad and disc rotor are securely fitted.**
 - **Only perform this procedure under safe road and traffic conditions. Use extreme caution.**
1. Drive vehicle on straight, flat road.
 2. Depress brake pedal with the power to stop vehicle within 3 to 5 seconds until the vehicle stops.
 3. Drive without depressing brake for a few minutes to cool the brake.
 4. Repeat steps 1 to 3 until pad and disc rotor are securely fitted.

BRAKE PEDAL

< REMOVAL AND INSTALLATION >

[RHD]

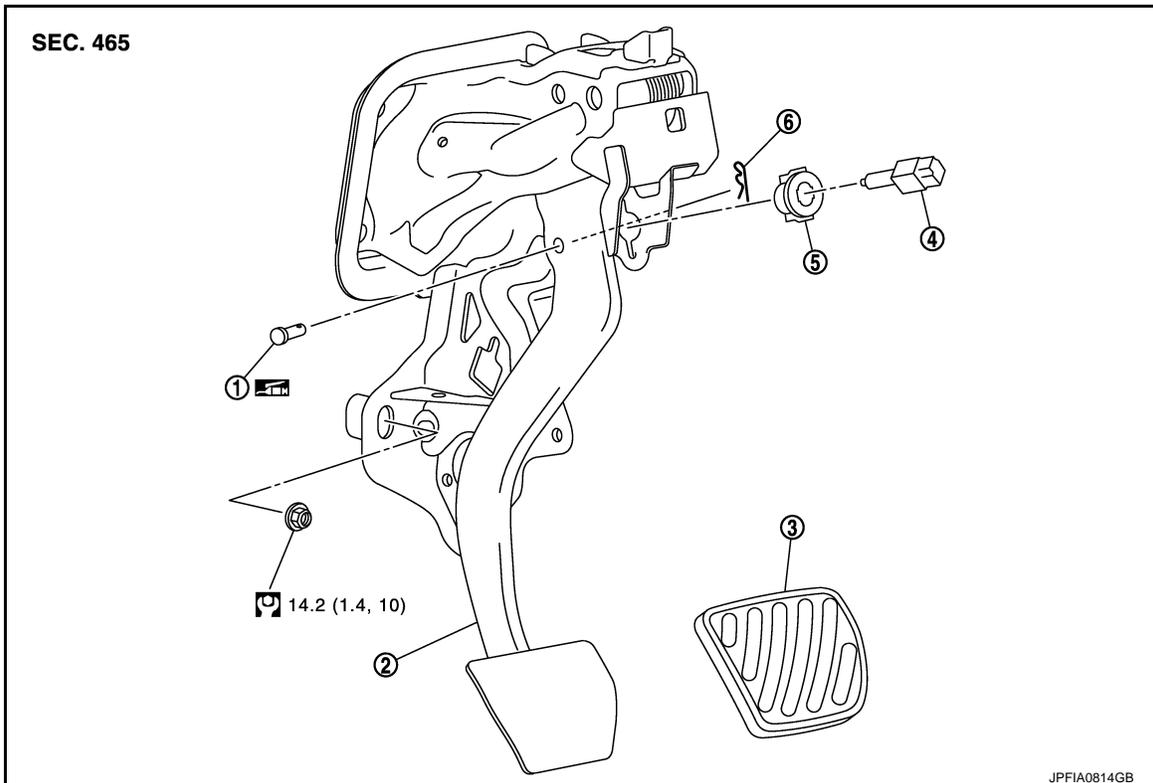
REMOVAL AND INSTALLATION

BRAKE PEDAL

Exploded View

INFOID:000000006589796

WITHOUT ESP



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

: Apply multi-purpose grease.

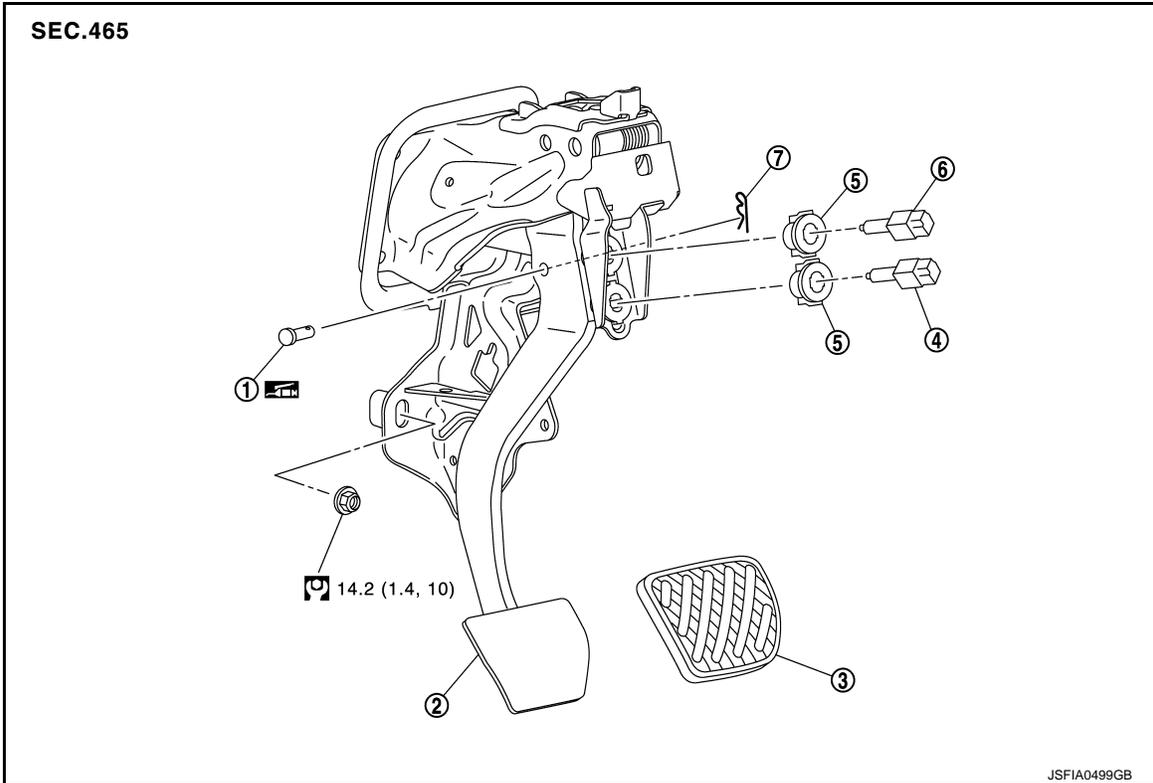
: N-m (kg-m, ft-lb)

WITH ESP

BRAKE PEDAL

< REMOVAL AND INSTALLATION >

[RHD]



- | | | |
|---|-------------------------|---------------------|
| 1. Clevis pin | 2. Brake pedal assembly | 3. Brake pedal pad |
| 4. Brake switch/brake pedal position switch | 5. Clip | 6. Stop lamp switch |
| 7. Snap pin | | |

: Apply multi-purpose grease.

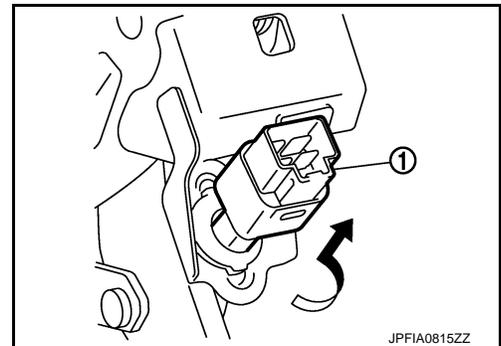
: N·m (kg·m, ft·lb)

Removal and Installation

INFOID:000000006589797

REMOVAL

1. Remove instrument lower panel. Refer to [IP-13. "Removal and Installation"](#).
2. Disconnect the stop lamp switch and the brake switch/brake pedal position switch harness connectors.
3. Rotate the stop lamp switch and the brake switch/brake pedal position switch (1) counter clockwise to remove.
4. Disconnect the accelerator pedal harness connector and harness clip.

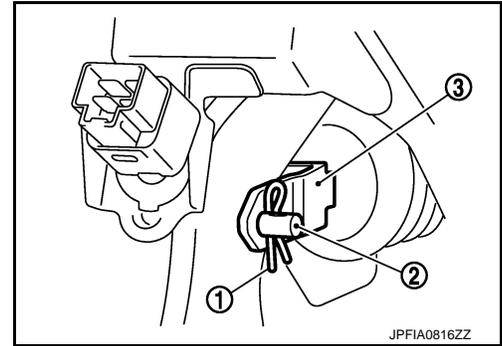


BRAKE PEDAL

[RHD]

< REMOVAL AND INSTALLATION >

5. Remove snap pin (1) and clevis pin (2) from clevis (3) of brake booster.
6. Remove the brake pedal assembly.
CAUTION:
Hold the brake booster and master cylinder assembly so as not to drop out or contact them other parts.
7. Remove accelerator pedal from brake pedal assembly. Refer to [ACC-3, "Removal and Installation"](#).
8. Perform inspection after removal. Refer to [BR-90, "Inspection and Adjustment"](#).



INSTALLATION

Note the following, and install in the reverse order of removal.

- Apply the multi-purpose grease to the clevis pin and the mating faces. (Not necessary if grease has been already applied)

NOTE:

The clevis pin may be inserted in either direction.

- Perform adjustment after installation. Refer to [BR-90, "Inspection and Adjustment"](#).

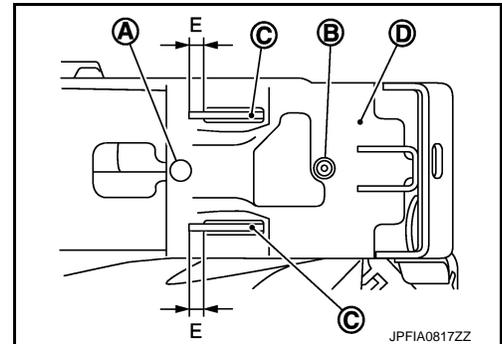
Inspection and Adjustment

INFOID:000000006589798

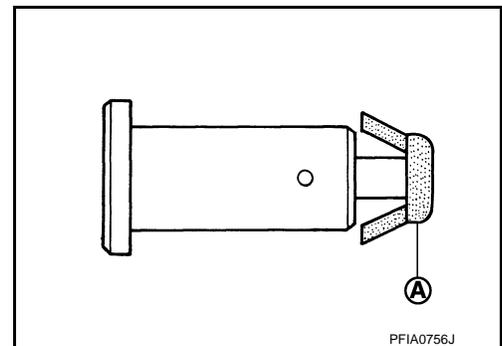
INSPECTION AFTER REMOVAL

- Check for the following items and replace the brake pedal assembly if necessary.
 - Check the brake pedal upper rivet (made by aluminum) (A) and pin (B) for deformation.
 - Check the brake pedal for bend, damage, and cracks on the welded parts.
 - Check the lapping length (E) of sub-bracket (C) and slide plate (D).

E : 5.5 mm (0.217 in) or more



- Check clevis pin and plastic stopper (A) for damage and deformation. If any is found, replace clevis pin.



ADJUSTMENT AFTER INSTALLATION

- Adjust each item of brake pedal after installing the brake pedal assembly to the vehicle. Refer to [BR-77, "Inspection and Adjustment"](#).
- Perform the release position learning of the accelerator pedal.
 - HR16DE: Refer to [EC-542, "Work Procedure"](#).
 - MR16DDT: Refer to [EC-134, "Work Procedure"](#).

BRAKE PIPING

< REMOVAL AND INSTALLATION >

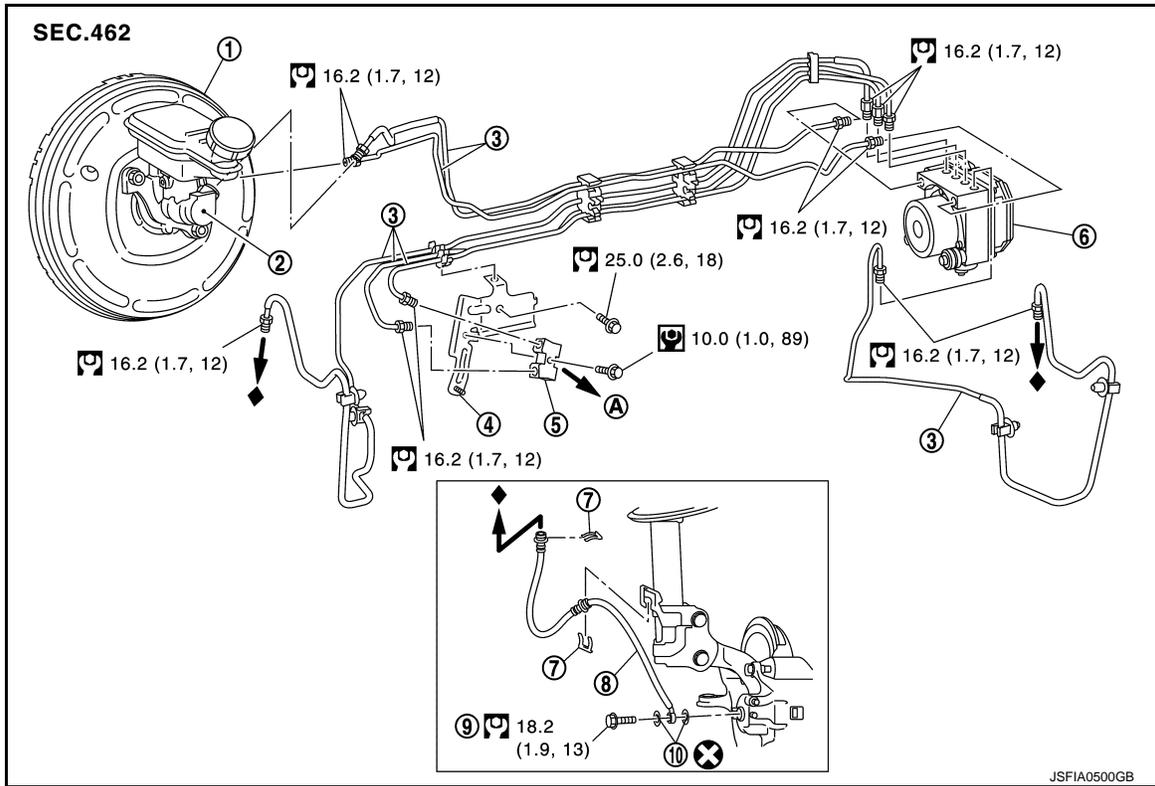
[RHD]

BRAKE PIPING FRONT

FRONT : Exploded View

INFOID:000000006589799

WITHOUT ESP



- | | | |
|-----------------------|-----------------------------|--|
| 1. Brake booster | 2. Master cylinder assembly | 3. Brake tube |
| 4. Connector bracket | 5. Connector | 6. ABS actuator and electric unit (control unit) |
| 7. Lock plate | 8. Brake hose | 9. Union bolt |
| 10. Copper washer | | |
| A. To rear brake tube | | |

: N·m (kg-m, ft-lb)

: N·m (kg-m, in-lb)

: Always replace after every disassembly.

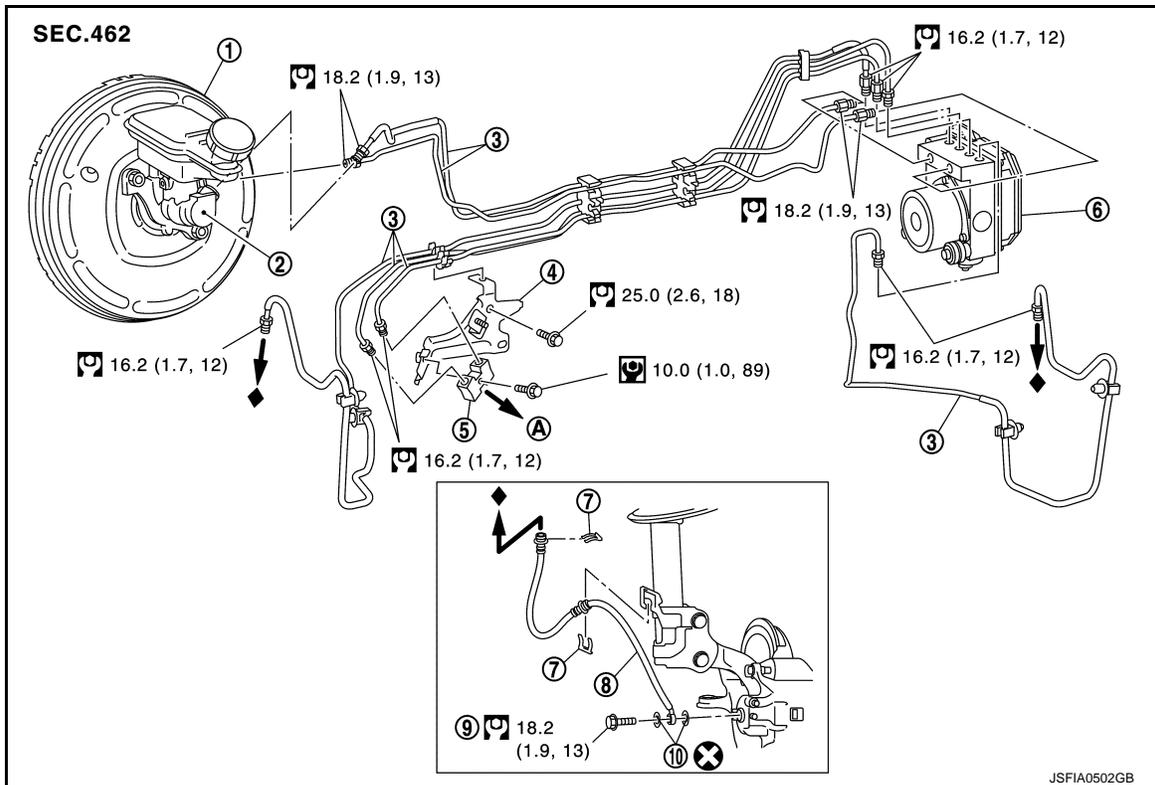
WITH ESP

BRAKE PIPING

< REMOVAL AND INSTALLATION >

[RHD]

MR16DDT



- | | | |
|-----------------------|-----------------------------|--|
| 1. Brake booster | 2. Master cylinder assembly | 3. Brake tube |
| 4. Connector bracket | 5. Connector | 6. ABS actuator and electric unit (control unit) |
| 7. Lock plate | 8. Brake hose | 9. Union bolt |
| 10. Copper washer | | |
| A. To rear brake tube | | |

: N-m (kg-m, ft-lb)

: N-m (kg-m, in-lb)

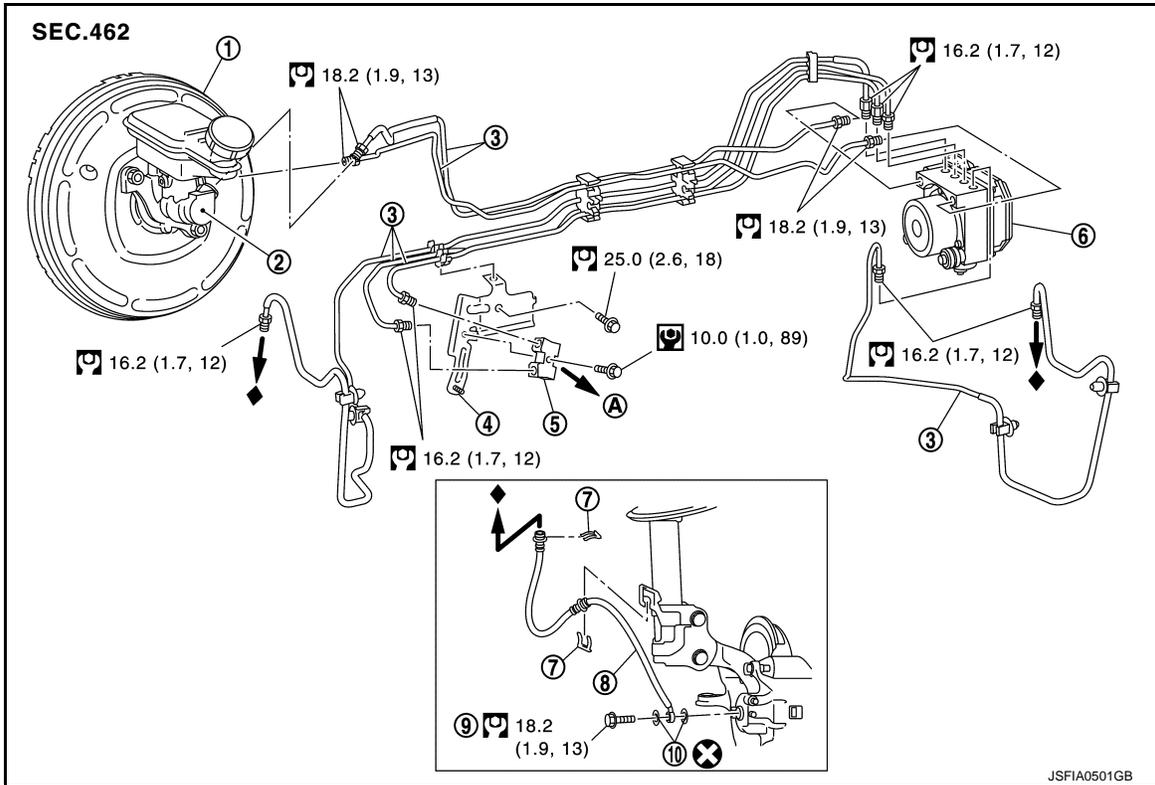
: Always replace after every disassembly.

