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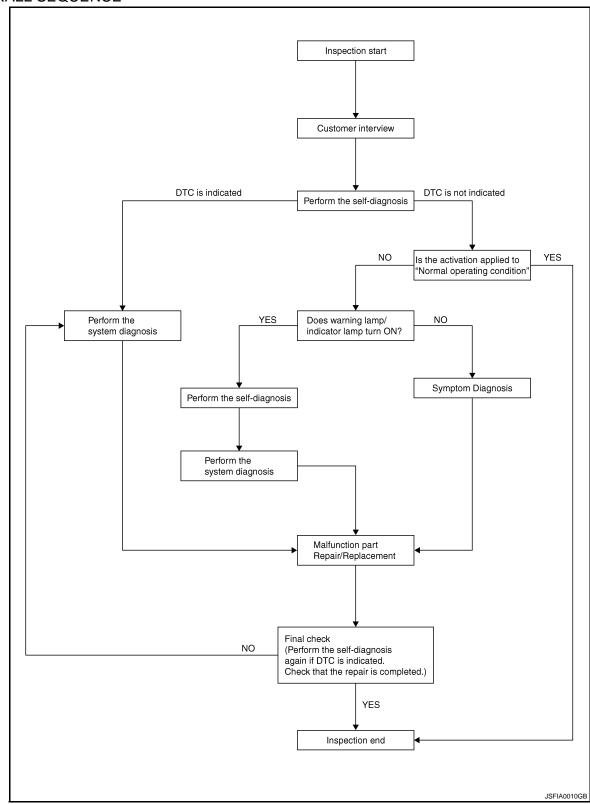
< BASIC INSPECTION > [ABS]

# **BASIC INSPECTION**

# DIAGNOSIS AND REPAIR WORKFLOW

Work Flow

### **OVERALL SEQUENCE**



**DETAILED FLOW** 

### **DIAGNOSIS AND REPAIR WORKFLOW**

[ABS] < BASIC INSPECTION > 1. COLLECT THE INFORMATION FROM THE CUSTOMER Α Get the 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". В >> GO TO 2. 2.PERFORM THE SELF-DIAGNOSIS Perform self-diagnosis for "ABS" with CONSULT-III. Refer to BRC-15, "CONSULT-III Function". Is there any DTC displayed? YES >> GO TO 3. D NO >> GO TO 4. 3.PERFORM THE SYSTEM DIAGNOSIS Perform the diagnosis applicable to the displayed DTC of "ABS" with CONSULT-III. Refer to BRC-56, "DTC Index". **BRC** >> GO TO 7. f 4.CHECK THE SYMPTOM THAT IS NOT CONSIDERED A SYSTEM MALFUNCTION Check that the symptom is a normal operation that is not considered a system malfunction. Refer to BRC-62, "Description". Is the symptom a normal operation? YES >> INSPECTION END Н NO >> GO TO 5. 5.CHECK THE WARNING LAMP FOR ILLUMINATION Check that the warning lamp illuminate. ABS warning lamp: Refer to <u>BRC-47</u>, "<u>Description</u>". • Brake warning lamp: Refer to BRC-48, "Description". Is ON/OFF timing normal? YES >> GO TO 6. NO >> GO TO 2. K  $oldsymbol{6}.$ PERFORM THE DIAGNOSIS BY SYMPTOM Perform the diagnosis applicable to the displayed DTC of "ABS" with CONSULT-III. >> GO TO 7. 7 . REPAIR OR REPLACE THE MALFUNCTIONING PARTS Repair or replace the specified malfunctioning parts. >> GO TO 8. N 8.MEMORY CLEAR Perform self-diagnosis memory clear for "ABS" with CONSULT-III. >> GO TO 9. 9. FINAL CHECK Perform the again, and check that the malfunction is repaired completely. Is no other DTC present and the repair completed? YES >> INSPECTION END NO >> GO TO 3.

# **DIAGNOSIS AND REPAIR WORKFLOW**

< BASIC INSPECTION >

[ABS]

# **Diagnostic Work Sheet**

INFOID:0000000005255385

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

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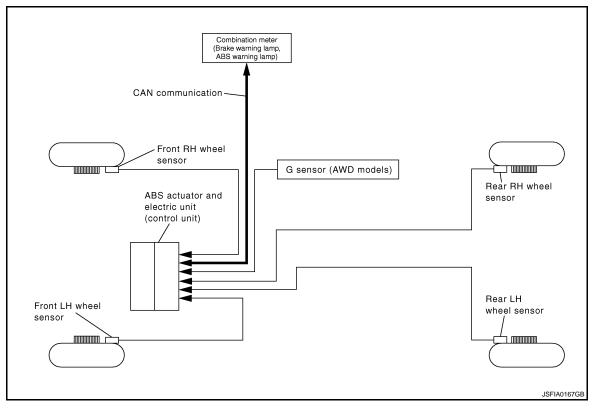
[ABS]

INFOID:0000000005255386

# SYSTEM DESCRIPTION

**ABS** 

System Diagram



# System Description

 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-III is available.

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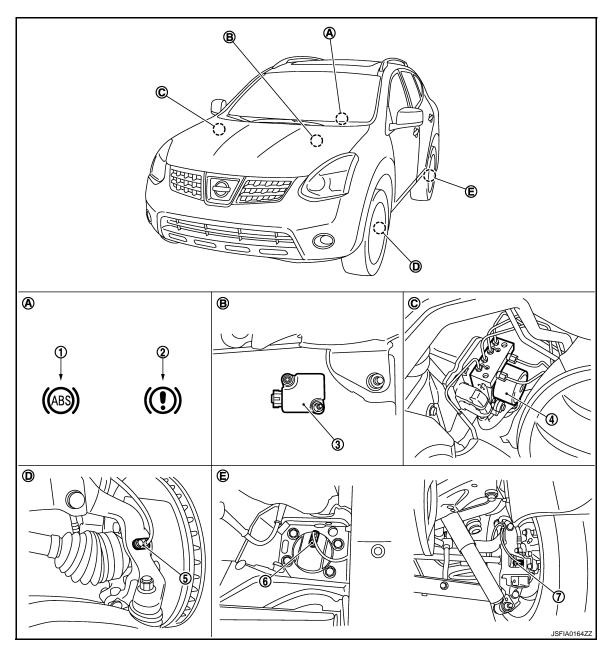
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# **Component Parts Location**

INFOID:0000000005255388



- 1. ABS warning lamp
- 4. ABS actuator and electric unit (control unit)
- 7. Rear wheel sensor (AWD models)
- A. Combination meter
- D. Steering knuckle

- 2. Brake warning lamp
- 5. Front wheel sensor
- B. Center console
- E. Rear axle

- 3. G sensor (AWD models)
- 6. Rear wheel sensor (2WD models)
- C. Engine room (right side)

# [ABS]

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# **Component Description**

INFOID:0000000005255389

Component parts		Reference
ABS actuator and electric unit (control unit)	Pump	BRC-27, "Description"
	Motor	BRC-21, Description
	Actuator relay (Main relay)	BRC-39, "Description"
	Solenoid valve	BRC-35, "Description"
Wheel sensor	BRC-18, "Description"	
G sensor (AWD models)	BRC-29, "Description"	
ABS warning lamp	BRC-47, "Description"	
Brake warning lamp		BRC-48, "Description"

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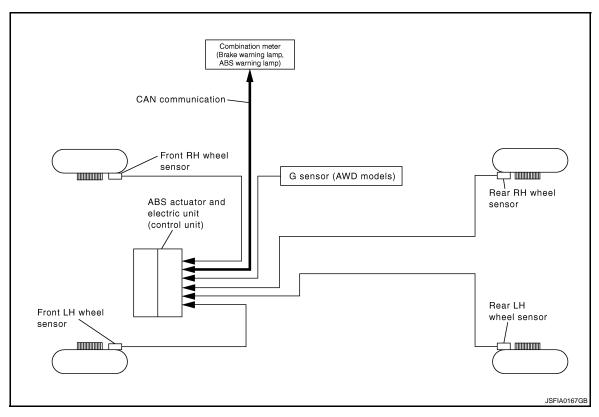
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[ABS]

**EBD** 

# System Diagram

INFOID:0000000005255390



# System Description

INFOID:0000000005255391

- Electric Brake force Distribution is a following function. ABS actuator and electric unit (control unit) detects subtle slippages between the front and rear wheels during braking. Then is electronically controls the rear braking force (brake fluid pressure) to reducing and reduces rear wheel slippage. Accordingly it improves vehicle stability.
- Electrical system diagnosis by CONSULT-III is available.

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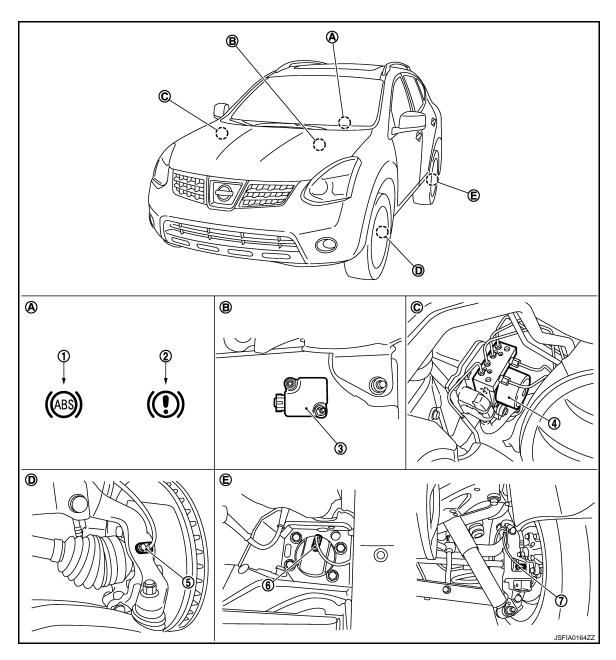
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# **Component Parts Location**

INFOID:0000000005255392



- 1. ABS warning lamp
- 4. ABS actuator and electric unit (control unit)
- 7. Rear wheel sensor (AWD models)
- A. Combination meter
- D. Steering knuckle

- 2. Brake warning lamp
- Front wheel sensor
- B. Center console
- E. Rear axle

- 3. G sensor (AWD models)
- 6. Rear wheel sensor (2WD models)
- C. Engine room (right side)

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# < SYSTEM DESCRIPTION > Component Description

INFOID:0000000005255393

Component parts		Reference
100	Pump	PDC 27 "Description"
	Motor	BRC-27, "Description"
ABS actuator and electric unit (control unit)	Actuator relay (Main relay)	BRC-39, "Description"
	Solenoid valve	BRC-35, "Description"
Wheel sensor	BRC-18, "Description"	
G sensor (AWD models)	BRC-29, "Description"	
ABS warning lamp	BRC-47, "Description"	
Brake warning lamp		BRC-48, "Description"

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

< SYSTEM DESCRIPTION >

[ABS]

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

**CONSULT-III Function** 

INFOID:0000000005255394

#### **FUNCTION**

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

Diagnostic test mode	Function
Self diagnostic result	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-III drives some actuators apart from the ABS actuator and electric unit (control unit) and also shifts some parameters in a specified range.
ECU identification	ABS actuator and electric unit (control unit) part number can be read.

### SELF DIAGNOSTIC RESULT

### Operation Procedure

Before performing the self-diagnosis for "ABS" with CONSULT-III, 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 for "ABS" with CONSULT-III, 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 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-56, "DTC Index".

#### DATA MONITOR

Display Item List

x: Applicable ▼: Optional item

	SELECT MO	ONITOR ITEM	A. Applicable . Optional term
Monitor item (Unit)	ECU INPUT SIGNALS	MAIN SIGNALS	Remarks
FR LH SENSOR [km/h (MPH)]	×	×	
FR RH SENSOR [km/h (MPH)]	×	×	Wheel greed
RR LH SENSOR [km/h (MPH)]	×	×	Wheel speed
RR RH SENSOR [km/h (MPH)]	×	×	
STOP LAMP SW (On/Off)	×	×	Stop lamp switch signal status
BATTERY VOLT (V)	×	×	Battery voltage supplied to the ABS actuator and electric unit (control unit)

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

### < SYSTEM DESCRIPTION > [ABS]

	SELECT MC	NITOR ITEM	
Monitor item (Unit)	ECU INPUT SIGNALS	MAIN SIGNALS	Remarks
DECEL G-SEN1 (On/Off) (AWD models)	×	×	Vehicle on level surface or on slope
DECEL G-SEN2 (On/Off) (AWD models)	×	×	verifice of level surface of off slope
FR RH IN SOL (On/Off)	▼	×	
FR RH OUT SOL (On/Off)	•	×	
FR LH IN SOL (On/Off)	▼	×	
FR LH OUT SOL (On/Off)	▼	×	Operation status of each solenoid valve
RR RH IN SOL (On/Off)	▼	×	Operation status of each solehold valve
RR RH OUT SOL (On/Off)	▼	×	
RR LH IN SOL (On/Off)	▼	×	
RR LH OUT SOL (On/Off)	▼	×	
MOTOR RELAY (On/Off)	▼	×	Motor and motor relay operation
ACTUATOR RLY (On/Off)	▼	×	Actuator relay operation
ABS WARN LAMP (On/Off)	▼	×	ABS warning lamp
EBD SIGNAL (On/Off)	▼	▼	EBD operation
ABS SIGNAL (On/Off)	▼	▼	ABS operation
EBD FAIL SIG (On/Off)	▼	▼	EBD fail-safe signal
ABS FAIL SIG (On/Off)	▼	▼	ABS fail-safe signal

### **ACTIVE TEST**

### **CAUTION:**

- Never 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.

#### 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" in "ABS" with CONSULT-III is displayed 10 seconds after operation start.
- After "TEST IS STOPPED" in "ABS" with CONSULT-III is displayed, to perform test again.

#### Test Item

### ABS SOLENOID VALVE

• Select "Up", "Keep" and "Down" of "ACTIVE TEST" in "ABS" with CONSULT-III. Then use screen monitor to check that solenoid valve operates as shown in solenoid valve operation chart.

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

# < SYSTEM DESCRIPTION >

[ABS]
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Test item	Display itom	Display		
	Display item	Up	Keep	Down
FR RH SOL	FR RH IN SOL	Off	On	On
FR RH SOL	FR RH OUT SOL	Off	Off	On*
FR LH SOL	FR LH IN SOL	Off	On	On
	FR LH OUT SOL	Off	Off	On*
RR RH SOL	RR RH IN SOL	Off	On	On
	RR RH OUT SOL	Off	Off	On*
RR LH SOL	RR LH IN SOL	Off	On	On
	RR LH OUT SOL	Off	Off	On*

<sup>\*:</sup> On for 1 to 2 seconds after the select, and then Off.

#### **ABS MOTOR**

• Select "On" and "Off" of "ACTIVE TEST" in "ABS" with CONSULT-III on screen. Make sure motor relay and actuator relay operates as shown in table below.

Test item	Display item	Dis	play
	Display item	On	Off
ABS MOTOR	MOTOR RELAY	On	Off
	ACTUATOR RLY (Note)		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.

### **ECU IDENTIFICATION**

ABS actuator and electric unit (control unit) part number can be read.

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[ABS]

# DTC/CIRCUIT DIAGNOSIS

# C1101, C1102, C1103, C1104 WHEEL SENSOR

**Description** 

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

#### 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 short circuit. Current signal from sensor is outside limits.	
C1102	RR LH SENSOR-1	Circuit of rear LH wheel sensor is open or short circuit. Current signal from sensor is outside limits.	Harness or connector     Wheel sensor
C1103	FR RH SENSOR-1	Circuit of front RH wheel sensor is open or short circuit. Current signal from sensor is outside limits.	ABS actuator and electric unit (control unit)
C1104	FR LH SENSOR-1	Circuit of front LH wheel sensor is open or short circuit. Current signal from sensor is outside limits.	

### DTC CONFIRMATION PROCEDURE

# 1. CHECK SELF-DIAGNOSIS RESULTS

Perform self-diagnosis for "ABS" with CONSULT-III.

Self-diagnosis results
RR RH SENSOR-1
RR LH SENSOR-1
FR RH SENSOR-1
FR LH SENSOR-1

### Is above displayed on the self-diagnosis display?

YES >> Proceed to diagnosis procedure. Refer to <a href="BRC-18">BRC-18</a>, "Diagnosis Procedure".

NO >> INSPECTION END

# Diagnosis Procedure

INFOID:0000000005255397

#### **CAUTION:**

#### Never check between wheel sensor terminals.

### 1.CHECK TIRES

Check air pressure, wear and size.

### Are air pressure, wear and size within standard?

YES >> GO TO 2.

NO >> Adjust air pressure, or replace tire.

# 2.check wheel sensor and sensor rotor

- Check that there is no damage or adherence of foreign matter on the sensor rotor surface.
- Check sensor rotor for damage.
- Check wheel sensor for damage, disconnection or looseness.
- Check that there is no deformation on the wheel sensor mounting surface.

#### Are the sensor and sensor rotor normal?

YES >> GO TO 3.

NO >> Repair wheel sensor mount or replace sensor rotor. Then perform self-diagnosis for "ABS" with CONSULT-III.

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

### < DTC/CIRCUIT DIAGNOSIS >

### [ABS]

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# $\overline{\mathbf{3}}$ .CHECK CONNECTOR

- 1. Turn ignition switch OFF.
- Disconnect ABS actuator and electric unit (control unit) connector.
- Disconnect malfunctioning wheel sensor connector.
- 4. Check terminal to see if it is deformed, disconnected, loose, etc., Repair or replace it if any malfunction condition is found.
- Reconnect connectors and then perform self-diagnosis for "ABS" with CONSULT-III.

### Is any item indicated on the self-diagnosis display?

YES >> GO TO 4.

NO >> Poor connection of connector terminal. Repair or replace connector.

# 4. CHECK WHEEL SENSOR HARNESS

- Turn ignition switch OFF.
- Disconnect ABS actuator and electric unit (control unit) connector. 2.
- 3. Disconnect malfunctioning wheel sensor connector.
- 4. Check continuity between terminals. (Also check continuity when steering wheel is turned right and left and when sensor harness inside the wheel house is moved.)

Measurement terminal for signal circuit

ABS actuator and electric unit (control unit)		Wheel sensor		Continuity	
Connector	Terminal	Connector	Terminal	Continuity	
	12	E39 (Front RH)	4	- Existed	
E36	27	E22 (Front LH)	2		
E30	15	B41 (Rear RH)	8	Existed	
	30	B44 (Rear LH)	6		

Measurement terminal for power supply circuit

ABS actuator and ele	S actuator and electric unit (control unit) Wheel sensor		Continuity		
Connector	Terminal	Connector	Terminal	Continuity	
E36	21	E39 (Front RH)	3		
	23	E22 (Front LH)	1	Existed	
	11	B41 (Rear RH)	7	Existed	
	26	B44 (Rear LH)	5		

Measurement terminal for ground circuit

	Continuity			
Connector	Terminal	Connector	Terminal	Continuity
E36	12, 21	E36 3, 4	- F26	
	27, 23			2 4 Not o
	15, 11		3, 4	ivot existed
	30, 26			

Reconnect ABS actuator and electric unit (control unit) connector.

### Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair or replace malfunctioning components.

# 5.REPLACE WHEEL SENSOR

- Replace wheel sensor.
- 2. Erase self-diagnosis results for "ABS" with CONSULT-III.
- 3. Turn the ignition switch OFF.
- Turn the ignition switch ON.

### CAUTION:

Never start engine.

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# C1101, C1102, C1103, C1104 WHEEL SENSOR

### < DTC/CIRCUIT DIAGNOSIS >

[ABS]

5. Perform self-diagnosis for "ABS" with CONSULT-III.

Is DTC "C1101", "C1102", "C1103" or "C1104" detected?

YES >> Replace ABS actuator and electric unit (control unit).

NO >> INSPECTION END

### Component Inspection

INFOID:0000000005255398

### 1. CHECK DATA MONITOR

Select "ABS", "DATA MONITOR" in order with CONSULT-III, 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	
FR RH SENSOR	Nearly matches the speedometer dis-
RR LH SENSOR	play (±10% or less)
RR RH SENSOR	

### Is the inspection result normal?

YES >> INSPECTION END

NO >> Go to diagnosis procedure. Refer to <a href="BRC-18">BRC-18</a>, "Diagnosis Procedure".

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

[ABS] < DTC/CIRCUIT DIAGNOSIS >

# C1105, C1106, C1107, C1108 WHEEL SENSOR

Description INFOID:000000005255399

ABS unit continually monitors wheel speed sensors to detect abnormal signals.

DTC Logic INFOID:0000000005255400

### DTC DETECTION LOGIC

DTC	Display item	Malfunction detected condition	Possible cause
C1105	RR RH SENSOR-2	Signal from rear RH wheel sensor does not match other 3 wheel speed signals.	Sensor not installed currently     Sensor rotor or encoder dam-
C1106	RR LH SENSOR-2	Signal from rear LH wheel sensor does not match other 3 wheel speed signals.	aged Sensor rotor loose on axle Electrical interference
C1107	FR RH SENSOR-2	Signal from front RH wheel sensor does not match other 3 wheel speed signals.	Wheel not turning - e.g. vehi- cle driven on 2WD dyno
C1108	FR LH SENSOR-2	Signal from front LH wheel sensor does not match other 3 wheel speed signals.	Sensor damaged     ABS unit damaged

### DTC CONFIRMATION PROCEDURE

# 1. CHECK SELF-DIAGNOSIS RESULTS

Perform self-diagnosis for "ABS" with CONSULT-III.

Self-diagnosis results
RR RH SENSOR-2
RR LH SENSOR-2
FR RH SENSOR-2
FR LH SENSOR-2

### Is above displayed on the self-diagnosis display?

YES >> Proceed to diagnosis procedure. Refer to <a href="BRC-21">BRC-21</a>, "Diagnosis Procedure".

>> INSPECTION END NO

# Diagnosis Procedure

# **CAUTION:**

Never check between wheel sensor terminals.

### 1.CHECK TIRES

Check air pressure, wear and size.

### Are air pressure, wear and size within standard?

YES >> GO TO 2.

NO >> Adjust air pressure, or replace tire.

### 2.CHECK SENSOR AND SENSOR ROTOR

- Check that there is no damage or adherence of foreign matter on the sensor rotor surface.
- Check sensor rotor for damage.
- Check wheel sensor for damage, disconnection or looseness.
- Check that there is no deformation on the wheel sensor mounting surface.

#### Are the sensor and sensor rotor normal?

YES >> GO TO 3.

NO >> Repair wheel sensor mount or replace sensor rotor. Then perform self-diagnosis for "ABS" with CONSULT-III.

# 3.CHECK CONNECTOR

Turn ignition switch OFF.

**BRC-21** 

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INFOID:000000000525540

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

### < DTC/CIRCUIT DIAGNOSIS >

[ABS]

- 2. Disconnect ABS actuator and electric unit (control unit) connector.
- 3. Disconnect malfunctioning wheel sensor connector.
- 4. Check terminal to see if it is deformed, disconnected, loose, etc., Repair or replace it if any malfunction condition is found.
- 5. Reconnect connectors and then perform self-diagnosis for "ABS" with CONSULT-III.

### Is any item indicated on the self-diagnosis display?

YES >> GO TO 4.

NO >> Poor connection of connector terminal. Repair or replace connector.

# 4. CHECK WHEEL SENSOR HARNESS

- 1. Turn ignition switch OFF.
- 2. Disconnect ABS actuator and electric unit (control unit) connector.
- 3. Disconnect malfunctioning wheel sensor connector.
- 4. Check continuity between terminals. (Also check continuity when steering wheel is turned right and left and when sensor harness inside the wheel house is moved.)

Measurement terminal for signal circuit

ABS actuator and electric unit (control unit)		Wheel sensor		Continuity
Connector	Terminal	Connector	Terminal	Continuity
E36	12	E39 (Front RH)	4	
	27	E22 (Front LH)	2	Existed
	15	B41 (Rear RH)	8	LAISIGU
	30	B44 (Rear LH)	6	

Measurement terminal for power supply circuit

ABS actuator and el	and electric unit (control unit) Wheel sensor		Continuity		
Connector	Terminal	Connector	Terminal	Continuity	
	21	E39 (Front RH)	3	Existed	
E36	23	E22 (Front LH)	1		
E30	11	B41 (Rear RH)	7	Existed	
	26	B44 (Rear LH)	5		

Measurement terminal for ground circuit

	Continuity			
Connector	Terminal	Connector	Continuity	
	12, 21	- E36		Not existed
E36	27, 23		3, 4	
	15, 11			
	30, 26			

5. Reconnect ABS actuator and electric unit (control unit) connector.

#### Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair or replace malfunctioning components.

# 5. REPLACE WHEEL SENSOR

- 1. Replace wheel sensor.
- 2. Erase self-diagnosis results for "ABS" with CONSULT-III.
- Turn the ignition switch OFF.
- 4. Turn the ignition switch ON.

### **CAUTION:**

### Never start engine.

5. Perform self-diagnosis for "ABS" with CONSULT-III.

### Is DTC "C1105", "C1106", "C1107" or "C1108" detected?

YES >> Replace ABS actuator and electric unit (control unit).

# C1105, C1106, C1107, C1108 WHEEL SENSOR [ABS] < DTC/CIRCUIT DIAGNOSIS > >> INSPECTION END NO Α Component Inspection INFOID:0000000005255402 1. CHECK DATA MONITOR В Select "ABS", "DATA MONITOR" in order with CONSULT-III, select "FR LH SENSOR", "FR RH SENSOR", "RR LH SENSOR" and "RR RH SENSOR", and check the vehicle speed. C Wheel sensor Vehicle speed (DATA MONITOR) FR LH SENSOR D FR RH SENSOR Nearly matches the speedometer display (±10% or less) RR LH SENSOR RR RH SENSOR Е Is the inspection result normal? YES >> INSPECTION END NO >> Go to diagnosis procedure. Refer to <a href="BRC-21">BRC-21</a>, "Diagnosis Procedure". **BRC** Н

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Revision: 2009 October BRC-23 2010 Rogue

### C1109 POWER AND GROUND SYSTEM

< DTC/CIRCUIT DIAGNOSIS >

SIS > [ABS]

## C1109 POWER AND GROUND SYSTEM

**Description** 

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

DTC Logic

### 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 is lower than normal and vehicle speed is greater than 6km/h (4 MPH). Power supply is greater than normal limits.	Harness or connector     ABS actuator and electric unit (control unit)     Fuse     Vehicle electrical power system

### DTC CONFIRMATION PROCEDURE

# 1. CHECK SELF-DIAGNOSIS RESULTS

Perform self-diagnosis for "ABS" with CONSULT-III.

Self-diagnosis results
BATTERY VOLTAGE [ABNORMAL]

### Is above displayed on the self-diagnosis display?

YES >> Proceed to diagnosis procedure. Refer to <u>BRC-24</u>, "<u>Diagnosis Procedure</u>".

NO >> INSPECTION END

# Diagnosis Procedure

INFOID:0000000005255405

# 1. CHECK CONNECTOR

- Turn ignition switch OFF.
- 2. Disconnect ABS actuator and electric unit (control unit) connector.
- 3. Check terminal for deformation, disconnection, looseness, and so on. If any malfunction is found, repair or replace terminal.
- 4. Reconnect connector and then perform self-diagnosis for "ABS" with CONSULT-III.

### Is any item indicated on the self-diagnosis display?

YES >> GO TO 2.

NO >> Poor connection of connector terminal. Repair or replace connector.

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

- 1. Turn ignition switch OFF.
- 2. Disconnect ABS actuator and electric unit (control unit) connector.
- Turn ignition switch ON or OFF and check voltage between ABS actuator and electric unit (control unit)
  harness connector terminal and ground.

ABS actuator and ele	lator and electric unit (control unit)		Condition	Voltage
Connector	Terminal	_	Condition	voitage
E36	16	Ground	Ignition switch: ON	Battery voltage
	10	Giodila	Ignition switch: OFF	Approx. 0 V

- Check 10A fusible link (59).
- 5. Check continuity between ABS actuator and electric unit (control unit) harness connector and IPDM E/R.

### C1109 POWER AND GROUND SYSTEM

### < DTC/CIRCUIT DIAGNOSIS >

ABS actuator and electric unit (control unit) IPDM E/R		continuity		
Connector	Terminal	Connector	Terminal	Continuity

E15

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Reconnect ABS actuator and electric unit (control unit) connector.

16

### Is the inspection result normal?

YES >> GO TO 3.

E36

NO >> Repair or replace malfunctioning components.

# 3.abs power supply check (under load conditions)

- Use 12 V lamp (normal rating 10 to 20 W) connected between E36 terminals 16 and 4. With ignition switch ON check bulb illuminates correctly.
- Check ABS motor supply under loaded condition (connector E36 terminals 1 and 3).

### Is the inspection result normal?

YES >> GO TO 4.

NO >> Check both power supply and ground circuit.

# $oldsymbol{4}.$ CHECK ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT) GROUND CIRCUIT

- Turn ignition switch OFF.
- Disconnect ABS actuator and electric unit (control unit) connector. 2.
- Check continuity between ABS actuator and electric unit (control unit) harness connector terminals and ground.

ABS actuator and ele	ectric unit (control unit)		Continuity
Connector	Terminal	_	Continuity
E36	3, 4	Ground	Existed

### Is the inspection result normal?

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

NO >> Repair or replace malfunctioning components (check ABS earth bolt for tightness and corrosion). BRC

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**BRC-25** Revision: 2009 October 2010 Rogue

# C1110 ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)

< DTC/CIRCUIT DIAGNOSIS >

[ABS]

# C1110 ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)

**Description** 

ABS unit is continuously monitoring ECU hardware and software for correct operation.

DTC Logic

### DTC DETECTION LOGIC

DTC	Display item	Malfunction detected condition	Possible cause
C1110	CONTROLLER FAILURE	Possible internal failure of control unit components.	Internal failure of control unit components. ABS solenoid valve or motor power supply/ ground abnormality.

#### DTC CONFIRMATION PROCEDURE

# 1. CHECK SELF-DIAGNOSIS RESULTS

- 1. Check both ABS solenoid valve and motor supply and ground circuits using a suitable electrical load.
- Check wheel speed sensor inputs.
- 3. Perform self-diagnosis for "ABS" with CONSULT-III.

Self-diagnosis results	
CONTROLLER FAILURE	

### Is above displayed on the self-diagnosis display?

YES >> Proceed to diagnosis procedure. Refer to BRC-26, "Diagnosis Procedure".

NO >> INSPECTION END

# Diagnosis Procedure

INFOID:0000000005255408

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 those applicable.

>> Replace ABS actuator and electric unit (control unit).

### C1111 ABS MOTOR, MOTOR RELAY SYSTEM

< DTC/CIRCUIT DIAGNOSIS >

[ABS]

# C1111 ABS MOTOR, MOTOR RELAY SYSTEM

Description INFOID:000000005255409

**PUMP** 

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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

### 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     ABS actuator and electric unit
OTT	Town Motor	During the actuator motor operating with OFF, when the actuator motor turns ON, or when the control line for relay is shorted to ground.	(control unit)

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### DTC CONFIRMATION PROCEDURE

# CHECK SELF-DIAGNOSIS RESULTS

Perform self-diagnosis for "ABS" with CONSULT-III.

Self-diagnosis results
PUMP MOTOR

Is above displayed on the self-diagnosis display?

YES >> Proceed to diagnosis procedure. Refer to <a href="BRC-27">BRC-27</a>, "Diagnosis Procedure".

NO >> INSPECTION END

# Diagnosis Procedure

INFOID:0000000005255411

# 1. CHECK CONNECTOR

- Turn ignition switch OFF.
- 2. Disconnect ABS actuator and electric unit (control unit) connector.
- 3. Check terminal for deformation, disconnect, looseness, and so on. If any malfunction is found, repair or replace terminal.
- 4. Reconnect connector and then perform self-diagnosis for "ABS" with CONSULT-III.

#### Is any item indicated on the self-diagnosis display?

YES >> GO TO 2.

NO >> Poor connection of connector terminal. Replace or repair 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) harness connector terminal and ground.

ABS actuator and ele	ectric unit (control unit)		Voltage
Connector	Terminal	_	voltage
E36	1	Ground	Battery voltage

4. Reconnect ABS actuator and electric unit (control unit) connector.

### C1111 ABS MOTOR, MOTOR RELAY SYSTEM

### < DTC/CIRCUIT DIAGNOSIS >

[ABS]

### Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace malfunctioning components.

# ${f 3.}$ abs power supply check (under load conditions)

Use 12 V lamp (normal rating 10 to 20 W) connected between E36 terminals 1 and 2. With ignition switch ON check bulb illuminates correctly.

### Is the inspection result normal?

YES >> GO TO 4.

NO >> Check both power supply and ground circuit.

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

- 1. Turn ignition switch OFF.
- Disconnect ABS actuator and electric unit (control unit) connector.
- Check continuity between ABS actuator and electric unit (control unit) harness connector terminals and ground.

ABS actuator and ele	ectric unit (control unit)	_	Continuity
Connector	Terminal		Continuity
E36	3, 4	Ground	Existed

#### Is the inspection result normal?

YES >> Replace ABS actuator and electric unit (control unit).

