# SECTION BR
# BRAKE SYSTEM

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# PRECAUTION

## PRECAUTIONS

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

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The Supplemental Restraint System such as “AIR BAG” and “SEAT BELT PRE-TENSIONER”, used along with a front seat belt, helps to reduce the risk or severity of injury to the driver and front passenger for certain types of collision. Information necessary to service the system safely is included in the SR and SB section of this Service Manual.

**WARNING:**

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

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

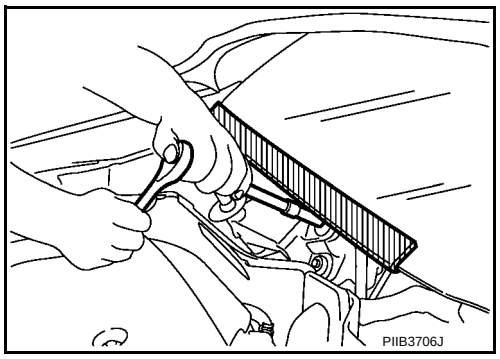
**WARNING:**

- **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 or batteries, and wait at least three minutes before performing any service.**

### Precaution for Procedure without Cowl Top Cover

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




### Precaution for Brake System

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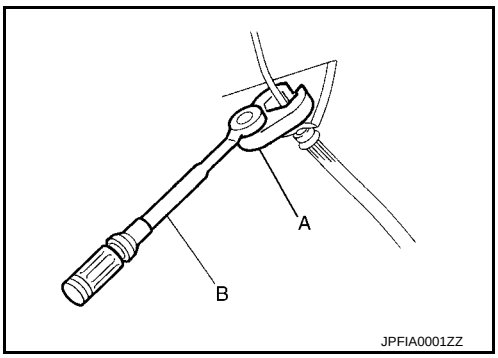
**WARNING:**

**Clean any dust from the front brake and rear brake with a vacuum dust collector. Do not blow with compressed air.**

**CAUTION:**

- **Brake fluid use refer to MA-11, "Fluids and Lubricants".**
- **Do not reuse drained brake fluid.**
- **Do not 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.**
- **Always clean with new brake fluid when cleaning the master cylinder, brake caliper and other components.**
- **Do not 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 using a crowfoot (A) and a torque wrench (B).**
- **Always confirm the specified tightening torque when installing the brake pipes.**
- **Turn the ignition switch OFF and disconnect the ABS actuator and electric unit (control unit) connector or the battery negative terminal before performing the work.**
- **Always connect the battery terminal when moving the vehicle.**
- **Check that no brake fluid leakage is present after replacing the parts.**
- **Check for bends, cracks and damage to the brake pedal. Adjust brake pedal if it is outside the standard value.**




- **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: refer to BR-53, "BRAKE PAD : Inspection and Adjustment".**

**- Rear brake: refer to BR-55, "BRAKE PAD : Inspection and Adjustment".**

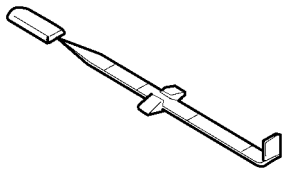
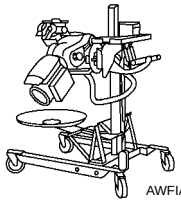
# PREPARATION

## PREPARATION

### Special Service Tool

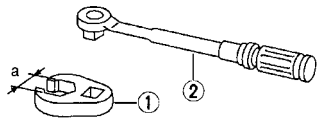
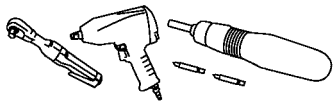
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The actual shape of the tools may differ from those illustrated here.

| Tool number<br>(TechMate No.)<br>Tool name | Description |
|---|---|
| —<br>(J-46532)<br>Brake height tool<br><br>LFIA0227E | Measuring brake pedal height |
| 38-PFM92<br>( — )<br>Pro-Cut™ PFM Series Lathe<br><br>AWFIA1169ZZ | Refinishing rotors |

### Commercial Service Tool

INFOID:0000000014900124

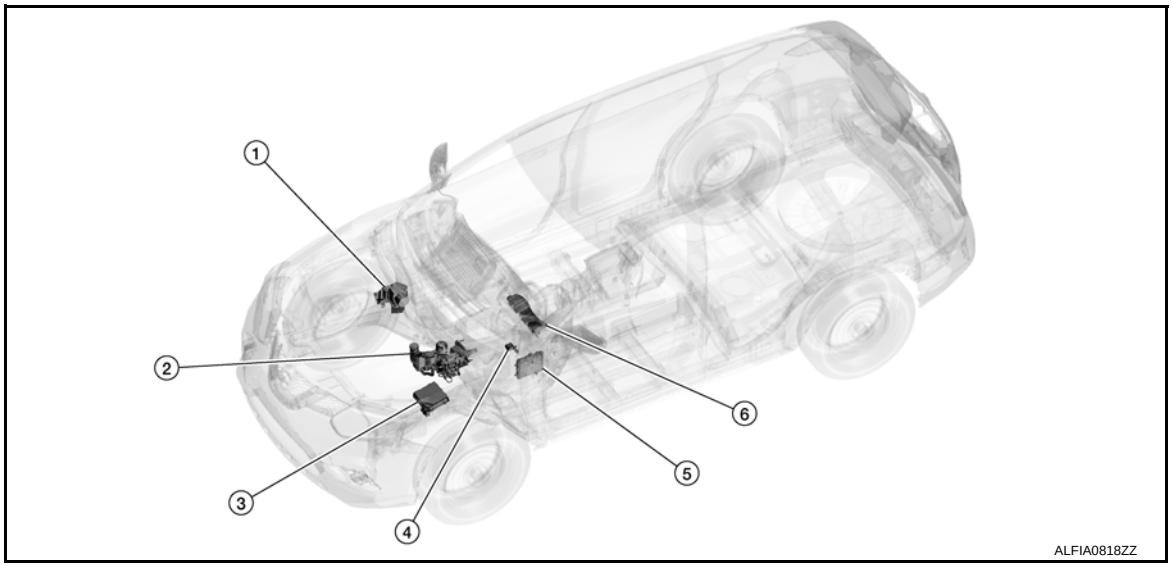
| Tool name | Description |
|---|---|
| 1. Flare nut crowfoot<br>2. Torque wrench<br><br>S-NT360 | Tightening brake tube flare nuts<br>**a: 10 mm (0.39 in)/12 mm (0.47 in)** |
| Power tool<br><br>PIIB1407E | Loosening nuts, screws and bolts |

# SYSTEM DESCRIPTION

## COMPONENT PARTS

### Component Parts Location

INFOID:0000000015244128




| No. | Component parts | Function |
|---|---|---|
| 1. | ABS actuator and electric unit (control unit) | Mainly transmits the following signals to hydraulic brake booster unit via CAN communication.<br>• Vehicle speed signal (ABS)<br>• Stroke sensor signal<br>Refer to BRC-12, "ABS Actuator and Electric Unit (Control Unit)", for detailed installation location. |
| 2. | Hydraulic brake booster unit | Refer to BR-6, "Hydraulic Brake Booster Unit". |
| 3. | IPDM E/R | Mainly transmits the following signals to hydraulic brake booster unit via CAN communication.<br>• Ignition switch ON signal<br>Refer to PCS-6, "Component Parts Location", for detailed installation location. |
| 4. | Warning buzzer | Refer to BR-7, "Warning Buzzer". |
| 5. | BCM | Mainly transmits the following signals to hydraulic brake booster unit via CAN communication.<br>• Stop lamp switch signal<br>Refer to BCS-5, "BODY CONTROL SYSTEM : Component Parts Location", for detailed installation location. |
| 6. | Combination meter | Mainly receives the following signals from hydraulic brake booster unit via CAN communication.<br>• Brake warning lamp signal<br>• Brake system warning lamp signal<br>Mainly transmits the following signals to hydraulic brake booster unit via CAN communication.<br>• Odometer signal |

### Hydraulic Brake Booster Unit

INFOID:0000000015244129

- Integrates the control module, accumulator, reservoir tank, master cylinder, pump motor, and return spring, and controls the fluid pressure that is sent to the ABS actuator and electric unit (control unit).
- Each pressure sensor and valve is built-into the hydraulic brake booster unit.

**NOTE:**
For the activation status of each part, refer to BR-8, "System Description".

#### Control module

- Controls the fluid pressure that is applied to the brake calipers, based on the signals from each sensor and unit.
- If a malfunction is detected, the system activates fail-safe mode.

### Accumulator
Accumulates the fluid pressure that is generated from the pump motor.

### Master cylinder
- Generates the brake fluid pressure according to the amount of piston movement.
- Sends the fluid pressure generated by the master cylinder to the ABS actuator and electric unit (control unit).

### Pump motor
Drives the pump by using the motor to generate fluid pressure for assist.

### Return spring
- Returns the pedal to the initial position.

### Accumulator pressure sensor 1, and 2
Detects the fluid pressure applied to the accumulator and transmits the value to the control module.

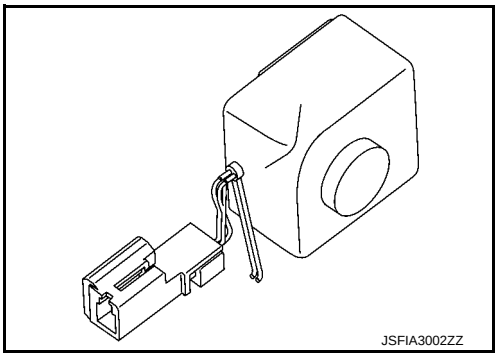
### Spool valve
- Guides the fluid pressure from the accumulator to the assist chamber (increase pressure).
- Releases the fluid pressure (decrease pressure).
- Holds the fluid pressure when the brake pedal is not operated (hold pressure).
- Conveys the reaction force from the master cylinder to the brake pedal.

### Relief valve
Releases the fluid pressure when the fluid pressure of the accumulator exceeds the control pressure.

### Check valve
Releases the assist fluid pressure from the accumulator for preventing a rapid increase of the fluid pressure in the master cylinder when ABS is operated.

## Warning Buzzer
INFOID:0000000015244130

Operates buzzer according to the signal from the hydraulic brake booster unit to inform of lowered pressure in the accumulator.



# SYSTEM

## System Description

INFOID:0000000015244131

- Hydraulic brake booster generates assist fluid pressure using the pump motor and stores the assist fluid pressure in the accumulator. The stored assist fluid pressure is released only the amount that the brake pedal is depressed and is used for brake assist (booster).
- The amount of pressure amount in the accumulator is calculated by the pressure sensor, and if the fluid pressure lowers down to a certain threshold value (Pump motor ON Pressure), the pump motor operates and starts accumulating pressure. When the fluid pressure increases to a certain threshold value (Pump motor OFF Pressure), the pump motor stops accumulating pressure.
- Hydraulic brake booster activates in any of the following conditions.

- Regardless of whether the ignition switch is ON or OFF, door lock operation is performed, or any of the doors, including the back door, is opened/closed.

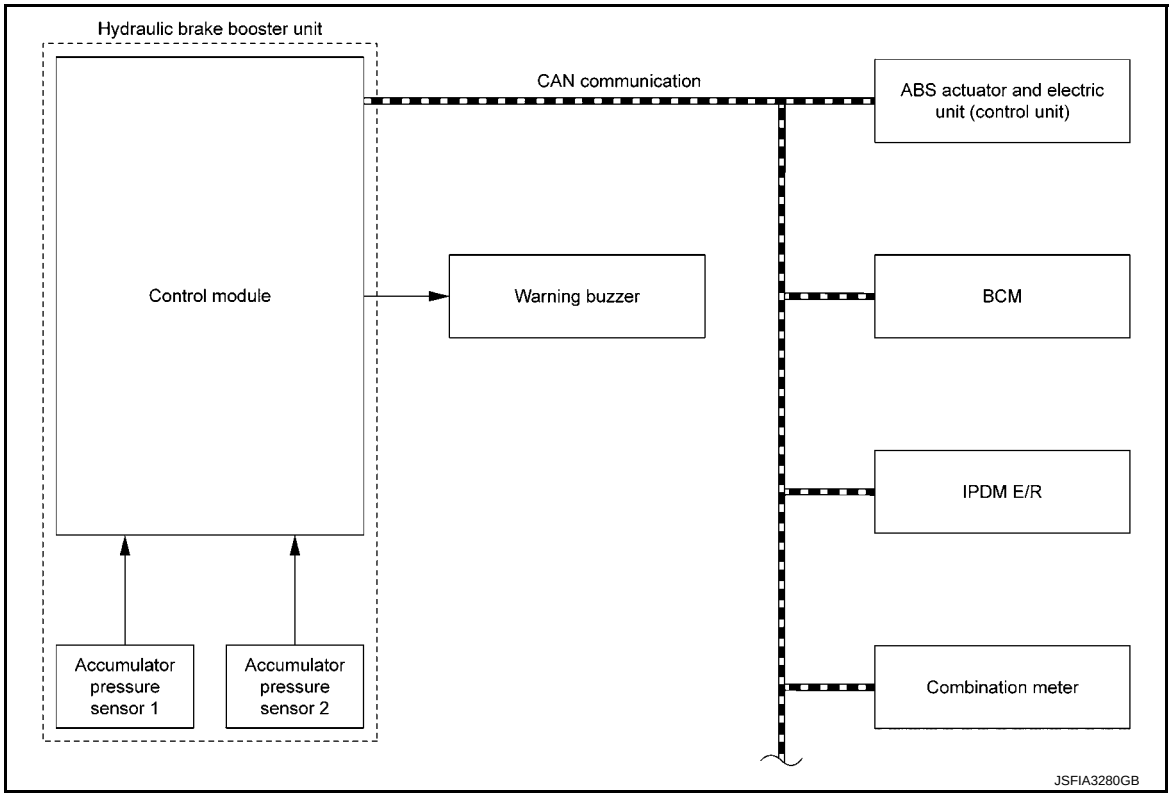
  **NOTE:**

  If door lock operation or door open/close operation is performed by using the auto ACC function, the accessory power supply turns ON, and the hydraulic brake booster activates.

- Set the vehicle in READY state. / Start the engine.

- CONSULT can be used for the system diagnosis.
- A fail-safe function is equipped to operate if a malfunction occurs in the hydraulic brake booster. Refer to BR-14, "Fail-safe".

### SYSTEM DIAGRAM



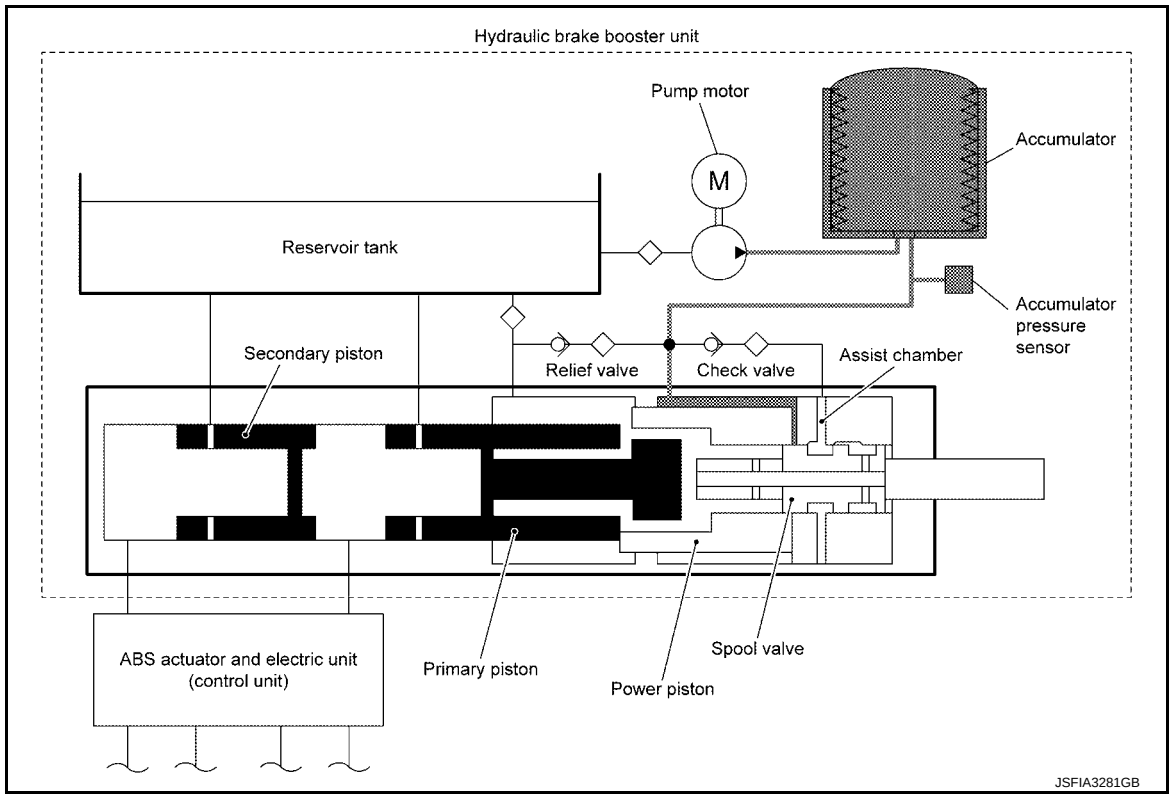

### INPUT SIGNAL AND OUTPUT SIGNAL

Major signal transmission between each unit via communication lines is shown in the following table.

| Component parts | Signal description |
|---|---|
| ABS actuator and electric unit (control unit) | Mainly transmits the following signals to hydraulic brake booster unit via CAN communication.<br>• Vehicle speed signal (ABS)<br>• Stroke sensor signal |
| BCM | Mainly transmits the following signals to hydraulic brake booster unit via CAN communication.<br>• Stop lamp switch signal |
| IPDM E/R | Mainly transmits the following signals to hydraulic brake booster unit via CAN communication.<br>• Ignition switch ON signal |
| Combination meter | Mainly receives the following signals from hydraulic brake booster unit via CAN communication.<br>• Brake warning lamp signal<br>• Brake system warning lamp signal<br>Mainly transmits the following signals to hydraulic brake booster unit via CAN communication.<br>• Odometer signal |

## OPERATION

Standby status (Brake pedal is not depressed.)

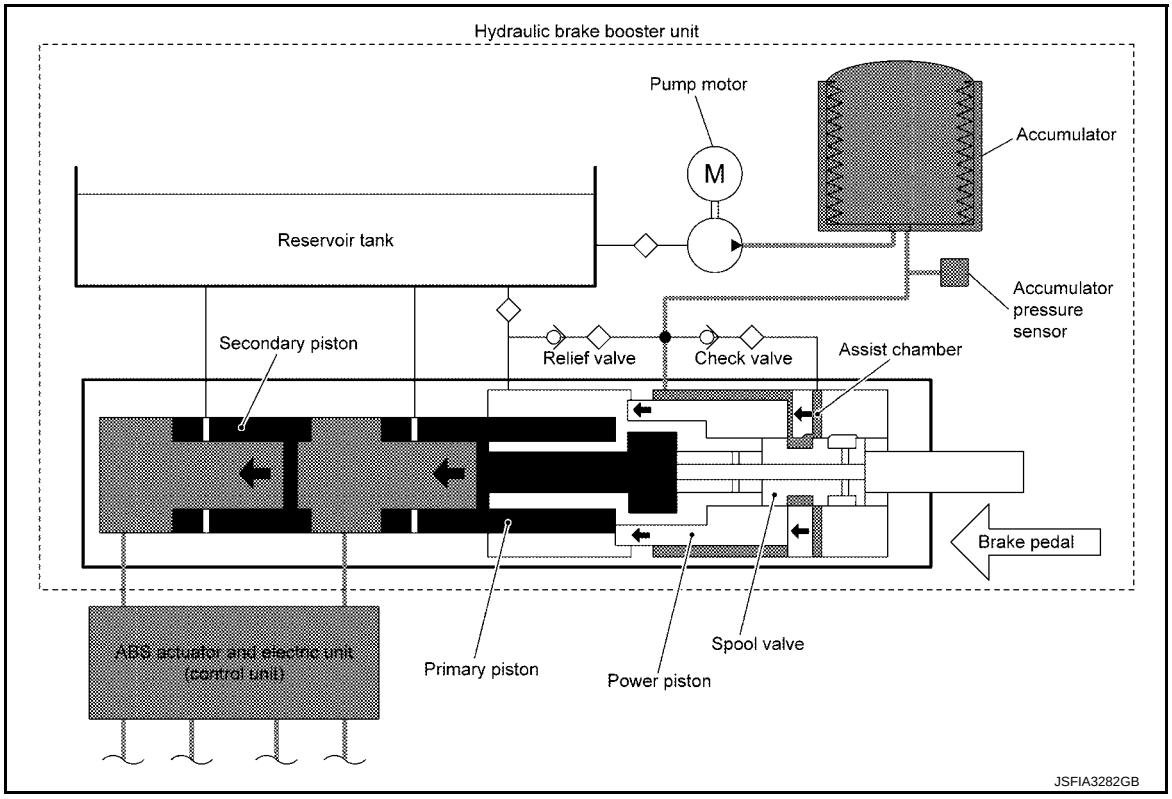



| Name | Not activated | Activation status |
|---|---|---|
| Brake pedal | Not depressed | Not depressed |
| Spool valve | Close | Close |
| Relief valve | Close | Close |
| Check valve | Close | Close |
| Assist chamber | Brake fluid pressure: Not generated | Brake fluid pressure: Not generated |
| Power piston | Brake fluid pressure: Not generated (Does not operate.) | Brake fluid pressure: Not generated (Does not operate.) |

| Name | Not activated | Activation status |
|---|---|---|
| Primary piston | Brake fluid pressure: Not generated (Does not operate.) | Brake fluid pressure: Not generated (Does not operate.) |
| Secondly piston | Brake fluid pressure: Not generated (Does not operate.) | Brake fluid pressure: Not generated (Does not operate.) |
| Each brake (Brake fluid pressure) | Brake fluid pressure: Not generated | Brake fluid pressure: Not generated |

- Because the brake pedal is not depressed, the spool valve closes the oil passage.
- Because the spool valve is closed, the brake fluid pressure from the accumulator is not conveyed to the assist chamber.
- Because the brake fluid pressure is not applied to the assist chamber, the power piston does not operate.
- Because the brake pedal is not depressed and the power piston does not operate, the brake fluid is not pumped to each brake via primary piston, secondary piston, ABS actuator, and electric unit (control unit).
- Accumulator accumulates the required brake fluid in preparation for each brake operation.

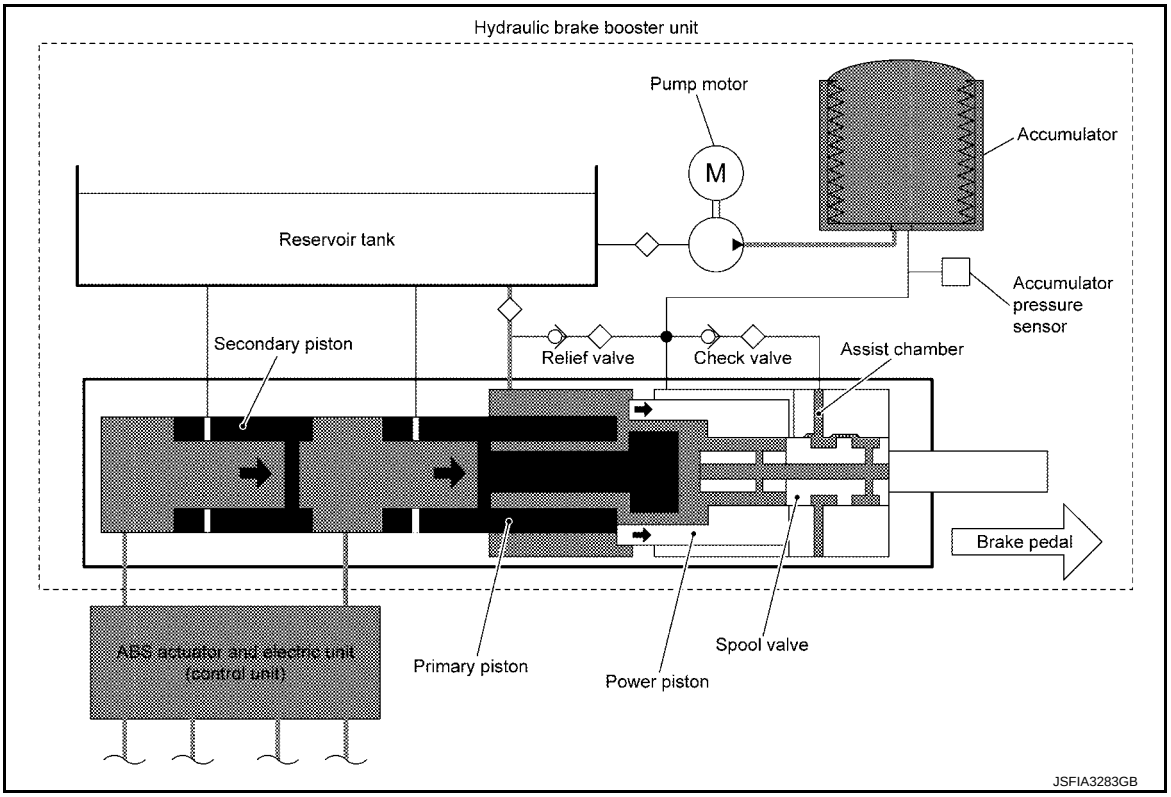
When applying brake (Pressure increase)




| Name | Not activated | Activation status |
|---|---|---|
| Brake pedal | Not depressed | When depressed |
| Spool valve | Close | Open (Between Accumulator – Assist chamber) |
| Relief valve | Close | Close |
| Check valve | Close | Close |
| Assist chamber | Brake fluid pressure: Not generated | Brake fluid pressure: Generated |
| Power piston | Brake fluid pressure: Not generated (Does not operate.) | Brake fluid pressure: Generated (Operates) |
| Primary piston | Brake fluid pressure: Not generated (Does not operate.) | Brake fluid pressure: Generated (Operates) |
| Secondly piston | Brake fluid pressure: Not generated (Does not operate.) | Brake fluid pressure: Generated (Operates) |
| Each brake (Brake fluid pressure) | Brake fluid pressure: Not generated | Brake fluid pressure: Increase |

- When the brake pedal is depressed, the spool valve opens the oil passage between the accumulator and the assist chamber.
- Because the spool valve opens the oil passage, the brake fluid pressure from the accumulator is conveyed to the assist chamber.
- Because the brake fluid pressure is applied to the assist chamber, the power piston moves in the operation direction (⬅).
- When the brake pedal is depressed and the power piston moves in the operation direction (⬅), the brake fluid is pumped to each brake via primary piston, secondary piston, ABS actuator, and electric unit (control unit), and the required braking force is generated.

When releasing brake (Pressure decrease)




| Name | Not activated | Activation status |
|---|---|---|
| Brake pedal | Not depressed | Released |
| Spool valve | Close | Open (Between Assist chamber – Reservoir tank) |
| Relief valve | Close | Close |
| Check valve | Close | Close |
| Assist chamber | Brake fluid pressure: Not generated | Brake fluid pressure: Generated |
| Power piston | Brake fluid pressure: Not generated (Does not operate.) | Brake fluid pressure: Generated (Operates) |
| Primary piston | Brake fluid pressure: Not generated (Does not operate.) | Brake fluid pressure: Generated (Operates) |
| Secondly piston | Brake fluid pressure: Not generated (Does not operate.) | Brake fluid pressure: Generated (Operates) |
| Each brake (Brake fluid pressure) | Brake fluid pressure: Not generated | Brake fluid pressure: Decrease |

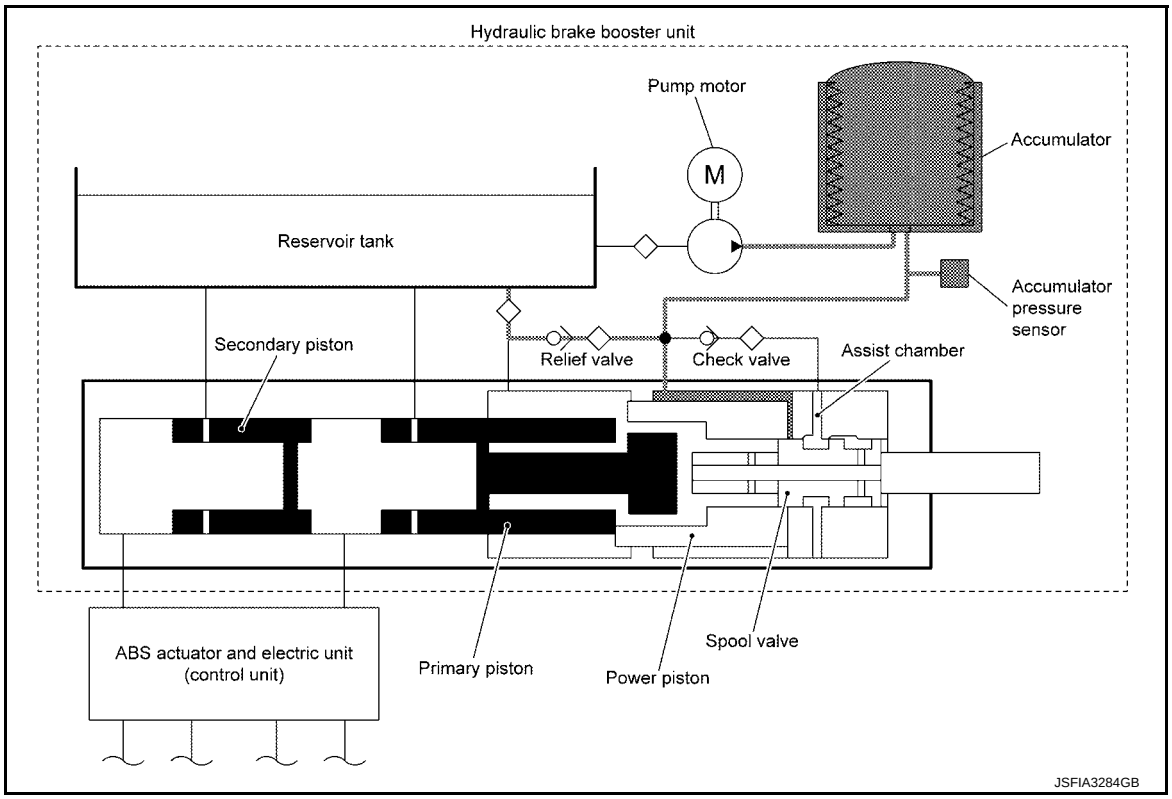
- When the brake pedal is released, the spool valve opens the oil passage between the assist chamber and the reservoir tank.
- Because the oil passage is opened by the spool valve, the brake fluid pressure in the assist chamber is conveyed to the reservoir tank.

