# SECTION BRC
# BRAKE CONTROL SYSTEM



## CONTENTS

### ABS

## TCS/ABS

## VDC/TCS/ABS

# BASIC INSPECTION

## DIAGNOSIS AND REPAIR WORKFLOW

### Work Flow

INFOID:0000000006389119

#### 1.COLLECT INFORMATION FROM THE CUSTOMER

Get detailed information from the customer about the symptom (the condition and the environment when the incident/malfunction occurred) using the diagnosis worksheet. Refer to BRC-8, "Diagnostic Work Sheet".

>> GO TO 2.

#### 2.PERFORM SELF DIAGNOSTIC RESULT

Perform self diagnostic result. Refer to BRC-15, "CONSULT Function (ABS)".

Are any DTCs displayed?

YES >> Refer to BRC-45, "DTC No. Index".
NO >> GO TO 3.

#### 3.CHECK SYMPTOM OPERATING CONDITION

Check that the symptom is a normal operating condition. Refer to BRC-60, "Description".

Is the symptom a normal operating condition?

YES >> Inspection End.
NO >> GO TO 4.

#### 4.CHECK WARNING LAMPS OPERATION

Check warning lamps operation.
- ABS warning lamp: Refer to BRC-42, "Description".
- brake warning lamp: Refer to BRC-43, "Description".

Is ON/OFF timing normal?

YES >> GO TO 5.
NO >> Perform warning lamp diagnosis. Refer to BRC-42, "Component Function Check" (ABS warning lamp) or BRC-43, "Component Function Check" (brake warning lamp).

#### 5.PERFORM DIAGNOSIS APPLICABLE TO THE SYMPTOM

Perform diagnosis applicable to the symptom. Refer to BRC-54, "Symptom Table".

>> GO TO 6.

#### 6.FINAL CHECK

Perform self diagnostic result again, and check that the malfunction is repaired. After checking, erase the self diagnosis memory. Refer to BRC-15, "CONSULT Function (ABS)".

>> Inspection End.

## Diagnostic Work Sheet

INFOID:0000000006389120

| | | | |
|---|---|---|---|
| Customer name MR/MS | Model & Year | | VIN |
| Engine # | Trans. | | Mileage |
| Incident Date | Manuf. Date | | In Service Date |
| Symptoms | ☐ Noise and vibration (from engine compartment)<br>☐ Noise and vibration (from axle) | ☐ Warning / Indicator activate | ☐ Firm pedal operation<br>Large stroke pedal operation |
| | ☐ ABS does not work (Wheels lock when braking) | ☐ ABS does not work (wheels slip when braking) | ☐ Lack of sense of acceleration |
| Engine conditions | ☐ When starting ☐ After starting | | |
| Road conditions | ☐ Low friction road ( ☐Snow ☐Gravel ☐Other )<br>☐ Bumps / potholes | | |
| Driving conditions | ☐ Full-acceleration<br>☐ High speed cornering<br>☐ Vehicle speed: Greater than 10 km/h (6 MPH)<br>☐ Vehicle speed: 10 km/h (6 MPH) or less<br>☐ Vehicle is stopped | | |
| Applying brake conditions | ☐ Suddenly<br>☐ Gradually | | |
| Other conditions | ☐ Operation of electrical equipment<br>☐ Shift change<br>☐ Other descriptions | | |

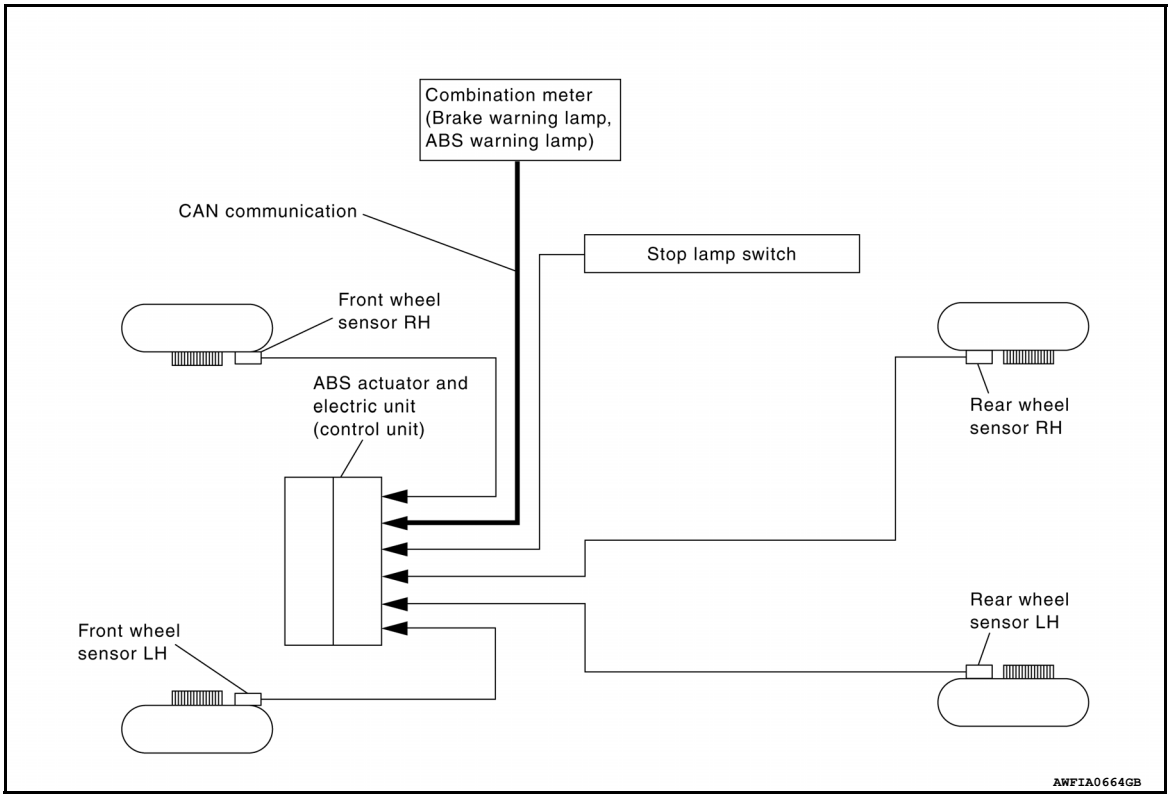
LFIA0176E

# SYSTEM DESCRIPTION

## ABS

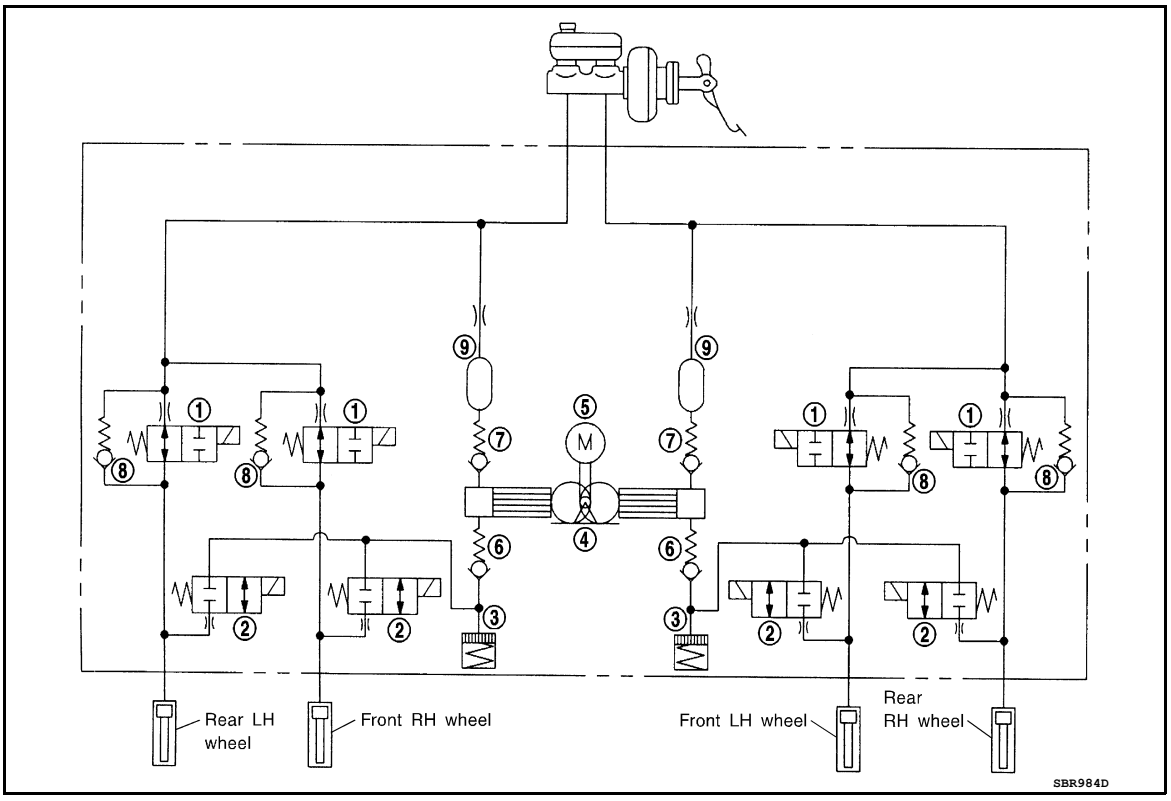
### System Diagram

INFOID:0000000006389121




### Hydraulic Circuit Diagram

INFOID:0000000006920842



1. Inlet solenoid valve
2. Outlet solenoid valve
3. Reservoir
4. Pump
5. Motor
6. Inlet valve
7. Outlet valve
8. Bypass check valve
9. Damper

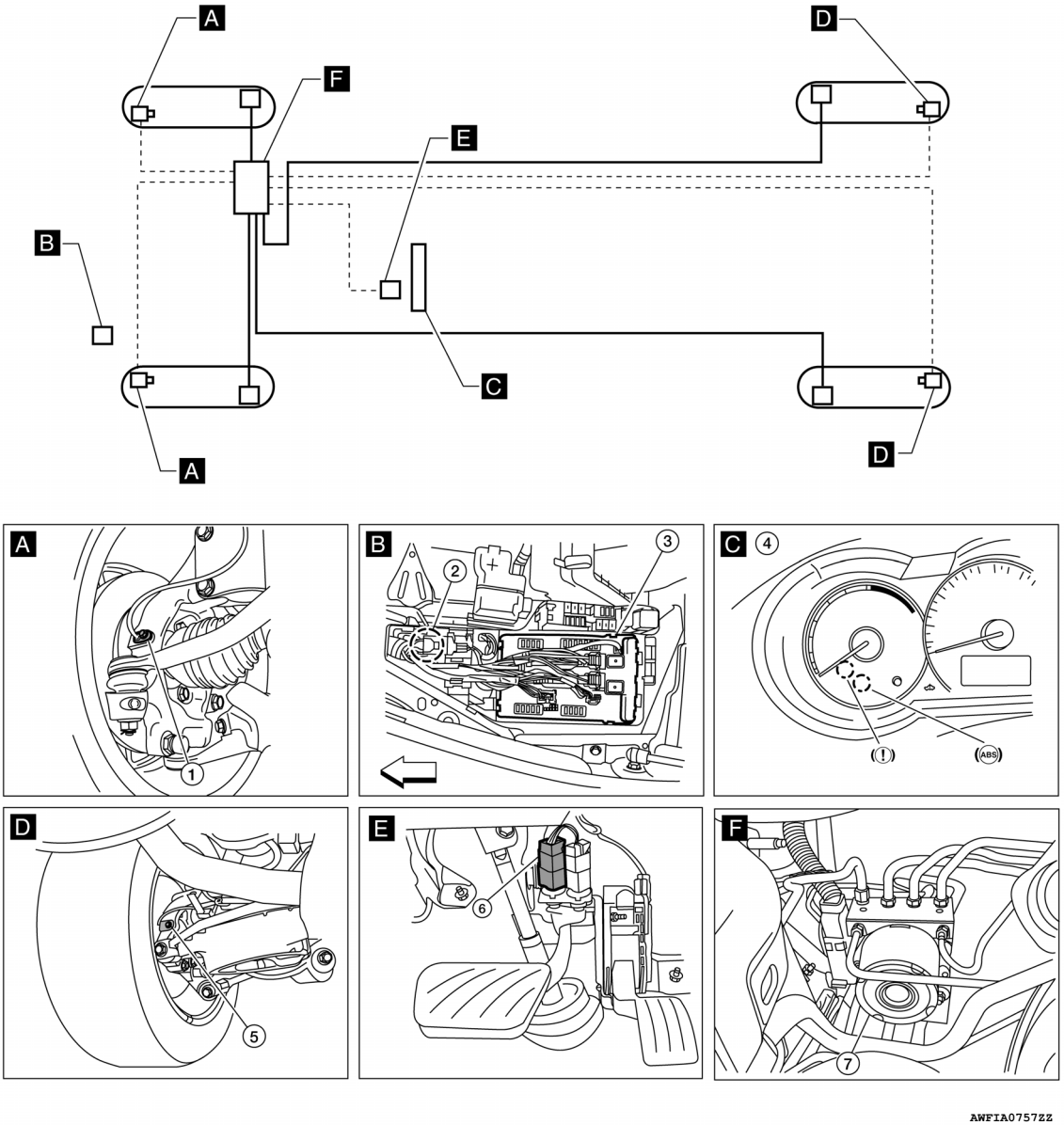
## System Description

INFOID:0000000006920848

- Anti-Lock Braking System is a function that detects wheel revolution while braking, electronically controls braking force, and prevents wheel locking during sudden braking. It improves handling stability and maneuverability for avoiding obstacles.
- Electrical system diagnosis by CONSULT is available.

## Component Parts Location

INFOID:0000000006389123




AWFIA0757ZZ

1. Front wheel sensor LH E19
   Front wheel sensor RH E41
2. Stop lamp relay-1 E57
3. IPDM E/R

4. Combination meter M24
5. Rear wheel sensor LH C2
   Rear wheel sensor RH C3
6. Stop lamp switch E38
7. ABS actuator and electric unit (control unit) E26

## Component Description

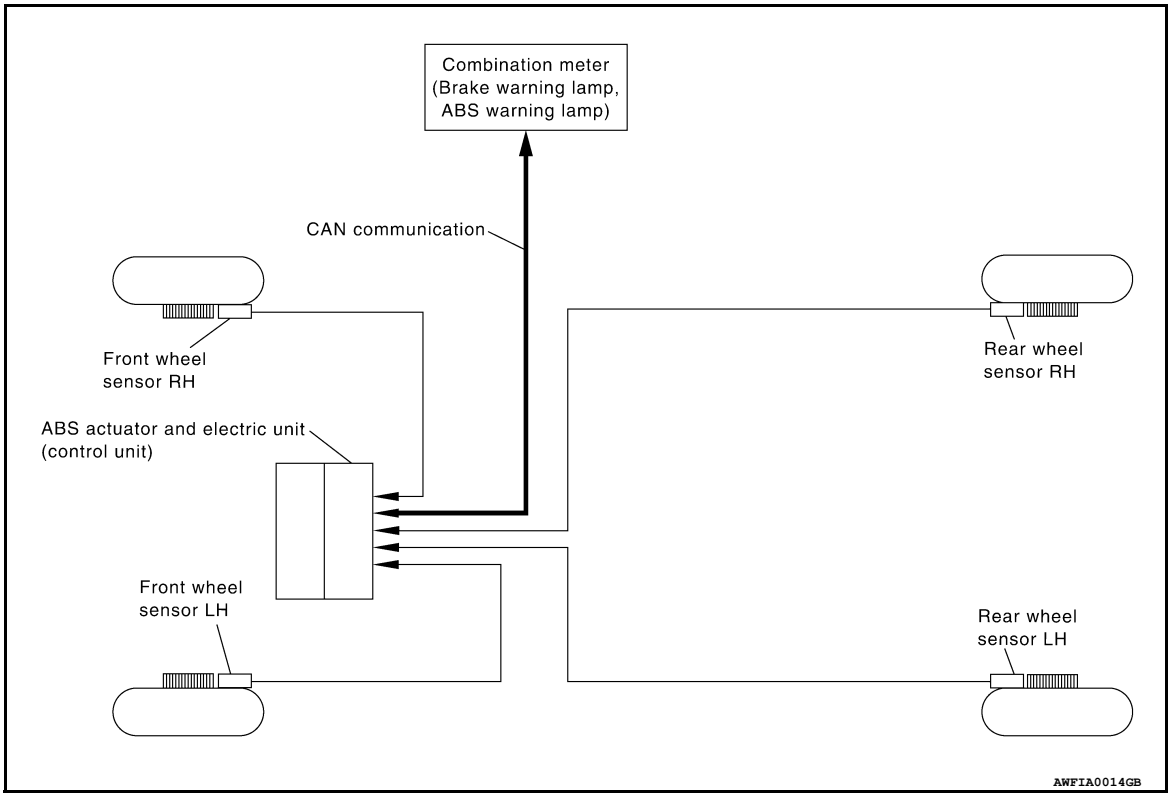
INFOID:0000000006389124

| Component parts | | Reference |
|---|---|---|
| ABS actuator and electric unit (control unit) | Pump | BRC-27, "Description" |
| | Motor | |
| | Actuator relay (Main relay) | BRC-29, "Description" |
| | Solenoid valve | BRC-34, "Description" |
| Wheel sensor | | BRC-18, "Description" |
| Stop lamp switch | | BRC-39, "Description" |
| ABS warning lamp | | BRC-42, "Description" |
| Brake warning lamp | | BRC-43, "Description" |

# EBD

## System Diagram

INFOID:0000000006920837




## System Description

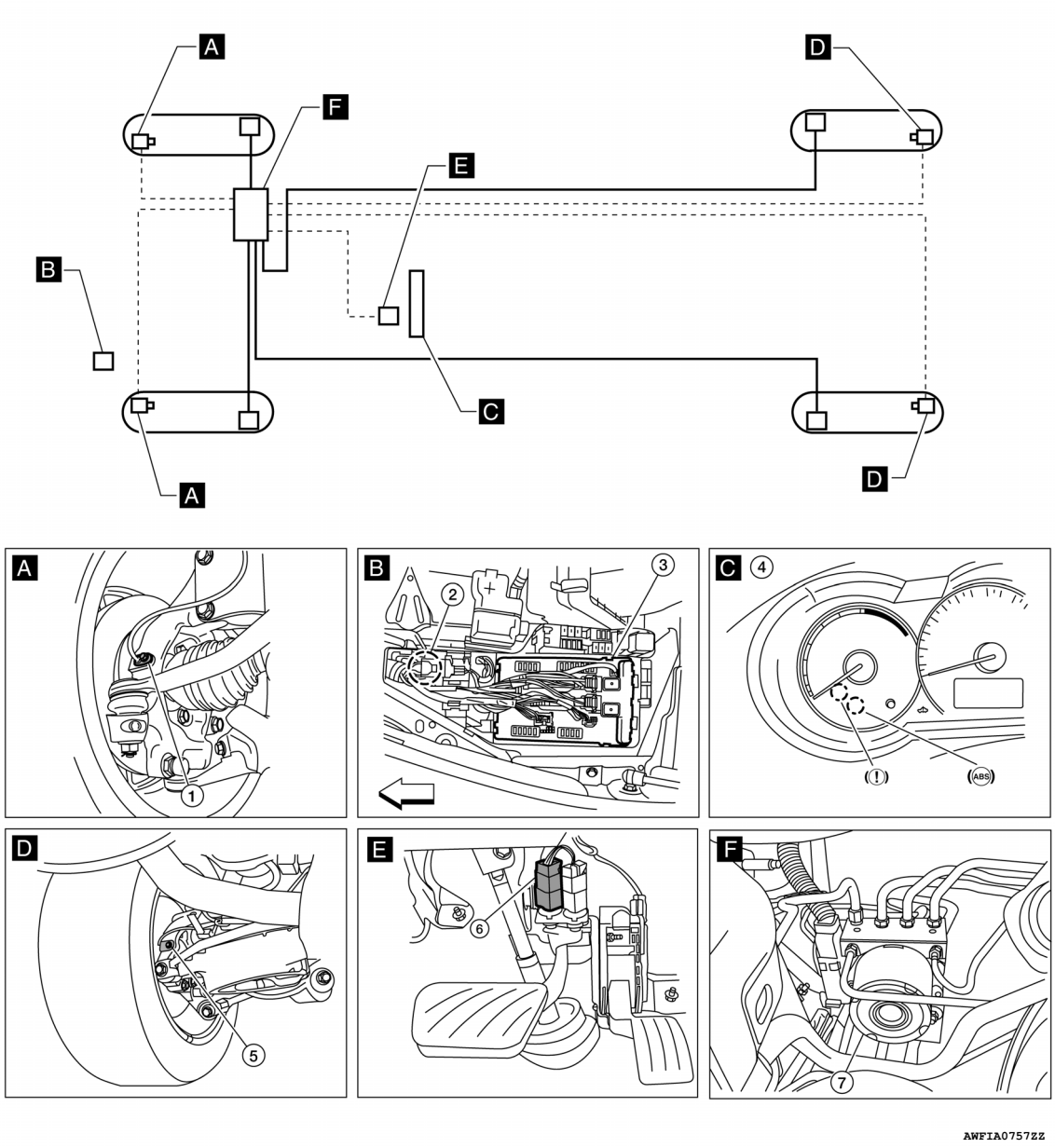
INFOID:0000000006920838

Electric Brake force Distribution functions as follows:

- ABS actuator and electric unit (control unit) detects subtle slippages between the front and rear wheels during braking. Then it electronically controls the rear braking force (brake fluid pressure) to reduce rear wheel slippage. Accordingly, it improves vehicle stability.
- Electrical system diagnosis by CONSULT is available.

## Component Parts Location

INFOID:0000000006920839




1. Front wheel sensor LH E19
   Front wheel sensor RH E41
2. Stop lamp relay-1 E57
3. IPDM E/R
4. Combination meter M24
5. Rear wheel sensor LH C2
   Rear wheel sensor RH C3
6. Stop lamp switch E38
7. ABS actuator and electric unit (control unit) E26

## Component Description

INFOID:0000000006920849

| Component parts | | Reference |
|---|---|---|
| ABS actuator and electric unit (control unit) | Pump | BRC-27, "Description" |
| | Motor | |
| | Actuator relay (Main relay) | BRC-29, "Description" |
| | Solenoid valve | BRC-34, "Description" |

| Component parts | Reference |
|---|---|
| Wheel sensor | BRC-18, "Description" |
| Stop lamp switch | BRC-39, "Description" |
| ABS warning lamp | BRC-42, "Description" |
| Brake warning lamp | BRC-43, "Description" |

# DIAGNOSIS SYSTEM [ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)]

## CONSULT Function (ABS)

INFOID:0000000006389125

### FUNCTION

CONSULT can display each diagnostic item using the diagnostic test modes shown following.

| Diagnostic test mode | Function |
|---|---|
| Work support | This mode enables a technician to adjust some devices faster and more accurately by following the indications on CONSULT. |
| Self-diagnostic results | Self-diagnostic results can be read and erased quickly. |
| Data monitor | Input/Output data in the ABS actuator and electric unit (control unit) can be read. |
| Active test | Diagnostic test mode is which CONSULT drives some actuators apart from the ABS actuator and electric unit (control unit) and also shifts some parameters in a specified range. |
| ECU part number | ABS actuator and electric unit (control unit) part number can be read. |
| Function test | Performed by CONSULT instead of a technician to determine whether each system is “OK” or “NG”. |
| CAN diagnostic support monitor | The results of transmit/receive diagnosis of CAN communication can be read. |

### SELF DIAGNOSTIC RESULT

Operation Procedure

1. Turn ignition switch OFF.
2. Connect CONSULT to data link connector.
3. Turn ignition switch ON.
4. Start engine and drive vehicle at 30 km/h (19 MPH) or more for approximately 1 minute.
5. After stopping vehicle, with the engine running, touch “ABS”, “SELF-DIAG RESULTS” in order on the CONSULT screen.
6. The self-diagnostic results are displayed.
   • Check ABS warning lamp. If “NO FAILURE” is displayed. Refer to BRC-42, "Component Function Check".
7. Perform the appropriate inspection from display item list, and repair or replace the malfunctioning component. Refer to "Display Item List".
8. Start engine and drive vehicle at 30 km/h (19 MPH) or more for approximately 1 minute.
   **CAUTION:**
   **When the wheel sensor malfunctions, after inspecting the wheel sensor system, the ABS warning lamp and brake warning lamp will not turn OFF even when the system is normal unless the vehicle is driven at approximately 30 km/h (19 MPH) or more for approximately 1 minute.**

Erase Memory

1. Turn ignition switch OFF.
2. Start engine and touch “ABS”, “SELF-DIAG RESULTS”, “ERASE MEMORY” in order on the CONSULT screen to erase the diagnostic memory.
   If “ABS” is not indicated, go to GI-50, "Description".
   **CAUTION:**
   **If the diagnostic memory is not erased, re-perform the operation from step 4.**
3. Perform self-diagnosis again, and make sure that diagnostic memory is erased.
4. Drive vehicle at 30 km/h (19 MPH) or more for approximately 1 minute as the final inspection, and make sure that the ABS warning lamp and brake warning lamp turn OFF.

**NOTE:**
Brake warning lamp will turn on in case of parking brake operation (when switch is ON) or of brake fluid level switch operation (when brake fluid is insufficient).

Display Item List
Refer to BRC-45, "DTC No. Index".

## DATA MONITOR

Display Item List

**CAUTION:**

**The display shows the control unit calculation data, so a normal value might be displayed even in the event the output circuit (harness) is open or short - circuited.**

| Item (Unit) | Data monitor item selection | | | Remarks |
|---|---|---|---|---|
| | ECU INPUT SIGNALS | MAIN SIGNALS | SELECTION FROM MENU | |
| FR LH SENSOR (km/h) | × | × | × | Wheel speed calculated by front LH wheel sensor signal is displayed. |
| FR RH SENSOR (km/h) | × | × | × | Wheel speed calculated by front RH wheel sensor signal is displayed. |
| RR LH SENSOR (km/h) | × | × | × | Wheel speed calculated by rear LH wheel sensor signal is displayed. |
| RR RH SENSOR (km/h) | × | × | × | Wheel speed calculated by rear RH wheel sensor signal is displayed. |
| STOP LAMP SW (ON/OFF) | × | × | × | Stop lamp switch (ON/OFF) status is displayed. |
| BATTERY VOLT (V) | × | × | × | Voltage supplied to ABS actuator and electric unit (control unit) is displayed. |
| FR RH IN SOL (ON/OFF) | — | × | × | Front RH IN ABS solenoid (ON/OFF) status is displayed. |
| FR RH OUT SOL (ON/OFF) | — | × | × | Front RH OUT ABS solenoid (ON/OFF) status is displayed. |
| FR LH IN SOL (ON/OFF) | — | × | × | Front LH IN ABS solenoid (ON/OFF) status is displayed. |
| FR LH OUT SOL (ON/OFF) | — | × | × | Front LH OUT ABS solenoid (ON/OFF) status is displayed. |
| RR RH IN SOL (ON/OFF) | — | × | × | Rear RH IN ABS solenoid (ON/OFF) status is displayed. |
| RR RH OUT SOL (ON/OFF) | — | × | × | Rear RH OUT ABS solenoid (ON/OFF) status is displayed. |
| RR LH IN SOL (ON/OFF) | — | × | × | Rear LH IN ABS solenoid (ON/OFF) status is displayed. |
| RR LH OUT SOL (ON/OFF) | — | × | × | Rear LH OUT ABS solenoid (ON/OFF) status is displayed. |
| MOTOR RELAY (ON/OFF) | — | × | × | ABS motor relay signal (ON/OFF) status is displayed. |
| ACTUATOR RLY (ON/OFF) | — | × | × | ABS actuator relay signal (ON/OFF) status is displayed. |
| ABS WARN LAMP (ON/OFF) | — | × | × | ABS warning lamp (ON/OFF) status is displayed. |

×: Applicable

–: Not applicable

Note: A brief moment of ON/OFF condition occurs every 20 seconds after ignition switch turned ON. This is not malfunction because it is an operation for checking.

## ACTIVE TEST

**CAUTION:**

- **Do not perform active test while driving vehicle.**
- **Make sure to completely bleed air from brake system.**
- **The active test cannot be performed with the ABS warning lamp and brake warning lamp are ON.**
- **ABS warning lamp and brake warning lamp are ON during active test.**

Operation Procedure

**NOTE:**
- When active test is performed while depressing the pedal, the pedal depression amount will change. This is normal. (Only solenoid valve and ABS motor)
- “TEST IS STOPPED” is displayed 10 seconds after operation start.
- After “TEST IS STOPPED” is displayed, to perform test again, touch “BACK” to restart the process.

Solenoid Valve

**NOTE:**

The example shown is for front right wheel. The procedure for the other wheels is the same as given below.
- When performing an active test of the ABS function, select the "MAIN SIGNALS" for each test item.In addition, when performing an active test of the TCS function, select the item menu for each test item.
- For ABS solenoid valve, touch “UP”, “KEEP”, and “DOWN” on the display screen. For ABS solenoid valve (ACT), touch “UP”, “ACT UP”, “ACT KEEP” and confirm that solenoid valves (IN, OUT) operate as shown in the table below.

| Operation (Note) | ABS solenoid valve | | | ABS solenoid valve (ACT) | | |
|---|---|---|---|---|---|---|
| | UP | KEEP | DOWN | UP | ACT UP | ACT KEEP |
| FR RH IN SOL | OFF | ON | ON | OFF | OFF | OFF |
| FR RH OUT SOL | OFF | OFF | ON* | OFF | OFF | OFF |

*: ON for 1 to 2 seconds after the touch, and then OFF

Note: A brief moment of ON/OFF condition occurs every 20 seconds after ignition switch turned ON. This is not malfunction because it is an operation for checking.

ABS Motor

Touch “ON” and “OFF” on screen. Make sure motor relay and actuator relay operates as shown in table below.

| Operation | ON | OFF |
|---|---|---|
| MOTOR RELAY | ON | OFF |
| ACTUATOR RLY (Note) | ON | ON |

Note: A brief moment of ON/OFF condition occurs every 20 seconds after ignition switch turned ON. This is not malfunction because it is an operation for checking.

# DTC/CIRCUIT DIAGNOSIS

## C1101, C1102, C1103, C1104 WHEEL SENSOR-1

### Description

INFOID:0000000006389126

When the sensor rotor rotates, the magnetic field changes. It converts the magnetic field changes to current signals (rectangular wave) and transmits them to the ABS actuator and electric unit (control unit).

### DTC Logic

INFOID:0000000006389127

#### DTC DETECTION LOGIC

| DTC | Display item | Malfunction detected condition | Possible cause |
|---|---|---|---|
| C1101 | RR RH SENSOR-1 | Circuit of rear RH wheel sensor is open. Or when the sensor power voltage is outside the standard. | • Harness or connector<br>• Wheel sensor<br>• ABS actuator and electric unit (control unit) |
| C1102 | RR LH SENSOR-1 | Circuit of rear LH wheel sensor is open. Or when the sensor power voltage is outside the standard. | |
| C1103 | FR RH SENSOR-1 | Circuit of front RH wheel sensor is open. Or when the sensor power voltage is outside the standard. | |
| C1104 | FR LH SENSOR-1 | Circuit of front LH wheel sensor is open. Or when the sensor power voltage is outside the standard. | |

#### DTC CONFIRMATION PROCEDURE

##### 1.CHECK SELF DIAGNOSTIC RESULT

With CONSULT.

1. Start engine and drive vehicle at approx. 30 km/h (19 MPH) or more for approx. 1 minute.
2. Perform self diagnostic result.

Is DTC C1101, C1102, C1103 or C1104 detected?

YES >> Proceed to diagnosis procedure. Refer to BRC-18, "Diagnosis Procedure".
NO >> Inspection End.

### Diagnosis Procedure

INFOID:0000000006389128

Regarding Wiring Diagram information, refer to BRC-47, "Wiring Diagram - ABS".

**CAUTION:**
**Do not check between wheel sensor terminals.**

##### 1.CONNECTOR INSPECTION

1. Disconnect ABS actuator and electric unit (control unit) connector and wheel sensor of malfunctioning code.
2. Check terminals for deformation, disconnection, looseness or damage.

Is the inspection result normal?

YES >> GO TO 2
NO >> Repair or replace as necessary.

##### 2.CHECK WHEEL SENSOR OUTPUT SIGNAL

1. Connect ABS active wheel sensor tester (J-45741) to wheel sensor using appropriate adapter.
2. Turn on the ABS active wheel sensor tester power switch.
   **NOTE:**
   The green POWER indicator should illuminate. If the POWER indicator does not illuminate, replace the battery in the ABS active wheel sensor tester before proceeding.
3. Spin the wheel of the vehicle by hand and observe the red SENSOR indicator on the ABS active wheel sensor tester. The red SENSOR indicator should flash on and off to indicate an output signal.
   **NOTE:**

If the red SENSOR indicator illuminates but does not flash, reverse the polarity of the tester leads and retest.

Does the ABS active wheel sensor tester detect a signal?

YES >> GO TO 3
NO >> Replace wheel sensor. Refer to BRC-64, "Removal and Installation".

## 3.CHECK TIRE

Check air pressure, wear and size.

Are air pressure, wear and size within standard?

YES >> GO TO 4
NO >> • Adjust air pressure, or replace tire.
• Perform the self-diagnosis, and make sure that the result shows “NO DTC IS DETECTED”.

## 4.CHECK WHEEL BEARINGS

Check wheel bearing axial end play. Refer to FAX-6, "Inspection" (front) or RAX-6, "On-vehicle Service" (rear).

Is the inspection result normal?

YES >> GO TO 5
NO >> Repair or replace as necessary. Refer to FAX-8, "Removal and Installation" (front) or RAX-7, "Removal and Installation" (rear).

## 5.CHECK WIRING HARNESS FOR SHORT CIRCUIT

Check continuity between wheel sensor connector terminals and ground.

| Wheel sensor connector terminal | Ground | Continuity |
|---|---|---|
| 1 | — | No |
| 2 | | |

Is the inspection result normal?

YES >> GO TO 6
NO >> Repair the circuit.

## 6.CHECK WIRING HARNESS FOR OPEN CIRCUIT

Check continuity between ABS actuator and electric unit (control unit) connector and the malfunctioning wheel sensor connector.

| Wheel sensor | ABS actuator and electric unit (control unit) | | Wheel sensor | | Continuity |
|---|---|---|---|---|---|
| | Connector | Terminal | Connector | Terminal | |
| Front LH | E26 | 16 | E19 | 1 | Yes |
| | | 5 | | 2 | |
| Front RH | | 9 | E41 | 1 | |
| | | 10 | | 2 | |
| Rear LH | | 6 | C2 | 1 | |
| | | 17 | | 2 | |
| Rear RH | | 8 | C3 | 1 | |
| | | 19 | | 2 | |

Is the inspection result normal?

YES >> Replace the ABS actuator and electric unit (control unit). Refer to BRC-67, "Removal and Installation".
NO >> Repair the circuit.

# Component Inspection

INFOID:0000000006389129

## 1.CHECK DATA MONITOR

On “DATA MONITOR”, select “FR LH SENSOR”, “FR RH SENSOR”, “RR LH SENSOR”, and “RR RH SENSOR”, and check the vehicle speed.

| Wheel sensor | Vehicle speed (DATA MONITOR) |
|---|---|
| FR LH SENSOR | Nearly matches the speedometer display (±10% or less) |
| FR RH SENSOR | |
| RR LH SENSOR | |
| RR RH SENSOR | |

Is the inspection result normal?

YES >> Inspection End.
NO >> Go to diagnosis procedure. Refer to BRC-18, "Diagnosis Procedure".

# C1105, C1106, C1107, C1108 WHEEL SENSOR-2

## Description

INFOID:0000000006389130

When the sensor rotor rotates, the magnetic field changes. It converts the magnetic field changes to current signals (rectangular wave) and transmits them to the ABS actuator and electric unit (control unit).

## DTC Logic

INFOID:0000000006389131

### DTC DETECTION LOGIC

| DTC | Display | Condition | Possible Cause |
|---|---|---|---|
| C1105 | RR RH SENSOR-2 | When the circuit in the rear RH wheel sensor is short-circuited, or when the distance between the wheel sensor and sensor rotor is too large and the sensor pulse cannot be recognized by the control unit. | • Harness or connector<br>• Wheel sensor<br>• ABS actuator and electric unit (control unit) |
| C1106 | RR LH SENSOR-2 | When the circuit in the rear LH wheel sensor is short-circuited, or when the distance between the wheel sensor and sensor rotor is too large and the sensor pulse cannot be recognized by the control unit. | |
| C1107 | FR RH SENSOR-2 | When the circuit in the front RH wheel sensor is short-circuited, or when the distance between the wheel sensor and sensor rotor is too large and the sensor pulse cannot be recognized by the control unit. | |
| C1108 | FR LH SENSOR-2 | When the circuit in the front LH wheel sensor is short-circuited, or when the distance between the wheel sensor and sensor rotor is too large and the sensor pulse cannot be recognized by the control unit. | |

### DTC CONFIRMATION PROCEDURE

#### 1.CHECK SELF DIAGNOSTIC RESULT

With CONSULT.
1. Start engine and drive vehicle at approx. 30 km/h (19 MPH) or more for approx. 1 minute.
2. Perform self diagnostic result.

Is DTC C1105, C1106, C1107 or C1108 detected?

YES >> Proceed to diagnosis procedure. Refer to BRC-21, "Diagnosis Procedure".
NO >> Inspection End.

## Diagnosis Procedure

INFOID:0000000006389132

Regarding Wiring Diagram information, refer to BRC-47, "Wiring Diagram - ABS".

**CAUTION:**
**Do not check between wheel sensor terminals.**

#### 1.CONNECTOR INSPECTION

1. Disconnect ABS actuator and electric unit (control unit) connector and wheel sensor of malfunctioning code.
2. Check terminals for deformation, disconnection, looseness or damage.

Is the inspection result normal?

YES >> GO TO 2
NO >> Repair or replace as necessary.

#### 2.CHECK WHEEL SENSOR OUTPUT SIGNAL

1. Connect ABS active wheel sensor tester (J-45741) to wheel sensor using appropriate adapter.
2. Turn on the ABS active wheel sensor tester power switch.
   **NOTE:**

The green POWER indicator should illuminate. If the POWER indicator does not illuminate, replace the battery in the ABS active wheel sensor tester before proceeding.

3. Spin the wheel of the vehicle by hand and observe the red SENSOR indicator on the ABS active wheel sensor tester. The red SENSOR indicator should flash on and off to indicate an output signal.
**NOTE:**
If the red SENSOR indicator illuminates but does not flash, reverse the polarity of the tester leads and retest.

Does the ABS active wheel sensor tester detect a signal?

YES >> GO TO 3
NO >> Replace wheel sensor. Refer to BRC-64, "Removal and Installation".

## 3.CHECK TIRE

Check air pressure, wear and size.

Are air pressure, wear and size within standard?

YES >> GO TO 4
NO >> • Adjust air pressure, or replace tire.
• Perform the self-diagnosis, and make sure that the result shows “NO DTC IS DETECTED”.

## 4.CHECK WHEEL BEARINGS

Check wheel bearing axial end play. Refer to FAX-6, "Inspection" (front) or RAX-6, "On-vehicle Service" (rear).

Is the inspection result normal?

YES >> GO TO 5
NO >> Repair or replace as necessary. Refer to FAX-8, "Removal and Installation" (front) or RAX-7, "Removal and Installation" (rear).

## 5.CHECK WIRING HARNESS FOR SHORT CIRCUIT

Check continuity between wheel sensor connector terminals and ground.

| Wheel sensor connector terminal | Ground | Continuity |
|---|---|---|
| 1 | — | No |
| 2 | | |

Is the inspection result normal?

YES >> GO TO 6
NO >> Repair the circuit.

## 6.CHECK WIRING HARNESS FOR OPEN CIRCUIT

Check continuity between ABS actuator and electric unit (control unit) connector and the malfunctioning wheel sensor connector.

| Wheel sensor | ABS actuator and electric unit (control unit) | | Wheel sensor | | Continuity |
|---|---|---|---|---|---|
| | Connector | Terminal | Connector | Terminal | |
| Front LH | E26 | 16 | E19 | 1 | Yes |
| | | 5 | | 2 | |
| Front RH | | 9 | E41 | 1 | |
| | | 10 | | 2 | |
| Rear LH | | 6 | C2 | 1 | |
| | | 17 | | 2 | |
| Rear RH | | 8 | C3 | 1 | |
| | | 19 | | 2 | |

Is the inspection result normal?

YES >> Replace the ABS actuator and electric unit (control unit). Refer to BRC-67, "Removal and Installation".
NO >> Repair the circuit.

## Component Inspection

INFOID:0000000006389133

### 1.CHECK DATA MONITOR

On “DATA MONITOR”, select “FR LH SENSOR”, “FR RH SENSOR”, “RR LH SENSOR”, and “RR RH SENSOR”, and check the vehicle speed.

| Wheel sensor | Vehicle speed (DATA MONITOR) |
|---|---|
| FR LH SENSOR | Nearly matches the speedometer display (±10% or less) |
| FR RH SENSOR | |
| RR LH SENSOR | |
| RR RH SENSOR | |

Is the inspection result normal?

YES >> Inspection End.
NO >> Go to diagnosis procedure. Refer to BRC-21, "Diagnosis Procedure".

# DTC C1109 BATTERY VOLTAGE [ABNORMAL]

## Description

INFOID:0000000006389134

Supplies electric power to the ABS actuator and electric unit (control unit).

## DTC Logic

INFOID:0000000006389135

### DTC DETECTION LOGIC

| DTC | Display item | Malfunction detected condition | Possible cause |
|---|---|---|---|
| C1109 | BATTERY VOLTAGE [ABNORMAL] | When the ABS actuator and electric unit (control unit) power supply voltage is lower than normal. | • Harness or connector<br>• ABS actuator and electric unit (control unit) |

### DTC CONFIRMATION PROCEDURE

#### 1.CHECK SELF DIAGNOSTIC RESULT

With CONSULT.
1. Turn the ignition switch OFF to ON.
2. Perform self diagnostic result.

Is DTC C1109 detected?

YES >> Proceed to diagnosis procedure. Refer to BRC-24, "Diagnosis Procedure".
NO >> Inspection End.

## Diagnosis Procedure

INFOID:0000000006389136

Regarding Wiring Diagram information, refer to BRC-47, "Wiring Diagram - ABS".

#### 1.CONNECTOR INSPECTION

1. Turn ignition switch OFF.
2. Disconnect ABS actuator and electric unit (control unit) connector.
3. Check terminals for deformation, disconnection, looseness, and so on. If any malfunction is found, repair or replace terminals.
4. Reconnect connector and perform self-diagnosis. Refer to BRC-15, "CONSULT Function (ABS)".

Is DTC 1109 detected?

YES >> GO TO 2
NO >> Poor connection of connector terminals. Repair or replace connector.

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

1. Turn ignition switch OFF.
2. Disconnect ABS actuator and electric unit (control unit) connector.
3. Turn ignition switch ON.
4. Check voltage between ABS actuator and electric unit (control unit) connector E26 terminal 18 and ground.

| ABS actuator and electric unit (control unit) | | Ground | Condition | Voltage (Approx) |
|---|---|---|---|---|
| Connector | Terminal | | | |
| E26 | 18 | — | Ignition switch ON | Battery voltage |
| | | | Ignition switch OFF | 0V |

5. Turn ignition switch OFF.
6. Check continuity between ABS actuator and electric unit (control unit) connector E26 terminals 1, 4 and ground.

| ABS actuator and electric unit (control unit) | | Ground | Continuity |
|---|---|---|---|
| Connector | Terminal | | |
| E26 | 1 | — | Yes |
| | 4 | | |

Is the inspection result normal?

YES >> Check battery for terminal looseness, low voltage, etc. If any malfunction is found, repair malfunctioning parts.

NO >> Repair or replace malfunctioning components.

# DTC C1110 CONTROL FAILURE

## DTC Logic

INFOID:0000000006389137

### DTC DETECTION LOGIC

| DTC | Display item | Malfunction detected condition | Possible cause |
|---|---|---|---|
| C1110 | CONTROLLER FAILURE | When there is an internal malfunction in the ABS actuator and electric unit (control unit). | • ABS actuator and electric unit (control unit) |

### DTC CONFIRMATION PROCEDURE

#### 1.CHECK SELF DIAGNOSTIC RESULT

With CONSULT.
1. Turn the ignition switch OFF to ON.
2. Perform self diagnostic result.

Is DTC C1110 detected?

YES >> Proceed to diagnosis procedure. Refer to BRC-26, "Diagnosis Procedure".
NO >> Inspection End.

## Diagnosis Procedure

INFOID:0000000006389138

#### 1.REPLACE ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)

**CAUTION:**
**Replace ABS actuator and electric unit (control unit) when self-diagnostic result shows items other than that applicable.**

>> Replace ABS actuator and electric unit (control unit). Refer to BRC-67, "Removal and Installation".

# DTC C1111 PUMP MOTOR

## Description

INFOID:0000000006389139

### PUMP

The pump returns the brake fluid stored in the reservoir to the master cylinder by reducing the pressure.

### MOTOR

The motor drives the pump according to the signals transmitted by the ABS actuator and electric unit (control unit).

## DTC Logic

INFOID:0000000006389140

### DTC DETECTION LOGIC

| DTC | Display item | Malfunction detected condition | Possible cause |
|---|---|---|---|
| C1111 | PUMP MOTOR | During the actuator motor operating with ON, when the actuator motor turns OFF, or when the control line for actuator motor relay is open. | • Harness or connector<br>• ABS actuator and electric unit (control unit) |
| | | During the actuator motor operating with OFF, when the actuator motor turns ON, or when the control line for relay is shorted to ground. | |

### DTC CONFIRMATION PROCEDURE

#### 1.CHECK SELF DIAGNOSTIC RESULT

With CONSULT.

1. Turn the ignition switch OFF to ON.
2. Perform self diagnostic result.

Is DTC C1111 detected?

YES >> Proceed to diagnosis procedure. Refer to BRC-27, "Diagnosis Procedure".
NO >> Inspection End.

## Diagnosis Procedure

INFOID:0000000006389141

Regarding Wiring Diagram information, refer to BRC-47, "Wiring Diagram - ABS".

#### 1.CONNECTOR INSPECTION

1. Turn ignition switch OFF.
2. Disconnect ABS actuator and electric unit (control unit) connector.
3. Check terminals for deformation, disconnection, looseness, and so on. If any malfunction is found, repair or replace terminals.
4. Reconnect connector and perform self-diagnosis. Refer to BRC-15, "CONSULT Function (ABS)".

Is DTC C1111 detected?

YES >> GO TO 2
NO >> Poor connection of connector terminals. Repair or replace connector.

#### 2. CHECK ABS MOTOR AND MOTOR RELAY POWER SUPPLY CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect ABS actuator and electric unit (control unit) connector.
3. Check voltage between the ABS actuator and electric unit (control unit) connector E26 terminal 2 and ground.

| ABS actuator and electric unit (control unit) | | Ground | Voltage (Approx) |
|---|---|---|---|
| Connector | Terminal | | |
| E26 | 2 | — | Battery voltage |

Is the inspection result normal?

YES >> GO TO 3
NO >> Repair or replace malfunctioning components.

## 3. CHECK ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT) GROUND CIRCUIT

Check continuity between ABS actuator and electric unit (control unit) connector E26 terminals 1, 4 and ground.

| ABS actuator and electric unit (control unit) | | Ground | Continuity |
|---|---|---|---|
| Connector | Terminal | | |
| E26 | 1 | — | Yes |
| | 4 | | |

Is the inspection result normal?

YES >> Replace ABS actuator and electric unit (control unit). Refer to BRC-67, "Removal and Installation".
NO >> Repair or replace malfunctioning components.

## Component Inspection

INFOID:0000000006389142

## 1. CHECK ACTIVE TEST

1. On “ACTIVE TEST”, select “ABS MOTOR”.
2. Touch ON and OFF on screen. Make sure motor relay and actuator relay operates as shown in table below.

| Operation | ON | OFF |
|---|---|---|
| MOTOR RELAY | ON | OFF |
| ACTUATOR RLY (Note) | ON | ON |

**NOTE:**

A brief moment of ON/OFF condition occurs every 20 seconds after ignition switch turned ON. This is not malfunction because it is an operation for checking.

Is the inspection result normal?

YES >> Inspection End.
NO >> Go to diagnosis procedure. Refer to BRC-27, "Diagnosis Procedure".

# DTC C1114 MAIN RELAY

## Description

INFOID:0000000006389143

Activates or deactivates each solenoid valve according to the signals transmitted by the ABS actuator and electric unit (control unit).

## DTC Logic

INFOID:0000000006389144

### DTC DETECTION LOGIC

| DTC | Display item | Malfunction detected condition | Possible cause |
|---|---|---|---|
| C1114 | MAIN RELAY | During the actuator relay operating with OFF, when the actuator relay turns ON, or when the control line for the relay is shorted to the ground. | • Harness or connector<br>• ABS actuator and electric unit (control unit) |
| | | During the actuator relay operating with ON, when the actuator relay turns ON, or when the control line for the relay is open. | |

### DTC CONFIRMATION PROCEDURE

#### 1.CHECK SELF DIAGNOSTIC RESULT

With CONSULT.
1. Turn the ignition switch OFF to ON.
2. Perform self diagnostic result.

Is DTC C1114 detected?

YES >> Proceed to diagnosis procedure. Refer to BRC-29, "Diagnosis Procedure".
NO >> Inspection End.

## Diagnosis Procedure

INFOID:0000000006389145

Regarding Wiring Diagram information, refer to BRC-47, "Wiring Diagram - ABS".

#### 1.CONNECTOR INSPECTION

1. Turn ignition switch OFF.
2. Disconnect ABS actuator and electric unit (control unit) connector.
3. Check terminals for deformation, disconnection, looseness, and so on. If any malfunction is found, repair or replace terminals.
4. Reconnect connector and perform self-diagnosis. Refer to BRC-15, "CONSULT Function (ABS)".

Is the inspection result normal?

YES >> Inspection End.
NO >> GO TO 2

#### 2.CHECK SOLENOID AND ACTUATOR RELAY POWER SUPPLY CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect ABS actuator and electric unit (control unit) connector.
3. Check voltage between ABS actuator and electric unit (control unit) connector E26 terminal 3 and ground.

| ABS actuator and electric unit (control unit) | | Ground | Voltage (Approx) |
|---|---|---|---|
| Connector | Terminal | | |
| E26 | 3 | — | Battery voltage |

Is the inspection result normal?

YES >> GO TO 3
NO >> Repair or replace malfunctioning components.

## 3. CHECK SOLENOID AND ACTUATOR RELAY GROUND CIRCUIT

Check continuity between ABS actuator and electric unit (control unit) connector E26 terminal 1, 4 and ground.

| ABS actuator and electric unit (control unit) | | Ground | Continuity |
|---|---|---|---|
| Connector | Terminal | | |
| E26 | 1 | — | Yes |
| | 4 | | |

Is the inspection result normal?

YES >> Replace ABS actuator and electric unit (control unit). Refer to BRC-67, "Removal and Installation".

NO >> Repair or replace malfunctioning components.

## Component Inspection

INFOID:0000000006389146

## 1. CHECK ACTIVE TEST

1. On “ACTIVE TEST”, select “ABS MOTOR”.
2. Touch ON and OFF on screen. Make sure motor relay and actuator relay operates as shown in table below.

| Operation | ON | OFF |
|---|---|---|
| MOTOR RELAY | ON | OFF |
| ACTUATOR RLY (Note) | ON | ON |

**NOTE:**

A brief moment of ON/OFF condition occurs every 20 seconds after ignition switch turned ON. This is not malfunction because it is an operation for checking.

Is the inspection result normal?

YES >> Inspection End.

NO >> Go to diagnosis procedure. Refer to BRC-27, "Diagnosis Procedure".

# DTC C1115 ABS SENSOR [ABNORMAL SIGNAL]

## Description

INFOID:0000000006389147

When the sensor rotor rotates, the magnetic field changes. It converts the magnetic field changes to current signals (rectangular wave) and transmits them to the ABS actuator and electric unit (control unit).

## DTC Logic

INFOID:0000000006389148

### DTC DETECTION LOGIC

| DTC | Display item | Malfunction detected condition | Possible cause |
|---|---|---|---|
| C1115 | ABS SENSOR [ABNORMAL SIGNAL] | When wheel sensor input signal is malfunctioning. | • Harness or connector<br>• Wheel sensor<br>• ABS actuator and electric unit (control unit) |

### DTC CONFIRMATION PROCEDURE

#### 1.CHECK SELF DIAGNOSTIC RESULT

With CONSULT.

1. Start engine and drive vehicle at approx. 30 km/h (19 MPH) or more for approx. 1 minute.
2. Perform self diagnostic result.

Is DTC C1115 detected?

YES >> Proceed to diagnosis procedure. Refer to BRC-31, "Diagnosis Procedure".
NO >> Inspection End.

## Diagnosis Procedure

INFOID:0000000006389149

Regarding Wiring Diagram information, refer to BRC-47, "Wiring Diagram - ABS".

**CAUTION:**
**Do not check between wheel sensor terminals.**

#### 1.CONNECTOR INSPECTION

1. Disconnect ABS actuator and electric unit (control unit) connector and wheel sensor of malfunctioning code.
2. Check terminals for deformation, disconnection, looseness or damage.

Is the inspection result normal?

YES >> GO TO 2
NO >> Repair or replace as necessary.

#### 2.CHECK WHEEL SENSOR OUTPUT SIGNAL

1. Connect ABS active wheel sensor tester (J-45741) to wheel sensor using appropriate adapter.
2. Turn on the ABS active wheel sensor tester power switch.
   **NOTE:**
   The green POWER indicator should illuminate. If the POWER indicator does not illuminate, replace the battery in the ABS active wheel sensor tester before proceeding.
3. Spin the wheel of the vehicle by hand and observe the red SENSOR indicator on the ABS active wheel sensor tester. The red SENSOR indicator should flash on and off to indicate an output signal.
   **NOTE:**
   If the red SENSOR indicator illuminates but does not flash, reverse the polarity of the tester leads and retest.

Does the ABS active wheel sensor tester detect a signal?

YES >> GO TO 3
NO >> Replace wheel sensor. Refer to BRC-64, "Removal and Installation".

#### 3.CHECK TIRE

Check air pressure, wear and size.

Are air pressure, wear and size within standard?

YES >> GO TO 4
NO >> • Adjust air pressure, or replace tire.
• Perform the self-diagnosis, and make sure that the result shows “NO DTC IS DETECTED”.

## 4. CHECK WHEEL BEARINGS

Check wheel bearing axial end play. Refer to FAX-6, "Inspection" (front) or RAX-6, "On-vehicle Service" (rear).

Is the inspection result normal?

YES >> GO TO 5
NO >> Repair or replace as necessary. Refer to FAX-8, "Removal and Installation" (front) or RAX-7, "Removal and Installation" (rear).

## 5. CHECK WIRING HARNESS FOR SHORT CIRCUIT

Check continuity between wheel sensor connector terminals and ground.

| Wheel sensor connector terminal | Ground | Continuity |
|---|---|---|
| 1 | — | No |
| 2 | | |

Is the inspection result normal?

YES >> GO TO 6
NO >> Repair the circuit.

## 6. CHECK WIRING HARNESS FOR OPEN CIRCUIT

Check continuity between ABS actuator and electric unit (control unit) connector and the malfunctioning wheel sensor connector.

| Wheel sensor | ABS actuator and electric unit (control unit) | | Wheel sensor | | Continuity |
|---|---|---|---|---|---|
| | Connector | Terminal | Connector | Terminal | |
| Front LH | E26 | 16 | E19 | 1 | Yes |
| | | 5 | | 2 | |
| Front RH | | 9 | E41 | 1 | |
| | | 10 | | 2 | |
| Rear LH | | 6 | C2 | 1 | |
| | | 17 | | 2 | |
| Rear RH | | 8 | C3 | 1 | |
| | | 19 | | 2 | |

Is the inspection result normal?

YES >> Replace the ABS actuator and electric unit (control unit). Refer to BRC-67, "Removal and Installation".
NO >> Repair the circuit.

# Component Inspection

INFOID:0000000006389150

## 1. CHECK DATA MONITOR

On “DATA MONITOR”, select “FR LH SENSOR”, “FR RH SENSOR”, “RR LH SENSOR”, and “RR RH SENSOR”, and check the vehicle speed.

| Wheel sensor | Vehicle speed (DATA MONITOR) |
|---|---|

| | |
|---|---|
| FR LH SENSOR | Nearly matches the speedometer display (±10% or less) |
| FR RH SENSOR | |
| RR LH SENSOR | |
| RR RH SENSOR | |

Is the inspection result normal?

YES >> Inspection End.

NO >> Go to diagnosis procedure. Refer to BRC-31, "Diagnosis Procedure".

# C1120, C1122, C1124, C1126 IN ABS SOL

## Description

INFOID:0000000006389151

The solenoid valve increases, holds or decreases the fluid pressure of each brake caliper according to the signals transmitted by the ABS actuator and electric unit (control unit).

## DTC Logic

INFOID:0000000006389152

### DTC DETECTION LOGIC

| DTC | Display item | Malfunction detected condition | Possible cause |
|---|---|---|---|
| C1120 | FR LH IN ABS SOL | When the control unit detects a malfunction in the front LH inlet solenoid circuit. | • ABS actuator and electric unit (control unit) |
| C1122 | FR RH IN ABS SOL | When the control unit detects a malfunction in the front RH inlet solenoid circuit. | |
| C1124 | RR LH IN ABS SOL | When the control unit detects a malfunction in the rear LH inlet solenoid circuit. | |
| C1126 | RR RH IN ABS SOL | When the control unit detects a malfunction in the rear RH inlet solenoid circuit. | |

### DTC CONFIRMATION PROCEDURE

#### 1.CHECK SELF DIAGNOSTIC RESULT

With CONSULT.
1. Turn the ignition switch OFF to ON.
2. Perform self diagnostic result.

Is DTC C1120, C1122, C1124 or C1126 detected?

YES >> Proceed to diagnosis procedure. Refer to BRC-34, "Diagnosis Procedure".
NO >> Inspection End.

## Diagnosis Procedure

INFOID:0000000006389153

Regarding Wiring Diagram information, refer to BRC-47, "Wiring Diagram - ABS".

#### 1.CONNECTOR INSPECTION

1. Turn ignition switch OFF.
2. Disconnect ABS actuator and electric unit (control unit) connector.
3. Check terminals for deformation, disconnection, looseness, and so on. If any malfunction is found, repair or replace terminals.
4. Reconnect connector and perform self-diagnosis. Refer to BRC-15, "CONSULT Function (ABS)".

Is the inspection result normal?

YES >> Inspection End.
NO >> GO TO 2

#### 2.CHECK SOLENOID AND ACTUATOR RELAY POWER SUPPLY CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect ABS actuator and electric unit (control unit) connector.
3. Check voltage between ABS actuator and electric unit (control unit) connector E26 terminal 3 and ground.

| ABS actuator and electric unit (control unit) | | Ground | Voltage (Approx) |
|---|---|---|---|
| Connector | Terminal | | |
| E26 | 3 | — | Battery voltage |

Is the inspection result normal?

YES >> GO TO 3
NO >> • Repair or replace malfunctioning components.
• Perform the self-diagnosis, and make sure that the result shows ″NO DTC IS DETECTED″.

## 3. CHECK SOLENOID AND ACTUATOR RELAY GROUND CIRCUIT

Check continuity between ABS actuator and electric unit (control unit) connector E26 terminal 1, 4 and ground.

| ABS actuator and electric unit (control unit) | | Ground | Continuity |
|---|---|---|---|
| Connector | Terminal | | |
| E26 | 1 | — | Yes |
| | 4 | | |

Is the inspection result normal?

YES >> • Replace ABS actuator and electric unit (control unit). Refer to BRC-67, "Removal and Installation".
• Perform the self-diagnosis, and make sure that the result shows ″NO DTC IS DETECTED″.
NO >> • Repair or replace malfunctioning components.
• Perform the self-diagnosis, and make sure that the result shows ″NO DTC IS DETECTED″.

# Component Inspection

INFOID:0000000006389154

## 1. CHECK ACTIVE TEST

1. Select each test menu item on “ACTIVE TEST”.
2. On the display, touch “UP”, “KEEP”, and “DOWN”, and check that the system operates as shown in the table below.
**NOTE:**
The example below is for front right wheel. The procedure for the other wheels is the same as given below.

| Operation (Note) | ABS solenoid valve | | |
|---|---|---|---|
| | UP | KEEP | DOWN |
| FR RH IN SOL | OFF | ON | ON |
| FR RH OUT SOL | OFF | OFF | ON* |

*: ON for 1 to 2 seconds after the touch, and then OFF.

**NOTE:**
A brief moment of ON/OFF condition occurs every 20 seconds after ignition switch turned ON. This is not malfunction because it is an operation for checking.

Is the inspection result normal?

YES >> Inspection End.
NO >> Go to diagnosis procedure. Refer to BRC-34, "Diagnosis Procedure".

# C1121, C1123, C1125, C1127 OUT ABS SOL

## Description

INFOID:0000000006389155

The solenoid valve increases, holds or decreases the fluid pressure of each brake caliper according to the signals transmitted by the ABS actuator and electric unit (control unit).

## DTC Logic

INFOID:0000000006389156

### DTC DETECTION LOGIC

| DTC | Display item | Malfunction detected condition | Possible cause |
|---|---|---|---|
| C1121 | FR LH OUT ABS SOL | When the control unit detects a malfunction in the front LH outlet solenoid circuit. | • ABS actuator and electric unit (control unit) |
| C1123 | FR RH OUT ABS SOL | When the control unit detects a malfunction in the front RH outlet solenoid circuit. | |
| C1125 | RR LH OUT ABS SOL | When the control unit detects a malfunction in the rear LH outlet solenoid circuit. | |
| C1127 | RR RH OUT ABS SOL | When the control unit detects a malfunction in the rear RH outlet solenoid circuit. | |

### DTC CONFIRMATION PROCEDURE

#### 1.CHECK SELF DIAGNOSTIC RESULT

With CONSULT.
1. Turn the ignition switch OFF to ON.
2. Perform self diagnostic result.

Is DTC C1121, C1123, C1125 or C1127 detected?

YES >> Proceed to diagnosis procedure. Refer to BRC-36, "DTC Logic".
NO >> Inspection End.

## Diagnosis Procedure

INFOID:0000000006389157

Regarding Wiring Diagram information, refer to BRC-47, "Wiring Diagram - ABS".