NO >> Repair or replace malfunctioning components. (Check ABS each bolt for tightness and corrosion).

# Component Inspection

INFOID:0000000005255412

# 1. CHECK ACTIVE TEST

- 1. Select "ABS", "ACTIVE TEST" and "ABS MOTOR" in order with CONSULT-III.
- Select "On" and "Off" on screen. Make sure motor relay and actuator relay operates as shown in table below.

Test item	Display item	Display	
	Display item	On	Off
ABS MOTOR	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 <u>BRC-27</u>, "<u>Diagnosis Procedure</u>".

[ABS]

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### C1113 G SENSOR

Description INFOID:0000000005255413

G sensor detects 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:0000000005255414

### DTC DETECTION LOGIC

DTC	Display item	Malfunction detected condition	Possible cause
C1113	G SENSOR	G sensor is malfunctioning, or signal line of G sensor is open or shorted.	Harness or connector     ABS actuator and electric unit (control unit)     G sensor     Electrical interference     Vehicle driven on AWD rolling road

### DTC CONFIRMATION PROCEDURE

# 1. CHECK SELF-DIAGNOSIS RESULTS

Perform self-diagnosis for "ABS" with CONSULT-III.

Self-diagnosis results **G SENSOR** 

Is above displayed on the self-diagnosis display?

YES >> Proceed to diagnosis procedure. Refer to <a href="BRC-29">BRC-29</a>, "Diagnosis Procedure".

NO >> INSPECTION END

# Diagnosis Procedure

# 1. CHECK CONNECTOR

Turn ignition switch OFF.

- 2. Disconnect ABS actuator and electric unit (control unit) connector.
- Disconnect G sensor connector.
- Check terminal for deformation, disconnection, looseness, and so on. If any malfunction is found, repair or replace terminal.
- Reconnect connectors and then perform self-diagnosis for "ABS" with CONSULT-III.

### Is any item indicated on the self-diagnosis display?

YES >> GO TO 2.

NO >> Poor connection of connector terminal. Replace or repair connector.

# 2. CHECK G SENSOR HARNESS

- Turn ignition switch OFF.
- Disconnect ABS actuator and electric unit (control unit) connector. 2.
- 3. Disconnect G sensor connector.
- Check continuity between G sensor harness connector terminals and ABS actuator and electric unit (control unit) harness connector terminals.

ABS actuator and electric unit (control unit)		G sensor		Continuity
Connector	Terminal	Connector Terminal		Continuity
	13	B32	2	Existed
F26	29		3	
E36	14		4	Existed
	28		5	

**BRC-29** Revision: 2009 October 2010 Rogue

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INFOID:0000000005255416

### < DTC/CIRCUIT DIAGNOSIS >

Is the inspection result normal?
YES >> GO TO 3.

NO >> Repair or replace malfunctioning components.

# 3.check g sensor power supply circuit

Turn ignition switch ON.

2. Check voltage between G sensor harness connector terminal and ground.

G sensor			<ul><li>Condition</li></ul>	Voltage	
Connector	Terminal		Condition	voltage	
B32	1 Ground	Ignition switch: ON	Battery voltage		
D32	'	Giodila	Ignition switch: OFF	Approx. 0 V	

### Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace malfunctioning components.

# 4.CHECK G SENSOR

- 1. Remove G sensor from the vehicle. Refer to BRC-71, "Exploded View".
- Connect the following terminals between G sensor and connector.

G sensor	Harness connector		
Terminal	Connector Terminal		
1	B32	1	
2		2	
3		3	
4		4	
5		5	

- 3. Turn ignition switch ON.
- Check voltage between G sensor terminals.

Condition	G se	ensor
Condition	Terminals 4 – 5	Terminals 3 – 5
Horizontal	1.50 – 1.95 V	1.50 – 1.95 V
Longitudinally 20°	3.51 – 4.14 V	3.51 – 4.14 V
Longitudinally 40°	1.50 – 1.95 V	3.51 – 4.14 V

#### Is the inspection result normal?

YES >> Replace ABS actuator and electric unit (control unit).

NO >> Replace G sensor.

# Component Inspection

# 1. CHECK DATA MONITOR

Select "ABS", "DATA MONITOR", "DECEL G-SEN1" and "DECEL G-SEN2", in order with CONSULT-III" and check G sensor signal.

Monitor item	Condition	DATA MONITOR
DEOEL O OENI	Changes according to an	On
DECEL G-SEN1	indication shown by the decel G sensor	Off
	Changes according to an	On
DECEL G-SEN2	indication shown by the decel G sensor	Off

C1113 G SENSOR	
< DTC/CIRCUIT DIAGNOSIS >	[ABS]
Is the inspection result normal?	
YES >> INSPECTION END	А
NO >> Go to diagnosis procedure. Refer to <u>BRC-29</u> , " <u>Diagnosis Procedure</u> ".	
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### C1115 WHEEL SENSOR

Description INFOID:000000005255417

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

### DTC DETECTION LOGIC

DTC	Display item	Malfunction detected condition	Possible cause
C1115	ABS SENSOR [ABNORMAL SIGNAL]	Miss-match between the 4 wheel speed sensor signals.	Harness or connector not a possible cause. Other possible causes tire radius (due to wrong size or pressure) interference.

### DTC CONFIRMATION PROCEDURE

### 1. CHECK SELF-DIAGNOSIS RESULTS

Perform self-diagnosis for "ABS" with CONSULT-III.

Self-diagnosis results	
ABS SENSOR [ABNORMAL SIGNAL]	

### Is above displayed on the self-diagnosis display?

YES >> Proceed to diagnosis procedure. Refer to <a href="BRC-32">BRC-32</a>, "Diagnosis Procedure".

NO >> INSPECTION END

# Diagnosis Procedure

INFOID:0000000005255419

#### **CAUTION:**

#### Never check between wheel sensor terminals.

### 1.CHECK TIRES

Check air pressure, wear and size.

### Are air pressure, wear and size within standard?

YES >> GO TO 2.

NO >> Adjust air pressure, or replace tire.

# 2.CHECK SENSOR AND SENSOR ROTOR

- Check that there is no damage or adherence of foreign matter on the sensor rotor surface.
- Check that there is no deformation, misalignment, float, and backlash on the wheel sensor and wheel sensor mounting surface.
- Check that the wheel sensor in installed with no misalignment and backlash.

#### Are the sensor and sensor rotor normal?

YES >> GO TO 3.

NO >> Repair wheel sensor mount or replace sensor rotor. Then perform self-diagnosis for "ABS" with CONSULT-III.

# 3. CHECK CONNECTOR

- Turn ignition switch OFF.
- Disconnect ABS actuator and electric unit (control unit) connector.
- Disconnect malfunctioning wheel sensor connector.
- Check terminal to see if it is deformed, disconnected, loose, etc., Repair or replace it if any malfunction condition is found.
- Reconnect connectors and then perform self-diagnosis for "ABS" with CONSULT-III.

### Is any item indicated on the self-diagnosis display?

YES >> GO TO 4.

### C1115 WHEEL SENSOR

### < DTC/CIRCUIT DIAGNOSIS >

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NO >> Poor connection of connector terminal. Repair or replace connector.

# 4. CHECK WHEEL SENSOR HARNESS

- Turn ignition switch OFF.
- Disconnect ABS actuator and electric unit (control unit) connector. 2.
- Disconnect malfunctioning wheel sensor connector.
- Check continuity between terminals. (Also check continuity when steering wheel is turned right and left and when sensor harness inside the wheel house is moved.)

Measurement terminal for signal circuit

ABS actuator and electric unit (control unit)		Wheel sensor		Continuity
Connector	Connector Terminal		Terminal	Continuity
	12	E39 (Front RH)	4	
E36	27	E22 (Front LH)	2	Existed
⊏30	15	B41 (Rear RH)	8	Existed
	30	B44 (Rear LH)	6	

Measurement terminal for power supply circuit

ABS actuator and electric unit (control unit)		Wheel sensor		Continuity
Connector	Connector Terminal		Terminal	Continuity
	21	E39 (Front RH)	3	
E36	23	E22 (Front LH)	1	Existed
L30	11	B41 (Rear RH)	7	LVISIGO
	26	B44 (Rear LH)	5	

Measurement terminal for ground circuit

	Continuity			
Connector	Connector Terminal Connector Terminal			
	12, 21	- E36	3, 4	Not existed
E36	27, 23			
⊏30	15, 11			
	30, 26			

Reconnect ABS actuator and electric unit (control unit) connector.

### Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair or replace malfunctioning components.

### 5. REPLACE WHEEL SENSOR

- 1. Replace wheel sensor.
- 2. Erase self-diagnosis results for "ABS" with CONSULT-III.
- Turn the ignition switch OFF.
- Turn the ignition switch ON.

#### **CAUTION:**

#### Never start engine.

5. Perform self-diagnosis for "ABS" with CONSULT-III.

### Is DTC "C1115" detected?

YES >> Replace ABS actuator and electric unit (control unit).

NO >> INSPECTION END

# Component Inspection

# 1. CHECK DATA MONITOR

Revision: 2009 October

Select "ABS", "DATA MONITOR" in order with CONSULT-III, select "FR LH SENSOR", "FR RH SENSOR", "RR LH SENSOR" and "RR RH SENSOR", and check the vehicle speed.

> **BRC-33** 2010 Rogue

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INFOID:0000000005255420

### **C1115 WHEEL SENSOR**

< DTC/CIRCUIT DIAGNOSIS >

[ABS]

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

### Is the inspection result normal?

YES >> INSPECTION END

NO >> Go to diagnosis procedure. Refer to <a href="BRC-32">BRC-32</a>, "Diagnosis Procedure".

### C1120, C1122, C1124, C1126 IN ABS SOL

< DTC/CIRCUIT DIAGNOSIS >

[ABS]

# C1120, C1122, C1124, C1126 IN ABS SOL

Description INFOID:0000000005255421

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:0000000005255422

### 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.		
C1122			ABS actuator and electric unit (control unit)	
C1124				
C1126	RR RH IN ABS SOL	When the control unit detects a malfunction in the rear RH inlet solenoid circuit.		

### DTC CONFIRMATION PROCEDURE

# CHECK SELF-DIAGNOSIS RESULTS

Perform self-diagnosis for "ABS" with CONSULT-III.

Self-diagnosis results
FR LH IN ABS SOL
FR RH IN ABS SOL
RR LH IN ABS SOL
RR RH IN ABS SOL

### Is above displayed on the self-diagnosis display?

>> Proceed to diagnosis procedure. Refer to <a href="BRC-35">BRC-35</a>, "Diagnosis Procedure". YES

NO >> INSPECTION END

# Diagnosis Procedure

# CHECK SENSOR AND SENSOR ROTOR

- Check that there is no damage or adherence of foreign matter on the sensor rotor surface.
- Check sensor rotor for damage.
- Check wheel sensor for damage, disconnection or looseness.
- Check that there is no deformation on the wheel sensor mounting surface.

### Are the sensor and sensor rotor normal?

YES >> GO TO 2.

NO >> Repair wheel sensor mount or replace sensor rotor. Then perform self-diagnosis for "ABS" with CONSULT-III.

# 2.CHECK CONNECTOR

- Turn ignition switch OFF.
- 2. Disconnect ABS actuator and electric unit (control unit) connector.
- Check terminal for deformation, disconnection, looseness, and so on. If any malfunction is found, repair or replace terminal.
- Reconnect connector and then perform self-diagnosis for "ABS" with CONSULT-III.

### Is any item indicated on the self-diagnosis display?

YES >> GO TO 3.

NO >> Poor connection of connector terminal. Replace or repair connector.

**BRC-35** Revision: 2009 October 2010 Rogue

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INFOID:0000000005255423

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### C1120, C1122, C1124, C1126 IN ABS SOL

< DTC/CIRCUIT DIAGNOSIS >

[ABS]

# ${f 3.}$ check actuator relay power supply circuit

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

ABS actuator and electric unit (control unit)			Voltage
Connector	Terminal		voitage
E36	2	Ground	Battery voltage

### Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace malfunctioning components.

# 4. CHECK ACTUATOR RELAY GROUND CIRCUIT

Check continuity between ABS actuator and electric unit (control unit) harness connector terminals and ground.

ABS actuator and ele	ectric unit (control unit)		Continuity	
Connector	Terminal		Continuity	
E36	3, 4	Ground	Existed	

### Is the inspection result normal?

YES >> Replace ABS actuator and electric unit (control unit).

NO >> Repair or replace malfunctioning components.

# Component Inspection

INFOID:0000000005255424

# 1. CHECK ACTIVE TEST

- 1. Select "ABS", "ACTIVE TEST" and each test item in order with CONSULT-III.
- On the display, select "Up", "Keep" and "Down", and check that the system operates as shown in the table below.

Test item	Display item -	Display		
		Up	Keep	Down
FR RH SOL	FR RH IN SOL	Off	On	On
FR RH SOL	FR RH OUT SOL	Off	Off	On*
FR LH SOL	FR LH IN SOL	Off	On	On
TR EITSOL	FR LH OUT SOL	Off	Off	On*
RR RH SOL	RR RH IN SOL	Off	On	On
KK KIT SOL	RR RH OUT SOL	Off	Off	On*
RR LH SOL	RR LH IN SOL	Off	On	On
INICIT SOL	RR LH OUT SOL	Off	Off	On*

<sup>\*:</sup> On for 1 to 2 seconds after the select, and then Off.

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Go to diagnosis procedure. Refer to BRC-35, "Diagnosis Procedure".

### C1121, C1123, C1125, C1127 OUT ABS SOL

< DTC/CIRCUIT DIAGNOSIS >

[ABS]

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## C1121, C1123, C1125, C1127 OUT ABS SOL

**Description** 

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

#### 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.	
C1123	FR RH OUT ABS SOL	When the control unit detects a malfunction in the front RH outlet solenoid circuit.	ABS actuator and electric unit
C1125	RR LH OUT ABS SOL	When the control unit detects a malfunction in the rear LH outlet solenoid circuit.	(control unit)
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-DIAGNOSIS RESULTS

Perform self-diagnosis for "ABS" with CONSULT-III.

Self-diagnosis results
FR LH OUT ABS SOL
FR RH OUT ABS SOL
RR LH OUT ABS SOL
RR RH OUT ABS SOL

#### Is above displayed on the self-diagnosis display?

YES >> Proceed to diagnosis procedure. Refer to <a href="BRC-37">BRC-37</a>, "Diagnosis Procedure".

NO >> INSPECTION END

## Diagnosis Procedure

JNOSIS Procedure

## 1. CHECK SENSOR AND SENSOR ROTOR

- Check that there is no damage or adherence of foreign matter on the sensor rotor surface.
- Check sensor rotor for damage.
- Check wheel sensor for damage, disconnection or looseness.
- Check that there is no deformation on the wheel sensor mounting surface.

### Are the sensor and sensor rotor normal?

YES >> GO TO 2.

NO >> Repair wheel sensor mount or replace sensor rotor. Then perform self-diagnosis for "ABS" with CONSULT-III.

# 2.CHECK CONNECTOR

- 1. Turn ignition switch OFF.
- 2. Disconnect ABS actuator and electric unit (control unit) connector.
- Check terminal for deformation, disconnection, looseness, and so on. If any malfunction is found, repair or replace terminal.
- Reconnect connector and then perform self-diagnosis for "ABS" with CONSULT-III.

#### Is any item indicated on the self-diagnosis display?

YES >> GO TO 3.

NO >> Poor connection of connector terminal. Replace or repair connector.

Revision: 2009 October BRC-37 2010 Rogue

### C1121, C1123, C1125, C1127 OUT ABS SOL

### < DTC/CIRCUIT DIAGNOSIS >

[ABS]

# 3.check actuator relay power supply circuit

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

ABS actuator and ele	ectric unit (control unit)	_	Voltage
Connector	Terminal	_	
E36	2	Ground	Battery voltage

#### Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace malfunctioning components.

## 4. CHECK ACTUATOR RELAY GROUND CIRCUIT

Check continuity between ABS actuator and electric unit (control unit) harness connector terminals and ground.

ABS actuator and ele	ectric unit (control unit)		Continuity
Connector	Terminal	_	Continuity
E36	3, 4	Ground	Existed

#### Is the inspection result normal?

YES >> Replace ABS actuator and electric unit (control unit).

NO >> Repair or replace malfunctioning components.

## Component Inspection

INFOID:0000000005255428

## 1. CHECK ACTIVE TEST

- 1. Select "ABS", "ACTIVE TEST" and each test item in order with CONSULT-III.
- On the display, select "Up", "Keep" and "Down", and check that the system operates as shown in the table below.

Test item	Display item –	Display		
rest item		Up	Keep	Down
FR RH SOL	FR RH IN SOL	Off	On	On
FR RH SOL	FR RH OUT SOL	Off	Off	On*
FR LH SOL	FR LH IN SOL	Off	On	On
TR EITSOL	FR LH OUT SOL	Off	Off	On*
RR RH SOL	RR RH IN SOL	Off	On	On
KK KIT SOL	RR RH OUT SOL	Off	Off	On*
RR LH SOL	RR LH IN SOL	Off	On	On
INI LIT SOL	RR LH OUT SOL	Off	Off	On*

<sup>\*:</sup> On for 1 to 2 seconds after the select, and then Off.

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Go to diagnosis procedure. Refer to BRC-37, "Diagnosis Procedure".

### C1140 ACTUATOR RELAY SYSTEM

< DTC/CIRCUIT DIAGNOSIS >

[ABS]

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### C1140 ACTUATOR RELAY SYSTEM

Description INFOID:000000005255429

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

DTC Logic

#### DTC DETECTION LOGIC

DTC	Display item	Malfunction detected condition	Possible cause
C1140	ACTUATOR RLY	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     ABS actuator and electric unit
C1140	ACTUATOR NET	During the actuator relay operating with ON, when the actuator relay turns ON, or when the control line for the relay is open.	(control unit)

### DTC CONFIRMATION PROCEDURE

### CHECK SELF-DIAGNOSIS RESULTS

Perform self-diagnosis for "ABS" with CONSULT-III.

Self-diagnosis results
ACTUATOR RLY

Is above displayed on the self-diagnosis display?

YES >> Proceed to diagnosis procedure. Refer to <a href="BRC-39">BRC-39</a>, "Diagnosis Procedure".

NO >> INSPECTION END

## Diagnosis Procedure

INFOID:0000000005255431

## 1. CHECK CONNECTOR

- Turn ignition switch OFF.
- 2. Disconnect ABS actuator and electric unit (control unit) connector.
- Check terminal for deformation, disconnection, looseness, and so on. If any malfunction is found, repair or replace terminal.
- 4. Reconnect connector and then perform self-diagnosis for "ABS" with CONSULT-III.

#### Is any item indicated on the self-diagnosis display?

YES >> GO TO 2.

NO >> Poor connection of connector terminal. Replace or repair connector.

## 2.CHECK ACTUATOR RELAY POWER SUPPLY CIRCUIT

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

ABS actuator and ele	ectric unit (control unit)	_	Voltage
Connector	Terminal		Voltage
E36	2	Ground	Battery voltage

Reconnect ABS actuator and electric unit (control unit) connector.

#### Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace malfunctioning components.

Revision: 2009 October BRC-39 2010 Rogue

### C1140 ACTUATOR RELAY SYSTEM

### < DTC/CIRCUIT DIAGNOSIS >

[ABS]

# ${f 3.}$ abs power supply check (under load conditions)

Use 12 V lamp (normal rating 10 to 20 W) connected between E36 terminals 1 and 3. With ignition switch ON check bulb illuminates correctly.

### Is the inspection result normal?

YES >> GO TO 4.

NO >> Check both power supply and ground circuit.

# ${f 4.}$ CHECK ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT) GROUND CIRCUIT

- 1. Turn ignition switch OFF.
- 2. Disconnect ABS actuator and electric unit (control unit) connector.
- 3. Check continuity between ABS actuator and electric unit (control unit) harness connector terminals and ground.

ABS actuator and ele	ectric unit (control unit)		Continuity	
Connector	Terminal	<del>_</del>	Continuity	
E36	3, 4	Ground	Existed	

### Is the inspection result normal?

YES >> Replace ABS actuator and electric unit (control unit).

NO >> Repair or replace malfunctioning components. (Check ABS each bolt for tightness and corrosion).

## Component Inspection

INFOID:0000000005255432

## 1. CHECK ACTIVE TEST

- 1. Select "ABS", "ACTIVE TEST" and "ABS MOTOR" in order with CONSULT-III,
- Select "On" and "Off" on screen. Make sure motor relay and actuator relay operates as shown in table below

Test item	Display item	Display	
rest item	Display item	On	Off
ABS MOTOR	MOTOR RELAY	On	Off
ABS MOTOR	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 <u>BRC-39</u>, "<u>Diagnosis Procedure</u>".

### **U1000 CAN COMM CIRCUIT**

< DTC/CIRCUIT DIAGNOSIS >

[ABS]

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### U1000 CAN COMM CIRCUIT

Description INFOID:0000000005255433

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

#### 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.	

### DTC CONFIRMATION PROCEDURE

### 1. CHECK SELF-DIAGNOSIS RESULTS

Perform self-diagnosis for "ABS" with CONSULT-III.

Self-diagnosis results	
CAN COMM CIRCUIT	

### Is above displayed on the self-diagnosis display?

YES >> Proceed to diagnosis procedure. Refer to BRC-41, "Diagnosis Procedure".

NO >> INSPECTION END

### Diagnosis Procedure

INFOID:0000000005255435

## 1. CHECK CONNECTOR

- Turn ignition switch OFF.
- 2. Disconnect ABS actuator and electric unit (control unit) connector.
- 3. Check terminal for deformation, disconnection, looseness, and so on. If any malfunction is found, repair or replace terminal.
- Reconnect connector and perform self-diagnosis for "ABS" with CONSULT-III.

Self-diagnosis results	
CAN COMM CIRCUIT	

### Is above displayed on the self-diagnosis display?

YES >> Go to LAN-16, "Trouble Diagnosis Flow Chart".

NO >> INSPECTION END

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[ABS]

## U1010 CONTROL UNIT (CAN)

Description INFOID:000000005255436

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

#### DTC DETECTION LOGIC

DTC	Items	Diagnostic item is detected when	Possible cause
U1010	CONTROL UNIT (CAN)	When detecting error during the initial diagnosis of CAN controller of ABS actuator and electric unit (control unit).	ABS actuator and electric unit (control unit) error

### DTC CONFIRMATION PROCEDURE

## 1. RECHECK DTC

- 1. Turn the ignition switch OFF to ON.
- 2. Perform self-diagnosis for "ABS" with CONSULT-III.

#### Is DTC "U1010" detected?

YES >> Proceed to diagnosis procedure. Refer to BRC-42, "Diagnosis Procedure".

NO >> INSPECTION END

## Diagnosis Procedure

INFOID:0000000005255438

2010 Rogue

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

Check that there is no malfunction in ABS actuator and electric unit (control unit) harness connector or disconnection.

#### Is the inspection result normal?

YES >> Replace ABS actuator and electric unit (control unit).

NO >> Repair or replace the harnesses and connectors.

### **BRAKE FLUID LEVEL SWITCH**

< DTC/CIRCUIT DIAGNOSIS >

[ABS]

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### BRAKE FLUID LEVEL SWITCH

Description INFOID:000000005255439

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).

## Component Function Check

# INFOID:0000000005255440

### 1. CHECK BRAKE FLUID LEVEL SWITCH OPERATION

Operate the brake fluid level switch. Then check that the brake warning lamp in the combination meter turns on/off correctly.

### Is the inspection result normal?

>> INSPECTION END

>> Go to diagnosis procedure. Refer to <u>BRC-43</u>, "<u>Diagnosis Procedure</u>". NO

## Diagnosis Procedure

INFOID:0000000005255441

## 1. CHECK BRAKE FLUID LEVEL

Check brake fluid level. Refer to BR-12, "Inspection".

### Is the inspection result normal?

>> GO TO 2. YES

NO >> Refill brake fluid. Refer to BR-12, "Refilling".

## 2. CHECK CONNECTOR

Turn ignition switch OFF.

- Disconnect brake fluid level switch connector and combination meter connector. 2.
- Check terminal for deformation, disconnection, looseness, and so on. If any malfunction is found, repair or replace terminal.
- 4. Reconnect connectors and then perform component function check. Refer to BRC-43, "Component Function Check".

#### Is the inspection result normal?

YES >> Poor connection of connector terminal. Replace or repair connector.

NO >> GO TO 3.

## 3.CHECK BRAKE FLUID LEVEL SWITCH

- Turn ignition switch OFF.
- Disconnect brake fluid level switch connector.
- Check continuity between brake fluid level switch connector terminals.

Brake fluid level switch		Condition	Continuity
Connector	Terminal	Condition	Continuity
F27 4 2	When brake fluid is full in the reservoir tank.	Not existed	
	E37 1 – 2	When brake fluid is empty in the reservoir tank.	Existed

### Is the inspection result normal?

YES >> GO TO 4.

Revision: 2009 October

NO >> Brake fluid level switch is malfunction. Replace reservoir tank.

## f 4.CHECK BRAKE FLUID LEVEL SWITCH CIRCUIT

- Disconnect combination meter connector.
- Check continuity between brake fluid level switch harness connector terminals and combination meter harness connector terminal and/or ground.

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**BRC-43** 2010 Rogue

INFOID:0000000005255442

Combination meter		Brake fluid level switch		Continuity
Connector	Terminal	Connector	Terminal	Continuity
M34	27	E37	1	Existed

Combina	tion meter	_	Continuity
Connector Terminal		_	Continuity
M34	27	Ground	Not existed

Brake fluid	level switch		Continuity
Connector	Terminal	_	Continuity
E37	2	Ground	Existed

### Is the inspection result normal?

YES >> INSPECTION END

NO >> Repair or replace malfunctioning components.

## Component Inspection

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	Terminal	Condition	Continuity	
E37 1 – 2	1 _ 2	When brake fluid is full in the reservoir tank.	Not existed	
	When brake fluid is empty in the reservoir tank.	Existed		

### Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace reservoir tank.

### PARKING BRAKE SWITCH

### < DTC/CIRCUIT DIAGNOSIS >

### [ABS]

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### PARKING BRAKE SWITCH

**Description** 

The parking brake switch converts the status of the parking brake pedal to an electric signal and transmits it to the ABS actuator and electric unit (control unit).

## Component Function Check

#### INFOID:0000000005255444

## 1. CHECK PARKING BRAKE SWITCH OPERATION

Operate the parking brake pedal. 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 switch is operation	ON
When the parking brake switch is not operation.	OFF

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### Is the inspection result normal?

YES >> INSPECTION END

NO >> Go to diagnosis procedure. Refer to <a href="BRC-45">BRC-45</a>, "Diagnosis Procedure".

## Diagnosis Procedure

### INFOID:0000000005255445

# 1. CHECK PARKING BRAKE SWITCH

- 1. Turn ignition switch OFF.
- Disconnect parking brake switch connector.
- 3. Check continuity between parking brake switch connector terminal and ground.

Parking brake switch		Condition	Continuity
Connector	Terminal	Condition	Continuity
E103 1 – Ground		When the parking brake switch is operated.	Existed
E103 1 – Ground	When the parking brake switch is not operated.	Not existed	

#### Is the inspection result normal?

YES >> GO TO 2.

NO >> Replace parking brake switch.

### 2. CHECK COMBINATION METER

Check if the indication and operation of combination meter are normal. Refer to MWI-32, "Diagnosis Description".

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Repair or replace combination meter.

## Component Inspection

### INFOID:0000000005255446

# 1. CHECK PARKING BRAKE SWITCH

- Turn ignition switch OFF.
- 2. Disconnect parking brake switch connector.
- Check continuity between parking brake switch connector terminal and ground.

### **PARKING BRAKE SWITCH**

### < DTC/CIRCUIT DIAGNOSIS >

[ABS]

Parking brake switch		Condition	Continuity
Connector	Terminal	Condition	Continuity
E103	1 – Ground	When the parking brake switch is operated.	Existed
E103 1 – Ground	When the parking brake switch is not operated.	Not existed	

### Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace parking brake switch. Refer to PB-6, "Exploded View".

### ABS WARNING LAMP

[ABS] < DTC/CIRCUIT DIAGNOSIS >

### **ABS WARNING LAMP**

Description INFOID:0000000005255447

 $\times$ : ON -: OFF

INFOID:0000000005255448

INFOID:0000000005255449

Condition	ABS warning lamp
Ignition switch OFF	-
For 1 second after turning ignition switch ON	×
1 second later after turning ignition switch ON	-
ABS function is malfunctioning.	×
EBD function is malfunctioning.	×

## Component Function Check

## 1. CHECK ABS WARNING LAMP OPERATION

Check that the lamp illuminates for approximately 1 second after the ignition switch is turned ON.

## Is the inspection result normal?

>> INSPECTION END YES

NO >> Go to diagnosis procedure. Refer to <a href="BRC-47">BRC-47</a>, "Diagnosis Procedure".

## Diagnosis Procedure

## 1. CHECK SELF-DIAGNOSIS

Perform self-diagnosis for "ABS" with CONSULT-III.

#### Is the inspection result normal?

YES >> GO TO 2.

>> Check items displayed by self-diagnosis. NO

## 2.CHECK COMBINATION METER

Check if the indication and operation of combination meter are normal. Refer to MWI-32, "Diagnosis Description".

### Is the inspection result normal?

YES >> Replace ABS actuator and electric unit (control unit).

NO >> Repair or replace combination meter. BRC

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[ABS]

### **BRAKE WARNING LAMP**

Description INFOID:0000000005255450

×: ON -: OFF

Condition	Brake warning lamp (Note 1)
Ignition switch OFF	-
For 1 second after turning ignition switch ON	× (Note 2)
1 second later after turning 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:0000000005255451

## BRAKE WARNING LAMP OPERATION CHECK 1

Check that the lamp illuminates for approximately 1 second after the ignition switch is turned ON.

#### Is the inspection result normal?

YES >> GO TO 2.

NO >> Go to diagnosis procedure. Refer to BRC-48, "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 pedal.

#### Is the inspection result normal?

YES >> INSPECTION END

>> Check parking brake switch. Refer to BRC-45, "Diagnosis Procedure". NO

## Diagnosis Procedure

INFOID:0000000005255452

## CHECK PARKING BRAKE SWITCH

Check that the brake warning lamp in the combination meter turns ON/OFF correctly when operating the parking brake pedal.

#### Is the inspection result normal?

YES >> GO TO 2.

NO >> Check parking brake switch. Refer to <a href="BRC-45">BRC-45</a>, "Diagnosis Procedure".

## 2. CHECK SELF-DIAGNOSIS

Perform self-diagnosis for "ABS" with CONSULT-III.

### 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-32, "Diagnosis Description".

### Is the inspection result normal?

YES >> Replace ABS actuator and electric unit (control unit).

NO >> Repair or replace combination meter.