- Because the brake fluid pressure of the assist chamber is decreased, the power piston moves in the release direction (➡).
- If the brake pedal is not depressed and the power piston moves in the release direction (➡), the brake fluid returns from each brake to the reservoir tank via ABS actuator and electric unit (control unit), primary piston, secondary piston, and power piston, and the required braking force decreases.

Accumulator high fluid pressure malfunction

**NOTE:**

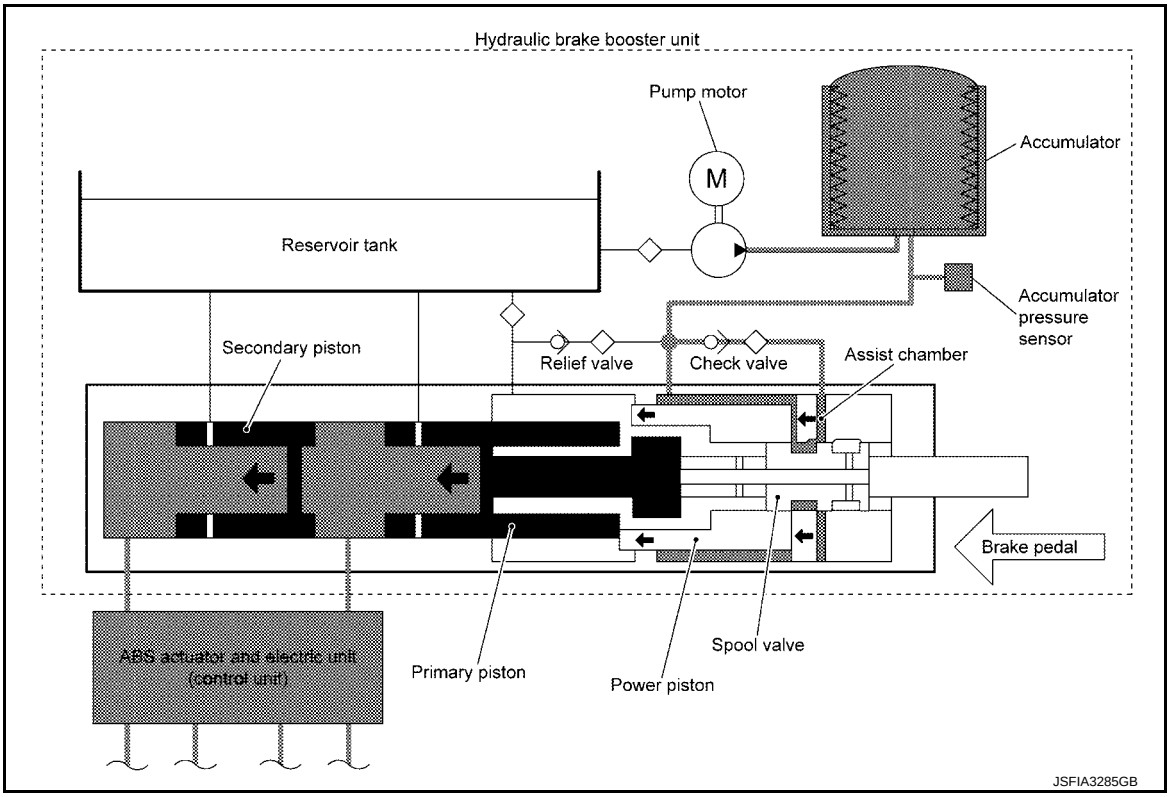
Even when an accumulator high fluid pressure malfunction occurs, it does not affect the boosting operation.




| Name | Not activated | Activation status |
|---|---|---|
| Brake pedal | Not depressed | Not depressed |
| Spool valve | Close | Close |
| Relief valve | Close | Open |
| Check valve | Close | Close |
| Assist chamber | Brake fluid pressure: Not generated | Brake fluid pressure: Not generated |
| Power piston | Brake fluid pressure: Not generated (Does not operate.) | Brake fluid pressure: Not generated (Does not operate.) |
| Primary piston | Brake fluid pressure: Not generated (Does not operate.) | Brake fluid pressure: Not generated (Does not operate.) |
| Secondly piston | Brake fluid pressure: Not generated (Does not operate.) | Brake fluid pressure: Not generated (Does not operate.) |
| Each brake (Brake fluid pressure) | Brake fluid pressure: Not generated | Brake fluid pressure: Not generated |

- Due to the fail-safe function, when the pump motor does not stop and the fluid pressure in the accumulator exceeds the control pressure, the relief valve opens.
- The relief valve opens and releases the fluid pressure from the accumulator to the reservoir tank, preventing damage to the pump motor and the accumulator.
- When the fluid pressure is released, a noise is heard from the hydraulic brake booster.

ABS function is in operation




| Name | Not activated | Activation status |
|---|---|---|
| Brake pedal | Not depressed | When depressed |
| Spool valve | Close | Open (Between Accumulator – Assist chamber) |
| Relief valve | Close | Close |
| Check valve | Close | Open |
| Assist chamber | Brake fluid pressure: Not generated | Brake fluid pressure: Generated |
| Power piston | Brake fluid pressure: Not generated (Does not operate.) | Brake fluid pressure: Generated (Operates) |
| Primary piston | Brake fluid pressure: Not generated (Does not operate.) | Brake fluid pressure: Generated (Operates) |
| Secondly piston | Brake fluid pressure: Not generated (Does not operate.) | Brake fluid pressure: Generated (Operates) |
| Each brake (Brake fluid pressure) | Brake fluid pressure: Not generated | Brake fluid pressure: Increase/Decrease* |

*: Changes according to the ABS operating status.

- When the ABS operates, the check valve opens for preventing a rapid increase of the fluid pressure inside the master cylinder as the brake fluid returns from the ABS actuator and electric unit (control unit).
- The check valve opens and releases the fluid pressure in the assist chamber, preventing damage to the master cylinder.

## CONDITION FOR TURN ON THE WARNING LAMP AND OPERATION WARNING BUZZER

Turns ON when ignition switch turns ON and turns OFF when the system is normal, for bulb check purposes.

| Condition (status) | Brake warning lamp (red) | Brake system warning lamp (yellow) | Warning buzzer |
|---|---|---|---|
| Ignition switch OFF | OFF | OFF | OFF |
| For several seconds after the ignition switch is turned ON | ON | ON | OFF |
| Several seconds after ignition switch is turned ON (when the system is in normal operation) | OFF | OFF | OFF |

| Condition (status) | Brake warning lamp (red) | Brake system warning lamp (yellow) | Warning buzzer |
|---|---|---|---|
| Low pressure malfunction of Accumulator* | ON | OFF | ON |
| • Malfunction of both ignition power supply and accessory power supply<br>• Malfunction of accumulator pressure sensor<br>• Malfunction of transmitting CAN communication signal | ON | ON | OFF |
| • Malfunction of either ignition power supply or accessory power supply<br>• Internal malfunction of control module<br>• Malfunction of pump motor<br>• Malfunction of receiving CAN communication signal | OFF | ON | OFF |

*: If the brake pedal is operated excessively, such as during air bleeding, “DTC C118E” is detected, the brake warning lamp may turn ON, and the warning buzzer may sound. This is not a system malfunction and occurs because the brake fluid pressure in the accumulator is temporarily low. The system returns to normal when the fluid pressure in the accumulator reaches the specified value when the ignition switch is ON, the brake warning lamp (red) is OFF, and the warning buzzer is not sounding.

## Fail-safe

INFOID:0000000015244132

- When malfunctions occur in both the ignition power supply system and the accessory power supply system of the hydraulic brake booster (voltage is not generated), only the amount of fluid pressure accumulated in the accumulator is used for brake assist. The brake warning lamp (red) and brake system warning lamp (yellow) turn ON at the same time. After the fluid pressure accumulated in the accumulator is used up, the braking force depends on the brake pedal force (no boosting operation exists).
- When a malfunction occurs in either the ignition power supply system or the accessory power supply system of the hydraulic brake booster, the brake system warning lamp (yellow) turns ON (the system operates normal control)
- When the pressure in the accumulator decreases and pressure cannot be accumulated, the braking force depends on the brake pedal force (there is no boosting operation). The brake warning lamp (red) turns ON and the warning buzzer sounds at the same time.
- When a malfunction occurs in the accumulator pressure sensor, the pump motor drives intermittently (boosting operation is not affected). The brake warning lamp (red) and brake system warning lamp (yellow) turn ON at the same time.
- When a malfunction occurs in the pump motor, the pump motor drives intermittently (boosting operation is not affected). The brake system warning lamp (yellow) turns ON at the same time.
  **NOTE:**
  When the pump motor drives intermittently, the accumulator fluid pressure may exceed the control pressure. However, in such cases, the relief valve opens to prevent damage to the pump motor and the accumulator. Refer to BR-8, "System Description". When the fluid pressure is released, a noise is heard from the hydraulic brake booster.
- When the hydraulic brake booster unit cannot transmit signals via CAN communication, the brake warning lamp (red) and the brake system warning lamp (yellow) turn ON.
- When the hydraulic brake booster unit cannot receive signals via CAN communication, the brake system warning lamp (yellow) turns ON.

| DTC | | Vehicle status |
|---|---|---|
| C1109 | Malfunction of either ignition power supply or accessory power supply | Normal control |
| | Malfunction of both ignition power supply and accessory power supply | Only the amount of fluid pressure accumulated in the accumulator is used for brake assist (booster). After the fluid pressure accumulated in the accumulator is used up, the braking force depends on the brake pedal force (no boosting operation exists). |
| C1111 | Low pressure malfunction of Accumulator | Booster function by hydraulic brake booster stops. |
| | Malfunction of accumulator pressure sensor or pump motor | Pump motor drives intermittently (boosting operation is not affected). |
| C118E | | Booster function by hydraulic brake booster stops. |

| DTC | Vehicle status |
|---|---|
| U1000 | Normal control |
| U1010 | Normal control |

## WARNING/INDICATOR/CHIME LIST

### WARNING/INDICATOR/CHIME LIST : Warning Lamp/Indicator Lamp

INFOID:0000000015244134

| Name | Design | Layout/Function |
|---|---|---|
| Brake warning lamp (red) |  | For layout: Refer to MWI-6, "METER SYSTEM : Design".<br>For function: Refer to BRC-47, "WARNING/INDICATOR/CHIME LIST : Warning Lamp/Indicator Lamp". |
| Brake system warning lamp (yellow) |  | For layout: Refer to MWI-6, "METER SYSTEM : Design".<br>For function: Refer to BRC-47, "WARNING/INDICATOR/CHIME LIST : Warning Lamp/Indicator Lamp". |

# DIAGNOSIS SYSTEM (HYDRAULIC BRAKE BOOSTER UNIT)

## CONSULT Function

INFOID:0000000015244135

### APPLICATION ITEMS

CONSULT can display each diagnostic item using the diagnostic test modes as follows.

| Mode | Function description |
|---|---|
| ECU Identification | Hydraulic brake booster unit part number can be read. |
| Self Diagnostic Result | Self-diagnostic results and freeze frame data can be read and erased quickly.* |
| Data Monitor | Input/Output data in the hydraulic brake booster unit can be read. |

*: The following diagnosis information is erased by erasing.
- DTC
- Freeze frame data (FFD)

### ECU IDENTIFICATION

Hydraulic brake booster unit part number can be read.

### SELF DIAGNOSTIC RESULT

Refer to BR-19, "DTC Index".

When “PRSNT” is displayed on self-diagnosis result.
- The system is presently malfunctioning.

When “PAST” is displayed on self-diagnosis result.
- System malfunction in the past is detected, but the system is presently normal.

### FREEZE FRAME DATA (FFD)

The following vehicle status is recorded when DTC is detected and is displayed.

| Freeze Frame Data Item | Description |
|---|---|
| ODO/TRIP METER | Display the mileage when the DTC is detected. |

### DATA MONITOR

**NOTE:**
The following table includes information (items) inapplicable to this vehicle. For information (items) applicable to this vehicle, refer to CONSULT display items.

| Monitor item [Unit] | Remarks |
|---|---|
| ACC POWER SUPPLY [V] | Display the accessory power supply. |
| MOTOR POWER SUPPLY [V] | Display the motor power supply. |
| ACCUM PRESS SEN 1 VOLT [V] | Display the power supply voltage of accumulator pressure sensor 1. |
| ACCUM PRESS SEN 2 VOLT [V] | Display the power supply voltage of accumulator pressure sensor 2. |
| ACCUMULATORE PRESSURE [MPa] | Display the accumulator pressure. |
| BRAKE WARNING LAMP [On/Off] | Display the brake warning lamp ON/OFF status* |
| BRAKE SYSTEM WARN LAMP [On/Off] | Display the brake system warning lamp ON/OFF status.* |
| MTR RELAY DRIVE STATUS [On/Off] | Display the drive status of motor relay inside hydraulic brake booster. |
| CAN DIAG MASK Clanking signal [On/Off] | Display the diagnosis permission status of CAN network.<br>• On: Forbid diagnosis because engine is in clanking.<br>• Off: Permit diagnosis because engine is in except clanking. |

*: Refer to BR-8, "System Description" for ON/OFF conditions of each warning lamp.

# ECU DIAGNOSIS INFORMATION

## HYDRAULIC BRAKE BOOSTER UNIT

### Reference Value

INFOID:0000000015244136

CONSULT DATA MONITOR STANDARD VALUE

**NOTE:**

The following table includes information (items) inapplicable to this vehicle. For information (items) applicable to this vehicle, refer to CONSULT display items.

| Monitor item | Condition | Reference values in normal operation |
|---|---|---|
| ACC POWER SUPPLY | Auto ACC: ON | 10 – 16 V |
| | Auto ACC: OFF | 0 V |
| MOTOR POWER SUPPLY | Always | 10 – 16 V |
| ACCUM PRESS SEN 1 VOLT | Always | 5 V |
| ACCUM PRESS SEN 2 VOLT | Always | 5 V |
| ACCUMULATOR PRESSURE | When system is in normal | 12.8 – 14.7 MPa |
| BRAKE WARNING LAMP | When brake warning lamp is ON* | On |
| | When brake warning lamp is OFF* | Off |
| BRAKE SYSTEM WARN LAMP | When brake system warning lamp is ON* | On |
| | When brake system warning lamp is OFF* | Off |
| MTR RELAY DRIVE STATUS | When the motor relay inside hydraulic brake booster is active | On |
| | When the motor relay inside hydraulic brake booster is not activated | Off |
| CAN DIAG MASK Clanking signal | During clanking | On |
| | During except clanking | Off |

*: Refer to BR-8, "System Description" for ON/OFF conditions of each warning lamp.

### Fail-safe

INFOID:0000000015244137

- When malfunctions occur in both the ignition power supply system and the accessory power supply system of the hydraulic brake booster (voltage is not generated), only the amount of fluid pressure accumulated in the accumulator is used for brake assist. The brake warning lamp (red) and brake system warning lamp (yellow) turn ON at the same time. After the fluid pressure accumulated in the accumulator is used up, the braking force depends on the brake pedal force (no boosting operation exists).
- When a malfunction occurs in either the ignition power supply system or the accessory power supply system of the hydraulic brake booster, the brake system warning lamp (yellow) turns ON (the system operates normal control)
- When the pressure in the accumulator decreases and pressure cannot be accumulated, the braking force depends on the brake pedal force (there is no boosting operation). The brake warning lamp (red) turns ON and the warning buzzer sounds at the same time.
- When a malfunction occurs in the accumulator pressure sensor, the pump motor drives intermittently (boosting operation is not affected). The brake warning lamp (red) and brake system warning lamp (yellow) turn ON at the same time.
- When a malfunction occurs in the pump motor, the pump motor drives intermittently (boosting operation is not affected). The brake system warning lamp (yellow) turns ON at the same time.

  **NOTE:**

  When the pump motor drives intermittently, the accumulator fluid pressure may exceed the control pressure. However, in such cases, the relief valve opens to prevent damage to the pump motor and the accumulator. Refer to BR-8, "System Description". When the fluid pressure is released, a noise is heard from the hydraulic brake booster.

- When the hydraulic brake booster unit cannot transmit signals via CAN communication, the brake warning lamp (red) and the brake system warning lamp (yellow) turn ON.
- When the hydraulic brake booster unit cannot receive signals via CAN communication, the brake system warning lamp (yellow) turns ON.

| DTC | | Vehicle status |
|---|---|---|
| C1109 | Malfunction of either ignition power supply or accessory power supply | Normal control |
| | Malfunction of both ignition power supply and accessory power supply | Only the amount of fluid pressure accumulated in the accumulator is used for brake assist (booster). After the fluid pressure accumulated in the accumulator is used up, the braking force depends on the brake pedal force (no boosting operation exists). |
| C1111 | Low pressure malfunction of Accumulator | Booster function by hydraulic brake booster stops. |
| | Malfunction of accumulator pressure sensor or pump motor | Pump motor drives intermittently (boosting operation is not affected). |
| C118E | | Booster function by hydraulic brake booster stops. |
| U1000 | | Normal control |
| U1010 | | Normal control |

## DTC Inspection Priority Chart

INFOID:0000000015244138

When multiple DTCs are displayed simultaneously, check one by one depending on the following priority list.

| Priority | Detected item (DTC) |
|---|---|
| 1 | • U1000 CAN COMM CIRCUIT<br>• U1010 CONTROL COMM(CAN) |
| 2 | • C1109 BATTERY VOLTAGE [ABNORMAL]<br>• C1111 PUMP MOTOR |
| 3 | • C118E ACCUMULATOR PRESS |

## DTC Index

INFOID:0000000015244139

| DTC | Items (CONSULT screen terms) | Brake warning lamp (red) | Brake system warning lamp (yellow) | Warning buzzer | Reference |
|---|---|---|---|---|---|
| C1109 | BATTERY VOLTAGE [ABNORMAL] | OFF/ON* | ON | OFF | BR-28, "DTC Description" |
| C1111 | PUMP MOTOR | OFF/ON* | OFF/ON* | OFF/ON* | BR-32, "DTC Description" |
| C118E | ACCUMULATOR PRESS | ON | OFF | ON | BR-35, "DTC Description" |
| U1000 | CAN COMM CIRCUIT | OFF/ON* | ON | OFF | BR-37, "DTC Description" |
| U1010 | CONTROL COMM(CAN) | OFF | OFF | OFF | BR-38, "DTC Description" |

*: Changes ON/OFF according to the system status. Refer to BR-8, "System Description".

**NOTE:**

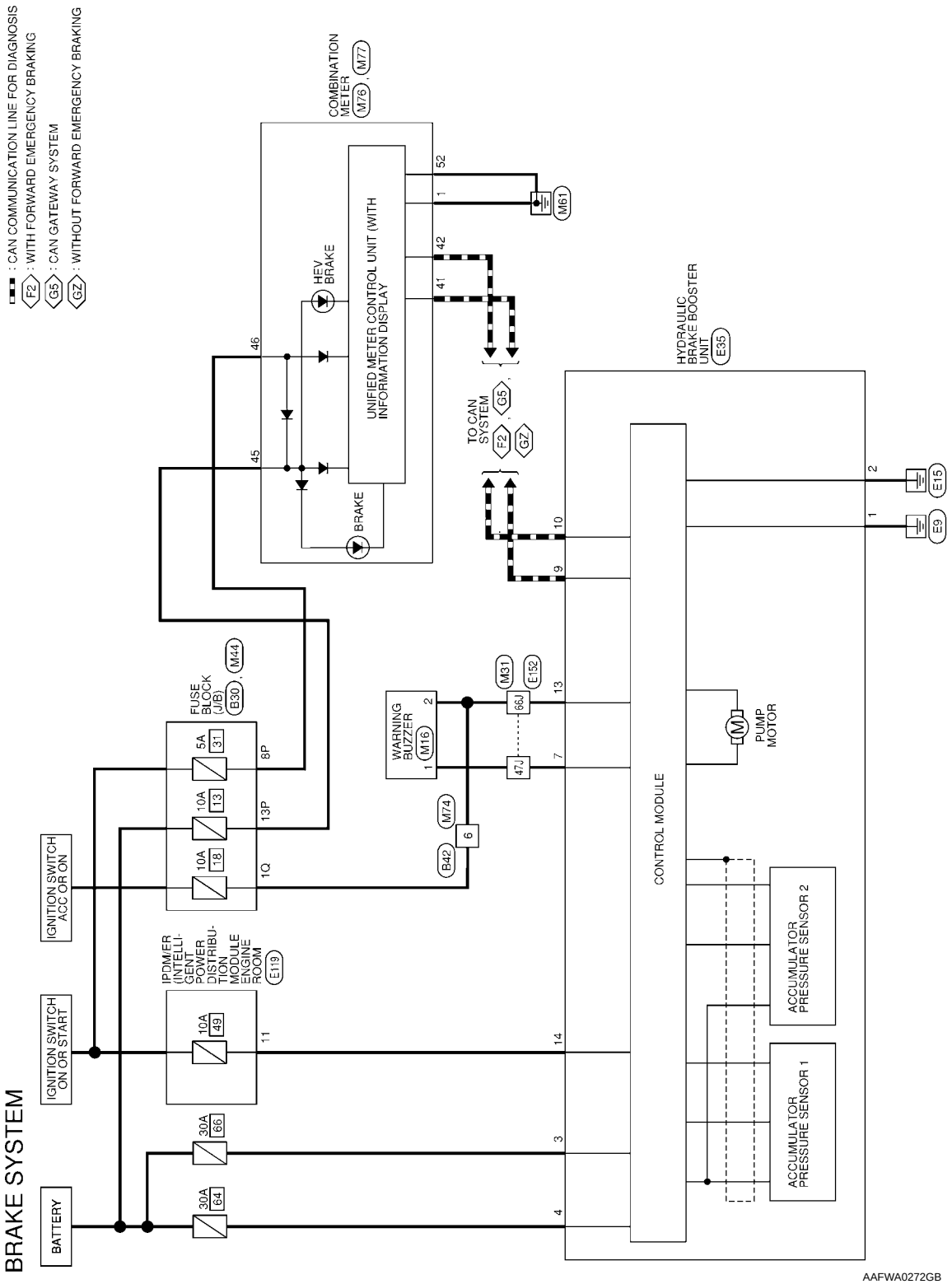
If two or more DTCs are detected, refer to BR-19, "DTC Inspection Priority Chart".

# WIRING DIAGRAM

## BRAKE SYSTEM

### Wiring Diagram

INFOID:0000000015244140



BRAKE SYSTEM CONNECTORS

| Connector No. | B30 |
|---|---|
| Connector Name | FUSE BLOCK (J/B) |
| Connector Type | NS08FW-CS |
| Connector Color | WHITE |

H.S.




| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 1Q | BG | ACCESSORY |
| 2Q | BR | IGNITION |
| 3Q | R | BATTERY |
| 4Q | – | – |
| 5Q | – | – |
| 6Q | LA/L | BATTERY |
| 7Q | – | – |
| 8Q | – | – |

| Connector No. | B42 |
|---|---|
| Connector Name | WIRE TO WIRE |
| Connector Type | NS16MW-CS |
| Connector Color | WHITE |

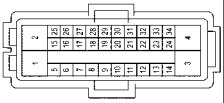
H.S.




| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 1 | LG | TO MAIN HARNESS |
| 2 | LG | TO MAIN HARNESS |
| 3 | V | TO MAIN HARNESS |
| 4 | LA/G | TO MAIN HARNESS |
| 5 | W | TO MAIN HARNESS |
| 6 | BG | TO MAIN HARNESS |
| 7 | LA/R | TO MAIN HARNESS |
| 8 | LA/GR | TO MAIN HARNESS (WITH AUTOMATIC DRIVE POSITIONER) |
| 8 | LA/G | TO MAIN HARNESS (WITHOUT AUTOMATIC DRIVE POSITIONER) |
| 9 | LA/P | TO MAIN HARNESS |
| 10 | LA/R | TO MAIN HARNESS |
| 11 | LA/V | TO MAIN HARNESS |
| 12 | LA/Y | TO MAIN HARNESS |
| 13 | LA/GR | TO MAIN HARNESS |
| 14 | LA/BG | TO MAIN HARNESS |
| 15 | LA/BR | TO MAIN HARNESS |
| 16 | R | TO MAIN HARNESS |

| Connector No. | E35 |
|---|---|
| Connector Name | HYDRAULIC BRAKE BOOSTER UNIT |
| Connector Type | SAZ30FB-SJZ4-D |
| Connector Color | BLACK |

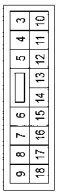
H.S.




| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 1 | B | GND1 |
| 2 | B | GND2 |
| 3 | R | BM1 |
| 4 | G | BM2 |
| 5 | – | – |
| 6 | – | – |
| 7 | W | BZ |
| 8 | – | – |
| 9 | L | CAN-H |
| 10 | R | CAN-L |
| 11 | – | – |
| 12 | – | – |
| 13 | BG | ACC |
| 14 | V | IG |
| 15 | – | – |
| 16 | – | – |
| 17 | – | – |
| 18 | – | – |
| 19 | – | – |
| 20 | – | – |
| 21 | – | – |
| 22 | – | – |
| 23 | – | – |
| 24 | – | – |
| 25 | – | – |
| 26 | – | – |
| 27 | – | – |
| 28 | – | – |
| 29 | – | – |
| 30 | – | – |
| 31 | – | – |
| 32 | – | – |
| 33 | – | – |
| 34 | – | – |

| Connector No. | E119 |
|---|---|
| Connector Name | IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM) |
| Connector Type | NS16FGY-CS |
| Connector Color | GRAY |

H.S.