#### 1.CONNECTOR INSPECTION

1. Turn ignition switch OFF.
2. Disconnect ABS actuator and electric unit (control unit) connector.
3. Check terminals for deformation, disconnection, looseness, and so on. If any malfunction is found, repair or replace terminals.
4. Reconnect connector and perform self-diagnosis. Refer to BRC-15, "CONSULT Function (ABS)".

Is the inspection result normal?

YES >> Inspection End.
NO >> GO TO 2

#### 2.CHECK SOLENOID AND ACTUATOR RELAY POWER SUPPLY CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect ABS actuator and electric unit (control unit) connector.
3. Check voltage between ABS actuator and electric unit (control unit) connector E26 terminal 3 and ground.

| ABS actuator and electric unit (control unit) | | Ground | Voltage (Approx) |
|---|---|---|---|
| Connector | Terminal | | |
| E26 | 3 | — | Battery voltage |

Is the inspection result normal?

YES >> GO TO 3
NO >> • Repair or replace malfunctioning components.
• Perform the self-diagnosis, and make sure that the result shows ″NO DTC IS DETECTED″.

## 3. CHECK SOLENOID AND ACTUATOR RELAY GROUND CIRCUIT

Check continuity between ABS actuator and electric unit (control unit) connector E26 terminal 1, 4 and ground.

| ABS actuator and electric unit (control unit) | | Ground | Continuity |
|---|---|---|---|
| Connector | Terminal | | |
| E26 | 1 | — | Yes |
| | 4 | | |

Is the inspection result normal?

YES >> • Replace ABS actuator and electric unit (control unit). Refer to BRC-67, "Removal and Installation".
• Perform the self-diagnosis, and make sure that the result shows ″NO DTC IS DETECTED″.
NO >> • Repair or replace malfunctioning components.
• Perform the self-diagnosis, and make sure that the result shows ″NO DTC IS DETECTED″.

# Component Inspection

INFOID:0000000006389158

## 1. CHECK ACTIVE TEST

1. Select each test menu item on “ACTIVE TEST”.
2. On the display, touch “UP”, “KEEP”, and “DOWN”, and check that the system operates as shown in the table below.
**NOTE:**
The example below is for front right wheel. The procedure for the other wheels is the same as given below.

| Operation (Note) | ABS solenoid valve | | |
|---|---|---|---|
| | UP | KEEP | DOWN |
| FR RH IN SOL | OFF | ON | ON |
| FR RH OUT SOL | OFF | OFF | ON* |

*: ON for 1 to 2 seconds after the touch, and then OFF.

**NOTE:**
A brief moment of ON/OFF condition occurs every 20 seconds after ignition switch turned ON. This is not malfunction because it is an operation for checking.

Is the inspection result normal?

YES >> Inspection End.
NO >> Go to diagnosis procedure. Refer to BRC-36, "Diagnosis Procedure".

# U1000 CAN COMM CIRCUIT

## Description

INFOID:0000000006389159

CAN (Controller Area Network) is a serial communication line for real time application. It is an on-vehicle multiplex communication line with high data communication speed and excellent error detection ability. Many electronic control units are equipped onto a vehicle, and each control unit shares information and links with other control units during operation (not independent). In CAN communication, control units are connected with 2 communication lines (CAN H line, CAN L line) allowing a high rate of information transmission with less wiring. Each control unit transmits/receives data but selectively reads required data only.

## DTC Logic

INFOID:0000000006389160

### DTC DETECTION LOGIC

| DTC | Display | Condition | Possible Cause |
|---|---|---|---|
| U1000 | CAN COMM CIRCUIT | When ABS actuator and electric unit (control unit) is not transmitting or receiving CAN communication signal for 2 seconds or more. | CAN communication system malfunction |

### DTC CONFIRMATION PROCEDURE

#### 1.CHECK SELF DIAGNOSTIC RESULT

With CONSULT.
1. Turn the ignition switch OFF to ON.
2. Perform self diagnostic result.

Is DTC U1000 detected?

YES >> Proceed to diagnosis procedure. Refer to BRC-38, "Diagnosis Procedure".
NO >> Inspection End.

## Diagnosis Procedure

INFOID:0000000006389161

#### 1.CONNECTOR INSPECTION

1. Turn ignition switch OFF.
2. Disconnect ABS actuator and electric unit (control unit) connector.
3. Check terminals for deformation, disconnection, looseness, and so on. If any malfunction is found, repair or replace terminals.
4. Reconnect connector and perform self diagnostic result. Refer to BRC-15, "CONSULT Function (ABS)".

Is DTC U1000 detected?

YES >> Refer to LAN-15, "Trouble Diagnosis Flow Chart".
NO >> Inspection End.

# STOP LAMP SWITCH

## Description

INFOID:0000000006920843

The stop lamp switch transmits the stop lamp switch signal (ON/OFF) to the ABS actuator and electric unit (control unit) either directly (with M/T) or through the stop lamp relay (with CVT).

## Component Function Check

INFOID:0000000006920844

### 1.CHECK DATA MONITOR

On “DATA MONITOR”, select “STOP LAMP SW” and check the stop lamp switch signal.

| Condition | STOP LAMP SW (DATA MONITOR) |
|---|---|
| Brake pedal depressed. | On |
| Brake pedal released. | Off |

Is the inspection result normal?

YES >> Inspection End.
NO >> Go to diagnosis procedure. Refer to BRC-39, "Diagnosis Procedure".

## Diagnosis Procedure

INFOID:0000000006920845

Regarding Wiring Diagram information, refer to BRC-47, "Wiring Diagram - ABS".

### 1.CHECK STOP LAMP SWITCH

Perform the stop lamp switch component inspection. Refer to BRC-41, "Component Inspection (Stop Lamp Switch)".

Is the inspection result normal?

YES (with CVT)>>GO TO 2
YES (with M/T)>>GO TO 7
NO >> Replace stop lamp switch.

### 2.CHECK STOP LAMP RELAY-1

Perform the stop lamp relay-1 component inspection. Refer to BRC-41, "Component Inspection (Stop Lamp Relay)".

Is the inspection result normal?

YES >> GO TO 3
NO >> Replace stop lamp relay-1.

### 3.CHECK STOP LAMP SWITCH SIGNAL CIRCUIT

1. Connect stop lamp switch and stop lamp relay-1 connectors.
2. Disconnect ABS actuator and electric unit (control unit) connector.
3. Check voltage between ABS actuator and electric unit (control unit) connector E26 terminal 20 and ground.

| ABS actuator and electric unit (control unit) | | Ground | Condition | Voltage (Approx.) |
|---|---|---|---|---|
| Connector | Terminal | | | |
| E26 | 20 | — | Brake pedal depressed | Battery voltage |
| | | | Brake pedal released | 0V |

Is the inspection result normal?

YES >> Replace ABS actuator and electric unit (control unit). Refer to BRC-67, "Removal and Installation".

NO >> GO TO 4

## 4.CHECK STOP LAMP RELAY-1 COIL CIRCUIT

1. Disconnect stop lamp relay-1 connector.
2. Check voltage between stop lamp relay-1 connector E57 terminal 1 and ground.

| Stop lamp relay-1 | | Ground | Condition | Voltage (Approx.) |
|---|---|---|---|---|
| Connector | Terminal | | | |
| E57 | 1 | — | Brake pedal depressed | Battery voltage |
| | | | Brake pedal released | 0V |

Is the inspection result normal?

YES >> GO TO 5
NO >> Repair circuit between stop lamp switch and stop lamp relay or circuit between fuse block J/B and stop lamp switch.

## 5.CHECK STOP LAMP RELAY-1 SWITCH INPUT CIRCUIT

Check voltage between stop lamp relay-1 connector E57 terminal 5 and ground.

| Stop lamp relay-1 | | Ground | Voltage (Approx.) |
|---|---|---|---|
| Connector | Terminal | | |
| E57 | 5 | — | Battery voltage |

Is the inspection result normal?

YES >> GO TO 6
NO >> Repair circuit between fuse block J/B and stop lamp relay.

## 6.CHECK STOP LAMP RELAY-1 GROUND CIRCUIT

Check continuity between stop lamp relay-1 connector E57 terminal 2 and ground.

| Stop lamp relay-1 | | Ground | Continuity |
|---|---|---|---|
| Connector | Terminal | | |
| E57 | 2 | — | Yes |

Is the inspection result normal?

YES >> Repair circuit between stop lamp relay and ABS actuator and electric unit (control unit).
NO >> Repair stop lamp relay ground circuit.

## 7.CHECK STOP LAMP SWITCH SIGNAL CIRCUIT

1. Disconnect ABS actuator and electric unit (control unit) connector.
2. Check voltage between ABS actuator and electric unit (control unit) connector E26 terminal 20 and ground.

| ABS actuator and electric unit (control unit) | | Ground | Condition | Voltage (Approx.) |
|---|---|---|---|---|
| Connector | Terminal | | | |
| E26 | 20 | — | Brake pedal depressed | Battery voltage |
| | | | Brake pedal released | 0V |

Is the inspection result normal?

YES >> Replace ABS actuator and electric unit (control unit). Refer to BRC-67, "Removal and Installation".
NO >> GO TO 8

## 8.CHECK STOP LAMP SWITCH INPUT CIRCUIT

1. Disconnect stop lamp switch connector.
2. Check voltage between stop lamp switch connector E38 terminal 1 and ground.

| Stop lamp switch | | Ground | Voltage (Approx.) |
|---|---|---|---|
| Connector | Terminal | | |
| E38 | 1 | — | Battery voltage |

Is the inspection result normal?

YES >> Repair circuit between stop lamp switch and ABS actuator and electric unit (control unit).
NO >> Repair circuit between fuse block J/B and stop lamp switch.

## Component Inspection (Stop Lamp Switch)

INFOID:0000000006920846

### 1.CHECK STOP LAMP SWITCH

1. Turn ignition switch OFF.
2. Disconnect stop lamp switch connector.
3. Check continuity between stop lamp switch terminals.

| Stop lamp switch terminals | Condition | Continuity |
|---|---|---|
| 1 – 2 | Brake pedal depressed. | Yes |
| | Brake pedal released. | No |

Is the inspection result normal?

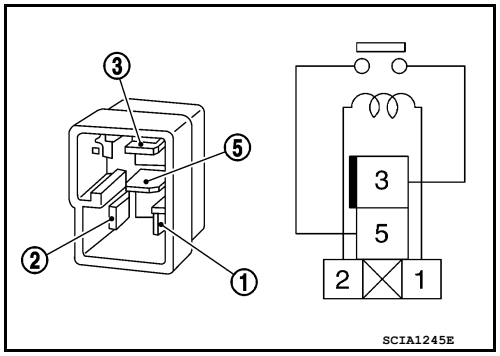
YES >> Inspection End.
NO >> Replace stop lamp switch.

## Component Inspection (Stop Lamp Relay)

INFOID:0000000006920847

### 1.CHECK STOP LAMP RELAY

1. Turn ignition switch OFF.
2. Disconnect stop lamp relay connector.
3. Apply battery voltage to stop lamp relay terminal 1 and ground to terminal 2.
4. Check continuity between stop lamp relay terminals 3 and 5.




| Stop lamp relay terminals | Condition | Continuity |
|---|---|---|
| 3 – 5 | Battery voltage applied to terminal 1 and ground to terminal 2 | Yes |
| | Voltage and ground removed | No |

Is the inspection result normal?

YES >> Inspection End.
NO >> Replace stop lamp relay.

# ABS WARNING LAMP

## Description

INFOID:0000000006389162

×: ON –: OFF

| Condition | ABS warning lamp |
|---|---|
| Ignition switch OFF | – |
| For 2 seconds after turning ON ignition switch | × |
| 2 seconds later after turning ON ignition switch | – |
| ABS function is malfunctioning. | × |
| EBD function is malfunctioning. | × |

## Component Function Check

INFOID:0000000006389163

### 1.CHECK ABS WARNING LAMP OPERATION

Check that the lamp illuminates for approximately 2 seconds after the ignition switch is turned ON.

Is the inspection result normal?

YES >> Inspection End
NO >> Go to diagnosis procedure. Refer to BRC-42, "Diagnosis Procedure".

## Diagnosis Procedure

INFOID:0000000006389164

### 1.CHECK SELF-DIAGNOSIS

Perform ABS actuator and electric unit (control unit) self-diagnosis. Refer to BRC-15, "CONSULT Function (ABS)".

Is the inspection result normal?

YES >> GO TO 2
NO >> Check items displayed by self-diagnosis.

### 2.CHECK COMBINATION METER

Check if the indication and operation of combination meter are normal. Refer to MWI-4, "Work Flow".

Is the inspection result normal?

YES >> Replace ABS actuator and electric unit (control unit). Refer to BRC-67, "Removal and Installation".
NO >> Repair or replace combination meter. Refer to MWI-139, "Removal and Installation".

# BRAKE WARNING LAMP

## Description

INFOID:0000000006389165

×: ON –: OFF

| Condition | Brake warning lamp (Note 1) |
|---|---|
| Ignition switch OFF | – |
| Ignition switch ON | × (Note 2) |
| EBD function is malfunctioning. | × |

**NOTE:**

- 1: Brake warning lamp will turn on in case of parking brake operation (when switch is ON) or of brake fluid level switch operation (when brake fluid is insufficient).
- 2: After starting engine, brake warning lamp is turned off.

## Component Function Check

INFOID:0000000006389166

### 1.BRAKE WARNING LAMP OPERATION CHECK 1

Check that the lamp illuminates after the ignition switch is turned ON, and turns OFF after the engine is started.

Is the inspection result normal?

YES >> GO TO 2
NO >> Go to diagnosis procedure. Refer to BRC-43, "Diagnosis Procedure".

### 2.BRAKE WARNING LAMP OPERATION CHECK 2

Check that the brake warning lamp in the combination meter turns ON/OFF correctly when operating the parking brake lever (M/T models) or the parking brake pedal (CVT models).

Is the inspection result normal?

YES >> Inspection End
NO >> Check parking brake switch. Refer to BR-13, "Inspection and Adjustment".

## Diagnosis Procedure

INFOID:0000000006389167

### 1.CHECK PARKING BRAKE SWITCH

Check that the brake warning lamp in the combination meter turns ON/OFF correctly when operating the parking brake lever (M/T models) or the parking brake pedal (CVT models).

Is the inspection result normal?

YES >> GO TO 2
NO >> Check parking brake switch. Refer to BR-13, "Inspection and Adjustment".

### 2.CHECK SELF-DIAGNOSIS

Perform ABS actuator and electric unit (control unit) self-diagnosis. Refer to BRC-15, "CONSULT Function (ABS)".

Is the inspection result normal?

YES >> GO TO 3
NO >> Check items displayed by self-diagnosis.

### 3.CHECK COMBINATION METER

Check if the indication and operation of combination meter are normal. Refer to MWI-4, "Work Flow".

Is the inspection result normal?

YES >> Replace ABS actuator and electric unit (control unit). Refer to BRC-67, "Removal and Installation".
NO >> Repair or replace combination meter. Refer to MWI-139, "Removal and Installation".

# ECU DIAGNOSIS INFORMATION

## ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)

### Reference Value

INFOID:0000000006389168

VALUES ON THE DIAGNOSIS TOOL

**CAUTION:**

**The display shows the control unit calculation data, so a normal value might be displayed even in the event the output circuit (harness) is open or short - circuited.**

| Monitor item | Display content | Data monitor | |
|---|---|---|---|
| | | Condition | Reference value in normal operation |
| FR LH SENSOR<br>FR RH SENSOR<br>RR LH SENSOR<br>RR RH SENSOR | Wheel speed | 0 [km/h] | Vehicle stopped |
| | | Nearly matches the speed meter display (± 10 % or less) | Vehicle running (Note 1) |
| STOP LAMP SW | Brake pedal operation | When brake pedal is depressed | ON |
| | | When brake pedal is not depressed | OFF |
| BATTERY VOLT | Battery voltage supplied to the ABS actuator and electric unit (control unit) | Ignition switch ON | 10 – 16 V |
| SLCT LVR POSI | CVT shift position | P position<br>R position<br>N position<br>D position | P<br>R<br>N<br>D |
| PARK BRAKE SW | Parking brake switch | Parking brake switch is active | ON |
| | | Parking brake switch is inactive | OFF |
| FR LH IN SOL<br>FR LH OUT SOL<br>FR RH IN SOL<br>FR RH OUT SOL<br>RR LH IN SOL<br>RR LH OUT SOL<br>RR RH IN SOL<br>RR RH OUT SOL | Operation status of all solenoid valve | Actuator (solenoid valve) is active (“ACTIVE TEST” with CONSULT) or actuator relay is inactive (in fail-safe mode) | ON |
| | | When the actuator (solenoid valve) is not active and actuator relay is active (ignition switch ON) | OFF |
| MOTOR RELAY | Motor and motor relay operation | When the motor relay and motor are operating | ON |
| | | When the motor relay and motor are not operating | OFF |
| ACTUATOR RLY (Note 2) | Actuator relay operation | When the actuator relay is operating | ON |
| | | When the actuator relay is not operating | OFF |
| ABS WARN LAMP | ABS warning lamp (Note 3) | When ABS warning lamp is ON | ON |
| | | When ABS warning lamp is OFF | OFF |
| ABS SIGNAL | ABS operation | ABS is active | ON |
| | | ABS is inactive | OFF |

| Monitor item | Display content | Data monitor | |
|---|---|---|---|
| | | Condition | Reference value in normal operation |
| ABS FAIL SIG | ABS fail-safe signal | In ABS fail-safe | ON |
| | | ABS is normal | OFF |

Note 1: Confirm tire pressure is normal.

Note 2: A brief moment of ON/OFF condition occurs every 20 seconds after ignition switch turned ON. This is not malfunction because it is an operation for checking.

Note 3: On and off timing for warning lamp and indicator lamp.Refer to BRC-15, "CONSULT Function (ABS)".

## Fail-Safe

INFOID:0000000006389169

### ABS SYSTEM

In case of electrical malfunctions with ABS, the ABS warning lamp will turn on. Simultaneously, the ABS switches to the fail-safe mode.

- In case of a malfunction with ABS, the result of a fail-safe mode will be normal braking without the aid of ABS.
  **NOTE:**
  ABS self-diagnosis sound may be heard. That is a normal condition because a self-diagnosis for “Ignition switch ON” and “The first starting” are being performed.

**CAUTION:**
**If the Fail-Safe function is activated, then perform self-diagnosis for ABS control system.**

## DTC No. Index

INFOID:0000000006389170

**CAUTION:**
**If the Fail-Safe function is activated, then perform self-diagnosis for VDC/TCS/ABS control system.**

| Display item | Malfunction detecting condition | Check item |
|---|---|---|
| RR RH SENSOR-1 [C1101]*1 | Circuit of rear RH wheel sensor is open. Or when the sensor power voltage is outside the standard. | BRC-18, "Diagnosis Procedure" (Note 1) |
| RR LH SENSOR-1 [C1102]*1 | Circuit of rear LH wheel sensor is open. Or when the sensor power voltage is outside the standard. | |
| FR RH SENSOR-1 [C1103]*1 | Circuit of front RH wheel sensor is open. Or when the sensor power voltage is outside the standard. | |
| FR LH SENSOR-1 [C1104]*1 | Circuit of front LH wheel sensor is open. Or when the sensor power voltage is outside the standard. | |
| RR RH SENSOR-2 [C1105]*1 | When the circuit in the rear RH wheel sensor is short-circuited. Or when the distance between the wheel sensor and sensor rotor is too large and the sensor pulse cannot be recognized by the control unit. | BRC-21, "Diagnosis Procedure" (Note 1) |
| RR LH SENSOR-2 [C1106]*1 | When the circuit in the rear LH wheel sensor is short-circuited. Or when the distance between the wheel sensor and sensor rotor is too large and the sensor pulse cannot be recognized by the control unit. | |
| FR RH SENSOR-2 [C1107]*1 | When the circuit in the front RH wheel sensor is short-circuited. Or when the distance between the wheel sensor and sensor rotor is too large and the sensor pulse cannot be recognized by the control unit. | |
| FR LH SENSOR- 2 [C1108]*1 | When the circuit in the front LH wheel sensor is short-circuited. Or when the distance between the wheel sensor and sensor rotor is too large and the sensor pulse cannot be recognized by the control unit. | |
| BATTERY VOLTAGE [ABNORMAL] [C1109] | When the ABS actuator and electric unit (control unit) power supply voltage is lower than normal. | BRC-24, "Diagnosis Procedure" |
| CONTROLLER FAILURE [C1110]*2 | When there is an internal malfunction in the ABS actuator and electric unit (control unit). | BRC-26, "Diagnosis Procedure" |

| Display item | Malfunction detecting condition | Check item |
|---|---|---|
| PUMP MOTOR [C1111] | During the actuator motor operating with ON, when the actuator motor turns OFF, or when the control line for actuator motor relay is open. | BRC-27, "Diagnosis Procedure" |
| | During the actuator motor operating with OFF, when the actuator motor turns ON, or when the control line for relay is shorted to ground. | |
| MAIN RELAY [C1114] | During the actuator relay operating with OFF, when the actuator relay turns ON. Or when the control line for the relay is shorted to the ground. | BRC-29, "Diagnosis Procedure" |
| | During the actuator relay operating with ON, when the actuator relay turns OFF, or when the control line for the relay is open. | |
| ABS SENSOR [ABNORMAL SIGNAL] [C1115] | When wheel sensor input signal is malfunctioning. | BRC-31, "Diagnosis Procedure" (Note 1) |
| FR LH IN ABS SOL [C1120] | When the control unit detects a malfunction in the front left inlet solenoid circuit. | BRC-34, "Diagnosis Procedure" |
| FR LH OUT ABS SOL [C1121] | When the control unit detects a malfunction in the front left outlet solenoid circuit. | BRC-36, "Diagnosis Procedure" |
| FR RH IN ABS SOL [C1122] | When the control unit detects a malfunction in the front right inlet solenoid circuit. | BRC-34, "Diagnosis Procedure" |
| FR RH OUT ABS SOL [C1123] | When the control unit detects a malfunction in the front right outlet solenoid circuit. | BRC-36, "Diagnosis Procedure" |
| RR LH IN ABS SOL [C1124] | When the control unit detects a malfunction in the rear left inlet solenoid circuit. | BRC-34, "Diagnosis Procedure" |
| RR LH OUT ABS SOL [C1125] | When the control unit detects a malfunction in the rear left outlet solenoid circuit. | BRC-36, "Diagnosis Procedure" |
| RR RH IN ABS SOL [C1126] | When the control unit detects a malfunction in the rear right inlet solenoid circuit. | BRC-34, "Diagnosis Procedure" |
| RR RH OUT ABS SOL [C1127] | When the control unit detects a malfunction in the rear right outlet solenoid circuit. | BRC-36, "Diagnosis Procedure" |
| CAN COMM CIRCUIT [U1000]*3 | When there is a malfunction in the CAN communication circuit. | BRC-38, "Diagnosis Procedure" |

*1: Be sure to confirm the ABS warning lamp illuminates when the ignition switch is turned ON after repairing the shorted sensor circuit, but the lamp turns off when driving the vehicle over 30 km/h (19 MPH) for approximately 1 minute in accordance with SELF-DIAGNOSIS PROCEDURE.

*2: When "CONTROLLER FAILURE" is displayed, check to see if the ABS warning lamp is burned out, and check the circuit between the ABS warning lamp and ABS actuator and electric unit (control unit) for open or short. Then, check the ABS actuator and electric unit (control unit) and circuit.

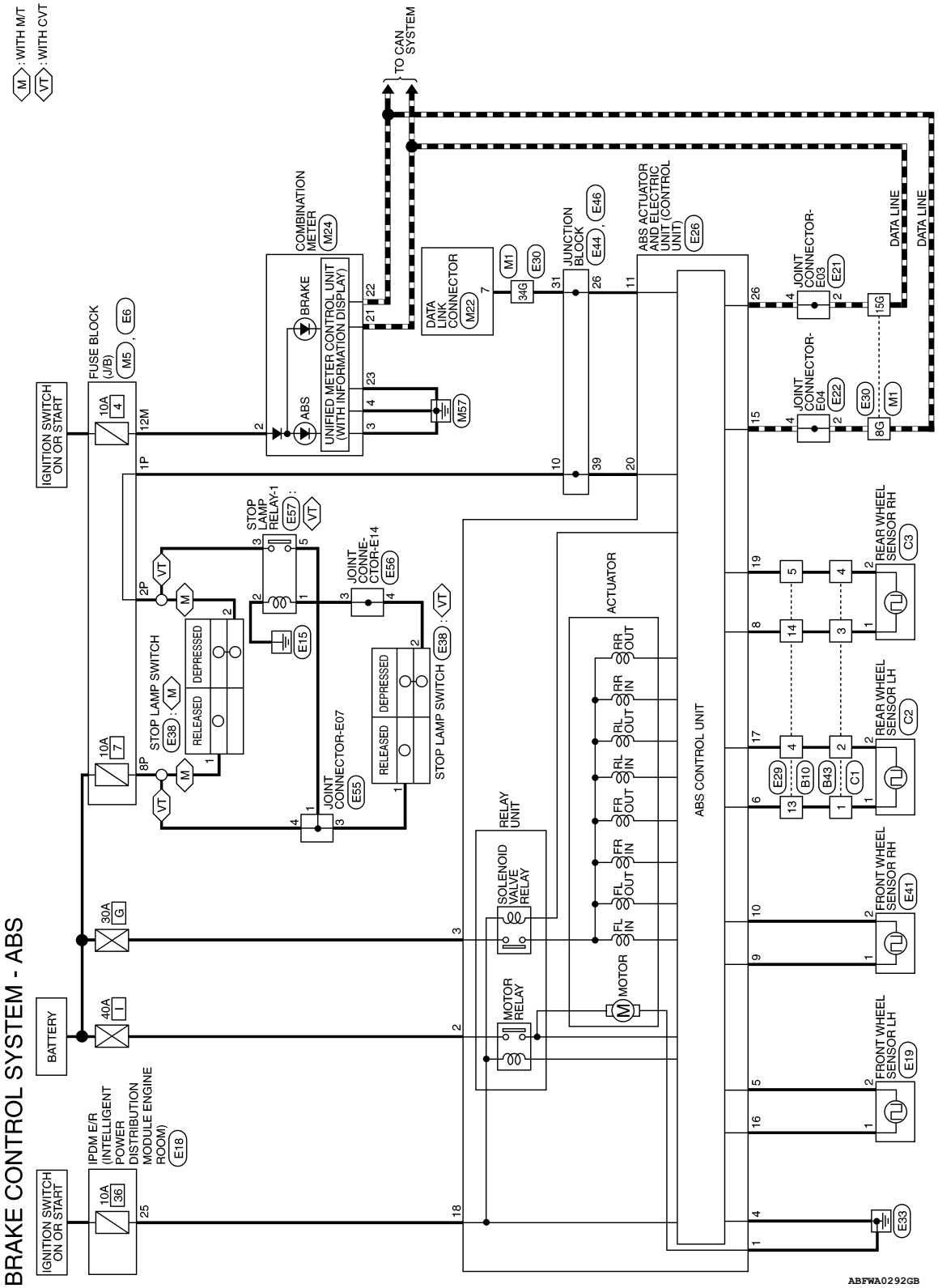
*3: When malfunctions are detected in several systems, including CAN communication circuit [U1000], troubleshoot CAN communication circuit first. Refer to LAN-6, "System Description".

# WIRING DIAGRAM

## BRAKE CONTROL SYSTEM

### Wiring Diagram - ABS

INFOID:0000000006389171



BRAKE CONTROL SYSTEM CONNECTORS - ABS

| Connector No. | M1 |
|---|---|
| Connector Name | WIRE TO WIRE |
| Connector Color | WHITE |

H.S.

| 9G | 8G | 7G | 6G | 5G | 4G | 3G | | |
|---|---|---|---|---|---|---|---|---|
| 17G | 16G | 15G | 14G | 13G | 12G | 11G | 10G | 2G | 1G |
| | 26G | 25G | 24G | 23G | 22G | 21G | 20G | | |
| | 34G | 33G | 32G | 31G | 30G | 29G | 28G | 27G | 19G | 18G |
| | 41G | 40G | 39G | 38G | 37G | 36G | 35G | | |
| 50G | 49G | 48G | 47G | 46G | 45G | 44G | 43G | 42G | |
| | 58G | 57G | 56G | 55G | | | | | |
| 63G | 62G | 61G | 60G | 59G | 54G | 53G | 52G | 51G | |
| | 72G | 71G | 70G | 69G | 68G | 67G | 66G | | |
| 80G | 79G | 78G | 77G | 76G | 75G | 74G | 73G | 65G | 64G |
| | | | 83G | | 82G | | 81G | | |

| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 8G | P | – |
| 15G | L | – |
| 34G | O | – |

| Connector No. | M5 |
|---|---|
| Connector Name | FUSE BLOCK (J/B) |
| Connector Color | WHITE |

H.S.

| 5M | 4M | | 3M | 2M | 1M |
|---|---|---|---|---|---|
| 12M | 11M | 10M | 9M | 8M | 7M | 6M |

| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 12M | O | – |

| Connector No. | M22 |
|---|---|
| Connector Name | DATA LINK CONNECTOR |
| Connector Color | WHITE |

H.S.

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

| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 7 | O | – |

| Connector No. | M24 |
|---|---|
| Connector Name | COMBINATION METER |
| 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 |
|---|---|---|
| 2 | O | IGN |
| 3 | B | GND (POWER) |
| 4 | B | GND (ILL) |
| 21 | L | CAN-H |
| 22 | P | CAN-L |
| 23 | B | GND (CIRCUIT) |

| Connector No. | E6 |
|---|---|
| Connector Name | FUSE BLOCK (J/B) |
| 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 | SB | – |
| 2P | LG | – (WITH MT) |
| 2P | Y | – (WITH CVT) |
| 8P | R | – |

AAFIA0081GB

| Connector No. | E18 |
|---|---|
| Connector Name | IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM) |
| Connector Color | WHITE |

H.S.

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

| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 25 | GR | ABS_ECU |

| Connector No. | E19 |
|---|---|
| Connector Name | FRONT WHEEL SENSOR LH |
| Connector Color | GRAY |

H.S.


| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 1 | W | – |
| 2 | V | – |

| Connector No. | E21 |
|---|---|
| Connector Name | JOINT CONNECTOR-E03 |
| Connector Color | WHITE |

H.S.




| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 2 | L | – |
| 4 | L | – |

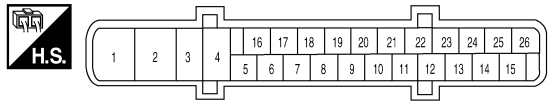
| Connector No. | E22 |
|---|---|
| Connector Name | JOINT CONNECTOR-E04 |
| Connector Color | WHITE |

H.S.


| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 2 | P | – |
| 4 | P | – |

ABFIA0339GB

| Connector No. | E26 |
|---|---|
| Connector Name | ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT) |
| Connector Color | BLACK |

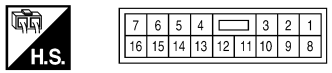



| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 1 | B | MGND |
| 2 | G | UB (MR) |
| 3 | R | UB (VR) |
| 4 | B | GND |

| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 5 | V | DS FL |
| 6 | G | DP RL |
| 7 | – | – |
| 8 | L | DP RR |
| 9 | B | DP FR |
| 10 | LG | DS FR |
| 11 | GR | DIAG-K |
| 12 | – | – |
| 13 | – | – |
| 14 | – | – |
| 15 | P | CAN-L |
| 16 | W | DP FL |
| 17 | O | DS RL |

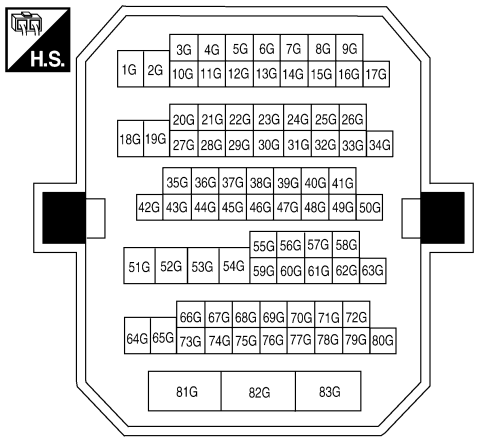
| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 18 | GR | IGN |
| 19 | BR | DS RR |
| 20 | SB | BLS |
| 21 | – | – |
| 22 | – | – |
| 23 | – | – |
| 24 | – | – |
| 25 | – | – |
| 26 | L | CAN-H |

| Connector No. | E29 |
|---|---|
| Connector Name | WIRE TO WIRE |
| Connector Color | WHITE |




| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 4 | O | – |
| 5 | BR | – |
| 13 | G | – |
| 14 | L | – |

| Connector No. | E30 |
|---|---|
| Connector Name | WIRE TO WIRE |
| Connector Color | WHITE |




| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 8G | P | – |
| 15G | L | – |
| 34G | O | – |

ABFIA0340GB

| Connector No. | E41 |
|---|---|
| Connector Name | FRONT WHEEL SENSOR RH |
| Connector Color | GRAY |

H.S.




| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 1 | B | – |
| 2 | LG | – |

| Connector No. | E38 |
|---|---|
| Connector Name | STOP LAMP SWITCH (WITH M/T) |
| Connector Color | BLACK |

H.S.




| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 1 | R | – |
| 2 | LG | – |

| Connector No. | E38 |
|---|---|
| Connector Name | STOP LAMP SWITCH (WITH CVT) |
| Connector Color | WHITE |

H.S.




| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 1 | R | – |
| 2 | LG | – |

| Connector No. | E55 |
|---|---|
| Connector Name | JOINT CONNECTOR-E07 |
| Connector Color | WHITE |

H.S.




| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 1 | W | – |
| 3 | R | – |
| 4 | R | – |

| Connector No. | E46 |
|---|---|
| Connector Name | JUNCTION BLOCK |
| Connector Color | WHITE |

H.S.




| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 26 | GR | – |
| 31 | O | – |
| 39 | SB | – |

| Connector No. | E44 |
|---|---|
| Connector Name | JUNCTION BLOCK |
| Connector Color | BROWN |

H.S.




| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 10 | SB | – |

AAFIA0082GB

| Connector No. | E56 |
|---|---|
| Connector Name | JOINT CONNECTOR-E14 |
| Connector Color | WHITE |

H.S.




| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 3 | LG | – |
| 4 | LG | – |

| Connector No. | C2 |
|---|---|
| Connector Name | REAR WHEEL SENSOR LH |
| Connector Color | BLACK |

H.S.




| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 1 | G | – |
| 2 | O | – |

| Connector No. | E57 |
|---|---|
| Connector Name | STOP LAMP RELAY-1 |
| Connector Color | BLUE |

H.S.




| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 1 | LG | – |
| 2 | B | – |
| 3 | Y | – |
| 5 | W | – |

| Connector No. | C3 |
|---|---|
| Connector Name | REAR WHEEL SENSOR RH |
| Connector Color | GRAY |

H.S.




| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 1 | LG | – |
| 2 | BR | – |

| Connector No. | C1 |
|---|---|
| Connector Name | WIRE TO WIRE |
| Connector Color | GRAY |

H.S.




| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 1 | G | – |
| 2 | O | – |
| 3 | LG | – |
| 4 | BR | – |

| Connector No. | B10 |
|---|---|
| Connector Name | WIRE TO WIRE |
| Connector Color | WHITE |

H.S.




| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 4 | O | – |
| 5 | BR | – |
| 13 | G | – |
| 14 | LG | – |

AAFIA0083GB

| Connector No. | B43 |
|---|---|
| Connector Name | WIRE TO WIRE |
| Connector Color | GRAY |


| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 1 | G | – |
| 2 | O | – |
| 3 | LG | – |
| 4 | BR | – |

AAFIA0084GB

# SYMPTOM DIAGNOSIS

## ABS

### Symptom Table

INFOID:0000000006389172

If ABS warning lamp turns ON, perform self-diagnosis.

| Symptom | Check item | Reference |
|---|---|---|
| Excessive ABS function operation frequency | Brake force distribution | BRC-55, "Diagnosis Procedure" |
| | Looseness of front and rear axle | |
| | Wheel sensor and rotor system | |
| Unexpected pedal reaction | Brake pedal stroke | BRC-56, "Diagnosis Procedure" |
| | Make sure the braking force is sufficient when the ABS is not operating. | |
| The braking distance is long | Check stopping distance when the ABS is not operating. | BRC-57, "Diagnosis Procedure" |
| ABS function does not operate (Note 1) | ABS actuator and electric unit (control unit) | BRC-58, "Diagnosis Procedure" |
| Pedal vibration or ABS operation sound occurs (Note 2) | Brake pedal | BRC-59, "Diagnosis Procedure" |
| | ABS actuator and electric unit (control unit) | |

**NOTE:**

- 1: The ABS does not operate when the speed is 10 km/h (6 MPH) or less.
- 2: Under the following conditions, ABS is activated and vibration is felt when brake pedal is lightly depressed (just place a foot on it). However, this is normal.

- When shifting gears
- When driving on slippery road
- During cornering at high speed
- When passing over bumps or grooves [at approximately 50 mm (1.97 in) or more]
- When pulling away just after starting engine [at approximately 10 km/h (6 MPH) or higher]

# EXCESSIVE ABS FUNCTION OPERATION FREQUENCY

## Diagnosis Procedure

INFOID:0000000006389173

### 1.CHECK START

Check front and rear brake force distribution using a brake tester.

Is the inspection result normal?

YES >> GO TO 2
NO >> Check brake system.

### 2.CHECK FRONT AND REAR AXLE

Make sure that there is no excessive play in the front and rear axles. Refer to front: FAX-6, "Inspection", Rear: RAX-6, "On-vehicle Service".

Is the inspection result normal?

YES >> GO TO 3
NO >> Repair or replace malfunctioning components.

### 3.CHECK WHEEL SENSOR AND SENSOR ROTOR

Check the following.
- Wheel sensor installation for damage.
- Sensor rotor installation for damage.
- Wheel sensor connector connection.
- Wheel sensor harness inspection.

Is the inspection result normal?

YES >> GO TO 4
NO >>
- Replace wheel sensor or sensor rotor. Refer to BRC-64, "Removal and Installation" or BRC-66, "Removal and Installation".
- Repair harness.

### 4.CHECK ABS WARNING LAMP DISPLAY

Make sure that the ABS warning lamp is turned off after the ignition switch is turned ON or when driving.

Is the inspection result normal?

YES >> Inspection End.
NO >> Perform self-diagnosis. Refer to BRC-15, "CONSULT Function (ABS)".

# UNEXPECTED PEDAL REACTION

## Diagnosis Procedure

INFOID:0000000006389174

### 1.CHECK BRAKE PEDAL STROKE

Check brake pedal stroke. Refer to BR-13, "Inspection and Adjustment".

Is the stroke too big?

YES >> • Bleed air from brake tube and hose. Refer to BR-16, "Bleeding Brake System".
• Check brake pedal, brake booster, and master cylinder for mount play, looseness, brake system fluid leakage, etc. Refer to brake pedal: BR-13, "Inspection and Adjustment", brake booster: BR-9, "Inspection" and master cylinder: BR-10, "On Board Inspection".

NO >> GO TO 2

### 2.CHECK ABS FUNCTION

Disconnect ABS actuator and electric unit (control unit) connector to deactivate ABS. Check if braking force is normal in this condition.Connect connector after inspection.

Is the inspection result normal?

YES >> Inspection End.
NO >> Check brake system.

# THE BRAKING DISTANCE IS LONG

## Diagnosis Procedure

INFOID:0000000006389175

**CAUTION:**

**The stopping distance on slippery road surfaces might be longer with the ABS operating than when the ABS is not operating.**

### 1.CHECK ABS FUNCTION

Turn ignition switch OFF and disconnect ABS actuator and electric unit (control unit) connector to deactivate ABS. In this condition, check stopping distance. After inspection, connect connector.

Is the inspection result normal?

YES >> Inspection End.
NO >> Check brake system.

# ABS FUNCTION DOES NOT OPERATE

## Diagnosis Procedure

INFOID:0000000006389176

**CAUTION:**
**ABS does not operate when speed is 10 km/h (6 MPH) or lower.**

1.CHECK ABS WARNING LAMP DISPLAY

Make sure that the ABS warning lamp turns OFF after ignition switch is turned on or when driving.

Is the inspection result normal?

YES >> Inspection End.
NO >> Perform self-diagnosis. Refer to BRC-15, "CONSULT Function (ABS)".

# PEDAL VIBRATION OR ABS OPERATION SOUND OCCURS

## Diagnosis Procedure

INFOID:0000000006389177

**CAUTION:**

**Under the following conditions, ABS is activated and vibration is felt when brake pedal is lightly depressed (just place a foot on it).However, this is normal.**

- **When shifting gears**
- **When driving on slippery road**
- **During cornering at high speed**
- **When passing over bumps or grooves [at approximately 50 mm (1.97 in) or more]**
- **When pulling away just after starting engine [at approximately 10 km/h (6 MPH) or higher]**

### 1.SYMPTOM CHECK 1

Check that there are pedal vibrations when the engine is started.

Do vibrations occur?

YES >> GO TO 2
NO >> Inspect the brake pedal.

### 2.SYMPTOM CHECK 2

Check that there are ABS operation noises when the engine is started.

Do the operation noises occur?

YES >> GO TO 3
NO >> Perform self diagnostic result. Refer to BRC-15, "CONSULT Function (ABS)".

### 3.SYMPTOM CHECK 3

Check symptoms when electrical component (headlamps, etc.) switches are operated.

Do symptoms occur?

YES >> Check if there is a radio, antenna, antenna lead wire, or wiring close to the control unit. If there is, move it farther away.
NO >> Inspection End.

# NORMAL OPERATING CONDITION

## Description

INFOID:0000000006389178

| Symptom | Result |
|---|---|
| Slight vibrations are felt on the brake pedal and the operation noises occur, when ABS is activated. | This is a normal condition due to ABS activation. |
| Stopping distance is longer than that of vehicles without ABS when the vehicle drives on rough, gravel, or snow-covered (fresh, deep snow) roads. | |
| The brake pedal vibrates and motor operation noises occur from the engine room, after the engine starts and just after the vehicle starts. | This is a normal, and it is caused by the ABS operation check. |

# PRECAUTION

## PRECAUTIONS

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

INFOID:0000000006389179

The Supplemental Restraint System such as “AIR BAG” and “SEAT BELT PRE-TENSIONER”, used along with a front seat belt, helps to reduce the risk or severity of injury to the driver and front passenger for certain types of collision. This system includes seat belt switch inputs and dual stage front air bag modules. The SRS system uses the seat belt switches to determine the front air bag deployment, and may only deploy one front air bag, depending on the severity of a collision and whether the front occupants are belted or unbelted. Information necessary to service the system safely is included in the SR and SB section of this Service Manual.

**WARNING:**

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

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

**WARNING:**

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

### Necessary for Steering Wheel Rotation After Battery Disconnect

INFOID:0000000006389180

**NOTE:**

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

This vehicle is equipped with a push-button ignition switch and a steering lock unit.
If the battery is disconnected or discharged, the steering wheel will lock and cannot be turned.
If turning the steering wheel is required with the battery disconnected or discharged, follow the procedure below before starting the repair operation.

### OPERATION PROCEDURE

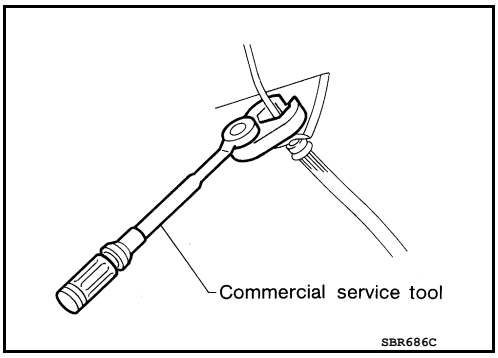
1. Connect both battery cables.
   **NOTE:**
   Supply power using jumper cables if battery is discharged.
2. Carry the Intelligent Key or insert it to the key slot and turn the push-button ignition switch to ACC position. (At this time, the steering lock will be released.)
3. Disconnect both battery cables. The steering lock will remain released with both battery cables disconnected and the steering wheel can be turned.
4. Perform the necessary repair operation.
5. When the repair work is completed, re-connect both battery cables. With the brake pedal released, turn the push-button ignition switch from ACC position to ON position, then to LOCK position. (The steering wheel will lock when the push-button ignition switch is turned to LOCK position.)

6. Perform self-diagnosis check of all control units using CONSULT.

## Precaution for Brake System

INFOID:0000000006389181

- Recommended fluid is brake fluid “DOT 3”.
- Never reuse drained brake fluid.
- Be careful not to splash brake fluid on painted surface of body. If brake fluid is splashed on painted surfaces of body immediately wipe off then with cloth and then wash it away with water.
- Never use mineral oils such as gasoline or kerosene. They will ruin rubber parts of the hydraulic system.
- Use a flare nut wrench when removing flare nuts, and use a flare nut torque wrench when tighten brake tube flare nuts.
- When installing brake tubes, be sure to check torque.
- Brake system is an important safety part. If a brake fluid leak is detected, always disassemble the affected part. If a malfunction is detected, replace part with a new one.
- Before working, turn ignition switch OFF and disconnect connectors of ABS actuator and electric unit (control unit) or the battery cable from the negative terminal.




**WARNING:**

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

## Precaution for Brake Control

INFOID:0000000006389182

- Just after starting vehicle after ignition switch ON, brake pedal may vibrate or motor operating noise may be heard from engine compartment. This is normal condition.
- When an error is indicated by ABS or another warning lamp, collect all necessary information from customer (what symptoms are present under what conditions) and check for simple causes before starting diagnostic servicing. Besides electrical system inspection, check brake booster operation, brake fluid level, and oil leaks.
- If tire size and type are used in an improper combination, or brake pads are not Genuine NISSAN parts, stopping distance or steering stability may deteriorate.
- ABS might be out of order or malfunctions by putting a radio (wiring inclusive), an antenna and a lead-in wire near the control unit.
- If aftermarket parts (car stereo, CD player, etc.) have been installed, check for incidents such as harness pinches, open circuits, and improper wiring.
- When replacing the following parts with parts other than genuine parts or making modifications: Suspension-related parts (shock absorber, spring, bushing, etc.), tires, wheels (other than specified sizes), brake-related parts (pad, rotor, caliper, etc.), engine-related parts (muffler, ECM, etc.) and body reinforcement-related parts (roll bar, tower bar, etc.).
- When driving with worn or deteriorated suspension, tires and brake-related parts.

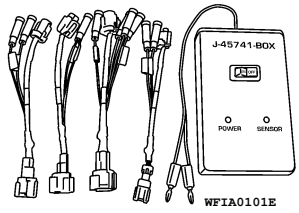
# PREPARATION

## PREPARATION

### Special Service Tool

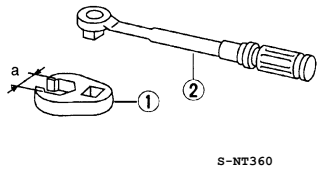
INFOID:0000000006389183

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

| Tool number<br>(Kent-Moore No.)<br>Tool name | Description |
|---|---|
| —<br>(J-45741)<br>ABS active wheel sensor tester   | Checking operation of ABS active wheel sensor |

### Commercial Service Tool

INFOID:0000000006389184

| Tool name | Description |
|---|---|
| 1. Flare nut crowfoot<br>2. Torque wrench   | Removing and installing brake piping<br>**a: 10mm (0.39 in)/12mm (0.47 in)** |

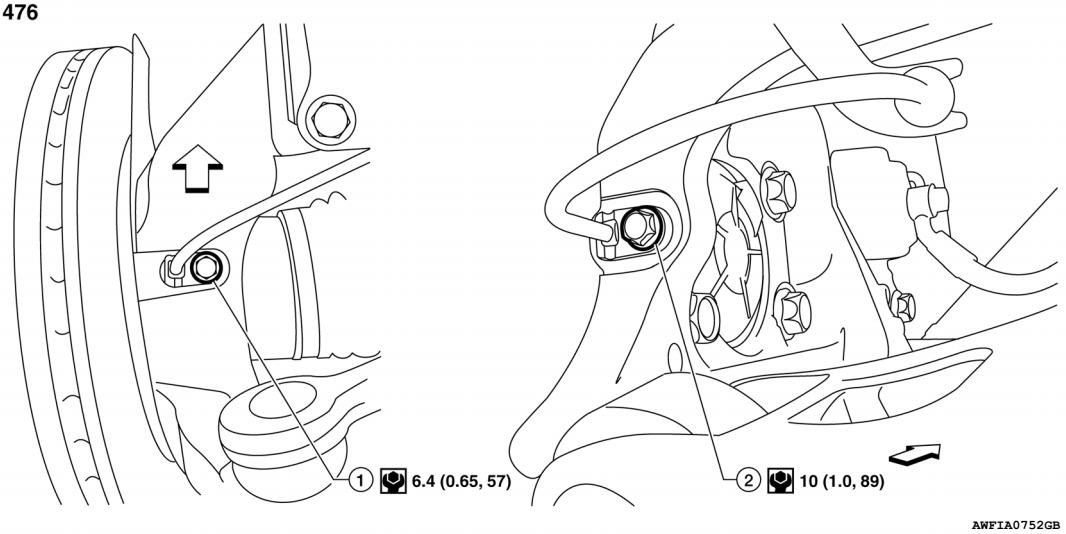
# REMOVAL AND INSTALLATION

## WHEEL SENSORS

### Removal and Installation

INFOID:0000000006389185

SEC. 476




1. Front wheel sensor
2. Rear wheel sensor
⇦ Front

**CAUTION:**

- **Be careful not to damage wheel sensor edge and sensor rotor teeth.**
- **When removing the front or rear wheel hub, first remove the wheel sensor from the wheel hub. Failure to do so may result in damage to the wheel sensor wires making the sensor inoperative.**
- **Pull out the wheel sensor, being careful to turn it as little as possible. Do not pull on the wheel sensor harness.**
- **Before installation, check if foreign objects such as iron fragments are adhered to the pick-up part of the sensor or to the inside of the hole in the wheel hub for the wheel sensor, or if a foreign object is caught in the surface of the mating surface for the sensor rotor. Fix as necessary and then install the wheel sensor.**

#### FRONT WHEEL SENSOR

Removal

1. Remove front wheel and tire. Refer to WT-65, "Adjustment".
2. Partially remove front wheel fender protector. Refer to EXT-22, "Removal and Installation" (Coupe), EXT-46, "Removal and Installation" (Sedan).
3. Remove wheel sensor bolt and wheel sensor.
4. Remove harness wire from mounts and disconnect wheel sensor harness connector.

Installation

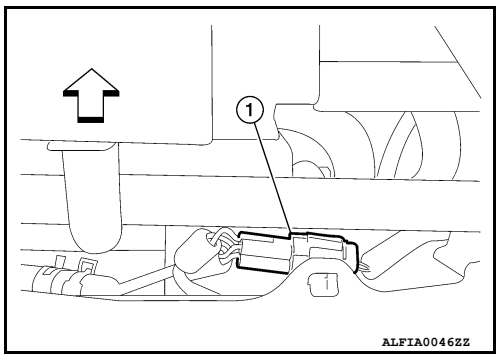
Installation is in the reverse order of removal.

#### REAR WHEEL SENSOR

Removal

1. Remove rear wheel and tire. Refer to WT-65, "Adjustment".

2. Disconnect wheel sensor harness connector (1).
   - ⇦: Front
3. Remove harness wire clips from rear suspension member.
4. Remove wheel sensor bolt and wheel sensor from rear wheel hub and bearing assembly.




Installation

Installation is in the reverse order of removal.

# SENSOR ROTOR

## Removal and Installation

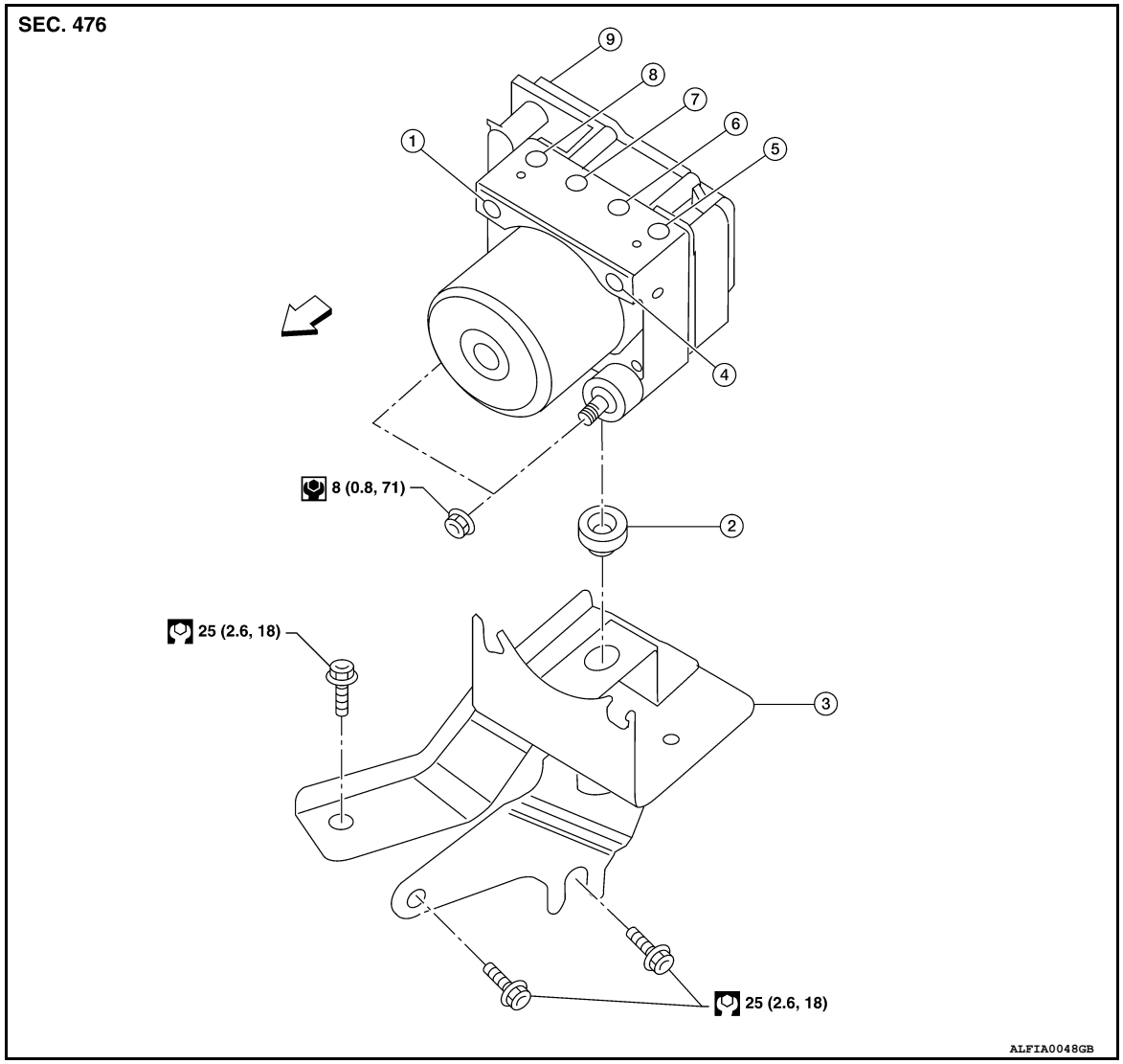
INFOID:0000000006389186

The front and rear wheel sensor rotors are an integral part of the wheel hubs and can not be disassembled. When replacing the sensor rotor, replace the wheel hub. Refer to FAX-8, "Removal and Installation" (front), RAX-7, "Removal and Installation" (rear).

# ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)

## Exploded View

INFOID:0000000006389187




1. From master cylinder secondary side
2. Grommet
3. Bracket
4. From master cylinder primary side
5. To front LH brake caliper
6. To rear RH brake caliper
7. To rear LH brake caliper
8. To front RH brake caliper
9. ABS actuator and electric unit (control unit)

⇦ Front

## Removal and Installation

INFOID:0000000006389188

**CAUTION:**

**Be careful of the following.**

- **Before servicing, disconnect the battery cable from negative terminal.**
- **To remove brake pipe, use a suitable tool (flare nut wrench) to prevent flare nuts and brake tube from being damaged. To install, use suitable tool (flare nut torque wrench).**
- **Do not apply excessive impact to ABS actuator and electric unit (control unit), such as dropping it.**
- **Do not remove and install ABS actuator and electric unit (control unit) by holding harness.**
- **After work is completed, bleed air from brake tube. Refer to BR-16, "Bleeding Brake System".**
- **After installing harness connector on the ABS actuator and electric unit (control unit), make sure connector is securely locked.**

## REMOVAL

1. Remove cowl top. Refer to EXT-21, "Removal and Installation" (Coupe), EXT-45, "Removal and Installation" (Sedan).
2. Disconnect washer hose.
3. Disconnect the battery negative terminal.
4. Remove strut tower bar, if equipped. Refer to FSU-13, "Exploded View".
5. Disconnect ABS actuator and electric unit (control unit) connector.
6. Loosen brake tube flare nuts, then remove brake tubes from ABS actuator and electric unit (control unit) using a suitable tool.
7. Remove ABS actuator and electric unit (control unit) nuts.
8. Remove ABS actuator and electric unit (control unit).
9. Remove bracket as necessary.

## INSTALLATION

Installation is in the reverse order of removal.
Torque brake lines to proper specifications. Refer to BR-18, "Hydraulic Circuit".

# BASIC INSPECTION

## DIAGNOSIS AND REPAIR WORKFLOW

### Work Flow

INFOID:0000000006920867

#### 1.COLLECT INFORMATION FROM THE CUSTOMER

Get detailed information from the customer about the symptom (the condition and the environment when the incident/malfunction occurred) using the diagnosis worksheet. Refer to BRC-70, "Diagnostic Work Sheet".

>> GO TO 2.

#### 2.PERFORM SELF DIAGNOSTIC RESULT

Perform self diagnostic result. Refer to BRC-81, "CONSULT Function (ABS)".

Are any DTCs displayed?

YES >> Refer to BRC-115, "DTC No. Index".
NO >> GO TO 3.

#### 3.CHECK SYMPTOM OPERATING CONDITION

Check that the symptom is a normal operating condition. Refer to BRC-131, "Description".

Is the symptom a normal operating condition?

YES >> Inspection End.
NO >> GO TO 4.

#### 4.CHECK WARNING AND INDICATOR LAMPS OPERATION

Check warning and indicator lamps operation.
- ABS warning lamp: Refer to BRC-109, "Description".
- brake warning lamp: Refer to BRC-110, "Description".
- SLIP indicator lamp: Refer to BRC-113, "Description".

Is ON/OFF timing normal?

YES >> GO TO 5.
NO >> Perform warning lamp diagnosis. Refer to BRC-109, "Component Function Check" (ABS warning lamp), BRC-110, "Component Function Check" (brake warning lamp), or BRC-113, "Component Function Check" (SLIP indicator lamp).

#### 5.PERFORM DIAGNOSIS APPLICABLE TO THE SYMPTOM

Perform diagnosis applicable to the symptom. Refer to BRC-124, "Symptom Table".

>> GO TO 6.

#### 6.FINAL CHECK

Perform self diagnostic result again, and check that the malfunction is repaired. After checking, erase the self diagnosis memory. Refer to BRC-81, "CONSULT Function (ABS)".

>> Inspection End.