BRAKE PIPING

< REMOVAL AND INSTALLATION >

[RHD]

HR16DE



- | | | |
|-----------------------|-----------------------------|--|
| 1. Brake booster | 2. Master cylinder assembly | 3. Brake tube |
| 4. Connector bracket | 5. Connector | 6. ABS actuator and electric unit (control unit) |
| 7. Lock plate | 8. Brake hose | 9. Union bolt |
| 10. Copper washer | | |
| A. To rear brake tube | | |

: N·m (kg-m, ft-lb)

: N·m (kg-m, in-lb)

: Always replace after every disassembly.

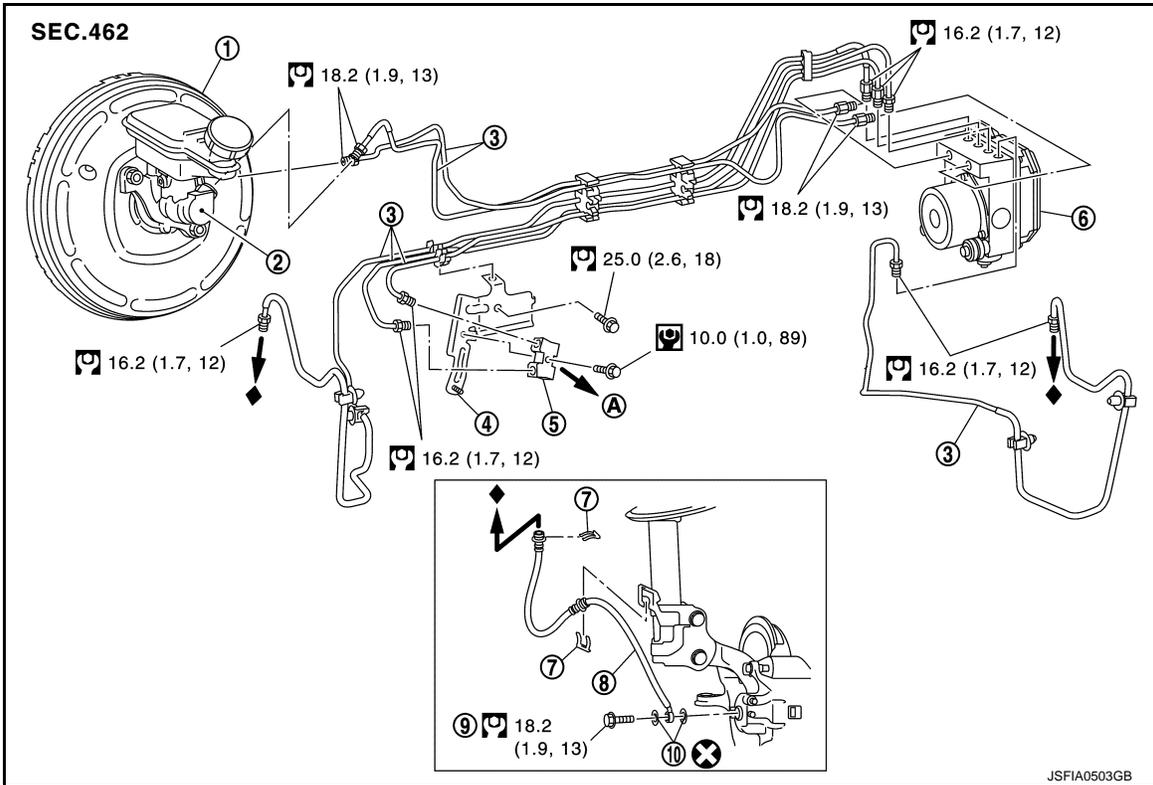
A
B
C
D
E
BR
G
H
I
J
K
L
M
N
O
P

BRAKE PIPING

< REMOVAL AND INSTALLATION >

[RHD]

K9K



- | | | |
|-----------------------|-----------------------------|--|
| 1. Brake booster | 2. Master cylinder assembly | 3. Brake tube |
| 4. Connector bracket | 5. Connector | 6. ABS actuator and electric unit (control unit) |
| 7. Lock plate | 8. Brake hose | 9. Union bolt |
| 10. Copper washer | | |
| A. To rear brake tube | | |

: N-m (kg-m, ft-lb)

: N-m (kg-m, in-lb)

: Always replace after every disassembly.

FRONT : Hydraulic Piping

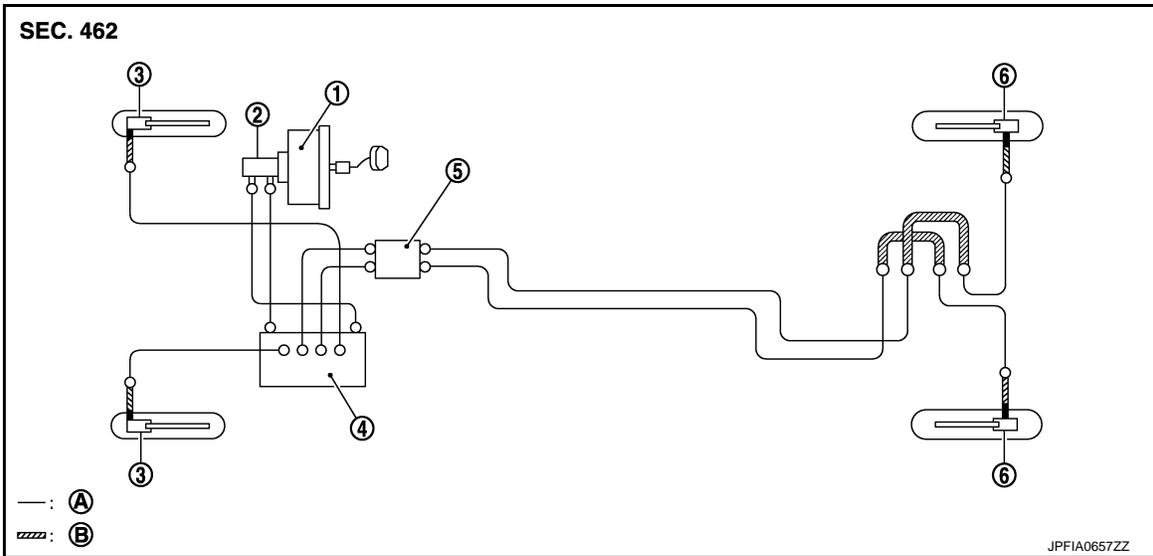
INFOID:000000006589800

2WD

BRAKE PIPING

< REMOVAL AND INSTALLATION >

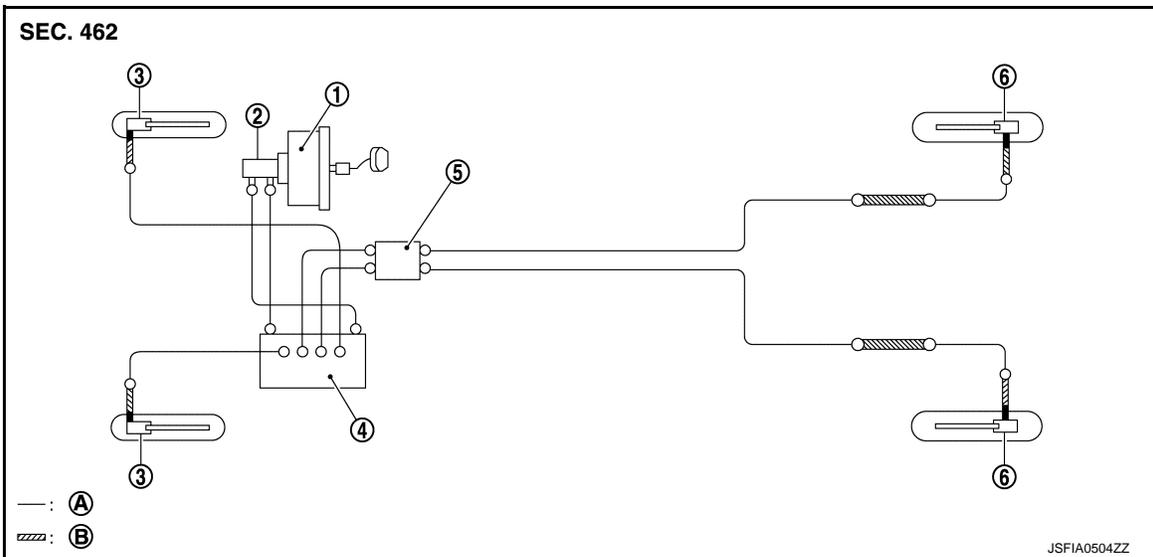
[RHD]



- | | | |
|--|-----------------------------|---------------------|
| 1. Brake booster | 2. Master cylinder assembly | 3. Front disc brake |
| 4. ABS actuator and electric unit (control unit) | 5. Connector | 6. Rear disc brake |
| A. Brake tube | B. Brake hose | |

- : Flare nut
 ■ : Union bolt

4WD



- | | | |
|--|-----------------------------|---------------------|
| 1. Brake booster | 2. Master cylinder assembly | 3. Front disc brake |
| 4. ABS actuator and electric unit (control unit) | 5. Connector | 6. Rear disc brake |
| A. Brake tube | B. Brake hose | |

- : Flare nut
 ■ : Union bolt

FRONT : Removal and Installation

REMOVAL

BRAKE PIPING

< REMOVAL AND INSTALLATION >

[RHD]

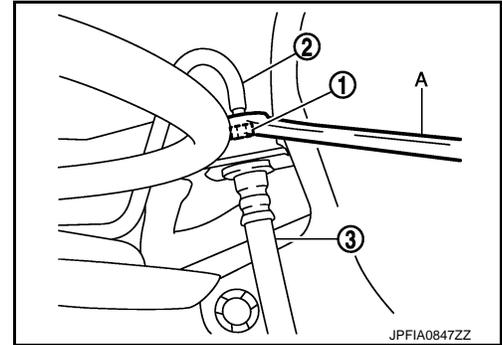
CAUTION:

- Never spill or splash brake fluid on painted surfaces. Brake fluid may seriously damage paint. Wipe it off immediately and wash with water if it gets on a painted surface. For brake component parts, never wash them with water.
- Never depress the brake pedal while removing the brake hose or brake tube. If this is not complied with, brake fluid may splash.

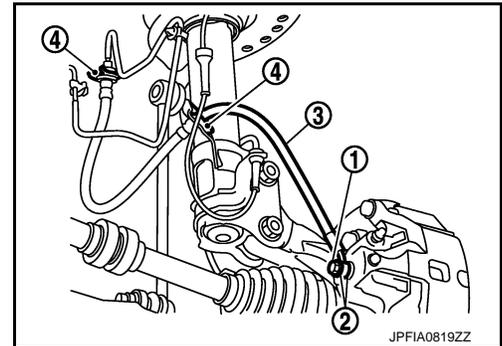
1. Remove tires.
2. Drain brake fluid. Refer to [BR-80, "Draining"](#).
3. Loosen the flare nut (1) with a flare nut wrench (A) and separate the brake tube (2) from the brake hose (3).

CAUTION:

- Never scratch the flare nut and the brake tube.
- Never bend sharply, twist or strongly pull out the brake hoses and tubes.
- Cover open end of brake tubes and hoses when disconnecting to prevent entrance of dirt.



4. Remove the union bolt (1) and copper washers (2), and remove the brake hose (3) from the brake caliper assembly.
5. Remove the lock plate (4) and remove the brake hose.



INSTALLATION

CAUTION:

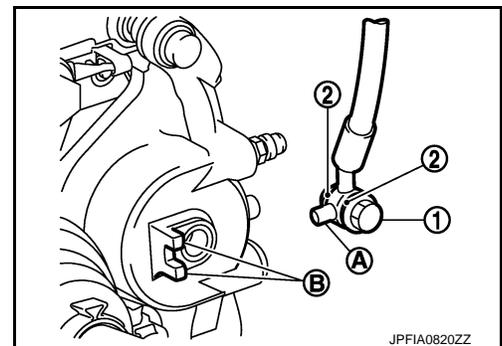
- Never spill or splash brake fluid on painted surfaces. Brake fluid may seriously damage paint. Wipe it off immediately and wash with water if it gets on a painted surface. For brake component parts, never wash them with water.
- Never depress the brake pedal while removing the brake hose or brake tube. If this is not complied with, brake fluid may splash.

1. Assemble the union bolt (1) and the copper washer (2) to the brake hose.

CAUTION:

Never reuse the copper washer.

2. Align the brake hose pin (A) with the brake caliper assembly projection (B), and tighten the union bolt (1) to the specified torque.



BRAKE PIPING

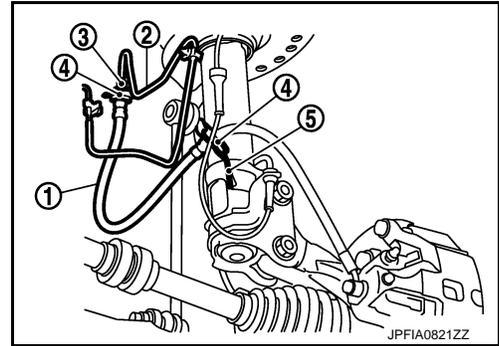
[RHD]

< REMOVAL AND INSTALLATION >

3. Install the brake tube (2) to the brake hose (1), temporarily tighten the flare nut (3) by hand until it does not rotate further, and fix the brake hose to the bracket (5) with the lock plate (4).

CAUTION:

Check that all brake hoses and brake tubes are not twisted and bent.



4. Tighten the flare nut to the specified torque with a flare nut torque wrench (A).

CAUTION:

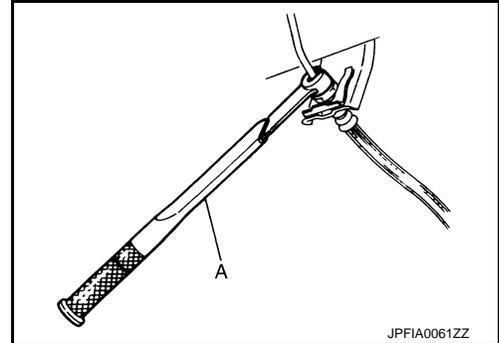
Never scratch the flare nut and the brake tube.

5. Refill with new brake fluid and perform the air bleeding. Refer to [BR-81, "Bleeding Brake System"](#).

CAUTION:

Never reuse drained brake fluid.

6. Install tires. Refer to [WT-7, "Exploded View"](#).
7. Perform inspection after installation. Refer to [BR-97, "FRONT : Inspection"](#).



FRONT : Inspection

INFOID:000000006589802

INSPECTION AFTER INSTALLATION

1. Check the brake hoses and tubes for the following: no scratches; no twist and deformation; no interference with other components when steering the steering wheel; no looseness at connections.
2. Depress the brake pedal with a force of 785 N (80 kg, 176 lb) and hold down the pedal for approximately 5 seconds with the engine running. Check for any fluid leakage.

CAUTION:

Retighten the applicable connection to the specified torque and repair any abnormal (damaged, worn or deformed) part if any brake fluid leakage is present.

REAR

REAR : Exploded View

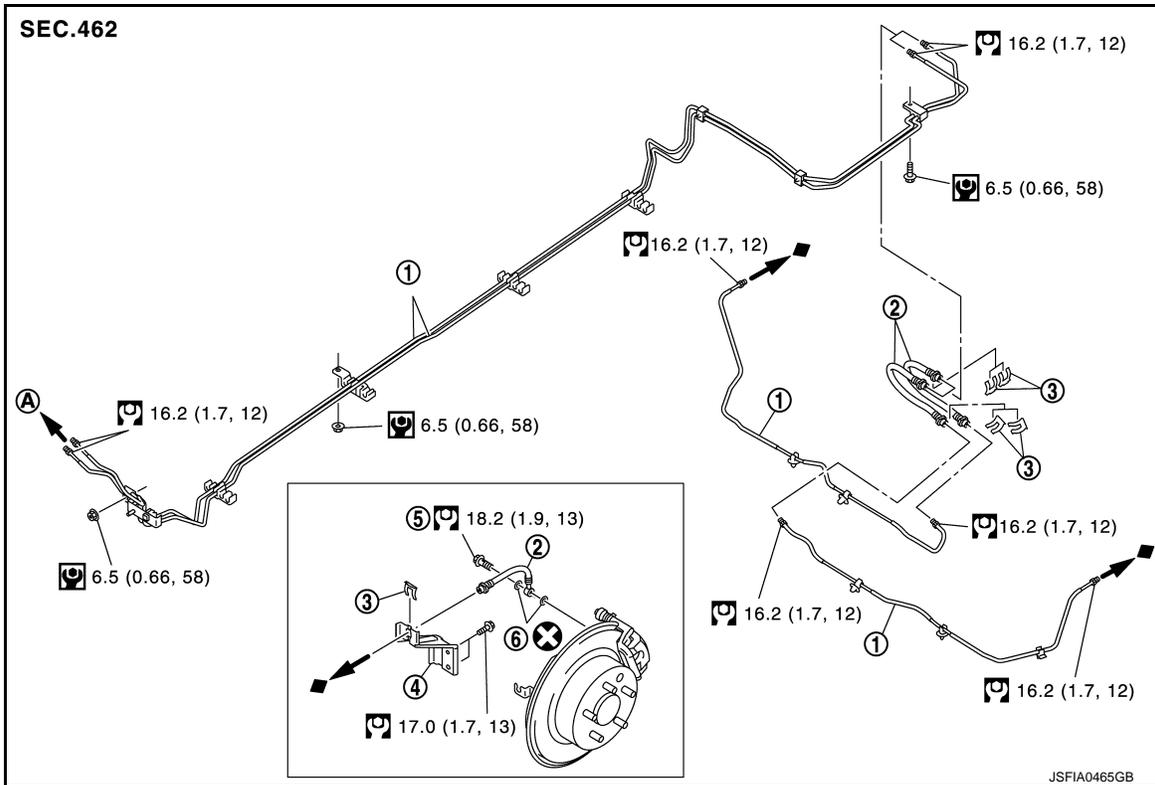
INFOID:000000006589803

2WD (MR16DDT, HR16DE)

BRAKE PIPING

< REMOVAL AND INSTALLATION >

[RHD]



- | | | |
|-----------------------|-----------------|-----------------|
| 1. Brake tube | 2. Brake hose A | 3. Lock plate |
| 4. Brake hose bracket | 5. Union bolt | 6. Brake hose B |
| 7. Copper washer | | |
| A. To connector | | |

: N·m (kg-m, ft-lb)

: N·m (kg-m, in-lb)

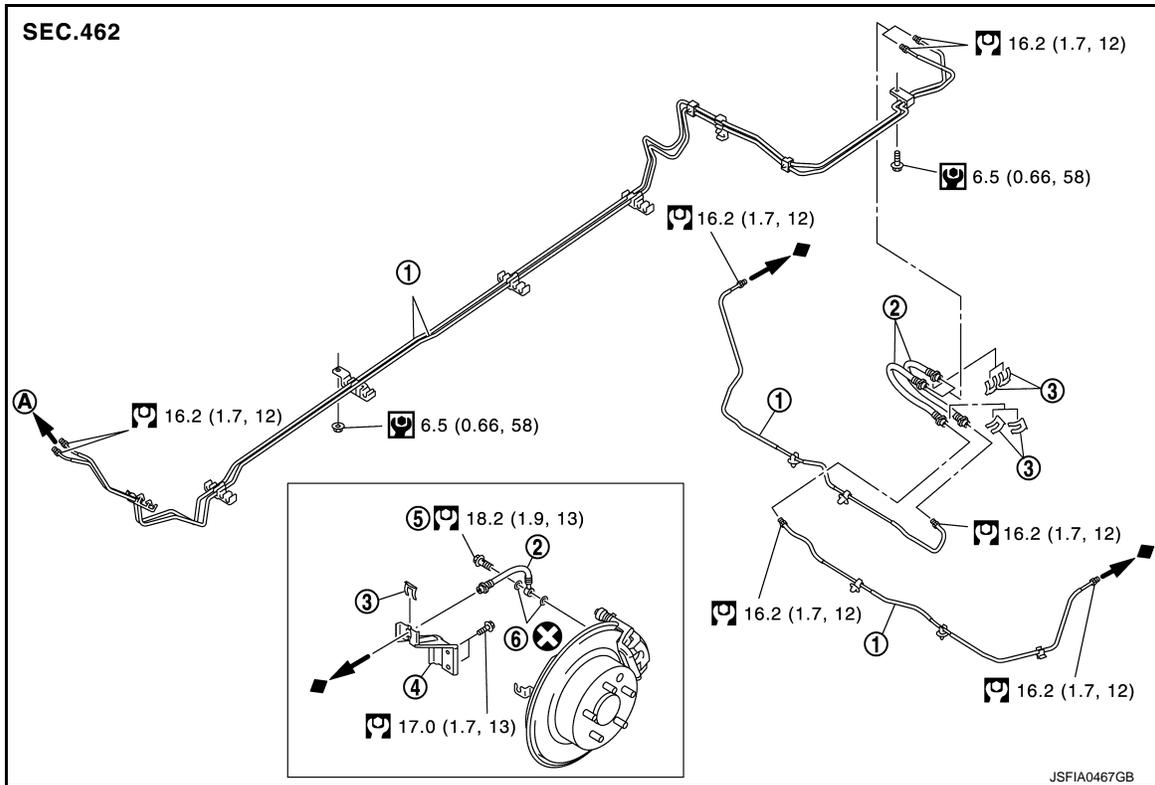
: Always replace after every disassembly.

2WD (K9K)

BRAKE PIPING

< REMOVAL AND INSTALLATION >

[RHD]



- | | | |
|-----------------------|-----------------|-----------------|
| 1. Brake tube | 2. Brake hose A | 3. Lock plate |
| 4. Brake hose bracket | 5. Union bolt | 6. Brake hose B |
| 7. Copper washer | | |
| A. To connector | | |

: N·m (kg-m, ft-lb)

: N·m (kg-m, in-lb)

: Always replace after every disassembly.

