SECTION BRAKE CONTROL SYSTEM

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BASIC INSPECTION DIAGNOSIS AND REPAIR WORKFLOW

Work Flow

INFOID:000000006202887





DETAILED FLOW

DIAGNOSIS AND REPAIR WORKFLOW

[ABS]

1.COLLECT THE INFORMATION FROM THE CUSTOMER	Δ
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 <u>BRC-8</u> , " <u>Diagnostic Work Sheet</u> ".	A
	В
2 = 0	
	С
Perform self-diagnosis for "ABS" with CONSULT-III. Refer to <u>BRC-15, "CONSULT-III Function"</u> .	
Is there any DTC displayed?	
NO $>>$ GO TO 4.	D
3. PERFORM THE SYSTEM DIAGNOSIS	
Perform the diagnosis applicable to the displayed DTC of "ABS" with CONSULT-III. Refer to <u>BRC-56. "DTC</u>	Е
Index".	
>> GO TO 7	BR
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 <u>BRC-62</u> , "Description"	G
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, "Description"</u>. Brake warning lamp: Refer to <u>BRC-48, "Description"</u>. 	
Is ON/OFE timing normal?	J
YES >> GO TO 6	0
NO $>>$ GO TO 2.	
6.PERFORM THE DIAGNOSIS BY SYMPTOM	Κ
Perform the diagnosis applicable to the displayed DTC of "ABS" with CONSULT-III.	
	L
>> GO TO 7.	
7. REPAIR OR REPLACE THE MALFUNCTIONING PARTS	
Repair or replace the specified malfunctioning parts.	M
>> GO TO 8.	N
8.MEMORY CLEAR	
Perform self-diagnosis memory clear for "ABS" with CONSULT-III.	0
>> GO TO 9.	
9.FINAL CHECK	Р
Perform the again, and check that the malfunction is repaired completely.	
Is no other DTC present and the repair completed?	
YES >> INSPECTION END	
NU >> GU I U 3.	

< BASIC INSPECTION >

DIAGNOSIS AND REPAIR WORKFLOW

< BASIC INSPECTION >

Diagnostic Work Sheet

INFOID:000000006202888

[ABS]

Customer name MR/MS	Model & Year		VIN	
Engine #	Trans.		Mileage	
Incident Date	Manuf. Date		In Service Dat	e
Symptoms	□ Noise and vibration (from engine compartment) □ Warning / Indicator activate □ Noise and vibration (from axle) □ (from axle)			 Firm pedal operation Large stroke pedal operation
	ABS does not work (Wheels lock when braking)			
Engine conditions	U 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			

SFIA3264E

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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BRC-9

[ABS]

INFOID:000000006202889

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Component Parts Location

INFOID:000000006202891

[ABS]



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

1.

В. Center console

Front wheel sensor

Ε. Rear axle

5.

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

< SYSTEM DESCRIPTION >

Component Description

Compo	nent parts	Reference	
ABS actuator and electric unit (control unit)	Pump	BRC-27 "Description"	
	Motor	<u>BRO-27, Description</u>	
	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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< SYSTEM DESCRIPTION > EBD

System Diagram

INFOID:000000006202893



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:000000006202895

[ABS]

А



EBD

D. Steering knuckle

1.

4.

7.

Α.

E. Rear axle

Ρ

Component Description

Compo	Reference	
	Pump	BPC-27 "Description"
	Motor	BRC-27, 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"	

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

< SYSTEM DESCRIPTION >

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

CONSULT-III Function

INFOID:000000006202897

[ABS]

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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.	г
Data monitor	Input/Output data in the ABS actuator and electric unit (control unit) can be read.	L
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.	F
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 <u>BRC-56, "DTC Index"</u>.

DATA MONITOR

Display Item List

 \times : Applicable \blacksquare : Optional item

	SELECT MC	SELECT MONITOR ITEM		М
Monitor item (Unit)	ECU INPUT SIGNALS	MAIN SIGNALS	Remarks	1 1 1
FR LH SENSOR [km/h (MPH)]	×	×		Ν
FR RH SENSOR [km/h (MPH)]	×	×	Wheel speed	0
RR LH SENSOR [km/h (MPH)]	×	×	Wheel speed	0
RR RH SENSOR [km/h (MPH)]	×	×		Ρ
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)	

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

< SYSTEM DESCRIPTION >

	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)	×	×	
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 colonaid 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
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.

[ABS]

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

< SYSTEM DESCRIPTION >

Test item	Toot itom	Display itom	om Dieplowitom	Display			
	Display item	Up	Keep	Down			
	FR RH IN SOL	Off	On	On	_		
FR RH SOL	FR RH OUT SOL	Off	Off	On*	B		
FR LH SOL	FR LH IN SOL	Off	On	On			
	FR LH OUT SOL	Off	Off	On*	С		
	RR RH IN SOL	Off	On	On			
	RR RH OUT SOL	Off	Off	On*			
RR LH SOL	RR LH IN SOL	Off	On	On	D		
	RR LH OUT SOL	Off	Off	On*			

*: 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
rest item	Display item	On	Off
	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.

ECU IDENTIFICATION

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

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[ABS]

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C1101, C1102, C1103, C1104 WHEEL SENSOR

< DTC/CIRCUIT DIAGNOSIS >

DTC/CIRCUIT DIAGNOSIS C1101, C1102, C1103, C1104 WHEEL SENSOR

Description

INFOID:000000006202898

[ABS]

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:000000006202899

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 connectorWheel 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 <u>BRC-18, "Diagnosis Procedure"</u>.

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 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.

BRC-18

C1101, C1102, C1103, C1104 WHEEL SENSOR

[ABS] < DTC/CIRCUIT DIAGNOSIS > 3. CHECK CONNECTOR А 1. Turn ignition switch OFF. Disconnect ABS actuator and electric unit (control unit) connector. 2. Disconnect malfunctioning wheel sensor connector. 3. 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. D **4.**CHECK WHEEL SENSOR HARNESS 1. Turn ignition switch OFF. Disconnect ABS actuator and electric unit (control unit) connector. 2. Е Disconnect malfunctioning wheel sensor connector. 3. 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.) BRC Measurement terminal for signal circuit ABS actuator and electric unit (control unit) Wheel sensor Continuity Terminal Connector Terminal Connector E39 (Front RH) 4 12 27 2 E22 (Front LH) E36 Existed Н 15 B41 (Rear RH) 8 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 21 E39 (Front RH) 3 23 1 E22 (Front LH) E36 Existed 7 11 B41 (Rear RH) Κ 5 26 B44 (Rear LH) Measurement terminal for ground circuit ABS actuator and electric unit (control unit) Continuity Connector Terminal Connector Terminal M 12, 21 27,23 E36 E36 3, 4 Not existed 15.11 Ν 30, 26 Reconnect ABS actuator and electric unit (control unit) connector. 5. 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.

- 4. Turn the ignition switch ON.
- CAUTION: Never start engine.

C1101, C1102, C1103, C1104 WHEEL SENSOR

< DTC/CIRCUIT DIAGNOSIS >

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:000000006202901

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-18, "Diagnosis Procedure"</u>.

C1105, C1106, C1107, C1108 WHEEL SENSOR

< DTC/CIRCUIT DIAGNOSIS >

C1105, C1106, C1107, C1108 WHEEL SENSOR

Description

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

DTC Logic

INFOID:000000006202903

INFOID:00000006202902

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 currentlySensor rotor or encoder dam-	D
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 	Е
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 damagedABS unit damaged	BR

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 <u>BRC-21, "Diagnosis Procedure"</u>.

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.

3.CHECK CONNECTOR

1. Turn ignition switch OFF.

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C1105, C1106, C1107, C1108 WHEEL SENSOR

< DTC/CIRCUIT DIAGNOSIS >

- 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.)

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	
	15	B41 (Rear RH)	8	LAISIEU	
	30	B44 (Rear LH)	6	Ť	

Measurement terminal for signal circuit

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	
F36	23	E22 (Front LH)	1	Evisted
E36	11	B41 (Rear RH)	7	Existed
	26	B44 (Rear LH)	5	`

Measurement terminal for ground circuit

ABS actuator and electric unit (control unit)			Continuity	
Connector	Terminal	Connector	Terminal	Continuity
E36	12, 21		3, 4	Not existed
	27, 23	E36		
	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.
- 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).

BRC-22

[ABS]

C1105, C1106, C1107, C1108 WHEEL SENSOR [ABS] < DTC/CIRCUIT DIAGNOSIS > >> INSPECTION END **Component Inspection** INFOID:000000006202905

1. CHECK DATA MONITOR

NO

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-21, "Diagnosis Procedure"</u>.

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< DTC/CIRCUIT DIAGNOSIS >

C1109 POWER AND GROUND SYSTEM

Description

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

DTC Logic

INFOID:000000006202907

INFOID:00000006202906

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, "Diagnosis Procedure"</u>.

NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000006202908

1.CHECK CONNECTOR

- 1. 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.
- 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 electric unit (control unit)			Condition	Voltaga	
Connector	Terminal		Condition	voitage	
E36	16	Ground	Ignition switch: ON	Battery voltage	
E30	10	Ground	Ignition switch: OFF	Approx. 0 V	

4. 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]

ABS actuator and	electric unit (control unit)		IPDM E/	/R	continuit.
Connector	Terminal	Co	nnector	Terminal	continuity
E36	16		E15	59	Existed
 Reconnect ABS is the inspection res 	actuator and electr sult normal?	ic unit (contro	I unit) connecto	r.	
YES >> GO TO	3. or replace malfunction	onina compor	nents		
B ABS POWER SI	IPPLY CHECK (UN				
I. Use 12 V lamp switch ON chec	(normal rating 10 k bulb illuminates co	to 20 W) cor orrectly.	nected betwee	n E36 terminals 1	6 and 4. With ignition
2. Check ABS mot	tor supply under loa	ded condition	(connector E36	6 terminals 1 and 3).
<u>s the inspection res</u>	<u>ault normal?</u>				
NO >> Check b	ooth power supply a	nd ground cir	cuit.		
1. CHECK ABS AC	TUATOR AND ELE	CTRIC UNIT	(CONTROL UN	IT) GROUND CIR	CUIT
. Turn ignition sw	itch OFF.				
 Disconnect ABS Check continuit 	3 actuator and election of the sector of the	ric unit (contro uator and ele	ol unit) connecto	or. ol unit) harness co	nnector terminals and
ground.					
			.		
ABS actuator and elec	ctric unit (control unit)		Continuity		
ABS actuator and electron	ctric unit (control unit) Terminal	-	Continuity		
ABS actuator and electron Connector E36	tric unit (control unit) Terminal 3, 4	— Ground	Continuity Existed		
ABS actuator and elec Connector E36 s the inspection res YES >> Check b	ctric unit (control unit) Terminal 3, 4 <u>ult normal?</u>	Ground	Continuity Existed	any malfunction is	found, repair malfunc-
ABS actuator and elec Connector E36 s the inspection res YES >> Check b tioning	tric unit (control unit) Terminal 3, 4 ult normal? Dattery for terminal lo Darts.	Ground Ooseness, lov	Continuity Existed v voltage, etc. it	any malfunction is	found, repair malfunc-
ABS actuator and electron Connector E36 s the inspection res YES >> Check to tioning NO >> Repair of	ctric unit (control unit) Terminal 3, 4 <u>sult normal?</u> pattery for terminal lo parts. pr replace malfunctio	— Ground ooseness, lov oning compor	Continuity Existed v voltage, etc. it nents (check AB	any malfunction is S earth bolt for tigl	found, repair malfunc- ntness and corrosion).
ABS actuator and elec Connector E36 S the inspection res YES >> Check to tioning NO >> Repair of	ctric unit (control unit) Terminal 3, 4 sult normal? pattery for terminal lo parts. pr replace malfunctio	— Ground ooseness, lov oning compor	Continuity Existed v voltage, etc. it nents (check AB	any malfunction is S earth bolt for tigl	found, repair malfunc- ntness and corrosion).
ABS actuator and electron Connector E36 S the inspection res YES >> Check to tioning NO >> Repair of	ctric unit (control unit) Terminal 3, 4 Sult normal? Dattery for terminal lo parts. Dr replace malfunctio	Ground Ooseness, low oning compor	Continuity Existed v voltage, etc. it nents (check AB	any malfunction is S earth bolt for tigl	found, repair malfunc- ntness and corrosion).
ABS actuator and electron Connector E36 S the inspection res YES >> Check t tioning NO >> Repair of	ctric unit (control unit) Terminal 3, 4 <u>sult normal?</u> pattery for terminal lo parts. pr replace malfunction	— Ground ooseness, lov oning compor	Continuity Existed v voltage, etc. it nents (check AB	any malfunction is S earth bolt for tigl	found, repair malfunc- ntness and corrosion).
ABS actuator and elec Connector E36 S the inspection res YES >> Check t tioning NO >> Repair of	ctric unit (control unit) Terminal 3, 4 <u>sult normal?</u> pattery for terminal lo parts. or replace malfunctio	— Ground ooseness, lov oning compor	Continuity Existed v voltage, etc. it nents (check AB	any malfunction is S earth bolt for tigl	found, repair malfunc- ntness and corrosion).
ABS actuator and electron Connector E36 s the inspection res YES >> Check to tioning NO >> Repair of	ctric unit (control unit) Terminal 3, 4 sult normal? pattery for terminal lo parts. or replace malfunction	— Ground ooseness, low oning compor	Continuity Existed v voltage, etc. it nents (check AB	any malfunction is S earth bolt for tig	found, repair malfunc- ntness and corrosion).
ABS actuator and electron E36 s the inspection res YES >> Check to tioning NO >> Repair of	ctric unit (control unit) Terminal 3, 4 <u>sult normal?</u> pattery for terminal lo parts. or replace malfunction	— Ground ooseness, low oning compor	Continuity Existed v voltage, etc. it nents (check AB	any malfunction is S earth bolt for tigl	found, repair malfunc- ntness and corrosion).
ABS actuator and elec Connector E36 s the inspection res YES >> Check t tioning NO >> Repair of	ctric unit (control unit) Terminal 3, 4 sult normal? pattery for terminal lo parts. or replace malfunction	— Ground ooseness, lov oning compor	Continuity Existed v voltage, etc. it nents (check AB	any malfunction is S earth bolt for tigl	found, repair malfunc- ntness and corrosion).
ABS actuator and electron Connector E36 s the inspection res YES >> Check to tioning NO >> Repair of	ctric unit (control unit) Terminal 3, 4 <u>sult normal?</u> Dattery for terminal le parts. Or replace malfunction	 Ground ooseness, low oning compor	Continuity Existed v voltage, etc. it nents (check AB	any malfunction is	found, repair malfunc- ntness and corrosion).
ABS actuator and elec Connector E36 s the inspection res YES >> Check t tioning NO >> Repair of	ctric unit (control unit) Terminal 3, 4 sult normal? pattery for terminal lo parts. or replace malfunctions	Ground ooseness, lov oning compor	Continuity Existed v voltage, etc. it nents (check AB	any malfunction is	found, repair malfunc- ntness and corrosion).
ABS actuator and elec Connector E36 S the inspection res YES >> Check t tioning NO >> Repair of	ctric unit (control unit) Terminal 3, 4 sult normal? Dattery for terminal lo parts. or replace malfunction	Ground ooseness, low oning compor	Continuity Existed v voltage, etc. it nents (check AB	any malfunction is	found, repair malfunc- ntness and corrosion).
ABS actuator and electron E36 Source the inspection reserves YES >> Check the tioning of the tion of tion of the tion of the tion of the tion of tion of the tion of tion of the tion of the tion of tion o	ctric unit (control unit) Terminal 3, 4 sult normal? pattery for terminal lo parts. or replace malfunctions	Ground ooseness, low oning compor	Continuity Existed v voltage, etc. it nents (check AB	any malfunction is	found, repair malfunc- ntness and corrosion).
ABS actuator and elec Connector E36 s the inspection res YES >> Check t tioning NO >> Repair of	tric unit (control unit) Terminal 3, 4 <u>sult normal?</u> Dattery for terminal loparts. or replace malfunctions	Ground ooseness, low oning compor	Continuity Existed v voltage, etc. it nents (check AB	any malfunction is	found, repair malfunc- ntness and corrosion).

C1110 ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)

< DTC/CIRCUIT DIAGNOSIS >

C1110 ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)

Description

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

DTC Logic

INFOID:000000006202910

INFOID:00000006202909

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.

2. 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-26, "Diagnosis Procedure"</u>.

NO >> INSPECTION ĔND

Diagnosis Procedure

INFOID:000000006202911

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 >

C1111 ABS MOTOR, MOTOR RELAY SYSTEM

Description

PUMP

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

MOTOR

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

DTC Logic

DTC DETECTION LOGIC

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DTC	Display item	Malfunction detected condition	Possible cause	
		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 upit	BR
CIIII		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)	G
DTC CC	ONFIRMATION PROCE	DURE		
1. CHEC	CK SELF-DIAGNOSIS RE	SULTS		⊢
Perform	self-diagnosis for "ABS" w	vith CONSULT-III.		
	-			
	Self-diagnosis	results		I
	PUMP MOT	OR		
Is above	displayed on the self-diag	gnosis display?		C.
YES NO	>> Proceed to diagnosis	procedure. Refer to <u>BRC-27, "Diagnosis Proced</u>	lure".	
Diogno				k
Diagne			INFOID:00000006202914	
1. CHEC	CK CONNECTOR			
1. Turn	ignition switch OFF.			L
2. Disc	connect ABS actuator and	electric unit (control unit) connector.	lifunction is found ropair or	
repla	ace terminal.	in, disconnect, looseness, and so on. If any ma		N
4. Rec	onnect connector and the	n perform self-diagnosis for "ABS" with CONSU	LT-III.	
<u>Is any ite</u>	em indicated on the self-di	agnosis display?		_
YES	>> GO TO 2.	nactor terminal. Deplace or repair connector		ľ
	CK ABS MOTOR AND MC	TOR RELAY POWER SUPPLY CIRCUIT		(
 Turn Disc Che grou 	i ignition switch OFF. connect ABS actuator and ck voltage between the A ind.	electric unit (control unit) connector. BS actuator and electric unit (control unit) harn	ess connector terminal and	F

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.

INFOID:000000006202912

INFOID:000000006202913

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C1111 ABS MOTOR, MOTOR RELAY SYSTEM

< DTC/CIRCUIT DIAGNOSIS >

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 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.

- 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		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:000000006202915

1.CHECK ACTIVE TEST

- 1. Select "ABS", "ACTIVE TEST" and "ABS MOTOR" in order with CONSULT-III.
- 2. 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 terri	On	Off
	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-27, "Diagnosis Procedure"</u>.

< DTC/CIRCUIT DIAGNOSIS >

C1113 G SENSOR

Description

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:000000006202917

INFOID:000000006202918

INFOID:000000006202916

DTC DETECTION LOGIC

DTC	Display item	Malfunction detected condition	Possible cause	D		
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 	E		
			Vehicle driven on AWD rolling road	BRC		

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 <u>BRC-29, "Diagnosis Procedure"</u>.

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 G 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 2.

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

2. CHECK G SENSOR HARNESS

- 1. Turn ignition switch OFF.
- 2. Disconnect ABS actuator and electric unit (control unit) connector.
- 3. Disconnect G sensor connector.
- 4. 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		2		
E36	29		3	Eviated	
	E30	14	B32	4	Existed
	28		5		

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< 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

1. Turn ignition switch ON.

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

G sensor			Condition	Voltago	
Connector	Terminal		Condition	voltage	
P22 1 Cround		Ignition switch: ON	Battery voltage		
0.02	I	Cibulia	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 <u>BRC-71, "Exploded View"</u>.