< ECU DIAGNOSIS INFORMATION >

[ABS]

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# **ECU DIAGNOSIS INFORMATION**

# ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)

Reference Value INFOID:0000000005255453

#### 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.

		Data monitor		D
Monitor item	Display content	Condition	Reference value in normal operation	_
		Vehicle stopped	0 [km/h (MPH)]	Е
FR LH SENSOR	Wheel speed	Vehicle running (Note 1)	Nearly matches the speed meter display (± 10% or less)	BRC
		Vehicle stopped	0 [km/h (MPH)]	
FR RH SENSOR	Wheel speed	Vehicle running (Note 1)	Nearly matches the speed meter display (± 10% or less)	G
		Vehicle stopped	0 [km/h (MPH)]	
RR LH SENSOR	Wheel speed	Vehicle running (Note 1)	Nearly matches the speed meter display (± 10% or less)	Н
	Wheel speed	Vehicle stopped	0 [km/h (MPH)]	
RR RH SENSOR Wh		Vehicle running (Note 1)	Nearly matches the speed meter display (± 10% or less)	J
STOP LAMP SW	Stop lamp switch signal status	When brake pedal is depressed	On	=
STOP LAWIP SW	Stop lamp switch signal status	When brake pedal is not depressed	Off	IZ.
BATTERY VOLT	Battery voltage supplied to the ABS actuator and electric unit (control unit)	Ignition switch ON	10 – 16 V	· K
DECEL G-SEN1	Decel G detected by decel G sensor	Changes according to an indication	On	l
(Note 2)	Decen & detected by decen & serisor	shown by the decel G sensor	Off	_
DECEL G-SEN2	Decel G detected by decel G sensor	Changes according to an indication	On	
(Note 2)	Door C detected by decer C correct	shown by the decel G sensor	Off	M
FR RH IN SOL	Operation status of each solenoid valve	Actuator (solenoid valve) is active ("ACTIVE TEST" in "ABS" with CONSULT-III)	On	N
PR KIT IIV SOL Operation	Sportation status of cacif solenous valve	When the actuator (solenoid valve) is not active and actuator relay is active (ignition switch ON)	Off	0
ED DH OUT COL	Operation status of each calculation	Actuator (solenoid valve) is active ("ACTIVE TEST" in "ABS" with CONSULT-III)	On	
FR RH OUT SOL	Operation status of each solenoid valve	When the actuator (solenoid valve) is not active and actuator relay is active (ignition switch ON)	Off	Р

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< ECU DIAGNOSIS INFORMATION >

[ABS]

		Data monitor		
Monitor item	Display content	Condition	Reference value in normal operation	
FR LH IN SOL	Operation status of each solenoid valve	Actuator (solenoid valve) is active ("ACTIVE TEST" in "ABS" with CONSULT-III)	On Off	
1 K 211 IIV 002	oporation status of such solicitors valve	When the actuator (solenoid valve) is not active and actuator relay is active (ignition switch ON)		
FR LH OUT SOL	Operation status of each colonoid valve	Actuator (solenoid valve) is active ("ACTIVE TEST" in "ABS" with CONSULT-III)	On	
FR LH OUT SOL	Operation status of each solenoid valve	When the actuator (solenoid valve) is not active and actuator relay is active (ignition switch ON)	Off	
RR RH IN SOL	Operation status of each colonoid valve	Actuator (solenoid valve) is active ("ACTIVE TEST" in "ABS" with CONSULT-III)	On	
	Operation status of each solenoid valve	When the actuator (solenoid valve) is not active and actuator relay is active (ignition switch ON)	Off	
RR RH OUT SOL		Actuator (solenoid valve) is active ("ACTIVE TEST" in "ABS" with CONSULT-III)	On	
	Operation status of each solenoid valve	When the actuator (solenoid valve) is not active and actuator relay is active (ignition switch ON)	Off On Off On Off	
RR LH IN SOL	Operation status of each solenoid valve	Actuator (solenoid valve) is active ("AC-TIVE TEST" in "ABS" with CONSULT-III)		
	Operation status of each solenoid valve	When the actuator (solenoid valve) is not active and actuator relay is active (ignition switch ON)	Off	
DD I II OUT SOI	Operation status of each calendid valve	Actuator (solenoid valve) is active ("ACTIVE TEST" in "ABS" with CONSULT-III)	On	
RR LH OUT SOL	Operation status of each solenoid valve	When the actuator (solenoid valve) is not active and actuator relay is active (ignition switch ON)	Off	
MOTOR RELAY		When the motor relay and motor are operating  On		
MOTOR RELAY	Motor and motor relay operation	When the motor relay and motor are not operating	Off	
ACTUATOR RLY	A-44	When the actuator relay is operating	On	
(Note 3)	Actuator relay operation	When the actuator relay is not operating	Off	
ADC MADALLARE	ABS warning lamp	When ABS warning lamp is ON	normal operation On Off	
ABS WARN LAMP (Note 4)		When ABS warning lamp is OFF	Off	
, ,		EBD is active	On	
EBD SIGNAL	EBD operation	EBD is inactive	Off	
ABS SIGNAL	ARS operation	ABS is active	On	
ADS SIGNAL	ABS operation	ABS is inactive	Off	
EBD FAIL SIG	EBD fail-safe signal	In EBD fail-safe	On	
LDD I ME OIG	LDD Idii Salo Sigilal	EBD is normal	Off	

### < ECU DIAGNOSIS INFORMATION >

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Monitor item		Data monitor	
	Display content	Condition Reference value in normal operation	Reference value in normal operation
ABS FAIL SIG	ADC fell sefe simul	In ABS fail-safe	On
	ABS fail-safe signal	ABS is normal	normal operation

#### NOTE:

- 1: Confirm tire pressure is normal.
- 2: Only AWD models.
- 3: Every 20 seconds momentary switch to Off.
- 4: On and off timing for warning lamp and indicator lamp.
- ABS warning lamp: Refer to BRC-47, "Description".

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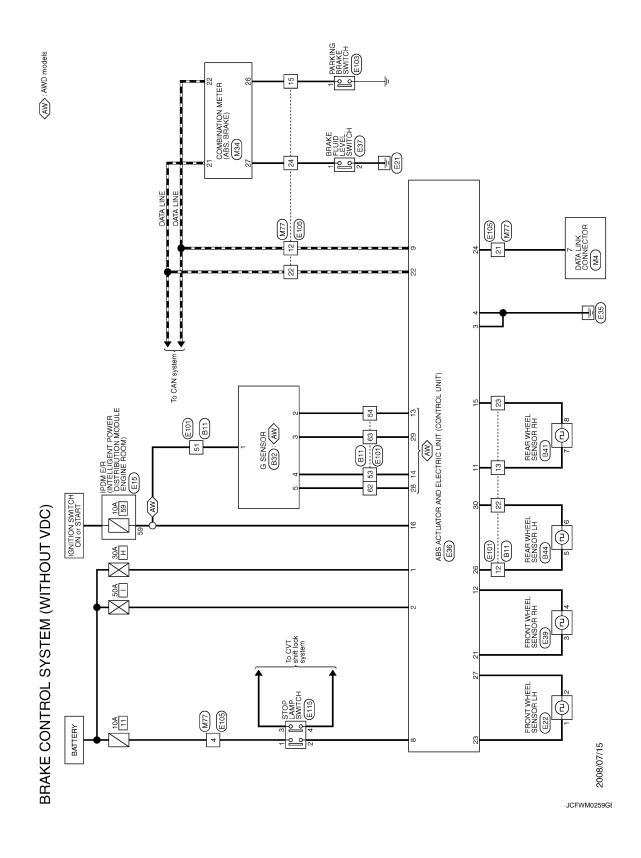
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Wiring Diagram -BRAKE CONTROL SYSTEM-

INFOID:0000000005255454



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					Α
Nosk LH	Signal Name [Specification]	IGN FR SENSOR VB CAN H CAN H FL SENSOR VB DIAG K RL SENSOR VB G GND G GND G SWZ RL SENSOR SIG G SWZ RL SENSOR SIG			В
B44 REAR WHEEL SENSOR LH RK02FGY	Ш	표 교 교 교 교 교			С
Connector No. Connector Name Connector Type	Color   Color   No.   Color   No.   Color	16 BR 22 C 23 C 24 GR 24 GR 27 P 28 BR 29 R 30 G			D
	ation]	AC UNIT	aton		Е
PEAR WHEEL SENSOR RH RHOZFGY	Signal Name [Specification]	ABS ACTUATOR AND ELECTRIC UNIT (COMTROL UNIT) PRIZERE-NUA-DH SE ATT A PROLITICIO LITERATOR (SEATT A PROLITICIO LITERATOR (DESCRIBERE REPORTED)	Signal Name [Specification] MOTOR ACTR ACTR GND A GND A STOP LAMB SW STOP LAMB SW ER SENSOR SIG G CHECK G CHECK G CHECK G CHECK G STOP CAN C G CHECK G CHECK G STOP CAN C G CHECK G CHECK G STOP CAN C G CHECK G STOP CAN C		BRC
	Codor of Wine S	9 9 0 7 4	Color of Wire P Y Y Y P R R R R R R R R R R R R R R R		G
Connector No. Connector Name Connector Type H.S.	Terminal No. 7 8 8	Connector No.	Meminal Ferminal Fermina Ferminal Ferminal Ferminal Ferminal Ferminal Ferminal Fermi		Н
	edification]		eoffication]		I
6 SENSOR YDZUGFW	Signal Name [Specification]  IGN IGN GST GSS GSI GND GND	FRONT WHEEL SENSOR LH RKGZMGY	Signal Name [Specification]		J
No. Name Type	of Wire	or Name	P P W		K
	Terminal No. 10 1 2 2 2 2 2 2 2 2 5 5 5 5 5 5 5 5 5 5 5		Terminal No. 2		L
STEM (WIT	Signal Name [Specification]	ULE ENGINE ROOM 49 48 47 56 55 54	Signal Name [Specification]		M
BRAKE CONTROL SYSTEM (WITHOUT Connector No. Bit Connector Name Wife To Wife Connector Type IH80MW-CS16-TW4  A.S. Connector Type IH80MW-CS16-TW4  A.S. Connector Type IH80MW-CS16-TW4  A.S. Connector Type IH80MW-CS16-TW4	Signal Nam	E15   PDM E.PR (INTELLIGENT POWER   PST   PST	Signal Nam		Ν
BRAKE CON Connector No. B Connector Name W Connector Type The	Color   Colo	ector No. ector Type ector Type  53	Terminal Color No. of Wire 59 BR		0
B Sommon Sommon	<u> </u>	Conn	<u> </u>	JCFWM0260GE	Р

BRAKE CONTROL SYSTEM (WITHO Connector No. E37  Connector Name BRAKE FLUID LEVEL SWITCH  Connector Type NV02FGV  Connector Type Signal Name [Specification]  Terminal Color  No. of Wire  1 LG  2 B		Connector Name Connector Name Connector Type Connec	FOUT WHEEL SENSOR RH RROZMGY  Signal Name [Specification]	Connector No.	WIRE TO WIRE THBOFW-CS16-TM4  WIND THE THEORY-CS16-TM4  Signal Name [Specification]	Connector No. Connector Name Connector Type M.S. H.S. I of Wir	No. E103  Name PARKNIG BRAKE SWITCH  Type POIFB-A  Color of Wire  Signal Name [Specification]	CH Specification]
WRE TO WRE THBOFV-CS16-TM4		Connector No. Connector Name Connector Type H.S.	STOP LAMP SWITCH MOHEW-LC  3 4	Gormettor No. Commettor Name Commettor Type	MATALINK CONNECTOR BD16FW  9 10 11 12 13 14 15 16 7 18	Connector No. Connector Name Connector Type H.S. H.S.	me COMBINATION METER ps SAB40FW SAB40FW SIGNED TO THE SAB40FW	100 E
Signal Name	Signal Name [Specification]	Terminal Golor No. of Wire	Signal Name	Terminal Color No. of Wire	Signal Name [Specification]	lau .	Color Signal Name [Specification]	Specification]
		> >	1 1	7 0	1	+	L CAN-H	H_1
		3 2				22 26	PARK	SRAKE SW
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## Fail-Safe

### ABS, EBD SYSTEM

BRAKE CONTROL SYSTEM (WITHOUT VDC)

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In case of electrical malfunctions with the ABS, ABS warning lamp will turn ON. In case of electrical malfunctions with the EBD, brake warning lamp, ABS warning lamp will turn ON. Simultaneously, the ABS become one of the following conditions of the fail-safe function.

### < ECU DIAGNOSIS INFORMATION >

[ABS]

• For malfunction of ABS, only the EBD is activated and the condition of vehicle is the same condition of vehicles without 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 ABS, EBD system.

DTC Index

DTC	Items (CONSULT screen terms)	Reference	
C1101	RR RH SENSOR-1		
C1102	RR LH SENSOR-1	DDC 40 "DTC Logic"	
C1103	FR RH SENSOR-1	BRC-18, "DTC Logic"	
C1104	FR LH SENSOR-1		
C1105	RR RH SENSOR-2		
C1106	RR LH SENSOR-2	DDC 04 UDTC Lawiell	
C1107	FR RH SENSOR-2	BRC-21, "DTC Logic"	
C1108	FR LH SENSOR-2		
C1109	BATTERY VOLTAGE [ABNORMAL]	BRC-24, "DTC Logic"	
C1110	CONTROLLER FAILURE	BRC-26, "DTC Logic"	
C1111	PUMP MOTOR	BRC-27, "DTC Logic"	
C1113	G SENSOR	BRC-29, "DTC Logic"	
C1115	ABS SENSOR [ABNORMAL SIGNAL]	BRC-32, "DTC Logic"	
C1120	FR LH IN ABS SOL	BRC-35, "DTC Logic"	
C1121	FR LH OUT ABS SOL	BRC-37, "DTC Logic"	
C1122	FR RH IN ABS SOL	BRC-35, "DTC Logic"	
C1123	FR RH OUT ABS SOL	BRC-37, "DTC Logic"	
C1124	RR LH IN ABS SOL	BRC-35, "DTC Logic"	
C1125	RR LH OUT ABS SOL	BRC-37, "DTC Logic"	
C1126	RR RH IN ABS SOL	BRC-35, "DTC Logic"	
C1127	RR RH OUT ABS SOL	BRC-37, "DTC Logic"	
C1140	ACTUATOR RLY	BRC-39, "DTC Logic"	
U1000	CAN COMM CIRCUIT	BRC-41, "DTC Logic"	
U1010	CONTROL UNIT (CAN)	BRC-42, "DTC Logic"	

### **EXCESSIVE ABS FUNCTION OPERATION FREQUENCY**

[ABS] < SYMPTOM DIAGNOSIS >

## SYMPTOM DIAGNOSIS

## **EXCESSIVE ABS FUNCTION OPERATION FREQUENCY**

# Diagnosis Procedure

## 1.CHECK START

Check front and rear brake force distribution using a brake tester. Refer to BR-49, "General Specifications". 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.

- Front
- 2WD models: Refer to FAX-8, "Inspection".
- AWD models: Refer to FAX-32, "Inspection".
- 2WD models: Refer to RAX-4, "Inspection".
- AWD models: Refer to RAX-11, "Inspection".

### 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.

>> • Replace wheel sensor or sensor rotor. NO

· Repair harness.

### f 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 ABS warning lamp illuminated?

YES >> Perform self-diagnosis for "ABS" with CONSULT-III.

NO >> Normal M

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### **UNEXPECTED PEDAL REACTION**

< SYMPTOM DIAGNOSIS > [ABS]

## UNEXPECTED PEDAL REACTION

## Diagnosis Procedure

INFOID:0000000005255458

## 1. CHECK BRAKE PEDAL STROKE

Check brake pedal stroke. Refer to BR-9, "Inspection and Adjustment".

### Is the stroke too large?

YES

- >> Bleed air from brake tube and hose. Refer to BR-13, "Bleeding Brake System".
  - Check brake pedal, brake booster, and master cylinder for mount play, looseness, brake system fluid leakage, etc.
  - Brake pedal: Refer to BR-9, "Inspection and Adjustment".
  - Master cylinder: Refer to BR-14, "Inspection".
  - Brake booster: Refer to BR-15, "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 >> Normal

NO >> Check brake system.

### THE BRAKING DISTANCE IS LONG

SYMPTOM DIAGNOSIS > [ABS]
THE BRAKING DISTANCE IS LONG
Diagnosis Procedure
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 >> Normal

NO >> Check brake system.

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### **ABS FUNCTION DOES NOT OPERATE**

< SYMPTOM DIAGNOSIS >

## **ABS FUNCTION DOES NOT OPERATE**

Diagnosis Procedure

#### INFOID:0000000005255460

[ABS]

#### **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 >> Normal

NO >> Perform self-diagnosis for "ABS" with CONSULT-III.

### PEDAL VIBRATION OR ABS OPERATION SOUND OCCURS

[ABS] < SYMPTOM DIAGNOSIS > PEDAL VIBRATION OR ABS OPERATION SOUND OCCURS Α Diagnosis Procedure INFOID:0000000005255461 **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] D 1.SYMPTOM CHECK 1 Check that there are pedal vibrations when the engine is started. Е Do vibrations occur? YES >> GO TO 2. NO >> Inspect the brake pedal. BRC 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-diagnosis for "ABS" with CONSULT-III. Н 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 >> Normal J K L M Ν Р

## **NORMAL OPERATING CONDITION**

< SYMPTOM DIAGNOSIS > [ABS]

# NORMAL OPERATING CONDITION

Description INFOID:0000000005255462

Symptom	Result
Slight vibrations are felt on the brake pedal and the operation noises occur, when ABS is activated.	This is a normal condi-
Stopping distance is longer than that of vehicles without ABS when the vehicle drives on rough, gravel, or snow-covered (fresh, deep snow) roads.	tion due to the ABS activation.
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.

[ABS] < PRECAUTION >

## **PRECAUTION**

## **PRECAUTIONS** FOR USA AND CANADA

FOR USA AND CANADA: Precaution for Supplemental Restraint System (SRS) "AIR BAG" and "SEAT BELT PRE-TENSIONER" INFOID:0000000005530481

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

#### **WARNING:**

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

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

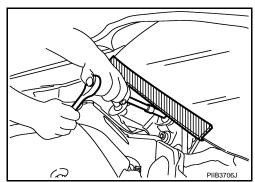
#### **WARNING:**

WARNING:

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

FOR USA AND CANADA: Precaution for Procedure without Cowl Top Cover

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



FOR USA AND CANADA: Precaution for Brake System

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

- Only use "DOT 3" brake fluid. Refer to MA-14, "FOR NORTH AMERICA: Fluids and Lubricants".
- Never reuse drained brake fluid.
- Never spill or splash brake fluid on painted surfaces. Brake fluid may seriously damage paint. Wipe it off immediately and wash with water if it gets on a painted surface.

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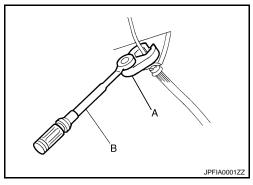
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### **PRECAUTIONS**

< PRECAUTION > [ABS]

 Never use mineral oils such as gasoline or light oil to clean. They may damage rubber parts and cause improper operation.

- Always loosen the brake tube flare nut with a flare nut wrench.
- Tighten the brake tube flare nut to the specified torque with crowfoot (A) and torque wrench (B).
- Always confirm the specified tightening torque when installing the brake pipes.
- Turn the ignition switch OFF and disconnect the ABS actuator and electric unit (control unit) connector or the battery negative terminal before performing the work.
- Check that no brake fluid leakage is present after replacing the parts.



### FOR USA AND CANADA: Precaution for Brake Control

INFOID:0000000005255466

- When starting engine or when starting vehicle just after starting engine, 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 estimate 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.

#### FOR MEXICO

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

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

### **WARNING:**

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

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

#### WARNING:

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

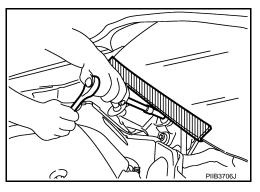
### **PRECAUTIONS**

< PRECAUTION > [ABS]

## FOR MEXICO: Precaution for Procedure without Cowl Top Cover

INFOID:0000000005530486

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



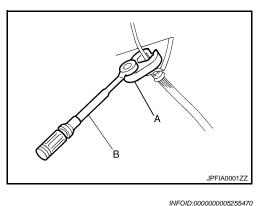
FOR MEXICO: Precaution for Brake System

INFOID:0000000005255469

#### **WARNING:**

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

- Only use "DOT 3" brake fluid. Refer to MA-15, "FOR MEXICO: Fluids and Lubricants".
- Never reuse drained brake fluid.
- Never spill or splash brake fluid on painted surfaces. Brake fluid may seriously damage paint. Wipe it off immediately and wash with water if it gets on a painted surface.
- Never use mineral oils such as gasoline or light oil to clean. They may damage rubber parts and cause improper operation.
- Always loosen the brake tube flare nut with a flare nut wrench.
- Tighten the brake tube flare nut to the specified torque with crowfoot (A) and torque wrench (B).
- Always confirm the specified tightening torque when installing the brake pipes.
- Turn the ignition switch OFF and disconnect the ABS actuator and electric unit (control unit) connector or the battery negative terminal before performing the work.
- Check that no brake fluid leakage is present after replacing the parts.



### FOR MEXICO: Precaution for Brake Control

- When starting engine or when starting vehicle just after starting engine, 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 estimate 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.

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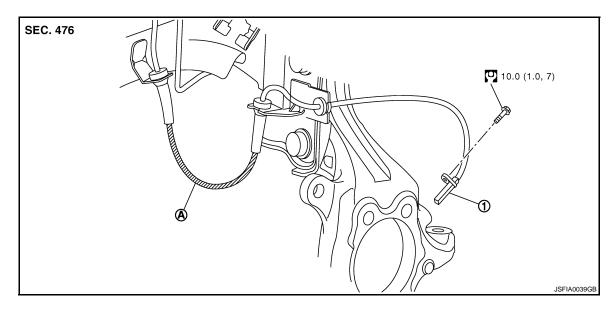
Revision: 2009 October BRC-65 2010 Rogue

# REMOVAL AND INSTALLATION

WHEEL SENSOR FRONT WHEEL SENSOR

FRONT WHEEL SENSOR: Exploded View

INFOID:0000000005255471



- 1. Front LH wheel sensor
- A. Yellow line (slant line)

Refer to GI-4, "Components" for symbol in the figure.

#### NOTE:

The above figure (front side) shows left side. Right side is the mirror image.

FRONT WHEEL SENSOR: Removal and Installation

INFOID:0000000005255472

#### **REMOVAL**

Pay attention to the following when removing sensor.

#### **CAUTION:**

- Never twist sensor harness as much as possible, when removing it. Pull sensors out without pulling sensor harness.
- Take care to avoid damaging sensor edges or rotor teeth. Remove wheel sensor first before removing front or rear wheel hub. This is to avoid damage to sensor wiring and loss of sensor function.
- When you see the harness of the wheel sensor from the front side of the vehicle ensure that the yellow lines (A) are not twisted.

#### INSTALLATION

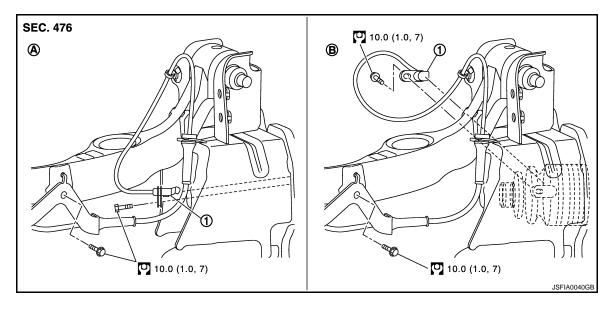
Pay attention to the following when installing wheel sensor. Tighten installation bolts to the specified torques.

- When installing, make sure there is no foreign material such as iron chips on and in the mounting hole of the wheel sensor. Make sure no foreign material has been caught in the sensor rotor. Remove any foreign material and clean the mount.
- When installing wheel sensor, be sure to press rubber grommets in until they lock at locations shown above in the figure. When installed, harness must not be twisted.

#### REAR WHEEL SENSOR

## **REAR WHEEL SENSOR: Exploded View**

INFOID:0000000005255473



1. Rear LH wheel sensor

A. 2WD models

B. AWD models

Refer to GI-4, "Components" for symbol in the figure.

#### NOTE:

The above figure (front side) shows left side. Right side is the mirror image.

#### REAR WHEEL SENSOR: Removal and Installation

### REMOVAL

Pay attention to the following when removing sensor.

#### CAUTION:

- Never twist sensor harness as much as possible, when removing it. Pull sensors out without pulling sensor harness.
- Take care to avoid damaging sensor edges or rotor teeth. Remove wheel sensor first before removing front or rear wheel hub. This is to avoid damage to sensor wiring and loss of sensor function.

#### **INSTALLATION**

Pay attention to the following when installing wheel sensor. Tighten installation bolts to the specified torques.

- When installing, make sure there is no foreign material such as iron chips on and in the mounting hole of the wheel sensor. Make sure no foreign material has been caught in the sensor rotor. Remove any foreign material and clean the mount.
- When installing wheel sensor, be sure to press rubber grommets in until they lock at locations shown above in the figure. When installed, harness must not be twisted.

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### **SENSOR ROTOR**

#### < REMOVAL AND INSTALLATION >

SENSOR ROTOR

FRONT SENSOR ROTOR

FRONT SENSOR ROTOR: Exploded View

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[ABS]

Refer to FAX-10, "Exploded View" (2WD models), FAX-34, "Exploded View" (AWD models).

FRONT SENSOR ROTOR: Removal and Installation

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#### **REMOVAL**

Sensor rotor cannot be disassembled. Remove the sensor rotor together with hub bearing assembly. Refer to <u>FAX-10</u>, "Removal and Installation" (2WD models), <u>FAX-34</u>, "Removal and Installation" (AWD models).

#### INSTALLATION

Sensor rotor cannot be disassembled. Installation the sensor rotor together with hub bearing assembly. Refer to <u>FAX-10</u>, "Removal and Installation" (2WD models), <u>FAX-34</u>, "Removal and Installation" (AWD models).

REAR SENSOR ROTOR

REAR SENSOR ROTOR: Exploded View

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Refer to RAX-5, "Exploded View" (2WD models), RAX-13, "Exploded View" (AWD models).

REAR SENSOR ROTOR: Removal and Installation

INFOID:0000000005255478

### **2WD MODELS**

Removal

Sensor rotor cannot be disassembled. Remove the sensor rotor together with hub bearing assembly. Refer to RAX-5, "Removal and Installation".

Installation

Sensor rotor cannot be disassembled. Installation the sensor rotor together with hub bearing assembly. Refer to RAX-5, "Removal and Installation".

#### AWD MODELS

For removal and installation of sensor rotor, refer to RAX-16, "Disassembly and Assembly".

[ABS]

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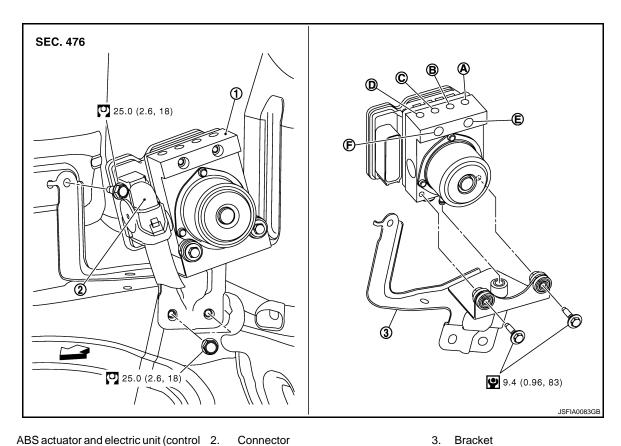
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## ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)

**Exploded View** INFOID:000000005255479



- 1. unit)
- В. To rear RH brake caliper
- C. To Rear LH brake caliper

To front RH brake caliper

To front LH brake caliper

- From master cylinder primary side
- From master cylinder secondary side

< >
☐: Vehicle front

A.

Refer to GI-4, "Components" for symbol in the figure.

#### Removal and Installation

**REMOVAL** 

#### **CAUTION:**

- Before servicing, disconnect the battery cable from negative terminal.
- To remove brake tube, use a flare nut wrench to prevent flare nuts and brake tube from being damaged. To install, use flare nut crowfoot and torque wrench.
- Never apply excessive impact to ABS actuator and electric unit (control unit), such as dropping it.
- Never remove and install actuator by holding harness.
- After work is completed, bleed air from brake tube. Refer to BR-13, "Bleeding Brake System".
- Remove cowl top. Refer to EXT-20, "Exploded View". 1.
- 2. Disconnect ABS actuator and electric unit (control unit) connector.
- 3. Loosen brake tube flare nuts, then remove brake tubes from ABS actuator and electric unit (control unit).
- Remove tire (front LH side).
- Remove fender protector (rear): (front LH side). Refer to <u>EXT-22, "Exploded View"</u>.
- Remove ABS actuator and electric unit (control unit) bracket mounting nut. 6.
- Remove ABS actuator and electric unit (control unit) from vehicle. 7.

#### INSTALLATION

**BRC-69** Revision: 2009 October 2010 Rogue

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### < REMOVAL AND INSTALLATION >

[ABS]

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

- Before servicing, disconnect the battery cable from negative terminal.
- To remove brake tube, use a flare nut wrench to prevent flare nuts and brake tube from being damaged. To install, use flare nut crowfoot and torque wrench.
- Never apply excessive impact to ABS actuator and electric unit (control unit), such as dropping it.
- Never remove and install actuator by holding harness.
- After work is completed, bleed air from brake tube. Refer to BR-13, "Bleeding Brake System".
- After installing harness connector in the ABS actuator and electric unit (control unit), make sure connector is securely locked.

[ABS]

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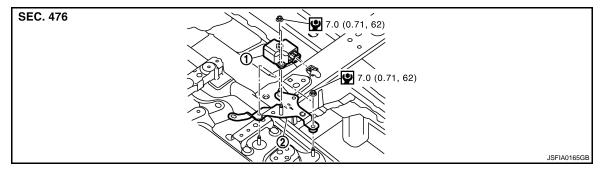
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## **G SENSOR**

Exploded View



1. G sensor 2. Bracket

∠ : Vehicle front

Refer to GI-4. "Components" for symbol in the figure.

### Removal and Installation

**REMOVAL** 

#### **CAUTION:**

Never drop or strike G sensor, or never use power tool etc., because G sensor is sensitive to the impact.

- Remove center console assembly. Refer to <u>IP-21, "Exploded View"</u>.
- 2. Disconnect G sensor harness connector.
- 3. Remove mounting nuts. Remove G sensor.

### **INSTALLATION**

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

• Never drop or strike G sensor, or never use power tool etc., because G sensor is sensitive to the impact.

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### **DIAGNOSIS AND REPAIR WORKFLOW**

< BASIC INSPECTION > [VDC/TCS/ABS]

# **BASIC INSPECTION**

## DIAGNOSIS AND REPAIR WORKFLOW

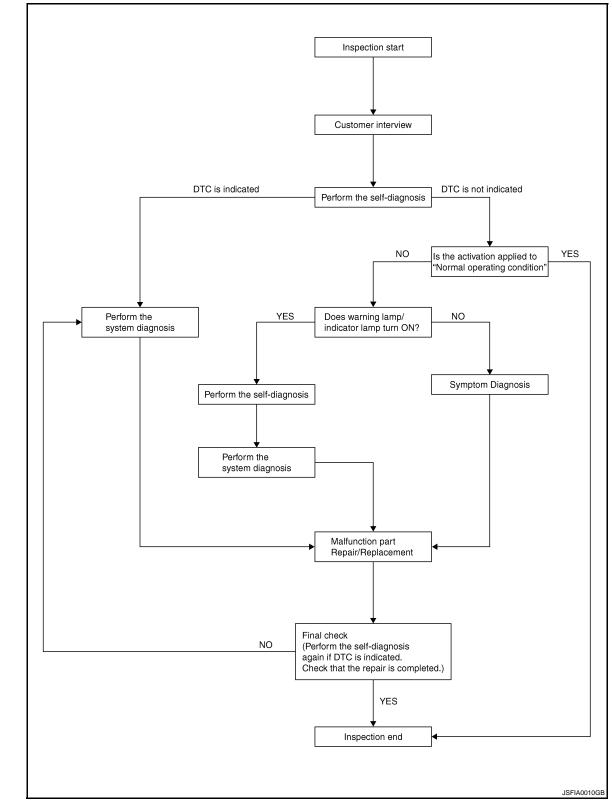
Work Flow

#### PRECAUTIONS FOR DIAGNOSIS

If steering angle sensor, steering system parts, suspension system parts, ABS actuator and electric unit (control unit) or tires have been replaced, or if wheel alignment has been adjusted, be sure to adjust neutral position of steering angle sensor before driving. Refer to <a href="https://example.com/BRC-76">BRC-76</a>, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION: Description".

< BASIC INSPECTION > [VDC/TCS/ABS]

## **OVERALL SEQUENCE**



## **DETAILED FLOW**

## 1. COLLECT THE INFORMATION FROM THE CUSTOMER

Get the detailed information from the customer about the symptom (the condition and the environment when the incident/malfunction occurred) using the diagnosis worksheet. Refer to <a href="BRC-75">BRC-75</a>, "Diagnostic Work Sheet".

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## **DIAGNOSIS AND REPAIR WORKFLOW**

< BASIC INSPECTION > [VDC/TCS/ABS]

## 2.perform the self-diagnosis

Perform self-diagnosis for "ABS" with CONSULT-III. Refer to BRC-94, "CONSULT-III Function".

#### Is there any DTC displayed?

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

## 3.PERFORM THE SYSTEM DIAGNOSIS

Perform the diagnosis applicable to the displayed DTC of "ABS" with CONSULT-III. Refer to BRC-161, "DTC Index".

>> GO TO 7.

## 4. CHECK THE SYMPTOM THAT IS NOT CONSIDERED A SYSTEM MALFUNCTION

Check that the symptom is a normal operation that is not considered a system malfunction. Refer to <a href="BRC-169">BRC-169</a>. <a href="Description"</a>.

#### Is the symptom a normal operation?

YES >> INSPECTION END

NO >> GO TO 5.

## 5. CHECK THE WARNING LAMP AND INDICATOR LAMP FOR ILLUMINATION

Check that the warning lamp and indicator lamp illuminate.

- ABS warning lamp: Refer to BRC-147, "Description".
- Brake warning lamp: Refer to BRC-148, "Description".
- VDC OFF indicator lamp: Refer to BRC-150, "Description".
- SLIP indicator lamp: Refer to BRC-152, "Description".

### Is ON/OFF timing normal?

YES >> GO TO 6. NO >> GO TO 2.

## **6.**PERFORM THE DIAGNOSIS BY SYMPTOM

Perform the diagnosis applicable to the displayed DTC of "ABS" with CONSULT-III.

>> GO TO 7.

## 7. REPAIR OR REPLACE THE MALFUNCTIONING PARTS

Repair or replace the specified malfunctioning parts.

>> GO TO 8.

## 8.MEMORY CLEAR

Perform self-diagnosis memory clear for "ABS" with CONSULT-III.

>> GO TO 9.

## 9. FINAL CHECK

Perform the self-diagnosis again, and check that the malfunction is repaired completely.

### Is no other DTC present and the repair completed?

YES >> INSPECTION END

NO >> GO TO 3.