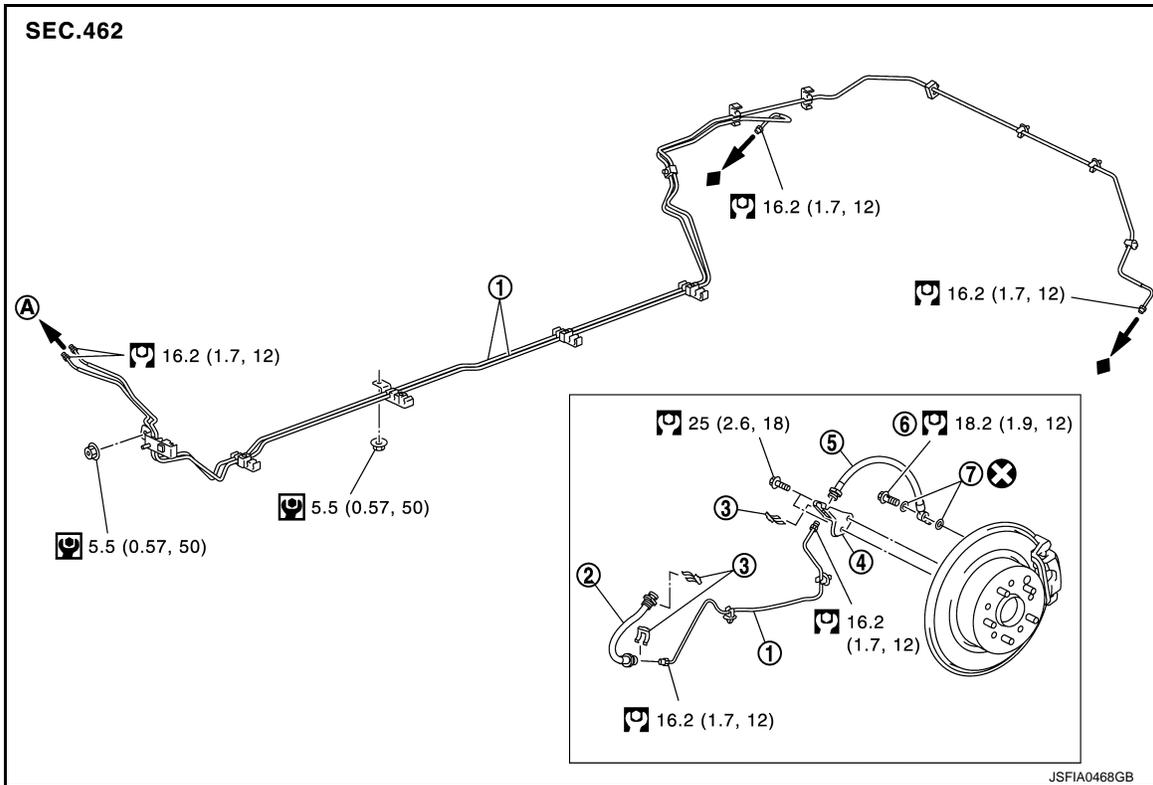
4WD

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

BRAKE PIPING

< REMOVAL AND INSTALLATION >

[RHD]



- 1. Brake tube
- 2. Brake hose A
- 3. Lock plate
- 4. Brake hose bracket
- 5. Brake hose B
- 6. Union bolt
- 7. Copper washer
- A. To connector

: N-m (kg-m, ft-lb)

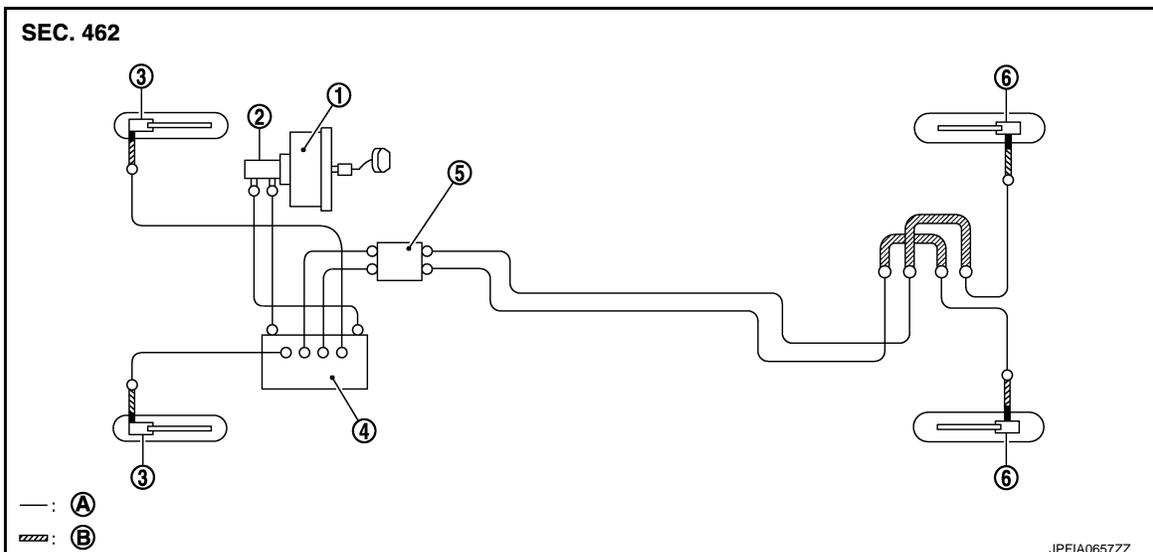
: N-m (kg-m, in-lb)

: Always replace after every disassembly.

REAR : Hydraulic Piping

INFOID:000000006589804

2WD



BRAKE PIPING

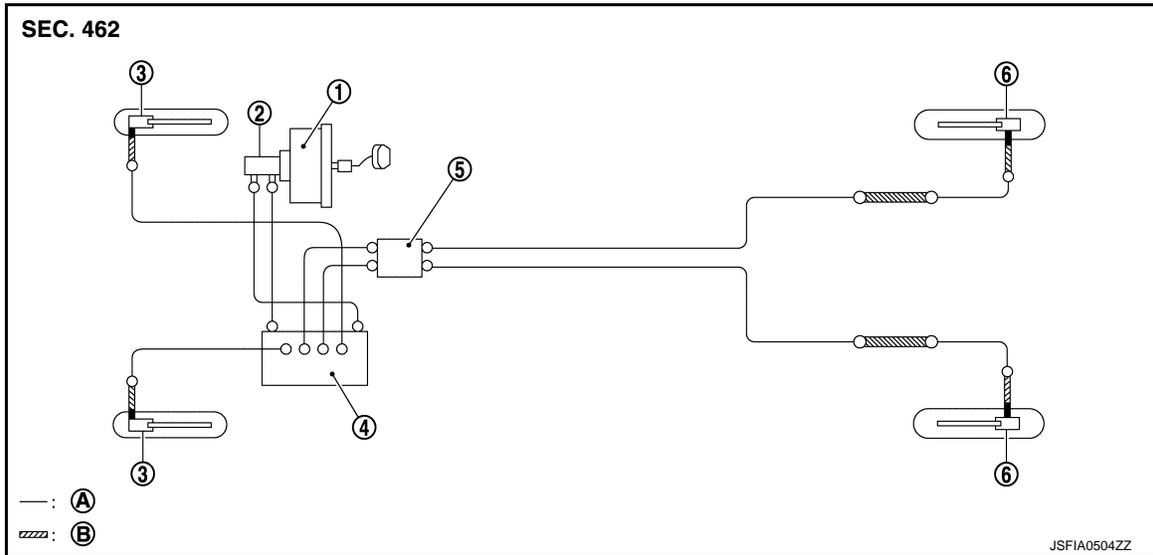
< REMOVAL AND INSTALLATION >

[RHD]

- | | | |
|--|-----------------------------|---------------------|
| 1. Brake booster | 2. Master cylinder assembly | 3. Front disc brake |
| 4. ABS actuator and electric unit (control unit) | 5. Connector | 6. Rear disc brake |
| A. Brake tube | B. Brake hose | |

- : Flare nut
■: Union bolt

4WD



- | | | |
|--|-----------------------------|---------------------|
| 1. Brake booster | 2. Master cylinder assembly | 3. Front disc brake |
| 4. ABS actuator and electric unit (control unit) | 5. Connector | 6. Rear disc brake |
| A. Brake tube | B. Brake hose | |

- : Flare nut
■: Union bolt

REAR : Removal and Installation

INFOID:000000006589805

REMOVAL

2WD

CAUTION:

- Never spill or splash brake fluid on painted surfaces. Brake fluid may seriously damage paint. Wipe it off immediately and wash with water if it gets on a painted surface. For brake component parts, never wash them with water.
- Never depress the brake pedal while removing the brake hose or brake tube. If this is not complied with, brake fluid may splash.

1. Remove tires.
2. Drain brake fluid. Refer to [BR-80, "Draining"](#).

BRAKE PIPING

[RHD]

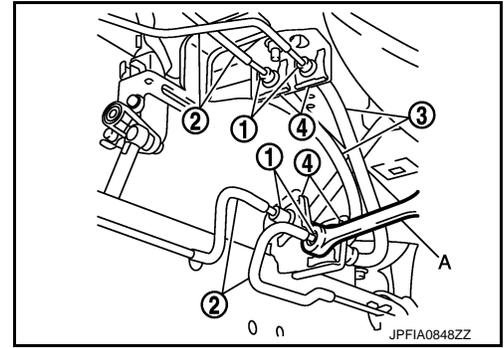
< REMOVAL AND INSTALLATION >

- Loosen the flare nut (1) with a flare nut wrench (A) and separate the brake tube (2) from the brake hose A (3).

CAUTION:

- Never scratch the flare nut and the brake tube.
- Never bend sharply, twist or strongly pull out the brake hoses and tubes.
- Cover open end of brake tubes and hoses when disconnecting to prevent entrance of dirt.

- Remove the lock plate (4) and remove the brake hose A.

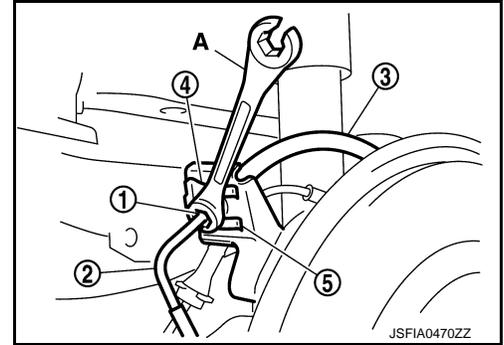


- Loosen the flare nut (1) with a flare nut wrench (A) and separate the brake tube (2) from the hose B (3).

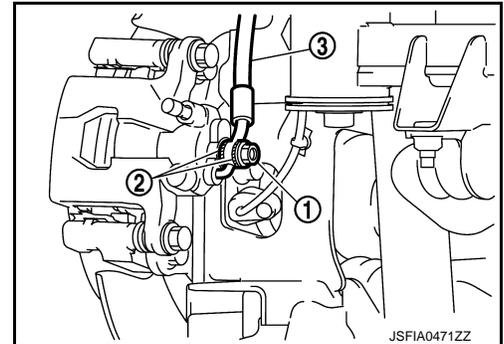
CAUTION:

- Never scratch the flare nut and the brake tube.
- Never bend sharply, twist or strongly pull out the brake hoses and tubes.
- Cover open end of brake tubes and hoses when disconnecting to prevent entrance of dirt.

- Remove the lock plate (4) from brake hose bracket (5).



- Remove the union bolt (1) and copper washers (2), and remove the brake hose B (3) from the brake caliper assembly.



4WD

CAUTION:

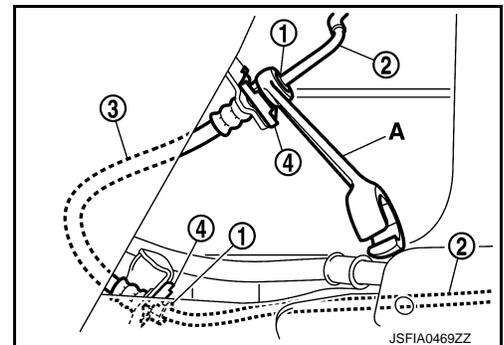
- Never spill or splash brake fluid on painted surfaces. Brake fluid may seriously damage paint. Wipe it off immediately and wash with water if it gets on a painted surface. For brake component parts, never wash them with water.
- Never depress the brake pedal while removing the brake hose or brake tube. If this is not complied with, brake fluid may splash.

- Remove tires.
- Drain brake fluid. Refer to [BR-80, "Draining"](#).
- Loosen the flare nut (1) with a flare nut wrench (A) and separate the brake tube (2) from the hose A (3).

CAUTION:

- Never scratch the flare nut and the brake tube.
- Never bend sharply, twist or strongly pull out the brake hoses and tubes.
- Cover open end of brake tubes and hoses when disconnecting to prevent entrance of dirt.

- Remove the lock plate (4) and remove the brake hose A.



BRAKE PIPING

[RHD]

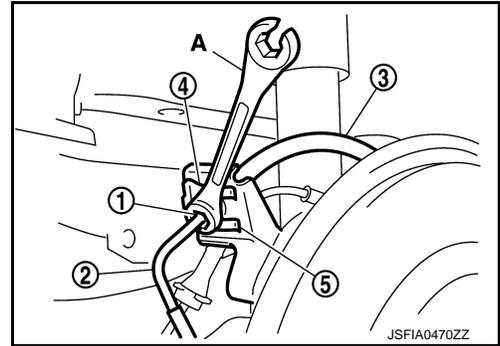
< REMOVAL AND INSTALLATION >

5. Loosen the flare nut (1) with a flare nut wrench (A) and separate the brake tube (2) from the hose B (3).

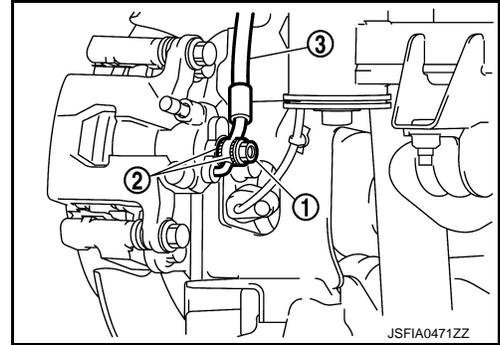
CAUTION:

- Never scratch the flare nut and the brake tube.
- Never bend sharply, twist or strongly pull out the brake hoses and tubes.
- Cover open end of brake tubes and hoses when disconnecting to prevent entrance of dirt.

6. Remove the lock plate (4) from brake hose bracket (5).



7. Remove the union bolt (1) and copper washers (2), and remove the brake hose B (3) from the brake caliper assembly.



INSTALLATION

2WD

CAUTION:

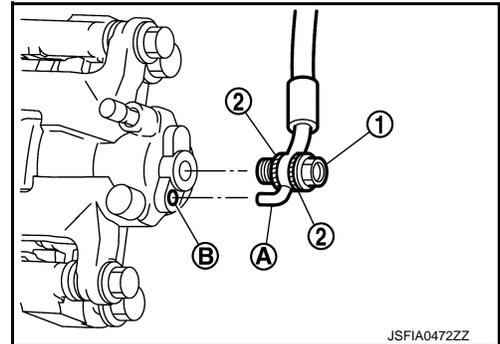
- Never spill or splash brake fluid on painted surfaces. Brake fluid may seriously damage paint. Wipe it off immediately and wash with water if it gets on a painted surface. For brake component parts, never wash them with water.
- Never depress the brake pedal while removing the brake hose or brake tube. If this is not complied with, brake fluid may splash.

1. Assemble the union bolt (1) and the copper washer (2) to the brake hose B.

CAUTION:

Never reuse the copper washer.

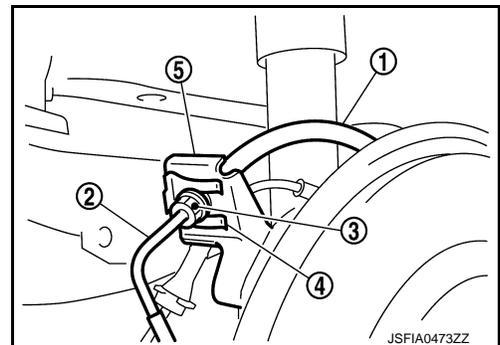
2. Align the brake hose B L-pin (A) with the brake caliper assembly hole (B), and tighten the union bolt (1) to the specified torque.



3. Install the brake tube (2) to the brake hose B (1), temporarily tighten the flare nut (3) by hand until it does not rotate further, and fix the brake hose B to the brake hose bracket (5) with the lock plate (4).

CAUTION:

Check that all brake hoses and brake tubes are not twisted and bent.



BRAKE PIPING

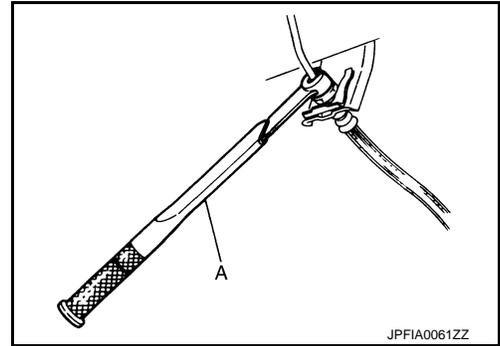
[RHD]

< REMOVAL AND INSTALLATION >

4. Tighten the flare nut to the specified torque with a flare nut torque wrench (A).

CAUTION:

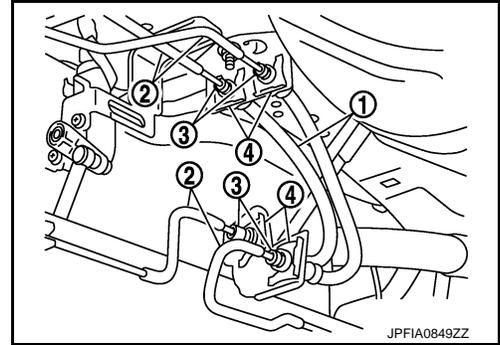
Never scratch the flare nut and the brake tube.



5. Install the brake tube (2) to the brake hose A (1), temporarily tighten the flare nut (3) by hand until it does not rotate further, and fix the brake hose with the lock plate (4).

CAUTION:

Check that all brake hoses and brake tubes are not twisted and bent.



6. Tighten the flare nut to the specified torque with a flare nut torque wrench (A).

CAUTION:

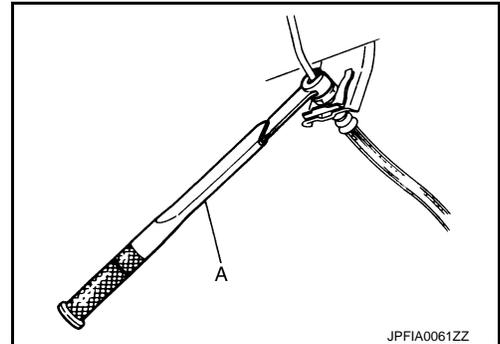
Never scratch the flare nut and the brake tube.

7. Refill with new brake fluid and perform the air bleeding. Refer to [BR-81, "Bleeding Brake System"](#).

CAUTION:

Never reuse drained brake fluid.

8. Install tires. Refer to [WT-7, "Exploded View"](#).
9. Perform inspection after installation. Refer to [BR-105, "REAR : Inspection"](#).



4WD

CAUTION:

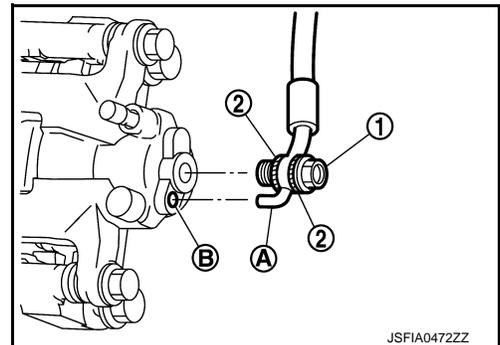
- **Never spill or splash brake fluid on painted surfaces. Brake fluid may seriously damage paint. Wipe it off immediately and wash with water if it gets on a painted surface. For brake component parts, never wash them with water.**
- **Never depress the brake pedal while removing the brake hose or brake tube. If this is not complied with, brake fluid may splash.**

1. Assemble the union bolt (1) and the copper washer (2) to the brake hose B.

CAUTION:

Never reuse the copper washer.

2. Align the brake hose B L-pin (A) with the brake caliper assembly hole (B), and tighten the union bolt (1) to the specified torque.



BRAKE PIPING

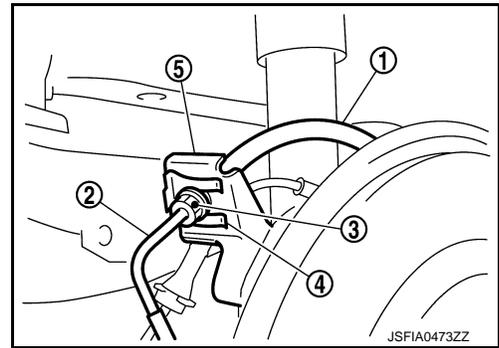
< REMOVAL AND INSTALLATION >

[RHD]

3. Install the brake tube (2) to the brake hose B (1), temporarily tighten the flare nut (3) by hand until it does not rotate further, and fix the brake hose B to the brake hose bracket (5) with the lock plate (4).

