SECTION BRC
BRAKE CONTROL SYSTEM

CONTENTS

VDC/TCS/ABS

INTELLIGENT BRAKE ASSIST

BASIC INSPECTION

DIAGNOSIS AND REPAIR WORK FLOW

Work Flow

INFOID:0000000010594718

DETAILED FLOW

1.INTERVIEW FROM THE CUSTOMER

Clarify customer complaints before inspection. First of all, perform an interview utilizing BRC-6, "Diagnostic Work Sheet" and reproduce the symptom as well as fully understand it. Ask customer about his/her complaints carefully. Check symptoms by driving vehicle with customer, if necessary.

CAUTION:

Customers are not professional. Never guess easily like “maybe the customer means that...,” or “ maybe the customer mentions this symptom”.

>> GO TO 2.

2.CHECK SYMPTOM

Reproduce the symptom that is indicated by the customer, based on the information from the customer obtained by interview. Also check that the symptom is not caused by fail-safe mode. Refer to BRC-139, "Fail-Safe".

CAUTION:

When the symptom is caused by normal operation, fully inspect each portion and obtain the understanding of customer that the symptom is not caused by a malfunction.

>> GO TO 3.

3.PERFORM THE SELF-DIAGNOSIS

With CONSULT

1. Turn the ignition switch OFF → ON.
   CAUTION:
   Be sure to wait of 10 seconds after turning ignition switch OFF or ON.
2. Repeat step 1 two or more times.
3. Perform self-diagnosis for “ABS”.

Is DTC detected?

YES >> Record or print self-diagnosis results and freeze frame data (FFD). GO TO 4.
NO >> GO TO 6.

4.RECHECK THE SYMPTOM

With CONSULT

1. Erase self-diagnostic results for “ABS”.
2. Turn the ignition switch OFF → ON → OFF.
   CAUTION:
   Be sure to wait of 10 seconds after turning ignition switch OFF or ON.
3. Perform DTC confirmation procedures for the error-detected system.

Is DTC detected?

YES >> GO TO 5.
NO >> Check harness and connectors based on the information obtained by interview. Refer to GI-45, "Intermittent Incident".

5.REPAIR OR REPLACE ERROR-DETECTED PART

1. Repair or replace error-detected parts.
2. Reconnect part or connector after repairing or replacing.
3. When DTC is detected, erase self-diagnostic result for “ABS”.
   CAUTION:
   - **Turn the ignition switch OFF → ON → OFF after erase self-diagnosis result.**
   - **Be sure to wait of 10 seconds after turning ignition switch OFF or ON.**

>> GO TO 7.

6. IDENTIFY ERROR-DETECTED SYSTEM BY SYMPTOM DIAGNOSIS

Estimate error-detected system based on symptom diagnosis and perform inspection.

Can the error-detected system be identified?

YES >> GO TO 7.
NO >> Check harness and connectors based on the information obtained by interview. Refer to GI-45, "Intermittent Incident".

7. FINAL CHECK

With CONSULT
1. Check the reference value for “ABS”.
2. Recheck the symptom and check that the symptom is not reproduced on the same conditions.

Is the symptom reproduced?

YES >> GO TO 3.
NO >> INSPECTION END

Diagnostic Work Sheet

INFOID:0000000010594719

DESCRIPTION

- In general, customers have their own criteria for a problem. Therefore, it is important to understand the symptom and status well enough by asking the customer about his/her concerns carefully. To systemize all the information for the diagnosis, prepare the interview sheet referring to the interview points.
- In some cases, multiple conditions that appear simultaneously may cause a DTC to be detected.

INTERVIEW SHEET SAMPLE

Interview sheet					
Customer name	MR/MS	Registration number		Initial year registration	
		Vehicle type		VIN	
Storage date		Engine/traction Motor		Mileage	km (Mile)
Symptom		☐ Does not operate ( ) function			
		☐ Warning lamp turns ON. ☐ ABS or  ☐ BRAKE or  ☐  ☐  OFF			
		☐ Other ( )			
		☐ Noise (Location:) ☐ Vibration (Location:)			
		☐ Other ( )			
First occurrence		☐ Recently ☐ Other ( )			
Frequency of occurrence		☐ Always ☐ Under a certain conditions of ☐ Sometimes (time(s)/day)			
Climate conditions		☐ Irrelevant			
	Weather	☐ Fine ☐ Cloud ☐ Rain ☐Snow ☐ Others ( )			
	Temperature	☐ Hot ☐Warm ☐ Cool ☐ Cold ☐ Temperature [Approx. °C (°F)]			
	Relative humidity	☐ High ☐ Moderate ☐ Low			
Road conditions		☐ Ordinary road ☐ Highway ☐ Mountainous road (uphill or downhill) ☐ Rough road			

Interview sheet

Customer name	MR/MS	Registration number		Initial year registration	
		Vehicle type		VIN	
Storage date		Engine/traction Motor		Mileage	km (Mile)
Operating condition, etc.		☐ Irrelevant ☐ When engine/traction motor starts ☐ During idling ☐ During driving ☐ During acceleration ☐ At constant speed driving ☐ During deceleration ☐ Immediately before stop [Vehicle speed: Approx. km/h (MPH)] ☐ During cornering (right curve or left curve) ☐ When steering wheel is steered (to right or to left)			
Other conditions	VDC OFF switch operation	☐ Yes ☐ No			
	Use of other functions (ex. ICC)	☐ Yes ☐ No ( )			
	Presence of non-genuine parts installation	☐ Yes ☐ No( )			
Memo					

INSPECTION AND ADJUSTMENT

ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT

ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Description

INFOID:0000000010594720

After replacing the ABS actuator and electric unit (control unit), perform the neutral position adjustment for the steering angle sensor. Refer to BRC-8, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION : Description".

ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement

INFOID:0000000010594721

1.PERFORM THE NEUTRAL POSITION ADJUSTMENT FOR THE STEERING ANGLE SENSOR

Perform the neutral position adjustment for the steering angle sensor.

>> Refer to BRC-8, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION : Description".

ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION : Description

INFOID:0000000010594722

When doing work that applies to the list below, make sure to adjust neutral position of steering angle sensor before running vehicle. Refer to BRC-8, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION : Special Repair Requirement".

×: Required –: Not required

Situation	Adjustment of steering angle sensor neutral position
Removing/Installing ABS actuator and electric unit (control unit)	—
Replacing ABS actuator and electric unit (control unit)	×
Removing/Installing steering angle sensor	×
Replacing steering angle sensor	×
Removing/Installing steering components	×
Replacing steering components	×
Removing/Installing suspension components	×
Replacing suspension components	×
Change tires to new ones	—
Tire rotation	—
Adjusting wheel alignment	×

ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION : Special Repair Requirement

INFOID:0000000010594723

ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

CAUTION:

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

1.ALIGN THE VEHICLE STATUS

Stop the 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.
2. Select “START”.
   CAUTION:
   Do not touch steering wheel while adjusting steering angle sensor.
3. After approximately 10 seconds, select “END”.
   NOTE:
   After approximately 60 seconds, it ends automatically.
4. Turn ignition switch OFF, then turn it ON again.
   CAUTION:
   Be sure to perform above operation.

>> GO TO 3.

3.CHECK DATA MONITOR

1. Run the vehicle with front wheels in straight-ahead position, then stop.
2. Select “ABS”, “DATA MONITOR” and “STR ANGLE SIG” in order with CONSULT, and check steering angle sensor signal.

STR ANGLE SIG : 0±2.5°

Is the steering angle within the specified range?

YES >> GO TO 4.
NO >> Perform the neutral position adjustment for the steering angle sensor again, GO TO 1.

4.ERASE THE SELF-DIAGNOSIS MEMORY

Erase the self-diagnosis memories for “ABS”, “ENGINE” and “ICC/ADAS” with CONSULT.
- “ABS”: Refer to BRC-30, "CONSULT Function".
- “ENGINE”: Refer to EC-146, "CONSULT Function".
- “ICC/ADAS”: Refer to CCS-39, "CONSULT Function (ICC/ADAS)".

Are the memories erased?

YES >> INSPECTION END
NO >> Check the items indicated by the self-diagnosis.

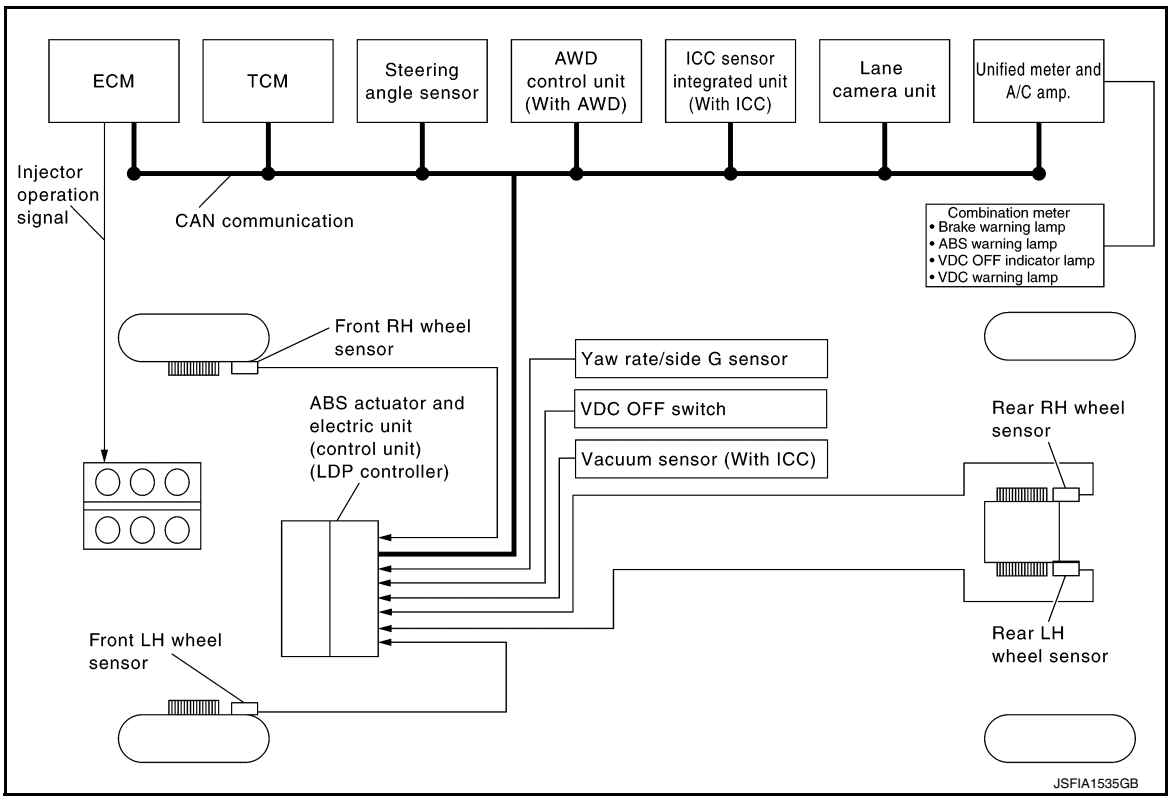
SYSTEM DESCRIPTION

VDC

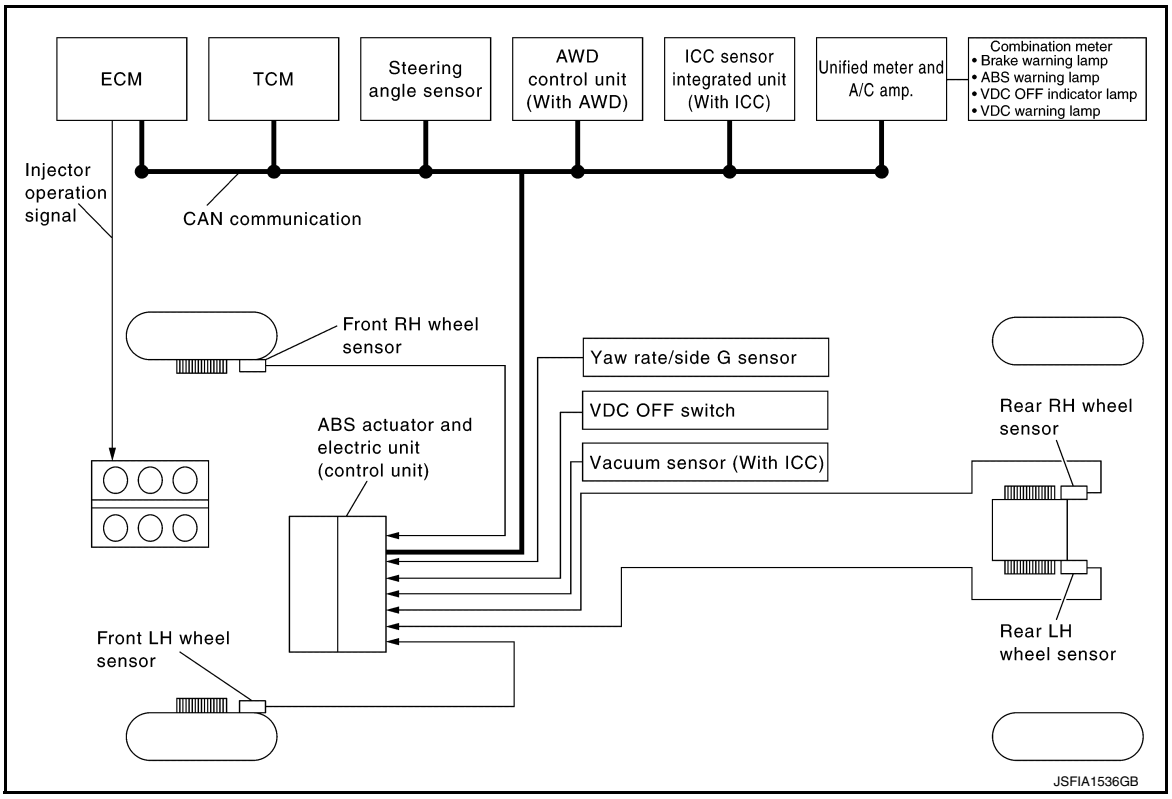
System Diagram

INFOID:0000000010594724

With LDP



Without LDP



System Description

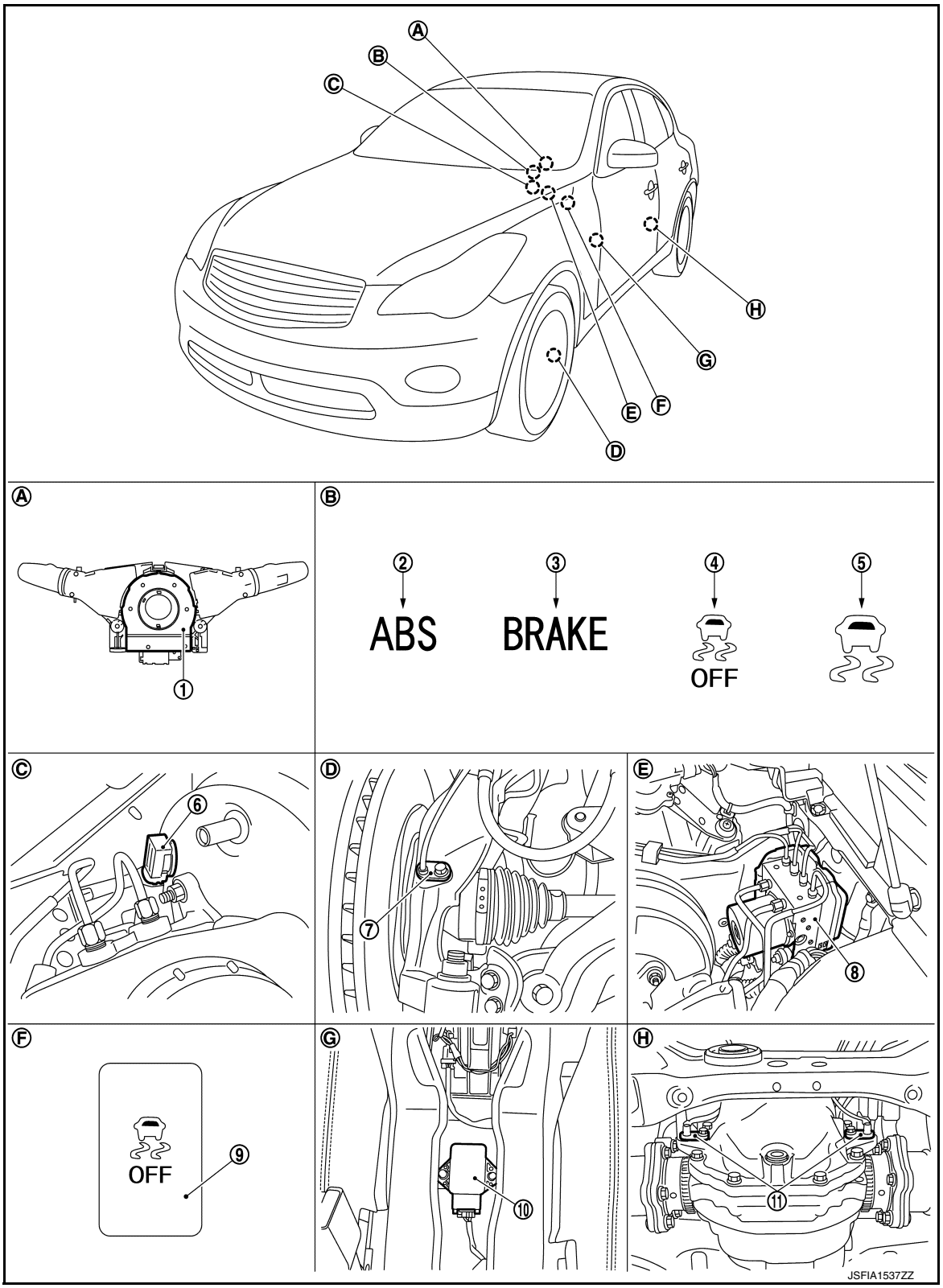
INFOID:0000000010594725

- 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 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 VDC warning lamp.
- Electrical system diagnosis by CONSULT is available.

Component Parts Location

INFOID:0000000010594726

For USA

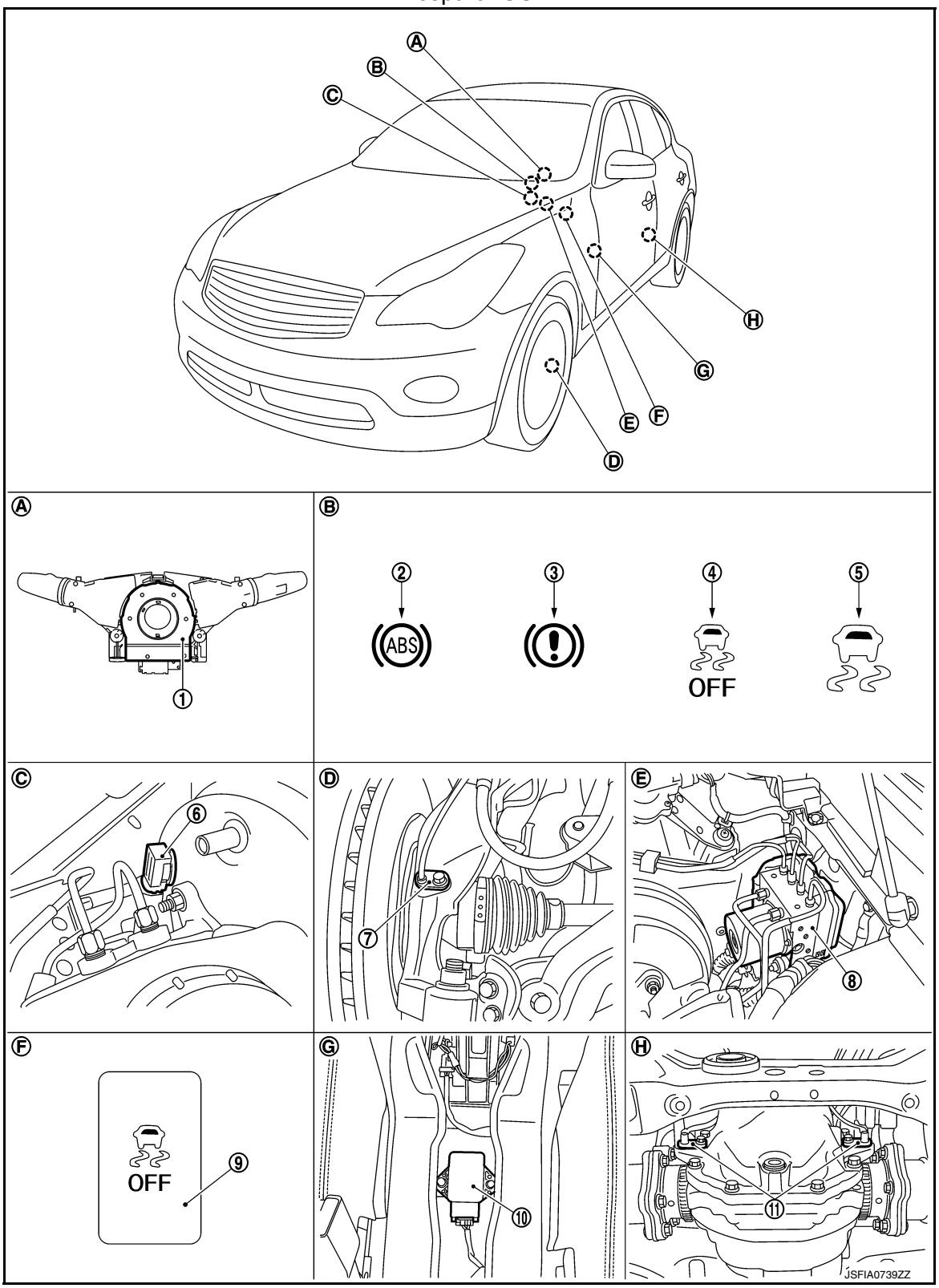


1. Steering angle sensor
2. ABS warning lamp
3. Brake warning lamp
4. VDC OFF indicator lamp
5. VDC warning lamp
6. Vacuum sensor (with ICC)

7. Front wheel sensor
8. ABS actuator and electric unit (control unit)
9. VDC OFF switch
10. Yaw rate/side G sensor
11. Rear wheel sensor

A. Back of spiral cable assembly
B. Combination meter
C. Brake booster
D. Steering knuckle
E. Inside brake master cylinder cover
F. Instrument driver lower panel
G. Under center console
H. Rear final drive assembly

Except for USA



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

A. Back of spiral cable assembly
B. Combination meter
C. Brake booster
D. Steering knuckle
E. Inside brake master cylinder cover
F. Instrument driver lower panel
G. Under center console
H. Rear final drive assembly

Component Description

INFOID:0000000010594727

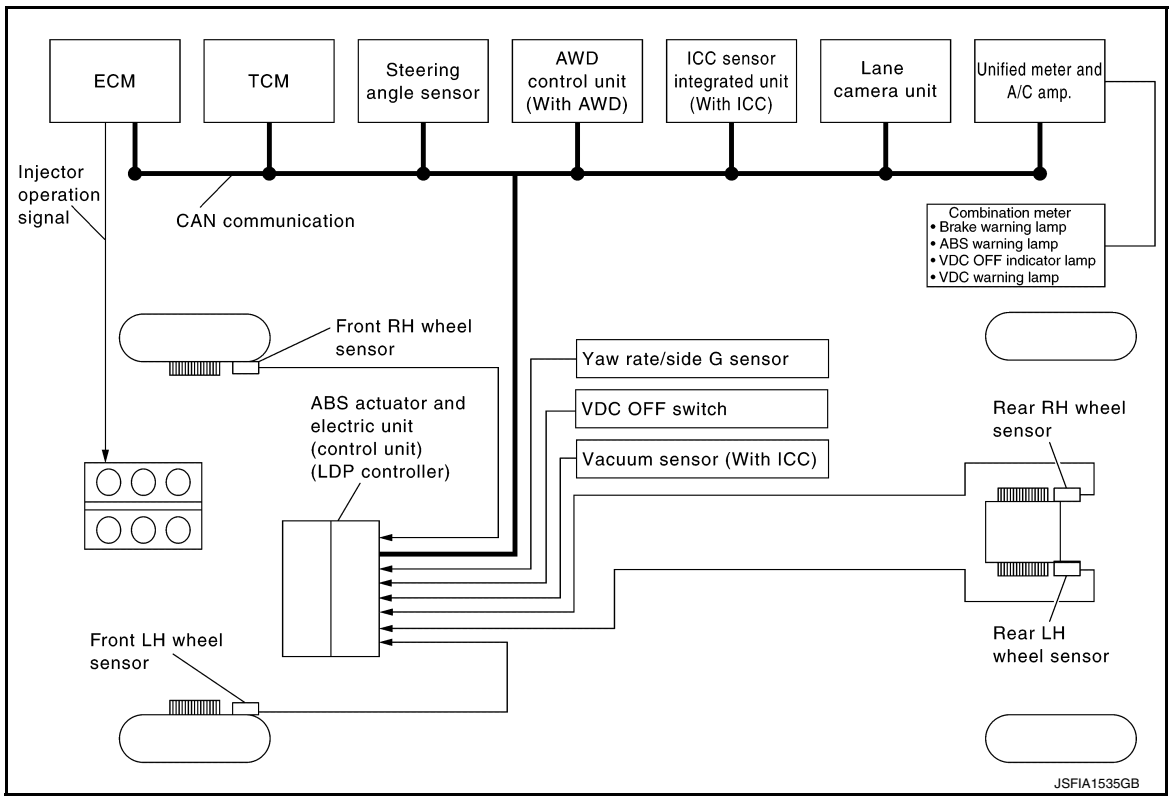
Component parts		Reference
ABS actuator and electric unit (control unit)	Pump	BRC-52, "Description"
	Motor	
	Actuator relay (main relay)	BRC-74, "Description"
	Solenoid valve	BRC-68, "Description"
	Pressure sensor	BRC-76, "Description"
	VDC switch-over valve (USV1, USV2, HSV1, HSV2)	BRC-88, "Description"
Wheel sensor		BRC-36, "Description"
Yaw rate/side G sensor		BRC-85, "Description"
Steering angle sensor		BRC-79, "Description"
VDC OFF switch		BRC-123, "Description"
ABS warning lamp		BRC-125, "Description"
Brake warning lamp		BRC-126, "Description"
VDC OFF indicator lamp		BRC-127, "Description"
VDC warning lamp		BRC-128, "Description"
Vacuum sensor (with ICC)		BRC-99, "Description"

TCS

System Diagram

INFOID:0000000010594728

With LDP



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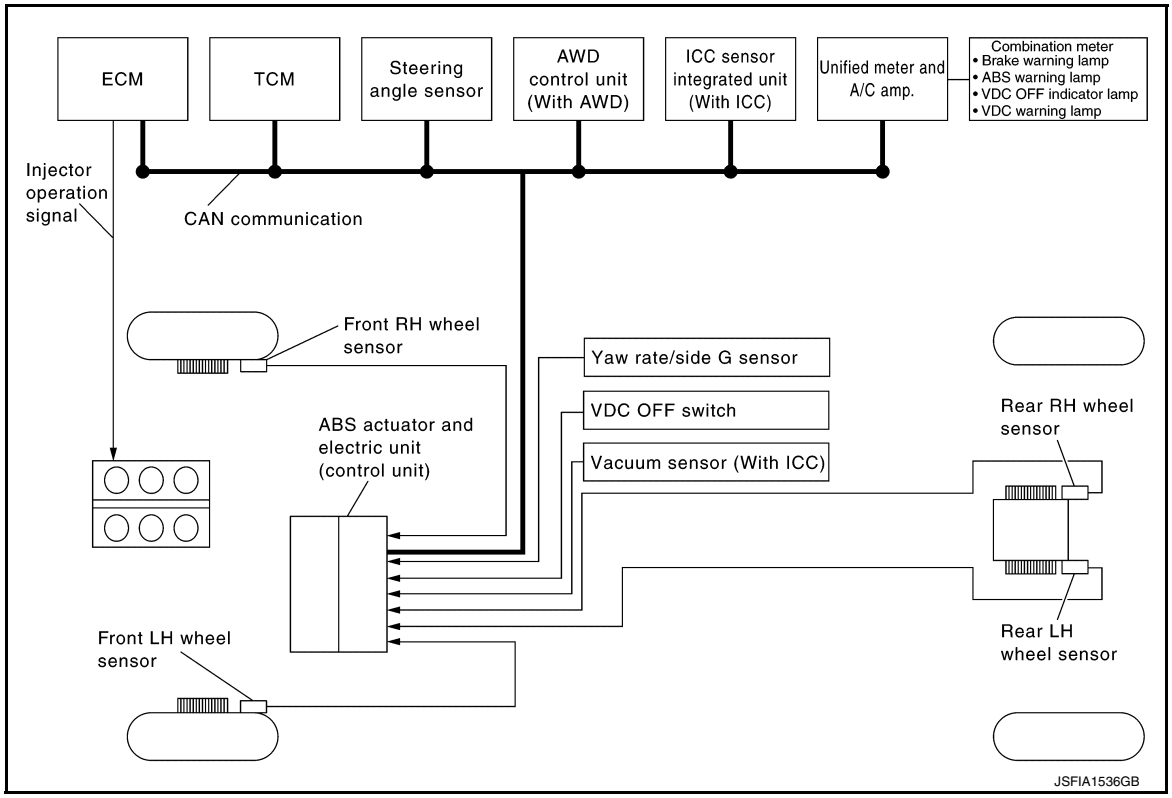


System Description

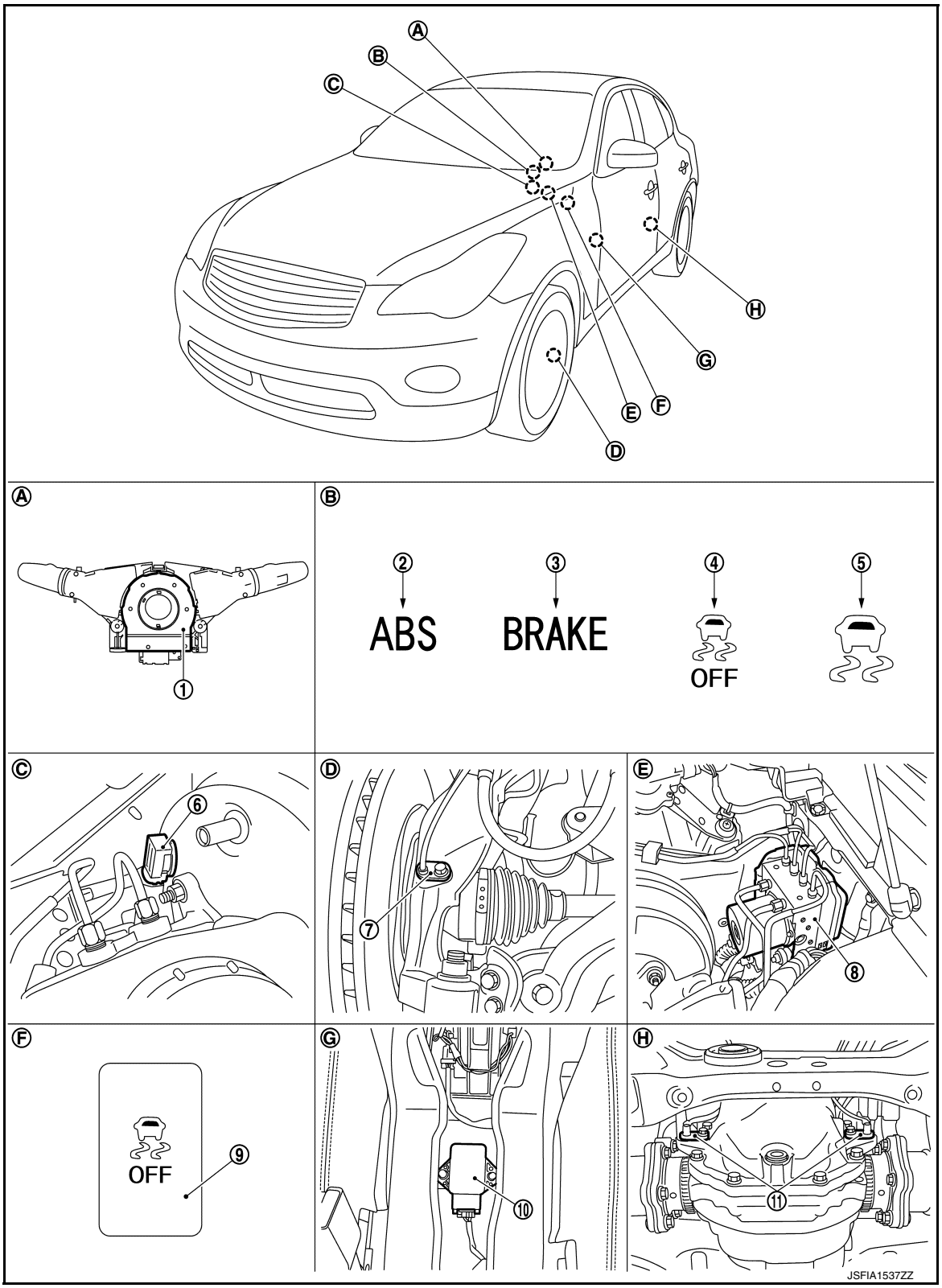
INFOID:0000000010594729

- Traction Control System is a function that electronically controls engine torque, brake fluid pressure and A/T gear 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, TCS informs driver of system operation by flashing VDC warning lamp.
- Electrical system diagnosis by CONSULT is available.