## **DIAGNOSIS AND REPAIR WORKFLOW**

< BASIC INSPECTION >

[VDC/TCS/ABS]

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Customer name MR/MS	Model & Year		VIN	
Engine #	Trans.		Mileage	
Incident Date	Manuf. Date		In Service Date	e
Symptoms	□ Noise and vibration (from engine compartment) □ Noise and vibration (from axle) □ Noise and vibration			☐ Firm pedal operation 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) □ Bumps / potholes			
Driving conditions	□ Full-acceleration □ High speed cornering □ Vehicle speed: Greater than 10 km/h (6 MPH) □ Vehicle speed: 10 km/h (6 MPH) or less □ Vehicle is stopped			
Applying brake conditions	□ Suddenly □ Gradually			
Other conditions	☐ Operation of electrical equipment ☐ Shift change ☐ Other descriptions			

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[VDC/TCS/ABS]

## INSPECTION AND ADJUSTMENT

## ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

## ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION: Description

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In case of doing work that applies to the list below, make sure to adjust neutral position of steering angle sensor before running vehicle.

x: Required -: Not required

Situation	Adjustment of steering angle sensor neutral position
Removing/Installing steering angle sensor	×
Replacing steering angle sensor	×
Removing/Installing steering wheel	×
Replacing steering wheel	×
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

## ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION CAUTION:

To adjust neutral position of steering angle sensor, make sure to use CONSULT-III (Adjustment cannot be done without CONSULT-III)

 ${f 1}$  . 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. Select"ABS", "WORK SUPPORT" and "ST ANGLE SENSOR ADJUSTMENT" in order with CONSULT-III.
- 2. Select "START".

#### **CAUTION:**

Never touch steering wheel while adjusting steering angle sensor.

3. After approximately 10 seconds, select "END".

#### NOTE:

After approximately 60 seconds, it 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 "ABS", "DATA MONITOR" and "STR ANGLE SIG" in order with CONSULT-III, and check steering angle sensor signal.

STR ANGLE SIG : 0±2.5°

#### INSPECTION AND ADJUSTMENT

[VDC/TCS/ABS] < BASIC INSPECTION > Is the steering angle within the specified range? Α >> GO TO 4. YES NO >> Perform the neutral position adjustment for the steering angle sensor again, GO TO 1. 4. ERASE THE SELF-DIAGNOSIS MEMORY В Erase the self-diagnosis memories for "ABS" and "ENGINE" with CONSULT-III. • "ABS": Refer to BRC-94, "CONSULT-III Function". • "ENGINE" C - For CALIFORNIA: Refer to EC-107, "CONSULT-III Function". For USA (FEDERAL) and CANADA: Refer to <u>EC-588</u>, "CONSULT-III Function". - For MEXICO: Refer to EC-1022, "CONSULT-III Function". Are the memories erased? D YES >> INSPECTION END

>> Check the items indicated by the self-diagnosis.

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**BRC-77** Revision: 2009 October 2010 Rogue

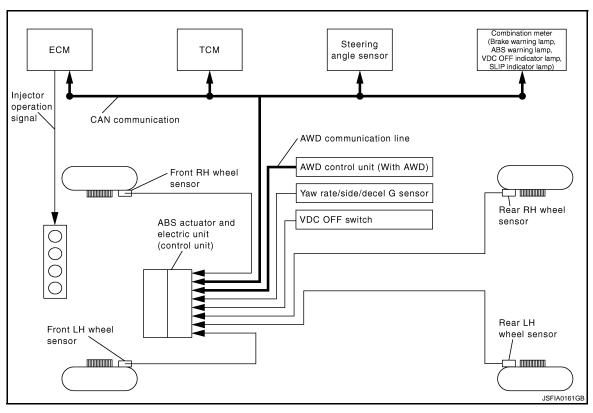
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## SYSTEM DESCRIPTION

**VDC** 

System Diagram

INFOID:0000000005255487



## System Description

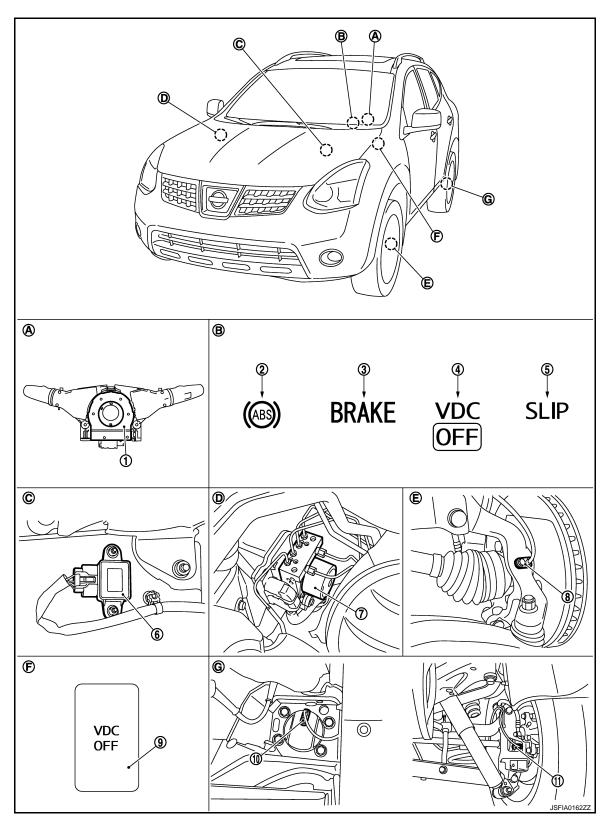
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- Vehicle Dynamics Control system detects driver's steering operation amount and brake pedal travel from steering angle sensor and pressure sensor. Using information from yaw rate/side/decel G sensor and wheel sensor, VDC judges driving condition (conditions of under steer and over steer) to improve vehicle driving stability by controlling brake application to 4 wheels and engine output.
- During VDC operation, it informs driver of system operation by flashing SLIP indicator lamp.
- Electrical system diagnosis by CONSULT-III is available.

## Component Parts Location

INFOID:0000000005255489

FOR USA



- 1. Steering angle sensor
- 4. VDC OFF indicator lamp
- 7. ABS actuator and electric unit (control unit)
- 10. Rear wheel sensor (2WD models)
- 2. ABS warning lamp
- 5. SLIP indicator lamp
- 8. Front wheel sensor
- 3. Brake warning lamp
- 6. Yaw rate/side/decel G sensor
- 9. VDC OFF switch

11. Rear wheel sensor (AWD models)

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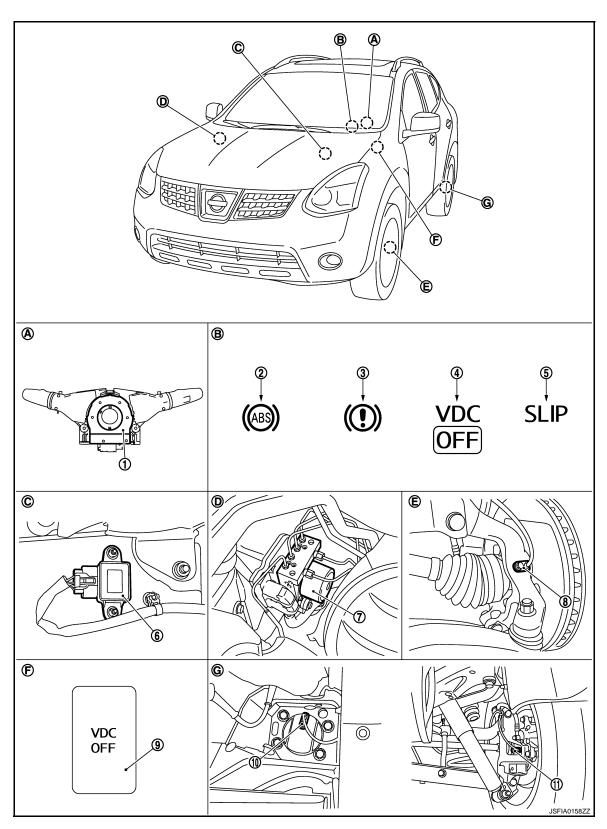
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- A. Back of spiral cable assembly
- D. Engine room (right side)
- G. Rear axle

- B. Combination meter
- E. Steering knuckle
- C. Center console
- F. Instrument driver lower panel

#### **EXCEPT FOR USA**



- 1. Steering angle sensor
- 4. VDC OFF indicator lamp
- 2. ABS warning lamp
- 5. SLIP indicator lamp
- 3. Brake warning lamp
- 6. Yaw rate/side/decel G sensor

### **VDC**

## < SYSTEM DESCRIPTION >

## [VDC/TCS/ABS]

- 7. ABS actuator and electric unit (control unit)
- 8. Front wheel sensor
- 9. VDC OFF switch

- 10. Rear wheel sensor (2WD models)
- 11. Rear wheel sensor (AWD models)
- A. Back of spiral cable assembly
- B. Combination meter
- C. Center console

- D. Engine room (right side)
- E. Steering knuckle F. Instrument driver lower panel

G. Rear axle

## **Component Description**

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Component parts		Reference
	Pump	BRC-109, "Description"
ADO actuates and allestric unit (control unit)	Motor	BKC-109, Description
	Actuator relay (Main relay)	BRC-128, "Description"
ABS actuator and electric unit (control unit)	Solenoid valve	BRC-121, "Description"
	VDC switch-over valve (CV1, CV2)	BRC-135, "Description"
	VDC switch-over valve (SV1, SV2)	BRC-137, "Description"
Wheel sensor		BRC-99. "Description"
Yaw rate/side/decel G sensor		BRC-111, "Description"
Steering angle sensor		BRC-130, "Description"
VDC OFF switch		BRC-145, "Description"
ABS warning lamp		BRC-147, "Description"
Brake warning lamp		BRC-148, "Description"
VDC OFF indicator lamp		BRC-150, "Description"
SLIP indicator lamp		BRC-152, "Description"

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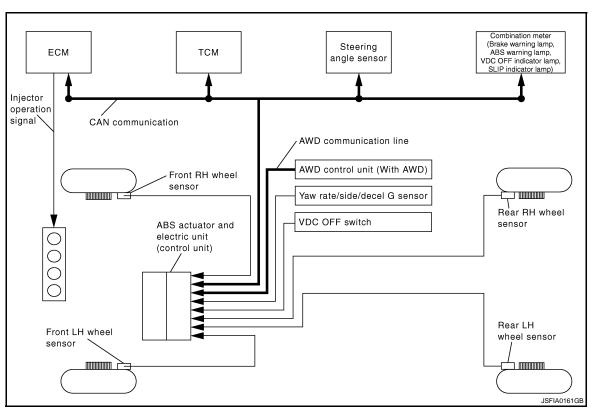
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## **TCS**

## System Diagram

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## System Description

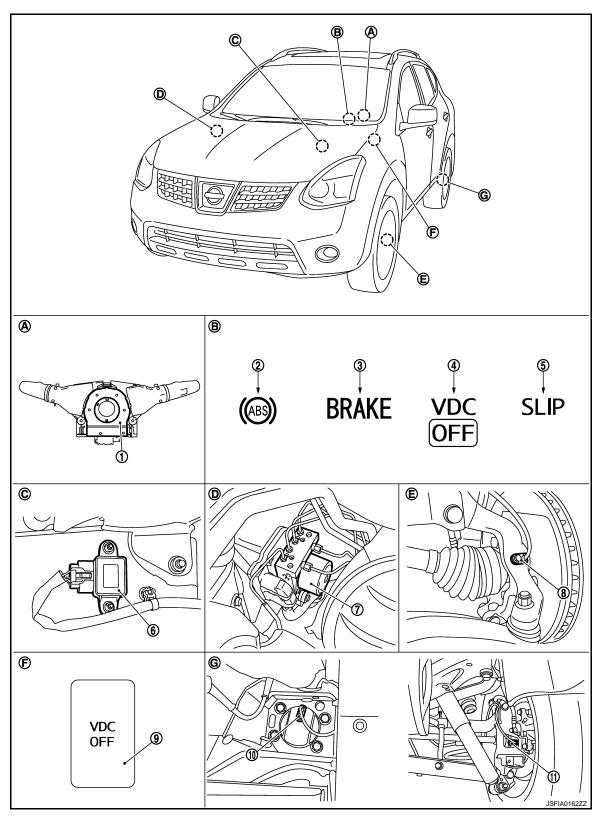
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- Traction Control System is a function that electronically controls engine torque, brake fluid pressure and CVT shift position to ensure the optimum slippage ratio at drive wheels by computing wheel speed signals from 4 wheel sensors. When ABS actuator and electric unit (control unit) detects a spin at drive wheels (rear wheels), it compares wheel speed signals from all 4 wheels. At this time, LH and RH rear 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-III is available.

## Component Parts Location

INFOID:0000000005255493

FOR USA



- 1. Steering angle sensor
- VDC OFF indicator lamp
- 7. ABS actuator and electric unit (control unit)
- 10. Rear wheel sensor (2WD models)
- 2. ABS warning lamp
- 5. SLIP indicator lamp
- 8. Front wheel sensor
- 3. Brake warning lamp
- Yaw rate/side/decel G sensor
- VDC OFF switch

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11. Rear wheel sensor (AWD models)

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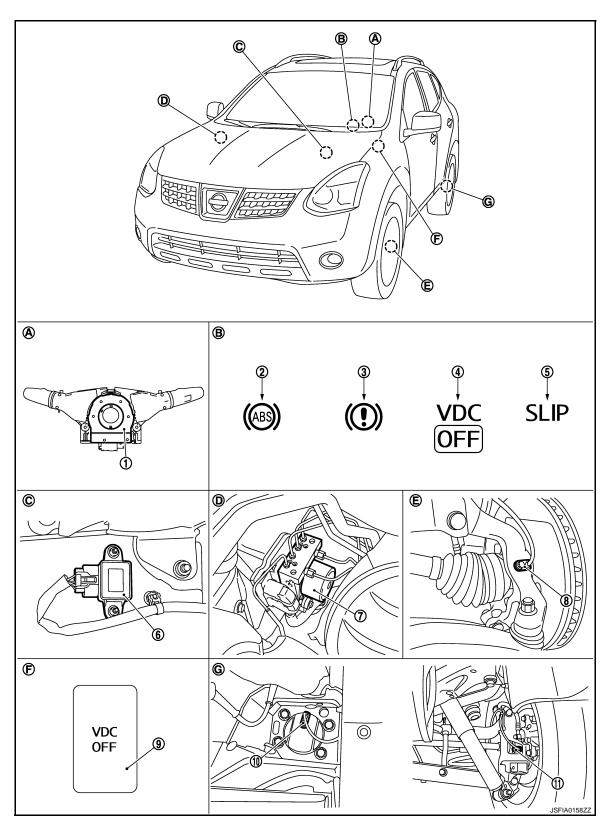
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- A. Back of spiral cable assembly
- D. Engine room (right side)
- G. Rear axle

- B. Combination meter
- E. Steering knuckle
- C. Center console
- F. Instrument driver lower panel

#### **EXCEPT FOR USA**



- 1. Steering angle sensor
- 4. VDC OFF indicator lamp
- 2. ABS warning lamp
- 5. SLIP indicator lamp
- 3. Brake warning lamp
- 6. Yaw rate/side/decel G sensor

### **TCS**

< SYSTEM	DESCRIPT	LIUNI ~

## [VDC/TCS/ABS]

- 7. ABS actuator and electric unit (control unit)
- Front wheel sensor
- 9. VDC OFF switch

- 10. Rear wheel sensor (2WD models)
- 11. Rear wheel sensor (AWD models)
- A. Back of spiral cable assembly
- B. Combination meter
- C. Center console

- D. Engine room (right side)
- E. Steering knuckle
- F. Instrument driver lower panel

G. Rear axle

## **Component Description**

INFOID:0000000005255494

Component parts		Reference
	Pump	PDC 100 "Description"
	Motor	BRC-109, "Description"
APC actuator and algoritic unit (control unit)	Actuator relay (Main relay)	BRC-128, "Description"
ABS actuator and electric unit (control unit)	Solenoid valve	BRC-121, "Description"
	VDC switch-over valve (CV1, CV2)	BRC-135, "Description"
	VDC switch-over valve (SV1, SV2)	BRC-137, "Description"
Wheel sensor		BRC-99, "Description"
Yaw rate/side/decel G sensor		BRC-111, "Description"
Steering angle sensor		BRC-130, "Description"
VDC OFF switch		BRC-145, "Description"
ABS warning lamp		BRC-147, "Description"
Brake warning lamp		BRC-148, "Description"
VDC OFF indicator lamp		BRC-150, "Description"
SLIP indicator lamp		BRC-152, "Description"

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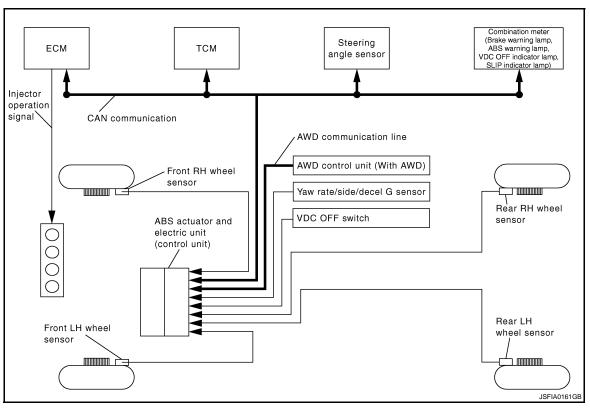
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## **ABS**

## System Diagram

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## **System Description**

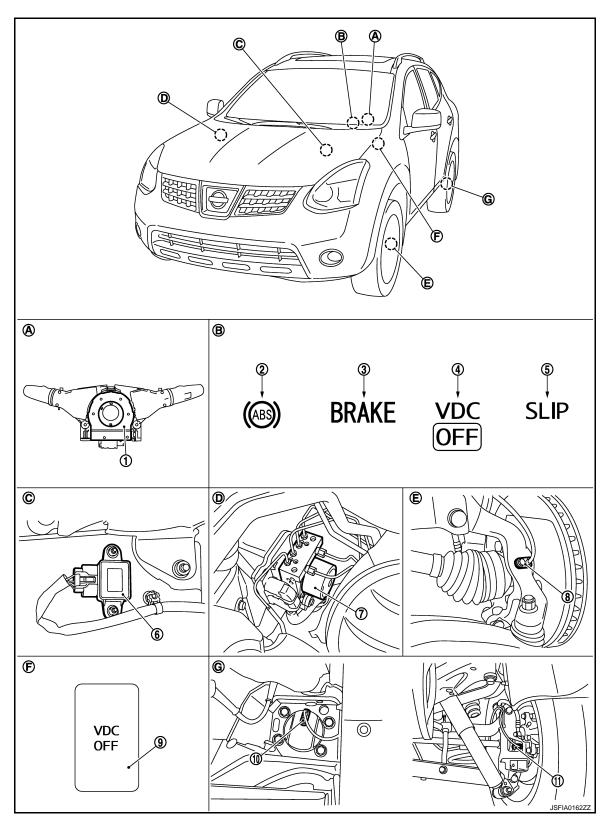
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- Anti-Lock Braking System is a function that detects wheel revolution while braking, electronically controls
  braking force, and prevents wheel locking during sudden braking. It improves handling stability and maneuverability for avoiding obstacles.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

## **Component Parts Location**

INFOID:0000000005255497

FOR USA



- 1. Steering angle sensor
- 4. VDC OFF indicator lamp
- 7. ABS actuator and electric unit (control unit)
- 10. Rear wheel sensor (2WD models)
- 2. ABS warning lamp
- 5. SLIP indicator lamp
- 8. Front wheel sensor
- 11. Rear wheel sensor (AWD models)
- 3. Brake warning lamp
- 6. Yaw rate/side/decel G sensor
- 9. VDC OFF switch

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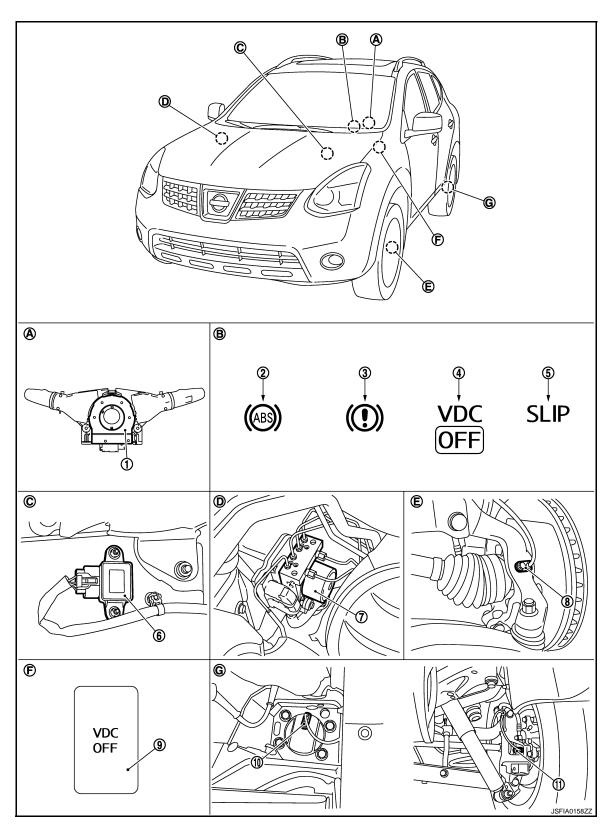
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- A. Back of spiral cable assembly
- D. Engine room (right side)
- G. Rear axle

- B. Combination meter
- E. Steering knuckle
- C. Center console
- F. Instrument driver lower panel

#### **EXCEPT FOR USA**



- 1. Steering angle sensor
- 4. VDC OFF indicator lamp
- 2. ABS warning lamp
- 5. SLIP indicator lamp
- 3. Brake warning lamp
- 6. Yaw rate/side/decel G sensor

### **ABS**

## < SYSTEM DESCRIPTION >

### [VDC/TCS/ABS]

- 7. ABS actuator and electric unit (control unit)
- 8. Front wheel sensor
- 9. VDC OFF switch

- 10. Rear wheel sensor (2WD models)
- 11. Rear wheel sensor (AWD models)
- A. Back of spiral cable assembly
- B. Combination meter
- C. Center console

- D. Engine room (right side)
- E. Steering knuckle
- F. Instrument driver lower panel

G. Rear axle

## **Component Description**

INFOID:0000000005255498

Component parts		Reference
	Pump	DDC 400 "Deceription"
	Motor	BRC-109, "Description"
	Actuator relay (Main relay)	BRC-128, "Description"
ABS actuator and electric unit (control unit)	Solenoid valve	BRC-121, "Description"
	VDC switch-over valve (CV1, CV2)	BRC-135, "Description"
	VDC switch-over valve (SV1, SV2)	BRC-137, "Description"
Wheel sensor		BRC-99, "Description"
Yaw rate/side/decel G sensor		BRC-111, "Description"
Steering angle sensor		BRC-130, "Description"
VDC OFF switch		BRC-145, "Description"
ABS warning lamp		BRC-147, "Description"
Brake warning lamp		BRC-148, "Description"
VDC OFF indicator lamp		BRC-150, "Description"
SLIP indicator lamp		BRC-152, "Description"

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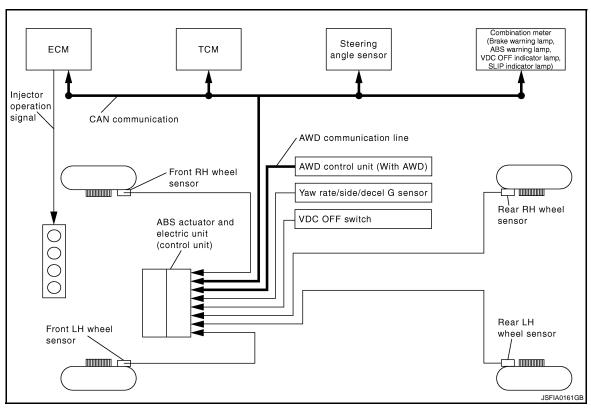
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**EBD** 

## System Diagram

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## System Description

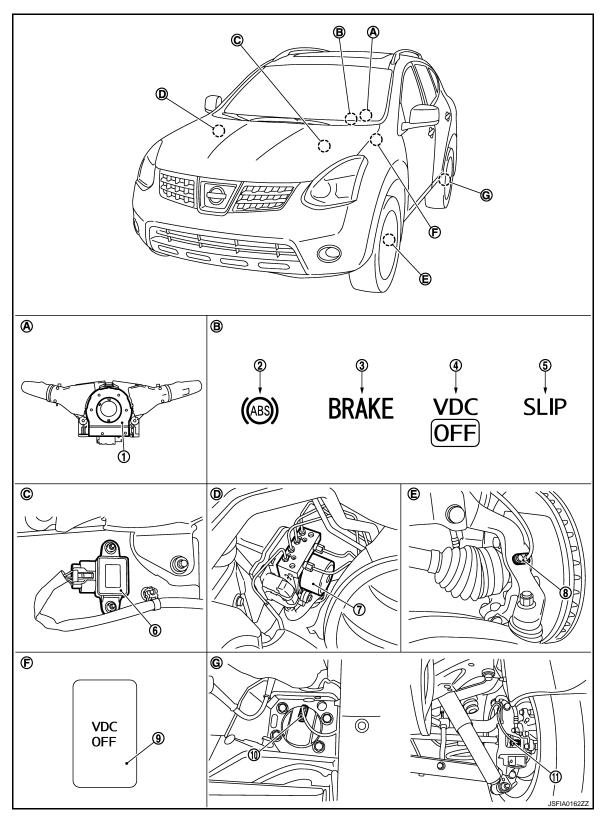
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- Electric Brake force Distribution is a following function. ABS actuator and electric unit (control unit) detects subtle slippages between the front and rear wheels during braking. Then is electronically controls the rear braking force (brake fluid pressure) to reducing and reduces rear wheel slippage. Accordingly it improves vehicle stability.
- Electrical system diagnosis by CONSULT-III is available.

## Component Parts Location

INFOID:0000000005255501

FOR USA



- 1. Steering angle sensor
- 4. VDC OFF indicator lamp
- 7. ABS actuator and electric unit (control unit)
- 10. Rear wheel sensor (2WD models)
- 2. ABS warning lamp
- 5. SLIP indicator lamp
- 8. Front wheel sensor
- 3. Brake warning lamp
- 6. Yaw rate/side/decel G sensor
- 9. VDC OFF switch

11. Rear wheel sensor (AWD models)

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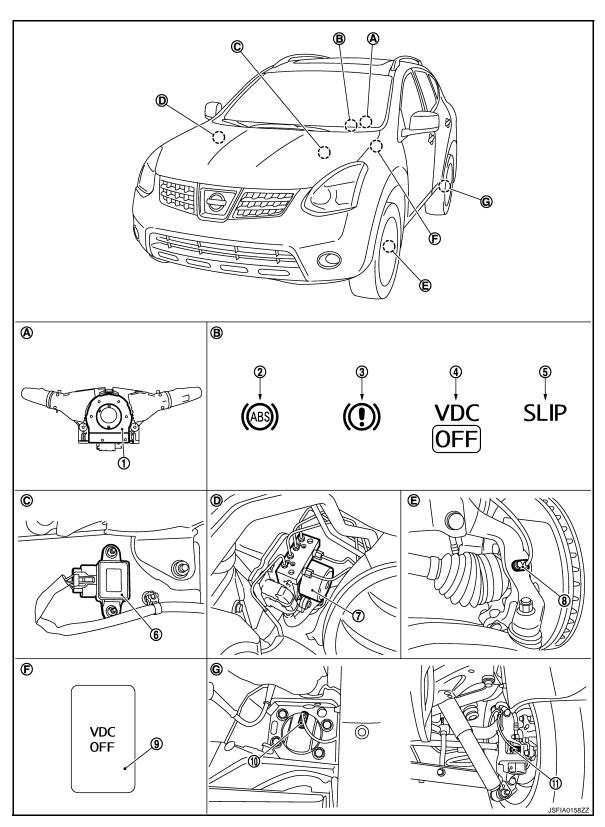
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- A. Back of spiral cable assembly
- D. Engine room (right side)
- G. Rear axle

- B. Combination meter
- E. Steering knuckle
- C. Center console
- F. Instrument driver lower panel

#### **EXCEPT FOR USA**



- 1. Steering angle sensor
- 4. VDC OFF indicator lamp
- 2. ABS warning lamp
- 5. SLIP indicator lamp
- 3. Brake warning lamp
- 6. Yaw rate/side/decel G sensor

## **EBD**

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## [VDC/TCS/ABS]

- ABS actuator and electric unit (control unit)
  - Front wheel sensor
- 9. VDC OFF switch

- 10. Rear wheel sensor (2WD models)
- 11. Rear wheel sensor (AWD models)
- A. Back of spiral cable assembly
- B. Combination meter
- C. Center console

- D. Engine room (right side)
- E. Steering knuckle
- F. Instrument driver lower panel

G. Rear axle

## **Component Description**

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Component parts		Reference
	Pump	BRC-109, "Description"
ADO actuates and allestric unit (control unit)	Motor	BKC-109, Description
	Actuator relay (Main relay)	BRC-128, "Description"
ABS actuator and electric unit (control unit)	Solenoid valve	BRC-121, "Description"
	VDC switch-over valve (CV1, CV2)	BRC-135, "Description"
	VDC switch-over valve (SV1, SV2)	BRC-137, "Description"
Wheel sensor		BRC-99. "Description"
Yaw rate/side/decel G sensor		BRC-111, "Description"
Steering angle sensor		BRC-130, "Description"
VDC OFF switch		BRC-145, "Description"
ABS warning lamp		BRC-147, "Description"
Brake warning lamp		BRC-148, "Description"
VDC OFF indicator lamp		BRC-150, "Description"
SLIP indicator lamp		BRC-152, "Description"

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< SYSTEM DESCRIPTION >

[VDC/TCS/ABS]

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

## **CONSULT-III Function**

INFOID:0000000005255503

#### **FUNCTION**

CONSULT-III 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-III.	
Self diagnostic result	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-III drives some actuators apart from the ABS actuator and electric unit (control unit) and also shifts some parameters in a specified range.	
ECU identification	ABS actuator and electric unit (control unit) part number can be read.	

#### WORK SUPPORT

Item	Description
ST ANGLE SENSOR ADJUSTMENT	Adjusts the neutral position of the steering angle sensor.

#### SELF DIAGNOSTIC RESULT

#### Operation Procedure

Before performing the self-diagnosis for "ABS" with CONSULT-III, 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 for "ABS" with CONSULT-III, 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, VDC OFF indicator 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.
- 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).
- VDC OFF switch should not stay "ON" position.

Display Item List

Refer to BRC-161, "DTC Index".

### DATA MONITOR MODE

Display Item List

< SYSTEM DESCRIPTION >

[VDC/TCS/ABS]

SELECT MONITOR ITEM		ONITOR ITEM	×: Applicable ▼: Optional item	
Monitor item (Unit)	ECU INPUT SIGNALS	MAIN SIGNALS	Remarks	
FR LH SENSOR [km/h (MPH)]	×	×		
FR RH SENSOR [km/h (MPH)]	×	×	Wheel speed	
RR LH SENSOR [km/h (MPH)]	×	×	wileer speed	
RR RH SENSOR [km/h (MPH)]	×	×		
STOP LAMP SW (On/Off)	×	×	Stop lamp switch signal status	
BATTERY VOLT (V)	×	×	Battery voltage supplied to the ABS actuator and electric unit (control unit)	
GEAR	×	×	Gear position determined by TCM	
OFF SW (On/Off)	×	×	VDC OFF switch	
YAW RATE SEN (d/s)	×	×	Yaw rate detected by yaw rate/side/decel G sensor	
DECEL G-SEN (G)	×	×	Decel G detected by yaw rate/side/decel G sensor	
ACCEL POS SIG %)	×	•	Throttle actuator opening/closing is displayed (Linked with accelerator pedal)	
SIDE G-SENSOR (m/s <sup>2</sup> )	×	•	Transverse G detected by yaw rate/side/decel G sensor	
STR ANGLE SIG (°)	×	•	Steering angle detected by steering angle sensor	
ENGINE RPM [tr/min (rpm)]	×	•	Engine speed	
FLUID LEV SW (On/Off)	×	•	Brake fluid level switch signal status	
FR RH IN SOL (On/Off)	•	×		
FR RH OUT SOL (On/Off)	•	×		
FR LH IN SOL (On/Off)	•	×		
FR LH OUT SOL On/Off)	▼	×	Operation status of each solenoid valve	
RR RH IN SOL On/Off)	•	×		
RR RH OUT SOL On/Off)	•	×		
RR LH IN SOL On/Off)	•	×		
RR LH OUT SOL On/Off)	▼	×		
MOTOR RELAY (On/Off)	•	×	Motor and motor relay operation	
ACTUATOR RLY (On/Off)	▼	×	Actuator relay operation	

#### < SYSTEM DESCRIPTION >

[VDC/TCS/ABS]

	SELECT MO	ONITOR ITEM	
Monitor item (Unit)	ECU INPUT SIGNALS	MAIN SIGNALS	Remarks
ABS WARN LAMP (On/Off)	•	×	ABS warning lamp
OFF LAMP (On/Off)	•	×	VDC OFF indicator lamp
SLIP LAMP (On/Off)	•	×	SLIP indicator lamp
N POSI SIG (On/Off)	•	•	N range status
P POSI SIG (On/Off)	•	•	P range status
R POSI SIG (On/Off)	•	•	R range status
CRAKING SIG (On/Off)	•	•	CAN mask request for cranking
CV1 (On/Off)	•	▼	Cut valve 1 monitor
CV2 (On/Off)	•	▼	Cut valve 2 monitor
SV1 (On/Off)	•	▼	Suction valve 1 monitor
SV2 (On/Off)	•	•	Suction valve 2 monitor
STOP LAMP SW2 (On/Off)	•	▼	ASCD brake switch signal status
EBD SIGNAL (On/Off)	•	▼	EBD operation
ABS SIGNAL (On/Off)	•	▼	ABS operation
TCS SIGNAL (On/Off)	•	▼	TCS operation
VDC SIGNAL (On/Off)	•	▼	VDC operation
EBD FAIL SIG (On/Off)	•	▼	EBD fail-safe status
ABS FAIL SIG (On/Off)	•	▼	ABS fail-safe status
TCS FAIL SIG (On/Off)	•	▼	TCS fail-safe status
VDC FAIL SIG (On/Off)	•	▼	VDC fail-safe status
4WD MODE MON (On/Off)	•	▼	AWD mode monitor

#### **ACTIVE TEST MODE**

#### CAUTION:

- Never 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 OFF indicator lamp, SLIP indicator lamp and brake warning lamp are on.
- ABS warning lamp, VDC OFF indicator lamp, SLIP indicator lamp and brake warning lamp are on during active test.
- Erase memory of ICC system after implementing active test.