## Diagnostic Work Sheet

INFOID:0000000006920868

| | | | |
|---|---|---|---|
| Customer name MR/MS | Model & Year | | VIN |
| Engine # | Trans. | | Mileage |
| Incident Date | Manuf. Date | | In Service Date |
| Symptoms | ☐ Noise and vibration (from engine compartment)<br>☐ Noise and vibration (from axle) | ☐ Warning / Indicator activate | ☐ Firm pedal operation<br>Large stroke pedal operation |
| | ☐ TCS does not work (Rear wheels slip when accelerating) | ☐ ABS does not work (Wheels lock when braking) | ☐ Lack of sense of acceleration |
| Engine conditions | ☐ When starting ☐ After starting | | |
| Road conditions | ☐ Low friction road ( ☐Snow ☐Gravel ☐Other )<br>☐ Bumps / potholes | | |
| Driving conditions | ☐ Full-acceleration<br>☐ High speed cornering<br>☐ Vehicle speed: Greater than 10 km/h (6 MPH)<br>☐ Vehicle speed: 10 km/h (6 MPH) or less<br>☐ Vehicle is stopped | | |
| Applying brake conditions | ☐ Suddenly<br>☐ Gradually | | |
| Other conditions | ☐ Operation of electrical equipment<br>☐ Shift change<br>☐ Other descriptions | | |

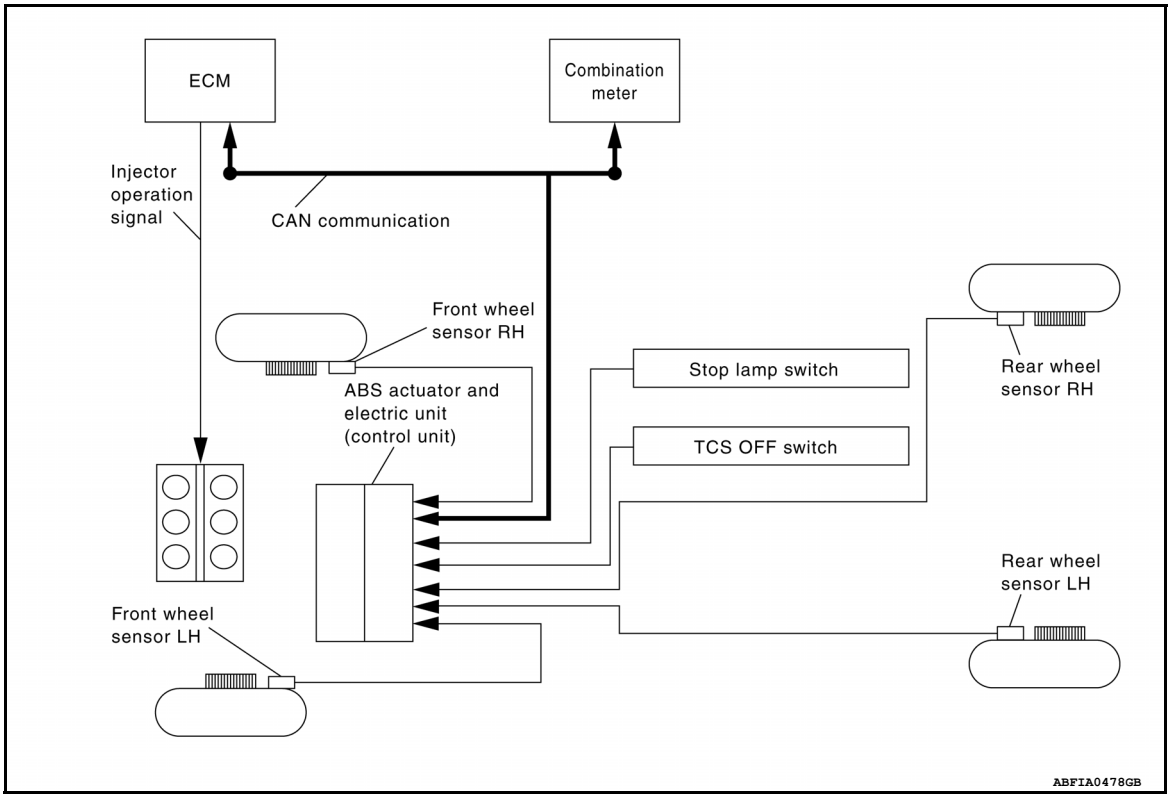
SFIA3265E

# SYSTEM DESCRIPTION

## TCS

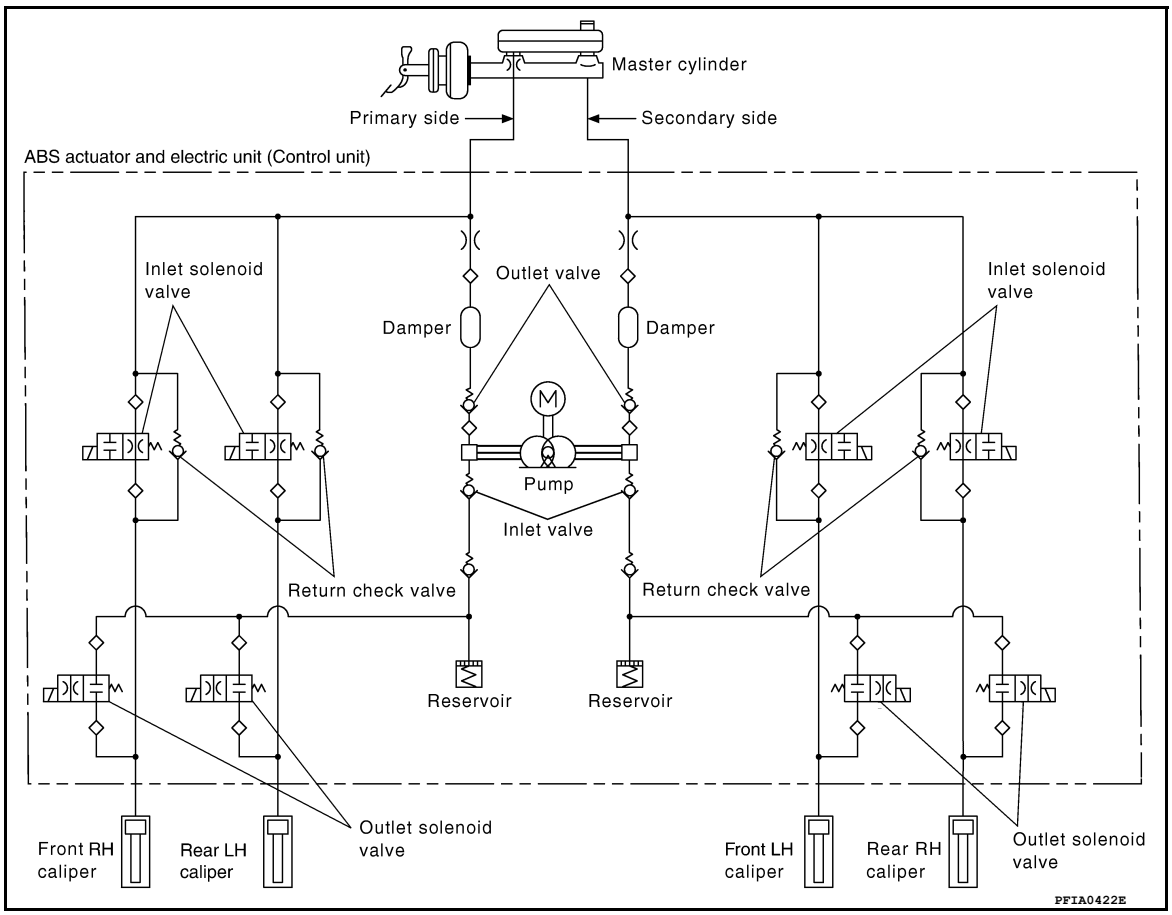
### System Diagram

INFOID:0000000006389191



## Hydraulic Circuit Diagram

INFOID:0000000006920888



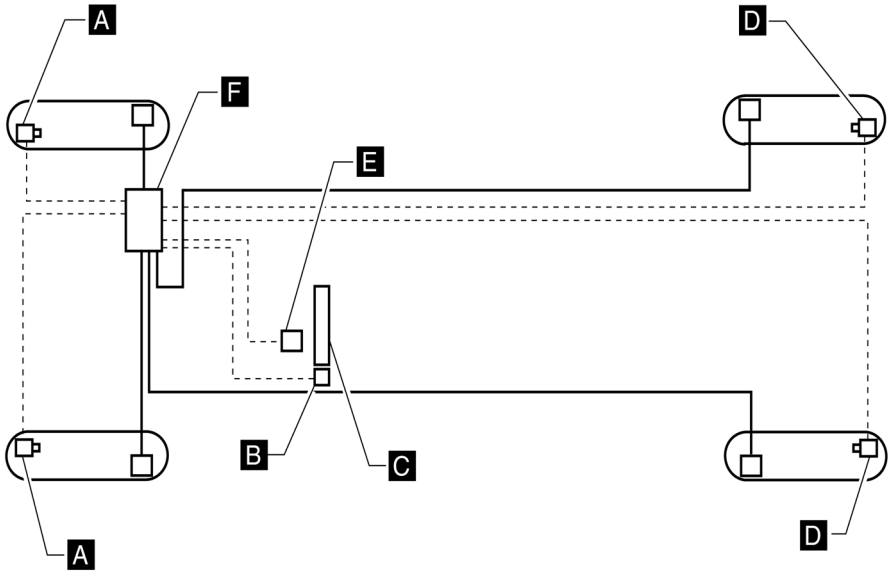

## System Description

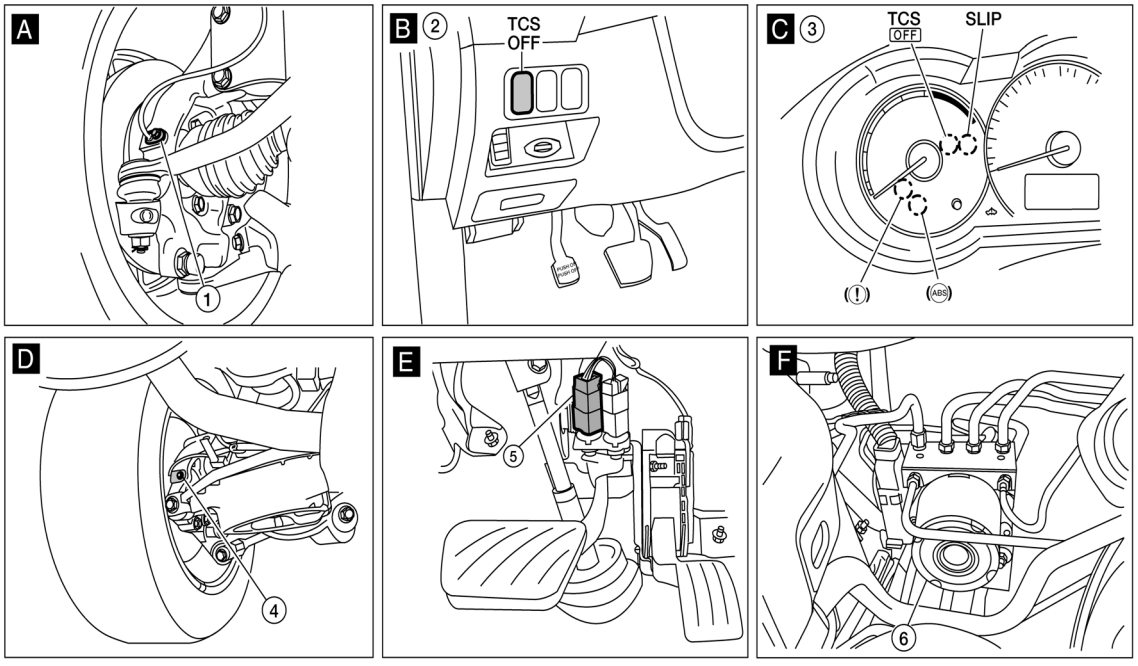
INFOID:0000000006920887

- Traction Control System is a function that electronically controls engine torque and brake fluid pressure to ensure the optimum slippage ratio at drive wheels by computing wheel speed signals from 4 wheel sensors. When ABS actuator and electric unit (control unit) detects a spin at drive wheels, it compares wheel speed signals from all 4 wheels. At this time, LH and RH front brake fluid pressure are controlled, while fuel being cut to engine and throttle valve being closed to reduce engine torque by the control unit. Further more, throttle position is continuously controlled to ensure the optimum engine torque at all times.
- During TCS operation, it informs driver of system operation by flashing slip indicator lamp.
- Electrical system diagnosis by CONSULT is available.

## Component Parts Location

INFOID:0000000006389193




AWFIA0662ZZ

1. Front wheel sensor LH E19
   Front wheel sensor RH E41
2. TCS OFF switch M72
3. Combination meter M24
4. Rear wheel sensor LH C2
   Rear wheel sensor RH C3
5. Stop lamp switch E38
6. ABS actuator and electric unit (control unit) E26

## Component Description

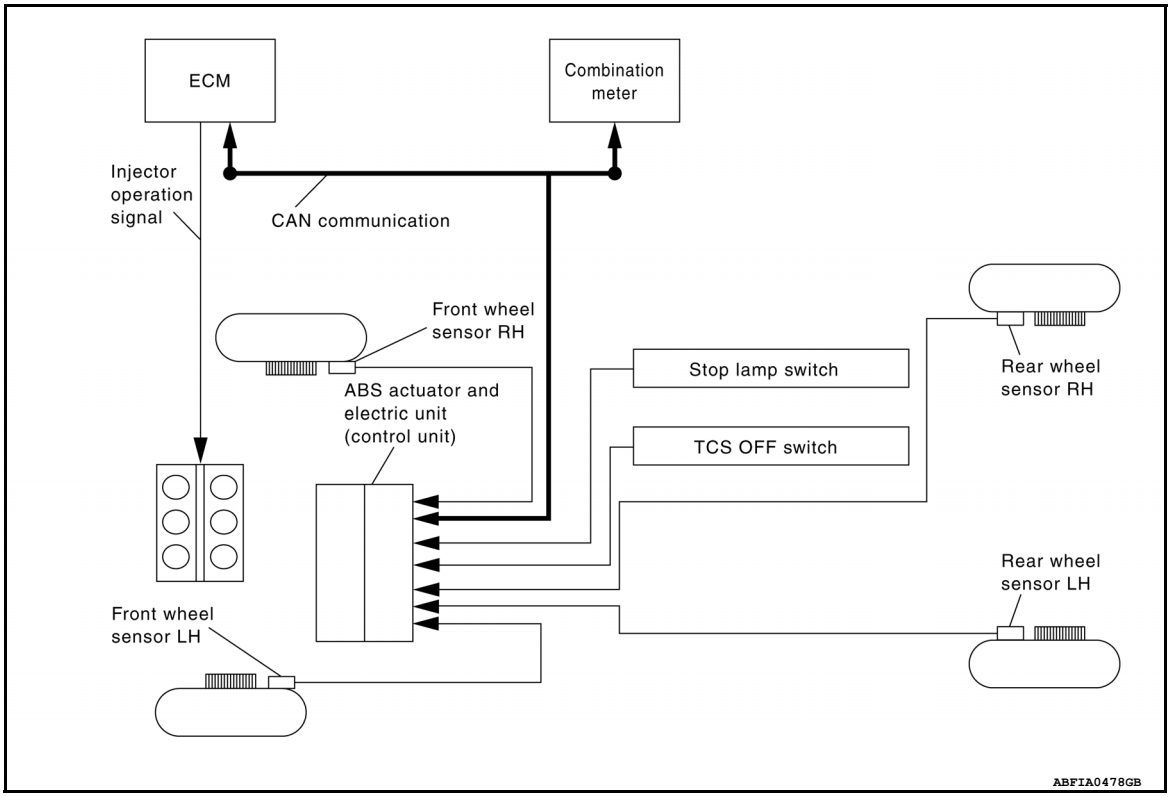
INFOID:0000000006389194

| Component parts | | Reference |
|---|---|---|
| ABS actuator and electric unit (control unit) | Pump | BRC-93, "Description" |
| | Motor | |
| | Actuator relay (Main relay) | BRC-95, "Description" |
| | Solenoid valve | BRC-100, "Description" |
| Wheel sensor | | BRC-84, "Description" |
| TCS OFF switch | | BRC-111, "Description" |
| ABS warning lamp | | BRC-109, "Description" |
| Brake warning lamp | | BRC-110, "Description" |
| Slip indicator lamp | | BRC-113, "Description" |

# ABS

## System Diagram

INFOID:0000000006920869



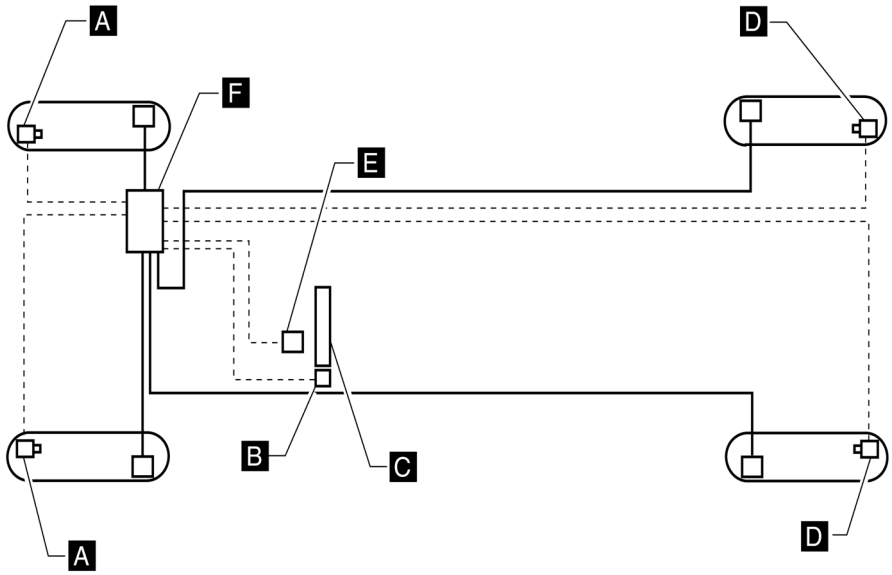

## System Description

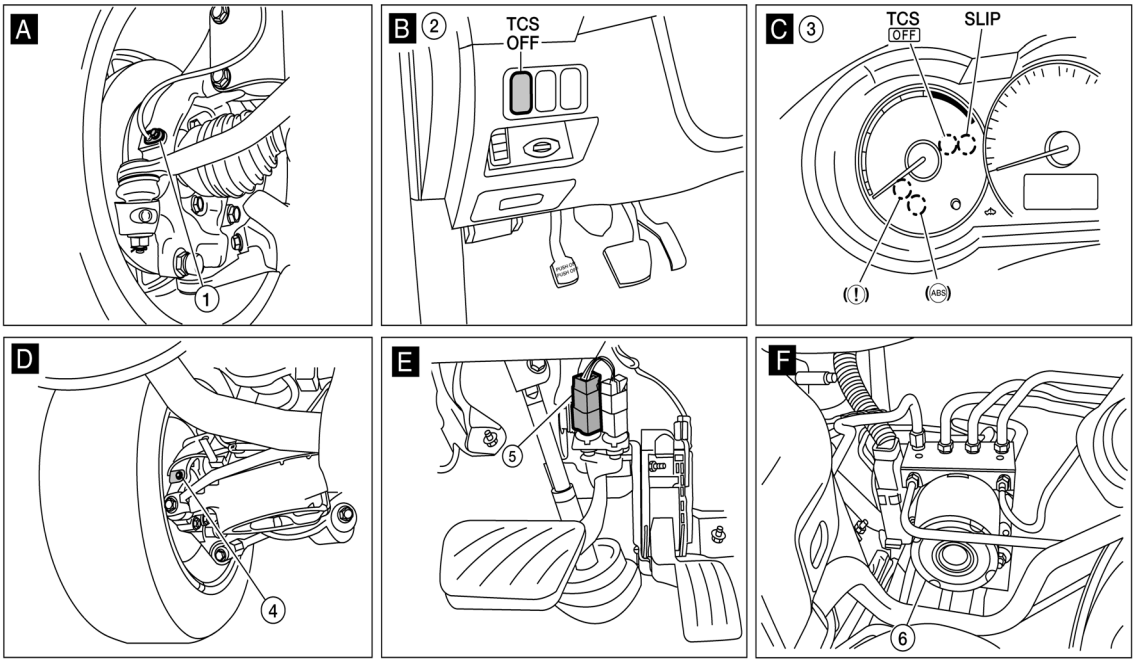
INFOID:0000000006920870

- Anti-Lock Braking System is a function that detects wheel revolution while braking, electronically controls braking force, and prevents wheel locking during sudden braking. It improves handling stability and maneuverability for avoiding obstacles.
- Electrical system diagnosis by CONSULT is available.

## Component Parts Location

INFOID:0000000006920878




AWFIA0662ZZ

1. Front wheel sensor LH E19
   Front wheel sensor RH E41
2. TCS OFF switch M72
3. Combination meter M24
4. Rear wheel sensor LH C2
   Rear wheel sensor RH C3
5. Stop lamp switch E38
6. ABS actuator and electric unit (control unit) E26

## Component Description

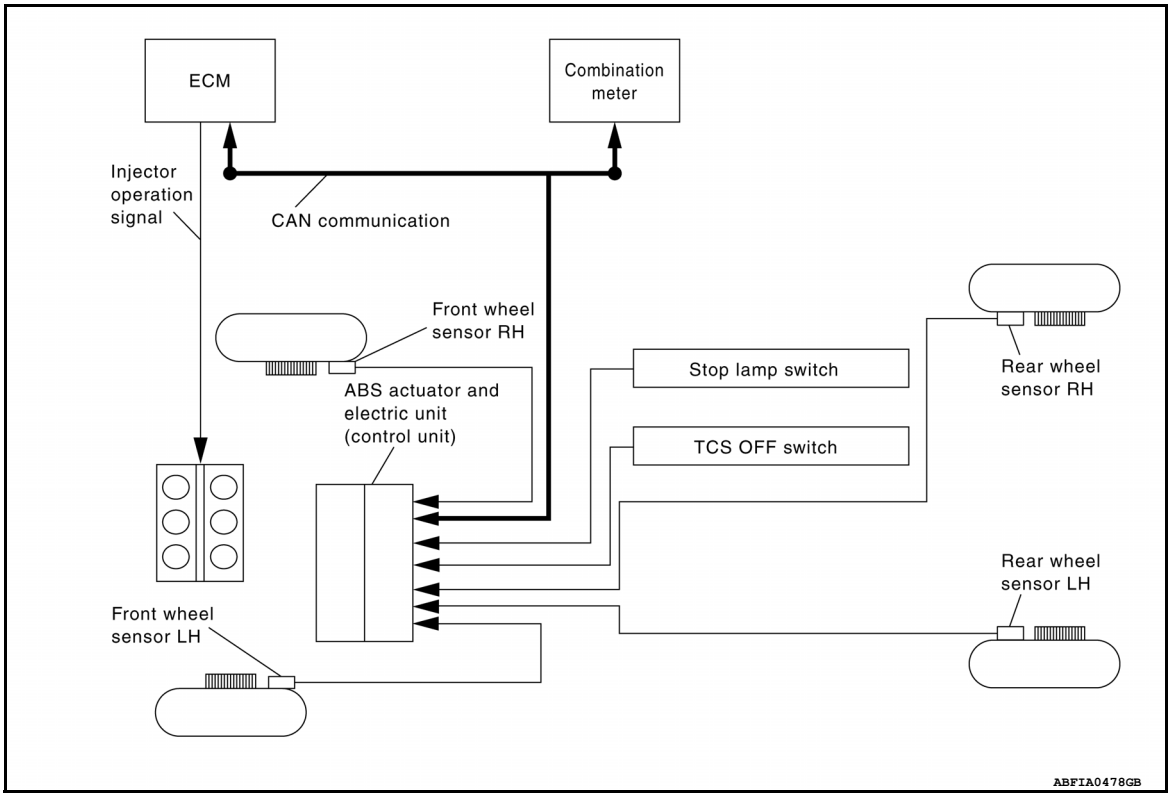
INFOID:0000000006920881

| Component parts | | Reference |
|---|---|---|
| ABS actuator and electric unit (control unit) | Pump | BRC-93, "Description" |
| | Motor | |
| | Actuator relay (Main relay) | BRC-95, "Description" |
| | Solenoid valve | BRC-100, "Description" |
| Wheel sensor | | BRC-84, "Description" |
| TCS OFF switch | | BRC-111, "Description" |
| ABS warning lamp | | BRC-109, "Description" |
| Brake warning lamp | | BRC-110, "Description" |
| Slip indicator lamp | | BRC-113, "Description" |

# EBD

## System Diagram

INFOID:0000000006920873




## System Description

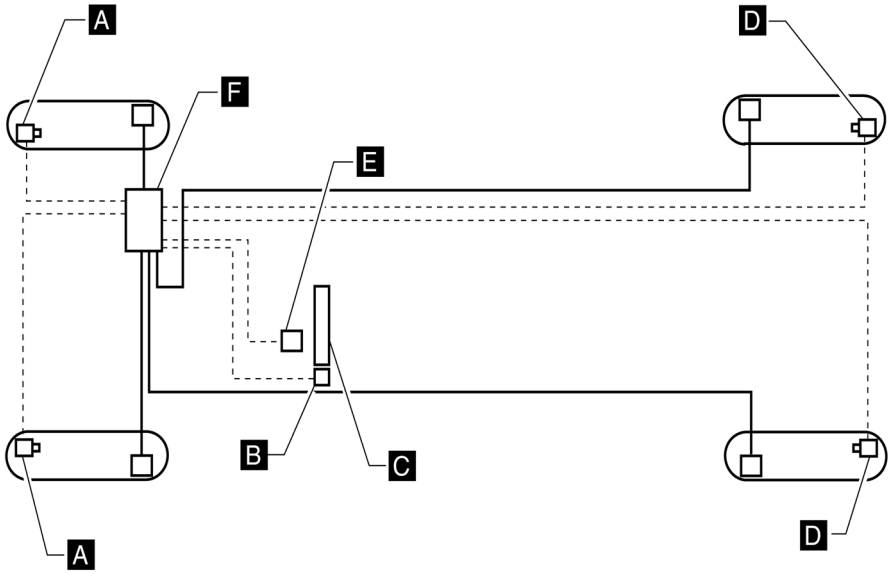
INFOID:0000000006920874

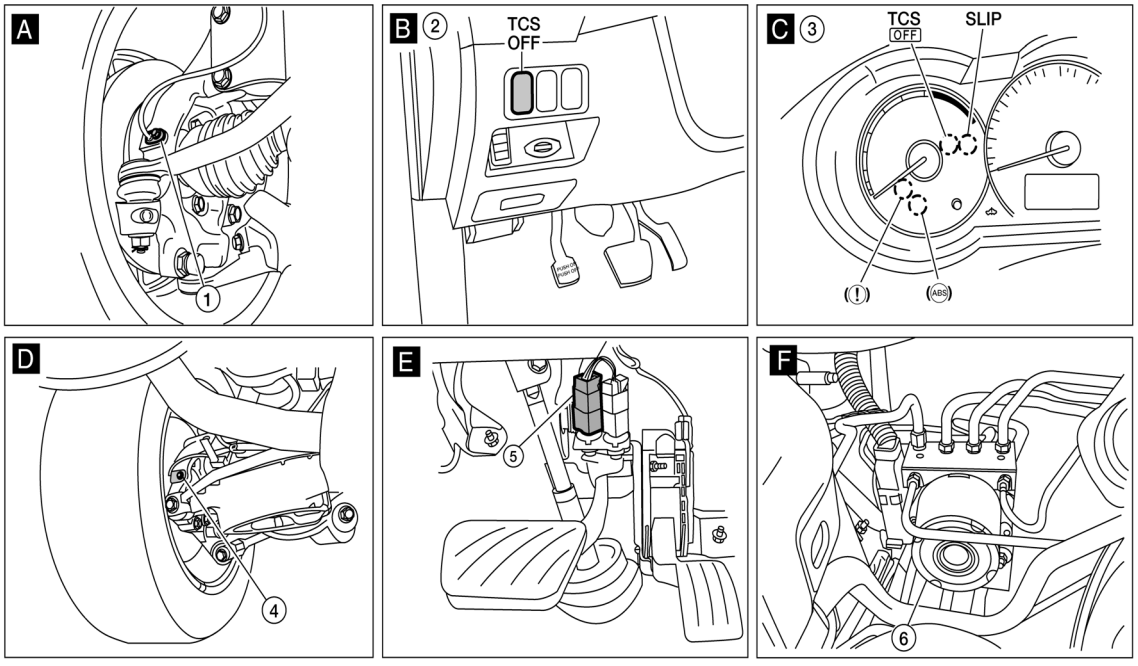
Electric Brake force Distribution functions as follows:

- ABS actuator and electric unit (control unit) detects subtle slippages between the front and rear wheels during braking. Then it electronically controls the rear braking force (brake fluid pressure) to reduce rear wheel slippage. Accordingly, it improves vehicle stability.
- Electrical system diagnosis by CONSULT is available.

## Component Parts Location

INFOID:0000000006920879




AWFIA0662ZZ

1. Front wheel sensor LH E19
   Front wheel sensor RH E41
2. TCS OFF switch M72
3. Combination meter M24
4. Rear wheel sensor LH C2
   Rear wheel sensor RH C3
5. Stop lamp switch E38
6. ABS actuator and electric unit (control unit) E26

## Component Description

INFOID:0000000006920880

| Component parts | | Reference |
|---|---|---|
| ABS actuator and electric unit (control unit) | Pump | BRC-93, "Description" |
| | Motor | |
| | Actuator relay (Main relay) | BRC-95, "Description" |
| | Solenoid valve | BRC-100, "Description" |
| Wheel sensor | | BRC-84, "Description" |
| TCS OFF switch | | BRC-111, "Description" |
| ABS warning lamp | | BRC-109, "Description" |
| Brake warning lamp | | BRC-110, "Description" |
| Slip indicator lamp | | BRC-113, "Description" |

# DIAGNOSIS SYSTEM [ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)]

## CONSULT Function (ABS)

INFOID:0000000006389195

### SELF DIAGNOSTIC RESULT

Operation Procedure

1. Turn ignition switch ON.
2. Start engine and drive vehicle at 30 km/h (19 MPH) or more for approximately 1 minute.
3. After stopping vehicle, with the engine running, touch “ABS”, “SELF-DIAG RESULTS” in order on the CONSULT screen.
4. The self-diagnostic results are displayed.
   • Check ABS warning lamp, TCS OFF indicator lamp, SLIP indicator lamp and brake warning lamp turn off. If “NO FAILURE” is displayed, refer to BRC-109, "Description".
5. Perform the appropriate inspection from display item list, and repair or replace the malfunctioning component.Refer to "Display Item List".
6. Start engine and drive vehicle at 30 km/h (19 MPH) or more for approximately 1 minute.
   **CAUTION:**
   **When the wheel sensor malfunctions, after inspecting the wheel sensor system, the ABS warning lamp, SLIP indicator lamp and brake warning lamp will not turn off even when the system is normal unless the vehicle is driving at approximately 30 km/h (19 MPH) or more for approximately 1 minute.**

Erase Memory

1. Turn ignition switch OFF.
2. Start engine and touch “ABS”, “SELF-DIAG RESULTS”, “ERASE MEMORY” in order on the CONSULT screen to erase the diagnostic memory.
   If “ABS” is not indicated, go to GI-50, "Description".
   **CAUTION:**
   **If the diagnostic memory is not erased, re-perform the operation from step 6 above.**
3. Perform self-diagnosis again, and make sure that diagnostic memory is erased.
4. Drive vehicle at 30 km/h (19 MPH) or more for approximately 1 minute as the final inspection, and make sure that the ABS warning lamp, TCS OFF indicator lamp, SLIP indicator lamp and brake warning lamp turn off.

**NOTE:**
• Brake warning lamp will turn on in case of parking brake operation (when switch is ON) or with brake fluid level switch operation (when brake fluid is insufficient).
• TCS OFF switch should not stay in the "ON" position.

Display Item List
Refer to BRC-115, "DTC No. Index".

### DATA MONITOR

Display Item List
**CAUTION:**
**The display shows the control unit calculation data, so a normal value might be displayed even in the event the output circuit (harness) is open or short - circuited.**

| Item (Unit) | Data monitor item selection | | | Remarks |
|---|---|---|---|---|
| | ECU INPUT SIGNALS | MAIN SIGNALS | SELECTION FROM MENU | |
| FR LH SENSOR (km/h) | × | × | × | Wheel speed calculated by front LH wheel sensor signal is displayed. |
| FR RH SENSOR (km/h) | × | × | × | Wheel speed calculated by front RH wheel sensor signal is displayed. |

| | | | | |
|---|---|---|---|---|
| RR LH SENSOR (km/h) | × | × | × | Wheel speed calculated by rear LH wheel sensor signal is displayed. |
| RR RH SENSOR (km/h) | × | × | × | Wheel speed calculated by rear RH wheel sensor signal is displayed. |
| STOP LAMP SW (ON/OFF) | × | × | × | Stop lamp switch (ON/OFF) status is displayed. |
| BATTERY VOLT (V) | × | × | × | Voltage supplied to ABS actuator and electric unit (control unit) is displayed. |
| GEAR | × | × | × | Gear position judged by PNP switch signal is displayed. |
| SLCT LVR POSI | × | × | × | Shift position judged by PNP switch signal. |
| OFF SW (ON/OFF) | × | × | × | TCS OFF switch (ON/OFF) status is displayed. |
| FR RH IN SOL (ON/OFF) | — | × | × | Front RH IN ABS solenoid (ON/OFF) status is displayed. |
| FR RH OUT SOL (ON/OFF) | — | × | × | Front RH OUT ABS solenoid (ON/OFF) status is displayed. |
| FR LH IN SOL (ON/OFF) | — | × | × | Front LH IN ABS solenoid (ON/OFF) status is displayed. |
| FR LH OUT SOL (ON/OFF) | — | × | × | Front LH OUT ABS solenoid (ON/OFF) status is displayed. |
| RR RH IN SOL (ON/OFF) | — | × | × | Rear RH IN ABS solenoid (ON/OFF) status is displayed. |
| RR RH OUT SOL (ON/OFF) | — | × | × | Rear RH OUT ABS solenoid (ON/OFF) status is displayed. |
| RR LH IN SOL (ON/OFF) | — | × | × | Rear LH IN ABS solenoid (ON/OFF) status is displayed. |
| RR LH OUT SOL (ON/OFF) | — | × | × | Rear LH OUT ABS solenoid (ON/OFF) status is displayed. |
| MOTOR RELAY (ON/OFF) | — | × | × | ABS motor relay signal (ON/OFF) status is displayed. |
| ACTUATOR RLY (ON/OFF) | — | × | × | ABS actuator relay signal (ON/OFF) status is displayed. |
| ABS WARN LAMP (ON/OFF) | — | × | × | ABS warning lamp (ON/OFF) status is displayed. |
| OFF LAMP (ON/OFF) | — | × | × | TCS OFF lamp (ON/OFF) status is displayed. |
| SLIP LAMP (ON/OFF) | — | × | × | SLIP indicator lamp (ON/OFF) status is displayed. |

×: Applicable

–: Not applicable

Note: A brief moment of ON/OFF condition occurs every 20 seconds after ignition switch turned ON. This is not malfunction because it is an operation for checking.

## ACTIVE TEST

**CAUTION:**

- **Do not perform active test while driving vehicle.**
- **Make sure to completely bleed air from brake system.**
- **The active test cannot be performed with the ABS warning lamp, TCS indicator lamp, SLIP indicator lamp and brake warning lamp are on.**
- **ABS warning lamp, TCS OFF indicator lamp, SLIP indicator lamp and brake warning lamp are on during active test.**

Operation Procedure

**NOTE:**

- When active test is performed while depressing the pedal, the pedal depression amount will change. This is normal. (Only solenoid valve and ABS motor)
- “TEST IS STOPPED” is displayed 10 seconds after operation start.
- After “TEST IS STOPPED” is displayed, to perform test again, touch “BACK” to restart the process.

Solenoid Valve

**NOTE:**

The example shown is for front right wheel. The procedure for the other wheels is the same as given below.

- When performing an active test of the ABS function, select the "MAIN SIGNALS" for each test item.In addition, when performing an active test of the TCS function, select the item menu for each test item.
- For ABS solenoid valve, touch “UP”, “KEEP”, and “DOWN” on the display screen. For ABS solenoid valve (ACT), touch “UP”, “ACT UP”, “ACT KEEP” and confirm that solenoid valves (IN, OUT) operate as shown in the table below.

| Operation (Note) | ABS solenoid valve | | | ABS solenoid valve (ACT) | | |
|---|---|---|---|---|---|---|
| | UP | KEEP | DOWN | UP | ACT UP | ACT KEEP |
| FR RH IN SOL | OFF | ON | ON | OFF | OFF | OFF |
| FR RH OUT SOL | OFF | OFF | ON* | OFF | OFF | OFF |

*: ON for 1 to 2 seconds after the touch, and then OFF

Note: A brief moment of ON/OFF condition occurs every 20 seconds after ignition switch turned ON. This is not malfunction because it is an operation for checking.

ABS Motor

Touch “ON” and “OFF” on screen. Make sure motor relay and actuator relay operates as shown in table below.

| Operation | ON | OFF |
|---|---|---|
| MOTOR RELAY | ON | OFF |
| ACTUATOR RLY (Note) | ON | ON |

Note: A brief moment of ON/OFF condition occurs every 20 seconds after ignition switch turned ON. This is not malfunction because it is an operation for checking.

# DTC/CIRCUIT DIAGNOSIS

## C1101, C1102, C1103, C1104 WHEEL SENSOR-1

### Description

INFOID:0000000006389196

When the sensor rotor rotates, the magnetic field changes. It converts the magnetic field changes to current signals (rectangular wave) and transmits them to the ABS actuator and electric unit (control unit).

### DTC Logic

INFOID:0000000006389197

#### DTC DETECTION LOGIC

| DTC | Display item | Malfunction detected condition | Possible cause |
|---|---|---|---|
| C1101 | RR RH SENSOR-1 | Circuit of rear RH wheel sensor is open. Or when the sensor power voltage is outside the standard. | • Harness or connector<br>• Wheel sensor<br>• ABS actuator and electric unit (control unit) |
| C1102 | RR LH SENSOR-1 | Circuit of rear LH wheel sensor is open. Or when the sensor power voltage is outside the standard. | |
| C1103 | FR RH SENSOR-1 | Circuit of front RH wheel sensor is open. Or when the sensor power voltage is outside the standard. | |
| C1104 | FR LH SENSOR-1 | Circuit of front LH wheel sensor is open. Or when the sensor power voltage is outside the standard. | |

#### DTC CONFIRMATION PROCEDURE

##### 1.CHECK SELF DIAGNOSTIC RESULT

With CONSULT.

1. Start engine and drive vehicle at approx. 30 km/h (19 MPH) or more for approx. 1 minute.
2. Perform self diagnostic result.

Is DTC C1101, C1102, C1103 or C1104 detected?

YES >> Proceed to diagnosis procedure. Refer to BRC-84, "Diagnosis Procedure".
NO >> Inspection End.

### Diagnosis Procedure

INFOID:0000000006389198

Regarding Wiring Diagram information, refer to BRC-117, "Wiring Diagram - TCS".

**CAUTION:**
**Do not check between wheel sensor terminals.**

##### 1.CONNECTOR INSPECTION

1. Disconnect ABS actuator and electric unit (control unit) connector and wheel sensor of malfunctioning code.
2. Check terminals for deformation, disconnection, looseness or damage.

Is the inspection result normal?

YES >> GO TO 2
NO >> Repair or replace as necessary.

##### 2.CHECK WHEEL SENSOR OUTPUT SIGNAL

1. Connect ABS active wheel sensor tester (J-45741) to wheel sensor using appropriate adapter.
2. Turn on the ABS active wheel sensor tester power switch.
   **NOTE:**
   The green POWER indicator should illuminate. If the POWER indicator does not illuminate, replace the battery in the ABS active wheel sensor tester before proceeding.
3. Spin the wheel of the vehicle by hand and observe the red SENSOR indicator on the ABS active wheel sensor tester. The red SENSOR indicator should flash on and off to indicate an output signal.
   **NOTE:**

If the red SENSOR indicator illuminates but does not flash, reverse the polarity of the tester leads and retest.

Does the ABS active wheel sensor tester detect a signal?

YES >> GO TO 3
NO >> Replace wheel sensor. Refer to BRC-136, "Removal and Installation".

## 3.CHECK TIRE

Check air pressure, wear and size.

Are air pressure, wear and size within standard?

YES >> GO TO 4
NO >> • Adjust air pressure, or replace tire.
• Perform the self-diagnosis, and make sure that the result shows “NO DTC IS DETECTED”.

## 4.CHECK WHEEL BEARINGS

Check wheel bearing axial end play. Refer to FAX-6, "Inspection" (front) or RAX-6, "On-vehicle Service" (rear).

Is the inspection result normal?

YES >> GO TO 5
NO >> Repair or replace as necessary. Refer to FAX-8, "Removal and Installation" (front) or RAX-7, "Removal and Installation" (rear).

## 5.CHECK WIRING HARNESS FOR SHORT CIRCUIT

Check continuity between wheel sensor connector terminals and ground.

| Wheel sensor connector terminal | Ground | Continuity |
|---|---|---|
| 1 | — | No |
| 2 | | |

Is the inspection result normal?

YES >> GO TO 6
NO >> Repair the circuit.

## 6.CHECK WIRING HARNESS FOR OPEN CIRCUIT

Check continuity between ABS actuator and electric unit (control unit) connector and the malfunctioning wheel sensor connector.

| Wheel sensor | ABS actuator and electric unit (control unit) | | Wheel sensor | | Continuity |
|---|---|---|---|---|---|
| | Connector | Terminal | Connector | Terminal | |
| Front LH | E26 | 16 | E19 | 1 | Yes |
| | | 5 | | 2 | |
| Front RH | | 9 | E41 | 1 | |
| | | 10 | | 2 | |
| Rear LH | | 6 | C2 | 1 | |
| | | 17 | | 2 | |
| Rear RH | | 8 | C3 | 1 | |
| | | 19 | | 2 | |

Is the inspection result normal?

YES >> Replace the ABS actuator and electric unit (control unit). Refer to BRC-139, "Removal and Installation".
NO >> Repair the circuit.

# Component Inspection

INFOID:0000000006389199

## 1.CHECK DATA MONITOR

On “DATA MONITOR”, select “FR LH SENSOR”, “FR RH SENSOR”, “RR LH SENSOR”, and “RR RH SENSOR”, and check the vehicle speed.

| Wheel sensor | Vehicle speed (DATA MONITOR) |
|---|---|
| FR LH SENSOR | Nearly matches the speedometer display (±10% or less) |
| FR RH SENSOR | |
| RR LH SENSOR | |
| RR RH SENSOR | |

Is the inspection result normal?

YES >> Inspection End.
NO >> Go to diagnosis procedure. Refer to BRC-84, "Diagnosis Procedure".

# C1105, C1106, C1107, C1108 WHEEL SENSOR-2

## Description

INFOID:0000000006389200

When the sensor rotor rotates, the magnetic field changes. It converts the magnetic field changes to current signals (rectangular wave) and transmits them to the ABS actuator and electric unit (control unit).

## DTC Logic

INFOID:0000000006389201

### DTC DETECTION LOGIC

| DTC | Display item | Malfunction detected condition | Possible cause |
|---|---|---|---|
| C1105 | RR RH SENSOR-2 | Circuit of rear RH wheel sensor is open. Or when the sensor power voltage is outside the standard. | • Harness or connector<br>• Wheel sensor<br>• ABS actuator and electric unit (control unit) |
| C1106 | RR LH SENSOR-2 | Circuit of rear LH wheel sensor is open. Or when the sensor power voltage is outside the standard. | |
| C1107 | FR RH SENSOR-2 | Circuit of front RH wheel sensor is open. Or when the sensor power voltage is outside the standard. | |
| C1108 | FR LH SENSOR-2 | Circuit of front LH wheel sensor is open. Or when the sensor power voltage is outside the standard. | |

### DTC CONFIRMATION PROCEDURE

#### 1.CHECK SELF DIAGNOSTIC RESULT

With CONSULT.
1. Start engine and drive vehicle at approx. 30 km/h (19 MPH) or more for approx. 1 minute.
2. Perform self diagnostic result.

Is DTC C1105, C1106, C1107 or C1108 detected?

YES >> Proceed to diagnosis procedure. Refer to BRC-87, "Diagnosis Procedure".
NO >> Inspection End.

## Diagnosis Procedure

INFOID:0000000006389202

Regarding Wiring Diagram information, refer to BRC-117, "Wiring Diagram - TCS".

**CAUTION:**
**Do not check between wheel sensor terminals.**

#### 1.CONNECTOR INSPECTION

1. Disconnect ABS actuator and electric unit (control unit) connector and wheel sensor of malfunctioning code.
2. Check terminals for deformation, disconnection, looseness or damage.

Is the inspection result normal?

YES >> GO TO 2
NO >> Repair or replace as necessary.

#### 2.CHECK WHEEL SENSOR OUTPUT SIGNAL

1. Connect ABS active wheel sensor tester (J-45741) to wheel sensor using appropriate adapter.
2. Turn on the ABS active wheel sensor tester power switch.
   **NOTE:**
   The green POWER indicator should illuminate. If the POWER indicator does not illuminate, replace the battery in the ABS active wheel sensor tester before proceeding.
3. Spin the wheel of the vehicle by hand and observe the red SENSOR indicator on the ABS active wheel sensor tester. The red SENSOR indicator should flash on and off to indicate an output signal.
   **NOTE:**
   If the red SENSOR indicator illuminates but does not flash, reverse the polarity of the tester leads and retest.

Does the ABS active wheel sensor tester detect a signal?

YES >> GO TO 3
NO >> Replace wheel sensor. Refer to BRC-136, "Removal and Installation".

## 3.CHECK TIRE

Check air pressure, wear and size.

Are air pressure, wear and size within standard?

YES >> GO TO 4
NO >> • Adjust air pressure, or replace tire.
• Perform the self-diagnosis, and make sure that the result shows “NO DTC IS DETECTED”.

## 4.CHECK WHEEL BEARINGS

Check wheel bearing axial end play. Refer to FAX-6, "Inspection" (front) or RAX-6, "On-vehicle Service" (rear).

Is the inspection result normal?

YES >> GO TO 5
NO >> Repair or replace as necessary. Refer to FAX-8, "Removal and Installation" (front) or RAX-7, "Removal and Installation" (rear).

## 5.CHECK WIRING HARNESS FOR SHORT CIRCUIT

Check continuity between wheel sensor connector terminals and ground.

| Wheel sensor connector terminal | Ground | Continuity |
|---|---|---|
| 1 | — | No |
| 2 | | |

Is the inspection result normal?

YES >> GO TO 6
NO >> Repair the circuit.

## 6.CHECK WIRING HARNESS FOR OPEN CIRCUIT

Check continuity between ABS actuator and electric unit (control unit) connector and the malfunctioning wheel sensor connector.

| Wheel sensor | ABS actuator and electric unit (control unit) | | Wheel sensor | | Continuity |
|---|---|---|---|---|---|
| | Connector | Terminal | Connector | Terminal | |
| Front LH | E26 | 16 | E19 | 1 | Yes |
| | | 5 | | 2 | |
| Front RH | | 9 | E41 | 1 | |
| | | 10 | | 2 | |
| Rear LH | | 6 | C2 | 1 | |
| | | 17 | | 2 | |
| Rear RH | | 8 | C3 | 1 | |
| | | 19 | | 2 | |

Is the inspection result normal?

YES >> Replace the ABS actuator and electric unit (control unit). Refer to BRC-139, "Removal and Installation".
NO >> Repair the circuit.

# Component Inspection

INFOID:0000000006389203

## 1.CHECK DATA MONITOR

On “DATA MONITOR”, select “FR LH SENSOR”, “FR RH SENSOR”, “RR LH SENSOR”, and “RR RH SENSOR”, and check the vehicle speed.

| Wheel sensor | Vehicle speed (DATA MONITOR) |
|---|---|
| FR LH SENSOR | Nearly matches the speedometer display (±10% or less) |
| FR RH SENSOR | |
| RR LH SENSOR | |
| RR RH SENSOR | |

Is the inspection result normal?

YES >> Inspection End.
NO >> Go to diagnosis procedure. Refer to BRC-87, "Diagnosis Procedure".

# DTC C1109 BATTERY VOLTAGE [ABNORMAL]

## Description

INFOID:0000000006389204

Supplies electric power to the ABS actuator and electric unit (control unit).

## DTC Logic

INFOID:0000000006389205

### DTC DETECTION LOGIC

| DTC | Display item | Malfunction detected condition | Possible cause |
|---|---|---|---|
| C1109 | BATTERY VOLTAGE [ABNORMAL] | When the ABS actuator and electric unit (control unit) power supply voltage is lower than normal. | • Harness or connector<br>• ABS actuator and electric unit (control unit) |

### DTC CONFIRMATION PROCEDURE

#### 1.CHECK SELF DIAGNOSTIC RESULT

With CONSULT.

1. Turn the ignition switch OFF to ON.
2. Perform self diagnostic result.

Is DTC C1109 detected?

YES >> Proceed to diagnosis procedure. Refer to BRC-90, "Diagnosis Procedure".
NO >> Inspection End.

## Diagnosis Procedure

INFOID:0000000006389206

Regarding Wiring Diagram information, refer to BRC-117, "Wiring Diagram - TCS".

#### 1.CONNECTOR INSPECTION

1. Turn ignition switch OFF.
2. Disconnect ABS actuator and electric unit (control unit) connector.
3. Check terminals for deformation, disconnection, looseness, and so on. If any malfunction is found, repair or replace terminals.
4. Reconnect connector and perform self-diagnosis. Refer to BRC-81, "CONSULT Function (ABS)".

Is DTC 1109 detected?

YES >> GO TO 2
NO >> Poor connection of connector terminals. Repair or replace connector.

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

1. Turn ignition switch OFF.
2. Disconnect ABS actuator and electric unit (control unit) connector.
3. Turn ignition switch ON.
4. Check voltage between ABS actuator and electric unit (control unit) connector E26 terminal 18 and ground.

| ABS actuator and electric unit (control unit) | | Ground | Condition | Voltage (Approx) |
|---|---|---|---|---|
| Connector | Terminal | | | |
| E26 | 18 | — | Ignition switch ON | Battery voltage |
| | | | Ignition switch OFF | 0V |

5. Turn ignition switch OFF.

6. Check continuity between ABS actuator and electric unit (control unit) connector E26 terminal 1, 4 and ground.

| ABS actuator and electric unit (control unit) | | Ground | Continuity |
|---|---|---|---|
| Connector | Terminal | | |
| E26 | 1 | — | Yes |
| | 4 | | |

Is the inspection result normal?

YES >> • Check battery for terminal looseness, low voltage, etc. If any malfunction is found, repair malfunctioning parts.
• Perform the self-diagnosis, and make sure that the result shows ″NO DTC IS DETECTED″.

NO >> • Repair or replace malfunctioning components.
• Perform the self-diagnosis, and make sure that the result shows ″NO DTC IS DETECTED″.

# DTC C1110 CONTROL FAILURE

## DTC Logic

INFOID:0000000006389207

### DTC DETECTION LOGIC

| DTC | Display item | Malfunction detected condition | Possible cause |
|---|---|---|---|
| C1110 | CONTROLLER FAILURE | When there is an internal malfunction in the ABS actuator and electric unit (control unit). | • ABS actuator and electric unit (control unit) |

### DTC CONFIRMATION PROCEDURE

#### 1.CHECK SELF DIAGNOSTIC RESULT

With CONSULT.
1. Turn the ignition switch OFF to ON.
2. Perform self diagnostic result.

Is DTC C1110 detected?

YES >> Proceed to diagnosis procedure. Refer to BRC-92, "Diagnosis Procedure".
NO >> Inspection End.

## Diagnosis Procedure

INFOID:0000000006389208

#### 1.REPLACE ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)

**CAUTION:**
**Replace ABS actuator and electric unit (control unit) when self-diagnostic result shows items other than that applicable.**

>> Replace ABS actuator and electric unit (control unit). Refer to BRC-139, "Removal and Installation".

# DTC C1111 PUMP MOTOR

## Description

INFOID:0000000006389209

### PUMP

The pump returns the brake fluid stored in the reservoir to the master cylinder by reducing the pressure.

### MOTOR

The motor drives the pump according to the signals transmitted by the ABS actuator and electric unit (control unit).

## DTC Logic

INFOID:0000000006389210

### DTC DETECTION LOGIC

| DTC | Display item | Malfunction detected condition | Possible cause |
|---|---|---|---|
| C1111 | PUMP MOTOR | During the actuator motor operating with ON, when the actuator motor turns OFF, or when the control line for actuator motor relay is open. | • Harness or connector<br>• ABS actuator and electric unit (control unit) |
| | | During the actuator motor operating with OFF, when the actuator motor turns ON, or when the control line for relay is shorted to ground. | |

### DTC CONFIRMATION PROCEDURE

#### 1.CHECK SELF DIAGNOSTIC RESULT

With CONSULT.

1. Turn the ignition switch OFF to ON.
2. Perform self diagnostic result.

Is DTC C1111 detected?

YES >> Proceed to diagnosis procedure. Refer to BRC-93, "Diagnosis Procedure".
NO >> Inspection End.

## Diagnosis Procedure

INFOID:0000000006389211

Regarding Wiring Diagram information, refer to BRC-117, "Wiring Diagram - TCS".

#### 1.CONNECTOR INSPECTION

1. Turn ignition switch OFF.
2. Disconnect ABS actuator and electric unit (control unit) connector.
3. Check terminals for deformation, disconnection, looseness, and so on. If any malfunction is found, repair or replace terminals.
4. Reconnect connector and perform self-diagnosis. Refer to BRC-81, "CONSULT Function (ABS)".

Is DTC C1111 detected?

YES >> GO TO 2
NO >> Poor connection of connector terminals. Repair or replace connector.

#### 2. CHECK ABS MOTOR AND MOTOR RELAY POWER SUPPLY CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect ABS actuator and electric unit (control unit) connector.
3. Check voltage between the ABS actuator and electric unit (control unit) connector E26 terminal 2 and ground.

| ABS actuator and electric unit (control unit) | | Ground | Voltage (Approx) |
|---|---|---|---|
| Connector | Terminal | | |
| E26 | 2 | — | Battery voltage |

Is the inspection result normal?

YES >> GO TO 3
NO >> • Repair or replace malfunctioning components.
• Perform the self-diagnosis, and make sure that the result shows ″NO DTC IS DETECTED″.

## 3. CHECK ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT) GROUND CIRCUIT

Check continuity between ABS actuator and electric unit (control unit) connector E26 terminal 1, 4 and ground.

| ABS actuator and electric unit (control unit) | | Ground | Continuity |
|---|---|---|---|
| Connector | Terminal | | |
| E26 | 1 | — | Yes |
| | 4 | | |

Is the inspection result normal?

YES >> • Replace ABS actuator and electric unit (control unit). Refer to BRC-139, "Removal and Installation".
• Perform the self-diagnosis, and make sure that the result shows ″NO DTC IS DETECTED″.
NO >> • Repair or replace malfunctioning components.
• Perform the self-diagnosis, and make sure that the result shows ″NO DTC IS DETECTED″.

## Component Inspection

INFOID:0000000006389212

## 1.CHECK ACTIVE TEST

1. On “ACTIVE TEST”, select “ABS MOTOR”.
2. Touch ON and OFF on screen. Make sure motor relay and actuator relay operates as shown in table below.

| Operation | ON | OFF |
|---|---|---|
| MOTOR RELAY | ON | OFF |
| ACTUATOR RLY (Note) | ON | ON |

**NOTE:**

A brief moment of ON/OFF condition occurs every 20 seconds after ignition switch turned ON. This is not malfunction because it is an operation for checking.

Is the inspection result normal?

YES >> Inspection End.
NO >> Go to diagnosis procedure. Refer to BRC-93, "Diagnosis Procedure".

# DTC C1114 MAIN RELAY

## Description

INFOID:0000000006389213

Activates or deactivates each solenoid valve according to the signals transmitted by the ABS actuator and electric unit (control unit).

## DTC Logic

INFOID:0000000006389214

### DTC DETECTION LOGIC

| DTC | Display item | Malfunction detected condition | Possible cause |
|---|---|---|---|
| C1114 | MAIN RELAY | During the actuator relay operating with OFF, when the actuator relay turns ON, or when the control line for the relay is shorted to the ground. | • Harness or connector<br>• ABS actuator and electric unit (control unit) |
| | | During the actuator relay operating with ON, when the actuator relay turns ON, or when the control line for the relay is open. | |

### DTC CONFIRMATION PROCEDURE

#### 1.CHECK SELF DIAGNOSTIC RESULT

With CONSULT.
1. Turn the ignition switch OFF to ON.
2. Perform self diagnostic result.

Is DTC C1114 detected?

YES >> Proceed to diagnosis procedure. Refer to BRC-95, "Diagnosis Procedure".
NO >> Inspection End.

## Diagnosis Procedure

INFOID:0000000006389215

Regarding Wiring Diagram information, refer to BRC-117, "Wiring Diagram - TCS".

#### 1.CONNECTOR INSPECTION

1. Turn ignition switch OFF.
2. Disconnect ABS actuator and electric unit (control unit) connector.
3. Check terminals for deformation, disconnection, looseness, and so on. If any malfunction is found, repair or replace terminals.
4. Reconnect connector and perform self-diagnosis. Refer to BRC-15, "CONSULT Function (ABS)".

Is the inspection result normal?

YES >> GO TO 2
NO >> Poor connection of connector terminals. Repair or replace connector.

#### 2.CHECK SOLENOID AND ACTUATOR RELAY POWER SUPPLY CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect ABS actuator and electric unit (control unit) connector.
3. Check voltage between ABS actuator and electric unit (control unit) connector E26 terminal 3 and ground.

| ABS actuator and electric unit (control unit) | | Ground | Voltage (Approx) |
|---|---|---|---|
| Connector | Terminal | | |
| E26 | 3 | — | Battery voltage |

Is the inspection result normal?

YES >> GO TO 3
NO >> • Repair or replace malfunctioning components.
• Perform the self-diagnosis, and make sure that the result shows ″NO DTC IS DETECTED″.

## 3. CHECK SOLENOID AND ACTUATOR RELAY GROUND CIRCUIT

Check continuity between ABS actuator and electric unit (control unit) connector E26 terminal 1, 4 and ground.

| ABS actuator and electric unit (control unit) | | Ground | Continuity |
|---|---|---|---|
| Connector | Terminal | | |
| E26 | 1 | — | Yes |
| | 4 | | |

Is the inspection result normal?

YES >> • Replace ABS actuator and electric unit (control unit). Refer to BRC-139, "Removal and Installation".
• Perform the self-diagnosis, and make sure that the result shows ″NO DTC IS DETECTED″.

NO >> • Repair or replace malfunctioning components.
• Perform the self-diagnosis, and make sure that the result shows ″NO DTC IS DETECTED″.

## Component Inspection

INFOID:0000000006389216

## 1. CHECK ACTIVE TEST

1. On “ACTIVE TEST”, select “ABS MOTOR”.
2. Touch ON and OFF on screen. Make sure motor relay and actuator relay operates as shown in table below.

| Operation | ON | OFF |
|---|---|---|
| MOTOR RELAY | ON | OFF |
| ACTUATOR RLY (Note) | ON | ON |

**NOTE:**

A brief moment of ON/OFF condition occurs every 20 seconds after ignition switch turned ON. This is not malfunction because it is an operation for checking.

Is the inspection result normal?

YES >> Inspection End.

NO >> Go to diagnosis procedure. Refer to BRC-93, "Diagnosis Procedure".

# DTC C1115 ABS SENSOR [ABNORMAL SIGNAL]

## Description

INFOID:0000000006389217

When the sensor rotor rotates, the magnetic field changes. It converts the magnetic field changes to current signals (rectangular wave) and transmits them to the ABS actuator and electric unit (control unit).

## DTC Logic

INFOID:0000000006389218

### DTC DETECTION LOGIC

| DTC | Display item | Malfunction detected condition | Possible cause |
|---|---|---|---|
| C1115 | ABS SENSOR [ABNORMAL SIGNAL] | When wheel sensor input signal is malfunctioning. | • Harness or connector<br>• Wheel sensor<br>• ABS actuator and electric unit (control unit) |

### DTC CONFIRMATION PROCEDURE

#### 1.CHECK SELF DIAGNOSTIC RESULT

With CONSULT.

1. Start engine and drive vehicle at approx. 30 km/h (19 MPH) or more for approx. 1 minute.
2. Perform self diagnostic result.

Is DTC C1115 detected?

YES >> Proceed to diagnosis procedure. Refer to BRC-97, "Diagnosis Procedure".
NO >> Inspection End.

## Diagnosis Procedure

INFOID:0000000006389219

Regarding Wiring Diagram information, refer to BRC-117, "Wiring Diagram - TCS".

**CAUTION:**
**Do not check between wheel sensor terminals.**

#### 1.CONNECTOR INSPECTION

1. Disconnect ABS actuator and electric unit (control unit) connector and wheel sensor of malfunctioning code.
2. Check terminals for deformation, disconnection, looseness or damage.

Is the inspection result normal?

YES >> GO TO 2
NO >> Repair or replace as necessary.

#### 2.CHECK WHEEL SENSOR OUTPUT SIGNAL

1. Connect ABS active wheel sensor tester (J-45741) to wheel sensor using appropriate adapter.
2. Turn on the ABS active wheel sensor tester power switch.
   **NOTE:**
   The green POWER indicator should illuminate. If the POWER indicator does not illuminate, replace the battery in the ABS active wheel sensor tester before proceeding.
3. Spin the wheel of the vehicle by hand and observe the red SENSOR indicator on the ABS active wheel sensor tester. The red SENSOR indicator should flash on and off to indicate an output signal.
   **NOTE:**
   If the red SENSOR indicator illuminates but does not flash, reverse the polarity of the tester leads and retest.

Does the ABS active wheel sensor tester detect a signal?

YES >> GO TO 3
NO >> Replace wheel sensor. Refer to BRC-136, "Removal and Installation".

#### 3.CHECK TIRE

Check air pressure, wear and size.

Are air pressure, wear and size within standard?

YES >> GO TO 4
NO >> • Adjust air pressure, or replace tire.
• Perform the self-diagnosis, and make sure that the result shows “NO DTC IS DETECTED”.

## 4.CHECK WHEEL BEARINGS

Check wheel bearing axial end play. Refer to FAX-6, "Inspection" (front) or RAX-6, "On-vehicle Service" (rear).

Is the inspection result normal?

YES >> GO TO 5
NO >> Repair or replace as necessary. Refer to FAX-8, "Removal and Installation" (front) or RAX-7, "Removal and Installation" (rear).

## 5.CHECK WIRING HARNESS FOR SHORT CIRCUIT

Check continuity between wheel sensor connector terminals and ground.

| Wheel sensor connector terminal | Ground | Continuity |
|---|---|---|
| 1 | — | No |
| 2 | | |

Is the inspection result normal?

YES >> GO TO 6
NO >> Repair the circuit.

## 6.CHECK WIRING HARNESS FOR OPEN CIRCUIT

Check continuity between ABS actuator and electric unit (control unit) connector and the malfunctioning wheel sensor connector.

| Wheel sensor | ABS actuator and electric unit (control unit) | | Wheel sensor | | Continuity |
|---|---|---|---|---|---|
| | Connector | Terminal | Connector | Terminal | |
| Front LH | E26 | 16 | E19 | 1 | Yes |
| | | 5 | | 2 | |
| Front RH | | 9 | E41 | 1 | |
| | | 10 | | 2 | |
| Rear LH | | 6 | C2 | 1 | |
| | | 17 | | 2 | |
| Rear RH | | 8 | C3 | 1 | |
| | | 19 | | 2 | |

Is the inspection result normal?

YES >> Replace the ABS actuator and electric unit (control unit). Refer to BRC-139, "Removal and Installation".
NO >> Repair the circuit.

# Component Inspection

INFOID:0000000006389220

## 1.CHECK DATA MONITOR

On “DATA MONITOR”, select “FR LH SENSOR”, “FR RH SENSOR”, “RR LH SENSOR”, and “RR RH SENSOR”, and check the vehicle speed.

| Wheel sensor | Vehicle speed (DATA MONITOR) |
|---|---|

| | |
|---|---|
| FR LH SENSOR | Nearly matches the speedometer display (±10% or less) |
| FR RH SENSOR | |
| RR LH SENSOR | |
| RR RH SENSOR | |

Is the inspection result normal?

YES >> Inspection End.
NO >> Go to diagnosis procedure. Refer to BRC-87, "Diagnosis Procedure".

# C1120, C1122, C1124, C1126 IN ABS SOL

## Description

INFOID:0000000006389221

The solenoid valve increases, holds or decreases the fluid pressure of each brake caliper according to the signals transmitted by the ABS actuator and electric unit (control unit).

## DTC Logic

INFOID:0000000006389222

### DTC DETECTION LOGIC

| DTC | Display item | Malfunction detected condition | Possible cause |
|---|---|---|---|
| C1120 | FR LH IN ABS SOL | When the control unit detects a malfunction in the front LH inlet solenoid circuit. | • ABS actuator and electric unit (control unit) |
| C1122 | FR RH IN ABS SOL | When the control unit detects a malfunction in the front RH inlet solenoid circuit. | |
| C1124 | RR LH IN ABS SOL | When the control unit detects a malfunction in the rear LH inlet solenoid circuit. | |
| C1126 | RR RH IN ABS SOL | When the control unit detects a malfunction in the rear RH inlet solenoid circuit. | |

### DTC CONFIRMATION PROCEDURE

#### 1.CHECK SELF DIAGNOSTIC RESULT

With CONSULT.
1. Turn the ignition switch OFF to ON.
2. Perform self diagnostic result.