2. 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.

4. Check voltage between G sensor terminals.

Quedition	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
	Changes according to an	On
DECEL G-SEN1	indication shown by the decel G sensor	Off
	Changes according to an indication shown by the decel G sensor	On
DECEL G-SEN2		Off

C1113 G SENSOR

		[ABS]
		А
NO	>> Go to diagnosis procedure. Refer to BRC-29, "Diagnosis Procedure".	
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< DTC/CIRCUIT DIAGNOSIS >

C1115 WHEEL SENSOR

Description

INFOID:00000006202920

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

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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 pos- sible 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?

>> Proceed to diagnosis procedure. Refer to <u>BRC-32, "Diagnosis Procedure"</u>. 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

- 1. 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.
- Reconnect connectors and then perform self-diagnosis for "ABS" with CONSULT-III. 5.

Is any item indicated on the self-diagnosis display?

YES >> GO TO 4.

C1115 WHEEL SENSOR

< DTC/CIRCUIT DIA	GNOSIS >			[ABS]
NO >> Poor con	nection of connector te	rminal. Repair or replac	ce connector.	
4.CHECK WHEEL S	ENSOR HARNESS			A
 Turn ignition swite Disconnect ABS a Disconnect malfu Check continuity and when sensor 	ch OFF. actuator and electric un nctioning wheel senso between terminals. (A harness inside the wh	nit (control unit) connec r connector. Iso check continuity wł eel house is moved.)	tor. nen steering wheel	B is turned right and left
Measurement terminal	for signal circuit	W/bool or	ancor	
		Connector	Torminal	Continuity
Connector	12	E20 (Front PH)	reminai	D
	12	E39 (Front H)	4	-
E36	21	E22 (FIOIILEH)	2	Existed
	15	B41 (Rear RH)	8	-
	30	B44 (Rear LH)	0	
Measurement terminal	for power supply circuit			BR
ABS actuator and ele	ectric unit (control unit)	Wheel se	ensor	Continuity
Connector	Terminal	Connector	Terminal	Continuity
	21	E39 (Front RH)	3	G
F26	23	E22 (Front LH)	1	Evisted
E30	11	B41 (Rear RH)	7	H
	26	B44 (Rear LH)	5	
Measurement terminal	for ground circuit ABS actuator and ele Terminal	ctric unit (control unit)	Terminal	Continuity
	12, 21		Torrinina	J
	27. 23			
E36	15, 11	E36	3, 4	Not existed
	30,26			K
5. Reconnect ABS a	actuator and electric ur	nit (control unit) connect	or.	L
YES >> GO TO 5. NO >> Repair or 5.REPLACE WHEEL	replace malfunctioning	g components.		Μ
 Replace wheel set Erase self-diagno Turn the ignition set Turn the ignition set 	ensor. sis results for "ABS" w switch OFF. switch ON.	ith CONSULT-III.		Ν
Never start engin 5. Perform self-diag Is DTC "C1115" detec	ne. nosis for "ABS" with C ted?	ONSULT-III.		0
NO >> INSPECT	TON END			Г
Component Inspe	ection			INFOID:000000006202923

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.

BRC-33

C1115 WHEEL SENSOR

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-32, "Diagnosis Procedure"</u>.

< DTC/CIRCUIT DIAGNOSIS >

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	D
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	E
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 CC	NFIRMATION PROC	EDURE	•	G

1.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-35, "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 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.
- 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 3.
- NO >> Poor connection of connector terminal. Replace or repair connector.

BRC-35

[ABS]

INFOID:00000006202924

INFOID:000000006202925

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C1120, C1122, C1124, C1126 IN ABS SOL

< DTC/CIRCUIT DIAGNOSIS >

3.CHECK ACTUATOR RELAY POWER SUPPLY CIRCUIT

- 1. Turn ignition switch OFF.
- 2. Disconnect ABS actuator and electric unit (control unit) connector.
- 3. Check voltage between ABS actuator and electric unit (control unit) 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 ACTUATOR RELAY GROUND CIRCUIT

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

ABS actuator and electric 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:000000006202927

1.CHECK ACTIVE TEST

1. Select "ABS", "ACTIVE TEST" and each test 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		
		Up	Keep	Down
FR RH SOL	FR RH IN SOL	Off	On	On
	FR RH OUT SOL	Off	Off	On*
	FR LH IN SOL	Off	On	On
TREITSOL	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 IN SOL	Off	On	On
	RR LH OUT SOL	Off	Off	On*

*: 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-35</u>, "Diagnosis Procedure".
C1121, C1123, C1125, C1127 OUT ABS SOL

< DTC/CIRCUIT DIAGNOSIS >

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

INFOID:000000006202929

INFOID:000000006202928

DTC DETECTION LOGIC

DTC	Display item	Malfunction detected condition	Possible cause	D
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	E
C1125	RR LH OUT ABS SOL	When the control unit detects a malfunction in the rear LH outlet solenoid circuit.	(control unit)	BRC
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 <u>BRC-37, "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 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.
- 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 3.
- NO >> Poor connection of connector terminal. Replace or repair connector.

BRC-37

[ABS]

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INFOID:000000006202930

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.
- 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 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:000000006202931

1.CHECK ACTIVE TEST

1. Select "ABS", "ACTIVE TEST" and each test 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.

Tostitom	Display itom	Display		
leschem	Display item	Up	Keep	Down
	FR RH IN SOL	Off	On	On
FR RH SOL	FR RH OUT SOL	Off	Off	On*
	FR LH IN SOL	Off	On	On
TREITSOL	FR LH OUT SOL	Off	Off	On*
	RR RH IN SOL	Off	On	On
KK KH SOL	RR RH OUT SOL	Off	Off	On*
	RR LH IN SOL	Off	On	On
KK EH SOL	RR LH OUT SOL	Off	Off	On*

*: 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-37</u>, "Diagnosis Procedure".

C1140 ACTUATOR RELAY SYSTEM

< DTC/CIRCUIT DIAGNOSIS >

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

INFOID:000000006202933

INFOID:000000006202932

DTC DETECTION LOGIC

DTC	Dis	play item	Malfunct	tion detected condition	Possible cause	D
C1140		CTUATOR BLY		elay operating with OFF, when the ON, or when the control line for the ground.	Harness or connector APS actuator and electric unit	Е
C1140			During the actuator re actuator relay turns C relay is open.	elay operating with ON, when the N, or when the control line for the	(control unit)	BRC
DTC CC	NFIRMAT	ION PROCED	JRE			DITC
1. CHEC	CK SELF-D	IAGNOSIS RES	JLTS			
Perform	self-diagno	sis for "ABS" wit	n CONSULT-III.			G
		Self-diagnosis re	sults			Н
			Y			
VES	<u>aispiayea a</u>	<u>on the self-diagn</u> d to diagnosis pr	<u>osis display :</u> ocedure: Refer to	BRC-39 "Diagnosis Proced	luro"	
NO	>> INSPEC	CTION END		<u>Dito 55, Diagnosis i 16666</u>	<u>lare</u> .	
Diagno	sis Proce	edure			INFOID:00000006202934	. [
1.снес	CK CONNE	CTOR				0
1. Turn	ignition sw	itch OFF.	(- (Κ
 Disc Chee 	ck terminal	for deformation,	disconnection, lo	oseness, and so on. If any m	alfunction is found, repair or	
repla	ace termina	l.	orformo colf dio a	nania far "ADC" with CONCL		L
4. Reco	m indicated	d on the self-diad	inosis display?	HOSIS IOF ADS WILL CONSU	L1-III.	
YES	>> GO TO	2.	<u>noolo alopia y n</u>			ЪЛ
NO	>> Poor co	nnection of conr	ector terminal. R	eplace or repair connector.		IVI
2.CHEC	CK ACTUAT	OR RELAY PO	VER SUPPLY CI	RCUIT		
1. Turn	ignition sw	itch OFF.	octric unit (contro	l unit) connector		Ν
3. Che	ck voltage	between ABS a	ctuator and elec	ctric unit (control unit) harne	ess connector terminal and	
grou	ind.					0
ARS act	luator and elec	ctric unit (control unit)			
Cor	nector	Terminal	<u> </u>	Voltage		P
	E36	2	Ground	Battery voltage		

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

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace malfunctioning components.

BRC-39

[ABS]

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C1140 ACTUATOR RELAY SYSTEM

< DTC/CIRCUIT DIAGNOSIS >

[ABS]

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		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:000000006202935

1.CHECK ACTIVE TEST

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

Test item	Display item	Display		
leschem	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-39. "Diagnosis Procedure"</u>.

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

INFOID:000000006202937

DTC DETECTION LOGIC

DTC	Display item	Malfunction detected condition	Possible cause	E
U1000	CAN COMM CIRCUIT	When ABS actuator and electric unit (control unit) is not transmitting or receiving CAN communication signal for 2 seconds or more.	 CAN communication line ABS actuator and electric unit (control unit) 	BRC
DTC CC	NFIRMATION PROCE	DURE		
1. CHEC	CK SELF-DIAGNOSIS RE	SULTS		G
Perform	self-diagnosis for "ABS" w	ith CONSULT-III.		
				Н
	Self-diagnosis			
 	CAN COMM CI			
Is above	displayed on the self-diag	inosis display?		I
YES NO	>> Proceed to diagnosis p >> INSPECTION END	procedure. Refer to <u>BRC-41, "Diagnosis Proced</u>	<u>ure"</u> .	
Diagno	sis Procedure			J
Diagno			INFOID:00000006202938	
1. CHEC	CK CONNECTOR			
1. Turn	ignition switch OFF.			K
2. Disc	onnect ABS actuator and	electric unit (control unit) connector.		
3. Cne repla	ck terminal for deformation	h, disconnection, looseness, and so on. If any m	alfunction is found, repair or	L
4. Rec	onnect connector and perf	orm self-diagnosis for "ABS" with CONSULT-III.		
	Self-diagnosis	results		M
	CAN COMM CI	RCUIT		
<u>Is above</u>	displayed on the self-diag	nosis display?		Ν
YES	>> Go to LAN-15, "Troubl	<u>e Diagnosis Flow Chart"</u> .		
NU	>> INSPECTION END			
				0

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INFOID:000000006202936

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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

INFOID:000000006202940

INFOID:000000006202939

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-42, "Diagnosis Procedure"</u>.
- NO >> INSPECTION ĔND

Diagnosis Procedure

INFOID:000000006202941

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

	DIAGNOSIS >		[ABS]	
BRAKE FLUI	D LEVEL SW	/ITCH		
Description			INFOID:00000006202942	
The brake fluid lev ator and electric ur	el switch converts i nit (control unit).	he brake fluid level to an electric signal an	d transmits it to the ABS actu-	
Component Fu	nction Check		INFOID:00000006202943	
.CHECK BRAKE	FLUID LEVEL SV	VITCH OPERATION		
Dperate the brake on/off correctly. <u>s the inspection re</u> YES >> INSPE NO >> Go to	fluid level switch. sult normal? CTION END diagnosis procedu	Then check that the brake warning lamp in the brake warning lamp in the brake warning lamp in the second seco	n the combination meter turns	
Diagnosis Prod	cedure		INFOID:00000006202944	
I .CHECK BRAKE	FLUID LEVEL			
Check brake fluid l s the inspection re YES >> GO TO NO >> Refill b	evel. Refer to <u>BR-1</u> e <u>sult normal?</u>) 2. orake fluid. Refer to	BR-12, "Refilling".		
2.CHECK CONN	ECTOR			
 Turn ignition s Disconnect bra Check termina replace termina Reconnect con tion Check". 	witch OFF. ake fluid level switc I for deformation, c al. nnectors and then j	h connector and combination meter conne isconnection, looseness, and so on. If any perform component function check. Refer t	ctor. malfunction is found, repair or o <u>BRC-43, "Component Func-</u>	
s the inspection re	sult normal?			
YES >> Poor o NO >> GO TO 3.CHECK BRAKE	onnection of conne 3. EFLUID LEVEL SV	ector terminal. Replace or repair connector		
 Turn ignition s Disconnect brack Check continut 	witch OFF. ake fluid level switc ity between brake	h connector. Iuid level switch connector terminals.		
Brake fluid	level switch	Condition	Continuity	
Connector	Terminal	When broke fluid is full in the recording test.	Not ovisted	
E37	E37 1-2 When brake fluid is full in the reservoir tank. Not existed When brake fluid is empty in the reservoir tank. Existed			
s the inspection re YES >> GO TO NO >> Brake 1. CHECK BRAKE	<u>sult normal?</u>) 4. fluid level switch is E FLUID LEVEL SV	malfunction. Replace reservoir tank. VITCH CIRCUIT		
 Disconnect co Check continu 	mbination meter co	nnector. fluid level switch harness connector tern	ninals and combination meter	

harness connector terminal and/or ground.

BRAKE FLUID LEVEL SWITCH

< DTC/CIRCUIT DIAGNOSIS >

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

Combination 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	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 >> INSPECTION END

NO >> Replace reservoir tank.

INFOID:000000006202945

PARKING BRAKE SWITCH

< DTC/CIRCUIT DIAGNOSIS >

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

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 opera- tion	ON	E
When the parking brake switch is not oper ation.	OFF	BR
Is the inspection result normal? YES >> INSPECTION END NO >> Go to diagnosis proce	dure. Refer to <u>BRC-45, "Diagnosis I</u>	Procedure". G
Diagnosis Procedure		INFOID:00000006202948

1. CHECK PARKING BRAKE SWITCH

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

Parking br	ake switch	Condition	Continuity	J
Connector	Terminal	Condition	Continuity	
F102	1 Cround	When the parking brake switch is operated.	Existed	
E103	r – Ground	When the parking brake switch is not operated.	Not existed	k
Is the inspection res	sult normal?			
YES >> GO TO NO >> Replace 2.CHECK COMBIN	2. e parking brake sw NATION METER	itch.		L
Check if the indicati tion".	on and operation c	f combination meter are normal. Refer to <u>MWI-27</u> ,	"CONSULT-III Func-	N
Is the inspection res YES >> INSPEC NO >> Repair	<u>sult normal?</u> CTION END or replace combina	ation meter.		ľ
Component Ins	pection		INFOID:00000006202949	C
1.CHECK PARKIN	IG BRAKE SWITC	4		
 Turn ignition sw Disconnect part 	vitch OFF. king brake switch c	connector.		F

3. Check continuity between parking brake switch connector terminal and ground.

INFOID:000000006202946

INFOID:000000006202947

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PARKING BRAKE SWITCH

< DTC/CIRCUIT DIAGNOSIS >

Parking brake switch		Condition	Continuity
Connector	Terminal	Condition	Continuity
E103	1 – Ground	When the parking brake switch is operated.	Existed
2105		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 <u>PB-6, "Exploded View"</u>.

ABS WARNING LAMP

< DTC/CIRCUIT DIAGNOSIS >

ABS WARNING LAMP

Description

INFOID:000000006202950

	×: ON –: OFF	В
Condition	ABS warning lamp	
Ignition switch OFF	-	
For 1 second after turning ignition switch ON	×	С
1 second later after turning ignition switch ON	_	
ABS function is malfunctioning.	×	D
EBD function is malfunctioning.	×	
Component Function Check	INFOID:00000006202951	Е
1. CHECK ABS WARNING LAMP OPERATION	_	
Check that the lamp illuminates for approximately 1 set Is the inspection result normal? YES >> INSPECTION END NO >> Go to diagnosis procedure. Refer to BRC-4	cond after the ignition switch is turned ON.	BR(
Diagnosis Procedure	INFOID:00000006202952	
1.CHECK SELF-DIAGNOSIS		Н
Perform self-diagnosis for "ABS" with CONSULT-III.		
<u>Is the inspection result normal?</u> YES >> GO TO 2.		
NO >> Check items displayed by self-diagnosis. 2.CHECK COMBINATION METER		J
Check if the indication and operation of combination m tion".	eter are normal. Refer to MWI-27, "CONSULT-III Func-	
ls the inspection result normal?		Κ
YES >> Replace ABS actuator and electric unit (co	ntrol unit).	
		L
		M
		Ν
		0

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[ABS]

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BRAKE WARNING LAMP

< DTC/CIRCUIT DIAGNOSIS >

BRAKE WARNING LAMP

Description

INFOID:000000006202953

INFOID:000000006202954

×: ON –: OFF

[ABS]

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

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 <u>BRC-48, "Diagnosis Procedure"</u>.

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 <u>BRC-45, "Diagnosis Procedure"</u>.

Diagnosis Procedure

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-45, "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 <u>MWI-27, "CONSULT-III Func-</u>tion".

Is the inspection result normal?

- YES >> Replace ABS actuator and electric unit (control unit).
- NO >> Repair or replace combination meter.

INFOID:000000006202955

< ECU DIAGNOSIS INFORMATION >

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.