Component Parts Location

INFOID:0000000010594730

For USA

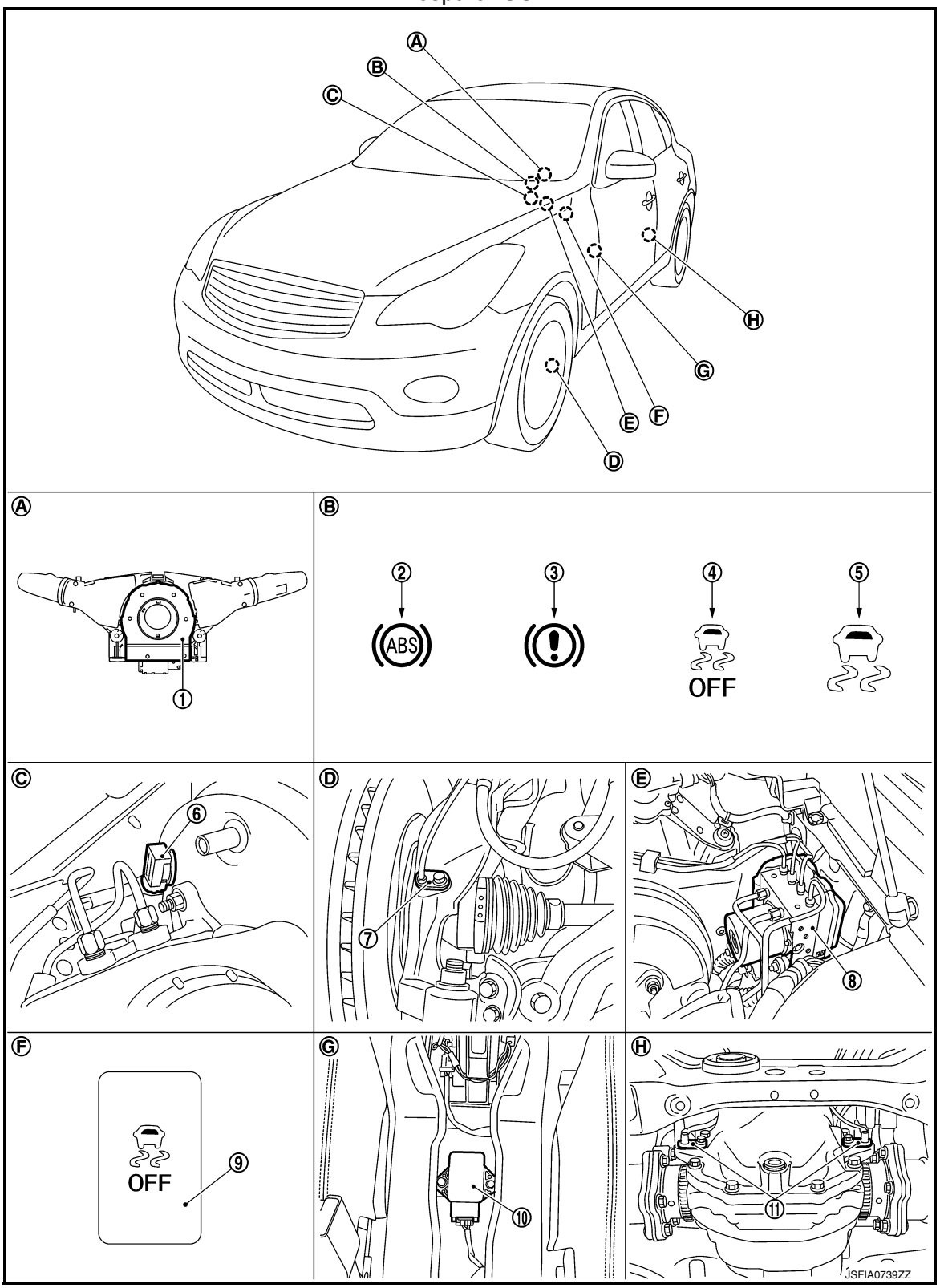


1. Steering angle sensor
2. ABS warning lamp
3. Brake warning lamp
4. VDC OFF indicator lamp
5. VDC warning lamp
6. Vacuum sensor (with ICC)

7. Front wheel sensor
8. ABS actuator and electric unit (control unit)
9. VDC OFF switch
10. Yaw rate/side G sensor
11. Rear wheel sensor

A. Back of spiral cable assembly
B. Combination meter
C. Brake booster
D. Steering knuckle
E. Inside brake master cylinder cover
F. Instrument driver lower panel
G. Under center console
H. Rear final drive assembly

Except for USA



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

A. Back of spiral cable assembly
B. Combination meter
C. Brake booster
D. Steering knuckle
E. Inside brake master cylinder cover
F. Instrument driver lower panel
G. Under center console
H. Rear final drive assembly

Component Description

INFOID:0000000010594731

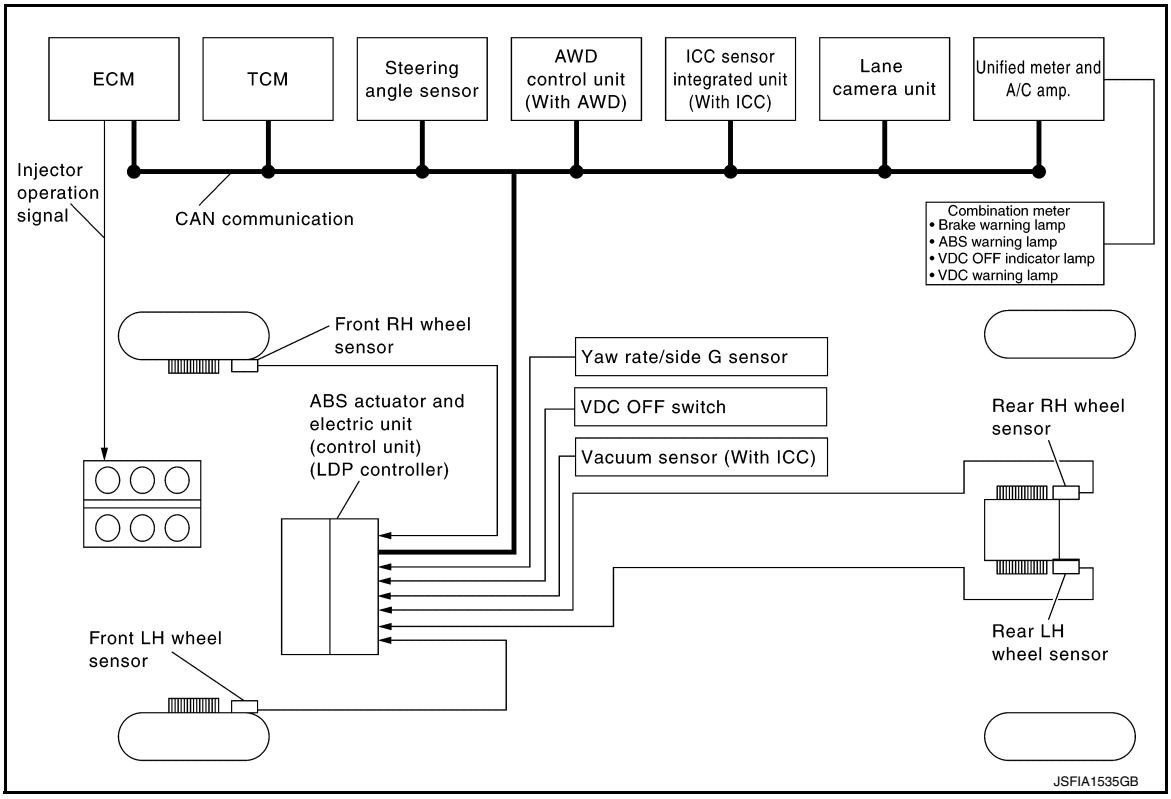
Component parts		Reference
ABS actuator and electric unit (control unit)	Pump	BRC-52, "Description"
	Motor	
	Actuator relay (main relay)	BRC-74, "Description"
	Solenoid valve	BRC-68, "Description"
	Pressure sensor	BRC-76, "Description"
	VDC switch-over valve (USV1, USV2, HSV1, HSV2)	BRC-88, "Description"
Wheel sensor		BRC-36, "Description"
Yaw rate/side G sensor		BRC-85, "Description"
Steering angle sensor		BRC-79, "Description"
VDC OFF switch		BRC-123, "Description"
ABS warning lamp		BRC-125, "Description"
Brake warning lamp		BRC-126, "Description"
VDC OFF indicator lamp		BRC-127, "Description"
VDC warning lamp		BRC-128, "Description"
Vacuum sensor (with ICC)		BRC-99, "Description"

ABS

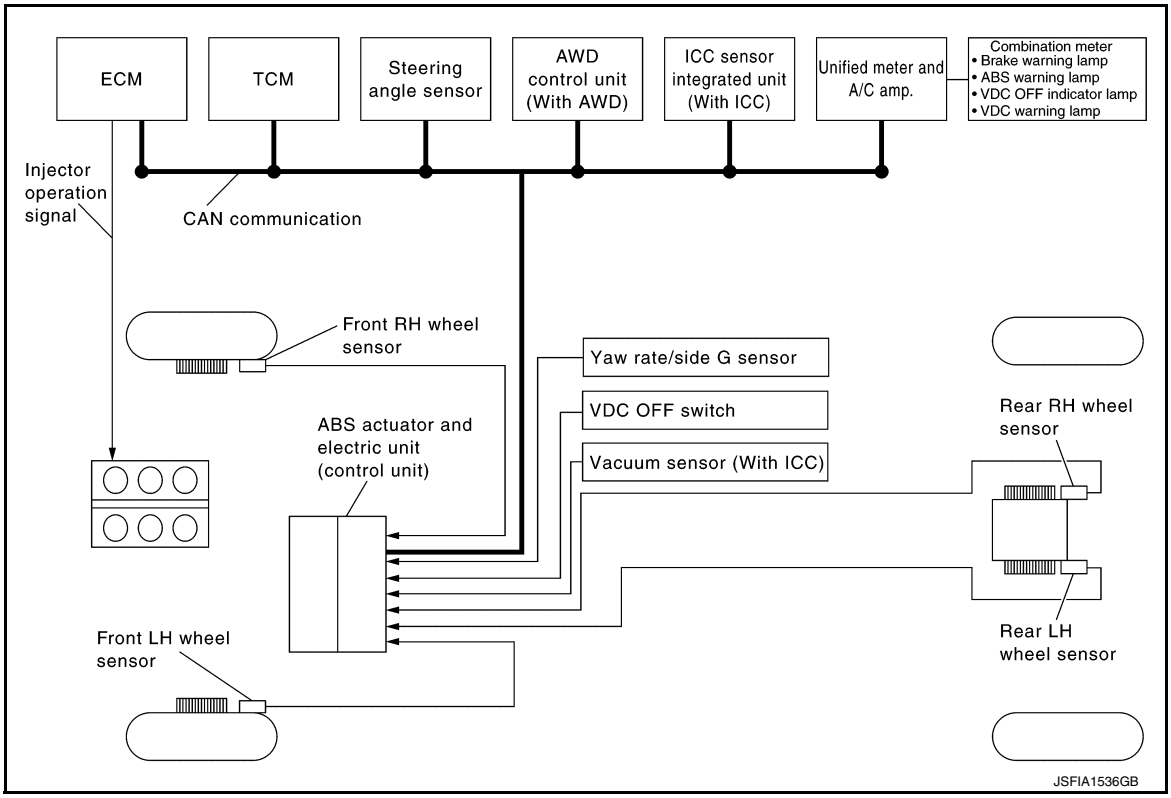
System Diagram

INFOID:0000000010594732

With LDP



Without LDP



System Description

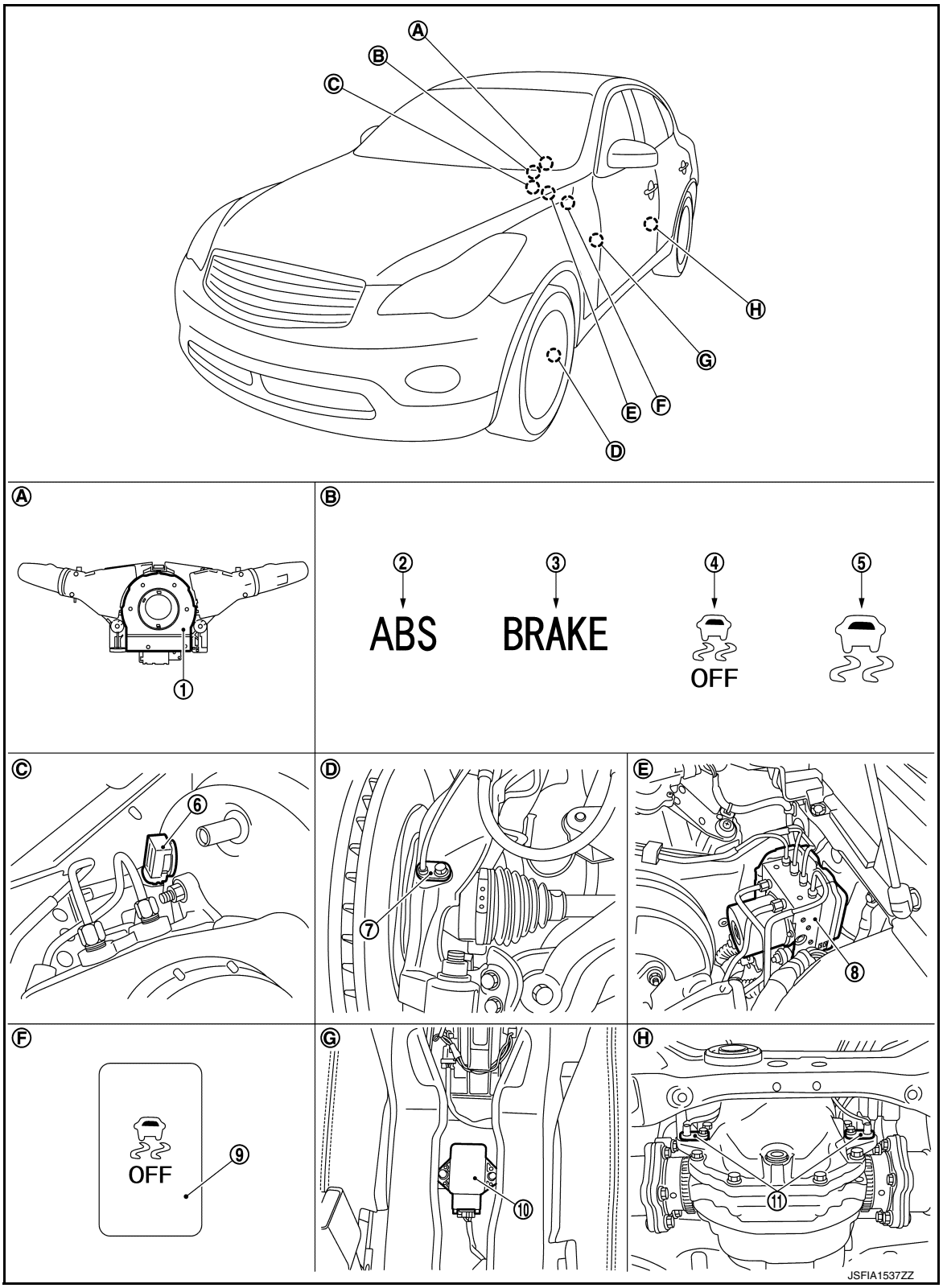
INFOID:0000000010594733

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

Component Parts Location

INFOID:0000000010594734

For USA

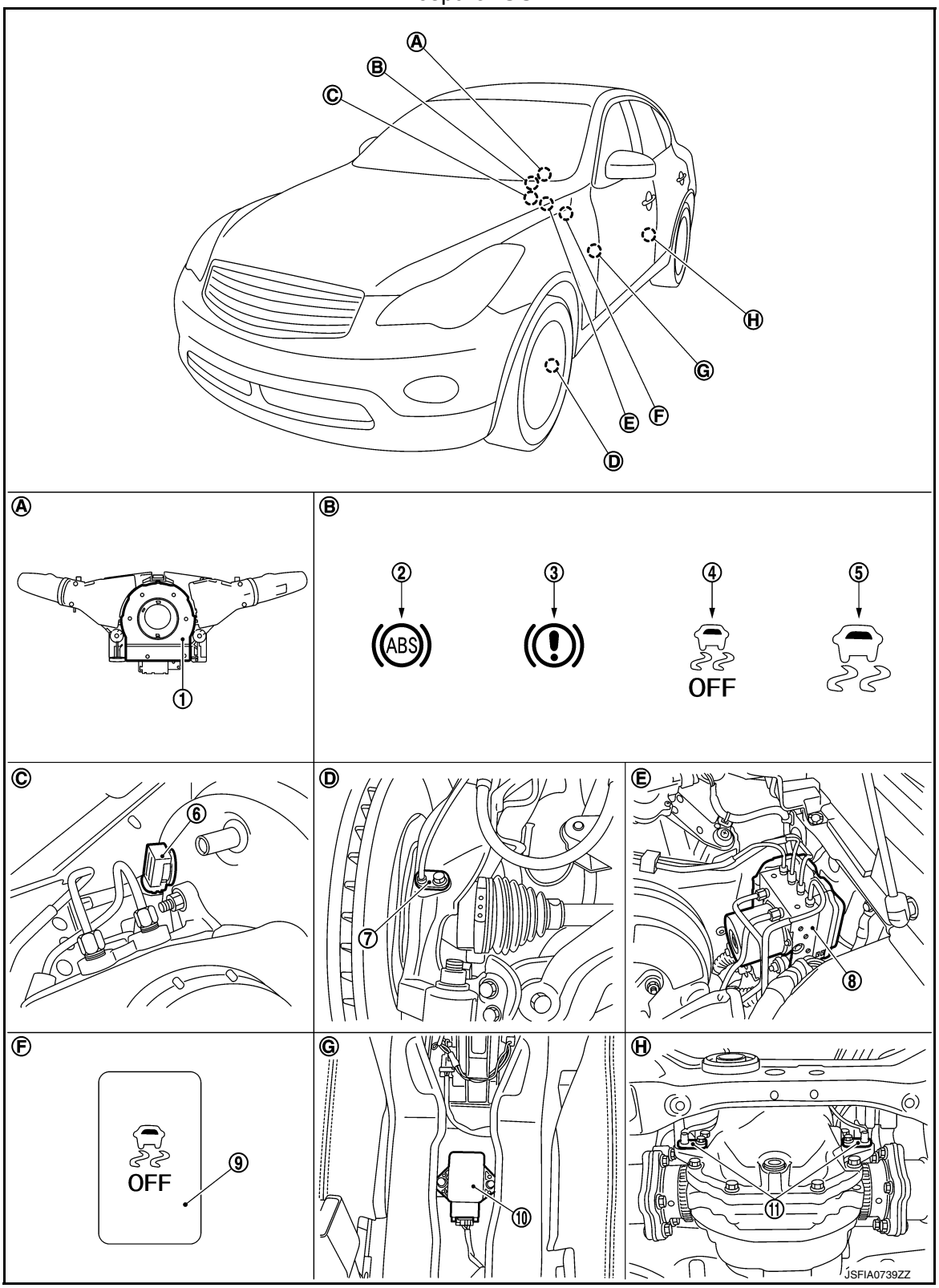


1. Steering angle sensor
2. ABS warning lamp
3. Brake warning lamp
4. VDC OFF indicator lamp
5. VDC warning lamp
6. Vacuum sensor (with ICC)

7. Front wheel sensor
8. ABS actuator and electric unit (control unit)
9. VDC OFF switch
10. Yaw rate/side G sensor
11. Rear wheel sensor

A. Back of spiral cable assembly
B. Combination meter
C. Brake booster
D. Steering knuckle
E. Inside brake master cylinder cover
F. Instrument driver lower panel
G. Under center console
H. Rear final drive assembly

Except for USA



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

A. Back of spiral cable assembly
B. Combination meter
C. Brake booster
D. Steering knuckle
E. Inside brake master cylinder cover
F. Instrument driver lower panel
G. Under center console
H. Rear final drive assembly

Component Description

INFOID:0000000010594735

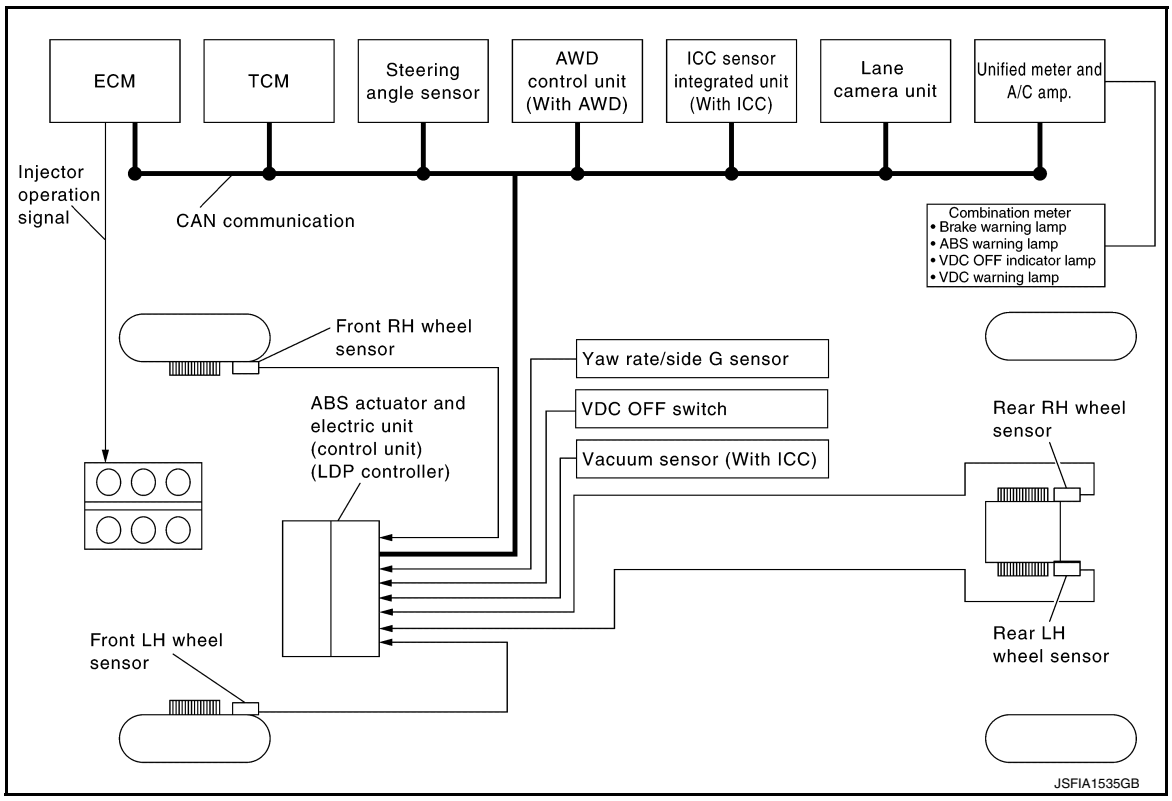
Component parts		Reference
ABS actuator and electric unit (control unit)	Pump	BRC-52, "Description"
	Motor	
	Actuator relay (main relay)	BRC-74, "Description"
	Solenoid valve	BRC-68, "Description"
	Pressure sensor	BRC-76, "Description"
	VDC switch-over valve (USV1, USV2, HSV1, HSV2)	BRC-88, "Description"
Wheel sensor		BRC-36, "Description"
Yaw rate/side G sensor		BRC-85, "Description"
Steering angle sensor		BRC-79, "Description"
VDC OFF switch		BRC-123, "Description"
ABS warning lamp		BRC-125, "Description"
Brake warning lamp		BRC-126, "Description"
VDC OFF indicator lamp		BRC-127, "Description"
VDC warning lamp		BRC-128, "Description"
Vacuum sensor (with ICC)		BRC-99, "Description"

EBD

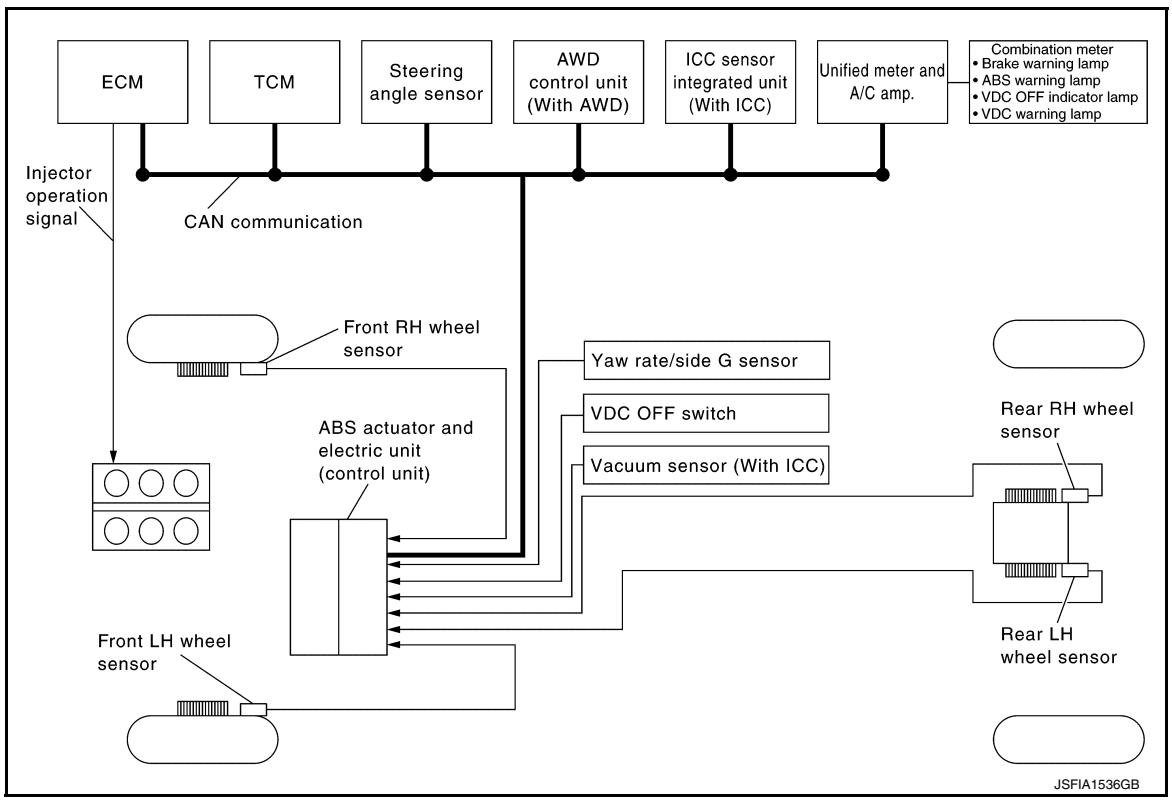
System Diagram

INFOID:0000000010594736

With LDP



Without LDP



System Description

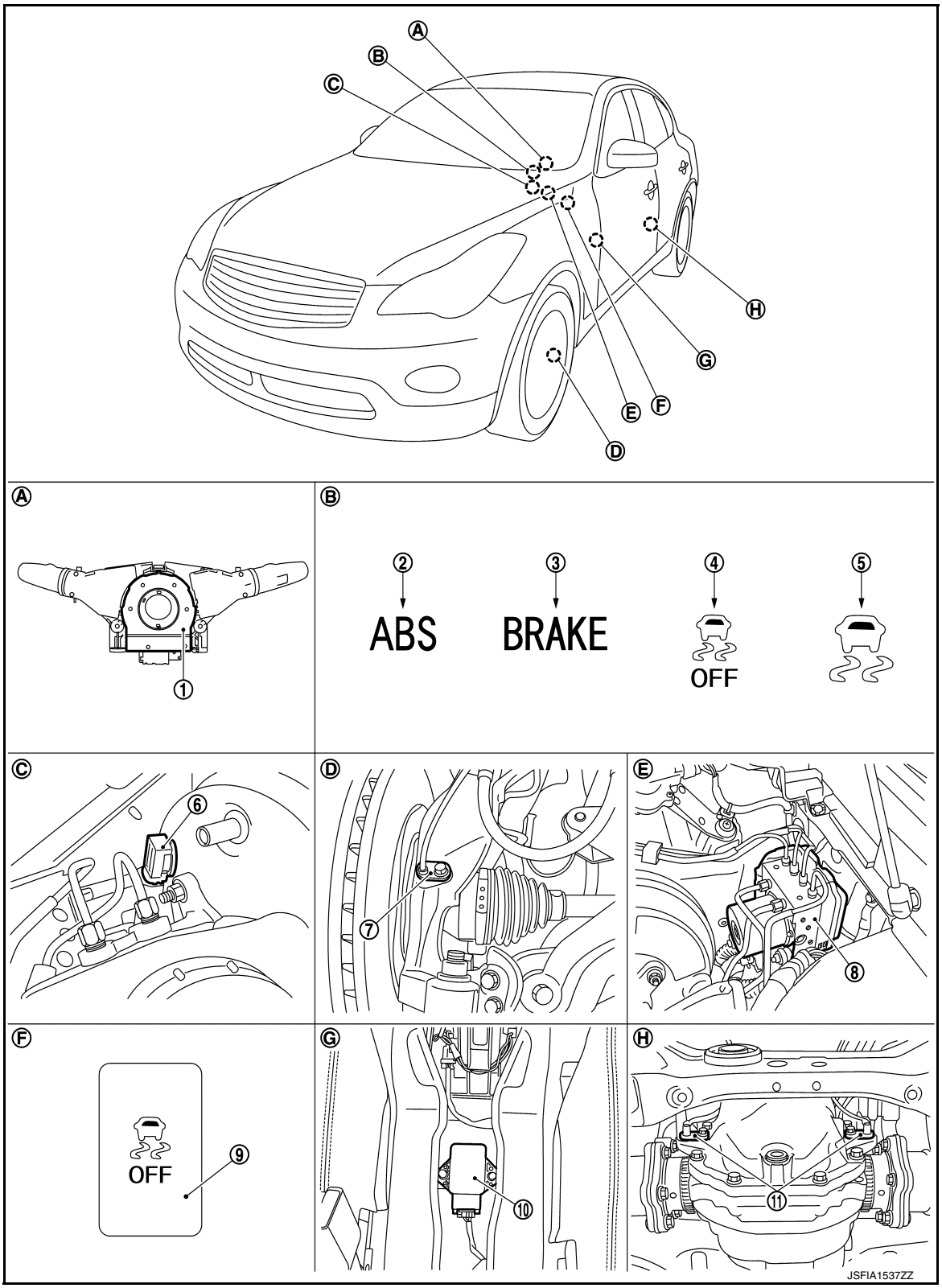
INFOID:0000000010594737

- 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 is available.