Is DTC C1120, C1122, C1124 or C1126 detected?

YES >> Proceed to diagnosis procedure. Refer to BRC-100, "Diagnosis Procedure".
NO >> Inspection End.

## Diagnosis Procedure

INFOID:0000000006389223

Regarding Wiring Diagram information, refer to BRC-117, "Wiring Diagram - TCS".

#### 1.CONNECTOR INSPECTION

1. Turn ignition switch OFF.
2. Disconnect ABS actuator and electric unit (control unit) connector.
3. Check terminals for deformation, disconnection, looseness, and so on. If any malfunction is found, repair or replace terminals.
4. Reconnect connector and perform self-diagnosis. Refer to BRC-81, "CONSULT Function (ABS)".

Is the inspection result normal?

YES >> GO TO 2
NO >> Poor connection of connector terminals. Repair or replace connector.

#### 2.CHECK SOLENOID AND ACTUATOR RELAY POWER SUPPLY CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect ABS actuator and electric unit (control unit) connector.
3. Check voltage between ABS actuator and electric unit (control unit) connector E26 terminal 3 and ground.

| ABS actuator and electric unit (control unit) | | Ground | Voltage (Approx) |
|---|---|---|---|
| Connector | Terminal | | |
| E26 | 3 | — | Battery voltage |

Is the inspection result normal?

YES >> GO TO 3
NO >> • Repair or replace malfunctioning components.
• Perform the self-diagnosis, and make sure that the result shows ″NO DTC IS DETECTED″.

## 3. CHECK SOLENOID AND ACTUATOR RELAY GROUND CIRCUIT

Check continuity between ABS actuator and electric unit (control unit) connector E26 terminal 1, 4 and ground.

| ABS actuator and electric unit (control unit) | | Ground | Continuity |
|---|---|---|---|
| Connector | Terminal | | |
| E26 | 1 | — | Yes |
| | 4 | | |

Is the inspection result normal?

YES >> • Replace ABS actuator and electric unit (control unit). Refer to BRC-139, "Removal and Installation".
• Perform the self-diagnosis, and make sure that the result shows ″NO DTC IS DETECTED″.
NO >> • Repair or replace malfunctioning components.
• Perform the self-diagnosis, and make sure that the result shows ″NO DTC IS DETECTED″.

# Component Inspection

INFOID:0000000006389224

## 1. CHECK ACTIVE TEST

1. Select each test menu item on “ACTIVE TEST”.
2. On the display, touch “UP”, “KEEP”, and “DOWN”, and check that the system operates as shown in the table below.
**NOTE:**
The example below is for front right wheel. The procedure for the other wheels is the same as given below.

| Operation (Note) | ABS solenoid valve | | |
|---|---|---|---|
| | UP | KEEP | DOWN |
| FR RH IN SOL | OFF | ON | ON |
| FR RH OUT SOL | OFF | OFF | ON* |

*: ON for 1 to 2 seconds after the touch, and then OFF.

**NOTE:**
A brief moment of ON/OFF condition occurs every 20 seconds after ignition switch turned ON. This is not malfunction because it is an operation for checking.

Is the inspection result normal?

YES >> Inspection End.
NO >> Go to diagnosis procedure. Refer to BRC-100, "Diagnosis Procedure".

# C1121, C1123, C1125, C1127 OUT ABS SOL

## Description

INFOID:0000000006389225

The solenoid valve increases, holds or decreases the fluid pressure of each brake caliper according to the signals transmitted by the ABS actuator and electric unit (control unit).

## DTC Logic

INFOID:0000000006389226

### DTC DETECTION LOGIC

| DTC | Display item | Malfunction detected condition | Possible cause |
|---|---|---|---|
| C1121 | FR LH OUT ABS SOL | When the control unit detects a malfunction in the front LH outlet solenoid circuit. | • ABS actuator and electric unit (control unit) |
| C1123 | FR RH OUT ABS SOL | When the control unit detects a malfunction in the front RH outlet solenoid circuit. | |
| C1125 | RR LH OUT ABS SOL | When the control unit detects a malfunction in the rear LH outlet solenoid circuit. | |
| C1127 | RR RH OUT ABS SOL | When the control unit detects a malfunction in the rear RH outlet solenoid circuit. | |

### DTC CONFIRMATION PROCEDURE

#### 1.CHECK SELF DIAGNOSTIC RESULT

With CONSULT.
1. Turn the ignition switch OFF to ON.
2. Perform self diagnostic result.

Is DTC C1121, C1123, C1125 or C1127 detected?

YES >> Proceed to diagnosis procedure. Refer to BRC-102, "Diagnosis Procedure".
NO >> Inspection End.

## Diagnosis Procedure

INFOID:0000000006389227

Regarding Wiring Diagram information, refer to BRC-117, "Wiring Diagram - TCS".

#### 1.CONNECTOR INSPECTION

1. Turn ignition switch OFF.
2. Disconnect ABS actuator and electric unit (control unit) connector.
3. Check terminals for deformation, disconnection, looseness, and so on. If any malfunction is found, repair or replace terminals.
4. Reconnect connector and perform self-diagnosis. Refer to BRC-15, "CONSULT Function (ABS)".

Is the inspection result normal?

YES >> Inspection End.
NO >> GO TO 2

#### 2.CHECK SOLENOID AND ACTUATOR RELAY POWER SUPPLY CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect ABS actuator and electric unit (control unit) connector.
3. Check voltage between ABS actuator and electric unit (control unit) connector E26 terminal 3 and ground.

| ABS actuator and electric unit (control unit) | | Ground | Voltage (Approx) |
|---|---|---|---|
| Connector | Terminal | | |
| E26 | 3 | — | Battery voltage |

Is the inspection result normal?

YES >> GO TO 3
NO >> • Repair or replace malfunctioning components.
• Perform the self-diagnosis, and make sure that the result shows ″NO DTC IS DETECTED″.

## 3. CHECK SOLENOID AND ACTUATOR RELAY GROUND CIRCUIT

Check continuity between ABS actuator and electric unit (control unit) connector E26 terminal 1, 4 and ground.

| ABS actuator and electric unit (control unit) | | Ground | Continuity |
|---|---|---|---|
| Connector | Terminal | | |
| E26 | 1 | — | Yes |
| | 4 | | |

Is the inspection result normal?

YES >> • Replace ABS actuator and electric unit (control unit). Refer to BRC-139, "Removal and Installation".
• Perform the self-diagnosis, and make sure that the result shows ″NO DTC IS DETECTED″.
NO >> • Repair or replace malfunctioning components.
• Perform the self-diagnosis, and make sure that the result shows ″NO DTC IS DETECTED″.

# Component Inspection

INFOID:0000000006389228

## 1. CHECK ACTIVE TEST

1. Select each test menu item on “ACTIVE TEST”.
2. On the display, touch “UP”, “KEEP”, and “DOWN”, and check that the system operates as shown in the table below.
**NOTE:**
The example below is for front right wheel. The procedure for the other wheels is the same as given below.

| Operation (Note) | ABS solenoid valve | | |
|---|---|---|---|
| | UP | KEEP | DOWN |
| FR RH IN SOL | OFF | ON | ON |
| FR RH OUT SOL | OFF | OFF | ON* |

*: ON for 1 to 2 seconds after the touch, and then OFF.

**NOTE:**
A brief moment of ON/OFF condition occurs every 20 seconds after ignition switch turned ON. This is not malfunction because it is an operation for checking.

Is the inspection result normal?

YES >> Inspection End.
NO >> Go to diagnosis procedure. Refer to BRC-102, "Diagnosis Procedure".

# C1130, C1131, C1132, C1133 ENGINE SIGNAL

## Description

INFOID:0000000006389229

ABS actuator and electric unit (control unit) and ECM exchange the engine signal with CAN communication line.

## DTC Logic

INFOID:0000000006389230

### DTC DETECTION LOGIC

| DTC | Display item | Malfunction detected condition | Possible cause |
|---|---|---|---|
| C1130 | ENGINE SIGNAL 1 | Major engine components are malfunctioning. | • Harness or connector<br>• ABS actuator and electric unit (control unit)<br>• ECM<br>• CAN communication line |
| C1131 | ENGINE SIGNAL 2 | | |
| C1132 | ENGINE SIGNAL 3 | | |
| C1133 | ENGINE SIGNAL 4 | | |

### DTC CONFIRMATION PROCEDURE

#### 1.CHECK SELF DIAGNOSTIC RESULT

With CONSULT.

1. Turn the ignition switch OFF to ON.
2. Perform self diagnostic result.

Is DTC C1130, C1131, C1132, C1133 or C1136 detected?

YES >> Proceed to diagnosis procedure. Refer to BRC-104, "Diagnosis Procedure".
NO >> Inspection End.

## Diagnosis Procedure

INFOID:0000000006389231

#### 1.CHECK ENGINE SYSTEM

1. Perform ECM self-diagnosis. Repair or replace items indicated, then perform ECM self-diagnosis again. Refer to EC-99, "CONSULT-III Function" (QR25DE), EC-423, "CONSULT-III Function" (VQ35DE).
2. Perform ABS actuator and electric unit (control unit) self-diagnosis. Refer to BRC-81, "CONSULT Function (ABS)".

Is the inspection result normal?

YES >> Inspection end.
NO >> • Repair or replace malfunctioning components.
• Perform the self-diagnosis, and make sure that the result shows ″NO DTC IS DETECTED″.

# U1000 CAN COMM CIRCUIT

## Description

INFOID:0000000006389232

CAN (Controller Area Network) is a serial communication line for real time application. It is an on-vehicle multiplex communication line with high data communication speed and excellent error detection ability. Many electronic control units are equipped onto a vehicle, and each control unit shares information and links with other control units during operation (not independent). In CAN communication, control units are connected with 2 communication lines (CAN H line, CAN L line) allowing a high rate of information transmission with less wiring. Each control unit transmits/receives data but selectively reads required data only.

## DTC Logic

INFOID:0000000006389233

### DTC DETECTION LOGIC

| DTC | Display item | Malfunction detected condition | Possible cause |
|---|---|---|---|
| U1000 | CAN COMM CIRCUIT | When ABS actuator and electric unit (control unit) is not transmitting or receiving CAN communication signal for 2 seconds or more. | CAN communication system malfunction |

### DTC CONFIRMATION PROCEDURE

#### 1.CHECK SELF DIAGNOSTIC RESULT

With CONSULT.
1. Turn the ignition switch OFF to ON.
2. Perform self diagnostic result.

Is DTC U1000 detected?

YES >> Proceed to diagnosis procedure. Refer to BRC-105, "Diagnosis Procedure".
NO >> Inspection End.

## Diagnosis Procedure

INFOID:0000000006389234

#### 1.CONNECTOR INSPECTION

1. Turn ignition switch OFF.
2. Disconnect ABS actuator and electric unit (control unit) connector.
3. Check terminals for deformation, disconnection, looseness, and so on. If any malfunction is found, repair or replace terminals.
4. Reconnect connector and perform self diagnostic result. Refer to BRC-81, "CONSULT Function (ABS)".

Is DTC U1000 detected?

YES >> Refer to LAN-15, "Trouble Diagnosis Flow Chart".
NO >> Inspection End.

# STOP LAMP SWITCH

## Description

INFOID:0000000006920882

The stop lamp switch, through the stop lamp relay, transmits the stop lamp switch signal (ON/OFF) to the ABS actuator and electric unit (control unit).

## Component Function Check

INFOID:0000000006920883

### 1.CHECK DATA MONITOR

On “DATA MONITOR”, select “STOP LAMP SW” and check the stop lamp switch signal.

| Condition | STOP LAMP SW (DATA MONITOR) |
|---|---|
| Brake pedal depressed. | On |
| Brake pedal released. | Off |

Is the inspection result normal?

YES >> Inspection End.
NO >> Go to diagnosis procedure. Refer to BRC-106, "Diagnosis Procedure".

## Diagnosis Procedure

INFOID:0000000006920884

Regarding Wiring Diagram information, refer to BRC-117, "Wiring Diagram - TCS".

### 1.CHECK STOP LAMP SWITCH

Perform the stop lamp switch component inspection. Refer to BRC-107, "Component Inspection (Stop Lamp Switch)".

Is the inspection result normal?

YES >> GO TO 2
NO >> Replace stop lamp switch.

### 2.CHECK STOP LAMP RELAY-1

Perform the stop lamp relay-1 component inspection. Refer to BRC-107, "Component Inspection (Stop Lamp Relay)".

Is the inspection result normal?

YES >> GO TO 3
NO >> Replace stop lamp relay-1.

### 3.CHECK STOP LAMP SWITCH SIGNAL CIRCUIT

1. Connect stop lamp switch and stop lamp relay-1 connectors.
2. Disconnect ABS actuator and electric unit (control unit) connector.
3. Check voltage between ABS actuator and electric unit (control unit) connector E26 terminal 20 and ground.

| ABS actuator and electric unit (control unit) | | Ground | Condition | Voltage (Approx.) |
|---|---|---|---|---|
| Connector | Terminal | | | |
| E26 | 20 | — | Brake pedal depressed | Battery voltage |
| | | | Brake pedal released | 0V |

Is the inspection result normal?

YES >> Replace ABS actuator and electric unit (control unit). Refer to BRC-139, "Removal and Installation".
NO >> GO TO 4

## 4.CHECK STOP LAMP RELAY-1 COIL CIRCUIT

1. Disconnect stop lamp relay-1 connector.
2. Check voltage between stop lamp relay-1 connector E57 terminal 1 and ground.

| Stop lamp relay-1 | | Ground | Condition | Voltage (Approx.) |
|---|---|---|---|---|
| Connector | Terminal | | | |
| E57 | 1 | — | Brake pedal depressed | Battery voltage |
| | | | Brake pedal released | 0V |

Is the inspection result normal?

YES >> GO TO 5
NO >> Repair circuit between stop lamp switch and stop lamp relay or circuit between fuse block J/B and stop lamp switch.

## 5.CHECK STOP LAMP RELAY-1 SWITCH INPUT CIRCUIT

Check voltage between stop lamp relay-1 connector E57 terminal 5 and ground.

| Stop lamp relay-1 | | Ground | Voltage (Approx.) |
|---|---|---|---|
| Connector | Terminal | | |
| E57 | 5 | — | Battery voltage |

Is the inspection result normal?

YES >> GO TO 6
NO >> Repair circuit between fuse block J/B and stop lamp relay.

## 6.CHECK STOP LAMP RELAY-1 GROUND CIRCUIT

Check continuity between stop lamp relay-1 connector E57 terminal 2 and ground.

| Stop lamp relay-1 | | Ground | Continuity |
|---|---|---|---|
| Connector | Terminal | | |
| E57 | 2 | — | Yes |

Is the inspection result normal?

YES >> Repair circuit between stop lamp relay and ABS actuator and electric unit (control unit).
NO >> Repair stop lamp relay ground circuit.

# Component Inspection (Stop Lamp Switch)

INFOID:0000000006920885

## 1.CHECK STOP LAMP SWITCH

1. Turn ignition switch OFF.
2. Disconnect stop lamp switch connector.
3. Check continuity between stop lamp switch terminals.

| Stop lamp switch terminals | Condition | Continuity |
|---|---|---|
| 1 – 2 | Brake pedal depressed. | Yes |
| | Brake pedal released. | No |

Is the inspection result normal?

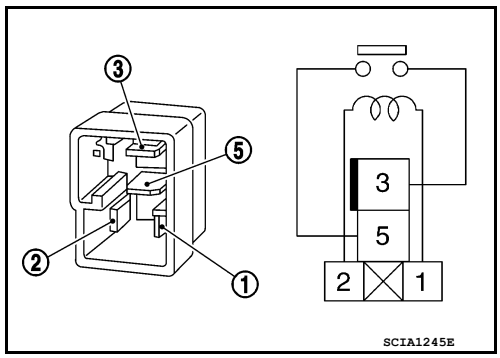
YES >> Inspection End.
NO >> Replace stop lamp switch.

# Component Inspection (Stop Lamp Relay)

INFOID:0000000006920886

## 1.CHECK STOP LAMP RELAY

1. Turn ignition switch OFF.
2. Disconnect stop lamp relay connector.
3. Apply battery voltage to stop lamp relay terminal 1 and ground to terminal 2.
4. Check continuity between stop lamp relay terminals 3 and 5.




| Stop lamp relay terminals | Condition | Continuity |
|---|---|---|
| 3 – 5 | Battery voltage applied to terminal 1 and ground to terminal 2 | Yes |
| | Voltage and ground removed | No |

Is the inspection result normal?

YES >> Inspection End.
NO >> Replace stop lamp relay.

# ABS WARNING LAMP

## Description

INFOID:0000000006389235

×: ON –: OFF

| Condition | ABS warning lamp |
|---|---|
| Ignition switch OFF | – |
| For 2 seconds after turning ON ignition switch | × |
| 2 seconds later after turning ON ignition switch | – |
| ABS function is malfunctioning. | × |
| EBD function is malfunctioning. | × |

## Component Function Check

INFOID:0000000006389236

### 1.CHECK ABS WARNING LAMP OPERATION

Check that the lamp illuminates for approximately 2 seconds after the ignition switch is turned ON.

Is the inspection result normal?

YES >> Inspection End
NO >> Go to diagnosis procedure. Refer to BRC-109, "Diagnosis Procedure".

## Diagnosis Procedure

INFOID:0000000006389237

### 1.CHECK SELF-DIAGNOSIS

Perform ABS actuator and electric unit (control unit) self-diagnosis. Refer to BRC-81, "CONSULT Function (ABS)".

Is the inspection result normal?

YES >> GO TO 2
NO >> Check items displayed by self-diagnosis.

### 2.CHECK COMBINATION METER

Check if the indication and operation of combination meter are normal. Refer to MWI-28, "Diagnosis Description".

Is the inspection result normal?

YES >> Replace ABS actuator and electric unit (control unit). Refer to BRC-139, "Removal and Installation".
NO >> Repair or replace combination meter. Refer to MWI-139, "Removal and Installation".

# BRAKE WARNING LAMP

## Description

INFOID:0000000006389238

×: ON –: OFF

| Condition | Brake warning lamp (Note 1) |
|---|---|
| Ignition switch OFF | – |
| Ignition switch ON | × (Note 2) |
| EBD function is malfunctioning. | × |

**NOTE:**

- 1: Brake warning lamp will turn on in case of parking brake operation (when switch is ON) or of brake fluid level switch operation (when brake fluid is insufficient).
- 2: After starting engine, brake warning lamp is turned off.

## Component Function Check

INFOID:0000000006389239

### 1.BRAKE WARNING LAMP OPERATION CHECK 1

Check that the lamp illuminates after the ignition switch is turned ON, and turns OFF after the engine is started.

Is the inspection result normal?

YES >> GO TO 2
NO >> Go to diagnosis procedure. Refer to BRC-110, "Diagnosis Procedure".

### 2.BRAKE WARNING LAMP OPERATION CHECK 2

Check that the brake warning lamp in the combination meter turns ON/OFF correctly when operating the parking brake lever (M/T models) or the parking brake pedal (CVT models).

Is the inspection result normal?

YES >> Inspection End
NO >> Check parking brake switch. Refer to BR-13, "Inspection and Adjustment".

## Diagnosis Procedure

INFOID:0000000006389240

### 1.CHECK PARKING BRAKE SWITCH

Check that the brake warning lamp in the combination meter turns ON/OFF correctly when operating the parking brake lever (M/T models) or the parking brake pedal (CVT models).

Is the inspection result normal?

YES >> GO TO 2
NO >> Check parking brake switch. Refer to BR-13, "Inspection and Adjustment".

### 2.CHECK SELF-DIAGNOSIS RESULT

Perform ABS actuator and electric unit (control unit) self-diagnosis. Refer to BRC-81, "CONSULT Function (ABS)".

Is the inspection result normal?

YES >> GO TO 3
NO >> Check items displayed by self-diagnosis.

### 3.CHECK COMBINATION METER

Check if the indication and operation of combination meter are normal. Refer to MWI-28, "Diagnosis Description".

Is the inspection result normal?

YES >> Replace ABS actuator and electric unit (control unit). Refer to BRC-139, "Removal and Installation".
NO >> Repair or replace combination meter. Refer to MWI-139, "Removal and Installation".

# TCS OFF SWITCH

## Description

INFOID:0000000006389241

TCS OFF switch can deactivate (turn OFF) the TCS function by pressing the TCS OFF switch.

## Component Function Check

INFOID:0000000006389242

### 1.CHECK TCS OFF SWITCH OPERATION

Press and release the TCS OFF switch, then press and release the TCS OFF switch again and check that the TCS OFF indicator lamp in the combination meter turns ON/OFF correctly.

| Condition | TCS OFF indicator lamp illumination status |
|---|---|
| TCS OFF switch: pressed and released | ON |
| TCS OFF switch: pressed and released | OFF |

Is the inspection result normal?

YES >> Inspection End.
NO >> Go to diagnosis procedure. Refer to BRC-111, "Diagnosis Procedure".

## Diagnosis Procedure

INFOID:0000000006389243

Regarding Wiring Diagram information, refer to BRC-117, "Wiring Diagram - TCS".

### 1.CHECK TCS OFF SWITCH

Perform the TCS OFF switch component inspection. Refer to BRC-112, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 2
NO >> Replace TCS OFF switch.

### 2.CHECK TCS OFF SWITCH HARNESS

1. Disconnect ABS actuator and electric unit (control unit) connector.
2. Check continuity between ABS actuator and electric unit (control unit) connector E26 terminal 13 and TCS OFF switch connector M72 terminal 1.

| ABS actuator and electric unit (control unit) | | TCS OFF switch | | Continuity |
|---|---|---|---|---|
| Connector | Terminal | Connector | Terminal | |
| E26 | 13 | M72 | 1 | Yes |

3. Check continuity between ABS actuator and electric unit (control unit) connector E26 terminal 13 and ground.

| ABS actuator and electric unit (control unit) | | Ground | Continuity |
|---|---|---|---|
| Connector | Terminal | | |
| E26 | 13 | — | No |

Is the inspection result normal?

YES >> GO TO 3
NO >> Repair or replace malfunctioning components.

### 3.CHECK TCS OFF SWITCH GROUND

Check continuity between TCS OFF switch connector M72 terminal 2 and ground.

| TCS OFF switch | | Ground | Continuity |
|---|---|---|---|
| Connector | Terminal | | |
| M72 | 2 | — | Yes |

Is the inspection result normal?

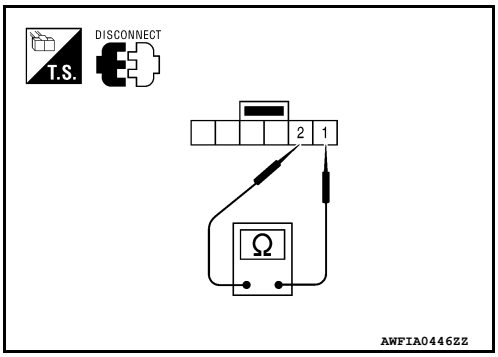
YES >> Inspection end.
NO >> Repair or replace malfunctioning components.

## Component Inspection

INFOID:0000000006389244

### 1.CHECK TCS OFF SWITCH

1. Disconnect TCS OFF switch connector.
2. Check continuity between TCS OFF switch terminals.




| TCS OFF switch terminals | Condition | Continuity |
|---|---|---|
| 1, 2 | TCS OFF switch pressed | Yes |
| | TCS OFF switch released | No |

Is the inspection result normal?

YES >> Inspection End.
NO >> Replace TCS OFF switch.

# SLIP INDICATOR LAMP

## Description

INFOID:0000000006920889

×: ON –: OFF

| Condition | SLIP indicator lamp |
|---|---|
| Ignition switch OFF | – |
| For 2 seconds after turning ON ignition switch | × |
| 2 seconds later after turning ON ignition switch | – |
| VDC/TCS function is malfunctioning. | × |
| ABS function is malfunctioning. | × |
| EBD function is malfunctioning. | × |

## Component Function Check

INFOID:0000000006920890

### 1.CHECK SLIP INDICATOR LAMP OPERATION

Check that the lamp illuminates for approximately 2 seconds after the ignition switch is turned ON.

Is the inspection result normal?

YES >> Inspection End
NO >> Go to diagnosis procedure. Refer to BRC-113, "Diagnosis Procedure".

## Diagnosis Procedure

INFOID:0000000006920891

### 1.CHECK SELF DIAGNOSTIC RESULT

Perform ABS actuator and electric unit (control unit) self diagnostic result. Refer to BRC-81, "CONSULT Function (ABS)".

Is the inspection result normal?

YES >> GO TO 2
NO >> Check items displayed by self diagnostic result. Refer to BRC-115, "DTC No. Index".

### 2.CHECK COMBINATION METER

Check if the indication and operation of combination meter are normal. Refer to MWI-4, "Work Flow".

Is the inspection result normal?

YES >> Replace ABS actuator and electric unit (control unit). Refer to BRC-139, "Removal and Installation".
NO >> Repair or replace combination meter. Refer to MWI-139, "Removal and Installation".

# ECU DIAGNOSIS INFORMATION

## ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)

### Reference Value

INFOID:0000000006389245

VALUES ON THE DIAGNOSIS TOOL

**CAUTION:**

**The display shows the control unit calculation data, so a normal value might be displayed even in the event the output circuit (harness) is open or short - circuited.**

| Monitor item | Display content | Data monitor | |
|---|---|---|---|
| | | Condition | Reference value in normal operation |
| FR LH SENSOR<br>FR RH SENSOR<br>RR LH SENSOR<br>RR RH SENSOR | Wheel speed | 0 [km/h] | Vehicle stopped |
| | | Nearly matches the speed meter display (± 10 % or less) | Vehicle running (Note 1) |
| STOP LAMP SW | Brake pedal operation | When brake pedal is depressed | ON |
| | | When brake pedal is not depressed | OFF |
| BATTERY VOLT | Battery voltage supplied to the ABS actuator and electric unit (control unit) | Ignition switch ON | 10 – 16 V |
| OFF SW | TCS OFF switch ON/OFF | TCS OFF switch ON (When TCS OFF indicator lamp is ON) | ON |
| | | TCS OFF switch OFF (When TCS OFF indicator lamp is OFF) | OFF |
| ENGINE RPM | With engine running | With engine stopped | 0 rpm |
| | | Engine running | Almost in accordance with tachometer display |
| FR LH IN SOL<br>FR LH OUT SOL<br>FR RH IN SOL<br>FR RH OUT SOL<br>RR LH IN SOL<br>RR LH OUT SOL<br>RR RH IN SOL<br>RR RH OUT SOL | Operation status of all solenoid valve | Actuator (solenoid valve) is active (“ACTIVE TEST” with CONSULT) or actuator relay is inactive (in fail-safe mode) | ON |
| | | When the actuator (solenoid valve) is not active and actuator relay is active (ignition switch ON) | OFF |
| MOTOR RELAY | Motor and motor relay operation | When the motor relay and motor are operating | ON |
| | | When the motor relay and motor are not operating | OFF |
| ACTUATOR RLY (Note 2) | Actuator relay operation | When the actuator relay is operating | ON |
| | | When the actuator relay is not operating | OFF |
| ABS WARN LAMP | ABS warning lamp (Note 3) | When ABS warning lamp is ON | ON |
| | | When ABS warning lamp is OFF | OFF |

| Monitor item | Display content | Data monitor | |
|---|---|---|---|
| | | Condition | Reference value in normal operation |
| OFF LAMP | TCS OFF indicator lamp (Note 3) | When TCS OFF indicator lamp is ON | ON |
| | | When TCS OFF indicator lamp is OFF | OFF |
| SLIP LAMP | SLIP indicator lamp (Note 3) | When SLIP indicator lamp is ON | ON |
| | | When SLIP indicator lamp is OFF | OFF |

Note 1: Confirm tire pressure is normal.

Note 2: A brief moment of ON/OFF condition occurs every 20 seconds after ignition switch turned ON. This is not malfunction because it is an operation for checking.

Note 3: On and off timing for warning lamp and indicator lamp. Refer to BRC-81, "CONSULT Function (ABS)".

## Fail-Safe

INFOID:0000000006389246

### ABS, EBD SYSTEM

In case of electrical malfunctions with the ABS, ABS warning lamp, TCS OFF indicator lamp, SLIP indicator lamp will turn on. In case of electrical malfunctions with the EBD, brake warning lamp, ABS warning lamp, TCS OFF indicator lamp and SLIP indicator lamp will turn on. Simultaneously, the TCS/ABS become one of the following conditions of the fail-safe function.

- For malfunction of ABS, only the EBD is activated and the condition of vehicle is the same condition of vehicles without TCS/ABS system.
  **NOTE:**
  ABS self-diagnosis sound may be heard. That is a normal condition because a self-diagnosis for “Ignition switch ON” and “The first starting” tests are being performed.
- For malfunction of EBD, EBD and ABS become inoperative, and the condition of vehicle is the same as the condition of vehicles without TCS/ABS, EBD system.

### TCS

In case of malfunction in the TCS/ABS system, TCS OFF indicator lamp, SLIP indicator lamp are turned on, and the condition of vehicle is the same as the condition of vehicles without TCS control.

**CAUTION:**

**If the Fail-Safe function is activated, then perform self-diagnosis for TCS/ABS control system.**

## DTC No. Index

INFOID:0000000006389247

| Display item | Malfunction detecting condition | Check item |
|---|---|---|
| RR RH SENSOR-1 [C1101] | Circuit of rear RH wheel sensor is open. Or when the sensor power voltage is outside the standard. | BRC-84, "Diagnosis Procedure" (Note) |
| RR LH SENSOR-1 [C1102] | Circuit of rear LH wheel sensor is open. Or when the sensor power voltage is outside the standard. | |
| FR RH SENSOR-1 [C1103] | Circuit of front RH wheel sensor is open. Or when the sensor power voltage is outside the standard. | |
| FR LH SENSOR-1 [C1104] | Circuit of front LH wheel sensor is open. Or when the sensor power voltage is outside the standard. | |

| Display item | Malfunction detecting condition | Check item |
|---|---|---|
| RR RH SENSOR-2 [C1105] | When the circuit in the rear RH wheel sensor is short-circuited. Or when the distance between the wheel sensor and sensor rotor is too large and the sensor pulse cannot be recognized by the control unit. | BRC-87, "Diagnosis Procedure" (Note) |
| RR LH SENSOR-2 [C1106] | When the circuit in the rear LH wheel sensor is short-circuited. Or when the distance between the wheel sensor and sensor rotor is too large and the sensor pulse cannot be recognized by the control unit. | |
| FR RH SENSOR-2 [C1107] | When the circuit in the front RH wheel sensor is short-circuited. Or when the distance between the wheel sensor and sensor rotor is too large and the sensor pulse cannot be recognized by the control unit. | |
| FR LH SENSOR- 2 [C1108] | When the circuit in the front LH wheel sensor is short-circuited. Or when the distance between the wheel sensor and sensor rotor is too large and the sensor pulse cannot be recognized by the control unit. | |
| BATTERY VOLTAGE [ABNORMAL] [C1109] | When the ABS actuator and electric unit (control unit) power supply voltage is lower than normal. | BRC-90, "Diagnosis Procedure" |
| CONTROLLER FAILURE [C1110] | When there is an internal malfunction in the ABS actuator and electric unit (control unit). | BRC-92, "Diagnosis Procedure" |
| PUMP MOTOR [C1111] | During the actuator motor operating with ON, when the actuator motor turns OFF, or when the control line for actuator motor relay is open. | BRC-93, "Diagnosis Procedure" |
| | During the actuator motor operating with OFF, when the actuator motor turns ON, or when the control line for relay is shorted to ground. | |
| MAIN RELAY [C1114] | Actuator solenoid valve relay is ON, even if control unit sends OFF signal.<br>Actuator solenoid valve relay is OFF, even if control unit sends ON signal. | BRC-95, "Diagnosis Procedure" |
| ABS SENSOR [C1115] | Teeth damage on sensor rotor or improper installation of wheel sensor. | BRC-97, "Diagnosis Procedure" |
| FR LH IN ABS SOL [C1120] | When the control unit detects a malfunction in the front left inlet solenoid circuit. | BRC-100, "Diagnosis Procedure" |
| FR LH OUT ABS SOL [C1121] | When the control unit detects a malfunction in the front left outlet solenoid circuit. | BRC-102, "Diagnosis Procedure" |
| FR RH IN ABS SOL [C1122] | When the control unit detects a malfunction in the front right inlet solenoid circuit. | BRC-100, "Diagnosis Procedure" |
| FR RH OUT ABS SOL [C1123] | When the control unit detects a malfunction in the front right outlet solenoid circuit. | BRC-102, "Diagnosis Procedure" |
| RR LH IN ABS SOL [C1124] | When the control unit detects a malfunction in the rear left inlet solenoid circuit. | BRC-100, "Diagnosis Procedure" |
| RR LH OUT ABS SOL [C1125] | When the control unit detects a malfunction in the rear left outlet solenoid circuit. | BRC-102, "Diagnosis Procedure" |
| RR RH IN ABS SOL [C1126] | When the control unit detects a malfunction in the rear right inlet solenoid circuit. | BRC-100, "Diagnosis Procedure" |
| RR RH OUT ABS SOL [C1127] | When the control unit detects a malfunction in the rear right outlet solenoid circuit. | BRC-102, "Diagnosis Procedure" |
| ENGINE SIGNAL 1 [C1130] | Fuel cut control abnormal. | BRC-104, "Diagnosis Procedure" |
| ENGINE SIGNAL 2 [C1131] | Electric throttle control abnormal. | |
| ENGINE SIGNAL 3 [C1132] | ECM CAN communication abnormal. | |
| ENGINE SIGNAL 4 [C1133] | ECM communication to ABS actuator and electric unit (control unit) abnormal. | |
| CAN COMM CIRCUIT [U1000] | When there is a malfunction in the CAN communication circuit. | BRC-105, "Diagnosis Procedure" |

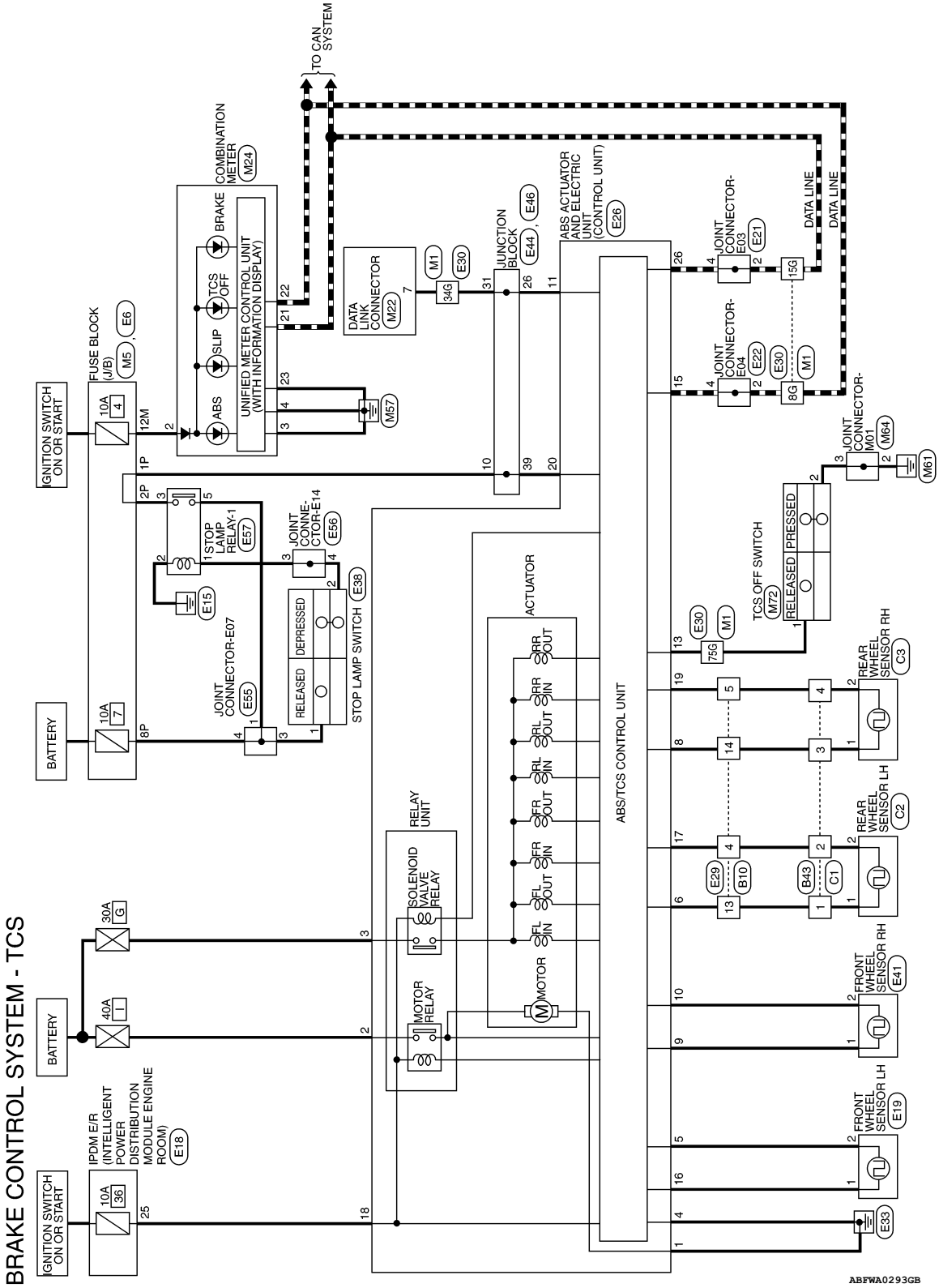
Note: After completing repairs of shorted sensor circuit, when ignition switch is turned ON, ABS warning lamp turns on. Make sure that ABS warning lamp turns off while driving vehicle at 30 km/h (19 MPH) or more for approximately 1 minute according to self-diagnosis procedure. In addition, if wheel sensor 2 is displayed for wheels, check wheel sensor circuit and also check control unit power voltage.

# WIRING DIAGRAM

## BRAKE CONTROL SYSTEM

### Wiring Diagram - TCS

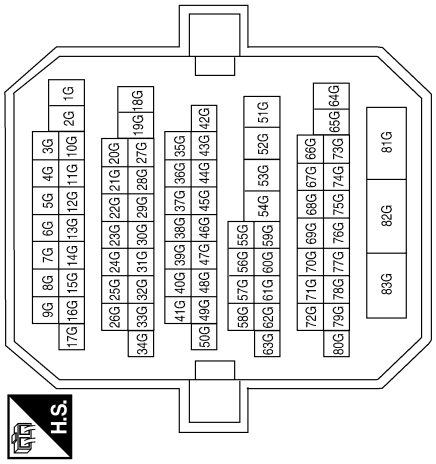
INFOID:0000000006389248



BRAKE CONTROL SYSTEM CONNECTORS - TCS

| Connector No. | M1 |
|---|---|
| Connector Name | WIRE TO WIRE |
| Connector Color | WHITE |

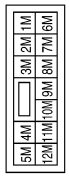
H.S.




| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 8G | P | – |
| 15G | L | – |
| 34G | O | – |
| 75G | SB | – |

| Connector No. | M5 |
|---|---|
| Connector Name | FUSE BLOCK (J/B) |
| Connector Color | WHITE |

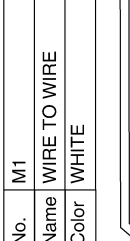
H.S.




| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 12M | O | – |

| Connector No. | M22 |
|---|---|
| Connector Name | DATA LINK CONNECTOR |
| Connector Color | WHITE |

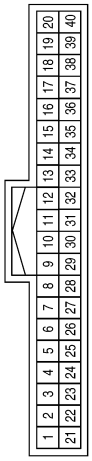
H.S.




| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 7 | O | – |

| Connector No. | M24 |
|---|---|
| Connector Name | COMBINATION METER |
| Connector Color | WHITE |

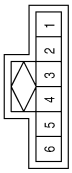
H.S.




| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 2 | O | IGN |
| 3 | B | GND (POWER) |
| 4 | B | GND (ILL) |
| 21 | L | CAN-H |
| 22 | P | CAN-L |
| 23 | B | GND (CIRCUIT) |

| Connector No. | M64 |
|---|---|
| Connector Name | JOINT CONNECTOR-M01 |
| Connector Color | GRAY |

H.S.




| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 2 | B | – |
| 3 | B | – |

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| Connector No. | M72 |
|---|---|
| Connector Name | TCS OFF SWITCH |
| Connector Color | GRAY |

H.S.

6 5 4 3 2 1

| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 1 | SB | – |
| 2 | B | – |

| Connector No. | E6 |
|---|---|
| Connector Name | FUSE BLOCK (J/B) |
| 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 | SB | – |
| 2P | Y | – |
| 8P | R | – |

| Connector No. | E18 |
|---|---|
| Connector Name | IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM) |
| Connector Color | WHITE |

H.S.

9 10 11 12 13 14
3 4 5 6 7 8

25 26 27 28 29 30 31 32 33 34
15 16 17 18 19 20 21 22 23 24

37 38
35 36

| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 25 | GR | ABS ECU |

| Connector No. | E19 |
|---|---|
| Connector Name | FRONT WHEEL SENSOR LH |
| Connector Color | GRAY |

H.S.

1 2

| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 1 | W | – |
| 2 | V | – |

| Connector No. | E21 |
|---|---|
| Connector Name | JOINT CONNECTOR-E03 |
| Connector Color | WHITE |

H.S.

4 3 2 1

| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 2 | L | – |
| 4 | L | – |

AAFIA0085GB

| Connector No. | E22 |
|---|---|
| Connector Name | JOINT CONNECTOR-E04 |
| Connector Color | WHITE |

H.S.




| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 2 | P | – |
| 4 | P | – |

| Connector No. | E26 |
|---|---|
| Connector Name | ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT) |
| Connector Color | BLACK |

H.S.




| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 1 | B | MGND |
| 2 | G | UB (MR) |
| 3 | R | UB (VR) |
| 4 | B | GND |
| 5 | V | DS FL |
| 6 | G | DP RL |
| 7 | – | – |
| 8 | L | DP RR |
| 9 | B | DP FR |
| 10 | LG | DS FR |
| 11 | GR | DIAG-K |
| 12 | – | – |
| 13 | R | ASR AUS (TCS) |
| 14 | – | – |
| 15 | P | CAN-L |
| 16 | W | DP FL |
| 17 | O | DS RL |
| 18 | GR | UZ |
| 19 | BR | DS RR |
| 20 | SB | BLS |
| 21 | – | – |
| 22 | – | – |
| 23 | – | – |
| 24 | – | – |
| 25 | – | – |
| 26 | L | CAN-H |

| Connector No. | E29 |
|---|---|
| Connector Name | WIRE TO WIRE |
| Connector Color | WHITE |

H.S.




| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 4 | O | – |
| 5 | BR | – |
| 13 | G | – |
| 14 | L | – |

ABFIA0345GB

| Connector No. | E38 |
|---|---|
| Connector Name | STOP LAMP SWITCH |
| Connector Color | WHITE |

H.S.

| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 1 | R | – |
| 2 | LG | – |

| Connector No. | E30 |
|---|---|
| Connector Name | WIRE TO WIRE |
| Connector Color | WHITE |

H.S.

| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 8G | P | – |
| 15G | L | – |
| 34G | O | – |
| 75G | R | – |

| Connector No. | E46 |
|---|---|
| Connector Name | JUNCTION BLOCK |
| Connector Color | WHITE |

H.S.

| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 26 | GR | – |
| 31 | O | – |
| 39 | SB | – |

| Connector No. | E44 |
|---|---|
| Connector Name | JUNCTION BLOCK |
| Connector Color | BROWN |

H.S.

| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 10 | SB | – |

| Connector No. | E41 |
|---|---|
| Connector Name | FRONT WHEEL SENSOR RH |
| Connector Color | GRAY |

H.S.

| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 1 | B | – |
| 2 | LG | – |

ABFIA0346GB

| Connector No. | E55 |
|---|---|
| Connector Name | JOINT CONNECTOR-E07 |
| Connector Color | WHITE |

H.S.

| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 1 | W | – |
| 3 | R | – |
| 4 | R | – |

| Connector No. | E56 |
|---|---|
| Connector Name | JOINT CONNECTOR-E14 |
| Connector Color | WHITE |

H.S.

| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 3 | LG | – |
| 4 | LG | – |

| Connector No. | E57 |
|---|---|
| Connector Name | STOP LAMP RELAY-1 |
| Connector Color | BLUE |

H.S.

| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 1 | LG | – |
| 2 | B | – |
| 3 | Y | – |
| 5 | W | – |

| Connector No. | C1 |
|---|---|
| Connector Name | WIRE TO WIRE |
| Connector Color | GRAY |

H.S.

| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 1 | G | – |
| 2 | O | – |
| 3 | LG | – |
| 4 | BR | – |

| Connector No. | C2 |
|---|---|
| Connector Name | REAR WHEEL SENSOR LH |
| Connector Color | BLACK |

H.S.

| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 1 | G | – |
| 2 | O | – |

| Connector No. | C3 |
|---|---|
| Connector Name | REAR WHEEL SENSOR RH |
| Connector Color | GRAY |

H.S.

| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 1 | LG | – |
| 2 | BR | – |

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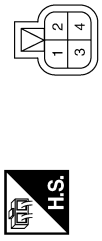
| Connector No. | B43 |
|---|---|
| Connector Name | WIRE TO WIRE |
| Connector Color | GRAY |

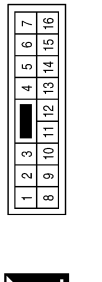




| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 1 | G | – |
| 2 | O | – |
| 3 | LG | – |
| 4 | BR | – |

| Connector No. | B10 |
|---|---|
| Connector Name | WIRE TO WIRE |
| Connector Color | WHITE |





| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 4 | O | – |
| 5 | BR | – |
| 13 | G | – |
| 14 | LG | – |

AAFIA0087GB

# SYMPTOM DIAGNOSIS

## TCS

### Symptom Table

INFOID:0000000006389249

If ABS warning lamp, TCS OFF indicator lamp and SLIP indicator lamp turn ON, perform self-diagnosis.

| Symptom | Check item | Reference |
|---|---|---|
| Excessive ABS function operation frequency | Brake force distribution | BRC-125, "Diagnosis Procedure" |
| | Looseness of front and rear axle | |
| | Wheel sensor and rotor system | |
| Unexpected pedal reaction | Brake pedal stroke | BRC-126, "Diagnosis Procedure" |
| | Make sure the braking force is sufficient when the ABS is not operating. | |
| The braking distance is long | Check stopping distance when the ABS is not operating. | BRC-127, "Diagnosis Procedure" |
| ABS function does not operate (Note 1) | ABS actuator and electric unit (control unit) | BRC-128, "Diagnosis Procedure" |
| Pedal vibration or ABS operation sound occurs (Note 2) | Brake pedal | BRC-129, "Diagnosis Procedure" |
| | ABS actuator and electric unit (control unit) | |
| Vehicle jerks during TCS/ABS control | ABS actuator and electric unit (control unit) | BRC-130, "Diagnosis Procedure" |
| | ECM | |

**NOTE:**

- 1: The ABS does not operate when the speed is 10 km/h (6 MPH) or less.
- 2: Under the following conditions, ABS is activated and vibration is felt when brake pedal is lightly depressed (just place a foot on it). However, this is normal.

- When shifting gears
- When driving on slippery road
- During cornering at high speed
- When passing over bumps or grooves [at approximately 50 mm (1.97 in) or more]
- When pulling away just after starting engine [at approximately 10 km/h (6 MPH) or higher]

# EXCESSIVE ABS FUNCTION OPERATION FREQUENCY

## Diagnosis Procedure

INFOID:0000000006389250

### 1.CHECK START

Check front and rear brake force distribution using a brake tester.

Is the inspection result normal?

YES >> GO TO 2
NO >> Check brake system.

### 2.CHECK FRONT AND REAR AXLE

Make sure that there is no excessive play in the front and rear axles. Refer to front: FAX-6, "Inspection", Rear: RAX-6, "On-vehicle Service".

Is the inspection result normal?

YES >> GO TO 3
NO >> Repair or replace malfunctioning components.

### 3.CHECK WHEEL SENSOR AND SENSOR ROTOR

Check the following.
- Wheel sensor installation for damage.
- Sensor rotor installation for damage.
- Wheel sensor connector connection.
- Wheel sensor harness inspection.

Is the inspection result normal?

YES >> GO TO 4
NO >>
- Replace wheel sensor or sensor rotor. Refer to BRC-136, "Removal and Installation" or BRC-138, "Removal and Installation".
- Repair harness.

### 4.CHECK ABS WARNING LAMP DISPLAY

Make sure that the ABS warning lamp is turned off after the ignition switch is turned ON or when driving.

Is the inspection result normal?

YES >> System normal.
NO >> Perform self-diagnosis. Refer to BRC-15, "CONSULT Function (ABS)".

# UNEXPECTED PEDAL REACTION

## Diagnosis Procedure

INFOID:0000000006389251

### 1.CHECK BRAKE PEDAL STROKE

Check brake pedal stroke. Refer to BR-13, "Inspection and Adjustment".

Is the stroke too big?

YES >> • Bleed air from brake tube and hose. Refer to BR-16, "Bleeding Brake System".
• Check brake pedal, brake booster, and master cylinder for mount play, looseness, brake system fluid leakage, etc. Refer to brake pedal: BR-13, "Inspection and Adjustment", brake booster: BR-9, "Inspection" and master cylinder: BR-10, "On Board Inspection".

NO >> GO TO 2.

### 2.CHECK FUNCTION

Disconnect ABS actuator and electric unit (control unit) connector to deactivate ABS. Check if braking force is normal in this condition.Connect connector after inspection.

Is the inspection result normal?

YES >> GO TO procedure 3 “CHECK WHEEL SENSOR AND SENSOR ROTOR” of symptom 1. Refer to BRC-55, "Diagnosis Procedure".

NO >> Check brake system.

# THE BRAKING DISTANCE IS LONG

## Diagnosis Procedure

INFOID:0000000006389252

**CAUTION:**
**The stopping distance on slippery road surfaces might be longer with the ABS operating than when the ABS is not operating.**

1.CHECK FUNCTION

Turn ignition switch OFF and disconnect ABS actuator and electric unit (control unit) connector to deactivate ABS. In this condition, check stopping distance. After inspection, connect connector.

Is the inspection result normal?

YES >> Inspection End.
NO >> Check brake system.

# ABS FUNCTION DOES NOT OPERATE

## Diagnosis Procedure

INFOID:0000000006389253

**CAUTION:**
**ABS does not operate when speed is 10 km/h (6 MPH) or lower.**

1.CHECK ABS WARNING LAMP DISPLAY

Make sure that the ABS warning lamp turns OFF after ignition switch is turned on or when driving.

Is the inspection result normal?

YES >> Inspection End.
NO >> Perform self-diagnosis. Refer to BRC-81, "CONSULT Function (ABS)".

# PEDAL VIBRATION OR ABS OPERATION SOUND OCCURS

## Diagnosis Procedure

INFOID:0000000006389254

**CAUTION:**

**Under the following conditions, ABS is activated and vibration is felt when brake pedal is lightly depressed (just place a foot on it). However, this is normal.**

- **When shifting gears**
- **When driving on slippery road**
- **During cornering at high speed**
- **When passing over bumps or grooves [at approximately 50 mm (1.97 in) or more]**
- **When pulling away just after starting engine [at approximately 10 km/h (6 MPH) or higher]**

### 1.SYMPTOM CHECK 1

Check that there are pedal vibrations when the engine is started.

Do symptoms occur?

YES >> GO TO 2
NO >> Inspect the brake pedal.

### 2.SYMPTOM CHECK 2

Check that there are ABS operation noises when the engine is started.

Do symptoms occur?

YES >> GO TO 3
NO >> Perform self diagnostic result. Refer to BRC-81, "CONSULT Function (ABS)".

### 3.SYMPTOM CHECK 3

Check symptoms when electrical component (headlamps, etc.) switches are operated.

Do symptoms occur?

YES >> Check if there is a radio, antenna, antenna lead wire, or wiring close to the control unit. If there is, move it farther away.
NO >> Inspection End.

# VEHICLE JERKS DURING TCS/ABS CONTROL

## Diagnosis Procedure

INFOID:0000000006389255

### 1.SYMPTOM CHECK

Check if the vehicle jerks during TCS/ABS control.

Is the inspection result normal?

YES >> Inspection End.
NO >> GO TO 2

### 2.CHECK SELF-DIAGNOSIS RESULTS

Perform self-diagnostic of ABS actuator and electric unit (control unit). Refer to BRC-81, "CONSULT Function (ABS)".

Are self-diagnosis results indicated?

YES >> Check corresponding items, make repairs, and perform ABS actuator and electric unit (control unit) self-diagnosis.
NO >> GO TO 3

### 3.CHECK CONNECTOR

- Turn ignition switch OFF and disconnect ABS actuator and electric unit (control unit) connector and check terminal for deformation, disconnection, looseness, etc.
- Securely connect connectors and perform ABS actuator and electric unit (control unit) self-diagnosis.

Are self-diagnosis results indicated?

YES >> If poor contact, damage, open or short circuit of connector terminal is found, repair or replace.
NO >> GO TO 4

### 4.CHECK ECM AND CVT SELF-DIAGNOSIS RESULTS

Perform ECM and CVT self-diagnosis. Refer to EC-423, "CONSULT-III Function" or TM-123, "CONSULT-III Function (TRANSMISSION)".

Are self-diagnosis results indicated?

YES >> Check the corresponding items.
- ECM: Refer to EC-423, "CONSULT-III Function".
- CVT: Refer to TM-123, "CONSULT-III Function (TRANSMISSION)".

NO >> Replace ABS actuator and electric unit (control unit). Refer to BRC-139, "Removal and Installation".

# NORMAL OPERATING CONDITION

## Description

INFOID:0000000006389256

| Symptom | Result |
|---|---|
| Slight vibrations are felt on the brake pedal and the operation noises occur, when TCS or ABS is activated. | This is a normal condition due to the TCS or ABS activation. |
| Stopping distance is longer than that of vehicles without ABS when the vehicle drives on rough, gravel, or snow-covered (fresh, deep snow) roads. | |
| The brake pedal moves and generates noises, when TCS is activated due to rapid acceleration or sharp turn. | |
| The brake pedal vibrates and motor operation noises occur from the engine room, after the engine starts and just after the vehicle starts. | This is a normal, and it is caused by the ABS operation check. |
| Depending on the road conditions, the driver may experience a sluggish feel. | This is normal, because TCS places the highest priority on the optimum traction (stability). |
| TCS may activate momentarily if wheel speed changes when driving over location where friction coefficient varies, when downshifting, or when fully depressing accelerator pedal. | |
| The ABS warning lamp and SLIP indicator lamp may turn ON when the vehicle is subject to strong shaking or large vibration, such as when the vehicle is rotating on a turntable or located on a ship while the engine is running. | In this case, restart the engine on a normal road. If the normal condition is restored, there is no malfunction. At that time, erase the self-diagnosis memory. |
| The ABS warning lamp, TCS OFF indicator lamp and SLIP indicator lamp may illuminate, when running on a special road that is extremely slanted (e.g. bank in a circuit course). | |
| The vehicle speed will not increase even though the accelerator pedal is depressed, when inspecting the speedometer on a 2-wheel chassis dynamometer. | Normal (Deactivate the TCS function before performing an inspection on a chassis dynamometer.) |
| TCS OFF indicator lamp and SLIP indicator lamp may simultaneously turn on when low tire pressure warning lamp turns on. | This is not a TCS system error but results from characteristic change of tire. |

# PRECAUTION

## PRECAUTIONS

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

INFOID:0000000006389257

The Supplemental Restraint System such as “AIR BAG” and “SEAT BELT PRE-TENSIONER”, used along with a front seat belt, helps to reduce the risk or severity of injury to the driver and front passenger for certain types of collision. This system includes seat belt switch inputs and dual stage front air bag modules. The SRS system uses the seat belt switches to determine the front air bag deployment, and may only deploy one front air bag, depending on the severity of a collision and whether the front occupants are belted or unbelted.
Information necessary to service the system safely is included in the SR and SB section of this Service Manual.

**WARNING:**

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

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

**WARNING:**

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

### Necessary for Steering Wheel Rotation After Battery Disconnect

INFOID:0000000006389258

**NOTE:**

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

This vehicle is equipped with a push-button ignition switch and a steering lock unit.
If the battery is disconnected or discharged, the steering wheel will lock and cannot be turned.
If turning the steering wheel is required with the battery disconnected or discharged, follow the procedure below before starting the repair operation.

#### OPERATION PROCEDURE

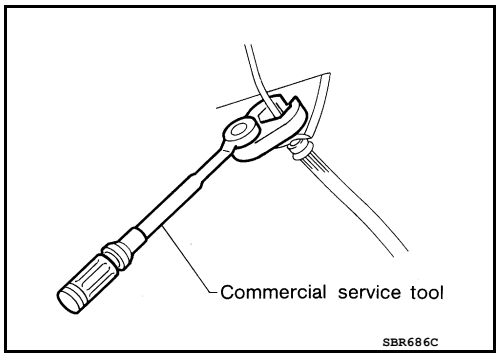
1. Connect both battery cables.
   **NOTE:**
   Supply power using jumper cables if battery is discharged.
2. Carry the Intelligent Key or insert it to the key slot and turn the push-button ignition switch to ACC position. (At this time, the steering lock will be released.)
3. Disconnect both battery cables. The steering lock will remain released with both battery cables disconnected and the steering wheel can be turned.
4. Perform the necessary repair operation.
5. When the repair work is completed, re-connect both battery cables. With the brake pedal released, turn the push-button ignition switch from ACC position to ON position, then to LOCK position. (The steering wheel will lock when the push-button ignition switch is turned to LOCK position.)

6. Perform self-diagnosis check of all control units using CONSULT.

## Precaution for Brake System

INFOID:0000000006389259

- Recommended fluid is brake fluid “DOT 3”.
- Never reuse drained brake fluid.
- Be careful not to splash brake fluid on painted surface of body. If brake fluid is splashed on painted surfaces of body immediately wipe off then with cloth and then wash it away with water.
- Never use mineral oils such as gasoline or kerosene. They will ruin rubber parts of the hydraulic system.
- Use a flare nut wrench when removing flare nuts, and use a flare nut torque wrench when tighten brake tube flare nuts.
- When installing brake tubes, be sure to check torque.
- Brake system is an important safety part. If a brake fluid leak is detected, always disassemble the affected part. If a malfunction is detected, replace part with a new one.
- Before working, turn ignition switch OFF and disconnect connectors of ABS actuator and electric unit (control unit) or the battery cable from the negative terminal.




**WARNING:**

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

## Precaution for Brake Control

INFOID:0000000006389260

- Just after starting vehicle after ignition switch ON, brake pedal may vibrate or motor operating noise may be heard from engine compartment. This is normal condition.
- When an error is indicated by ABS or another warning lamp, collect all necessary information from customer (what symptoms are present under what conditions) and check for simple causes before starting diagnostic servicing. Besides electrical system inspection, check brake booster operation, brake fluid level, and oil leaks.
- If tire size and type are used in an improper combination, or brake pads are not Genuine NISSAN parts, stopping distance or steering stability may deteriorate.
- ABS might be out of order or malfunctions by putting a radio (wiring inclusive), an antenna and a lead-in wire near the control unit.
- If aftermarket parts (car stereo, CD player, etc.) have been installed, check for incidents such as harness pinches, open circuits, and improper wiring.
- When replacing the following parts with parts other than genuine parts or making modifications: Suspension-related parts (shock absorber, spring, bushing, etc.), tires, wheels (other than specified sizes), brake-related parts (pad, rotor, caliper, etc.), engine-related parts (muffler, ECM, etc.) and body reinforcement-related parts (roll bar, tower bar, etc.).
- When driving with worn or deteriorated suspension, tires and brake-related parts.

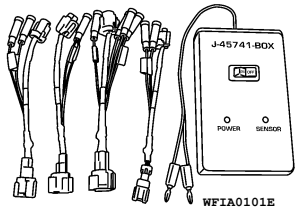
# PREPARATION

## PREPARATION

### Special Service Tool

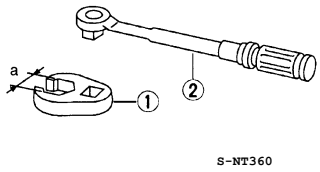
INFOID:0000000006389261

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

| Tool number<br>(Kent-Moore No.)<br>Tool name | Description |
|---|---|
| —<br>(J-45741)<br>ABS active wheel sensor tester   | Checking operation of ABS active wheel sensor |

### Commercial Service Tool

INFOID:0000000006389262

| Tool name | Description |
|---|---|
| 1. Flare nut crowfoot<br>2. Torque wrench   | Removing and installing brake piping<br>**a: 10mm (0.39 in)/12mm (0.47 in)** |

# REMOVAL AND INSTALLATION

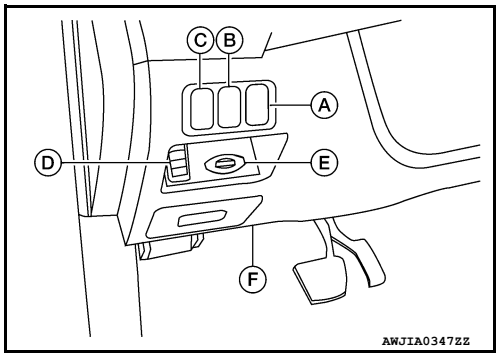
## TCS OFF SWITCH

### Removal and Installation

INFOID:0000000006389263

REMOVAL

1. Remove instrument lower cover to access the TCS OFF switch. Refer to IP-11, "Exploded View".
2. Disconnect the following harness connectors to remove from the instrument lower cover:
   - Headlamp aiming (A)
   - Rear sonar system off switch (B)
   - TCS OFF (C)
   - Trunk release (D)
   - Key slot (E)
   - Diagnostic connector (F)
   - Asperator tube
3. Remove TCS OFF switch from the back of the instrument lower cover



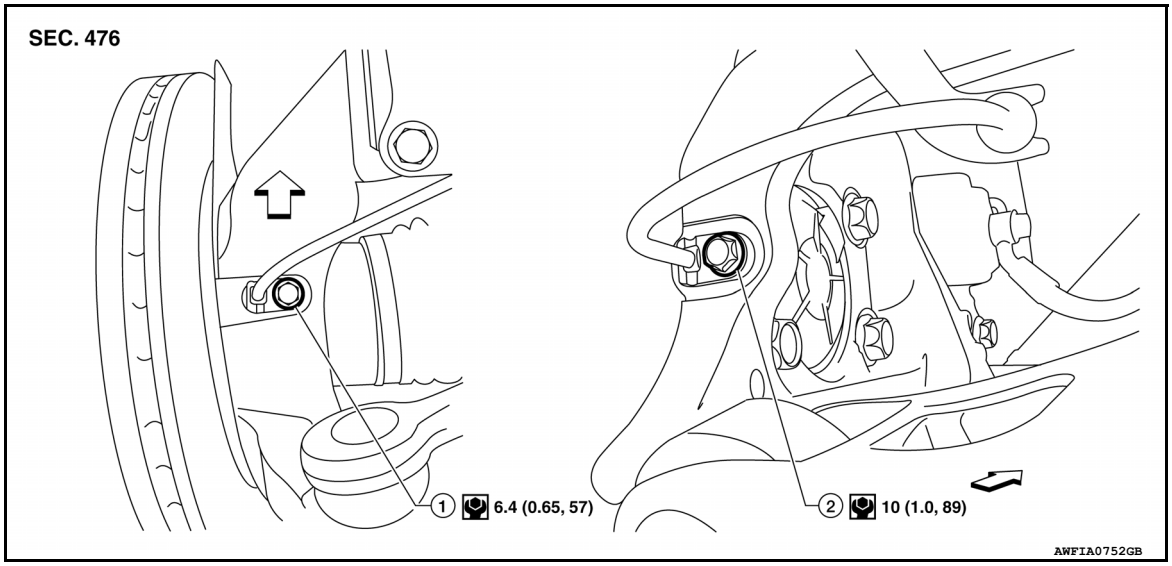

INSTALLATION

Installation is in the reverse order of removal.