		Data monitor		D
Monitor item	Display content	Condition	Reference value in normal operation	_
		Vehicle stopped	0 [km/h (MPH)]	E
FR LH SENSOR	Wheel speed	Vehicle running (Note 1)	Nearly matches the speed meter display (± 10% or less)	BR
		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
		Vehicle stopped	0 [km/h (MPH)]	
RR RH SENSOR	Wheel speed	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	
	Clop lamp switch signal status	When brake pedal is not depressed	Off	K
BATTERY VOLT	Battery voltage supplied to the ABS actuator and electric unit (control unit)	Ignition switch ON	10 – 16 V	Γ.
DECEL G-SEN1	Decel G detected by decel G sensor	Changes according to an indication	On	I
(Note 2)	Decer O detected by decer O sensor	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)		shown by the decel G sensor	Off	M
	Operation status of each solenoid valve	Actuator (solenoid valve) is active ("AC- TIVE TEST" in "ABS" with CONSULT- III)	On	Ν
		When the actuator (solenoid valve) is not active and actuator relay is active (ignition switch ON)	Off	0
	Operation status of each colonaid value	Actuator (solenoid valve) is active ("AC- TIVE TEST" in "ABS" with CONSULT- III)	On	0
	Operation status of each solenoid valve	When the actuator (solenoid valve) is not active and actuator relay is active (ignition switch ON)	Off	Ρ

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< ECU DIAGNOSIS INFORMATION >

		Data monitor	
Monitor item	Display content	Condition	Reference value in normal operation
	Operation status of each solenoid value	Actuator (solenoid valve) is active ("AC- TIVE TEST" in "ABS" with CONSULT- III)	On
		When the actuator (solenoid valve) is not active and actuator relay is active (ignition switch ON)	Off
	Operation status of each solenoid valve	Actuator (solenoid valve) is active ("AC- TIVE TEST" in "ABS" with CONSULT- III)	On
	v r (When the actuator (solenoid valve) is not active and actuator relay is active (ignition switch ON)	Off
	Operation status of each colonaid valve	Actuator (solenoid valve) is active ("AC- TIVE TEST" in "ABS" with CONSULT- III)	On
KK KH IN SOL		When the actuator (solenoid valve) is not active and actuator relay is active (ignition switch ON)	Off
	Operation status of each colonaid value	Actuator (solenoid valve) is active ("AC- TIVE TEST" in "ABS" with CONSULT- III)	On
KR KH OUT SOL	Operation status of each solehold valve	When the actuator (solenoid valve) is not active and actuator relay is active (ignition switch ON)	Off
		Actuator (solenoid valve) is active ("AC- TIVE 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
		Actuator (solenoid valve) is active ("AC- TIVE TEST" in "ABS" with CONSULT- III)	On
KR LH OUT SOL	Operation status of each solehold valve	When the actuator (solenoid valve) is not active and actuator relay is active (ignition switch ON)	Off
	Motor and motor relay operation	When the motor relay and motor are operating	On
MOTOR RELAT		When the motor relay and motor are not operating	Off
ACTUATOR RLY	Actuator relay aparation	When the actuator relay is operating	On
(Note 3)		When the actuator relay is not operating	Off
	ABS warning lamp	When ABS warning lamp is ON	On
	(Note 4)	When ABS warning lamp is OFF	Off
EBD SIGNAL	EBD operation	EBD is active	On
		EBD is inactive	Off
ABS SIGNAI	ABS operation	ABS is active	On
		ABS is inactive	Off
	FBD fail-safe signal	In EBD fail-safe	On
		EBD is normal	Off

< ECU DIAGNOSIS INFORMATION >

[ABS]

Monitor item Display content Condition Referen normal normal ABS FAIL SIG ABS fail-safe signal In ABS fail-safe On ABS FAIL SIG ABS fail-safe signal In ABS fail-safe On 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 BBC-47. "Description" .	Monitor itemDisplay contentConditionReference value in normal operationABS FAIL SIGABS fail-safe signalIn ABS fail-safeOnABS FAIL SIGABS fail-safe signalIn ABS fail-safeOnIn ABS fail-safeOnABS fail-safe signalIn ABS fail-safeOnIn ABS fail-safeOnOffIOTE: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".			Data monitor	onitor
ABS FAIL SIG ABS fail-safe signal In ABS fail-safe On ABS FAIL SIG ABS fail-safe signal Off NOTE: • 1: Confirm tire pressure is normal. Off • 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"	ABS FAIL SIG ABS fail-safe signal In ABS fail-safe On IOTE: .	Monitor item	Display content	Condition	Reference value in normal operation
ABS FAIL SIG ABS fail-safe signal Off 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. • 4: On and off timing for warning lamp and indicator lamp. • ABS warning lamp: Refer to BRC-47. "Description"	ABS FAIL SIG ABS fail-safe signal Off IOTE: 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 <u>BRC-47, "Description"</u> .		APS fail asfa signal	In ABS fail-safe	On
 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" 	IOTE: 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 <u>BRC-47, "Description"</u> .	ADS FAIL SIG	ADS Tail-Sale Signal	ABS is normal	Off
 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" 	 Confirm tire pressure is normal. Only AWD models. Every 20 seconds momentary switch to Off. On and off timing for warning lamp and indicator lamp. ABS warning lamp: Refer to <u>BRC-47, "Description"</u>. 	NOTE:			
 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" 	 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 <u>BRC-47, "Description"</u>. 	• 1: Confirm tire pres	ssure is normal.		
 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" 	 3: Every 20 seconds momentary switch to Off. 4: On and off timing for warning lamp and indicator lamp. ABS warning lamp: Refer to <u>BRC-47, "Description"</u>. 	2: Only AWD mode	els.		
 4: On and off timing for warning lamp and indicator lamp. ABS warning lamp: Refer to BRC-47. "Description" 	4: On and off timing for warning lamp and indicator lamp. ABS warning lamp: Refer to <u>BRC-47, "Description"</u> .	 3: Every 20 second 	ds momentary switch to Off.		
- ABS warning lamp: Refer to BRC-47 "Description"	ABS warning lamp: Refer to <u>BRC-47, "Description"</u> .	 4: On and off timing 	g for warning lamp and indicator lamp.		
Abo wanning lamp. Noter to <u>brooth.</u>		 ABS warning lamp 	: Refer to <u>BRC-47, "Description"</u> .		

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< ECU DIAGNOSIS INFORMATION >

Wiring Diagram -BRAKE CONTROL SYSTEM-



[ABS]



< ECU DIAGNOSIS INFORMATION >

А Signal Name [Specification] Signal Name [Specification] BRAKE FLUID LEVEL SWITCH В FRONT WHEEL SENSOR RH DIAG K SENSOR SENSOR SENSOR FL SENS(AWD (<u> -</u> С E39 [」]≥ R R r Color of Wire Color of Wire 88 J Connector Name Connector Name vpe σ Connector No D H.S. Terminal No. H.S. erminal No. 8 E 倨 Ε 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 (LINO Signal Name [Specification] Signal Name [Specification] FRONT WHEEL SENSOR LH MOTO BRC GND G 3 4 2 88 - 2 88 88 m Color of Wire Color of Wire nnector No. onnector No. Connector Name nector Name ,pe - 6 RBB ا[®] [H.S. H.S. erminal No. erminal No. 20 28 Н ſ E Signal Name [Specification] Signal Name [Specification] Signal Name [Specification] 47 54 REAR WHEEL SENSOR RH REAR WHEEL SENSOR LH 56 57 Ð J 58 <u>5</u>8 53 52 62 61 E15 PDM E/1 B44 B41 Color of Wire O Color of Wire BR R Κ Color of Wire BR Connector Name Connector Type SB Connector Name Connector Name vine. nnector No. Connector No. H.S. erminal No. H.S.H Terminal No. H.S. erminal No. BRAKE CONTROL SYSTEM (WITHOUT VDC) 47 ſ ſ F L Signal Name [Specification] Signal Name [Specification] Μ 45) GND IST IGN C WIRE TO WIRE N Ν G SENSOR 80 86 97 92 36 98 93 Color of Wire Color of Wire Connector Name Type 0 0 GR GR Connector Name ype S S nnector No. Ο AHS. AHS. erminal No. erminal No. 5 88 ŝ 倨 倨

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Revision: 2010 July

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[ABS]

< ECU DIAGNOSIS INFORMATION >



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ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)	[ABS]
Terminal Connector Name Connector Name Conne	
JCFWM0	676GB

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ABS, EBD SYSTEM

Fail-Safe

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 >

• 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

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DTC	Items (CONSULT screen terms)	Reference	
C1101	RR RH SENSOR-1		
C1102	RR LH SENSOR-1	BRC-18, "DTC Logic"	
C1103	FR RH SENSOR-1		
C1104	FR LH SENSOR-1		
C1105	RR RH SENSOR-2		
C1106	RR LH SENSOR-2	PPC 21 "DTC Logic"	
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
< SYMPTOM DIAGNOSIS > [ABS
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 <u>BR-49. "General Specifications"</u> .
Is the inspection result normal?
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 ZWD models: Refer to FAX-8 "Inspection"
- AWD models: Refer to <u>FAX-32, "Inspection"</u> .
Rear 2000 models: Refer to RAX-4. "Inspection"
- AWD models: Refer to <u>RAX-11, "Inspection"</u> .
Is the inspection result normal?
YES >> GO TO 3.
CHECK WHEEL SENSOD AND SENSOD DOTOD
Wheel sensor installation for damage.
Sensor rotor installation for damage.
 Wheel sensor connector connection. Wheel sensor harness inspection.
Is the inspection result normal?
YES >> GO TO 4.
NO >> • Replace wheel sensor or sensor rotor. • Repair harness
4. CHECK ABS WARNING LAMP DISPLAY
Make sure that the ABS warning lamp is turned off after the ignition switch is turned ON or when driving.
Is the ABS warning lamp illuminated?
YES >> Perform self-diagnosis for "ABS" with CONSULT-III.
NO >> Normal

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UNEXPECTED PEDAL REACTION

Diagnosis Procedure

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[ABS]

1.CHECK BRAKE PEDAL STROKE

Check brake pedal stroke. Refer to <u>BR-9, "Inspection and Adjustment"</u>.

Is the stroke too large?

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

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

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

Diagnosis Procedure

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.

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[ABS]

PEDAL VIBRATION OR ABS OPERATION SOUND OCCURS	
< SYMPTOM DIAGNOSIS > [ABS]	
PEDAL VIBRATION OR ABS OPERATION SOUND OCCURS	Λ
Diagnosis Procedure	~
 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] 	B C D
1. SYMPTOM CHECK 1	
Check that there are pedal vibrations when the engine is started.	Е
YES >> GO TO 2. NO >> Inspect the brake pedal.	
2.SYMPTOM CHECK 2	BRC
Check that there are ABS operation noises when the engine is started.	
Do the operation noises occur?	G
YES >> GO TO 3. NO >> Perform self-diagnosis for "ABS" with CONSULT-III.	
3.SYMPTOM CHECK 3	Η
Check symptoms when electrical component (headlamps, etc.) switches are operated.	
Do symptoms occur?	Ι
move it farther away.	
NO >> Normal	J
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NORMAL OPERATING CONDITION

< SYMPTOM DIAGNOSIS >

NORMAL OPERATING CONDITION

Description

INFOID:000000006202965

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

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 that would result in air bag inflation, all maintenance must be performed by BRC 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 "SRS AIR BAG".
- Never 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, never 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:000000006445159

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

WARNING:

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

- Brake fluid use refer to MA-15, "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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PRECAUTIONS

< 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



- 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 "SRS AIR BAG".
- Never 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, never 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 Brake System

WARNING:

< PRECAUTION >

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

- Brake fluid use refer to MA-15, "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.
- 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 torgue 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.



- 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 Μ (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. Ν
- 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.

PRECAUTIONS

FOR MEXICO : 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.





[ABS]

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< REMOVAL AND INSTALLATION >

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 <u>GI-4, "Components"</u> 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

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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

INFOID:000000006202974

WHEEL SENSOR

< REMOVAL AND INSTALLATION >

REAR WHEEL SENSOR : Exploded View

А

INFOID:000000006202976



- 1. Rear LH wheel sensor
- A. 2WD models B. AWD models

Refer to <u>GI-4, "Components"</u> 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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Refer to RAX-5, "Exploded View" (2WD models), RAX-13, "Exploded View" (AWD models).

REAR SENSOR ROTOR : Removal and Installation

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".

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).

< REMOVAL AND INSTALLATION >

SENSOR ROTOR FRONT SENSOR ROTOR

FRONT SENSOR ROTOR : Exploded View

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

FRONT SENSOR ROTOR : Removal and Installation

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

REMOVAL

INSTALLATION

REAR SENSOR ROTOR

REAR SENSOR ROTOR : Exploded View

INFOID-00000006202978

INFOID:000000006202979

INFOID-000000006202980

INFOID-000000006202981

< REMOVAL AND INSTALLATION >

ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)

Exploded View

INFOID:000000006202982



- 5. Remove fender protector (rear): (front LH side). Refer to EXT-22, "Exploded View".
- 6. Remove ABS actuator and electric unit (control unit) bracket mounting nut.
- 7. Remove ABS actuator and electric unit (control unit) from vehicle.

INSTALLATION

BRC-69

[ABS]

А

< REMOVAL AND INSTALLATION >

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.

G SENSOR

Exploded View

INFOID:000000006202984

INFOID:000000006202985

[ABS]

А



1. G sensor

Bracket 2.

BRC

: 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.

- 1. Remove center console assembly. Refer to IP-22, "Exploded View".
- 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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< BASIC INSPECTION >

[VDC/TCS/ABS]

BASIC INSPECTION DIAGNOSIS AND REPAIR WORKFLOW

Work Flow

INFOID:000000006202986

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 <u>BRC-76, "ADJUSTMENT OF STEERING ANGLE</u> <u>SENSOR NEUTRAL POSITION : Description"</u>.
DIAGNOSIS AND REPAIR WORKFLOW

< BASIC INSPECTION >

[VDC/TCS/ABS]





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 <u>BRC-75</u>, "Diagnostic Work Sheet".

>> GO TO 2.

DIAGNOSIS AND REPAIR WORKFLOW

< BASIC INSPECTION >

[VDC/TCS/ABS]

2.PERFORM THE SELF-DIAGNOSIS

Perform self-diagnosis for "ABS" with CONSULT-III. Refer to <u>BRC-94, "CONSULT-III Function"</u>. 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 <u>BRC-161, "DTC Index"</u>.

>> 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 <u>BRC-169.</u> "Description".

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

Diagnostic Work Sheet

INFOID:000000006202987

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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) 	U Warning / Indicator activate		 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 □Gra □ Bumps / potholes	avel DOther)		
Driving conditions	□ Full-acceleration □ High speed cornering □ Vehicle speed: Greater than 10 k □ Vehicle speed: 10 km/h (6 MPH) □ Vehicle is stopped	m/h (6 MPH) or less		
Applying brake conditions	□ Suddenly □ Gradually			
Other conditions	Operation of electrical equipment Shift change Other descriptions	:		

SFIA3265E

INSPECTION AND ADJUSTMENT

< BASIC INSPECTION >

INSPECTION AND ADJUSTMENT ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION : Description

INFOID:000000006202988

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

×: Required -: Not required

Situation	Adjustment of steering angle sensor neutral position
Removing/Installing 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)

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.

- 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 $: 0\pm 2.5^{\circ}$

INSPECTION AND ADJUSTMENT

< BASIC INSPECTION >	[VDC/TCS/ABS]
Is the steering angle within the specified range?	
YES >> GO TO 4.	
NO $>>$ Perform the neutral position adjustment for the steering angle sensor aga	ain, GO TO 1.
4.ERASE THE SELF-DIAGNOSIS MEMORY	
Erase the self-diagnosis memories for "ABS" and "ENGINE" with CONSULT-III.	
"ABS": Refer to <u>BRC-94, "CONSULT-III Function"</u> .	
"ENGINE" For CALIFORNIA: Refer to EC-116. "CONSULT-III Function"	
- For USA (FEDERAL) and CANADA: Refer to EC-597. "CONSULT-III Function".	
- For MEXICO: Refer to EC-1029, "CONSULT-III Function".	
Are the memories erased?	
YES >> INSPECTION END	
NO >> Check the items indicated by the self-diagnosis.	

< SYSTEM DESCRIPTION > SYSTEM DESCRIPTION VDC

System Diagram

INFOID:000000006202990



System Description

INFOID:000000006202991

- 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:000000006202992

FOR USA



4. VDC OFF indicator lamp

< SYSTEM DESCRIPTION >

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



VDC

Revision: 2010 July

< SYSTEM DESCRIPTION >

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

- В. Combination meter Ε. Steering knuckle
- C. Center console
- F. Instrument driver lower panel

EXCEPT FOR USA



- Steering angle sensor 1.
- 4. VDC OFF indicator lamp
- SLIP indicator lamp

5.

- 3. Brake warning lamp
- 6. Yaw rate/side/decel G sensor

BRC-80



VDC

[VDC/TCS/ABS]

INFOID:000000006202993

7.	ABS actuator and electric unit (con- trol unit)	8.	Front wheel sensor	9.	VDC OFF switch	А
10.	Rear wheel sensor (2WD models)	11.	Rear wheel sensor (AWD models)			
Α.	Back of spiral cable assembly	В.	Combination meter	C.	Center console	R
D.	Engine room (right side)	Ε.	Steering knuckle	F.	Instrument driver lower panel	D
G.	Rear axle					

Component Description

< SYSTEM DESCRIPTION >

Component parts			
Pump	PPC 100 "Description"		
Motor	BRC-109, Description	_	
Actuator relay (Main relay)	BRC-128, "Description"	E	
Solenoid valve	BRC-121, "Description"		
VDC switch-over valve (CV1, CV2)	BRC-135, "Description"	BRC	
VDC switch-over valve (SV1, SV2)	BRC-137, "Description"		
Wheel sensor			
Yaw rate/side/decel G sensor			
Steering angle sensor			
	BRC-145, "Description"	Н	
ABS warning lamp			
Brake warning lamp			
VDC OFF indicator lamp			
	BRC-152, "Description"		
	Pump Motor Actuator relay (Main relay) Solenoid valve VDC switch-over valve (CV1, CV2) VDC switch-over valve (SV1, SV2)	Denent partsReferencePumpBRC-109. "Description"MotorBRC-109. "Description"Actuator relay (Main relay)BRC-128. "Description"Solenoid valveBRC-121. "Description"VDC switch-over valve (CV1, CV2)BRC-135. "Description"VDC switch-over valve (SV1, SV2)BRC-137. "Description"VDC switch-over valve (SV1, SV2)BRC-137. "Description"BRC-111. "Description"BRC-111. "Description"BRC-130. "Description"BRC-130. "Description"BRC-145. "Description"BRC-145. "Description"BRC-145. "Description"BRC-148. "Description"BRC-150. "Description"BRC-152. "Description"	

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TCS

System Diagram

INFOID:000000006202994



System Description

INFOID:000000006202995

- 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:000000006444599

FOR USA



TCS

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< SYSTEM DESCRIPTION >

[VDC/TCS/ABS]

А



1.	Steering	angle	sensor
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- VDC OFF indicator lamp 4.
- ABS actuator and electric unit (con-7. trol unit)

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- 10. Rear wheel sensor (2WD models)
- 2. ABS warning lamp

G

- 5. SLIP indicator lamp
- 8. Front wheel sensor
- 11. Rear wheel sensor (AWD models)

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Brake warning lamp 3.

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Yaw rate/side/decel G sensor 6.

JPFIC0225Z2

VDC OFF switch 9.

< SYSTEM DESCRIPTION >

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

- В. Combination meter Ε. Steering knuckle
- C. Center console
- F. Instrument driver lower panel

EXCEPT FOR USA



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

BRC-84

2011 Rogue



< SYSTEM DESCRIPTION >

INFOID:000000006202997

7.	ABS actuator and electric unit (con- trol unit)	8.	Front wheel sensor	9.	VDC OFF switch	-	A
1(D. Rear wheel sensor (2WD models)	11.	Rear wheel sensor (AWD models)				
А	. Back of spiral cable assembly	В.	Combination meter	C.	Center console		R
D	. Engine room (right side)	Ε.	Steering knuckle	F.	Instrument driver lower panel		D
G	. Rear axle						

TCS

Component Description

Compo	Reference	D	
-	Pump	PRC 100 "Description"	
	Motor	BRC-109, Description	-
APS actuator and algotric unit (control unit)	Actuator relay (Main relay)	BRC-128, "Description"	E
	Solenoid valve	BRC-121, "Description"	_
	VDC switch-over valve (CV1, CV2)	BRC-135, "Description"	BRC
	VDC switch-over valve (SV1, SV2)	BRC-137, "Description"	
Wheel sensor		BRC-99, "Description"	
Yaw rate/side/decel G sensor	BRC-111, "Description"	G	
Steering angle sensor		BRC-130, "Description"	
VDC OFF switch		BRC-145, "Description"	Н
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 Diagram

INFOID:000000006202998

Combination meter (Brake warning lamp, ABS warning lamp, VDC OFF indicator lamp, SLIP indicator lamp) Steering ECM тсм angle sensor Injector operation signal CAN communication AWD communication line AWD control unit (With AWD) Front RH wheel sensor Yaw rate/side/decel G sensor Rear RH wheel VDC OFF switch sensor ABS actuator and electric unit (control unit) \bigcirc \bigcirc Rear LH Front LH wheel wheel sensor sensor JSFIA0161GB

ABS

System Description

INFOID:000000006202999

- 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:000000006444600

FOR USA

ABS



- 7. ABS actuator and electric unit (control unit)
- 10. Rear wheel sensor (2WD models)
- 8. Front wheel sensor
- 11. Rear wheel sensor (AWD models)
- VDC OFF switch 9.

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4.