#### < SYSTEM DESCRIPTION >

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#### 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" in "ABS" with CONSULT-III is displayed 10 seconds after operation start.
- After "TEST IS STOPPED" in "ABS" with CONSULT-III is displayed, to perform test again.

#### Test Item

#### ABS SOLENOID VALVE

• Select "Up", "Keep" and "Down" of "ACTIVE TEST" in "ABS" with CONSULT-III. Then use screen monitor to check that solenoid valve operates as shown in solenoid valve operation chart.

To at itam	Dianlassitam		Display	
Test item	Display item -	Up	Keep	Down
	FR RH IN SOL	Off	On	On
FR RH SOL	FR RH OUT SOL	Off	Off	On*
FR KH SOL	CV1	Off	Off	Off
	SV1	Off	Off	Off
	FR LH IN SOL	Off	On	On
FR LH SOL	FR LH OUT SOL	Off	Off	On*
FR LH SOL	CV2	Off	Off	Off
	SV2	Off	Off	Off
	RR RH IN SOL	Off	On	On
	RR RH OUT SOL	Off	Off	On*
RR RH SOL	CV2	Off	Off	Off
	SV2	Off	Off	Off
	RR LH IN SOL	Off	On	On
RR LH SOL	RR LH OUT SOL	Off	Off	On*
	CV1	Off	Off	Off
	SV1	Off	Off	Off

<sup>\*:</sup> On for 1 to 2 seconds after the select, and then Off.

#### ABS SOLENOID VALVE (ACT)

• Select "Up", "Keep" and "Down" of "ACTIVE TEST" in "ABS" with CONSULT-III. Then use screen monitor to check that solenoid valve operates as shown in solenoid valve operation chart.

To at itam	Diamlay itam	Display		
Test item	Display item	Up	ACT UP	ACT KEEP
	FR RH IN SOL	Off	Off	Off
FR RH ABS SOLENOID	FR RH OUT SOL	Off	Off	Off
(ACT)	CV1	Off	On	On
	SV1	Off	On*	Off
FR LH ABS SOLENOID (ACT)	FR LH IN SOL	Off	Off	Off
	FR LH OUT SOL	Off	Off	Off
	CV2	Off	On	On
	SV2	Off	On*	Off
	RR RH IN SOL	Off	Off	Off
RR RH ABS SOLENOID (ACT)	RR RH OUT SOL	Off	Off	Off
	CV2	Off	On	On
	SV2	Off	On*	Off

< SYSTEM DESCRIPTION >

[VDC/TCS/ABS]

Test item	Display item	Display		
		Up	ACT UP	ACT KEEP
RR LH ABS SOLENOID (ACT)	RR LH IN SOL	Off	Off	Off
	RR LH OUT SOL	Off	Off	Off
	CV1	Off	On	On
	SV1	Off	On*	Off

<sup>\*:</sup> On for 1 to 2 seconds after the select, and then Off.

#### **ABS MOTOR**

• Select "On" and "Off" of "ACTIVE TEST" in "ABS" with CONSULT-III on screen. Make sure motor relay and actuator relay operates as shown in table below.

Test item	Display item	Display	
restrieni	Display item	On	Off
ABS MOTOR	MOTOR RELAY	On	Off
ABS WOTOR	ACTUATOR RLY	On	On

#### **ECU IDENTIFICATION**

ABS actuator and electric unit (control unit) part number can be read.

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INFOID:0000000005255506

## DTC/CIRCUIT DIAGNOSIS

## C1101, C1102, C1103, C1104 WHEEL SENSOR

**Description** 

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

#### 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 short circuit. Current signal from sensor is outside limits.	
C1102	RR LH SENSOR-1	Circuit of rear LH wheel sensor is open or short circuit. Current signal from sensor is outside limits.	Harness or connector     Wheel sensor
C1103	FR RH SENSOR-1	Circuit of front RH wheel sensor is open or short circuit. Current signal from sensor is outside limits.	ABS actuator and electric unit (control unit)
C1104	FR LH SENSOR-1	Circuit of front LH wheel sensor is open or short circuit. Current signal from sensor is outside limits.	

### DTC CONFIRMATION PROCEDURE

## 1. CHECK SELF-DIAGNOSIS RESULTS

Perform self-diagnosis for "ABS" with CONSULT-III.

Self-diagnosis results
RR RH SENSOR-1
RR LH SENSOR-1
FR RH SENSOR-1
FR LH SENSOR-1

#### Is above displayed on the self-diagnosis display?

YES >> Proceed to diagnosis procedure. Refer to <a href="BRC-99">BRC-99</a>, "Diagnosis Procedure".

NO >> INSPECTION END

## Diagnosis Procedure

#### **CAUTION:**

Never check between wheel sensor terminals.

## 1.CHECK TIRES

Check air pressure, wear and size.

#### Are air pressure, wear and size within standard?

YES >> GO TO 2.

NO >> Adjust air pressure, or replace tire.

## 2.CHECK SENSOR AND SENSOR ROTOR

- Check that there is no damage or adherence of foreign matter on the sensor rotor surface.
- Check sensor rotor for damage.
- Check wheel sensor for damage, disconnection or looseness.
- Check that there is no deformation on the wheel sensor mounting surface.

#### Are the sensor and sensor rotor normal?

YES >> GO TO 3.

NO >> Repair wheel sensor mount or replace sensor rotor. Then perform self-diagnosis for "ABS" with CONSULT-III.

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[VDC/TCS/ABS]

## 3. CHECK CONNECTOR

- 1. Turn ignition switch OFF.
- 2. Disconnect ABS actuator and electric unit (control unit) connector.
- 3. Disconnect malfunctioning wheel sensor connector.
- Check terminal to see if it is deformed, disconnected, loose, etc., Repair or replace it if any malfunction condition is found.
- 5. Reconnect connectors and then perform self-diagnosis for "ABS" with CONSULT-III.

#### Is any item indicated on the self-diagnosis display?

YES >> GO TO 4.

NO >> Poor connection of connector terminal. Repair or replace connector.

## 4. CHECK WHEEL SENSOR HARNESS

- 1. Turn ignition switch OFF.
- Disconnect ABS actuator and electric unit (control unit) connector.
- 3. Disconnect malfunctioning wheel sensor connector.
- 4. Check continuity between terminals. (Also check continuity when steering wheel is turned right and left and when sensor harness inside the wheel house is moved.)

Measurement terminal for signal circuit

ABS actuator and electric unit (control unit)		Wheel sensor		Continuity	
Connector	Terminal	Connector	Terminal	Continuity	
	12	E39 (Front RH)	4	Existed	
E36	27	E22 (Front LH)	2		
15 30	15	B41 (Rear RH)	8		
	B44 (Rear LH)	6			

Measurement terminal for power supply circuit

ABS actuator and ele	ABS actuator and electric unit (control unit)		Wheel sensor		
Connector	Terminal	Connector	Terminal	Continuity	
	21	E39 (Front RH)	3	Existed	
E36	23	E22 (Front LH)	1		
L30	11	B41 (Rear RH)	7	LXISIEU	
	26	B44 (Rear LH)	5		

Measurement terminal for ground circuit

	Continuity			
Connector	Terminal	Connector	Terminal	Continuity
	12, 21	E36	3, 4	Not existed
E36	27, 23			
⊏30	15, 11			
	30, 26			

5. Reconnect ABS actuator and electric unit (control unit) connector.

#### Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair or replace malfunctioning components.

## 5. REPLACE WHEEL SENSOR

- 1. Replace wheel sensor.
- 2. Erase self-diagnosis results for "ABS" with CONSULT-III.
- 3. Turn the ignition switch OFF.
- Turn the ignition switch ON.

**CAUTION:** 

#### C1101, C1102, C1103, C1104 WHEEL SENSOR [VDC/TCS/ABS] < DTC/CIRCUIT DIAGNOSIS > Never start engine. Perform self-diagnosis results for "ABS" with CONSULT-III. Α IS DTC "C1101", "C1102", "C1103" or "C1104" detected? >> Replace ABS actuator and electric unit (control unit). NO >> INSPECTION END В Component Inspection INFOID:0000000005255507 1. CHECK DATA MONITOR Select "ABS", "DATA MONITOR" in order with CONSULT-III, select "FR LH SENSOR", "FR RH SENSOR", "RR LH SENSOR" and "RR RH SENSOR", and check the vehicle speed. D Vehicle speed (DATA MONITOR) Wheel sensor FR LH SENSOR Е FR RH SENSOR Nearly matches the speedometer display (±10% or less) RR LH SENSOR **BRC** RR RH SENSOR Is the inspection result normal? YES >> INSPECTION END NO >> Go to diagnosis procedure. Refer to <a href="BRC-99">BRC-99</a>, "Diagnosis Procedure". Special Repair Requirement INFOID:0000000005522786 Н 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) or steering angle sensor and removing steering angle sensor. Refer to BRC-76, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION: Special Repair Requirement". >> END K

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[VDC/TCS/ABS]

## C1105, C1106, C1107, C1108 WHEEL SENSOR

Description

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

#### DTC DETECTION LOGIC

DTC	Display item	Malfunction detected condition	Possible cause
C1105	RR RH SENSOR-2	Signal from rear RH wheel sensor does not match other 3 wheel speed signal.	Sensor not installed currently     Sensor rotor or encoder dam-
C1106	RR LH SENSOR-2	Signal from rear LH wheel sensor does not match other 3 wheel speed signal.	aged Sensor rotor loose on axle Electrical interference
C1107	FR RH SENSOR-2	Signal from front RH wheel sensor does not match other 3 wheel speed signal.	Wheel not turning - e.g. vehi- cle driven on 2WD dyno
C1108	FR LH SENSOR-2	Signal from front LH wheel sensor does not match other 3 wheel speed signal.	Sensor damaged     ABS unit damaged

## DTC CONFIRMATION PROCEDURE

## 1. CHECK SELF-DIAGNOSIS RESULTS

Perform self-diagnosis for "ABS" with CONSULT-III.

Self-diagnosis results
RR RH SENSOR-2
RR LH SENSOR-2
FR RH SENSOR-2
FR LH SENSOR-2

#### Is above displayed on the self-diagnosis display?

YES >> Proceed to diagnosis procedure. Refer to <a href="BRC-102">BRC-102</a>, "Diagnosis Procedure".

NO >> INSPECTION END

## Diagnosis Procedure

INFOID:0000000005255510

#### **CAUTION:**

#### Never check between wheel sensor terminals.

1. CHECK TIRES

Check air pressure, wear and size.

Are air pressure, wear and size within standard?

YES >> GO TO 2.

NO >> Adjust air pressure, or replace tire.

## 2.CHECK SENSOR AND SENSOR ROTOR

- Check that there is no damage or adherence of foreign matter on the sensor rotor surface.
- Check sensor rotor for damage.
- Check wheel sensor for damage, disconnection or looseness.
- Check that there is no deformation on the wheel sensor mounting surface.

#### Are the sensor and sensor rotor normal?

YES >> GO TO 3.

NO >> Repair wheel sensor mount or replace sensor rotor. Then perform self-diagnosis for "ABS" with CONSULT-III.

## 3. CHECK CONNECTOR

## C1105, C1106, C1107, C1108 WHEEL SENSOR

## < DTC/CIRCUIT DIAGNOSIS >

[VDC/TCS/ABS]

- Turn ignition switch OFF.
- 2. Disconnect ABS actuator and electric unit (control unit) connector.
- 3. Disconnect malfunctioning wheel sensor connector.
- 4. Check terminal to see if it is deformed, disconnected, loose, etc., Repair or replace it if any malfunction condition is found.
- 5. Reconnect connectors and then perform self-diagnosis for "ABS" with CONSULT-III.

#### Is any item indicated on the self-diagnosis display?

YES >> GO TO 4.

NO >> Poor connection of connector terminal. Repair or replace connector.

## 4. CHECK WHEEL SENSOR HARNESS

- Turn ignition switch OFF.
- Disconnect ABS actuator and electric unit (control unit) connector. 2.
- 3. Disconnect malfunctioning wheel sensor connector.
- Check continuity between terminals. (Also check continuity when steering wheel is turned right and left and when sensor harness inside the wheel house is moved.)

Measurement terminal for signal circuit

ABS actuator and ele	ectric unit (control unit)	t) Wheel sensor		Continuity
Connector	Terminal	Connector	Terminal	Continuity
	12	E39 (Front RH)	4	
E36	27	E22 (Front LH)	2	Existed
E30	15	B41 (Rear RH)	8	Existed
	30	B44 (Rear LH)	6	

Measurement terminal for power supply circuit

ABS actuator and el	ectric unit (control unit)	Wheel	sensor		
Connector	Terminal	Connector	Terminal	Continuity	
	21	E39 (Front RH)	3		
E36	23	E22 (Front LH)	1	Eviated	
	11	B41 (Rear RH)	7	Existed	
	26	B44 (Rear LH)	5		

Measurement terminal for ground circuit

	Continuity				
Connector	Terminal	Connector	Terminal	Continuity	
	12, 21	E36			
E36	27, 23		3, 4	Not existed	
ESO	15, 11		3, 4	Not existed	
	30, 26				

5. Reconnect ABS actuator and electric unit (control unit) connector.

#### Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair or replace malfunctioning components.

## 5. REPLACE WHEEL SENSOR

- Replace wheel sensor.
- Erase self-diagnosis results for "ABS" with CONSULT-III.
- Turn the ignition switch OFF.
- Turn the ignition switch ON.

#### **CAUTION:**

Never start engine.

5. Perform self-diagnosis results for "ABS" with CONSULT-III.

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## C1105, C1106, C1107, C1108 WHEEL SENSOR

#### < DTC/CIRCUIT DIAGNOSIS >

[VDC/TCS/ABS]

#### IS DTC "C1105", "C1106", "C1107" or "C1108" detected?

YES >> Replace ABS actuator and electric unit (control unit).

NO >> INSPECTION END

## Component Inspection

INFOID:0000000005255511

## 1. CHECK DATA MONITOR

Select "ABS", "DATA MONITOR" in order with CONSULT-III, 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	
FR RH SENSOR	Nearly matches the speedometer dis-
RR LH SENSOR	play (±10% or less)
RR RH SENSOR	

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Go to diagnosis procedure. Refer to <u>BRC-102</u>, "<u>Diagnosis Procedure</u>".

## Special Repair Requirement

INFOID:0000000005522802

## ${f 1}$ . 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) or steering angle sensor and removing steering angle sensor. Refer to <a href="https://example.com/BRC-76">BRC-76</a>, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION: Special Repair Requirement".

>> END

#### C1109 POWER AND GROUND SYSTEM

### < DTC/CIRCUIT DIAGNOSIS >

[VDC/TCS/ABS]

## C1109 POWER AND GROUND SYSTEM

Description INFOID:000000005255512

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

DTC Logic

#### 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 is lower than normal. Power supply is greater than normal limits.	Harness or connector     ABS unit     Fuse     Vehicle electrical power system	

#### DTC CONFIRMATION PROCEDURE

## 1. CHECK SELF-DIAGNOSIS RESULTS

Perform self-diagnosis for "ABS" with CONSULT-III.

Self-diagnosis results
BATTERY VOLTAGE [ABNORMAL]

#### Is above displayed on the self-diagnosis display?

YES >> Proceed to diagnosis procedure. Refer to <u>BRC-105</u>, "<u>Diagnosis Procedure</u>".

NO >> INSPECTION END

## Diagnosis Procedure

## 1. CHECK CONNECTOR

- Turn ignition switch OFF.
- 2. Disconnect ABS actuator and electric unit (control unit) connector.
- Check terminal for deformation, disconnection, looseness, and so on. If any malfunction is found, repair or replace terminal.
- 4. Reconnect connector and then perform self-diagnosis for "ABS" with CONSULT-III.

#### Is any item indicated on the self-diagnosis display?

YES >> GO TO 2.

NO >> Poor connection of connector terminal. 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 or OFF and check voltage between ABS actuator and electric unit (control unit) harness connector terminal and ground.

ABS actuator and ele	ectric unit (control unit)		Condition	Voltage
Connector	Terminal	_	Condition	voltage
E36	16	Ground	Ignition switch: ON	Battery voltage
LSO	10	Ground	Ignition switch: OFF	Approx. 0 V

- Check 10A fusible link (59).
- Check continuity between ABS actuator and electric unit (control unit) harness connector and IPDM E/R.

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[VDC/TCS/ABS]

ABS actuator and ele	ectric unit (control unit)	IPDI	M E/R	continuity
Connector	Terminal	Connector	Terminal	Continuity
E36	16	E15	59	Existed

Reconnect ABS actuator and electric unit (control unit) connector.

#### Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace malfunctioning components.

## 3.abs power supply check (under load conditions)

- Use 12 V lamp (normal rating 10 to 20 W) connected between E36 terminals 16 and 4. With ignition switch ON check bulb illuminates correctly.
- Check ABS motor supply under loaded condition (connector E36 terminals 1 and 3).

#### Is the inspection result normal?

YES >> GO TO 4.

NO >> Check both power supply and ground circuit.

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

- Turn ignition switch OFF.
- 2. Disconnect ABS actuator and electric unit (control unit) connector.
- Check continuity between ABS actuator and electric unit (control unit) harness connector terminals and ground.

ABS actuator and electronic	ric unit (control unit)		Continuity
Connector Terminal			Continuity
E36	3, 4	Ground	Existed

#### Is the inspection result normal?

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

NO >> Repair or replace malfunctioning components. (Check ABS earth bolt for tightness and corrosion.)

## Diagnosis Procedure

INFOID:0000000005522803

## 1. CHECK CONNECTOR

- 1. Turn ignition switch OFF.
- 2. Disconnect ABS actuator and electric unit (control unit) connector.
- Check terminal for deformation, disconnection, looseness, and so on. If any malfunction is found, repair or replace terminal.
- 4. Reconnect connector and then perform self-diagnosis for "ABS" with CONSULT-III.

### Is any item indicated on the self-diagnosis display?

YES >> GO TO 2.

NO >> Poor connection of connector terminal. Repair or replace connector.

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

- 1. Turn ignition switch OFF.
- Disconnect ABS actuator and electric unit (control unit) connector.
- Turn ignition switch ON or OFF and check voltage between ABS actuator and electric unit (control unit)
  harness connector terminal and ground.

ABS actuator and electric unit (control unit)			Condition	Voltage
Connector	Terminal	_	Condition	vollage
E36	16 Ground	Ignition switch: ON	Battery voltage	
	10	Ground	Ignition switch: OFF	Approx. 0 V

## **C1109 POWER AND GROUND SYSTEM**

### < DTC/CIRCUIT DIAGNOSIS >

[VDC/TCS/ABS]

5. Check continuity between ABS actuator and electric unit (control unit) harness connector and IPDM E/R.

ABS actuator and ele	ectric unit (control unit)	IPDI	M E/R	continuity
Connector	Terminal	Connector	Terminal	Continuity
E36	16	E15	59	Existed

6. Reconnect ABS actuator and electric unit (control unit) connector.

#### Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace malfunctioning components.

## 3.abs power supply check (under load conditions)

1. Use 12 V lamp (normal rating 10 to 20 W) connected between E36 terminals 16 and 4. With ignition switch ON check bulb illuminates correctly.

2. Check ABS motor supply under loaded condition (connector E36 terminals 1 and 3).

#### Is the inspection result normal?

YES >> GO TO 4.

NO >> Check both power supply and ground circuit.

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

Turn ignition switch OFF.

2. Disconnect ABS actuator and electric unit (control unit) connector.

Check continuity between ABS actuator and electric unit (control unit) harness connector terminals and ground.

ABS actuator and electr	ric unit (control unit)		Continuity
Connector Terminal			Continuity
E36	3, 4	Ground	Existed

#### Is the inspection result normal?

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

NO >> Repair or replace malfunctioning components. (Check ABS earth bolt for tightness and corrosion.)

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## C1110 ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)

< DTC/CIRCUIT DIAGNOSIS >

[VDC/TCS/ABS]

## C1110 ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)

Description INFOID:000000005255515

ABS unit is continuously monitoring ECU hardware and software for correct operation.

DTC Logic

#### DTC DETECTION LOGIC

DTC	Display item	Malfunction detected condition	Possible cause
C1110	CONTROLLER FAILURE	Possible internal failure of control unit components.	Internal failure of control unit components. ABS solenoid valve or motor power supply / ground abnormal.

#### DTC CONFIRMATION PROCEDURE

## 1. CHECK SELF-DIAGNOSIS RESULTS

- 1. Check both ABS solenoid valve and motor supply and ground circuits using a suitable electrical load.
- Check wheel speed sensor inputs.
- 3. Perform self-diagnosis for "ABS" with CONSULT-III.

Self-diagnosis results	
CONTROLLER FAILURE	

#### Is above displayed on the self-diagnosis display?

YES >> Proceed to diagnosis procedure. Refer to <u>BRC-108</u>, "<u>Diagnosis Procedure</u>".

NO >> INSPECTION END

## Diagnosis Procedure

INFOID:0000000005255517

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 those applicable.

>> Replace ABS actuator and electric unit (control unit).

## Special Repair Requirement

INFOID:0000000005522804

## 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) or steering angle sensor and removing steering angle sensor. Refer to <a href="https://example.com/BRC-76">BRC-76</a>, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION: Special Repair Requirement".

>> END

## C1111 ABS MOTOR, MOTOR RELAY SYSTEM

< DTC/CIRCUIT DIAGNOSIS >

[VDC/TCS/ABS]

## C1111 ABS MOTOR, MOTOR RELAY SYSTEM

Description INFOID:0000000005255518

**PUMP** 

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

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

DTC Logic INFOID:0000000005255519 

#### 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     ABS actuator and electric units	
	TOWN WOTOK	During the actuator motor operating with OFF, when the actuator motor turns ON, or when the control line for relay is shorted to ground.	(control unit)	

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#### DTC CONFIRMATION PROCEDURE

## CHECK SELF-DIAGNOSIS RESULTS

Perform self-diagnosis for "ABS" with CONSULT-III.

Self-diagnosis results **PUMP MOTOR** 

Is above displayed on the self-diagnosis display?

YES >> Proceed to diagnosis procedure. Refer to BRC-109, "Diagnosis Procedure".

NO >> INSPECTION END

## Diagnosis Procedure

INFOID:0000000005255520

## 1. CHECK CONNECTOR

Turn ignition switch OFF.

- Disconnect ABS actuator and electric unit (control unit) connector.
- Check terminal for deformation, disconnect, looseness, and so on. If any malfunction is found, repair or replace terminal.
- Reconnect connector and then perform self-diagnosis for "ABS" with CONSULT-III.

#### Is any item indicated on the self-diagnosis display?

YES >> GO TO 2.

NO

>> Poor connection of connector terminal. Replace or repair connector.

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

- Turn ignition switch OFF.
- Disconnect ABS actuator and electric unit (control unit) connector.
- Check voltage between the ABS actuator and electric unit (control unit) harness connector terminal and ground.

ABS actuator and ele	ectric unit (control unit)		Voltage
Connector Terminal			voltage
E36 1		Ground	Battery voltage

Reconnect ABS actuator and electric unit (control unit) connector.

**BRC-109** Revision: 2009 October 2010 Rogue

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## C1111 ABS MOTOR, MOTOR RELAY SYSTEM

< DTC/CIRCUIT DIAGNOSIS >

[VDC/TCS/ABS]

#### Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace malfunctioning components.

# ${f 3.}$ abs power supply check (under load condition)

Use 12 V lamp (normal rating 10 to 20 W) connected between E36 terminals 2 and 3. With ignition switch ON check bulb illuminates correctly.

#### Is the inspection result normal?

YES >> GO TO 4.

NO >> Check both power supply and ground circuit.

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

- 1. Turn ignition switch OFF.
- 2. Disconnect ABS actuator and electric unit (control unit) connector.
- Check continuity between ABS actuator and electric unit (control unit) harness connector terminals and ground.

ABS actuator and ele	ectric unit (control unit)	_	Continuity
Connector	Terminal		Continuity
E36	3, 4	Ground	Existed

#### Is the inspection result normal?

YES >> Replace ABS actuator and electric unit (control unit).

NO >> Repair or replace malfunctioning components. (Check ABS each bolt for tightness and corrosion.)

## Component Inspection

INFOID:0000000005255521

## 1. CHECK ACTIVE TEST

- 1. Select "ABS", "ACTIVE TEST" and "ABS MOTOR" in order with CONSULT-III.
- Select "On" and "Off" on screen. Make sure motor relay and actuator relay operates as shown in table below.

Test item	Display item	Display	
restitem	Display item	On	Off
ABS MOTOR	MOTOR RELAY	On	Off
ABS MOTOR	ACTUATOR RLY	On	On

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Go to diagnosis procedure. Refer to <u>BRC-109</u>, "<u>Diagnosis Procedure</u>".

## Special Repair Requirement

INFOID:0000000005522805

## ${f 1}$ . 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) or steering angle sensor and removing steering angle sensor. Refer to <a href="https://example.com/BRC-76">BRC-76</a>, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION: Special Repair Requirement".

< DTC/CIRCUIT DIAGNOSIS >

[VDC/TCS/ABS]

## C1113, C1145, C1146 YAW RATE/SIDE/DECEL G SENSOR

Description INFOID:0000000005255522

Yaw rate/side/decel G sensor detects 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

#### DTC DETECTION LOGIC

DTC	Display item	Malfunction detected condition	Possible cause	
C1113	G SENSOR			Harness or connector
C1145	YAW RATE SENSOR		ABS actuator and electric unit (control unit)	
C1146	SIDE G-SEN CIRCUIT	Yaw rate/side/decel G sensor is malfunctioning, or signal line of yaw rate/side/decel G sensor is open or shorted.	Yaw rate/side/decel G sensor     Electrical interference     Vehicle driven on AWD rolling road	

#### DTC CONFIRMATION PROCEDURE

## 1. CHECK SELF-DIAGNOSIS RESULTS

Perform self-diagnosis for "ABS" with CONSULT-III.

Self-diagnosis results
G SENSOR
YAW RATE SENSOR
SIDE G-SEN CIRCUIT

#### Is above displayed on the self-diagnosis display?

YES >> Proceed to diagnosis procedure. Refer to BRC-111, "Diagnosis Procedure".

NO >> INSPECTION END

## Diagnosis Procedure

# 1. CHECK CONNECTOR

- 1. Turn ignition switch OFF.
- 2. Disconnect ABS actuator and electric unit (control unit) connector.
- 3. Disconnect yaw rate/side/decel G sensor connector.
- 4. Check terminal for deformation, disconnection, looseness, and so on. If any malfunction is found, repair or replace terminal.
- Reconnect connectors and then perform self-diagnosis for "ABS" with CONSULT-III.

#### Is any item indicated on the self-diagnosis display?

YES >> GO TO 2.

Revision: 2009 October

NO >> Poor connection of connector terminal. Replace or repair connector.

# 2.CHECK YAW RATE/SIDE/DECEL G SENSOR HARNESS

- Turn ignition switch OFF.
- 2. Disconnect ABS actuator and electric unit (control unit) connector.
- 3. Disconnect yaw rate/side/decel G sensor connector.
- 4. Check continuity between yaw rate/side/decel G sensor harness connector terminals and ABS actuator and electric unit (control unit) harness connector terminals.

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**BRC-111** 

INFOID:0000000005255524

#### < DTC/CIRCUIT DIAGNOSIS >

[VDC/TCS/ABS]

ABS actuator and electric unit (control unit)		Yaw rate/side/decel G sensor		Continuity
Connector Terminal		Connector	Terminal	Continuity
	13	B38	4	
E36	14		5	Existed
E30	28		2	Existed
	29		6	

#### Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace malfunctioning components.

# 3.check yaw rate/side/decel g sensor harness connector

Check continuity between G sensor harness connector terminal and ground.

Yaw rate/sid	Continuity	
Connector	Connector Terminal	
	2 – 4	
	2 – 5	
B38	2 – 6	Not existed
B30	4 – 5	Not existed
	4 – 6	
	5 – 6	

#### Is the inspection result normal?

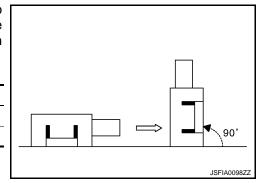
YES >> GO TO 4.

NO >> Repair or replace malfunctioning components.

## 4. CHECK YAW RATE/SIDE/DECEL G SENSOR 1

- 1. Connect yaw rate/side/decel G sensor connector.
- 2. Connect ABS actuator and electric unit (control unit) connector.
- 3. Turn ignition switch ON.
- Move yaw rate/side/decel G sensor as shown in the figure to check the output of before and after moving the sensor with the "ABS", "DATA MONITOR" and "DECEL G-SEN" in order with CONSULT-III.

Condition	DATA MONITOR
Horizontal	Approx. 0 G
Vertical	Approx. +1 G
	•



#### Is the inspection result normal?

YES >> Replace yaw rate/side/decel G sensor.

NO >> GO TO 5.

## ${f 5}$ .CHECK YAW RATE/SIDE/DECEL G SENSOR 2

- Turn ignition switch OFF.
- 2. Connect following terminals between yaw rate/side/decel G sensor and connector.

#### < DTC/CIRCUIT DIAGNOSIS >

[VDC/TCS/ABS]

Yaw rate/side/decel G	Harness connector	
sensor	Connector	Terminal
2 4 5 6	B38	2
		4
		5
		6

3. Turn ignition switch ON.

 Check voltage between yaw rate/side/decel G sensor harness connector terminals. CAUTION:

Never short out the terminals while measuring voltages.

Yaw rate/side/	- Voltage	
connector Terminal		
B38	5 – 2	2.5 – 4.5 V
	6 – 2	0.5 – 2.5 V

#### Is the inspection result normal?

YES >> Replace ABS actuator end electric unit (control unit). Perform self-diagnosis for "ABS" with CON-SULT-III.

NO >> Replace yaw rate/side/decel G sensor. Perform self-diagnosis for "ABS" with CONSULT-III.

### Component Inspection

## 1. CHECK DATA MONITOR

Select "ABS", "DATA MONITOR" and "YAW RATE SENSOR", "SIDE G-SENSOR" and/or "DECEL G-SEN" in order with CONSULT-III, and check yaw rate/side/decel G sensor signal.

#### YAW RATE SENSOR

Vehicle condition	DATA MONITOR	
Vehicle stopped	Approx. 0 d/s	
Vehicle turning	-100 to 100 d/s	
SIDE G SENSOR		
Vehicle condition	DATA MONITOR	
Vehicle stopped	Approx. 0 m/s <sup>2</sup>	
Vehicle turning right	Negative value	
Vehicle turning left	Positive value	
DECEL G SENSOR		
Vehicle condition	DATA MONITOR	
Vehicle stopped	−0.11 to +0.11 G	
During acceleration	Negative value	
During deceleration	Positive value	

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Go to diagnosis procedure. Refer to <u>BRC-111, "Diagnosis Procedure"</u>.

## Special Repair Requirement

1. ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

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INFOID:0000000005522806

< DTC/CIRCUIT DIAGNOSIS >

[VDC/TCS/ABS]

Always perform the neutral position adjustment for the steering angle sensor, when replacing the ABS actuator and electric unit (control unit) or steering angle sensor and removing steering angle sensor. Refer to <a href="https://example.com/BRC-76">BRC-76</a>, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION: Special Repair Requirement".

## C1115 WHEEL SENSOR

Description INFOID:0000000005255526

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:0000000005255527

#### DTC DETECTION LOGIC

DTC	Display item	Malfunction detected condition	Possible cause
C1115	ABS SENSOR [ABNORMAL SIGNAL]	Miss-match between the 4 wheel speed sensor signals.	Harness or connector not a possible cause. Other possible causes tire radius (due to wrong size or pressure) interference.