# WHEEL SENSORS

## Removal and Installation

INFOID:0000000006389264




1. Front wheel sensor
2. Rear wheel sensor
⇦ Front

**CAUTION:**

- **Be careful not to damage wheel sensor edge and sensor rotor teeth.**
- **When removing the front or rear wheel hub, first remove the wheel sensor from the wheel hub. Failure to do so may result in damage to the wheel sensor wires making the sensor inoperative.**
- **Pull out the wheel sensor, being careful to turn it as little as possible. Do not pull on the wheel sensor harness.**
- **Before installation, check if foreign objects such as iron fragments are adhered to the pick-up part of the sensor or to the inside of the hole in the wheel hub for the wheel sensor, or if a foreign object is caught in the surface of the mating surface for the sensor rotor. Fix as necessary and then install the wheel sensor.**

### FRONT WHEEL SENSOR

Removal

1. Remove front wheel and tire. Refer to WT-65, "Adjustment".
2. Partially remove front wheel fender protector. Refer to EXT-22, "Removal and Installation" (Coupe), EXT-46, "Removal and Installation" (Sedan).
3. Remove wheel sensor bolt and wheel sensor.
4. Remove harness wire from mounts and disconnect wheel sensor harness connector.

Installation

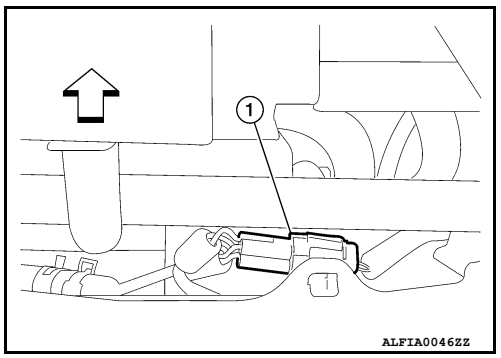
Installation is in the reverse order of removal.

### REAR WHEEL SENSOR

Removal

1. Remove rear wheel and tire. Refer to WT-65, "Adjustment".

2. Disconnect wheel sensor harness connector (1).
   - ⇦: Front
3. Remove harness wire clips from rear suspension member.
4. Remove wheel sensor bolt and wheel sensor from rear wheel hub and bearing assembly.




Installation

Installation is in the reverse order of removal.

# SENSOR ROTOR

## Removal and Installation

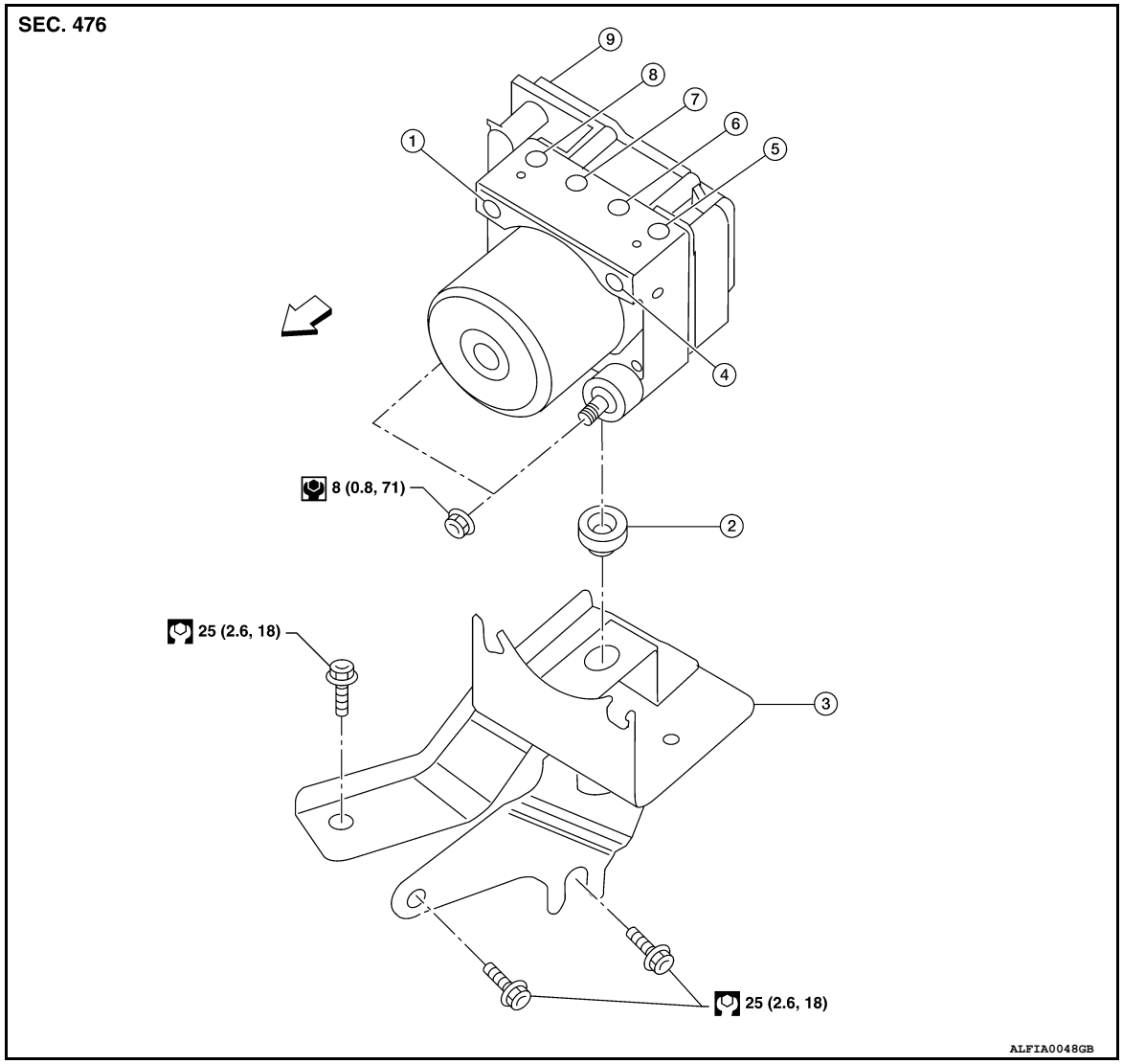
INFOID:0000000006389265

The front and rear wheel sensor rotors are an integral part of the wheel hubs and can not be disassembled. When replacing the sensor rotor, replace the wheel hub. Refer to FAX-8, "Removal and Installation" (front), RAX-7, "Removal and Installation" (rear).

# ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)

## Exploded View

INFOID:0000000006389266




1. From master cylinder secondary side
2. Grommet
3. Bracket
4. From master cylinder primary side
5. To front LH brake caliper
6. To rear RH brake caliper
7. To rear LH brake caliper
8. To front RH brake caliper
9. ABS actuator and electric unit (control unit)

⇦ Front

## Removal and Installation

INFOID:0000000006389267

**CAUTION:**

**Be careful of the following.**

- **Before servicing, disconnect the battery cable from negative terminal.**
- **To remove brake pipe, use a suitable tool (flare nut wrench) to prevent flare nuts and brake tube from being damaged. To install, use suitable tool (flare nut torque wrench).**
- **Do not apply excessive impact to ABS actuator and electric unit (control unit), such as dropping it.**
- **Do not remove and install ABS actuator and electric unit (control unit) by holding harness.**
- **After work is completed, bleed air from brake tube. Refer to BR-16, "Bleeding Brake System".**
- **After installing harness connector on the ABS actuator and electric unit (control unit), make sure connector is securely locked.**

## REMOVAL

1. Remove cowl top. Refer to EXT-21, "Removal and Installation" (Coupe), EXT-45, "Removal and Installation" (Sedan).
2. Disconnect washer hose.
3. Disconnect the battery negative terminal.
4. Remove strut tower bar, if equipped. Refer to FSU-13, "Exploded View".
5. Disconnect ABS actuator and electric unit (control unit) connector.
6. Loosen brake tube flare nuts, then remove brake tubes from ABS actuator and electric unit (control unit) using a suitable tool.
7. Remove ABS actuator and electric unit (control unit) nuts.
8. Remove ABS actuator and electric unit (control unit).
9. Remove bracket as necessary.

## INSTALLATION

Installation is in the reverse order of removal.
Torque brake lines to proper specifications. Refer to BR-18, "Hydraulic Circuit".

# BASIC INSPECTION

## DIAGNOSIS AND REPAIR WORKFLOW

### Work Flow

INFOID:0000000006920894

### 1.COLLECT INFORMATION FROM THE CUSTOMER

Get detailed information from the customer about the symptom (the condition and the environment when the incident/malfunction occurred) using the diagnosis worksheet. Refer to BRC-142, "Diagnostic Work Sheet".

>> GO TO 2.

### 2.PERFORM SELF DIAGNOSTIC RESULT

Perform self diagnostic result. Refer to BRC-158, "CONSULT Function (ABS)".

Are any DTCs displayed?

YES >> Refer to BRC-220, "DTC No. Index".
NO >> GO TO 3.

### 3.CHECK SYMPTOM OPERATING CONDITION

Check that the symptom is a normal operating condition. Refer to BRC-248, "Description".

Is the symptom a normal operating condition?

YES >> Inspection End.
NO >> GO TO 4.

### 4.CHECK WARNING AND INDICATOR LAMPS OPERATION

Check warning and indicator lamps operation.
- ABS warning lamp: Refer to BRC-209, "Description".
- brake warning lamp: Refer to BRC-210, "Description".
- VDC OFF indicator lamp: Refer to BRC-212, "Description".
- SLIP indicator lamp: Refer to BRC-214, "Description".

Is ON/OFF timing normal?

YES >> GO TO 5.
NO >> Perform warning lamp diagnosis. Refer to BRC-209, "Component Function Check" (ABS warning lamp), BRC-210, "Component Function Check" (brake warning lamp), BRC-212, "Component Function Check" (VDC OFF indicator lamp) or BRC-214, "Component Function Check" (SLIP indicator lamp).

### 5.PERFORM DIAGNOSIS APPLICABLE TO THE SYMPTOM

Perform diagnosis applicable to the symptom. Refer to BRC-241, "Symptom Table".

>> GO TO 6.

### 6.FINAL CHECK

Perform self diagnostic result again, and check that the malfunction is repaired. After checking, erase the self diagnosis memory. Refer to BRC-158, "CONSULT Function (ABS)".

>> Inspection End.

## Diagnostic Work Sheet

INFOID:0000000006389269

| | | | |
|---|---|---|---|
| Customer name MR/MS | Model & Year | | VIN |
| Engine # | Trans. | | Mileage |
| Incident Date | Manuf. Date | | In Service Date |
| Symptoms | ☐ Noise and vibration (from engine compartment)<br>☐ Noise and vibration (from axle) | ☐ Warning / Indicator activate | ☐ Firm pedal operation<br>Large stroke pedal operation |
| | ☐ TCS does not work (Rear wheels slip when accelerating) | ☐ ABS does not work (Wheels lock when braking) | ☐ Lack of sense of acceleration |
| Engine conditions | ☐ When starting ☐ After starting | | |
| Road conditions | ☐ Low friction road ( ☐Snow ☐Gravel ☐Other )<br>☐ Bumps / potholes | | |
| Driving conditions | ☐ Full-acceleration<br>☐ High speed cornering<br>☐ Vehicle speed: Greater than 10 km/h (6 MPH)<br>☐ Vehicle speed: 10 km/h (6 MPH) or less<br>☐ Vehicle is stopped | | |
| Applying brake conditions | ☐ Suddenly<br>☐ Gradually | | |
| Other conditions | ☐ Operation of electrical equipment<br>☐ Shift change<br>☐ Other descriptions | | |

SFIA3265E

# INSPECTION AND ADJUSTMENT

## ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT

### ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Description

INFOID:0000000006389270

After replacing the ABS actuator and electric unit (control unit), perform the neutral position adjustment for the steering angle sensor.

### ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement

INFOID:0000000006389271

**1.** PERFORM THE NEUTRAL POSITION ADJUSTMENT FOR THE STEERING ANGLE SENSOR

Perform the neutral position adjustment for the steering angle sensor.

>> Refer to BRC-143, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION : Special Repair Requirement".

## ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

### ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION : Description

INFOID:0000000006389272

In case of doing work that applies to the list below, make sure to adjust neutral position of steering angle sensor before running vehicle.

×: Required –: Not required

| Situation | Adjustment of steering angle sensor neutral position |
|---|---|
| Removing/Installing ABS actuator and electric unit (control unit) | — |
| Replacing ABS actuator and electric unit (control unit) | × |
| Removing/Installing steering angle sensor | × |
| Replacing steering angle sensor | × |
| Removing/Installing steering components | × |
| Replacing steering components | × |
| Removing/Installing suspension components | × |
| Replacing suspension components | × |
| Change tires to new ones | — |
| Tire rotation | — |
| Adjusting wheel alignment | × |

### ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION : Special Repair Requirement

INFOID:0000000006389273

ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

**CAUTION:**

**To adjust neutral position of steering angle sensor, make sure to use CONSULT (Adjustment cannot be done without CONSULT)**

**1.** ALIGN THE VEHICLE STATUS

Stop vehicle with front wheels in straight-ahead position.

>> GO TO 2.

**2.** PERFORM THE NEUTRAL POSITION ADJUSTMENT FOR THE STEERING ANGLE SENSOR

1. On the CONSULT screen, touch "WORK SUPPORT", then "ST ANG SEN ADJUSTMENT".
2. Touch “START”.

**CAUTION:**
**Do not touch steering wheel while adjusting steering angle sensor.**

3. After approximately 10 seconds, touch “END”.
**NOTE:**
After approximately 60 seconds, the adjustment ends automatically.
4. Turn ignition switch OFF, then turn it ON again.
**CAUTION:**
**Be sure to perform above operation.**

>> GO TO 3.

## 3.CHECK DATA MONITOR

1. Run vehicle with front wheels in straight-ahead position, then stop.
2. Select “DATA MONITOR”. Then make sure “STR ANGLE SIG” is within 0±2.5°.

Is the steering angle within the specified range?

YES >> GO TO 4.
NO >> Perform the neutral position adjustment for the steering angle sensor again, GO TO 1.

## 4.ERASE THE SELF-DIAGNOSIS MEMORY

Erase the self-diagnosis memories of the ABS actuator and electric unit (control unit) and ECM.
- ABS actuator and electric unit (control unit): Refer to BRC-158, "CONSULT Function (ABS)".
- ECM: Refer to EC-99, "CONSULT-III Function" (QR25DE), EC-423, "CONSULT-III Function" (VQ35DE).

Are the memories erased?

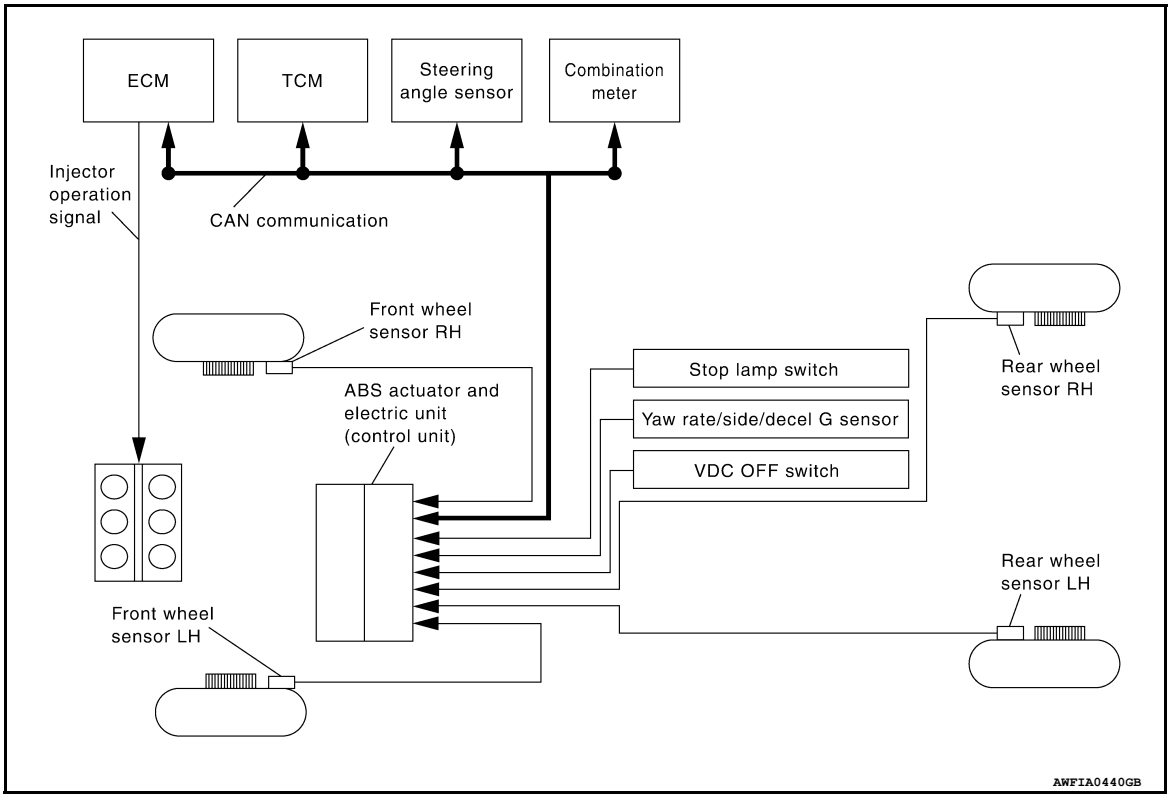
YES >> Inspection End
NO >> Check the items indicated by the self-diagnosis.

# SYSTEM DESCRIPTION

## VDC

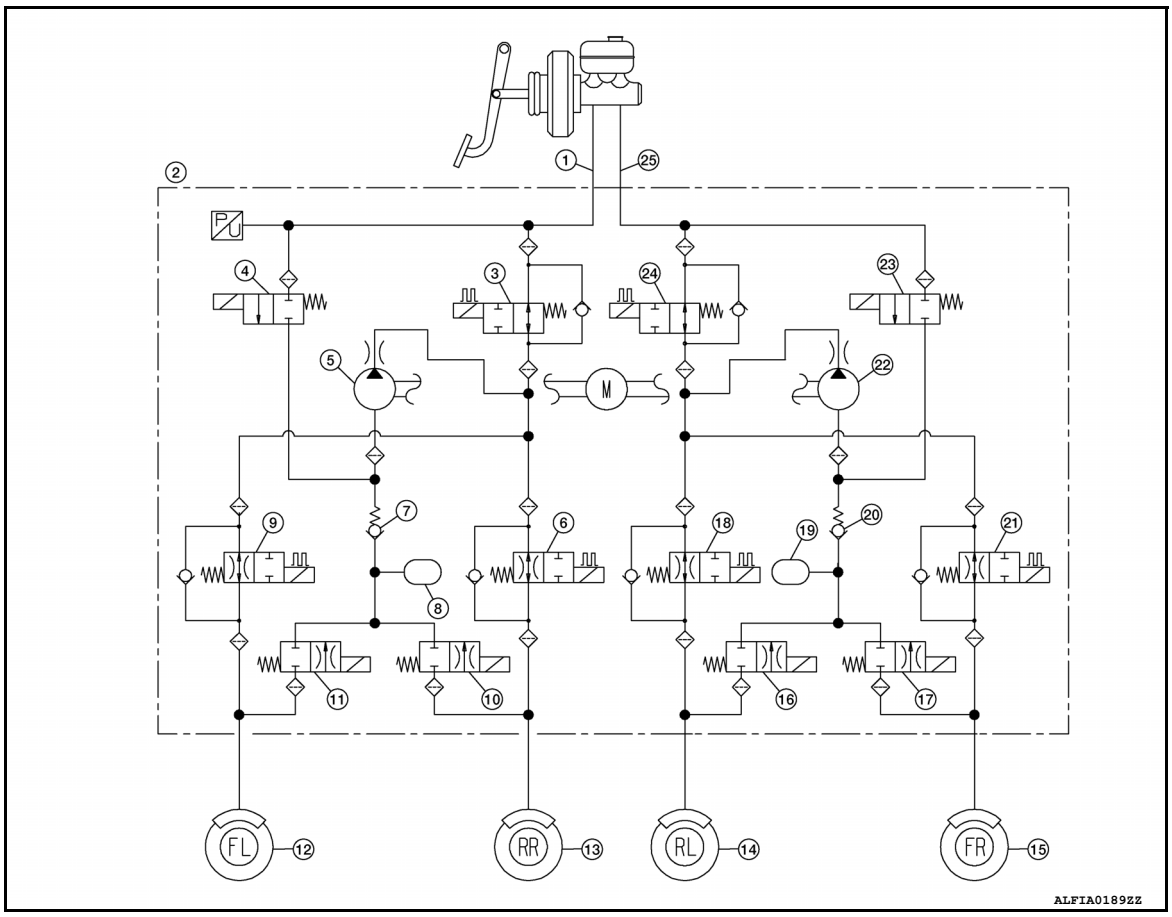
### System Diagram

INFOID:0000000006920909



## Hydraulic Circuit Diagram

INFOID:0000000006920910




1. Primary side
2. VDC/TCS/ABS actuator
3. Primary side VDC switch-over valve 1 (USV1)
4. Primary side VDC switch-over valve 1 (HSV1)
5. Primary side pump
6. Rear right inlet solenoid valve
7. Primary side inlet valve
8. Primary side damper
9. Front left inlet solenoid valve
10. Rear right outlet solenoid valve
11. Front left outlet solenoid valve
12. Front left caliper
13. Rear right caliper
14. Rear left caliper
15. Front right caliper
16. Rear left outlet solenoid valve
17. Front right outlet solenoid valve
18. Rear left inlet solenoid valve
19. Secondary side damper
20. Secondary side inlet valve
21. Front right inlet solenoid valve
22. Secondary side pump
23. Secondary side VDC switch-over valve 2 (HSV2)
24. Secondary side VDC switch-over valve 2 (USV2)
25. Secondary side

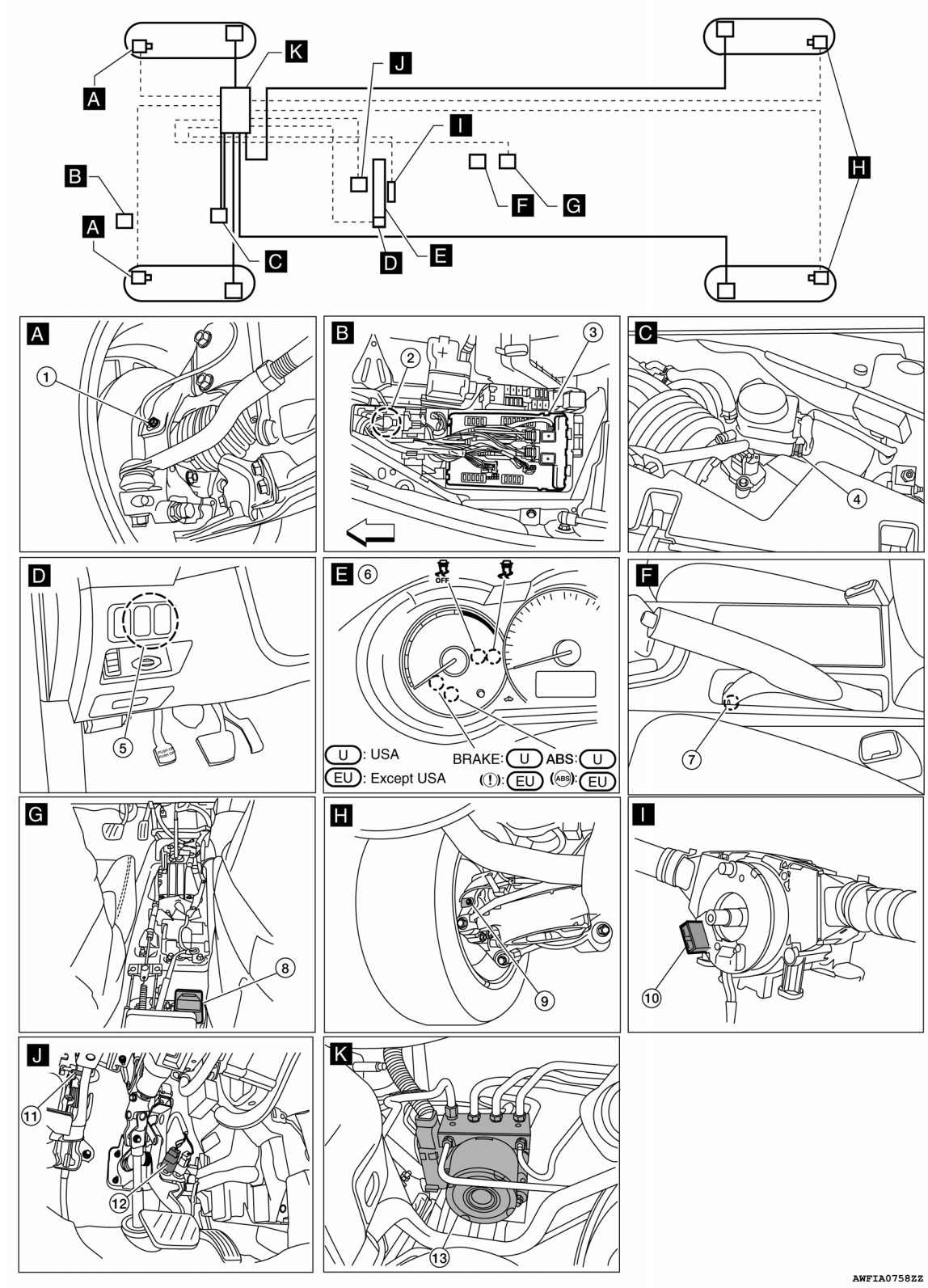
## System Description

INFOID:0000000006920911

- Vehicle dynamic control system detects driver's steering operation amount from the steering angle sensor. Using input information from the yaw rate/side/decel G sensor and wheel speed sensors, the VDC system judges driving conditions (conditions of understeer and oversteer) and controls engine output and brake application to improve vehicle driving stability.
- During VDC operation, it informs driver of system operation by flashing SLIP indicator lamp.
- Electrical system diagnosis by CONSULT is available.

## Component Parts Location

INFOID:0000000006920912




1. Front wheel sensor LH E19
   Front wheel sensor RH E41
2. Stop lamp relay E57 (with CVT)
3. IPDM E/R
4. Brake fluid level switch E24
5. VDC OFF switch M72
6. Combination meter M24
7. Parking brake switch M73 (Sedan with M/T)
8. Yaw rate/side/decel G sensor M55
9. Rear wheel sensor LH C2
   Rear wheel sensor RH C3

10. Steering angle sensor M53 (view with steering wheel removed)
11. Parking brake switch E35 (with CVT)
12. Stop lamp switch E38
13. ABS actuator and electric unit (control unit) E26

## Component Description

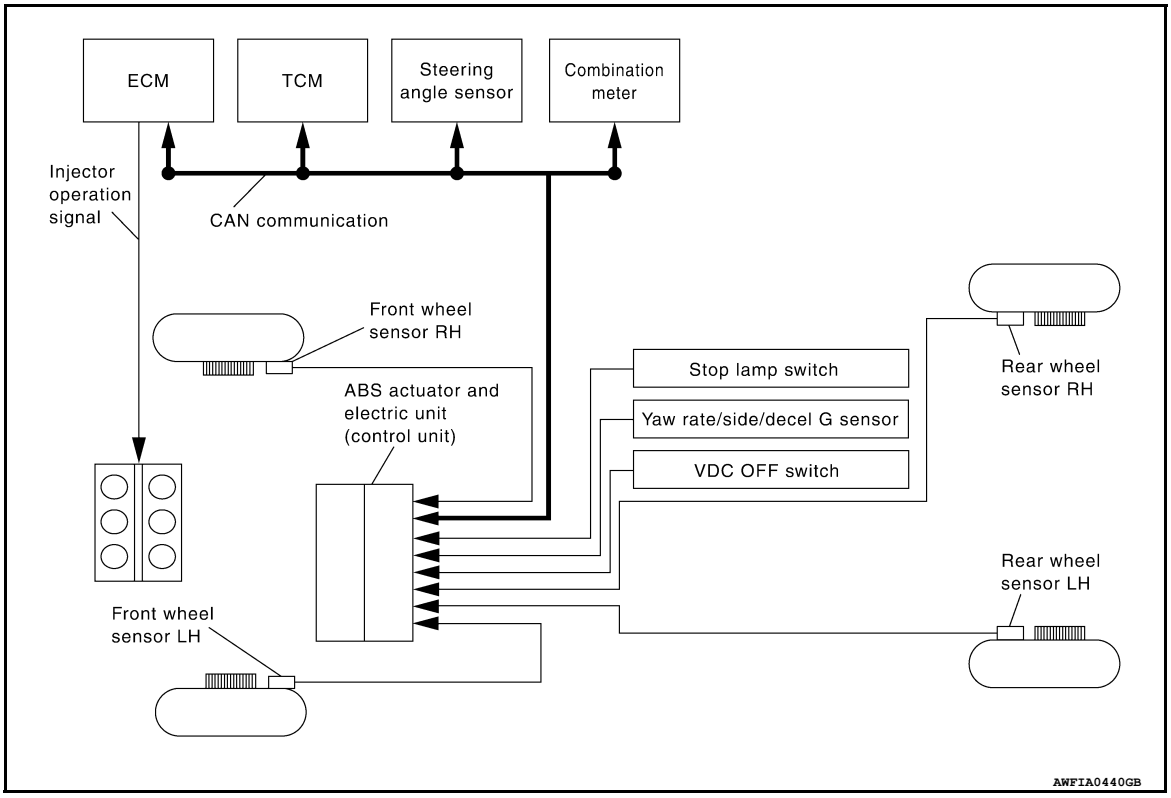
INFOID:0000000006920913

| Component parts | | Reference |
|---|---|---|
| ABS actuator and electric unit (control unit) | Pump | BRC-171, "Description" |
| | Motor | |
| | Actuator relay (Main relay) | BRC-173, "Description" |
| | Solenoid valve | BRC-182, "Description" |
| | Pressure sensor | BRC-189, "Description" |
| | VDC switch-over valve (HSV1, HSV2, USV1, USV2) | BRC-196, "Description" |
| Wheel sensor | | BRC-162, "Description" |
| Stop lamp switch | | BRC-178, "Description" |
| Steering angle sensor | | BRC-191, "Description" |
| Yaw rate/side/G sensor | | BRC-193, "Description" |
| Brake fluid level switch | | BRC-201, "Description" |
| Parking brake switch | | BRC-205, "Description" |
| VDC OFF switch | | BRC-207, "Description" |
| ABS warning lamp | | BRC-209, "Description" |
| Brake warning lamp | | BRC-210, "Description" |
| VDC OFF indicator lamp | | BRC-212, "Description" |
| Slip indicator lamp | | BRC-214, "Description" |

# TCS

## System Diagram

INFOID:0000000006920915



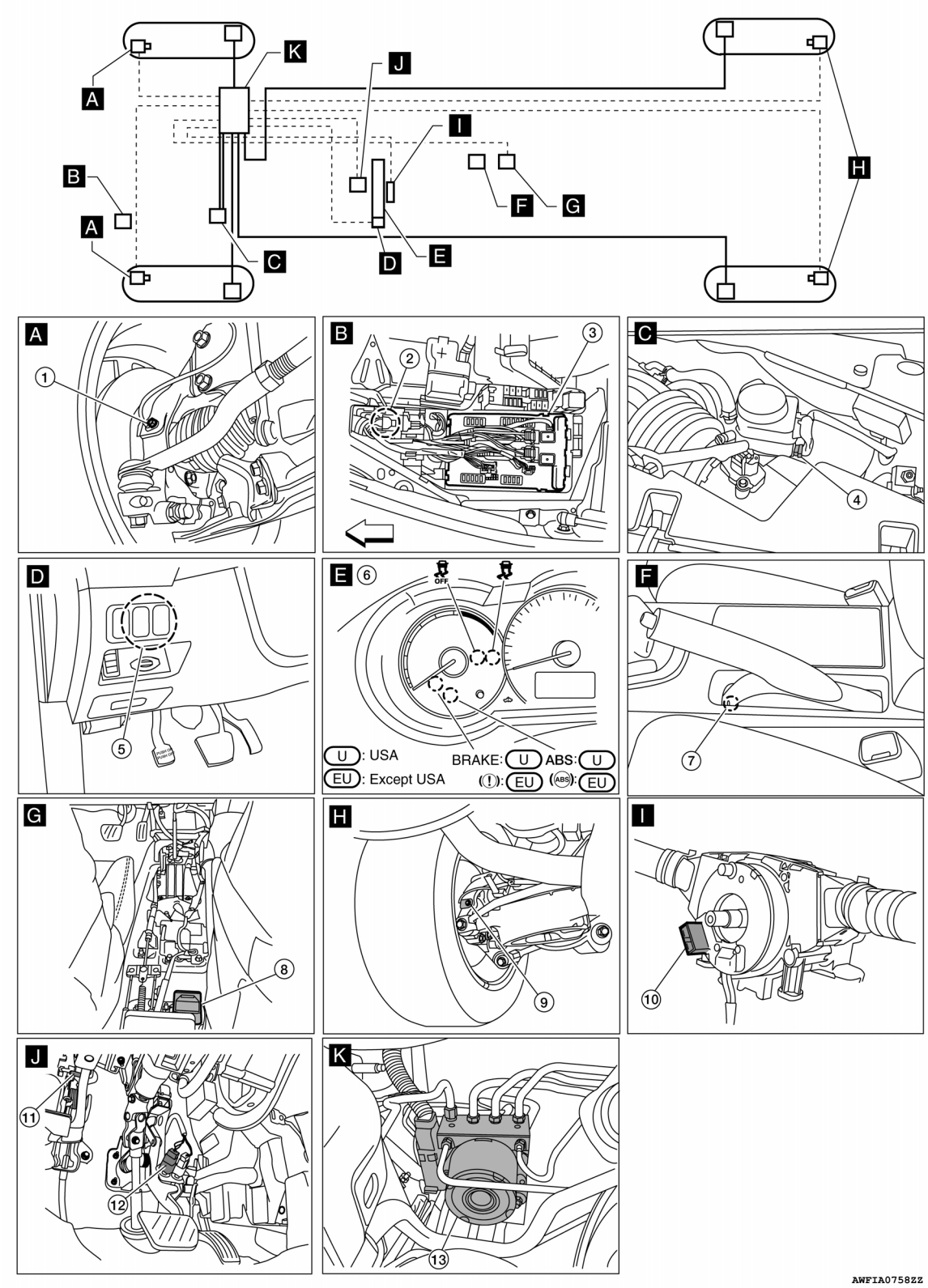

## System Description

INFOID:0000000006920897

- Traction Control System is a function that electronically controls engine torque and brake fluid pressure to ensure the optimum slippage ratio at drive wheels by computing wheel speed signals from 4 wheel sensors. When ABS actuator and electric unit (control unit) detects a spin at drive wheels, it compares wheel speed signals from all 4 wheels. At this time, LH and RH front brake fluid pressure are controlled, while fuel being cut to engine and throttle valve being closed to reduce engine torque by the control unit. Further more, throttle position is continuously controlled to ensure the optimum engine torque at all times.
- During TCS operation, it informs driver of system operation by flashing slip indicator lamp.
- Electrical system diagnosis by CONSULT is available.

## Component Parts Location

INFOID:0000000006920916




1. Front wheel sensor LH E19
   Front wheel sensor RH E41
2. Stop lamp relay E57 (with CVT)
3. IPDM E/R
4. Brake fluid level switch E24
5. VDC OFF switch M72
6. Combination meter M24
7. Parking brake switch M73 (Sedan with M/T)
8. Yaw rate/side/decel G sensor M55
9. Rear wheel sensor LH C2
   Rear wheel sensor RH C3

10. Steering angle sensor M53 (view with steering wheel removed)
11. Parking brake switch E35 (with CVT)
12. Stop lamp switch E38
13. ABS actuator and electric unit (control unit) E26

## Component Description

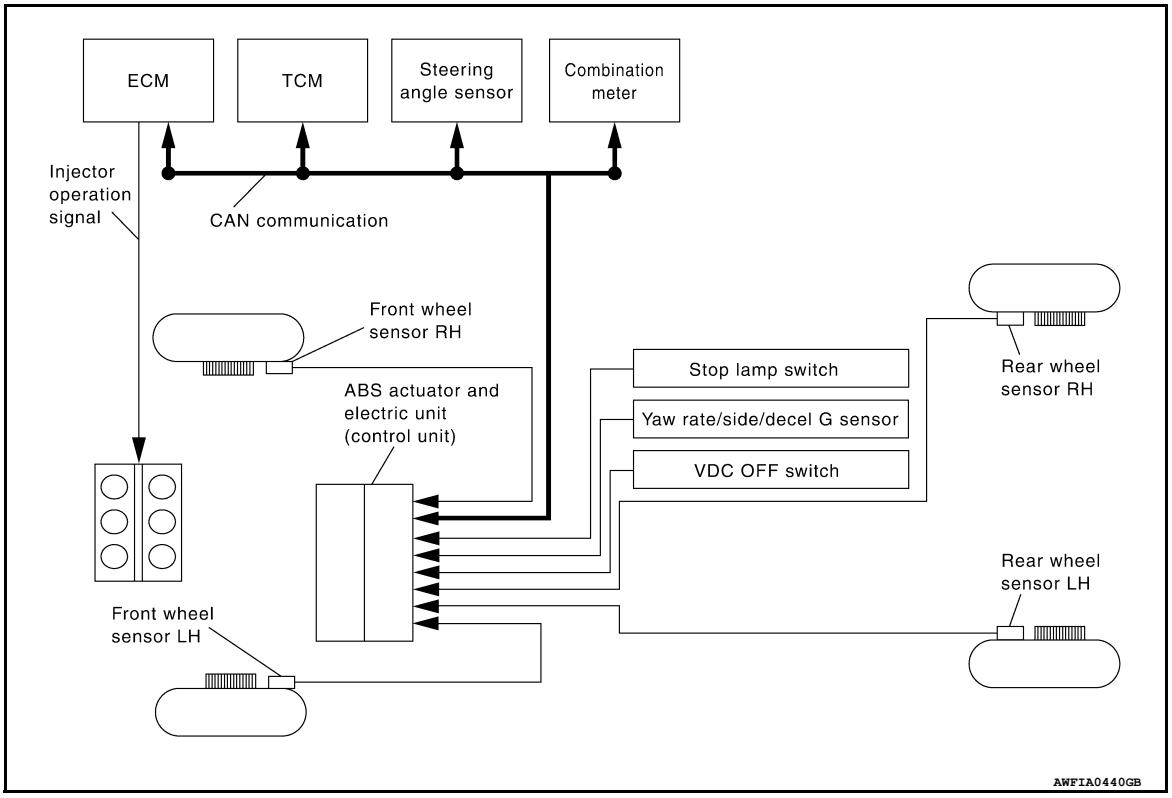
INFOID:0000000006920917

| Component parts | | Reference |
|---|---|---|
| ABS actuator and electric unit (control unit) | Pump | BRC-171, "Description" |
| | Motor | |
| | Actuator relay (Main relay) | BRC-173, "Description" |
| | Solenoid valve | BRC-182, "Description" |
| | Pressure sensor | BRC-189, "Description" |
| | VDC switch-over valve (HSV1, HSV2, USV1, USV2) | BRC-196, "Description" |
| Wheel sensor | | BRC-162, "Description" |
| Stop lamp switch | | BRC-178, "Description" |
| Steering angle sensor | | BRC-191, "Description" |
| Yaw rate/side/G sensor | | BRC-193, "Description" |
| Brake fluid level switch | | BRC-201, "Description" |
| Parking brake switch | | BRC-205, "Description" |
| VDC OFF switch | | BRC-207, "Description" |
| ABS warning lamp | | BRC-209, "Description" |
| Brake warning lamp | | BRC-210, "Description" |
| VDC OFF indicator lamp | | BRC-212, "Description" |
| Slip indicator lamp | | BRC-214, "Description" |

# ABS

## System Diagram

INFOID:0000000006920918



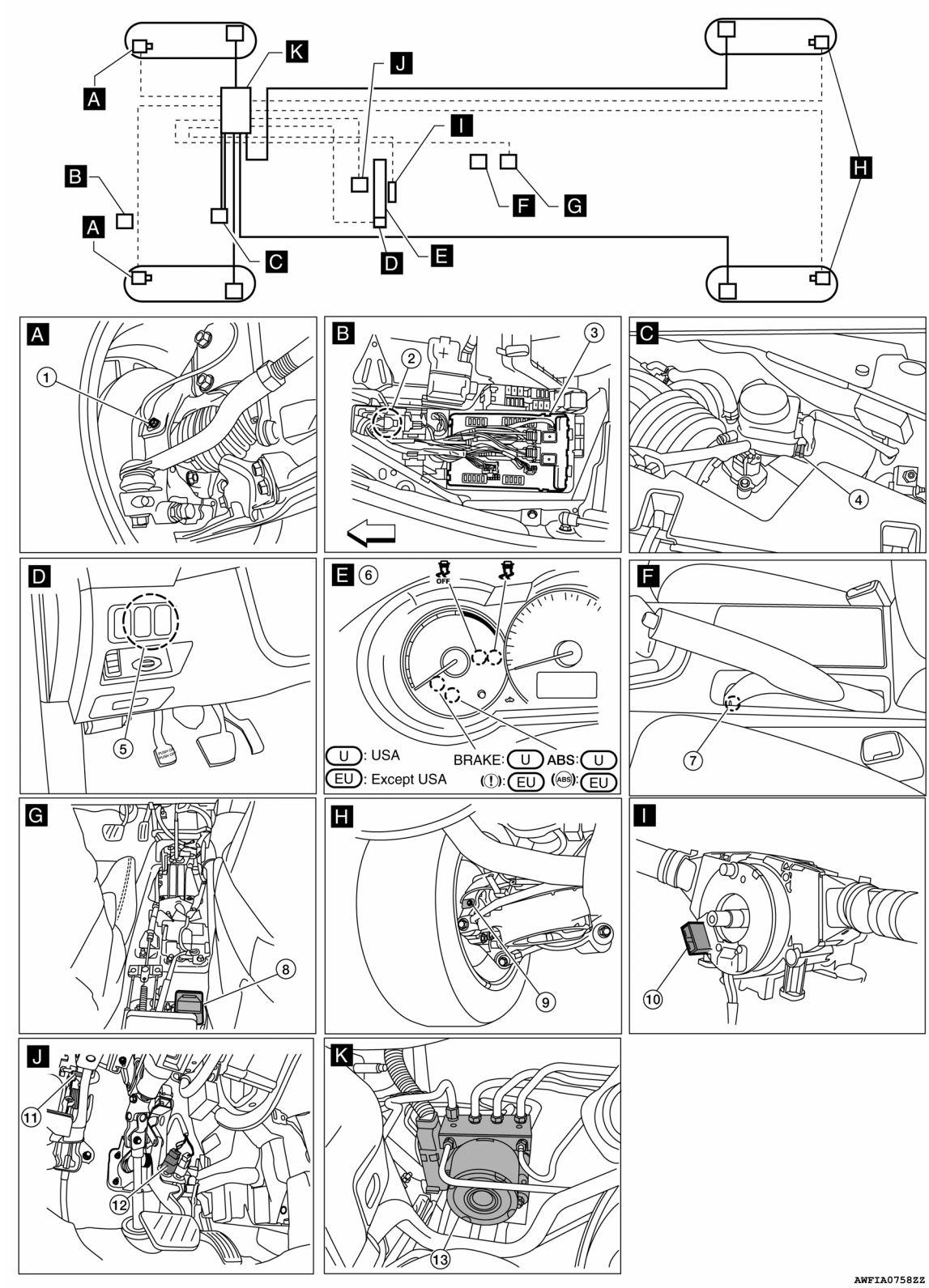

## System Description

INFOID:0000000006920901

- Anti-Lock Braking System is a function that detects wheel revolution while braking, electronically controls braking force, and prevents wheel locking during sudden braking. It improves handling stability and maneuverability for avoiding obstacles.
- Electrical system diagnosis by CONSULT is available.

## Component Parts Location

INFOID:0000000006920919




1. Front wheel sensor LH E19
   Front wheel sensor RH E41
2. Stop lamp relay E57 (with CVT)
3. IPDM E/R
4. Brake fluid level switch E24
5. VDC OFF switch M72
6. Combination meter M24
7. Parking brake switch M73 (Sedan with M/T)
8. Yaw rate/side/decel G sensor M55
9. Rear wheel sensor LH C2
   Rear wheel sensor RH C3

10. Steering angle sensor M53 (view with steering wheel removed)
11. Parking brake switch E35 (with CVT)
12. Stop lamp switch E38
13. ABS actuator and electric unit (control unit) E26

## Component Description

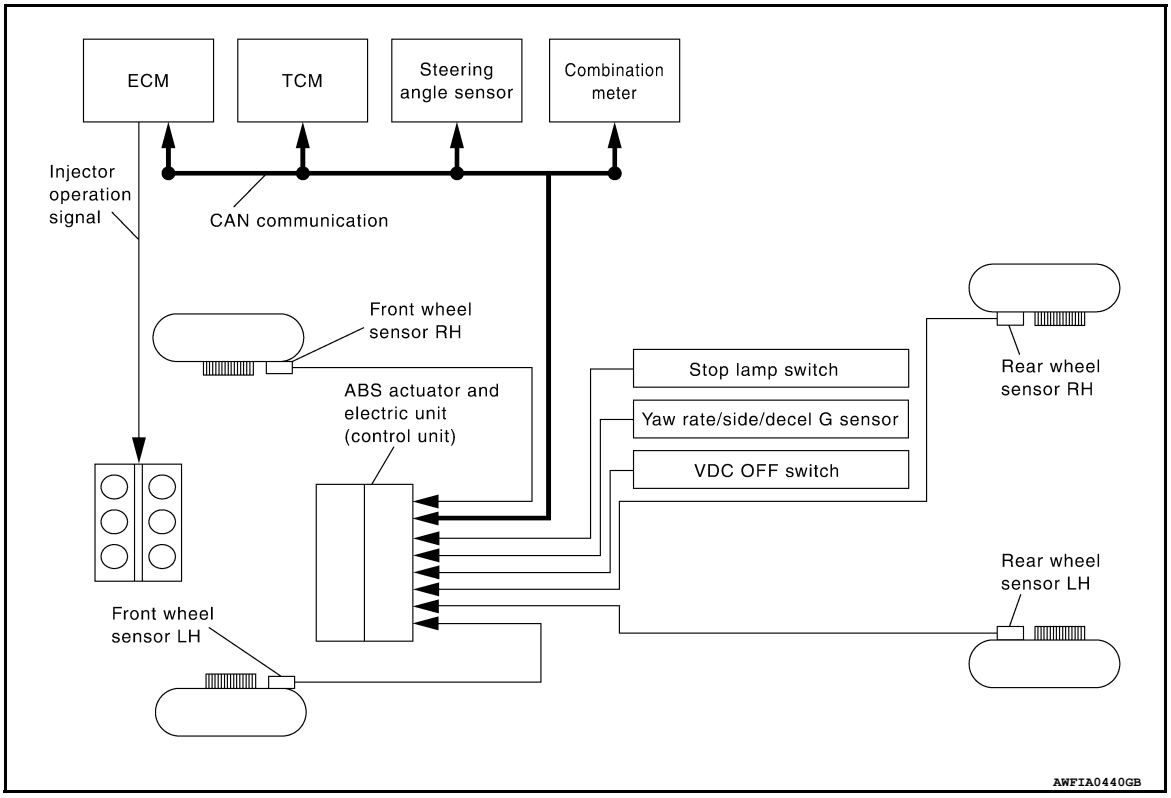
INFOID:0000000006920920

| Component parts | | Reference |
|---|---|---|
| ABS actuator and electric unit (control unit) | Pump | BRC-171, "Description" |
| | Motor | |
| | Actuator relay (Main relay) | BRC-173, "Description" |
| | Solenoid valve | BRC-182, "Description" |
| | Pressure sensor | BRC-189, "Description" |
| | VDC switch-over valve (HSV1, HSV2, USV1, USV2) | BRC-196, "Description" |
| Wheel sensor | | BRC-162, "Description" |
| Stop lamp switch | | BRC-178, "Description" |
| Steering angle sensor | | BRC-191, "Description" |
| Yaw rate/side/G sensor | | BRC-193, "Description" |
| Brake fluid level switch | | BRC-201, "Description" |
| Parking brake switch | | BRC-205, "Description" |
| VDC OFF switch | | BRC-207, "Description" |
| ABS warning lamp | | BRC-209, "Description" |
| Brake warning lamp | | BRC-210, "Description" |
| VDC OFF indicator lamp | | BRC-212, "Description" |
| Slip indicator lamp | | BRC-214, "Description" |

# EBD

## System Diagram

INFOID:0000000006920921




## System Description

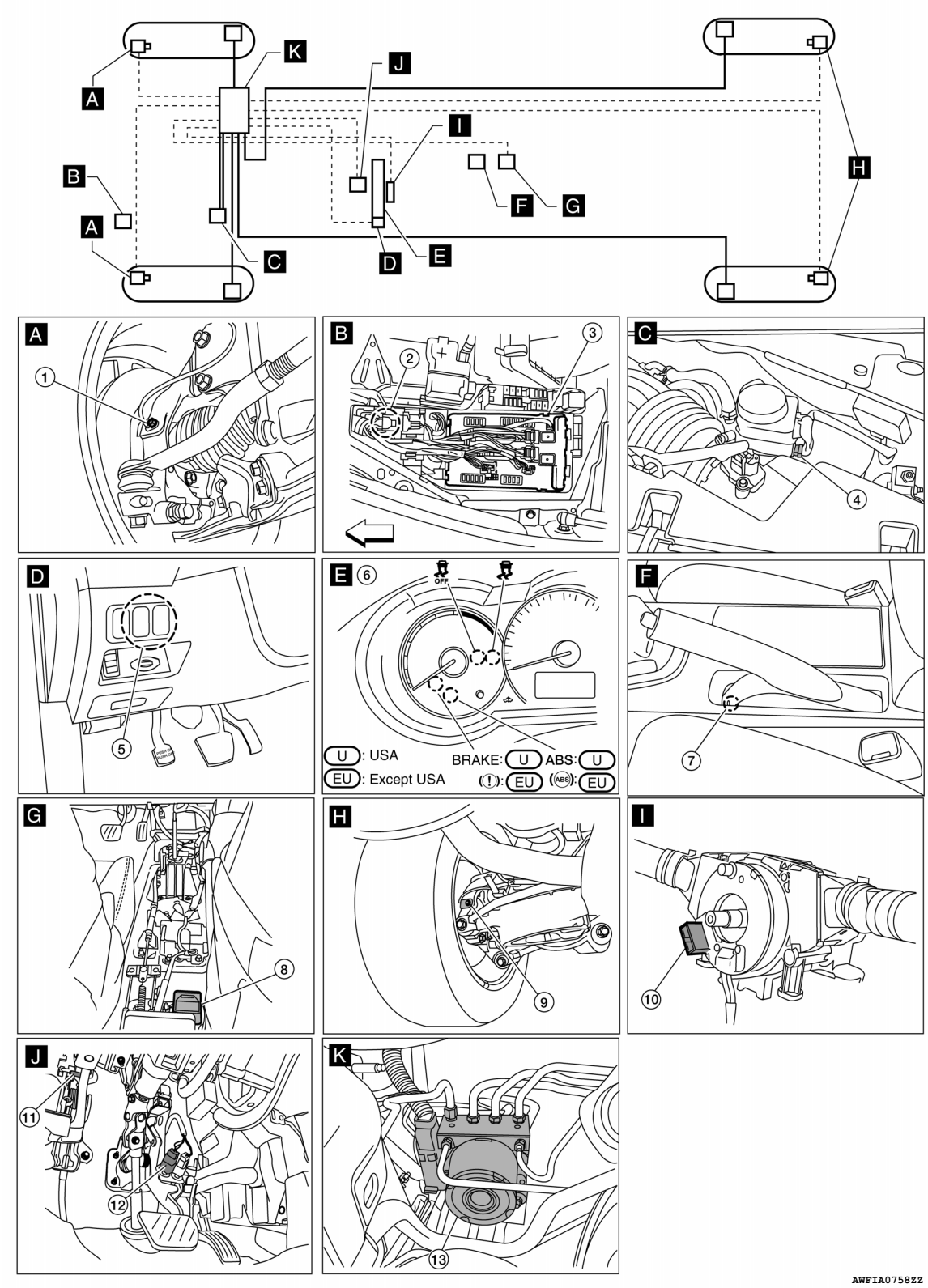
INFOID:0000000006920905

Electric Brake force Distribution functions as follows:

- ABS actuator and electric unit (control unit) detects subtle slippages between the front and rear wheels during braking. Then it electronically controls the rear braking force (brake fluid pressure) to reduce rear wheel slippage. Accordingly, it improves vehicle stability.
- Electrical system diagnosis by CONSULT is available.

## Component Parts Location

INFOID:0000000006920922




1. Front wheel sensor LH E19
   Front wheel sensor RH E41
2. Stop lamp relay E57 (with CVT)
3. IPDM E/R
4. Brake fluid level switch E24
5. VDC OFF switch M72
6. Combination meter M24
7. Parking brake switch M73 (Sedan with M/T)
8. Yaw rate/side/decel G sensor M55
9. Rear wheel sensor LH C2
   Rear wheel sensor RH C3

10. Steering angle sensor M53 (view with steering wheel removed)
11. Parking brake switch E35 (with CVT)
12. Stop lamp switch E38
13. ABS actuator and electric unit (control unit) E26

## Component Description

INFOID:0000000006920923

| Component parts | | Reference |
|---|---|---|
| ABS actuator and electric unit (control unit) | Pump | BRC-171, "Description" |
| | Motor | |
| | Actuator relay (Main relay) | BRC-173, "Description" |
| | Solenoid valve | BRC-182, "Description" |
| | Pressure sensor | BRC-189, "Description" |
| | VDC switch-over valve (HSV1, HSV2, USV1, USV2) | BRC-196, "Description" |
| Wheel sensor | | BRC-162, "Description" |
| Stop lamp switch | | BRC-178, "Description" |
| Steering angle sensor | | BRC-191, "Description" |
| Yaw rate/side/G sensor | | BRC-193, "Description" |
| Brake fluid level switch | | BRC-201, "Description" |
| Parking brake switch | | BRC-205, "Description" |
| VDC OFF switch | | BRC-207, "Description" |
| ABS warning lamp | | BRC-209, "Description" |
| Brake warning lamp | | BRC-210, "Description" |
| VDC OFF indicator lamp | | BRC-212, "Description" |
| Slip indicator lamp | | BRC-214, "Description" |

# DIAGNOSIS SYSTEM [ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)]

## CONSULT Function (ABS)

INFOID:0000000006389278

### FUNCTION

CONSULT can display each diagnostic item using the following diagnostic test modes.

| Diagnostic test mode | Function |
|---|---|
| Work support | Supports inspections and adjustments. Commands are transmitted to the ABS actuator and electric unit (control unit) for setting the status suitable for required operation, input/output signals are received from the ABS actuator and electric unit (control unit) and received data is displayed. |
| Data monitor | Displays ABS actuator and electric unit (control unit) input/output data in real time. |
| Active test | Operation of electrical loads can be checked by sending drive signals to them. |
| Function test | This mode is used to inform customers when the vehicle requires periodic maintenance. |
| Self diagnostic result | Displays ABS actuator and electric unit (control unit) self-diagnosis results. |
| CAN diag support mntr | The result of transmit/receive diagnosis of CAN communication can be read. |
| ECU identification | ABS actuator and electric unit (control unit) part number can be read. |

### SELF DIAGNOSTIC RESULT MODE

Operation Procedure

Before performing the self-diagnosis, start engine and drive vehicle at 30 km/h (19 MPH) or more for approximately 1 minute.

How to Erase Self-Diagnosis Results

After erasing DTC memory, start engine and drive vehicle at 30 km/h (19 MPH) or more for approximately 1 minute as the final inspection, and make sure that the ABS warning lamp, VDC OFF indicator lamp, SLIP indicator lamp and brake warning lamp turn OFF.

**CAUTION:**

**If memory cannot be erased, perform applicable diagnosis.**

**NOTE:**

- When the wheel sensor malfunctions, after inspecting the wheel sensor system, the ABS warning lamp and brake warning lamp will not turn OFF even when the system is normal unless the vehicle is driving at approximately 30 km/h (19 MPH) or more for approximately 1 minute.
- Brake warning lamp will turn ON in case of parking brake operation (when switch is ON) or of brake fluid level switch operation (when brake fluid is insufficient).

Display Item List

Refer to BRC-220, "DTC No. Index".

### DATA MONITOR

Display Item List

| Item (Unit) | Data monitor item selection | | | Remarks |
|---|---|---|---|---|
| | ECU INPUT SIGNALS | MAIN SIGNALS | SELECTION FROM MENU | |
| FR LH SENSOR (km/h) | × | × | × | Wheel speed calculated by front LH wheel sensor signal is displayed. |
| FR RH SENSOR (km/h) | × | × | × | Wheel speed calculated by front RH wheel sensor signal is displayed. |
| RR LH SENSOR (km/h) | × | × | × | Wheel speed calculated by rear LH wheel sensor signal is displayed. |
| RR RH SENSOR (km/h) | × | × | × | Wheel speed calculated by rear RH wheel sensor signal is displayed. |

| | | | | |
|---|---|---|---|---|
| FR RH IN SOL (On/Off) | — | × | × | Front RH IN ABS solenoid (On/Off) status is displayed. |
| FR RH OUT SOL (On/Off) | — | × | × | Front RH OUT ABS solenoid (On/Off) status is displayed. |
| FR LH IN SOL (On/Off) | — | × | × | Front LH IN ABS solenoid (On/Off) status is displayed. |
| FR LH OUT SOL (On/Off) | — | × | × | Front LH OUT ABS solenoid (On/Off) status is displayed. |
| RR RH IN SOL (On/Off) | — | × | × | Rear RH IN ABS solenoid (On/Off) status is displayed. |
| RR RH OUT SOL (On/Off) | — | × | × | Rear RH OUT ABS solenoid (On/Off) status is displayed. |
| RR LH IN SOL (On/Off) | — | × | × | Rear LH IN ABS solenoid (On/Off) status is displayed. |
| RR LH OUT SOL (On/Off) | — | × | × | Rear LH OUT ABS solenoid (On/Off) status is displayed. |
| STOP LAMP SW (On/Off) | × | × | × | Stop lamp switch (On/Off) status is displayed. |
| MOTOR RELAY (On/Off) | — | × | × | ABS motor relay signal (On/Off) status is displayed. |
| ACTUATOR RLY (On/Off) | — | × | × | ABS actuator relay signal (On/Off) status is displayed. |
| ABS WARN LAMP (On/Off) | — | × | × | ABS warning lamp (On/Off) status is displayed. |
| OFF LAMP (On/Off) | — | × | × | VDC OFF lamp (On/Off) status is displayed. |
| OFF SW (On/Off) | × | × | × | VDC OFF switch (On/Off) status is displayed. |
| SLIP LAMP (On/Off) | — | × | × | SLIP indicator lamp (On/Off) status is displayed. |
| BATTERY VOLT (V) | × | × | × | Voltage supplied to ABS actuator and electric unit (control unit) is displayed. |
| GEAR (1, 2, 3, 4, 5, 6) | × | × | × | Gear position while in manual mode determined by TCM is displayed. |
| YAW RATE SEN (d/s) | × | × | × | Yaw rate detected by yaw rate sensor is displayed. |
| ACCEL POS SIG (%) | × | — | × | Throttle valve open/close status judged by CAN communication signal is displayed. |
| SIDE G-SENSOR ($m/s^2$) | × | — | × | Lateral acceleration detected by side G sensor is displayed. |
| STR ANGLE SIG (°) | × | — | × | Steering angle detected by steering angle sensor is displayed. |
| PRESS SENSOR (bar) | × | — | × | Brake fluid pressure detected by pressure sensor is displayed. |
| EBD SIGNAL (On/Off) | — | — | × | EBD operation (On/Off) status is displayed. |
| ABS SIGNAL (On/Off) | — | — | × | ABS operation (On/Off) status is displayed. |
| TCS SIGNAL (On/Off) | — | — | × | TCS operation (On/Off) status is displayed. |
| VDC SIGNAL (On/Off) | — | — | × | VDC operation (On/Off) status is displayed. |
| EBD FAIL SIG (On/Off) | — | — | × | EBD fail signal (On/Off) status is displayed. |

| | | | | |
|---|---|---|---|---|
| ABS FAIL SIG (On/Off) | — | — | × | ABS fail signal (On/Off) status is displayed. |
| TCS FAIL SIG (On/Off) | — | — | × | TCS fail signal (On/Off) status is displayed. |
| VDC FAIL SIG (On/Off) | — | — | × | VDC fail signal (On/Off) status is displayed. |
| CRANKING SIG (On/Off) | — | — | × | Cranking condition (On/Off) status is displayed. |
| FLUID LEV SW (On/Off) | × | — | × | Brake fluid level switch (On/Off) status is displayed. |
| PARK BRAKE SW (On/Off) | × | — | × | Parking brake switch (On/Off) status is displayed. |
| USV [FL-RR] (On/Off) | — | — | × | Primary side USV solenoid valve (On/Off) status is displayed. |
| USV [FR-RL] (On/Off) | — | — | × | Secondary side USV solenoid valve (On/Off) status is displayed. |
| HSV [FL-RR] (On/Off) | — | — | × | Primary side HSV solenoid valve (On/Off) status is displayed. |
| HSV [FR-RL] (On/Off) | — | — | × | Secondary side HSV solenoid valve (On/Off) status is displayed. |
| V/R OUTPUT (On/Off) | — | — | × | Valve relay operation signal (On/Off) status is displayed. |
| M/R OUTPUT (On/Off) | — | — | × | Motor relay operation signal (On/Off) status is displayed. |
| ENGINE RPM (rpm) | × | — | × | Engine speed judged by CAN communication signal is displayed. |

×: Applicable

–: Not applicable

## ACTIVE TEST

**CAUTION:**

- **Do not perform active test while driving vehicle.**
- **Make sure to completely bleed air from brake system.**
- **The active test cannot be performed with the ABS warning lamp, VDC indicator lamp, SLIP indicator lamp or brake warning lamp on.**
- **ABS warning lamp, VDC OFF indicator lamp, SLIP indicator lamp and brake warning lamp are on during active test.**

**NOTE:**

- When active test is performed while depressing the pedal, the pedal depression amount will change. This is normal. (Only solenoid valve and ABS motor)
- “TEST IS STOPPED” is displayed 10 seconds after operation start.
- After “TEST IS STOPPED” is displayed, to perform test again, touch BACK.