< SYSTEM DESCRIPTION >

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

B. Combination meterE. Steering knuckle

ABS

- C. Center console
- F. Instrument driver lower panel

[VDC/TCS/ABS]

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

BRC-88

ABS

[VDC/TCS/ABS]

INFOID:000000006203001

7.	ABS actuator and electric unit (con- trol unit)	8.	Front wheel sensor	9.	VDC OFF switch	Д	
10.	Rear wheel sensor (2WD models)	11.	Rear wheel sensor (AWD models)				
Α.	Back of spiral cable assembly	В.	Combination meter	C.	Center console	F	ł
D.	Engine room (right side)	Ε.	Steering knuckle	F.	Instrument driver lower panel	L	
G.	Rear axle						

Component Description

< SYSTEM DESCRIPTION >

Compo	nent parts	Reference	D	
	Pump	PPC 100 "Description"		
	Motor	BRC-109, Description	_	
ABS actuator and electric unit (control unit)	Actuator relay (Main relay)	BRC-128, "Description"	E	
	Solenoid valve	BRC-121, "Description"		
	VDC switch-over valve (CV1, CV2)	BRC-135, "Description"	BRC	
	VDC switch-over valve (SV1, SV2)	BRC-137, "Description"		
Wheel sensor	BRC-99, "Description"			
Yaw rate/side/decel G sensor	BRC-111, "Description"	G		
Steering angle sensor		BRC-130, "Description"		
VDC OFF switch		BRC-145, "Description"	Н	
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 > EBD

System Diagram

INFOID:000000006203002

Combination meter (Brake warning lamp, ABS warning lamp, VDC OFF indicator lamp, SLIP indicator lamp) Steering ECM тсм angle sensor Injector operation signal CAN communication AWD communication line AWD control unit (With AWD) Front RH wheel sensor Yaw rate/side/decel G sensor Rear RH wheel VDC OFF switch ABS actuator and sensor electric unit (control unit) \bigcirc \bigcirc Rear LH Front LH wheel wheel sensor sensor JSFIA0161GB

EBD

System Description

INFOID:000000006203003

- 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:000000006444601

FOR USA

11. Rear wheel sensor (AWD models)

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trol unit)

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ABS actuator and electric unit (con-

Steering angle sensor

VDC OFF indicator lamp

10. Rear wheel sensor (2WD models)

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8.

ABS warning lamp

SLIP indicator lamp

Front wheel sensor



EBD

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< SYSTEM DESCRIPTION >



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В

Brake warning lamp

VDC OFF switch

Yaw rate/side/decel G sensor

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2011 Rogue

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< SYSTEM DESCRIPTION >

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

B. Combination meterE. Steering knuckle

EBD

- C. Center console
- F. Instrument driver lower panel

[VDC/TCS/ABS]

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

BRC-92

EBD

[VDC/TCS/ABS]

INFOID:000000006203005

7.	ABS actuator and electric unit (con- trol unit)	8.	Front wheel sensor	9.	VDC OFF switch	А
10.	Rear wheel sensor (2WD models)	11.	Rear wheel sensor (AWD models)			
Α.	Back of spiral cable assembly	В.	Combination meter	C.	Center console	R
D.	Engine room (right side)	Ε.	Steering knuckle	F.	Instrument driver lower panel	D
G.	Rear axle					

Component Description

< SYSTEM DESCRIPTION >

Compo	Reference	D	
-	Pump	PPC 100 "Description"	
	Motor	BRC-109, Description	_
APS actuator and algoritic unit (control unit)	Actuator relay (Main relay)	BRC-128, "Description"	- E
	Solenoid valve	BRC-121, "Description"	_
	VDC switch-over valve (CV1, CV2)	BRC-135, "Description"	BRC
	VDC switch-over valve (SV1, SV2)	BRC-137, "Description"	
Wheel sensor	BRC-99, "Description"		
Yaw rate/side/decel G sensor	BRC-111, "Description"	G	
Steering angle sensor	BRC-130, "Description"		
VDC OFF switch		BRC-145, "Description"	H
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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DIAGNOSIS SYSTEM [ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)]

< SYSTEM DESCRIPTION >

[VDC/TCS/ABS]

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

CONSULT-III Function

INFOID:000000006203006

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 <u>BRC-161, "DTC Index"</u>.

DATA MONITOR MODE

Display Item List

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

< SYSTEM DESCRIPTION >

[VDC/TCS/ABS]

			x: Applicable ▼: Optional item
	SELECT MO	ONITOR 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)]	×	×	
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 ²)	×	•	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 value
RR RH IN SOL (On/Off)	▼	×	Operation Status of Each Solenolu 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

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

< SYSTEM DESCRIPTION >

[VDC/TCS/ABS]

	SELECT MONITOR 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/VDC 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.

BRC-96

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

< SYSTEM DESCRIPTION >

[VDC/TCS/ABS]

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NOTE:

- When active test is performed while depressing the pedal, the pedal depression amount will change. This is A 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.

Test item	Disalauitara		Display		
	Display item	Up	Кеер	Down	
	FR RH IN SOL	Off	On	On	
	FR RH OUT SOL	Off	Off	On*	E
FR RH SOL	CV1	Off	Off	Off	
	SV1	Off	Off	Off	BRC
	FR LH IN SOL	Off	On	On	
	FR LH OUT SOL	Off	Off	On*	
FR LH SOL	CV2	Off	Off	Off	G
	SV2	Off	Off	Off	
	RR RH IN SOL	Off	On	On	Н
	RR RH OUT SOL	Off	Off	On*	
RR RH SOL	CV2	Off	Off	Off	
	SV2	Off	Off	Off	
RR LH SOL	RR LH IN SOL	Off	On	On	
	RR LH OUT SOL	Off	Off	On*	
	CV1	Off	Off	Off	J
	SV1	Off	Off	Off	

*: 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.

Test item	Dianlay itom		Display		
	Display item	Up	ACT UP	ACT KEEP	N
	FR RH IN SOL	Off	Off	Off	
FR RH ABS SOLENOID	FR RH OUT SOL	Off	Off	Off	N
(ACT)	CV1	Off	On	On	
	SV1	Off	On*	Off	
	FR LH IN SOL	Off	Off	Off	С
FR LH ABS SOLENOID	FR LH OUT SOL	Off	Off	Off	
(ACT)	CV2	Off	On	On	
	SV2	Off	On*	Off	- F
RR RH ABS SOLENOID (ACT)	RR RH IN SOL	Off	Off	Off	
	RR RH OUT SOL	Off	Off	Off	
	CV2	Off	On	On	
	SV2	Off	On*	Off	

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

< 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	

*: 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	
	Display item	On	Off
ABS MOTOR	MOTOR RELAY	On	Off
	ACTUATOR RLY	On	On

ECU IDENTIFICATION

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

CONSULT-III.

C1101, C1102, C1103, C1104 WHEEL SENSOR

< DTC/CIRCUIT DIAGNOSIS >

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.		E
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 	BR
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.		G
DTC CC	ONFIRMATION PROCE	DURE		
1. CHEC	CK SELF-DIAGNOSIS RE	SULTS		Н
Perform	self-diagnosis for "ABS" w	ith CONSULT-III.		
	Self-diagnosis	results		
	RR RH SENS	OR-1		
	RR LH SENS	OR-1		J
	FR RH SENS	OR-1		
	FR LH SENS	DR-1		K
Is above	displayed on the self-diag	Inosis display?	luno"	
NO	>> INSPECTION END	brocedure. Refer to <u>BRC-99, Diagnosis Proced</u>	<u>lure</u> .	L
Diagno	osis Procedure		INFOID:00000006203009	
CAUTIO	N:			N
Never c	heck between wheel sen	sor terminals.		
1. CHE0	CK TIRES			
Check a	ir pressure, wear and size			N
<u>Are air p</u>	ressure, wear and size wit	hin standard?		
YES	>> GO TO 2.	rankaga tira		0
 Check Check 	sensor rotor for damage o	r adherence of foreign matter on the sensor rote	or surface.	Ρ
Check	wheel sensor for damage	, disconnection or looseness.		
Check	that there is no deformation	on on the wheel sensor mounting surface.		
Are the s	sensor and sensor rotor no	ormal?		
NO	>> Repair wheel sensor i	mount or replace sensor rotor. Then perform s	elf-diagnosis for "ABS" with	

[VDC/TCS/ABS]

INFOID:000000006203007

INFOID:000000006203008

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C1101, C1102, C1103, C1104 WHEEL SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[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.
- 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	Continuity	
Connector	Terminal	Connector	Terminal	Continuity
E36	12	E39 (Front RH)	4	Evisted
	27	E22 (Front LH)	2	
	15	B41 (Rear RH)	8	LXISIEU
	30	B44 (Rear LH)	6	

Measurement terminal for power supply circuit

ABS actuator and ele	ectric unit (control unit)	Wheel	Continuity	
Connector	Terminal	Connector	Terminal	Continuity
E36	21	E39 (Front RH)	3	Evistod
	23	E22 (Front LH)	1	
	11	B41 (Rear RH)	7	LAISIEU
	26	B44 (Rear LH)	5	*

Measurement termina	al for ground circuit					
	ABS actuator and electric unit (control unit)					
Connector	Terminal	Terminal Connector Terminal				
	12, 21	E36	3, 4	Not existed		
E36	27, 23					
	15, 11					
	30, 26	1				

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.
- 4. Turn the ignition switch ON. CAUTION:

C1101, C	C1102, C1103, C1104 WHEE	L SENSOR	
< DTC/CIRCUIT DIAGNOSIS >		[VDC/TCS/ABS]	
Never start engine.			-
5. Perform self-diagnosis results	for "ABS" with CONSULT-III.		А
YES >> Replace ABS actuato	of CTT04 detected?		
NO >> INSPECTION END			В
Component Inspection		INFOID:000000006203010	
1. CHECK DATA MONITOR			С
Select "ABS" "DATA MONITOR"	in order with CONSULT-III select "F	R I H SENSOR" "ER RH SENSOR"	
"RR LH SENSOR" and "RR RH SI	ENSOR", and check the vehicle speed	d.	D
Wheel sensor	Vehicle speed (DATA MONITOR)		
FR LH SENSOR			Е
FR RH SENSOR	Nearly matches the speedometer dis-		
RR LH SENSOR	play (±10% or less)	I	
RR RH SENSOR			BR
Is the inspection result normal?		-	
YES >> INSPECTION END	duna Deferite DDO 00 "Diamasia D		G
NO >> Go to diagnosis proce	dure. Refer to <u>BRC-99, "Diagnosis Pr</u>	<u>'ocedure"</u> .	
Special Repair Requirement	nt	INFOID:00000006203011	Ц
1. ADJUSTMENT OF STEERING	ANGLE SENSOR NEUTRAL POSIT	ION	
Always perform the neutral position tor and electric unit (control unit) of 76, "ADJUSTMENT OF STEERIN	n adjustment for the steering angle s or steering angle sensor and removing G ANGLE SENSOR NEUTRAL POSI	ensor, when replacing the ABS actua- steering angle sensor. Refer to <u>BRC-</u> <u>TION : Special Repair Requirement</u> .	I
>> END			J
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C1105, C1106, C1107, C1108 WHEEL SENSOR

< DTC/CIRCUIT DIAGNOSIS >

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

INFOID:000000006203013

INFOID:000000006203012

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 currentlySensor 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 damagedABS 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 <u>BRC-102</u>, "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.

3.CHECK CONNECTOR

Revision: 2010 July

BRC-102

INFOID:000000006203014

[VDC/TCS/ABS]

C1105, C1106, C1107, C1108 WHEEL SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[VDC/TCS/ABS]

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- 1. 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

- 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 el	ectric unit (control unit)	Wheel	sensor	Continuity	BRC
Connector	Terminal	Connector	Terminal	Continuity	
	12	E39 (Front RH)	4		G
Fac	27	E22 (Front LH)	2	Eviated	
E30	15	B41 (Rear RH)	8	Existed	
	30	B44 (Rear LH)	6	_	H

Measurement terminal	for power supply circuit				_
ABS actuator and ele	ectric unit (control unit)	Wheel	sensor	Continuity	_
Connector	Terminal	Connector	Terminal	Continuity	
	21	E39 (Front RH)	3		J
F36	23	E22 (Front LH)	1	Existed	
L30	11	B41 (Rear RH)	7	LXISIEU	
	26	B44 (Rear LH)	5		k

	ABS actuator and ele	ctric unit (control unit)		Continuity
Connector	Terminal	Connector	Terminal	Continuity
	12, 21			
F26	27, 23	F26	2.4	Not eviated
E30	15, 11	E30	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

1. Replace wheel sensor.

2. Erase self-diagnosis results for "ABS" with CONSULT-III.

- 3. 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.

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C1105, C1106, C1107, C1108 WHEEL SENSOR

< DTC/CIRCUIT DIAGNOSIS >

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

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

NO >> INSPECTION END

Component Inspection

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, "Diagnosis Procedure"</u>.

Special Repair Requirement

INFOID:000000006203016

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-</u>76, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION : Special Repair Requirement".

>> END

[VDC/TCS/ABS]

INFOID:000000006203015

C1109 POWER AND GROUND SYSTEM

< DTC/CIRCUIT DIAGNOSIS >

C1109 POWER AND GROUND SYSTEM

Description

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

DTC Logic

DTC DETECTION LOGIC

DTC	Displa	y item	Malfunction detected c	ondition	Possible cause	
C1109	BATTERY VOI [ABNORMAL]	TAGE When the power signature greater	ne ABS actuator and electric upply is lower than normal. than normal limits.	: unit (control unit) Power supply is	 Harness or connector ABS unit Fuse Vehicle electrical power system 	E
DTC CC	ONFIRMATIC	N PROCEDURE				
1. CHE0	CK SELF-DIA	GNOSIS RESULTS				Bł
Perform	self-diagnosis	for "ABS" with CON	ISULT-III.			
						(
		Self-diagnosis results				
	BATTE	RY VOLTAGE [ABNORM	IAL]			
<u>Is above</u>	displayed on	the self-diagnosis d	isplay?			ŀ
YES	>> Proceed to	o diagnosis procedu	re. Refer to <u>BRC-105,</u>	"Diagnosis Proced	lure".	
NO 	>> INSPECT	ION END				
Diagno	osis Procec	lure			INFOID:000000006203019	
1 .CHE0		OR				
1 Turr						
2. Disc	connect ABS a	actuator and electric	unit (control unit) conn	ector.		
3. Che	ck terminal for	r deformation, discor	nnection, looseness, ar	nd so on. If any ma	Ifunction is found, repair or	
4 Rec	ace terminal. onnect conne	ctor and then perfor	n self-diagnosis for "Al	SS" with CONSULT	T-III	
Is any ite	em indicated o	on the self-diagnosis	display?			
YES	>> GO TO 2.					
NO	>> Poor conr	nection of connector	terminal. Repair or rep	lace connector.		
2.сне	CK ABS ACT	UATOR AND ELEC	TRIC UNIT (CONTRO	OL UNIT) POWER	SUPPLY CIRCUIT AND	
GROUN	D CIRCUIT					
1. Turr	n ignition switc	h OFF.				
2. Disc	connect ABS a	ctuator and electric	unit (control unit) conn	ector.	d ala atria conit (a antral conit)	
3. Turr harr	n ignition switt	r terminal and group	check voltage between	ABS actuator and	a electric unit (control unit)	
		r terminal and groun				
ABS	actuator and ele	ctric unit (control unit)		Condition	Valtaga	(
C	onnector	Terminal		Condition	vollage	
	E26	16	Ground	Ignition switch: ON	Battery voltage	
	L30	10	Giouna	Ignition switch: OFF	Approx. 0 V	

4. Check 10A fusible link (59).

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

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[VDC/TCS/ABS]

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INFOID:000000006203017

INFOID:000000006203018

C1109 POWER AND GROUND SYSTEM

< DTC/CIRCUIT DIAGNOSIS >

[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

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

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 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.)

Diagnosis Procedure

INFOID:000000006203020

1.CHECK CONNECTOR

- 1. 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.

 $\mathbf{2}$.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	Voltago
Connector	Terminal		Condition	vollage
E36	16	Ground	Ignition switch: ON	Battery voltage
230	10	Ground	Ignition switch: OFF	Approx. 0 V

4. Check 10A fusible link (59).

C1109 POWER AND GROUND SYSTEM

< DTC/CIRCUIT DIAGNOSIS >

[VDC/TCS/ABS]

ABS actuator and ele	ctric unit (control unit)		IPDM E	E/R	continuity	
Connector	Terminal	Со	nnector	Terminal	Continuity	
E36	16		E15	59	Existed	
Reconnect ABS a	ctuator and electric	: unit (contro	l unit) connect	or.		
the inspection resul	t normal?					
ES >> GO TO 3.	raplace malfunction	ning compon	onto			
ADS POWER SUP						
Use 12 V lamp (normal rating 10 to	o 20 W) con	inected betwe	en E36 terminals "	16 and 4. With ignition	
Use 12 V lamp (switch ON check Check ABS motor	normal rating 10 to bulb illuminates cor supply under load	o 20 W) con rectly. ed condition	(connector E3	en E36 terminals 7 36 terminals 1 and 3	 and 4. vvith ignition 3). 	
Use 12 V lamp (switch ON check Check ABS motor the inspection resul	normal rating 10 to bulb illuminates cor supply under load t normal?	o 20 W) con rectly. ed condition	(connector E3	en E36 terminals 7 36 terminals 1 and 3	and 4. with ignition3).	
Use 12 V lamp (switch ON check Check ABS motor the inspection resul ES >> GO TO 4.	normal rating 10 to bulb illuminates cor supply under load t normal?	o 20 W) con rectly. ed condition	(connector E3	en E36 terminals 7	and 4. with ignition3).	
Use 12 V lamp (switch ON check Check ABS motor the inspection resul ES >> GO TO 4. O >> Check bo	normal rating 10 to bulb illuminates cor supply under load <u>t normal?</u> th power supply an	d 20 W) con rectly. ed condition d ground circ	inected betwe (connector E3 cuit.	en E36 terminals 7	3).	
Use 12 V lamp (switch ON check Check ABS motor the inspection resul ES >> GO TO 4. O >> Check bo CHECK ABS ACTU	normal rating 10 to bulb illuminates cor supply under load t normal? th power supply an JATOR AND ELEC	o 20 W) con rectly. ed condition d ground circ TRIC UNIT (cuit.	en E36 terminals 7 36 terminals 1 and 3 NIT) GROUND CIR	G and 4. With ignition	
Use 12 V lamp (switch ON check Check ABS motor the inspection resul ES >> GO TO 4. O >> Check bo CHECK ABS ACTU Turn ignition switc	normal rating 10 to bulb illuminates cor supply under load t normal? th power supply an JATOR AND ELEC	d ground circ TRIC UNIT (connector E3 (connector E3 cuit.	en E36 terminals 7 36 terminals 1 and 3 NIT) GROUND CIR	CUIT	
Use 12 V lamp (switch ON check Check ABS motor the inspection resul ES >> GO TO 4. O >> Check bo CHECK ABS ACTU Turn ignition switc Disconnect ABS a	normal rating 10 to bulb illuminates cor supply under load t normal? th power supply an JATOR AND ELEC th OFF. actuator and electric	20 W) con rectly. ed condition d ground circ TRIC UNIT (c unit (contro	(connector E3 cuit. (CONTROL UI	en E36 terminals 7 36 terminals 1 and 3 NIT) GROUND CIR	CUIT	
Use 12 V lamp (switch ON check Check ABS motor the inspection resul ES >> GO TO 4. IO >> Check bo CHECK ABS ACTU Turn ignition switc Disconnect ABS a Check continuity ground.	normal rating 10 to bulb illuminates cor supply under load t normal? th power supply an JATOR AND ELEC th OFF. actuator and electric between ABS actu	b 20 W) con rectly. ed condition d ground circ TRIC UNIT (c unit (contro ator and ele	(connector E3 cuit. (CONTROL UI ol unit) connector ctric unit (cont	en E36 terminals 36 terminals 1 and 3 NIT) GROUND CIR tor. trol unit) harness c	CUIT	
Use 12 V lamp (switch ON check Check ABS motor the inspection resul (ES >> GO TO 4. IO >> Check bo CHECK ABS ACTU Turn ignition switc Disconnect ABS a Check continuity ground.	normal rating 10 to bulb illuminates cor supply under load t normal? th power supply an JATOR AND ELEC th OFF. actuator and electric between ABS actu	20 W) con rectly. ed condition d ground circ TRIC UNIT (TRIC UNIT (c unit (contro ator and ele	cuit. (CONTROL UI CONTROL UI ol unit) connect	en E36 terminals ⁴ 36 terminals 1 and 3 NIT) GROUND CIR tor. trol unit) harness c	CUIT	
Use 12 V lamp (switch ON check Check ABS motor the inspection resul (ES >> GO TO 4. NO >> Check bo CHECK ABS ACTU Turn ignition switc Disconnect ABS a Check continuity ground.	normal rating 10 to bulb illuminates cor supply under load t normal? th power supply an JATOR AND ELEC th OFF. actuator and electric between ABS actu	o 20 W) con rectly. ed condition d ground circ TRIC UNIT (c unit (contro ator and ele	(connector E3 cuit. (CONTROL UI ol unit) connector ctric unit (cont	en E36 terminals ⁴ 36 terminals 1 and 3 NIT) GROUND CIR tor. trol unit) harness c	CUIT	
Use 12 V lamp (switch ON check Check ABS motor the inspection resul (ES >> GO TO 4. NO >> Check bo .CHECK ABS ACTU Turn ignition switc Disconnect ABS a Check continuity ground.	normal rating 10 to bulb illuminates cor supply under load t normal? th power supply an JATOR AND ELEC th OFF. actuator and electric between ABS actu	20 W) con rectly. ed condition d ground circ TRIC UNIT (c unit (contro ator and ele	cuit. (CONTROL UI CONTROL UI ol unit) connect ctric unit (cont Continuity	en E36 terminals ⁴ 36 terminals 1 and 3 NIT) GROUND CIR tor. trol unit) harness c	CUIT	

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) [VDC/TCS/ABS]

< DTC/CIRCUIT DIAGNOSIS >

C1110 ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)

Description

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

DTC Logic

INFOID:000000006203022

INFOID:000000006203021

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. 2.