#### DTC CONFIRMATION PROCEDURE

## CHECK SELF-DIAGNOSIS RESULTS

Perform self-diagnosis for "ABS" with CONSULT-III.

Self-diagnosis results ABS SENSOR [ABNORMAL SIGNAL]

#### Is above displayed on the self-diagnosis display?

>> Proceed to diagnosis procedure. Refer to <a href="BRC-115">BRC-115</a>, "Diagnosis Procedure". YES

NO >> INSPECTION END

## Diagnosis Procedure

#### CAUTION:

Never check between wheel sensor terminals.

## 1.CHECK TIRES

Check air pressure, wear and size.

Are air pressure, wear and size within standard?

YES >> GO TO 2.

NO >> Adjust air pressure, or replace tire.

## 2.CHECK SENSOR AND SENSOR ROTOR

- Check that there is no damage or adherence of foreign matter on the sensor rotor surface.
- Check that there is no deformation, misalignment, float, and backlash on the wheel sensor and wheel sensor mounting surface.
- · Check that the wheel sensor in installed with no misalignment and backlash.

#### Are the sensor and sensor rotor normal?

YES >> GO TO 3.

>> Repair wheel sensor mount or replace sensor rotor. Then perform self-diagnosis for "ABS" with NO CONSULT-III.

# 3. CHECK CONNECTOR

- Turn ignition switch OFF.
- Disconnect ABS actuator and electric unit (control unit) connector.
- Disconnect malfunctioning wheel sensor connector.
- Check terminal to see if it is deformed, disconnected, loose, etc., Repair or replace it if any malfunction condition is found.
- Reconnect connectors and then perform self-diagnosis for "ABS" with CONSULT-III.

#### Is any item indicated on the self-diagnosis display?

YES >> GO TO 4.

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#### < DTC/CIRCUIT DIAGNOSIS >

NO >> Poor connection of connector terminal. Repair or replace connector.

## 4. CHECK WHEEL SENSOR HARNESS

- 1. Turn ignition switch OFF.
- 2. Disconnect ABS actuator and electric unit (control unit) connector.
- 3. Disconnect malfunctioning wheel sensor connector.
- Check continuity between terminals. (Also check continuity when steering wheel is turned right and left and when sensor harness inside the wheel house is moved.)

Measurement terminal for signal circuit

ABS actuator and electric unit (control unit)		Wheel sensor		Continuity
Connector	Terminal	Connector	Terminal	Continuity
	12	E39 (Front RH)	4	
E36	27	E22 (Front LH)	2	Existed
L30	15	B41 (Rear RH)	8	LAISIGU
	30	B44 (Rear LH)	6	

Measurement terminal for power supply circuit

ABS actuator and electric unit (control unit)		Wheel sensor		Continuity
Connector	Terminal	Connector	Terminal	Continuity
	21	E39 (Front RH)	3	
E36	23	E22 (Front LH)	1	Existed
E30	11	B41 (Rear RH)	7	EXISTEC
	26	B44 (Rear LH)	5	

Measurement terminal for ground circuit

	ABS actuator and electric unit (control unit)			
Connector	Connector Terminal Connector Terminal		Continuity	
	12, 21	E36	3, 4	Not existed
E36	27, 23			
⊏30	15, 11			
	30, 26			

5. Reconnect ABS actuator and electric unit (control unit) connector.

#### Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair or replace malfunctioning components.

## 5. REPLACE WHEEL SENSOR

- 1. Replace wheel sensor.
- 2. Erase self-diagnosis results for "ABS" with CONSULT-III.
- Turn the ignition switch OFF.
- 4. Turn the ignition switch ON.

#### **CAUTION:**

#### Never start engine.

5. Perform self-diagnosis results for "ABS" with CONSULT-III.

#### IS DTC "C1115" detected?

YES >> Replace ABS actuator and electric unit (control unit).

NO >> INSPECTION END

# Component Inspection

INFOID:0000000005255529

1. CHECK DATA MONITOR

#### C1115 WHEEL SENSOR

#### < DTC/CIRCUIT DIAGNOSIS >

[VDC/TCS/ABS]

Select "ABS", "DATA MONITOR" in order with CONSULT-III, 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	
FR RH SENSOR	Nearly matches the speedometer dis-
RR LH SENSOR	play (±10% or less)
RR RH SENSOR	

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Go to diagnosis procedure. Refer to <u>BRC-115</u>, "<u>Diagnosis Procedure</u>".

#### Special Repair Requirement

INFOID:0000000005522807

# 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) or steering angle sensor and removing steering angle sensor. Refer to <a href="https://example.com/BRC-76">BRC-76</a>, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION: Special Repair Requirement".

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#### C1116 STOP LAMP SWITCH

**Description** 

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

DTC Logic

#### DTC DETECTION LOGIC

DTC	Display item	Malfunction detected condition	Possible cause
C1116	STOP LAMP SW	When a stop lamp switch signal is not input where the brake pedal is depressed.	Harness or connector     Stop lamp switch     ABS actuator and electric unit (control unit)

#### DTC CONFIRMATION PROCEDURE

## 1. CHECK SELF-DIAGNOSIS RESULTS

Perform self-diagnosis for "ABS" with CONSULT-III.

Self-diagnosis results	_
STOP LAMP SW	

#### Is above displayed on the self-diagnosis display?

YES >> Proceed to diagnosis procedure. Refer to <u>BRC-118</u>, "<u>Diagnosis Procedure</u>".

NO >> INSPECTION END

## Diagnosis Procedure

INFOID:0000000005255532

## 1. CHECK STOP LAMP ILLUMINATE

Check stop lamps illuminate when brake pedal is pressed.

#### Is the inspection result normal?

YES >> GO TO 2.

NO >> Check stop lamp circuit.

# 2.CHECK CONNECTOR

- Turn ignition switch OFF.
- 2. Disconnect ABS actuator and electric unit (control unit) connector.
- 3. Disconnect stop lamp switch connector.
- 4. Check terminal for deformation, disconnection, looseness, etc.
- 5. Reconnect ABS actuator and electric unit (control unit) and stop lamp switch connectors securely.
- Start engine.
- Repeat pumping brake pedal carefully several times, and perform self-diagnosis for "ABS" with CON-SULT-III.

#### Is any item indicated in the self-diagnosis display?

YES >> GO TO 3.

NO >> Poor connection of connector terminal. Replace or repair error-detected parts.

#### $oldsymbol{3}.$ CHECK STOP LAMP SWITCH CLEARANCE

Check stop lamp switch clearance. Refer to BR-9, "Inspection and Adjustment".

#### Is the inspection result normal?

YES >> GO TO 4.

NO >> Adjust stop lamp switch clearance. Refer to <u>BR-9</u>. "Inspection and Adjustment".

#### 4. CHECK STOP LAMP SWITCH CIRCUIT

1. Turn ignition switch OFF.

#### C1116 STOP LAMP SWITCH

#### < DTC/CIRCUIT DIAGNOSIS >

[VDC/TCS/ABS]

2. Disconnect ABS actuator and electric unit (control unit) connector.

Check voltage between ABS actuator and electric unit (control unit) harness connector terminal and ground.

ABS actuator and electric unit (control unit)		_	Condition	Voltage
Connector	Terminal			
E36	8	Ground	Brake pedal is depressed	Battery voltage
230	3	Ground	Brake pedal is released	Approx. 0 V

Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair or replace malfunctioning components.

#### 5.CHECK STOP LAMP SWITCH

Check stop lamp switch. Refer to BRC-119, "Component Inspection".

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace stop lamp switch. Refer to <a href="mailto:BR-20">BR-20</a>, "Exploded View".

## Component Inspection

# 1. CHECK STOP LAMP SWITCH

. Turn ignition switch OFF.

2. Disconnect stop lamp switch connector.

3. Check continuity between stop lamp switch connector terminals.

Stop lamp switch	Condition	Continuity
Terminal	Condition	
1 – 2	Release stop lamp switch (When brake pedal is depressed.)	Existed
1 2	Push stop lamp switch (When brake pedal is released.)	Not existed

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace stop lamp switch. Refer to <u>BR-20</u>, "Exploded View".

## Component Inspection

## 1. CHECK STOP LAMP SWITCH

Turn ignition switch OFF.
 Disconnect stop lamp switch conne

Disconnect stop lamp switch connector.
 Check continuity between stop lamp switch connector terminals.

Stop lamp switch	Condition	Continuity	
Terminal	Condition	Continuity	
1 – 2	Release stop lamp switch (When brake pedal is depressed.)	Existed	
1 2	Push stop lamp switch (When brake pedal is released.)	Not existed	

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace stop lamp switch. Refer to <a href="mailto:BR-20">BR-20</a>, "Exploded View".

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## C1118 AWD SYSTEM

**Description** 

It transmits the value calculated by AWD control unit to ABS actuator and electric unit (control unit) with AWD communication line (line for AWD system only). ABS actuator and electric unit (control unit) controls AWD solenoid valve according to the received command value.

DTC Logic

#### DTC DETECTION LOGIC

DTC	Display item	Malfunction detected condition	Possible cause
C1118	4WD SYSTEM	An error is detected on AWD control unit side. (AWD control unit fail-safe mode)	<ul> <li>Harness or connector</li> <li>AWD communication line</li> <li>AWD control unit</li> <li>ABS actuator and electric unit (control unit)</li> </ul>

#### DTC CONFIRMATION PROCEDURE

## 1. CHECK SELF-DIAGNOSIS RESULTS

Perform self-diagnosis for "ABS" with CONSULT-III.

Self-diagnosis results	
4WD SYSTEM	

#### Is above displayed on the self-diagnosis display?

YES >> Proceed to diagnosis procedure. Refer to <a href="BRC-120">BRC-120</a>, "Diagnosis Procedure".

NO >> INSPECTION END

## Diagnosis Procedure

INFOID:0000000005255536

## 1. CHECK AWD CONTROL UNIT

Perform self-diagnosis for "ALL MODE AWD/4WD" with CONSULT-III.

#### Is any error system detected?

YES >> Check the error system. Refer to <u>DLN-40</u>, "<u>DTC Index</u>".

NO >> Replace ABS actuator and electric unit (control unit).

## Special Repair Requirement

INFOID:0000000005522809

# 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) or steering angle sensor and removing steering angle sensor. Refer to <a href="https://example.com/BRC-76">BRC-76</a>, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION: Special Repair Requirement".

#### C1120, C1122, C1124, C1126 IN ABS SOL

#### < DTC/CIRCUIT DIAGNOSIS >

[VDC/TCS/ABS]

## C1120, C1122, C1124, C1126 IN ABS SOL

**Description** 

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

#### 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.	
C1122	FR RH IN ABS SOL	When the control unit detects a malfunction in the front RH inlet solenoid circuit.	ABS actuator and electric unit
C1124	RR LH IN ABS SOL	When the control unit detects a malfunction in the rear LH inlet solenoid circuit.	(control unit)
C1126	RR RH IN ABS SOL	When the control unit detects a malfunction in the rear RH inlet solenoid circuit.	

#### DTC CONFIRMATION PROCEDURE

## CHECK SELF-DIAGNOSIS RESULTS

Perform self-diagnosis for "ABS" with CONSULT-III.

Self-diagnosis results
FR LH IN ABS SOL
FR RH IN ABS SOL
RR LH IN ABS SOL
RR RH IN ABS SOL

#### Is above displayed on the self-diagnosis display?

YES >> Proceed to diagnosis procedure. Refer to <u>BRC-121</u>. "<u>Diagnosis Procedure</u>".

NO >> INSPECTION END

## Diagnosis Procedure

## 1. CHECK SENSOR AND SENSOR ROTOR

- Check that there is no damage or adherence of foreign matter on the sensor rotor surface.
- Check sensor rotor for damage.
- · Check wheel sensor for damage, disconnection or looseness.
- Check that there is no deformation on the wheel sensor mounting surface.

#### Are the sensor and sensor rotor normal?

YES >> GO TO 2.

NO >> Repair wheel sensor mount or replace sensor rotor. Then perform the self-diagnosis.

## 2.check connector

- 1. Turn ignition switch OFF.
- 2. Disconnect ABS actuator and electric unit (control unit) connector.
- Check terminal for deformation, disconnection, looseness, and so on. If any malfunction is found, repair or replace terminal.
- 4. Reconnect connector and then perform self-diagnosis for "ABS" with CONSULT-III.

#### Is any item indicated on the self-diagnosis display?

YES >> GO TO 3.

NO >> Poor connection of connector terminal. Replace or repair connector.

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## C1120, C1122, C1124, C1126 IN ABS SOL

< DTC/CIRCUIT DIAGNOSIS >

[VDC/TCS/ABS]

# ${f 3.}$ CHECK SOLENOID, VDC SWITCH-OVER VALVE AND ACTUATOR RELAY POWER SUPPLY CIRCUIT

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

ABS actuator and electric unit (control unit)		_	Voltage
Connector Terminal			voltage
E36	2	Ground	Battery voltage

#### Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace malfunctioning components.

## 4.CHECK SOLENOID, VDC SWITCH-OVER VALVE AND ACTUATOR RELAY GROUND CIRCUIT

Check continuity between ABS actuator and electric unit (control unit) harness connector terminals and ground.

ABS actuator and ele	ectric unit (control unit)	_	Continuity
Connector	Connector Terminal		Continuity
E36	3, 4	Ground	Existed

#### Is the inspection result normal?

YES >> Replace ABS actuator and electric unit (control unit).

NO >> Repair or replace malfunctioning components.

## Component Inspection

INFOID:0000000005255540

## 1. CHECK ACTIVE TEST

- 1. Select "ABS", "ACTIVE TEST" and each test menu item in order with CONSULT-III.
- 2. On the display, select "Up", "Keep", and "Down", and check that the system operates as shown in the table below.

Test item	Display item —		Display		
rest item		Up	Keep	Down	
	FR RH IN SOL	Off	On	On	
FR RH SOL	FR RH OUT SOL	Off	Off	On*	
FR RH 30L	CV1	Off	Off	Off	
	SV1	Off	Off	Off	
	FR LH IN SOL	Off	On	On	
FR LH SOL	FR LH OUT SOL	Off	Off	On*	
FR LH SOL	CV2	Off	Off	Off	
	SV2	Off	Off	Off	
	RR RH IN SOL	Off	On	On	
RR RH SOL	RR RH OUT SOL	Off	Off	On*	
KK KH 30L	CV2	Off	Off	Off	
	SV2	Off	Off	Off	
	RR LH IN SOL	Off	On	On	
RR LH SOL	RR LH OUT SOL	Off	Off	On*	
IXI LII SUL	CV1	Off	Off	Off	
	SV1	Off	Off	Off	

<sup>\*:</sup> On for 1 to 2 seconds after the select, and then Off.

## C1120, C1122, C1124, C1126 IN ABS SOL

# < DTC/CIRCUIT DIAGNOSIS > [VDC/TCS/ABS] Is the inspection result normal? YES >> INSPECTION END NO >> Go to diagnosis procedure. Refer to BRC-121, "Diagnosis Procedure".

# Special Repair Requirement

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) or steering angle sensor and removing steering angle sensor. Refer to <a href="https://example.com/BRC-76">BRC-76</a>, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION: Special Repair Requirement".

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## C1121, C1123, C1125, C1127 OUT ABS SOL

**Description** 

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

#### 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.	
C1123	FR RH OUT ABS SOL	When the control unit detects a malfunction in the front RH outlet solenoid circuit.	ABS actuator and electric unit
C1125	RR LH OUT ABS SOL	When the control unit detects a malfunction in the rear LH outlet solenoid circuit.	(control unit)
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-DIAGNOSIS RESULTS

Perform self-diagnosis for "ABS" with CONSULT-III.

Self-diagnosis results
FR LH OUT ABS SOL
FR RH OUT ABS SOL
RR LH OUT ABS SOL
RR RH OUT ABS SOL

#### Is above displayed on the self-diagnosis display?

YES >> Proceed to diagnosis procedure. Refer to <a href="BRC-124">BRC-124</a>, "Diagnosis Procedure".

NO >> INSPECTION END

## Diagnosis Procedure

INFOID:0000000005255543

## 1. CHECK SENSOR AND SENSOR ROTOR

- Check that there is no damage or adherence of foreign matter on the sensor rotor surface.
- Check sensor rotor for damage.
- Check wheel sensor for damage, disconnection or looseness.
- Check that there is no deformation on the wheel sensor mounting surface.

#### Are the sensor and sensor rotor normal?

YES >> GO TO 2.

NO >> Repair wheel sensor mount or replace sensor rotor. Then perform the self-diagnosis.

## 2.check connector

- 1. Turn ignition switch OFF.
- 2. Disconnect ABS actuator and electric unit (control unit) connector.
- Check terminal for deformation, disconnection, looseness, and so on. If any malfunction is found, repair or replace terminal.
- 4. Reconnect connector and then perform self-diagnosis for "ABS" with CONSULT-III.

#### Is any item indicated on the self-diagnosis display?

YES >> GO TO 3.

NO >> Poor connection of connector terminal. Replace or repair connector.

### C1121, C1123, C1125, C1127 OUT ABS SOL

#### < DTC/CIRCUIT DIAGNOSIS >

[VDC/TCS/ABS]

# ${f 3.}$ check solenoid, vdc switch-over valve and actuator relay power supply circuit

- 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) harness connector terminal and ground.

ABS actuator and ele	ectric unit (control unit)		Voltage
Connector Terminal			voltage
E36	2	Ground	Battery voltage

#### Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace malfunctioning components.

## 4.CHECK SOLENOID, VDC SWITCH-OVER VALVE AND ACTUATOR RELAY GROUND CIRCUIT

Check continuity between ABS actuator and electric unit (control unit) harness connector terminals and ground.

ABS actuator and ele	ectric unit (control unit)		Continuity
Connector Terminal			Continuity
E36	3, 4	Ground	Existed

#### Is the inspection result normal?

YES >> Replace ABS actuator and electric unit (control unit).

NO >> Repair or replace malfunctioning components.

## Component Inspection

## 1. CHECK ACTIVE TEST

- 1. Select "ABS", "ACTIVE TEST" and each test menu item in order with CONSULT-III.
- On the display, select "Up", "Keep", and "Down", and check that the system operates as shown in the table below.

Took itom	Diaplay item	Display		
Test item	Display item —	Up	Keep	Down
	FR RH IN SOL	Off	On	On
ED DIL COL	FR RH OUT SOL	Off	Off	On*
FR RH SOL	CV1	Off	Off	Off
	SV1	Off	Off	Off
	FR LH IN SOL	Off	On	On
FR LH SOL	FR LH OUT SOL	Off	Off	On*
FR LH SUL	CV2	Off	Off	Off
	SV2	Off	Off	Off
	RR RH IN SOL	Off	On	On
RR RH SOL	RR RH OUT SOL	Off	Off	On*
RR RH SUL	CV2	Off	Off	Off
	SV2	Off	Off	Off
	RR LH IN SOL	Off	On	On
DD III COI	RR LH OUT SOL	Off	Off	On*
RR LH SOL	CV1	Off	Off	Off
	SV1	Off	Off	Off

<sup>\*:</sup> On for 1 to 2 seconds after the select, and then Off.

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## C1121, C1123, C1125, C1127 OUT ABS SOL

< DTC/CIRCUIT DIAGNOSIS >

[VDC/TCS/ABS]

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Go to diagnosis procedure. Refer to <a href="BRC-124">BRC-124</a>, "Diagnosis Procedure".

## Special Repair Requirement

INFOID:0000000005522811

# 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) or steering angle sensor and removing steering angle sensor. Refer to <a href="https://example.com/BRC-76">BRC-76</a>, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION: Special Repair Requirement".

	RCUIT DIAGNOSIS >		[VDC/TCS/ABS]	
C1130		1		
	ENGINE SIGNA	L		А
Descript	tion		INFOID:000000005255545	
ABS actualine.	ator and electric unit (d	control unit) and ECM exchange the engine sign	al via CAN communication	В
DTC Lo	gic		INFOID:000000005255546	
OTC DET	FECTION LOGIC			С
DTC	Display item	Malfunction detected condition	Possible cause	
C1130	ENGINE SIGNAL 1	ECM signals are invalid or ECM self diagnosis indicates a fault that prevents correct TCS operation.	<ul> <li>Harness or connector</li> <li>ABS actuator and electric unit (control unit)</li> <li>ECM</li> <li>CAN communication line</li> </ul>	E
	NFIRMATION PROCI	EDURE		BR
1.checi	K SELF-DIAGNOSIS R	ESULTS		
Perform s	elf-diagnosis for "ABS"	with CONSULT-III.		G
	Self-diagnosi	e reculte		
	ENGINE SIC			Н
ls above o	displayed on the self-dia	agnosis display?		
	<ul><li>Proceed to diagnosis</li><li>INSPECTION END</li></ul>	s procedure. Refer to <u>BRC-127, "Diagnosis Proce</u>	<u>dure"</u> .	ı
	sis Procedure		INFOID:000000005255547	
	K ENGINE SYSTEM			J
		NGINE" with CONSULT-III. Repair or replace ite	ms indicated then Perform	
self-d	liagnosis for "ENGINE" rm self-diagnosis for "A	with CONSULT-III.	ms malcated, then I enomi	K
	n indicated on the self-	<del></del>		
	>> Repair or replace the >> INSPECTION END	e arrected part.		L
	sis Procedure		INFOID:000000005522812	
Diagnos	olo i roccaarc		INFOID.00000000003322612	

- Perform self-diagnosis for "ENGINE" with CONSULT-III. Repair or replace items indicated, then Perform self-diagnosis for "ENGINE" with CONSULT-III. Perform self-diagnosis for "ABS" with CONSULT-III.

Is any item indicated on the self-diagnosis display?

>> Repair or replace the affected part. >> INSPECTION END YES

NO

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## C1140 ACTUATOR RELAY SYSTEM

**Description** 

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

DTC Logic

#### DTC DETECTION LOGIC

DTC	Display item	Malfunction detected condition	Possible cause
C1140	ACTUATOR RLY	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     ABS actuator and electric un (control unit)
C1140	ACTUATORINET	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-DIAGNOSIS RESULTS

Perform self-diagnosis for "ABS" with CONSULT-III.

Self-diagnosis	results
ACTUATOR	RLY

#### Is above displayed on the self-diagnosis display?

YES >> Proceed to diagnosis procedure. Refer to <a href="BRC-128">BRC-128</a>, "Diagnosis Procedure".

NO >> INSPECTION END

## Diagnosis Procedure

INFOID:0000000005255550

## 1. CHECK CONNECTOR

- Turn ignition switch OFF.
- 2. Disconnect ABS actuator and electric unit (control unit) connector.
- Check terminal for deformation, disconnection, looseness, and so on. If any malfunction is found, repair or replace terminal.
- 4. Reconnect connector and then perform self-diagnosis for "ABS" with CONSULT-III.

#### Is any item indicated on the self-diagnosis display?

YES >> GO TO 2.

NO >> Poor connection of connector terminal. Replace or repair connector.

# 2.check solenoid, vdc switch-over valve and actuator relay power supply circuit

- Turn ignition switch OFF.
- Disconnect ABS actuator and electric unit (control unit) connector.
- Check voltage between ABS actuator and electric unit (control unit) harness connector terminal and ground.

ABS actuator and ele	ectric unit (control unit)		Voltage
Connector	Terminal	<u>—</u>	voltage
E36	2	Ground	Battery voltage

Reconnect ABS actuator and electric unit (control unit) connector.

#### Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace malfunctioning components.

#### C1140 ACTUATOR RELAY SYSTEM

#### < DTC/CIRCUIT DIAGNOSIS >

[VDC/TCS/ABS]

# ${f 3.}$ abs power supply check (under load condition)

Use 12 V lamp (normal rating 10 to 20 W) connected between E36 terminals 1 and 3. With ignition switch ON check bulb illuminates correctly.

#### Is the inspection result normal?

YES >> GO TO 4.

NO >> Check both power supply and ground circuit.

## $oldsymbol{4}.$ CHECK ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT) GROUND CIRCUIT

- Turn ignition switch OFF.
- 2. Disconnect ABS actuator and electric unit (control unit) connector.
- Check continuity between ABS actuator and electric unit (control unit) harness connector terminals and ground.

ABS actuator and ele	ectric unit (control unit)		Continuity
Connector	Terminal	_	Continuity
E36	3, 4	Ground	Existed

#### Is the inspection result normal?

YES >> Replace ABS actuator and electric unit (control unit).

>> Repair or replace malfunctioning components. (Check ABS each bolt for tightness and corrosion.) NO

## Component Inspection

## 1. CHECK ACTIVE TEST

Select "ABS", "ACTIVE TEST" and "ABS MOTOR" in order with CONSULT-III.

Select "On" and "Off" on screen. Make sure motor relay and actuator relay operates as shown in table below.

Test item	Display item	Display	
rest item		On	Off
ABS MOTOR	MOTOR RELAY	On	Off
ABS MOTOR	ACTUATOR RLY	On	On

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Go to diagnosis procedure. Refer to BRC-128, "Diagnosis Procedure".

## Special Repair Requirement

## ${f 1}$ . 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) or steering angle sensor and removing steering angle sensor. Refer to BRC-76, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION: Special Repair Requirement".

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#### C1143, C1144 STEERING ANGLE SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[VDC/TCS/ABS]

## C1143, C1144 STEERING ANGLE SENSOR

Description

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

#### 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     Steering angle sensor
C1144	ST ANG SEN SIGNAL	Neutral position of steering angle sensor is not finished.	ABS actuator and electric unit (control unit)

#### DTC CONFIRMATION PROCEDURE

## 1. CHECK SELF-DIAGNOSIS RESULTS

Perform self-diagnosis for "ABS" with CONSULT-III.

Self-diagnosis results
ST ANG SEN CIRCUIT
ST ANG SEN SIGNAL

#### Is above displayed on the self-diagnosis display?

YES >> Proceed to diagnosis procedure. Refer to <a href="BRC-130">BRC-130</a>, "Diagnosis Procedure".

NO >> INSPECTION END

## Diagnosis Procedure

INFOID:0000000005255554

## 1. CHECK VEHICLE STATE

Check vehicle for any suspension/steering misalignment or damage.

#### Is the inspection result normal?

YES >> GO TO 2.

NO >> Correct any damage found.

# 2. CHECK CONNECTOR

- 1. Turn ignition switch OFF.
- 2. Disconnect ABS actuator and electric unit (control unit) connector.
- 3. Disconnect steering angle sensor connector.
- Check terminal for deformation, disconnection, looseness, and so on. If any malfunction is found, repair or replace terminal.
- 5. Reconnect connectors and then perform self-diagnosis for "ABS" with CONSULT-III.

#### Is any item indicated on the self-diagnosis display?

YES >> GO TO 3.

NO >> Poor connection of connector terminal. Replace or repair connector.

# ${f 3.}$ check steering angle sensor harness

- Turn ignition switch OFF.
- Disconnect steering angle sensor connector.
- 3. Check continuity between steering angle sensor harness connector terminal and ground.

Steering angle sensor		Continuity	
Connector	Terminal	_	Continuity
M30	3	Ground	Existed

#### C1143, C1144 STEERING ANGLE SENSOR

#### < DTC/CIRCUIT DIAGNOSIS >

[VDC/TCS/ABS]

Turn ignition switch ON.

Check voltage between steering angle sensor harness connector terminal and ground. 5.

Steering a	ngle sensor		Voltage	
Connector	Terminal	_	voltage	
M30	1	Ground	Battery voltage	

#### Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace malfunctioning components.

#### 4. CHECK DATA MONITOR

Connect the steering angle sensor connector and ABS actuator and electric unit (control unit) connector.

Select "ABS", "DATA MONITOR" and "STR ANGLE SIG" in order with CONSULT-III, 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 >> GO TO 5.

NO >> Adjust neutral position of steering angle sensor.

## 5.CHECK FOR BACKLASH

- Check for backlash [turn wheel to left then straight then right then straight (approx. 90°)].
- Check straight position is always similar value.

#### Is there noticeable backlash?

YES >> Check sensor is correctly fitted to combination switch.

NO >> Check sensor output is correct from lock to lock.

## Component Inspection

1. CHECK DATA MONITOR

Select "ABS", "DATA MONITOR" and "STR ANGLE SIG" in order with CONSULT-III, and check steering angle sensor signal.

Steering condition STR ANGLE SIG (DATA MON	
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 <u>BRC-130</u>, "Diagnosis Procedure".

## Special Repair Requirement

## 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) or steering angle sensor and removing steering angle sensor. Refer to BRC-76, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION: Special Repair Requirement".

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## C1155 BRAKE FLUID LEVEL SWITCH

< DTC/CIRCUIT DIAGNOSIS >

[VDC/TCS/ABS]

## C1155 BRAKE FLUID LEVEL SWITCH

Description

Brake fluid level switch contacts close when brake fluid level is low. This is detected by the combination meter which sends the status of fluid level to the VDC unit via the CAN bus.

DTC Logic

#### DTC DETECTION LOGIC

DTC	Display item	Malfunction detected condition	Possible cause
C1155	BR FLUID LEVEL LOW	Ignition switch ON and brake fluid signal low or not available for 10 seconds.	<ul> <li>Brake fluid level low</li> <li>Brake fluid level switch failure</li> <li>Wiring to brake fluid level switch short circuit</li> <li>CAN bus failure</li> <li>Combination meter failure</li> </ul>

#### DTC CONFIRMATION PROCEDURE

## 1. CHECK SELF-DIAGNOSIS RESULTS

Perform self-diagnosis for "ABS" with CONSULT-III.

Self-diagnosis results	
BR FLUID LEVEL LOW	

#### Is above displayed on the self-diagnosis display?

YES >> Proceed to diagnosis procedure. Refer to <a href="BRC-132">BRC-132</a>, "Diagnosis Procedure".

NO >> INSPECTION END

## Diagnosis Procedure

INFOID:0000000005255559

## 1. CHECK BRAKE FLUID LEVEL

Check brake fluid level. Refer to BR-12, "Inspection".

#### Is the inspection result normal?

YES >> GO TO 2.

NO >> Refill brake fluid. Refer to <u>BR-12</u>, "Refilling".

## 2.CHECK BRAKE WARNING LAMP 1

Check that the brake warning lamp illuminates after the ignition switch is turned ON.

#### Is the inspection result normal?

YES >> GO TO 3.

NO >> Check wiring to brake fluid level sensor and brake fluid level sensor.

## 3.CHECK BRAKE WARNING LAMP 2

Check that the brake warning lamp in the combination meter turns ON/OFF correctly when operating the parking brake.

#### Is the inspection result normal?

YES >> GO TO 4.

NO >> Check parking brake switch.

## 4. CHECK CONNECTOR

- Turn ignition switch OFF.
- 2. Disconnect brake fluid level switch connector and combination meter connector.
- Check terminal for deformation, disconnection, looseness, and so on. If any malfunction is found, repair or replace terminal.
- Reconnect connectors and then perform self-diagnosis for "ABS" with CONSULT-III.

#### C1155 BRAKE FLUID LEVEL SWITCH

#### < DTC/CIRCUIT DIAGNOSIS >

[VDC/TCS/ABS]

#### Is any item indicated on the self-diagnosis display?

YES >> GO TO 5.

NO >> Poor connection of connector terminal. Replace or repair connector.

# 5. CHECK BRAKE FLUID LEVEL SWITCH

- 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	Terminal	Condition	Continuity	
E37	1 – 2	When brake fluid is full in the reservoir tank.	Not existed	
237	1-2	When brake fluid is empty in the reservoir tank.	Existed	

#### Is the inspection result normal?

YES >> GO TO 6.

NO >> Brake fluid level switch is malfunction. Replace reservoir tank.

## 6.CHECK BRAKE FLUID LEVEL SWITCH CIRCUIT

- Disconnect combination meter connector.
- 2. Check continuity between brake fluid level switch harness connector terminals and combination meter harness connector terminal and/or ground.

Combination meter		Brake fluid	Continuity	
Connector	Terminal	Connector	Terminal	Continuity
M34	27	E37	1	Existed

Combina	tion meter		Continuity
Connector	Connector Terminal		Continuity
M34	27	Ground	Not existed

Brake fluid	level switch		Continuity
Connector	Terminal	_	Continuity
E37	2	Ground	Existed

#### Is the inspection result normal?

YES >> Replace ABS actuator and electric unit (control unit).

NO >> Repair or replace malfunctioning components.

## Component Inspection

# 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	Terminal	Gondidon	Continuity	
E37	1 – 2	When brake fluid is full in the reservoir tank.	Not existed	
LSI	1-2	When brake fluid is empty in the reservoir tank.	Existed	
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#### C1155 BRAKE FLUID LEVEL SWITCH

< DTC/CIRCUIT DIAGNOSIS >

[VDC/TCS/ABS]

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Go to diagnosis procedure. Refer to <a href="BRC-132">BRC-132</a>, "Diagnosis Procedure".

## Special Repair Requirement

INFOID:0000000005522815

# 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) or steering angle sensor and removing steering angle sensor. Refer to <a href="https://example.com/BRC-76">BRC-76</a>, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION: Special Repair Requirement".