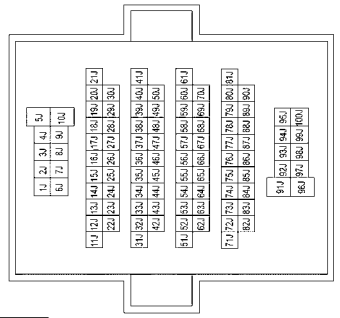

| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 3 | P | IGN NOT COLUMN LOCK |
| 4 | Y | LIGHT POSITION REAR LH |
| 5 | – | – |
| 6 | – | – |
| 7 | – | – |
| 8 | BR | ACTUATOR4 CABIN (3FB4) |
| 9 | L | LO HORN RLY |
| 10 | – | – |
| 11 | V | IGN AIRBAG |
| 12 | B | SIGNAL GROUND |
| 13 | – | – |
| 14 | – | – |
| 15 | – | – |
| 16 | G | LIGHT REVERSE LAMP |
| 17 | W | LIGHT POSITION REAR RH |
| 18 | – | – |

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BRAKE SYSTEM CONNECTORS

| Connector No. | E152 |
|---|---|
| Connector Name | WIRE TO WIRE |
| Connector Type | TH80FW-CS16-TM4 |
| Connector Color | WHITE |

H.S.




| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 1J | – | TO MAIN HARNESS |
| 2J | Y | TO MAIN HARNESS |
| 3J | – | TO MAIN HARNESS |
| 4J | – | TO MAIN HARNESS |
| 5J | – | TO MAIN HARNESS |
| 6J | – | TO MAIN HARNESS |
| 7J | – | TO MAIN HARNESS |
| 8J | – | TO MAIN HARNESS |
| 9J | BR | TO MAIN HARNESS |
| 10J | – | TO MAIN HARNESS |
| 11J | – | TO MAIN HARNESS |
| 12J | – | TO MAIN HARNESS |
| 13J | – | TO MAIN HARNESS |
| 14J | – | TO MAIN HARNESS |
| 15J | – | TO MAIN HARNESS |
| 16J | – | TO MAIN HARNESS |
| 17J | – | TO MAIN HARNESS |
| 18J | – | TO MAIN HARNESS |
| 19J | – | TO MAIN HARNESS |
| 20J | – | TO MAIN HARNESS |
| 21J | GR | TO MAIN HARNESS |
| 22J | SHIELD | TO MAIN HARNESS |
| 23J | LG | TO MAIN HARNESS |
| 24J | V | TO MAIN HARNESS |
| 25J | L | TO MAIN HARNESS |
| 26J | BR | TO MAIN HARNESS |
| 27J | G | TO MAIN HARNESS |
| 28J | R | TO MAIN HARNESS |
| 29J | L | TO MAIN HARNESS |
| 30J | V | TO MAIN HARNESS |
| 31J | – | TO MAIN HARNESS |
| 32J | – | TO MAIN HARNESS |
| 33J | R | TO MAIN HARNESS |
| 34J | L | TO MAIN HARNESS |
| 35J | BG | TO MAIN HARNESS |
| 36J | LG | TO MAIN HARNESS |
| 37J | GR | TO MAIN HARNESS |
| 38J | BR | TO MAIN HARNESS |
| 39J | – | TO MAIN HARNESS |
| 40J | – | TO MAIN HARNESS |
| 41J | G | TO MAIN HARNESS |
| 42J | W | TO MAIN HARNESS |
| 43J | L | TO MAIN HARNESS |
| 44J | B | TO MAIN HARNESS |
| 45J | SB | TO MAIN HARNESS |
| 46J | BR | TO MAIN HARNESS |
| 47J | W | TO MAIN HARNESS |
| 48J | W | TO MAIN HARNESS |
| 49J | L | TO MAIN HARNESS |
| 50J | P | TO MAIN HARNESS |
| 51J | W | TO MAIN HARNESS |
| 52J | R | TO MAIN HARNESS |
| 53J | SB | TO MAIN HARNESS |
| 54J | LG | TO MAIN HARNESS |
| 55J | W | TO MAIN HARNESS |
| 56J | BG | TO MAIN HARNESS |
| 57J | R | TO MAIN HARNESS |
| 58J | V | TO MAIN HARNESS |
| 59J | BR | TO MAIN HARNESS |
| 60J | P | TO MAIN HARNESS |
| 61J | L | TO MAIN HARNESS |
| 62J | P | TO MAIN HARNESS |
| 63J | L | TO MAIN HARNESS |
| 64J | R | TO MAIN HARNESS |
| 65J | L | TO MAIN HARNESS |
| 66J | BG | TO MAIN HARNESS |
| 67J | – | TO MAIN HARNESS |
| 68J | – | TO MAIN HARNESS |
| 69J | G | TO MAIN HARNESS |
| 70J | L | TO MAIN HARNESS |
| 71J | – | TO MAIN HARNESS |
| 72J | – | TO MAIN HARNESS |
| 73J | – | TO MAIN HARNESS |
| 74J | – | TO MAIN HARNESS |
| 75J | – | TO MAIN HARNESS |
| 76J | – | TO MAIN HARNESS |
| 77J | – | TO MAIN HARNESS |
| 78J | – | TO MAIN HARNESS |
| 79J | SHIELD | TO MAIN HARNESS |
| 80J | B | TO MAIN HARNESS |
| 81J | W | TO MAIN HARNESS |
| 82J | – | TO MAIN HARNESS |
| 83J | – | TO MAIN HARNESS |
| 84J | – | TO MAIN HARNESS |
| 85J | – | TO MAIN HARNESS |
| 86J | – | TO MAIN HARNESS |
| 87J | – | TO MAIN HARNESS |
| 88J | – | TO MAIN HARNESS |
| 89J | – | TO MAIN HARNESS |
| 90J | – | TO MAIN HARNESS |
| 91J | – | TO MAIN HARNESS |
| 92J | LG | TO MAIN HARNESS |
| 93J | L | TO MAIN HARNESS |
| 94J | L | TO MAIN HARNESS |
| 95J | BR | TO MAIN HARNESS |
| 96J | – | TO MAIN HARNESS |
| 97J | GR | TO MAIN HARNESS |
| 98J | P | TO MAIN HARNESS |
| 99J | W | TO MAIN HARNESS |
| 100J | Y | TO MAIN HARNESS |

| Connector No. | M16 |
|---|---|
| Connector Name | WARNING BUZZER |
| Connector Type | TK02FBR |
| Connector Color | BROWN |

H.S.




| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 1 | W | BZ |
| 2 | BG | ACC |

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## BRAKE SYSTEM CONNECTORS

| Connector No. | M31 |
|---|---|
| Connector Name | WIRE TO WIRE |
| Connector Type | TH80MW-CS16-TM4 |
| Connector Color | WHITE |

H.S.




| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 1J | – | TO ENGINE ROOM HARNESS |
| 2J | R | TO ENGINE ROOM HARNESS |
| 3J | – | TO ENGINE ROOM HARNESS |
| 4J | – | TO ENGINE ROOM HARNESS |
| 5J | – | TO ENGINE ROOM HARNESS |
| 6J | – | TO ENGINE ROOM HARNESS |
| 7J | – | TO ENGINE ROOM HARNESS |
| 8J | – | TO ENGINE ROOM HARNESS |
| 9J | W | TO ENGINE ROOM HARNESS |
| 10J | – | TO ENGINE ROOM HARNESS |
| 11J | – | TO ENGINE ROOM HARNESS |
| 12J | – | TO ENGINE ROOM HARNESS |
| 13J | – | TO ENGINE ROOM HARNESS |
| 14J | – | TO ENGINE ROOM HARNESS |
| 15J | – | TO ENGINE ROOM HARNESS |
| 16J | – | TO ENGINE ROOM HARNESS |
| 17J | – | TO ENGINE ROOM HARNESS |
| 18J | – | TO ENGINE ROOM HARNESS |
| 19J | – | TO ENGINE ROOM HARNESS |
| 20J | – | TO ENGINE ROOM HARNESS |
| 21J | LA/L | TO ENGINE ROOM HARNESS |
| 22J | SHIELD | TO ENGINE ROOM HARNESS |
| 23J | LG | TO ENGINE ROOM HARNESS |
| 24J | V | TO ENGINE ROOM HARNESS |
| 25J | L | TO ENGINE ROOM HARNESS |
| 26J | BR | TO ENGINE ROOM HARNESS |
| 27J | G | TO ENGINE ROOM HARNESS |
| 28J | Y | TO ENGINE ROOM HARNESS |
| 29J | L | TO ENGINE ROOM HARNESS |
| 30J | V | TO ENGINE ROOM HARNESS |
| 31J | – | TO ENGINE ROOM HARNESS |
| 32J | – | TO ENGINE ROOM HARNESS |
| 33J | R | TO ENGINE ROOM HARNESS |
| 33J | Y | TO ENGINE ROOM HARNESS - (WITH DRIVER ASSISTNACE SYSTEM) |
| 34J | L | TO ENGINE ROOM HARNESS |
| 35J | BG | TO ENGINE ROOM HARNESS |
| 36J | GR | TO ENGINE ROOM HARNESS |
| 37J | Y | TO ENGINE ROOM HARNESS |
| 38J | LA/BR | TO ENGINE ROOM HARNESS |
| 39J | – | TO ENGINE ROOM HARNESS |
| 40J | – | TO ENGINE ROOM HARNESS |
| 41J | LA/R | TO ENGINE ROOM HARNESS |
| 42J | W | TO ENGINE ROOM HARNESS |
| 43J | L | TO ENGINE ROOM HARNESS |
| 44J | B | TO ENGINE ROOM HARNESS |
| 45J | SB | TO ENGINE ROOM HARNESS |
| 46J | BR | TO ENGINE ROOM HARNESS |
| 47J | W | TO ENGINE ROOM HARNESS |
| 48J | R | TO ENGINE ROOM HARNESS |
| 49J | SB | TO ENGINE ROOM HARNESS |
| 50J | GR | TO ENGINE ROOM HARNESS |
| 51J | W | TO ENGINE ROOM HARNESS |
| 52J | R | TO ENGINE ROOM HARNESS |
| 53J | BR | TO ENGINE ROOM HARNESS |
| 54J | LG | TO ENGINE ROOM HARNESS |
| 55J | LA/Y | TO ENGINE ROOM HARNESS |
| 56J | LA/V | TO ENGINE ROOM HARNESS |
| 57J | LA/R | TO ENGINE ROOM HARNESS |
| 58J | W | TO ENGINE ROOM HARNESS |
| 59J | BR | TO ENGINE ROOM HARNESS |
| 60J | P | TO ENGINE ROOM HARNESS |
| 61J | L | TO ENGINE ROOM HARNESS |
| 62J | R | TO ENGINE ROOM HARNESS |
| 63J | L | TO ENGINE ROOM HARNESS |
| 64J | R | TO ENGINE ROOM HARNESS |
| 65J | L | TO ENGINE ROOM HARNESS |
| 66J | BG | TO ENGINE ROOM HARNESS |
| 67J | – | TO ENGINE ROOM HARNESS |
| 68J | – | TO ENGINE ROOM HARNESS |
| 69J | G | TO ENGINE ROOM HARNESS |
| 70J | L | TO ENGINE ROOM HARNESS |
| 71J | – | TO ENGINE ROOM HARNESS |
| 72J | – | TO ENGINE ROOM HARNESS |
| 73J | – | TO ENGINE ROOM HARNESS |
| 74J | – | TO ENGINE ROOM HARNESS |
| 75J | – | TO ENGINE ROOM HARNESS |
| 76J | – | TO ENGINE ROOM HARNESS |
| 77J | – | TO ENGINE ROOM HARNESS |
| 78J | – | TO ENGINE ROOM HARNESS |
| 79J | SHIELD | TO ENGINE ROOM HARNESS |
| 80J | B | TO ENGINE ROOM HARNESS |
| 81J | W | TO ENGINE ROOM HARNESS |
| 82J | – | TO ENGINE ROOM HARNESS |
| 83J | – | TO ENGINE ROOM HARNESS |
| 84J | – | TO ENGINE ROOM HARNESS |
| 85J | – | TO ENGINE ROOM HARNESS |
| 86J | – | TO ENGINE ROOM HARNESS |
| 87J | – | TO ENGINE ROOM HARNESS |
| 88J | – | TO ENGINE ROOM HARNESS |
| 89J | – | TO ENGINE ROOM HARNESS |
| 90J | – | TO ENGINE ROOM HARNESS |
| 91J | – | TO ENGINE ROOM HARNESS |
| 92J | Y | TO ENGINE ROOM HARNESS |
| 93J | G | TO ENGINE ROOM HARNESS |
| 94J | L | TO ENGINE ROOM HARNESS |
| 95J | P | TO ENGINE ROOM HARNESS |
| 96J | – | TO ENGINE ROOM HARNESS |
| 97J | SB | TO ENGINE ROOM HARNESS |
| 98J | P | TO ENGINE ROOM HARNESS |
| 99J | LA/R | TO ENGINE ROOM HARNESS |
| 100J | R | TO ENGINE ROOM HARNESS |

| Connector No. | M44 |
|---|---|
| Connector Name | FUSE BLOCK (J/B) |
| Connector Type | NS16FW-CS |
| Connector Color | WHITE |

H.S.

| 7P | 6P | 5P | 4P | | 3P | 2P | 1P |
|---|---|---|---|---|---|---|---|
| 16P | 15P | 14P | 13P | 12P | 11P | 10P | 9P | 8P |

| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 1P | R | IGNITION |
| 2P | G | IGNITION |
| 3P | Y | IGNITION RELAY-2 CONTROL |
| 4P | LG | REAR WINDOW DEFOGGER RELAY OUTPUT |
| 5P | GR | REAR WINDOW DEFOGGER RELAY OUTPUT |
| 6P | LA/R | REAR WINDOW DEFOGGER RELAY CONTROL |
| 7P | Y | IGNITION |
| 8P | V | IGNITION |
| 9P | L | BATTERY |
| 10P | LG | IGNITION |
| 11P | – | – |
| 12P | – | – |
| 13P | G | BATTERY |
| 14P | – | – |
| 15P | L | BATTERY |
| 16P | LA/W | FRONT BLOWER MOTOR RELAY CONTROL |

| Connector No. | M74 |
|---|---|
| Connector Name | WIRE TO WIRE |
| Connector Type | NS16FW-CS |
| Connector Color | WHITE |

H.S.

| 7 | 6 | 5 | 4 | | 3 | 2 | 1 |
|---|---|---|---|---|---|---|---|
| 16 | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 |

| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 1 | LG | TO BODY HARNESS |
| 2 | LG | TO BODY HARNESS |
| 3 | V | TO BODY HARNESS |
| 4 | Y | TO BODY HARNESS |
| 5 | W | TO BODY HARNESS |
| 6 | BG | TO BODY HARNESS |
| 7 | SB | TO BODY HARNESS |
| 8 | BR | TO BODY HARNESS |
| 9 | LA/G | TO BODY HARNESS |
| 10 | LA/R | TO BODY HARNESS |
| 11 | LG | TO BODY HARNESS |
| 12 | GR | TO BODY HARNESS |
| 13 | BR | TO BODY HARNESS |
| 14 | LA/L | TO BODY HARNESS |
| 15 | LA/BR | TO BODY HARNESS |
| 16 | GR | TO BODY HARNESS |

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BRAKE SYSTEM CONNECTORS

| | |
|---|---|
| Connector No. | M76 |
| Connector Name | COMBINATION METER |
| Connector Type | TH40FW-NH |
| Connector Color | WHITE |

H.S.

| | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 |

| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 1 | B | GND |
| 2 | – | – |
| 3 | – | – |
| 4 | – | – |
| 5 | – | – |
| 6 | – | – |
| 7 | BG | SECURITY |
| 8 | – | – |
| 9 | GR | ECO MODE SW |
| 10 | – | – |
| 11 | – | – |
| 12 | – | – |
| 13 | – | – |
| 14 | – | – |
| 15 | L | OUTSIDE TEMP SENSOR |
| 16 | – | – |
| 17 | BG | SATELLITE SW GND |
| 18 | SB | TRIP RESET SW |
| 19 | – | – |
| 20 | Y | OUTSIDE TEMP GND |
| 21 | L | GND (STRG SW GND) |
| 22 | Y | STRG SW A |
| 23 | GR | STRG SW B |
| 24 | BR | WASHER SW |
| 25 | V | BRAKE OIL SW |
| 26 | G | PKB SW |
| 27 | – | – |
| 28 | Y | DR BELT SW |
| 29 | R | SPORT MODE SW |
| 30 | LG | M RANGE |
| 31 | SB | NOT M RANGE |
| 32 | BG | AT SHIFT UP |
| 33 | BR | AT SHIFT DOWN |
| 34 | – | – |
| 35 | – | – |
| 36 | GR | ILL UP SW |
| 37 | V | ILL DOWN SW |
| 38 | G | 8P/R OUTPUT |
| 39 | W | 2P/R OUTPUT |
| 40 | – | – |

| | |
|---|---|
| Connector No. | M77 |
| Connector Name | COMBINATION METER |
| Connector Type | TH12FW-NH |
| Connector Color | WHITE |

H.S.

| | | | | | |
|---|---|---|---|---|---|
| 41 | 42 | 43 | 44 | 45 | 46 |
| 47 | 48 | 49 | 50 | 51 | 52 |

| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 41 | L | CAN-H |
| 42 | P | CAN-L |
| 43 | R | ILL CONT OUT |
| 44 | LA/B | FUEL SENSOR GND |
| 45 | G | BAT |
| 46 | V | IGN |
| 47 | SB | M-CAN H |
| 48 | LG | M-CAN L |
| 49 | – | – |
| 50 | – | – |
| 51 | LA/L | FUEL SENSOR |
| 52 | B | G1 |

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# BASIC INSPECTION

## HYDRAULIC BRAKE BOOSTER UNIT

### Inspection

INFOID:0000000014900127

Check for brake fluid leakage from the following areas:
- Master cylinder mounting face
- Reservoir tank mounting face
- Brake tube and brake tube connections
- Brake hose and brake hose connections

**NOTE:**
If any brake fluid leakage is found, repair as necessary.

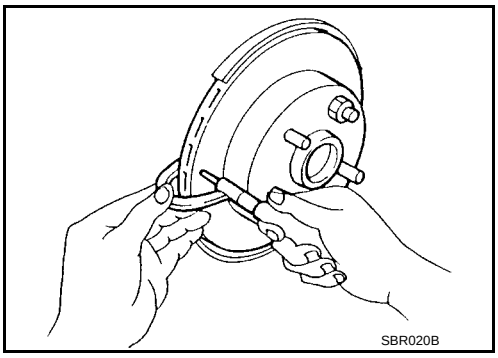
# FRONT DISC BRAKE
## DISC BRAKE ROTOR
### DISC BRAKE ROTOR : Inspection

INFOID:0000000014900128

#### INSPECTION

Uneven Wear

Check for uneven wear of the disc brake rotor using a micrometer. Replace the disc brake rotor if the thickness is below the wear limit. Refer to FAX-9, "Exploded View" (FWD) FAX-46, "Exploded View" (AWD).




| | |
|---|---|
| **Thickness variation (measured at 8 positions)** | **: Refer to BR-88, "Front Disc Brake".** |

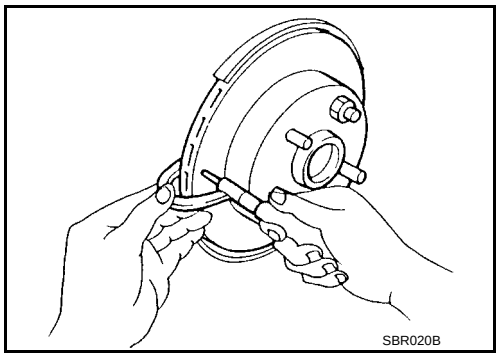
# REAR DISC BRAKE
## DISC BRAKE ROTOR
### DISC BRAKE ROTOR : Inspection

INFOID:0000000014900129

#### INSPECTION

Uneven wear

Check for uneven wear of the disc brake rotor using a micrometer. Replace the disc brake rotor if the thickness is below the wear limit. Refer to RAX-7, "Exploded View" (FWD) RAX-16, "Exploded View" (AWD).




| | |
|---|---|
| **Thickness variation (measured at 8 positions)** | **: Refer to BR-88, "Rear Disc Brake".** |

# DTC/CIRCUIT DIAGNOSIS

## C1109 POWER AND GROUND SYSTEM

### DTC Description

INFOID:0000000015244141

#### DTC DETECTION LOGIC

| DTC No. | CONSULT screen terms (Trouble diagnosis content) | DTC detection condition | |
|---|---|---|---|
| C1109 | BATTERY VOLTAGE [ABNORMAL] (Battery voltage [abnormal]) | Diagnosis condition | When ignition switch is ON. |
| | | Signal (terminal) | - |
| | | Threshold | When accessory power supply voltage is in the following state.<br>• Accessory power supply voltage: 10 V ≥ Accessory power supply voltage.<br>• Accessory power supply voltage: 16 V ≤Accessory power supply voltage.<br>• Ignition power supply circuit is open or shorted |
| | | Diagnosis delay time | 2 seconds or more |

#### POSSIBLE CAUSE

- Harness or connector
- Hydraulic brake booster unit
- Fuse
- Ignition power supply circuit
- Accessory power supply circuit
- 12V battery

#### DTC CONFIRMATION PROCEDURE

##### 1.PRECONDITIONING

If “DTC CONFIRMATION PROCEDURE” has been previously conducted, always turn the ignition switch OFF and wait at least 10 seconds before conducting the next test.

>> GO TO 2.

##### 2.CHECK DTC DETECTION

With CONSULT

1. Turn the ignition switch OFF to ON.
   **CAUTION:**
   - **Be sure to wait for 10 seconds or more after turning the ignition switch OFF or ON.**
   - **Never set the vehicle to READY/Never start the engine.**
2. Repeat step 1 two times or more.
3. Perform self-diagnosis for “BRAKE”.

Is DTC “C1109” detected?

YES >> Proceed to BR-28, "Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-54, "Intermittent Incident".
NO-2 >> Confirmation after repair: Inspection End.

### Diagnosis Procedure

INFOID:0000000015244142

##### 1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Check the hydraulic brake booster unit harness connector for disconnection or looseness.

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair / replace harness or connector, securely lock the connector, and GO TO 2.

## 2.PERFORM SELF-DIAGNOSIS

CONSULT
1. Turn the ignition switch OFF to ON.
   **CAUTION:**
   - **Be sure to wait for 10 seconds or more after turning the ignition switch OFF or ON.**
   - **Never set the vehicle to READY/Never start the engine.**
2. Repeat step 1 two times or more.
3. Select “Self Diagnostic Result” mode of “BRAKE”.

Is DTC “C1109” detected?

YES >> GO TO 3.
NO >> Inspection End.

## 3..CHECK HYDRAULIC BRAKE BOOSTER UNIT IGNITION POWER SUPPLY

1. Turn the ignition switch OFF.
2. Disconnect hydraulic brake booster unit harness connector.
3. Check the voltage between the hydraulic brake booster unit harness connector and ground.

| Terminals | | | Voltage (Approx.) |
|---|---|---|---|
| (+) | | (–) | |
| Hydraulic brake booster unit | | Ground | |
| Connector | Terminal | | |
| E35 | 14 | — | 0 V |

4. Turn the ignition switch ON.
   **CAUTION:**
   **Never set the vehicle to READY/Never start the engine.**
5. Check the voltage between the hydraulic brake booster unit harness connector and ground.

| Terminals | | | Voltage (Approx.) |
|---|---|---|---|
| (+) | | (–) | |
| Hydraulic brake booster unit | | Ground | |
| Connector | Terminal | | |
| E35 | 14 | — | 10 – 16 V |

Is the inspection result normal?

YES >> GO TO 5.
NO >> GO TO 4.

## 4..CHECK HYDRAULIC BRAKE BOOSTER UNIT IGNITION POWER SUPPLY CIRCUIT

1. Turn the ignition switch OFF.
2. Check the 10A fuse (#86).
3. Disconnect IPDM E/R harness connector.
4. Check the continuity between hydraulic brake booster unit harness connector and IPDM E/R harness connector.

| Hydraulic brake booster unit | | IPDM E/R | | Continuity |
|---|---|---|---|---|
| Connector | Terminal | Connector | Terminal | |
| E35 | 14 | E119 | 11 | Yes |

5. Check the continuity between hydraulic brake booster unit harness connector and ground.

| Hydraulic brake booster unit | | Ground | Continuity |
|---|---|---|---|
| Connector | Terminal | | |
| E35 | 14 | — | No |

Is the inspection result normal?

YES >> Perform trouble diagnosis for ignition power supply. Refer to PG-44, "Wiring Diagram - IGNITION POWER SUPPLY -".
NO >> Repair or replace error-detected parts.

## 5. CHECK HYDRAULIC BRAKE BOOSTER UNIT ACCESSORY POWER SUPPLY

1. Turn the ignition switch OFF with driver door open.
2. Get out of the vehicle and close driver's door.
3. Wait for 3 minutes or more.
   **CAUTION:**
   **Never operate vehicle (door lock, open/close the door, etc,) while waiting. It causes an accessory power supply by auto ACC function.**
4. Disconnect hydraulic brake booster unit harness connector.
5. Check the voltage between the hydraulic brake booster unit harness connector and ground.

| Terminals | | | Voltage (Approx.) |
|---|---|---|---|
| (+) | | (–) | |
| Hydraulic brake booster unit | | Ground | |
| Connector | Terminal | | |
| E35 | 13 | — | 0 V |

6. Turn the ignition switch ON.
   **CAUTION:**
   **Never set the vehicle to READY/Never start the engine.**
7. Check the voltage between the hydraulic brake booster unit harness connector and ground.

| Terminals | | | Voltage (Approx.) |
|---|---|---|---|
| (+) | | (–) | |
| Hydraulic brake booster unit | | Ground | |
| Connector | Terminal | | |
| E35 | 13 | — | 10 – 16 V |

Is the inspection result normal?

YES >> GO TO 7.
NO >> GO TO 6.

## 6. CHECK HYDRAULIC BRAKE BOOSTER UNIT ACCESSORY POWER SUPPLY CIRCUIT

1. Turn the ignition switch OFF with driver door open.
2. Get out of the vehicle and close driver's door.
3. Wait for 3 minutes or more.
   **CAUTION:**
   **Never operate vehicle (door lock, open/close the door, etc,) while waiting. It causes an accessory power supply by auto ACC function.**
4. Check the 10A fuse (#18).
5. Disconnect fuse block (J/B) harness connector.
6. Check the continuity between hydraulic brake booster unit harness connector and fuse block (J/B) harness connector.

| Hydraulic brake booster unit | | Fuse block (J/B) | | Continuity |
|---|---|---|---|---|
| Connector | Terminal | Connector | Terminal | |
| E35 | 13 | B30 | 1Q | Yes |

7. Check the continuity between hydraulic brake booster unit harness connector and ground.

| Hydraulic brake booster unit | | Ground | Continuity |
|---|---|---|---|
| Connector | Terminal | | |
| E35 | 13 | — | No |

Is the inspection result normal?

YES >> Perform trouble diagnosis for accessory power supply. Refer to PG-37, "Wiring Diagram - ACCESSORY POWER SUPPLY -".
NO >> Repair or replace error-detected parts.

## 7. CHECK HYDRAULIC BRAKE BOOSTER UNIT GROUND CIRCUIT

1. Turn the ignition switch OFF.
2. Check the continuity between hydraulic brake booster unit harness connector and ground.

| Hydraulic brake booster unit | | Ground | Continuity |
|---|---|---|---|
| Connector | Terminal | | |
| E35 | 1 | — | Yes |
| | 2 | | |

Is the inspection result normal?

YES >> GO TO 8.
NO >> Repair or replace error-detected parts.

## 8. CHECK TERMINAL

1. Check the hydraulic brake booster unit pin terminals for damage or loose connection with harness connector.
2. Check the IPDM E/R pin terminals for damage or loose connection with harness connector.
3. Check the fuse block (J/B) pin terminals for damage or loose connection with harness connector.

Is the inspection result normal?

YES >> Replace hydraulic brake booster unit. Refer to BR-65, "Removal and Installation".
NO >> Repair or replace error-detected parts.

# C1111 PUMP MOTOR

## DTC Description

INFOID:0000000015244143

### DTC DETECTION LOGIC

| DTC No. | CONSULT screen terms (Trouble diagnosis content) | DTC detection condition | |
|---|---|---|---|
| C1111 | PUMP MOTOR | Diagnosis condition | When ignition switch is ON. |
| | | Signal (terminal) | - |
| | | Threshold | When the malfunction of motor, motor relay, accumulator or accumulator pressure sensor. |
| | | Diagnosis delay time | 2 seconds or more |

### POSSIBLE CAUSE

- Harness or connector
- Hydraulic brake booster unit
- Fusible link
- 12V battery power supply circuit
- 12V battery

### DTC CONFIRMATION PROCEDURE

#### 1.PRECONDITIONING

If “DTC CONFIRMATION PROCEDURE” has been previously conducted, always turn the ignition switch OFF and wait at least 10 seconds before conducting the next test.

>> GO TO 2.

#### 2.CHECK DTC DETECTION

CONSULT

1. Turn the ignition switch OFF to ON.
   **CAUTION:**
   - **Be sure to wait for 10 seconds or more after turning the ignition switch OFF or ON.**
   - **Never set the vehicle to READY/Never start the engine.**
2. Repeat step 1 two times or more.
3. Select “Self Diagnostic Result” mode of “BRAKE”.

Is DTC “C1111” detected?

YES >> Proceed to BR-32, "Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-54, "Intermittent Incident".
NO-2 >> Confirmation after repair: Inspection End.

## Diagnosis Procedure

INFOID:0000000015244144

#### 1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Check the hydraulic brake booster unit harness connector for disconnection or looseness.

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair / replace harness or connector, securely lock the connector, and GO TO 2.

#### 2.PERFORM SELF-DIAGNOSIS (1)

CONSULT

1. Turn the ignition switch OFF to ON.
   **CAUTION:**
   - **Be sure to wait for 10 seconds or more after turning the ignition switch OFF or ON.**
   - **Never set the vehicle to READY/Never start the engine.**

2. Repeat step 1 two times or more.
3. Select “Self Diagnostic Result”“BRAKE”.

Is DTC “C1111” detected?

YES >> GO TO 3.
NO >> Inspection End.

## 3. CHECK MOTOR AND MOTOR RELAY POWER SUPPLY

1. Turn the ignition switch OFF.
2. Disconnect hydraulic brake booster unit harness connector.
3. Check the voltage between the hydraulic brake booster unit harness connector and ground.

| Terminals | | | Voltage (Approx.) |
|---|---|---|---|
| (+) | | (–) | |
| Hydraulic brake booster unit | | Ground | |
| Connector | Terminal | | |
| E35 | 3 | — | 10 – 16 V |
| | 4 | | |

4. Turn the ignition switch ON.
**CAUTION:**
**Never set the vehicle to READY/Never start the engine.**
5. Check the voltage between the hydraulic brake booster unit harness connector and ground.

| Terminals | | | Voltage (Approx.) |
|---|---|---|---|
| (+) | | (–) | |
| Hydraulic brake booster unit | | Ground | |
| Connector | Terminal | | |
| E35 | 3 | — | 10 – 16 V |
| | 4 | | |

Is the inspection result normal?

YES >> GO TO 6.
NO >> GO TO 4.

## 4. CHECK MOTOR AND MOTOR RELAY POWER SUPPLY CIRCUIT

1. Turn the ignition switch OFF.
2. Check the 30A fuse (#66) and (#64).
3. Check the continuity and short circuit between hydraulic brake booster unit harness connector terminal 3 and 30A fuse (#66).
4. Check the continuity and short circuit between hydraulic brake booster unit harness connector terminal 4 and 30A fuse (#64).

Is the inspection result normal?

YES >> Perform trouble diagnosis for 12V battery power supply. Refer to PG-13, "Wiring Diagram - BATTERY POWER SUPPLY -".
NO >> Repair or replace error-detected parts. GO TO 5.

## 5. PERFORM SELF-DIAGNOSIS (2)

CONSULT
1. Record or print self-diagnosis results and freeze frame data (FFD).
2. Erase “Self Diagnostic Result”“BRAKE”.
3. Turn the ignition switch OFF to ON.
**CAUTION:**
- **Be sure to wait for 10 seconds or more after turning the ignition switch OFF or ON.**
- **Never set the vehicle to READY/Never start the engine.**
4. Repeat step 3 two times or more.
5. Select “Self Diagnostic Result”“BRAKE”.

Is DTC “C1111” detected?

YES >> Hydraulic brake booster unit is internal malfunctioning. Replace hydraulic brake booster unit. Refer to BR-65, "Removal and Installation".
NO >> Inspection End.

## 6.CHECK HYDRAULIC BRAKE BOOSTER UNIT GROUND CIRCUIT

1. Turn the ignition switch OFF.
2. Check the continuity between hydraulic brake booster unit harness connector and ground.

| Hydraulic brake booster unit | | Ground | Continuity |
|---|---|---|---|
| Connector | Terminal | | |
| E35 | 1 | — | Yes |
| | 2 | | |

Is the inspection result normal?

YES >> GO TO 8.
NO >> Repair or replace error-detected parts. GO TO 7.

## 7.PERFORM SELF-DIAGNOSIS (3)

CONSULT
1. Record or print self-diagnosis results and freeze frame data (FFD).
2. Erase “Self Diagnostic Result”“BRAKE”.
3. Turn the ignition switch OFF to ON.
   **CAUTION:**
   - **Be sure to wait for 10 seconds or more after turning the ignition switch OFF or ON.**
   - **Never set the vehicle to READY/Never start the engine.**
4. Repeat step 3 two times or more.
5. Select “Self Diagnostic Result”“BRAKE”.

Is DTC “C1111” detected?

YES >> Hydraulic brake booster unit is internal malfunctioning. Replace hydraulic brake booster unit. Refer to BR-65, "Removal and Installation".
NO >> Inspection End.

## 8.CHECK TERMINAL

1. Turn the ignition switch OFF.
2. Check the hydraulic brake booster unit pin terminals for damage or loose connection with harness connector.

Is the inspection result normal?

YES >> Hydraulic brake booster unit is internal malfunctioning. Replace hydraulic brake booster unit. Refer to BR-65, "Removal and Installation".
NO >> Repair or replace error-detected parts. GO TO 9.