CAUTION:

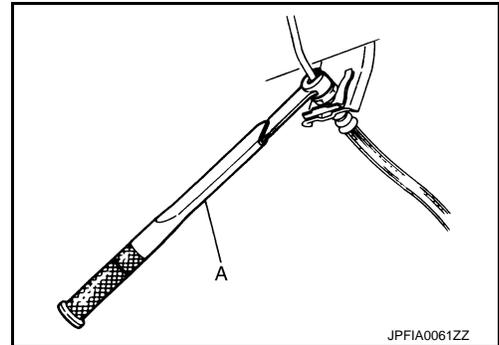
Check that all brake hoses and brake tubes are not twisted and bent.



4. Tighten the flare nut to the specified torque with a flare nut torque wrench (A).

CAUTION:

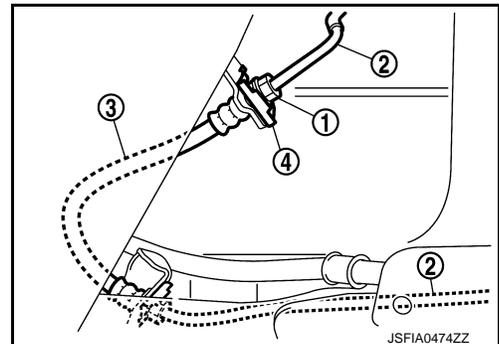
Never scratch the flare nut and the brake tube.



5. Install the brake tube (2) to the brake hose A (3), temporarily tighten the flare nut (1) by hand until it does not rotate further, and fix the brake hose A to the bracket with the lock plate (4).

CAUTION:

Check that all brake hoses and brake tubes are not twisted and bent.



6. Tighten the flare nut to the specified torque with a flare nut torque wrench (A).

CAUTION:

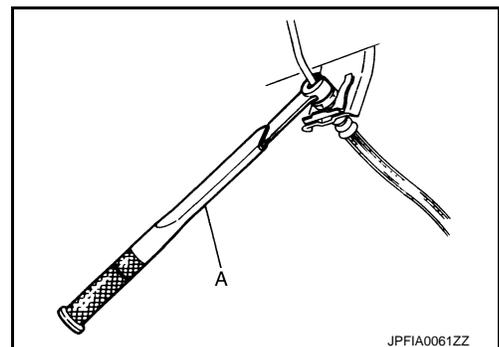
Never scratch the flare nut and the brake tube.

7. Refill with new brake fluid and perform the air bleeding. Refer to [BR-81, "Bleeding Brake System"](#).

CAUTION:

Never reuse drained brake fluid.

8. Install tires. Refer to [WT-7, "Exploded View"](#).
9. Perform inspection after installation. Refer to [BR-105, "REAR : Inspection"](#).



REAR : Inspection

INFOID:000000006589806

INSPECTION AFTER INSTALLATION

1. Check the brake hoses and tubes for the following: no scratches; no twist and deformation; no looseness at connections.
2. Depress the brake pedal with a force of 785 N (80kg, 176 lb) and hold down the pedal for approximately 5 seconds with the engine running. Check for any fluid leakage.

CAUTION:

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

BRAKE PIPING

< REMOVAL AND INSTALLATION >

[RHD]

Retighten the applicable connection to the specified torque and repair any abnormal (damaged, worn or deformed) part if any brake fluid leakage is present.

BRAKE MASTER CYLINDER

< REMOVAL AND INSTALLATION >

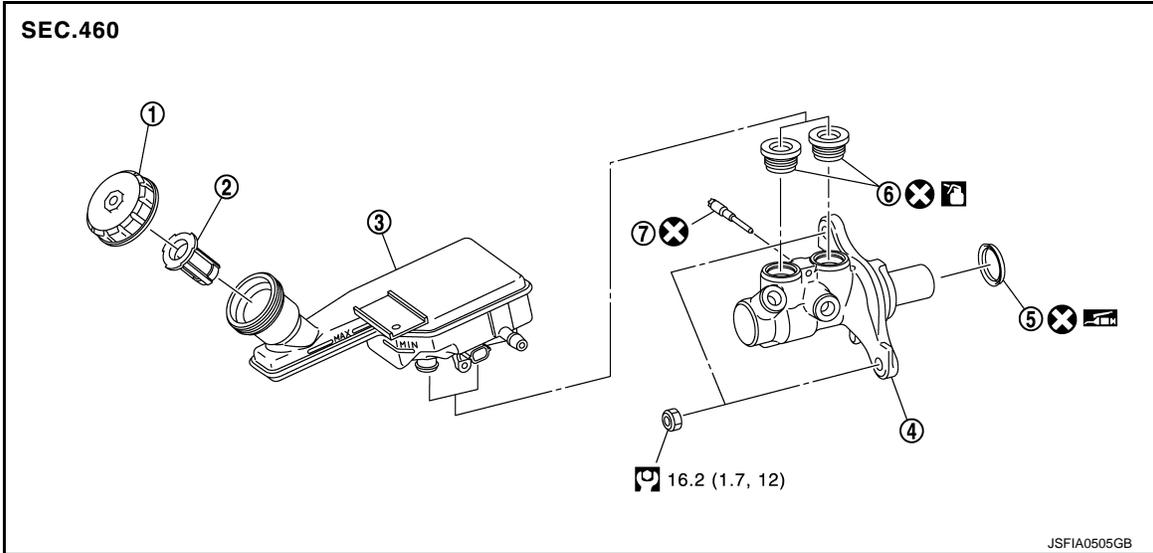
[RHD]

BRAKE MASTER CYLINDER

Exploded View

INFOID:000000006589807

2WD



- | | | |
|------------------|-----------------|-------------------|
| 1. Reservoir cap | 2. Oil strainer | 3. Reservoir tank |
| 4. Cylinder body | 5. O-ring | 6. Grommet |
| 7. Pin | | |

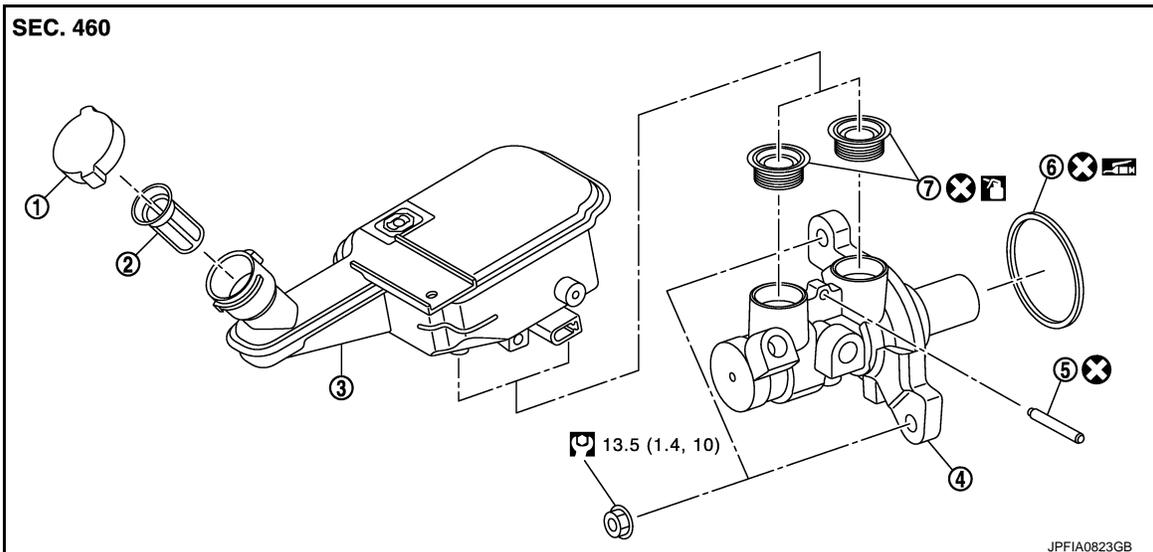
: Apply polyglycol ether lubricant

: Apply brake fluid.

: N·m (kg-m, ft-lb)

: Always replace after every disassembly.

4WD



- | | | |
|------------------|-----------------|-------------------|
| 1. Reservoir cap | 2. Oil strainer | 3. Reservoir tank |
| 4. Cylinder body | 5. Pin | 6. O-ring |
| 7. Grommet | | |

BRAKE MASTER CYLINDER

< REMOVAL AND INSTALLATION >

[RHD]

: Apply polyglycol ether lubricant

: Apply brake fluid.

: N·m (kg·m, ft·lb)

: Always replace after every disassembly.

Removal and Installation

INFOID:000000006589808

REMOVAL

CAUTION:

- Never spill or splash brake fluid on painted surfaces. Brake fluid may seriously damage paint. Wipe it off immediately and wash with water if it gets on a painted surface. For brake component parts, never wash them with water.
- Never depress the brake pedal while removing the brake tube. If this is not complied with, brake fluid may splash.

1. Perform inspection before removal. Refer to [BR-110, "Inspection"](#).
2. Depress the brake pedal several times to release the vacuum pressure from the brake booster.
3. Drain brake fluid. Refer to [BR-80, "Draining"](#).
4. Disconnect the brake fluid level switch harness connector.
5. Separate the brake tube from master cylinder assembly with a flare nut wrench (A).

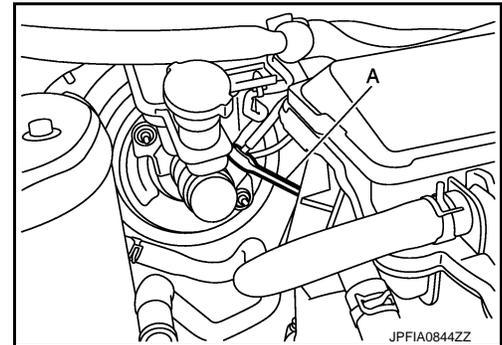
CAUTION:

Never scratch the flare nut and the brake tube.

6. Remove the master cylinder assembly.

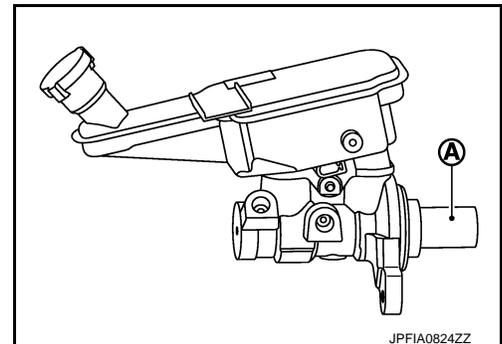
CAUTION:

- Never deform or bend the brake tubes.
- Never depress the brake pedal after the master cylinder assembly is removed.



- The piston (A) of the master cylinder assembly is exposed. Never damage it when removing the master cylinder.
- The piston may drop off when pulled out strongly. Never hold the piston. Hold the cylinder body when handling the master cylinder assembly.

7. Remove the O-ring.



INSTALLATION

Note the following, and install in the reverse order of removal.

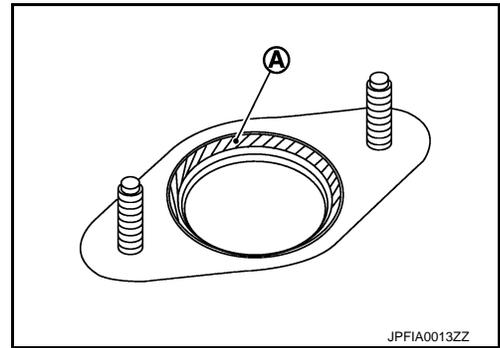
- Never spill or splash brake fluid on painted surfaces. Brake fluid may seriously damage paint. Wipe it off immediately and wash with water if it gets on a painted surface. For brake component parts, never wash them with water.
- Never depress the brake pedal while removing the brake tube. If this is not complied with, brake fluid may splash.
- Never depress the brake pedal after the master cylinder assembly is removed.

BRAKE MASTER CYLINDER

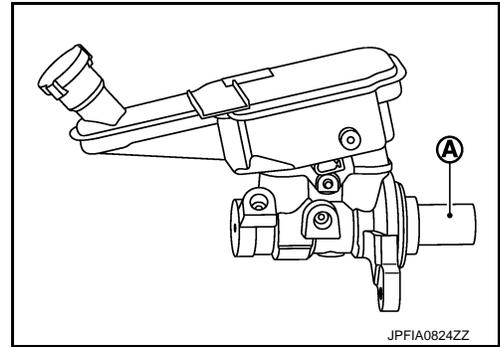
[RHD]

< REMOVAL AND INSTALLATION >

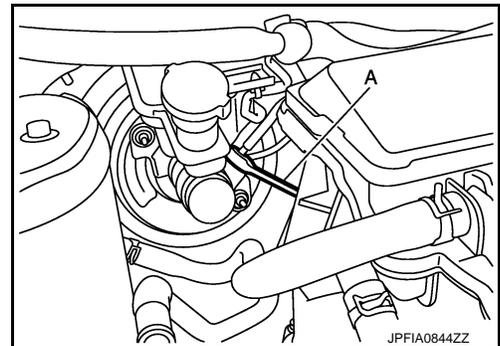
- Apply polyglycol ether based lubricant to the brake booster [see (A) in the figure] when installing the master cylinder assembly to the brake booster.



- The piston (A) of the master cylinder assembly is exposed. Never damage it when handling the master cylinder.
- Check that no dirt and dust are present on the piston before installation. Clean it with new brake fluid if necessary.
- The piston may drop off when pulled strongly. Never hold the piston. Hold the cylinder body when handling the master cylinder assembly.
- Never reuse the O-ring.
- Never deform or bend the brake tubes.



- Temporarily tighten the brake tube flare nut to the master cylinder assembly by hand. Then tighten it to the specified torque with a flare nut torque wrench (A). Refer to [BR-91, "FRONT : Exploded View"](#).
- Perform the air bleeding. Refer to [BR-81, "Bleeding Brake System"](#)
- Perform inspection after installation. Refer to [BR-110, "Inspection"](#).



Disassembly and Assembly

INFOID:000000006589809

DISASSEMBLY

CAUTION:

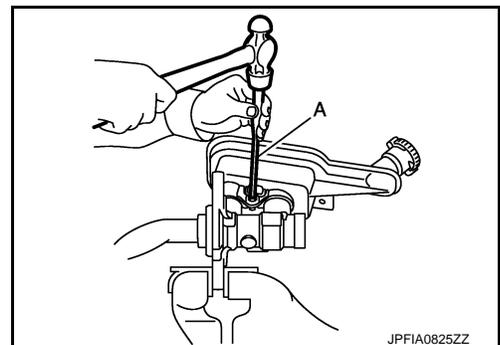
- Never disassemble the cylinder body.
- Remove the reservoir tank only when necessary.

1. Fix the master cylinder assembly to a vise.

CAUTION:

- Always set copper plates or cloth between vise grips when fixing the cylinder body to a vise.
- Never overtighten the vise.

2. Remove the reservoir tank mounting pin with a pin punch (A) [4 mm (0.157 in)].
3. Remove the reservoir tank and grommet from the cylinder body.



BRAKE MASTER CYLINDER

< REMOVAL AND INSTALLATION >

[RHD]

ASSEMBLY

CAUTION:

- Never use mineral oils such as kerosene or gasoline and rubber grease during the cleaning and assembly process.
- Never allow foreign matter (e.g. dust) and oils other than brake fluid to enter the reservoir tank.
- Never drop the when installing. The parts must not be reused if they are dropped.

1. Apply new brake fluid to the grommet and install it to the cylinder body.

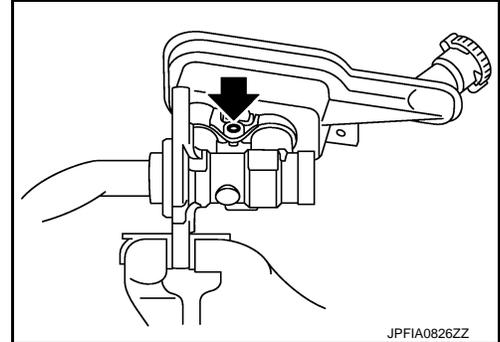
CAUTION:

Never reuse the grommets.

2. Install the reservoir tank to the cylinder body.
3. Fix the cylinder body to a vise.

CAUTION:

- Place the reservoir tank with the chamfered pin hole (←) facing up.
- Always set copper plates or cloth between vise grips when fixing the cylinder body to a vise.
- Never overtighten the vise.



4. Tilt the reservoir tank so that a mounting pin can be inserted. Insert a mounting pin. Return the reservoir tank to the horizontal position. Insert another mounting pin into the pin hole on the opposite side in the same manner after the mounting pin passes through the cylinder body pin hole.

CAUTION:

Never reuse the mounting pin.

Inspection

INFOID:000000006589810

INSPECTION BEFORE REMOVAL

Check the brake fluid level switch.

- Without ESP: Refer to [BRC-73, "Component Inspection"](#).
- With ESP: Refer to [BRC-194, "Component Inspection"](#).

INSPECTION AFTER INSTALLATION

Check the following items and replace if necessary.

- Check the master cylinder for deformation, twist, contact with other parts or looseness of connection.
- Check for fluid leakage from connection. Refer to [BR-97, "FRONT : Inspection"](#).

CAUTION:

If the fluid leakage is present, retighten to the specified torque. Replace if necessary.

BRAKE BOOSTER

< REMOVAL AND INSTALLATION >

[RHD]

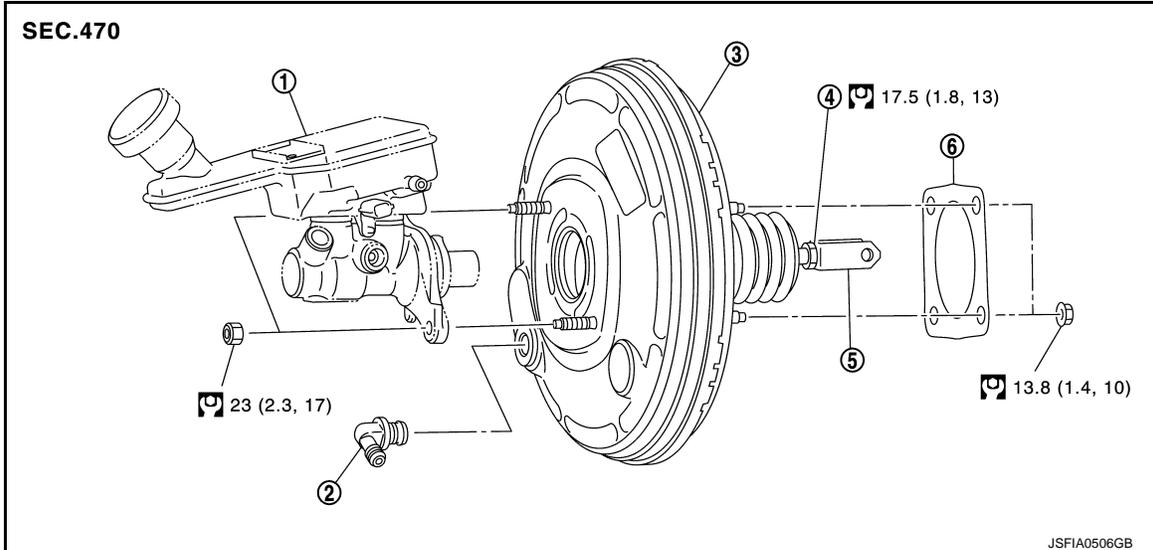
BRAKE BOOSTER

Exploded View

INFOID:000000006589811

2WD

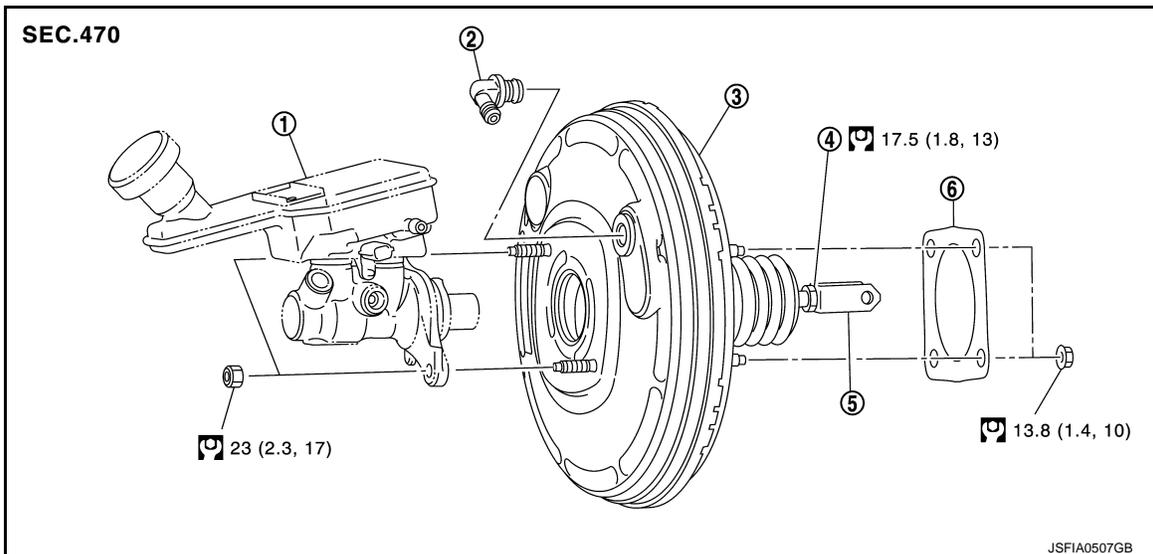
MR16DDT, HR16DE



- 1. Master cylinder assembly
- 2. Vacuum pipe
- 3. Brake booster
- 4. Lock nut
- 5. Clevis
- 6. Gasket

: N·m (kg-m, ft-lb)

K9K



- 1. Master cylinder assembly
- 2. Vacuum pipe
- 3. Brake booster
- 4. Lock nut
- 5. Clevis
- 6. Gasket

: N·m (kg-m, ft-lb)