Component Parts Location

INFOID:0000000010594738

For USA

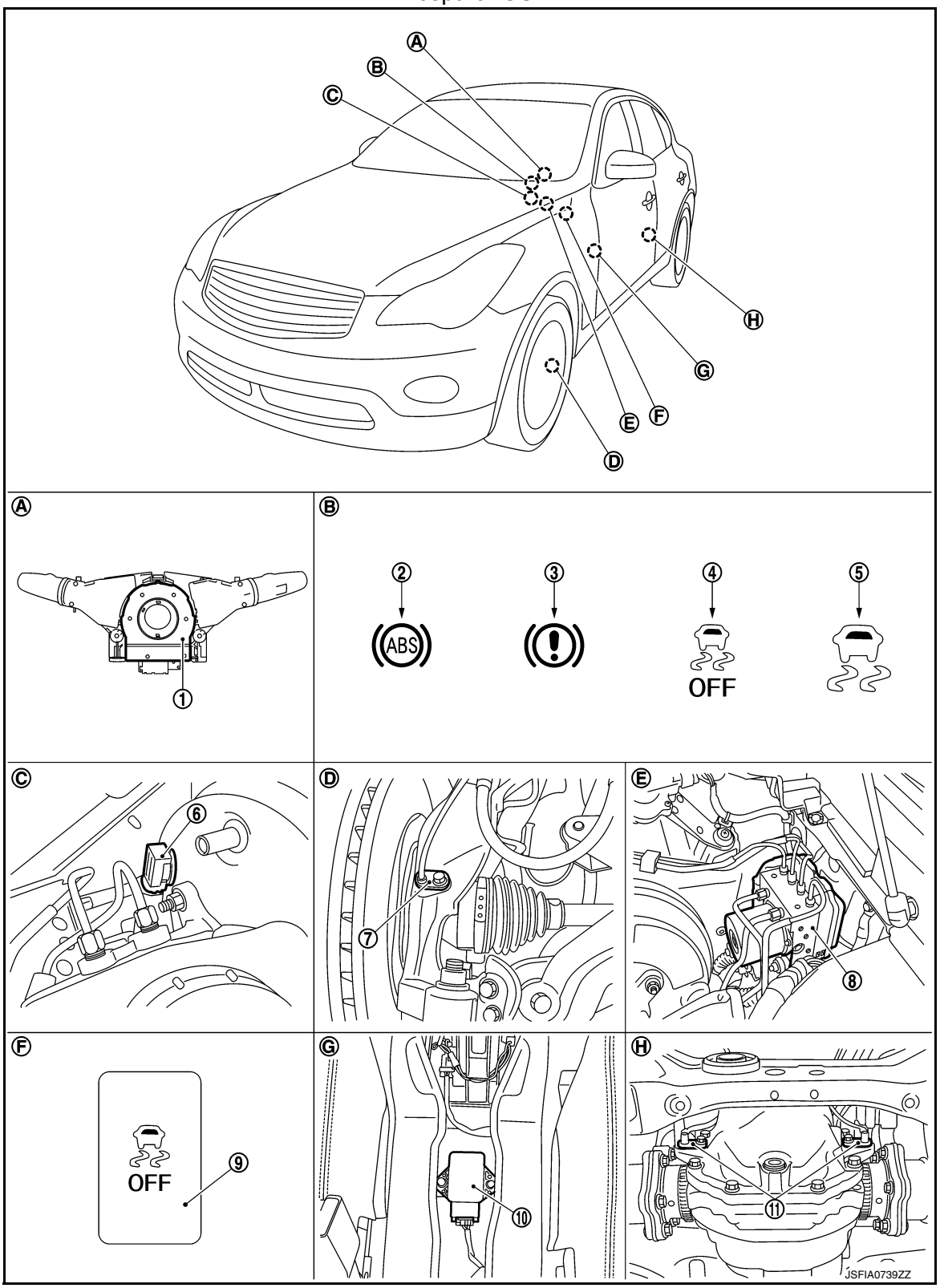


1. Steering angle sensor
2. ABS warning lamp
3. Brake warning lamp
4. VDC OFF indicator lamp
5. VDC warning lamp
6. Vacuum sensor (with ICC)

7. Front wheel sensor
8. ABS actuator and electric unit (control unit)
9. VDC OFF switch
10. Yaw rate/side G sensor
11. Rear wheel sensor

A. Back of spiral cable assembly
B. Combination meter
C. Brake booster
D. Steering knuckle
E. Inside brake master cylinder cover
F. Instrument driver lower panel
G. Under center console
H. Rear final drive assembly

Except for USA



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

A. Back of spiral cable assembly
B. Combination meter
C. Brake booster
D. Steering knuckle
E. Inside brake master cylinder cover
F. Instrument driver lower panel
G. Under center console
H. Rear final drive assembly

Component Description

INFOID:0000000010594739

Component parts		Reference
ABS actuator and electric unit (control unit)	Pump	BRC-52, "Description"
	Motor	
	Actuator relay (main relay)	BRC-74, "Description"
	Solenoid valve	BRC-68, "Description"
	Pressure sensor	BRC-76, "Description"
	VDC switch-over valve (USV1, USV2, HSV1, HSV2)	BRC-88, "Description"
Wheel sensor		BRC-36, "Description"
Yaw rate/side G sensor		BRC-85, "Description"
Steering angle sensor		BRC-79, "Description"
VDC OFF switch		BRC-123, "Description"
ABS warning lamp		BRC-125, "Description"
Brake warning lamp		BRC-126, "Description"
VDC OFF indicator lamp		BRC-127, "Description"
VDC warning lamp		BRC-128, "Description"
Vacuum sensor (with ICC)		BRC-99, "Description"

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

CONSULT Function

INFOID:0000000010594740

FUNCTION

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

Diagnostic test mode	Function
Work support	This mode enables a technician to adjust some devices faster and more accurately by following the indications on CONSULT.
Self diagnostic 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	CONSULT drives some actuators apart from 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.
Specific data monitor	Specific LDP data in the ABS actuator and electric unit (control unit) can be read.

WORK SUPPORT

CAUTION:

Erase DTC memory of the lane camera unit after implementing work support. Refer to DAS-268, "CONSULT Function (LANE CAMERA)".

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, start engine and drive vehicle at 50 km/h (31 MPH) or more for approximately 2 minutes.

Display Item List

Refer to BRC-140, "DTC No. Index".

How to Erase Self-diagnosis Results

After erasing DTC memory for “ABS” with CONSULT, start the engine and drive the vehicle at 50 km/h (31 MPH) or more for approximately 2 minutes as the final inspection, and make sure that the ABS warning lamp, VDC 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, ABS warning lamp, VDC warning lamp and brake warning lamp will not turn OFF even when the system is normal unless the vehicle is driven at approximately 50 km/h (31 MPH) or more for approximately 2 minutes.
- Brake warning lamp will turn ON in case of parking brake operation (when switch is ON) or in case of brake fluid level switch operation (when brake fluid is insufficient).
- VDC OFF switch should not stay in “ON” position.

DATA MONITOR

Display Item List

NOTE:

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

×: Applicable ▼: Optional item

Monitor item (Unit)	SELECT MONITOR ITEM		Remarks
	ECU INPUT SIGNALS	MAIN SIGNALS	
FR LH SENSOR [km/h (MPH)]	×	×	Wheel speed
FR RH SENSOR [km/h (MPH)]	×	×	
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
SLCT LVR POSI	×	×	A/T selector lever position
YAW RATE SEN (d/s)	×	×	Yaw rate detected by yaw rate/side 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 G sensor
STR ANGLE SIG (°)	×	▼	Steering angle detected by steering angle sensor
PRESS SENSOR (bar)	×	▼	Brake fluid pressure detected by pressure sensor
ENGINE RPM [tr/min (rpm)]	×	▼	Engine speed
FLUID LEV SW (On/Off)	×	▼	Brake fluid level switch signal status
PARK BRAKE SW (On/Off)	×	▼	Parking brake switch signal status
FR RH IN SOL (On/Off) (Note)	▼	×	Operation status of each solenoid valve
FR RH OUT SOL (On/Off) (Note)	▼	×	
FR LH IN SOL (On/Off) (Note)	▼	×	
FR LH OUT SOL (On/Off) (Note)	▼	×	
RR RH IN SOL (On/Off) (Note)	▼	×	
RR RH OUT SOL (On/Off) (Note)	▼	×	
RR LH IN SOL (On/Off) (Note)	▼	×	
RR LH OUT SOL (On/Off) (Note)	▼	×	
MOTOR RELAY (On/Off)	▼	×	Motor and motor relay operation
ACTUATOR RLY (On/Off) (Note)	▼	×	Actuator relay operation

Monitor item (Unit)	SELECT MONITOR ITEM		Remarks
	ECU INPUT SIGNALS	MAIN SIGNALS	
ABS WARN LAMP (On/Off)	▼	×	ABS warning lamp
OFF LAMP (On/Off)	▼	×	VDC OFF indicator lamp
SLIP/VDC LAMP (On/Off)	▼	×	VDC warning lamp
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 signal
ABS FAIL SIG (On/Off)	▼	▼	ABS fail-safe signal
TCS FAIL SIG (On/Off)	▼	▼	TCS fail-safe signal
VDC FAIL SIG (On/Off)	▼	▼	VDC fail-safe signal
CRANKING SIG (On/Off)	▼	▼	Crank operation
USV[FR-RL] (On/Off) (Note)	▼	▼	VDC switch-over valve
USV[FL-RR] (On/Off) (Note)	▼	▼	
HSV[FR-RL] (On/Off) (Note)	▼	▼	
HSV[FL-RR] (On/Off) (Note)	▼	▼	
V/R OUTPUT (On/Off)	▼	▼	Solenoid valve relay activated
M/R OUTPUT (On/Off)	▼	▼	Actuator motor and motor relay activated
LDP) APP SEN (%)	×	×	Accelerator pedal position sensor status received from ECM via CAN communication
LDP) ICC MAIN SW (On/Off)	×	×	ICC MAIN switch status received from ECM via CAN communication
LDP) LDP ON SW (On/Off)	×	×	Dynamic driver assistance switch status received from ECM via CAN communication
LDP) WIPER SIGNAL (Stop/PRTCT/1low/1high/Low/High)	×	×	Front wiper operating condition received from BCM via CAN communication
LDP) BRAKE SW (On/Off)	×	×	Brake switch signal status
LDP) STOP LMP SW (On/Off)	×	×	Stop lamp switch signal status
LDP) LDW SW (On/Off)	×	×	Warning systems switch status received from lane camera unit via CAN communication

Monitor item (Unit)	SELECT MONITOR ITEM		Remarks
	ECU INPUT SIGNALS	MAIN SIGNALS	
LDP) SHIFT POSITION (OFF/P/R/N/D/MM 1st – MM 5th)	×	×	Shift position received from TCM via CAN communication
LDP) TURN SIGNAL (Off/LH/RH/LH&RH)	×	×	Turn signal operating condition received from BCM via CAN communication

NOTE:

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

ACTIVE TEST

CAUTION:

- **Do not perform active test while driving vehicle.**
- **Make sure to completely bleed air from brake system.**
- **The active test cannot be started when ABS warning lamp, VDC warning lamp and brake warning lamp are ON.**
- **ABS warning lamp, VDC warning lamp and brake warning lamp are ON during active test.**
- **Erase memory of ICC system after implementing active test. Refer to CCS-39, "CONSULT Function (ICC/ADAS)".**
- **Erase memory of the lane camera unit after implementing active test. Refer to DAS-268, "CONSULT Function (LANE CAMERA)".**

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

Test Item

ABS SOLENOID VALVE

- Select “Up”, “Keep” and “Down” of “ACTIVE TEST” in “ABS” with CONSULT. Then use screen monitor to check that solenoid valve operates as shown in the table below.

Test item	Display item	Display (Note)		
		Up	Keep	Down
FR RH SOL	FR RH IN SOL	Off	On	On
	FR RH OUT SOL	Off	Off	On*
	USV[FR-RL]	Off	Off	Off
	HSV[FR-RL]	Off	Off	Off
FR LH SOL	FR LH IN SOL	Off	On	On
	FR LH OUT SOL	Off	Off	On*
	USV[FL-RR]	Off	Off	Off
	HSV[FL-RR]	Off	Off	Off
RR RH SOL	RR RH IN SOL	Off	On	On
	RR RH OUT SOL	Off	Off	On*
	USV[FL-RR]	Off	Off	Off
	HSV[FL-RR]	Off	Off	Off
RR LH SOL	RR LH IN SOL	Off	On	On
	RR LH OUT SOL	Off	Off	On*
	USV[FR-RL]	Off	Off	Off
	HSV[FR-RL]	Off	Off	Off

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

NOTE:

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

ABS SOLENOID VALVE (ACT)

- Select “Up”, “ACT UP” and “ACT KEEP” of “ACTIVE TEST” in “ABS” with CONSULT. Then use screen monitor to check that solenoid valve operates as shown in the table below.

Test item	Display item	Display (Note)		
		Up	ACT UP	ACT KEEP
FR RH ABS SOLENOID (ACT)	FR RH IN SOL	Off	Off	Off
	FR RH OUT SOL	Off	Off	Off
	USV[FR-RL]	Off	On	On
	HSV[FR-RL]	Off	On*	Off
FR LH ABS SOLENOID (ACT)	FR LH IN SOL	Off	Off	Off
	FR LH OUT SOL	Off	Off	Off
	USV[FL-RR]	Off	On	On
	HSV[FL-RR]	Off	On*	Off
RR RH ABS SOLENOID (ACT)	RR RH IN SOL	Off	Off	Off
	RR RH OUT SOL	Off	Off	Off
	USV[FL-RR]	Off	On	On
	HSV[FL-RR]	Off	On*	Off
RR LH ABS SOLENOID (ACT)	RR LH IN SOL	Off	Off	Off
	RR LH OUT SOL	Off	Off	Off
	USV[FR-RL]	Off	On	On
	HSV[FR-RL]	Off	On*	Off

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

NOTE:

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

ABS MOTOR

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

Test item	Display item	Display	
		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.

ECU IDENTIFICATION

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

SPECIFIC DATA MONITOR

Specific data monitor displays specific LDP operating conditions.

Monitor item (Unit)	Remarks
YAW RATE SEN (d/s)	Yaw rate detected by yaw rate/side G sensor
LDP) YAW ORDER (×100Nm)	Calculated target yaw moment

Monitor item (Unit)	Remarks
LDP) WARN REQ (On/Off)	Status of warning request that transmits to lane camera unit via CAN communication
LDP) WARN CONTROL (On/Off)	Status of warning main controller for LDP
LDP) REDY SIGNAL (On/Off)	Status of internal judgment by LDP controller [ABS actuator and electric unit (control unit)]
LDP) STATUS SIGNAL (STANDBY/WARN/MASK/Off)	Status of internal judgment by LDP controller [ABS actuator and electric unit (control unit)]
LDP) CAMERA LOST (Detect/Deviate/Both)	Lane marker detected condition received from lane camera unit via CAN communication
LDP) LANE UNCLEAR (On/Off)	Lane marker condition received from lane camera unit via CAN communication

DTC/CIRCUIT DIAGNOSIS

C1101, C1102, C1103, C1104 WHEEL SENSOR

Description

INFOID:0000000010594741

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:0000000010594742

DTC DETECTION LOGIC

DTC	Display item (Trouble diagnosis content)	Malfunction detected condition
C1101	RR RH SENSOR-1 (Rear RH wheel sensor-1)	When an open circuit is detected in rear RH wheel sensor circuit.
C1102	RR LH SENSOR-1 (Rear LH wheel sensor-1)	When an open circuit is detected in rear LH wheel sensor circuit.
C1103	FR RH SENSOR-1 (Front RH wheel sensor-1)	When an open circuit is detected in front RH wheel sensor circuit.
C1104	FR LH SENSOR-1 (Front LH wheel sensor-1)	When an open circuit is detected in front LH wheel sensor circuit.

POSSIBLE CAUSE

NOTE:
Confirm if DTC is PAST or CRNT. If DTC is CRNT, proceed with Diagnosis Procedure. If DTC is PAST, clear DTC. Do not replace the ABS actuator and electric unit (control unit) for a PAST DTC.

PAST DTC	CRNT DTC
• Harness or connector • ABS actuator and electric unit (control unit) power supply system • Fuse • Fusible link • Battery	• Harness or connector • Wheel sensor • ABS actuator and electric unit (control unit) • ABS actuator and electric unit (control unit) power supply system • Fuse • Fusible link • Battery

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

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

>> GO TO 2.

2.DTC REPRODUCTION PROCEDURE

With CONSLT
1. Start the engine.
2. Drive the vehicle at approx 50 km/h (31 MPH) or more for approximately 2 minutes.
3. Stop the vehicle.
4. Turn the ignition switch OFF → ON.
   CAUTION:
   - **Be sure to wait of 10 seconds after turning ignition switch OFF or ON.**
   - **Start the engine.**
5. Repeat step 4 two or more times.
6. Perform self-diagnosis for “ABS”.

Is any DTC “C1101”, “C1102”, “C1103” or “C1104” detected?

YES-1 >> “C1101”, “C1102”, “C1103” or “C1104” is displayed by “CRNT”: Proceed to BRC-37, "Diagnosis Procedure".
YES-2 >> “C1101”, “C1102”, “C1103” and “C1104” are displayed by “PAST”: INSPECTION END (Erase the memory of self-diagnosis results.)
NO-1 >> To check malfunction symptom before repair: Refer to GI-45, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:0000000010594743

CAUTION:
Never check between wheel sensor harness connector terminals.

1.CHECK WHEEL SENSOR

1. Turn the ignition switch OFF.
2. Check the wheel sensor for damage.

Is the inspection result normal?

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

2.REPLACE WHEEL SENSOR (1)

With CONSULT
1. Replace the wheel sensor.
- Front: Refer to BRC-153, "FRONT WHEEL SENSOR : Removal and Installation".
- Rear: Refer to BRC-154, "REAR WHEEL SENSOR : Removal and Installation".
2. Erase self-diagnosis result for “ABS”.
3. Turn the ignition switch OFF → ON → OFF.
   CAUTION:
   Be sure to wait of 10 seconds after turning ignition switch OFF or ON.
4. Start the engine.
5. Drive the vehicle at approx. 50 km/h (31 MPH) or more for approx. 2 minutes.
6. Stop the vehicle.
7. Turn the ignition switch OFF → ON.
   CAUTION:
   - **Be sure to wait of 10 seconds after turning ignition switch OFF or ON.**
   - **Start the engine.**
8. Repeat step 7 two or more times.
9. Perform self-diagnosis for “ABS”.

Is any DTC “C1101”, “C1102”, “C1103” or “C1104” detected?

YES >> GO TO 3.
NO >> INSPECTION END

3.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Check the ABS actuator and electric unit (control unit) harness connector for disconnection or looseness.
3. Check the wheel sensor harness connector for disconnection or looseness.

Is the inspection result normal?

YES >> GO TO 5.
NO >> Repair / replace harness or connector, securely lock the connector, and GO TO 4.

4.PERFORM SELF-DIAGNOSIS (1)

With CONSULT
1. Erase self-diagnosis result for “ABS”.
2. Turn the ignition switch OFF → ON → OFF.
   CAUTION:
   Be sure to wait of 10 seconds after turning ignition switch OFF or ON.
3. Start the engine.
4. Drive the vehicle at approx. 50 km/h (31 MPH) or more for approx. 2 minutes.
5. Stop the vehicle.
6. Turn the ignition switch OFF → ON.

CAUTION:
- **Be sure to wait of 10 seconds after turning ignition switch OFF or ON.**
- **Start the engine.**

7. Repeat step 6 two or more times.
8. Perform self-diagnosis for “ABS”.

Is any DTC “C1101”, “C1102”, “C1103” or “C1104” detected?

YES >> GO TO 5.
NO >> INSPECTION END

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

Check the ABS actuator and electric unit (control unit) power supply and ground circuit. Refer to BRC-118, "Diagnosis Procedure".

Is the inspection result normal?

YES >> GO TO 6.
NO >> Repair / replace harness, connector, fuse, or fusible link.

6.CHECK TERMINAL

1. Turn the ignition switch OFF.
2. Disconnect ABS actuator and electric unit (control unit) harness connector and then check the ABS actuator and electric unit (control unit) pin terminals for damage or loose connection with harness connector.
3. Disconnect wheel sensor harness connector and check each wheel sensor pin terminals for damage or loose connection with harness connector.

Is the inspection result normal?

YES >> GO TO 8.
NO >> Repair / replace harness, connector, terminal, and GO TO 7.

7.PERFORM SELF-DIAGNOSIS (2)

With CONSULT
1. Connect ABS actuator and electric unit (control unit) harness connector.
2. Connect wheel sensor harness connector.
3. Erase self-diagnosis result for “ABS”.
4. Turn the ignition switch OFF → ON → OFF.

CAUTION:
Be sure to wait of 10 seconds after turning ignition switch OFF or ON.

5. Start the engine.
6. Drive the vehicle at approx. 50 km/h (31 MPH) or more for approx. 2 minutes.
7. Stop the vehicle.
8. Turn the ignition switch OFF → ON.

CAUTION:
- **Be sure to wait of 10 seconds after turning ignition switch OFF or ON.**
- **Start the engine.**

9. Repeat step 8 two or more times.
10. Perform self-diagnosis for “ABS”.

Is any DTC “C1101”, “C1102”, “C1103” or “C1104” detected?

YES >> GO TO 8.
NO >> INSPECTION END

8.CHECK WHEEL SENSOR HARNESS

1. Turn the ignition switch OFF.
2. Disconnect ABS actuator and electric unit (control unit) harness connector.
3. Disconnect wheel sensor harness connector.
4. Check the continuity between ABS actuator and electric unit (control unit) harness connector and wheel sensor harness connector. (Check the continuity when steering wheel is steered to RH and LH, or center harness in wheel housing is moved.)

Measurement connector and terminal for power supply circuit

ABS actuator and electric unit (control unit)		Wheel sensor		Continuity
Connector	Terminal	Connector	Terminal	
E41	26	E60 (Front LH)	1	Existed
	9	E27 (Front RH)		
	6	B34 (Rear LH)		
	7	B33 (Rear RH)		

Measurement connector and terminal for signal circuit

ABS actuator and electric unit (control unit)		Wheel sensor		Continuity
Connector	Terminal	Connector	Terminal	
E41	5	E60 (Front LH)	2	Existed
	10	E27 (Front RH)		
	27	B34 (Rear LH)		
	29	B33 (Rear RH)		

Is the inspection result normal?

YES >> GO TO 10.
NO >> Repair / replace harness or connector, and GO TO 9.

9. PERFORM SELF-DIAGNOSIS (3)

With CONSULT

1. Connect ABS actuator and electric unit (control unit) harness connector.
2. Connect wheel sensor harness connector.
3. Erase self-diagnosis result for “ABS”.
4. Turn the ignition switch OFF → ON → OFF.
   CAUTION:
   Be sure to wait of 10 seconds after turning ignition switch OFF or ON.
5. Start the engine.
6. Drive the vehicle at approx. 50 km/h (31 MPH) or more for approx. 2 minutes.
7. Stop the vehicle.
8. Turn the ignition switch OFF → ON.
   CAUTION:
   - **Be sure to wait of 10 seconds after turning ignition switch OFF or ON.**
   - **Start the engine.**
9. Repeat step 8 two or more times.
10. Perform self-diagnosis for “ABS”.

Is any DTC “C1101”, “C1102”, “C1103” or “C1104” detected?

YES >> GO TO 10.
NO >> INSPECTION END

10. REPLACE WHEEL SENSOR

With CONSULT

1. Replace the wheel sensor.

- Front: Refer to BRC-153, "FRONT WHEEL SENSOR : Removal and Installation".
- Rear: Refer to BRC-154, "REAR WHEEL SENSOR : Removal and Installation".

2. Erase self-diagnosis result for “ABS”.
3. Turn the ignition switch OFF → ON → OFF.
   CAUTION:
   Be sure to wait of 10 seconds after turning ignition switch OFF or ON.
4. Start the engine.
5. Drive the vehicle at approx. 50 km/h (31 MPH) or more for approx. 2 minutes.
6. Stop the vehicle.
7. Turn the ignition switch OFF → ON.
   CAUTION:
   - **Be sure to wait of 10 seconds after turning ignition switch OFF or ON.**
   - **Start the engine.**

8. Repeat step 7 two or more times.
9. Perform self-diagnosis for “ABS”.

Is any DTC “C1101”, “C1102”, “C1103” or “C1104” detected?

YES >> Replace the ABS actuator and electric unit (control unit). Refer to BRC-156, "Removal and Installation".
NO >> INSPECTION END

C1105, C1106, C1107, C1108 WHEEL SENSOR

Description

INFOID:0000000010594745

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:0000000010594746

DTC DETECTION LOGIC

DTC	Display item (Trouble diagnosis content)	Malfunction detected condition
C1105	RR RH SENSOR-2 (Rear RH sensor -2)	• When power supply voltage of rear RH wheel sensor is low. • When distance between rear RH wheel sensor and rear RH wheel sensor rotor is large. • When installation of rear RH wheel sensor or rear RH wheel sensor rotor is not normal.
C1106	RR LH SENSOR-2 (Rear LH wheel sensor-2)	• When power supply voltage of rear LH wheel sensor is low. • When distance between rear LH wheel sensor and rear LH wheel sensor rotor is large. • When installation of rear LH wheel sensor or rear LH wheel sensor rotor is not normal.
C1107	FR RH SENSOR-2 (Front RH wheel sensor-2)	• When power supply voltage of front RH wheel sensor is low. • When distance between front RH wheel sensor and front RH wheel sensor rotor is large. • When installation of front RH wheel sensor or rear RH wheel sensor rotor is not normal.
C1108	FR LH SENSOR-2 (Front LH wheel sensor-2)	• When power supply voltage of front LH wheel sensor is low. • When distance between front LH wheel sensor and front LH wheel sensor rotor is large. • When installation of front LH wheel sensor or front LH wheel sensor rotor is not normal.

POSSIBLE CAUSE

NOTE:
Confirm if DTC is PAST or CRNT. If DTC is CRNT, proceed with Diagnosis Procedure. If DTC is PAST, clear DTC. Do not replace the ABS actuator and electric unit (control unit) for a PAST DTC.

PAST DTC	CRNT DTC
• Harness or connector • Wheel sensor • Sensor rotor • Tire size • ABS actuator and electric unit (control unit) power supply system • Fuse • Fusible link • Battery	• Harness or connector • Wheel sensor • Sensor rotor • ABS actuator and electric unit (control unit) • Tire size • ABS actuator and electric unit (control unit) power supply system • Fuse • Fusible link • Battery

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

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

>> GO TO 2.

2.DTC REPRODUCTION PROCEDURE

With CONSULT
1. Start the engine.
2. Drive the vehicle at approx. 50 km/h (31 MPH) or more for approx. 2 minutes.
3. Stop the vehicle.
4. Turn the ignition switch OFF → ON.

CAUTION:
- **Be sure to wait of 10 seconds after turning ignition switch OFF or ON.**

• **Start the engine.**
5. Repeat step 4 two or more times.
6. Perform self-diagnosis for “ABS”.

Is any DTC “C1105”, “C1106”, “C1107” or “C1108” detected?

YES-1 >> “C1105”, “C1106”, “C1107” or “C1108” is displayed by “CRNT”: Proceed to BRC-42, "Diagnosis Procedure".
YES-2 >> “C1105”, “C1106”, “C1107” and “C1108” are displayed by “PAST”: INSPECTION END (Erase the memory of self-diagnosis results.)
NO-1 >> To check malfunction symptom before repair: Refer to GI-45, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:0000000010594747

CAUTION:
Never check between wheel sensor harness connector terminals.

1.CHECK WHEEL HUB AND BEARING ASSEMBLY

Check that there is no excessive looseness in wheel hub and bearing assembly.
• Front
- 2WD: Refer to FAX-6, "Inspection".
- AWD: Refer to FAX-15, "Inspection".
• Rear: Refer to RAX-5, "Inspection".

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair or replace the wheel hub and bearing assembly, and GO TO 2.
• Front
- 2WD: Refer to FAX-7, "Removal and Installation".
- AWD: Refer to FAX-17, "Removal and Installation".
• Rear: Refer to RAX-7, "Removal and Installation".

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

Check the ABS actuator and electric unit (control unit) power supply and ground circuit. Refer to BRC-118, "Diagnosis Procedure".

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair / replace harness, connector, fuse, or fusible link.

3.CHECK TIRE

1. Turn the ignition switch OFF.
2. Check the tire air pressure, wear and size. Refer to WT-53, "Tire Air Pressure".

Is the inspection result normal?

YES >> GO TO 6.
NO >> Adjust air pressure or replace tire and GO TO 4.

4.CHECK DATA MONITOR (1)

With CONSULT
1. Erase self-diagnosis result for “ABS”.
2. Turn the ignition switch OFF → ON → OFF.
CAUTION:
Be sure to wait of 10 seconds after turning ignition switch OFF or ON.
3. Start the engine.
4. Select “ABS” and “DATA MONITOR”, check “FR LH SENSOR”, “FR RH SENSOR”, “RR LH SENSOR” and “RR RH SENSOR”.
NOTE:
Set the “DATA MONITOR” recording speed to “10 msec”.
5. Read a value (wheel speed) of both normal wheel sensors and error-detecting wheel sensor.

Regarding the deference at 50 km/h (31 MPH) between the wheel speed detected by the error detecting wheel sensor and the maximum/minimum wheel speed detected by the normal wheel sensors, is the difference within 5%, respectively?

YES >> GO TO 5.
NO >> GO TO 6.

5. PERFORM SELF-DIAGNOSIS (1)

With CONSULT

1. Drive the vehicle at approx. 50 km/h (31 MPH) or more for approx. 2 minutes.
2. Stop the vehicle.
3. Turn the ignition switch OFF → ON.
   CAUTION:
   - **Be sure to wait of 10 seconds after turning ignition switch OFF or ON.**
   - **Start the engine.**
4. Repeat step 3 two or more times.
5. Perform self-diagnosis for “ABS”.

Is any DTC “C1105”, “C1106”, “C1107” or “C1108” detected?

YES >> GO TO 6.
NO >> INSPECTION END

6. CHECK WHEEL SENSOR

1. Turn the ignition switch OFF.
2. Check the wheel sensor for damage.
3. Remove dust and foreign matter adhered to the sensor rotor with a vacuum dust collector through the wheel sensor mounting hole.
   CAUTION:
   Install wheel sensor with no backlash and float, and tighten the mounting bolt to the specified torque.
   - **Front: Refer to BRC-153, "FRONT WHEEL SENSOR : Exploded View".**
   - **Rear: Refer to BRC-154, "REAR WHEEL SENSOR : Exploded View".**

Is the inspection result normal?

YES >> GO TO 9.
NO >> GO TO 7.

7. REPLACE WHEEL SENSOR (1)

With CONSULT

1. Replace the wheel sensor.

- Front: Refer to BRC-153, "FRONT WHEEL SENSOR : Removal and Installation".
- Rear: Refer to BRC-154, "REAR WHEEL SENSOR : Removal and Installation".

2. Erase self-diagnosis result for “ABS”.
3. Turn the ignition switch OFF → ON → OFF.
   CAUTION:
   Be sure to wait of 10 seconds after turning ignition switch OFF or ON.
4. Start the engine.
5. Select “ABS” and “DATA MONITOR”, check “FR LH SENSOR”, “FR RH SENSOR”, “RR LH SENSOR” and “RR RH SENSOR”.
   NOTE:
   Set the “DATA MONITOR” recording speed to “10 msec”.
6. Read a value (wheel speed) of both normal wheel sensors and error-detecting wheel sensor.

Regarding the deference at 50 km/h (31 MPH) between the wheel speed detected by the error detecting wheel sensor and the maximum/minimum wheel speed detected by the normal wheel sensors, is the difference within 5%, respectively?

YES >> GO TO 8.
NO >> GO TO 20.

8. PERFORM SELF-DIAGNOSIS (2)

With CONSULT

1. Drive the vehicle at approx. 50 km/h (31 MPH) or more for approx. 2 minutes.

2. Stop the vehicle.
3. Turn the ignition switch OFF → ON.

CAUTION:
- **Be sure to wait of 10 seconds after turning ignition switch OFF or ON.**
- **Start the engine.**

4. Repeat step 3 two or more times.
5. Perform self-diagnosis for “ABS”.

Is any DTC “C1105”, “C1106”, “C1107” or “C1108” detected?

YES >> GO TO 20.
NO >> INSPECTION END

9. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Check the ABS actuator and electric unit (control unit) harness connector for disconnection or looseness.
3. Check the wheel sensor harness connector for disconnection or looseness.

Is the inspection result normal?

YES >> GO TO 12.
NO >> Repair / replace harness or connector, securely lock the connector, and GO TO 10.

10. CHECK DATA MONITOR (2)

With CONSULT
1. Erase self-diagnosis result for “ABS”.
2. Turn the ignition switch OFF → ON → OFF.

CAUTION:
Be sure to wait of 10 seconds after turning ignition switch OFF or ON.

3. Start the engine.
4. Select “ABS” and “DATA MONITOR”, check “FR LH SENSOR”, “FR RH SENSOR”, “RR LH SENSOR” and “RR RH SENSOR”.

NOTE:
Set the “DATA MONITOR” recording speed to “10 msec”.

5. Read a value (wheel speed) of both normal wheel sensors and error-detecting wheel sensor.

Regarding the deference at 50 km/h (31 MPH) between the wheel speed detected by the error detecting wheel sensor and the maximum/minimum wheel speed detected by the normal wheel sensors, is the difference within 5%, respectively?

YES >> GO TO 11.
NO >> GO TO 12.

11. PERFORM SELF-DIAGNOSIS (3)

With CONSULT
1. Drive the vehicle at approx. 50 km/h (31 MPH) or more for approx. 2 minutes.
2. Stop the vehicle.
3. Turn the ignition switch OFF → ON.

CAUTION:
- **Be sure to wait of 10 seconds after turning ignition switch OFF or ON.**
- **Start the engine.**

4. Repeat step 3 two or more times.
5. Perform self-diagnosis for “ABS”.

Is any DTC “C1105”, “C1106”, “C1107” or “C1108” detected?

YES >> GO TO 12.
NO >> INSPECTION END

12. CHECK TERMINAL

1. Turn the ignition switch OFF.
2. Disconnect ABS actuator and electric unit (control unit) harness connector and then check ABS actuator and electric unit (control unit) pin terminals for damage or loose connection with harness connector.
3. Disconnect wheel sensor harness connector and check each wheel sensor pin terminals for damage or loose connection with harness connector.

Is the inspection result normal?

YES >> GO TO 15.
NO >> Repair / replace harness, connector, or terminal, and GO TO 13.