Test Item

SOLENOID VALVE

- When performing an active test of the ABS function, select “MAIN SIGNALS” for each test item.
- For ABS solenoid valve, touch “Up”, “Keep”, and “Down” on the display screen. For ABS solenoid valve (ACT), touch “Up”, “ACT UP”, “ACT KEEP” and confirm that solenoid valves operate as shown in the table below.

| Operation | | ABS solenoid valve | | | ABS solenoid valve (ACT) | | |
|---|---|---|---|---|---|---|---|
| | | Up | Keep | Down | Up | ACT UP | ACT KEEP |
| FR RH SOL | FR RH IN SOL | Off | On | On | — | — | — |
| | FR RH OUT SOL | Off | Off | On* | — | — | — |
| | USV [FR-RL] | Off | Off | On* | — | — | — |
| | HSV [FR-RL] | Off | Off | On* | — | — | — |
| FR LH SOL | FR LH IN SOL | Off | On | On | — | — | — |
| | FR LH OUT SOL | Off | Off | On* | — | — | — |
| | USV [FL-RR] | Off | Off | On* | — | — | — |
| | HSV [FL-RR] | Off | Off | On* | — | — | — |
| RR RH SOL | RR RH IN SOL | Off | On | On | — | — | — |
| | RR RH OUT SOL | Off | Off | On* | — | — | — |
| | USV [FL-RR] | Off | Off | On* | — | — | — |
| | HSV [FL-RR] | Off | Off | On* | — | — | — |
| RR LH SOL | RR LH IN SOL | Off | On | On | — | — | — |
| | RR LH OUT SOL | Off | Off | On* | — | — | — |
| | USV [FR-RL] | Off | Off | On* | — | — | — |
| | HSV [FR-RL] | Off | Off | On* | — | — | — |
| FR RH ABS SOLENOID (ACT) | FR RH IN SOL | — | — | — | Off | Off | Off |
| | FR RH OUT SOL | — | — | — | Off | Off | Off |
| | USV [FR-RL] | — | — | — | Off | On | On |
| | HSV [FR-RL] | — | — | — | Off | On* | Off |
| FR LH ABS SOLENOID (ACT) | FR LH IN SOL | — | — | — | Off | Off | Off |
| | FR LH OUT SOL | — | — | — | Off | Off | Off |
| | USV [FL-RR] | — | — | — | Off | Off | Off |
| | HSV [FL-RR] | — | — | — | Off | Off | Off |
| RR RH ABS SOLENOID (ACT) | RR RH IN SOL | — | — | — | Off | Off | Off |
| | RR RH OUT SOL | — | — | — | Off | Off | Off |
| | USV [FL-RR] | — | — | — | Off | Off | Off |
| | HSV [FL-RR] | — | — | — | Off | Off | Off |
| RR LH ABS SOLENOID (ACT) | RR LH IN SOL | — | — | — | Off | Off | Off |
| | RR LH OUT SOL | — | — | — | Off | Off | Off |
| | USV [FR-RL] | — | — | — | Off | On | On |
| | HSV [FR-RL] | — | — | — | Off | On* | Off |

*: On for 1 to 2 seconds after the touch, and then Off

ABS MOTOR
- Touch “On” and “Off” on screen. Make sure motor relay AND actuator relay operate as shown in table below.

| Operation | On | Off |
|---|---|---|
| MOTOR RELAY | On | Off |
| ACTUATOR RLY | On | On |

# DTC/CIRCUIT DIAGNOSIS

## C1101, C1102, C1103, C1104 WHEEL SENSOR-1

### Description

INFOID:0000000006389279

When the sensor rotor rotates, the magnetic field changes. It converts the magnetic field changes to current signals (rectangular wave) and transmits them to the ABS actuator and electric unit (control unit).

### DTC Logic

INFOID:0000000006389280

#### DTC DETECTION LOGIC

| DTC | Display item | Malfunction detected condition | Possible cause |
|---|---|---|---|
| C1101 | RR RH SENSOR-1 | Circuit of rear RH wheel sensor is open. Or when the sensor power voltage is outside the standard. | • Harness or connector<br>• Wheel sensor<br>• ABS actuator and electric unit (control unit) |
| C1102 | RR LH SENSOR-1 | Circuit of rear LH wheel sensor is open. Or when the sensor power voltage is outside the standard. | |
| C1103 | FR RH SENSOR-1 | Circuit of front RH wheel sensor is open. Or when the sensor power voltage is outside the standard. | |
| C1104 | FR LH SENSOR-1 | Circuit of front LH wheel sensor is open. Or when the sensor power voltage is outside the standard. | |

#### DTC CONFIRMATION PROCEDURE

##### 1.CHECK SELF DIAGNOSTIC RESULT

With CONSULT.

1. Start engine and drive vehicle at approx. 30 km/h (19 MPH) or more for approx. 1 minute.
2. Perform self diagnostic result.

Is DTC C1101, C1102, C1103 or C1104 detected?

YES >> Proceed to diagnosis procedure. Refer to BRC-162, "Diagnosis Procedure".
NO >> Inspection End.

### Diagnosis Procedure

INFOID:0000000006389281

Regarding Wiring Diagram information, refer to BRC-223, "Wiring Diagram - Coupe" or BRC-232, "Wiring Diagram - Sedan With VDC".

**CAUTION:**
**Do not check between wheel sensor terminals.**

##### 1.CONNECTOR INSPECTION

1. Disconnect ABS actuator and electric unit (control unit) connector and wheel sensor of malfunctioning code.
2. Check terminals for deformation, disconnection, looseness or damage.

Is the inspection result normal?

YES >> GO TO 2
NO >> Repair or replace as necessary.

##### 2.CHECK WHEEL SENSOR OUTPUT SIGNAL

1. Connect ABS active wheel sensor tester (J-45741) to wheel sensor using appropriate adapter.
2. Turn on the ABS active wheel sensor tester power switch.
   **NOTE:**
   The green POWER indicator should illuminate. If the POWER indicator does not illuminate, replace the battery in the ABS active wheel sensor tester before proceeding.
3. Spin the wheel of the vehicle by hand and observe the red SENSOR indicator on the ABS active wheel sensor tester. The red SENSOR indicator should flash on and off to indicate an output signal.

**NOTE:**
If the red SENSOR indicator illuminates but does not flash, reverse the polarity of the tester leads and retest.

Does the ABS active wheel sensor tester detect a signal?

YES >> GO TO 3
NO >> Replace wheel sensor. Refer to BRC-253, "Removal and Installation".

## 3.CHECK TIRE

Check air pressure, wear and size.

Are air pressure, wear and size within standard?

YES >> GO TO 4
NO >> • Adjust air pressure, or replace tire.
• Perform the self-diagnosis, and make sure that the result shows “NO DTC IS DETECTED”.

## 4.CHECK WHEEL BEARINGS

Check wheel bearing axial end play. Refer to FAX-6, "Inspection" (front) or RAX-6, "On-vehicle Service" (rear).

Is the inspection result normal?

YES >> GO TO 5
NO >> Repair or replace as necessary. Refer to FAX-8, "Removal and Installation" (front) or RAX-7, "Removal and Installation" (rear).

## 5.CHECK WIRING HARNESS FOR SHORT CIRCUIT

Check continuity between wheel sensor connector terminals and ground.

| Wheel sensor connector terminal | Ground | Continuity |
|---|---|---|
| 1 | — | No |
| 2 | | |

Is the inspection result normal?

YES >> GO TO 6
NO >> Repair the circuit.

## 6.CHECK WIRING HARNESS FOR OPEN CIRCUIT

Check continuity between ABS actuator and electric unit (control unit) connector and the malfunctioning wheel sensor connector.

| Wheel sensor | ABS actuator and electric unit (control unit) | | Wheel sensor | | Continuity |
|---|---|---|---|---|---|
| | Connector | Terminal | Connector | Terminal | |
| Front LH | E26 | 16 | E19 | 1 | Yes |
| | | 5 | | 2 | |
| Front RH | | 9 | E41 | 1 | |
| | | 10 | | 2 | |
| Rear LH | | 6 | C2 | 1 | |
| | | 17 | | 2 | |
| Rear RH | | 8 | C3 | 1 | |
| | | 19 | | 2 | |

Is the inspection result normal?

YES >> Replace the ABS actuator and electric unit (control unit). Refer to BRC-256, "Removal and Installation".
NO >> Repair the circuit.

# Component Inspection

INFOID:0000000006389282

## 1.CHECK DATA MONITOR

On “DATA MONITOR”, select “FR LH SENSOR”, “FR RH SENSOR”, “RR LH SENSOR”, and “RR RH SENSOR”, and check the vehicle speed.

| Wheel sensor | Vehicle speed (DATA MONITOR) |
|---|---|
| FR LH SENSOR | Nearly matches the speedometer display (±10% or less) |
| FR RH SENSOR | |
| RR LH SENSOR | |
| RR RH SENSOR | |

Is the inspection result normal?

YES >> Inspection End.
NO >> Go to diagnosis procedure. Refer to BRC-162, "Diagnosis Procedure".

## Special Repair Requirement

INFOID:0000000006389283

### 1.ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

Always perform the neutral position adjustment for the steering angle sensor, when replacing the ABS actuator and electric unit (control unit). Refer to BRC-143, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION : Special Repair Requirement".

>> END

# C1105, C1106, C1107, C1108 WHEEL SENSOR-2

## Description

INFOID:0000000006389284

When the sensor rotor rotates, the magnetic field changes. It converts the magnetic field changes to current signals (rectangular wave) and transmits them to the ABS actuator and electric unit (control unit).

## DTC Logic

INFOID:0000000006389285

### DTC DETECTION LOGIC

| DTC | Display item | Malfunction detected condition | Possible cause |
|---|---|---|---|
| C1105 | RR RH SENSOR-2 | Circuit of rear RH wheel sensor is open. Or when the sensor power voltage is outside the standard. | • Harness or connector<br>• Wheel sensor<br>• ABS actuator and electric unit (control unit) |
| C1106 | RR LH SENSOR-2 | Circuit of rear LH wheel sensor is open. Or when the sensor power voltage is outside the standard. | |
| C1107 | FR RH SENSOR-2 | Circuit of front RH wheel sensor is open. Or when the sensor power voltage is outside the standard. | |
| C1108 | FR LH SENSOR-2 | Circuit of front LH wheel sensor is open. Or when the sensor power voltage is outside the standard. | |

### DTC CONFIRMATION PROCEDURE

#### 1.CHECK SELF DIAGNOSTIC RESULT

With CONSULT.

1. Start engine and drive vehicle at approx. 30 km/h (19 MPH) or more for approx. 1 minute.
2. Perform self diagnostic result.

Is DTC C1105, C1106, C1107 or C1108 detected?

YES >> Proceed to diagnosis procedure. Refer to BRC-165, "Diagnosis Procedure".
NO >> Inspection End.

## Diagnosis Procedure

INFOID:0000000006389286

Regarding Wiring Diagram information, refer to BRC-223, "Wiring Diagram - Coupe" or BRC-232, "Wiring Diagram - Sedan With VDC".

**CAUTION:**
**Do not check between wheel sensor terminals.**

#### 1.CONNECTOR INSPECTION

1. Disconnect ABS actuator and electric unit (control unit) connector and wheel sensor of malfunctioning code.
2. Check terminals for deformation, disconnection, looseness or damage.

Is the inspection result normal?

YES >> GO TO 2
NO >> Repair or replace as necessary.

#### 2.CHECK WHEEL SENSOR OUTPUT SIGNAL

1. Connect ABS active wheel sensor tester (J-45741) to wheel sensor using appropriate adapter.
2. Turn on the ABS active wheel sensor tester power switch.
   **NOTE:**
   The green POWER indicator should illuminate. If the POWER indicator does not illuminate, replace the battery in the ABS active wheel sensor tester before proceeding.
3. Spin the wheel of the vehicle by hand and observe the red SENSOR indicator on the ABS active wheel sensor tester. The red SENSOR indicator should flash on and off to indicate an output signal.
   **NOTE:**

If the red SENSOR indicator illuminates but does not flash, reverse the polarity of the tester leads and retest.

Does the ABS active wheel sensor tester detect a signal?

YES >> GO TO 3
NO >> Replace wheel sensor. Refer to BRC-253, "Removal and Installation".

## 3.CHECK TIRE

Check air pressure, wear and size.

Are air pressure, wear and size within standard?

YES >> GO TO 4
NO >> • Adjust air pressure, or replace tire.
• Perform the self-diagnosis, and make sure that the result shows “NO DTC IS DETECTED”.

## 4.CHECK WHEEL BEARINGS

Check wheel bearing axial end play. Refer to FAX-6, "Inspection" (front) or RAX-6, "On-vehicle Service" (rear).

Is the inspection result normal?

YES >> GO TO 5
NO >> Repair or replace as necessary. Refer to FAX-8, "Removal and Installation" (front) or RAX-7, "Removal and Installation" (rear).

## 5.CHECK WIRING HARNESS FOR SHORT CIRCUIT

Check continuity between wheel sensor connector terminals and ground.

| Wheel sensor connector terminal | Ground | Continuity |
|---|---|---|
| 1 | — | No |
| 2 | | |

Is the inspection result normal?

YES >> GO TO 6
NO >> Repair the circuit.

## 6.CHECK WIRING HARNESS FOR OPEN CIRCUIT

Check continuity between ABS actuator and electric unit (control unit) connector and the malfunctioning wheel sensor connector.

| Wheel sensor | ABS actuator and electric unit (control unit) | | Wheel sensor | | Continuity |
|---|---|---|---|---|---|
| | Connector | Terminal | Connector | Terminal | |
| Front LH | E26 | 16 | E19 | 1 | Yes |
| | | 5 | | 2 | |
| Front RH | | 9 | E41 | 1 | |
| | | 10 | | 2 | |
| Rear LH | | 6 | C2 | 1 | |
| | | 17 | | 2 | |
| Rear RH | | 8 | C3 | 1 | |
| | | 19 | | 2 | |

Is the inspection result normal?

YES >> Replace the ABS actuator and electric unit (control unit). Refer to BRC-256, "Removal and Installation".
NO >> Repair the circuit.

# Component Inspection

INFOID:0000000006389287

## 1.CHECK DATA MONITOR

On “DATA MONITOR”, select “FR LH SENSOR”, “FR RH SENSOR”, “RR LH SENSOR”, and “RR RH SENSOR”, and check the vehicle speed.

| Wheel sensor | Vehicle speed (DATA MONITOR) |
|---|---|
| FR LH SENSOR | Nearly matches the speedometer display (±10% or less) |
| FR RH SENSOR | |
| RR LH SENSOR | |
| RR RH SENSOR | |

Is the inspection result normal?

YES >> Inspection End.
NO >> Go to diagnosis procedure. Refer to BRC-175, "Diagnosis Procedure".

## Special Repair Requirement

INFOID:0000000006389288

### 1.ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

Always perform the neutral position adjustment for the steering angle sensor, when replacing the ABS actuator and electric unit (control unit). Refer to BRC-143, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION : Special Repair Requirement".

>> END

# DTC C1109 BATTERY VOLTAGE [ABNORMAL]

## Description

INFOID:0000000006389289

Supplies electric power to the ABS actuator and electric unit (control unit).

## DTC Logic

INFOID:0000000006389290

### DTC DETECTION LOGIC

| DTC | Display item | Malfunction detected condition | Possible cause |
|---|---|---|---|
| C1109 | BATTERY VOLTAGE [ABNORMAL] | When the ABS actuator and electric unit (control unit) power supply voltage is lower than normal. | • Harness or connector<br>• ABS actuator and electric unit (control unit) |

### DTC CONFIRMATION PROCEDURE

#### 1.CHECK SELF DIAGNOSTIC RESULT

With CONSULT.
1. Turn the ignition switch OFF to ON.
2. Perform self diagnostic result.

Is DTC C1109 detected?

YES >> Proceed to diagnosis procedure. Refer to BRC-168, "Diagnosis Procedure".
NO >> Inspection End.

## Diagnosis Procedure

INFOID:0000000006389291

Regarding Wiring Diagram information, refer to BRC-223, "Wiring Diagram - Coupe" or BRC-232, "Wiring Diagram - Sedan With VDC".

#### 1.CONNECTOR INSPECTION

1. Turn ignition switch OFF.
2. Disconnect ABS actuator and electric unit (control unit) connector.
3. Check terminals for deformation, disconnection, looseness, and so on. If any malfunction is found, repair or replace terminals.
4. Reconnect connector and perform self-diagnosis. Refer to BRC-158, "CONSULT Function (ABS)".

Is DTC 1109 detected?

YES >> GO TO 2
NO >> Poor connection of connector terminals. Repair or replace connector.

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

1. Turn ignition switch OFF.
2. Disconnect ABS actuator and electric unit (control unit) connector.
3. Turn ignition switch ON.
4. Check voltage between ABS actuator and electric unit (control unit) connector E26 terminal 18 and ground.

| ABS actuator and electric unit (control unit) | | Ground | Condition | Voltage (Approx) |
|---|---|---|---|---|
| Connector | Terminal | | | |
| E26 | 18 | — | Ignition switch ON | Battery voltage |
| | | | Ignition switch OFF | 0V |

5. Turn ignition switch OFF.

6. Check continuity between ABS actuator and electric unit (control unit) connector E26 terminal 1, 4 and ground.

| ABS actuator and electric unit (control unit) | | Ground | Continuity |
|---|---|---|---|
| Connector | Terminal | | |
| E26 | 1 | — | Yes |
| | 4 | | |

Is the inspection result normal?

YES >> • Check battery for terminal looseness, low voltage, etc. If any malfunction is found, repair malfunctioning parts.
• Perform the self-diagnosis, and make sure that the result shows ″NO DTC IS DETECTED″.

NO >> • Repair or replace malfunctioning components.
• Perform the self-diagnosis, and make sure that the result shows ″NO DTC IS DETECTED″.

## Special Repair Requirement

INFOID:0000000006921397

### 1.ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

Always perform the neutral position adjustment for the steering angle sensor, when replacing the ABS actuator and electric unit (control unit). Refer to BRC-143, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION : Special Repair Requirement".

>> END

# C1110, C1153, C1170 ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)

## DTC Logic

INFOID:0000000006389292

### DTC DETECTION LOGIC

| DTC | Display item | Malfunction detected condition | Possible cause |
|---|---|---|---|
| C1110 | CONTROLLER FAILURE | When there is an internal malfunction in the ABS actuator and electric unit (control unit). | • ABS actuator and electric unit (control unit) |
| C1153 | EMERGENCY BRAKE | When ABS actuator and electric unit (control unit) is malfunctioning. (Pressure increase is too much or too little) | |
| C1170 | VARIANT CODING | In a case where VARIANT CODING is different. | |

### DTC CONFIRMATION PROCEDURE

#### 1.CHECK SELF DIAGNOSTIC RESULT

With CONSULT.
1. Turn the ignition switch OFF to ON.
2. Perform self diagnostic result.

Is DTC C1110, C1153 or C1170 detected?

YES >> Proceed to diagnosis procedure. Refer to BRC-170, "Diagnosis Procedure".
NO >> Inspection End.

## Diagnosis Procedure

INFOID:0000000006389293

#### 1.REPLACE ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)

**CAUTION:**
**Replace ABS actuator and electric unit (control unit) when self-diagnostic result shows items other than that applicable.**

>> Replace ABS actuator and electric unit (control unit). Refer to BRC-256, "Removal and Installation".

## Special Repair Requirement

INFOID:0000000006389294

#### 1.ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

Always perform the neutral position adjustment for the steering angle sensor, when replacing the ABS actuator and electric unit (control unit). Refer to BRC-143, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION : Special Repair Requirement".

>> END

# DTC C1111 PUMP MOTOR

## Description

INFOID:0000000006389295

### PUMP

The pump returns the brake fluid stored in the reservoir to the master cylinder by reducing the pressure.

### MOTOR

The motor drives the pump according to the signals transmitted by the ABS actuator and electric unit (control unit).

## DTC Logic

INFOID:0000000006389296

### DTC DETECTION LOGIC

| DTC | Display item | Malfunction detected condition | Possible cause |
|---|---|---|---|
| C1111 | PUMP MOTOR | During the actuator motor operating with ON, when the actuator motor turns OFF, or when the control line for actuator motor relay is open. | • Harness or connector<br>• ABS actuator and electric unit (control unit) |
| | | During the actuator motor operating with OFF, when the actuator motor turns ON, or when the control line for relay is shorted to ground. | |

### DTC CONFIRMATION PROCEDURE

#### 1.CHECK SELF DIAGNOSTIC RESULT

With CONSULT.

1. Turn the ignition switch OFF to ON.
2. Perform self diagnostic result.

Is DTC C1111 detected?

YES >> Proceed to diagnosis procedure. Refer to BRC-171, "Diagnosis Procedure".
NO >> Inspection End.

## Diagnosis Procedure

INFOID:0000000006389297

Regarding Wiring Diagram information, refer to BRC-223, "Wiring Diagram - Coupe" or BRC-232, "Wiring Diagram - Sedan With VDC".

#### 1.CONNECTOR INSPECTION

1. Turn ignition switch OFF.
2. Disconnect ABS actuator and electric unit (control unit) connector.
3. Check terminals for deformation, disconnection, looseness, and so on. If any malfunction is found, repair or replace terminals.
4. Reconnect connector and perform self-diagnosis. Refer to BRC-158, "CONSULT Function (ABS)".

Is DTC C1111 detected?

YES >> GO TO 2
NO >> Poor connection of connector terminals. Repair or replace connector.

#### 2. CHECK ABS MOTOR AND MOTOR RELAY POWER SUPPLY CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect ABS actuator and electric unit (control unit) connector.
3. Check voltage between the ABS actuator and electric unit (control unit) connector E26 terminal 2 and ground.

| ABS actuator and electric unit (control unit) | | Ground | Voltage (Approx) |
|---|---|---|---|
| Connector | Terminal | | |
| E26 | 2 | — | Battery voltage |

Is the inspection result normal?

YES >> GO TO 3
NO >> • Repair or replace malfunctioning components.
• Perform the self-diagnosis, and make sure that the result shows ″NO DTC IS DETECTED″.

## 3. CHECK ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT) GROUND CIRCUIT

Check continuity between ABS actuator and electric unit (control unit) connector E26 terminal 1, 4 and ground.

| ABS actuator and electric unit (control unit) | | Ground | Continuity |
|---|---|---|---|
| Connector | Terminal | | |
| E26 | 1 | — | Yes |
| | 4 | | |

Is the inspection result normal?

YES >> • Replace ABS actuator and electric unit (control unit). Refer to BRC-256, "Removal and Installation".
• Perform the self-diagnosis, and make sure that the result shows ″NO DTC IS DETECTED″.
NO >> • Repair or replace malfunctioning components.
• Perform the self-diagnosis, and make sure that the result shows ″NO DTC IS DETECTED″.

# Component Inspection

INFOID:0000000006389298

## 1. CHECK ACTIVE TEST

1. On “ACTIVE TEST”, select “ABS MOTOR”.
2. Touch ON and OFF on screen. Make sure motor relay and actuator relay operates as shown in table below.

| Operation | ON | OFF |
|---|---|---|
| MOTOR RELAY | ON | OFF |
| ACTUATOR RLY (Note) | ON | ON |

**NOTE:**

A brief moment of ON/OFF condition occurs every 20 seconds after ignition switch turned ON. This is not malfunction because it is an operation for checking.

Is the inspection result normal?

YES >> Inspection End.
NO >> Go to diagnosis procedure. Refer to BRC-171, "Diagnosis Procedure".

# Special Repair Requirement

INFOID:0000000006389299

## 1. ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

Always perform the neutral position adjustment for the steering angle sensor, when replacing the ABS actuator and electric unit (control unit). Refer to BRC-143, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION : Special Repair Requirement".

>> END

# DTC C1114 MAIN RELAY

## Description

INFOID:0000000006389300

Activates or deactivates each solenoid valve according to the signals transmitted by the ABS actuator and electric unit (control unit).

## DTC Logic

INFOID:0000000006389301

### DTC DETECTION LOGIC

| DTC | Display item | Malfunction detected condition | Possible cause |
|---|---|---|---|
| C1114 | MAIN RELAY | During the actuator relay operating with OFF, when the actuator relay turns ON, or when the control line for the relay is shorted to the ground. | • Harness or connector<br>• ABS actuator and electric unit (control unit) |
| | | During the actuator relay operating with ON, when the actuator relay turns ON, or when the control line for the relay is open. | |

### DTC CONFIRMATION PROCEDURE

#### 1.CHECK SELF DIAGNOSTIC RESULT

With CONSULT.
1. Turn the ignition switch OFF to ON.
2. Perform self diagnostic result.

Is DTC C1114 detected?

YES >> Proceed to diagnosis procedure. Refer to BRC-173, "Diagnosis Procedure".
NO >> Inspection End.

## Diagnosis Procedure

INFOID:0000000006389302

Regarding Wiring Diagram information, refer to BRC-223, "Wiring Diagram - Coupe" or BRC-232, "Wiring Diagram - Sedan With VDC".

#### 1.CONNECTOR INSPECTION

1. Turn ignition switch OFF.
2. Disconnect ABS actuator and electric unit (control unit) connector.
3. Check terminals for deformation, disconnection, looseness, and so on. If any malfunction is found, repair or replace terminals.
4. Reconnect connector and perform self-diagnosis. Refer to BRC-158, "CONSULT Function (ABS)".

Is the inspection result normal?

YES >> GO TO 2
NO >> Poor connection of connector terminals. Repair or replace connector.

#### 2.CHECK SOLENOID AND ACTUATOR RELAY POWER SUPPLY CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect ABS actuator and electric unit (control unit) connector.
3. Check voltage between ABS actuator and electric unit (control unit) connector E26 terminal 3 and ground.

| ABS actuator and electric unit (control unit) | | Ground | Voltage (Approx) |
|---|---|---|---|
| Connector | Terminal | | |
| E26 | 3 | — | Battery voltage |

Is the inspection result normal?

YES >> GO TO 3
NO >> • Repair or replace malfunctioning components.

- Perform the self-diagnosis, and make sure that the result shows ″NO DTC IS DETECTED″.

## 3. CHECK SOLENOID AND ACTUATOR RELAY GROUND CIRCUIT

Check continuity between ABS actuator and electric unit (control unit) connector E26 terminal 1, 4 and ground.

| ABS actuator and electric unit (control unit) | | Ground | Continuity |
|---|---|---|---|
| Connector | Terminal | | |
| E26 | 1 | — | Yes |
| | 4 | | |

Is the inspection result normal?

YES >> • Replace ABS actuator and electric unit (control unit). Refer to BRC-256, "Removal and Installation".
• Perform the self-diagnosis, and make sure that the result shows ″NO DTC IS DETECTED″.

NO >> • Repair or replace malfunctioning components.
• Perform the self-diagnosis, and make sure that the result shows ″NO DTC IS DETECTED″.

# Component Inspection

INFOID:0000000006389303

## 1. CHECK ACTIVE TEST

1. On “ACTIVE TEST”, select “ABS MOTOR”.
2. Touch ON and OFF on screen. Make sure motor relay and actuator relay operates as shown in table below.

| Operation | ON | OFF |
|---|---|---|
| MOTOR RELAY | ON | OFF |
| ACTUATOR RLY (Note) | ON | ON |

**NOTE:**

A brief moment of ON/OFF condition occurs every 20 seconds after ignition switch turned ON. This is not malfunction because it is an operation for checking.

Is the inspection result normal?

YES >> Inspection End.

NO >> Go to diagnosis procedure. Refer to BRC-171, "Diagnosis Procedure".

# Special Repair Requirement

INFOID:0000000006389304

## 1. ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

Always perform the neutral position adjustment for the steering angle sensor, when replacing the ABS actuator and electric unit (control unit). Refer to BRC-143, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION : Special Repair Requirement".

>> END

# DTC C1115 ABS SENSOR [ABNORMAL SIGNAL]

## Description

INFOID:0000000006389305

When the sensor rotor rotates, the magnetic field changes. It converts the magnetic field changes to current signals (rectangular wave) and transmits them to the ABS actuator and electric unit (control unit).

## DTC Logic

INFOID:0000000006389306

### DTC DETECTION LOGIC

| DTC | Display item | Malfunction detected condition | Possible cause |
|---|---|---|---|
| C1115 | ABS SENSOR [ABNORMAL SIGNAL] | When wheel sensor input signal is malfunctioning. | • Harness or connector<br>• Wheel sensor<br>• ABS actuator and electric unit (control unit) |

### DTC CONFIRMATION PROCEDURE

#### 1.CHECK SELF DIAGNOSTIC RESULT

With CONSULT.

1. Start engine and drive vehicle at approx. 30 km/h (19 MPH) or more for approx. 1 minute.
2. Perform self diagnostic result.

Is DTC C1115 detected?

YES >> Proceed to diagnosis procedure. Refer to BRC-175, "Diagnosis Procedure".
NO >> Inspection End.

## Diagnosis Procedure

INFOID:0000000006389307

Regarding Wiring Diagram information, refer to BRC-223, "Wiring Diagram - Coupe" or BRC-232, "Wiring Diagram - Sedan With VDC".

**CAUTION:**
**Do not check between wheel sensor terminals.**

#### 1.CONNECTOR INSPECTION

1. Disconnect ABS actuator and electric unit (control unit) and malfunctioning wheel sensor connectors.
2. Check terminals to see if they are deformed, disconnected, loose, etc., Repair or replace if any malfunction condition is found.

Is the inspection result normal?

YES >> GO TO 2
NO >> Repair or replace as necessary.

#### 2.CHECK WHEEL SENSOR OUTPUT SIGNAL

1. Connect ABS active wheel sensor tester (J-45741) to wheel sensor using appropriate adapter.
2. Turn on the ABS active wheel sensor tester power switch.
   **NOTE:**
   The green POWER indicator should illuminate. If the POWER indicator does not illuminate, replace the battery in the ABS active wheel sensor tester before proceeding.
3. Spin the wheel of the vehicle by hand and observe the red SENSOR indicator on the ABS active wheel sensor tester. The red SENSOR indicator should flash on and off to indicate an output signal.
   **NOTE:**
   If the red SENSOR indicator illuminates but does not flash, reverse the polarity of the tester leads and retest.

Does the ABS active wheel sensor tester detect a signal?

YES >> GO TO 3
NO >> Replace wheel sensor. Refer to BRC-253, "Removal and Installation".

## 3.CHECK TIRE

Check air pressure, wear and size.

Are air pressure, wear and size within standard?

YES >> GO TO 4
NO >> • Adjust air pressure, or replace tire.
• Perform the self-diagnosis, and make sure that the result shows “NO DTC IS DETECTED”.

## 4.CHECK WHEEL BEARINGS

Check wheel bearing axial end play. Refer to FAX-6, "Inspection" (front) or RAX-6, "On-vehicle Service" (rear).

Is the inspection result normal?

YES >> GO TO 5
NO >> Repair or replace as necessary. Refer to FAX-8, "Removal and Installation" (front) or RAX-7, "Removal and Installation" (rear).

## 5.CHECK WIRING HARNESS FOR SHORT CIRCUIT

Check continuity between wheel sensor connector terminals and ground.

| Wheel sensor connector terminal | Ground | Continuity |
|---|---|---|
| 1 | — | No |
| 2 | | |

Is the inspection result normal?

YES >> GO TO 6
NO >> Repair the circuit.

## 6.CHECK WIRING HARNESS FOR OPEN CIRCUIT

Check continuity between ABS actuator and electric unit (control unit) connector and the malfunctioning wheel sensor connector.

| Wheel sensor | ABS actuator and electric unit (control unit) | | Wheel sensor | | Continuity |
|---|---|---|---|---|---|
| | Connector | Terminal | Connector | Terminal | |
| Front LH | E26 | 16 | E19 | 1 | Yes |
| | | 5 | | 2 | |
| Front RH | | 9 | E41 | 1 | |
| | | 10 | | 2 | |
| Rear LH | | 6 | C2 | 1 | |
| | | 17 | | 2 | |
| Rear RH | | 8 | C3 | 1 | |
| | | 19 | | 2 | |

Is the inspection result normal?

YES >> Replace the ABS actuator and electric unit (control unit). Refer to BRC-256, "Removal and Installation".
NO >> Repair the circuit.

# Component Inspection

INFOID:0000000006389308

## 1.CHECK DATA MONITOR

On “DATA MONITOR”, select “FR LH SENSOR”, “FR RH SENSOR”, “RR LH SENSOR”, and “RR RH SENSOR”, and check the vehicle speed.

| Wheel sensor | Vehicle speed (DATA MONITOR) |
|---|---|

| | |
|---|---|
| FR LH SENSOR | Nearly matches the speedometer display (±10% or less) |
| FR RH SENSOR | |
| RR LH SENSOR | |
| RR RH SENSOR | |

Is the inspection result normal?

YES >> Inspection End.
NO >> Go to diagnosis procedure. Refer to BRC-175, "Diagnosis Procedure".

## Special Repair Requirement

INFOID:0000000006389309

### 1.ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

Always perform the neutral position adjustment for the steering angle sensor, when replacing the ABS actuator and electric unit (control unit). Refer to BRC-143, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION : Special Repair Requirement".

>> END

# C1116 STOP LAMP SW

## Description

INFOID:0000000006921424

The stop lamp switch transmits the stop lamp switch signal (ON/OFF) to the ABS actuator and electric unit (control unit) either directly (with M/T) or through the stop lamp relay (with CVT).

## DTC Logic

INFOID:0000000006921425

### DTC DETECTION LOGIC

| DTC | Display | Condition | Possible Cause |
|---|---|---|---|
| C1116 | STOP LAMP SW | When stop lamp switch signal circuit is open. | • Harness or connector<br>• Stop lamp switch<br>• Stop lamp relay (with CVT)<br>• ABS actuator and electric unit (control unit) |

### DTC CONFIRMATION PROCEDURE

#### 1.CHECK SELF DIAGNOSTIC RESULT

With CONSULT.
1. Turn the ignition switch OFF to ON.
2. Perform self diagnostic result.

Is DTC C1116 detected?

YES >> Proceed to diagnosis procedure. Refer to BRC-178, "Diagnosis Procedure (With M/T)" or BRC-179, "Diagnosis Procedure (With CVT)".
NO >> Inspection End.

## Diagnosis Procedure (With M/T)

INFOID:0000000006921426

Regarding Wiring Diagram information, refer to BRC-223, "Wiring Diagram - Coupe" or BRC-232, "Wiring Diagram - Sedan With VDC".

#### 1.CONNECTOR INSPECTION

1. Turn ignition switch OFF.
2. Disconnect ABS actuator and electric unit (control unit) connector.
3. Check terminals for deformation, disconnection, looseness, and so on. If any malfunction is found, repair or replace terminals.
4. Reconnect connector and perform self diagnostic result. Refer to BRC-158, "CONSULT Function (ABS)".

Is DTC C1116 detected?

YES >> GO TO 2
NO >> Poor connection of connector terminals. Repair or replace connector.

#### 2.CHECK STOP LAMP SWITCH

Perform the stop lamp switch component inspection. Refer to BRC-180, "Component Inspection (Stop Lamp Switch)".

Is the inspection result normal?

YES >> GO TO 3
NO >> Replace stop lamp switch.

#### 3.CHECK STOP LAMP SWITCH SIGNAL CIRCUIT

1. Disconnect ABS actuator and electric unit (control unit) connector.
2. Check voltage between ABS actuator and electric unit (control unit) connector E26 terminal 20 and ground.

| ABS actuator and electric unit (control unit) | | Ground | Condition | Voltage (Approx.) |
|---|---|---|---|---|
| Connector | Terminal | | | |
| E26 | 20 | — | Brake pedal depressed | Battery voltage |
| | | | Brake pedal released | 0V |

Is the inspection result normal?

YES >> Replace ABS actuator and electric unit (control unit). Refer to BRC-256, "Removal and Installation".

NO >> GO TO 4

## 4.CHECK STOP LAMP SWITCH INPUT CIRCUIT

1. Disconnect stop lamp switch connector.
2. Check voltage between stop lamp switch connector E38 terminal 1 and ground.

| Stop lamp switch | | Ground | Voltage (Approx.) |
|---|---|---|---|
| Connector | Terminal | | |
| E38 | 1 | — | Battery voltage |

Is the inspection result normal?

YES >> Repair circuit between stop lamp switch and ABS actuator and electric unit (control unit).

NO >> Repair circuit between fuse block J/B and stop lamp switch.

# Diagnosis Procedure (With CVT)

INFOID:0000000006921427

Regarding Wiring Diagram information, refer to BRC-223, "Wiring Diagram - Coupe" or BRC-232, "Wiring Diagram - Sedan With VDC".

## 1.CONNECTOR INSPECTION

1. Turn ignition switch OFF.
2. Disconnect ABS actuator and electric unit (control unit) connector.
3. Check terminals for deformation, disconnection, looseness, and so on. If any malfunction is found, repair or replace terminals.
4. Reconnect connector and perform self diagnostic result. Refer to BRC-158, "CONSULT Function (ABS)".

Is DTC C1116 detected?

YES >> GO TO 2

NO >> Poor connection of connector terminals. Repair or replace connector.

## 2.CHECK STOP LAMP SWITCH

Perform the stop lamp switch component inspection. Refer to BRC-180, "Component Inspection (Stop Lamp Switch)".

Is the inspection result normal?

YES >> GO TO 3

NO >> Replace stop lamp switch.

## 3.CHECK STOP LAMP RELAY-1

Perform the stop lamp relay-1 component inspection. Refer to BRC-181, "Component Inspection (Stop Lamp Relay)".

Is the inspection result normal?

YES >> GO TO 4

NO >> Replace stop lamp relay-1.

## 4.CHECK STOP LAMP SWITCH SIGNAL CIRCUIT

1. Connect stop lamp switch and stop lamp relay-1 connectors.

2. Disconnect ABS actuator and electric unit (control unit) connector.
3. Check voltage between ABS actuator and electric unit (control unit) connector E26 terminal 20 and ground.

| ABS actuator and electric unit (control unit) | | Ground | Condition | Voltage (Approx.) |
|---|---|---|---|---|
| Connector | Terminal | | | |
| E26 | 20 | — | Brake pedal depressed | Battery voltage |
| | | | Brake pedal released | 0V |

Is the inspection result normal?

YES >> Replace ABS actuator and electric unit (control unit). Refer to BRC-256, "Removal and Installation".
NO >> GO TO 5

## 5.CHECK STOP LAMP RELAY-1 COIL CIRCUIT

1. Disconnect stop lamp relay-1 connector.
2. Check voltage between stop lamp relay-1 connector E57 terminal 1 and ground.

| Stop lamp relay-1 | | Ground | Condition | Voltage (Approx.) |
|---|---|---|---|---|
| Connector | Terminal | | | |
| E57 | 1 | — | Brake pedal depressed | Battery voltage |
| | | | Brake pedal released | 0V |

Is the inspection result normal?

YES >> GO TO 6
NO >> Repair circuit between stop lamp switch and stop lamp relay or circuit between fuse block J/B and stop lamp switch.

## 6.CHECK STOP LAMP RELAY-1 SWITCH INPUT CIRCUIT

Check voltage between stop lamp relay-1 connector E57 terminal 5 and ground.

| Stop lamp relay-1 | | Ground | Voltage (Approx.) |
|---|---|---|---|
| Connector | Terminal | | |
| E57 | 5 | — | Battery voltage |

Is the inspection result normal?

YES >> GO TO 7
NO >> Repair circuit between fuse block J/B and stop lamp relay.

## 7.CHECK STOP LAMP RELAY-1 GROUND CIRCUIT

Check continuity between stop lamp relay-1 connector E57 terminal 2 and ground.

| Stop lamp relay-1 | | Ground | Continuity |
|---|---|---|---|
| Connector | Terminal | | |
| E57 | 2 | — | Yes |

Is the inspection result normal?

YES >> Repair circuit between stop lamp relay and ABS actuator and electric unit (control unit).
NO >> Repair stop lamp relay ground circuit.

# Component Inspection (Stop Lamp Switch)

INFOID:0000000006921428

## 1.CHECK STOP LAMP SWITCH

1. Turn ignition switch OFF.
2. Disconnect stop lamp switch connector.
3. Check continuity between stop lamp switch terminals.

| Stop lamp switch terminals | Condition | Continuity |
|---|---|---|
| 1 – 2 | Brake pedal depressed. | Yes |
| | Brake pedal released. | No |

Is the inspection result normal?

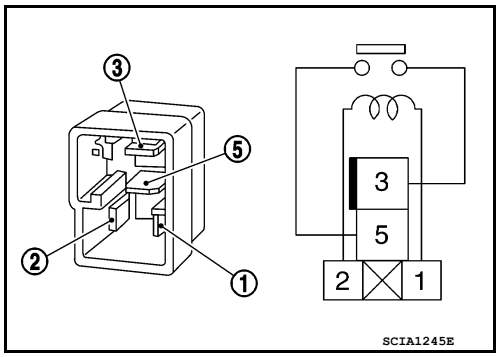
YES >> Inspection End.
NO >> Replace stop lamp switch.

## Component Inspection (Stop Lamp Relay)

INFOID:0000000006921429

### 1.CHECK STOP LAMP RELAY

1. Turn ignition switch OFF.
2. Disconnect stop lamp relay connector.
3. Apply battery voltage to stop lamp relay terminal 1 and ground to terminal 2.
4. Check continuity between stop lamp relay terminals 3 and 5.




| Stop lamp relay terminals | Condition | Continuity |
|---|---|---|
| 3 – 5 | Battery voltage applied to terminal 1 and ground to terminal 2 | Yes |
| | Voltage and ground removed | No |

Is the inspection result normal?

YES >> Inspection End.
NO >> Replace stop lamp relay.

## Special Repair Requirement

INFOID:0000000006921430

### 1.ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

Always perform the neutral position adjustment for the steering angle sensor, when replacing the ABS actuator and electric unit (control unit). Refer to BRC-143, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION : Special Repair Requirement".

>> END

# C1120, C1122, C1124, C1126 IN ABS SOL

## Description

INFOID:0000000006389314

The solenoid valve increases, holds or decreases the fluid pressure of each brake caliper according to the signals transmitted by the ABS actuator and electric unit (control unit).

## DTC Logic

INFOID:0000000006389315

### DTC DETECTION LOGIC

| DTC | Display item | Malfunction detected condition | Possible cause |
|---|---|---|---|
| C1120 | FR LH IN ABS SOL | When the control unit detects a malfunction in the front LH inlet solenoid circuit. | • ABS actuator and electric unit (control unit) |
| C1122 | FR RH IN ABS SOL | When the control unit detects a malfunction in the front RH inlet solenoid circuit. | |
| C1124 | RR LH IN ABS SOL | When the control unit detects a malfunction in the rear LH inlet solenoid circuit. | |
| C1126 | RR RH IN ABS SOL | When the control unit detects a malfunction in the rear RH inlet solenoid circuit. | |

### DTC CONFIRMATION PROCEDURE

#### 1.CHECK SELF DIAGNOSTIC RESULT

With CONSULT.
1. Turn the ignition switch OFF to ON.
2. Perform self diagnostic result.

Is DTC C1120, C1122, C1124 or C1126 detected?

YES >> Proceed to diagnosis procedure. Refer to BRC-182, "Diagnosis Procedure".
NO >> Inspection End.

## Diagnosis Procedure

INFOID:0000000006389316

Regarding Wiring Diagram information, refer to BRC-223, "Wiring Diagram - Coupe" or BRC-232, "Wiring Diagram - Sedan With VDC".

#### 1.CONNECTOR INSPECTION

1. Turn ignition switch OFF.
2. Disconnect ABS actuator and electric unit (control unit) connector.
3. Check terminals for deformation, disconnection, looseness, and so on. If any malfunction is found, repair or replace terminals.
4. Reconnect connector and perform self-diagnosis. Refer to BRC-158, "CONSULT Function (ABS)".

Is the inspection result normal?

YES >> GO TO 2
NO >> Poor connection of connector terminals. Repair or replace connector.

#### 2.CHECK SOLENOID AND ACTUATOR RELAY POWER SUPPLY CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect ABS actuator and electric unit (control unit) connector.
3. Check voltage between ABS actuator and electric unit (control unit) connector E26 terminal 3 and ground.

| ABS actuator and electric unit (control unit) | | Ground | Voltage (Approx) |
|---|---|---|---|
| Connector | Terminal | | |
| E26 | 3 | — | Battery voltage |

Is the inspection result normal?

YES >> GO TO 3
NO >> • Repair or replace malfunctioning components.
• Perform the self-diagnosis, and make sure that the result shows ″NO DTC IS DETECTED″.

## 3. CHECK SOLENOID AND ACTUATOR RELAY GROUND CIRCUIT

Check continuity between ABS actuator and electric unit (control unit) connector E26 terminal 1, 4 and ground.

| ABS actuator and electric unit (control unit) | | Ground | Continuity |
|---|---|---|---|
| Connector | Terminal | | |
| E26 | 1 | — | Yes |
| | 4 | | |

Is the inspection result normal?

YES >> • Replace ABS actuator and electric unit (control unit). Refer to BRC-256, "Removal and Installation".
• Perform the self-diagnosis, and make sure that the result shows ″NO DTC IS DETECTED″.
NO >> • Repair or replace malfunctioning components.
• Perform the self-diagnosis, and make sure that the result shows ″NO DTC IS DETECTED″.

## Component Inspection

INFOID:0000000006389317

## 1. CHECK ACTIVE TEST

1. Select each test menu item on “ACTIVE TEST”.
2. On the display, touch “Up”, “Keep”, and “Down”, and check that the system operates as shown in the table below.

| Operation | | ABS solenoid valve | | |
|---|---|---|---|---|
| | | Up | Keep | Down |
| FR RH SOL | FR RH IN SOL | Off | On | On |
| | FR RH OUT SOL | Off | Off | On* |
| | USV [FR-RL] | Off | Off | On* |
| | HSV [FR-RL] | Off | Off | On* |
| FR LH SOL | FR LH IN SOL | Off | On | On |
| | FR LH OUT SOL | Off | Off | On* |
| | USV [FL-RR] | Off | Off | On* |
| | HSV [FL-RR] | Off | Off | On* |
| RR RH SOL | RR RH IN SOL | Off | On | On |
| | RR RH OUT SOL | Off | Off | On* |
| | USV [FL-RR] | Off | Off | On* |
| | HSV [FL-RR] | Off | Off | On* |
| RR LH SOL | RR LH IN SOL | Off | On | On |
| | RR LH OUT SOL | Off | Off | On* |
| | USV [FR-RL] | Off | Off | On* |
| | HSV [FR-RL] | Off | Off | On* |

*: On for 1 to 2 seconds after the touch, and then Off

Is the inspection result normal?

YES >> Inspection End.
NO >> Go to diagnosis procedure. Refer to BRC-182, "Diagnosis Procedure".

## Special Repair Requirement

INFOID:0000000006389318

### 1.ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

Always perform the neutral position adjustment for the steering angle sensor, when replacing the ABS actuator and electric unit (control unit). Refer to BRC-143, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION : Special Repair Requirement".

>> END

# C1121, C1123, C1125, C1127 OUT ABS SOL

## Description

INFOID:0000000006389319

The solenoid valve increases, holds or decreases the fluid pressure of each brake caliper according to the signals transmitted by the ABS actuator and electric unit (control unit).

## DTC Logic

INFOID:0000000006389320

### DTC DETECTION LOGIC

| DTC | Display item | Malfunction detected condition | Possible cause |
|---|---|---|---|
| C1121 | FR LH OUT ABS SOL | When the control unit detects a malfunction in the front LH outlet solenoid circuit. | • ABS actuator and electric unit (control unit) |
| C1123 | FR RH OUT ABS SOL | When the control unit detects a malfunction in the front RH outlet solenoid circuit. | |
| C1125 | RR LH OUT ABS SOL | When the control unit detects a malfunction in the rear LH outlet solenoid circuit. | |
| C1127 | RR RH OUT ABS SOL | When the control unit detects a malfunction in the rear RH outlet solenoid circuit. | |

### DTC CONFIRMATION PROCEDURE

#### 1.CHECK SELF DIAGNOSTIC RESULT

With CONSULT.
1. Turn the ignition switch OFF to ON.
2. Perform self diagnostic result.

Is DTC C1121, C1123, C1125 or C1127 detected?

YES >> Proceed to diagnosis procedure. Refer to BRC-185, "Diagnosis Procedure".
NO >> Inspection End.

## Diagnosis Procedure

INFOID:0000000006389321

Regarding Wiring Diagram information, refer to BRC-223, "Wiring Diagram - Coupe" or BRC-232, "Wiring Diagram - Sedan With VDC".

#### 1.CONNECTOR INSPECTION

1. Turn ignition switch OFF.
2. Disconnect ABS actuator and electric unit (control unit) connector.
3. Check terminals for deformation, disconnection, looseness, and so on. If any malfunction is found, repair or replace terminals.
4. Reconnect connector and perform self-diagnosis. Refer to BRC-158, "CONSULT Function (ABS)".

Is the inspection result normal?

YES >> Inspection End.
NO >> GO TO 2

#### 2.CHECK SOLENOID AND ACTUATOR RELAY POWER SUPPLY CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect ABS actuator and electric unit (control unit) connector.
3. Check voltage between ABS actuator and electric unit (control unit) connector E26 terminal 3 and ground.

| ABS actuator and electric unit (control unit) | | Ground | Voltage (Approx) |
|---|---|---|---|
| Connector | Terminal | | |
| E26 | 3 | — | Battery voltage |

Is the inspection result normal?

YES >> GO TO 3
NO >> • Repair or replace malfunctioning components.
• Perform the self-diagnosis, and make sure that the result shows ″NO DTC IS DETECTED″.

## 3. CHECK SOLENOID AND ACTUATOR RELAY GROUND CIRCUIT

Check continuity between ABS actuator and electric unit (control unit) connector E26 terminal 1, 4 and ground.

| ABS actuator and electric unit (control unit) | | Ground | Continuity |
|---|---|---|---|
| Connector | Terminal | | |
| E26 | 1 | — | Yes |
| | 4 | | |

Is the inspection result normal?

YES >> • Replace ABS actuator and electric unit (control unit). Refer to BRC-256, "Removal and Installation".
• Perform the self-diagnosis, and make sure that the result shows ″NO DTC IS DETECTED″.
NO >> • Repair or replace malfunctioning components.
• Perform the self-diagnosis, and make sure that the result shows ″NO DTC IS DETECTED″.

# Component Inspection

INFOID:0000000006389322

## 1. CHECK ACTIVE TEST

1. Select each test menu item on “ACTIVE TEST”.
2. On the display, touch “Up”, “Keep”, and “Down”, and check that the system operates as shown in the table below.

| Operation | | ABS solenoid valve | | |
|---|---|---|---|---|
| | | Up | Keep | Down |
| FR RH SOL | FR RH IN SOL | Off | On | On |
| | FR RH OUT SOL | Off | Off | On* |
| | USV [FR-RL] | Off | Off | On* |
| | HSV [FR-RL] | Off | Off | On* |
| FR LH SOL | FR LH IN SOL | Off | On | On |
| | FR LH OUT SOL | Off | Off | On* |
| | USV [FL-RR] | Off | Off | On* |
| | HSV [FL-RR] | Off | Off | On* |
| RR RH SOL | RR RH IN SOL | Off | On | On |
| | RR RH OUT SOL | Off | Off | On* |
| | USV [FL-RR] | Off | Off | On* |
| | HSV [FL-RR] | Off | Off | On* |
| RR LH SOL | RR LH IN SOL | Off | On | On |
| | RR LH OUT SOL | Off | Off | On* |
| | USV [FR-RL] | Off | Off | On* |
| | HSV [FR-RL] | Off | Off | On* |

*: On for 1 to 2 seconds after the touch, and then Off

Is the inspection result normal?

YES >> Inspection End.
NO >> Go to diagnosis procedure. Refer to BRC-182, "Diagnosis Procedure".

## Special Repair Requirement

INFOID:0000000006389323

### 1.ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

Always perform the neutral position adjustment for the steering angle sensor, when replacing the ABS actuator and electric unit (control unit). Refer to BRC-143, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION : Special Repair Requirement".

>> END

# C1130, C1131, C1132, C1133, C1136 ENGINE SIGNAL

## Description

INFOID:0000000006389324

ABS actuator and electric unit (control unit) and ECM exchange the engine signal with CAN communication line.

## DTC Logic

INFOID:0000000006389325

### DTC DETECTION LOGIC

| DTC | Display item | Malfunction detected condition | Possible cause |
|---|---|---|---|
| C1130 | ENGINE SIGNAL 1 | Major engine components are malfunctioning. | • Harness or connector<br>• ABS actuator and electric unit (control unit)<br>• ECM<br>• CAN communication line |
| C1131 | ENGINE SIGNAL 2 | | |
| C1132 | ENGINE SIGNAL 3 | | |
| C1133 | ENGINE SIGNAL 4 | | |
| C1136 | ENGINE SIGNAL 6 | | |

### DTC CONFIRMATION PROCEDURE

#### 1.CHECK SELF DIAGNOSTIC RESULT

With CONSULT.

1. Turn the ignition switch OFF to ON.
2. Perform self diagnostic result.

Is DTC C1130, C1131, C1132, C1133 or C1136 detected?

YES >> Proceed to diagnosis procedure. Refer to BRC-188, "Diagnosis Procedure".
NO >> Inspection End.

## Diagnosis Procedure

INFOID:0000000006389326

#### 1.CHECK ENGINE SYSTEM

1. Perform ECM self-diagnosis. Repair or replace items indicated, then perform ECM self-diagnosis again. Refer to EC-99, "CONSULT-III Function" (QR25DE) or EC-423, "CONSULT-III Function" (VQ35DE).
2. Perform ABS actuator and electric unit (control unit) self-diagnosis.

Is the inspection result normal?

YES >> Inspection End.
NO >> • Repair or replace malfunctioning components.
• Perform the self-diagnosis, and make sure that the result shows ″NO DTC IS DETECTED″.

# DTC C1142 PRESS SEN CIRCUIT

## Description

INFOID:0000000006389327

The pressure sensor converts the brake fluid pressure to an electric signal and transmits it to the ABS actuator and electric unit (control unit). (The pressure sensor is integrated in the ABS actuator and electric unit (control unit).)

## DTC Logic

INFOID:0000000006389328

### DTC DETECTION LOGIC

| DTC | Display item | Malfunction detected condition | Possible cause |
|---|---|---|---|
| C1142 | PRESS SEN CIRCUIT | Pressure sensor signal line is open or shorted, or pressure sensor is malfunctioning. | • Harness or connector<br>• Stop lamp switch<br>• ABS actuator and electric unit (control unit) |

### DTC CONFIRMATION PROCEDURE

#### 1.CHECK SELF DIAGNOSTIC RESULT

With CONSULT.
1. Turn the ignition switch OFF to ON.
2. Perform self diagnostic result.

Is DTC C1142 detected?

YES >> Proceed to diagnosis procedure. Refer to BRC-189, "Diagnosis Procedure".
NO >> Inspection End.

## Diagnosis Procedure

INFOID:0000000006389329

Regarding Wiring Diagram information, refer to BRC-223, "Wiring Diagram - Coupe" or BRC-232, "Wiring Diagram - Sedan With VDC".

#### 1.CHECK STOP LAMP SWITCH CONNECTOR

1. Turn ignition switch OFF.
2. Disconnect ABS actuator and electric unit (control unit) and stop lamp switch connectors.
3. Check terminals for deformation, disconnection, looseness, and so on. If any malfunction is found, repair or replace terminals.
4. Reconnect connectors securely.
5. Start engine.
6. Repeat pumping brake pedal carefully several times, and perform self-diagnosis. Refer to BRC-158, "CONSULT Function (ABS)".

Is the inspection result normal?

YES >> GO TO 2
NO >> Poor connection of connector terminal. Repair or replace connector.

#### 2.CHECK STOP LAMP SWITCH

1. Turn ignition switch OFF.
2. Disconnect stop lamp switch connector.
3. Check continuity between stop lamp switch connector terminals.

| Stop lamp switch terminals | Condition | Continuity |
|---|---|---|
| 1 – 2 | Brake pedal depressed. | Yes |
| | Brake pedal released. | No |

Is the inspection result normal?

YES >> GO TO 3
NO >> Replace stop lamp switch.

## 3.CHECK STOP LAMP SWITCH CIRCUIT

1. Disconnect ABS actuator and electric unit (control unit) connector.
2. Connect stop lamp switch connector.
3. Check voltage between ABS actuator and electric unit (control unit) connector E26 terminal 20 and ground.

| ABS actuator and electric unit (control unit) | | Condition | Voltage |
|---|---|---|---|
| Connector | Terminal | | |
| E26 | 20 | Brake pedal is depressed | Battery voltage |
| | | Brake pedal is released | Approx. 0 V |

Is the inspection result normal?

YES >> GO TO 4
NO >> Repair or replace malfunctioning components.

## 4.CHECK SELF DIAGNOSTIC RESULT

With CONSULT.
1. Turn the ignition switch OFF to ON.
2. Perform self diagnostic result.

Is DTC C1142 detected?

YES >> Replace ABS actuator and electric unit (control unit). Refer to BRC-256, "Removal and Installation".
NO >> Inspection End.

# Component Inspection

INFOID:0000000006389330

## 1.CHECK DATA MONITOR

On “DATA MONITOR”, select “PRESS SENSOR” and check the brake fluid pressure.

| Condition | PRESS SENSOR (DATA MONITOR) |
|---|---|
| With ignition switch turned ON and brake pedal released. | Approx. 0 bar |
| With ignition switch turned ON and brake pedal depressed. | – 40 to 300 bar |

Is the inspection result normal?

YES >> Inspection End.
NO >> Go to diagnosis procedure. Refer to BRC-189, "Diagnosis Procedure".

# Special Repair Requirement

INFOID:0000000006389331

## 1.ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

Always perform the neutral position adjustment for the steering angle sensor, when replacing the ABS actuator and electric unit (control unit). Refer to BRC-143, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION : Special Repair Requirement".

>> END

# C1143, C1144 STEERING ANGLE SENSOR

## Description

INFOID:0000000006389332

The steering angle sensor detects the rotation amount, angular velocity and direction of the steering wheel, and transmits the data to the ABS actuator and electric unit (control unit) via CAN communication.

## DTC Logic

INFOID:0000000006389333

### DTC DETECTION LOGIC

| DTC | Display item | Malfunction detected condition | Possible cause |
|---|---|---|---|
| C1143 | ST ANG SEN CIRCUIT | Neutral position of steering angle sensor is dislocated, or the steering angle sensor is malfunctioning. | • Harness or connector<br>• Steering angle sensor<br>• ABS actuator and electric unit (control unit) |
| C1144 | ST ANG SEN SIGNAL | Neutral position of steering angle sensor is not finished. | |

### DTC CONFIRMATION PROCEDURE

#### 1.CHECK SELF DIAGNOSTIC RESULT

With CONSULT.

1. Turn the ignition switch OFF to ON.
2. Perform self diagnostic result.

Is DTC C1143 or C1144 detected?

YES >> Proceed to diagnosis procedure. Refer to BRC-191, "Diagnosis Procedure".
NO >> Inspection End.

## Diagnosis Procedure

INFOID:0000000006389334

Regarding Wiring Diagram information, refer to BRC-223, "Wiring Diagram - Coupe" or BRC-232, "Wiring Diagram - Sedan With VDC".

#### 1.CONNECTOR INSPECTION

1. Turn ignition switch OFF.
2. Disconnect ABS actuator and electric unit (control unit) connector.
3. Check terminals for deformation, disconnection, looseness, and so on. If any malfunction is found, repair or replace terminals.
4. Reconnect connector and perform self-diagnosis. Refer to BRC-158, "CONSULT Function (ABS)".

Is the inspection result normal?

YES >> Inspection End.
NO >> GO TO 2

#### 2.CHECK STEERING ANGLE SENSOR HARNESS

1. Check CAN communication system. Refer to LAN-15, "Trouble Diagnosis Flow Chart".
2. Turn ignition switch OFF.
3. Disconnect steering angle sensor connector.
4. Check continuity between steering angle sensor connector M53 terminal 1 and ground.

| Steering angle sensor | | Ground | Continuity |
|---|---|---|---|
| Connector | Terminal | | |
| M53 | 1 | — | Yes |

5. Turn ignition switch ON.
6. Check voltage between steering angle sensor connector M53 terminal 4 and ground.

| Steering angle sensor | | Ground | Voltage (Approx.) |
|---|---|---|---|
| Connector | Terminal | | |
| M53 | 4 | — | Battery voltage |

Is the inspection result normal?

YES >> GO TO 3
NO >> • Repair or replace malfunctioning components.
• Perform the self-diagnosis, and make sure that the result shows ″NO DTC IS DETECTED″.

## 3.CHECK DATA MONITOR

1. Turn ignition switch OFF.
2. Connect the steering angle sensor and ABS actuator and electric unit (control unit) connectors.
3. Perform the steering angle sensor component inspection. Refer to BRC-192, "Component Inspection".