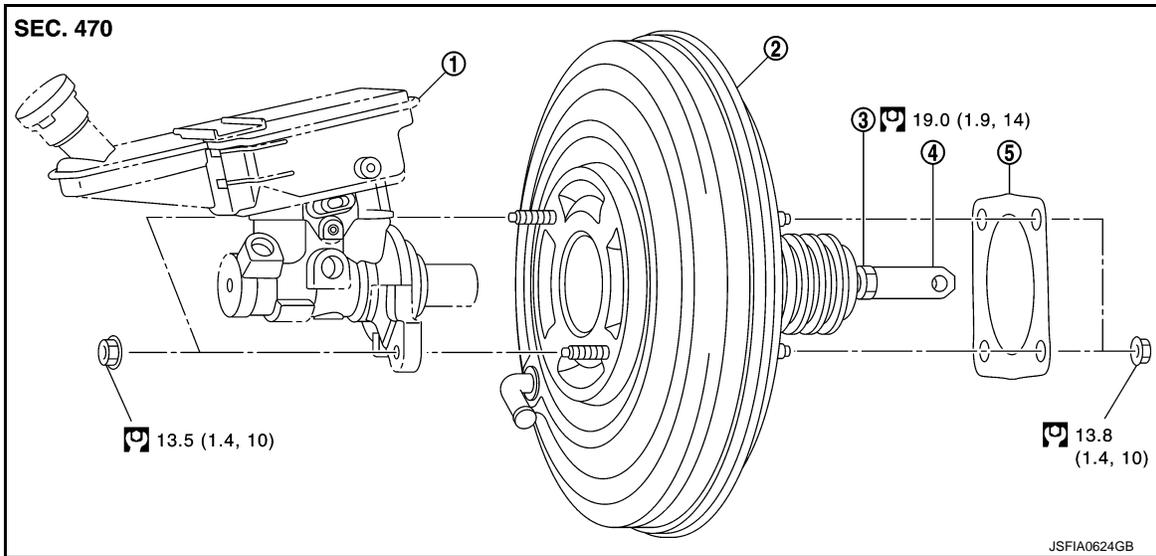
4WD

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

BRAKE BOOSTER

< REMOVAL AND INSTALLATION >

[RHD]



1. Master cylinder assembly
2. Brake booster
3. Lock nut
4. Clevis
5. Gasket

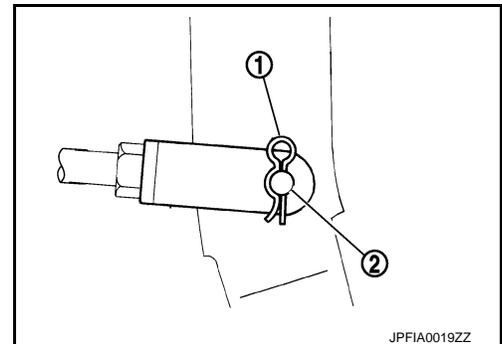
: N·m (kg·m, ft·lb)

Removal and installation

INFOID:000000006589812

REMOVAL

1. Perform inspection before removal. Refer to [BR-113, "Inspection and Adjustment"](#).
2. Remove cowl top and cowl top extension. Refer to [EXT-20, "Removal and Installation"](#).
3. Remove brake master cylinder assembly. Refer to [BR-108, "Removal and Installation"](#).
4. Remove vacuum hose from brake booster.
 - MR16DDT: Refer to [BR-115, "MR16DDT : Removal and Installation"](#).
 - HR16DE: Refer to [BR-116, "HR16DE : Removal and Installation"](#).
 - K9K: Refer to [BR-117, "K9K : Removal and Installation"](#).
5. Remove low-pressure flexible hose.
 - HR16DE: Refer to [HA-35, "LOW-PRESSURE FLEXIBLE HOSE : Removal and Installation"](#).
 - MR16DDT: Refer to [HA-91, "LOW-PRESSURE FLEXIBLE HOSE : Removal and Installation"](#).
 - K9K: Refer to HA.
6. Remove snap pin (1) and clevis pin (2). Refer to [BR-88, "Exploded View"](#).
7. Remove nuts on brake booster and brake pedal assembly.
CAUTION:
Hold the brake booster so as to avoid dropping out.
8. Remove brake booster.
CAUTION:
Never deform or bend the brake tubes.
NOTE:
If removing brake booster is difficult, remove clevis from brake booster.
9. Remove vacuum pipe from brake booster. (2WD)
10. Perform inspection after removal. Refer to [BR-113, "Inspection and Adjustment"](#).



INSTALLATION

CAUTION:

Never spill or splash brake fluid on painted surfaces. Brake fluid may seriously damage paint. Wipe it off immediately and wash with water if it gets on a painted surface.

Note the following, and install in the reverse order of removal.

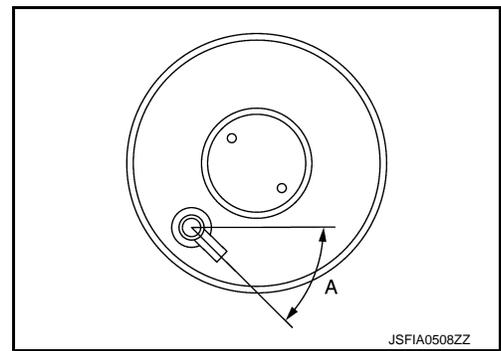
BRAKE BOOSTER

[RHD]

< REMOVAL AND INSTALLATION >

- Set vacuum pipe angle (A) as shown in the figure. [2WD (MR16DDT and HR16DE)]

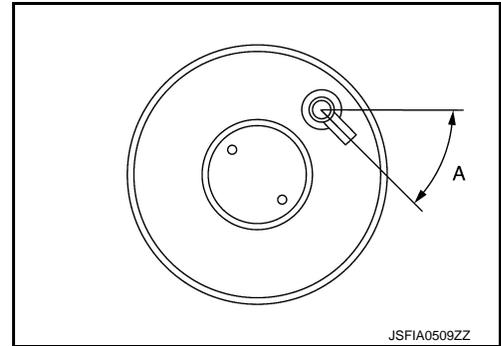
A : 28 – 38°



- Set vacuum pipe angle (A) as shown in the figure. [2WD (K9K)]

A : 28 – 38°

- Be careful not to damage brake booster stud bolt threads. If brake booster is tilted during installation, the dash panel may damage the threads.
- Never deform or bend the brake tubes when installing the brake booster.
- Always use a gasket between the brake booster and the dash panel.
- Replace the clevis pin if it is damaged. Refer to [BR-90, "Inspection and Adjustment"](#).
- Perform the air bleeding. Refer to [BR-81, "Bleeding Brake System"](#).
- Check each item of brake pedal. Adjust it if the measurement value is not the standard. Refer to [BR-77, "Inspection and Adjustment"](#).



Inspection and Adjustment

INFOID:000000006589813

INSPECTION BEFORE REMOVAL

Air Tight

CAUTION:

Check the air tight condition when the master cylinder and the brake booster is installed.

1. Check the air tight use a handy vacuum pump.

At vacuum of -66.7 kPa (-500 mmHg, -19.69 inHg, -0.067 bar) Vacuum should decrease within 3.3 kPa (24.8 mmHg, 0.98 inHg, 0.033 bar) for 15 seconds.

2. If the air tight condition cannot be maintained, perform the following operation.
 - a. Check the no dirt and dust are present on the brake booster and brake master cylinder mating faces. Clean it if necessary.
 - b. Check the O-ring on the master cylinder. If anything is found, replace the O-ring. Refer to [BR-108, "Removal and Installation"](#).
 - c. Check the air tight condition again. If the condition still cannot be maintained, replace the brake booster.

INSPECTION AFTER REMOVAL

Input Rod Length Inspection

BRAKE BOOSTER

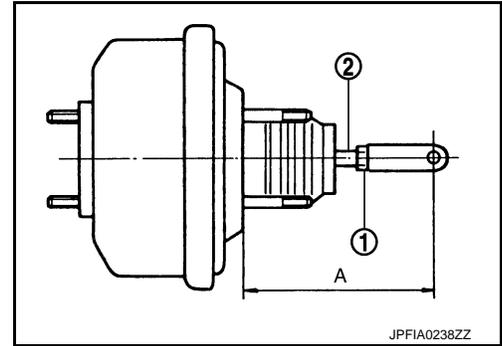
[RHD]

< REMOVAL AND INSTALLATION >

1. Loosen the lock nut (1) and adjust the input rod (2) to the specified length (A).

A : Refer to [BR-136. "Brake Booster"](#).

2. Tighten the lock nut to the specified torque.



INSPECTION AFTER INSTALLATION

Operation

Depress the brake pedal several times at 5-second intervals with the engine stopped. Start the engine with the brake pedal fully depressed. Check that the clearance between brake pedal and dash lower panel decreases.

NOTE:

A slight impact with a small click may be felt on the pedal when the brake pedal is fully depressed. This is a normal phenomenon due to the brake system operation.

Air Tight

1. Run the engine at idle for 1 minute to apply vacuum to the brake booster, and stop the engine.
2. Depress the brake pedal several times at 5-second intervals until the accumulated vacuum is released to atmospheric pressure. Check that the clearance between brake pedal and dash lower panel gradually increases each time the brake pedal is depressed when performing this operation.
3. Depress the brake pedal with the engine running. Then stop the engine while holding down the brake pedal. Check that the brake pedal stroke does not change after holding down the brake pedal for 30 seconds or more.

ADJUSTMENT AFTER INSTALLATION

Perform the brake pedal adjustment after installing the brake pedal assembly. Refer to [BR-77. "Inspection and Adjustment"](#).

VACUUM LINES

< REMOVAL AND INSTALLATION >

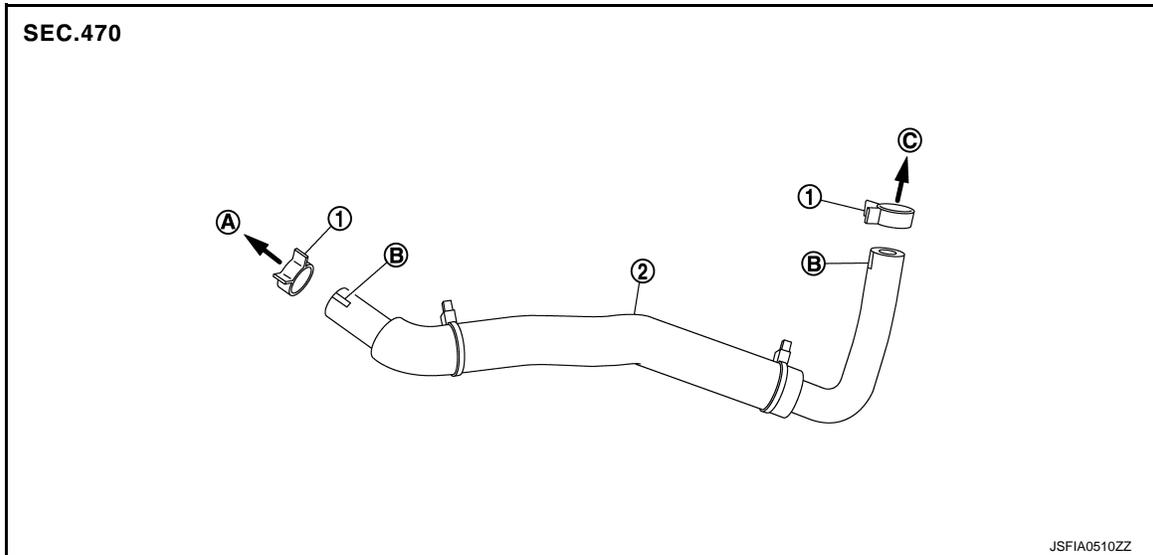
[RHD]

VACUUM LINES

MR16DDT

MR16DDT : Exploded View

INFOID:000000006589817



- | | | |
|-------------------|----------------|---------------------|
| 1. Clamp | 2. Vacuum hose | |
| A. To engine side | B. Paint mark | C. To brake booster |

MR16DDT : Removal and Installation

INFOID:000000006589818

REMOVAL

1. Remove the vacuum hose and vacuum piping.
2. Perform inspection after removal. Refer to [BR-115, "MR16DDT : Inspection"](#).

INSTALLATION

Note the following, install the vacuum hose.

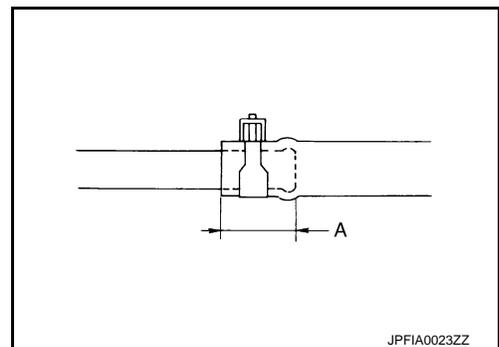
- When installing vacuum hose, insert it until its tip reaches the back-end of length (A) or further as shown in the figure.

CAUTION:

Never use lubricating oil during assembly.

A : 24 mm (0.95 in) or more

- Face the paint mark of vacuum hose (engine side) upward to assemble.
- Face the paint mark of vacuum hose (brake booster side) to the vehicle front side to assemble.
- For clamp mounting direction (the orientation of pawl), refer to [BR-115, "MR16DDT : Exploded View"](#).



MR16DDT : Inspection

INFOID:000000006589819

INSPECTION AFTER REMOVAL

Appearance

Check for correct assembly, damage and deterioration.

Check Valve Airtightness

VACUUM LINES

[RHD]

< REMOVAL AND INSTALLATION >

- Use a handy vacuum pump (A) to check.

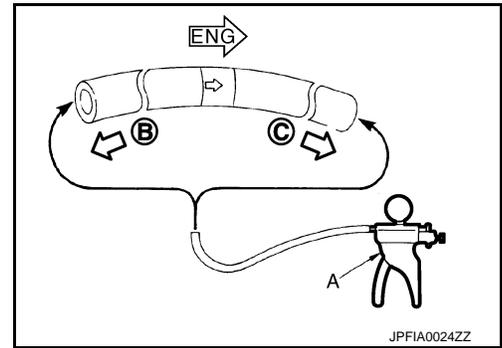
When connected to the booster side (B):

Vacuum should decrease within 1.3 kPa (9.8 mmHg, 0.38 inHg, 0.013 bar) for 15 seconds under a vacuum of -66.7 kPa (-500 mmHg, -19.70 inHg, -0.667 bar).

When connected to the engine side (C):

Vacuum should not exist.

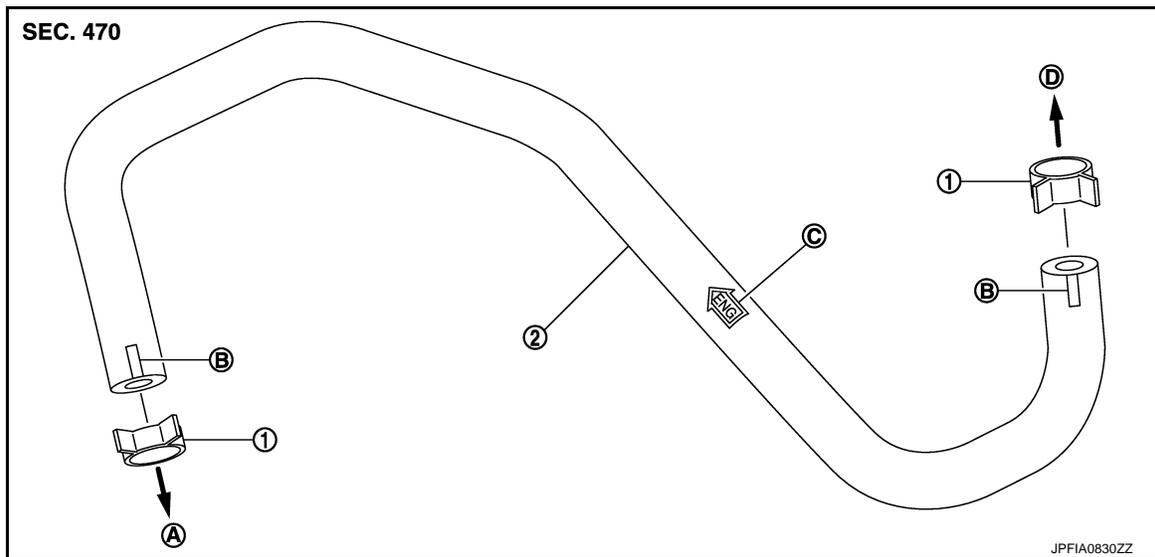
- Replace vacuum hose if vacuum hose is malfunctioning.



HR16DE

HR16DE : Exploded View

INFOID:000000006589814



- | | |
|-----------------------|---------------------------------------|
| 1. Clamp | 2. Vacuum hose (built-in check valve) |
| A. To intake manifold | B. Paint mark |
| D. To brake booster | C. Stamp indicating engine direction |

HR16DE : Removal and Installation

INFOID:000000006589815

REMOVAL

1. Remove the vacuum hose and vacuum piping.
2. Perform inspection after removal. Refer to [BR-117, "HR16DE : Inspection"](#).

INSTALLATION

Note the following, install the vacuum hose.

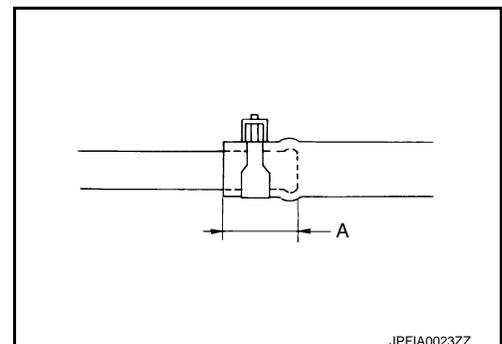
- When installing vacuum hose, insert it until its tip reaches the back-end of length (A) or further as shown in the figure.

CAUTION:

Never use lubricating oil during assembly.

A : 24 mm (0.95 in) or more

- Face the paint marks upward to assemble.
- For clamp mounting direction (the orientation of pawl), refer to [BR-116, "HR16DE : Exploded View"](#).



VACUUM LINES

< REMOVAL AND INSTALLATION >

[RHD]

HR16DE : Inspection

INFOID:000000006589816

INSPECTION AFTER REMOVAL

Appearance

Check for correct assembly, damage and deterioration.

Check Valve Airtightness

- Use a handy vacuum pump (A) to check.

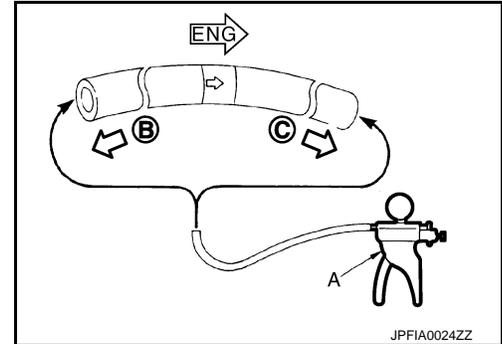
When connected to the booster side (B):

Vacuum should decrease within 1.3 kPa (9.8 mmHg, 0.38 inHg, 0.013 bar) for 15 seconds under a vacuum of -66.7 kPa (-500 mmHg, -19.70 inHg, -0.667 bar).

When connected to the engine side (C):

Vacuum should not exist.

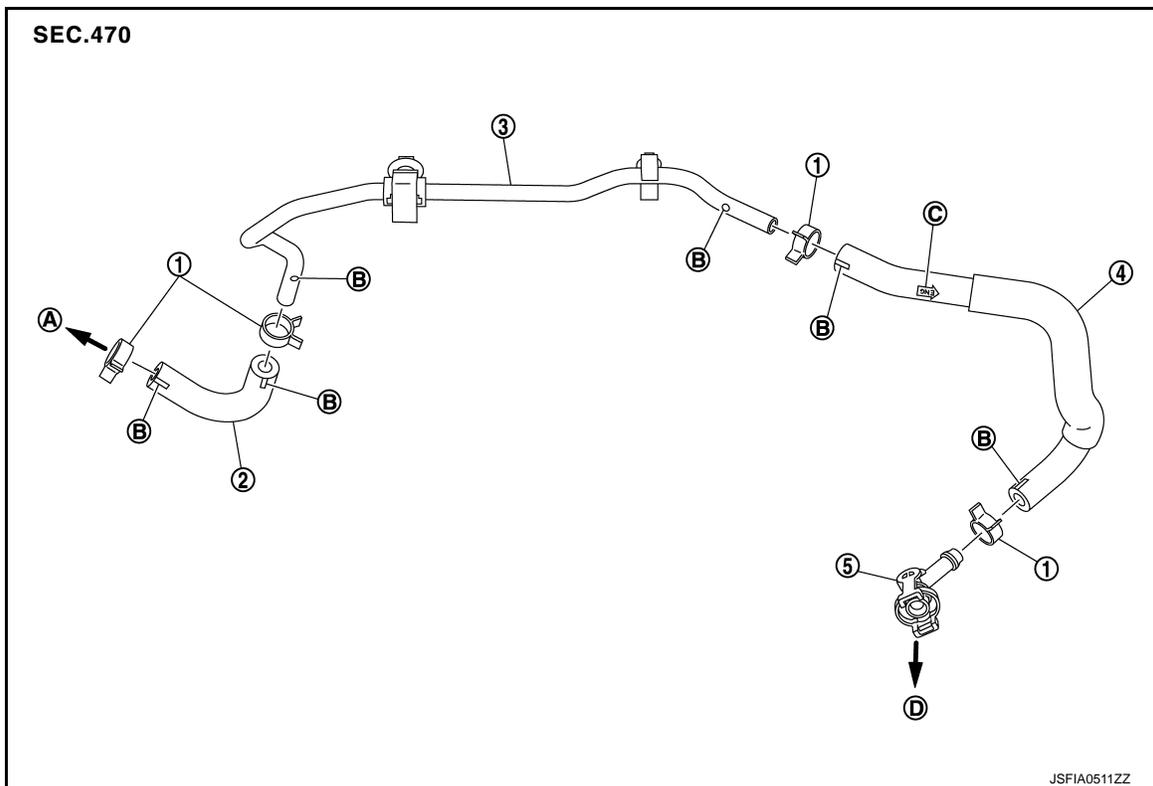
- Replace vacuum hose assembly if vacuum hose and check valve are malfunctioning.