13. CHECK DATA MONITOR (3)

With CONSULT
1. Connect ABS actuator and electric unit (control unit) harness connector.
2. Connect wheel sensor harness connector.
3. Erase self-diagnosis result for “ABS”.
4. Turn the ignition switch OFF → ON → OFF.
   CAUTION:
   Be sure to wait of 10 seconds after turning ignition switch OFF or ON.
5. Start the engine.
6. Select “ABS” and “DATA MONITOR”, check “FR LH SENSOR”, “FR RH SENSOR”, “RR LH SENSOR” and “RR RH SENSOR”.
   NOTE:
   Set the “DATA MONITOR” recording speed to “10 msec”.
7. Read a value (wheel speed) of both normal wheel sensors and error-detecting wheel sensor.

Regarding the deference at 50 km/h (31 MPH) between the wheel speed detected by the error detecting wheel sensor and the maximum/minimum wheel speed detected by the normal wheel sensors, is the difference within 5%, respectively?

YES >> GO TO 14.
NO >> GO TO 15.

14. PERFORM SELF-DIAGNOSIS (4)

With CONSULT
1. Drive the vehicle at approx. 50 km/h (31 MPH) or more for approx. 2 minutes.
2. Stop the vehicle.
3. Turn the ignition switch OFF → ON.
   CAUTION:
   - **Be sure to wait of 10 seconds after turning ignition switch OFF or ON.**
   - **Start the engine.**
4. Repeat step 3 two or more times.
5. Perform self-diagnosis for “ABS”.

Is any DTC “C1105”, “C1106”, “C1107” or “C1108” detected?

YES >> GO TO 15.
NO >> INSPECTION END

15. CHECK WHEEL SENSOR HARNESS

1. Turn the ignition switch OFF.
2. Disconnect ABS actuator and electric unit (control unit) harness connector.
3. Disconnect wheel sensor harness connector.
4. Check the continuity between ABS actuator and electric unit (control unit) harness connector and the ground.

ABS actuator and electric unit (control unit)		—	Continuity
Connector	Terminal		
E41	26, 5	Ground	Not existed
	9, 10		
	6, 27		
	7, 29		

Is the inspection result normal?

YES >> GO TO 16.
NO >> Repair / replace harness or connector, and GO TO 16.

16. CHECK DATA MONITOR (4)

With CONSULT
1. Connect ABS actuator and electric unit (control unit) harness connector.

2. Connect wheel sensor harness connector.
3. Erase self-diagnosis result for “ABS”.
4. Turn the ignition switch OFF → ON → OFF.
   CAUTION:
   Be sure to wait of 10 seconds after turning ignition switch OFF or ON.
5. Start the engine.
6. Select “ABS” and “DATA MONITOR”, check “FR LH SENSOR”, “FR RH SENSOR”, “RR LH SENSOR” and “RR RH SENSOR”.
   NOTE:
   Set the “DATA MONITOR” recording speed to “10 msec”.
7. Read a value (wheel speed) of both normal wheel sensors and error-detecting wheel sensor.

Regarding the deference at 50 km/h (31 MPH) between the wheel speed detected by the error detecting wheel sensor and the maximum/minimum wheel speed detected by the normal wheel sensors, is the difference within 5%, respectively?

YES >> GO TO 17.
NO >> GO TO 18.

17. PERFORM SELF-DIAGNOSIS (5)

With CONSULT
1. Drive the vehicle at approx. 50 km/h (31 MPH) or more for approx. 2 minutes.
2. Stop the vehicle.
3. Turn the ignition switch OFF → ON.
   CAUTION:
   - **Be sure to wait of 10 seconds after turning ignition switch OFF or ON.**
   - **Start the engine.**
4. Repeat step 3 two or more times.
5. Perform self-diagnosis for “ABS”.

Is any DTC “C1105”, “C1106”, “C1107” or “C1108” detected?

YES >> GO TO 18.
NO >> INSPECTION END

18. REPLACE WHEEL SENSOR

With CONSULT
1. Replace the wheel sensor.
- Front: Refer to BRC-153, "FRONT WHEEL SENSOR : Removal and Installation".
- Rear: Refer to BRC-154, "REAR WHEEL SENSOR : Removal and Installation".
2. Erase self-diagnosis result for “ABS”.
3. Turn the ignition switch OFF → ON → OFF.
   CAUTION:
   Be sure to wait of 10 seconds after turning ignition switch OFF or ON.
4. Start the engine.
5. Select “ABS” and “DATA MONITOR”, check “FR LH SENSOR”, “FR RH SENSOR”, “RR LH SENSOR” and “RR RH SENSOR”.
   NOTE:
   Set the “DATA MONITOR” recording speed to “10 msec”.
6. Read a value (wheel speed) of both normal wheel sensors and error-detecting wheel sensor.

Regarding the deference at 50 km/h (31 MPH) between the wheel speed detected by the error detecting wheel sensor and the maximum/minimum wheel speed detected by the normal wheel sensors, is the difference within 5%, respectively?

YES >> GO TO 19.
NO >> GO TO 20.

19. PERFORM SELF-DIAGNOSIS (6)

With CONSULT
1. Drive the vehicle at approx. 50 km/h (31 MPH) or more for approx. 2 minutes.
2. Stop the vehicle.
3. Turn the ignition switch OFF → ON.
   CAUTION:
   - **Be sure to wait of 10 seconds after turning ignition switch OFF or ON.**

- **Start the engine.**

4. Repeat step 3 two or more times.
5. Perform self-diagnosis for “ABS”.

Is any DTC “C1105”, “C1106”, “C1107” or “C1108” detected?

YES >> GO TO 20.
NO >> INSPECTION END

20. REPLACE SENSOR ROTOR

With CONSULT

1. Replace the sensor rotor.

- Front: Refer to BRC-155, "FRONT SENSOR ROTOR : Removal and Installation".
- Rear: Refer to BRC-155, "REAR SENSOR ROTOR : Removal and Installation".

2. Erase self-diagnosis result for “ABS”.
3. Turn the ignition switch OFF → ON → OFF.

CAUTION:
Be sure to wait of 10 seconds after turning ignition switch OFF or ON.

4. Start the engine.
5. Drive the vehicle at approx. 50 km/h (31 MPH) or more for approx. 2 minutes.
6. Stop the vehicle.
7. Turn the ignition switch OFF → ON.

CAUTION:
- **Be sure to wait of 10 seconds after turning ignition switch OFF or ON.**
- **Start the engine.**

8. Repeat step 7 two or more times.
9. Perform self-diagnosis for “ABS”.

Is any DTC “C1105”, “C1106”, “C1107” or “C1108” detected?

YES >> Replace the ABS actuator and electric unit (control unit). Refer to BRC-156, "Removal and Installation".
NO >> INSPECTION END

C1109 POWER AND GROUND SYSTEM

Description

INFOID:0000000010594749

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

DTC Logic

INFOID:0000000010594750

DTC DETECTION LOGIC

DTC	Display item (Trouble diagnosis content)	Malfunction detected condition
C1109	BATTERY VOLTAGE [ABNORMAL] (Battery voltage [abnormal)]	When ignition power supply voltage is in following state. • Ignition power supply voltage: 10 V ≥ ignition power supply voltage. • Ignition power supply voltage: 16 V ≤ ignition power supply voltage.

POSSIBLE CAUSE

NOTE:
Confirm if DTC is PAST or CRNT. If DTC is CRNT, proceed with Diagnosis Procedure. If DTC is PAST, clear DTC. Do not replace the ABS actuator and electric unit (control unit) for a PAST DTC.

PAST DTC	CRNT DTC
• Harness or connector • ABS actuator and electric unit (control unit) power supply system • Fuse • Fusible link • Battery • Charge system	• Harness or connector • ABS actuator and electric unit (control unit) • IPDM E/R • ABS actuator and electric unit (control unit) power supply system • Fuse • Fusible link • Battery • Charge system

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

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

>> GO TO 2.

2.DTC REPRODUCTION PROCEDURE

With CONSULT
1. Turn the ignition switch OFF → ON.
   CAUTION:
   Be sure to wait of 10 seconds after turning ignition switch OFF or ON.
2. Repeat step 1 two or more times.
3. Perform self-diagnosis for “ABS”.

Is DTC “C1109” detected?

YES-1 >> “CRNT” is displayed: Proceed to BRC-48, "Diagnosis Procedure".
YES-2 >> “PAST” is displayed: INSPECTION END (Erase the memory of self-diagnosis results.)
NO-1 >> To check malfunction symptom before repair: Refer to GI-45, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:0000000010594751

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Check the ABS actuator and electric unit (control unit) harness connector for disconnection or looseness.

Is the inspection result normal?

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

2.PERFORM SELF-DIAGNOSIS

With CONSULT
1. Turn the ignition switch OFF → ON.
   CAUTION:
   Be sure to wait of 10 seconds after turning ignition switch OFF or ON.
2. Repeat step 1 two or more times.
3. Perform self-diagnosis for “ABS”.

Is DTC “C1109” detected?

YES >> GO TO 3.
NO >> INSPECTION END

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

Check the ABS actuator and electric unit (control unit) power supply and ground circuit. Refer to BRC-118, "Diagnosis Procedure".

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair / replace harness, connector, fuse, or fusible link.

4.CHECK TERMINAL

1. Check the ABS actuator and electric unit (control unit) pin terminals for damage or loose connection with harness connector.
2. Check the IPDM E/R pin terminals for damage or loose connection with harness connector.

Is the inspection result normal?

YES >> Replace the ABS actuator and electric unit (control unit). Refer to BRC-156, "Removal and Installation".
NO >> Repair / replace harness, connector, or terminal.

C1110, C1153 ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)

DTC Logic

INFOID:0000000010594753

DTC DETECTION LOGIC

DTC	Display item (Trouble diagnosis content)	Malfunction detected condition
C1110	CONTROLLER FAILURE (Controller failure)	When there is an internal malfunction in the ABS actuator and electric unit (control unit).
C1153	EMERGENCY BRAKE (Emergency brake)	When ABS actuator and electric unit (control unit) is malfunctioning. (Pressure increase is too much or too little)

POSSIBLE CAUSE

NOTE:
Confirm if DTC is PAST or CRNT. If DTC is CRNT, proceed with Diagnosis Procedure. If DTC is PAST, clear DTC. Do not replace the ABS actuator and electric unit (control unit) for a PAST DTC.

DTC	PAST DTC	CRNT DTC
C1110	• The vehicle travels near high-voltage electrical power lines. • Motor built-in the ABS actuator and electric unit (control unit) operates temporarily without a break. • Harness or connector • ABS actuator and electric unit (control unit) power supply system • Fuse • Fusible link • Battery	• Harness or connector • ABS actuator and electric unit (control unit) • ABS actuator and electric unit (control unit) power supply system • Fuse • Fusible link • Battery
C1153	• The vehicle travels near high-voltage electrical power lines. • ABS operates for a long time (e.g. travel under a tire hydroplaning condition).	ABS actuator and electric unit (control unit)

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

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

>> GO TO 2.

2.DTC REPRODUCTION PROCEDURE

With CONSULT
1. Turn the ignition switch OFF → ON.
   CAUTION:
   Be sure to wait of 10 seconds after turning ignition switch OFF or ON.
2. Repeat step 1 two or more time.
3. Perform self-diagnosis for “ABS”.

Is any DTC “C1110” or “C1153” detected?

YES-1 >> “C1110” or “C1153” is displayed by “CRNT”: Proceed to BRC-50, "Diagnosis Procedure".
YES-2 >> “C1110” and “C1153” are displayed by “PAST”: INSPECTION END (Erase the memory of self-diagnosis results.)
NO-1 >> To check malfunction symptom before repair: Refer to GI-45, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:0000000010594754

1.CHECK ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT) POWER SUPPLY AND GROUND CIR-

CUIT

Check the ABS actuator and electric unit (control unit) power supply and ground circuit. Refer to BRC-118, "Diagnosis Procedure".

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair / replace harness, connector, fuse, or fusible link.

2. PERFORM SELF-DIAGNOSIS

With CONSULT
Perform self-diagnosis for “ABS”.

NOTE:
Replace the ABS actuator and electric unit (control unit) even if other display than “C1110” or “C1153” is displayed in self-diagnosis for “ABS”.

Is any DTC “C1110” or “C1153” detected?

YES >> Replace the ABS actuator and electric unit (control unit). Refer to BRC-156, "Removal and Installation".
NO >> INSPECTION END (Although motor built-in the ABS actuator and electric unit (control unit) operates temporarily without a break, this is not a malfunction. Erase the memory of self-diagnosis results.)

C1111 ABS MOTOR, MOTOR RELAY SYSTEM

Description

INFOID:0000000010594756

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).

MOTOR RELAY

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

DTC Logic

INFOID:0000000010594757

DTC DETECTION LOGIC

DTC	Display item (Trouble diagnosis content)	Malfunction detected condition
C1111	PUMP MOTOR (Pump motor and motor relay)	When a malfunction is detected in motor or motor relay.

POSSIBLE CAUSE

NOTE:

Confirm if DTC is PAST or CRNT. If DTC is CRNT, proceed with Diagnosis Procedure. If DTC is PAST, clear DTC. Do not replace the ABS actuator and electric unit (control unit) for a PAST DTC.

PAST DTC	CRNT DTC
• Harness or connector • ABS actuator and electric unit (control unit) power supply system • Fuse • Fusible link • Battery	• Harness or connector • ABS actuator and electric unit (control unit) • ABS actuator and electric unit (control unit) power supply system • Fuse • Fusible link • Battery

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

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

>> GO TO 2.

2.DTC REPRODUCTION PROCEDURE

With CONSULT

1. Turn the ignition switch OFF → ON, and wait 30 seconds.
2. Drive the vehicle at approx. 50 km/h (31 MPH) or more for approx. 2 minutes.
3. Stop the vehicle.
4. Turn the ignition switch OFF → ON.

   CAUTION:

   - **Be sure to wait of 10 seconds after turning ignition switch OFF or ON.**
   - **Start the engine.**
5. Repeat step 4 two or more times.
6. Perform self-diagnosis for “ABS”.

Is DTC “C1111” detected?

YES-1 >> “CRNT” is displayed: Proceed to BRC-53, "Diagnosis Procedure".
YES-2 >> “PAST” is displayed: INSPECTION END (Erase the memory of self-diagnosis results.)

NO-1 >> To check malfunction symptom before repair: Refer to GI-45, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:0000000010594758

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Check the ABS actuator and electric unit (control unit) harness connector for disconnection or looseness.

Is the inspection result normal?

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

2.PERFORM SELF-DIAGNOSIS

With CONSULT
1. Turn the ignition switch OFF → ON, and wait 30 seconds.
2. Drive the vehicle at approx. 50 km/h (31 MPH) or more for approx. 2 minutes.
3. Stop the vehicle.
4. Turn the ignition switch OFF → ON.
   CAUTION:
   - **Be sure to wait of 10 seconds after turning ignition switch OFF or ON.**
   - **Start the engine.**
5. Repeat step 4 two or more times.
6. Perform self-diagnosis for “ABS”.

Is DTC “C1111” detected?

YES >> GO TO 3.
NO >> INSPECTION END

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

Check the ABS actuator and electric unit (control unit) power supply and ground circuit. Refer to BRC-118, "Diagnosis Procedure".

Is the inspection result normal?

YES >> GO TO 5.
NO >> Repair / replace harness, connector, fuse, or fusible link, and GO TO 4.

4.ERASE SELF-DIAGNOSIS RESULT (1)

With CONSULT
1. Drive the vehicle at approx. 50 km/h (31 MPH) or more for approx. 2 minutes.
2. Stop the vehicle.
3. Erase self-diagnosis result for “ABS”.
4. Turn the ignition switch OFF → ON → OFF.
   CAUTION:
   Be sure to wait of 10 seconds after turning ignition switch OFF or ON.

>> INSPECTION END

5.CHECK TERMINAL

1. Turn the ignition switch OFF.
2. Check the ABS actuator and electric unit (control unit) pin terminals for damage or loose connection with harness connector.

Is the inspection result normal?

YES >> Replace the ABS actuator and electric unit (control unit). Refer to BRC-156, "Removal and Installation".
NO >> Repair / replace harness or connector, and GO TO 6.

6.ERASE SELF-DIAGNOSIS RESULT (2)

With CONSULT

1. Drive the vehicle at approx. 50 km/h (31 MPH) or more for approx. 2 minutes.
2. Stop the vehicle.
3. Erase self-diagnosis result for “ABS”.
4. Turn the ignition switch OFF → ON → OFF.

CAUTION:
Be sure to wait of 10 seconds after turning ignition switch OFF or ON.

>> INSPECTION END

C1115 WHEEL SENSOR

Description

INFOID:0000000010594760

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:0000000010594761

DTC DETECTION LOGIC

DTC	Display item (Trouble diagnosis content)	Malfunction detected condition
C1115	ABS SENSOR [ABNORMAL SIGNAL] (Wheel sensor [abnormal signal)]	When difference in wheel speed between any wheel and others is detected the vehicle is driven, because of installation of other tires than specified.

POSSIBLE CAUSE

NOTE:
Confirm if DTC is PAST or CRNT. If DTC is CRNT, proceed with Diagnosis Procedure. If DTC is PAST, clear DTC. Do not replace the ABS actuator and electric unit (control unit) for a PAST DTC.

PAST DTC	CRNT DTC
• Harness or connector • Wheel sensor • Sensor rotor • ABS actuator and electric unit (control unit) power supply system • Fuse • Fusible link • Battery	• Harness or connector • Wheel sensor • Sensor rotor • ABS actuator and electric unit (control unit) • ABS actuator and electric unit (control unit) power supply system • Fuse • Fusible link • Battery • Tire size

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

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

>> GO TO 2.

2.DTC REPRODUCTION PROCEDURE

With CONSULT
1. Start the engine.
2. Drive the vehicle at approx. 50 km/h (19 MPH) or more for approx. 2 minutes.
3. Stop the vehicle.
4. Turn the ignition switch OFF → ON.
   CAUTION:
   - **Be sure to wait of 10 seconds after turning ignition switch OFF or ON.**
   - **Start the engine.**
5. Repeat step 4 two or more times.
6. Perform self-diagnosis for “ABS”.

Is DTC “C1115” detected?

YES-1 >> “CRNT” is displayed: Proceed to BRC-56, "Diagnosis Procedure".
YES-2 >> “PAST” is displayed: INSPECTION END (Erase the memory of self-diagnosis results.)
NO-1 >> To check malfunction symptom before repair: Refer to GI-45, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:0000000010594762

CAUTION:
For wheel sensor, never check between terminals.

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

Check the ABS actuator and electric unit (control unit) power supply and ground circuit. Refer to BRC-118, "Diagnosis Procedure".

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair / replace harness, connector, fuse, or fusible link.

2.CHECK TIRE

1. Turn the ignition switch OFF.
2. Check the tire air pressure, wear and size. Refer to WT-53, "Tire Air Pressure".

Is the inspection result normal?

YES >> GO TO 5.
NO >> Adjust air pressure or replace tire and GO TO 3.

3.CHECK DATA MONITOR (1)

With CONSULT
1. Erase self-diagnosis result for “ABS”.
2. Turn the ignition switch OFF → ON → OFF.
   CAUTION:
   Be sure to wait of 10 seconds after turning ignition switch OFF or ON.
3. Start the engine.
4. Select “ABS” and “DATA MONITOR”, check “FR LH SENSOR”, “FR RH SENSOR”, “RR LH SENSOR” and “RR RH SENSOR”.
   NOTE:
   Set the “DATA MONITOR” recording speed to “10 msec”.
5. Read a value (wheel speed) of both normal wheel sensors and error-detecting wheel sensor.

Regarding the deference at 50 km/h (31 MPH) between the wheel speed detected by the error detecting wheel sensor and the maximum/minimum wheel speed detected by the normal wheel sensors, is the difference within 5%, respectively?

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

4.PERFORM SELF-DIAGNOSIS (1)

With CONSULT
1. Drive the vehicle at approx. 50 km/h (31 MPH) or more for approx. 2 minutes.
2. Stop the vehicle.
3. Turn the ignition switch OFF → ON.
   CAUTION:
   - **Be sure to wait of 10 seconds after turning ignition switch OFF or ON.**
   - **Start the engine.**
4. Repeat step 3 two or more times.
5. Perform self-diagnosis for “ABS”.

Is DTC “C1115” detected?

YES >> GO TO 5.
NO >> INSPECTION END

5.CHECK WHEEL SENSOR

1. Turn the ignition switch OFF.
2. Check the wheel sensor for damage.
3. Remove dust and foreign matter adhered to the sensor rotor with a vacuum dust collector through the wheel sensor mounting hole.
   CAUTION:

Install wheel sensor with no backlash and float, and tighten the mounting bolt to the specified torque.
- **Front: Refer to BRC-153, "FRONT WHEEL SENSOR : Exploded View".**
- **Rear: Refer to BRC-154, "REAR WHEEL SENSOR : Exploded View".**

Is the inspection result normal?

YES >> GO TO 8.
NO >> GO TO 6.

6. REPLACE WHEEL SENSOR (1)

With CONSULT
1. Replace the wheel sensor.
- Front: Refer to BRC-153, "FRONT WHEEL SENSOR : Removal and Installation".
- Rear: Refer to BRC-154, "REAR WHEEL SENSOR : Removal and Installation".
2. Erase self-diagnosis result for “ABS”.
3. Turn the ignition switch OFF → ON → OFF.
   CAUTION:
   Be sure to wait of 10 seconds after turning ignition switch OFF or ON.
4. Start the engine.
5. Select “ABS” and “DATA MONITOR”, check “FR LH SENSOR”, “FR RH SENSOR”, “RR LH SENSOR” and “RR RH SENSOR”.
   NOTE:
   Set the “DATA MONITOR” recording speed to “10 msec”.
6. Read a value (wheel speed) of both normal wheel sensors and error-detecting wheel sensor.

Regarding the deference at 50 km/h (31 MPH) between the wheel speed detected by the error detecting wheel sensor and the maximum/minimum wheel speed detected by the normal wheel sensors, is the difference within 5%, respectively?

YES >> GO TO 7.
NO >> GO TO 19.

7. PERFORM SELF-DIAGNOSIS (2)

With CONSULT
1. Drive the vehicle at approx. 50 km/h (31 MPH) or more for approx. 2 minutes.
2. Stop the vehicle.
3. Turn the ignition switch OFF → ON.
   CAUTION:
   - **Be sure to wait of 10 seconds after turning ignition switch OFF or ON.**
   - **Start the engine.**
4. Repeat step 3 two or more times.
5. Perform self-diagnosis for “ABS”.

Is DTC “C1115” detected?

YES >> GO TO 19.
NO >> INSPECTION END

8. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Check the ABS actuator and electric unit (control unit) harness connector for disconnection or looseness.
3. Check the wheel sensor harness connector for disconnection or looseness.

Is the inspection result normal?

YES >> GO TO 11.
NO >> Repair / replace harness or connector, securely lock the connector, and GO TO 9.

9. CHECK DATA MONITOR (2)

With CONSULT
1. Erase self-diagnosis result for “ABS”.
2. Turn the ignition switch OFF → ON → OFF.
   CAUTION:
   Be sure to wait of 10 seconds after turning ignition switch OFF or ON.
3. Start the engine.

4. Select “ABS” and “DATA MONITOR”, check “FR LH SENSOR”, “FR RH SENSOR”, “RR LH SENSOR” and “RR RH SENSOR”.
   NOTE:
   Set the “DATA MONITOR” recording speed to “10 msec”.
5. Read a value (wheel speed) of both normal wheel sensors and error-detecting wheel sensor.

Regarding the deference at 50 km/h (31 MPH) between the wheel speed detected by the error detecting wheel sensor and the maximum/minimum wheel speed detected by the normal wheel sensors, is the difference within 5%, respectively?

YES >> GO TO 10.
NO >> GO TO 11.

10. PERFORM SELF-DIAGNOSIS (3)

With CONSULT
1. Drive the vehicle at approx. 50 km/h (31 MPH) or more for approx. 2 minutes.
2. Stop the vehicle.
3. Turn the ignition switch OFF → ON.
   CAUTION:
   - **Be sure to wait of 10 seconds after turning ignition switch OFF or ON.**
   - **Start the engine.**
4. Repeat step 3 two or more times.
5. Perform self-diagnosis for “ABS”.

Is DTC “C1115” detected?

YES >> GO TO 11.
NO >> INSPECTION END

11. CHECK TERMINAL

1. Turn the ignition switch OFF.
2. Disconnect ABS actuator and electric unit (control unit) harness connector and then check the ABS actuator and electric unit (control unit) pin terminals for damage or loose connection with harness connector.
3. Disconnect wheel sensor harness connector and check each wheel sensor pin terminals for damage or loose connection with harness connector.

Is the inspection result normal?

YES >> GO TO 14.
NO >> Repair / replace harness, connector, or terminal, and GO TO 12.

12. CHECK DATA MONITOR (3)

With CONSULT
1. Connect ABS actuator and electric unit (control unit) harness connector.
2. Connect wheel sensor harness connector.
3. Erase self-diagnosis result for “ABS”.
4. Turn the ignition switch OFF → ON → OFF.
   CAUTION:
   Be sure to wait of 10 seconds after turning ignition switch OFF or ON.
5. Start the engine.
6. Select “ABS” and “DATA MONITOR”, check “FR LH SENSOR”, “FR RH SENSOR”, “RR LH SENSOR” and “RR RH SENSOR”.
   NOTE:
   Set the “DATA MONITOR” recording speed to “10 msec”.
7. Read a value (wheel speed) of both normal wheel sensors and error-detecting wheel sensor.

Regarding the deference at 50 km/h (31 MPH) between the wheel speed detected by the error detecting wheel sensor and the maximum/minimum wheel speed detected by the normal wheel sensors, is the difference within 5%, respectively?

YES >> GO TO 13.
NO >> GO TO 14.

13. PERFORM SELF-DIAGNOSIS (4)

With CONSULT
1. Drive the vehicle at approx. 50 km/h (31 MPH) or more for approx. 2 minutes.

2. Stop the vehicle.
3. Turn the ignition switch OFF → ON.

CAUTION:
- **Be sure to wait of 10 seconds after turning ignition switch OFF or ON.**
- **Start the engine.**

4. Repeat step 3 two or more times.
5. Perform self-diagnosis for “ABS”.

Is DTC “C1115” detected?

YES >> GO TO 14.
NO >> INSPECTION END

14. CHECK WHEEL SENSOR HARNESS

1. Turn the ignition switch OFF.
2. Disconnect ABS actuator and electric unit (control unit) harness connector.
3. Disconnect wheel sensor harness connector.
4. Check the continuity between ABS actuator and electric unit (control unit) harness connector and wheel sensor harness connector. (Check the continuity when steering wheel is steered to RH and LH, or center harness in wheel housing is moved.)

Measurement connector and terminal for power supply circuit

ABS actuator and electric unit (control unit)		Wheel sensor		Continuity
Connector	Terminal	Connector	Terminal	
E41	26	E60 (Front LH)	1	Existed
	9	E27 (Front RH)		
	6	B34 (Rear LH)		
	7	B33 (Rear RH)		

Measurement connector and terminal for signal circuit

ABS actuator and electric unit (control unit)		Wheel sensor		Continuity
Connector	Terminal	Connector	Terminal	
E41	5	E60 (Front LH)	2	Existed
	10	E27 (Front RH)		
	27	B34 (Rear LH)		
	29	B33 (Rear RH)		

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

ABS actuator and electric unit (control unit)		—	Continuity
Connector	Terminal		
E41	26, 5	Ground	Not existed
	9, 10		
	6, 27		
	7, 29		

Is the inspection result normal?

YES >> GO TO 15.
NO >> Repair / replace harness or connector, and GO TO 15.

15. CHECK DATA MONITOR (4)

With CONSULT

1. Connect ABS actuator and electric unit (control unit) harness connector.
2. Connect wheel sensor harness connector.
3. Erase self-diagnosis result for “ABS”.
4. Turn the ignition switch OFF → ON → OFF.

CAUTION:
Be sure to wait of 10 seconds after turning ignition switch OFF or ON.

5. Start the engine.
6. Select “ABS” and “DATA MONITOR”, check “FR LH SENSOR”, “FR RH SENSOR”, “RR LH SENSOR” and “RR RH SENSOR”.
   NOTE:
   Set the “DATA MONITOR” recording speed to “10 msec”.
7. Read a value (wheel speed) of both normal wheel sensors and error-detecting wheel sensor.

Regarding the deference at 50 km/h (31 MPH) between the wheel speed detected by the error detecting wheel sensor and the maximum/minimum wheel speed detected by the normal wheel sensors, is the difference within 5%, respectively?

YES >> GO TO 16.
NO >> GO TO 17.

16. PERFORM SELF-DIAGNOSIS (5)

With CONSULT
1. Drive the vehicle at approx. 50 km/h (31 MPH) or more for approx. 2 minutes.
2. Stop the vehicle.
3. Turn the ignition switch OFF → ON.
   CAUTION:
   - **Be sure to wait of 10 seconds after turning ignition switch OFF or ON.**
   - **Start the engine.**
4. Repeat step 3 two or more times.
5. Perform self-diagnosis for “ABS”.

Is DTC “C1115” detected?

YES >> GO TO 17.
NO >> INSPECTION END

17. REPLACE WHEEL SENSOR

With CONSULT
1. Replace the wheel sensor.
- Front: Refer to BRC-153, "FRONT WHEEL SENSOR : Removal and Installation".
- Rear: Refer to BRC-154, "REAR WHEEL SENSOR : Removal and Installation".
2. Erase self-diagnosis result for “ABS”.
3. Turn the ignition switch OFF → ON → OFF.
   CAUTION:
   Be sure to wait of 10 seconds after turning ignition switch OFF or ON.
4. Start the engine.
5. Select “ABS” and “DATA MONITOR”, check “FR LH SENSOR”, “FR RH SENSOR”, “RR LH SENSOR” and “RR RH SENSOR”.
   NOTE:
   Set the “DATA MONITOR” recording speed to “10 msec”.
6. Read a value (wheel speed) of both normal wheel sensors and error-detecting wheel sensor.

Regarding the deference at 50 km/h (31 MPH) between the wheel speed detected by the error detecting wheel sensor and the maximum/minimum wheel speed detected by the normal wheel sensors, is the difference within 5%, respectively?

YES >> GO TO 18.
NO >> GO TO 19.

18. PERFORM SELF-DIAGNOSIS (6)

With CONSULT
1. Drive the vehicle at approx. 50 km/h (31 MPH) or more for approx. 2 minutes.
2. Stop the vehicle.
3. Turn the ignition switch OFF → ON.
   CAUTION:
   - **Be sure to wait of 10 seconds after turning ignition switch OFF or ON.**
   - **Start the engine.**
4. Repeat step 3 two or more times.
5. Perform self-diagnosis for “ABS”.

Is DTC “C1115” detected?

YES >> GO TO 19.
NO >> INSPECTION END

19. REPLACE SENSOR ROTOR

With CONSULT

1. Replace the sensor rotor.
- Front: Refer to BRC-155, "FRONT SENSOR ROTOR : Removal and Installation".
- Rear: Refer to BRC-155, "REAR SENSOR ROTOR : Removal and Installation".
2. Erase self-diagnosis result for “ABS”.
3. Turn the ignition switch OFF → ON → OFF.
   CAUTION:
   Be sure to wait of 10 seconds after turning ignition switch OFF or ON.
4. Start the engine.
5. Drive the vehicle at approx. 50 km/h (31 MPH) or more for approx. 2 minutes.
6. Stop the vehicle.
7. Turn the ignition switch OFF → ON.
   CAUTION:
   - **Be sure to wait of 10 seconds after turning ignition switch OFF or ON.**
   - **Start the engine.**
8. Repeat step 7 two or more times.
9. Perform self-diagnosis for “ABS”.

Is DTC “C1115” detected?

YES >> Replace the ABS actuator and electric unit (control unit). Refer to BRC-156, "Removal and Installation".
NO >> INSPECTION END

C1116 STOP LAMP SWITCH

Description

INFOID:0000000010594764

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

DTC Logic

INFOID:0000000010594765

DTC DETECTION LOGIC

DTC	Display item (Trouble diagnosis content)	Malfunction detected condition
C1116	STOP LAMP SW (Stop lamp switch)	When a stop lamp switch signal is not input where the brake pedal operates

POSSIBLE CAUSE

NOTE:
Confirm if DTC is PAST or CRNT. If DTC is CRNT, proceed with Diagnosis Procedure. If DTC is PAST, clear DTC. Do not replace the ABS actuator and electric unit (control unit) for a PAST DTC.

PAST DTC	CRNT DTC
• Harness or connector • Stop lamp switch signal circuit	• Harness or connector • Stop lamp switch • ABS actuator and electric unit (control unit) • ABS actuator and electric unit (control unit) power supply system • Fuse • Fusible link • Battery

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

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

>> GO TO 2.