Perform self-diagnosis for "ABS" with CONSULT-III. 3.

Self-diagnosis results	
CONTROLLER FAILURE	

Is above displayed on the self-diagnosis display?

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

NO >> INSPECTION END

Diagnosis Procedure

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:000000006203024

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

INFOID:000000006203023
C1111 ABS MOTOR, MOTOR RELAY SYSTEM

< DTC/CIRCUIT DIAGNOSIS >

C1111 ABS MOTOR, MOTOR RELAY SYSTEM

Description

PUMP

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

MOTOR

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

DTC Logic

DTC DETECTION LOGIC

DTC	Display item	Malfunction detected condition	Possible cause
C1111		During the actuator motor operating with ON, when the actuator motor turns OFF, or when the control line for actuator motor relay is open.	Harness or connector ABS actuator and electric unit
onn		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)
DTC CC	NFIRMATION PROCE	DURE	
1. CHEC	CK SELF-DIAGNOSIS RE	SULTS	
Perform	self-diagnosis for "ABS" w	ith CONSULT-III.	
	Self-diagnosis	results	
	PUMP MOT	OR	
Is above	displayed on the self-diag	inosis display?	ala una ll
YES NO	>> Proceed to diagnosis p >> INSPECTION END	procedure. Refer to <u>BRC-109, "Diagnosis Proce</u>	<u>dure"</u> .
Diagno	sis Procedure		
Liagino			INFOID:00000006203027
1. CHEC	CK CONNECTOR		
 Turn Disc Chernological replation 	ignition switch OFF. onnect ABS actuator and ck terminal for deformatio ace terminal.	electric unit (control unit) connector. n, disconnect, looseness, and so on. If any ma	lfunction is found, repair or
4. Reco	onnect connector and ther	n perform self-diagnosis for "ABS" with CONSU	_T-III.
Is any ite	em indicated on the self-dia	agnosis display?	
YES	>> GO TO 2.	nnector terminal Replace or repair connector	
		TOR RELAT FOWER SUFFET CIRCOTT	
 1. Turn 2. Disc 3. Cheagrou 	orignition switch OFF. onnect ABS actuator and ck voltage between the A ind.	electric unit (control unit) connector. BS actuator and electric unit (control unit) harn	ess connector terminal and

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.

INFOID:000000006203025

INFOID:000000006203026

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C1111 ABS MOTOR, MOTOR RELAY SYSTEM

< DTC/CIRCUIT DIAGNOSIS >

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace malfunctioning components.

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

ABS actuator and electric 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:000000006203028

1.CHECK ACTIVE TEST

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

Test item	Display item	Dis	play
leschem	Display item	On	Off
	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, "Diagnosis Procedure"</u>.

Special Repair Requirement

INFOID:000000006203029

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".

>> END

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

< DTC/CIRCUIT DIAGNOSIS >

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

Description

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

INFOID:000000006203031

INFOID:000000006203030

DTC DETECTION LOGIC

DTC	Display item	Malfunction detected condition	Possible cause	D
C1113	G SENSOR		Harness or connector	
C1145	YAW RATE SENSOR		 ABS actuator and electric unit (control unit) 	
C11/6		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 sensorElectrical interference	
01140	SIDE G-SEN CIRCOTT		Vehicle driven on AWD rolling road	BRC

DTC CONFIRMATION PROCEDURE

1.CHECK SELF-DIAGNOSIS RESULTS

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

Self-diagnosis results	Н
G SENSOR	
YAW RATE SENSOR	1
SIDE G-SEN CIRCUIT	1
Is above displayed on the self-diagnosis display?	
YES >> Proceed to diagnosis procedure. Refer to <u>BRC-111, "Diagnosis Procedure"</u> . NO >> INSPECTION END	J
Diagnosis Procedure	К
1.CHECK CONNECTOR	
 Turn ignition switch OFF. Disconnect ABS actuator and electric unit (control unit) connector. Disconnect yaw rate/side/decel G sensor connector. 	L
 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. 	Μ
Is any item indicated on the self-diagnosis display?	
YES >> GO TO 2. NO >> Poor connection of connector terminal. Replace or repair connector.	Ν
2. CHECK YAW RATE/SIDE/DECEL G SENSOR HARNESS	\circ
1. Turn ignition switch OFF.	0

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

- 3. Disconnect yaw rate/side/decel G sensor connector.
- Check continuity between yaw rate/side/decel G sensor harness connector terminals and ABS actuator P and electric unit (control unit) harness connector terminals.

[VDC/TCS/ABS]

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

< DTC/CIRCUIT DIAGNOSIS >

ABS actuator and electric unit (control unit) Yaw rate/side/decel G sensor		Continuity		
Connector	Terminal	Connector	Terminal	Continuity
	13		4	
E26	14	D20	5	Evicted
E30	28	D30	2	EXISIEU
	29		6	

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace malfunctioning components.

 $\mathbf{3}$.check yaw rate/side/decel g sensor harness connector

Check continuity between G sensor harness connector terminal and ground.

Yaw rate/side/	decel G sensor	Continuity
Connector	Terminal	Continuity
	2 – 4	
	2 – 5	
D20	2 – 6	Not ovicted
D30	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.
- 4. 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.

5.CHECK YAW RATE/SIDE/DECEL G SENSOR 2

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

C1113, C1145, C1146 YAW RATE/SIDE/DECEL G SENSOR CUIT DIAGNOSIS > [VDC/TCS/ABS]

< DTC/CIRCUIT DIAGNOSIS >

Yaw rate/side/decel G	Harness	connector
sensor	Connector	Terminal
2		2
4	B38	4
5		5
6		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/	decel G sensor	Valtara
connector	Terminal	voltage
B38	5 – 2	2.5 – 4.5 V
030	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- G 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 ²
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 procedu	ure. Refer to <u>BRC-111, "Diagno</u>
Special Repair Requirement	

1.ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

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INFOID:000000006203033

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

< 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 <u>BRC-76</u>, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION : Special Repair Requirement".

>> END

C1115 WHEEL SENSOR

Description

INFOID:000000006203035

	ogic		INFOID:00000006203036
DTC DE	TECTION 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 pos- sible cause. Other possible causes tire radius (due to wrong size or pressure) interference.
DTC CC	ONFIRMATION PROCE	DURE	
1. CHE	CK SELF-DIAGNOSIS RE	SULTS	
Perform	self-diagnosis for "ABS" v	vith CONSULT-III.	
	Self-diagnosis		
le obovo	ABS SENSOR (ABNO	RIMAL JIGNALJ	
YFS	Second to diagnosis	<u>unosis display :</u> procedure Refer to BRC-115 "Diagnosis Proce	dure"
NO	>> INSPECTION END		<u>.</u>
Diagno	sis Procedure		INFOID:00000006203037
	NI -		
Never c	heck between wheel ser	nsor terminals.	
1. CHE0	CK TIRES		
Check a			
Oneon a	ir pressure, wear and size).	
Are air p	ir pressure, wear and size wind size win	e. ithin standard?	
Are air p	ir pressure, wear and size ressure, wear and size with >> GO TO 2.	e. <u>ithin standard?</u>	
Are air p YES NO 2 CUE	ir pressure, wear and size <u>ressure, wear and size wi</u> >> GO TO 2. >> Adjust air pressure, o	a. i <u>thin standard?</u> r replace tire.	
Are air p YES NO 2. CHE	ir pressure, wear and size ressure, wear and size wi >> GO TO 2. >> Adjust air pressure, o CK SENSOR AND SENSO	». i <u>thin standard?</u> r replace tire. DR ROTOR	
Are air p YES NO 2.CHEC • Check • Check	ir pressure, wear and size <u>ressure, wear and size wi</u> >> GO TO 2. >> Adjust air pressure, o CK SENSOR AND SENSO that there is no damage of that there is no deformati	e. <u>ithin standard?</u> r replace tire. OR ROTOR or adherence of foreign matter on the sensor roto on, misalignment, float, and backlash on the whe	or surface. el sensor and wheel sensor
Are air p YES NO 2.CHEC • Check • Check	ir pressure, wear and size ressure, wear and size wi >> GO TO 2. >> Adjust air pressure, o CK SENSOR AND SENSO that there is no damage of that there is no deformation ing surface.	e. <u>ithin standard?</u> r replace tire. OR ROTOR or adherence of foreign matter on the sensor roto on, misalignment, float, and backlash on the whe	or surface. el sensor and wheel sensor
Are air p YES NO 2.CHE0 • Check • Check mount • Check	ir pressure, wear and size ressure, wear and size wi >> GO TO 2. >> Adjust air pressure, o CK SENSOR AND SENSO that there is no damage of that there is no deformation ing surface. that the wheel sensor in i	e. <u>ithin standard?</u> r replace tire. DR ROTOR or adherence of foreign matter on the sensor roto on, misalignment, float, and backlash on the whe nstalled with no misalignment and backlash.	or surface. el sensor and wheel sensor
Are air p YES NO 2.CHEC • Check • Check mount • Check Are the s	ir pressure, wear and size ressure, wear and size wing Solution of the size	e. <u>ithin standard?</u> r replace tire. DR ROTOR or adherence of foreign matter on the sensor roto on, misalignment, float, and backlash on the whe nstalled with no misalignment and backlash. <u>ormal?</u>	or surface. el sensor and wheel sensor
Are air p YES NO 2.CHEC • Check • Check • Check mount • Check Are the s YES NO	ir pressure, wear and size ressure, wear and size wing >> GO TO 2. >> Adjust air pressure, on CK SENSOR AND SENSOR that there is no damage of that there is no deformation ing surface. that the wheel sensor in its sensor and sensor rotor not >> GO TO 3. >> Repair wheel sensor CONSULT-III.	e. <u>ithin standard?</u> r replace tire. OR ROTOR or adherence of foreign matter on the sensor rotor on, misalignment, float, and backlash on the whe nstalled with no misalignment and backlash. <u>ormal?</u> mount or replace sensor rotor. Then perform se	or surface. el sensor and wheel sensor elf-diagnosis for "ABS" with
Are air p YES NO 2.CHEC • Check • Check • Check mount • Check <u>Are the s</u> NO 3.CHEC	ir pressure, wear and size ressure, wear and size winch >> GO TO 2. >> Adjust air pressure, of CK SENSOR AND SENSOR that there is no damage of that there is no deformation that there is no deformation that there is no deformation that the wheel sensor in its sensor and sensor rotor non >> GO TO 3. >> Repair wheel sensor CONSULT-III. CK CONNECTOR	e. <u>ithin standard?</u> r replace tire. DR ROTOR or adherence of foreign matter on the sensor rotor on, misalignment, float, and backlash on the whe nstalled with no misalignment and backlash. <u>ormal?</u> mount or replace sensor rotor. Then perform so	or surface. el sensor and wheel sensor elf-diagnosis for "ABS" with
Are air p YES NO 2.CHEC • Check • Check • Check MO YES NO 3.CHEC	ir pressure, wear and size ressure, wear and size winch >> GO TO 2. >> Adjust air pressure, of CK SENSOR AND SENSOR that there is no damage of that there is no deformation that there is no deformation that there is no deformation that the wheel sensor in its sensor and sensor rotor non >> GO TO 3. >> Repair wheel sensor CONSULT-III. CK CONNECTOR in ignition switch OFF.	e. <u>ithin standard?</u> r replace tire. DR ROTOR or adherence of foreign matter on the sensor rotor on, misalignment, float, and backlash on the whe nstalled with no misalignment and backlash. <u>ormal?</u> mount or replace sensor rotor. Then perform se	or surface. el sensor and wheel sensor elf-diagnosis for "ABS" with
Are air p YES NO 2.CHEC • Check • Check • Check mount • Check Are the s YES NO 3.CHEC 1. Turr 2. Disc	ir pressure, wear and size <u>ressure, wear and size wi</u> >> GO TO 2. >> Adjust air pressure, o CK SENSOR AND SENSO that there is no damage of that there is no deformation ing surface. that the wheel sensor in its sensor and sensor rotor n >> GO TO 3. >> Repair wheel sensor CONSULT-III. CK CONNECTOR ignition switch OFF. connect ABS actuator and connect malfunctioning who	electric unit (control unit) connector.	or surface. eel sensor and wheel sensor elf-diagnosis for "ABS" with
Are air p YES NO 2.CHEC • Check • Check • Check • Check Mount • Check Are the s YES NO 3.CHEC 1. Turr 2. Disc 3. Disc 4. Che	ir pressure, wear and size ressure, wear and size wing >> GO TO 2. >> Adjust air pressure, of CK SENSOR AND SENSOR that there is no damage of that there is no deformation that the wheel sensor in it sensor and sensor rotor none >> GO TO 3. >> Repair wheel sensor CONSULT-III. CK CONNECTOR in ignition switch OFF. connect ABS actuator and connect malfunctioning which terminal to see if it is a	ex. (thin standard? r replace tire. DR ROTOR or adherence of foreign matter on the sensor rotor on, misalignment, float, and backlash on the whe nstalled with no misalignment and backlash. ormal? mount or replace sensor rotor. Then perform se electric unit (control unit) connector. beel sensor connector. deformed, disconnected, loose, etc., Repair or r	or surface. el sensor and wheel sensor elf-diagnosis for "ABS" with
Are air p YES NO 2.CHEC • Check • Check • Check MO • Check Are the s YES NO 3.CHEC 1. Turr 2. Disc 3. Disc 4. Check	ir pressure, wear and size ressure, wear and size wing >> GO TO 2. >> Adjust air pressure, of CK SENSOR AND SENSOR that there is no damage of that there is no deformation ing surface. that the wheel sensor in it sensor and sensor rotor nong >> GO TO 3. >> Repair wheel sensor CONSULT-III. CK CONNECTOR in ignition switch OFF. connect ABS actuator and connect malfunctioning which terminal to see if it is dition is found. connect connectors and the	ex. (thin standard? r replace tire. OR ROTOR or adherence of foreign matter on the sensor rotor on, misalignment, float, and backlash on the whe nstalled with no misalignment and backlash. ormal? mount or replace sensor rotor. Then perform set electric unit (control unit) connector. beel sensor connector. deformed, disconnected, loose, etc., Repair or r	r surface. el sensor and wheel sensor elf-diagnosis for "ABS" with
Are air p YES NO 2.CHEC • Check • Check • Check • Check Mounti • Check Are the s YES NO 3.CHEC 1. Turr 2. Disc 3. Disc 4. Che 5. Rec	ir pressure, wear and size ressure, wear and size winch >> GO TO 2. >> Adjust air pressure, of CK SENSOR AND SENSOR that there is no damage of that there is no deformation of that there is no deformation that the wheel sensor in its sensor and sensor rotor no >> GO TO 3. >> Repair wheel sensor CONSULT-III. CK CONNECTOR in ignition switch OFF. connect ABS actuator and connect malfunctioning which ck terminal to see if it is dition is found. onnect connectors and the principated on the self-d	e. ithin standard? r replace tire. DR ROTOR or adherence of foreign matter on the sensor rotor on, misalignment, float, and backlash on the whe nstalled with no misalignment and backlash. ormal? mount or replace sensor rotor. Then perform se electric unit (control unit) connector. heel sensor connector. deformed, disconnected, loose, etc., Repair or no en perform self-diagnosis for "ABS" with CONSU iagnosis display?	or surface. el sensor and wheel sensor elf-diagnosis for "ABS" with replace it if any malfunction JLT-III.

BRC-115

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C1115 WHEEL SENSOR

< DTC/CIRCUIT DIAGNOSIS >

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

4.CHECK WHEEL SENSOR HARNESS

Management of the set of the start of the start of the set

- 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 terminarior signal circuit					
ABS actuator and electric unit (control unit)		Wheel	Continuity		
Connector	Terminal	Connector	Terminal	Continuity	
E36	12	E39 (Front RH)	4		
	27	E22 (Front LH)	2	Evisted	
	15	B41 (Rear RH)	8	LAISted	
	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
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
	12, 21	E36		Not existed
F26	27, 23		3, 4	
E30	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.
- 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

1.CHECK DATA MONITOR

INFOID:000000006203038

C1115 WHEEL SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[VDC/TCS/ABS]

Select "ABS", "DATA MONITOR" "RR LH SENSOR" and "RR RH S	in order with CONSULT-III, select ENSOR", and check the vehicle sp	: "FR LH SENSOR", "FR RH SENSOR", eed.	А
Wheel sensor	Vehicle speed (DATA MONITOR)		
FR LH SENSOR		-	В
FR RH SENSOR	Nearly matches the speedometer dis-		
RR LH SENSOR	play (±10% or less)		C
RR RH SENSOR	-		C
Is the inspection result normal?			
YES >> INSPECTION END NO >> Go to diagnosis proce	edure. Refer to BRC-115, "Diagnos	is Procedure".	D
Special Repair Requirement	nt	INFOID:00000006203039	
1.ADJUSTMENT OF STEERING	ANGLE SENSOR NEUTRAL POS	SITION	
Always perform the neutral position tor and electric unit (control unit) of 76, "ADJUSTMENT OF STEERIN	on adjustment for the steering angle or steering angle sensor and removed IC ANGLE SENSOR NEUTRAL PO	e sensor, when replacing the ABS actua- ving steering angle sensor. Refer to <u>BRC-</u> DSITION : Special Repair Requirement".	BR
>> END			G
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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. "Diagnosis Procedure"</u>.