## 9.PERFORM SELF-DIAGNOSIS (4)

CONSULT
1. Record or print self-diagnosis results and freeze frame data (FFD).
2. Erase “Self Diagnostic Result”“BRAKE”.
3. Turn the ignition switch OFF to ON.
   **CAUTION:**
   - **Be sure to wait for 10 seconds or more after turning the ignition switch OFF or ON.**
   - **Never set the vehicle to READY/Never start the engine.**
4. Repeat step 3 two times or more.
5. Select “Self Diagnostic Result”“BRAKE”.

Is DTC “C1111” detected?

YES >> Hydraulic brake booster unit is internal malfunctioning. Replace hydraulic brake booster unit. Refer to BR-65, "Removal and Installation".
NO >> Inspection End.

# C118E ACCUMULATOR

## DTC Description

INFOID:0000000015244145

### DTC DETECTION LOGIC

**CAUTION:**

**The brake warning lamp turns ON, the warning buzzer sounds and DTC “C118E” may be detected in self-diagnosis result of “BRAKE” when the brake pedal is excessively operated, such as air bleeding. This is not a system malfunction because this occurs due to the temporary decrease in accumulator fluid pressure. The system returns to normal condition when the accumulator fluid pressure reaches the specified pressure with the ignition switch ON and the brake warning lamp turn OFF and the warning buzzer does not sound.**

| DTC No. | CONSULT screen terms (Trouble diagnosis content) | DTC detection condition | |
|---|---|---|---|
| C118E | ACCUMULATOR PRESS | Diagnosis condition | When ignition switch is ON. |
| | | Signal (terminal) | - |
| | | Threshold | When the decreasing the pressure in accumulator is detected. |
| | | Diagnosis delay time | 2 seconds or more |

### POSSIBLE CAUSE

- Brake pedal is excessively operated
- Decrease in accumulator fluid pressure

### DTC CONFIRMATION PROCEDURE

#### 1.CHECK DTC PRIORITY

If DTC “C118E” is displayed with DTC “C1111”, first perform the confirmation procedure (trouble diagnosis) for DTC “C1111”.

Is applicable DTC detected?

YES >> Perform diagnosis of applicable.Refer to BR-32, "DTC Description".
NO >> GO TO 2.

#### 2.PRECONDITIONING

If “DTC CONFIRMATION PROCEDURE” has been previously conducted, always turn the ignition switch OFF and wait at least 10 seconds before conducting the next test.

>> GO TO 3.

#### 3.CHECK DTC DETECTION

CONSULT

1. Turn the ignition switch OFF to ON.
   **CAUTION:**
   - **Be sure to wait for 10 seconds or more after turning the ignition switch OFF or ON.**
   - **Never set the vehicle to READY/Never start the engine.**
2. Repeat step 1 two times or more.
3. Select “Select Diagnostic Result mode of ”“BRAKE”.

Is DTC “C118E” detected?

YES >> Proceed to BR-35, "Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-54, "Intermittent Incident".
NO-2 >> Confirmation after repair: Inspection End.

## Diagnosis Procedure

INFOID:0000000015244146

#### 1.ERASE SELF-DIAGNOSIS RESULT

**CAUTION:**

**The brake warning lamp turns ON, the warning buzzer sounds and DTC “C118E” may be detected in self-diagnosis result of “BRAKE” when the brake pedal is excessively operated, such as air bleeding. This is not a system malfunction because this occurs due to the temporary decrease in accumulator fluid pressure. The system returns to normal condition when the accumulator fluid pressure reaches the specified pressure with the ignition switch ON and the brake warning lamp turn OFF and the warning buzzer does not sound.**

CONSULT

1. Erase “Self Diagnostic Result” mode of “BRAKE”.
2. Turn the ignition switch OFF.
3. Depress brake pedal to full stroke 20 times or more.
4. Start the engine, and then wait 2 minutes or more.
5. Check the VDC warning lamp, BRAKE warning lamp and brake warning lamp turns OFF.
6. Select “Self Diagnostic Result” mode of “BRAKE”.

Is DTC detected?

YES >> Check the DTC. Refer to BR-19, "DTC Index".
NO >> Inspection End.

# U1000 CAN COMM CIRCUIT

## DTC Description

INFOID:0000000015244147

### DTC DETECTION LOGIC

| DTC No. | CONSULT screen terms (Trouble diagnosis content) | DTC detection condition | |
|---|---|---|---|
| U1000 | CAN COMM CIRCUIT | Diagnosis condition | When ignition switch is ON. |
| | | Signal (terminal) | - |
| | | Threshold | When CAN communication signal is not continuously transmitted or received for 2 seconds or more. |
| | | Diagnosis delay time | 2 seconds or more |

### POSSIBLE CAUSE

- CAN communication system malfunction

### DTC CONFIRMATION PROCEDURE

#### 1.PRECONDITIONING

If “DTC CONFIRMATION PROCEDURE” has been previously conducted, always turn the ignition switch OFF and wait at least 10 seconds before conducting the next test.

>> GO TO 2.

#### 2.CHECK DTC DETECTION

CONSULT

1. Turn the ignition switch OFF to ON.
   **CAUTION:**
   - **Be sure to wait for 10 seconds or more after turning the ignition switch OFF or ON.**
   - **Never set the vehicle to READY/Never start the engine.**
2. Repeat step 1 two times or more.
3. Select “Self Diagnostic Result” mode of “BRAKE”.

Is DTC “U1000” detected?

YES >> Proceed to BR-37, "Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-54, "Intermittent Incident".
NO-2 >> Confirmation after repair: Inspection End.

## Diagnosis Procedure

INFOID:0000000015244148

Proceed to LAN-26, "Trouble Diagnosis Flow Chart".

# U1010 CONTROL UNIT (CAN)

## DTC Description

INFOID:0000000015244149

### DTC DETECTION LOGIC

| DTC No. | CONSULT screen terms (Trouble diagnosis content) | DTC detection condition | |
|---|---|---|---|
| U1010 | CONTROL COMM(CAN) | Diagnosis condition | When ignition switch is ON. |
| | | Signal (terminal) | - |
| | | Threshold | When detecting error during the initial diagnosis of CAN controller of hydraulic brake booster unit. |
| | | Diagnosis delay time | 2 seconds or more |

### POSSIBLE CAUSE

- Hydraulic brake booster unit

### DTC CONFIRMATION PROCEDURE

#### 1.PRECONDITIONING

If “DTC CONFIRMATION PROCEDURE” has been previously conducted, always turn the ignition switch OFF and wait at least 10 seconds before conducting the next test.

>> GO TO 2.

#### 2.CHECK DTC DETECTION

CONSULT

1. Turn the ignition switch OFF to ON.
   **CAUTION:**
   - **Be sure to wait for 10 seconds or more after turning the ignition switch OFF or ON.**
   - **Never set the vehicle to READY/Never start the engine.**
2. Repeat step 1 two times or more.
3. Select “Self diagnostic Result” mode of “BRAKE”.

Is DTC “U1010” detected?

YES >> Proceed to BR-38, "Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-54, "Intermittent Incident".
NO-2 >> Confirmation after repair: Inspection End.

## Diagnosis Procedure

INFOID:0000000015244150

#### 1.CHECK HYDRAULIC BRAKE BOOSTER UNIT

Check the hydraulic brake booster unit harness connector for disconnection and deformation.

Is the inspection result normal?

YES >> Replace the hydraulic brake booster unit. Refer to BR-65, "Removal and Installation".
NO >> Repair / replace harness, connector, or terminal.

# POWER SUPPLY AND GROUND CIRCUIT

## Diagnosis Procedure

INFOID:0000000015244151

### 1. CHECK HYDRAULIC BRAKE BOOSTER UNIT IGNITION POWER SUPPLY

1. Turn the ignition switch OFF.
2. Disconnect hydraulic brake booster unit harness connector.
3. Check the voltage between the hydraulic brake booster unit harness connector and ground.

| Terminals | | | Voltage (Approx.) |
|---|---|---|---|
| (+) | | (–) | |
| Hydraulic brake booster unit | | Ground | |
| Connector | Terminal | | |
| E35 | 14 | — | 0 V |

4. Turn the ignition switch ON.
   **CAUTION:**
   **Never set the vehicle to READY/Never start the engine.**
5. Check the voltage between the hydraulic brake booster unit harness connector and ground.

| Terminals | | | Voltage (Approx.) |
|---|---|---|---|
| (+) | | (–) | |
| Hydraulic brake booster unit | | Ground | |
| Connector | Terminal | | |
| E35 | 14 | — | 10 – 16 V |

Is the inspection result normal?

YES >> GO TO 3.
NO >> GO TO 2.

### 2. CHECK HYDRAULIC BRAKE BOOSTER UNIT IGNITION POWER SUPPLY CIRCUIT

1. Turn the ignition switch OFF.
2. Check the 10A fuse (#49).
3. Disconnect IPDM E/R harness connector.
4. Check the continuity between hydraulic brake booster unit harness connector and IPDM E/R harness connector.

| Hydraulic brake booster unit | | IPDM E/R | | Continuity |
|---|---|---|---|---|
| Connector | Terminal | Connector | Terminal | |
| E35 | 14 | E119 | 11 | Yes |

5. Check the continuity between hydraulic brake booster unit harness connector and ground.

| Hydraulic brake booster unit | | Ground | Continuity |
|---|---|---|---|
| Connector | Terminal | | |
| E35 | 14 | — | No |

Is the inspection result normal?

YES >> Perform trouble diagnosis for ignition power supply. Refer to PG-44, "Wiring Diagram - IGNITION POWER SUPPLY -".
NO >> Repair or replace error-detected parts.

### 3. CHECK HYDRAULIC BRAKE BOOSTER UNIT ACCESSORY POWER SUPPLY

1. Turn the ignition switch OFF with driver door open.
2. Get out of the vehicle and close driver's door.
3. Wait for 3 minutes or more.

**CAUTION:**
**Never operate vehicle (door lock, open/close the door, etc,) while waiting. It causes an accessory power supply by auto ACC function.**

4. Disconnect hydraulic brake booster unit harness connector.
5. Check the voltage between the hydraulic brake booster unit harness connector and ground.

| Terminals | | | Voltage (Approx.) |
|---|---|---|---|
| (+) | | (–) | |
| Hydraulic brake booster unit | | Ground | |
| Connector | Terminal | | |
| E35 | 13 | — | 0 V |

6. Turn the ignition switch ON.

**CAUTION:**
**Never set the vehicle to READY/Never start the engine.**

7. Check the voltage between the hydraulic brake booster unit harness connector and ground.

| Terminals | | | Voltage (Approx.) |
|---|---|---|---|
| (+) | | (–) | |
| Hydraulic brake booster unit | | Ground | |
| Connector | Terminal | | |
| E35 | 13 | — | 10 – 16 V |

Is the inspection result normal?

YES >> GO TO 5.
NO >> GO TO 4.

## 4. CHECK HYDRAULIC BRAKE BOOSTER UNIT ACCESSORY POWER SUPPLY CIRCUIT

1. Turn the ignition switch OFF with driver door open.
2. Get out of the vehicle and close driver's door.
3. Wait for 3 minutes or more.

**CAUTION:**
**Never operate vehicle (door lock, open/close the door, etc,) while waiting. It causes an accessory power supply by auto ACC function.**

4. Check the 10A fuse (#18).
5. Disconnect fuse block (J/B) harness connector.
6. Check the continuity between hydraulic brake booster unit harness connector and fuse block (J/B) harness connector.

| Hydraulic brake booster unit | | Fuse block (J/B) | | Continuity |
|---|---|---|---|---|
| Connector | Terminal | Connector | Terminal | |
| E35 | 13 | B30 | 1Q | Yes |

7. Check the continuity between hydraulic brake booster unit harness connector and ground.

| Hydraulic brake booster unit | | Ground | Continuity |
|---|---|---|---|
| Connector | Terminal | | |
| E35 | 13 | — | No |

Is the inspection result normal?

YES >> Perform trouble diagnosis for accessory power supply. Refer to PG-37, "Wiring Diagram - ACCESSORY POWER SUPPLY -".
NO >> Repair or replace error-detected parts.

## 5. CHECK MOTOR AND MOTOR RELAY POWER SUPPLY CIRCUIT

1. Turn the ignition switch OFF.
2. Check the voltage between the hydraulic brake booster unit harness connector and ground.

| Terminals | | | Voltage (Approx.) |
|---|---|---|---|
| (+) | | (–) | |
| Hydraulic brake booster unit | | Ground | |
| Connector | Terminal | | |
| E35 | 3 | — | 10 – 16 V |
| | 4 | | |

3. Turn the ignition switch ON.
**CAUTION:**
**Never set the vehicle to READY/Never start the engine.**
4. Check the voltage between the hydraulic brake booster unit harness connector and ground.

| Terminals | | | Voltage (Approx.) |
|---|---|---|---|
| (+) | | (–) | |
| Hydraulic brake booster unit | | Ground | |
| Connector | Terminal | | |
| E35 | 3 | — | 10 – 16 V |
| | 4 | | |

Is the inspection result normal?

YES >> GO TO 7.
NO >> GO TO 6.

## 6. CHECK MOTOR AND MOTOR RELAY POWER SUPPLY CIRCUIT

1. Turn the ignition switch OFF.
2. Check the 30A fuse (#66) and (#64).
3. Check the continuity and short circuit between hydraulic brake booster unit harness connector terminal 3 and 30A fuse (#66).
4. Check the continuity and short circuit between hydraulic brake booster unit harness connector terminal 4 and 30A fuse (#64).

Is the inspection result normal?

YES >> Perform trouble diagnosis for 12V battery power supply. Refer to PG-13, "Wiring Diagram - BATTERY POWER SUPPLY -".
NO >> Repair or replace error-detected parts.

## 7. CHECK HYDRAULIC BRAKE BOOSTER UNIT GROUND CIRCUIT

1. Turn the ignition switch OFF.
2. Check the continuity between hydraulic brake booster unit harness connector and ground.

| Hydraulic brake booster unit | | Ground | Continuity |
|---|---|---|---|
| Connector | Terminal | | |
| E35 | 1 | — | Yes |
| | 2 | | |

Is the inspection result normal?

YES >> GO TO 8.
NO >> Repair or replace error-detected parts.

## 8. CHECK TERMINAL

1. Check the hydraulic brake booster unit pin terminals for damage or loose connection with harness connector.
2. Check the IPDM E/R pin terminals for damage or loose connection with harness connector.
3. Check the fuse block (J/B) pin terminals for damage or loose connection with harness connector.

Is the inspection result normal?

YES >> Inspection End.

NO >> Repair or replace error-detected parts.

# WARNING BUZZER CIRCUIT

## Diagnosis Procedure

INFOID:0000000015244152

### 1.CHECK HYDRAULIC BRAKE BOOSTER UNIT POWER SUPPLY AND GROUND CIRCUIT

Check the hydraulic brake booster unit power supply and ground circuit. Refer to BR-39, "Diagnosis Procedure".

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair or replace error-detected parts.

### 2..CHECK WARNING BUZZER POWER SUPPLY

1. Turn the ignition switch OFF with driver door open.
2. Get out of the vehicle and close driver's door.
3. Wait for 3 minutes or more.

**CAUTION:**
**Never operate vehicle (door lock, open/close the door, etc,) while waiting. It causes an accessory power supply by auto ACC function.**

4. Disconnect warning buzzer harness connector.
5. Check the voltage between the warning buzzer harness connector and ground.

| Terminals | | | Voltage (Approx.) |
|---|---|---|---|
| (+) | | (–) | |
| Warning buzzer | | Ground | |
| Connector | Terminal | | |
| M16 | 2 | — | 0 V |

6. Turn the ignition switch ON.

**CAUTION:**
**Never set the vehicle to READY/Never start the engine.**

7. Check the voltage between the warning buzzer harness connector and ground.

| Terminals | | | Voltage (Approx.) |
|---|---|---|---|
| (+) | | (–) | |
| Warning buzzer | | Ground | |
| Connector | Terminal | | |
| M16 | 2 | — | 10 – 16 V |

Is the inspection result normal?

YES >> GO TO 4.
NO >> GO TO 3.

### 3..CHECK WARNING BUZZER POWER SUPPLY CIRCUIT

1. Turn the ignition switch OFF with driver door open.
2. Get out of the vehicle and close driver's door.
3. Wait for 3 minutes or more.

**CAUTION:**
**Never operate vehicle (door lock, open/close the door, etc,) while waiting. It causes an accessory power supply by auto ACC function.**

4. Check the 10A fuse (#18).
5. Disconnect fuse block (J/B) harness connector.
6. Check the continuity between warning buzzer harness connector and fuse block (J/B) harness connector.

| Warning buzzer | | Fuse block (J/B) | | Continuity |
|---|---|---|---|---|
| Connector | Terminal | Connector | Terminal | |
| M16 | 2 | B30 | 1Q | Yes |

7. Check the continuity between warning buzzer harness connector and ground.

| Warning buzzer | | Ground | Continuity |
|---|---|---|---|
| Connector | Terminal | | |
| M16 | 2 | — | No |

Is the inspection result normal?

YES >> Perform trouble diagnosis for accessory power supply. Refer to PG-37, "Wiring Diagram - ACCESSORY POWER SUPPLY -".
NO >> Repair or replace error-detected parts.

## 4. CHECK WARNING BUZZER GROUND CIRCUIT

1. Turn the ignition switch OFF with driver door open.
2. Get out of the vehicle and close driver's door.
3. Wait for 3 minutes or more.

**CAUTION:**
**Never operate vehicle (door lock, open/close the door, etc,) while waiting. It causes an accessory power supply by auto ACC function.**

4. Disconnect hydraulic brake booster unit harness connector.
5. Check the continuity between hydraulic brake booster unit harness connector and warning buzzer harness connector.

| Hydraulic brake booster unit | | Warning buzzer | | Continuity |
|---|---|---|---|---|
| Connector | Terminal | Connector | Terminal | |
| E35 | 7 | M16 | 1 | Yes |

Is the inspection result normal?

YES >> GO TO 5.
NO >> Repair or replace error-detected parts.

## 5. CHECK WARNING BUZZER

Check warning buzzer. Refer to BR-44, "Component Inspection".

Is the inspection result normal?

YES >> Inspection End.
NO >> Replace warning buzzer. Refer to BR-68, "Removal and Installation".

# Component Inspection

INFOID:0000000015244153

## 1. CHECK WARNING BUZZER

1. Turn the ignition switch OFF with driver door open.
2. Get out of the vehicle and close driver's door.
3. Wait for 3 minutes or more.

**CAUTION:**
**Never operate vehicle (door lock, open/close the door, etc,) while waiting. It causes an accessory power supply by auto ACC function.**

4. Disconnect warning buzzer harness connector.
5. Remove warning buzzer. Refer to BR-68, "Removal and Installation".
6. Apply 12 V to warning buzzer connector No. 1 terminal and No. 2 terminal.

| Condition | Warning buzzer |
|---|---|
| Apply voltage | Sound |
| Do not apply voltage | Do not sound |

Is the inspection result normal?

YES >> Inspection End.
NO >> Replace warning buzzer. Refer to BR-68, "Removal and Installation".

# BRAKE WARNING LAMP

## Component Function Check

INFOID:0000000015244154

### 1.CHECK BRAKE WARNING LAMP (RED) FUNCTION (1)

Check that the brake warning lamp (red) turns ON when ignition switch turns ON. Then, brake warning lamp (red) turns OFF after the vehicle is set to READY or the engine is started.

Is the inspection result normal?

YES >> GO TO 2.
NO >> Proceed to BR-45, "Diagnosis Procedure".

### 2.CHECK BRAKE WARNING LAMP (RED) FUNCTION (2)

Check that brake warning lamp (red) in combination meter turns ON/OFF when parking brake is operated.
**NOTE:**
Brake warning lamp turns ON when parking brake is operated (when parking brake switch is ON).

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check parking brake switch circuit. Refer to BRC-172, "Diagnosis Procedure".

### 3.CHECK BRAKE WARNING LAMP (RED) FUNCTION (3)

Check that brake warning lamp (red) in combination meter turns ON/OFF when brake fluid level switch is operated while brake fluid level in reservoir tank is with the specified level.
**NOTE:**
Brake warning lamp turns ON when brake fluid is less than the specified level (when brake fluid level switch is ON).

Is the inspection result normal?

YES >> Inspection End.
NO >> Check brake fluid level switch circuit. Refer to BRC-134, "Diagnosis Procedure".

## Diagnosis Procedure

INFOID:0000000015244155

### 1.CHECK ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT) POWER SUPPLY AND GROUND CIRCUIT

Perform the trouble diagnosis for ABS actuator and electric unit (control unit) power supply and ground circuit. Refer to BRC-169, "Diagnosis Procedure".

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair or replace error-detected parts.

### 2.CHECK HYDRAULIC BRAKE BOOSTER UNIT POWER SUPPLY AND GROUND CIRCUIT

Perform the trouble diagnosis for hydraulic brake booster unit power supply and ground circuit. Refer to BR-39, "Diagnosis Procedure".

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair or replace error-detected parts.

### 3.PERFORM THE SELF-DIAGNOSIS

CONSULT
1. Turn the ignition switch OFF to ON.
   **CAUTION:**
   - **Be sure to wait for 10 seconds or more after turning the ignition switch OFF or ON.**
   - **Never set the vehicle to READY/Never start the engine.**
2. Repeat step 1 two times or more.
3. Select “Self Diagnostic Result”“ABS” and “BRAKE”.

Is any DTC detected?

YES >> Check the DTC.
- “ABS”: Refer to BRC-61, "DTC Index".

- “BRAKE”: Refer to BR-19, "DTC Index".

NO >> GO TO 4.

## 4. CHECK BRAKE WARNING LAMP SIGNAL [ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)]

CONSULT

1. Select “ABS”, “Data Monitor” and “EBD WARN LAMP” according to this order.
2. Turn the ignition switch OFF.
3. Check that data monitor displays “On” for several seconds after ignition switch is turned ON and then changes to “Off”.

**CAUTION:**
**Never set the vehicle to READY/Never start the engine.**

Is the inspection result normal?

YES >> GO TO 5.
NO >> Replace ABS actuator and electric unit (control unit). Refer to BRC-204, "Removal and Installation".

## 5. CHECK BRAKE WARNING LAMP SIGNAL (HYDRAULIC BRAKE BOOSTER UNIT)

CONSULT

1. Select “BRAKE”, “Data Monitor” and “BRAKE WARNING LAMP” according to this order.
2. Turn the ignition switch OFF.
3. Check that data monitor displays “On” for several seconds after ignition switch is turned ON and then changes to “Off”.

**CAUTION:**
**Never set the vehicle to READY/Never start the engine.**

Is the inspection result normal?

YES >> Replace combination meter. Refer to MWI-81, "Removal and Installation".
NO >> Replace hydraulic brake booster unit. Refer to BR-65, "Removal and Installation".

# BRAKE SYSTEM WARNING LAMP

## Component Function Check

INFOID:0000000015244156

### 1.CHECK BRAKE SYSTEM WARNING LAMP (YELLOW) FUNCTION

Check that ABS warning lamp in combination meter turns ON for several seconds after ignition switch is turned ON.

**CAUTION:**

**Never set the vehicle to READY/Never start the engine.**

Is the inspection result normal?

YES >> Inspection End.
NO >> Proceed to BR-47, "Diagnosis Procedure".

## Diagnosis Procedure

INFOID:0000000015244157

### 1.CHECK ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT) POWER SUPPLY AND GROUND CIRCUIT

Perform the trouble diagnosis for ABS actuator and electric unit (control unit) power supply and ground circuit. Refer to BRC-169, "Diagnosis Procedure".

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair or replace error-detected parts.

### 2.CHECK HYDRAULIC BRAKE BOOSTER UNIT POWER SUPPLY AND GROUND CIRCUIT

Perform the trouble diagnosis for hydraulic brake booster unit power supply and ground circuit. Refer to BR-39, "Diagnosis Procedure".

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair or replace error-detected parts.

### 3.PERFORM THE SELF-DIAGNOSIS

CONSULT

1. Turn the ignition switch OFF to ON.
   **CAUTION:**
   - **Be sure to wait for 10 seconds or more after turning the ignition switch OFF or ON.**
   - **Never set the vehicle to READY/Never start the engine.**
2. Repeat step 1 two times or more.
3. Select “Self Diagnostic Result”“ABS” and “BRAKE”.

Is any DTC detected?

YES >> Check the DTC.
- “ABS”: Refer to BRC-61, "DTC Index".
- “BRAKE”: Refer to BR-19, "DTC Index".

NO >> GO TO 4.

### 4.CHECK BRAKE WARNING LAMP SIGNAL (HYDRAULIC BRAKE BOOSTER UNIT)

CONSULT

1. Select “BRAKE”, “Data Monitor” and “BRAKE SYSTEM WARN LAMP” according to this order.
2. Turn the ignition switch OFF.
3. Check that data monitor displays “On” for several seconds after ignition switch is turned ON and then changes to “Off”.
   **CAUTION:**
   **Never set the vehicle to READY/Never start the engine.**

Is the inspection result normal?

YES >> Replace combination meter. Refer to MWI-81, "Removal and Installation".
NO >> Replace hydraulic brake booster unit. Refer to BR-65, "Removal and Installation".

# SYMPTOM DIAGNOSIS

## NOISE, VIBRATION AND HARSHNESS (NVH) TROUBLESHOOTING

### NVH Troubleshooting Chart

INFOID:0000000014900125

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

| | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Reference page | | | BR-53, BR-55 | | | BR-53, BR-55 | BR-53, BR-26, BR-55, BR-27 | BR-53, BR-26, BR-55, BR-27 | BR-53, BR-55 | BR-53, BR-55 | BR-53, BR-55 | BR-53, BR-26, BR-55, BR-27 | DLN-104 (AWD) | DLN-120 (AWD) | FSU-5 | RSU-4 | WT-62 | FAX-6 (FWD), FAX-43 (AWD) RAX-5 (FWD), RAX-13 (AWD) | ST-26 |
| Possible cause and SUSPECTED PARTS | | | Brake pad - damaged | Brake pad - uneven wear | Shims damaged | Disc brake rotor imbalance | Disc brake rotor damage | Disc brake rotor runout | Disc brake rotor deformation | Disc brake rotor deflection | Disc brake rotor rust | Disc brake rotor thickness variation | PROPELLER SHAFT | DIFFERENTIAL | FRONT SUSPENSION | REAR SUSPENSION | WHEELAND TIRE | DRIVE SHAFT | STEERING |
| Symptom | BRAKE | Noise | × | × | × | | | | | | | | × | × | × | × | × | × | × |
| | | Shake | | | | × | | | | | | | × | | × | × | × | × | × |
| | | Shimmy, Shudder | | | | × | × | × | × | × | × | × | | | × | × | × | | × |

×: Applicable

# PERIODIC MAINTENANCE

## BRAKE PEDAL

### Inspection

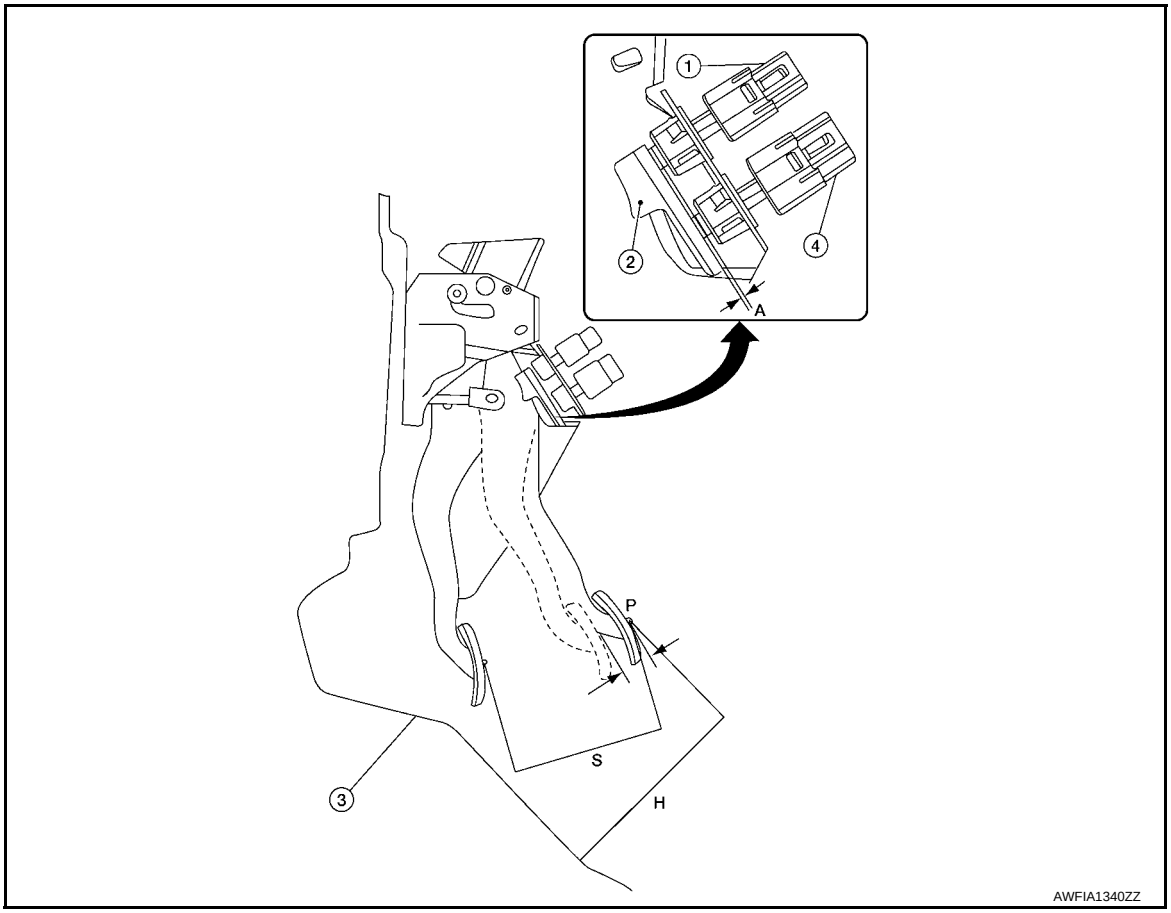
INFOID:0000000014900130

BRAKE PEDAL HEIGHT

Check the brake pedal height (H) between the dash lower panel (3) and the brake pedal upper surface.