2.DTC REPRODUCTION PROCEDURE

With CONSULT
1. Turn the ignition switch OFF, and wait 10 seconds or more.
2. Start the engine.
   CAUTION:
   Stop the vehicle.
3. Wait 1 minute or more.
   CAUTION:
   Never depress brake pedal.
4. Depress brake pedal by 100 mm (3.94 in) or more, and maintain at that position for a minimum of 1 minute or more.
5. Release brake pedal, and wait 1 minute or more.
6. Repeat step 4 to 5 ten or more times.
7. Turn the ignition switch OFF → ON.
   CAUTION:
   - **Be sure to wait of 10 seconds after turning ignition switch OFF or ON.**
   - **Start the engine.**
8. Repeat step 7 two or more times.
9. Perform self-diagnosis for “ABS”.

Is DTC “C1116” detected?

YES-1 >> “CRNT” is displayed: Proceed to BRC-63, "Diagnosis Procedure".

YES-2 >> “PAST” is displayed: INSPECTION END (Erase the memory of self-diagnosis results.)
NO-1 >> To check malfunction symptom before repair: Refer to GI-45, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:0000000010594766

NOTE:
DTC “C1116” may be detected when the brake pedal and the accelerator pedal are simultaneously depressed for 1 minute or more while driving the vehicle. This is not a malfunction.

1.INTERVIEW FROM THE CUSTOMER

Check if the brake pedal and the accelerator pedal are simultaneously depressed for 1 minute or more while driving the vehicle.

Is there such a history?

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

2.PERFORM SELF-DIAGNOSIS

With CONSLT
1. Erase self-diagnosis result for “ABS”.
2. Turn the ignition switch OFF → ON → OFF.
   CAUTION:
   Be sure to wait of 10 seconds after turning ignition switch OFF or ON.
3. Start the engine.
   CAUTION:
   Never start the vehicle.
4. Depress the brake pedal several times.
5. Turn the ignition switch OFF → ON.
   CAUTION:
   - **Be sure to wait of 10 seconds after turning ignition switch OFF or ON.**
   - **Start the engine.**
6. Repeat step 5 two or more times.
7. Perform self-diagnosis for “ABS”.

Is DTC “C1116” detected?

YES >> GO TO 3.
NO >> INSPECTION END

3.STOP LAMP FOR ILLUMINATION

Depress brake pedal and check that stop lamp turns ON.

Does stop lamp turn ON?

YES >> GO TO 5.
NO >> Check the stop lamp system. Refer to EXL-153, "Wiring Diagram - BCM -" (XENON TYPE), EXL-343, "Wiring Diagram - BCM -" (HALOGEN TYPE). GO TO 4.

4.CHECK DATA MONITOR (1)

With CONSLT
1. Erase self-diagnosis result for “ABS”.
2. Turn the ignition switch OFF → ON → OFF.
   CAUTION:
   Be sure to wait of 10 seconds after turning ignition switch OFF or ON.
3. Start the engine.
   CAUTION:
   Never start the vehicle.
4. Select “ABS”, “DATA MONITOR” and “STOP LAMP SW” according to this order. Check that data monitor displays “On” or “Off” when brake pedal is depress or release. Refer to BRC-129, "Reference Value".
5. Select “ABS”, “DATA MONITOR” and “pressure sensor” according to this order. Check that data monitor displays “5 bar” or less when brake pedal is depress. Refer to BRC-129, "Reference Value".

Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 5.

5.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Check the ABS actuator and electric unit (control unit) harness connector for disconnection or looseness.
3. Check the stop lamp switch harness connector for disconnection or looseness.

Is the inspection result normal?

YES >> GO TO 6.
NO >> Repair / replace harness or connector, and GO TO 6.

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

Check the ABS actuator and electric unit (control unit) power supply and ground circuit. Refer to BRC-118, "Diagnosis Procedure".

Is the inspection result normal?

YES >> GO TO 7.
NO >> Repair / replace harness, connector, fuse, or fusible link.

7.CHECK STOP LAMP SWITCH CLEARANCE

1. Turn the ignition switch OFF.
2. Check the stop lamp switch clearance. Refer to BR-9, "Inspection and Adjustment".

Is the inspection result normal?

YES >> GO TO 9.
NO >> Adjust stop lamp switch clearance. GO TO 8.

8.CHECK DATA MONITOR (2)

With CONSLT
1. Erase self-diagnosis result for “ABS”.
2. Turn the ignition switch OFF → ON → OFF.
   CAUTION:
   Be sure to wait of 10 seconds after turning ignition switch OFF or ON.
3. Start the engine.
   CAUTION:
   Never start the vehicle.
4. Select “ABS”, “DATA MONITOR” and “STOP LAMP SW” according to this order. Check that data monitor displays “On” or “Off” when brake pedal is depress or release. Refer to BRC-129, "Reference Value".
5. Select “ABS”, “DATA MONITOR” and “pressure sensor” according to this order. Check that data monitor displays “5 bar” or less when brake pedal is depress. Refer to BRC-129, "Reference Value".

Is the inspection result normal?

YES >> INSPECTION END
NO >> GO TO 9.

9.CHECK STOP LAMP SWITCH

Check the stop lamp switch. Refer to BRC-66, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 10.
NO >> Replace the stop lamp switch. Refer to BR-20, "Removal and Installation". GO TO 10.

10.CHECK DATA MONITOR (3)

With CONSLT
1. Erase self-diagnosis result for “ABS”.
2. Turn the ignition switch OFF → ON → OFF.
   CAUTION:
   Be sure to wait of 10 seconds after turning ignition switch OFF or ON.
3. Start the engine.
   CAUTION:
   Never start the vehicle.

4. Select “ABS”, “DATA MONITOR” and “STOP LAMP SW” according to this order. Check that data monitor displays “On” or “Off” when brake pedal is depress or release. Refer to BRC-129, "Reference Value".
5. Select “ABS”, “DATA MONITOR” and “pressure sensor” according to this order. Check that data monitor displays “5 bar” or less when brake pedal is depress. Refer to BRC-129, "Reference Value".

Is the inspection result normal?

YES >> INSPECTION END
NO >> GO TO 11.

11. CHECK CONNECTOR AND TERMINAL

1. Turn the ignition switch OFF.
2. Disconnect ABS actuator and electric unit (control unit) harness connector.
3. Check the ABS actuator and electric unit (control unit) harness connector for disconnection or looseness.
4. Check the ABS actuator and electric unit (control unit) pin terminals for damage or loose connection with harness connector.
5. Disconnect stop lamp switch harness connector.
6. Check the stop lamp switch harness connector for disconnection or looseness.
7. Check the stop lamp switch pin terminals for damage or loose connection with harness connector.

Is the inspection result normal?

YES >> GO TO 13.
NO >> Repair / replace harness, connector, or terminal, and GO TO 12.

12. CHECK DATA MONITOR (4)

With CONSLT
1. Connect ABS actuator and electric unit (control unit) harness connector.
2. Connect stop lamp switch harness connector.
3. Erase self-diagnosis result for “ABS”.
4. Turn the ignition switch OFF → ON → OFF.
   CAUTION:
   Be sure to wait of 10 seconds after turning ignition switch OFF or ON.
5. Start the engine.
   CAUTION:
   Never start the vehicle.
6. Select “ABS”, “DATA MONITOR” and “STOP LAMP SW” according to this order. Check that data monitor displays “On” or “Off” when brake pedal is depress or release. Refer to BRC-129, "Reference Value".
7. Select “ABS”, “DATA MONITOR” and “pressure sensor” according to this order. Check that data monitor displays “5 bar” or less when brake pedal is depress. Refer to BRC-129, "Reference Value".

Is the inspection result normal?

YES >> INSPECTION END
NO >> GO TO 13.

13. CHECK STOP LAMP SWITCH CIRCUIT (1)

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

ABS actuator and electric unit (control unit)		—	Condition	Voltage
Connector	Terminal			
E41	30	Ground	Brake pedal depressed	Battery voltage
			Brake pedal not depressed	Approx. 0 V

4. Turn the ignition switch ON.
5. Check the voltage between ABS actuator and electric unit (control unit) harness connector and ground.

ABS actuator and electric unit (control unit)		—	Condition	Voltage
Connector	Terminal			
E41	30	Ground	Brake pedal depressed	Battery voltage
			Brake pedal not depressed	Approx. 0 V

Is the inspection result normal?

YES >> Replace the ABS actuator and electric unit (control unit). Refer to BRC-156, "Removal and Installation".

NO >> Repair / replace harness or connector, and GO TO 14.

14. CHECK STOP LAMP SWITCH CIRCUIT (2)

1. Turn the ignition switch OFF.
2. Disconnect stop lamp switch harness connector.
3. Check the continuity between ABS actuator and electric unit (control unit) harness connector and stop lamp switch harness connector.

ABS actuator and electric unit (control unit)		Stop lamp switch		Continuity
Connector	Terminal	Connector	Terminal	
E41	30	E110	2	Existed

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

ABS actuator and electric unit (control unit)		—	Continuity
Connector	Terminal		
E41	30	Ground	Not existed

Is the inspection result normal?

YES >> Replace the ABS actuator and electric unit (control unit). Refer to BRC-156, "Removal and Installation".

NO >> Repair / replace harness or connector, and GO TO 15.

15. CHECK DATA MONITOR (5)

With CONSLT

1. Connect ABS actuator and electric unit (control unit) harness connector.
2. Connect stop lamp switch harness connector.
3. Erase self-diagnosis result for “ABS”.
4. Turn the ignition switch OFF → ON → OFF.
   CAUTION:
   Be sure to wait of 10 seconds after turning ignition switch OFF or ON.
5. Start the engine.
   CAUTION:
   Never start the vehicle.
6. Select “ABS”, “DATA MONITOR” and “STOP LAMP SW” according to this order. Check that data monitor displays “On” or “Off” when brake pedal is depress or release. Refer to BRC-129, "Reference Value".
7. Select “ABS”, “DATA MONITOR” and “pressure sensor” according to this order. Check that data monitor displays “5 bar” or less when brake pedal is depress. Refer to BRC-129, "Reference Value".

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace the ABS actuator and electric unit (control unit). Refer to BRC-156, "Removal and Installation".

Component Inspection

INFOID:0000000010594767

1. CHECK STOP LAMP SWITCH

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

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

Is the inspection result normal?

YES >> INSPECTION END
NO >> Replace the stop lamp switch. Refer to BR-20, "Removal and Installation".

C1120, C1122, C1124, C1126 IN ABS SOL

Description

INFOID:0000000010594769

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:0000000010594770

DTC DETECTION LOGIC

DTC	Display item (Trouble diagnosis content)	Malfunction detected condition
C1120	FR LH IN ABS SOL (Front LH ABS IN solenoid valve)	When a malfunction is detected in front LH ABS IN valve.
C1122	FR RH IN ABS SOL (Front RH ABS IN solenoid valve)	When a malfunction is detected in front RH ABS IN valve.
C1124	RR LH IN ABS SOL (Rear LH ABS IN solenoid valve)	When a malfunction is detected in rear LH ABS IN valve.
C1126	RR RH IN ABS SOL (Rear RH ABS IN solenoid valve)	When a malfunction is detected in rear RH ABS IN valve.

POSSIBLE CAUSE

NOTE:
Confirm if DTC is PAST or CRNT. If DTC is CRNT, proceed with Diagnosis Procedure. If DTC is PAST, clear DTC. Do not replace the ABS actuator and electric unit (control unit) for a PAST DTC.

PAST DTC	CRNT DTC
• Harness or connector • ABS actuator and electric unit (control unit) power supply system • Fuse • Fusible link • Battery	• Harness or connector • ABS actuator and electric unit (control unit) • ABS actuator and electric unit (control unit) power supply system • Fuse • Fusible link • Battery

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

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

>> GO TO 2.

2.DTC REPRODUCTION PROCEDURE

With CONSLT
1. Turn the ignition switch OFF → ON.
   CAUTION:
   - **Be sure to wait of 10 seconds after turning ignition switch OFF or ON.**
   - **Start the engine.**
2. Repeat step 1 two or more times.
3. Perform self-diagnosis for “ABS”.

Is any DTC “C1120”, “C1122”, “C1124” or “C1126” detected?

YES-1 >> “C1120”, “C1122”, “C1124” or “C1126” is displayed by “CRNT”: Proceed to BRC-69, "Diagnosis Procedure".
YES-2 >> “C1120”, “C1122”, “C1124” and “C1126” are displayed by “PAST”: INSPECTION END (Erase the memory of self-diagnosis results.)
NO-1 >> To check malfunction symptom before repair: Refer to GI-45, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:0000000010594771

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Check the ABS actuator and electric unit (control unit) harness connector for disconnection or looseness.

Is the inspection result normal?

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

2.PERFORM SELF-DIAGNOSIS

With CONSULT
1. Turn the ignition switch OFF → ON.

CAUTION:
- **Be sure to wait of 10 seconds after turning ignition switch OFF or ON.**
- **Start the engine.**

2. Repeat step 1 two or more times.
3. Perform self-diagnosis for “ABS”.

Is any DTC “C1120”, “C1122”, “C1124” or “C1126” detected?

YES >> GO TO 3.
NO >> INSPECTION END

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

Check the ABS actuator and electric unit (control unit) power supply and ground circuit. Refer to BRC-118, "Diagnosis Procedure".

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair / replace harness, connector, fuse, or fusible link.

4.CHECK TERMINAL

Check the ABS actuator and electric unit (control unit) pin terminals for damage or loose connection with harness connector.

Is the inspection result normal?

YES >> Replace the ABS actuator and electric unit (control unit). Refer to BRC-156, "Removal and Installation".
NO >> Repair / replace harness, connector, or terminal.

C1121, C1123, C1125, C1127 OUT ABS SOL

Description

INFOID:0000000010594773

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:0000000010594774

DTC DETECTION LOGIC

DTC	Display item (Trouble diagnosis content)	Malfunction detected condition
C1121	FR LH OUT ABS SOL (Front LH ABS OUT solenoid valve)	When a malfunction is detected in front LH ABS OUT valve.
C1121	FR RH OUT ABS SOL (Front RH ABS OUT solenoid valve)	When a malfunction is detected in front RH ABS OUT valve.
C1125	RR LH OUT ABS SOL (Rear LH ABS OUT solenoid valve)	When a malfunction is detected in rear LH ABS OUT valve.
C1127	RR RH OUT ABS SOL (Rear RH ABS OUT solenoid valve)	When a malfunction is detected in rear RH ABS OUT valve.

POSSIBLE CAUSE

NOTE:
Confirm if DTC is PAST or CRNT. If DTC is CRNT, proceed with Diagnosis Procedure. If DTC is PAST, clear DTC. Do not replace the ABS actuator and electric unit (control unit) for a PAST DTC.

PAST DTC	CRNT DTC
• Harness or connector • ABS actuator and electric unit (control unit) power supply system • Fuse • Fusible link • Battery	• Harness or connector • ABS actuator and electric unit (control unit) • ABS actuator and electric unit (control unit) power supply system • Fuse • Fusible link • Battery

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

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

>> GO TO 2.

2.DTC REPRODUCTION PROCEDURE

With CONSLT
1. Turn the ignition switch OFF → ON.
   CAUTION:
   - **Be sure to wait of 10 seconds after turning ignition switch OFF or ON.**
   - **Start the engine.**
2. Repeat step 1 two or more times.
3. Perform self-diagnosis for “ABS”.

Is any DTC “C1121”, “C1123”, “C1125” or “C1127” detected?

YES-1 >> “C1121”, “C1123”, “C1125” or “C1127” is displayed by “CRNT”: Proceed to BRC-71, "Diagnosis Procedure".
YES-2 >> “C1121”, “C1123”, “C1125” and “C1127” are displayed by “PAST”: INSPECTION END (Erase the memory of self-diagnosis results.)
NO-1 >> To check malfunction symptom before repair: Refer to GI-45, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:0000000010594775

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Check the ABS actuator and electric unit (control unit) harness connector for disconnection or looseness.

Is the inspection result normal?

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

2.PERFORM SELF-DIAGNOSIS

With CONSULT
1. Turn the ignition switch OFF → ON.

CAUTION:
- **Be sure to wait of 10 seconds after turning ignition switch OFF or ON.**
- **Start the engine.**

2. Repeat step 1 two or more times.
3. Perform self-diagnosis for “ABS”.

Is any DTC “C1121”, “C1123”, “C1125” or “C1127” detected?

YES >> GO TO 3.
NO >> INSPECTION END

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

Check the ABS actuator and electric unit (control unit) power supply and ground circuit. Refer to BRC-118, "Diagnosis Procedure".

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair / replace harness, connector, fuse, or fusible link.

4.CHECK TERMINAL

Check the ABS actuator and electric unit (control unit) pin terminals for damage or loose connection with harness connector.

Is the inspection result normal?

YES >> Replace the ABS actuator and electric unit (control unit). Refer to BRC-156, "Removal and Installation".
NO >> Repair / replace harness, connector, or terminal.

C1130 ENGINE SIGNAL

Description

INFOID:0000000010594777

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

DTC Logic

INFOID:0000000010594778

DTC DETECTION LOGIC

DTC	Display item (Trouble diagnosis content)	Malfunction detected condition
C1130	ENGINE SIGNAL 1 (Engine system signal)	When a malfunction is detected in ECM system.

POSSIBLE CAUSE

NOTE:
Confirm if DTC is PAST or CRNT. If DTC is CRNT, proceed with Diagnosis Procedure. If DTC is PAST, clear DTC. Do not replace the ABS actuator and electric unit (control unit) for a PAST DTC.

PAST DTC	CRNT DTC
• Harness or connector • ABS actuator and electric unit (control unit) power supply system • Fuse • Fusible link • Battery • CAN communication line	• Harness or connector • ECM • ABS actuator and electric unit (control unit) • ABS actuator and electric unit (control unit) power supply system • Fuse • Fusible link • Battery

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

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

>> GO TO 2.

2.DTC REPRODUCTION PROCEDURE

With CONSULT
1. Turn the ignition switch OFF → ON.
   CAUTION:
   - **Be sure to wait of 10 seconds after turning ignition switch OFF or ON.**
   - **Start the engine.**
2. Repeat step 1 two or more times.
3. Perform self-diagnosis for “ABS”.

Is DTC “C1130” detected?

YES-1 >> “CRNT” is displayed: Proceed to BRC-72, "Diagnosis Procedure".
YES-2 >> “PAST” is displayed: INSPECTION END (Erase the memory of self-diagnosis results.)
NO-1 >> To check malfunction symptom before repair: Refer to GI-45, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:0000000010594779

1.CHECK ENGINE SYSTEM

With CONSULT
Perform self-diagnosis for “ENGINE”.

Is any DTC detected?

YES >> Check the DTC. Refer to EC-576, "DTC Index".
NO >> GO TO 2.

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

Check the ABS actuator and electric unit (control unit) power supply and ground circuit. Refer to BRC-118, "Diagnosis Procedure".

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair / replace harness, connector, fuse, or fusible link.

3. CHECK CONNECTOR AND TERMINAL

1. Turn the ignition switch OFF.
2. Disconnect ECM harness connector.
3. Disconnect ABS actuator and electric unit (control unit) harness connector.
4. Check the connector for disconnection or looseness.
5. Check the pin terminals for damage or loose connection with harness connector.

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair / replace harness, connector, or terminal, securely lock the connector, and GO TO 4.

4. CHECK ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)

With CONSULT
1. Connect ECM harness connector.
2. Connect ABS actuator and electric unit (control unit) harness connector.
3. Erase self-diagnosis result for “ABS”.
4. Turn the ignition switch OFF → ON.
   CAUTION:
   - **Be sure to wait of 10 seconds after turning ignition switch OFF or ON.**
   - **Start the engine.**
5. Repeat step 4 two or more times.
6. Perform self-diagnosis for “ABS”.

Is DTC “C1130” or “U1000”detected?

YES (“C1130”)>>GO TO 1.
YES (“U1000”)>>Refer to LAN-16, "Trouble Diagnosis Flow Chart".
NO >> INSPECTION END

C1140 ACTUATOR RELAY SYSTEM

Description

INFOID:0000000010594781

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

DTC Logic

INFOID:0000000010594782

DTC DETECTION LOGIC

DTC	Display item (Trouble diagnosis content)	Malfunction detected condition
C1140	ACTUATOR RLY (Actuator relay)	When a malfunction is detected in actuator relay.

POSSIBLE CAUSE

NOTE:
Confirm if DTC is PAST or CRNT. If DTC is CRNT, proceed with Diagnosis Procedure. If DTC is PAST, clear DTC. Do not replace the ABS actuator and electric unit (control unit) for a PAST DTC.

PAST DTC	CRNT DTC
• Harness or connector • ABS actuator and electric unit (control unit) power supply system • Fuse • Fusible link • Battery	• Harness or connector • ABS actuator and electric unit (control unit) • ABS actuator and electric unit (control unit) power supply system • Fuse • Fusible link • Battery

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

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

>> GO TO 2.

2.DTC REPRODUCTION PROCEDURE

With CONSULT
1. Turn the ignition switch OFF →ON.
   CAUTION:
   - **Be sure to wait of 10 seconds after turning ignition switch OFF or ON.**
   - **Start the engine.**
2. Repeat step 1 two or more times.
3. Perform self-diagnosis for “ABS”.

Is DTC “C1140” detected?

YES-1 >> “CRNT” is displayed: Proceed to BRC-74, "Diagnosis Procedure".
YES-2 >> “PAST” is displayed: INSPECTION END (Erase the memory of self-diagnosis results.)
NO-1 >> To check malfunction symptom before repair: Refer to GI-45, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:0000000010594783

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Check the ABS actuator and electric unit (control unit) harness connector for disconnection or looseness.

Is the inspection result normal?

YES >> GO TO 3.

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

2.PERFORM SELF-DIAGNOSIS

With CONSULT
1. Turn the ignition switch OFF → ON.
   CAUTION:
   - **Be sure to wait of 10 seconds after turning ignition switch OFF or ON.**
   - **Start the engine.**
2. Repeat step 1 two or more times.
3. Perform self-diagnosis for “ABS”.

Is DTC “C1140” detected?

YES >> GO TO 3.
NO >> INSPECTION END

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

Check the ABS actuator and electric unit (control unit) power supply and ground circuit. Refer to BRC-118, "Diagnosis Procedure".

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair / replace harness, connector, fuse, or fusible link.

4.CHECK TERMINAL

Check the ABS actuator and electric unit (control unit) pin terminals for damage or loose connection with harness connector.

Is the inspection result normal?

YES >> Replace the ABS actuator and electric unit (control unit). Refer to BRC-156, "Removal and Installation".
NO >> Repair / replace harness, connector, or terminal.

C1142 PRESS SENSOR

Description

INFOID:0000000010594785

The pressure sensor converts the brake fluid pressure to an electric signal and transmits it to the ABS actuator and electric unit (control unit). [The pressure sensor is integrated in the ABS actuator and electric unit (control unit).]

DTC Logic

INFOID:0000000010594786

DTC DETECTION LOGIC

DTC	Display item (Trouble diagnosis content)	Malfunction detected condition
C1142	PRESS SEN CIRCUIT (Pressure sensor circuit)	When a malfunction is detected in pressure sensor.

POSSIBLE CAUSE

NOTE:
Confirm if DTC is PAST or CRNT. If DTC is CRNT, proceed with Diagnosis Procedure. If DTC is PAST, clear DTC. Do not replace the ABS actuator and electric unit (control unit) for a PAST DTC.

PAST DTC	CRNT DTC
• Harness or connector • Air inclusion in the brake piping • Stop lamp switch system • ABS actuator and electric unit (control unit) power supply system • Fuse • Fusible link • Battery	• Stop lamp switch system • ABS actuator and electric unit (control unit) • Brake system • ABS actuator and electric unit (control unit) power supply system • Fuse • Fusible link • Battery

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

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

>> GO TO 2.

2.DTC REPRODUCTION PROCEDURE

With CONSULT
1. Turn the ignition switch OFF →ON.
   CAUTION:
   - **Be sure to wait of 10 seconds after turning ignition switch OFF or ON.**
   - **Start the engine.**
2. Repeat step 1 two or more times.
3. Perform self-diagnosis for “ABS”.

Is DTC “C1142” detected?

YES-1 >> “CRNT” is displayed: Proceed to BRC-76, "Diagnosis Procedure".
YES-2 >> “PAST” is displayed: INSPECTION END (Erase the memory of self-diagnosis results.)
NO-1 >> To check malfunction symptom before repair: Refer to GI-45, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:0000000010594787

1.CHECK STOP LAMP SWITCH SYSTEM

Check the stop lamp switch system. Refer to BRC-63, "Diagnosis Procedure".

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair or replace stop lamp switch system.

2.CHECK BRAKE FLUID LEAKAGE

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

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair or replace brake fluid leakage part.

3.CHECK BRAKE PIPING

Check the brake piping.
- Front: Refer to BR-24, "FRONT : Inspection".
- Rear: Refer to BR-26, "REAR : Inspection".

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair or replace brake piping.
- Front: Refer to BR-23, "FRONT : Removal and Installation".
- Rear: Refer to BR-26, "REAR : Removal and Installation".

4.CHECK BRAKE PEDAL

Check the brake pedal.
- Brake pedal each height: Refer to BR-9, "Inspection and Adjustment".
- Brake pedal assembly: Refer to BR-21, "Inspection and Adjustment".

Is the inspection result normal?

YES >> GO TO 5.
NO >> Adjust the brake pedal each height or replace brake pedal assembly.
- Adjust the brake pedal: Refer to BR-9, "Inspection and Adjustment".
- Replace the brake pedal: Refer to BR-20, "Removal and Installation".

5.CHECK BRAKE MASTER CYLINDER

Check the brake master cylinder. Refer to BR-14, "Inspection".

Is the inspection result normal?

YES >> GO TO 6.
NO >> Repair or replace brake master cylinder. Refer to BR-29, "Disassembly and Assembly".

6.CHECK BRAKE BOOSTER

Check the brake booster. Refer to BR-15, "Inspection".

Is the inspection result normal?

YES >> GO TO 7.
NO >> Repair or replace brake booster. Refer to BR-31, "Removal and installation".

7.CHECK BRAKE BOOSTER PRESSURE SENSOR

Check the brake booster pressure sensor. Refer to BR-34, "Inspection".

Is the inspection result normal?

YES >> GO TO 8.
NO >> Repair or replace brake booster pressure sensor. Refer to BR-34, "Removal and Installation".

8.CHECK VACUUM PIPING

Check the vacuum piping. Refer to BR-35, "Inspection".

Is the inspection result normal?

YES >> GO TO 9.
NO >> Repair or replace vacuum piping. Refer to BR-35, "Removal and Installation".

9.CHECK FRONT DISC BRAKE

Check the front disc brake. Refer to BR-42, "BRAKE CALIPER ASSEMBLY : Inspection".

Is the inspection result normal?

YES >> GO TO 10.

NO >> Repair or replace front disc brake. Refer to BR-39, "BRAKE CALIPER ASSEMBLY : Removal and Installation".

10. CHECK REAR DISC BRAKE

Check the rear disc brake. Refer to BR-48, "BRAKE CALIPER ASSEMBLY : Inspection".

Is the inspection result normal?

YES >> GO TO 11.
NO >> Repair or replace rear disc brake. Refer to BR-45, "BRAKE CALIPER ASSEMBLY : Removal and Installation".

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

Check the ABS actuator and electric unit (control unit) power supply and ground circuit. Refer to BRC-118, "Diagnosis Procedure".

Is the inspection result normal?

YES >> GO TO 12.
NO >> Repair / replace harness, connector, fuse, or fusible link.

12. CHECK ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)

With CONSULT

1. Erase self-diagnosis result for “ABS”.
2. Turn the ignition switch OFF → ON.
   CAUTION:
   Be sure to wait of 10 seconds after turning ignition switch OFF or ON.
3. Repeat step 2 two or more times.
4. Start the engine and drive the vehicle for a short period of time.
5. Stop the vehicle.
6. Perform self-diagnosis for “ABS”.

Is DTC “C1142” detected?

YES >> Replace the ABS actuator and electric unit (control unit). Refer to BRC-156, "Removal and Installation".
NO >> Check the ABS actuator and electric unit (control unit) harness connector and terminal for damage, looseness and disconnection. Repair / replace harness, connector, or terminal.

C1143 STEERING ANGLE SENSOR

Description

INFOID:0000000010594789

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:0000000010594790

DTC DETECTION LOGIC

DTC	Display item (Trouble diagnosis content)	Malfunction detected condition
C1143	ST ANG SEN CIRCUIT (steering angle sensor circuit)	When a malfunction is detected in steering angle sensor.

POSSIBLE CAUSE

NOTE:
Confirm if DTC is PAST or CRNT. If DTC is CRNT, proceed with Diagnosis Procedure. If DTC is PAST, clear DTC. Do not replace the ABS actuator and electric unit (control unit) for a PAST DTC.

PAST DTC	CRNT DTC
• Harness or connector • ABS actuator and electric unit (control unit) power supply system • Fuse • Fusible link • Battery • CAN communication line • Incomplete neutral position adjustment of steering angle sensor • Improper installation of steering angle sensor	• Harness or connector • Steering angle sensor • ABS actuator and electric unit (control unit) • IPDM E/R • CAN communication line • Wheel alignment • Incomplete neutral position adjustment of steering angle sensor • ABS actuator and electric unit (control unit) power supply system • Fuse • Fusible link • Battery

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

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

>> GO TO 2.

2.DTC REPRODUCTION PROCEDURE

With CONSULT
1. Turn the ignition switch OFF →ON.
   CAUTION:
   - **Be sure to wait of 10 seconds after turning ignition switch OFF or ON.**
   - **Start the engine.**
2. Repeat step 1 two or more times.
3. Perform self-diagnosis for “ABS”.

Is DTC “C1143” detected?

YES-1 >> “CRNT” is displayed: Proceed to BRC-79, "Diagnosis Procedure".
YES-2 >> “PAST” is displayed: INSPECTION END (Erase the memory of self-diagnosis results.)
NO-1 >> To check malfunction symptom before repair: Refer to GI-45, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:0000000010594791

1.ADJUST THE NEUTRAL POSITION OF STEERING ANGLE SENSOR

With CONSULT
Perform neutral position adjustment of steering angle sensor. Refer to BRC-8, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION : Description".

>> GO TO 2.

2. PERFORM SELF-DIAGNOSIS (1)

With CONSULT
1. Turn the ignition switch OFF → ON.
   CAUTION:
   - **Be sure to wait of 10 seconds after turning ignition switch OFF or ON.**
   - **Start the engine.**
2. Repeat step 1 two or more times.
3. Perform self-diagnosis for “ABS”.

Is DTC “C1143” detected?

YES-1 >> “CRNT” is displayed: GO TO 3.
YES-2 >> “PAST” is displayed: INSPECTION END (Erase the memory of self-diagnosis results.)
NO >> INSPECTION END

3. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Check the ABS actuator and electric unit (control unit) harness connector for disconnection or looseness.
3. Check the steering angle sensor harness connector for disconnection or looseness.

Is the inspection result normal?

YES >> GO TO 5.
NO >> Repair / replace harness or connector, securely lock the connector, and GO TO 4.

4. PERFORM SELF-DIAGNOSIS (1)

With CONSULT
1. Turn the ignition switch OFF → ON.
   CAUTION:
   - **Be sure to wait of 10 seconds after turning ignition switch OFF or ON.**
   - **Start the engine.**
2. Repeat step 1 two or more times.
3. Perform self-diagnosis for “ABS”.

Is DTC “C1143” detected?

YES >> GO TO 5.
NO >> INSPECTION END

5. CHECK STEERING ANGLE SENSOR POWER SUPPLY

1. Turn the ignition switch OFF.
2. Disconnect steering angle sensor harness connector.
3. Check the voltage between steering angle sensor harness connector and ground.

Steering angle sensor		—	Voltage
Connector	Terminal		
M37	8	Ground	Approx. 0 V

4. Turn the ignition switch ON.
   CAUTION:
   Never start the engine.
5. Check the voltage between steering angle sensor harness connector and ground.

Steering angle sensor		—	Voltage
Connector	Terminal		
M37	8	Ground	Battery voltage

Is the inspection result normal?

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

6. CHECK STEERING ANGLE SENSOR POWER SUPPLY CIRCUIT

1. Turn the ignition switch OFF.
2. Check the 10A fuse (#45).
3. Disconnect IPDM E/R harness connector.
4. Check the continuity between steering angle sensor harness connector and IPDM E/R harness connector.

Steering angle sensor		IPDM E/R		Continuity
Connector	Terminal	Connector	Terminal	
M37	8	E5	25	Existed

5. Check the continuity between steering angle sensor harness connector and ground.

Steering angle sensor		—	Continuity
Connector	Terminal		
M37	8	Ground	Not existed

Is the inspection result normal?

YES >> Perform the trouble diagnosis for ignition power supply circuit.
NO >> Repair / replace harness, connector, or fuse.

7. CHECK STEERING ANGLE SENSOR GROUND CIRCUIT

1. Turn the ignition switch OFF.
2. Check the continuity between steering angle sensor harness connector and ground.

Steering angle sensor		—	Continuity
Connector	Terminal		
M37	7	Ground	Existed

Is the inspection result normal?

YES >> GO TO 8.
NO >> Repair / replace harness or connector.