K9K

K9K : Exploded View

INFOID:000000006589820



- | | | |
|---------------------------------------|----------------|--------------------------------------|
| 1. Clamp | 2. Vacuum hose | 3. Vacuum piping |
| 4. Vacuum hose (built-in check valve) | 5. Connector | |
| A. To brake booster | B. Paint mark | C. Stamp indicating engine direction |
| D. To vacuum pump | | |

K9K : Removal and Installation

INFOID:000000006589821

REMOVAL

1. Remove air duct and air cleaner case. Refer to [EM-280. "Removal and Installation"](#).

VACUUM LINES

[RHD]

< REMOVAL AND INSTALLATION >

2. Remove the vacuum hose and connector.

INSTALLATION

Note the following, install the vacuum hose.

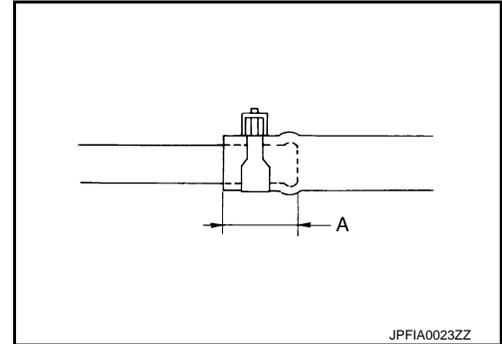
- When installing vacuum hose, insert it until its tip reaches the back-end of length (A) or further as shown in the figure.

CAUTION:

Never use lubricating oil during assembly.

A : 24 mm (0.95 in) or more

- Face the paint mark of vacuum hose (built-in check valve, connector side) upward to assemble.
- Face the other paint marks to vehicle front side to assemble.
- For clamp mounting direction (the orientation of pawl), refer to [BR-117, "K9K : Exploded View"](#).



INFOID:000000006589822

K9K : Inspection

INSPECTION AFTER REMOVAL

Appearance

Check for correct assembly, damage and deterioration.

Check Valve Airtightness

- Use a handy vacuum pump (A) to check.

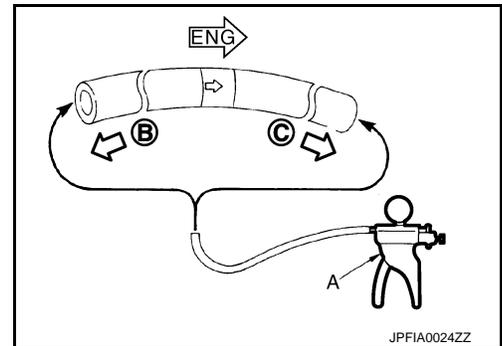
When connected to the booster side (B):

Vacuum should decrease within 1.3 kPa (9.8 mmHg, 0.38 inHg, 0.013 bar) for 15 seconds under a vacuum of -66.7 kPa (-500 mmHg, -19.70 inHg, -0.667 bar).

When connected to the engine side (C):

Vacuum should not exist.

- Replace vacuum hose assembly if vacuum hose and check valve are malfunctioning.



FRONT DISC BRAKE

< REMOVAL AND INSTALLATION >

[RHD]

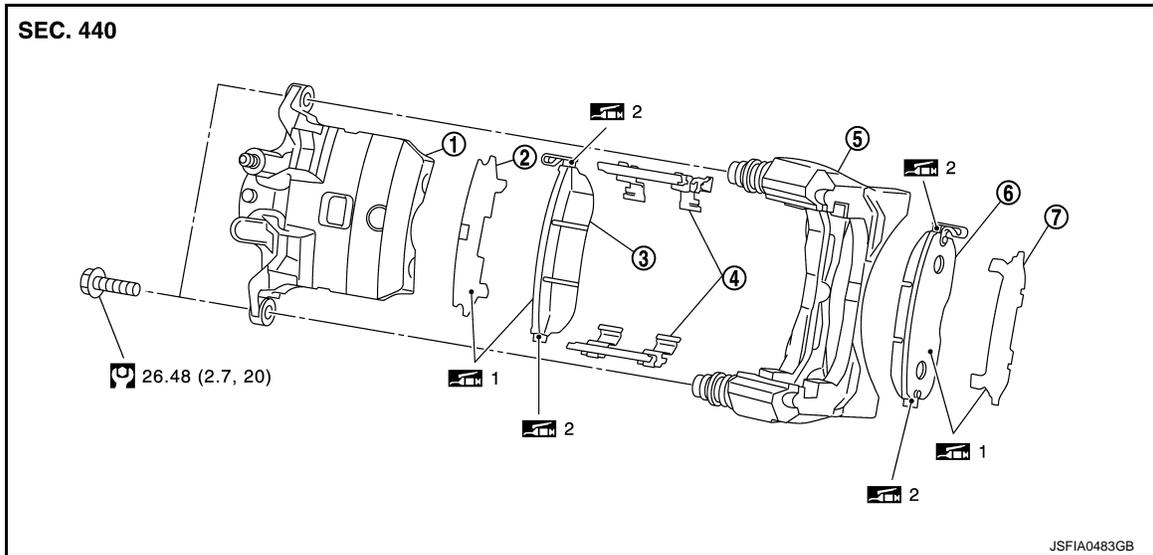
FRONT DISC BRAKE

BRAKE PAD

BRAKE PAD : Exploded View

INFOID:000000006589823

MR16DDT



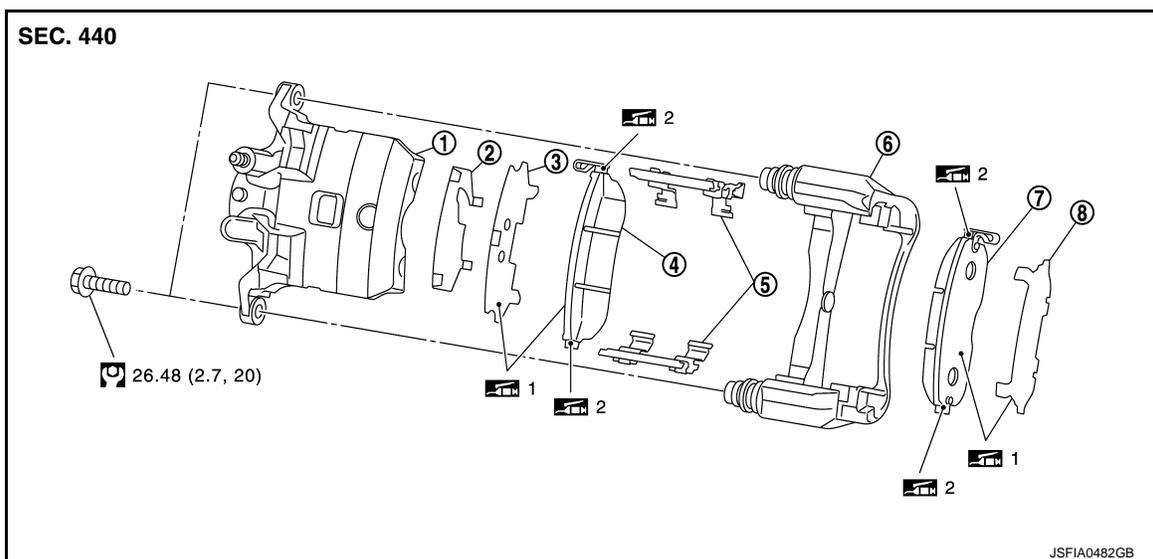
- | | | |
|------------------|------------------|-------------------------------------|
| 1. Cylinder body | 2. Inner shim | 3. Inner pad (with pad wear sensor) |
| 4. Pad retainer | 5. Torque member | 6. Outer pad |
| 7. Outer shim | | |

1: Apply MOLYKOTE® AS880N or silicone-based grease.

2: Apply MOLYKOTE® 7439 or equivalent.

: N·m (kg·m, ft·lb)

HR16DE, K9K



- | | | |
|-------------------------------------|---------------------|------------------|
| 1. Cylinder body | 2. Inner shim cover | 3. Inner shim |
| 4. Inner pad (with pad wear sensor) | 5. Pad retainer | 6. Torque member |
| 7. Outer pad | 8. Outer shim | |

FRONT DISC BRAKE

< REMOVAL AND INSTALLATION >

[RHD]

 1: Apply MOLYKOTE® AS880N or silicone-based grease.

 2: Apply MOLYKOTE® 7439 or equivalent.

 : N·m (kg·m, ft·lb)

BRAKE PAD : Removal and Installation

INFOID:000000006589824

REMOVAL

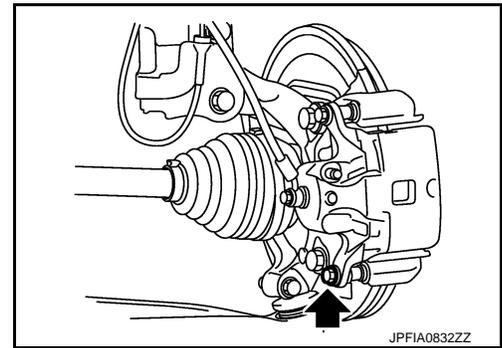
WARNING:

Clean any dust from the brake caliper and brake pads with a vacuum dust collector. Never blow with compressed air.

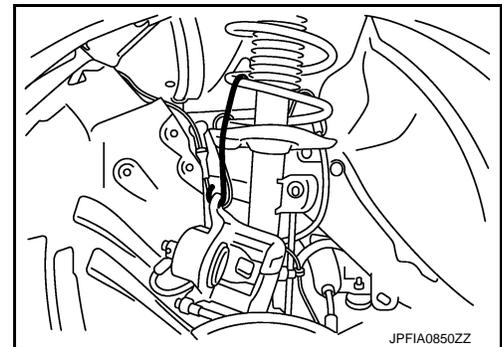
CAUTION:

- Never depress the brake pedal while removing the brake pads because the piston may pop out.
- If the brake fluid or grease adheres to the disc rotor, quickly wipe it off.

1. Remove tires.
2. Remove lower sliding pin bolt.



3. Suspend the cylinder body with suitable wire so that the brake hose will not stretch.

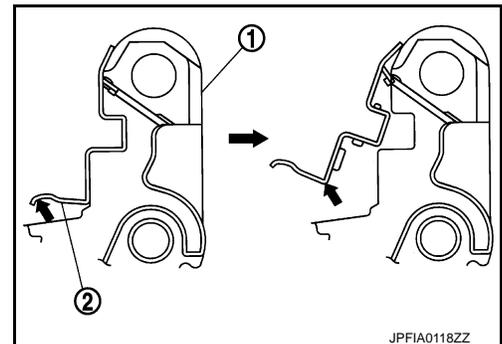


4. Remove the brake pads, shims, shim covers and pad retainers from the torque member.

CAUTION:

- Never deform the pad retainer (2) when removing the pad retainer from the torque member (1).
- Never damage the piston boot.
- Never drop the brake pads, shims, and the shim covers.
- Remember each position of the removed brake pads.

5. Perform inspection after removal. Refer to [BR-121, "BRAKE PAD : Inspection"](#).



INSTALLATION

WARNING:

Clean any dust from the brake caliper and brake pads with a vacuum dust collector. Never blow with compressed air.

CAUTION:

FRONT DISC BRAKE

[RHD]

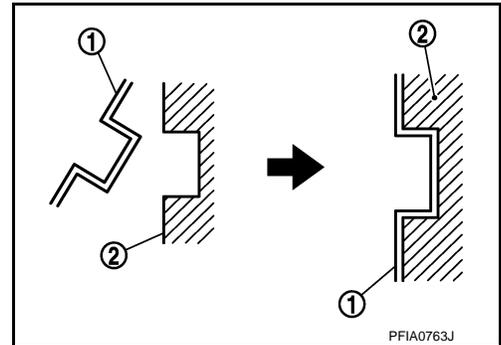
< REMOVAL AND INSTALLATION >

- Never depress the brake pedal while removing the brake pads or the cylinder body because the piston may pop out.
- If the brake fluid or grease adheres to the disc rotor, quickly wipe it off.

1. Install the pad retainers (1) to the torque member (2) if the pad retainers has been removed.

CAUTION:

- Securely assemble the pad retainers so that it will not be lifted up from the torque member.
- Never deform the pad retainers.

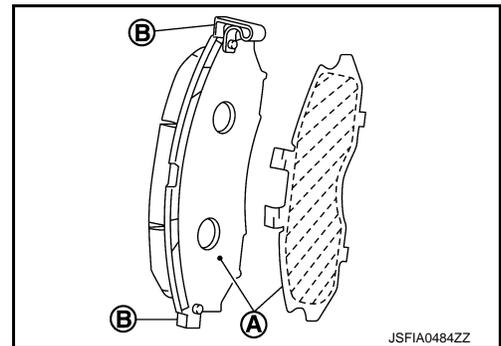


2. Apply MOLYKOTE® AS880N or silicone-based grease to the mating faces (A) between the brake pads and the shims, and install the shims to the brake pad.

CAUTION:

Always replace the shim together with the shim cover when replacing the brake pad.

3. Apply MOLYKOTE® 7439 or equivalent to the mating faces (B) between the brake pads and the pad retainers.



4. Install the brake pads to the torque member.

CAUTION:

- Both inner and outer pads have a pad return system on the pad retainer. Install pad return lever (1) securely to pad retainer (2).
- Never deform the pad retainers.

5. Install cylinder body to torque member.

CAUTION:

- Never damage the piston boot.
- When replacing brake pad with new one, check a brake fluid level in the reservoir tank because brake fluid returns to master cylinder reservoir tank when pressing piston in.

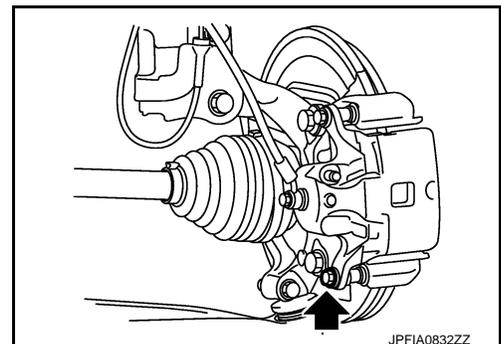
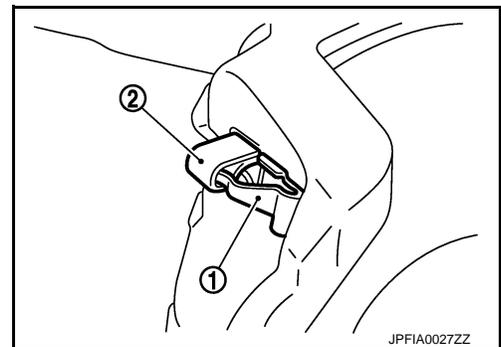
NOTE:

Use a disc brake piston tool to easily press piston.

6. Install the lower sliding pin bolt and tighten it to the specified torque.

7. Depress the brake pedal several times to check that no drag feel is present for the front disc brake. Refer to [BR-121. "BRAKE PAD : Inspection"](#).

8. Install tires. Refer to [WT-7. "Exploded View"](#).



BRAKE PAD : Inspection

INFOID:000000006589825

INSPECTION AFTER REMOVAL

- Replace the shims and the shim covers if rust is excessively attached.

FRONT DISC BRAKE

< REMOVAL AND INSTALLATION >

[RHD]

- Eliminate rust on the pad retainers and the torque member. Replace them if rust is excessively attached.

INSPECTION AFTER INSTALLATION

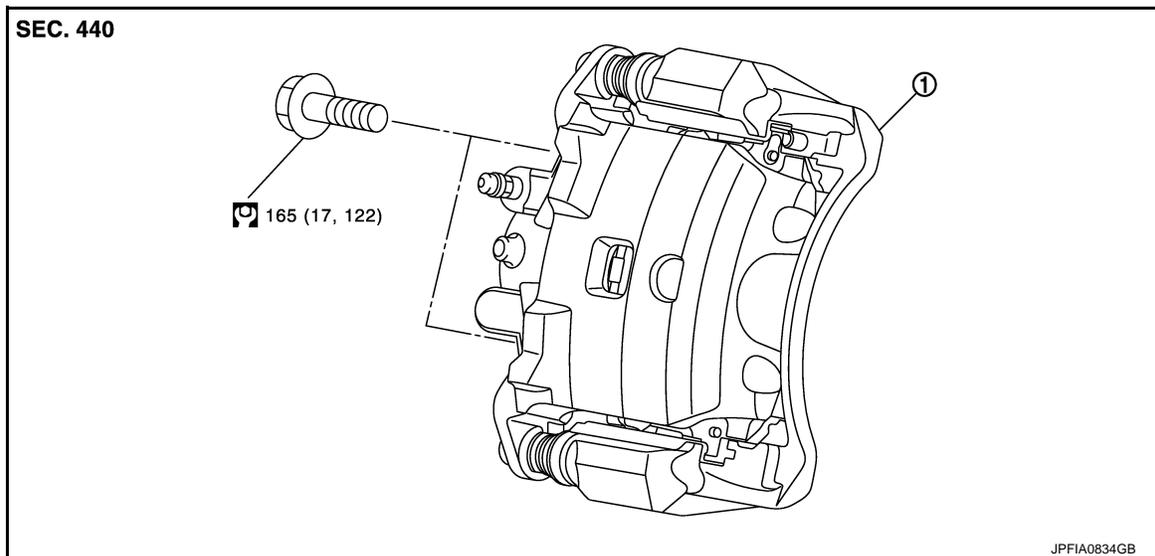
1. Check a drag of rear disc brake. If any drag is found, follow the procedure described below.
2. Remove brake pads. Refer to [BR-128, "BRAKE PAD : Removal and Installation"](#).
3. Press the pistons. Refer to [BR-128, "BRAKE PAD : Removal and Installation"](#).
4. Install brake pads. Refer to [BR-128, "BRAKE PAD : Removal and Installation"](#).
5. Securely depress the brake pedal several times.
6. Check a drag of rear disc brake again. If any drag is found, disassemble the cylinder body and replace if necessary. Refer to [BR-132, "BRAKE CALIPER ASSEMBLY : Disassembly and Assembly"](#)
7. Burnish contact surfaces brake pads and disc rotor after refinishing or replacing brake pads, or if a soft pedal occurs at very low mileage. Refer to [BR-86, "BRAKE PAD : Inspection and Adjustment"](#).

BRAKE CALIPER ASSEMBLY

BRAKE CALIPER ASSEMBLY : Exploded View

INFOID:000000006589826

REMOVAL



1. Brake caliper assembly

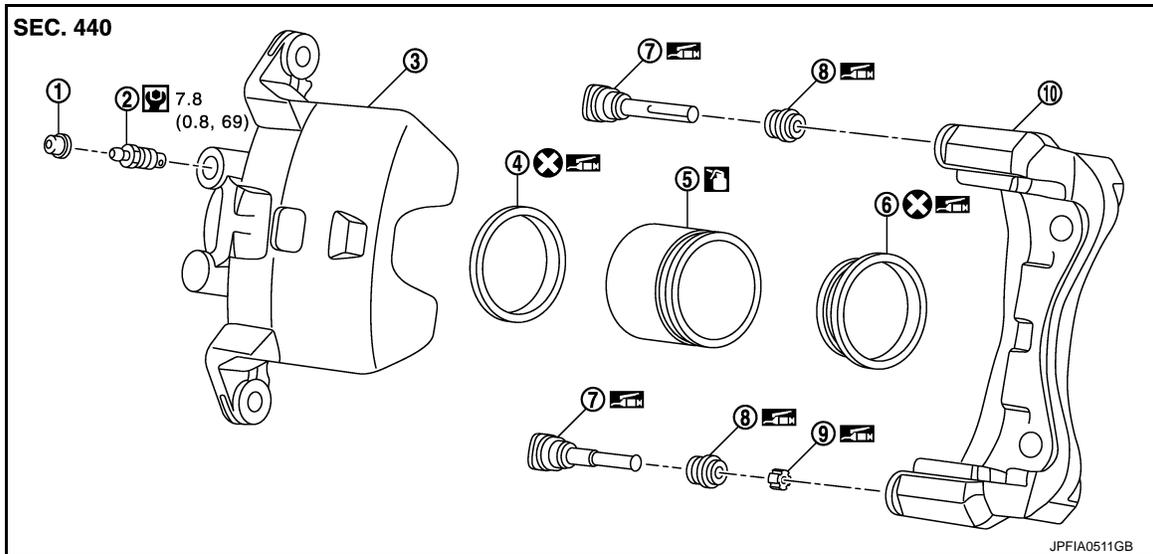
: N·m (kg·m, ft·lb)

DISASSEMBLY

FRONT DISC BRAKE

< REMOVAL AND INSTALLATION >

[RHD]



- | | | |
|-------------------|---------------------|------------------|
| 1. Cap | 2. Bleeder valve | 3. Cylinder body |
| 4. Piston seal | 5. Piston | 6. Piston boot |
| 7. Sliding pin | 8. Sliding pin boot | 9. Bushing |
| 10. Torque member | | |

: Apply rubber grease.

: Apply brake fluid.

: N·m (kg·m, in·lb)

: Always replace after every disassembly.