NO >> INSPECTION END

Diagnosis Procedure

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

- 1. 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.
- 6. Start engine.
- 7. 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.

3.CHECK STOP LAMP SWITCH CLEARANCE

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

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.

INEOID:000000006203041

INFOID:000000006203040

INFOID:000000006203042

C1116 STOP LAMP SWITCH

< DTC/CIRCUIT DIAGNOSIS >

- 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 A ground.

ABS actuator unit (cont	and electric rol unit)	_	Condition	Voltage	
Connector	Terminal				
F36	8	Ground	Brake pedal is depressed	Battery voltage	
200	0	orodina	Brake pedal is released	Approx. 0 V	
Is the inspect	ion result ne	ormal?			
YES >> G	GO TO 5.	alaca malfu	otioning comp	nonto	
			ictioning compo	Jinems.	
			0 110 10		
Uneck stop la	ion result n	Refer to <u>Br</u> ormal?	<u>C-119, Compo</u>	onent inspection	
YFS >> II	NSPECTIO				
NO >> R	Replace stop	b lamp swite	h. Refer to <u>BR-</u>	20, "Exploded Vi	<u>ew"</u> .
Componer	nt Inspect	ion			INFOID:00000006203043
1 aurai: a		0.4//=====			
I.CHECK S	IOP LAMP	SWITCH			
2. Disconne 3. Check co	ect stop lam ontinuity bet	p switch co ween stop l	nnector. amp switch con	nector terminals.	
Stop lamp sw	vitch	Condit	ion	Continuity	
Terminal				-	
1 – 2	Releas (When	se stop lamp s i brake pedal i	witch s depressed.)	Existed	
	Push s (When	stop lamp swite brake pedal i	ch s released.)	Not existed	
Is the inspect	ion result no	ormal?			
YES >> II		N END	b Dofor to PD	20 "Evoloded \/i	ow"
		iamp switt			<u>5w</u> .
Componer	nt Inspect	lon			INFOID:00000006203044
1. снеск s [.]	TOP LAMP	SWITCH			
1. Turn ignit	tion switch (OFF.			
2. Disconne	ect stop lam	p switch co	nnector.		
3. Check co	ontinuity bet	ween stop I	amp switch con	nector terminals.	
Stop Jamp sw	vitch				
Terminal		Condit	ion	Continuity	
	Releas (When	se stop lamp s i brake pedal i	witch s depressed.)	Existed	
1 – 2	Push s (When	stop lamp swite brake pedal i	ch s released.)	Not existed	
		10			

- <u>Is the inspection result normal?</u> YES >> INSPECTION END
- NO >> Replace stop lamp switch. Refer to <u>BR-20, "Exploded View"</u>.

BRC-119

C1118 AWD SYSTEM

Description

INFOID:000000006203045

INEOID:000000006203046

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)	 Harness or connector AWD communication line AWD control unit 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

4WD SYSTEM

Is above displayed on the self-diagnosis display?

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

NO >> INSPECTION END

Diagnosis Procedure

		CONTROL	LINIT
ILUNEUN	AVVD	CONTROL	

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-42, "DTC Index"</u>.

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

Special Repair Requirement

INFOID:000000006203048

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".

>> END

INFOID:000000006203047

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

INFOID:000000006203050

INFOID:000000006203049

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INFOID:000000006203051

DTC DETECTION LOGIC

DTC	Display item	Malfunction detected condition	Possible cause	D
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	E
C1124	RR LH IN ABS SOL	When the control unit detects a malfunction in the rear LH inlet solenoid circuit.	(control unit)	BRC
C1126	RR RH IN ABS SOL	When the control unit detects a malfunction in the rear RH inlet solenoid circuit.		

DTC CONFIRMATION PROCEDURE

1.CHECK SELF-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, "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.
- 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 3.

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

BRC-121

[VDC/TCS/ABS]

C1120, C1122, C1124, C1126 IN ABS SOL

< DTC/CIRCUIT DIAGNOSIS >

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.
- 3. 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	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:000000006203052

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.

Testitem	Display itom		Display	
iest item	Display item	Up	Keep	Down
	FR RH IN SOL	Off	On	On
	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 OUT SOL	Off	Off	On*
	CV2	Off	Off	Off
	SV2	Off	Off	Off
	RR RH IN SOL	Off	On	On
	RR RH OUT SOL	Off	Off	On*
	CV2	Off	Off	Off
	SV2	Off	Off	Off
	RR LH IN SOL	Off	On	On
	RR LH OUT SOL	Off	Off	On*
	CV1	Off	Off	Off
	SV1	Off	Off	Off

*: On for 1 to 2 seconds after the select, and then Off.

C1120, C1122, C1124, C1126 IN ABS SOL

[VDC/TCS/ABS] < DTC/CIRCUIT DIAGNOSIS > Is the inspection result normal? А YES >> INSPECTION END NO >> Go to diagnosis procedure. Refer to <u>BRC-121, "Diagnosis Procedure"</u>. Special Repair Requirement INFOID:000000006203053 В 1.ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION Always perform the neutral position adjustment for the steering angle sensor, when replacing the ABS actua-С tor 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". D

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C1121, C1123, C1125, C1127 OUT ABS SOL

< DTC/CIRCUIT DIAGNOSIS >

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

INFOID:000000006203055

INFOID:00000006203054

[VDC/TCS/ABS]

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 <u>BRC-124, "Diagnosis Procedure"</u>.

NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000006203056

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.
- 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 3.

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

BRC-124

C1121, C1123, C1125, C1127 OUT ABS SOL

< DTC/CIRCUIT DIAGNOSIS >

[VDC/TCS/ABS]

Е

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INFOID:000000006203057

${f 3.}$ check solenoid, VDC switch-over valve and actuator relay power supply circuit А 1. Turn ignition switch OFF. Disconnect ABS actuator and electric unit (control unit) connector. 2. 3. Check voltage between ABS actuator and electric unit (control unit) harness connector terminal and В ground. ABS actuator and electric unit (control unit) Voltage Connector Terminal E36 2 Battery voltage Ground D

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace malfunctioning components.

${f 4.}$ 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. BRC

ABS actuator and electric 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

Select "ABS", "ACTIVE TEST" and each test menu item in order with CONSULT-III. 1.

On the display, select "Up", "Keep", and "Down", and check that the system operates as shown in the 2. table below.

Testitem	Dioplay itom		Display		- r
iest tient	Display item	Up	Кеер	Down	
	FR RH IN SOL	Off	On	On	L
	FR RH OUT SOL	Off	Off	On*	
FR RH SOL	CV1	Off	Off	Off	_
	SV1	Off	Off	Off	M
	FR LH IN SOL	Off	On	On	
	FR LH OUT SOL	Off	Off	On*	N
FR LH SOL	CV2	Off	Off	Off	
	SV2	Off	Off	Off	
	RR RH IN SOL	Off	On	On	0
	RR RH OUT SOL	Off	Off	On*	
	CV2	Off	Off	Off	P
	SV2	Off	Off	Off	_ '
	RR LH IN SOL	Off	On	On	
	RR LH OUT SOL	Off	Off	On*	
	CV1	Off	Off	Off	
	SV1	Off	Off	Off	

*: On for 1 to 2 seconds after the select, and then Off.

C1121, C1123, C1125, C1127 OUT ABS SOL

< DTC/CIRCUIT DIAGNOSIS >

<u>Is the inspection result normal?</u> YES >> INSPECTION END

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

Special Repair Requirement

INFOID:000000006203058

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-</u><u>76. "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION : Special Repair Requirement"</u>.

>> END

C1130 ENGINE SIGNAL

Description

ABS actuator and electric unit (control unit) and ECM exchange the engine signal via CAN communication $\ensuremath{\,{}_{\mathsf{B}}}$ line.

DTC Logic

INFOID:000000006203060

INFOID:000000006203059

DTC DETECTION LOGIC

DTC	Display item	Malfunction detected condition	Possible cause	D
C1130	ENGINE SIGNAL 1	ECM signals are invalid or ECM self diagnosis indicates a fault that prevents correct TCS operation.	 Harness or connector ABS actuator and electric unit (control unit) ECM CAN communication line 	E
DTC CC	NFIRMATION PROCE	DURE		BRC
1. CHEC	CK SELF-DIAGNOSIS RE	SULTS		
Perform	self-diagnosis for "ABS" w	ith CONSULT-III.		G
				G
	Self-diagnosis			
	displayed on the solf diag	NAL 1		Н
YES NO	 Proceed to diagnosis p INSPECTION END 	procedure. Refer to <u>BRC-127, "Diagnosis Proce</u>	dure".	I
Diagno	sis Procedure		INFOID:00000006203061	
1.снес	CK ENGINE SYSTEM			J
 Performself-or self-or Performself-or Performse	orm self-diagnosis for "EN diagnosis for "ENGINE" w orm self-diagnosis for "AB em indicated on the self-dia >> Repair or replace the a	IGINE" with CONSULT-III. Repair or replace ite ith CONSULT-III. S" with CONSULT-III. agnosis display? affected part.	ms indicated, then Perform	K
NO	>> INSPECTION END			L
Diagno	sis Procedure		INFOID:00000006203062	
1. CHEC	K ENGINE SYSTEM			Μ
 Performant Self-or Performant 	orm self-diagnosis for "EN diagnosis for "ENGINE" w orm self-diagnosis for "AB	IGINE" with CONSULT-III. Repair or replace ite ith CONSULT-III. S" with CONSULT-III.	ms indicated, then Perform	Ν
Is any ite	m indicated on the self-di	agnosis display?		~
YES NO	>> Repair or replace the a >> INSPECTION END	affected part.		0
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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

INFOID:000000006203064

INFOID:000000006203063

DTC DETECTION LOGIC

DTC	Display item	Malfunction detected condition	Possible cause
		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
	NOTONTONTON	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

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 <u>BRC-128, "Diagnosis Procedure"</u>.

NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000006203065

1.CHECK CONNECTOR

- 1. 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. Replace or repair connector.

 $\mathbf{2}$. 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.
- 3. 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

4. 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]

3. ABS POWER SUPPLY CHECK (UNDER LOAD CONDITION) А 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? В 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. Check continuity between ABS actuator and electric unit (control unit) harness connector terminals and 3. D ground. Е ABS actuator and electric unit (control unit) Continuity Connector Terminal E36 3, 4 Ground Existed BRC 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 INFOID:000000006203066 1. CHECK ACTIVE TEST Н Select "ABS". "ACTIVE TEST" and "ABS MOTOR" in order with CONSULT-III. 1 Select "On" and "Off" on screen. Make sure motor relay and actuator relay operates as shown in table 2. below. Display Test item Display item On Off MOTOR RELAY On Off ABS MOTOR ACTUATOR RIY On On Κ Is the inspection result normal? YES >> INSPECTION END NO >> Go to diagnosis procedure. Refer to BRC-128, "Diagnosis Procedure". Special Repair Requirement INFOID:000000006203067 1. ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION M 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-Ν 76, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION : Special Repair Requirement". >> END Ρ

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

INFOID-000000006203069

INFOID:00000006203068

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 connectorSteering 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?

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

NO >> INSPECTION END

Diagnosis Procedure

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 4. replace terminal.
- Reconnect connectors and then perform self-diagnosis for "ABS" with CONSULT-III. 5.

Is any item indicated on the self-diagnosis display?

YFS >> GO TO 3.

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

3.CHECK STEERING ANGLE SENSOR HARNESS

1. Turn ignition switch OFF.

2. 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

Revision: 2010 July

C1143, C1144 STEERING ANGLE SENSOR

< DTC/CIRCUIT DIAGNOSIS >

4. Turn ignition switch ON.

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

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

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace malfunctioning components.

4.CHECK DATA MONITOR

- 1. 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

1. Check for backlash [turn wheel to left then straight then right then straight (approx. 90°)].

2. 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 MONITOR)
Driving straight	±2.5 °
Turn 90 ° to right	Approx. +90 °
Turn 90 ° to left	Approx. –90 °

Is the inspection result normal?

YES >> INSPECTION END

NO >> Go to diagnosis procedure. Refer to <u>BRC-130, "Diagnosis Procedure"</u>.

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 <u>BRC-76, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION : Special Repair Requirement"</u>.

>> END

BRC-131

INFOID:000000006203072

[VDC/TCS/ABS]

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INFOID-00000000620307

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

INFOID:000000006203074

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 avail- able for 10 seconds.	 Brake fluid level low Brake fluid level switch failure Wiring to brake fluid level switch short circuit CAN bus failure Combination meter failure

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 <u>BRC-132, "Diagnosis Procedure"</u>.

NO >> INSPECTION END

Diagnosis Procedure

4	

Check brake fluid level. Refer to <u>BR-12, "Inspection"</u>.

Is the inspection result normal?

YES >> GO TO 2.

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

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

1. Turn ignition switch OFF.

- 2. Disconnect brake fluid level switch connector and combination meter connector.
- 3. 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.

BRC-132

INFOID:000000006203075

INFOID:000000006203073

C1155 BRAKE FLUID LEVEL SWITCH

[VDC/TCS/ABS] < DTC/CIRCUIT DIAGNOSIS > Is any item indicated on the self-diagnosis display? А YES >> GO TO 5. NO >> Poor connection of connector terminal. Replace or repair connector. 5. CHECK BRAKE FLUID LEVEL SWITCH 1. Turn ignition switch OFF. Disconnect brake fluid level switch connector. 2. 3. Check continuity between brake fluid level switch connector terminals. Brake fluid level switch Condition Continuity Connector Terminal D When brake fluid is full in the reservoir Not existed tank. E37 1 – 2 When brake fluid is empty in the reservoir Е Existed tank. Is the inspection result normal? YES >> GO TO 6. BRC NO >> Brake fluid level switch is malfunction. Replace reservoir tank. $\mathbf{6}.$ CHECK BRAKE FLUID LEVEL SWITCH CIRCUIT 1. Disconnect combination meter connector. Check continuity between brake fluid level switch harness connector terminals and combination meter 2. harness connector terminal and/or ground. Н Combination meter Brake fluid level switch Continuity Terminal Connector Terminal Connector M34 27 F37 Existed 1 Combination meter Continuity Connector Terminal M34 27 Ground Not existed Κ Brake fluid level switch Continuity Terminal Connector E37 2 Ground Existed Is the inspection result normal? M YES >> Replace ABS actuator and electric unit (control unit). NO >> Repair or replace malfunctioning components. Component Inspection INFOID:000000006203076 Ν **1.**CHECK BRAKE FLUID LEVEL SWITCH 1. Turn ignition switch OFF. Disconnect brake fluid level switch connector. 2. Check continuity between brake fluid level switch connector terminals. 3. Brake fluid level switch Condition Continuity Connector Terminal When brake fluid is full in the reservoir Not existed tank.

1 - 2

tank.

E37

Existed

When brake fluid is empty in the reservoir

C1155 BRAKE FLUID LEVEL SWITCH

< DTC/CIRCUIT DIAGNOSIS >

<u>Is the inspection result normal?</u> YES >> INSPECTION END

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

Special Repair Requirement

INFOID:000000006203077

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-</u><u>76. "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION : Special Repair Requirement"</u>.

>> END

C1164, C1165 CV SYSTEM

Description

INFOID:000000006203078

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В

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The cut valv	e shuts off the norma	I brake fluid path	from the master	r cylinder, whe	n VDC/TCS is activated.	
	-					

DTC Logic

INFOID:000000006203079

DTC DETECTION LOGIC

DTC	Display item		Malfunct	tion detected condition	Possible cause
C1164	CV1	VDC side or sh	switch-over sole is open circuit or orted to the pow	enoid valve (CV1) on the primary shorted, or the control line is open er supply or the ground.	Harness or connector APS actuator and electric unit
C1165	CV2	VDC side or sh	switch-over sole is open circuit or orted to the pow	shorted, or the control line is open er supply or the ground.	(control unit)
DTC CC	NFIRMATION PR	OCEDUR	Ε		
1. CHEC	K SELF-DIAGNOSI	S RESULT	S		
Perform	self-diagnosis for "Al	BS" with C	ONSULT-III.		
	Self-diag	nosis results			
ls above	displayed on the sel	f-diagnosis	display?		
YES NO	>> Proceed to diagr >> INSPECTION END	iosis proce	dure. Refer to	BRC-135, "Diagnosis Proce	dure".
Diagno	sis Procedure				INFOID:00000006203080
1.снес	K CONNECTOR				
1. Turn 2. Disc 3. Chee	ignition switch OFF. onnect ABS actuator ck terminal for deforr	r and electi nation, disc	ic unit (contro connection, lo	ol unit) connector. oseness, and so on. If any m	alfunction is found, repair or
4. Reco	ice terminal. Innect connectors ai	nd then pe	form self-diad	gnosis for "ABS" with CONSL	JLT-III.
<u>Is any ite</u>	m indicated on the s	elf-diagnos	<u>sis display?</u>	5	
YES	>> GO TO 2.	of composit	or torminal D		
1. Turn 2. Disc 3. Cheo grou	ignition switch OFF. onnect ABS actuator ck voltage between nd.	r and electr ABS actu	ic unit (contro ator and elec	ol unit) connector. ctric unit (control unit) harne	ess connector terminal and
ARS act	uator and electric unit (co	ontrol unit)			
Cor	nector Terr	ninal	—	Voltage	
[E36	2	Ground	Battery voltage	

YES >> GO TO 3.

NO >> Repair or replace malfunctioning components.

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

BRC-135

C1164, C1165 CV SYSTEM

< DTC/CIRCUIT DIAGNOSIS >

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	onnector 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:000000006203081

[VDC/TCS/ABS]

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.

Tastitam	Display itom	Display		
lest tient	Display terri	Up	ACT UP	ACT KEEP
FR RH ABS SOLENOID	FR RH IN SOL	Off	Off	Off
	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

*: 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, "Diagnosis Procedure"</u>.

Special Repair Requirement

INFOID:000000006203082

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, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION : Special Repair Requirement"</u>.