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

Check the ABS actuator and electric unit (control unit) power supply and ground circuit. Refer to BRC-118, "Diagnosis Procedure".

Is the inspection result normal?

YES >> GO TO 9.
NO >> Repair / replace harness, connector, fuse, or fusible link.

9. CHECK TERMINAL

1. Check the steering angle sensor pin terminals for damage or loose connection with harness connector.
2. Check the IPDM E/R pin terminals for damage or loose connection with harness connector.

Is the inspection result normal?

YES >> GO TO 10.
NO >> Repair / replace harness, connector, or terminal.

10. CHECK CAN COMMUNICATION LINE

Check the CAN communication line. Refer to LAN-16, "Trouble Diagnosis Flow Chart".

Is the inspection result normal?

YES >> GO TO 11.
NO >> Repair / replace harness or connector. Refer to BRC-151, "Precautions for Harness Repair".

11. CHECK DATA MONITOR

With CONSULT
1. “ABS”, “DATA MONITOR” and “STR ANGLE SIG” according to this order.
2. Check that the indication changes with the steering angle when the steering wheel is turned left/right from the neutral position. Refer to BRC-129, "Reference Value".

Is the inspection result normal?

YES >> Replace the ABS actuator and electric unit (control unit). Refer to BRC-156, "Removal and Installation".

NO >> Replace the steering angle sensor. Refer to BRC-159, "Removal and Installation".

C1144 INCOMPLETE STEERING ANGLE SENSOR ADJUSTMENT

DTC Logic

INFOID:0000000010594793

DTC DETECTION LOGIC

DTC	Display item (Trouble diagnosis content)	Malfunction detected condition
C1144	ST ANG SEN SIGNAL (Steering angle sensor not complete)	When neutral position adjustment of steering angle sensor is not complete.

POSSIBLE CAUSE

NOTE:
Confirm if DTC is PAST or CRNT. If DTC is CRNT, proceed with Diagnosis Procedure. If DTC is PAST, clear DTC. Do not replace the ABS actuator and electric unit (control unit) for a PAST DTC.

PAST DTC	CRNT DTC
Incomplete neutral position adjustment of steering angle sensor	• Harness or connector • Steering angle sensor • ABS actuator and electric unit (control unit) • Incomplete neutral position adjustment of steering angle sensor

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

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

>> GO TO 2.

2.DTC REPRODUCTION PROCEDURE

With CONSULT
1. Turn the ignition switch OFF →ON.
   CAUTION:
   - **Be sure to wait of 10 seconds after turning ignition switch OFF or ON.**
   - **Start the engine.**
2. Repeat step 1 two or more times.
3. Perform self-diagnosis for “ABS”.

Is DTC “C1144” detected?

YES-1 >> “CRNT” is displayed: Proceed to BRC-83, "Diagnosis Procedure".
YES-2 >> “PAST” is displayed: INSPECTION END (Erase the memory of self-diagnosis results.)
NO-1 >> To check malfunction symptom before repair: Refer to GI-45, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:0000000010594794

1.ADJUST THE NEUTRAL POSITION OF STEERING ANGLE SENSOR

Perform neutral position adjustment of steering angle sensor. Refer to BRC-8, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION : Description".

>> GO TO 2.

2.CHECK ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)

With CONSULT
1. Turn the ignition switch OFF → ON.
   CAUTION:
   - **Be sure to wait of 10 seconds after turning ignition switch OFF or ON.**

- **Start the engine.**

2. Repeat step 1 two or more times.
3. Perform self-diagnosis for “ABS”.

Is DTC “C1144” detected?

YES >> GO TO 3.
NO >> INSPECTION END

3.CHECK STEERING ANGLE SENSOR SYSTEM

1. Turn the ignition switch OFF.
2. Check the steering angle sensor system. Refer to BRC-79, "Diagnosis Procedure".

Is the inspection result normal?

YES >> Replace the ABS actuator and electric unit (control unit). Refer to BRC-156, "Removal and Installation".
NO >> Repair / replace harness, connector, or terminal.

C1145, C1146 YAW RATE/SIDE G SENSOR

Description

INFOID:0000000010594796

The yaw rate/side G sensor detects the yaw rate/side 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:0000000010594797

DTC DETECTION LOGIC

DTC	Display item (Trouble diagnosis content)	Malfunction detected condition
C1145	YAW RATE SENSOR (Yaw rate sensor circuit)	• When a malfunction is detected in yaw rate signal. • When a signal line of yaw rate/side G sensor is open or shorted.
C1146	SIDE G-SEN CIRCUIT (Side G sensor circuit)	• When a malfunction is detected in side G signal. • When a signal line of yaw rate/side G sensor is open or shorted.

POSSIBLE CAUSE

NOTE:
Confirm if DTC is PAST or CRNT. If DTC is CRNT, proceed with Diagnosis Procedure. If DTC is PAST, clear DTC. Do not replace the ABS actuator and electric unit (control unit) for a PAST DTC.

PAST DTC	CRNT DTC
• Harness or connector • ABS actuator and electric unit (control unit) power supply system • Fuse • Fusible link • Battery	• Harness or connector • Yaw rate/side G sensor • ABS actuator and electric unit (control unit) • ABS actuator and electric unit (control unit) power supply system • Fuse • Fusible link • Battery

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

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

>> GO TO 2.

2.DTC REPRODUCTION PROCEDURE

With CONSULT
1. Turn the ignition switch OFF →ON.
   CAUTION:
   - **Be sure to wait of 10 seconds after turning ignition switch OFF or ON.**
   - **Start the engine.**
2. Repeat step 1 two or more times.
3. Perform self-diagnosis for “ABS”.

Is DTC “C1145” or “C1146” detected?

YES-1 >> “C1145” or “C1146” is displayed by “CRNT”: Proceed to BRC-85, "Diagnosis Procedure".
YES-2 >> “C1145” and “C1146” are displayed by “PAST”: INSPECTION END (Erase the memory of self-diagnosis results.)
NO-1 >> To check malfunction symptom before repair: Refer to GI-45, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:0000000010594798

CAUTION:

- **A malfunction in yaw rate/side G sensor system may be detected when the vehicle sharply turns during a spin turn, acceleration turn or drift driving while VDC function is OFF (VDC OFF indicator lamp is in ON status). This is not a malfunction if the status returns to normal after engine is started again. In that case, erase self-diagnosis result memory using CONSULT.**
- **When the engine is in running status and the vehicle is on a turntable at the entrance of parking lot or on a moving unit, VDC warning lamp may turn ON and "ABS" self-diagnosis may display "YAW RATE SENSOR". In this case, yaw rate sensor is not malfunctioning. The status returns to normal when the vehicle is left from the turntable or moving unit and the engine is started again. In that case, erase self-diagnosis result memory using CONSULT.**

1.CHECK YAW RATE/SIDE G SENSOR POWER SUPPLY

1. Turn the ignition switch OFF.
2. Disconnect yaw rate/side G sensor connector.
3. Check the voltage between yaw rate/side G sensor harness connector and ground.

Yaw rate/side G sensor		—	Voltage
Connector	Terminal		
M143	4	Ground	Approx. 0 V

4. Turn the ignition switch ON.
   CAUTION:
   Never start the engine.
5. Check the voltage between yaw rate/side G sensor harness connector and ground.

Yaw rate/side G sensor		—	Voltage
Connector	Terminal		
M143	4	Ground	Battery voltage

Is the inspection result normal?

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

2.CHECK YAW RATE/SIDE G SENSOR POWER SUPPLY CIRCUIT

1. Turn the ignition switch OFF.
2. Check the 10A fuse (#45).
3. Disconnect IPDM E/R harness connector.
4. Check the continuity between yaw rate/side G sensor harness connector and IPDM E/R harness connector.

Yaw rate/side G sensor		IPDM E/R		Continuity
Connector	Terminal	Connector	Terminal	
M143	4	E5	25	Existed

5. Check the continuity between yaw rate/side G sensor harness connector and ground.

Yaw rate/side G sensor		—	Continuity
Connector	Terminal		
M143	4	Ground	Not existed

Is the inspection result normal?

YES >> Perform the trouble diagnosis for ignition power supply circuit.
NO >> Repair / replace harness, connector, or fuse.

3.CHECK YAW RATE/SIDE G SENSOR GROUND CIRCUIT

1. Turn the ignition switch OFF.
2. Check the continuity between yaw rate/side G sensor harness connector and ground.

Yaw rate/side G sensor		—	Continuity
Connector	Terminal		
M143	1	Ground	Existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair / replace harness or connector.

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

Check the ABS actuator and electric unit (control unit) power supply and ground circuit. Refer to BRC-118, "Diagnosis Procedure".

Is the inspection result normal?

YES >> GO TO 5.
NO >> Repair / replace harness, connector, fuse, or fusible link.

5. CHECK YAW RATE/SIDE G SENSOR HARNESS

Check the continuity between yaw rate/side G sensor harness connector and ABS actuator and electric unit (control unit) harness connector.

ABS actuator and electric unit (control unit)		Yaw rate/side G sensor		Continuity
Connector	Terminal	Connector	Terminal	
E41	25	M143	2	Existed
	45		3	

Is the inspection result normal?

YES >> GO TO 6.
NO >> Repair / replace harness or connector. Refer to BRC-151, "Precautions for Harness Repair".

6. CHECK TERMINAL

1. Check ABS actuator and electric unit (control unit) pin terminals for damage or loose connection with harness connector.
2. Check yaw rate/side G sensor pin terminals for damage or loose connection with harness connector.
3. Check IPDM E/R pin terminals for damage or loose connection with harness connector.

Is the inspection result normal?

YES >> GO TO 7.
NO >> Repair / replace harness, connector, or terminal.

7. REPLACE YAW RATE/SIDE G SENSOR

With CONSULT

1. Connect ABS actuator and electric unit (control unit) harness connector.
2. Replace the yaw rate/side G sensor. Refer to BRC-159, "Removal and Installation".
3. Erase self-diagnosis results for “ABS”.
4. Turn the ignition switch OFF.
5. Turn the ignition switch ON.

CAUTION:
Never start the engine.

6. Perform self-diagnosis for “ABS”.

Is DTC “C1145” or “C1146” detected?

YES >> Replace the ABS actuator and electric unit (control unit). Refer to BRC-156, "Removal and Installation".
NO >> INSPECTION END

C1147, C1148, C1149, C1150 USV/HSV LINE

Description

INFOID:0000000010594800

USV1, USV2 (CUT VALVE)

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

HSV1, HSV2 (SUCTION VALVE)

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

DTC Logic

INFOID:0000000010594801

DTC DETECTION LOGIC

DTC	Display item (Trouble diagnosis content)	Malfunction detected condition
C1147	USV LINE[FL-RR] (USV line [front LH - rear RH])	VDC switch-over solenoid valve (USV1) on the primary side is open circuit or shorted, or the control line is open or shorted to the power supply or the ground.
C1148	USV LINE[FR-RL] (SV line [front RH - rear LH])	VDC switch-over solenoid valve (USV2) on the primary side is open circuit or shorted, or the control line is open or shorted to the power supply or the ground.
C1149	HSV LINE[FL-RR] (HSV line [front LH - rear RH])	VDC switch-over solenoid valve (HSV1) on the primary side is open circuit or shorted, or the control line is open or shorted to the power supply or the ground.
C1150	HSV LINE[FR-RL] (HSV line [front RH - rear LH])	VDC switch-over solenoid valve (HSV2) on the primary side is open circuit or shorted, or the control line is open or shorted to the power supply or the ground.

POSSIBLE CAUSE

NOTE:

Confirm if DTC is PAST or CRNT. If DTC is CRNT, proceed with Diagnosis Procedure. If DTC is PAST, clear DTC. Do not replace the ABS actuator and electric unit (control unit) for a PAST DTC.

PAST DTC	CRNT DTC
• Harness or connector • ABS actuator and electric unit (control unit) power supply system • Fuse • Fusible link • Battery	• Harness or connector • ABS actuator and electric unit (control unit) • ABS actuator and electric unit (control unit) power supply system • Fuse • Fusible link • Battery

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

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

>> GO TO 2.

2.DTC REPRODUCTION PROCEDURE

With CONSULT

1. Turn the ignition switch OFF →ON.
   CAUTION:
   - **Be sure to wait of 10 seconds after turning ignition switch OFF or ON.**
   - **Start the engine.**
2. Repeat step 1 two or more times.
3. Perform self-diagnosis for “ABS”.

Is DTC “C1147”, “C1148”, “C1149” or “C1150” detected?

YES-1 >> “C1147”, “C1148”, “C1149” or “C1150” is displayed by “CRNT”: Proceed to BRC-89, "Diagnosis Procedure".

YES-2 >> “C1147”, “C1148”, “C1149” and “C1150” are displayed by “PAST”: INSPECTION END (Erase the memory of self-diagnosis results.)
NO-1 >> To check malfunction symptom before repair: Refer to GI-45, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:0000000010594802

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Check the ABS actuator and electric unit (control unit) harness connector for disconnection or looseness.

Is the inspection result normal?

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

2.PERFORM SELF-DIAGNOSIS

With CONSULT
1. Turn the ignition switch OFF → ON.
   CAUTION:
   - **Be sure to wait of 10 seconds after turning ignition switch OFF or ON.**
   - **Start the engine.**
2. Repeat step 1 two or more times.
3. Perform self-diagnosis for “ABS”.

Is any DTC “C1147”, “C1148”, “C1149” or “C1150” detected?

YES >> GO TO 3.
NO >> INSPECTION END

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

Check the ABS actuator and electric unit (control unit) power supply and ground circuit. Refer to BRC-118, "Diagnosis Procedure".

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair / replace harness, connector, fuse, or fusible link.

4.CHECK TERMINAL

Check the ABS actuator and electric unit (control unit) pin terminals for damage or loose connection with harness connector.

Is the inspection result normal?

YES >> Replace the ABS actuator and electric unit (control unit). Refer to BRC-156, "Removal and Installation".
NO >> Repair / replace harness, connector, or terminal.

C1154 TRANSMISSION RANGE SWITCH

Description

INFOID:0000000010594804

The ABS actuator and electric unit (control unit) and TCM exchange signals via the CAN communication line.

DTC Logic

INFOID:0000000010594805

DTC DETECTION LOGIC

DTC	Display item (Trouble diagnosis content)	Malfunction detected condition
C1154	PNP POSI SIG (PNP position signal)	When a malfunction is detected in TCM system.

POSSIBLE CAUSE

NOTE:
Confirm if DTC is PAST or CRNT. If DTC is CRNT, proceed with Diagnosis Procedure. If DTC is PAST, clear DTC. Do not replace the ABS actuator and electric unit (control unit) for a PAST DTC.

PAST DTC	CRNT DTC
• Harness or connector • Transmission range switch	• Harness or connector • ABS actuator and electric unit (control unit) • TCM • Transmission range switch

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

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

>> GO TO 2.

2.DTC REPRODUCTION PROCEDURE

With CONSULT
1. Turn the ignition switch OFF →ON.
   CAUTION:
   - **Be sure to wait of 10 seconds after turning ignition switch OFF or ON.**
   - **Start the engine.**
2. Repeat step 1 two or more times.
3. Perform self-diagnosis for “ABS”.

Is DTC “C1154” detected?

YES-1 >> “CRNT” is displayed: Proceed to BRC-90, "Diagnosis Procedure".
YES-2 >> “PAST” is displayed: INSPECTION END (Erase the memory of self-diagnosis results.)
NO-1 >> To check malfunction symptom before repair: Refer to GI-45, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:0000000010594806

CAUTION:
“C1154” may be detected when going up a slope, being toed with ignition switch ON and the gear in a shift position other than R position. This is not a shift position error. The system returns to normal when parking on level ground after stopping the traction and restarting the engine.

1.CHECK CVT SYSTEM

With CONSULT
Perform self-diagnosis for “TRANSMISSION”.

Is any DTC detected?

YES >> Check the DTC. Refer to TM-156, "DTC Index".
NO >> GO TO 2.

2.PERFORM SELF-DIAGNOSIS

With CONSULT
1. Erase Self-diagnosis result for “ABS”.
2. Turn the ignition switch OFF → ON.
   CAUTION:
   - **Be sure to wait of 10 seconds after turning ignition switch OFF or ON.**
   - **Start the engine.**
3. Repeat step 1 two or more times.
4. Drive the vehicle for a short period of time.
5. Stop the vehicle.
6. Perform self-diagnosis for “ABS”.

Is DTC “C1154” detected?

YES >> Replace the ABS actuator and electric unit (control unit). Refer to BRC-156, "Removal and Installation".
NO >> Check pin terminals and connection of each harness connector for abnormal conditions. Repair / replace harness, connector, or terminal.

C1155 BRAKE FLUID LEVEL SWITCH

Description

INFOID:0000000010594808

The brake fluid level switch converts the brake fluid level to an electric signal and transmits it to the ABS actuator and electric unit (control unit).

DTC Logic

INFOID:0000000010594809

DTC DETECTION LOGIC

DTC	Display item (Trouble diagnosis content)	Malfunction detected condition
C1155	BR FLUID LEVEL LOW (Brake fluid level low)	• When brake fluid level low signal is detected. • When an open circuit is detected in brake fluid level switch circuit.

POSSIBLE CAUSE

NOTE:
Confirm if DTC is PAST or CRNT. If DTC is CRNT, proceed with Diagnosis Procedure. If DTC is PAST, clear DTC. Do not replace the ABS actuator and electric unit (control unit) for a PAST DTC.

PAST DTC	CRNT DTC
• Harness or connector • Brake fluid level is low	• Harness or connector • ABS actuator and electric unit (control unit) • Brake fluid level switch • Combination meter • Unified meter and A/C amp. • Brake fluid level is low

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

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

>> GO TO 2.

2.DTC REPRODUCTION PROCEDURE

With CONSULT
1. Turn the ignition switch OFF →ON.
   CAUTION:
   - **Be sure to wait of 10 seconds after turning ignition switch OFF or ON.**
   - **Start the engine.**
2. Repeat step 1 two or more times.
3. Perform self-diagnosis for “ABS”.

Is DTC “C1155” detected?

YES-1 >> “CRNT” is displayed: Proceed to BRC-92, "Diagnosis Procedure".
YES-2 >> “PAST” is displayed: INSPECTION END (Erase the memory of self-diagnosis results.)
NO-1 >> To check malfunction symptom before repair: Refer to GI-45, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:0000000010594810

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Check the combination meter harness connector for disconnection or looseness.
3. Check the unified meter and A/C amp. harness connector for disconnection or looseness.
4. Check the brake fluid level switch harness connector for disconnection or looseness.

Is the inspection result normal?

>> GO TO 3.
>> Repair / replace harness or connector, and GO TO 2.

2.PERFORM SELF-DIAGNOSIS (1)

With CONSULT
1. Turn the ignition switch OFF → ON.
CAUTION:
- **Be sure to wait of 10 seconds after turning ignition switch OFF or ON.**
- **Start the engine.**
2. Repeat step 1 two or more times.
3. Perform self-diagnosis for “ABS”.

Is DTC “C1155” detected?

YES >> GO TO 3.
NO >> INSPECTION END

3.CHECK BRAKE FLUID LEVEL

1. Turn the ignition switch OFF.
2. Check the brake fluid level. Refer to BR-12, "Inspection".

Is the inspection result normal?

YES >> GO TO 5.
NO >> Refill brake fluid. Refer to BR-12, "Refilling". GO TO 4.

4.PERFORM SELF-DIAGNOSIS (2)

With CONSULT
1. Erase self-diagnosis result for “ABS”
2. Turn the ignition switch OFF → ON → OFF.
CAUTION:
Be sure to wait of 10 seconds after turning ignition switch OFF or ON.
3. Turn the ignition switch OFF → ON.
CAUTION:
- **Be sure to wait of 10 seconds after turning ignition switch OFF or ON.**
- **Start the engine.**
4. Repeat step 3 two or more times.
5. Perform self-diagnosis for “ABS”.

Is DTC “C1155” detected?

YES >> GO TO 5.
NO >> INSPECTION END

5.CHECK BRAKE FLUID LEVEL SWITCH

Check the brake fluids level switch. Refer to BRC-95, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 7.
NO >> Replace the reservoir tank. Refer to BR-29, "Disassembly and Assembly". GO TO 6.

6.PERFORM SELF-DIAGNOSIS (3)

With CONSULT
1. Erase self-diagnosis result for “ABS”
2. Turn the ignition switch OFF → ON → OFF.
CAUTION:
Be sure to wait of 10 seconds after turning ignition switch OFF or ON.
3. Turn the ignition switch OFF → ON.
CAUTION:
- **Be sure to wait of 10 seconds after turning ignition switch OFF or ON.**
- **Start the engine.**
4. Repeat step 3 two or more times.
5. Perform self-diagnosis for “ABS”.

Is DTC “C1155” detected?

YES >> GO TO 7.

NO >> INSPECTION END

7. CHECK CONNECTOR AND TERMINAL

1. Turn the ignition switch OFF.
2. Disconnect brake fluid level switch harness connector.
3. Check the brake fluid level switch harness connector for disconnection or looseness.
4. Check the brake fluid level switch pin terminals for damage or loose connection with harness connector.
5. Disconnect combination meter harness connector.
6. Check the combination meter harness connector for disconnection or looseness.
7. Check the combination meter pin terminals for damage or loose connection with harness connector.
8. Disconnect unified meter and A/C amp. harness connector.
9. Check the unified meter and A/C amp. harness connector for disconnection or looseness.
10. Check the unified meter and A/C amp. pin terminals for damage or loose connection with harness connector.

Is the inspection result normal?

YES >> GO TO 9.
NO >> Repair / replace harness, connector, or terminal, and GO TO 8.

8. PERFORM SELF-DIAGNOSIS (4)

With CONSULT
1. Erase self-diagnosis result for “ABS”
2. Turn the ignition switch OFF → ON → OFF.
   CAUTION:
   Be sure to wait of 10 seconds after turning ignition switch OFF or ON.
3. Turn the ignition switch OFF → ON.
   CAUTION:
   - **Be sure to wait of 10 seconds after turning ignition switch OFF or ON.**
   - **Start the engine.**
4. Repeat step 3 two or more times.
5. Perform self-diagnosis for “ABS”.

Is DTC “C1155” detected?

YES >> GO TO 9.
NO >> INSPECTION END

9. CHECK BRAKE FLUID LEVEL SWITCH HARNESS

1. Turn the ignition switch OFF.
2. Disconnect brake fluid level switch harness connector.
3. Disconnect combination meter harness connector.
4. Disconnect unified meter and A/C amp. harness connector.
5. Check the continuity between brake fluid level switch harness connector and combination meter harness connector.

Brake fluid level switch		Combination meter		Continuity
Connector	Terminal	Connector	Terminal	
E47	1	M53	28	Existed

6. Check the continuity between brake fluid level switch harness connector and unified meter and A/C amp. harness connector.

Brake fluid level switch		Unified meter and A/C amp.		Continuity
Connector	Terminal	Connector	Terminal	
E47	1	M67	57	Existed

7. Check the continuity between brake fluid level switch harness connector and ground.

Brake fluid level switch		—	Continuity
Connector	Terminal		
E47	1	Ground	Not existed

Is the inspection result normal?

YES >> GO TO 10.
NO >> Repair / replace harness or connector, and GO TO 10.

10.CHECK BRAKE FLUID LEVEL SWITCH GROUND

Check the continuity between brake fluid level switch harness connector and ground.

Brake fluid level switch		—	Continuity
Connector	Terminal		
E47	2	Ground	Existed

Is the inspection result normal?

YES >> GO TO 11.
NO >> Repair / replace harness or connector, and GO TO 11.

11.CHECK COMBINATION METER

Check the combination meter. Refer to MWI-42, "CONSULT Function (METER/M&A)".

Is the inspection result normal?

YES >> Replace the ABS actuator and electric unit (control unit). Refer to BRC-156, "Removal and Installation".
NO >> Repair or replace combination meter. Refer to MWI-136, "Removal and Installation".

Component Inspection

INFOID:0000000010594811

1.CHECK BRAKE FLUID LEVEL SWITCH

1. Turn the ignition switch OFF.
2. Disconnect brake fluid level switch connector.
3. Check the continuity between brake fluid level switch connector terminals.

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

Is the inspection result normal?

YES >> INSPECTION END
NO >> Replace the reservoir tank. Refer to BR-29, "Disassembly and Assembly".

C1170 VARIANT CODING

DTC Logic

INFOID:0000000011999801

DTC DETECTION LOGIC

DTC	Display Item (Trouble diagnosis content)	Malfunction detected condition
C1170	VARIANT CODING (Variant coding)	When the information in ABS actuator and electric unit (control unit) is not the same.

POSSIBLE CAUSE

NOTE:
Confirm if DTC is PAST or CRNT. If DTC is CRNT, proceed with Diagnosis Procedure. If DTC is PAST, clear DTC. Do not replace the ABS actuator and electric unit (control unit) for a PAST DTC.

PAST DTC	CRNT DTC
—	ABS actuator and electric unit (control unit)

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

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

>> GO TO 2.

2.CHECK DTC DETECTION

With CONSULT

1. Turn the ignition switch OFF → ON.
   CAUTION:
   - **Be sure to wait of 10 seconds after turning ignition switch OFF or ON.**
   - **Start the engine.**
2. Repeat step 1 two or more times.
3. Perform self-diagnosis for “ABS”.

Is DTC “C1170” detected?

YES-1 >> “CRNT” is displayed: Proceed to BRC-96, "Diagnosis Procedure".
YES-2 >> “PAST” is displayed: INSPECTION END (Erase the memory of self-diagnosis results.)
NO-1 >> To check malfunction symptom before repair: Refer to GI-45, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:0000000011999802

1.CHECK SELF-DIAGNOSIS RESULTS

With CONSULT

Replace the ABS actuator and electric unit (control unit) even if other display than “C1170” is displayed in self-diagnosis for “ABS”.

>> Replace the ABS actuator and electric unit (control unit). Refer to BRC-156, "Removal and Installation".

C1185 ICC UNIT

Description

INFOID:0000000010594813

The ABS actuator and electric unit (control unit) and the ICC sensor integrated unit exchange signals via the CAN communication line.

DTC Logic

INFOID:0000000010594814

DTC DETECTION LOGIC

DTC	Display item (Trouble diagnosis content)	Malfunction detected condition
C1185	ACC CONT (ACC controller)	ICC sensor integrated unit internal malfunction.

POSSIBLE CAUSE

NOTE:
Confirm if DTC is PAST or CRNT. If DTC is CRNT, proceed with Diagnosis Procedure. If DTC is PAST, clear DTC. Do not replace the ABS actuator and electric unit (control unit) for a PAST DTC.

PAST DTC	CRNT DTC
• Harness or connector • ABS actuator and electric unit (control unit) power supply system • Fuse • Fusible link • Battery • CAN communication line	• Harness or connector • ICC sensor integrated unit • ABS actuator and electric unit (control unit) • CAN communication line

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

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

>> GO TO 2.

2.DTC REPRODUCTION PROCEDURE

With CONSULT
1. Turn the ignition switch OFF →ON.
   CAUTION:
   - **Be sure to wait of 10 seconds after turning ignition switch OFF or ON.**
   - **Start the engine.**
2. Repeat step 1 two or more times.
3. Perform self-diagnosis for “ABS”.

Is DTC “C1185” detected?

YES-1 >> “CRNT” is displayed: Proceed to BRC-97, "Diagnosis Procedure".
YES-2 >> “PAST” is displayed: INSPECTION END (Erase the memory of self-diagnosis results.)
NO-1 >> To check malfunction symptom before repair: Refer to GI-45, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:0000000010594815

1.CHECK ICC SENSOR INTEGRATED UNIT SYSTEM

With CONSULT
Perform self-diagnosis for “ICC/ADAS”. Refer to CCS-39, "CONSULT Function (ICC/ADAS)".

Is any DTC detected?

YES >> Check the DTC. Refer to CCS-152, "DTC Index".
NO >> GO TO 2.

2.CHECK CONNECTOR AND TERMINAL

1. Turn the ignition switch OFF.
2. Disconnect ICC sensor integrated unit harness connector.
3. Disconnect ABS actuator and electric unit (control unit) harness connector.
4. Check the connector for disconnection or looseness.
5. Check the pin terminals for damage or loose connection with harness connector.

Is the inspection result normal?

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

3.CHECK ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)

With CONSULT
1. Connect ICC sensor integrated unit harness connector.
2. Connect ABS actuator and electric unit (control unit) harness connector.
3. Erase self-diagnosis result for “ABS”.
4. Turn the ignition switch OFF → ON.

   CAUTION:
   - **Be sure to wait of 10 seconds after turning ignition switch OFF or ON.**
   - **Start the engine.**
5. Repeat step 4 two or more times.
6. Perform self-diagnosis for “ABS”.

Is any DTC “C1185” or “U1000” detected?

YES (“C1185”)>>GO TO 1.
YES (“U1000”)>>Refer to LAN-16, "Trouble Diagnosis Flow Chart".
NO >> INSPECTION END

C1197 VACUUM SENSOR

Description

INFOID:0000000010594817

The vacuum sensor converts the vacuum pressure to an electric signal and transmits it to the ABS actuator and electric unit (control unit).

DTC Logic

INFOID:0000000010594818

DTC DETECTION LOGIC

DTC	Display item (Trouble diagnosis content)	Malfunction detected condition
C1197	VACUUM SENSOR (Vacuum sensor)	When a malfunction is detected in vacuum sensor.

POSSIBLE CAUSE

NOTE:
Confirm if DTC is PAST or CRNT. If DTC is CRNT, proceed with Diagnosis Procedure. If DTC is PAST, clear DTC. Do not replace the ABS actuator and electric unit (control unit) for a PAST DTC.

PAST DTC	CRNT DTC
• Harness or connector • ABS actuator and electric unit (control unit) power supply system • Fuse • Fusible link • Battery	• Harness or connector • Vacuum sensor (brake booster) • Vacuum piping • ABS actuator and electric unit (control unit)

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

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

>> GO TO 2.

2.DTC REPRODUCTION PROCEDURE

With CONSULT
1. Turn the ignition switch OFF →ON.
   CAUTION:
   - **Be sure to wait of 10 seconds after turning ignition switch OFF or ON.**
   - **Start the engine.**
2. Repeat step 1 two or more times.
3. Perform self-diagnosis for “ABS”.

Is DTC “C1197” detected?

YES-1 >> “CRNT” is displayed: Proceed to BRC-99, "Diagnosis Procedure".
YES-2 >> “PAST” is displayed: INSPECTION END (Erase the memory of self-diagnosis results.)
NO-1 >> To check malfunction symptom before repair: Refer to GI-45, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:0000000010594819

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Check the vacuum sensor harness connector for disconnection or looseness.
3. Check the ABS actuator and electric unit (control unit) harness connector for disconnection or looseness.

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair / replace harness or connector, and GO TO 2.

2.PERFORM SELF-DIAGNOSIS (1)

With CONSULT
1. Turn the ignition switch OFF → ON.
   CAUTION:
   - **Be sure to wait of 10 seconds after turning ignition switch OFF or ON.**
   - **Start the engine.**
2. Repeat step 1 two or more times.
3. Perform self-diagnosis for “ABS”.

Is DTC “C1197” detected?

YES >> GO TO 3.
NO >> INSPECTION END

3.CHECK BRAKE BOOSTER

1. Turn the ignition switch OFF.
2. Check the brake booster. Refer to BR-32, "Inspection and Adjustment".

Is the inspection result normal?

YES >> GO TO 4.
NO >> Replace the brake booster. Refer to BR-31, "Removal and installation".

4.PERFORM SELF-DIAGNOSIS (2)

With CONSULT
1. Erase self-diagnosis for “ABS”.
2. Turn the ignition switch OFF → ON → OFF.
   CAUTION:
   Be sure to wait of 10 seconds after turning ignition switch OFF or ON.
3. Turn the ignition switch OFF → ON.
   CAUTION:
   - **Be sure to wait of 10 seconds after turning ignition switch OFF or ON.**
   - **Start the engine.**
4. Repeat step 3 two or more times.
5. Perform self-diagnosis for “ABS”.

Is DTC “C1197” detected?

YES >> GO TO 5.
NO >> INSPECTION END

5.CHECK VACUUM PIPING

Check the vacuum piping. Refer to BR-35, "Inspection".

Is the inspection result normal?

YES >> GO TO 6.
NO >> Replace the vacuum piping. Refer to BR-35, "Removal and Installation".

6.PERFORM SELF-DIAGNOSIS (3)

With CONSULT
1. Erase self-diagnosis for “ABS”.
2. Turn the ignition switch OFF → ON → OFF.
   CAUTION:
   Be sure to wait of 10 seconds after turning ignition switch OFF or ON.
3. Turn the ignition switch OFF → ON.
   CAUTION:
   - **Be sure to wait of 10 seconds after turning ignition switch OFF or ON.**
   - **Start the engine.**
4. Repeat step 3 two or more times.
5. Perform self-diagnosis for “ABS”.

Is DTC “C1197” detected?