**CAUTION:**

**Check the brake pedal height with the floor trim removed.**




| | |
|---|---|
| Brake pedal height (H) from dash lower panel (3) | Refer to BR-87, "Brake Pedal". |
| Clearance (A) between brake pedal stopper bracket (2), stop lamp switch (4) and brake pedal position switch (1) contact ends | Refer to BR-87, "Brake Pedal". |
| Brake pedal full stroke (S) | Refer to BR-87, "Brake Pedal". |
| Brake pedal play (P) | Refer to BR-87, "Brake Pedal". |

### Adjustment

INFOID:0000000014900131

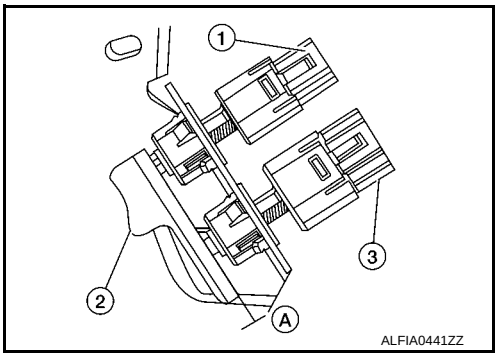
BRAKE PEDAL HEIGHT

1. Remove instrument lower panel LH. Refer to IP-22, "Removal and Installation".
2. Disconnect the harness connectors from the stop lamp switch and brake pedal position switch.
3. Turn the stop lamp switch and brake pedal position switch 45° counterclockwise.
4. Check that the brake pedal height meets the specification by checking the brake pedal and brake booster for damage and replace parts as necessary. Refer to BR-87, "Brake Pedal".
5. Turn the stop lamp switch and brake pedal position switch 45° clockwise.
6. Connect the harness connectors to the stop lamp switch and brake pedal position switch.

7. Check the brake pedal for smooth operation.
   **CAUTION:**
   **The stop lamp must turn off when the brake pedal is released.**
8. Install the instrument lower panel LH. Refer to IP-22, "Removal and Installation".

## STOP LAMP SWITCH AND BRAKE PEDAL POSITION SWITCH

1. Remove instrument lower panel LH. Refer to IP-22, "Removal and Installation".
2. Disconnect the harness connectors from the stop lamp switch and brake pedal position switch.
3. Turn the stop lamp switch and brake pedal position switch 45° counterclockwise.
4. With the threaded ends of the stop lamp switch (3) and brake pedal position switch (1) contacting the brake pedal stopper bracket (2), turn the switches 45° clockwise to lock in place. Check that both the stop lamp switch (3) and brake pedal position switch (1) contact ends to brake pedal stopper bracket (2) clearance (A) are within specification.
   **CAUTION:**
   - **Make sure that the clearance (A) between the brake pedal stopper bracket (2), stop lamp switch (3) and the brake pedal position switch (1) contact ends are within specification.**
   - **The stop lamp must turn off when the brake pedal is released.**




**Clearance (A) : Refer to BR-87, "Brake Pedal".**

5. Connect the harness connector to the stop lamp switch and the brake pedal position switch.
6. Install instrument lower panel LH. Refer to IP-22, "Removal and Installation".

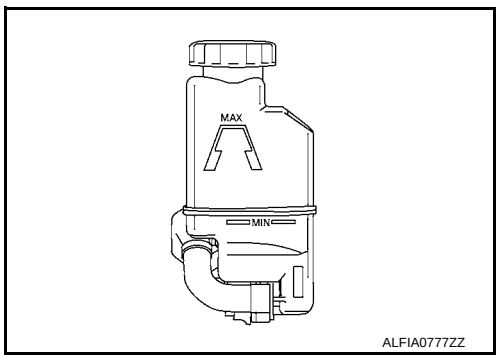
# BRAKE FLUID

## Inspection

INFOID:0000000014900132

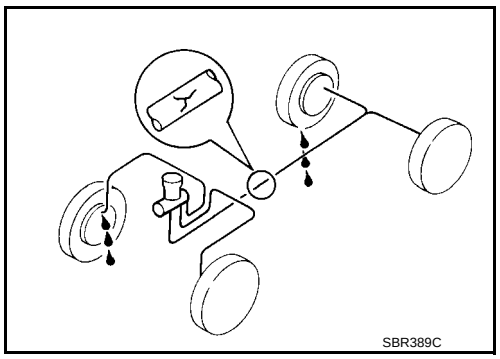
### BRAKE FLUID LEVEL

- Make sure that the brake fluid level in the reservoir tank is between the MAX and MIN lines.
- Visually check around the reservoir tank for brake fluid leakage.
- If the brake fluid level is excessively low, check the brake system for leakage.
- If brake warning lamp remains illuminated after parking brake pedal is released, check the brake system for brake fluid leakage.




### BRAKE LINE

1. Check brake line (tubes and hoses) for cracks, deterioration or other damage. Replace any damaged parts.
2. Check for brake fluid leakage by fully depressing brake pedal while engine is running.
   **CAUTION:**
   **If brake fluid leakage occurs around joints, retighten or replace damaged parts as necessary.**




## Drain and Refill

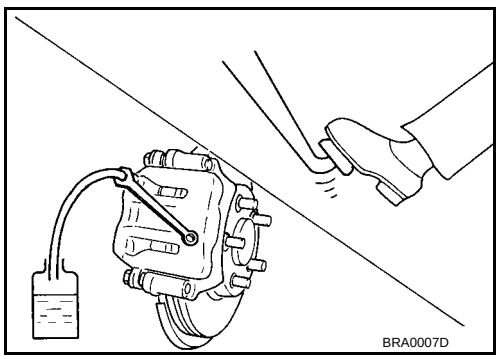
INFOID:0000000014900133

**CAUTION:**

- **Do not spill or splash brake fluid on painted surfaces. Brake fluid may damage paint. If brake fluid is splashed on painted areas, wash it away with water immediately.**
- **Prior to repair, turn the ignition switch OFF, disconnect the ABS actuator and electric unit (control unit) connector or negative battery terminal. Refer to PG-128, "Battery Disconnect".**
- **Refill brake system with new brake fluid. Refer to MA-11, "Fluids and Lubricants".**
- **Do not reuse drained brake fluid.**

### DRAINING

1. Turn ignition switch OFF and disconnect ABS actuator and electric unit (control unit) connector or negative battery terminal. Refer to PG-128, "Battery Disconnect".
2. Connect a vinyl tube to bleeder valve.
3. Depress brake pedal, loosen bleeder valve, and gradually remove brake fluid.
   **CAUTION:**
   **Do not allow reservoir tank to empty as this may cause damage to master cylinder internal components.**




### REFILLING

1. Make sure no foreign material is in the reservoir tank, and refill with new brake fluid.

**CAUTION:**
**Do not reuse drained brake fluid.**

2. Refill the brake system as follows:
   - Depress the brake pedal.
   - Loosen bleeder valve.
   - Slowly depress brake pedal to 2/3 of the brake pedal full stroke.
   - Tighten bleeder valve.
   - Release brake pedal.

   Repeat this operation at intervals of two or three seconds until all old brake fluid is discharged. Add new brake fluid frequently.

   **CAUTION:**
   **Do not allow reservoir tank to empty as this may cause damage to master cylinder internal components.**
3. Bleed the air out of the brake hydraulic system. Refer to BR-52, "Bleeding Brake System".

## Bleeding Brake System

INFOID:0000000014900134

**CAUTION:**
- **While bleeding, pay attention to the brake fluid level.**
- **Do not allow reservoir tank to empty as this may cause damage to master cylinder internal components.**
- **Before working, disconnect ABS actuator and electric unit (control unit) connectors or negative battery terminal. Refer to PG-128, "Battery Disconnect".**

1. Turn ignition switch OFF and disconnect ABS actuator and electric unit (control unit) connector or negative battery terminal. Refer to PG-128, "Battery Disconnect".
2. Connect a vinyl tube to rear (RH) brake caliper bleeder valve.
3. Fully depress brake pedal 4 or 5 times.
4. With brake pedal depressed, loosen bleeder valve to bleed air in brake line, and then tighten it immediately.
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. Refer to BR-81, "BRAKE CALIPER ASSEMBLY : Exploded View" (front disc brake), BR-84, "Exploded View" (rear disc brake).
7. Repeat steps 2 through 6, with the reservoir tank filled at least halfway. Bleed the air in the following order: rear (RH), front (LH), rear (LH), front (RH).
8. Check the fluid level in the reservoir tank is with in the specified range after bleeding. Refer to BR-51, "Inspection".

# FRONT DISC BRAKE

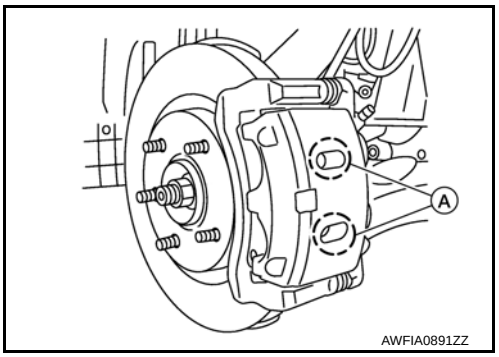
## BRAKE PAD

### BRAKE PAD : Inspection and Adjustment

INFOID:0000000014900135

#### INSPECTION

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




**Wear thickness** **: Refer to BR-88, "Front Disc Brake".**

#### ADJUSTMENT

**CAUTION:**

- **Burnish contact surfaces between brake pads and disc rotor according to the following procedure after refinishing the disc rotor, replacing brake pads or if a soft pedal occurs at very low mileage.**
- **Be careful of vehicle speed. Brakes do not operate firmly/securely until pads and disc rotor are securely seated.**
- **Only perform this procedure under safe road and traffic conditions. Use extreme caution.**

1. Drive the vehicle on straight, flat road.
2. Depress the brake pedal until the vehicle stops.
3. Release the brake pedal for a few minutes to allow the brake components to cool.
4. Repeat steps 1 to 3 until pad and disc rotor are securely seated.

## DISC BRAKE ROTOR

### DISC BRAKE ROTOR : Inspection and Adjustment

INFOID:0000000014900137

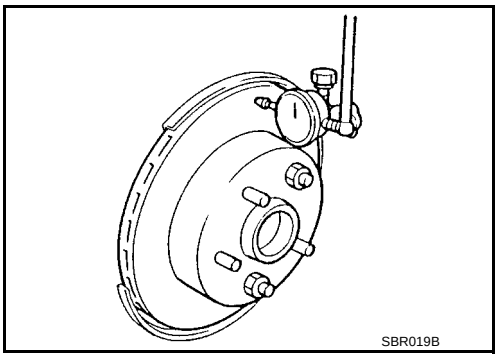
#### INSPECTION

Appearance

Check surface of disc rotor for uneven wear, cracks or damage. Replace if necessary. Refer to BR-73, "DISC BRAKE ROTOR : Removal and Installation".

Runout

1. Check the wheel bearing axial end play before the inspection. Refer to FAX-7, "Inspection" (FWD) or FAX-44, "Inspection" (AWD).
2. Secure the disc rotor to the wheel hub and bearing assembly with wheel nuts at two wheel nut locations.
3. Inspect the runout with a dial gauge, measured at 10 mm (0.39 in) inside the disc edge.




**Runout (with it attached to the vehicle)** **: Refer to BR-88, "Front Disc Brake".**

4. Find the installation position with 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.
5. Refinish the disc rotor if the runout is outside the limit even after performing the above operation. When refinishing, use Tool.

**Tool number : 38-PFM92 ( — )**

**CAUTION:**

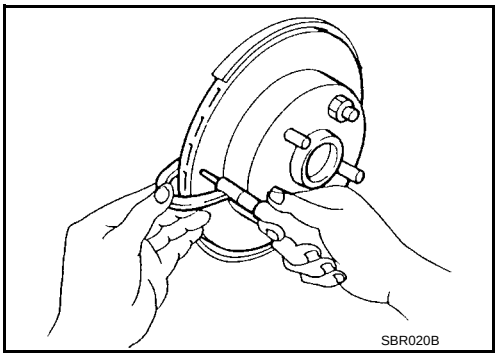
- **Check in advance that the thickness of the disc brake rotor is wear thickness + 0.3 mm (0.012 in) or more.**
- **If the thickness is less than wear thickness + 0.3 mm (0.012 in), replace the disc brake rotor. Refer to FAX-9, "Exploded View" (FWD) or FAX-46, "Exploded View" (AWD).**

**Wear thickness : Refer to BR-88, "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.

**Wear thickness : Refer to BR-88, "Front Disc Brake".**




ADJUSTMENT

**CAUTION:**

- **Burnish contact surfaces between brake pads and disc rotor according to the following procedure after refinishing the disc rotor, replacing brake pads or if a soft pedal occurs at very low mileage.**
- **Be careful of vehicle speed. Brakes do not operate firmly/securely until pads and disc rotor are securely seated.**
- **Only perform this procedure under safe road and traffic conditions. Use extreme caution.**

1. Drive the vehicle on straight, flat road.
2. Depress the brake pedal until the vehicle stops.
3. Release the brake pedal for a few minutes to allow the brake components to cool.
4. Repeat steps 1 to 3 until pad and disc rotor are securely seated.

# REAR DISC BRAKE

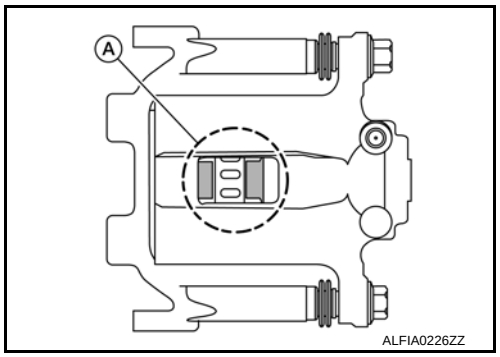
## BRAKE PAD

### BRAKE PAD : Inspection and Adjustment

INFOID:0000000014900139

#### INSPECTION

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




**Wear thickness** **: Refer to BR-88, "Rear Disc Brake".**

#### ADJUSTMENT

**CAUTION:**

- **Burnish contact surfaces between brake pads and disc rotor according to the following procedure after refinishing the disc rotor, replacing brake pads or if a soft pedal occurs at very low mileage.**
- **Be careful of vehicle speed. Brakes do not operate firmly/securely until pads and disc rotor are securely seated.**
- **Only perform this procedure under safe road and traffic conditions. Use extreme caution.**

1. Drive the vehicle on straight, flat road.
2. Depress the brake pedal until the vehicle stops.
3. Release the brake pedal for a few minutes to allow the brake components to cool.
4. Repeat steps 1 to 3 until pad and disc rotor are securely seated.

## DISC BRAKE ROTOR

### DISC BRAKE ROTOR : Inspection and Adjustment

INFOID:0000000014900141

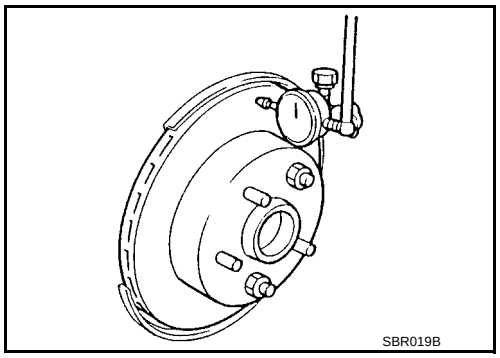
#### INSPECTION

Appearance

Check surface of disc rotor for uneven wear, cracks or damage. Replace it if necessary. Refer to BR-79, "DISC BRAKE ROTOR : Removal and Installation".

Runout

1. Check the wheel bearing axial end play before the inspection. Refer to RAX-6, "Inspection" (FWD) or RAX-14, "Inspection" (AWD).
2. Secure the disc rotor to the wheel hub and bearing assembly with wheel nuts at two wheel nut locations.
3. Inspect the runout with a dial gauge, measured at 10 mm (0.39 in) inside the disc edge.




**Runout (with it attached to the vehicle)** **: Refer to BR-88, "Rear Disc Brake".**

4. Find the installation position with 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.
5. Refinish the disc rotor if the runout is outside the limit even after performing the above operation. When refinishing, use Tool.

**Tool number** **: 38-PFM92 ( — )**

**CAUTION:**

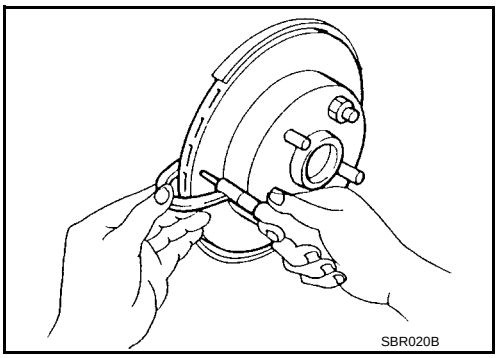
- **Check in advance that the thickness of the disc brake rotor is wear thickness + 0.3 mm (0.012 in) or more.**
- **If the thickness is less than wear thickness + 0.3 mm (0.012 in), replace the disc brake rotor. Refer to RAX-7, "Exploded View" (FWD) or RAX-16, "Exploded View" (AWD).**

**Wear thickness : Refer to BR-88, "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.

**Wear thickness : Refer to BR-88, "Rear Disc Brake".**




ADJUSTMENT

**CAUTION:**

- **Burnish contact surfaces between brake pads and disc rotor according to the following procedure after refinishing the disc rotor, replacing brake pads or if a soft pedal occurs at very low mileage.**
- **Be careful of vehicle speed. Brakes do not operate firmly/securely until pads and disc rotor are securely seated.**
- **Only perform this procedure under safe road and traffic conditions. Use extreme caution.**

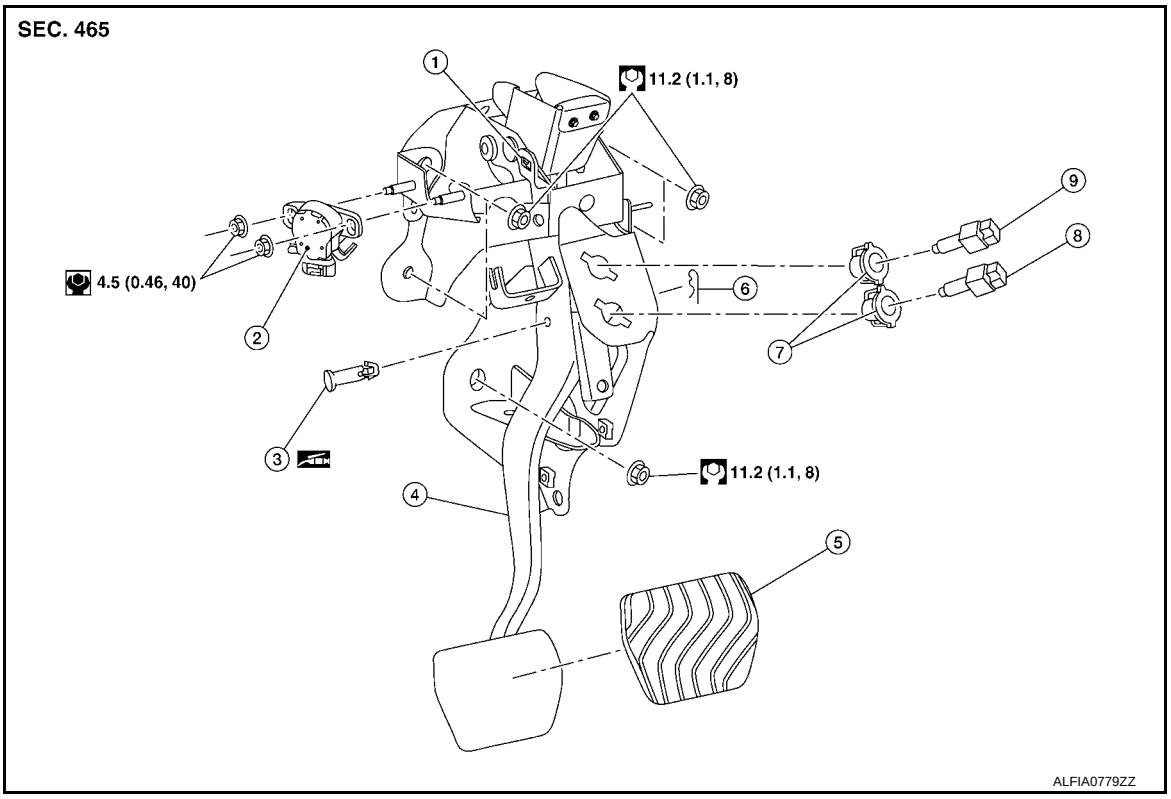
1. Drive the vehicle on straight, flat road.
2. Depress the brake pedal until the vehicle stops.
3. Release the brake pedal for a few minutes to allow the brake components to cool.
4. Repeat steps 1 to 3 until pad and disc rotor are securely seated.

# REMOVAL AND INSTALLATION

## BRAKE PEDAL

### Exploded View

INFOID:0000000014900143




1. Rivet
2. Brake stroke sensor
3. Clevis pin
4. Brake pedal
5. Brake pedal pad
6. Snap pin
7. Clip
8. Stop lamp switch
9. Brake pedal position switch

### Removal and Installation

INFOID:0000000014900144

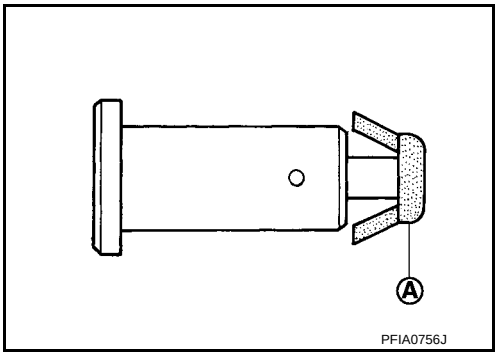
#### REMOVAL

1. Remove instrument lower panel LH. Refer to IP-22, "Removal and Installation".
2. Remove the knee protector. Refer to IP-14, "Exploded View".
3. Remove snap pin and clevis pin from clevis of brake booster.
4. Disconnect the harness connectors from the stop lamp switch, brake pedal position switch and brake stroke sensor.
5. Remove the accelerator pedal. Refer to ACC-3, "Removal and Installation".
6. Remove the brake pedal.
   **CAUTION:**
   **Support the brake booster and master cylinder to prevent contact with other components.**

#### INSPECTION AFTER REMOVAL

- Check the following items and replace the brake pedal assembly if necessary.
- Check the brake pedal rivet for deformation or damage.
- Check the brake pedal for bend, damage, and cracks on the welded parts.

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




## INSTALLATION

Installation is in the reverse order of removal.

**CAUTION:**

**Replace the brake pedal if it has been dropped or sustained an impact.**

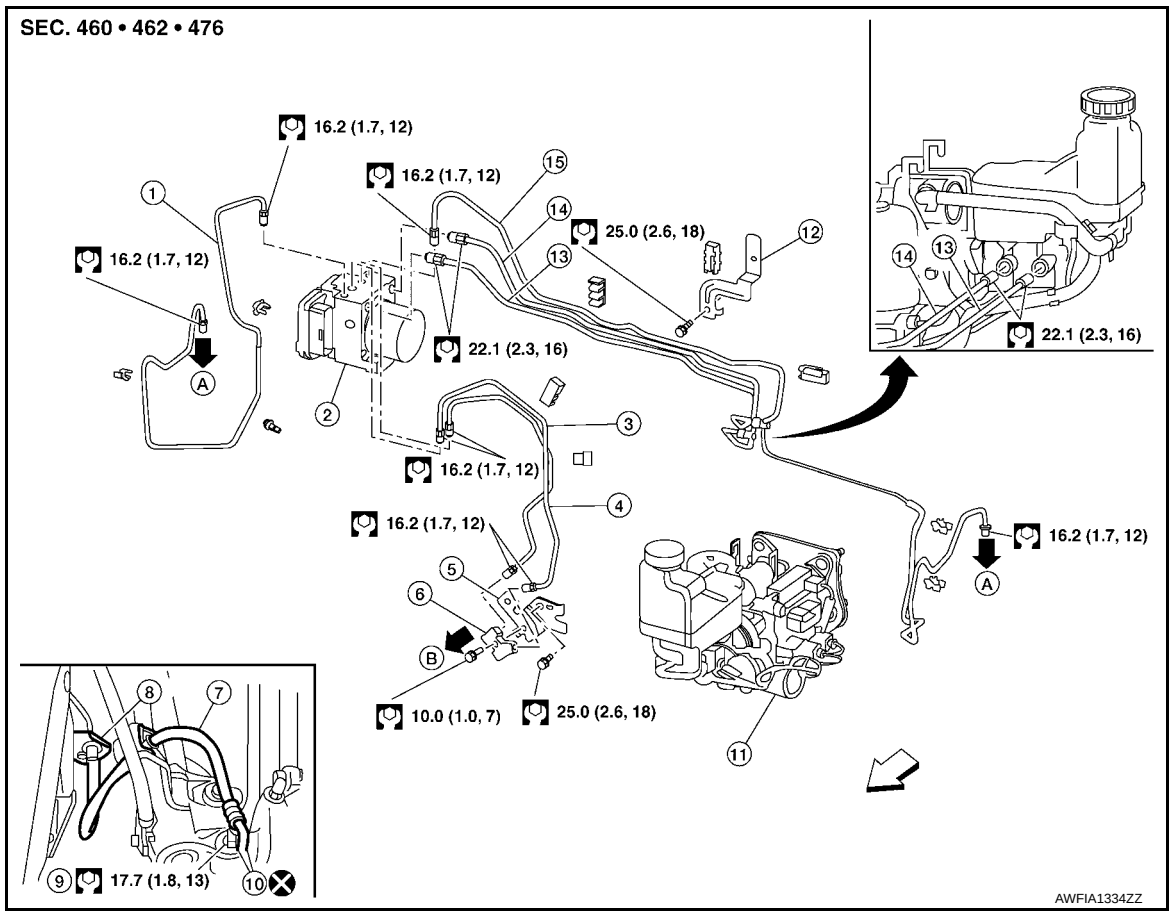
- Check that the brake pedal height and brake pedal play meet the specifications by checking the brake pedal and hydraulic brake booster unit for damage and replace parts as necessary. Refer to BR-87, "Brake Pedal".
- Perform the Accelerator Pedal Released Position Learning procedure. Refer to EC-159, "Work Procedure".

# BRAKE PIPING

## FRONT

### FRONT : Exploded View

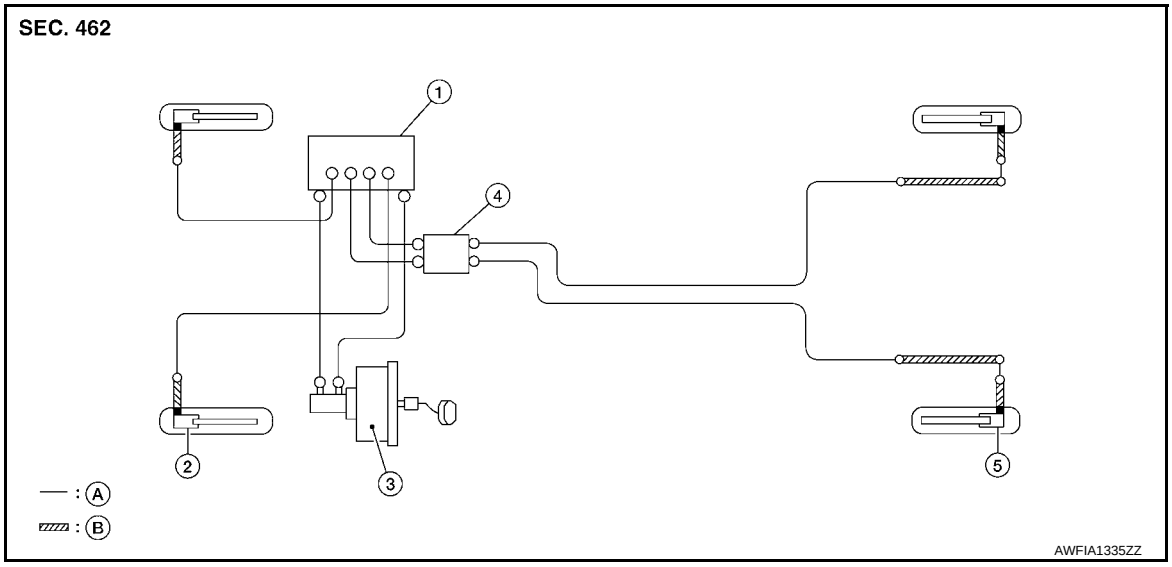
INFOID:0000000014900145




| | | | | | |
|---|---|---|---|---|---|
| 1. | Brake tube (RH) | 2. | ABS actuator and electric unit (control unit) | 3. | ABS actuator to connector brake tube (RH) |
| 4. | ABS actuator to connector brake tube (LH) | 5. | Connector bracket | 6. | Connector |
| 7. | Front brake hose | 8. | Lock plate | 9. | Union bolt |
| 10. | Copper sealing washers | 11. | Hydraulic brake booster unit | 12. | Brake tube bracket |
| 13. | Master cylinder secondary to ABS actuator brake tube | 14. | Master cylinder primary to ABS actuator brake tube | 15. | Brake tube (LH) |
| A. | To front brake hose | B. | To rear brake tube | ⇦ | Front |

## FRONT : Hydraulic Piping

INFOID:0000000014900146




1. ABS actuator and electric unit (control unit)
2. Front disc brake
3. Hydraulic brake booster unit
4. Connector
5. Rear disc brake
A. Brake tube
B. Brake hose

◯: Flare nut

■: Union bolt

## FRONT : Removal and Installation

INFOID:0000000014900147

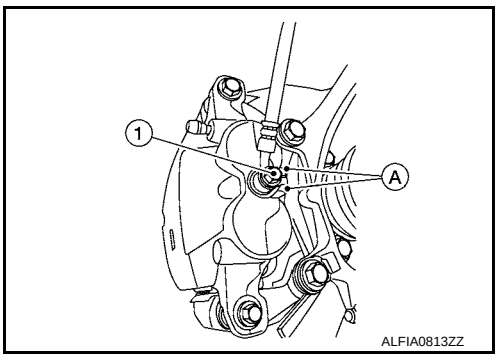
**CAUTION:**
- **All hoses and piping (tubes) must be free from excessive bending, twisting and pulling.**
- **Make sure there is no interference with other parts when turning steering both clockwise and counterclockwise.**
- **Do not spill or splash brake fluid on painted surfaces. Brake fluid may seriously damage paint. Wipe it off immediately and wash with water if it gets on a painted surface.**
- **Do not allow foreign matter (e.g. dust) and oils other than brake fluid to enter the reservoir tank.**

**NOTE:**
When removing components such as hoses, tubes/lines, etc., cap or plug openings to prevent fluid from spilling.