>> END

C1166, C1167 SV SYSTEM

< DTC/CIRCUIT DIAGNOSIS >

C1166, C1167 SV SYSTEM

Description

INFOID:000000006203083

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

DTC Logic

INFOID:000000006203084

DTC DETECTION LOGIC

	Display item	Malfund	ction detected condition	Possible cause
C1166	SV1	VDC switch-over sol side is open circuit o or shorted to the pov	enoid valve (SV1) on the primary r shorted, or the control line is open ver supply or the ground.	Harness or connector ABS actuator and electric unit
C1167	SV2	VDC switch-over sol side is open circuit o or shorted to the pov	enoid valve (SV2) on the secondary r shorted, or the control line is open ver supply or the ground.	(control unit)
отс сс	ONFIRMATION PRO	CEDURE		
1.сне	CK SELF-DIAGNOSIS	RESULTS		
Perform	self-diagnosis for "ABS	S" with CONSULT-III.		
	Qalf dia ma			
	Self-diagno			
	S	/2		
s above	displayed on the self-	diagnosis display?		
YES NO	>> Proceed to diagnos >> INSPECTION END	sis procedure. Refer to	o <u>BRC-137, "Diagnosis Proce</u>	dure".
Diagno	sis Procedure			INFOID:00000006203085
Diagno 1.снес	osis Procedure CK CONNECTOR			INFOID:00000006203085
Diagno 1. CHEO 1. Turr 2. Disc 3. Che repla 4. Rec	DSIS Procedure CK CONNECTOR ignition switch OFF. connect ABS actuator a ck terminal for deforma ace terminal. onnect connectors and	nd electric unit (contr tion, disconnection, lo	ol unit) connector. poseness, and so on. If any m anosis for "ABS" with CONSL	INFOID:00000000203085 alfunction is found, repair or JLT-III.
Diagno 1 .CHEO 1. Turr 2. Disc 3. Che repla 4. Rec is any ite	DSIS Procedure CK CONNECTOR ignition switch OFF. connect ABS actuator a ck terminal for deforma ace terminal. onnect connectors and em indicated on the sel	and electric unit (contr ation, disconnection, lo then perform self-dia <u>f-diagnosis display?</u>	ol unit) connector. poseness, and so on. If any m gnosis for "ABS" with CONSL	INFOID:000000005203085 alfunction is found, repair or JLT-III.
Diagno 1. CHEO 1. Turr 2. Disc 3. Che repla 4. Rec <u>s any ite</u> YES	DSIS Procedure CK CONNECTOR in ignition switch OFF. connect ABS actuator a ck terminal for deforma ace terminal. onnect connectors and em indicated on the sel >> GO TO 2.	and electric unit (contr ation, disconnection, lo then perform self-dia f-diagnosis display?	ol unit) connector. poseness, and so on. If any m ignosis for "ABS" with CONSL	alfunction is found, repair or
Diagno 1. CHEO 1. Turr 2. Disc 3. Che repla 4. Rec <u>Is any ite</u> YES NO 2. CHEO	DSIS Procedure CK CONNECTOR ignition switch OFF. connect ABS actuator a ck terminal for deforma ace terminal. onnect connectors and em indicated on the sel >> GO TO 2. >> Poor connection of	nd electric unit (contr ation, disconnection, lo then perform self-dia <u>f-diagnosis display?</u> connector terminal. F	ol unit) connector. poseness, and so on. If any m gnosis for "ABS" with CONSL Replace or repair connector.	alfunction is found, repair or JLT-III.
Diagno 1.CHEC 1. Turr 2. Disc 3. Che repla 4. Rec <u>is any ite</u> YES NO 2.CHEC 1. Turr 2. Disc 3. Che grou	DSIS Procedure CK CONNECTOR ignition switch OFF. connect ABS actuator a ck terminal for deforma ace terminal. onnect connectors and em indicated on the sel >> GO TO 2. >> Poor connection of CK SOLENOID, VDC S ignition switch OFF. connect ABS actuator a ck voltage between A and.	and electric unit (contr ation, disconnection, lo then perform self-dia <u>f-diagnosis display?</u> connector terminal. F WITCH-OVER VALVI and electric unit (contr BS actuator and ele	ol unit) connector. Doseness, and so on. If any m Ignosis for "ABS" with CONSL Replace or repair connector. E AND ACTUATOR RELAY P ol unit) connector. ctric unit (control unit) harne	alfunction is found, repair or JLT-III.
Diagno 1.CHEO 1. Turr 2. Disc 3. Che repla 4. Rec is any ite YES NO 2.CHEO 1. Turr 2. Disc 3. Che grou ABS ac	DSIS Procedure CK CONNECTOR in ignition switch OFF. connect ABS actuator a ck terminal for deforma ace terminal. onnect connectors and em indicated on the sel >> GO TO 2. >> Poor connection of CK SOLENOID, VDC S in ignition switch OFF. connect ABS actuator a ck voltage between A and.	and electric unit (contr ation, disconnection, lo then perform self-dia <u>f-diagnosis display?</u> connector terminal. F WITCH-OVER VALVI and electric unit (contr BS actuator and ele	ol unit) connector. Doseness, and so on. If any m Ignosis for "ABS" with CONSL Replace or repair connector. E AND ACTUATOR RELAY P ol unit) connector. ctric unit (control unit) harne	alfunction is found, repair or JLT-III.
Diagno 1. CHEO 1. Turr 2. Disc 3. Che repla 4. Rec YES NO 2. CHEO 1. Turr 2. Disc 3. Che grou ABS ac Col	Desis Procedure CK CONNECTOR in ignition switch OFF. connect ABS actuator a ck terminal for deforma ace terminal. onnect connectors and em indicated on the sel >> GO TO 2. >> Poor connection of CK SOLENOID, VDC S in ignition switch OFF. connect ABS actuator a ck voltage between A and.	and electric unit (contr ation, disconnection, lo then perform self-dia <u>f-diagnosis display?</u> connector terminal. F WITCH-OVER VALVI and electric unit (contr BS actuator and ele	ol unit) connector. Doseness, and so on. If any m Ignosis for "ABS" with CONSL Replace or repair connector. E AND ACTUATOR RELAY P ol unit) connector. ctric unit (control unit) harne	alfunction is found, repair or JLT-III.

NO >> Repair or replace malfunctioning components.

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

BRC-137

C1166, C1167 SV SYSTEM

< DTC/CIRCUIT DIAGNOSIS >

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	onnector 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:000000006203086

[VDC/TCS/ABS]

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.

Tastitam	Display itom	Display		
lest tient	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 ABS SOLENOID	RR RH IN SOL	Off	Off	Off
	RR RH OUT SOL	Off	Off	Off
(ACT)	CV2	Off	On	On
	SV2	Off	On*	Off
RR LH ABS SOLENOID	RR LH IN SOL	Off	Off	Off
	RR LH OUT SOL	Off	Off	Off
(ACT)	CV1	Off	On	On
	SV1	Off	On*	Off

*: 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, "Diagnosis Procedure"</u>.

Special Repair Requirement

INFOID:000000006203087

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, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION : Special Repair Requirement"</u>.

>> END

C1176 STOP LAMP SW2

< DTC/CIRCUIT DIAGNOSIS >

C1176 STOP LAMP SW2

Description

INFOID:000000006203088

When the brake pedal is depressed, ASCD brake switch is turned OFF and stop lamp	switch is turned ON.
DTC Logic	INFOID:00000006203089

DTC DETECTION LOGIC

DTC	Display item	Malfunction detected condition	Possible cause
C1176	C1176 STOP LAMP SW2 When a ASCD brake switch signal is not input where the brake pedal is depressed. • Harness or connected • ASCD brake switch • ABS actuator and electron (control unit)		 Harness or connector ASCD brake switch ABS actuator and electric unit (control unit)
DTC CC	NFIRMATION PROCE	DURE	
1. CHEC	CK SELF-DIAGNOSIS RE	SULTS	PD
Perform	self-diagnosis for "ABS" w	/ith CONSULT-III.	
	Self-diagnosis	results	G
	STOP LAMP	SW2	
<u>Is above</u> YES NO	 displayed on the self-diag > Proceed to diagnosis > INSPECTION END 	<u>gnosis display?</u> procedure. Refer to <u>BRC-139, "Diagnosis Proce</u>	dure". H
Diagno	sis Procedure		INFOID:00000006203090
1.снес	CK CONNECTOR		
1. Turn 2. Disc 3. Cheo	ignition switch OFF. onnect ABS actuator and ck terminal for deformation	electric unit (control unit) connector. n, disconnection, looseness, and so on. If any m	J alfunction is found, repair or
4. Reco	onnect connectors and the	en perform self-diagnosis for "ABS" with CONSL	JLT-III. K
<u>Is any ite</u>	m indicated on the self-di	agnosis display?	
YES	>> GO TO 2.		L
		nnector terminal. Replace or repair connector.	
		H CLEARANCE	D.4
Check A	SCD brake switch clearan	ice. Refer to <u>BR-9, "Inspection and Adjustment"</u> .	IVI
YFS	>> GOTO3		
NO	>> Adjust ASCD brake sv	vitch clearance. Refer to <u>BR-9, "Inspection and </u>	Adjustment" N
3. снес	CK ASCD BRAKE SWITC	Н	
1. Turn 2. Disc	ignition switch OFF. onnect ASCD brake switc	h connector.	0
J. UNE	ck continuity between ASC	JU Drake Switch connector terminals.	
ASCD br	ake switch		P

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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C1176 STOP LAMP SW2

< DTC/CIRCUIT DIAGNOSIS >

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

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 brake switch	Voltage
Connector Terminal	- voliage
E112 1 C	Bround 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

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

ASCD brake switch		ABS actuator and electric unit (control 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

1.CHECK ASCD BRAKE SWITCH

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

ASCD brake switch	Condition	Continuity	
Terminal	Condition		
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

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. "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION : Special Repair Requirement"</u>.

>> END

BRC-140

INFOID:000000006203091

INFOID:000000006203092

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

INFOID:000000006203094

DTC DETECTION LOGIC

DTC	DTC Display item Malfunction detected condition Possible cause				
U1000	CAN COMM CIRCUIT	When ABS actuator and electric unit (control unit) is not transmitting or receiving CAN communication signal for 2 seconds or more.• CAN communication lin • ABS actuator and electric (control unit)			
DTC CO	ONFIRMATION PROCE	DURE			
1. CHE	CK SELF-DIAGNOSIS RE	SULTS		G	
Perform	self-diagnosis for "ABS" w	vith CONSULT-III.			
	Self-diagnosis	results		Н	
	CAN COMM C	RCUIT			
ls above	e displayed on the self-diag	gnosis display?			
YES	>> Proceed to diagnosis	procedure. Refer to <u>BRC-141, "Diagnosis Proce</u>	<u>dure"</u> .		
Diago				J	
Diagno			INFOID:00000006203095		
1. CHE	CK CONNECTOR			V	
1. Turi	n ignition switch OFF.			N	
2. Dise 3. Che	connect ABS actuator and eck terminal for deformation	electric unit (control unit) connector. n. disconnection. looseness. and so on. If any m	alfunction is found. repair or		
repl	ace terminal.			L	
4. Rec	connect connector and per	form self-diagnosis for "ABS" with CONSULT-III.			
	Self-diagnosis	results		M	
	CAN COMM C	RCUIT			
Is above	e displayed on the self-diag	gnosis display?		N	
YES NO	>> Go to <u>LAN-15, "Troub</u> >> INSPECTION END	le Diagnosis Flow Chart".		IN	
Specia	al Repair Requiremen	nt	INFOID:00000006203096	0	
1.adji	JSTMENT OF STEERING	ANGLE SENSOR NEUTRAL POSITION			
Always	perform the neutral positio	n adjustment for the steering angle sensor, whe	en replacing the ABS actua-	Ρ	

tor and electric unit (control unit) or steering angle sensor and removing steering angle sensor. Refer to <u>BRC-</u>76, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION : Special Repair Requirement".

INFOID:000000006203093

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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

INFOID:000000006203098

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>, "Diagnosis Procedure".
- NO >> INSPECTION END

Diagnosis Procedure

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 <u>BRC-178. "Exploded View"</u>.
- NO >> Repair or replace the harnesses and connectors.

Special Repair Requirement

INFOID:000000006203100

INFOID:00000006203099

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".

>> END

INFOID:000000006203097

PARKING BRAKE SWITCH

< DTC/CIRCUIT DIAGNOSIS >

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

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.

	Conditio	on	Brake warning lamp illum	ination status		_
When the p tion	arking brake	switch is op	oera-ON			E
When the p ation.	When the parking brake swit ation.		oper-OFF			BRC
Is the insp	ection resu	ult normal	?			
YES > NO >	> INSPEC > Go to dia	TION ENI agnosis pi	D rocedure. Refer to <u>BRC-143</u>	3, "Diagnos	is Procedure".	G
Diagnos	is Proce	dure			INFOID:00000006203103	
1.CHECH	(PARKING	G BRAKE	SWITCH			Η
 Turn i Discord Check 	gnition swi nnect parki c continuity	tch OFF. ing brake between	switch connector. parking brake switch conne	ector termin	al and ground.	Ι
Parking b	rake switch		Que divier	Orationity		J
Connector	Terminal		Condition	Continuity		
E103	1	Ground	When the parking brake switch is operated.	Existed		Κ
2100	•	Cround	When the parking brake switch is not operated.	Not existed		
Is the insp	ection resu	ult normal	<u>?</u>			L
YES > NO > 2.CHECH	> GO TO 2 > Replace (COMBIN	2. parking b ATION MI	rake switch. ETER			Μ
Check if th <u>tion"</u> . Is the insp	ne indicatio	n and ope	eration of combination mete <u>?</u>	er are norma	al. Refer to <u>MWI-27, "CONSULT-III Func-</u>	Ν
YES > NO >	> INSPEC > Check A	TION ENI BS actuat	D tor and electric unit (control	unit). Refe	r to BRC-94, "CONSULT-III Function".	0
Compor	nent Insp	ection			INFOID:000000006203104	
1.снеси	(PARKING	BRAKE	SWITCH			Ρ
 Turn ig Discore 	gnition swi nnect parki	tch OFF. ing brake	switch connector.			

3. Check continuity between parking brake switch connector terminal and ground.

INFOID:000000006203101

INFOID:000000006203102

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PARKING BRAKE SWITCH

< DTC/CIRCUIT DIAGNOSIS >

Parking brake switch			Condition	Continuity
Connector	Terminal		Condition	Continuity
E102	2 1	1 Ground	When the parking brake switch is operated.	Existed
		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 <u>PB-6. "Exploded View"</u>.
VDC OFF SWITCH

< DTC/CIRCUIT DIAGNOSIS >

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.

Conc	lition	VDC OFF indicator lan	np illumination status		
VDC OFF switch: C	N	ON	1		F
VDC OFF switch: C	DFF	OF	F		
Is the inspection	result normal?				
YES >> INSP NO >> Go t	PECTION END o diagnosis proc	edure. Refer to <u>BR</u>	<u>C-145, "Diagnosi</u>	<u>s Procedure"</u> .	BRC
Diagnosis Pro	ocedure			INFOID:000000062	203107
1. CHECK VDC	OFF SWITCH				0
 Turn ignition Disconnect ¹ Check contir 	switch OFF. VDC OFF switch nuity between VI	connector. DC OFF switch con	nector terminals.		Н
VDC OFF switch	Co	ndition	Continuity		
Terminal					
1 0	When VDC OFF s	witch is hold pressed.	Existed		J
1 – 2	When releasing VI	DC OFF switch.	Not existed		
Is the inspection	result normal?				
YES >> GO	TO 2.			20 A	K

NO >> VDC OFF switch is malfunctioning. Replace VDC OFF switch.

2. CHECK VDC OFF SWITCH HARNESS

- Disconnect ABS actuator and electric unit (control unit) connector. 1.
- 2. Check continuity between VDC OFF switch connector terminals and ABS actuator and electric unit (control unit) connector terminal and/or ground.

ABS actuator a (contr	and electric unit ol unit)	VDC OFF switch		Continuity
Connector	Terminal	Connector	Terminal	
E36	5	M5	1	Existed

ABS actuator and electric unit (control unit)			Continuity
Connector	Terminal		Continuity
E36	5	Ground	Not existed

VDC OF	F switch		Continuity
Connector	Terminal		Continuity
M5	2	Ground	Existed

Is the inspection result normal?

INFOID:000000006203105

INFOID:000000006203106

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VDC OFF SWITCH

< DTC/CIRCUIT DIAGNOSIS >

- 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 <u>MWI-27, "CONSULT-III Func-</u>tion".

Is the inspection result normal?

- YES >> Replace ABS actuator and electric unit (control unit).
- NO >> Repair or replace combination meter.

Component Inspection

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:000000006203109

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-</u>76, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION : Special Repair Requirement".

>> END

INFOID:000000006203108

ABS WARNING LAMP

< DTC/CIRCUIT DIAGNOSIS >

ABS WARNING LAMP

Description

INFOID:000000006203110

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[VDC/TCS/ABS]

	×: ON –: OFF
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:00000006203111
1.CHECK ABS WARNING LAMP OPERATION	-
Check that the lamp illuminates for approximately 1 se Is the inspection result normal? YES >> INSPECTION END NO >> Go to diagnosis procedure. Refer to BRC-	cond after the ignition switch is turned ON.
Diagnosis Procedure	INFOID:000000006203112
1.CHECK SELF-DIAGNOSIS	
Perform self-diagnosis for "ABS" with CONSULT-III.	
<u>Is the inspection result normal?</u> YES >> GO TO 2. NO >> Check items displayed by self-diagnosis	
2 CHECK COMBINATION METER	
Check if the indication and operation of combination m	neter are normal. Refer to MWI-27, "CONSULT-III Func-
Is the inspection result normal? YES >> Replace ABS actuator and electric unit (co NO >> Repair or replace combination meter.	ontrol unit).
Special Repair Requirement	INFOID:00000006203113
1. ADJUSTMENT OF STEERING ANGLE SENSOR	NEUTRAL POSITION
Always perform the neutral position adjustment for the tor and electric unit (control unit) or steering angle sen 76. "ADJUSTMENT OF STEERING ANGLE SENSOR	steering angle sensor, when replacing the ABS actua- sor and removing steering angle sensor. Refer to <u>BRC-</u> <u>NEUTRAL POSITION : Special Repair Requirement</u> ".
>> END	

BRAKE WARNING LAMP

< DTC/CIRCUIT DIAGNOSIS >

BRAKE WARNING LAMP

Description

INFOID:000000006203114

×: ON -: OFF

INFOID:000000006203115

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

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 <u>BRC-148, "Diagnosis Procedure"</u>.

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 <u>BRC-143. "Diagnosis Procedure"</u>.

Diagnosis Procedure

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>, "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 <u>MWI-27, "CONSULT-III Func-</u>tion".

Is the inspection result normal?

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

NO >> Repair or replace combination meter.

Special Repair Requirement

1.ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

Revision: 2010 July

BRC-148

2011 Rogue

INFOID:000000006203117

INFOID:000000006203116



BRAKE WARNING LAMP

< DTC/CIRCUIT DIAGNOSIS >

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-</u>76, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION : Special Repair Requirement".

>> END

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[VDC/TCS/ABS]

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VDC OFF INDICATOR LAMP

< DTC/CIRCUIT DIAGNOSIS >

VDC OFF INDICATOR LAMP

Description

INFOID:000000006203118

[VDC/TCS/ABS]

×: 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.	X

Component Function Check

INFOID:000000006203119

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 <u>BRC-150, "Diagnosis Procedure"</u>.

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 <u>BRC-145, "Diagnosis Procedure"</u>.

Diagnosis Procedure

INFOID:000000006203120

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 <u>BRC-145</u>, "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 <u>MWI-27, "CONSULT-III Func-</u>tion".

Is the inspection result normal?

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

NO >> Repair or replace combination meter.

Special Repair Requirement

1.ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

INFOID:000000006203121

BRC-150

VDC OFF INDICATOR LAMP

< DTC/CIRCUIT DIAGNOSIS >

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-</u>76, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION : Special Repair Requirement".

>> END

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[VDC/TCS/ABS]

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SLIP INDICATOR LAMP

< DTC/CIRCUIT DIAGNOSIS >

SLIP INDICATOR LAMP

Description

INFOID:000000006203122

INFOID:000000006203123

INFOID:000000006203124

[VDC/TCS/ABS]

	×:	ON	-:	OF	FF
--	----	----	----	----	----

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

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 <u>BRC-152, "Diagnosis Procedure"</u>.

Diagnosis Procedure

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 <u>MWI-27, "CONSULT-III Func-</u>tion".

Is the inspection result normal?

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

NO >> Repair or replace combination meter.

Special Repair Requirement

INFOID:000000006203125

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".