BRAKE CALIPER ASSEMBLY : Removal and Installation

INFOID:000000006589827

REMOVAL

WARNING:

Clean any dust from the brake caliper and brake pads with a vacuum dust collector. Never blow with compressed air.

CAUTION:

- Never spill or splash brake fluid on painted surfaces. Brake fluid may seriously damage paint. Wipe it out immediately and wash with water if it gets on a protect surface. For brake component parts, never wash them with water.
- Never depress the brake pedal while removing the brake hose. If this is not complied with, brake fluid may splash.
- Never drop removed parts.
- If the brake fluid or grease adheres to the disc rotor, quickly wipe it off.

1. Remove tires.
2. Fix the disc rotor using wheel nuts.
3. Drain brake fluid. Refer to [BR-80. "Draining"](#).
4. Separate brake hose from caliper assembly. Refer to [BR-95. "FRONT : Removal and Installation"](#).

FRONT DISC BRAKE

< REMOVAL AND INSTALLATION >

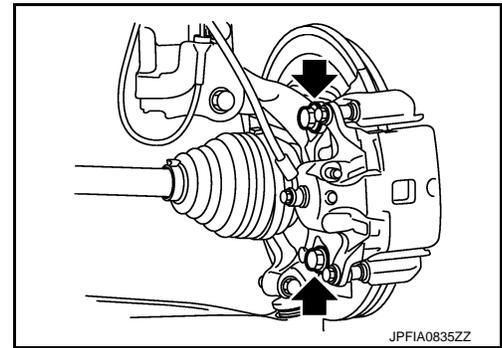
[RHD]

5. Remove torque member mounting bolts, and remove brake caliper assembly.

CAUTION:

Never drop brake pad and caliper assembly.

6. When removing disc rotor.
 - MR16DDT: Refer to [FAX-11, "Removal and Installation"](#).
 - HR16DE: Refer to [FAX-43, "Removal and Installation"](#).
 - K9K: Refer to [FAX-68, "Removal and Installation"](#).



INSTALLATION

WARNING:

Clean any dust from the brake caliper and brake pads with a vacuum dust collector. Never blow with compressed air.

CAUTION:

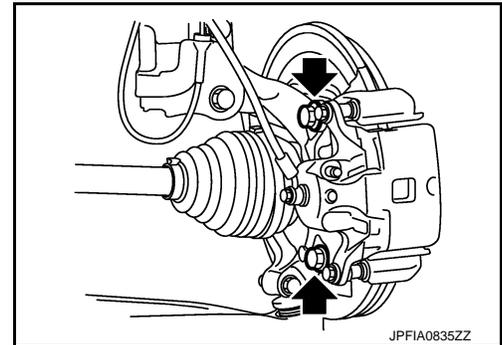
- Never spill or splash brake fluid on painted surfaces. Brake fluid may seriously damage paint. Wipe it out immediately and wash with water if it gets on a protect surface. For brake component parts, never wash them with water.
- Never depress the brake pedal while removing the brake hose. If this is not complied with, brake fluid may splash.
- If the brake fluid or grease adheres to the disc rotor, quickly wipe it off.

1. Install disc rotor.
 - MR16DDT: Refer to [FAX-11, "Removal and Installation"](#).
 - HR16DE: Refer to [FAX-43, "Removal and Installation"](#).
 - K9K: Refer to [FAX-68, "Removal and Installation"](#).
2. Install the brake caliper assembly to the steering knuckle and tighten the torque member mounting bolts to the specified torque.

CAUTION:

Never spill or splash any grease and moisture on the brake caliper assembly mounting face, threads, mounting bolts and washers. Wipe out any grease and moisture.

3. Install brake hose. Refer to [BR-95, "FRONT : Removal and Installation"](#).
4. Perform the air bleeding. Refer to [BR-81, "Bleeding Brake System"](#).
5. Check a drag of front disc brake. If any drag is found, refer to [BR-126, "BRAKE CALIPER ASSEMBLY : Inspection"](#).
6. Install tires. Refer to [WT-7, "Exploded View"](#).
7. Perform inspection after installation. Refer to [BR-126, "BRAKE CALIPER ASSEMBLY : Inspection"](#).



BRAKE CALIPER ASSEMBLY : Disassembly and Assembly

INFOID:000000006589828

DISASSEMBLY

NOTE:

Never remove the torque member, brake pad and pad retainers when disassembling and assembling the cylinder body.

1. Remove the sliding pin bolt, and remove the cylinder body from the torque member. Refer to [BR-120, "BRAKE PAD : Removal and Installation"](#).

CAUTION:

Fix the brake pad at suitable tape so that the brake pad will not drop.

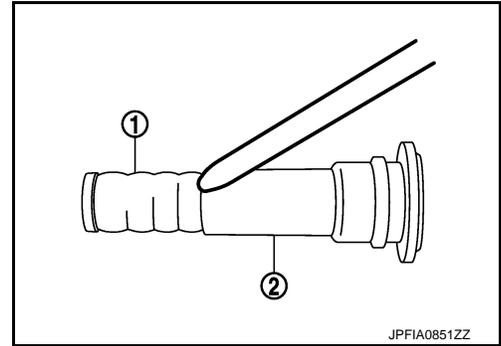
2. Remove sliding pins and sliding pin boots from torque member.

FRONT DISC BRAKE

< REMOVAL AND INSTALLATION >

[RHD]

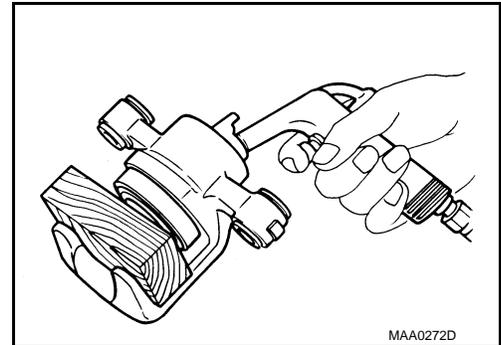
3. Remove bushing (1) from sliding pin (2).



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

CAUTION:

Never get fingers caught in the pistons.



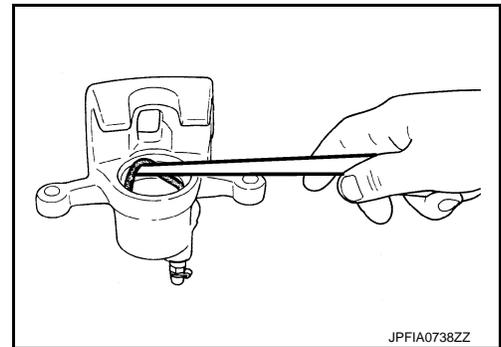
5. Remove piston seal from cylinder body using seal pick tool.

CAUTION:

Be careful not to damage a cylinder inner wall.

6. Remove bleeder valve and cap.

7. Perform inspection after disassembly. Refer to [BR-126, "BRAKE CALIPER ASSEMBLY : Inspection"](#).



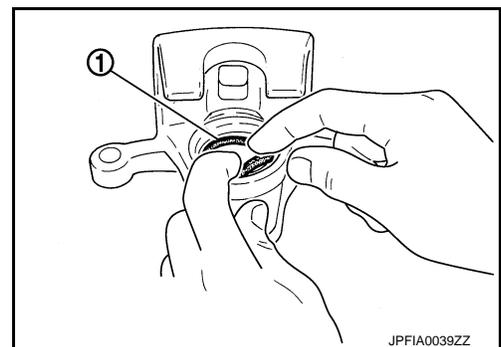
ASSEMBLY

1. Install bleeder valve and cap.

2. Apply rubber grease to piston seals (1), and install them to cylinder body.

CAUTION:

Never reuse piston seals.



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

FRONT DISC BRAKE

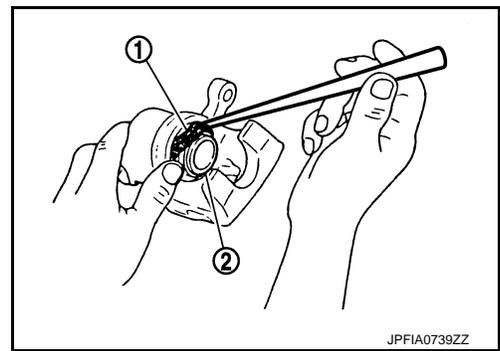
[RHD]

< REMOVAL AND INSTALLATION >

3. Apply rubber grease to piston boots (1). Cover the piston (2) end with piston boot, and then install cylinder side lip on piston boot securely into a groove on cylinder body.

CAUTION:

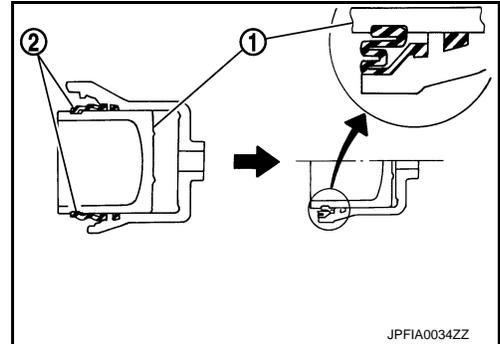
Never reuse piston boots.



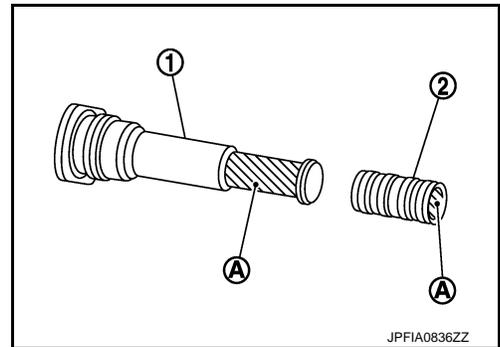
4. Apply new brake fluid to pistons (1). Push piston into cylinder body by hand and push piston boot (2) piston-side lip into the piston groove.

CAUTION:

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

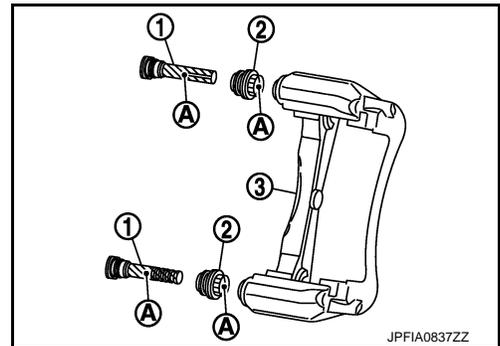


5. Apply rubber grease to mating faces (A) between sliding pin (1) and bushing (2), and install bushing to sliding pin.



6. Apply rubber grease to mating faces (A) between sliding pin (1) and sliding pin boot (2), and install sliding pin and sliding pin boot to sliding torque member (3).

7. Install the cylinder body to tighten cylinder body mounting bolts to the specified torque. Refer to [BR-119, "BRAKE PAD : Exploded View"](#).



BRAKE CALIPER ASSEMBLY : Inspection

INFOID:000000006589829

INSPECTION AFTER DISASSEMBLY

Check the following items and replace if necessary.

Cylinder Body

Check the inner wall of the cylinder for rust, wear, cracks or damage.

CAUTION:

Always clean with new brake fluid. Never clean with mineral oil such as gasoline and light oil.

Torque Member

Check the torque member for rust, wear, cracks or damage.

FRONT DISC BRAKE

< REMOVAL AND INSTALLATION >

[RHD]

Pistons

Check the surface of the piston for rust, wear, cracks or damage.

CAUTION:

A piston sliding surface is plated. Never polish with sandpaper.

Sliding Pin, Sliding Pin Boot and Bushing

Check the sliding pins, sliding boots and bushing for rust, wear, cracks or damage.

INSPECTION AFTER INSTALLATION

1. Check a drag of front disc brake. If any drag is found, follow the procedure described below.
2. Remove brake pads. Refer to [BR-120, "BRAKE PAD : Removal and Installation"](#).
3. Press the pistons. Refer to [BR-120, "BRAKE PAD : Removal and Installation"](#).
4. Install brake pads. Refer to [BR-120, "BRAKE PAD : Removal and Installation"](#).
5. Securely depress the brake pedal several times.
6. Check a drag of front disc brake again. If any drag is found, disassemble the cylinder body and replace if necessary. Refer to [BR-124, "BRAKE CALIPER ASSEMBLY : Disassembly and Assembly"](#).
7. Burnish contact surface between disc rotor and brake pads after refinishing or replacing disc rotor, or if a soft pedal occurs at very low mileage. Refer to [BR-86, "DISC ROTOR : Inspection and Adjustment"](#).

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

REAR DISC BRAKE

< REMOVAL AND INSTALLATION >

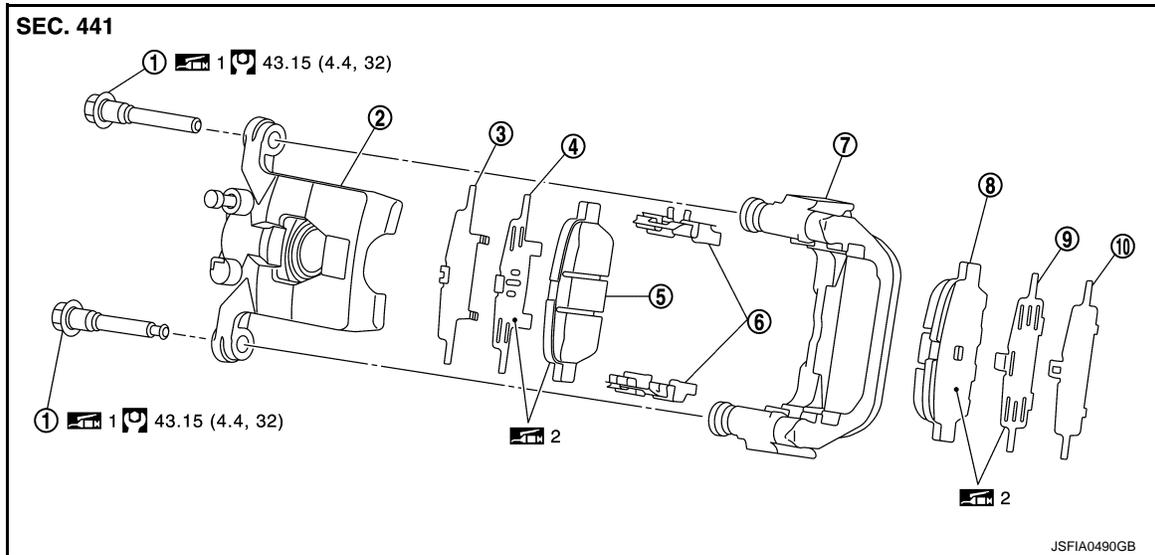
[RHD]

REAR DISC BRAKE

BRAKE PAD

BRAKE PAD : Exploded View

INFOID:000000006589830



- | | | |
|----------------------|-------------------------------------|---------------------|
| 1. Sliding pin bolt | 2. Cylinder body | 3. Inner shim cover |
| 4. Inner shim | 5. Inner pad (with pad wear sensor) | 6. Pad retainer |
| 7. Torque member | 8. Outer pad | 9. Outer shim |
| 10. Outer shim cover | | |

 1 Apply rubber grease.

 2: Apply MOLYKOTE® AS880N or silicone-based grease.

: N·m (kg·m, ft·lb)

BRAKE PAD : Removal and Installation

INFOID:000000006589831

REMOVAL

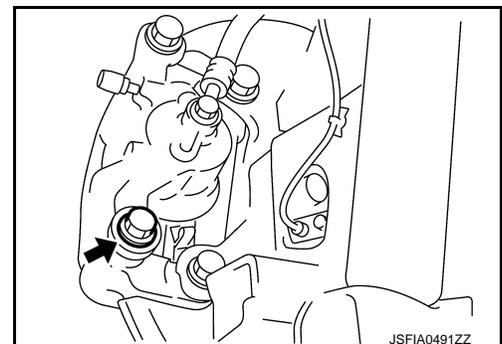
WARNING:

Clean any dust from the brake caliper and brake pads with a vacuum dust collector. Never blow with compressed air.

CAUTION:

- Never depress the brake pedal while removing the brake pads because the piston may pop out.
- If the brake fluid or grease adheres to the disc rotor, quickly wipe it off.

1. Remove tires.
2. Remove lower sliding pin bolt.

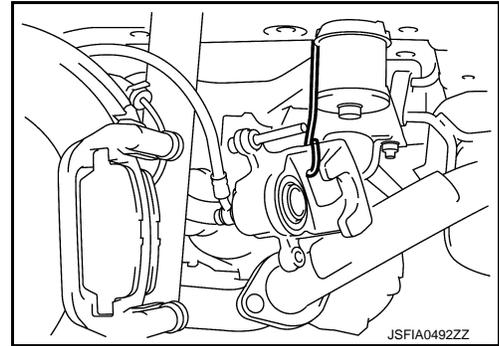


REAR DISC BRAKE

[RHD]

< REMOVAL AND INSTALLATION >

3. Suspend the cylinder body with suitable wire so that the brake hose will not stretch.

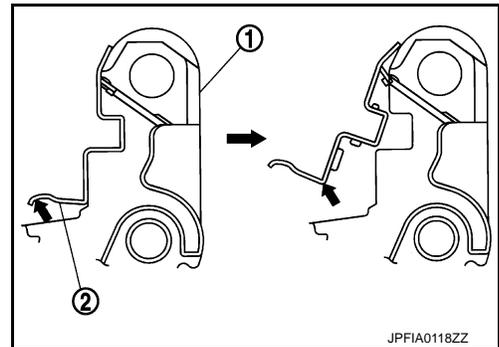


4. Remove the brake pads, shims, shim covers and pad retainers from the torque member.

CAUTION:

- Never deform the pad retainer (2) when removing the pad retainer from the torque member (1).
- Never damage the piston boot.
- Never drop the brake pads, shims, and the shim covers.
- Remember each position of the removed brake pads.

5. Perform inspection after removal. Refer to [BR-121. "BRAKE PAD : Inspection"](#).



INSTALLATION

WARNING:

Clean any dust from the brake caliper and brake pads with a vacuum dust collector. Never blow with compressed air.

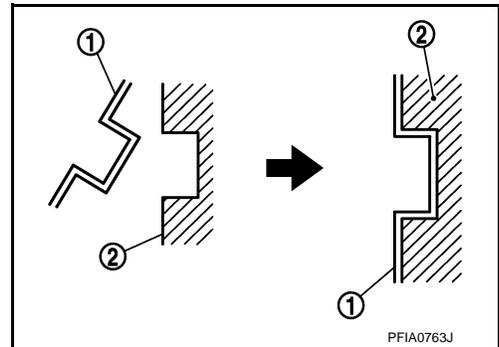
CAUTION:

- Never depress the brake pedal while removing the brake pads or the cylinder body because the piston may pop out.
- If the brake fluid or grease adheres to the disc rotor, quickly wipe it off.

1. Install the pad retainers (1) to the torque member (2) if the pad retainers has been removed.

CAUTION:

- Securely assemble the pad retainers so that it will not be lifted up from the torque member.
- Never deform the pad retainers.



2. Apply MOLYKOTE® AS880N or silicone-based grease to the mating faces (A) between the brake pads and the shims, and install the shims to the brake pad.

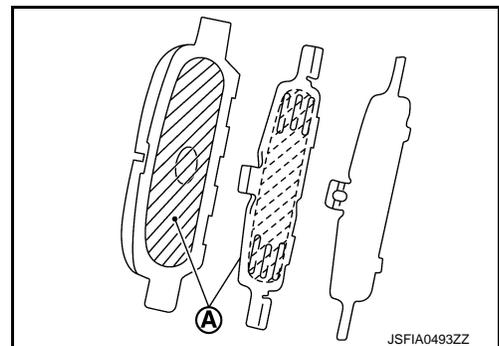
CAUTION:

Always replace the shim together with the shim cover when replacing the brake pad.

3. Install the brake pads to the torque member.
4. Install cylinder body to torque member.

CAUTION:

- Never damage the piston boot.
- When replacing brake pad with new one, check a brake fluid level in the reservoir tank because brake fluid



REAR DISC BRAKE

< REMOVAL AND INSTALLATION >

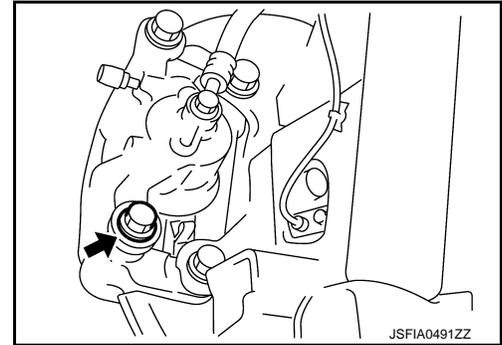
[RHD]

returns to master cylinder reservoir tank when pressing piston in.

NOTE:

Use a disc brake piston tool to easily press piston.

5. Install the lower sliding pin bolt and tighten it to the specified torque.
6. Depress the brake pedal several times to check that no drag feel is present for the front disc brake. Refer to [BR-121, "BRAKE PAD : Inspection"](#).
7. Install tires. Refer to [WT-7, "Exploded View"](#).



BRAKE PAD : Inspection

INFOID:000000006589832

INSPECTION AFTER REMOVAL

- Replace the shims and the shim covers if rust is excessively attached.
- Eliminate rust on the pad retainers and the torque member. Replace them if rust is excessively attached.