### REMOVAL

1. Remove reservoir cap from the reservoir tank.
2. Remove wheels and tires using power tool.
3. Loosen the flare nut with a flare nut wrench and separate the brake tube from the hose.
   **CAUTION:**
   - **Do not scratch the flare nut and the brake pipe.**
   - **All brake hoses and pipes must be free from excessive bending, twisting and pulling.**

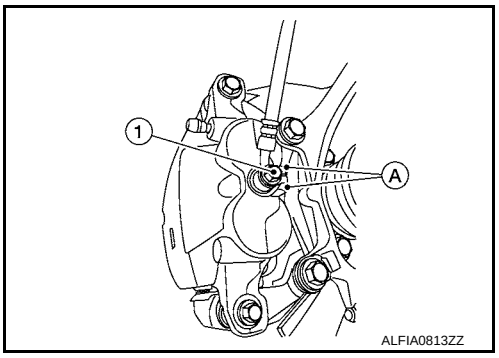
4. Remove the union bolt (1) and the brake hose from the brake caliper. Remove and discard the copper sealing washers.
**CAUTION:**
**Do not reuse copper sealing washers.**
5. Remove the lock plate and remove the brake hose.




## INSTALLATION

**CAUTION:**
**Do not allow foreign matter (e.g. dust) and oils other than brake fluid to enter the reservoir tank.**

1. Assemble the union bolt (1) and the copper sealing washers to the brake hose and install it as an assembly to the brake caliper. Align the brake hose pin to the projection (A) by aligning it with the brake caliper hole, and tighten the union bolt (1) to the specified torque.
**CAUTION:**
**Do not reuse copper sealing washers.**

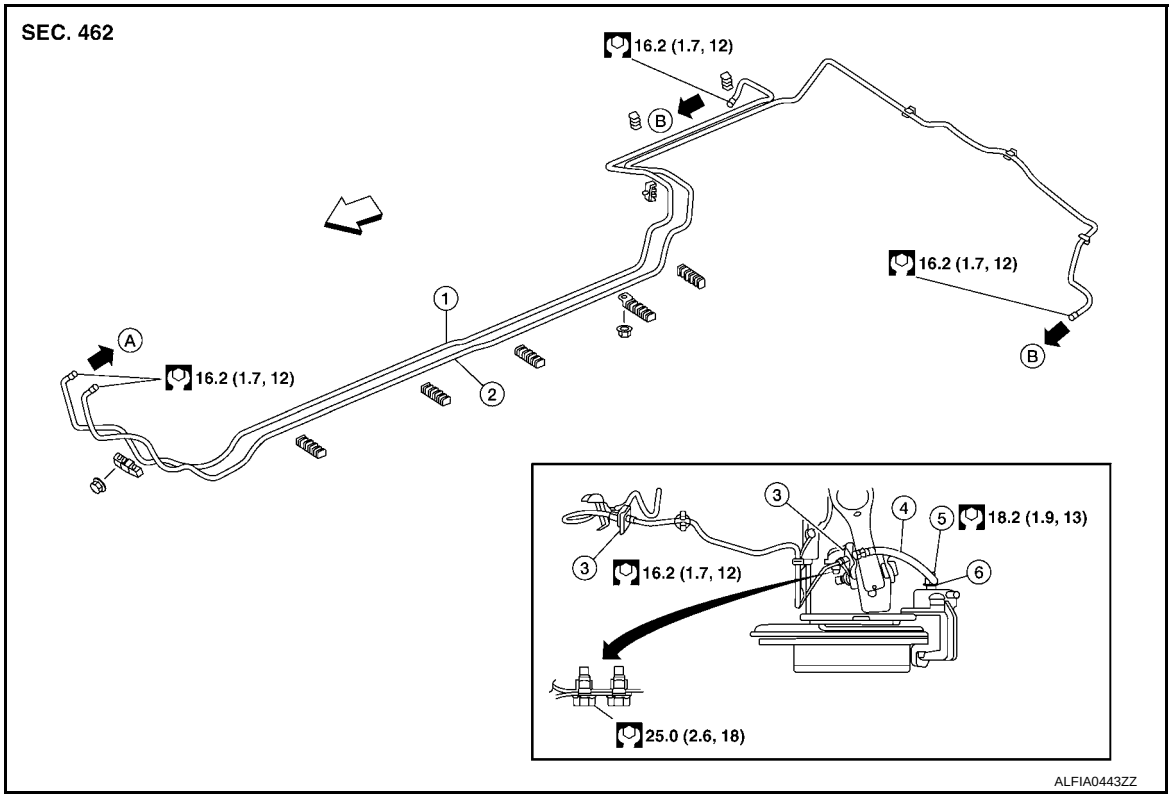



2. Install the brake pipe to the brake hose, temporarily tighten the flare nut by hand until it does not rotate further, and attach the brake hose to the bracket with the lock plate.
**CAUTION:**
**Check that the brake hoses and pipes are not bent or twisted.**
3. Tighten the flare nut to the specified torque with a flare nut crowfoot and a torque wrench.
**CAUTION:**
**Do not scratch the flare nut and the brake pipe.**
4. Refill with new brake fluid and perform the air bleeding. Refer to BR-52, "Bleeding Brake System".
**CAUTION:**
**Do not reuse drained brake fluid.**
5. Install the wheels and tires. Refer to WT-67, "Removal and Installation".
6. Perform inspection after installation. Refer to BR-51, "Inspection".

## REAR

## REAR : Exploded View

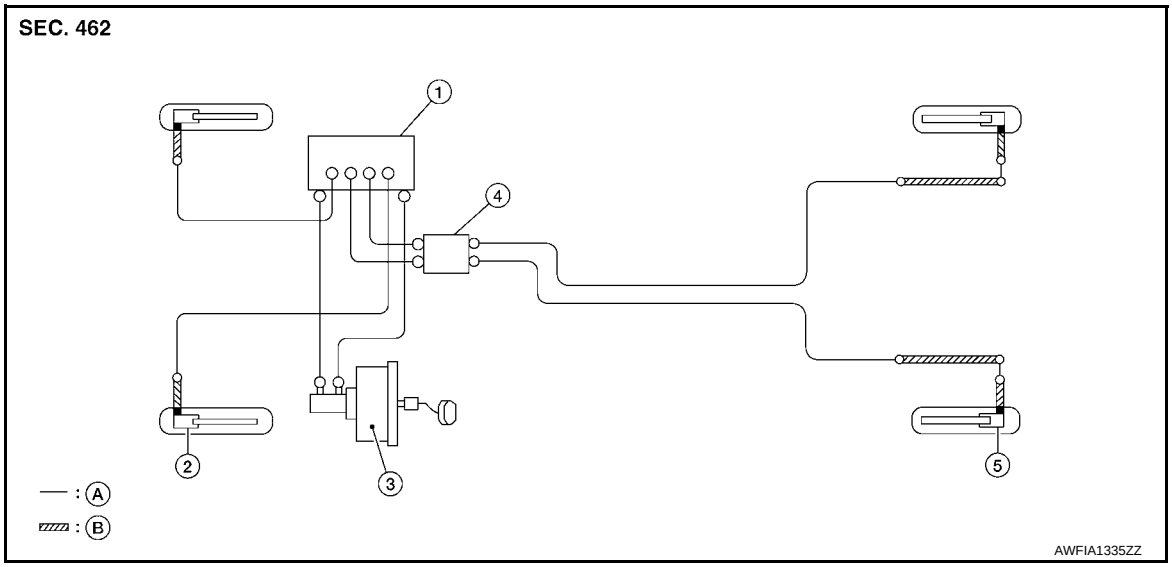
INFOID:0000000014900148




1. Rear brake pipe assembly (RH)
2. Rear brake pipe assembly (LH)
3. Lock plate
4. Rear brake hose
5. Union bolt
6. Copper sealing washers
- A. To brake pipe connector
- B. To rear brake hose
- ⇦ Front

## REAR : Hydraulic Piping

INFOID:0000000014900149




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

◯: Flare nut

■: Union bolt

## REAR : Removal and Installation

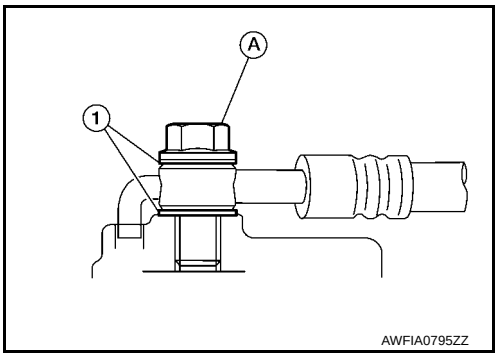
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**CAUTION:**
- **All hoses and piping (tubes) must be free from excessive bending, twisting and pulling.**
- **The brake piping is an important safety part. If a brake fluid leak is detected, always disassemble the parts. Replace applicable part with a new one, if necessary.**
- **Do not 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.**
- **Do not allow foreign matter (e.g. dust) and oils other than brake fluid to enter the reservoir tank.**

**NOTE:**
When removing components such as hoses, tubes/lines, etc., cap or plug openings to prevent fluid from spilling.

### REMOVAL

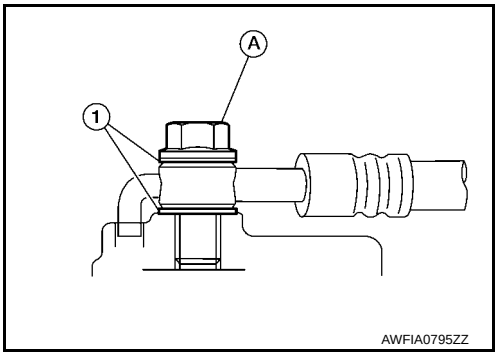
1. Remove reservoir cap from the reservoir tank.
2. Remove wheels and tires using power tool.
3. Loosen the flare nut with a flare nut wrench and separate the brake tube from the hose.
   **CAUTION:**
   - **Do not scratch the flare nut and the brake pipe.**
   - **All brake hoses and pipes must be free from excessive bending, twisting and pulling.**
4. Remove the union bolt (A) and the brake hose from the brake caliper. Remove and discard the copper sealing washers (1).
   **CAUTION:**
   **Do not reuse copper sealing washers.**
5. Remove the lock plate and remove the brake hose.




### INSTALLATION

**CAUTION:**
**Do not allow foreign matter (e.g. dust) and oils other than brake fluid to enter the reservoir tank.**

1. Assemble the union bolt (A) and the copper sealing washers (1) to the brake hose and install it as an assembly to the brake caliper. Align the brake hose L-pin by aligning it with the brake caliper hole, and tighten the union bolt (A) to the specified torque.
   **CAUTION:**
   **Do not reuse copper sealing washers.**




2. Install the brake pipe to the brake hose, temporarily tighten the flare nut by hand until it does not rotate further, and attach the brake hose to the bracket with the lock plate.
   **CAUTION:**
   **Check that the brake hoses and pipes are not bent or twisted.**
3. Tighten the flare nut to the specified torque with a flare nut crowfoot and a torque wrench.
   **CAUTION:**
   **Do not scratch the flare nut and the brake pipe.**
4. Refill with new brake fluid and perform the air bleeding. Refer to BR-52, "Bleeding Brake System".

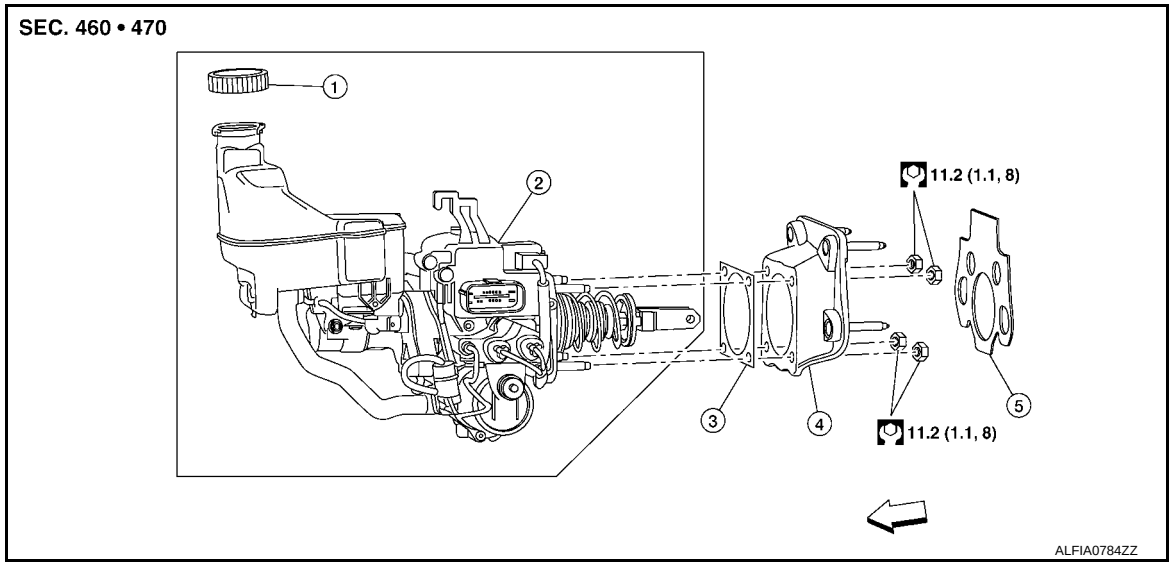
**CAUTION:**
**Do not reuse drained brake fluid.**

5. Install the wheels and tires. Refer to WT-67, "Removal and Installation".
6. Perform inspection after installation. Refer to BR-51, "Inspection".

# HYDRAULIC BRAKE BOOSTER UNIT

## Exploded View

INFOID:0000000014900154




1. Reservoir cap
2. Hydraulic brake booster unit
3. Gasket
4. Spacer
5. Gasket

⇦ Front

## Removal and Installation

INFOID:0000000014900155

**CAUTION:**

- **Do not 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.**
- **Do not allow foreign matter (e.g. dust) and oils or other then brake fluid to enter the reservoir tank.**

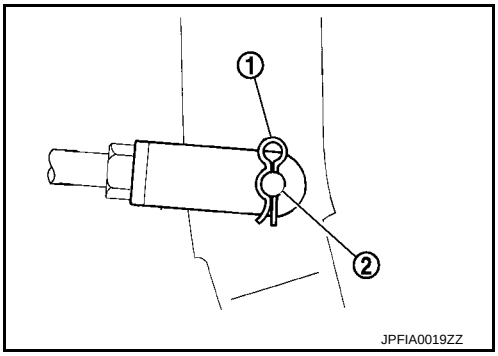
**NOTE:**

When removing components such as hoses, tubes/lines, ect., cap or plug openings to prevent fluid from spilling.

### REMOVAL

1. Disconnect the negative battery terminal. Refer to PG-128, "Battery Disconnect".
2. Operate the brake pedal until the pedal becomes heavy.
   **CAUTION:**
   **Always perform this step before removing the hydraulic brake booster unit.**
3. Remove air cleaner assembly. Refer to EM-29, "Removal and Installation".
4. Remove air duct and resonator. Refer to EM-29, "Exploded View".
5. Disconnect the harness connector from the brake fluid level switch.
6. Disconnect the harness connectors from the hydraulic brake booster unit.
7. Separate the brake tubes from the hydraulic brake booster unit with a flare nut wrench.
   **CAUTION:**
   **Do not scratch the flare nut or the brake pipe.**
8. Remove the instrument lower panel LH. Refer to IP-22, "Removal and Installation".
9. Remove the knee protector. Refer to IP-14, "Exploded View".

10. Remove the snap pin (1) and clevis pin (2) from the brake pedal.




11. Remove the nuts on the hydraulic brake booster unit and brake pedal. Refer to BR-57, "Exploded View".
    **CAUTION:**
    **Support the hydraulic brake booster unit to avoid damage to components.**
12. Remove the hydraulic brake booster unit.
    **CAUTION:**
    - **Do not deform or bend the brake pipes.**
    - **Do not hold hydraulic brake booster unit by high pressure tube, pump body, motor, reservoir, input rod and pressure sensor.**
    - **Always use a cushion or equivalent to place the hydraulic booster assembly. Failure to do this may cause uneven loads or impact that may result in malfunction.**
    - **Always hold the head of the brake master cylinder body and spacer when removing the hydraulic brake booster unit.**
13. After replacing hydraulic brake booster unit, always follow the accumulator disposal procedure to discard the hydraulic booster unit. Refer to BR-67, "Disposal".

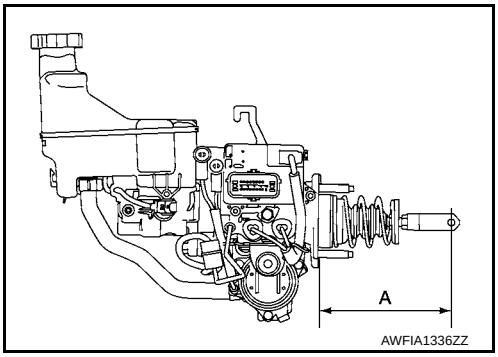
## INSTALLATION

Installation is in the reverse order of removal.

**CAUTION:**

- **Be careful not to damage hydraulic brake booster unit stud threads.**
- **Do not use a shocked or dropped hydraulic brake booster unit. Slight impulse during installation work is acceptable.**
- **Install a new gasket between the hydraulic brake booster unit and dash panel.**
- **Always hold the head of the brake master cylinder body and spacer when removing the hydraulic brake booster unit.**
- Before installation check that length (A) of the input rod is the specified length. Replace hydraulic brake booster unit if input rod length is out of specification.

**(A) : Refer to BR-88, "Brake Booster".**




- Bleed the brake system. Refer to BR-52, "Bleeding Brake System".
- Inspect the hydraulic brake booster unit. Refer to BR-25, "Inspection".
- Adjust the brake pedal. Refer to BR-49, "Adjustment".
- Perform stroke sensor 0 point learning. Refer to BRC-82, "Description".

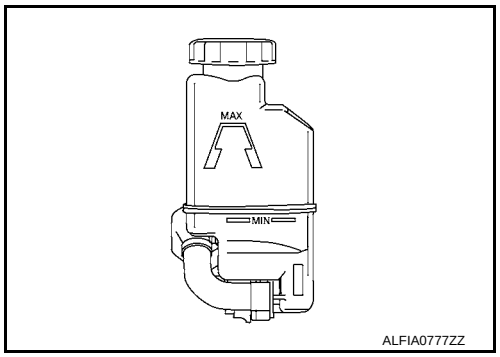
# Inspection After Installation

INFOID:0000000015188694

## FUNCTION CHECK

1. Turn the ignition switch OFF with the driver side door opened.
2. Wait at least 3 minutes.
   **CAUTION:**
   **While waiting, do not operate the vehicle such as locking, opening, and closing doors.**

3. Check that the accessory power is OFF and fully depress the brake pedal 20 times or more.
4. Check and adjust brake fluid level to the maximum level.
   **CAUTION:**
   **Make sure to fill the brake fluid to upper line of MAX level.**




5. Check that shift position is in P and release the parking brake.
6. Turn the ignition switch ON and check the time from pump motor activation to its automatic deactivation.

   **Time to automatic deactivation : 11 seconds or less**

7. After the pump motor is deactivated, depress the brake pedal and turn the ignition switch ON (vehicle: ready state) to check that the brake warning lamp and the brake system warning lamp are OFF.
8. Turn the ignition switch OFF.
9. Turn the ignition switch ON and fully depress the brake pedal 2 or 3 times to check the time from pump motor activation to its automatic deactivation.

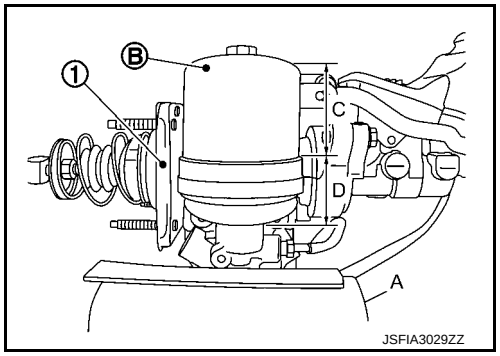
   **Time to automatic deactivation : 1 – 5 seconds**

10. With CONSULT, perform self-diagnosis of “brake” and erase the memory of self-diagnosis results.

## Disposal

INFOID:0000000014920251

1. Secure the hydraulic brake booster unit (1) in a vise (A).
   **CAUTION:**
   - **When securing hydraulic brake booster unit in a vice, always use copper or aluminum plates between vise and hydraulic brake booster unit.**
   - **Do not over tighten the vise.**
2. With a drill bit [3 mm (0.12 in)], slowly drill a hole within the range (C) on the side of accumulator (B) and gradually release gas.




   **Range C : 45 mm (1.77 in)**
   **Dimension D : 40 mm (1.57 in)**

   **WARNING:**
   - **Wear eye protection (safety glasses).**
   - **Wear gloves.**

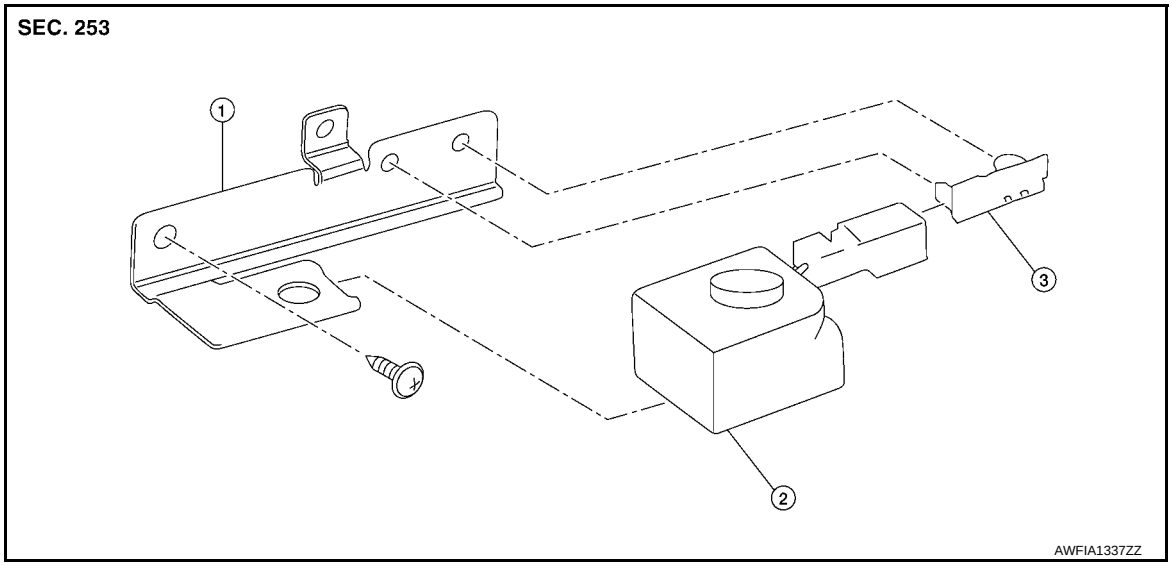
   **CAUTION:**
   - **Use a drill with its tip conically-shaped.**
   - **Perform the procedure slowly.**
   - **Cover with cloth to avoid spatter.**

   **NOTE:**
   The gas is clear colorless, odorless, and harmless.

# WARNING BUZZER

## Exploded View

INFOID:0000000014920249



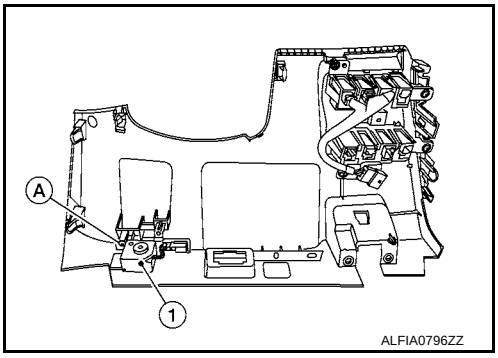

1. Bracket
2. Warning buzzer
3. Clip

## Removal and Installation

INFOID:0000000014920250

### REMOVAL

1. Remove instrument lower panel LH. Refer to IP-22, "Removal and Installation".
2. Remove screw (A), and remove warning buzzer assembly (1)




3. Remove bracket and clip from warning buzzer (if necessary).

### INSTALLATION

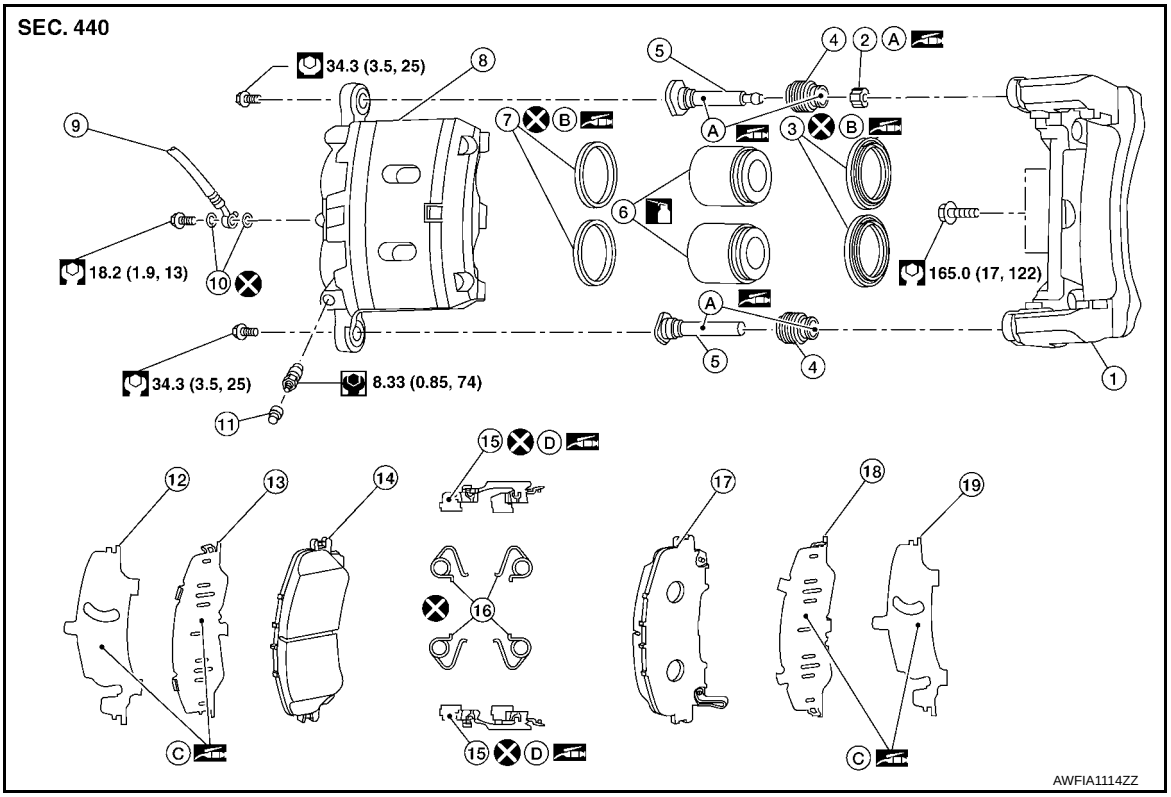
Install in the reverse order of removal.

# FRONT DISC BRAKE

## BRAKE PAD

### BRAKE PAD : Exploded View

INFOID:0000000014900162




| | | |
|---|---|---|
| 1. Torque member | 2. Bushing | 3. Piston boot |
| 4. Slide pin boot | 5. Slide pin | 6. Piston |
| 7. Piston seal | 8. Brake caliper body | 9. Bleeder cap |
| 10. Brake hose | 11. Copper sealing washers | 12. Inner shim cover |
| 13. Inner shim | 14. Inner pad | 15. Pad retainer |
| 16. Anti-rattle clip | 17. Outer pad | 18. Outer shim |
| 19. Outer shim cover | A. Niglube Rx-2 | B. Rubber grease |
| C. Molykote® AS-880N | D. Molykote® 7439 | |

: Apply brake fluid.

### BRAKE PAD : Removal and Installation

INFOID:0000000014900163

#### REMOVAL

**WARNING:**

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

**CAUTION:**

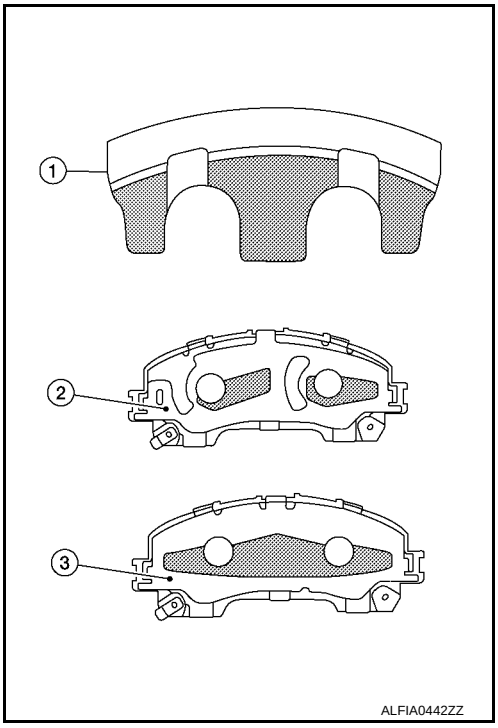
- **Do not depress the brake pedal while removing the brake pads because the pistons may pop out.**
- **It is not necessary to remove bolts on torque member and brake hose except for disassembly or replacement of brake caliper. For brake pad removal, hang brake caliper with a wire so as not to stretch brake hose.**
- **If brake fluid or grease adheres to the brake caliper or disc brake rotor, quickly wipe it off.**
- **Do not reuse drained brake fluid.**

1. Observe brake fluid level in reservoir tank. Partially drain brake fluid if necessary. Refer to BR-51, "Drain and Refill".