## C1164, C1165 CV SYSTEM

Description INFOID:0000000005255561

The cut valve shuts off the normal brake fluid path from the master cylinder, when VDC/TCS is activated.

DTC Logic

#### DTC DETECTION LOGIC

DTC	Display item	Malfunction detected condition	Possible cause
C1164	CV1	VDC switch-over solenoid valve (CV1) 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     ABS actuator and electric unit
C1165	CV2	VDC switch-over solenoid valve (CV2) on the secondary side is open circuit or shorted, or the control line is open or shorted to the power supply or the ground.	(control unit)

#### DTC CONFIRMATION PROCEDURE

## 1. CHECK SELF-DIAGNOSIS RESULTS

Perform self-diagnosis for "ABS" with CONSULT-III.

Self-diagnosis results

CV1

CV2

Is above displayed on the self-diagnosis display?

YES >> Proceed to diagnosis procedure. Refer to <a href="BRC-135">BRC-135</a>, "Diagnosis Procedure".

NO >> INSPECTION END

## Diagnosis Procedure

## 1. CHECK CONNECTOR

1. Turn ignition switch OFF.

- 2. Disconnect ABS actuator and electric unit (control unit) connector.
- Check terminal for deformation, disconnection, looseness, and so on. If any malfunction is found, repair or replace terminal.
- 4. Reconnect connectors and then perform self-diagnosis for "ABS" with CONSULT-III.

#### Is any item indicated on the self-diagnosis display?

YES >> GO TO 2.

NO >> Poor connection of connector terminal. Replace or repair connector.

## 2.CHECK SOLENOID, VDC SWITCH-OVER VALVE AND ACTUATOR RELAY POWER SUPPLY CIRCUIT

- Turn ignition switch OFF.
- Disconnect ABS actuator and electric unit (control unit) connector.
- Check voltage between ABS actuator and electric unit (control unit) harness connector terminal and ground.

ABS actuator and ele	ectric unit (control unit)		Voltage
Connector	Terminal		voltage
E36	2	Ground	Battery voltage

#### Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace malfunctioning components.

3.check solenoid, vdc switch-over valve and actuator relay ground circuit

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#### C1164, C1165 CV SYSTEM

#### < DTC/CIRCUIT DIAGNOSIS >

[VDC/TCS/ABS]

Check continuity between ABS actuator and electric unit (control unit) harness connector terminals and ground.

ABS actuator and ele	ectric unit (control unit)	_	Continuity
Connector	Terminal		Continuity
E36	3, 4	Ground	Existed

#### Is the inspection result normal?

YES >> Replace ABS actuator and electric unit (control unit).

NO >> Repair or replace malfunctioning components.

## Component Inspection

INFOID:0000000005255564

## 1. CHECK ACTIVE TEST

- 1. Select "ABS", "ACTIVE TEST" and each test menu item in order with CONSULT-III.
- On the display, select "Up", "ACT UP", and "ACT KEEP", and check that the system operates as shown in the table below.

Test item	Display item		Display	
rest item	Display item	Up	ACT UP	ACT KEEP
	FR RH IN SOL	Off	Off	Off
FR RH ABS SOLENOID	FR RH OUT SOL	Off	Off	Off
(ACT)	CV1	Off	On	On
	SV1	Off	On*	Off
	FR LH IN SOL	Off	Off	Off
FR LH ABS SOLENOID	FR LH OUT SOL	Off	Off	Off
(ACT)	CV2	Off	On	On
	SV2	Off	On*	Off
	RR RH IN SOL	Off	Off	Off
RR RH ABS SOLENOID	RR RH OUT SOL	Off	Off	Off
(ACT)	CV2	Off	On	On
	SV2	Off	On*	Off
	RR LH IN SOL	Off	Off	Off
RR LH ABS SOLENOID	RR LH OUT SOL	Off	Off	Off
(ACT)	CV1	Off	On	On
	SV1	Off	On*	Off

<sup>\*:</sup> On for 1 to 2 seconds after the select, and then Off.

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Go to diagnosis procedure. Refer to <u>BRC-135</u>, "<u>Diagnosis Procedure</u>".

## Special Repair Requirement

INFOID:0000000005522816

## ${f 1}$ .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) or steering angle sensor and removing steering angle sensor. Refer to <a href="https://example.com/BRC-76">BRC-76</a>, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION: Special Repair Requirement".

## C1166, C1167 SV SYSTEM

Description

The suction valve supplies the brake fluid from the master cylinder to the pump, when VDC/TCS is activated.

DTC Logic

#### DTC DETECTION LOGIC

DTC	Display item	Malfunction detected condition	Possible cause
C1166	SV1	VDC switch-over solenoid valve (SV1) 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     ABS actuator and electric unit
C1167	SV2	VDC switch-over solenoid valve (SV2) on the secondary side is open circuit or shorted, or the control line is open or shorted to the power supply or the ground.	(control unit)

## DTC CONFIRMATION PROCEDURE

## 1. CHECK SELF-DIAGNOSIS RESULTS

Perform self-diagnosis for "ABS" with CONSULT-III.

Self-diagnosis results
SV1
SV2

Is above displayed on the self-diagnosis display?

YES >> Proceed to diagnosis procedure. Refer to <u>BRC-137</u>, "Diagnosis Procedure".

NO >> INSPECTION END

## Diagnosis Procedure

## 1. CHECK CONNECTOR

1. Turn ignition switch OFF.

- 2. Disconnect ABS actuator and electric unit (control unit) connector.
- Check terminal for deformation, disconnection, looseness, and so on. If any malfunction is found, repair or replace terminal.
- Reconnect connectors and then perform self-diagnosis for "ABS" with CONSULT-III.

#### Is any item indicated on the self-diagnosis display?

YES >> GO TO 2.

NO >> Poor connection of connector terminal. Replace or repair connector.

## 2.CHECK SOLENOID, VDC SWITCH-OVER VALVE AND ACTUATOR RELAY POWER SUPPLY CIRCUIT

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

ABS actuator and ele	ectric unit (control unit)		Voltage
Connector	Terminal		voltage
E36	2	Ground	Battery voltage

#### Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace malfunctioning components.

3.check solenoid, vdc switch-over valve and actuator relay ground circuit

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#### C1166, C1167 SV SYSTEM

#### < DTC/CIRCUIT DIAGNOSIS >

[VDC/TCS/ABS]

Check continuity between ABS actuator and electric unit (control unit) harness connector terminals and ground.

ABS actuator and ele	ectric unit (control unit)	_	Continuity
Connector	Connector Terminal		Continuity
E36	3, 4	Ground	Existed

#### Is the inspection result normal?

YES >> Replace ABS actuator and electric unit (control unit).

NO >> Repair or replace malfunctioning components.

## Component Inspection

INFOID:0000000005255568

## 1. CHECK ACTIVE TEST

- 1. Select "ABS", "ACTIVE TEST" and each test menu item in order with CONSULT-III.
- On the display, select "Up", "ACT UP", and "ACT KEEP", and check that the system operates as shown in the table below.

Test item	Diaplay itam		Display	
rest item	Display item	Up	ACT UP	ACT KEEP
	FR RH IN SOL	Off	Off	Off
FR RH ABS SOLENOID	FR RH OUT SOL	Off	Off	Off
(ACT)	CV1	Off	On	On
	SV1	Off	On*	Off
	FR LH IN SOL	Off	Off	Off
FR LH ABS SOLENOID	FR LH OUT SOL	Off	Off	Off
(ACT)	CV2	Off	On	On
	SV2	Off	On*	Off
	RR RH IN SOL	Off	Off	Off
RR RH ABS SOLENOID	RR RH OUT SOL	Off	Off	Off
(ACT)	CV2	Off	On	On
	SV2	Off	On*	Off
	RR LH IN SOL	Off	Off	Off
RR LH ABS SOLENOID	RR LH OUT SOL	Off	Off	Off
(ACT)	CV1	Off	On	On
	SV1	Off	On*	Off

<sup>\*:</sup> On for 1 to 2 seconds after the select, and then Off.

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Go to diagnosis procedure. Refer to <u>BRC-137</u>, "<u>Diagnosis Procedure</u>".

## Special Repair Requirement

INFOID:0000000005522817

## ${f 1}$ .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) or steering angle sensor and removing steering angle sensor. Refer to <a href="https://example.com/BRC-76">BRC-76</a>, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION: Special Repair Requirement".

INFOID:000000005255569

#### C1176 STOP LAMP SW2

Description

When the brake pedal is depressed, ASCD brake switch is turned OFF and stop lamp switch is turned ON.

DTC Logic INFOID:0000000005255570

#### DTC DETECTION LOGIC

DTC	Display item	Malfunction detected condition	Possible cause
C1176	STOP LAMP SW2	When a ASCD brake switch signal is not input where the brake pedal is depressed.	Harness or connector     ASCD brake switch     ABS actuator and electric unit (control unit)

#### DTC CONFIRMATION PROCEDURE

## CHECK SELF-DIAGNOSIS RESULTS

Perform self-diagnosis for "ABS" with CONSULT-III.

Self-diagnosis results STOP LAMP SW2

Is above displayed on the self-diagnosis display?

YES >> Proceed to diagnosis procedure. Refer to <a href="BRC-139">BRC-139</a>, "Diagnosis Procedure".

NO >> INSPECTION END

## Diagnosis Procedure

## 1. CHECK CONNECTOR

- Turn ignition switch OFF.
- Disconnect ABS actuator and electric unit (control unit) connector.
- Check terminal for deformation, disconnection, looseness, and so on. If any malfunction is found, repair or replace terminal.
- Reconnect connectors and then perform self-diagnosis for "ABS" with CONSULT-III.

#### Is any item indicated on the self-diagnosis display?

YFS >> GO TO 2.

NO >> Poor connection of connector terminal. Replace or repair connector.

## 2.check ascd brake switch clearance

Check ASCD brake switch clearance. Refer to BR-9, "Inspection and Adjustment".

Is the inspection result normal?

YES >> GO TO 3.

NO >> Adjust ASCD brake switch clearance. Refer to BR-9, "Inspection and Adjustment"

# 3. CHECK ASCD BRAKE SWITCH

- Turn ignition switch OFF.
- 2. Disconnect ASCD brake switch connector.
- Check continuity between ASCD brake switch connector terminals.

ASCD brake switch	Condition	Continuity
Terminal	Condition	Continuity
1 – 2	Brake pedal is fully released.	Existed
1-2	Brake pedal is slightly depressed.	Not existed

#### Is the inspection result normal?

YES >> GO TO 4.

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#### < DTC/CIRCUIT DIAGNOSIS >

NO >> Replace ASCD brake switch. Refer to BR-20, "Exploded View".

## 4.CHECK ASCD BRAKE SWITCH POWER SUPPLY CIRCUIT

- 1. Turn ignition switch OFF.
- 2. Disconnect ASCD brake switch connector.
- 3. Turn ignition switch ON.
- 4. Check voltage between ASCD brake switch harness connector and ground.

ASCD bra	ake switch	_	Voltage
Connector	Terminal		voltage
E112	1	Ground	Battery voltage

#### Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair or replace malfunctioning components.

## 5.CHECK ASCD BRAKE SWITCH INPUT SIGNAL CIRCUIT

- Turn ignition switch OFF.
- Disconnect ABS actuator and electric unit (control unit) connector.
- Check continuity between ASCD brake switch harness connector and ABS actuator and electric unit (control unit) harness connector.

ASCD bra	ake switch		and electric unit ol unit)	Continuity
Connector	Terminal	Connector	Terminal	
E112	2	E36	6	Existed

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Repair or replace malfunctioning components.

## Component Inspection

INFOID:0000000005255572

## 1. CHECK ASCD BRAKE SWITCH

- Turn ignition switch OFF.
- Disconnect ASCD brake switch connector.
- 3. Check continuity between ASCD brake switch connector terminals.

ASCD brake switch	Condition	Continuity
Terminal	Condition	Continuity
1 – 2	Brake pedal is fully released.	Existed
1 – 2	Brake pedal is slightly depressed.	Not existed

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace ASCD brake switch. Refer to <u>BR-20, "Exploded View"</u>.

## Special Repair Requirement

INFOID:0000000005522818

## 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) or steering angle sensor and removing steering angle sensor. Refer to <a href="https://example.com/BRC-76">BRC-76</a>, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION: Special Repair Requirement".

#### **U1000 CAN COMM CIRCUIT**

< DTC/CIRCUIT DIAGNOSIS >

[VDC/TCS/ABS]

#### U1000 CAN COMM CIRCUIT

**Description** 

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

#### 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.	

#### DTC CONFIRMATION PROCEDURE

## 1. CHECK SELF-DIAGNOSIS RESULTS

Perform self-diagnosis for "ABS" with CONSULT-III.

Self-diagnosis results	
CAN COMM CIRCUIT	

#### Is above displayed on the self-diagnosis display?

YES >> Proceed to diagnosis procedure. Refer to <u>BRC-141</u>, "<u>Diagnosis Procedure</u>".

NO >> INSPECTION END

## Diagnosis Procedure

1. CHECK CONNECTOR

- Turn ignition switch OFF.
- 2. Disconnect ABS actuator and electric unit (control unit) connector.
- 3. Check terminal for deformation, disconnection, looseness, and so on. If any malfunction is found, repair or replace terminal.
- Reconnect connector and perform self-diagnosis for "ABS" with CONSULT-III.

Self-diagnosis results	
CAN COMM CIRCUIT	

#### Is above displayed on the self-diagnosis display?

YES >> Go to LAN-16, "Trouble Diagnosis Flow Chart".

NO >> INSPECTION END

## Special Repair Requirement

# 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) or steering angle sensor and removing steering angle sensor. Refer to <a href="https://example.com/BRC-76">BRC-76</a>, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION: Special Repair Requirement".

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## U1010 CONTROL UNIT (CAN)

**Description** 

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

#### DTC DETECTION LOGIC

DTC	Items	Diagnostic item is detected when	Possible cause
U1010	CONTROL UNIT (CAN)	When detecting error during the initial diagnosis of CAN controller of ABS actuator and electric unit (control unit).	ABS actuator and electric unit (control unit) error

#### DTC CONFIRMATION PROCEDURE

## 1. RECHECK DTC

- 1. Turn the ignition switch OFF to ON.
- 2. Perform self-diagnosis for "ABS" with CONSULT-III.

#### Is DTC "U1010" detected?

YES >> Proceed to diagnosis procedure. Refer to <u>BRC-142</u>, "<u>Diagnosis Procedure</u>".

NO >> INSPECTION END

## Diagnosis Procedure

INFOID:0000000005255578

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

Check that there is no malfunction in ABS actuator and electric unit (control unit) harness connector or disconnection.

#### Is the inspection result normal?

YES >> Replace ABS actuator and electric unit (control unit). Refer to BRC-178, "Exploded View".

NO >> Repair or replace the harnesses and connectors.

## Special Repair Requirement

INFOID:0000000005522820

## 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) or steering angle sensor and removing steering angle sensor. Refer to <a href="https://example.com/BRC-76">BRC-76</a>, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION: Special Repair Requirement".

## **PARKING BRAKE SWITCH**

#### < DTC/CIRCUIT DIAGNOSIS >

#### [VDC/TCS/ABS]

## PARKING BRAKE SWITCH

Description

INFOID:0000000005255579

The parking brake switch converts the status of the parking brake pedal to an electric signal and transmits it to the ABS actuator and electric unit (control unit).

## Component Function Check

INFOID:0000000005255580

## 1. CHECK PARKING BRAKE SWITCH OPERATION

Operate the parking brake pedal. 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 switch is operation	ON
When the parking brake switch is not operation.	OFF

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#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Go to diagnosis procedure. Refer to <a href="BRC-143">BRC-143</a>, "Diagnosis Procedure".

INFOID:0000000005255581

## Diagnosis Procedure

# 1. CHECK PARKING BRAKE SWITCH

Turn ignition switch OFF.

Disconnect parking brake switch connector.

3. Check continuity between parking brake switch connector terminal and ground.

Parking br	Parking brake switch		Condition	Continuity
Connector	Terminal	_	Condition	Continuity
E103	1	1 Cround	When the parking brake switch is operated.	Existed
	1 Ground When the parking brake switch is not operated.	Not existed		
s the inspection result normal?				

#### Is the inspection result normal?

YES >> GO TO 2.

NO >> Replace parking brake switch.

## 2. CHECK COMBINATION METER

Check if the indication and operation of combination meter are normal. Refer to <a href="MWI-32">MWI-32</a>, "Diagnosis Description".

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Check ABS actuator and electric unit (control unit). Refer to <u>BRC-94, "CONSULT-III Function"</u>.

## Component Inspection

## INFOID:0000000005255582

## 1. CHECK PARKING BRAKE SWITCH

- Turn ignition switch OFF.
- 2. Disconnect parking brake switch connector.
- Check continuity between parking brake switch connector terminal and ground.

## **PARKING BRAKE SWITCH**

< DTC/CIRCUIT DIAGNOSIS >

[VDC/TCS/ABS]

Parking brake switch			Condition	Continuity
Connector	Terminal	_	Condition	Continuity
E103	1	Ground	When the parking brake switch is operated.	Existed
			When the parking brake switch is not operated.	Not existed

## Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace parking brake switch. Refer to PB-6, "Exploded View".

INFOID:0000000005255584

INFOID:0000000005255585

### VDC OFF SWITCH

Description

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

## Component Function Check

## 1. CHECK VDC OFF SWITCH OPERATION

Turn ON/OFF the VDC OFF switch 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: ON	ON
VDC OFF switch: OFF	OFF

### Is the inspection result normal?

YES >> INSPECTION END

NO >> Go to diagnosis procedure. Refer to <a href="BRC-145">BRC-145</a>, "Diagnosis Procedure".

## Diagnosis Procedure

## 1. CHECK VDC OFF SWITCH

- Turn ignition switch OFF.
- 2. Disconnect VDC OFF switch connector.
- 3. Check continuity between VDC OFF switch connector terminals.

VDC OFF switch	Condition	Continuity	
Terminal	Conducti		
1 – 2	When VDC OFF switch is hold pressed.	Existed	
1-2	When releasing VDC OFF switch.	Not existed	

### Is the inspection result normal?

YES >> GO TO 2.

NO >> VDC OFF switch is malfunctioning. Replace VDC OFF switch.

## 2.CHECK VDC OFF SWITCH HARNESS

- 1. Disconnect ABS actuator and electric unit (control unit) connector.
- Check continuity between VDC OFF switch connector terminals and ABS actuator and electric unit (control unit) connector terminal and/or ground.

ABS actuator and electric unit (control unit)		VDC OFF switch		Continuity
Connector	Terminal	Connector	Terminal	
E36	5	M5	1	Existed

ABS actuator and electric unit (control unit)			Continuity
Connector	Connector Terminal		Continuity
E36	5	Ground	Not existed

VDC OFF switch			Continuity
Connector	Terminal		Continuity
M5	2	Ground	Existed

#### Is the inspection result normal?

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### **VDC OFF SWITCH**

### < DTC/CIRCUIT DIAGNOSIS >

[VDC/TCS/ABS]

YES >> GO TO 3.

NO >> If the open or short in harness, repair or replace harness.

## 3.CHECK COMBINATION METER

Check if the indication and operation of combination meter are normal. Refer to MWI-32, "Diagnosis Description".

### Is the inspection result normal?

YES >> Replace ABS actuator and electric unit (control unit).

NO >> Repair or replace combination meter.

## Component Inspection

INFOID:0000000005255586

## 1. CHECK VDC OFF SWITCH

- 1. Turn ignition switch OFF.
- 2. Disconnect VDC OFF switch connector.
- 3. Check continuity between VDC OFF switch connector terminals.

VDC OFF switch	Condition	Condition	
Terminal	Condition	Condition	
1 – 2	When VDC OFF switch is hold pressed.	Existed	
1-2	When releasing VDC OFF switch.	Not existed	

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace VDC OFF switch.

## Special Repair Requirement

INFOID:0000000005522821

## 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) or steering angle sensor and removing steering angle sensor. Refer to <a href="https://example.com/BRC-76">BRC-76</a>, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION: Special Repair Requirement".

>> END

### **ABS WARNING LAMP**

< DTC/CIRCUIT DIAGNOSIS >

[VDC/TCS/ABS]

### **ABS WARNING LAMP**

Description

: ON –: OFF

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Condition	ABS warning lamp
Ignition switch OFF	-
For 1 second after turning ignition switch ON	×
1 second later after turning ignition switch ON	-
ABS function is malfunctioning.	×
EBD function is malfunctioning.	×

Component Function Check

INFOID:0000000005255588

## 1. CHECK ABS WARNING LAMP OPERATION

Check that the lamp illuminates for approximately 1 second after the ignition switch is turned ON.

Is the inspection result normal?

YES >> INSPECTION END

NO >> Go to diagnosis procedure. Refer to <a href="BRC-147">BRC-147</a>. "Diagnosis Procedure".

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## Diagnosis Procedure

1. CHECK SELF-DIAGNOSIS

INFOID:0000000005255589

Perform self-diagnosis for "ABS" with CONSULT-III.

Is the inspection result normal?

YES >> GO TO 2.

NO >> Check items displayed by self-diagnosis.

2.CHECK COMBINATION METER

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Check if the indication and operation of combination meter are normal. Refer to MWI-32, "Diagnosis Description".

Is the inspection result normal?

YES >> Replace ABS actuator and electric unit (control unit).

NO >> Repair or replace combination meter.

## Special Repair Requirement

INFOID:0000000005522822

## 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) or steering angle sensor and removing steering angle sensor. Refer to <u>BRC-76</u>, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION: Special Repair Requirement".

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[VDC/TCS/ABS]

### **BRAKE WARNING LAMP**

**Description** 

×: ON -: OFF

Condition	Brake warning lamp (Note 1)
Ignition switch OFF	-
For 1 second after turning ignition switch ON	× (Note 2)
1 second later after turning 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:0000000005255591

## 1.BRAKE WARNING LAMP OPERATION CHECK 1

Check that the lamp illuminates for approximately 1 second after the ignition switch is turned ON.

### Is the inspection result normal?

YES >> GO TO 2.

NO >> Go to diagnosis procedure. Refer to <a href="BRC-148">BRC-148</a>, "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 pedal.

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Check parking brake switch. Refer to <a href="BRC-143">BRC-143</a>, "Diagnosis Procedure".

## Diagnosis Procedure

INFOID:0000000005255592

## 1. CHECK PARKING BRAKE SWITCH

Check that the brake warning lamp in the combination meter turns ON/OFF correctly when operating the parking brake pedal.

#### Is the inspection result normal?

YES >> GO TO 2.

NO >> Check parking brake switch. Refer to <u>BRC-143</u>, "<u>Diagnosis Procedure</u>".

## 2.check self-diagnosis

Perform self-diagnosis for "ABS" with CONSULT-III.

### 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 <a href="MWI-32">MWI-32</a>, "Diagnosis Description".

#### Is the inspection result normal?

YES >> Replace ABS actuator and electric unit (control unit).

NO >> Repair or replace combination meter.

### Special Repair Requirement

INFOID:0000000005522823

## 1. ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

### **BRAKE WARNING LAMP**

< DTC/CIRCUIT DIAGNOSIS >

[VDC/TCS/ABS]

Always perform the neutral position adjustment for the steering angle sensor, when replacing the ABS actuator and electric unit (control unit) or steering angle sensor and removing steering angle sensor. Refer to <a href="https://example.com/BRC-76">BRC-76</a>, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION: Special Repair Requirement".

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[VDC/TCS/ABS]

### VDC OFF INDICATOR LAMP

Description INFOID:0000000005255593

×: ON -: OFF

Condition	VDC OFF indicator lamp
Ignition switch OFF	-
For 1 second after turning ignition switch ON	×
1 second later after turning ignition switch ON	-
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:0000000005255594

### ${f 1}$ .VDC OFF INDICATOR LAMP OPERATION CHECK 1

Check that the lamp illuminates for approximately 1 second after the ignition switch is turned ON.

### Is the inspection result normal?

YES >> GO TO 2.

NO >> Go to diagnosis procedure. Refer to <a href="BRC-150">BRC-150</a>, "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 <a href="BRC-145">BRC-145</a>, "Diagnosis Procedure".

## Diagnosis Procedure

INFOID:0000000005255595

## 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-145, "Diagnosis Procedure".

### CHECK SELF-DIAGNOSIS

Perform self-diagnosis for "ABS" with CONSULT-III.

### 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 <a href="MWI-32">MWI-32</a>, "Diagnosis Description".

### Is the inspection result normal?

YES >> Replace ABS actuator and electric unit (control unit).

NO >> Repair or replace combination meter.

## Special Repair Requirement

INFOID:0000000005522824

## 1. ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

### **VDC OFF INDICATOR LAMP**

< DTC/CIRCUIT DIAGNOSIS >

[VDC/TCS/ABS]

Always perform the neutral position adjustment for the steering angle sensor, when replacing the ABS actuator and electric unit (control unit) or steering angle sensor and removing steering angle sensor. Refer to <a href="https://example.com/BRC-76">BRC-76</a>, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION: Special Repair Requirement".

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[VDC/TCS/ABS]

### SLIP INDICATOR LAMP

**Description** 

×: ON -: OFF

Condition	SLIP indicator lamp
Ignition switch OFF	-
For 1 second after turning ignition switch ON	×
1 second later after turning ignition switch ON	-
VDC/TCS function is malfunctioning.	×
ABS function is malfunctioning.	×
EBD function is malfunctioning.	×

## Component Function Check

INFOID:0000000005255597

### 1. CHECK SLIP INDICATOR LAMP OPERATION

Check that the lamp illuminates for approximately 1 second after the ignition switch is turned ON.

### Is the inspection result normal?

YES >> INSPECTION END

NO >> Go to diagnosis procedure. Refer to <a href="BRC-152">BRC-152</a>, "Diagnosis Procedure".

### Diagnosis Procedure

INFOID:0000000005255598

## 1. CHECK SELF-DIAGNOSIS

Perform self-diagnosis for "ABS" with CONSULT-III.

### 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 <a href="MWI-32">MWI-32</a>, "Diagnosis Description".

### Is the inspection result normal?

YES >> Replace ABS actuator and electric unit (control unit).

NO >> Repair or replace combination meter.

## Special Repair Requirement

INFOID:0000000005522825

## ${f 1}$ . 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) or steering angle sensor and removing steering angle sensor. Refer to <a href="https://example.com/BRC-76">BRC-76</a>, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION: Special Repair Requirement".

>> END

< ECU DIAGNOSIS INFORMATION >

[VDC/TCS/ABS]

## **ECU DIAGNOSIS INFORMATION**

## ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)

Reference Value

### 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	
		Vehicle stopped	0 [km/h (MPH)]
FR LH SENSOR	Wheel speed	Vehicle running (Note 1)	Nearly matches the speed meter display (± 10% or less)
		Vehicle stopped	0 [km/h (MPH)]
FR RH SENSOR	Wheel speed	Vehicle running (Note 1)	Nearly matches the speed meter display (± 10% or less)
		Vehicle stopped	0 [km/h (MPH)]
RR LH SENSOR	Wheel speed	Vehicle running (Note 1)	Nearly matches the speed meter display (± 10% or less)
		Vehicle stopped	0 [km/h (MPH)]
RR RH SENSOR Wheel speed	Wheel speed	Vehicle running (Note 1)	Nearly matches the speed meter display (± 10% or less)
STOP LAMP SW	Stop lamp switch signal status	When brake pedal is depressed	On
STOP LAIMP SW		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
GEAR	Gear position determined by TCM	First gear (1GR) Second gear (2GR) Third gear (3GR) Forth gear (4GR) Fifth gear (5GR) Sixth gear (6GR)	1 2 3 4 5 6
	VDC OFF switch ON/OFF	VDC OFF switch ON (When VDC OFF indicator lamp is ON)	On
OFF SW	VDC OFF SWIRCH CIN/OFF	VDC OFF switch OFF (When VDC OFF indicator lamp is OFF)	Off
YAW RATE SEN	Vaw rate detected by your rate concer	Vehicle stopped	Approx. 0 d/s
IAW KAIE SEN	Yaw rate detected by yaw rate sensor	Vehicle turning	-100 to 100 d/s
		Vehicle stopped	−0.11 − +0.11 G
DECEL G-SEN	Decel G detected by decel G sensor	During acceleration	Negative value
		During deceleration	Positive value
	Throttle actuator opening/closing is displayed	Accelerator pedal not depressed (ignition switch is ON)	0 %
	(linked with accelerator pedal)	Depress accelerator pedal (ignition switch is ON)	0 - 100 %

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< ECU DIAGNOSIS INFORMATION >

[VDC/TCS/ABS]

< ECO DIAGNOS	SIS INFORMATION >		[VDC/TC3/AB3]	
		Data monitor		
Monitor item	Display content	Condition	Reference value in normal operation	
		Vehicle stopped	Approx. 0 m/s <sup>2</sup>	
SIDE G-SENSOR	Transverse G detected by side G sensor	Vehicle turning right	Negative value	
		Vehicle turning left	Positive value	
CTD ANOLE CIO	Steering angle detected by steering angle	During straight	Approx. 0°	
STR ANGLE SIG	sensor	Steering wheel turned	–720 to 720°	
		With engine stopped	0 [tr/min (rpm)]	
ENGINE SPEED	With engine running	Engine running	Almost in accordance with tachometer display	
	Droke fluid level quiteb cianal status	When brake fluid level switch ON	On	
FLUID LEV SW	Brake fluid level switch signal status	When brake fluid level switch OFF	Off	
FR RH IN SOL	Operation status of each solenoid valve	Actuator (solenoid valve) is active ("ACTIVE TEST" in "ABS" with CONSULT-III)	On	
TR KITIN GOL	Operation status of each solehold valve	When the actuator (solenoid valve) is not active and actuator relay is active (ignition switch ON)	Off	
FR RH OUT SOL		Actuator (solenoid valve) is active ("ACTIVE TEST" in "ABS" with CONSULT-III)	On	
FR KH OUT SOL	Operation status of each solenoid valve	When the actuator (solenoid valve) is not active and actuator relay is active (ignition switch ON)	Off	
FD LLUN COL		Actuator (solenoid valve) is active ("ACTIVE TEST" in "ABS" with CONSULT-III)	On	
FR LH IN SOL	Operation status of each solenoid valve	When the actuator (solenoid valve) is not active and actuator relay is active (ignition switch ON)	Off	
ED LILOUT COL	Operation status of each solenoid valve	Actuator (solenoid valve) is active ("ACTIVE TEST" in "ABS" with CONSULT-III)	On	
FR LH OUT SOL		When the actuator (solenoid valve) is not active and actuator relay is active (ignition switch ON)	Off	
RR RH IN SOL Operation	Operation status of each calcustidualus	Actuator (solenoid valve) is active ("ACTIVE TEST" in "ABS" with CONSULT-III)	On	
	Operation status of each solenoid valve	When the actuator (solenoid valve) is not active and actuator relay is active (ignition switch ON)	Off	
RR RH OUT SOL	Operation status of each solenoid valve	Actuator (solenoid valve) is active ("ACTIVE TEST" in "ABS" with CONSULT-III)	On	
RR RH OUT SOL		When the actuator (solenoid valve) is not active and actuator relay is active (ignition switch ON)	Off	

< ECU DIAGNOSIS INFORMATION >

[VDC/TCS/ABS]

		Data monitor	
Monitor item	Display content	Condition	Reference value in normal operation
RR LH IN SOL	On existing status of each colonicid value	Actuator (solenoid valve) is active ("ACTIVE TEST" in "ABS" with CONSULT-III)	On
KK LH IN SOL	Operation status of each solenoid valve	When the actuator (solenoid valve) is not active and actuator relay is active (ignition switch ON)	Off
RR LH OUT SOL	Operation status of each solenoid valve	Actuator (solenoid valve) is active ("ACTIVE TEST" in "ABS" with CONSULT-III)	On
(K LH 001 30L	Operation status of each solenoid valve	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
WOTOR RELAT	Motor and motor relay operation	When the motor relay and motor are not operating	Off
ACTUATOR RIV	Actuator relay exerction	When the actuator relay is operating	On
ACTUATOR RLY	Actuator relay operation	When the actuator relay is not operating	Off
ABS WARN LAMP	ABS warning lamp	When ABS warning lamp is ON	On
ADO WAKN LAWP	(Note 2)	When ABS warning lamp is OFF	Off
OFF LAMP	VDC OFF indicator lamp	When VDC OFF indicator lamp is ON	On
DIT LAWIF	(Note 2)	When VDC OFF indicator lamp is OFF	Off
SLIP LAMP	SLIP indicator lamp	When SLIP indicator lamp is ON	On
DEII EAWI	(Note 2)	When SLIP indicator lamp is OFF	Off
BD SIGNAL	EBD operation	EBD is active	On
EDD GIGIVAE	EBB operation	EBD is inactive	Off
ABS SIGNAL	ABS operation	ABS is active	On
ADO SIGIVAL	Abo operation	ABS is inactive	Off
TCS SIGNAL	TCS operation	TCS is active	On
CO SIGIVAL	100 operation	TCS is inactive	Off
/DC SIGNAL	VDC operation	VDC is active	On
DO GIGINAL	*20 operation	VDC is inactive	Off
BD FAIL SIG	EBD fail-safe signal	In EBD fail-safe	On
22 17 NE 010	255 rail oaro digital	EBD is normal	Off
BS FAIL SIG	ABS fail-safe signal	In ABS fail-safe	On
	, 155 rail oaro digital	ABS is normal	Off
CS FAIL SIG	TCS fail-safe signal	In TCS fail-safe	On
	. So ran sare digital	TCS is normal	Off
DC FAIL SIG	VDC fail-safe signal	In VDC fail-safe	On
2017112010	120 ian oaro oigila.	VDC is normal	Off
RANKING SIG	Crank operation	Crank is active	On
	C.din operation	Crank is inactive	Off
I POSI SIG	N position signal	For N range	On
		Except for N range	Off
P POSI SIG	P position signal	For P range	On
. 00.010	. Footion orginal	Except for P range	Off

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< ECU DIAGNOSIS INFORMATION >

[VDC/TCS/ABS]

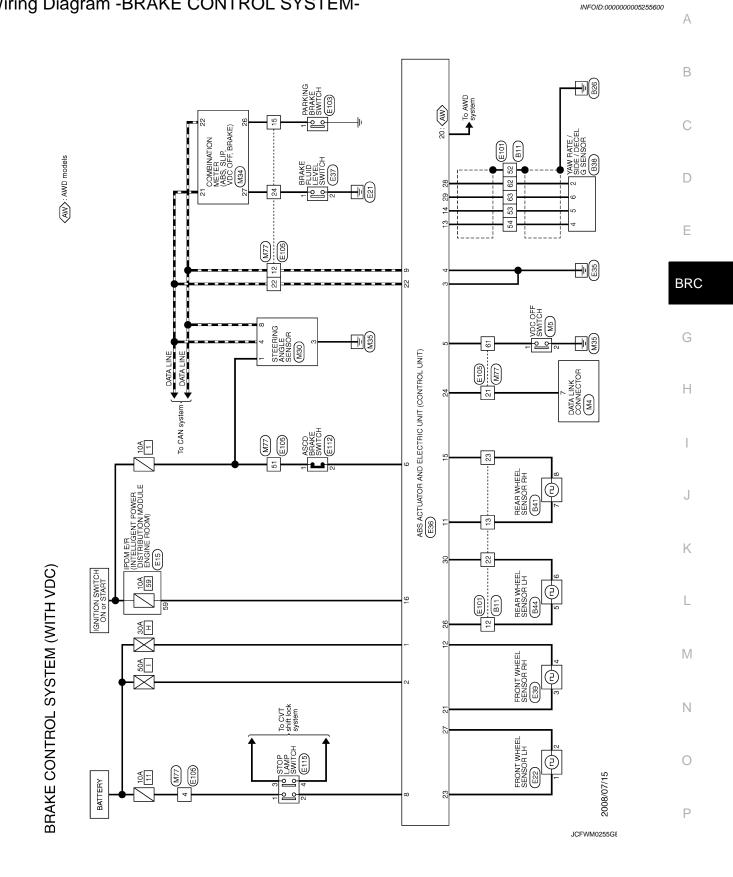
		Data monitor		
Monitor item	Display content	Condition	Reference value in normal operation	
R POSI SIG	R position signal	For R range	On	
K POSI SIG		Except for R range	Off	
		AUTO is active	AUTO	
4WD MODE MON	Axle condition	LOCK is active	LOCK	
		2WD is active	2WD	
CV1	Operation status of each solenoid valve	Actuator (solenoid valve) is active ("ACTIVE TEST" in "ABS" with CONSULT-III)	On	
		When the actuator (solenoid valve) is not active and actuator relay is active (ignition switch ON)	Off	
CV2	Operation status of each solenoid valve	Actuator (solenoid valve) is active ("ACTIVE TEST" in "ABS" with CONSULT-III)	On	
		When the actuator (solenoid valve) is not active and actuator relay is active (ignition switch ON)	Off	
SV1	Operation status of each solenoid valve	Actuator (solenoid valve) is active ("ACTIVE TEST" in "ABS" with CONSULT-III)	On	
		When the actuator (solenoid valve) is not active and actuator relay is active (ignition switch ON)	Off	
SV2	Operation status of each solenoid valve	Actuator (solenoid valve) is active ("ACTIVE TEST" in "ABS" with CONSULT-III)	On	
	Operation status of each soletiola valve	When the actuator (solenoid valve) is not active and actuator relay is active (ignition switch ON)	Off	
STOP LAMP SW2	Chan laws switch signal status	When brake pedal is depressed	On	
STOP LAWIF 3W2	Stop lamp switch signal status	When brake pedal is not depressed	Off	

#### NOTE:

- 1: Confirm tire pressure is normal.
- 2: On and off timing for warning lamp and indicator lamp.
- ABS warning lamp: Refer to BRC-147, "Description".
- Brake warning lamp: Refer to BRC-148, "Description".
- VDC OFF indicator lamp: Refer to BRC-150, "Description".
- SLIP indicator lamp: Refer to BRC-152, "Description".