YES >> GO TO 7.
NO >> INSPECTION END

7. CHECK TERMINAL

1. Turn the ignition switch OFF.
2. Disconnect vacuum sensor harness connector.
3. Check the vacuum sensor pin terminals for damage or loose connection with harness connector.
4. Disconnect ABS actuator and electric unit (control unit) harness connector.
5. Check the ABS actuator and electric unit (control unit) pin terminals for damage or loose connection with harness connector.

Is the inspection result normal?

YES >> GO TO 8.
NO >> Repair / replace harness, connector, or terminal.

8. PERFORM SELF-DIAGNOSIS (4)

With CONSULT
1. Erase self-diagnosis for “ABS”.
2. Turn the ignition switch OFF → ON → OFF.
   CAUTION:
   Be sure to wait of 10 seconds after turning ignition switch OFF or ON.
3. Turn the ignition switch OFF → ON.
   CAUTION:
   - **Be sure to wait of 10 seconds after turning ignition switch OFF or ON.**
   - **Start the engine.**
4. Repeat step 3 two or more times.
5. Perform self-diagnosis for “ABS”.

Is DTC “C1197” detected?

YES >> GO TO 9.
NO >> INSPECTION END

9. CHECK VACUUM SENSOR CIRCUIT

1. Turn the ignition switch OFF.
2. Disconnect vacuum sensor harness connector.
3. Disconnect ABS actuator and electric unit (control unit) harness connector.
4. Check the continuity between vacuum sensor harness connector and ABS actuator and electric unit (control unit) harness connector.

Vacuum sensor		ABS actuator and electric unit (control unit)		Continuity
Connector	Terminal	Connector	Terminal	
E82	1	E41	12	Existed
	2		15	
	3		19	

5. Check the continuity between vacuum sensor harness connector and ground.

Vacuum sensor		—	Continuity
Connector	Terminal		
E82	1	Ground	Not existed
	2		
	3		

Is the inspection result normal?

YES >> GO TO 10.
NO >> Repair / replace harness or connector.

10. REPLACE VACUUM SENSOR

With CONSULT
1. Connect ABS actuator and electric unit (control unit) harness connector.
2. Replace the vacuum sensor.

CAUTION:
Always replace brake booster because vacuum sensor cannot be disassembled. Refer to BR-31, "Removal and installation".

3. Erase self-diagnosis result for “ABS”.
4. Turn the ignition switch OFF → ON → OFF.
   CAUTION:
   Be sure to wait of 10 seconds after turning ignition switch OFF or ON.
5. Start engine.
   CAUTION:
   Stop the vehicle.
6. Perform self-diagnosis for “ABS”.

Is DTC “C1197” detected?

YES >> Replace the ABS actuator and electric unit (control unit). Refer to BRC-156, "Removal and Installation".
NO >> INSPECTION END

C1198 VACUUM SENSOR

Description

INFOID:0000000010594821

The vacuum sensor converts the vacuum pressure to an electric signal and transmits it to the ABS actuator and electric unit (control unit).

DTC Logic

INFOID:0000000010594822

DTC DETECTION LOGIC

DTC	Display item (Trouble diagnosis content)	Malfunction detected condition
C1198	VACUUM SEN CIR (Vacuum sensor circuit)	• When an open circuit is detected in vacuum sensor circuit. • When a short circuit is detected in vacuum sensor circuit. • When a malfunction is detected in vacuum sensor noise.

POSSIBLE CAUSE

NOTE:
Confirm if DTC is PAST or CRNT. If DTC is CRNT, proceed with Diagnosis Procedure. If DTC is PAST, clear DTC. Do not replace the ABS actuator and electric unit (control unit) for a PAST DTC.

PAST DTC	CRNT DTC
• Harness or connector • ABS actuator and electric unit (control unit) power supply system • Fuse • Fusible link • Battery	• Harness or connector • Vacuum sensor (brake booster) • ABS actuator and electric unit (control unit)

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

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

>> GO TO 2.

2.DTC REPRODUCTION PROCEDURE

With CONSULT
1. Turn the ignition switch OFF →ON.
   CAUTION:
   - **Be sure to wait of 10 seconds after turning ignition switch OFF or ON.**
   - **Start the engine.**
2. Repeat step 1 two or more times.
3. Perform self-diagnosis for “ABS”.

Is DTC “C1198” detected?

YES-1 >> “CRNT” is displayed: Proceed to BRC-103, "Diagnosis Procedure".
YES-2 >> “PAST” is displayed: INSPECTION END (Erase the memory of self-diagnosis results.)
NO-1 >> To check malfunction symptom before repair: Refer to GI-45, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:0000000010594823

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Check the vacuum sensor harness connector for disconnection or looseness.
3. Check the ABS actuator and electric unit (control unit) harness connector for disconnection or looseness.

Is the inspection result normal?

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

2. PERFORM SELF-DIAGNOSIS (1)

With CONSULT
1. Turn the ignition switch OFF → ON.
   CAUTION:
   - **Be sure to wait of 10 seconds after turning ignition switch OFF or ON.**
   - **Start the engine.**
2. Repeat step 1 two or more times.
3. Perform self-diagnosis for “ABS”.

Is DTC “C1198” detected?

YES >> GO TO 3.
NO >> INSPECTION END

3. CHECK TERMINAL

1. Turn the ignition switch OFF.
2. Disconnect vacuum sensor harness connector.
3. Check the vacuum sensor pin terminals for damage or loose connection with harness connector.
4. Disconnect ABS actuator and electric unit (control unit) harness connector.
5. Check the ABS actuator and electric unit (control unit) pin terminals for damage or loose connection with harness connector.

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair / replace harness, connector, or terminal.

4. PERFORM SELF-DIAGNOSIS (2)

With CONSULT
1. Erase self-diagnosis for “ABS”.
2. Turn the ignition switch OFF → ON → OFF.
   CAUTION:
   Be sure to wait of 10 seconds after turning ignition switch OFF or ON.
3. Turn the ignition switch OFF → ON.
   CAUTION:
   - **Be sure to wait of 10 seconds after turning ignition switch OFF or ON.**
   - **Start the engine.**
4. Repeat step 3 two or more times.
5. Perform self-diagnosis for “ABS”.

Is DTC “C1198” detected?

YES >> GO TO 5.
NO >> INSPECTION END

5. CHECK VACUUM SENSOR CIRCUIT

1. Turn the ignition switch OFF.
2. Disconnect vacuum sensor harness connector.
3. Disconnect ABS actuator and electric unit (control unit) harness connector.
4. Check the continuity between vacuum sensor harness connector and ABS actuator and electric unit (control unit) harness connector.

Vacuum sensor		ABS actuator and electric unit (control unit)		Continuity
Connector	Terminal	Connector	Terminal	
E82	1	E41	12	Existed
	2		15	
	3		19	

5. Check the continuity between vacuum sensor harness connector and ground.

Vacuum sensor		—	Continuity
Connector	Terminal		
E82	1	Ground	Not existed
	2		
	3		

Is the inspection result normal?

YES >> GO TO 6.
NO >> Repair / replace harness or connector.

6. REPLACE VACUUM SENSOR

With CONSULT

1. Connect ABS actuator and electric unit (control unit) harness connector.
2. Replace the vacuum sensor.
   CAUTION:
   Always replace brake booster because vacuum sensor cannot be disassembled. Refer to BR-31, "Removal and installation".
3. Erase self-diagnosis result for “ABS”.
4. Turn the ignition switch OFF → ON → OFF.
   CAUTION:
   Be sure to wait of 10 seconds after turning ignition switch OFF or ON.
5. Start engine.
   CAUTION:
   Stop the vehicle.
6. Perform self-diagnosis for “ABS”.

Is DTC “C1198” detected?

YES >> Replace the ABS actuator and electric unit (control unit). Refer to BRC-156, "Removal and Installation".
NO >> INSPECTION END

C1199 VACUUM SENSOR

Description

INFOID:0000000010594825

The vacuum sensor converts the vacuum pressure to an electric signal and transmits it to the ABS actuator and electric unit (control unit).

DTC Logic

INFOID:0000000010594826

DTC DETECTION LOGIC

DTC	Display item (Trouble diagnosis content)	Malfunction detected condition
C1199	BRAKE BOOSTER (Brake booster)	When brake booster vacuum is approx. 0 kPa (0 mmHg) during engine running.

POSSIBLE CAUSE

NOTE:
Confirm if DTC is PAST or CRNT. If DTC is CRNT, proceed with Diagnosis Procedure. If DTC is PAST, clear DTC. Do not replace the ABS actuator and electric unit (control unit) for a PAST DTC.

PAST DTC	CRNT DTC
• Harness or connector • ABS actuator and electric unit (control unit) power supply system • Fuse • Fusible link • Battery	• Harness or connector • Vacuum sensor (brake booster) • Vacuum piping • ABS actuator and electric unit (control unit)

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

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

>> GO TO 2.

2.DTC REPRODUCTION PROCEDURE

With CONSULT
1. Turn the ignition switch OFF →ON.
   CAUTION:
   - **Be sure to wait of 10 seconds after turning ignition switch OFF or ON.**
   - **Start the engine.**
2. Repeat step 1 two or more times.
3. Perform self-diagnosis for “ABS”.

Is DTC “C1199” detected?

YES-1 >> “CRNT” is displayed: Proceed to BRC-106, "Diagnosis Procedure".
YES-2 >> “PAST” is displayed: INSPECTION END (Erase the memory of self-diagnosis results.)
NO-1 >> To check malfunction symptom before repair: Refer to GI-45, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:0000000010594827

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Check the vacuum sensor harness connector for disconnection or looseness.
3. Check the ABS actuator and electric unit (control unit) harness connector for disconnection or looseness.

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair / replace harness or connector, and GO TO 2.

2. PERFORM SELF-DIAGNOSIS (1)

With CONSULT

1. Turn the ignition switch OFF → ON.
   CAUTION:
   - **Be sure to wait of 10 seconds after turning ignition switch OFF or ON.**
   - **Start the engine.**
2. Repeat step 1 two or more times.
3. Perform self-diagnosis for “ABS”.

Is DTC “C1199” detected?

YES >> GO TO 3.
NO >> INSPECTION END

3. CHECK BRAKE BOOSTER

1. Turn the ignition switch OFF.
2. Check the brake booster. Refer to BR-32, "Inspection and Adjustment".

Is the inspection result normal?

YES >> GO TO 4.
NO >> Replace the brake booster. Refer to BR-31, "Removal and installation".

4. PERFORM SELF-DIAGNOSIS (2)

With CONSULT

1. Erase self-diagnosis for “ABS”.
2. Turn the ignition switch OFF → ON → OFF.
   CAUTION:
   Be sure to wait of 10 seconds after turning ignition switch OFF or ON.
3. Turn the ignition switch OFF → ON.
   CAUTION:
   - **Be sure to wait of 10 seconds after turning ignition switch OFF or ON.**
   - **Start the engine.**
4. Repeat step 3 two or more times.
5. Perform self-diagnosis for “ABS”.

Is DTC “C1199” detected?

YES >> GO TO 5.
NO >> INSPECTION END

5. CHECK VACUUM PIPING

Check the vacuum piping. Refer to BR-35, "Inspection".

Is the inspection result normal?

YES >> GO TO 6.
NO >> Replace the vacuum piping. Refer to BR-35, "Removal and Installation".

6. PERFORM SELF-DIAGNOSIS (3)

With CONSULT

1. Erase self-diagnosis for “ABS”.
2. Turn the ignition switch OFF → ON → OFF.
   CAUTION:
   Be sure to wait of 10 seconds after turning ignition switch OFF or ON.
3. Turn the ignition switch OFF → ON.
   CAUTION:
   - **Be sure to wait of 10 seconds after turning ignition switch OFF or ON.**
   - **Start the engine.**
4. Repeat step 3 two or more times.
5. Perform self-diagnosis for “ABS”.

Is DTC “C1199” detected?

YES >> GO TO 7.
NO >> INSPECTION END

7.CHECK TERMINAL

1. Turn the ignition switch OFF.
2. Disconnect vacuum sensor harness connector.
3. Check the vacuum sensor pin terminals for damage or loose connection with harness connector.
4. Disconnect ABS actuator and electric unit (control unit) harness connector.
5. Check the ABS actuator and electric unit (control unit) pin terminals for damage or loose connection with harness connector.

Is the inspection result normal?

YES >> GO TO 8.
NO >> Repair / replace harness, connector, or terminal.

8.PERFORM SELF-DIAGNOSIS (4)

With CONSULT
1. Erase self-diagnosis for “ABS”.
2. Turn the ignition switch OFF → ON → OFF.
   CAUTION:
   Be sure to wait of 10 seconds after turning ignition switch OFF or ON.
3. Turn the ignition switch OFF → ON.
   CAUTION:
   - **Be sure to wait of 10 seconds after turning ignition switch OFF or ON.**
   - **Start the engine.**
4. Repeat step 3 two or more times.
5. Perform self-diagnosis for “ABS”.

Is DTC “C1199” detected?

YES >> GO TO 9.
NO >> INSPECTION END

9.CHECK VACUUM SENSOR CIRCUIT

1. Turn the ignition switch OFF.
2. Disconnect vacuum sensor harness connector.
3. Disconnect ABS actuator and electric unit (control unit) harness connector.
4. Check the continuity between vacuum sensor harness connector and ABS actuator and electric unit (control unit) harness connector.

Vacuum sensor		ABS actuator and electric unit (control unit)		Continuity
Connector	Terminal	Connector	Terminal	
E82	1	E41	12	Existed
	2		15	
	3		19	

5. Check the continuity between vacuum sensor harness connector and ground.

Vacuum sensor		—	Continuity
Connector	Terminal		
E82	1	Ground	Not existed
	2		
	3		

Is the inspection result normal?

YES >> GO TO 10.
NO >> Repair / replace harness or connector.

10.REPLACE VACUUM SENSOR

With CONSULT
1. Connect ABS actuator and electric unit (control unit) harness connector.
2. Replace the vacuum sensor.

CAUTION:
Always replace brake booster because vacuum sensor cannot be disassembled. Refer to BR-31, "Removal and installation".

3. Erase self-diagnosis result for “ABS”.
4. Turn the ignition switch OFF → ON → OFF.

CAUTION:
Be sure to wait of 10 seconds after turning ignition switch OFF or ON.

5. Start engine.

CAUTION:
Stop the vehicle.

6. Perform self-diagnosis for “ABS”.

Is DTC “C1199” detected?

YES >> Replace the ABS actuator and electric unit (control unit). Refer to BRC-156, "Removal and Installation".

NO >> INSPECTION END

C119A VACUUM SENSOR

Description

INFOID:0000000010594829

The vacuum sensor converts the vacuum pressure to an electric signal and transmits it to the ABS actuator and electric unit (control unit).

DTC Logic

INFOID:0000000010594830

DTC DETECTION LOGIC

DTC	Display item (Trouble diagnosis content)	Malfunction detected condition
C119A	VACUUM SEN VOLT (Vacuum sensor voltage)	When a malfunction is detected in supply power voltage of vacuum sensor.

POSSIBLE CAUSE

NOTE:
Confirm if DTC is PAST or CRNT. If DTC is CRNT, proceed with Diagnosis Procedure. If DTC is PAST, clear DTC. Do not replace the ABS actuator and electric unit (control unit) for a PAST DTC.

PAST DTC	CRNT DTC
• Harness or connector • ABS actuator and electric unit (control unit) power supply system • Fuse • Fusible link • Battery	• Harness or connector • Vacuum sensor (brake booster) • ABS actuator and electric unit (control unit) • ABS actuator and electric unit (control unit) power supply system • Fuse • Fusible link • Battery

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

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

>> GO TO 2.

2.DTC REPRODUCTION PROCEDURE

With CONSULT
1. Turn the ignition switch OFF →ON.
   CAUTION:
   - **Be sure to wait of 10 seconds after turning ignition switch OFF or ON.**
   - **Start the engine.**
2. Repeat step 1 two or more times.
3. Perform self-diagnosis for “ABS”.

Is DTC “C119A” detected?

YES-1 >> “CRNT” is displayed: Proceed to BRC-110, "Diagnosis Procedure".
YES-2 >> “PAST” is displayed: INSPECTION END (Erase the memory of self-diagnosis results.)
NO-1 >> To check malfunction symptom before repair: Refer to GI-45, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:0000000010594831

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Check the vacuum sensor harness connector for disconnection or looseness.
3. Check the ABS actuator and electric unit (control unit) harness connector for disconnection or looseness.

Is the inspection result normal?

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

2. PERFORM SELF-DIAGNOSIS

With CONSULT

1. Turn the ignition switch OFF → ON.
   CAUTION:
   - **Be sure to wait of 10 seconds after turning ignition switch OFF or ON.**
   - **Start the engine.**
2. Repeat step 1 two or more times.
3. Perform self-diagnosis for “ABS”.

Is DTC “C119A” detected?

YES >> GO TO 3.
NO >> INSPECTION END

3. CHECK VACUUM SENSOR POWER SUPPLY

1. Turn the ignition switch OFF.
2. Disconnect vacuum sensor harness connector.
3. Check the voltage between vacuum sensor harness connector and ground.

Vacuum sensor		—	Voltage
Connector	Terminal		
E82	3	Ground	0 V

4. Turn the ignition switch ON.
   CAUTION:
   Start the engine.
5. Check the voltage between vacuum sensor harness connector and ground.

Vacuum sensor		—	Voltage
Connector	Terminal		
E82	3	Ground	4.75 V – 5.25 V

Is the inspection result normal?

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

4. CHECK VACUUM SENSOR POWER SUPPLY CIRCUIT

1. Turn the ignition switch OFF.
2. Disconnect ABS actuator and electric unit (control unit) harness connector.
3. Check the continuity between vacuum sensor harness connector and ABS actuator and electric unit (control unit) harness connector.

Vacuum sensor		ABS actuator and electric unit (control unit)		Continuity
Connector	Terminal	Connector	Terminal	
E82	3	E41	19	Existed

4. Check the continuity between vacuum sensor harness connector and ground.

Vacuum sensor		—	Continuity
Connector	Terminal		
E82	3	Ground	Not existed

Is the inspection result normal?

YES >> GO TO 6.
NO >> Repair / replace harness or connector.

5.CHECK VACUUM SENSOR GROUND CIRCUIT

1. Turn the ignition switch OFF.
2. Check the continuity between vacuum sensor harness connector and ground.

Vacuum sensor		—	Continuity
Connector	Terminal		
E82	2	Ground	Not existed

Is the inspection result normal?

YES >> GO TO 6.
NO >> Repair / replace harness or connector.

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

Check the ABS actuator and electric unit (control unit) power supply and ground circuit. Refer to BRC-118, "Diagnosis Procedure".

Is the inspection result normal?

YES >> GO TO 7.
NO >> Repair / replace harness, connector, fuse, or fusible link.

7.CHECK TERMINAL

1. Check the vacuum sensor pin terminals for damage or loose connection with harness connector.
2. Check the ABS actuator and electric unit (control unit) pin terminals for damage or loose connection with harness connector.

Is the inspection result normal?

YES >> Replace the ABS actuator and electric unit (control unit). Refer to BRC-156, "Removal and Installation".
NO >> Repair / replace harness, connector, or terminal.

U1000 CAN COMM CIRCUIT

Description

INFOID:0000000010594833

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:0000000010594834

DTC DETECTION LOGIC

DTC	Display item (Trouble diagnosis content)	Malfunction detected condition
U1000	CAN COMM CIRCUIT (CAN communication circuit)	When CAN communication signal is not continuously transmitted or received for 2 seconds or more.

POSSIBLE CAUSE

NOTE:
Confirm if DTC is PAST or CRNT. If DTC is CRNT, proceed with Diagnosis Procedure. If DTC is PAST, clear DTC. Do not replace the ABS actuator and electric unit (control unit) for a PAST DTC.

PAST DTC	CRNT DTC
• Harness or connector • CAN communication line	CAN communication system malfunction

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

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

>> GO TO 2.

2.DTC REPRODUCTION PROCEDURE

With CONSULT
1. Turn the ignition switch OFF →ON.
   CAUTION:
   - **Be sure to wait of 10 seconds after turning ignition switch OFF or ON.**
   - **Start the engine.**
2. Repeat step 1 two or more times.
3. Perform self-diagnosis for “ABS”.

Is DTC “U1000” detected?

YES-1 >> “CRNT” is displayed: Proceed to BRC-113, "Diagnosis Procedure".
YES-2 >> “PAST” is displayed: INSPECTION END (Erase the memory of self-diagnosis results.)
NO-1 >> To check malfunction symptom before repair: Refer to GI-45, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:0000000010594835

Proceed to LAN-16, "Trouble Diagnosis Flow Chart".

U1002 SYSTEM COMM (CAN)

Description

INFOID:0000000010594837

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:0000000010594838

DTC DETECTION LOGIC

DTC	Display item (Trouble diagnosis content)	Malfunction detected condition
U1002	SYSTEM COMM (CAN) (CAN system communication)	When ABS actuator and electric unit (control unit) is not transmitting or receiving CAN communication signal for 2 seconds or less.

POSSIBLE CAUSE

NOTE:
Confirm if DTC is PAST or CRNT. If DTC is CRNT, proceed with Diagnosis Procedure. If DTC is PAST, clear DTC. Do not replace the ABS actuator and electric unit (control unit) for a PAST DTC.

PAST DTC	CRNT DTC
• Harness or connector • CAN communication line	• CAN communication line • ABS actuator and electric unit (control unit) • Steering angle sensor

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

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

>> GO TO 2.

2.DTC REPRODUCTION PROCEDURE

With CONSULT
1. Turn the ignition switch OFF →ON.
   CAUTION:
   - **Be sure to wait of 10 seconds after turning ignition switch OFF or ON.**
   - **Start the engine.**
2. Repeat step 1 two or more times.
3. Perform self-diagnosis for “ABS”.

Is DTC “U1002” detected?

YES-1 >> “CRNT” is displayed: Proceed to BRC-114, "Diagnosis Procedure".
YES-2 >> “PAST” is displayed: INSPECTION END (Erase the memory of self-diagnosis results.)
NO-1 >> To check malfunction symptom before repair: Refer to GI-45, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:0000000010594839

CAUTION:
- **Never apply 7.0 V or more to the measurement terminal.**
- **Use a tester with open terminal voltage of 7.0 V or less.**
- **Turn the ignition switch OFF and disconnect the battery cable from the negative terminal when checking the harness.**

1.CHECK CAN DIAGNOSIS SUPPORT MONITOR

With CONSULT
1. Select “ABS” and “CAN Diagnosis Support Monitor” in order.
2. Check the malfunction history between each control unit connected to ABS actuator and electric unit (control unit).

Check the result of “PAST”?

All items are “OK”>>Check the intermittent incident. Refer to GI-45, "Intermittent Incident".
“TRANSMIT DIAG” is other than “OK”>>GO TO 2.
A control unit other than ABS actuator and electric unit (control unit) is anything other than “OK”>>GO TO 3.

2.CHECK TRANSMITTING SIDE UNIT

Check the ABS actuator and electric unit (control unit) harness connector terminals No. 14 and 35 for damage or loose connection.

Is the inspection result normal?

YES >> Erase self-diagnosis results. Then perform self-diagnosis for “ABS” with CONSULT.
NO >> Recheck terminals for damage or loose connection. Refer to LAN-6, "Precautions for Harness Repair".

3.CHECK APPLICABLE CONTROL UNIT

Check the terminals of each harness connector for damage or loose connection.

Is the inspection result normal?

YES >> Erase self-diagnosis results. Then perform self-diagnosis for applicable control unit with CONSULT.
NO >> Recheck terminals for damage or loose connection. Refer to LAN-6, "Precautions for Harness Repair".

U1100 CAN COMM CIRCUIT (ICC UNIT)

Description

INFOID:0000000010594841

The ABS actuator and electric unit (control unit) and the ICC sensor integrated unit exchange signals via the CAN communication line.

DTC Logic

INFOID:0000000010594842

DTC DETECTION LOGIC

DTC	Display item (Trouble diagnosis content)	Malfunction detected condition
U1100	ACC COMM CIRCUIT (ACC communication circuit)	When there is a malfunction in the CAN communication circuit or ICC sensor integrated unit.

POSSIBLE CAUSE

NOTE:
Confirm if DTC is PAST or CRNT. If DTC is CRNT, proceed with Diagnosis Procedure. If DTC is PAST, clear DTC. Do not replace the ABS actuator and electric unit (control unit) for a PAST DTC.

PAST DTC	CRNT DTC
• CAN communication line • ICC sensor integrated unit • Harness or connector	• CAN communication line • ABS actuator and electric unit (control unit) • ICC sensor integrated unit

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

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

>> GO TO 2.

2.DTC REPRODUCTION PROCEDURE

With CONSULT
1. Turn the ignition switch OFF →ON.
   CAUTION:
   - **Be sure to wait of 10 seconds after turning ignition switch OFF or ON.**
   - **Start the engine.**
2. Repeat step 1 two or more times.
3. Perform self-diagnosis for “ABS”.

Is DTC “U1100” detected?

YES-1 >> “CRNT” is displayed: Proceed to BRC-116, "Diagnosis Procedure".
YES-2 >> “PAST” is displayed: INSPECTION END (Erase the memory of self-diagnosis results.)
NO-1 >> To check malfunction symptom before repair: Refer to GI-45, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:0000000010594843

1.CHECK CAN COMMUNICATION LINE

Check the CAN communication line. Refer to BRC-113, "Diagnosis Procedure".

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair / replace harness, connector, or terminal.

2.PERFORM SELF-DIAGNOSIS

With CONSULT

Perform self-diagnosis for “ICC/ADAS”.

Is any DTC detected?

YES >> Check the DTC. Refer to CCS-152, "DTC Index".
NO >> Replace the ABS actuator and electric unit (control unit). Refer to BRC-156, "Removal and Installation".

POWER SUPPLY AND GROUND CIRCUIT

Description

INFOID:0000000010594845

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

Diagnosis Procedure

INFOID:0000000010594846

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

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

ABS actuator and electric unit (control unit)		—	Condition	Voltage
Connector	Terminal			
E41	28	Ground	Ignition switch: OFF	Approx. 0 V

4. Turn the ignition switch ON.
   CAUTION:
   Never start the engine.
5. Check the voltage between ABS actuator and electric unit (control unit) harness connector and ground.

ABS actuator and electric unit (control unit)		—	Condition	Voltage
Connector	Terminal			
E41	28	Ground	Ignition switch: ON	Battery voltage

Is the inspection result normal?

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

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

1. Turn the ignition switch OFF.
2. Check the 10A fuse (#45).
3. Disconnect IPDM E/R harness connector.
4. Check the continuity between ABS actuator and electric unit (control unit) harness connector and IPDM E/R harness connector.

ABS actuator and electric unit (control unit)		IPDM E/R		Continuity
Connector	Terminal	Connector	Terminal	
E41	28	E5	25	Existed

Is the inspection result normal?

YES >> Perform the trouble diagnosis for ignition power supply circuit
NO >> Repair / replace fuse, harness, connector, or terminal.

3.CHECK MOTOR AND MOTOR RELAY POWER SUPPLY

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

ABS actuator and electric unit (control unit)		—	Voltage
Connector	Terminal		
E41	2	Ground	Battery voltage

3. Turn the ignition switch ON.
   CAUTION:
   Start the engine.
4. Check the voltage between ABS actuator and electric unit (control unit) harness connector and ground.

ABS actuator and electric unit (control unit)		—	Voltage
Connector	Terminal		
E41	2	Ground	Battery voltage

Is the inspection result normal?

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

4. CHECK MOTOR AND MOTOR RELAY POWER SUPPLY CIRCUIT

1. Turn the ignition switch OFF.
2. Check the 50A fusible link (#M).
3. Check the continuity and short circuit between ABS actuator and electric unit (control unit) harness connector terminal (2) and 50A fusible link (#M).

Is the inspection result normal?

YES >> Perform the trouble diagnosis for ignition power supply circuit
NO >> Repair / replace fuse, harness, connector, or fusible link.

5. CHECK ACTUATOR RELAY, ABS IN VALVE, ABS OUT VALVE, USV AND HSV POWER SUPPLY

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

ABS actuator and electric unit (control unit)		—	Voltage
Connector	Terminal		
E41	3	Ground	Battery voltage

3. Turn the ignition switch ON.
CAUTION:
Start the engine.
4. Check the voltage between ABS actuator and electric unit (control unit) harness connector and ground.

ABS actuator and electric unit (control unit)		—	Voltage
Connector	Terminal		
E41	3	Ground	Battery voltage

Is the inspection result normal?

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

6. CHECK MOTOR AND MOTOR RELAY POWER SUPPLY CIRCUIT

1. Turn the ignition switch OFF.
2. Check the 30A fusible link (#L).
3. Check the continuity and short circuit between ABS actuator and electric unit (control unit) harness connector terminal (3) and 30A fusible link (#L).

Is the inspection result normal?

YES >> Perform the trouble diagnosis for ignition power supply circuit
NO >> Repair / replace fuse, harness, connector, or fusible link.

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

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

ABS actuator and electric unit (control unit)		—	Continuity
Connector	Terminal		
E41	1	Ground	Existed
	4		

Is the inspection result normal?

YES >> INSPECTION END
NO >> Repair / replace harness, connector, or terminal.

8.CHECK TERMINAL

1. Check the ABS actuator and electric unit (control unit) pin terminals for damage or loose connection with harness connector.
2. Check the IPDM E/R pin terminals for damage or loose connection with harness connector.

Is the inspection result normal?

YES >> Replace the ABS actuator and electric unit (control unit). Refer to BRC-156, "Removal and Installation".
NO >> Repair / replace harness, connector, or terminal.

PARKING BRAKE SWITCH

Component Function Check

INFOID:0000000010594847

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

Is the inspection result normal?

YES >> INSPECTION END
NO >> Proceed to diagnosis procedure. Refer to BRC-121, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000010594848

1.CHECK PARKING BRAKE SWITCH

Check the parking brake switch. Refer to BRC-121, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 2.
NO >> Replace the parking brake switch.

2.CHECK COMBINATION METER

Check if the indication and operation of combination meter are normal. Refer to MWI-40, "Diagnosis Description".

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair or replace combination meter. Refer to MWI-136, "Removal and Installation".

3.CHECK DATA MONITOR

With CONSULT

Select “ABS”, “DATA MONITOR” and “PARK BRAKE SW” in order, and perform the parking brake switch inspection.

Condition	PARK BRAKE SW (DATA MONITOR)
Parking brake switch is active	ON
Parking brake switch is inactive	OFF

Is the inspection result normal?

YES >> INSPECTION END
NO >> Check the unified meter and A/C amp. Refer to MWI-42, "CONSULT Function (METER/M&A)".

Component Inspection

INFOID:0000000010594849

1.CHECK PARKING BRAKE SWITCH

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

Parking brake switch		—	Condition	Continuity
Connector	Terminal			
E107	1	Ground	When the parking brake switch is operated.	Existed
			When the parking brake switch is not operated.	Not existed

Is the inspection result normal?

YES >> INSPECTION END
NO >> Replace the parking brake switch.

VDC OFF SWITCH

Description

INFOID:0000000010594850

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

Component Function Check

INFOID:0000000010594851

1.CHECK VDC OFF SWITCH OPERATION

Turn ON/OFF the VDC OFF switch and check that the VDC OFF indicator lamp in the combination meter turns ON/OFF correctly.

Condition	VDC OFF indicator lamp illumination status
Press the VDC OFF switch when VDC OFF indicator lamp is OFF.	ON
Press the VDC OFF switch when VDC OFF indicator lamp is ON.	OFF

Is the inspection result normal?

YES >> INSPECTION END
NO >> Proceed to diagnosis procedure. Refer to BRC-123, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000010594852

1.CHECK VDC OFF SWITCH

Check the VDC OFF switch. Refer to BRC-124, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 2.
NO >> VDC OFF switch is malfunctioning. Replace the VDC OFF switch.

2.CHECK VDC OFF SWITCH HARNESS

1. Disconnect ABS actuator and electric unit (control unit) connector.
2. Disconnect VDC OFF switch connector.
3. Check the continuity between VDC OFF switch connector and ABS actuator and electric unit (control unit) connector.

ABS actuator and electric unit (control unit)		VDC OFF switch		Continuity
Connector	Terminal	Connector	Terminal	
E41	31	M19	1	Existed

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

ABS actuator and electric unit (control unit)		—	Continuity
Connector	Terminal		
E41	31	Ground	Not existed

5. Check the continuity between VDC OFF switch harness connector and ground.

VDC OFF switch		—	Continuity
Connector	Terminal		
M19	2	Ground	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> If the open or short in harness, repair or replace harness.

3.CHECK COMBINATION METER

1. Connect ABS actuator and electric unit (control unit) connector.
2. Connect VDC OFF switch connector.
3. Check the indication and operation of combination meter are normal. Refer to MWI-40, "Diagnosis Description".

Is the inspection result normal?

YES >> INSPECTION END
NO >> Repair or replace combination meter. Refer to MWI-136, "Removal and Installation".

Component Inspection

INFOID:0000000010594853

1.CHECK VDC OFF SWITCH

1. Turn the ignition switch OFF.
2. Disconnect VDC OFF switch connector.
3. Check the continuity between VDC OFF switch connector terminals.