>> END

ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT) [VDC/TCS/ABS]

< ECU DIAGNOSIS INFORMATION >

ECU DIAGNOSIS INFORMATION

ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)

Reference Value

INFOID:000000006203126 В

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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)]	E
FR LH SENSOR	Wheel speed	Vehicle running (Note 1)	Nearly matches the speed meter display (± 10% or less)	BRO
		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)	H
		Vehicle stopped	0 [km/h (MPH)]	
RR RH SENSOR	Wheel speed	Vehicle running (Note 1)	Nearly matches the speed meter display (± 10% or less)	J
	Stop lowp quitch signal status	When brake pedal is depressed	On	
STOP LAWP SW	Stop lamp switch signal status	When brake pedal is not depressed	Off	LZ.
BATTERY VOLT	Battery voltage supplied to the ABS actuator and electric unit (control unit)	Ignition switch ON	10 – 16 V	K
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	L
055.014		VDC OFF switch ON (When VDC OFF indicator lamp is ON)	On	
OFF SW	VDC OFF switch ON/OFF	VDC OFF switch OFF (When VDC OFF indicator lamp is OFF)	Off	Ν
		Vehicle stopped	Approx. 0 d/s	\circ
TAW KALE SEN	raw rate detected by yaw rate sensor	Vehicle turning	-100 to 100 d/s	0
		Vehicle stopped	–0.11 – +0.11 G	
DECEL G-SEN	Decel G detected by decel G sensor	During acceleration	Negative value	Ρ
		During deceleration	Positive value	
	Throttle actuator opening/closing is displayed	Accelerator pedal not depressed (igni- tion switch is ON)	0 %	
	(linked with accelerator pedal)	Depress accelerator pedal (ignition switch is ON)	0 - 100 %	

< ECU DIAGNOSIS INFORMATION >

[VDC/TCS/ABS]

		Data monitor	
Monitor item	Display content	Condition	Reference value in normal operation
		Vehicle stopped	Approx. 0 m/s ²
SIDE G-SENSOR	Transverse G detected by side G sensor	Vehicle turning right	Negative value
		Vehicle turning left	Positive value
	Steering angle detected by steering angle	During straight	Approx. 0°
STR ANGLE SIG	sensor	Steering wheel turned	–720 to 720 $^\circ$
		With engine stopped	0 [tr/min (rpm)]
ENGINE SPEED	With engine running	Engine running	Almost in accor- dance with tachome- ter display
	Droke fluid lovel ewitch eigenel status	When brake fluid level switch ON	On
FLUID LEV SW	Brake fluid level switch signal status	When brake fluid level switch OFF	Off
		Actuator (solenoid valve) is active ("AC- TIVE TEST" in "ABS" with CONSULT- III)	On
FR RH IN SOL		When the actuator (solenoid valve) is not active and actuator relay is active (ignition switch ON)	Off
		Actuator (solenoid valve) is active ("AC- TIVE TEST" in "ABS" with CONSULT- III)	On
FR RH OUT SOL	Operation status of each solehold valve	When the actuator (solenoid valve) is not active and actuator relay is active (ignition switch ON)	Off
	Operation status of each colonaid value	Actuator (solenoid valve) is active ("AC- TIVE TEST" in "ABS" with CONSULT- III)	On
FR LH IN SOL	Operation status of each solehold valve	When the actuator (solenoid valve) is not active and actuator relay is active (ignition switch ON)	Off
	Operation status of each solenoid valve	Actuator (solenoid valve) is active ("AC- TIVE TEST" in "ABS" with CONSULT- III)	On
		When the actuator (solenoid valve) is not active and actuator relay is active (ignition switch ON)	Off
	Operation status of each solenoid value	Actuator (solenoid valve) is active ("AC- TIVE TEST" in "ABS" with CONSULT- III)	On
		When the actuator (solenoid valve) is not active and actuator relay is active (ignition switch ON)	Off
	Operation status of each solenoid value	Actuator (solenoid valve) is active ("AC- TIVE TEST" in "ABS" with CONSULT- III)	On
		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	Operation status of each solenoid valve	Actuator (solenoid valve) is active ("AC- TIVE TEST" in "ABS" with CONSULT- III)	On	
		When the actuator (solenoid valve) is not active and actuator relay is active (ignition switch ON)	Off	
RR LH OUT SOL	Operation status of each solenoid valve	Actuator (solenoid valve) is active ("AC- TIVE TEST" in "ABS" with CONSULT- III)	On	
		When the actuator (solenoid valve) is not active and actuator relay is active (ignition switch ON)	Off	
MOTOR RELAY	Motor and motor relay operation	When the motor relay and motor are op- erating	On	
		When the motor relay and motor are not operating	Off	
ACTUATOR RLY Actuator relay operation	When the actuator relay is operating	On		
	Actuator relay operation	When the actuator relay is not operating	Off	
ABS WARN LAMP	ABS warning lamp	When ABS warning lamp is ON	On	
	(Note 2)	When ABS warning lamp is OFF	Off	
	VDC OFF indicator lamp	When VDC OFF indicator lamp is ON	On	
OFF LAMP	(Note 2)	When VDC OFF indicator lamp is OFF	Off	
SLIP/VDC LAMP	SLIP indicator lamp (Note 2)	When SLIP indicator lamp is ON	On	
		When SLIP indicator lamp is OFF	Off	
	EBD operation	EBD is active	On	
EBD SIGNAL		EBD is inactive	Off	
ABS SIGNAL	ABS operation	ABS is active	On	
		ABS is inactive	Off	
	TCS operation	TCS is active	On	
TCS SIGNAL		TCS is inactive	Off	
VDC SIGNAL	VDC operation	VDC is active	On	
		VDC is inactive	Off	
EBD FAIL SIG	EBD fail-safe signal	In EBD fail-safe	On	
		EBD is normal	Off	
ABS FAIL SIG	ABS fail-safe signal	In ABS fail-safe	On	
		ABS is normal	Off	
TCS FAIL SIG	TCS fail-safe signal	In TCS fail-safe	On	
		TCS is normal	Off	
	VDC fail-safe signal	In VDC fail-safe	On	
VDC FAIL SIG	v Do Tali-sale signal	VDC is normal	Off	
	Crank operation	Crank is active	On	
		Crank is inactive	Off	
N POSI SIG	N position signal	For N range	On	
		Except for N range	Off	
P POSI SIG	P position signal	For P range	On	
1 FUSI SIG		Except for P range	Off	

< 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	
		Except for R range	Off	
4WD MODE MON	Axle condition	AUTO is active	AUTO	
		LOCK is active	LOCK	
		2WD is active	2WD	
CV1	Operation status of each solenoid valve	Actuator (solenoid valve) is active ("AC- TIVE 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 ("AC- TIVE 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 ("AC- TIVE 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 ("AC- TIVE TEST" in "ABS" with CONSULT- III)	On	
		When the actuator (solenoid valve) is not active and actuator relay is active (ignition switch ON)	Off	
	Stop Jamp switch signal status	When brake pedal is depressed	On	
STOP LAIVIE SVVZ	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 <u>BRC-147, "Description"</u>.
- Brake warning lamp: Refer to <u>BRC-148, "Description"</u>.
- VDC OFF indicator lamp: Refer to BRC-150, "Description".
- SLIP indicator lamp: Refer to BRC-152, "Description".

ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT) [VDC/TCS/ABS]

< ECU DIAGNOSIS INFORMATION >

Wiring Diagram -BRAKE CONTROL SYSTEM-

INFOID:000000006203127

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< ECU DIAGNOSIS INFORMATION >

[VDC/TCS/ABS]



JCFWM0671GB



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JCFWM0672GB



JCFWM0673GB

INFOID:000000006203128

ABS, EBD SYSTEM

Fail-Safe

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.

BRC-160

ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT) OSIS INFORMATION > [VDC/TCS/ABS]

< ECU DIAGNOSIS INFORMATION >

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

NOTE:

ABS self-diagnosis sound may be heard. That is a normal condition because a self-diagnosis for "Ignition switch ON" and "The first starting" are being performed.

• For malfunction of EBD, EBD and ABS become inoperative, and the condition of vehicle is the same as the condition of vehicles without TCS/ABS, EBD system.

VDC/TCS

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

If the Fail-Safe function is activated, then perform self-diagnosis for "ABS" with CONSULT-III.

DTC Index

INFOID:000000006203129

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DTC	Items (CONSULT screen terms)	Reference	
C1101	RR RH SENSOR-1		BR(
C1102	RR LH SENSOR-1		
C1103	FR RH SENSOR-1	BRC-99, DTC Logic	
C1104	FR LH SENSOR-1		G
C1105	RR RH SENSOR-2		
C1106	RR LH SENSOR-2		Ц
C1107	FR RH SENSOR-2	BRC-102, DTC Logic	П
C1108	FR LH SENSOR-2		
C1109	BATTERY VOLTAGE [ABNORMAL]	BRC-105, "DTC Logic"	
C1110	CONTROLLER FAILURE	BRC-108, "DTC Logic"	
C1111	PUMP MOTOR	BRC-109, "DTC Logic"	
C1113	G SENSOR	BRC-111, "DTC Logic"	J
C1115	ABS SENSOR [ABNORMAL SIGNAL]	BRC-115, "DTC Logic"	
C1116	STOP LAMP SW	BRC-118, "DTC Logic"	K
C1118	4WD SYSTEM	BRC-120, "DTC Logic"	
C1120	FR LH IN ABS SOL	BRC-121, "DTC Logic"	
C1121	FR LH OUT ABS SOL	BRC-124, "DTC Logic"	L
C1122	FR RH IN ABS SOL	BRC-121, "DTC Logic"	
C1123	FR RH OUT ABS SOL	BRC-124, "DTC Logic"	M
C1124	RR LH IN ABS SOL	BRC-121, "DTC Logic"	
C1125	RR LH OUT ABS SOL	BRC-124, "DTC Logic"	
C1126	RR RH IN ABS SOL	BRC-121, "DTC Logic"	N
C1127	RR RH OUT ABS SOL	BRC-124, "DTC Logic"	
C1130	ENGINE SIGNAL 1	BRC-127, "DTC Logic"	0
C1140	ACTUATOR RLY	BRC-128, "DTC Logic"	0
C1143	ST ANG SEN CIRCUIT		
C1144	ST ANG SEN SIGNAL	BRC-130, DTC Logic	Р
C1145	YAW RATE SENSOR		
C1146	SIDE G-SEN CIRCUIT	BRC-111, "DTC Logic"	
C1155	BR FLUID LEVEL LOW	BRC-132, "DTC Logic"	
C1164	CV1		
C1165	CV2	DRU-130, DTC LOGIC	

< ECU DIAGNOSIS INFORMATION >

[VDC/TCS/ABS]

DTC	Items (CONSULT screen terms)	Reference
C1166	SV1	BPC-137 "DTC Logic"
C1167	SV2	<u>BRC-137, DTC Logic</u>
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		
< SYMPTOM DIAGNOSIS > [VDC/TCS/ABS	\$]	
SYMPTOM DIAGNOSIS		
EXCESSIVE ABS FUNCTION OPERATION FREQUENCY		
Diagnosis Procedure	130	
1.CHECK START		
Check front and rear brake force distribution using a brake tester. Refer to <u>BR-49</u> , "General Specifications".		
Is the inspection result normal?		
YES >> GO TO 2.		
2 CHECK FRONT AND REAR AXI F		
Make sure that there is no excessive play in the front and rear axles	—	
 Front 		
- 2WD models: Refer to FAX-8, "Inspection".		
• Rear		
- 2WD models: Refer to <u>RAX-4, "Inspection"</u> .		
- AWD models: Refer to <u>RAX-11, "Inspection"</u> .		
YES \rightarrow 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?		
NO >> • Replace wheel sensor or sensor rotor.		
Repair harness.		
4. CHECK ABS WARNING LAMP DISPLAY		
Make sure that the ABS warning lamp is turned off after the ignition switch is turned ON or when driving.	_	
Is the ABS warning lamp illuminated?		
YES >> Perform self-diagnosis for "ABS" with CONSULT-III.		

UNEXPECTED PEDAL REACTION

Diagnosis Procedure

INFOID:000000006203131

[VDC/TCS/ABS]

1.CHECK BRAKE PEDAL STROKE

Check brake pedal stroke. Refer to <u>BR-9, "Inspection and Adjustment"</u>.

Is the stroke too large?

- YES >> Bleed air from brake tube and hose. Refer to <u>BR-13, "Bleeding Brake System"</u>.
 - 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 <u>BR-14</u>, "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

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

Diagnosis Procedure

INFOID:000000006203133

[VDC/TCS/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	1
	<u>יו</u>
PEDAL VIBRATION OR ABS OPERATION SOUND OCCURS	
Diagnosis Procedure	134
CAUTION: Under the following conditions, ABS is activated and vibration is felt when brake pedal is light 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]	ly
• When pulling away just after starting engine [at approximately 10 km/h (6 MPH) or higher]	
I.SYMPTOM CHECK 1	
Check that there are pedal vibrations when the engine is started. <u>Do vibrations occur?</u> YES >> GO TO 2. NO >> Inspect the brake pedal	ſ
2.SYMPTOM CHECK 2	
Check that there are ABS operation noises when the engine is started.	_
<u>Do the operation noises occur?</u> YES >> GO TO 3.	
NO >> Perform self-diagnosis for "ABS" with CONSULT-III.	
3. SYMPTOM CHECK 3	
Check symptoms when electrical component (headlamps, etc.) switches are operated.	
YES >> Check if there is a radio, antenna, antenna lead wire, or wiring close to the control unit. If there i move it farther away.	s,
NO >> Normal	

VEHICLE JERKS DURING VDC/TCS/ABS CONTROL

< SYMPTOM DIAGNOSIS >

VEHICLE JERKS DURING VDC/TCS/ABS CONTROL

Diagnosis Procedure

INFOID:000000006203135

[VDC/TCS/ABS]

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-III.

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-116. "CONSULT-III Function".
 - For USA (FEDERAL) and CANADA: Refer to EC-597, "CONSULT-III Function".
 - For MEXICO: Refer to EC-1029, "CONSULT-III Function".
 - "TRANSMISSION": Refer to TM-42, "Diagnosis Description".
- NO >> Replace ABS actuator and electric unit (control unit).

NORMAL OPERATING CONDITION

< SYMPTOM DIAGNOSIS >

NORMAL OPERATING CONDITION

Description

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INFOID:000000006203136

[VDC/TCS/ABS]

Slight vibrations are felt on the brake pedal and the operation noises occur, when VDC, TCS or ABS is act		
vated.	-	С
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 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.		D
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.	E
Depending on the road conditions, the driver may experience a sluggish feel.	This is normal, because	
TCS may activate momentarily if wheel speed changes when driving over location where friction coefficient varies, when downshifting, or when fully depressing accelerator pedal.	TCS places the highest priority on the optimum traction (stability).	BR
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 or a ship while the engine is running.	In this case, restart the engine on a normal road. If the normal con-	G
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).	dition is restored, there is no malfunction. At	Н
A malfunction may occur in the yaw rate/side G sensor system, when the vehicle turns sharply, such as dur ing a spin turn, axle turn, or drift driving, while the VDC function is off (VDC OFF indicator lamp illuminated)	that time, erase the self- diagnosis memory.	
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 be- fore performing an in-	
	spection on a chassis dynamometer.)	J

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< PRECAUTION > 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 that 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 "SRS AIR BAG".
- Never 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, never 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:000000006445133

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:000000006203139

WARNING:

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

- Brake fluid use refer to MA-15, "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.

PRECAUTIONS

< PRECAUTION >

[VDC/TCS/ABS]

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- 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:000000006203140

INFOID:000000006203141

- 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

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).



< PRECAUTION >

• 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]

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 "SRS AIR BAG".
- Never 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, never 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:000000006445134

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.

• Brake fluid use refer to MA-16, "FOR MEXICO : Fluids and Lubricants".

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INFOID:00000006445155

PRECAUTIONS

< PRECAUTION >

- · Never reuse drained brake fluid.
- · Never spill or splash brake fluid on painted surfaces. Brake fluid may seriously damage paint. Wipe it off А 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.
- 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 Κ parts (pad, rotor, caliper, etc.), engine-related parts (muffler, ECM, etc.) and body reinforcement-related parts (roll bar. tower bar. etc.).

BRC-173

- When driving with worn or deteriorated suspension, tires and brake-related parts.

FOR MEXICO : Precautions for Harness Repair

COMMUNICATION LINE

Revision: 2010 July

 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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[VDC/TCS/ABS]

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.



< REMOVAL AND INSTALLATION >

REMOVAL AND INSTALLATION WHEEL SENSOR

FRONT WHEEL SENSOR

FRONT WHEEL SENSOR : Exploded View



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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WHEEL SENSOR

< REMOVAL AND INSTALLATION >

REAR WHEEL SENSOR : Exploded View

INFOID:000000006203149



- 1. Rear LH wheel sensor
- A. 2WD models B. AWD models

Refer to <u>GI-4, "Components"</u> 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

INFOID:000000006203150

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 [VDC/TCS/ABS] < REMOVAL AND INSTALLATION > SENSOR ROTOR А FRONT SENSOR ROTOR FRONT SENSOR ROTOR : Exploded View INFOID:000000006203151 В Refer to FAX-10, "Exploded View" (2WD models), FAX-34, "Exploded View" (AWD models). FRONT SENSOR ROTOR : Removal and Installation INFOID:000000006203152 REMOVAL Sensor rotor cannot be disassembled. Remove the sensor rotor together with hub bearing assembly. Refer to D FAX-10, "Removal and Installation" (2WD models), FAX-34, "Removal and Installation" (AWD models). INSTALLATION Sensor rotor cannot be disassembled. Installation the sensor rotor together with hub bearing assembly. Refer E to FAX-10, "Removal and Installation" (2WD models), FAX-34, "Removal and Installation" (AWD models). REAR SENSOR ROTOR BRC **REAR SENSOR ROTOR : Exploded View** INFOID:000000006203153 Refer to RAX-5, "Exploded View" (2WD models), RAX-15, "Exploded View" (AWD models). **REAR SENSOR ROTOR : Removal and Installation** INFOID:000000006203154 **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. Refer to RAX-5, "Removal and Installation". J AWD MODELS For removal and installation of sensor rotor, refer to RAX-16, "Disassembly and Assembly". Κ

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< REMOVAL AND INSTALLATION >

ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)

Exploded View

INFOID:000000006203155

[VDC/TCS/ABS]



- 1. ABS actuator and electric unit (control 2. Connector unit)
- A. To front LH brake caliper
- D. To front RH brake caliper
- B. To rear RH brake caliper
- E. 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

INFOID:000000006203156

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>.
- 1. Remove cowl top. Refer to EXT-20, "Exploded View".
- 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).
- 4. Remove tire (front LH side).
- 5. Remove fender protector (rear): (front LH side). Refer to EXT-22, "Exploded View".
- 6. Remove ABS actuator and electric unit (control unit) bracket mounting nut.
- 7. Remove ABS actuator and electric unit (control unit) from vehicle.

INSTALLATION

BRC-178

3. Bracket

< 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 adjust neutral position of steering angle sensor. Refer to <u>BRC-76, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION :</u> <u>Description</u>".

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G SENSOR

Exploded View

INFOID:000000006203157

[VDC/TCS/ABS]



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:000000006203158

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.

- 1. Remove center console assembly. Refer to IP-22, "Exploded View".
- 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.
STEERING ANGLE SENSOR

< REMOVAL AND INSTALLATION >

STEERING ANGLE SENSOR

Exploded View

INFOID:000000006203159

[VDC/TCS/ABS]



1. Steering angle sensor

C: Vehicle front

Removal and Installation

REMOVAL

- 1. Remove spiral cable assembly. Refer to <u>SR-14. "Exploded View"</u> (for USA and Canada), <u>SR-39.</u> <u>"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 <u>BRC-76, "ADJUSTMENT</u> OF STEERING ANGLE SENSOR NEUTRAL POSITION : Description".

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