Is the inspection result normal?

YES >> Replace ABS actuator and electric unit (control unit). Refer to BRC-256, "Removal and Installation".
NO >> Replace steering angle sensor. Refer to BRC-259, "Removal and Installation".

# Component Inspection

INFOID:0000000006389335

## 1.CHECK DATA MONITOR

Select “STR ANGLE SIG” in “DATA MONITOR” and check steering angle sensor signal.

| Steering condition | STR ANGLE SIG (DATA MONITOR) |
|---|---|
| Driving straight | ±2.5 ° |
| Turn 90 ° to right | Approx. +90 ° |
| Turn 90 ° to left | Approx. −90 ° |

Is the inspection result normal?

YES >> Inspection End.
NO >> Go to diagnosis procedure. Refer to BRC-191, "Diagnosis Procedure".

# Special Repair Requirement

INFOID:0000000006921398

## 1.ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

Always perform the neutral position adjustment for the steering angle sensor, when replacing the ABS actuator and electric unit (control unit). Refer to BRC-143, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION : Special Repair Requirement".

>> END

# C1145, C1146 YAW RATE/SIDE G SENSOR

## Description

INFOID:0000000006389336

The yaw rate/side/decel G sensor detects the yaw rate/side/decel G affecting the vehicle, and transmits the data to the ABS actuator and electric unit (control unit) as an analog voltage signal.

## DTC Logic

INFOID:0000000006389337

### DTC DETECTION LOGIC

| DTC | Display item | Malfunction detected condition | Possible cause |
|---|---|---|---|
| C1145 | YAW RATE SENSOR | Yaw rate sensor is malfunctioning, or the yaw rate sensor signal line is open or shorted. | • Harness or connector<br>• ABS actuator and electric unit (control unit)<br>• Yaw rate/side G sensor |
| C1146 | SIDE G-SEN CIRCUIT | Side G sensor is malfunctioning, or circuit of side G sensor is open or shorted. | |

### DTC CONFIRMATION PROCEDURE

#### 1.CHECK SELF DIAGNOSTIC RESULT

With CONSULT.
1. Turn the ignition switch OFF to ON.
2. Perform self diagnostic result.

Is DTC C1145 or C1146 detected?

YES >> Proceed to diagnosis procedure. Refer to BRC-193, "Diagnosis Procedure".
NO >> Inspection End.

## Diagnosis Procedure

INFOID:0000000006389338

Regarding Wiring Diagram information, refer to BRC-223, "Wiring Diagram - Coupe" or BRC-232, "Wiring Diagram - Sedan With VDC".

**CAUTION:**
- **Sudden turns (such as spin turns, acceleration turns), drifting, etc., when VDC function is off (VDC OFF switch "ON") may cause yaw rate/side/decel G sensor system to indicate a malfunction. However, this is not a malfunction, if normal operation can be resumed after restarting engine. Then erase memory of self-diagnosis.**
- **If vehicle is on turn-table at entrance to parking garage, or on other moving surface, VDC OFF indicator lamp may illuminate and CONSULT self-diagnosis may indicate yaw rate sensor system malfunction. However, in this case there is no malfunction in yaw rate sensor system. Take vehicle off of turn-table or other moving surface, and start engine. Results will return to normal. And after doing spin turns or acceleration turns with VDC function is being off (VDC OFF switch “ON”), too, the results will return to a normal condition by re-starting vehicle.**

#### 1.CONNECTOR INSPECTION

1. Turn ignition switch OFF.
2. Disconnect yaw rate/side/decel G sensor and ABS actuator and electric unit (control unit) connector.
3. Check terminals for deformation, disconnection, looseness, and so on. If any malfunction is found, repair or replace terminals.
4. Reconnect connector and perform self-diagnosis. Refer to BRC-158, "CONSULT Function (ABS)".

Is the inspection result normal?

YES >> Inspection End.
NO >> GO TO 2

#### 2.CHECK YAW RATE/SIDE/DECEL G SENSOR POWER SUPPLY CIRCUIT

1. Check voltage between yaw rate/side/decel G sensor connector M55 terminal 4 and ground.

| Yaw rate/side/decel G sensor | | Ground | Condition | Voltage (Approx.) |
|---|---|---|---|---|
| Connector | Terminal | | | |
| M55 | 4 | — | Ignition switch ON | Battery voltage |
| | | | Ignition switch OFF | 0V |

Is the inspection result normal?

YES >> GO TO 3
NO >> • Repair or replace malfunctioning components.
• Perform the self-diagnosis, and make sure that the result shows ″NO DTC IS DETECTED″.

## 3.CHECK YAW RATE/SIDE/DECEL G SENSOR GROUND SUPPLY CIRCUIT

Check resistance between yaw rate/side/decel G sensor connector M55 terminal 1 and ground.

| Yaw rate/side/decel G sensor | | Ground | Continuity |
|---|---|---|---|
| Connector | Terminal | | |
| M55 | 1 | — | Yes |

Is the inspection result normal?

YES >> GO TO 4
NO >> • Repair or replace malfunctioning components.
• Perform the self-diagnosis, and make sure that the result shows ″NO DTC IS DETECTED″.

## 4.CHECK YAW RATE/SIDE/DECEL G SENSOR HARNESS

1. Check continuity between ABS actuator and electric unit (control unit) connector E26 and yaw rate/side/decel G sensor connector M55.

| ABS actuator and electric unit (control unit) | | Yaw rate/side/decel G sensor | | Continuity |
|---|---|---|---|---|
| Connector | Terminal | Connector | Terminal | |
| E26 | 14 | M55 | 2 | Yes |
| | 25 | | 3 | |

2. Check continuity between ABS actuator and electric unit (control unit) connector E26 and ground.

| ABS actuator and electric unit (control unit) | | Ground | Continuity |
|---|---|---|---|
| Connector | Terminal | | |
| E26 | 14 | — | No |
| | 25 | | |

Is the inspection result normal?

YES >> GO TO 5
NO >> Repair or replace malfunctioning components.

## 5.CHECK DATA MONITOR

1. Connect the Yaw rate/side/decel G sensor and ABS actuator and electric unit (control unit) connectors.
2. Perform the yaw rate/side/decel G sensor component inspection. Refer to BRC-195, "Component Inspection".

Is the inspection result normal?

YES >> Replace ABS actuator and electric unit (control unit). Refer to BRC-158, "CONSULT Function (ABS)".
NO >> Replace Yaw rate/side/decel G sensor. Refer to BRC-258, "Removal and Installation".

## Component Inspection

INFOID:0000000006389339

### 1.CHECK DATA MONITOR

Select “YAW RATE SEN”, “SIDE G-SENSOR” in “DATA MONITOR” and check yaw rate/side/decel G sensor signal.

| Vehicle condition | YAW RATE SEN (DATA MONITOR) | SIDE G-SENSOR (DATA MONITOR) |
|---|---|---|
| Stopped | Approx. 0 d/s | Approx. 0 $m/s^2$ |
| Turning right | Negative value | Negative value |
| Turning left | Positive value | Positive value |

Is the inspection result normal?

YES >> Inspection End.
NO >> Go to diagnosis procedure. Refer to BRC-193, "Diagnosis Procedure".

## Special Repair Requirement

INFOID:0000000006389340

### 1.ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

Always perform the neutral position adjustment for the steering angle sensor, when replacing the ABS actuator and electric unit (control unit). Refer to BRC-143, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION : Special Repair Requirement".

>> END

# C1147, C1148, C1149, C1150 USV/HSV LINE

## Description

INFOID:0000000006389341

USV1, USV2 (CUT VALVE)
The cut valve shuts off the normal brake fluid path from the master cylinder, when VDC/TCS is activated.

HSV1, HSV2 (SUCTION VALVE)
The suction valve supplies the brake fluid from the master cylinder to the pump, when VDC/TCS is activated.

## DTC Logic

INFOID:0000000006389342

### DTC DETECTION LOGIC

| DTC | Display item | Malfunction detected condition | Possible cause |
|---|---|---|---|
| C1147 | USV LINE[FL-RR] | VDC switch-over solenoid valve (USV1) on the primary side is open circuit or shorted, or the control line is open or shorted to the power supply or the ground. | • Harness or connector<br>• ABS actuator and electric unit (control unit) |
| C1148 | USV LINE[FR-RL] | VDC switch-over solenoid valve (USV2) on the primary side is open circuit or shorted, or the control line is open or shorted to the power supply or the ground. | |
| C1149 | HSV LINE[FL-RR] | VDC switch-over solenoid valve (HSV1) on the primary side is open circuit or shorted, or the control line is open or shorted to the power supply or the ground. | |
| C1150 | HSV LINE[FR-RL] | VDC switch-over solenoid valve (HSV2) on the primary side is open circuit or shorted, or the control line is open or shorted to the power supply or the ground. | |

### DTC CONFIRMATION PROCEDURE

#### 1.CHECK SELF DIAGNOSTIC RESULT

With CONSULT.
1. Turn the ignition switch OFF to ON.
2. Perform self diagnostic result.

Is DTC C1147, C1148, C1149 or C1150 detected?

YES >> Proceed to diagnosis procedure. Refer to BRC-196, "Diagnosis Procedure".
NO >> Inspection End.

## Diagnosis Procedure

INFOID:0000000006389343

Regarding Wiring Diagram information, refer to BRC-223, "Wiring Diagram - Coupe" or BRC-232, "Wiring Diagram - Sedan With VDC".

#### 1.CONNECTOR INSPECTION

1. Turn ignition switch OFF.
2. Disconnect ABS actuator and electric unit (control unit) connector.
3. Check terminals for deformation, disconnection, looseness, and so on. If any malfunction is found, repair or replace terminals.
4. Reconnect connector and perform self-diagnosis. Refer to BRC-158, "CONSULT Function (ABS)".

Is the inspection result normal?

YES >> Inspection End.
NO >> GO TO 2

#### 2.CHECK SOLENOID AND ACTUATOR RELAY POWER SUPPLY CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect ABS actuator and electric unit (control unit) connector.

3. Check voltage between ABS actuator and electric unit (control unit) connector E26 terminal 3 and ground.

| ABS actuator and electric unit (control unit) | | Ground | Voltage (Approx) |
|---|---|---|---|
| Connector | Terminal | | |
| E26 | 3 | — | Battery voltage |

Is the inspection result normal?

YES >> GO TO 3
NO >> • Repair or replace malfunctioning components.
• Perform the self-diagnosis, and make sure that the result shows ″NO DTC IS DETECTED″.

## 3. CHECK SOLENOID AND ACTUATOR RELAY GROUND CIRCUIT

Check continuity between ABS actuator and electric unit (control unit) connector E26 terminal 1, 4 and ground.

| ABS actuator and electric unit (control unit) | | Ground | Continuity |
|---|---|---|---|
| Connector | Terminal | | |
| E26 | 1 | — | Yes |
| | 4 | | |

Is the inspection result normal?

YES >> • Replace ABS actuator and electric unit (control unit). Refer to BRC-256, "Removal and Installation".
• Perform the self-diagnosis, and make sure that the result shows ″NO DTC IS DETECTED″.
NO >> • Repair or replace malfunctioning components.
• Perform the self-diagnosis, and make sure that the result shows ″NO DTC IS DETECTED″.

# Component Inspection

INFOID:0000000006389344

## 1. CHECK ACTIVE TEST

1. Select each test menu item on “ACTIVE TEST”.
2. On the display, touch “Up”, “ACT UP”, and “ACT KEEP”, and check that the system operates as shown in the table below.

| Operation | | ABS solenoid valve (ACT) | | |
|---|---|---|---|---|
| | | Up | ACT UP | ACT KEEP |
| FR RH ABS SOLENOID (ACT) | FR RH IN SOL | Off | Off | Off |
| | FR RH OUT SOL | Off | Off | Off |
| | USV [FR-RL] | Off | On | On |
| | HSV [FR-RL] | Off | On* | Off |
| FR LH ABS SOLENOID (ACT) | FR LH IN SOL | Off | Off | Off |
| | FR LH OUT SOL | Off | Off | Off |
| | USV [FL-RR] | Off | Off | Off |
| | HSV [FL-RR] | Off | Off | Off |
| RR RH ABS SOLENOID (ACT) | RR RH IN SOL | Off | Off | Off |
| | RR RH OUT SOL | Off | Off | Off |
| | USV [FL-RR] | Off | Off | Off |
| | HSV [FL-RR] | Off | Off | Off |
| RR LH ABS SOLENOID (ACT) | RR LH IN SOL | Off | Off | Off |
| | RR LH OUT SOL | Off | Off | Off |
| | USV [FR-RL] | Off | On | On |
| | HSV [FR-RL] | Off | On* | Off |

*: On for 1 to 2 seconds after the touch, and then Off

Is the inspection result normal?

YES >> Inspection End
NO >> Go to diagnosis procedure. Refer to BRC-196, "Diagnosis Procedure".

## Special Repair Requirement

INFOID:0000000006389345

### 1.ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

Always perform the neutral position adjustment for the steering angle sensor, when replacing the ABS actuator and electric unit (control unit). Refer to BRC-143, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION : Special Repair Requirement".

>> END

# C1154 PNP SWITCH

## Description

INFOID:0000000006389346

The transmission range switch signal is transmitted to the ABS actuator and electric unit (control unit) using the CAN communication lines.

## DTC Logic

INFOID:0000000006389347

### DTC DETECTION LOGIC

| DTC | Display item | Malfunction detected condition | Possible cause |
|---|---|---|---|
| C1154 | PNP POS SIG | Transmission range switch signal or communication line between the ABS actuator and electric unit (control unit) and TCM is open or shorted. | • Harness or connector<br>• Transmission range switch |

### DTC CONFIRMATION PROCEDURE

#### 1.CHECK SELF DIAGNOSTIC RESULT

With CONSULT.
1. Turn the ignition switch OFF to ON.
2. Perform self diagnostic result.

Is DTC C1154 detected?

YES >> Proceed to diagnosis procedure. Refer to BRC-199, "Diagnosis Procedure".
NO >> Inspection End.

## Diagnosis Procedure

INFOID:0000000006389348

#### 1.CHECK DATA MONITOR

Select “SLCT LVR POSI” in “Data Monitor” and check transmission range switch signal.

| Selector lever position | SLCT LVR POSI (Data monitor) |
|---|---|
| P position | P |
| R position | R |
| N position | N |
| D position | D |

Is the inspection result normal?

YES >> • Replace ABS actuator and electric unit (control unit). Refer to BRC-256, "Removal and Installation".
• Perform the self-diagnosis, and make sure that the result shows ″NO DTC IS DETECTED″.
NO >> GO TO 2

#### 2.CHECK TRANSMISSION RANGE SWITCH

Perform transmission range switch inspection. Refer to TM-135, "Description" (VQ35DE) or TM-296, "Description" (QR25DE).

Is the inspection result normal?

YES >> • Replace ABS actuator and electric unit (control unit). Refer to BRC-256, "Removal and Installation".
• Perform the self-diagnosis, and make sure that the result shows ″NO DTC IS DETECTED″.
NO >> • Repair or replace malfunctioning components.
• Perform the self-diagnosis, and make sure that the result shows ″NO DTC IS DETECTED″.

## Special Repair Requirement

INFOID:0000000006389349

#### 1.ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

Always perform the neutral position adjustment for the steering angle sensor, when replacing the ABS actuator and electric unit (control unit). Refer to BRC-143, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION : Special Repair Requirement".

>> END

# DTC C1155 BR FLUID LEVEL LOW

## Description

INFOID:0000000006389350

The brake fluid level switch converts the brake fluid level to an electric signal and transmits it to the ABS actuator and electric unit (control unit).

## DTC Logic

INFOID:0000000006389351

### DTC DETECTION LOGIC

| DTC | Display item | Malfunction detected condition | Possible cause |
|---|---|---|---|
| C1155 | BR FLUID LEVEL LOW | Brake fluid level is low or communication line between the ABS actuator and electric unit (control unit) and brake fluid level switch is open or shorted. | • Harness or connector<br>• Brake fluid level switch |

### DTC CONFIRMATION PROCEDURE

#### 1.CHECK SELF DIAGNOSTIC RESULT

With CONSULT.
1. Turn the ignition switch OFF to ON.
2. Perform self diagnostic result.

Is DTC C1155 detected?

YES >> Proceed to diagnosis procedure. Refer to BRC-201, "Diagnosis Procedure".
NO >> Inspection End.

## Diagnosis Procedure

INFOID:0000000006389352

Regarding Wiring Diagram information, refer to BRC-223, "Wiring Diagram - Coupe" or BRC-232, "Wiring Diagram - Sedan With VDC".

**CAUTION:**
**Check brake fluid level in brake reservoir tank before starting inspection.**

#### 1.CONNECTOR INSPECTION

1. Turn ignition switch OFF.
2. Disconnect brake fluid level switch and combination meter connectors.
3. Check terminals for deformation, disconnection, looseness, and so on. If any malfunction is found, repair or replace terminalS.
4. Reconnect connector and perform self-diagnosis. Refer to BRC-158, "CONSULT Function (ABS)".

Is the inspection result normal?

YES >> Inspection End.
NO >> GO TO 2

#### 2.CHECK BRAKE FLUID LEVEL SWITCH

Perform the brake fluid level switch component inspection. Refer to BRC-202, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 3
NO >> Replace brake fluid level switch. Refer to BR-22, "Exploded View".

#### 3.CHECK BRAKE FLUID LEVEL SWITCH HARNESS

1. Disconnect combination meter connector M24.
2. Check continuity between combination meter connector M24 terminal 27 and brake fluid level switch connector E24 terminal 1.

**27 - 1 : Continuity should exist.**

3. Check continuity between combination meter connector M24 terminal 27 and ground.

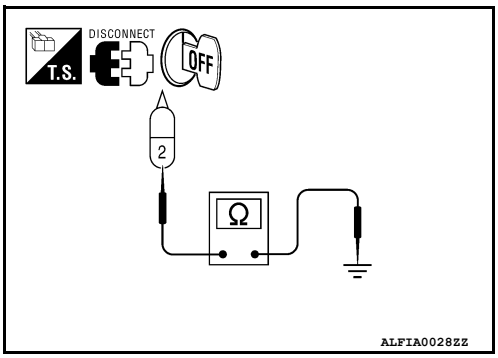
**27 - Ground : Continuity should not exist.**

Is the inspection result normal?

YES >> GO TO 4
NO >> • Repair or replace malfunctioning components.
• Perform the self-diagnosis, and make sure that the result shows ″NO DTC IS DETECTED″.

## 4.CHECK BRAKE FLUID LEVEL SWITCH GROUND CIRCUIT

Check continuity between brake fluid level switch connector E24 Sterminal 2 and ground.




**2 - Ground : Continuity should exist.**

Is the inspection result normal?

YES >> Brake fluid level switch circuit is OK.
NO >> • Repair or replace malfunctioning components.
• Perform the self-diagnosis, and make sure that the result shows ″NO DTC IS DETECTED″.

# Component Inspection

INFOID:0000000006389353

## 1.CHECK BRAKE FLUID LEVEL SWITCH

1. Turn ignition switch OFF.
2. Disconnect brake fluid level switch connector.
3. Check continuity between brake fluid level switch connector terminals.

| Brake fluid level switch | | Condition | Continuity |
|---|---|---|---|
| Connector | Terminals | | |
| E24 | 1 – 2 | When brake fluid is full in the reservoir tank. | No |
| | | When brake fluid is empty in the reservoir tank. | Yes |

Is the inspection result normal?

YES >> Inspection End.
NO >> Replace reservoir tank.

# Special Repair Requirement

INFOID:0000000006921400

## 1.ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

Always perform the neutral position adjustment for the steering angle sensor, when replacing the ABS actuator and electric unit (control unit). Refer to BRC-143, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION : Special Repair Requirement".

>> END

# DTC C1156 ST ANG SEN COM CIR

## Description

INFOID:0000000006389354

The steering angle sensor is connected to the ABS actuator and electric unit (control unit) in addition to CAN lines. CAN (Controller Area Network) is a serial communication line for real time application. It is an on-vehicle multiplex communication line with high data communication speed and excellent error detection ability. Many electronic control units are equipped onto a vehicle, and each control unit shares information and links with other control units during operation (not independent). In CAN communication, control units are connected with 2 communication lines (CAN H line, CAN L line) allowing a high rate of information transmission with less wiring. Each control unit transmits/receives data but selectively reads required data only.

## DTC Logic

INFOID:0000000006389355

### DTC DETECTION LOGIC

| DTC | Display item | Malfunction detected condition | Possible cause |
|---|---|---|---|
| C1156 | ST ANG SEN COM CIR | When steering angle sensor is not transmitting CAN communication signal to the ABS actuator and electric unit (control unit). | • Harness or connector<br>• CAN communication line<br>• Steering angle sensor<br>• ABS actuator and electric unit (control unit) |

### DTC CONFIRMATION PROCEDURE

#### 1.CHECK SELF DIAGNOSTIC RESULT

With CONSULT.

1. Turn the ignition switch OFF to ON.
2. Perform self diagnostic result.

Is DTC C1156 detected?

YES >> Proceed to diagnosis procedure. Refer to BRC-203, "Diagnosis Procedure".
NO >> Inspection End.

## Diagnosis Procedure

INFOID:0000000006389356

#### 1.CONNECTOR INSPECTION

1. Turn ignition switch OFF.
2. Disconnect ABS actuator and electric unit (control unit) connector.
3. Check terminals for deformation, disconnection, looseness, and so on. If any malfunction is found, repair or replace terminals.
4. Reconnect connector and perform self-diagnosis. Refer to BRC-158, "CONSULT Function (ABS)".

Is DTC C1156 detected?

YES >> Refer to LAN-15, "Trouble Diagnosis Flow Chart".
NO >> Inspection End.

# U1000 CAN COMM CIRCUIT

## Description

INFOID:0000000006389357

CAN (Controller Area Network) is a serial communication line for real time application. It is an on-vehicle multiplex communication line with high data communication speed and excellent error detection ability. Many electronic control units are equipped onto a vehicle, and each control unit shares information and links with other control units during operation (not independent). In CAN communication, control units are connected with 2 communication lines (CAN H line, CAN L line) allowing a high rate of information transmission with less wiring. Each control unit transmits/receives data but selectively reads required data only.

## DTC Logic

INFOID:0000000006389358

### DTC DETECTION LOGIC

| DTC | Display | Condition | Possible Cause |
|---|---|---|---|
| U1000 | CAN COMM CIRCUIT | When ABS actuator and electric unit (control unit) is not transmitting or receiving CAN communication signal for 2 seconds or more. | CAN communication system malfunction |

### DTC CONFIRMATION PROCEDURE

#### 1.CHECK SELF DIAGNOSTIC RESULT

With CONSULT.
1. Turn the ignition switch OFF to ON.
2. Perform self diagnostic result.

Is DTC U1000 detected?

YES >> Proceed to diagnosis procedure. Refer to BRC-204, "Diagnosis Procedure".
NO >> Inspection End.

## Diagnosis Procedure

INFOID:0000000006389359

#### 1.CONNECTOR INSPECTION

1. Turn ignition switch OFF.
2. Disconnect ABS actuator and electric unit (control unit) connector.
3. Check terminals for deformation, disconnection, looseness, and so on. If any malfunction is found, repair or replace terminals.
4. Reconnect connector and perform self-diagnosis. Refer to BRC-158, "CONSULT Function (ABS)".

Is DTC U1000 detected?

YES >> Refer to LAN-15, "Trouble Diagnosis Flow Chart".
NO >> Inspection End.

# PARKING BRAKE SWITCH

## Description

INFOID:0000000006389360

The parking brake switch converts the status of the parking brake pedal to an electric signal and transmits it to the combination meter. Then, through CAN communication, the signal is carried to the ABS actuator and electric unit (control unit).

## Component Function Check

INFOID:0000000006389361

### 1.CHECK PARKING BRAKE SWITCH OPERATION

Operate the parking brake. Then check that the brake warning lamp in the combination meter turns on/off correctly.

| Condition | Brake warning lamp illumination status |
|---|---|
| When the parking brake is engaged | ON |
| When the parking brake is not engaged | OFF |

Is the inspection result normal?

YES >> Inspection End.
NO >> Go to diagnosis procedure. Refer to BRC-205, "Diagnosis Procedure".

## Diagnosis Procedure

INFOID:0000000006389362

Regarding Wiring Diagram information, refer to BRC-223, "Wiring Diagram - Coupe" or BRC-232, "Wiring Diagram - Sedan With VDC".

### 1.CHECK PARKING BRAKE SWITCH CIRCUIT

1. Disconnect combination meter connector and parking brake switch connector.
2. Check continuity between combination meter harness connector M24 terminal 26 and parking brake switch harness connector E35 (with CVT) or M73 (with M/T) terminal 1.

**26 - 1 : Continuity should exist.**

3. Check continuity between combination meter harness connector M24 terminal 26 and ground.

**26 - Ground : Continuity should not exist.**

Is the inspection result normal?

YES >> GO TO 2
NO >> Repair harness or connector.

### 2.CHECK PARKING BRAKE SWITCH

Perform the parking brake switch component inspection. Refer to BRC-205, "Component Inspection".

Is the inspection result normal?

YES >> Check parking brake switch case ground condition.
NO >> Replace parking brake switch.

## Component Inspection

INFOID:0000000006389363

### 1.CHECK PARKING BRAKE SWITCH

1. Turn ignition switch OFF.
2. Disconnect parking brake switch connector.
3. Check continuity between parking brake switch terminal 1 and ground.

| Parking brake switch terminal | Ground | Condition | Continuity |
|---|---|---|---|
| 1 | Ground | When the parking brake is engaged. | Yes |
| | | When the parking brake is released. | No |

Is the inspection result normal?

YES >> Inspection End.
NO >> Replace parking brake switch.

## Special Repair Requirement

INFOID:0000000006921401

### 1.ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

Always perform the neutral position adjustment for the steering angle sensor, when replacing the ABS actuator and electric unit (control unit). Refer to BRC-143, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION : Special Repair Requirement".

>> END

# VDC OFF SWITCH

## Description

INFOID:0000000006389364

VDC OFF switch can deactivate (turn OFF) the VDC/TCS function by pressing the VDC OFF switch.

## Component Function Check

INFOID:0000000006389365

### 1.CHECK VDC OFF SWITCH OPERATION

Press and release the VDC OFF switch, then press and release the VDC OFF switch again and check that the VDC OFF indicator lamp in the combination meter turns ON/OFF correctly.

| Condition | VDC OFF indicator lamp illumination status |
|---|---|
| VDC OFF switch: pressed and released | ON |
| VDC OFF switch: pressed and released | OFF |

Is the inspection result normal?

YES >> Inspection End.
NO >> Go to diagnosis procedure. Refer to BRC-207, "Diagnosis Procedure".

## Diagnosis Procedure

INFOID:0000000006389366

Regarding Wiring Diagram information, refer to BRC-223, "Wiring Diagram - Coupe" or BRC-232, "Wiring Diagram - Sedan With VDC".

### 1.CHECK VDC OFF SWITCH

Perform the VDC OFF switch component inspection. Refer to BRC-208, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 2
NO >> Replace VDC OFF switch.

### 2.CHECK VDC OFF SWITCH HARNESS

1. Disconnect ABS actuator and electric unit (control unit) connector E26.
2. Check continuity between ABS actuator and electric unit (control unit) connector E26 terminal 21 and VDC OFF switch connector M72 terminal 1.

| ABS actuator and electric unit (control unit) | | VDC OFF switch | | Continuity |
|---|---|---|---|---|
| Connector | Terminal | Connector | Terminal | |
| E26 | 21 | M72 | 1 | Yes |

3. Check continuity between ABS actuator and electric unit (control unit) connector E26 terminal 21 and ground.

| ABS actuator and electric unit (control unit) | | Ground | Continuity |
|---|---|---|---|
| Connector | Terminal | | |
| E26 | 21 | — | No |

Is the inspection result normal?

YES >> GO TO 3
NO >> Repair or replace malfunctioning components.

### 3.CHECK VDC OFF SWITCH GROUND

Check continuity between VDC OFF switch connector M72 terminal 2 and ground.

| VDC OFF switch | | Ground | Continuity |
|---|---|---|---|
| Connector | Terminal | | |
| M72 | 2 | — | Yes |

Is the inspection result normal?

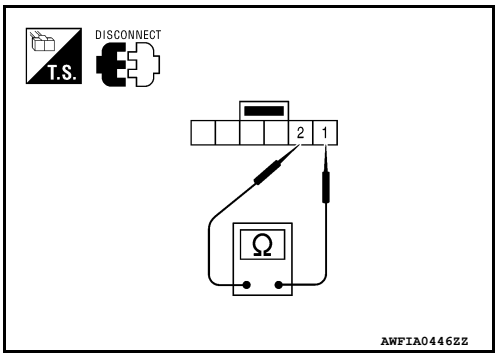
YES >> Inspection end.
NO >> Repair or replace malfunctioning components.

## Component Inspection

INFOID:0000000006389367

### 1.CHECK VDC OFF SWITCH

1. Disconnect VDC OFF switch connector.
2. Check continuity between VDC OFF switch terminals.




| VDC OFF switch terminals | Condition | Continuity |
|---|---|---|
| 1, 2 | VDC OFF switch pressed | Yes |
| | VDC OFF switch released | No |

Is the inspection result normal?

YES >> Inspection End.
NO >> Replace VDC OFF switch.

## Special Repair Requirement

INFOID:0000000006921422

### 1.ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

Always perform the neutral position adjustment for the steering angle sensor, when replacing the ABS actuator and electric unit (control unit). Refer to BRC-143, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION : Special Repair Requirement".

>> END

# ABS WARNING LAMP

## Description

INFOID:0000000006389368

×: ON –: OFF

| Condition | ABS warning lamp |
|---|---|
| Ignition switch OFF | – |
| For 2 seconds after turning ON ignition switch | × |
| 2 seconds later after turning ON ignition switch | – |
| ABS function is malfunctioning. | × |
| EBD function is malfunctioning. | × |

## Component Function Check

INFOID:0000000006389369

### 1.CHECK ABS WARNING LAMP OPERATION

Check that the lamp illuminates for approximately 2 seconds after the ignition switch is turned ON.

Is the inspection result normal?

YES >> Inspection End.
NO >> Go to diagnosis procedure. Refer to BRC-209, "Diagnosis Procedure".

## Diagnosis Procedure

INFOID:0000000006389370

### 1.CHECK SELF-DIAGNOSIS

Perform ABS actuator and electric unit (control unit) self-diagnosis. Refer to BRC-158, "CONSULT Function (ABS)".

Is the inspection result normal?

YES >> GO TO 2
NO >> Check items displayed by self-diagnosis.

### 2.CHECK COMBINATION METER

Check if the indication and operation of combination meter are normal. Refer to MWI-4, "Work Flow".

Is the inspection result normal?

YES >> Replace ABS actuator and electric unit (control unit). Refer to BRC-256, "Removal and Installation".
NO >> Repair or replace combination meter. Refer to MWI-139, "Removal and Installation".

## Special Repair Requirement

INFOID:0000000006389371

### 1.ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

Always perform the neutral position adjustment for the steering angle sensor, when replacing the ABS actuator and electric unit (control unit). Refer to BRC-143, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION : Special Repair Requirement".

>> END

# BRAKE WARNING LAMP

## Description

INFOID:0000000006389372

×: ON –: OFF

| Condition | Brake warning lamp (Note 1) |
|---|---|
| Ignition switch OFF | – |
| Ignition switch ON | × (Note 2) |
| EBD function is malfunctioning. | × |

**NOTE:**

- 1: Brake warning lamp will turn on in case of parking brake operation (when switch is ON) or of brake fluid level switch operation (when brake fluid is insufficient).
- 2: After starting engine, brake warning lamp is turned off.

## Component Function Check

INFOID:0000000006389373

### 1.BRAKE WARNING LAMP OPERATION CHECK 1

Check that the lamp illuminates after the ignition switch is turned ON, and turns OFF after the engine is started.

Is the inspection result normal?

YES >> GO TO 2
NO >> Go to diagnosis procedure. Refer to BRC-210, "Diagnosis Procedure".

### 2.BRAKE WARNING LAMP OPERATION CHECK 2

Check that the brake warning lamp in the combination meter turns ON/OFF correctly when operating the parking brakes.

Is the inspection result normal?

YES >> Inspection End.
NO >> Check parking brake switch. Refer to BR-13, "Inspection and Adjustment".

## Diagnosis Procedure

INFOID:0000000006389374

### 1.CHECK PARKING BRAKE SWITCH

Check that the brake warning lamp in the combination meter turns ON/OFF correctly when operating the parking brakes.

Is the inspection result normal?

YES >> GO TO 2
NO >> Check parking brake switch. Refer to BR-13, "Inspection and Adjustment".

### 2.CHECK SELF-DIAGNOSIS

Perform ABS actuator and electric unit (control unit) self-diagnosis. Refer to BRC-158, "CONSULT Function (ABS)".

Is the inspection result normal?

YES >> GO TO 3
NO >> Check items displayed by self-diagnosis.

### 3.CHECK COMBINATION METER

Check if the indication and operation of combination meter are normal. Refer to MWI-4, "Work Flow".

Is the inspection result normal?

YES >> Replace ABS actuator and electric unit (control unit). Refer to BRC-256, "Removal and Installation".
NO >> Repair or replace combination meter. Refer to MWI-139, "Removal and Installation".

## Special Repair Requirement

INFOID:0000000006389375

### 1.ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

Always perform the neutral position adjustment for the steering angle sensor, when replacing the ABS actuator and electric unit (control unit). Refer to BRC-143, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION : Special Repair Requirement".

>> END

# VDC OFF INDICATOR LAMP

## Description

INFOID:0000000006389376

×: ON –: OFF

| Condition | VDC OFF indicator lamp |
|---|---|
| Ignition switch OFF | – |
| For 2 seconds after turning ON ignition switch | × |
| 2 seconds later after turning ON ignition switch | – |
| VDC OFF switch turned ON. (VDC function is OFF.) | × |
| VDC/TCS function is malfunctioning. | × |
| ABS function is malfunctioning. | × |
| EBD function is malfunctioning. | × |

## Component Function Check

INFOID:0000000006389377

### 1.VDC OFF INDICATOR LAMP OPERATION CHECK 1

Check that the lamp illuminates for approximately 2 seconds after the ignition switch is turned ON.

Is the inspection result normal?

YES >> GO TO 2
NO >> Go to diagnosis procedure. Refer to BRC-212, "Diagnosis Procedure".

### 2.VDC OFF INDICATOR LAMP OPERATION CHECK 2

Check that the VDC OFF indicator lamp in the combination meter turns ON/OFF correctly when operating the VDC OFF switch.

Is the inspection result normal?

YES >> Inspection End.
NO >> Check VDC OFF switch. Refer to BRC-207, "Description".

## Diagnosis Procedure

INFOID:0000000006389378

### 1.CHECK VDC OFF SWITCH

Check that the VDC OFF indicator lamp in the combination meter turns ON/OFF correctly when operating the VDC OFF switch.

Is the inspection result normal?

YES >> GO TO 2
NO >> Check VDC OFF switch. Refer to BRC-207, "Diagnosis Procedure".

### 2.CHECK SELF-DIAGNOSIS

Perform ABS actuator and electric unit (control unit) self-diagnosis. Refer to BRC-158, "CONSULT Function (ABS)".

Is the inspection result normal?

YES >> GO TO 3
NO >> Check items displayed by self-diagnosis.

### 3.CHECK COMBINATION METER

Check if the indication and operation of combination meter are normal. Refer to MWI-4, "Work Flow".

Is the inspection result normal?

YES >> Replace ABS actuator and electric unit (control unit). Refer to BRC-256, "Removal and Installation".
NO >> Repair or replace combination meter. Refer to MWI-139, "Removal and Installation".

## Special Repair Requirement

INFOID:0000000006389379

### 1.ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

Always perform the neutral position adjustment for the steering angle sensor, when replacing the ABS actuator and electric unit (control unit). Refer to BRC-143, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION : Special Repair Requirement".

>> END

# SLIP INDICATOR LAMP

## Description

INFOID:0000000006389380

×: ON –: OFF

| Condition | SLIP indicator lamp |
|---|---|
| Ignition switch OFF | – |
| For 2 seconds after turning ON ignition switch | × |
| 2 seconds later after turning ON ignition switch | – |
| VDC/TCS function is malfunctioning. | × |
| ABS function is malfunctioning. | × |
| EBD function is malfunctioning. | × |

## Component Function Check

INFOID:0000000006389381

### 1.CHECK SLIP INDICATOR LAMP OPERATION

Check that the lamp illuminates for approximately 2 seconds after the ignition switch is turned ON.

Is the inspection result normal?

YES >> Inspection End.
NO >> Go to diagnosis procedure. Refer to BRC-214, "Diagnosis Procedure".

## Diagnosis Procedure

INFOID:0000000006389382

### 1.CHECK SELF-DIAGNOSIS

Perform ABS actuator and electric unit (control unit) self-diagnosis. Refer to BRC-158, "CONSULT Function (ABS)".

Is the inspection result normal?

YES >> GO TO 2
NO >> Check items displayed by self-diagnosis.

### 2.CHECK COMBINATION METER

Check if the indication and operation of combination meter are normal. Refer to MWI-4, "Work Flow".

Is the inspection result normal?

YES >> Replace ABS actuator and electric unit (control unit). Refer to BRC-256, "Removal and Installation".
NO >> Repair or replace combination meter. Refer to MWI-139, "Removal and Installation".

## Special Repair Requirement

INFOID:0000000006389383

### 1.ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

Always perform the neutral position adjustment for the steering angle sensor, when replacing the ABS actuator and electric unit (control unit). Refer to BRC-143, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION : Special Repair Requirement".

>> END

# ECU DIAGNOSIS INFORMATION

## ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)

### Reference Value

INFOID:0000000006389384

VALUES ON THE DIAGNOSIS TOOL

**CAUTION:**

**The display shows the control unit calculation data, so a normal value might be displayed even in the event the output circuit (harness) is open or short - circuited.**

| Monitor item | Display content | Data monitor | |
|---|---|---|---|
| | | Condition | Reference value in normal operation |
| FR LH SENSOR | Wheel speed | 0 [km/h, mph] | Vehicle stopped |
| | | Nearly matches the speed meter display (± 10% or less) | Vehicle running (Note 1) |
| FR RH SENSOR | Wheel speed | 0 [km/h, mph] | Vehicle stopped |
| | | Nearly matches the speed meter display (± 10% or less) | Vehicle running (Note 1) |
| RR LH SENSOR | Wheel speed | 0 [km/h, mph] | Vehicle stopped |
| | | Nearly matches the speed meter display (± 10% or less) | Vehicle running (Note 1) |
| RR RH SENSOR | Wheel speed | 0 [km/h, mph] | Vehicle stopped |
| | | Nearly matches the speed meter display (± 10% or less) | Vehicle running (Note 1) |
| FR LH IN SOL | Operation status of all solenoid valves | Actuator (solenoid valve) is active (“ACTIVE TEST” with CONSULT) or actuator relay is inactive (in fail-safe mode) | On |
| | | When the actuator (solenoid valve) is not active and actuator relay is active (ignition switch ON) | Off |
| FR LH OUT SOL | Operation status of all solenoid valves | Actuator (solenoid valve) is active (“ACTIVE TEST” with CONSULT) or actuator relay is inactive (in fail-safe mode) | On |
| | | When the actuator (solenoid valve) is not active and actuator relay is active (ignition switch ON) | Off |
| FR RH IN SOL | Operation status of all solenoid valves | Actuator (solenoid valve) is active (“ACTIVE TEST” with CONSULT) or actuator relay is inactive (in fail-safe mode) | On |
| | | When the actuator (solenoid valve) is not active and actuator relay is active (ignition switch ON) | Off |

| Monitor item | Display content | Data monitor | |
|---|---|---|---|
| | | Condition | Reference value in normal operation |
| FR RH OUT SOL | Operation status of all solenoid valves | Actuator (solenoid valve) is active (“ACTIVE TEST” with CONSULT) or actuator relay is inactive (in fail-safe mode) | On |
| | | When the actuator (solenoid valve) is not active and actuator relay is active (ignition switch ON) | Off |
| RR LH IN SOL | Operation status of all solenoid valves | Actuator (solenoid valve) is active (“ACTIVE TEST” with CONSULT) or actuator relay is inactive (in fail-safe mode) | On |
| | | When the actuator (solenoid valve) is not active and actuator relay is active (ignition switch ON) | Off |
| RR LH OUT SOL | Operation status of all solenoid valves | Actuator (solenoid valve) is active (“ACTIVE TEST” with CONSULT) or actuator relay is inactive (in fail-safe mode) | On |
| | | When the actuator (solenoid valve) is not active and actuator relay is active (ignition switch ON) | Off |
| RR RH IN SOL | Operation status of all solenoid valves | Actuator (solenoid valve) is active (“ACTIVE TEST” with CONSULT) or actuator relay is inactive (in fail-safe mode) | On |
| | | When the actuator (solenoid valve) is not active and actuator relay is active (ignition switch ON) | Off |
| RR RH OUT SOL | Operation status of all solenoid valves | Actuator (solenoid valve) is active (“ACTIVE TEST” with CONSULT) or actuator relay is inactive (in fail-safe mode) | On |
| | | When the actuator (solenoid valve) is not active and actuator relay is active (ignition switch ON) | Off |
| STOP LAMP SW | Brake pedal operation | When brake pedal is depressed | ON |
| | | When brake pedal is not depressed | OFF |
| MOTOR RELAY | Motor and motor relay operation | When the motor relay and motor are operating | ON |
| | | When the motor relay and motor are not operating | OFF |

| Monitor item | Display content | Data monitor | |
|---|---|---|---|
| | | Condition | Reference value in normal operation |
| ACTUATOR RLY (Note 2) | Actuator relay operation | When the actuator relay is operating | ON |
| | | When the actuator relay is not operating | OFF |
| ABS WARN LAMP | ABS warning lamp (Note 3) | When ABS warning lamp is ON | ON |
| | | When ABS warning lamp is OFF | OFF |
| OFF LAMP | VDC OFF indicator lamp (Note 3) | When VDC OFF indicator lamp is ON | ON |
| | | When VDC OFF indicator lamp is OFF | OFF |
| OFF SW | VDC OFF switch ON/OFF | VDC OFF switch ON (When VDC OFF indicator lamp is ON) | ON |
| | | VDC OFF switch OFF (When VDC OFF indicator lamp is OFF) | OFF |
| SLIP LAMP | SLIP indicator lamp (Note 3) | When SLIP indicator lamp is ON | ON |
| | | When SLIP indicator lamp is OFF | OFF |
| BATTERY VOLT | Battery voltage supplied to the ABS actuator and electric unit (control unit) | Ignition switch ON | 10 – 16 V |
| GEAR | Manual mode gear position determined by TCM | 1st gear<br>2nd gear<br>3rd gear<br>4th gear<br>5th gear<br>6th gear | 1<br>2<br>3<br>4<br>5<br>6 |
| YAW RATE SEN | Yaw rate detected by yaw rate/side G sensor | When vehicle stop | Approx. 0 d/s |
| | | When vehicle turning | -75 to 75 d/s |
| ACCEL POS SIG | Throttle actuator opening/closing is displayed (linked with accelerator pedal) | Accelerator pedal not depressed (ignition switch is ON) | 0 % |
| | | Depress accelerator pedal (ignition switch is ON) | 0 - 100 % |
| SIDE G-SENSOR | Transverse G detected by side G sensor | Vehicle stopped | Approx. 0 $m/s^2$ |
| | | Vehicle turning right | Negative value ($m/s^2$) |
| | | Vehicle turning left | Positive value ($m/s^2$) |
| STR ANGLE SIG | Steering angle detected by steering angle sensor | Straight-ahead | Approx. 0° |
| | | Steering wheel turned | –720 to 720° |
| PRESS SENSOR | Brake fluid pressure detected by pressure sensor | With ignition switch turned ON and brake pedal released | Approx. 0 bar |
| | | With ignition switch turned ON and brake pedal depressed | –40 to 300 bar |

| Monitor item | Display content | Data monitor | |
|---|---|---|---|
| | | Condition | Reference value in normal operation |
| EBD SIGNAL | EBD operation | EBD is active | ON |
| | | EBD is inactive | OFF |
| ABS SIGNAL | ABS operation | ABS is active | ON |
| | | ABS is inactive | OFF |
| TCS SIGNAL | TCS operation | TCS is active | ON |
| | | TCS is inactive | OFF |
| VDC SIGNAL | VDC operation | VDC is active | ON |
| | | VDC is inactive | OFF |
| EBD FAIL SIG | EBD fail-safe signal | In EBD fail-safe | ON |
| | | EBD is normal | OFF |
| ABS FAIL SIG | ABS fail-safe signal | In ABS fail-safe | ON |
| | | ABS is normal | OFF |
| TCS FAIL SIG | TCS fail-safe signal | In TCS fail-safe | ON |
| | | TCS is normal | OFF |
| VDC FAIL SIG | VDC fail-safe signal | In VDC fail-safe | ON |
| | | VDC is normal | OFF |
| CRANKING SIG | Crank operation | Crank is active | ON |
| | | Crank is inactive | OFF |
| FLUID LEV SW | Brake fluid level switch | When brake fluid level switch ON | ON |
| | | When brake fluid level switch OFF | OFF |
| PARK BRAKE SW | Parking brake switch | Parking brake switch is active | ON |
| | | Parking brake switch is inactive | OFF |
| USV[FL-RR] | VDC switch-over valve | When actuator (switch-over valve) is active (“ACTIVE TEST” with CONSULT) or actuator relay is inactive (when in fail-safe mode) | On |
| | | When actuator (switch-over valve) is not active and actuator relay is active (ignition switch ON) | Off |
| USV[FR-RL] | VDC switch-over valve | When actuator (switch-over valve) is active (“ACTIVE TEST” with CONSULT) or actuator relay is inactive (when in fail-safe mode) | On |
| | | When actuator (switch-over valve) is not active and actuator relay is active (ignition switch ON) | Off |

| Monitor item | Display content | Data monitor | |
|---|---|---|---|
| | | Condition | Reference value in normal operation |
| HSV[FL-RR] | VDC switch-over valve | When actuator (switch-over valve) is active (“ACTIVE TEST” with CONSULT) or actuator relay is inactive (when in fail-safe mode) | On |
| | | When actuator (switch-over valve) is not active and actuator relay is active (ignition switch ON) | Off |
| HSV[FR-RL] | VDC switch-over valve | When actuator (switch-over valve) is active (“ACTIVE TEST” with CONSULT) or actuator relay is inactive (when in fail-safe mode) | On |
| | | When actuator (switch-over valve) is not active and actuator relay is active (ignition switch ON) | Off |
| V/R OUTPUT (Note 2) | Solenoid valve relay activated | When the solenoid valve relay is active (When ignition switch OFF) | ON |
| | | When the solenoid valve relay is not active (in the fail-safe mode) | OFF |
| M/R OUTPUT | Actuator motor and motor relay activated | When the actuator motor and motor relay are active (″ACTIVE TEST” with CONSULT) | ON |
| | | When the actuator motor and motor relay are inactive | OFF |
| ENGINE RPM | With engine running | With engine stopped | 0 rpm |
| | | Engine running | Almost in accordance with tachometer display |

Note 1: Confirm tire pressure is normal.

Note 2: A brief moment of ON/OFF condition occurs every 20 seconds after ignition switch turned ON. This is not malfunction because it is an operation for checking.

Note 3: On and off timing for warning lamp and indicator lamp. Refer to BRC-209, "Description" (ABS), BRC-212, "Description" (VDC OFF) or BRC-214, "Description" (SLIP).

## Fail-Safe

INFOID:0000000006389385

### ABS, EBD SYSTEM

In case of electrical malfunctions with the ABS, ABS warning lamp, VDC OFF indicator lamp, SLIP indicator lamp will turn on. In case of electrical malfunctions with the EBD, brake warning lamp, ABS warning lamp, VDC OFF indicator lamp and SLIP indicator lamp will turn on. Simultaneously, the VDC/TCS/ABS become one of the following conditions of the fail-safe function.

- For malfunction of ABS, only the EBD is activated and the condition of vehicle is the same condition of vehicles without TCS/ABS system.
  **NOTE:**
  ABS self-diagnosis sound may be heard. That is a normal condition because a self-diagnosis for “Ignition switch ON” and “The first starting” are being performed.

- For malfunction of EBD, EBD and ABS become inoperative, and the condition of vehicle is the same as the condition of vehicles without TCS/ABS, EBD system.

VDC / TCS

In case of malfunction in the VDC/TCS/ABS system, VDC OFF indicator lamp, SLIP indicator lamp are turned on, and the condition of vehicle is the same as the condition of vehicles without VDC/TCS control.

**CAUTION:**

**If the Fail-Safe function is activated, then perform self-diagnosis for VDC/TCS/ABS control system.**

## DTC No. Index

INFOID:0000000006389386

| Display item | Malfunction detecting condition | Check item |
|---|---|---|
| RR RH SENSOR-1 [C1101] | Circuit of rear RH wheel sensor is open. Or when the sensor power voltage is outside the standard. | BRC-162, "Diagnosis Procedure" (Note 1) |
| RR LH SENSOR-1 [C1102] | Circuit of rear LH wheel sensor is open. Or when the sensor power voltage is outside the standard. | |
| FR RH SENSOR-1 [C1103] | Circuit of front RH wheel sensor is open. Or when the sensor power voltage is outside the standard. | |
| FR LH SENSOR-1 [C1104] | Circuit of front LH wheel sensor is open. Or when the sensor power voltage is outside the standard. | |
| RR RH SENSOR-2 [C1105] | When the circuit in the rear RH wheel sensor is short-circuited. Or when the distance between the wheel sensor and sensor rotor is too large and the sensor pulse cannot be recognized by the control unit. | BRC-165, "Diagnosis Procedure" (Note 1) |
| RR LH SENSOR-2 [C1106] | When the circuit in the rear LH wheel sensor is short-circuited. Or when the distance between the wheel sensor and sensor rotor is too large and the sensor pulse cannot be recognized by the control unit. | |
| FR RH SENSOR-2 [C1107] | When the circuit in the front RH wheel sensor is short-circuited. Or when the distance between the wheel sensor and sensor rotor is too large and the sensor pulse cannot be recognized by the control unit. | |
| FR LH SENSOR- 2 [C1108] | When the circuit in the front LH wheel sensor is short-circuited. Or when the distance between the wheel sensor and sensor rotor is too large and the sensor pulse cannot be recognized by the control unit. | |
| BATTERY VOLTAGE [ABNORMAL] [C1109] | When the ABS actuator and electric unit (control unit) power supply voltage is lower than normal. | BRC-168, "Diagnosis Procedure" |
| CONTROLLER FAILURE [C1110] | When there is an internal malfunction in the ABS actuator and electric unit (control unit). | BRC-170, "Diagnosis Procedure" |
| PUMP MOTOR [C1111] | During the actuator motor operating with ON, when the actuator motor turns OFF, or when the control line for actuator motor relay is open. | BRC-171, "Diagnosis Procedure" |
| | During the actuator motor operating with OFF, when the actuator motor turns ON, or when the control line for relay is shorted to ground. | |
| MAIN RELAY [C1114] | During the actuator relay operating with OFF, when the actuator relay turns ON. Or when the control line for the relay is shorted to the ground. | BRC-173, "Diagnosis Procedure" |
| | During the actuator relay operating with ON, when the actuator relay turns OFF, or when the control line for the relay is open. | |
| ABS SENSOR [ABNORMAL SIGNAL] [C1115] | When wheel sensor input signal is malfunctioning. | BRC-175, "Diagnosis Procedure" (Note 1) |
| STOP LAMP SW [C1116] | When stop lamp switch circuit is open. | BRC-178, "Diagnosis Procedure (With M/T)" BRC-179, "Diagnosis Procedure (With CVT)" |

| Display item | Malfunction detecting condition | Check item |
|---|---|---|
| FR LH IN ABS SOL [C1120] | When the control unit detects a malfunction in the front left inlet solenoid circuit. | BRC-182, "Diagnosis Procedure" |
| FR RH IN ABS SOL [C1122] | When the control unit detects a malfunction in the front right inlet solenoid circuit. | |
| RR LH IN ABS SOL [C1124] | When the control unit detects a malfunction in the rear left inlet solenoid circuit. | |
| RR RH IN ABS SOL [C1126] | When the control unit detects a malfunction in the rear right inlet solenoid circuit. | |
| FR LH OUT ABS SOL [C1121] | When the control unit detects a malfunction in the front left outlet solenoid circuit. | BRC-185, "Diagnosis Procedure" |
| FR RH OUT ABS SOL [C1123] | When the control unit detects a malfunction in the front right outlet solenoid circuit. | |
| RR LH OUT ABS SOL [C1125] | When the control unit detects a malfunction in the rear left outlet solenoid circuit. | |
| RR RH OUT ABS SOL [C1127] | When the control unit detects a malfunction in the rear right outlet solenoid circuit. | |
| ENGINE SIGNAL 1 [C1130] | Major engine components are malfunctioning. | BRC-188, "Diagnosis Procedure" |
| ENGINE SIGNAL 2 [C1131] | | |
| ENGINE SIGNAL 3 [C1132] | | |
| ENGINE SIGNAL 4 [C1133] | | |
| ENGINE SIGNAL 6 [C1136] | | |
| PRESS SEN CIRCUIT [C1142] | Pressure sensor signal line is open or shorted, or pressure sensor is malfunctioning. | BRC-189, "Diagnosis Procedure" |
| ST ANG SEN CIRCUIT [C1143] | Neutral position of steering angle sensor is dislocated, or the steering angle sensor is malfunctioning. | BRC-191, "Diagnosis Procedure" |
| ST ANG SEN SIGNAL [C1144] | Neutral position correction of steering angle sensor is not finished. | |
| YAW RATE SENSOR [C1145] | Yaw rate sensor is malfunctioning, or the yaw rate sensor signal line is open or shorted. | BRC-193, "Diagnosis Procedure" |
| SIDE G-SEN CIRCUIT [C1146] | Side G sensor is malfunctioning, or circuit of side G sensor is open or shorted. | |
| USV LINE [FL-RR] [C1147] | VDC switch-over solenoid valve (USV1) on the primary side is open circuit or shorted, or the control line is open or shorted to the power supply or the ground. | BRC-196, "Diagnosis Procedure" |
| USV LINE [FR-RL] [C1148] | VDC switch-over solenoid valve (USV2) on the secondary side is open circuit or shorted, or the control line is open or shorted to the power supply or the ground. | |
| HSV LINE [FL-RR] [C1149] | VDC switch-over solenoid valve (HSV1) on the primary side is open circuit or shorted, or the control line is open or shorted to the power supply or the ground. | |
| HSV LINE [FR-RL] [C1150] | VDC switch-over solenoid valve (HSV2) on the secondary side is open circuit or shorted, or the control line is open or shorted to the power supply or the ground. | |
| EMERGENCY BRAKE [C1153] | When ABS actuator and electric unit (control unit) is malfunctioning. (Pressure increase is too much or too little) | BRC-170, "Diagnosis Procedure" |
| PNP POS SIG [C1154] | TCM or ABS actuator and electric unit (control unit) internal malfunction. | BRC-199, "Diagnosis Procedure" |
| BR FLUID LEVEL LOW [C1155] | Brake fluid level is low or communication line between the ABS actuator and electric unit (control unit) and brake fluid level switch is open or shorted. | BRC-201, "Diagnosis Procedure" |
| ST ANG SEN COM CIR [C1156] | CAN communication circuit or steering angle sensor is malfunctioning. | BRC-203, "Diagnosis Procedure" |

| Display item | Malfunction detecting condition | Check item |
|---|---|---|
| VARIANT CODING [C1170] | In a case where VARIANT CODING is different. | BRC-170, "Diagnosis Procedure" |
| CAN COMM CIRCUIT [U1000] | When there is a malfunction in the CAN communication circuit. | BRC-204, "Diagnosis Procedure" (Note 2) |

Note 1: After completing repairs of shorted sensor circuit, when ignition switch is turned ON, ABS warning lamp turns on. Make sure that ABS warning lamp turns off while driving vehicle at 30 km/h (19 MPH) or more for approximately 1 minute according to self-diagnosis procedure. In addition, if wheel sensor 2 is displayed for wheels, check wheel sensor circuit and also check control unit power voltage.

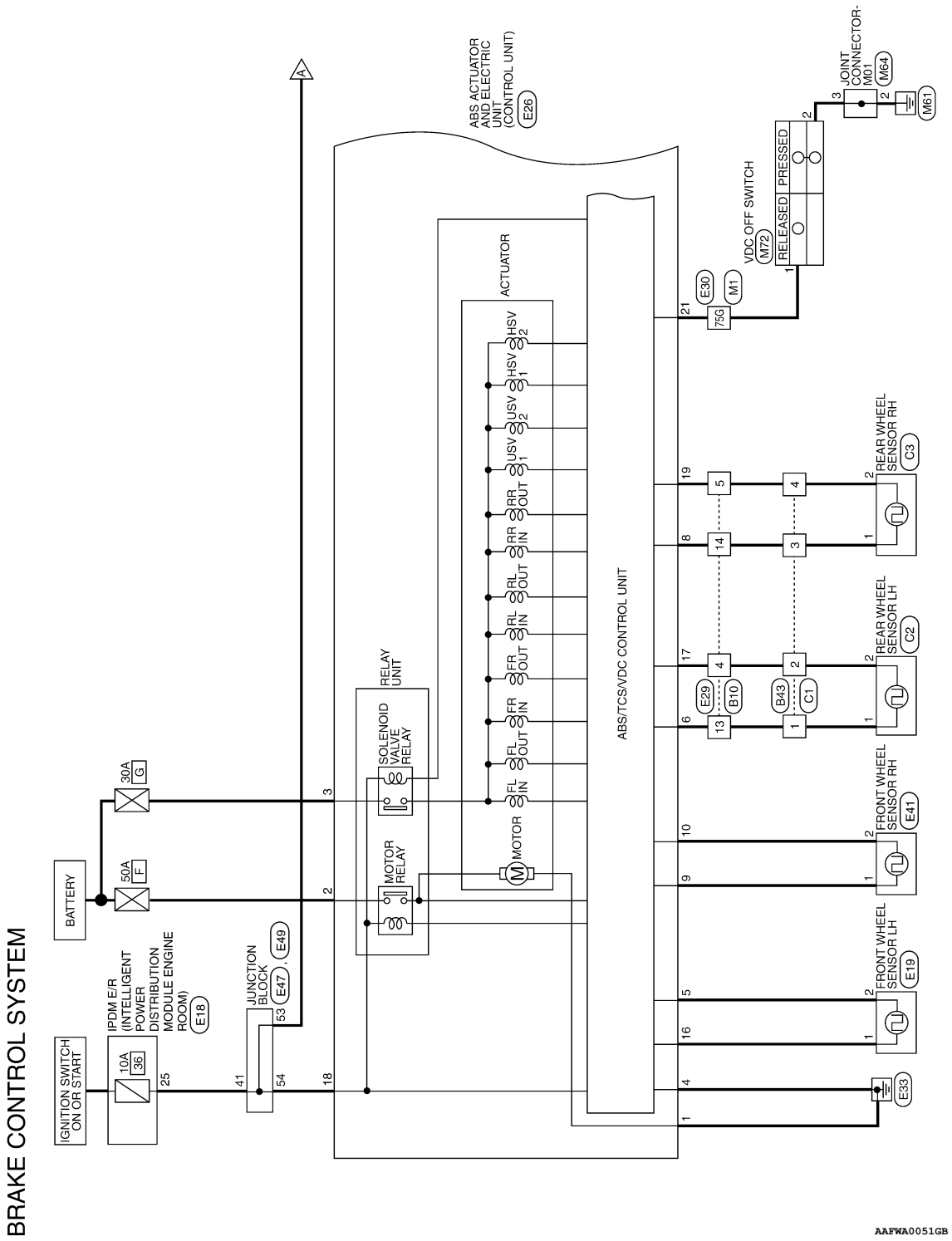
Note 2: When malfunctions are detected in several systems, including CAN communication circuit [U1000], troubleshoot CAN communication circuit. Refer to BRC-204, "Diagnosis Procedure".