INSPECTION AFTER INSTALLATION

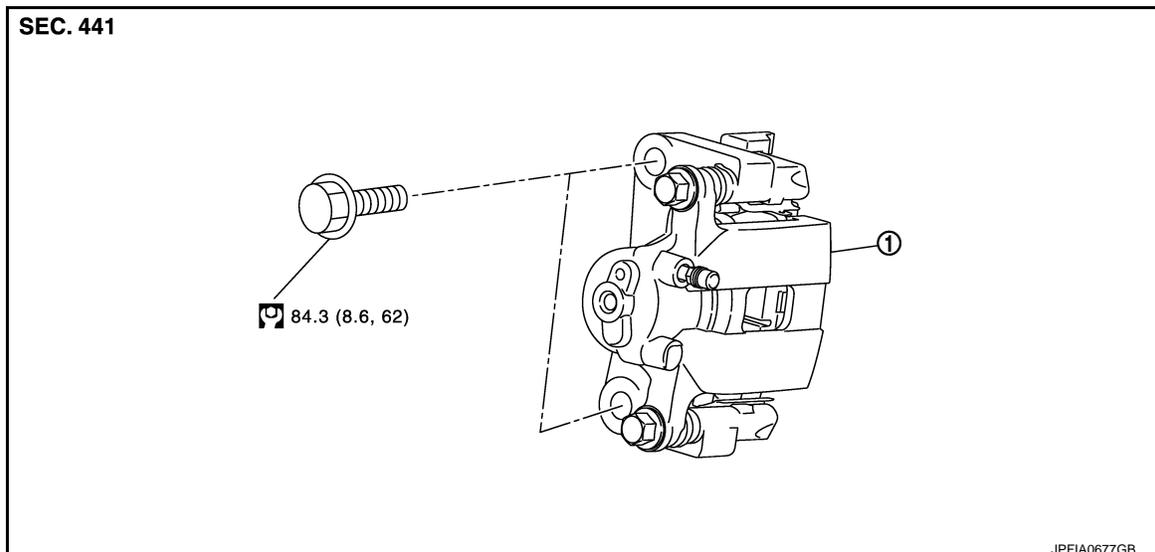
1. Check a drag of front disc brake. If any drag is found, follow the procedure described below.
2. Remove brake pads. Refer to [BR-128, "BRAKE PAD : Removal and Installation"](#).
3. Press the pistons. Refer to [BR-128, "BRAKE PAD : Removal and Installation"](#).
4. Install brake pads. Refer to [BR-128, "BRAKE PAD : Removal and Installation"](#).
5. Securely depress the brake pedal several times.
6. Check a drag of front disc brake again. If any drag is found, disassemble the cylinder body and replace if necessary. Refer to [BR-132, "BRAKE CALIPER ASSEMBLY : Disassembly and Assembly"](#)
7. Burnish contact surfaces brake pads and disc rotor after refinishing or replacing brake pads, or if a soft pedal occurs at very low mileage. Refer to [BR-86, "BRAKE PAD : Inspection and Adjustment"](#).

BRAKE CALIPER ASSEMBLY

BRAKE CALIPER ASSEMBLY : Exploded View

INFOID:000000006589833

REMOVAL



REAR DISC BRAKE

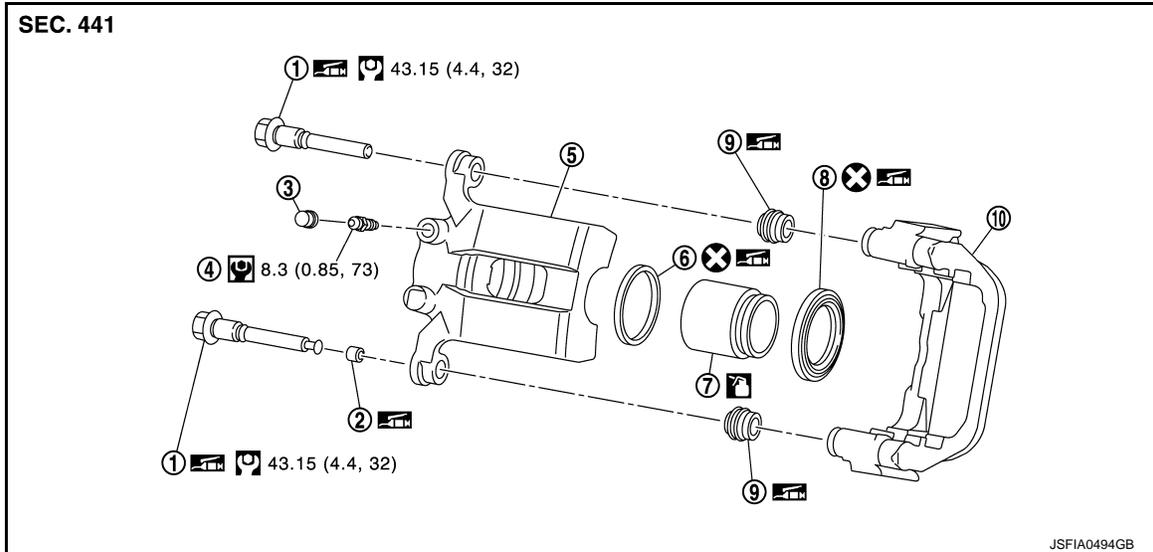
< REMOVAL AND INSTALLATION >

[RHD]

1. Brake caliper assembly

: N·m (kg·m, ft·lb)

DISASSEMBLY



- | | | |
|---------------------|------------------|---------------------|
| 1. Sliding pin bolt | 2. Bushing | 3. Cap |
| 4. Bleeder valve | 5. Cylinder body | 6. Piston seal |
| 7. Piston | 8. Piston boot | 9. Sliding pin boot |
| 10. Torque member | | |

: Apply rubber grease.

: Apply brake fluid.

: N·m (kg·m, ft·lb)

: N·m (kg·m, in·lb)

: Always replace after every disassembly.

BRAKE CALIPER ASSEMBLY : Removal and Installation

INFOID:0000000006589834

REMOVAL

WARNING:

Clean any dust from the brake caliper and brake pads with a vacuum dust collector. Never blow with compressed air.

CAUTION:

- Never spill or splash brake fluid on painted surfaces. Brake fluid may seriously damage paint. Wipe it out immediately and wash with water if it gets on a protect surface. For brake component parts, never wash them with water.
- Never depress the brake pedal while removing the brake hose. If this is not complied with, brake fluid may splash.
- Never drop removed parts.
- If the brake fluid or grease adheres to the disc rotor, quickly wipe it off.

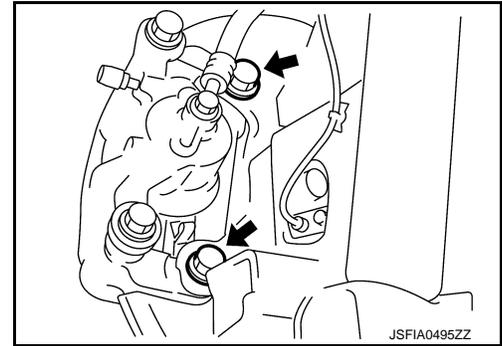
1. Remove tires.
2. Fix the disc rotor using wheel nuts.
3. Drain brake fluid. Refer to [BR-80, "Draining"](#).
4. Separate brake hose from caliper assembly. Refer to [BR-101, "REAR : Removal and Installation"](#).

REAR DISC BRAKE

[RHD]

< REMOVAL AND INSTALLATION >

- Remove torque member mounting bolts, and remove brake caliper assembly.
CAUTION:
Never drop brake pad and caliper assembly.
- When removing disc rotor.
 - 2WD: Refer to [RAX-5, "Removal and Installation"](#).
 - 4WD: Refer to [RAX-14, "Removal and Installation"](#).



INSTALLATION

WARNING:

Clean any dust from the brake caliper and brake pads with a vacuum dust collector. Never blow with compressed air.

CAUTION:

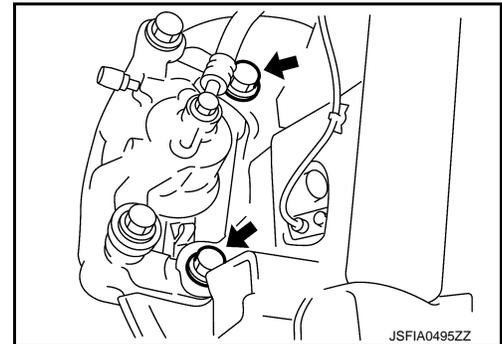
- Never spill or splash brake fluid on painted surfaces. Brake fluid may seriously damage paint. Wipe it out immediately and wash with water if it gets on a protect surface. For brake component parts, never wash them with water.
- Never depress the brake pedal while removing the brake hose. If this is not complied with, brake fluid may splash.
- If the brake fluid or grease adheres to the disc rotor, quickly wipe it off.

- Install disc rotor.
 - 2WD: Refer to [RAX-5, "Removal and Installation"](#).
 - 4WD: Refer to [RAX-14, "Removal and Installation"](#).
- Install the brake caliper assembly to the axle housing and tighten the torque member mounting bolts to the specified torque.

CAUTION:

Never spill or splash any grease and moisture on the brake caliper assembly mounting face, threads, mounting bolts and washers. Wipe out any grease and moisture.

- Install brake hose. Refer to [BR-101, "REAR : Removal and Installation"](#).
- Perform the air bleeding. Refer to [BR-81, "Bleeding Brake System"](#).
- Check a drag of rear disc brake. If any drag is found, refer to [BR-130, "BRAKE PAD : Inspection"](#).
- Install tires. Refer to [WT-7, "Exploded View"](#).
- Perform inspection after installation. Refer to [BR-134, "BRAKE CALIPER ASSEMBLY : Inspection"](#).



BRAKE CALIPER ASSEMBLY : Disassembly and Assembly

INFOID:000000006589835

DISASSEMBLY

NOTE:

Never remove the torque member, brake pad and pad retainers when disassembling and assembling the cylinder body.

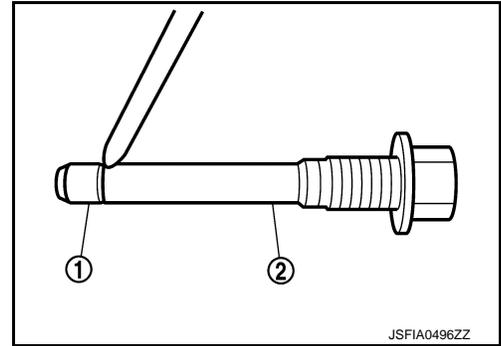
- Remove the sliding pin bolt, and remove the cylinder body from the torque member. Refer to [BR-128, "BRAKE PAD : Removal and Installation"](#).
CAUTION:
Fix the brake pad at suitable tape so that the brake pad will not drop.
- Remove sliding pin boots from torque member.

REAR DISC BRAKE

[RHD]

< REMOVAL AND INSTALLATION >

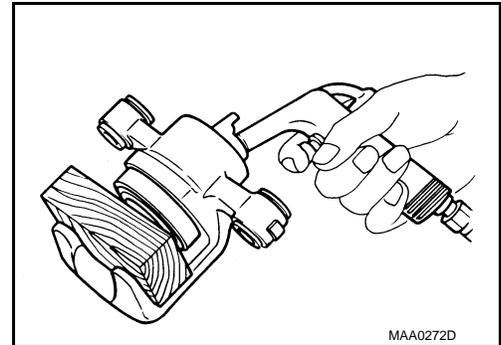
3. Remove bushing (1) from sliding pin bolt (2).



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

CAUTION:

Never get fingers caught in the pistons.



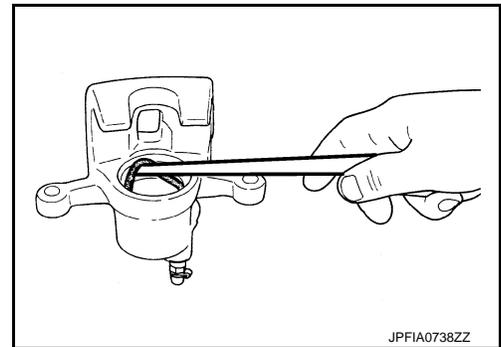
5. Remove piston seal from cylinder body using seal pick tool.

CAUTION:

Be careful not to damage a cylinder inner wall.

6. Remove bleeder valve and cap.

7. Perform inspection after disassembly. Refer to [BR-126, "BRAKE CALIPER ASSEMBLY : Inspection"](#).



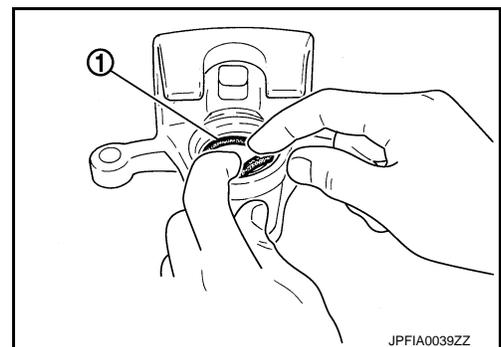
ASSEMBLY

1. Install bleeder valve and cap.

2. Apply rubber grease to piston seals (1), and install them to cylinder body.

CAUTION:

Never reuse piston seals.



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

REAR DISC BRAKE

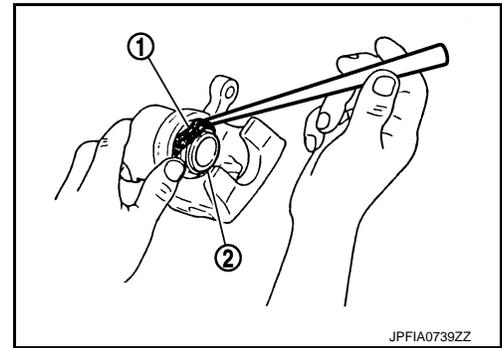
[RHD]

< REMOVAL AND INSTALLATION >

3. Apply rubber grease to piston boots (1). Cover the piston (2) end with piston boot, and then install cylinder side lip on piston boot securely into a groove on cylinder body.

CAUTION:

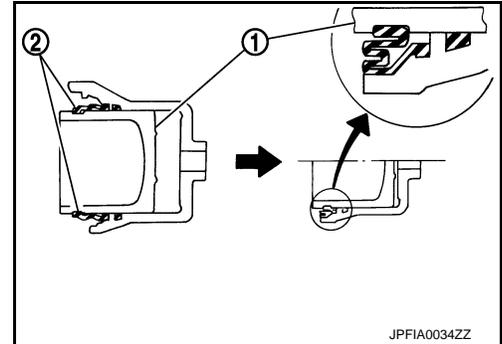
Never reuse piston boots.



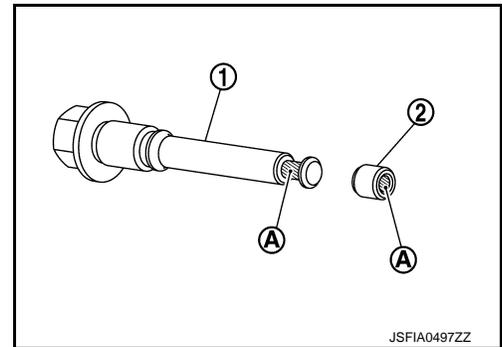
4. Apply new brake fluid to pistons (1). Push piston into cylinder body by hand and push piston boot (2) piston-side lip into the piston groove.

CAUTION:

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

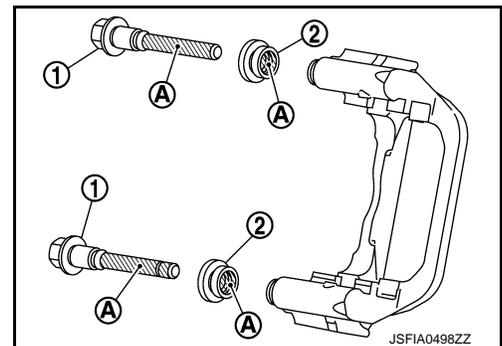


5. Apply rubber grease to mating faces (A) between sliding pin bolt (1) and bushing (2), and install bushing to sliding pin.



6. Apply rubber grease to mating faces (A) between sliding pin bolt (1) and sliding pin boot (2), and install sliding pin and sliding pin boot to sliding torque member.

7. Install the cylinder body to tighten sliding pin bolts to the specified torque. Refer to [BR-128, "BRAKE PAD : Exploded View"](#).



BRAKE CALIPER ASSEMBLY : Inspection

INFOID:000000006589836

INSPECTION AFTER DISASSEMBLY

Check the following items and replace if necessary.

Cylinder Body

Check the inner wall of the cylinder for rust, wear, cracks or damage.

CAUTION:

Always clean with new brake fluid. Never clean with mineral oil such as gasoline and light oil.

Torque Member

Check the torque member for rust, wear, cracks or damage.

REAR DISC BRAKE

< REMOVAL AND INSTALLATION >

[RHD]

Pistons

Check the surface of the piston for rust, wear, cracks or damage.

CAUTION:

A piston sliding surface is plated. Never polish with sandpaper.

Sliding Pin, Sliding Pin Boot and Bushing

Check the sliding pins, sliding boots and bushing for rust, wear, cracks or damage.

INSPECTION AFTER INSTALLATION

1. Check a drag of front disc brake. If any drag is found, follow the procedure described below.
2. Remove brake pads. Refer to [BR-120, "BRAKE PAD : Removal and Installation"](#).
3. Press the pistons. Refer to [BR-120, "BRAKE PAD : Removal and Installation"](#).
4. Install brake pads. Refer to [BR-120, "BRAKE PAD : Removal and Installation"](#).
5. Securely depress the brake pedal several times.
6. Check a drag of front disc brake again. If any drag is found, disassemble the cylinder body and replace if necessary. Refer to [BR-124, "BRAKE CALIPER ASSEMBLY : Disassembly and Assembly"](#).
7. Burnish contact surface between disc rotor and brake pads after refinishing or replacing disc rotor, or if a soft pedal occurs at very low mileage. Refer to [BR-86, "DISC ROTOR : Inspection and Adjustment"](#).

A

B

C

D

E

BR

G

H

I

J

K

L

M

N

O

P

SERVICE DATA AND SPECIFICATIONS (SDS)

< SERVICE DATA AND SPECIFICATIONS (SDS)

[RHD]

SERVICE DATA AND SPECIFICATIONS (SDS)

SERVICE DATA AND SPECIFICATIONS (SDS)

General Specifications

INFOID:000000006589837

MR16DDT

Unit: mm (in)

Front brake	Cylinder bore diameter		57.2 (2.252)
	Pad length × width × thickness		109.0 × 45.8 × 11.0 (4.29 × 1.803 × 0.433)
	Rotor outer diameter × thickness		296 × 26.0 (11.65 × 1.024)
Rear brake	Cylinder bore diameter		34.93 (1.3752)
	Pad length × width × thickness		83.0 × 31.9 × 8.5 (3.268 × 1.256 × 0.335)
	Rotor outer diameter × thickness		292 × 9.0 (11.50 × 0.354)
Master cylinder	Cylinder bore diameter		23.8 (15/16)
Control valve	Valve type		Electric brake force distribution
Brake booster	Diaphragm diameter	2WD	257 (10)
		4WD	256 (10)
Recommended brake fluid			Refer to MA-13, "Fluids and Lubricants" .

HR16DE, K9K

Unit: mm (in)

Front brake	Cylinder bore diameter		57.2 (2.252)
	Pad length × width × thickness		109.0 × 45.8 × 11.0 (4.29 × 1.803 × 0.433)
	Rotor outer diameter × thickness		280 × 24.0 (11.02 × 0.495)
Rear brake	Cylinder bore diameter		34.93 (1.3752)
	Pad length × width × thickness		83.0 × 31.9 × 8.5 (3.268 × 1.256 × 0.335)
	Rotor outer diameter × thickness		292 × 9.0 (11.50 × 0.354)
Master cylinder	Cylinder bore diameter		23.8 (15/16)
Control valve	Valve type		Electric brake force distribution
Brake booster	Diaphragm diameter	2WD	257 (10)
		4WD	256 (10)
Recommended brake fluid			Refer to MA-13, "Fluids and Lubricants" .

Brake Pedal

INFOID:000000006589838

Unit: mm (in)

Item		Standard
Brake pedal height		158.9 – 168.9 (6.26 – 6.65)
Depressed brake pedal height [Depressing 490 N (50 kg, 110 lb) while turning the engine ON]	MR16DDT	80.0 (3.150) or more
	HR16DE and K9K	75.0 (2.953) or more
Clearance between stop lamp switch and brake switch/brake pedal position switch threaded end and the brake pedal lever		0.74 – 1.96 (0.0291 – 0.0772)
Brake pedal play		3 – 11 (0.12 – 0.43)

Brake Booster

INFOID:000000006589839

2WD

SERVICE DATA AND SPECIFICATIONS (SDS)

< SERVICE DATA AND SPECIFICATIONS (SDS)

[RHD]

Unit: mm (in)

Item	Standard
Input rod length	125.25 – 126.75 (4.93 – 4.99)

4WD

Unit: mm (in)

Item	Standard
Input rod length	125.5 – 126.5 (4.94 – 4.98)

Front Disc Brake

INFOID:000000006589840

MR16DDT

Unit: mm (in)

Item	Limit
Brake pad	Wear thickness 2.0 (0.079)
Disc rotor	Wear thickness 24.0 (0.945)
	Thickness variation (measured at 8 positions) 0.008 (0.0003)
	Runout (with it attached to the vehicle) 0.035 (0.0014)

HR16DE, K9K

Unit: mm (in)

Item	Limit
Brake pad	Wear thickness 2.0 (0.079)
Disc rotor	Wear thickness 22.0 (0.866)
	Thickness variation (measured at 8 positions) 0.008 (0.0003)
	Runout (with it attached to the vehicle) 0.035 (0.0014)

Rear Disc Brake

INFOID:000000006589841

Unit: mm (in)

Item	Limit
Brake pad	Wear thickness 2.0 (0.079)
Disc rotor	Wear thickness 8.0 (0.315)
	Thickness variation (measured at 8 positions) 0.016 (0.0006)
	Runout (with it attached to the vehicle) 0.1 (0.004)