2. Remove the front wheels and tires using power tool.
3. Remove slide pin bolts.
4. Remove the brake caliper from the torque member. Leaving brake hose attached, reposition the brake caliper aside with wire.
5. Remove the brake pads, shims, shim covers, pad retainers, and anti-rattle clips from the torque member.
   **CAUTION:**
   - **Do not reuse the pad retainers and anti-rattle clips.**
   - **Do not damage the piston boot.**
   - **Do not drop the brake pads, shims, or the shim covers.**
   - **Note the position of components during removal to aid with installation.**
6. Compress the front caliper pistons.

## INSTALLATION

1. Install the new pad retainers and anti-rattle clips to the torque member.
   **CAUTION:**
   - **Do not reuse the pad retainers and anti-rattle clips.**
   - **Do not deform the pad retainers.**
   - **Verify that the pad retainers are secured properly to the torque member.**
2. Apply Molykote® 7439 to pad retainers. Refer to BR-69, "BRAKE PAD : Exploded View".
3. Apply Molykote® AS-880N grease to the mating faces between the brake caliper body (1), inner shim (2) and outer shim (3), and install them to the brake pad. Refer to BR-69, "BRAKE PAD : Exploded View".
   **CAUTION:**
   **When installing new brake pads, replace the shims and shim covers.**




4. Install the brake pads to the torque member.
5. Using a suitable tool, press the pistons into the brake caliper.
   **CAUTION:**
   **Do not damage the piston boot.**
6. Install the brake caliper to the torque member.
7. Install the slide pin bolts and tighten to specification. Refer to BR-69, "BRAKE PAD : Exploded View".
8. Depress the brake pedal several times and verify that drag does not exist.
9. Install the front wheels and tires. Refer to WT-67, "Removal and Installation".
10. Check brake fluid level and refill as necessary. Refer to BR-51, "Inspection".

## INSPECTION AFTER INSTALLATION

1. Check the drag of front disc brake. If any drag is found, follow the procedure described below.
2. Remove brake pads.
3. Using a suitable tool, press the pistons into the brake caliper body.

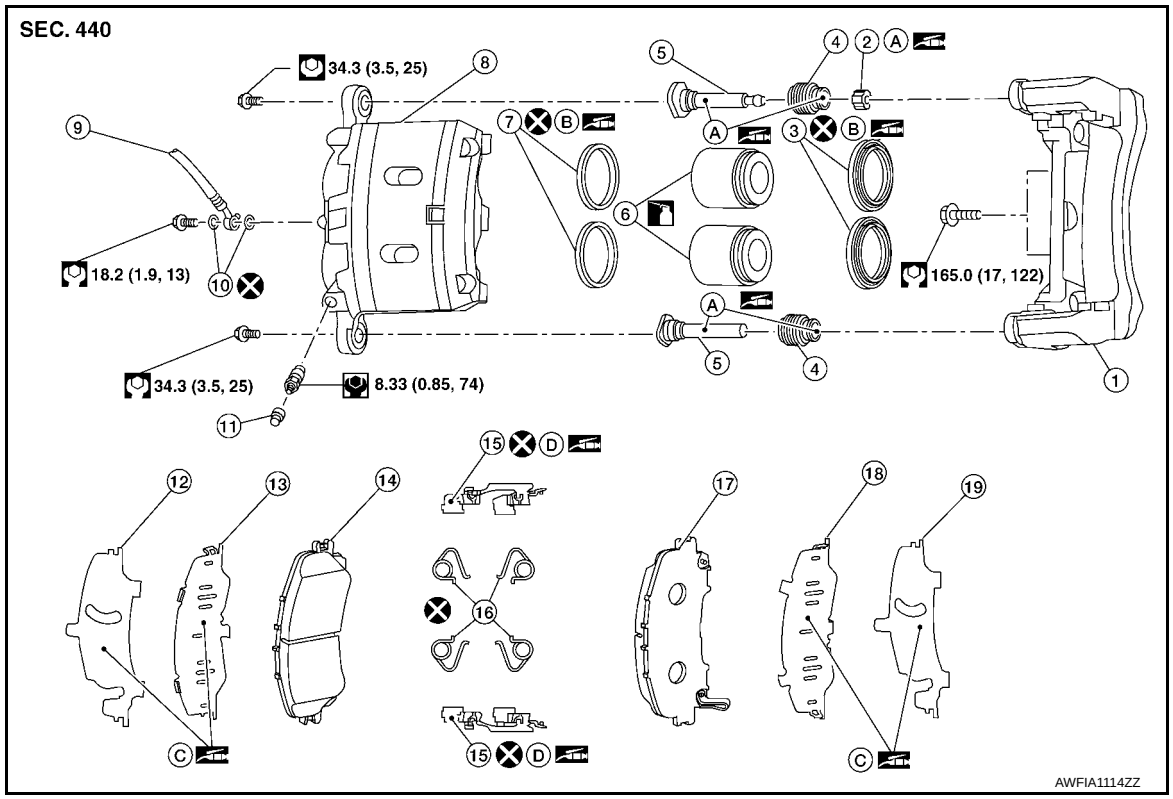
**CAUTION:**
**Do not damage the piston boots.**

4. Install brake pads.
5. Depress the brake pedal several times.
6. Check the drag of front disc brake again. If any drag is found, disassemble the brake caliper body.
7. Burnish contact surfaces after refinishing or replacing disc brake rotors or if a soft pedal occurs at very low mileage. Refer to BR-53, "BRAKE PAD : Inspection and Adjustment".

## BRAKE CALIPER ASSEMBLY

### BRAKE CALIPER ASSEMBLY : Exploded View

INFOID:0000000014900164




| | | |
|---|---|---|
| 1. Torque member | 2. Bushing | 3. Piston boot |
| 4. Slide pin boot | 5. Slide pin | 6. Piston |
| 7. Piston seal | 8. Brake caliper body | 9. Bleeder cap |
| 10. Brake hose | 11. Copper sealing washers | 12. Inner shim cover |
| 13. Inner shim | 14. Inner pad | 15. Pad retainer |
| 16. Anti-rattle clip | 17. Outer pad | 18. Outer shim |
| 19. Outer shim cover | A. Niglube Rx-2 | B. Rubber grease |
| C. Molykote® AS-880N | D. Molykote® 7439 | |

: Apply brake fluid.

### BRAKE CALIPER ASSEMBLY : Removal and Installation

INFOID:0000000014900165

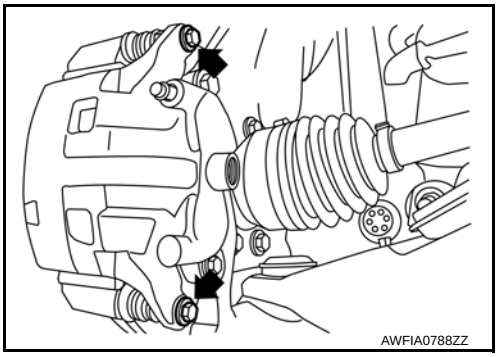
**WARNING:**
**Clean dust on brake caliper and brake pad with a vacuum dust collector to minimize the hazard of air-borne particles or other materials.**
**CAUTION:**
- **Do not depress the brake pedal.**
- **Do not spill or splash brake fluid on painted areas; it may cause paint damage. If brake fluid is splashed on painted areas, wash it away with water immediately.**

- **Do not bend, twist or pull the brake hoses and piping.**
- **Do not reuse drained brake fluid.**

**NOTE:**
When removing components such as hoses, tubes/lines, etc., cap or plug openings to prevent fluid from spilling.

## REMOVAL

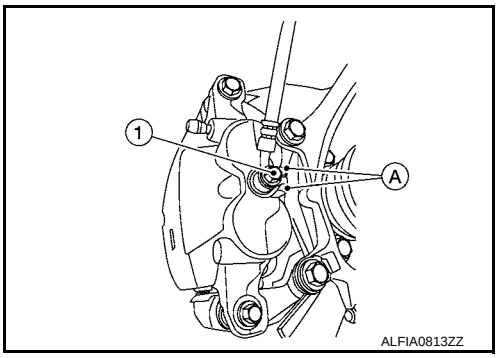
1. Remove reservoir cap from the reservoir tank.
2. Remove front wheels and tires using power tool.
3. Remove union bolt, copper sealing washers, and remove brake hose from brake caliper. Discard the copper sealing washers.
   **CAUTION:**
   **Do not reuse copper sealing washers.**
4. Remove slide pin bolts and the brake caliper.
   **CAUTION:**
   **Do not drop brake pads or caliper.**




5. Remove the brake pads from the torque member.
   **CAUTION:**
   - **Do not damage the piston boot.**
   - **Do not drop the brake pads, shims, or the shim covers.**
   - **Note the position of components during removal to aid with installation.**

## INSTALLATION

1. Install the brake pads in the torque member.
   **CAUTION:**
   - **Do not damage the piston boot.**
   - **Do not drop the brake pads, shims, or the shim covers.**
   - **Note the position of components during removal to aid with installation.**
2. Position the brake caliper to torque member and install the slide pin bolts. Tighten to specification.
3. Assemble the union bolt (1) and the copper washers to the brake hose and install it as an assembly to the brake caliper. Align the brake hose pin to the projection (A) by aligning it with the brake caliper hole, and tighten the union bolt (1) to the specified torque.
   **CAUTION:**
   **Do not reuse copper sealing washers.**




4. Refill with new brake fluid and perform the air bleeding. Refer to BR-52, "Bleeding Brake System".
   **CAUTION:**
   - **Do not reuse drained brake fluid.**
   - **Do not spill or splash brake fluid on the disc brake rotor.**
5. Install the front wheels and tires. Refer to WT-67, "Removal and Installation".

## INSPECTION AFTER INSTALLATION

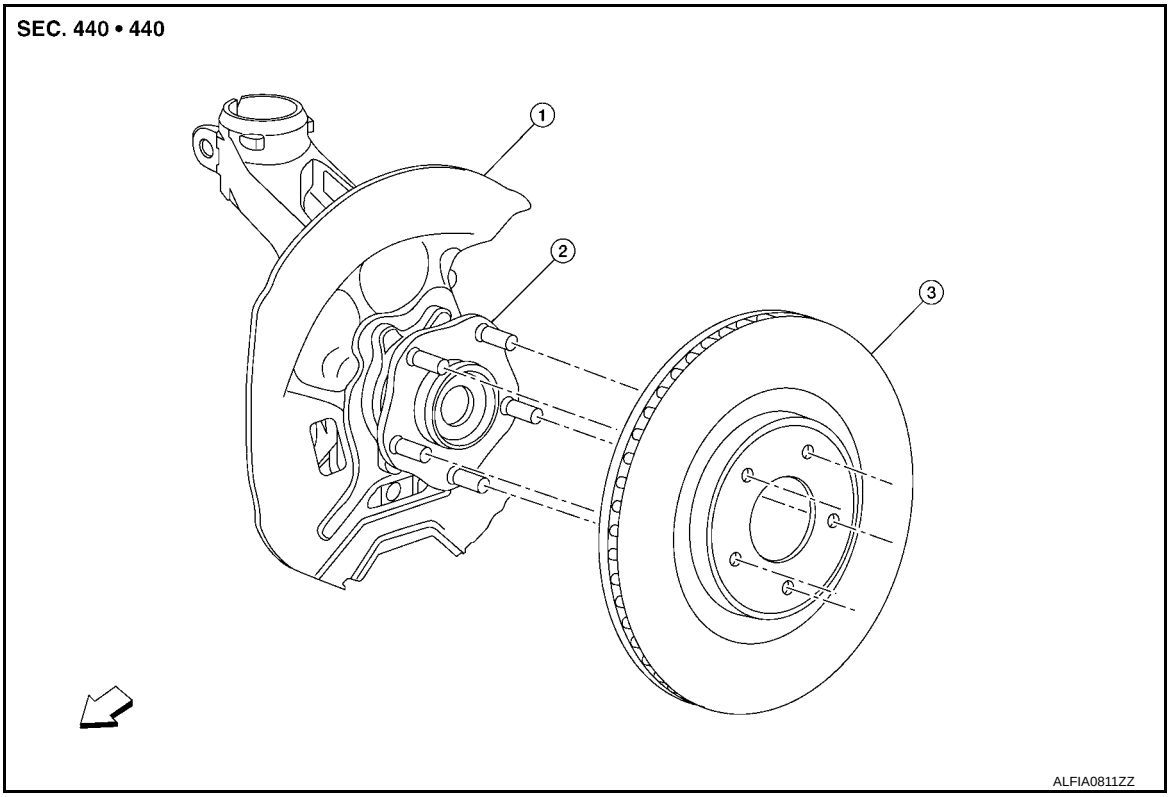
1. Check the drag of front disc brake. If any drag is found, follow the procedure described below.
2. Remove brake pads.

3. Using a suitable tool, press the pistons into the brake caliper body.
   **CAUTION:**
   **Do not damage the piston boots.**
4. Install brake pads.
5. Depress the brake pedal several times.
6. Check the drag of front disc brake again. If any drag is found, disassemble the brake caliper body.
7. Burnish contact surfaces after refinishing or replacing disc brake rotors or if a soft pedal occurs at very low mileage. Refer to BR-53, "DISC BRAKE ROTOR : Inspection and Adjustment".

## DISC BRAKE ROTOR

### DISC BRAKE ROTOR : Exploded View

INFOID:0000000015184898




1. Splash guard
2. Front wheel hub and bearing
3. Front disc brake rotor

⇦ Front

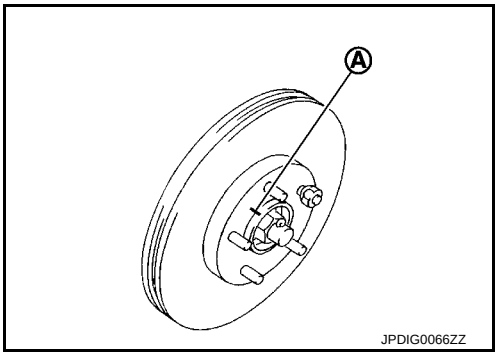
### DISC BRAKE ROTOR : Removal and Installation

INFOID:0000000015184899

#### REMOVAL

1. Remove front wheels and tires using a power tool. Refer toWT-67, "Removal and Installation".
2. Remove front brake caliper torque member bolts. Leaving brake hose attached, reposition brake caliper aside with wire. Refer to BR-73, "DISC BRAKE ROTOR : Exploded View".

3. Place alignment marks (A) on front disc brake rotor and wheel hub and bearing, then remove front disc brake rotor.
   **CAUTION:**
   **Do not drop the disc brake rotor.**




## INSTALLATION

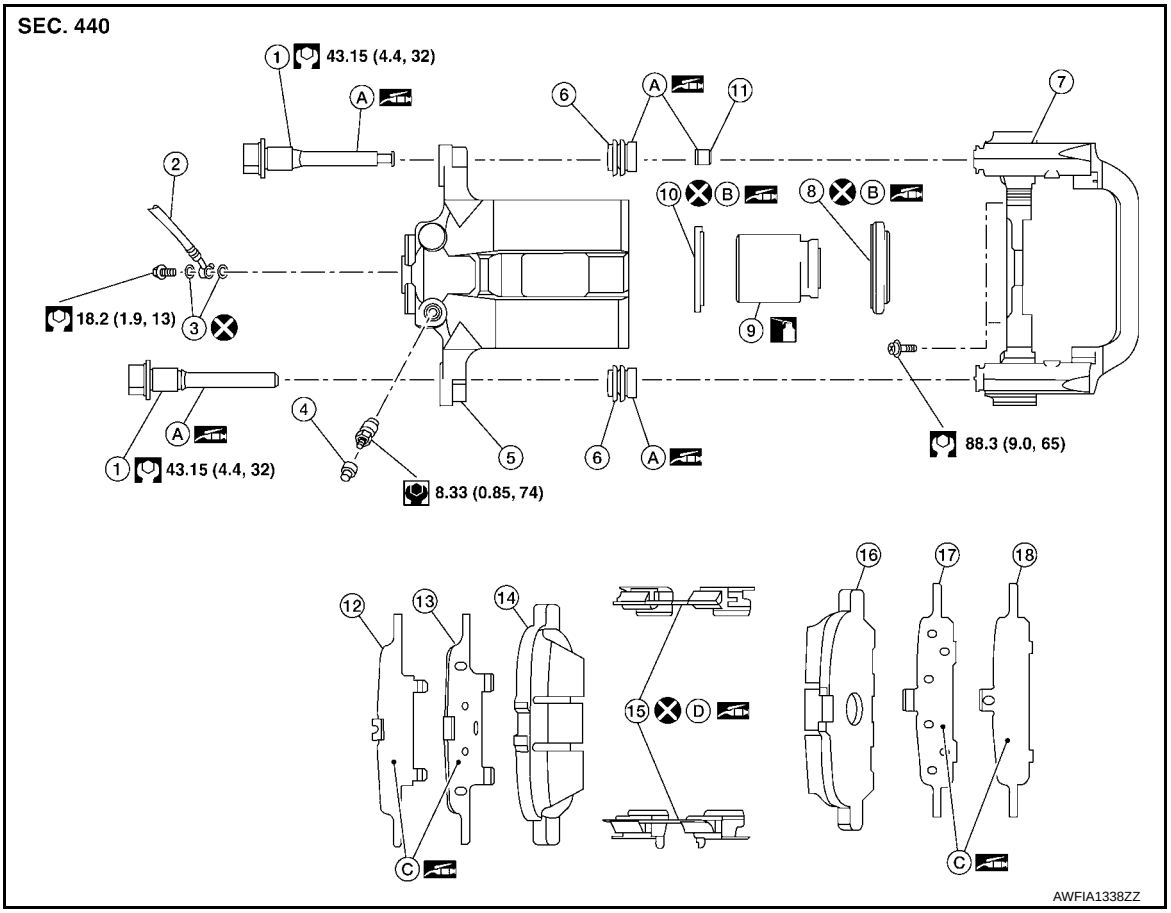
Installation is in the reverse order of removal.

# REAR DISC BRAKE

## BRAKE PAD

### BRAKE PAD : Exploded View

INFOID:0000000014900166




| | | |
|---|---|---|
| 1. Slide pin bolt | 2. Slide pin bushing | 3. Copper sealing washers |
| 4. Bleeder cap | 5. Brake caliper body | 6. Slide pin boot |
| 7. Torque member | 8. Piston boot | 9. Piston |
| 10. Piston seal | 11. Bushing | 12. Inner shim cover |
| 13. Inner shim | 14. Inner pad | 15. Pad retainer |
| 16. Outer pad | 17. Outer shim | 18. Outer shim cover |
| A. Niglube Rx-2 | B. Rubber grease | C. Molykote® AS-880N |
| D. Molykote® 7439 | : Apply brake fluid. | |

### BRAKE PAD : Removal and Installation

INFOID:0000000014900167

#### REMOVAL

**WARNING:**

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

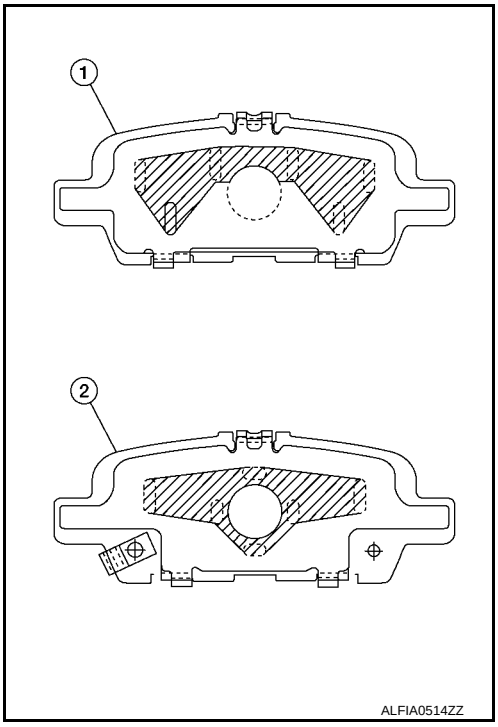
**CAUTION:**

- **Do not depress the brake pedal while removing the brake pads because the pistons may pop out.**
- **It is not necessary to remove bolts on torque member and brake hose except for disassembly or replacement of brake caliper. For brake pad removal, hang brake caliper with a wire so as not to stretch brake hose.**
- **If brake fluid or grease adheres to the brake caliper or disc brake rotor, quickly wipe it off.**
- **Do not reuse drained brake fluid.**

1. Observe brake fluid level reservoir tank. Partially drain brake fluid if necessary. Refer to BR-51, "Drain and Refill".
2. Remove the rear wheels and tires using power tool.
3. Loosen the upper slide pin bolt and remove the lower slide pin bolt.
4. Remove the upper slide pin bolt. Leave brake hose attached. Position brake caliper aside using wire.
5. Remove the brake pads, shims, shim covers, pad retainers, and anti-rattle clips from the torque member.
   **CAUTION:**
   - **Do not reuse the pad retainers and anti-rattle clips.**
   - **Do not damage the piston boot.**
   - **Do not drop the brake pads, shims, or the shim covers.**
   - **Note the position of components during removal to aid with installation.**
6. Compress the rear caliper piston.

## INSTALLATION

1. Install the new pad retainers anti-rattle clips to the torque member.
   **CAUTION:**
   - **Do not reuse the pad retainers and anti-rattle clips.**
   - **Do not deform the pad retainers.**
   - **Verify that the pad retainers are secured properly to the torque member.**
2. Apply Molykote® 7439 to the pad retainers. Refer to BR-75, "BRAKE PAD : Exploded View".
3. Apply Molykote® AS-880N grease to the mating faces between the brake pads, inner shim (1) and outer shim (2). Install components to the brake pad. Refer to BR-75, "BRAKE PAD : Exploded View".
   **CAUTION:**
   **When installing new brake pads, replace the shims and shim covers.**




4. Install the brake pads to the torque member.
5. Using a suitable tool, press the pistons into the brake caliper.
   **CAUTION:**
   **Do not damage the piston boot.**
6. Using the upper slide pin bolt as a pivot, swing the brake caliper up to the torque member.
7. Install the lower slide pin bolts. Tighten all slide pin bolts to specification. Refer to BR-75, "BRAKE PAD : Exploded View".
8. Depress the brake pedal several times and verify that drag does not exist.
9. Install the front wheels and tires. Refer to WT-67, "Removal and Installation".
10. Check brake fluid level and refill as necessary. Refer to BR-51, "Inspection".

## INSPECTION AFTER INSTALLATION

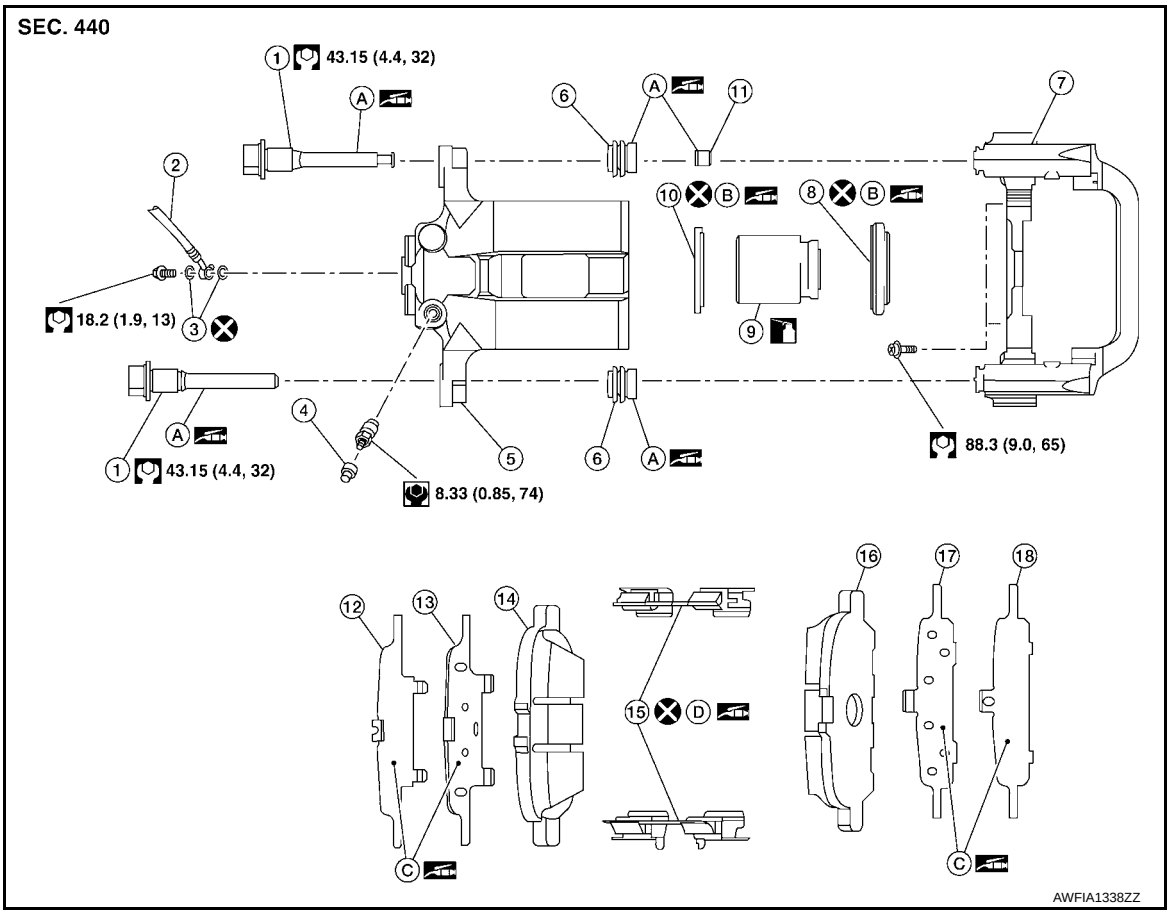
1. Check the drag of rear disc brake. If any drag is found, follow the procedure described below.

2. Remove brake pads.
3. Using a suitable tool, press the pistons into the brake caliper body.
   **CAUTION:**
   **Do not damage the piston boots.**
4. Install brake pads.
5. Depress the brake pedal several times.
6. Check the drag of rear disc brake again. If any drag is found, disassemble the brake caliper body.
7. Burnish contact surfaces after refinishing or replacing disc brake rotors or if a soft pedal occurs at very low mileage. Refer to BR-55, "BRAKE PAD : Inspection and Adjustment".

## BRAKE CALIPER ASSEMBLY

### BRAKE CALIPER ASSEMBLY : Exploded View

INFOID:0000000014900168




| | | |
|---|---|---|
| 1. Slide pin bolt | 2. Slide pin bushing | 3. Copper sealing washers |
| 4. Bleeder cap | 5. Brake caliper body | 6. Slide pin boot |
| 7. Torque member | 8. Piston boot | 9. Piston |
| 10. Piston seal | 11. Bushing | 12. Inner shim cover |
| 13. Inner shim | 14. Inner pad | 15. Pad retainer |
| 16. Outer pad | 17. Outer shim | 18. Outer shim cover |
| A. Niglube Rx-2 | B. Rubber grease | C. Molykote® AS-880N |
| D. Molykote® 7439 | : Apply brake fluid. | |

### BRAKE CALIPER ASSEMBLY : Removal and Installation

INFOID:0000000014900169

**WARNING:**

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

**CAUTION:**

- **Do not depress the brake pedal.**
- **Do not spill or splash brake fluid on painted areas; it may cause paint damage. If brake fluid is splashed on painted areas, wash it away with water immediately.**
- **Do not bend, twist or pull the brake hoses and piping.**
- **Do not reuse drained brake fluid.**

**NOTE:**

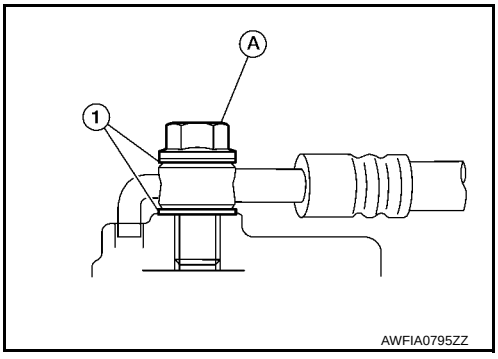
When removing components such as hoses, tubes/lines, etc., cap or plug openings to prevent fluid from spilling.

## REMOVAL

1. Remove reservoir cap from the reservoir tank.
2. Remove rear wheels and tires using power tool.
3. Remove union bolt, copper sealing washers, and disconnect brake hose from brake caliper. Discard the copper sealing washers.
   **CAUTION:**
   **Do not reuse copper sealing washers.**
4. Loosen the upper slide pin bolt and remove the lower slide pin bolt.
5. Remove the upper slide pin bolt and caliper from the vehicle as an assembly.
6. Remove the brake pads from the torque member.
   **CAUTION:**
   - **Do not damage the piston boot.**
   - **Do not drop the brake pads, shims, or the shim covers.**
   - **Note the position of components during removal to aid with installation.**

## INSTALLATION

1. Install the brake pads in the torque member.
   **CAUTION:**
   - **Do not damage the piston boot.**
   - **Do not drop the brake pads, shims, or the shim covers.**
   - **Note the position of components during removal to aid with installation.**
2. Install the brake caliper to torque member and install the slide pin bolts. Tighten to specification.
3. Install the brake caliper and torque member to the vehicle as an assembly. Install the torque member bolts.
4. Assemble the union bolt (A) and the copper sealing washers (1) to the brake hose and install it as an assembly to the brake caliper. Align the brake hose L-pin by aligning it with the brake caliper hole, and tighten the union bolt (A) to the specified torque.
   **CAUTION:**
   **Do not reuse copper sealing washers.**




5. Refill with new brake fluid and perform the air bleeding. Refer to BR-52, "Bleeding Brake System".
   **CAUTION:**
   - **Do not reuse drained brake fluid.**
   - **Do not spill or splash brake fluid on the disc brake rotor.**
6. Install the rear wheels and tires. Refer to WT-67, "Removal and Installation".

## INSPECTION AFTER INSTALLATION

1. Check the drag of rear disc brake. If any drag is found, follow the procedure described below.
2. Remove brake pads.
3. Using a suitable tool, press the pistons into the brake caliper body.