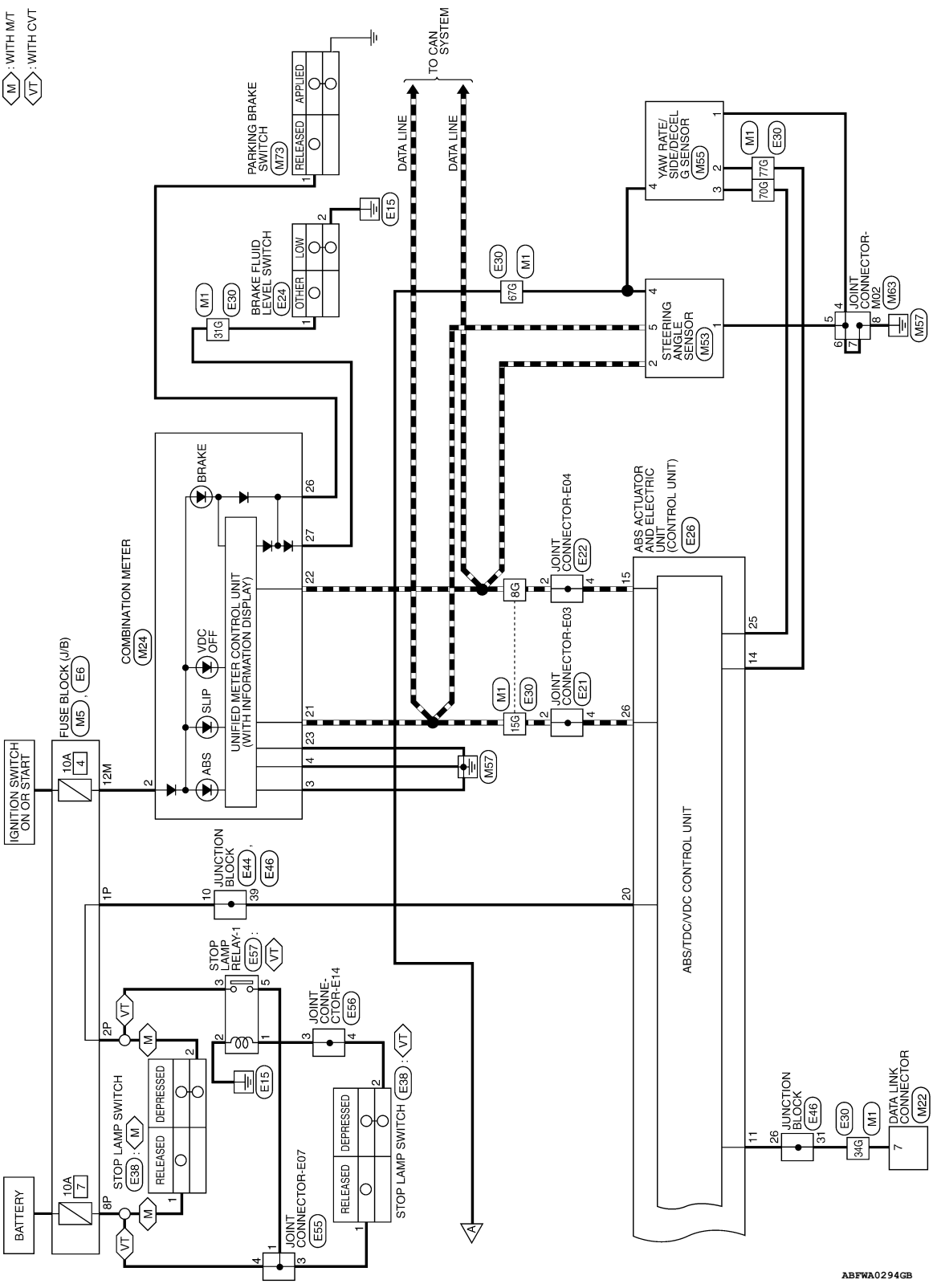
# WIRING DIAGRAM

## BRAKE CONTROL SYSTEM

### Wiring Diagram - Coupe

INFOID:0000000006389387

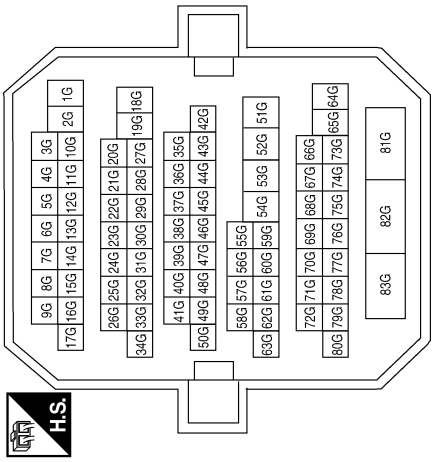



M : WITH M/T
VT : WITH CVT
TO CAN SYSTEM
DATA LINE
DATA LINE
PARKING BRAKE SWITCH M73
RELEASED
APPLIED
BRAKE FLUID LEVEL SWITCH E24
OTHER
LOW
E15
YAW RATE/ SIDE/DECEL G SENSOR M55
STEERING ANGLE SENSOR M53
JOINT CONNECTOR-M02 M63
M57
COMBINATION METER M24
UNIFIED METER CONTROL UNIT (WITH INFORMATION DISPLAY)
BRAKE
VDC OFF
SLIP
ABS
JOINT CONNECTOR-E04 E22
JOINT CONNECTOR-E03 E21
ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT) E26
ABS/TDC/VDC CONTROL UNIT
FUSE BLOCK (J/B) M5, E6
IGNITION SWITCH ON OR START
BATTERY
10A 4
10A 7
12M
8P
1P
2P
JUNCTION BLOCK E44, E46
STOP LAMP RELAY-1 E57 : VT
STOP LAMP SWITCH E38 : M
STOP LAMP SWITCH E38 : VT
DEPRESSED
RELEASED
JOINT CONNE-CTOR-E14 E56
JOINT CONNECTOR-E07 E55
JUNCTION BLOCK E46
DATA LINK CONNECTOR M22
ABFWA0294GB

BRAKE CONTROL SYSTEM CONNECTORS

| Connector No. | M1 |
|---|---|
| Connector Name | WIRE TO WIRE |
| Connector Color | WHITE |

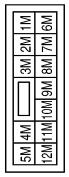
H.S.




| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 8G | P | – |
| 15G | L | – |
| 31G | V | – |
| 34G | O | – |
| 67G | GR | – |
| 70G | Y | – |
| 75G | SB | – |
| 77G | Y/B | – |

| Connector No. | M5 |
|---|---|
| Connector Name | FUSE BLOCK (J/B) |
| Connector Color | WHITE |

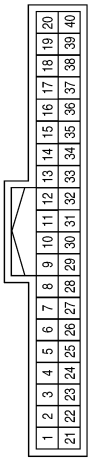
H.S.




| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 12M | O | – |

| Connector No. | M24 |
|---|---|
| Connector Name | COMBINATION METER |
| Connector Color | WHITE |

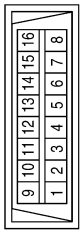
H.S.




| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 2 | O | IGN |
| 3 | B | GND (POWER) |
| 4 | B | GND (ILL) |
| 21 | L | CAN-H |
| 22 | P | CAN-L |
| 23 | B | GND (CIRCUIT) |
| 26 | G/R | PKB |
| 27 | V | BRAKE OIL IN |

| Connector No. | M22 |
|---|---|
| Connector Name | DATA LINK CONNECTOR |
| Connector Color | WHITE |

H.S.

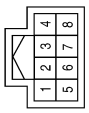



| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 7 | O | – |

ABFIA0331GB

| Connector No. | M53 |
|---|---|
| Connector Name | STEERING ANGLE SENSOR |
| Connector Color | WHITE |

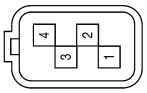
H.S.




| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 1 | B | GND |
| 2 | P | CAN-L |
| 4 | GR | IG |
| 5 | L | CAN-H |

| Connector No. | M55 |
|---|---|
| Connector Name | YAW RATE/SIDE/DECEL G SENSOR |
| Connector Color | BLACK |

H.S.




| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 1 | B | GND |
| 2 | Y/B | CAN-L |
| 3 | Y | CAN-H |
| 4 | GR | IG |

| Connector No. | M63 |
|---|---|
| Connector Name | JOINT CONNECTOR-M02 |
| Connector Color | BLUE |

H.S.


| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 4 | B | – |
| 5 | B | – |
| 6 | B | – |
| 7 | B | – |
| 8 | B | – |

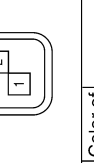
| Connector No. | M64 |
|---|---|
| Connector Name | JOINT CONNECTOR-M01 |
| Connector Color | GRAY |

H.S.


| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 2 | B | – |
| 3 | B | – |

| Connector No. | M72 |
|---|---|
| Connector Name | VDC OFF SWITCH |
| Connector Color | GRAY |

H.S.




| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 1 | SB | – |
| 2 | B | – |

| Connector No. | M73 |
|---|---|
| Connector Name | PARKING BRAKE SWITCH |
| Connector Color | BLACK |

H.S.


| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 1 | G/R | – |

ABFIA0578GB

| Connector No. | E6 |
|---|---|
| Connector Name | FUSE BLOCK (J/B) |
| 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 | SB | – |
| 2P | Y | – |
| 8P | R | – |

| Connector No. | E18 |
|---|---|
| Connector Name | IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM) |
| Connector Color | WHITE |

H.S.

9 10 11 12 13 14
3 4 5 6 7 8

25 26 27 28 29 30 31 32 33 34
15 16 17 18 19 20 21 22 23 24

37 38
35 36

| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 25 | GR | ABS ECU |

| Connector No. | E19 |
|---|---|
| Connector Name | FRONT WHEEL SENSOR LH |
| Connector Color | GRAY |

H.S.

1 2

| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 1 | W | – |
| 2 | V | – |

| Connector No. | E21 |
|---|---|
| Connector Name | JOINT CONNECTOR-E03 |
| Connector Color | WHITE |

H.S.

4 3 2 1

| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 2 | L | – |
| 4 | L | – |

| Connector No. | E22 |
|---|---|
| Connector Name | JOINT CONNECTOR-E04 |
| Connector Color | WHITE |

H.S.

4 3 2 1

| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 2 | P | – |
| 4 | P | – |

AAFIA0088GB

| Connector No. | E24 |
|---|---|
| Connector Name | BRAKE FLUID LEVEL SWITCH |
| Connector Color | GRAY |

H.S.




| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 1 | V | – |
| 2 | B/Y | – |

| Connector No. | E26 |
|---|---|
| Connector Name | ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT) |
| Connector Color | BLACK |

H.S.




| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 1 | B | MGND |
| 2 | G | UB (MR) |
| 3 | R | UB (VR) |
| 4 | B | GND |
| 5 | V | DS FL |
| 6 | G | DP RL |
| 7 | – | – |
| 8 | L | DP RR |

| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 9 | B | DP FR |
| 10 | LG | DS FR |
| 11 | GR | DIAG-K |
| 12 | – | – |
| 13 | – | – |
| 14 | O | CAN-M2 |
| 15 | P | CAN-L |
| 16 | W | DP FL |
| 17 | O | DS RL |
| 18 | GR | UZ |
| 19 | BR | DS RR |
| 20 | SB | BLS |
| 21 | R | ASR AUS |
| 22 | – | – |
| 23 | – | – |
| 24 | – | – |
| 25 | B | CAN-P2 |
| 26 | L | CAN-H |

| Connector No. | E29 |
|---|---|
| Connector Name | WIRE TO WIRE |
| Connector Color | WHITE |

H.S.




| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 4 | O | – |
| 5 | BR | – |
| 13 | G | – |
| 14 | L | – |

ABFIA0334GB

| Connector No. | E38 |
|---|---|
| Connector Name | STOP LAMP SWITCH (WITH CVT) |
| Connector Color | WHITE |

H.S.




| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 1 | R | – |
| 2 | LG | – |

| Connector No. | E44 |
|---|---|
| Connector Name | JUNCTION BLOCK |
| Connector Color | BROWN |

H.S.




| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 10 | SB | – |

| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 8G | P | – |
| 15G | L | – |
| 31G | V | – |
| 34G | O | – |
| 67G | W | – |
| 70G | B | – |
| 75G | R | – |
| 77G | O | – |

| Connector No. | E41 |
|---|---|
| Connector Name | FRONT WHEEL SENSOR RH |
| Connector Color | GRAY |

H.S.




| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 1 | B | – |
| 2 | LG | – |

| Connector No. | E30 |
|---|---|
| Connector Name | WIRE TO WIRE |
| Connector Color | WHITE |

H.S.




| Connector No. | E38 |
|---|---|
| Connector Name | STOP LAMP SWITCH (WITH M/T) |
| Connector Color | BLACK |

H.S.




| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 1 | R | – |
| 2 | LG | – |

ABFIA0335GB

| Connector No. | E46 |
|---|---|
| Connector Name | JUNCTION BLOCK |
| Connector Color | WHITE |

H.S.

| 31 | 30 | 29 | 28 | | 27 | 26 | 25 |
|---|---|---|---|---|---|---|---|
| 40 | 39 | 38 | 37 | 36 | 35 | 34 | 33 | 32 |

| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 26 | GR | – |
| 31 | O | – |
| 39 | SB | – |

| Connector No. | E47 |
|---|---|
| Connector Name | JUNCTION BLOCK |
| Connector Color | WHITE |

H.S.

| 42 | | 41 |
|---|---|---|
| 46 | 45 | 44 | 43 |

| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 41 | GR | – |

| Connector No. | E49 |
|---|---|
| Connector Name | JUNCTION BLOCK |
| Connector Color | BROWN |

H.S.

| 54 | 53 | 52 | 51 |
|---|---|---|---|

| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 53 | W | – |
| 54 | GR | – |

| Connector No. | E55 |
|---|---|
| Connector Name | JOINT CONNECTOR-E07 |
| Connector Color | WHITE |

H.S.

| 4 | 3 | 2 | 1 |
|---|---|---|---|

| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 1 | W | – |
| 3 | R | – |
| 4 | R | – |

| Connector No. | E56 |
|---|---|
| Connector Name | JOINT CONNECTOR-E14 |
| Connector Color | WHITE |

H.S.

| 4 | 3 | 2 | 1 |
|---|---|---|---|

| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 3 | LG | – |
| 4 | LG | – |

| Connector No. | E57 |
|---|---|
| Connector Name | STOP LAMP RELAY-1 |
| Connector Color | BLUE |

H.S.

| 3 | |
|---|---|
| 5 | |
| 2 | 1 |

| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 1 | LG | – |
| 2 | B | – |
| 3 | Y | – |
| 5 | W | – |

AAFIA0089GB

| Connector No. | C1 |
|---|---|
| Connector Name | WIRE TO WIRE |
| Connector Color | GRAY |

H.S.

| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 1 | G | – |
| 2 | O | – |
| 3 | LG | – |
| 4 | BR | – |

| Connector No. | C2 |
|---|---|
| Connector Name | REAR WHEEL SENSOR LH |
| Connector Color | BLACK |

H.S.

| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 1 | G | – |
| 2 | O | – |

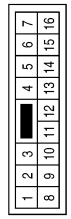
| Connector No. | C3 |
|---|---|
| Connector Name | REAR WHEEL SENSOR RH |
| Connector Color | GRAY |

H.S.

| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 1 | LG | – |
| 2 | BR | – |

| Connector No. | B10 |
|---|---|
| Connector Name | WIRE TO WIRE |
| Connector Color | WHITE |

H.S.



| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 4 | O | – |
| 5 | BR | – |
| 13 | G | – |
| 14 | LG | – |

| Connector No. | B43 |
|---|---|
| Connector Name | WIRE TO WIRE |
| Connector Color | GRAY |

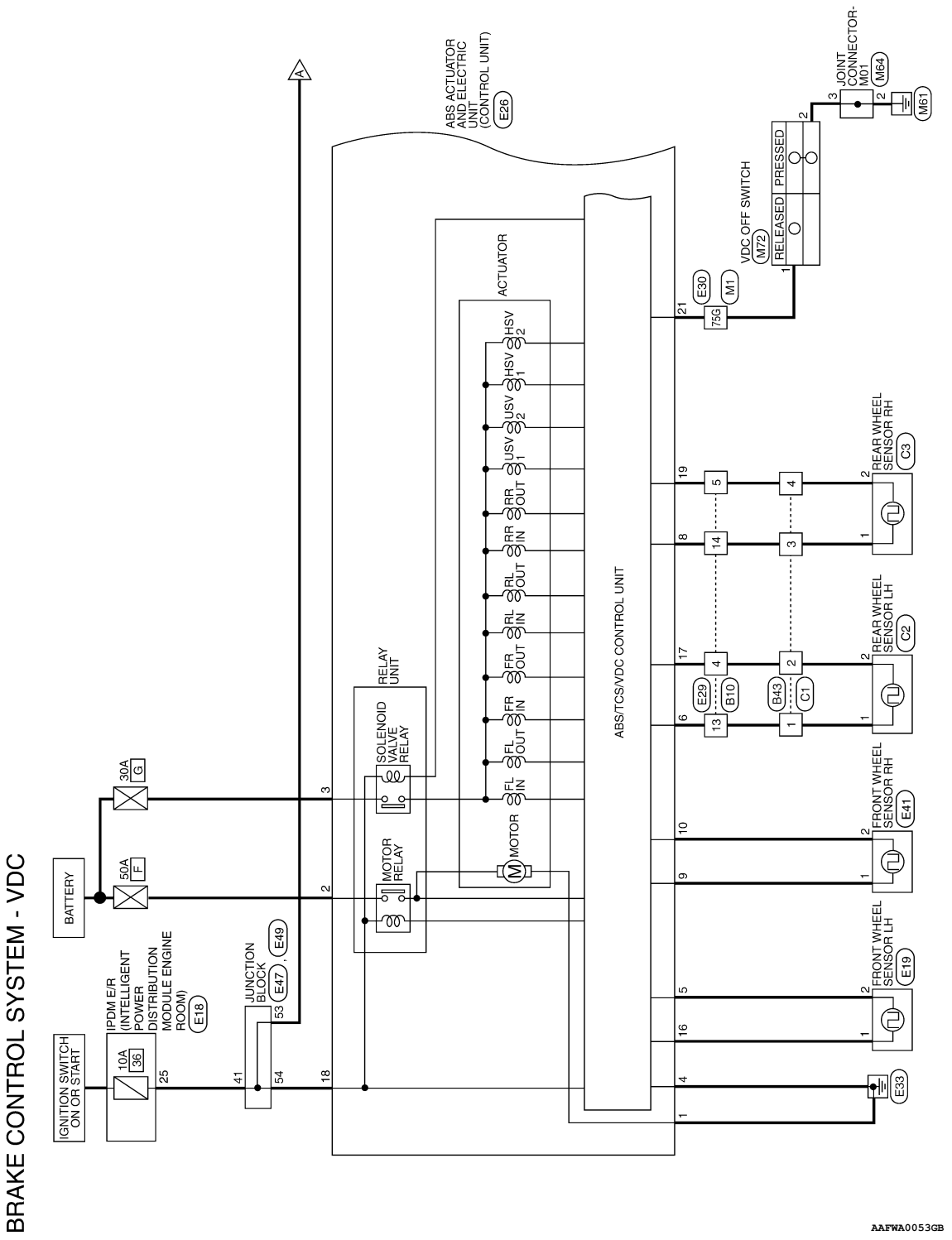
H.S.

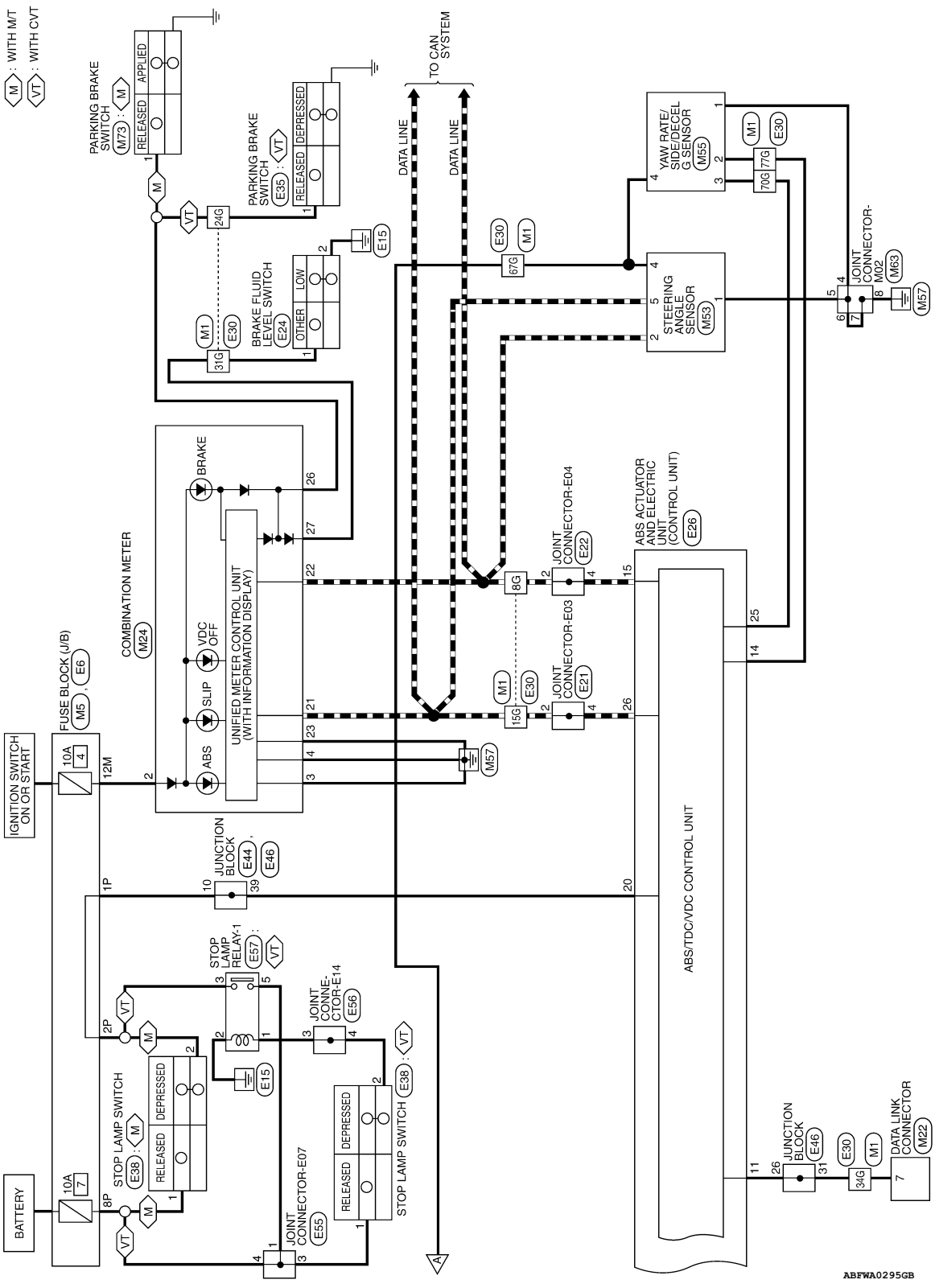
| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 1 | G | – |
| 2 | O | – |
| 3 | LG | – |
| 4 | BR | – |

AAFIA0090GB

## Wiring Diagram - Sedan With VDC

INFOID:0000000006389388

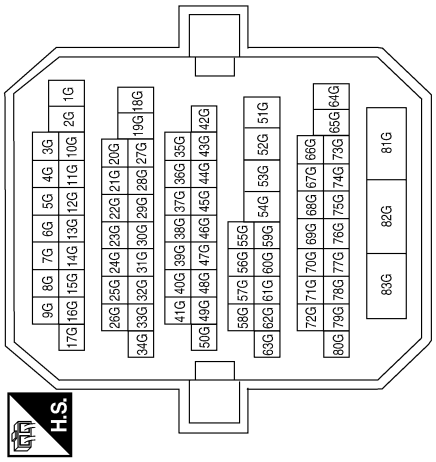



M : WITH M/T
VT : WITH CVT
PARKING BRAKE SWITCH (M73) : M
APPLIED
RELEASED
PARKING BRAKE SWITCH (E35) : VT
DEPRESSED
RELEASED
BRAKE FLUID LEVEL SWITCH (E24)
LOW
OTHER
TO CAN SYSTEM
DATA LINE
DATA LINE
YAW RATE/ SIDE/DECEL G SENSOR (M55)
STEERING ANGLE SENSOR (M53)
JOINT CONNECTOR-M02 (M63)
COMBINATION METER (M24)
UNIFIED METER CONTROL UNIT (WITH INFORMATION DISPLAY)
BRAKE
VDC OFF
SLIP
ABS
JOINT CONNECTOR-E04 (E22)
JOINT CONNECTOR-E03 (E21)
ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT) (E26)
ABS/TDC/VDC CONTROL UNIT
FUSE BLOCK (J/B) (M5) : (E6)
IGNITION SWITCH ON OR START
BATTERY
JUNCTION BLOCK (E44) : (E46)
STOP LAMP RELAY-1 (E57) : VT
STOP LAMP SWITCH (E38) : M
STOP LAMP SWITCH (E38) : VT
JOINT CONNECTOR-E14 (E56)
JOINT CONNECTOR-E07 (E55)
JUNCTION BLOCK (E46)
DATA LINK CONNECTOR (M22)
ABFWA0295GB

BRAKE CONTROL SYSTEM CONNECTORS - VDC

| Connector No. | M1 |
|---|---|
| Connector Name | WIRE TO WIRE |
| Connector Color | WHITE |

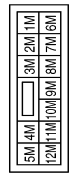
H.S.




| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 8G | P | – |
| 15G | L | – |
| 24G | G/R | – |
| 31G | V | – |
| 34G | O | – |
| 67G | GR | – |
| 70G | Y | – |
| 75G | SB | – |
| 77G | Y/B | – |

| Connector No. | M5 |
|---|---|
| Connector Name | FUSE BLOCK (J/B) |
| Connector Color | WHITE |

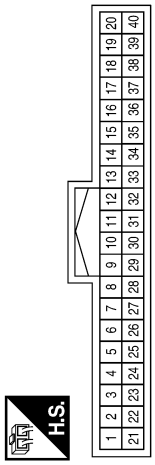
H.S.




| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 12M | O | – |

| Connector No. | M24 |
|---|---|
| Connector Name | COMBINATION METER |
| Connector Color | WHITE |

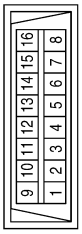
H.S.




| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 2 | O | IGN |
| 3 | B | GND (POWER) |
| 4 | B | GND (ILL) |
| 21 | L | CAN-H |
| 22 | P | CAN-L |
| 23 | B | GND (CIRCUIT) |
| 26 | G/R | PKB |
| 27 | V | BRAKE OIL IN |

| Connector No. | M22 |
|---|---|
| Connector Name | DATA LINK CONNECTOR |
| Connector Color | WHITE |

H.S.




| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 7 | O | – |

ABFIA0348GB

| Connector No. | M53 |
|---|---|
| Connector Name | STEERING ANGLE SENSOR |
| Connector Color | WHITE |

H.S.

| 1 | 2 | 3 | 4 |
|---|---|---|---|
| 5 | 6 | 7 | 8 |

| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 1 | B | GND |
| 2 | P | CAN-L |
| 4 | GR | IG |
| 5 | L | CAN-H |

| Connector No. | M55 |
|---|---|
| Connector Name | YAW RATE/SIDE/DECEL G SENSOR |
| Connector Color | BLACK |

H.S.

| 4 | 3 | 2 |
|---|---|---|
| | 1 | |

| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 1 | B | GND |
| 2 | Y/B | CAN-L |
| 3 | Y | CAN-H |
| 4 | GR | IG |

| Connector No. | M63 |
|---|---|
| Connector Name | JOINT CONNECTOR-M02 |
| Connector Color | BLUE |

H.S.

| 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
|---|---|---|---|---|---|---|---|---|---|---|---|

| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 4 | B | – |
| 5 | B | – |
| 6 | B | – |
| 7 | B | – |
| 8 | B | – |

| Connector No. | M64 |
|---|---|
| Connector Name | JOINT CONNECTOR-M01 |
| Connector Color | GRAY |

H.S.

| 6 | 5 | 4 | 3 | 2 | 1 |
|---|---|---|---|---|---|

| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 2 | B | – |
| 3 | B | – |

| Connector No. | M72 |
|---|---|
| Connector Name | VDC OFF SWITCH |
| Connector Color | GRAY |

H.S.

| 6 | 5 | 4 | 3 | 2 | 1 |
|---|---|---|---|---|---|

| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 1 | SB | – |
| 2 | B | – |

| Connector No. | M73 |
|---|---|
| Connector Name | PARKING BRAKE SWITCH (WITH M/T) |
| Connector Color | BLACK |

H.S.

| 1 |
|---|

| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 1 | G/R | – |

ABFIA0579GB

| Connector No. | E6 |
|---|---|
| Connector Name | FUSE BLOCK (J/B) |
| 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 | SB | – |
| 2P | LG | – (WITH MT) |
| 2P | Y | – (WITH CVT) |
| 8P | R | – |

| Connector No. | E18 |
|---|---|
| Connector Name | IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM) |
| Connector Color | WHITE |

H.S.

9 10 11 12 13 14
3 4 5 6 7 8

25 26 27 28 29 30 31 32 33 34
15 16 17 18 19 20 21 22 23 24

37 38
35 36

| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 25 | GR | ABS ECU |

| Connector No. | E19 |
|---|---|
| Connector Name | FRONT WHEEL SENSOR LH |
| Connector Color | GRAY |

H.S.

1 2

| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 1 | W | – |
| 2 | V | – |

| Connector No. | E21 |
|---|---|
| Connector Name | JOINT CONNECTOR-E03 |
| Connector Color | WHITE |

H.S.

4 3 2 1

| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 2 | L | – |
| 4 | L | – |

| Connector No. | E22 |
|---|---|
| Connector Name | JOINT CONNECTOR-E04 |
| Connector Color | WHITE |

H.S.

4 3 2 1

| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 2 | P | – |
| 4 | P | – |

AAFIA0091GB

| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 9 | B | DP FR |
| 10 | LG | DS FR |
| 11 | GR | DIAG-K |
| 12 | – | – |
| 13 | – | – |
| 14 | O | CAN-M2 |
| 15 | P | CAN-L |
| 16 | W | DP FL |
| 17 | O | DS RL |
| 18 | GR | UZ |
| 19 | BR | DS RR |
| 20 | SB | BLS |
| 21 | R | ASR AUS |
| 22 | – | – |
| 23 | – | – |
| 24 | – | – |
| 25 | B | CAN-P2 |
| 26 | L | CAN-H |

| Connector No. | E26 |
|---|---|
| Connector Name | ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT) |
| Connector Color | BLACK |

H.S.




| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 1 | B | MGND |
| 2 | G | UB (MR) |
| 3 | R | UB (VR) |
| 4 | B | GND |
| 5 | V | DS FL |
| 6 | G | DP RL |
| 7 | – | – |
| 8 | L | DP RR |

| Connector No. | E24 |
|---|---|
| Connector Name | BRAKE FLUID LEVEL SWITCH |
| Connector Color | GRAY |

H.S.




| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 1 | V | – |
| 2 | B/Y | – |

| Connector No. | E29 |
|---|---|
| Connector Name | WIRE TO WIRE |
| Connector Color | WHITE |

H.S.




| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 4 | O | – |
| 5 | BR | – |
| 13 | G | – |
| 14 | L | – |

ABFIA0351GB

| Connector No. | E30 |
|---|---|
| Connector Name | WIRE TO WIRE |
| Connector Color | WHITE |

H.S.




| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 8G | P | – |
| 15G | L | – |
| 24G | P | – |
| 31G | V | – |
| 34G | O | – |
| 67G | W | – |
| 70G | B | – |
| 75G | R | – |
| 77G | O | – |

| Connector No. | E35 |
|---|---|
| Connector Name | PARKING BRAKE SWITCH (WITH CVT) |
| Connector Color | BLACK |

H.S.




| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 1 | P | – |

| Connector No. | E38 |
|---|---|
| Connector Name | STOP LAMP SWITCH (WITH CVT) |
| Connector Color | WHITE |

H.S.




| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 1 | R | – |
| 2 | LG | – |

| Connector No. | E38 |
|---|---|
| Connector Name | STOP LAMP SWITCH (WITH M/T) |
| Connector Color | BLACK |

H.S.




| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 1 | R | – |
| 2 | LG | – |

| Connector No. | E41 |
|---|---|
| Connector Name | FRONT WHEEL SENSOR RH |
| Connector Color | GRAY |

H.S.




| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 1 | B | – |
| 2 | LG | – |

ABFIA0352GB

| Connector No. | E44 |
|---|---|
| Connector Name | JUNCTION BLOCK |
| Connector Color | BROWN |

H.S.

| 5 | 4 | | 3 | 2 | 1 |
|---|---|---|---|---|---|
| 12 | 11 | 10 | 9 | 8 | 7 | 6 |

| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 10 | SB | – |

| Connector No. | E46 |
|---|---|
| Connector Name | JUNCTION BLOCK |
| Connector Color | WHITE |

H.S.

| 31 | 30 | 29 | 28 | | 27 | 26 | 25 |
|---|---|---|---|---|---|---|---|
| 40 | 39 | 38 | 37 | 36 | 35 | 34 | 33 | 32 |

| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 26 | GR | – |
| 31 | O | – |
| 39 | SB | – |

| Connector No. | E47 |
|---|---|
| Connector Name | JUNCTION BLOCK |
| Connector Color | WHITE |

H.S.

| 42 | | 41 |
|---|---|---|
| 46 | 45 | 44 | 43 |

| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 41 | GR | – |

| Connector No. | E49 |
|---|---|
| Connector Name | JUNCTION BLOCK |
| Connector Color | BROWN |

H.S.

| 54 | 53 | 52 | 51 |
|---|---|---|---|

| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 53 | W | – |
| 54 | GR | – |

| Connector No. | E55 |
|---|---|
| Connector Name | JOINT CONNECTOR-E07 |
| Connector Color | WHITE |

H.S.

| 4 | 3 | 2 | 1 |
|---|---|---|---|

| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 1 | W | – |
| 3 | R | – |
| 4 | R | – |

| Connector No. | E56 |
|---|---|
| Connector Name | JOINT CONNECTOR-E14 |
| Connector Color | WHITE |

H.S.

| 4 | 3 | 2 | 1 |
|---|---|---|---|

| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 3 | LG | – |
| 4 | LG | – |

AAFIA0092GB

| Connector No. | E57 |
|---|---|
| Connector Name | STOP LAMP RELAY-1 |
| Connector Color | BLUE |

H.S.

| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 1 | LG | – |
| 2 | B | – |
| 3 | Y | – |
| 5 | W | – |

| Connector No. | C3 |
|---|---|
| Connector Name | REAR WHEEL SENSOR RH |
| Connector Color | GRAY |

H.S.

| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 1 | LG | – |
| 2 | BR | – |

| Connector No. | C1 |
|---|---|
| Connector Name | WIRE TO WIRE |
| Connector Color | GRAY |

H.S.

| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 1 | G | – |
| 2 | O | – |
| 3 | LG | – |
| 4 | BR | – |

| Connector No. | B10 |
|---|---|
| Connector Name | WIRE TO WIRE |
| Connector Color | WHITE |

H.S.

| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 4 | O | – |
| 5 | BR | – |
| 13 | G | – |
| 14 | LG | – |

| Connector No. | C2 |
|---|---|
| Connector Name | REAR WHEEL SENSOR LH |
| Connector Color | BLACK |

H.S.

| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 1 | G | – |
| 2 | O | – |

| Connector No. | B43 |
|---|---|
| Connector Name | WIRE TO WIRE |
| Connector Color | GRAY |

H.S.

| Terminal No. | Color of Wire | Signal Name |
|---|---|---|
| 1 | G | – |
| 2 | O | – |
| 3 | LG | – |
| 4 | BR | – |

AAFIA0093GB

# SYMPTOM DIAGNOSIS

## VDC/TCS/ABS

### Symptom Table

INFOID:0000000006389389

If ABS warning lamp, VDC OFF indicator lamp and SLIP indicator lamp turn ON, perform self-diagnosis.

| Symptom | Check item | Reference |
|---|---|---|
| Excessive ABS function operation frequency | Brake force distribution | BRC-242, "Diagnosis Procedure" |
| | Looseness of front and rear axle | |
| | Wheel sensor and rotor system | |
| Unexpected pedal reaction | Brake pedal stroke | BRC-243, "Diagnosis Procedure" |
| | Make sure the braking force is sufficient when the ABS is not operating. | |
| The braking distance is long | Check stopping distance when the ABS is not operating. | BRC-244, "Diagnosis Procedure" |
| ABS function does not operate (Note 1) | ABS actuator and electric unit (control unit) | BRC-245, "Diagnosis Procedure" |
| Pedal vibration or ABS operation sound occurs (Note 2) | Brake pedal | BRC-246, "Diagnosis Procedure" |
| | ABS actuator and electric unit (control unit) | |
| Vehicle jerks during VDC/TCS/ABS control | ABS actuator and electric unit (control unit) | BRC-247, "Diagnosis Procedure" |
| | TCM | |
| | ECM | |

**NOTE:**

- 1: The ABS does not operate when the speed is 10 km/h (6 MPH) or less.
- 2: Under the following conditions, ABS is activated and vibration is felt when brake pedal is lightly depressed (just place a foot on it). However, this is normal.

- When shifting gears
- When driving on slippery road
- During cornering at high speed
- When passing over bumps or grooves [at approximately 50 mm (1.97 in) or more]
- When pulling away just after starting engine [at approximately 10 km/h (6 MPH) or higher]

# EXCESSIVE ABS FUNCTION OPERATION FREQUENCY

## Diagnosis Procedure

INFOID:0000000006389390

### 1.CHECK START

Check front and rear brake force distribution using a brake tester.

Is the inspection result normal?

YES >> GO TO 2
NO >> Check brake system.

### 2.CHECK FRONT AND REAR AXLE

Make sure that there is no excessive play in the front and rear axles. Refer to front: FAX-6, "Inspection", Rear: RAX-6, "On-vehicle Service".

Is the inspection result normal?

YES >> GO TO 3
NO >> Repair or replace malfunctioning components.

### 3.CHECK WHEEL SENSOR AND SENSOR ROTOR

Check the following.
- Wheel sensor installation for damage.
- Sensor rotor installation for damage.
- Wheel sensor connector connection.
- Wheel sensor harness inspection.

Is the inspection result normal?

YES >> GO TO 4
NO >>
- Replace wheel sensor or sensor rotor. Refer to BRC-253, "Removal and Installation" or BRC-255, "Removal and Installation".
- Repair harness.

### 4.CHECK ABS WARNING LAMP DISPLAY

Make sure that the ABS warning lamp is turned off after the ignition switch is turned ON or when driving.

Is the inspection result normal?

YES >> Inspection End.
NO >> Perform self-diagnosis. Refer to BRC-158, "CONSULT Function (ABS)".

# UNEXPECTED PEDAL REACTION

## Diagnosis Procedure

INFOID:0000000006389391

### 1.CHECK BRAKE PEDAL STROKE

Check brake pedal stroke. Refer to BR-13, "Inspection and Adjustment".

Is the stroke too big?

YES >> • Bleed air from brake tube and hose. Refer to BR-16, "Bleeding Brake System".
• Check brake pedal, brake booster, and master cylinder for mount play, looseness, brake system fluid leakage, etc. Refer to brake pedal: BR-13, "Inspection and Adjustment", brake booster and master cylinder.

NO >> GO TO 2

### 2.CHECK FUNCTION

Disconnect ABS actuator and electric unit (control unit) connector to deactivate ABS. Check if braking force is normal in this condition.Connect connector after inspection.

Is the inspection result normal?

YES >> Inspection End.
NO >> Check brake system.

# THE BRAKING DISTANCE IS LONG

## Diagnosis Procedure

INFOID:0000000006389392

**CAUTION:**

**The stopping distance on slippery road surfaces might be longer with the ABS operating than when the ABS is not operating.**

1.CHECK FUNCTION

Turn ignition switch OFF and disconnect ABS actuator and electric unit (control unit) connector to deactivate ABS. In this condition, check stopping distance. After inspection, connect connector.

Is the inspection result normal?

YES >> Inspection End.
NO >> Check brake system.

# ABS FUNCTION DOES NOT OPERATE

## Diagnosis Procedure

INFOID:0000000006389393

**CAUTION:**
**ABS does not operate when speed is 10 km/h (6 MPH) or lower.**

1.CHECK ABS WARNING LAMP DISPLAY

Make sure that the ABS warning lamp turns OFF after ignition switch is turned on or when driving.

Is the inspection result normal?

YES >> Inspection End.
NO >> Perform self-diagnosis. Refer to BRC-158, "CONSULT Function (ABS)".

# PEDAL VIBRATION OR ABS OPERATION SOUND OCCURS

## Diagnosis Procedure

INFOID:0000000006389394

**CAUTION:**

**Under the following conditions, ABS is activated and vibration is felt when brake pedal is lightly depressed (just place a foot on it).However, this is normal.**

- **When shifting gears**
- **When driving on slippery road**
- **During cornering at high speed**
- **When passing over bumps or grooves [at approximately 50 mm (1.97 in) or more]**
- **When pulling away just after starting engine [at approximately 10 km/h (6 MPH) or higher]**

### 1.SYMPTOM CHECK 1

Check that there are pedal vibrations when the engine is started.

Do symptoms occur?

YES >> GO TO 2
NO >> Inspect the brake pedal.

### 2.SYMPTOM CHECK 2

Check that there are ABS operation noises when the engine is started.

Do symptoms occur?

YES >> GO TO 3
NO >> Perform self diagnostic result. Refer to BRC-158, "CONSULT Function (ABS)".

### 3.SYMPTOM CHECK 3

Check symptoms when electrical component (headlamps, etc.) switches are operated.

Do symptoms occur?

YES >> Check if there is a radio, antenna, antenna lead wire, or wiring close to the control unit. If there is, move it farther away.
NO >> Inspection End.

# VEHICLE JERKS DURING VDC/TCS/ABS CONTROL

## Diagnosis Procedure

INFOID:0000000006389395

### 1.SYMPTOM CHECK

Check if the vehicle jerks during VDC/TCS/ABS control.

Is the inspection result normal?

YES >> Inspection End.
NO >> GO TO 2

### 2.CHECK SELF-DIAGNOSIS RESULTS

Perform self-diagnostic of ABS actuator and electric unit (control unit). Refer to BRC-158, "CONSULT Function (ABS)".

Are self-diagnosis results indicated?

YES >> Check corresponding items, make repairs, and perform ABS actuator and electric unit (control unit) self-diagnosis.
NO >> GO TO 3

### 3.CHECK CONNECTOR

- Turn ignition switch OFF and disconnect ABS actuator and electric unit (control unit) connector and check terminal for deformation, disconnection, looseness, etc.
- Securely connect connectors and perform ABS actuator and electric unit (control unit) self-diagnosis.

Are self-diagnosis results indicated?

YES >> If poor contact, damage, open or short circuit of connector terminal is found, repair or replace.
NO >> GO TO 4

### 4.CHECK ECM AND CVT SELF-DIAGNOSIS RESULTS

Perform ECM and CVT self-diagnosis. Refer to EC-99, "CONSULT-III Function" (QR25DE), EC-423, "CONSULT-III Function" (VQ35DE) or TM-123, "CONSULT-III Function (TRANSMISSION)".

Are self-diagnosis results indicated?

YES >> Check the corresponding items.
- ECM: Refer to EC-99, "CONSULT-III Function" (QR25DE) or EC-423, "CONSULT-III Function" (VQ35DE).
- CVT: Refer to TM-123, "CONSULT-III Function (TRANSMISSION)".

NO >> Replace ABS actuator and electric unit (control unit). Refer to BRC-256, "Removal and Installation".

# NORMAL OPERATING CONDITION

## Description

INFOID:0000000006920914

| Symptom | Result |
|---|---|
| Slight vibrations are felt on the brake pedal and the operation noises occur, when VDC, TCS or ABS is activated. | This is a normal condition due to the VDC, TCS or ABS activation. |
| Stopping distance is longer than that of vehicles without ABS when the vehicle drives on rough, gravel, or snow-covered (fresh, deep snow) roads. | |
| The brake pedal moves and generates noises, when TCS or VDC is activated due to rapid acceleration or sharp turn. | |
| The brake pedal vibrates and motor operation noises occur from the engine room, after the engine starts and just after the vehicle starts. | This is normal, and it is caused by the ABS operation check. |
| Depending on the road conditions, the driver may experience a sluggish feel. | This is normal, because TCS places the highest priority on the optimum traction (stability). |
| TCS may activate momentarily if wheel speed changes when driving over location where friction coefficient varies, when downshifting, or when fully depressing accelerator pedal. | |
| The ABS warning lamp, VDC OFF indicator lamp and SLIP indicator lamp may turn ON when the vehicle is subject to strong shaking or large vibration, such as when the vehicle is rotating on a turntable or located on a ship while the engine is running. | In this case, restart the engine on a normal road. If the normal condition is restored, there is no malfunction. At that time, erase the self-diagnosis memory. |
| VDC may not operate normally or the ABS warning lamp, VDC OFF indicator lamp, and SLIP indicator lamp may illuminate, when running on a special road that is extremely slanted (e.g. bank in a circuit course). | |
| A malfunction may occur in the yaw rate/side/decel G sensor system, when the vehicle turns sharply, such as during a spin turn, axle turn, or drift driving, while the VDC function is off (VDC OFF indicator lamp illuminated). | |
| The vehicle speed will not increase even though the accelerator pedal is depressed, when inspecting the speedometer on a 2-wheel chassis dynamometer. | Normal (Deactivate the VDC/TCS function before performing an inspection on a chassis dynamometer.) |
| VDC OFF indicator lamp and SLIP indicator lamp may simultaneously turn on when low tire pressure warning lamp turns on. | This is not a VDC system error but results from characteristic change of tire. |

# PRECAUTION

## PRECAUTIONS

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

INFOID:0000000006389396

The Supplemental Restraint System such as “AIR BAG” and “SEAT BELT PRE-TENSIONER”, used along with a front seat belt, helps to reduce the risk or severity of injury to the driver and front passenger for certain types of collision. This system includes seat belt switch inputs and dual stage front air bag modules. The SRS system uses the seat belt switches to determine the front air bag deployment, and may only deploy one front air bag, depending on the severity of a collision and whether the front occupants are belted or unbelted.
Information necessary to service the system safely is included in the SR and SB section of this Service Manual.

**WARNING:**

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

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

**WARNING:**

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

### Necessary for Steering Wheel Rotation After Battery Disconnect

INFOID:0000000006389397

**NOTE:**

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

This vehicle is equipped with a push-button ignition switch and a steering lock unit.
If the battery is disconnected or discharged, the steering wheel will lock and cannot be turned.
If turning the steering wheel is required with the battery disconnected or discharged, follow the procedure below before starting the repair operation.

### OPERATION PROCEDURE

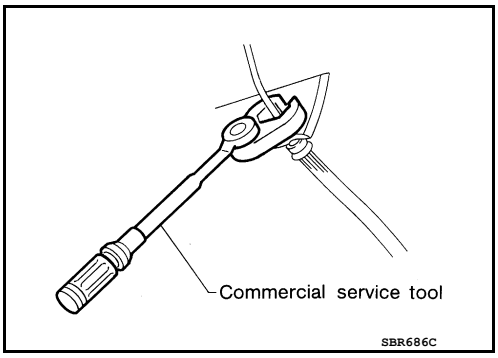
1. Connect both battery cables.
   **NOTE:**
   Supply power using jumper cables if battery is discharged.
2. Carry the Intelligent Key or insert it to the key slot and turn the push-button ignition switch to ACC position. (At this time, the steering lock will be released.)
3. Disconnect both battery cables. The steering lock will remain released with both battery cables disconnected and the steering wheel can be turned.
4. Perform the necessary repair operation.
5. When the repair work is completed, re-connect both battery cables. With the brake pedal released, turn the push-button ignition switch from ACC position to ON position, then to LOCK position. (The steering wheel will lock when the push-button ignition switch is turned to LOCK position.)

6. Perform self-diagnosis check of all control units using CONSULT.

## Precaution for Brake System

INFOID:0000000006389398

- Recommended fluid is brake fluid “DOT 3”.
- Never reuse drained brake fluid.
- Be careful not to splash brake fluid on painted surface of body. If brake fluid is splashed on painted surfaces of body immediately wipe off then with cloth and then wash it away with water.
- Never use mineral oils such as gasoline or kerosene. They will ruin rubber parts of the hydraulic system.
- Use a flare nut wrench when removing flare nuts, and use a flare nut torque wrench when tighten brake tube flare nuts.
- When installing brake tubes, be sure to check torque.
- Brake system is an important safety part. If a brake fluid leak is detected, always disassemble the affected part. If a malfunction is detected, replace part with a new one.
- Before working, turn ignition switch OFF and disconnect connectors of ABS actuator and electric unit (control unit) or the battery cable from the negative terminal.




**WARNING:**

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

## Precaution for Brake Control

INFOID:0000000006389399

- Just after starting vehicle after ignition switch ON, brake pedal may vibrate or motor operating noise may be heard from engine compartment. This is normal condition.
- When an error is indicated by ABS or another warning lamp, collect all necessary information from customer (what symptoms are present under what conditions) and check for simple causes before starting diagnostic servicing. Besides electrical system inspection, check brake booster operation, brake fluid level, and oil leaks.
- If tire size and type are used in an improper combination, or brake pads are not Genuine NISSAN parts, stopping distance or steering stability may deteriorate.
- ABS might be out of order or malfunctions by putting a radio (wiring inclusive), an antenna and a lead-in wire near the control unit.
- If aftermarket parts (car stereo, CD player, etc.) have been installed, check for incidents such as harness pinches, open circuits, and improper wiring.
- VDC system may not operate normally or a VDC OFF indicator lamp or SLIP indicator lamp may light.
- When replacing the following parts with parts other than genuine parts or making modifications: Suspension-related parts (shock absorber, spring, bushing, etc.), tires, wheels (other than specified sizes), brake-related parts (pad, rotor, caliper, etc.), engine-related parts (muffler, ECM, etc.) and body reinforcement-related parts (roll bar, tower bar, etc.).
- When driving with worn or deteriorated suspension, tires and brake-related parts.

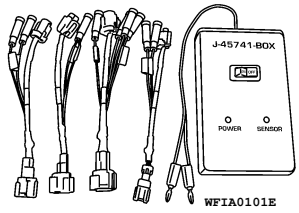
# PREPARATION

## PREPARATION

### Special Service Tool

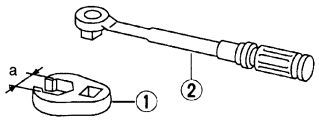
INFOID:0000000006389400

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

| Tool number<br>(Kent-Moore No.)<br>Tool name | Description |
|---|---|
| —<br>(J-45741)<br>ABS active wheel sensor tester  WFIA0101E | Checking operation of ABS active wheel sensor |

### Commercial Service Tool

INFOID:0000000006389401

| Tool name | Description |
|---|---|
| 1. Flare nut crowfoot<br>2. Torque wrench  S-NT360 | Removing and installing brake piping<br>**a: 10mm (0.39 in)/12mm (0.47 in)** |

# REMOVAL AND INSTALLATION

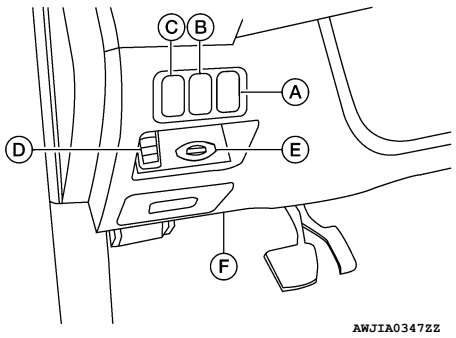
## VDC OFF SWITCH

### Removal and Installation

INFOID:0000000006389402

REMOVAL

1. Remove instrument lower cover to access the VDC OFF switch. Refer to IP-11, "Exploded View".
2. Disconnect the following harness connectors to remove instrument lower cover:
   - Headlamp aiming (A)
   - Rear sonar system off switch (B)
   - VDC OFF (C)
   - Trunk release (D)
   - Key slot (E)
   - Diagnostic connector (F)
   - Asperator tube
3. Remove VDC OFF switch from the back of the instrument lower cover.




INSTALLATION

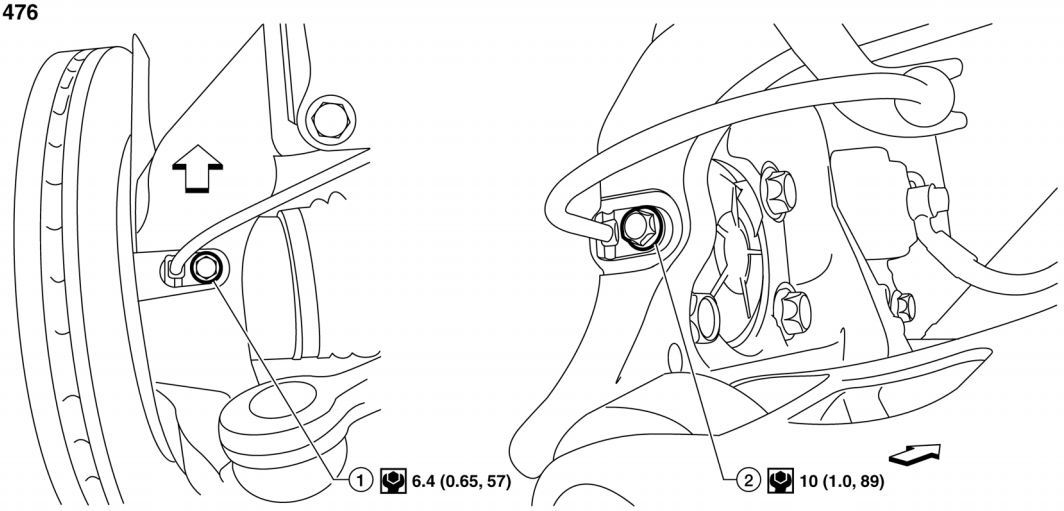
Installation is in the reverse order of removal.

# WHEEL SENSORS

## Removal and Installation

INFOID:0000000006389403

SEC. 476




1. Front wheel sensor
2. Rear wheel sensor
⇦ Front

**CAUTION:**

- **Be careful not to damage wheel sensor edge and sensor rotor teeth.**
- **When removing the front or rear wheel hub, first remove the wheel sensor from the wheel hub. Failure to do so may result in damage to the wheel sensor wires making the sensor inoperative.**
- **Pull out the wheel sensor, being careful to turn it as little as possible. Do not pull on the wheel sensor harness.**
- **Before installation, check if foreign objects such as iron fragments are adhered to the pick-up part of the sensor or to the inside of the hole in the wheel hub for the wheel sensor, or if a foreign object is caught in the surface of the mating surface for the sensor rotor. Fix as necessary and then install the wheel sensor.**

### FRONT WHEEL SENSOR

Removal

1. Remove front wheel and tire. Refer to WT-65, "Adjustment".
2. Partially remove front wheel fender protector. Refer to EXT-22, "Removal and Installation" (Coupe), EXT-46, "Removal and Installation" (Sedan).
3. Remove wheel sensor bolt and wheel sensor.
4. Remove harness wire from mounts and disconnect wheel sensor harness connector.

Installation

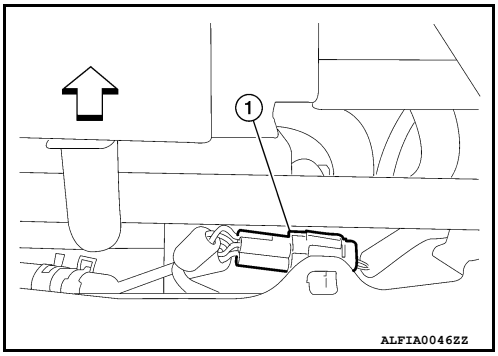
Installation is in the reverse order of removal.

### REAR WHEEL SENSOR

Removal

1. Remove rear wheel and tire. Refer to WT-65, "Adjustment".

2. Disconnect wheel sensor harness connector (1).
   • ⇦: Front
3. Remove harness wire clips from rear suspension member.
4. Remove wheel sensor bolt and wheel sensor from rear wheel hub and bearing assembly.




Installation
Installation is in the reverse order of removal.

# SENSOR ROTOR

## Removal and Installation

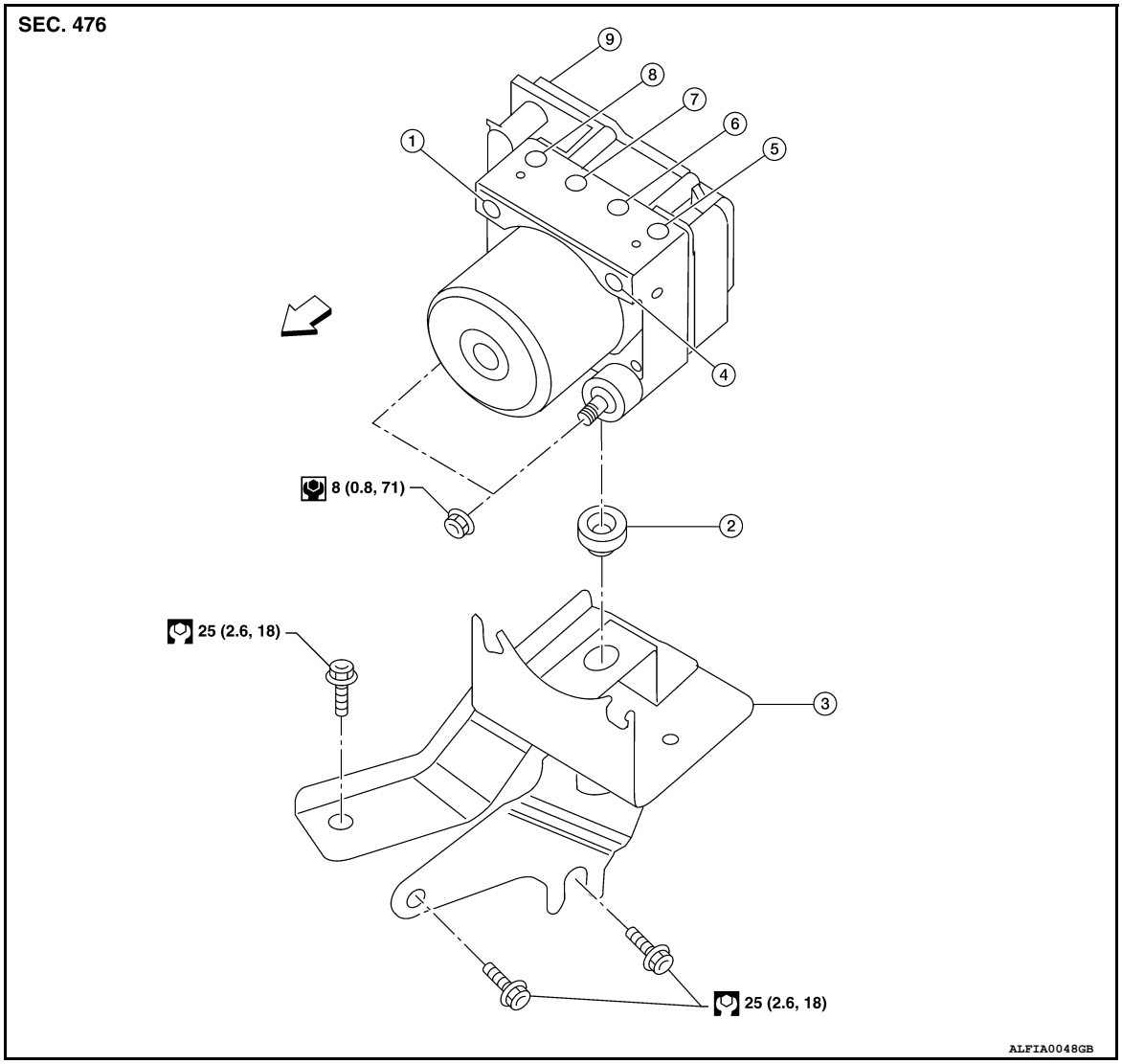
INFOID:0000000006389404

The front and rear wheel sensor rotors are an integral part of the wheel hubs and can not be disassembled. When replacing the sensor rotor, replace the wheel hub. Refer to FAX-8, "Removal and Installation" (front), RAX-7, "Removal and Installation" (rear).

# ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)

## Exploded View

INFOID:0000000006389405




1. From master cylinder secondary side
2. Grommet
3. Bracket
4. From master cylinder primary side
5. To front LH brake caliper
6. To rear RH brake caliper
7. To rear LH brake caliper
8. To front RH brake caliper
9. ABS actuator and electric unit (control unit)

⇦ Front

## Removal and Installation

INFOID:0000000006389406

**CAUTION:**

**Be careful of the following.**

- **In the case that the ABS actuator and electronic unit (control unit) is replaced, make sure to adjust position of steering angle sensor. Refer to BRC-143, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION : Special Repair Requirement".**
- **Before servicing, disconnect the battery cable from negative terminal.**
- **To remove brake pipe, use a suitable tool (flare nut wrench) to prevent flare nuts and brake tube from being damaged. To install, use suitable tool (flare nut torque wrench).**
- **Do not apply excessive impact to ABS actuator and electric unit (control unit), such as dropping it.**
- **Do not remove and install ABS actuator and electric unit (control unit) by holding harness.**

- **After work is completed, bleed air from brake tube. Refer to BR-16, "Bleeding Brake System".**
- **After installing harness connector on the ABS actuator and electric unit (control unit), make sure connector is securely locked.**

## REMOVAL

1. Remove cowl top. Refer to EXT-21, "Removal and Installation" (Coupe), EXT-45, "Removal and Installation" (Sedan).
2. Disconnect washer hose.
3. Disconnect the battery negative terminal.
4. Remove tower bar, if equipped. Refer to FSU-13, "Exploded View".
5. Disconnect ABS actuator and electric unit (control unit) connector.
6. Loosen brake tube flare nuts, then remove brake tubes from ABS actuator and electric unit (control unit) using a suitable tool.
7. Remove ABS actuator and electric unit (control unit) nuts.
8. Remove ABS actuator and electric unit (control unit).
9. Remove bracket as necessary.

## INSTALLATION

Installation is in the reverse order of removal.
Torque brake lines to proper specification. Refer to BR-18, "Hydraulic Circuit".

# YAW RATE/SIDE/DECEL G SENSOR

## Removal and Installation

INFOID:0000000006389407

**CAUTION:**

- **Do not drop or strike the yaw rate/side/decel G sensor, because it has little endurance to impacts.**
- **Do not use power tools, because yaw rate/side/decel G sensor is sensitive to impacts.**
- **For installation, make sure the arrow on top of the yaw rate/side/decel G sensor is pointing to the front of the vehicle.**

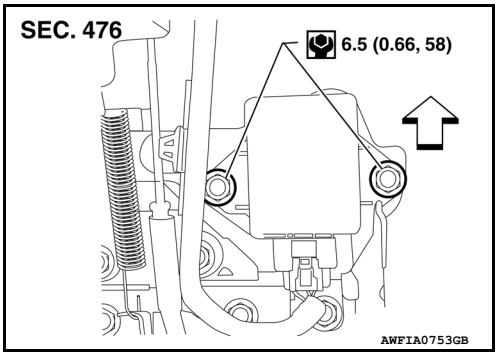
### REMOVAL

1. Remove the center console. Refer to IP-22, "Disassembly and Assembly".
2. Disconnect the yaw rate/side/decel G sensor harness connector.
3. Remove the yaw rate/side/decel G sensor nuts.
4. Remove the yaw rate/side/decel G sensor.

### INSTALLATION

Installation is in the reverse order of removal.

- For installation, make sure the arrow on top of the yaw rate/side/decel G sensor is pointing to the front of the vehicle.
- ⇦: Front of vehicle.



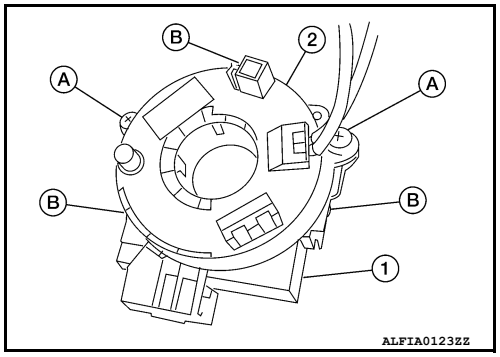
# STEERING ANGLE SENSOR

## Removal and Installation

INFOID:0000000006389408

### REMOVAL

1. Remove the spiral cable. Refer to SR-8, "Removal and Installation".
2. Remove the two screws (A) and release the three clips (B) to remove the steering angle sensor (1) from spiral cable (2).




### INSTALLATION

Installation is in the reverse order of removal.

**CAUTION:**

**Perform the neutral position adjustment for the steering angle sensor. Refer to BRC-143, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION : Special Repair Requirement"**