[VDC/TCS/ABS]

Wiring Diagram -BRAKE CONTROL SYSTEM-



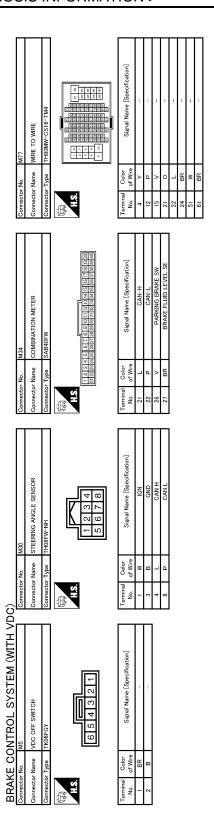
[VDC/TCS/ABS]

BRAKE CONTROL SYSTEM (WITH VD Connector No. 1811	(DC)	Connector No. B41	Connector No. B44
Connector Name WIRE TO WIRE	Connector Name YAW RATE / SIDE / DECEL G SENSOR	Connector Name REAR WHEEL SENSOR RH	Connector Name REAR WHEEL SENSOR LH
Connector Type TH80MW-CS16-TM4	Connector Type SCZ06FB	Connector Type RK02FGY	Connector Type RK02FGY
5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	<b>强</b>	₹ E	SI.
S   S   S   S   S   S   S   S   S   S	10345		
100 100 100 100 100 100 100 100 100 100	5		
	Terminal Color		Terminal Color
°	No. of Wire	No. of Wire	•
13 0 -	4 B VCC(POWER)	8 SB	ng 9
22 G -	5 L SERIAL+		
SHIELD	4		
54 B = -			
63 R –			
ſ	ſ		-
Connector No. E15	Т	Connector No. E36	7 50
Connector Name DISTRIBUTION MODULE ENGINE ROOM)	Connector Name FRONT WHEEL SENSOR LH	Connector Name (CONTROL UNIT)	15 SB RR IGN
Connector Type NS16FW-CS	Connector Type RK02MGY	Connector Type RH28FB-NU4-DH	Y
1	1	1	5
· Final Control of the Control of th			_
	<		Н
		1 2 5 6 7 8 9 10 11 12 13 14 15 16 17 18	GR
62 61 60 59 58 57 56 55 54		3 4 19 20 21 22 23 24 25 26 27 28 29 30 31 32	BR
			27 P FL SENSOR SIG
			- 0
e	Terminal Color	Terminal Golor	G
of Wire	of Wire	of Wire	
59 BR –	W		
	2 P –	2 BR ACTR	
		3 B GND A	
		>	
		GR AS	
		0	
		12 R FR SENSOR SIG	
		20	

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< ECU DIAGNOSIS INFORMATION > [VDC/TCS/ABS]

Connector No. E 103 Connector Name PARKING BRAKE SWITCH Connector Type POIFE-A  T.S.  T.S.  Terminal Color Signal Name [Specification]  Terminal Color Signal Name [Specification]	Cornector No.   M4   CONNECTOR		A B C
Connector No.   E   101	tor No. E115  Itor Name STOP LAMP SWTCH  STOP LAMP SWTCH  Tor With a story of Wine Signal Name [Specification]  V	B	E BRC G
Connector No. E39 Connector Name FRONT WHEEL SENSOR RH Connector Type RK02MGY  ALS  Terminal Color No. of Wire Signal Name [Specification] 3 4 R	Connector No. E112 Connector Name ASCD BRAKE SWITCH Connector Type MOZ-BR-LC  Terminal Color No. or Wire 1 L 2 GR		J K
AAKE CONTROL SYSTEM (WITH VD ector No. E37  Cotor Name BRAKE FLUID LEVEL SWITCH  BEGGET Type (VVOZFGY)  Signal Name [Specification]  B	Connector No.   E105		M N
B Common	Communication   Communicatio	JCFWM0257GE	Р



JCFWM0258GE

Fail-Safe

### 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.

### < ECU DIAGNOSIS INFORMATION >

[VDC/TCS/ABS]

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• 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.

If the Fail-Safe function is activated, then perform self-diagnosis for "ABS" with CONSULT-III.

DTC Index

Reference	Items (CONSULT screen terms)	DTC
	RR RH SENSOR-1	C1101
PRO 00 "PTC Logic	RR LH SENSOR-1	C1102
BRC-99, "DTC Logic	FR RH SENSOR-1	C1103
_	FR LH SENSOR-1	C1104
	RR RH SENSOR-2	C1105
DDC 402 "DTC Logic	RR LH SENSOR-2	C1106
BRC-102, "DTC Logic	FR RH SENSOR-2	C1107
-	FR LH SENSOR-2	C1108
BRC-105, "DTC Logic	BATTERY VOLTAGE [ABNORMAL]	C1109
BRC-108, "DTC Logic	CONTROLLER FAILURE	C1110
BRC-109, "DTC Logic	PUMP MOTOR	C1111
BRC-111, "DTC Logic	G SENSOR	C1113
BRC-115, "DTC Logic	ABS SENSOR [ABNORMAL SIGNAL]	C1115
BRC-118, "DTC Logic	STOP LAMP SW	C1116
BRC-120, "DTC Logic	4WD SYSTEM	C1118
BRC-121, "DTC Logic	FR LH IN ABS SOL	C1120
BRC-124, "DTC Logic	FR LH OUT ABS SOL	C1121
BRC-121, "DTC Logic	FR RH IN ABS SOL	C1122
BRC-124, "DTC Logic	FR RH OUT ABS SOL	C1123
BRC-121, "DTC Logic	RR LH IN ABS SOL	C1124
BRC-124, "DTC Logic	RR LH OUT ABS SOL	C1125
BRC-121, "DTC Logic	RR RH IN ABS SOL	C1126
BRC-124, "DTC Logic	RR RH OUT ABS SOL	C1127
BRC-127, "DTC Logic	ENGINE SIGNAL 1	C1130
BRC-128, "DTC Logic	ACTUATOR RLY	C1140
DDC 420 "DTC   22:	ST ANG SEN CIRCUIT	C1143
BRC-130, "DTC Logic	ST ANG SEN SIGNAL	C1144
DDC 444 "DTC !:-	YAW RATE SENSOR	C1145
BRC-111, "DTC Logic	SIDE G-SEN CIRCUIT	C1146
BRC-132, "DTC Logic	BR FLUID LEVEL LOW	C1155
DDC 405 IIDTC Lock	CV1	C1164
BRC-135, "DTC Logic	CV2	C1165

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< ECU DIAGNOSIS INFORMATION >

[VDC/TCS/ABS]

DTC	Items (CONSULT screen terms)	Reference
C1166	SV1	BRC-137, "DTC Logic"
C1167	SV2	BRO-137, BTO Logic
C1176	STOP LAMP SW2	BRC-139, "DTC Logic"
U1000	CAN COMM CIRCUIT	BRC-141, "DTC Logic"
U1010	CONTROL UNIT(CAN)	BRC-142, "DTC Logic"

### **EXCESSIVE ABS FUNCTION OPERATION FREQUENCY**

[VDC/TCS/ABS] < SYMPTOM DIAGNOSIS >

## SYMPTOM DIAGNOSIS

## **EXCESSIVE ABS FUNCTION OPERATION FREQUENCY**

## Diagnosis Procedure

## 1.CHECK START

Check front and rear brake force distribution using a brake tester. Refer to BR-49, "General Specifications". 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.

- Front
- 2WD models: Refer to FAX-8, "Inspection".
- AWD models: Refer to FAX-32, "Inspection".
- 2WD models: Refer to RAX-4, "Inspection".
- AWD models: Refer to RAX-11, "Inspection".

### 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.

>> • Replace wheel sensor or sensor rotor. NO

· Repair harness.

### f 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 ABS warning lamp illuminated?

YES >> Perform self-diagnosis for "ABS" with CONSULT-III.

NO >> Normal

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### **UNEXPECTED PEDAL REACTION**

< SYMPTOM DIAGNOSIS >

[VDC/TCS/ABS]

## UNEXPECTED PEDAL REACTION

## Diagnosis Procedure

INFOID:0000000005255604

## 1. CHECK BRAKE PEDAL STROKE

Check brake pedal stroke. Refer to BR-9, "Inspection and Adjustment".

### Is the stroke too large?

YES

- >> Bleed air from brake tube and hose. Refer to BR-13, "Bleeding Brake System".
  - Check brake pedal, brake booster, and master cylinder for mount play, looseness, brake system fluid leakage, etc.
  - Brake pedal: Refer to BR-9, "Inspection and Adjustment".
  - Master cylinder: Refer to BR-14, "Inspection".
  - Brake booster: Refer to BR-15, "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 >> Normal

NO >> Check brake system.

### THE BRAKING DISTANCE IS LONG

< SYMPTOM DIAGNOSIS > [VDC/TCS/ABS]

## THE BRAKING DISTANCE IS LONG

## THE BIG WAINS BIS IT WOLL TO ESTAC

#### **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

Diagnosis Procedure

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 >> Normal

NO >> Check brake system.

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### **ABS FUNCTION DOES NOT OPERATE**

< SYMPTOM DIAGNOSIS >

[VDC/TCS/ABS]

## **ABS FUNCTION DOES NOT OPERATE**

Diagnosis Procedure

INFOID:0000000005255606

#### **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 >> Normal

NO >> Perform self-diagnosis for "ABS" with CONSULT-III.

### PEDAL VIBRATION OR ABS OPERATION SOUND OCCURS

[VDC/TCS/ABS] < SYMPTOM DIAGNOSIS > PEDAL VIBRATION OR ABS OPERATION SOUND OCCURS Α Diagnosis Procedure INFOID:0000000005255607 **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] D 1.SYMPTOM CHECK 1 Check that there are pedal vibrations when the engine is started. Е Do vibrations occur? YES >> GO TO 2. NO >> Inspect the brake pedal. BRC 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-diagnosis for "ABS" with CONSULT-III. Н 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 >> Normal J K L M Ν

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### VEHICLE JERKS DURING VDC/TCS/ABS CONTROL

< SYMPTOM DIAGNOSIS >

[VDC/TCS/ABS]

## VEHICLE JERKS DURING VDC/TCS/ABS CONTROL

## Diagnosis Procedure

INFOID:0000000005255608

## 1.SYMPTOM CHECK

Check if the vehicle jerks during VDC/TCS/ABS control.

### Is the inspection result normal?

YES >> Normal. NO >> GO TO 2.

## 2. CHECK SELF-DIAGNOSIS RESULTS

Perform self-diagnosis for "ABS" with CONSULT-III.

#### Are self-diagnosis results indicated?

YES >> Check corresponding items, make repairs, and perform self-diagnosis for "ABS" with CONSULT-

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 self-diagnosis for "ABS" with CONSULT-III.

#### 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 TCM SELF-DIAGNOSIS RESULTS

Perform self-diagnosis for "ENGINE" and "TRANSMISSION" with CONSULT-III.

#### Are self-diagnosis results indicated?

YES >> Check the corresponding items.

- "ENGINE"
- For CALIFORNIA: Refer to EC-107, "CONSULT-III Function".
- For USA (FEDERAL) and CANADA: Refer to EC-588, "CONSULT-III Function".
- For MEXICO: Refer to EC-1022, "CONSULT-III Function".
- "TRANSMISSION": Refer to TM-42, "Diagnosis Description".

NO >> Replace ABS actuator and electric unit (control unit).

### **NORMAL OPERATING CONDITION**

< SYMPTOM DIAGNOSIS >

[VDC/TCS/ABS]

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## NORMAL OPERATING CONDITION

Description INFOID:0000000005255609

Symptom	Result	
Slight vibrations are felt on the brake pedal and the operation noises occur, when VDC, TCS or ABS is activated.		(
Stopping distance is longer than that of vehicles without ABS when the vehicle drives on rough, gravel, or snow-covered (fresh, deep snow) roads.	This is a normal condition due to the VDC, TCS or ABS activation.	
The brake pedal moves and generates noises, when TCS or VDC is activated due to rapid acceleration or sharp turn.	TCS of ABS activation.	
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.	Е
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 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.)	

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< PRECAUTION > [VDC/TCS/ABS]

## **PRECAUTION**

# PRECAUTIONS FOR USA AND CANADA

FOR USA AND CANADA: Precaution for Supplemental Restraint System (SRS) "AIR BAG" and "SEAT BELT PRE-TENSIONER"

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

### **WARNING:**

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

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

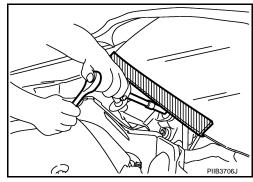
#### **WARNING:**

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

FOR USA AND CANADA: Precaution for Procedure without Cowl Top Cover

INFOID:0000000005530587

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



FOR USA AND CANADA: Precaution for Brake System

INFOID:0000000005255612

#### **WARNING:**

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

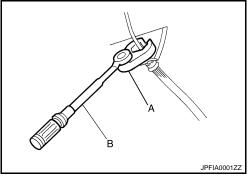
- Only use "DOT 3" brake fluid. Refer to MA-14, "FOR NORTH AMERICA: Fluids and Lubricants".
- · Never reuse drained brake fluid.
- Never spill or splash brake fluid on painted surfaces. Brake fluid may seriously damage paint. Wipe it off immediately and wash with water if it gets on a painted surface.

[VDC/TCS/ABS] < PRECAUTION >

 Never use mineral oils such as gasoline or light oil to clean. They may damage rubber parts and cause improper operation.

- Always loosen the brake tube flare nut with a flare nut wrench.
- Tighten the brake tube flare nut to the specified torque with crowfoot (A) and torque wrench (B).

- Always confirm the specified tightening torque when installing the brake pipes.
- Turn the ignition switch OFF and disconnect the ABS actuator and electric unit (control unit) connector or the battery negative terminal before performing the work.
- Check that no brake fluid leakage is present after replacing the parts.



### FOR USA AND CANADA: Precaution for Brake Control

INFOID:0000000005255613

 When starting engine or when starting vehicle just after starting engine, 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 estimate 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: Suspensionrelated 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.

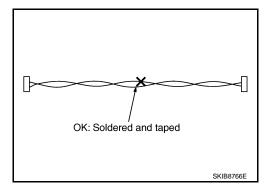
## FOR USA AND CANADA: Precautions for Harness Repair

INFOID:0000000005530646

#### COMMUNICATION LINE

• Solder the repaired area and wrap tape around the soldered area. NOTE:

A fray of twisted lines must be within 110 mm (4.33 in).



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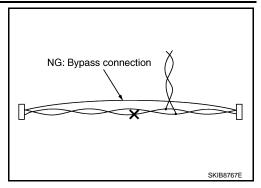
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**BRC-171** Revision: 2009 October 2010 Rogue < PRECAUTION > [VDC/TCS/ABS]

- Bypass connection is never allowed at the repaired area.
   NOTE:
  - Bypass connection may cause communication error as spliced wires that are separate from the main line or twisted lines lose noise immunity.
- Replace the applicable harness as an assembly if error is detected on the shield lines of communication line.



### FOR MEXICO

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

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

#### **WARNING:**

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

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

#### **WARNING:**

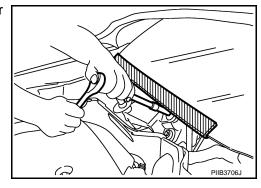
- When working near the Air Bag Diagnosis Sensor Unit or other Air Bag System sensors with the ignition ON or engine running, DO NOT use air or electric power tools or strike near the sensor(s) with a hammer. Heavy vibration could activate the sensor(s) and deploy the air bag(s), possibly causing serious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

FOR MEXICO: Precaution for Procedure without Cowl Top Cover

INFOID:0000000005530607

INFOID:0000000005255616

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



FOR MEXICO: Precaution for Brake System

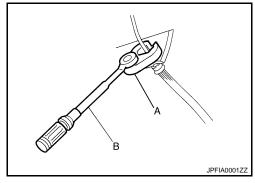
### **WARNING:**

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

Only use "DOT 3" brake fluid. Refer to MA-15, "FOR MEXICO: Fluids and Lubricants".

< PRECAUTION > [VDC/TCS/ABS]

- · Never reuse drained brake fluid.
- Never spill or splash brake fluid on painted surfaces. Brake fluid may seriously damage paint. Wipe it off immediately and wash with water if it gets on a painted surface.
- Never use mineral oils such as gasoline or light oil to clean. They may damage rubber parts and cause improper operation.
- Always loosen the brake tube flare nut with a flare nut wrench.
- Tighten the brake tube flare nut to the specified torque with crowfoot (A) and torque wrench (B).
- Always confirm the specified tightening torque when installing the brake pipes.
- Turn the ignition switch OFF and disconnect the ABS actuator and electric unit (control unit) connector or the battery negative terminal before performing the work.
- Check that no brake fluid leakage is present after replacing the parts.



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### FOR MEXICO: Precaution for Brake Control

 When starting engine or when starting vehicle just after starting engine, 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 estimate 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.

## FOR MEXICO: Precautions for Harness Repair

COMMUNICATION LINE
Solder the repaired area and wrap tape around the soldered area.

A fray of twisted lines must be within 110 mm (4.33 in).

NOTE:

OK: Soldered and taped

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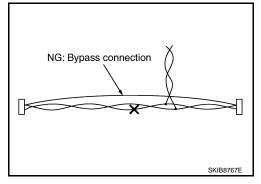
### **PRECAUTIONS**

< PRECAUTION > [VDC/TCS/ABS]

Bypass connection is never allowed at the repaired area.
 NOTE:

Bypass connection may cause communication error as spliced wires that are separate from the main line or twisted lines lose noise immunity.

• Replace the applicable harness as an assembly if error is detected on the shield lines of communication line.



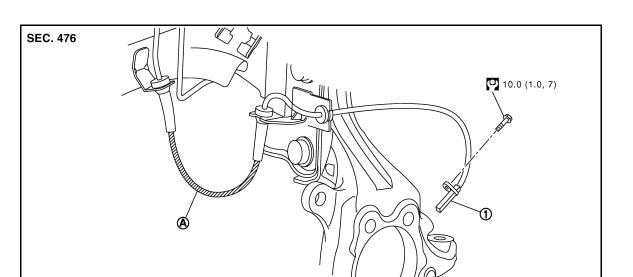
[VDC/TCS/ABS]

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## REMOVAL AND INSTALLATION

WHEEL SENSOR FRONT WHEEL SENSOR

FRONT WHEEL SENSOR: Exploded View



1. Front LH wheel sensor

A. Yellow line (slant line)

Refer to GI-4, "Components" for symbol in the figure.

#### NOTE:

The above figure (front side) shows left side. Right side is the mirror image.

### FRONT WHEEL SENSOR: Removal and Installation

### REMOVAL

Pay attention to the following when removing sensor.

#### **CAUTION:**

- Never twist sensor harness as much as possible, when removing it. Pull sensors out without pulling sensor harness.
- Take care to avoid damaging sensor edges or rotor teeth. Remove wheel sensor first before removing front or rear wheel hub. This is to avoid damage to sensor wiring and loss of sensor function.
- When you see the harness of the wheel sensor from the front side of the vehicle ensure that the yellow lines (A) are not twisted.

#### INSTALLATION

Pay attention to the following when installing wheel sensor. Tighten installation bolts to the specified torques.

- When installing, make sure there is no foreign material such as iron chips on and in the mounting hole of the wheel sensor. Make sure no foreign material has been caught in the sensor rotor. Remove any foreign material and clean the mount.
- When installing wheel sensor, be sure to press rubber grommets in until they lock at locations shown above in the figure. When installed, harness must not be twisted.

### REAR WHEEL SENSOR

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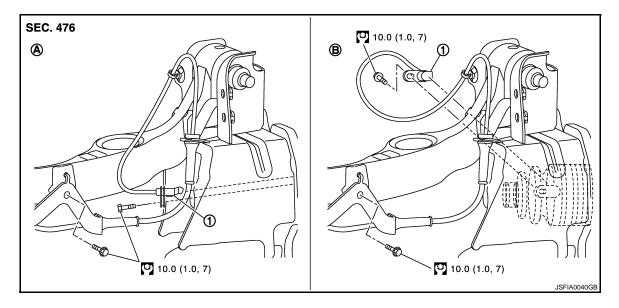
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## REAR WHEEL SENSOR: Exploded View

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INFOID:0000000005255621



1. Rear LH wheel sensor

A. 2WD models

B. AWD models

Refer to GI-4, "Components" for symbol in the figure.

#### NOTE:

The above figure (front side) shows left side. Right side is the mirror image.

REAR WHEEL SENSOR: Removal and Installation

### **REMOVAL**

Pay attention to the following when removing sensor.

#### **CAUTION:**

- Never twist sensor harness as much as possible, when removing it. Pull sensors out without pulling sensor harness.
- Take care to avoid damaging sensor edges or rotor teeth. Remove wheel sensor first before removing front or rear wheel hub. This is to avoid damage to sensor wiring and loss of sensor function.

#### INSTALLATION

Pay attention to the following when installing wheel sensor. Tighten installation bolts to the specified torques.

- When installing, make sure there is no foreign material such as iron chips on and in the mounting hole of the wheel sensor. Make sure no foreign material has been caught in the sensor rotor. Remove any foreign material and clean the mount.
- When installing wheel sensor, be sure to press rubber grommets in until they lock at locations shown above in the figure. When installed, harness must not be twisted.

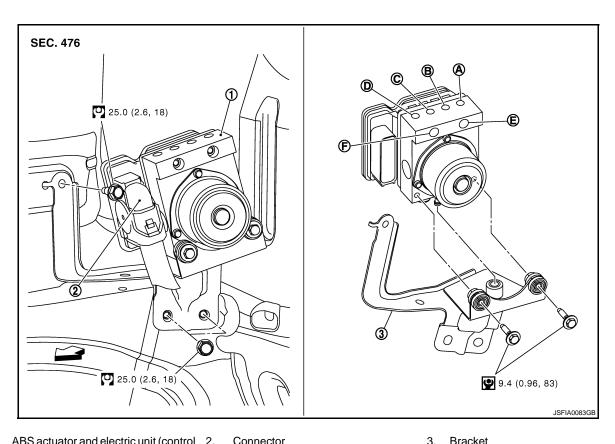
SENSOR ROTOR	
< REMOVAL AND INSTALLATION > [VDC/TCS/ABS]	<u> </u>
SENSOR ROTOR	А
FRONT SENSOR ROTOR	, ,
FRONT SENSOR ROTOR: Exploded View	2 B
Refer to FAX-10, "Exploded View" (2WD models), FAX-34, "Exploded View" (AWD models).	
FRONT SENSOR ROTOR : Removal and Installation	3 C
REMOVAL Sensor rotor cannot be disassembled. Remove the sensor rotor together with hub bearing assembly. Refer to FAX-10, "Removal and Installation" (2WD models), FAX-34, "Removal and Installation" (AWD models).  INSTALLATION	D D
Sensor rotor cannot be disassembled. Installation the sensor rotor together with hub bearing assembly. Refer to <a href="FAX-34">FAX-34</a> , "Removal and Installation" (2WD models), <a href="FAX-34">FAX-34</a> , "Removal and Installation" (AWD models). REAR SENSOR ROTOR	r E
REAR SENSOR ROTOR : Exploded View	BRO
Refer to RAX-5, "Exploded View" (2WD models), RAX-15, "Exploded View" (AWD models).	
REAR SENSOR ROTOR : Removal and Installation	5 G
2WD MODELS	Н
Removal Sensor rotor cannot be disassembled. Remove the sensor rotor together with hub bearing assembly. Refer to RAX-5, "Removal and Installation".	
Installation Sensor rotor cannot be disassembled. Installation the sensor rotor together with hub bearing assembly. Refet to RAX-5, "Removal and Installation".	r J
AWD MODELS For removal and installation of sensor rotor, refer to RAX-16, "Disassembly and Assembly".	
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[VDC/TCS/ABS]

## ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)

**Exploded View** INFOID:0000000005255626



- 1. ABS actuator and electric unit (control 2. unit)

3. Bracket

- A. To front LH brake caliper
- B. To rear RH brake caliper
- From master cylinder primary side
- C. To Rear LH brake caliper

F. From master cylinder secondary side

<□: Vehicle front

Refer to GI-4, "Components" for symbol in the figure.

### Removal and Installation

To front RH brake caliper

INFOID:0000000005255627

### **REMOVAL**

#### **CAUTION:**

- Before servicing, disconnect the battery cable from negative terminal.
- To remove brake tube, use a flare nut wrench to prevent flare nuts and brake tube from being damaged. To install, use flare nut crowfoot and torque wrench.
- Never apply excessive impact to ABS actuator and electric unit (control unit), such as dropping it.
- Never remove and install actuator by holding harness.
- After work is completed, bleed air from brake tube. Refer to <u>BR-13, "Bleeding Brake System"</u>.
- Remove cowl top. Refer to EXT-20, "Exploded View". 1.
- 2. Disconnect ABS actuator and electric unit (control unit) connector.
- 3. Loosen brake tube flare nuts, then remove brake tubes from ABS actuator and electric unit (control unit).
- Remove tire (front LH side).
- 5. Remove fender protector (rear): (front LH side). Refer to EXT-22, "Exploded View".
- Remove ABS actuator and electric unit (control unit) bracket mounting nut.
- Remove ABS actuator and electric unit (control unit) from vehicle. 7.

#### INSTALLATION

### < REMOVAL AND INSTALLATION >

[VDC/TCS/ABS]

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

- Before servicing, disconnect the battery cable from negative terminal.
- To remove brake tube, use a flare nut wrench to prevent flare nuts and brake tube from being damaged. To install, use flare nut crowfoot and torque wrench.
- Never apply excessive impact to ABS actuator and electric unit (control unit), such as dropping it.
- Never remove and install actuator by holding harness.
- After work is completed, bleed air from brake tube. Refer to <u>BR-13, "Bleeding Brake System"</u>.
- After installing harness connector in the ABS actuator and electric unit (control unit), make sure connector is securely locked.
- When replacing ABS actuator and electric unit (control unit), make sure sdjust neutral position of steering angle sensor. Refer to <u>BRC-76</u>, "<u>ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION</u>: <u>Description</u>".

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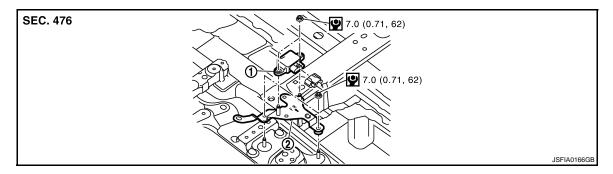
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## **G** SENSOR

Exploded View



- 1. yaw rate/side/decel G sensor
- 2. Bracket

<□: Vehicle front

Refer to GI-4, "Components" for symbol in the figure.

### Removal and Installation

INFOID:0000000005255629

### **REMOVAL**

#### **CAUTION:**

Never drop or strike yaw rate/side/decel G sensor, or never use power tool etc., because yaw rate/side/decel G sensor is sensitive to the impact.

- Remove center console assembly. Refer to <u>IP-21, "Exploded View"</u>.
- 2. Disconnect yaw rate/side/decel G sensor harness connector.
- 3. Remove mounting bolts. Remove yaw rate/side/decel G sensor.

### **INSTALLATION**

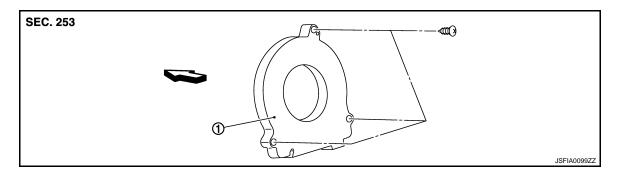
Note the following, and install in the reverse order of removal.

• Never drop or strike yaw rate/side/decel G sensor, or never use power tool etc., because yaw rate/side/decel G sensor is sensitive to the impact.

[VDC/TCS/ABS]

## STEERING ANGLE SENSOR

Exploded View



1. Steering angle sensor

<□: Vehicle front

### Removal and Installation

INFOID:0000000005255631

### **REMOVAL**

- Remove spiral cable assembly. Refer to <u>SR-14, "Exploded View"</u> (for USA and Canada), <u>SR-39, "Exploded View"</u> (for Mexico).
- 2. Remove steering angle sensor from spiral cable assembly.

### INSTALLATION

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

• After work, make sure to adjust neutral position of steering angle sensor. Refer to <a href="BRC-76">BRC-76</a>, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION: Description".

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