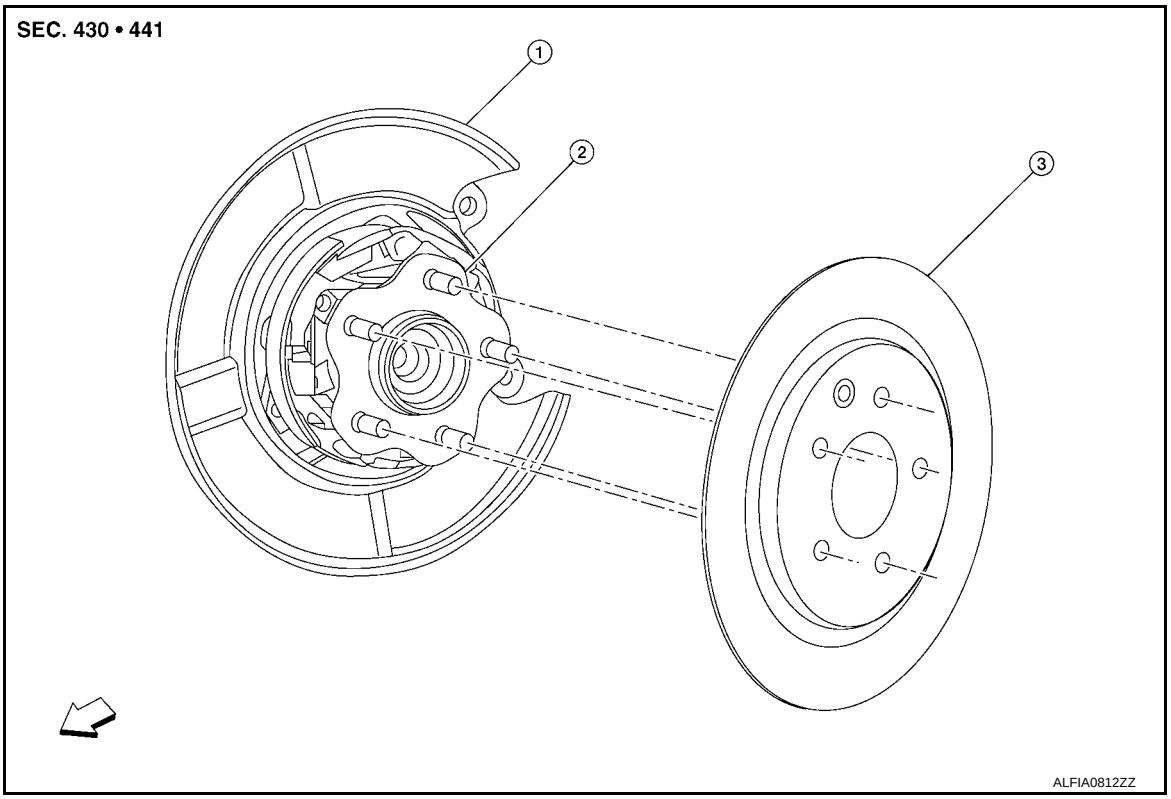
**CAUTION:**
**Do not damage the piston boots.**

4. Install brake pads.
5. Depress the brake pedal several times.
6. Check the drag of rear disc brake again. If any drag is found, disassemble the brake caliper body.
7. Burnish contact surfaces after refinishing or replacing disc brake rotors or if a soft pedal occurs at very low mileage. Refer to BR-55, "DISC BRAKE ROTOR : Inspection and Adjustment".

# DISC BRAKE ROTOR

## DISC BRAKE ROTOR : Exploded View

INFOID:0000000015186358




1. Splash guard
2. Rear wheel hub and bearing
3. Rear disc brake rotor

⇦ Front

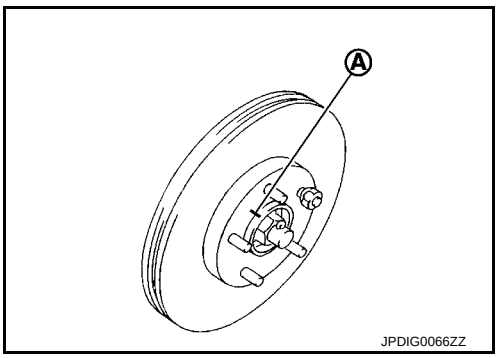
## DISC BRAKE ROTOR : Removal and Installation

INFOID:0000000015186359

### REMOVAL

1. Remove front wheels and tires using a power tool. Refer toWT-67, "Removal and Installation".
2. Remove rear brake caliper torque member bolts. Leaving brake hose attached, reposition brake caliper aside with wire. Refer to BR-77, "BRAKE CALIPER ASSEMBLY : Exploded View".

3. Place alignment marks (A) on rear disc brake rotor and wheel hub and bearing, then remove rear disc brake rotor.
   **CAUTION:**
   **Do not drop the disc brake rotor.**




## INSTALLATION

Installation is in the reverse order of removal.

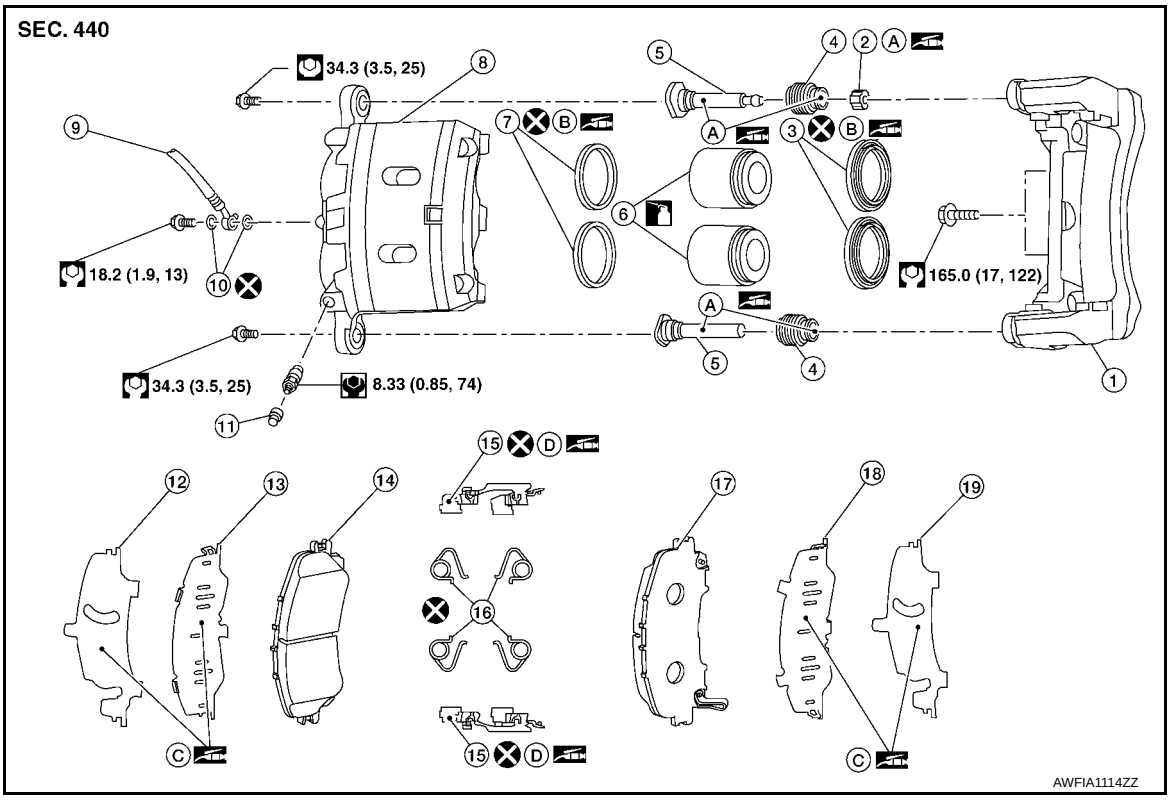
# UNIT DISASSEMBLY AND ASSEMBLY

## FRONT DISC BRAKE

### BRAKE CALIPER ASSEMBLY

#### BRAKE CALIPER ASSEMBLY : Exploded View

INFOID:0000000014900172




| | | |
|---|---|---|
| 1. Torque member | 2. Bushing | 3. Piston boot |
| 4. Slide pin boot | 5. Slide pin | 6. Piston |
| 7. Piston seal | 8. Brake caliper body | 9. Bleeder cap |
| 10. Brake hose | 11. Copper sealing washers | 12. Inner shim cover |
| 13. Inner shim | 14. Inner pad | 15. Pad retainer |
| 16. Anti-rattle clip | 17. Outer pad | 18. Outer shim |
| 19. Outer shim cover | A. Niglube Rx-2 | B. Rubber grease |
| C. Molykote® AS-880N | D. Molykote® 7439 | |

: Apply brake fluid.

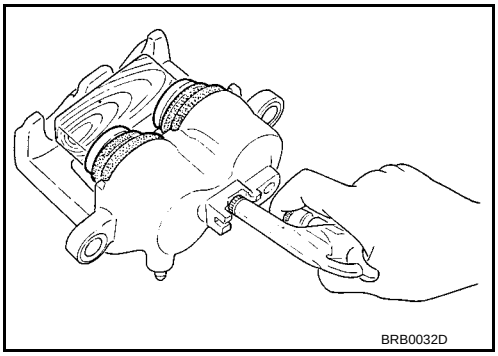
#### BRAKE CALIPER ASSEMBLY : Disassembly and Assembly

INFOID:0000000014900173

##### DISASSEMBLY

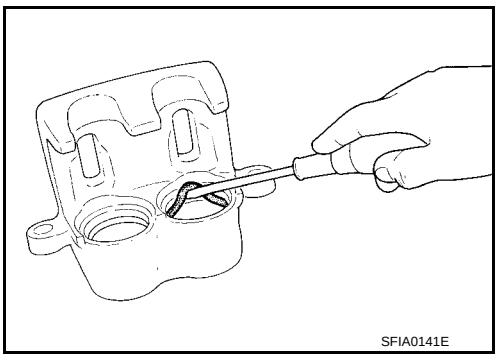
1. Remove the brake caliper from the vehicle. Refer to BR-71, "BRAKE CALIPER ASSEMBLY : Removal and Installation".

2. Place a wooden block in brake caliper body and blow air from union bolt hole to remove pistons and piston boots.




**WARNING:**
**Do not get fingers caught between pistons and brake caliper body.**
**CAUTION:**
**Do not reuse piston boots.**

3. Remove piston seals from brake caliper body using suitable tool.




**CAUTION:**
- **Do not damage cylinder inner wall.**
- **Do not reuse piston seals.**

4. Remove bleeder valve and cap.

## INSPECTION AFTER DISASSEMBLY

### Brake Caliper Body

Check the inner wall of the brake caliper body for rust, wear, cracks or damage. Replace the brake caliper if any abnormal condition is detected.

**CAUTION:**
**Always clean with new brake fluid. Do not clean with mineral oil such as gasoline and light oil.**

### Torque Member

Check the torque member for rust, wear, cracks or damage. Replace the brake caliper if any abnormal condition is detected.

### Piston

Check the surface of the piston for rust, wear, cracks or damage. Replace the brake caliper if any abnormal condition is detected.

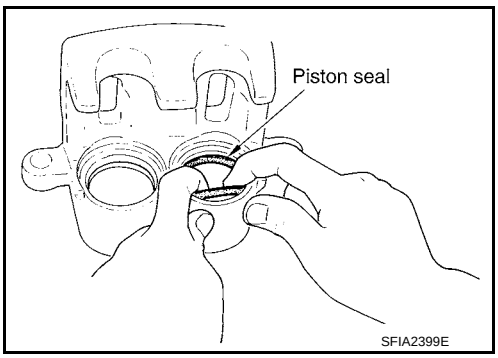
**CAUTION:**
**Piston sliding surface is plated. Do not polish with sandpaper.**

### Slide Pin and Slide Pin Boot

Check the slide pins and slide pin boots for rust, wear, cracks or damage. Replace the parts if any abnormal condition is detected.

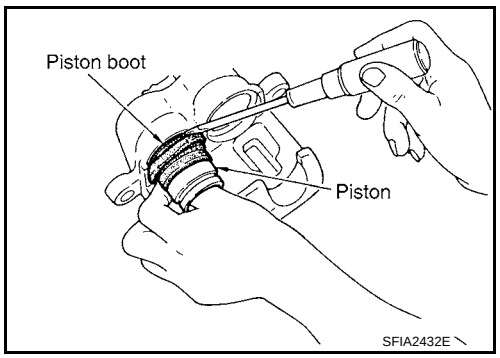
## ASSEMBLY

1. Install bleeder valve and cap.
2. Apply rubber grease to each piston seal, and install them to the brake caliper body.

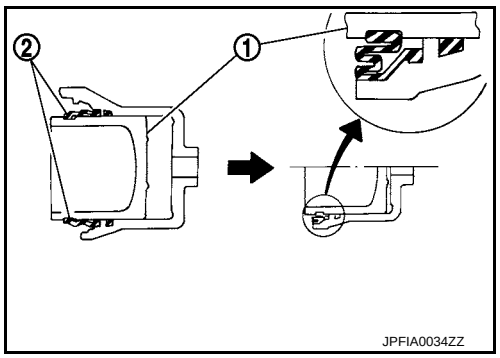



**CAUTION:**
**Do not reuse piston seal.**

3. Apply rubber grease to the piston boots. Cover each piston end with a piston boot, and then install cylinder side lip on piston boot securely into a groove on brake caliper body.
**CAUTION:**
**Do not reuse piston boots.**




4. Apply brake fluid to each piston (1). Push each piston into cylinder body by hand and push piston boot (2) piston-side lip into the piston groove.
**CAUTION:**
**Press the piston evenly and vary the pressing point to prevent cylinder inner wall from being rubbed.**




5. Apply Niglube Rx-2 grease to bushing; install bushing to slide pin.
6. Apply Niglube Rx-2 grease to slide pins and slide pin boots, install slide pins and slide pin boots to torque member.
7. Install the brake caliper to the vehicle. Refer to BR-71, "BRAKE CALIPER ASSEMBLY : Removal and Installation".

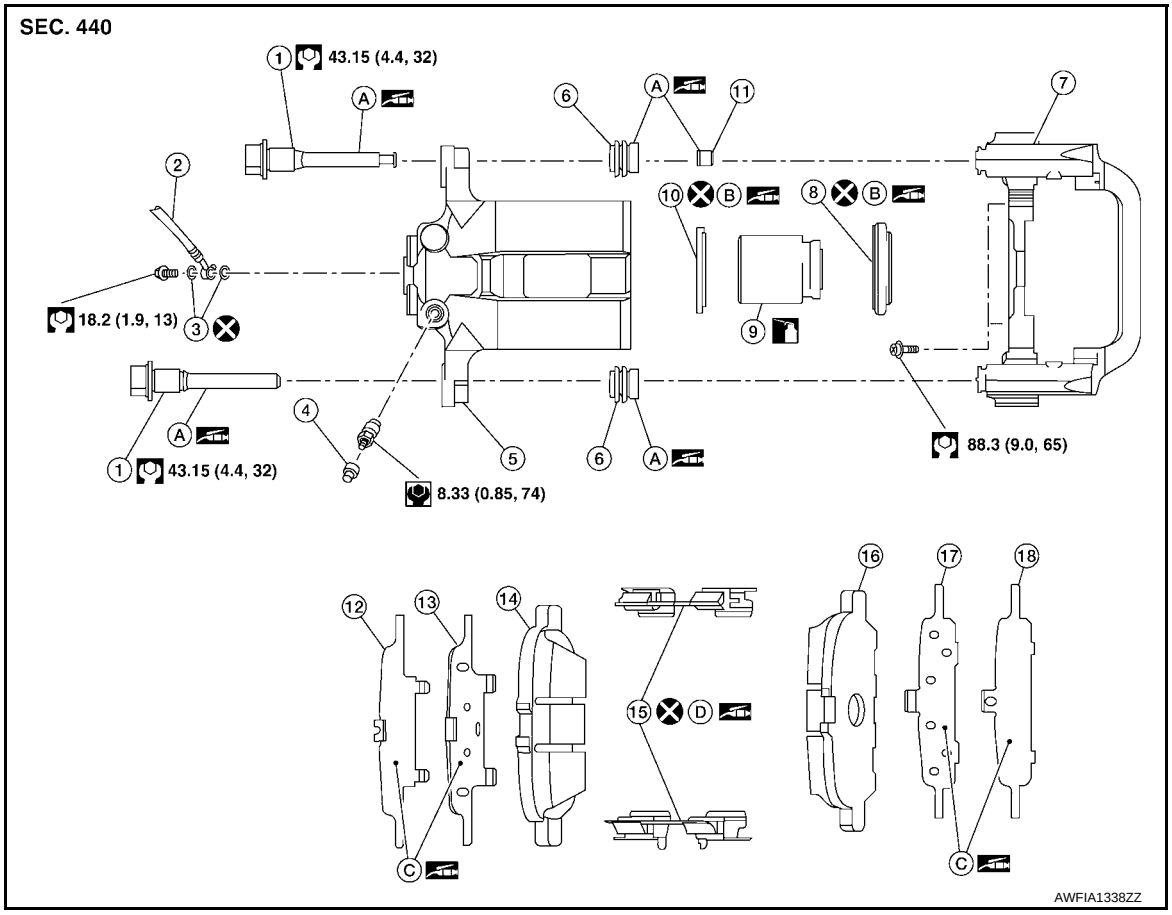
## INSPECTION AFTER INSTALLATION

1. Check the drag of front disc brake. If any drag is found, follow the procedure described below.
2. Remove brake pads.
3. Using a suitable tool, press the pistons into the brake caliper body.
**CAUTION:**
**Do not damage the piston boots.**
4. Install brake pads.
5. Depress the brake pedal several times.
6. Check the drag of front disc brake again. If any drag is found, disassemble the brake caliper body.
7. Burnish contact surfaces after refinishing or replacing disc brake rotors or if a soft pedal occurs at very low mileage. Refer to BR-53, "BRAKE PAD : Inspection and Adjustment".

# REAR DISC BRAKE

## Exploded View

INFOID:0000000014900174




| | | |
|---|---|---|
| 1. Slide pin bolt | 2. Slide pin bushing | 3. Copper sealing washers |
| 4. Bleeder cap | 5. Brake caliper body | 6. Slide pin boot |
| 7. Torque member | 8. Piston boot | 9. Piston |
| 10. Piston seal | 11. Bushing | 12. Inner shim cover |
| 13. Inner shim | 14. Inner pad | 15. Pad retainer |
| 16. Outer pad | 17. Outer shim | 18. Outer shim cover |
| A. Niglube Rx-2 | B. Rubber grease | C. Molykote® AS-880N |
| D. Molykote® 7439 | : Apply brake fluid. | |

## Disassembly and Assembly

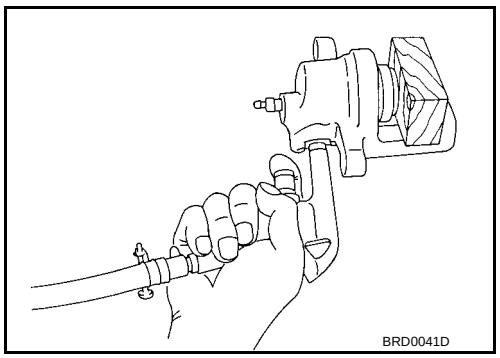
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### DISASSEMBLY

1. Remove the brake caliper from the vehicle. Refer to BR-77, "BRAKE CALIPER ASSEMBLY : Removal and Installation".
2. Remove slide pin boots from torque member.
3. Remove slide pin bolt bushing from slide pin bolt.

4. Place a wooden block in the cylinder body and blow air from union bolt hole to remove piston and piston boot.

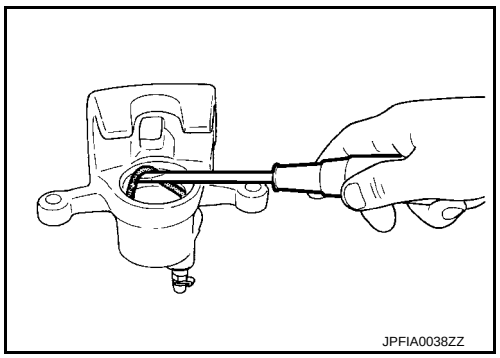
**WARNING:**
**Do not get fingers caught between pistons and brake caliper body.**
**CAUTION:**
**Do not reuse piston boot.**




5. Remove piston seal from brake caliper body using suitable tool.

**CAUTION:**
- **Do not damage cylinder inner wall.**
- **Do not reuse piston seal.**

6. Remove bleeder valve and cap.




## INSPECTION AFTER DISASSEMBLY

### Brake Caliper Body

Check the inner wall of the brake caliper body for rust, wear, cracks or damage. Replace the brake caliper if any abnormal condition is detected.

**CAUTION:**
**Always clean with new brake fluid. Do not clean with mineral oil such as gasoline and light oil.**

### Torque Member

Check the torque member for rust, wear, cracks or damage. Replace the brake caliper if any abnormal condition is detected.

### Piston

Check the surface of the piston for rust, wear, cracks or damage. Replace the brake caliper if any abnormal condition is detected.

**CAUTION:**
**Piston sliding surface is plated. Do not polish with sandpaper.**

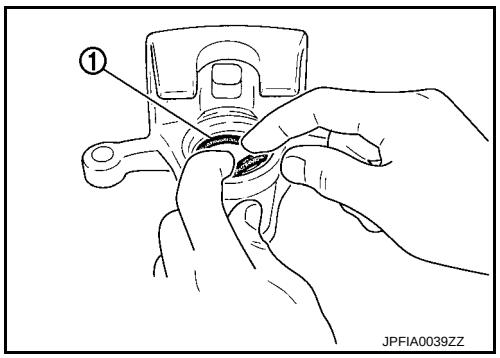
### Slide Pin and Slide Pin Bolt Boot

Check the slide pins and slide pin bolt boots for rust, wear, cracks or damage. Replace the parts if any abnormal condition is detected.

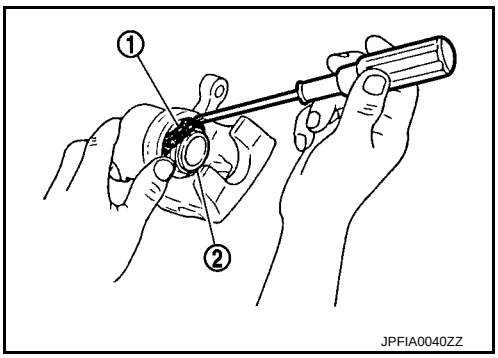
## ASSEMBLY

1. Install bleeder valve and cap.
2. Apply rubber grease to piston seal (1), and install it to the brake caliper body.

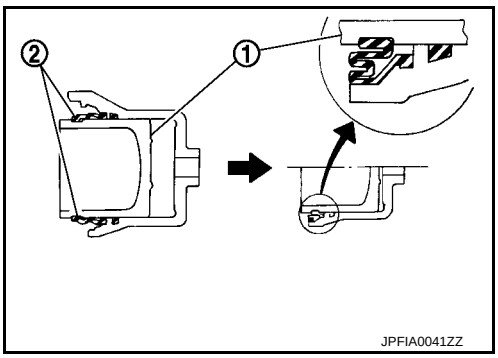
**CAUTION:**
**Do not reuse piston seal.**



3. Apply rubber grease to piston boot (1). Cover the piston end (2) with the piston boot (1), and then install cylinder side lip on the piston boot securely into the groove on brake caliper body.
   **CAUTION:**
   **Do not reuse piston boot.**




4. Apply brake fluid to piston (1). Push piston into brake caliper body by hand and push piston boot (2) piston side lip into the piston groove.
   **CAUTION:**
   **Press the piston evenly and vary the pressing point to prevent cylinder inner wall from contact.**




5. Apply Niglube Rx-2 grease to bushing; install bushing to slide pin bolt.
6. Install slide pin boots to torque member.
7. Install the brake caliper to the vehicle. Refer to BR-77, "BRAKE CALIPER ASSEMBLY : Removal and Installation".

## INSPECTION AFTER INSTALLATION

1. Check the drag of rear disc brake. If any drag is found, follow the procedure described below.
2. Remove brake pads.
3. Using a suitable tool, press the pistons into the brake caliper body.
   **CAUTION:**
   **Do not damage the piston boots.**
4. Install brake pads.
5. Depress the brake pedal several times.
6. Check the drag of rear disc brake again. If any drag is found, disassemble the brake caliper body.
7. Burnish contact surfaces after refinishing or replacing disc brake rotors or if a soft pedal occurs at very low mileage. Refer to BR-55, "BRAKE PAD : Inspection and Adjustment".

# SERVICE DATA AND SPECIFICATIONS (SDS)

## SERVICE DATA AND SPECIFICATIONS (SDS)

### General Specifications

INFOID:0000000014900176

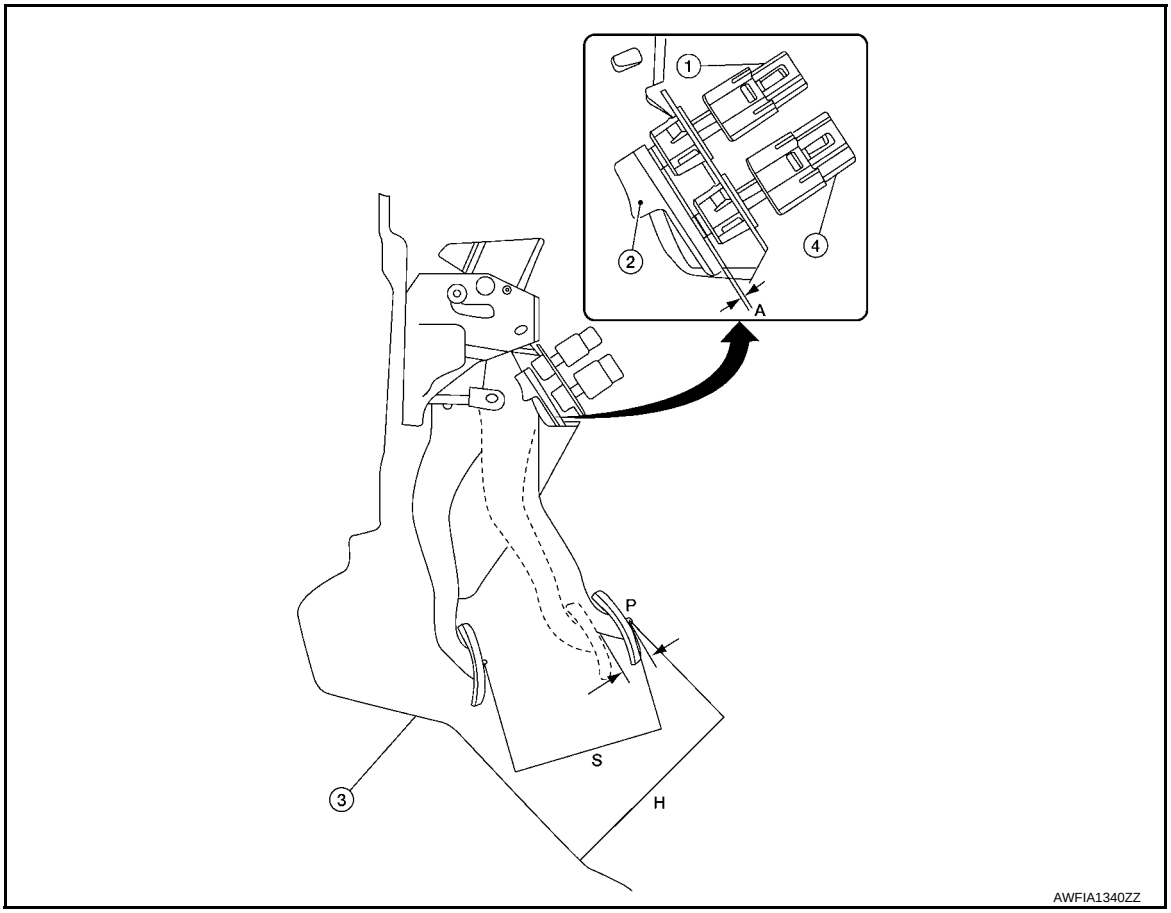
Unit: mm (in)

| | | |
|---|---|---|
| Front disc brake | Cylinder bore diameter | 44.45 (1.750) |
| | Pad length × width × thickness | 133.6 × 56.3 × 10.0 (5.26 × 2.256 × 0.394) |
| | Disc brake rotor outer diameter × thickness | 320 × 28.0 (12.60 × 1.102) |
| Rear disc brake | Cylinder bore diameter | 38.1 (1.5) |
| | Pad length × width × thickness | 83.0 × 33.0 × 8.5 (3.268 × 1.299 × 0.335) |
| | Disc brake rotor outer diameter × thickness | 292 × 16.0 (11.50 × 0.630) |
| Master cylinder | Cylinder bore diameter | 23.8 (0.973) |
| Control valve | Valve type | Electric brake force distribution |
| Recommended brake fluid | | Refer to MA-11, "Fluids and Lubricants" |

### Brake Pedal

INFOID:0000000014900177

Unit: mm (in)




| Item | Standard |
|---|---|
| Brake pedal height (H) | 175.9 – 185.9 (6.93 – 7.32) |
| Clearance (A) between brake pedal stopper bracket (2), stop lamp switch (4) and brake pedal position switch (1) contact ends | 0.20 – 1.96 (0.0079 – 0.0772) |

| | |
|---|---|
| Brake pedal full stroke (S) | 135.1 (5.32) |
| Brake pedal play | — |

## Brake Booster

INFOID:0000000014900178

Unit: mm (in)

| Item | Standard |
|---|---|
| Input rod length | 144.1 ± 0.5 (5.7 ± 0.02) |

## Front Disc Brake

INFOID:0000000014900179

Unit: mm (in)

| Item | | Limit |
|---|---|---|
| Brake pad | Wear thickness | 2.0 (0.079) |
| Disc brake rotor | Wear thickness | 26.0 (1.024) |
| | Thickness variation (measured at 8 positions)* | 0.020 (0.0008) |
| | Runout limit (with it attached to the vehicle) | 0.035 (0.0014) |

*To check if rotor imbalance, rotor runout or rotor deformation exists.

## Rear Disc Brake

INFOID:0000000014900180

Unit: mm (in)

| Item | | Limit |
|---|---|---|
| Brake pad | Wear thickness | 1.5 (0.059) |
| Disc brake rotor | Wear thickness | 14.0 (0.551) |
| | Thickness variation (measured at 8 positions)* | 0.020 (0.0008) |
| | Runout limit (with it attached to the vehicle) | 0.070 (0.0028) |

*To check for rotor imbalance, rotor runout or rotor deformation.