VDC OFF switch Terminal	Condition	Continuity
1 – 2	When VDC OFF switch is hold pressed.	Existed
	When releasing VDC OFF switch.	Not existed

Is the inspection result normal?

YES >> INSPECTION END
NO >> Replace the VDC OFF switch.

ABS WARNING LAMP

Description

INFOID:0000000010594854

×: 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:0000000010594855

1.CHECK ABS WARNING LAMP OPERATION

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

Is the inspection result normal?

YES >> INSPECTION END
NO >> Proceed to diagnosis procedure. Refer to BRC-125, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000010594856

1.CHECK SELF-DIAGNOSIS

With CONST
Perform self-diagnosis for “ABS”.

Is any DTC detected?

YES >> Check the DTC. Refer to BRC-140, "DTC No. Index".
NO >> GO TO 2.

2.CHECK COMBINATION METER

Check if the indication and operation of combination meter are normal. Refer to MWI-40, "Diagnosis Description".

Is the inspection result normal?

YES >> Replace the ABS actuator and electric unit (control unit). Refer to BRC-156, "Removal and Installation".
NO >> Repair or replace combination meter. Refer to MWI-136, "Removal and Installation".

BRAKE WARNING LAMP

Description

INFOID:0000000010594857

×: ON –: OFF

Condition	Brake warning lamp (Note 1)
Ignition switch OFF	–
For 1 second after turning ignition switch ON	× (Note 2)
1 second later after turning ignition switch ON	× (Note 2)
EBD function is malfunctioning.	×

NOTE:

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

Component Function Check

INFOID:0000000010594858

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 >> Proceed to diagnosis procedure. Refer to BRC-126, "Diagnosis Procedure".

2.BRAKE WARNING LAMP OPERATION CHECK 2

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

Is the inspection result normal?

YES >> INSPECTION END
NO >> Check the parking brake switch. Refer to BRC-121, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000010594859

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 the parking brake switch. Refer to BRC-121, "Diagnosis Procedure".

2.CHECK SELF-DIAGNOSIS

With CONST
Perform self-diagnosis for “ABS”.

Is any DTC detected?

YES >> Check the DTC. Refer to BRC-140, "DTC No. Index".
NO >> GO TO 3.

3.CHECK COMBINATION METER

Check if the indication and operation of combination meter are normal. Refer to MWI-40, "Diagnosis Description".

Is the inspection result normal?

YES >> Replace the ABS actuator and electric unit (control unit). Refer to BRC-156, "Removal and Installation".
NO >> Repair or replace combination meter. Refer to MWI-136, "Removal and Installation".

VDC OFF INDICATOR LAMP

Description

INFOID:0000000010594860

×: 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.)	×

Component Function Check

INFOID:0000000010594861

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 >> Proceed to diagnosis procedure. Refer to BRC-127, "Diagnosis Procedure".

2.VDC OFF INDICATOR LAMP OPERATION CHECK 2

Check that the VDC OFF indicator lamp in the combination meter turns ON/OFF correctly when operating the VDC OFF switch.

Is the inspection result normal?

YES >> INSPECTION END
NO >> Check the VDC OFF switch. Refer to BRC-123, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000010594862

1.CHECK VDC OFF SWITCH

Perform the trouble diagnosis for VDC OFF switch. Refer to BRC-123, "Diagnosis Procedure".

Is the inspection result normal?

YES >> GO TO 2.
NO >> Check the VDC OFF switch. Refer to BRC-123, "Diagnosis Procedure".

2.CHECK SELF-DIAGNOSIS

With CONST
Perform self-diagnosis for “ABS”.

Is any DTC detected?

YES >> Check the DTC. Refer to BRC-140, "DTC No. Index".
NO >> GO TO 3.

3.CHECK COMBINATION METER

Check if the indication and operation of combination meter are normal. Refer to MWI-40, "Diagnosis Description".

Is the inspection result normal?

YES >> Replace the ABS actuator and electric unit (control unit). Refer to BRC-156, "Removal and Installation".
NO >> Repair or replace combination meter. Refer to MWI-136, "Removal and Installation".

VDC WARNING LAMP

Description

INFOID:0000000010594863

×: ON △: Blink –: OFF

Condition	VDC warning lamp
Ignition switch OFF	–
For 1 second after turning ignition switch ON	×
1 second later after turning ignition switch ON	–
VDC/TCS is activated while driving	△
VDC/TCS function is malfunctioning.	×
ABS function is malfunctioning.	×
EBD function is malfunctioning.	×

Component Function Check

INFOID:0000000010594864

1.CHECK VDC WARNING LAMP OPERATION

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

Is the inspection result normal?

YES >> INSPECTION END
NO >> Proceed to diagnosis procedure. Refer to BRC-128, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000010594865

1.CHECK SELF-DIAGNOSIS

With CONST
Perform self-diagnosis for “ABS”.

Is any DTC detected?

YES >> Check the DTC. Refer to BRC-140, "DTC No. Index".
NO >> GO TO 2.

2.CHECK COMBINATION METER

Check if the indication and operation of combination meter are normal. Refer to MWI-40, "Diagnosis Description".

Is the inspection result normal?

YES >> Replace the ABS actuator and electric unit (control unit). Refer to BRC-156, "Removal and Installation".
NO >> Repair or replace combination meter. Refer to MWI-136, "Removal and Installation".

ECU DIAGNOSIS INFORMATION

ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)

Reference Value

INFOID:0000000010594866

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.

NOTE:

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

Monitor item	Display content	Data monitor	
		Condition	Reference value in normal operation
FR LH SENSOR	Wheel speed	Vehicle stopped	0 [km/h (MPH)]
		Vehicle running (Note 1)	Nearly matches the speedometer display (± 10% or less)
FR RH SENSOR	Wheel speed	Vehicle stopped	0 [km/h (MPH)]
		Vehicle running (Note 1)	Nearly matches the speedometer display (± 10% or less)
RR LH SENSOR	Wheel speed	Vehicle stopped	0 [km/h (MPH)]
		Vehicle running (Note 1)	Nearly matches the speedometer display (± 10% or less)
RR RH SENSOR	Wheel speed	Vehicle stopped	0 [km/h (MPH)]
		Vehicle running (Note 1)	Nearly matches the speedometer display (± 10% or less)
STOP LAMP SW	Stop lamp switch signal status	When brake pedal is depressed	On
		When brake pedal is not depressed	Off
BATTERY VOLT	Battery voltage supplied to the ABS actuator and electric unit (control unit)	Ignition switch ON	10 – 16 V
GEAR	Gear position determined by TCM	First gear (1GR) Second gear (2GR) Third gear (3GR) Forth gear (4GR) Fifth gear (5GR)	1 2 3 4 5
SLCT LVR POSI	A/T selector lever position	P position R position N position D position	P R N D
YAW RATE SEN	Yaw rate detected by yaw rate/side G sensor	Vehicle stopped	Approx. 0 d/s
		Vehicle turning right	Negative value
		Vehicle turning left	Positive value
ACCEL POS SIG	Throttle actuator opening/closing is displayed (linked with accelerator pedal)	Accelerator pedal not depressed (ignition switch is ON)	0 %
		Depress accelerator pedal (ignition switch is ON)	0 - 100 %

Monitor item	Display content	Data monitor	
		Condition	Reference value in normal operation
SIDE G-SENSOR	Transverse G detected by side G sensor	Vehicle stopped	Approx. 0 m/s^2
		Vehicle turning right	Negative value
		Vehicle turning left	Positive value
STR ANGLE SIG	Steering angle detected by steering angle sensor	Driving straight	±2.5°
		Turn 90° to right	Approx. +90°
		Turn 90° to left	Approx. –90°
PRESS SENSOR	Brake fluid pressure detected by pressure sensor	With ignition switch turned ON and brake pedal released	Approx. 0 bar
		With ignition switch turned ON and brake pedal depressed	–40 to 300 bar
ENGINE RPM	With engine running	With engine stopped	0 rpm
		Engine running	Almost in accordance with tachometer display
FLUID LEV SW	Brake fluid level switch signal status	When brake fluid level switch ON	On
		When brake fluid level switch OFF	Off
PARK BRAKE SW	Parking brake switch signal status	Parking brake switch is active	On
		Parking brake switch is inactive	Off
FR RH IN SOL	Operation status of each solenoid valve	Actuator (solenoid valve) is active (“ACTIVE TEST” in “ABS” with CONSULT)	On
		When the actuator (solenoid valve) is not active and actuator relay is active (ignition switch ON)	Off
FR RH OUT SOL	Operation status of each solenoid valve	Actuator (solenoid valve) is active (“ACTIVE TEST” in “ABS” with CONSULT)	On
		When the actuator (solenoid valve) is not active and actuator relay is active (ignition switch ON)	Off
FR LH IN SOL	Operation status of each solenoid valve	Actuator (solenoid valve) is active (“ACTIVE TEST” in “ABS” with CONSULT)	On
		When the actuator (solenoid valve) is not active and actuator relay is active (ignition switch ON)	Off
FR LH OUT SOL	Operation status of each solenoid valve	Actuator (solenoid valve) is active (“ACTIVE TEST” in “ABS” with CONSULT)	On
		When the actuator (solenoid valve) is not active and actuator relay is active (ignition switch ON)	Off
RR RH IN SOL	Operation status of each solenoid valve	Actuator (solenoid valve) is active (“ACTIVE TEST” in “ABS” with CONSULT)	On
		When the actuator (solenoid valve) is not active and actuator relay is active (ignition switch ON)	Off
RR RH OUT SOL	Operation status of each solenoid valve	Actuator (solenoid valve) is active (“ACTIVE TEST” in “ABS” with CONSULT)	On
		When the actuator (solenoid valve) is not active and actuator relay is active (ignition switch ON)	Off

Monitor item	Display content	Data monitor	
		Condition	Reference value in normal operation
RR LH IN SOL	Operation status of each solenoid valve	Actuator (solenoid valve) is active (“ACTIVE TEST” in “ABS” with CONSULT)	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 (“ACTIVE TEST” in “ABS” with CONSULT)	On
		When the actuator (solenoid valve) is not active and actuator relay is active (ignition switch ON)	Off
MOTOR RELAY	Motor and motor relay operation	When the motor relay and motor are operating	On
		When the motor relay and motor are not operating	Off
ACTUATOR RLY (Note 2)	Actuator relay operation	When the actuator relay is operating	On
		When the actuator relay is not operating	Off
ABS WARN LAMP	ABS warning lamp (Note 3)	When ABS warning lamp is ON	On
		When ABS warning lamp is OFF	Off
OFF LAMP	VDC OFF indicator lamp (Note 3)	When VDC OFF indicator lamp is ON	On
		When VDC OFF indicator lamp is OFF	Off
SLIP/VDC LAMP	VDC warning lamp (Note 3)	When VDC warning lamp is ON	On
		When VDC warning lamp is OFF	Off
EBD SIGNAL	EBD operation	EBD is active	On
		EBD is inactive	Off
ABS SIGNAL	ABS operation	ABS is active	On
		ABS is inactive	Off
TCS SIGNAL	TCS operation	TCS is active	On
		TCS is inactive	Off
VDC SIGNAL	VDC operation	VDC is active	On
		VDC is inactive	Off
EBD FAIL SIG	EBD fail-safe signal	In EBD fail-safe	On
		EBD is normal	Off
ABS FAIL SIG	ABS fail-safe signal	In ABS fail-safe	On
		ABS is normal	Off
TCS FAIL SIG	TCS fail-safe signal	In TCS fail-safe	On
		TCS is normal	Off
VDC FAIL SIG	VDC fail-safe signal	In VDC fail-safe	On
		VDC is normal	Off
CRANKING SIG	Crank operation	Crank is active	On
		Crank is inactive	Off
USV [FL-RR] (Note 2)	VDC switch-over valve	When actuator (switch-over valve) is active (“ACTIVE TEST” in “ABS” with CONSULT)	On
		When actuator (switch-over valve) is not active and actuator relay is active (ignition switch ON)	Off

Monitor item	Display content	Data monitor	
		Condition	Reference value in normal operation
USV [FR-RL] (Note 2)	VDC switch-over valve	When actuator (switch-over valve) is active (“ACTIVE TEST” in “ABS” with CONSULT)	On
		When actuator (switch-over valve) is not active and actuator relay is active (ignition switch ON)	Off
HSV [FL-RR] (Note 2)	VDC switch-over valve	When actuator (switch-over valve) is active (“ACTIVE TEST” in “ABS” with CONSULT)	On
		When actuator (switch-over valve) is not active and actuator relay is active (ignition switch ON)	Off
HSV [FR-RL] (Note 2)	VDC switch-over valve	When actuator (switch-over valve) is active (“ACTIVE TEST” in “ABS” with CONSULT)	On
		When actuator (switch-over valve) is not active and actuator relay is active (ignition switch ON)	Off
V/R OUTPUT (Note 2)	Solenoid valve relay activated	When the solenoid valve relay is active (When ignition switch OFF)	On
		When the solenoid valve relay is not active (in the fail-safe mode)	Off
M/R OUTPUT	Actuator motor and motor relay activated	When the actuator motor and motor relay are active (“ACTIVE TEST” in “ABS” with CONSULT)	On
		When the actuator motor and motor relay are inactive	Off
LDP) APP SEN	Accelerator pedal position sensor status	Accelerator pedal is not depressed (Ignition switch ON)	0 %
		Depress accelerator pedal (Ignition switch ON)	0 - 100 %
LDP) ICC MAIN SW	ICC MAIN switch	ICC MAIN switch is ON	On
		ICC MAIN switch is OFF	Off
LDP) LDP ON SW	Dynamic driver assistance switch	Dynamic driver assistance switch is ON	On
		Dynamic driver assistance switch is OFF	Off
LDP) WIPER SIGNAL	Front wiper operation	Front wiper is OFF	Stop
		Front wiper stops at fail-safe operation	PRTCT
		Front wiper INT is operating	1low
		Front wiper LO is operating	Low
		Front wiper HI is operating	High
LDP) BRAKE SW	Brake switch signal status	When brake pedal is not depressed	On
		When brake pedal is depressed	Off
LDP) STOP LMP SW	Stop lamp switch signal status	When brake pedal is depressed	On
		When brake pedal is not depressed	Off
LDP) LDW SW	Warning systems switch condition	Warning systems switch is ON (Warning systems ON indicator is ON)	On
		Warning systems switch is OFF (Warning systems ON indicator is OFF)	Off

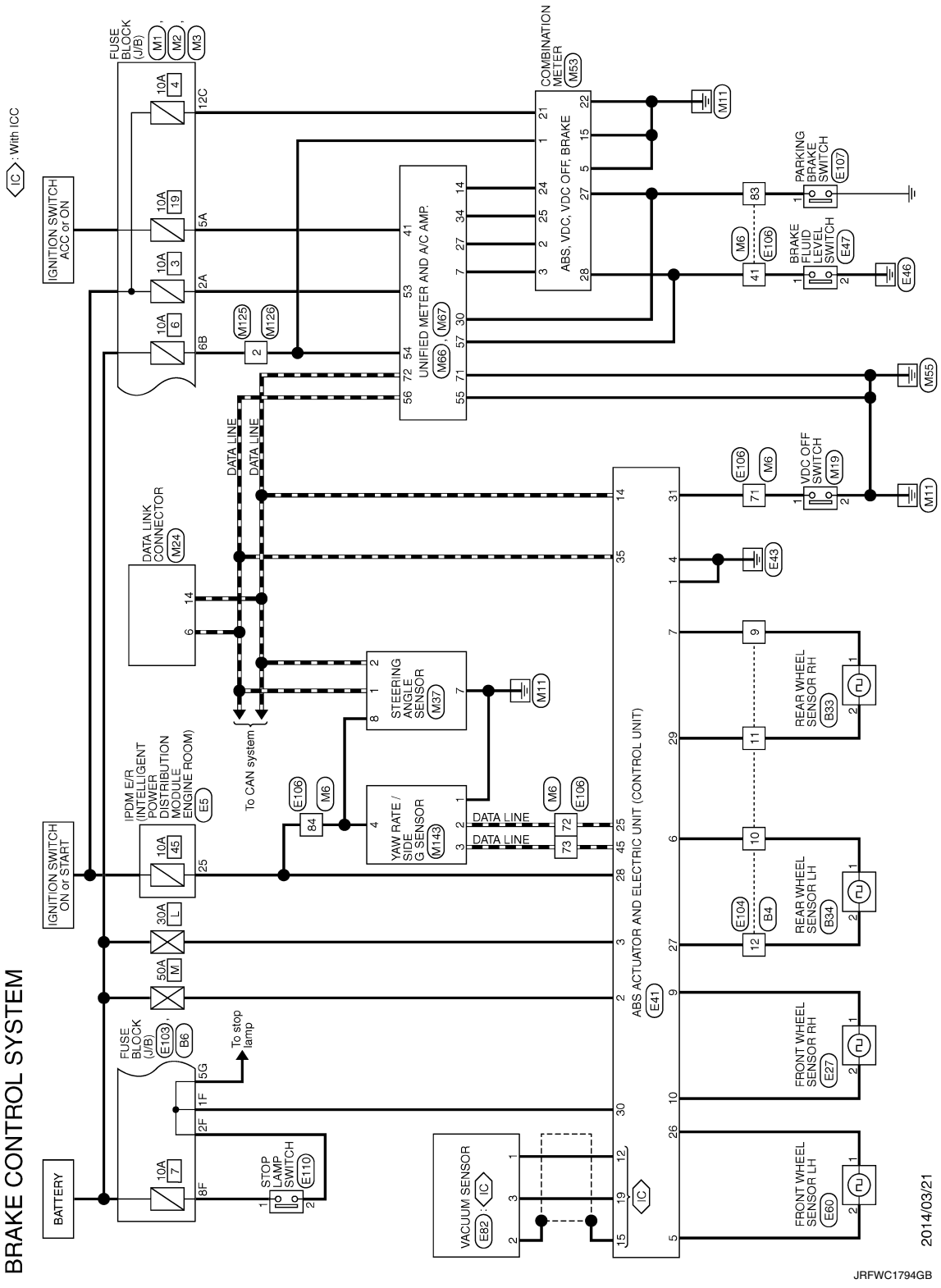
Monitor item	Display content	Data monitor	
		Condition	Reference value in normal operation
LDP) SHIFT POSITION	Shift position	Shift position is not received	Off
		Selector lever position	P/R/N/D
		When using manual mode	MM 1st – MM 5th
LDP) TURN SIGNAL	Turn signal operation	Turn signal is OFF.	Off
		Turn signal lamp RH is blinking	LH
		Turn signal lamp LH is blinking	RH
		Turn signal lamp LH and RH are blinking.	LH&RH
LDP) YAW ORDER (Note 4)	Calculated target yaw moment status	LDP is controlling to right side deviation	Negative value
		LDP is controlling to left side deviation	Positive value
LDP) WARN REQ (Note 4)	Lane departure warning request status	Lane departure warning is operating. (When using LDP)	On
		Lane departure warning is not operating.	Off
LDP) WARN CONTROL (Note 4)	Warning main controller status	When using LDP	On
		When using LDW	Off
LDP) REDY SIGNAL (Note 4)	LDP ready status	LDP control is ready	On
		LDP control is not ready	Off
LDP) STATUS SIGNAL (Note 4)	LDP control status	LDP control is standby	STANDBY
		Lane departure warning is operating (When using LDP)	WARN
		LDP control is stopped	MASK
		LDP control is OFF	Off
LDP) CAMERA LOST (Note 4)	Lane marker detected condition	Both side lane markers are detected	Detect
		Deviate side lane marker is lost	Deviate
		Both side lane markers are lost	Both
LDP) LANE UNCLEAR (Note 4)	Lane marker condition	Lane marker is unclear	On
		Lane marker is clear	Off

NOTE:

- 1: Confirm tire pressure is normal.
- 2: A brief moment of On/Off condition occurs every 20 seconds after ignition switch turned ON. This is not malfunction because it is an operation for checking.
- 3: On and off timing for warning lamp and indicator lamp.
- ABS warning lamp: Refer to BRC-125, "Description".
- Brake warning lamp: Refer to BRC-126, "Description".
- VDC OFF indicator lamp: Refer to BRC-127, "Description".
- VDC warning lamp: Refer to BRC-128, "Description".
- 4: The item displayed on “SPECIFIC DATA MONITOR”.

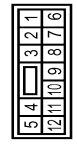
Wiring Diagram - BRAKE CONTROL SYSTEM -

INFOID:0000000010594867



BRAKE CONTROL SYSTEM

Connector No.	B4
Connector Name	WIRE TO WIRE
Connector Type	NS12FW-CS



Terminal No.	Color Of Wire	Signal Name [Specification]
1	W	–
2	B	–
3	G	–
4	SHIELD	–
5	P	–
7	Y	–
8	R	–
9	BR	–
10	BG	–
11	LG	–
12	GR	–

Connector No.	B6
Connector Name	FUSE BLOCK (J/B)
Connector Type	NS12FBR-CS

Terminal No.	Color Of Wire	Signal Name [Specification]
10G	W	–
11G	W	–
12G	GR	–
4G	R	–
5G	LG	–

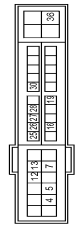
Connector No.	B33
Connector Name	REAR WHEEL SENSOR RH
Connector Type	AA202FB1

Terminal No.	Color Of Wire	Signal Name [Specification]
1	BR	–
2	LG	–

Connector No.	B34
Connector Name	REAR WHEEL SENSOR LH
Connector Type	RH02FB

Terminal No.	Color Of Wire	Signal Name [Specification]
1	BG	–
2	GR	–

Connector No.	E5
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Type	TH120FW-CS12-M4-1V

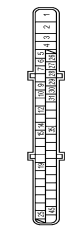


Terminal No.	Color Of Wire	Signal Name [Specification]
4	V	–
5	L	–
7	R	–
12	B/W	–
13	Y	–
16	LG	–
19	W	–
25	G	–
26	R	–
27	BG	–
28	L	–
30	GR	–
36	G	–

Connector No.	E27
Connector Name	FRONT WHEEL SENSOR RH
Connector Type	RH02FB

Terminal No.	Color Of Wire	Signal Name [Specification]
1	B	–
2	W	–

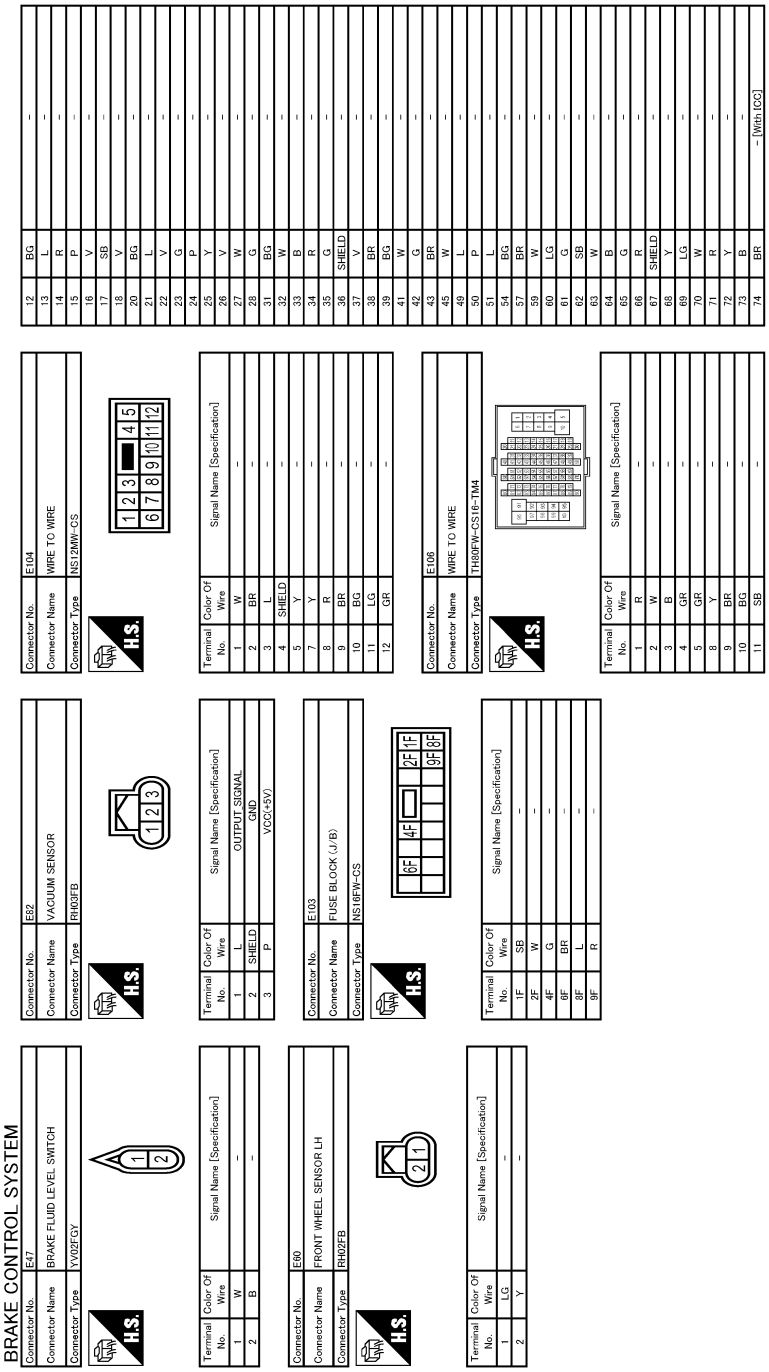
Connector No.	E41
Connector Name	ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)
Connector Type	BA42FB-AH24-LH



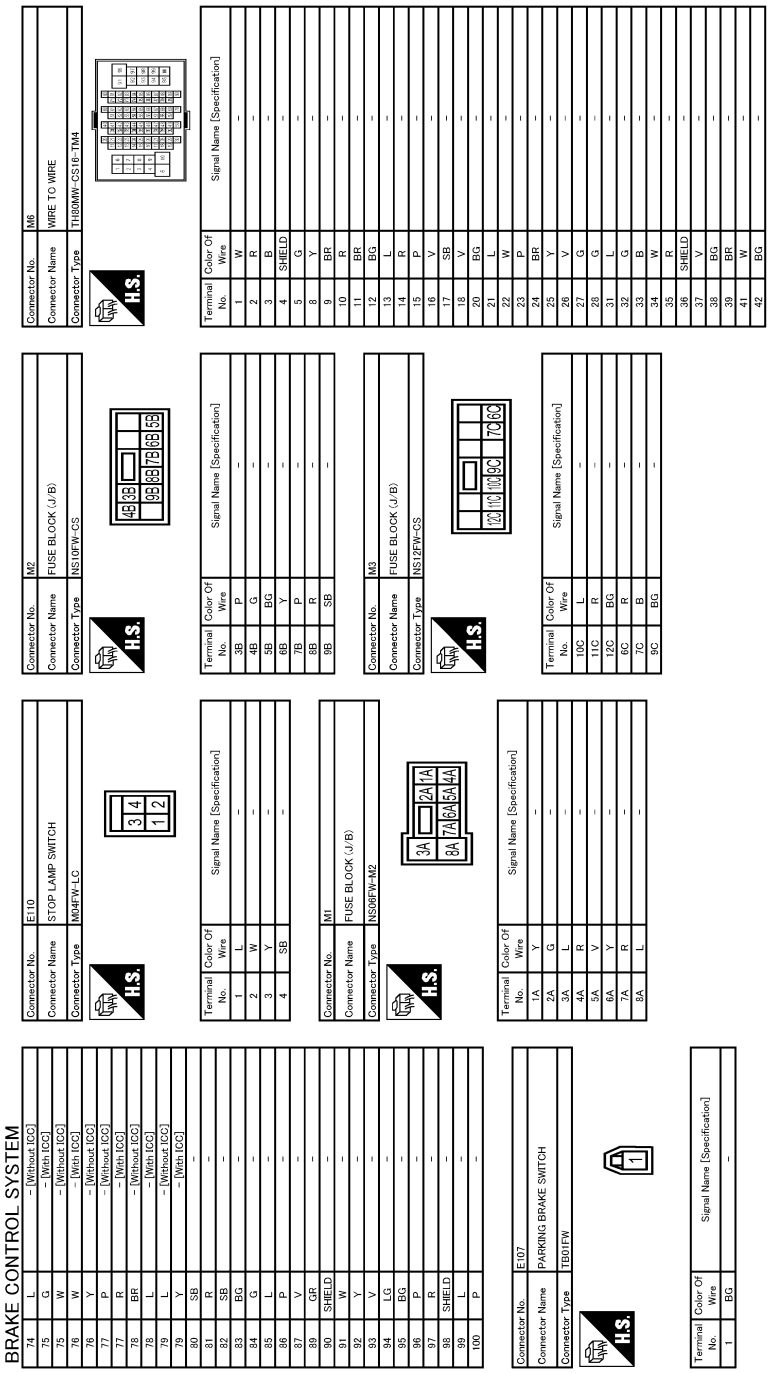
Terminal No.	Color Of Wire	Signal Name [Specification]
1	B	GROUND
2	G	UBMR
3	R	UBVR
4	B	GROUND
5	Y	DS FL
6	BG	DP RL
7	BR	DP RR
9	B	DP FR
10	W	DS FR
12	L	VAC
14	P	CAN-L
15	SHIELD	GROUND
19	P	UST
25	Y	BUS-L
26	LG	DP FL
27	GR	DS RL
28	G	U2
29	LG	DS RR
30	SB	BLS
31	R	VDC OFF SW
35	L	CAN-H
45	B	BUS-H

JRFWC1810GB

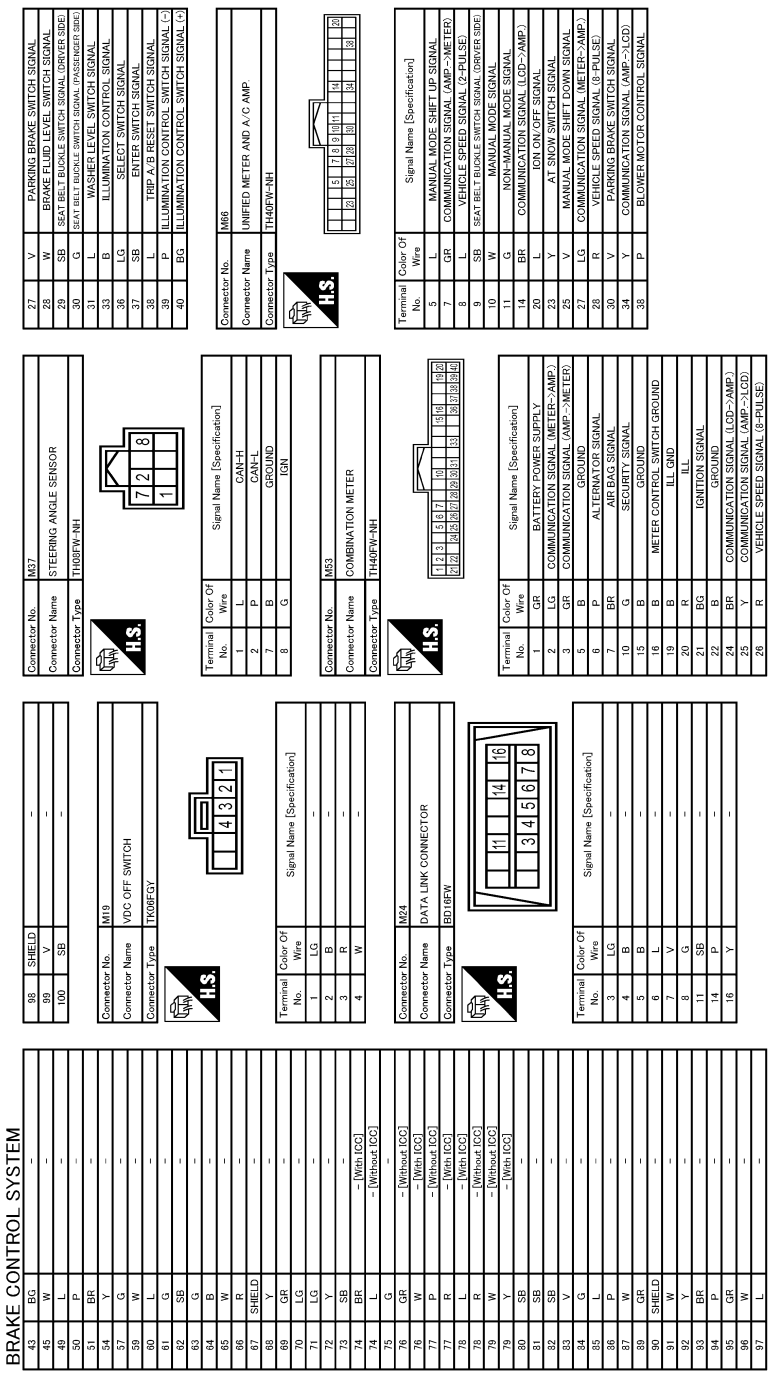
BRAKE CONTROL SYSTEM



JRFWC1811GB



JRFWC1812GB



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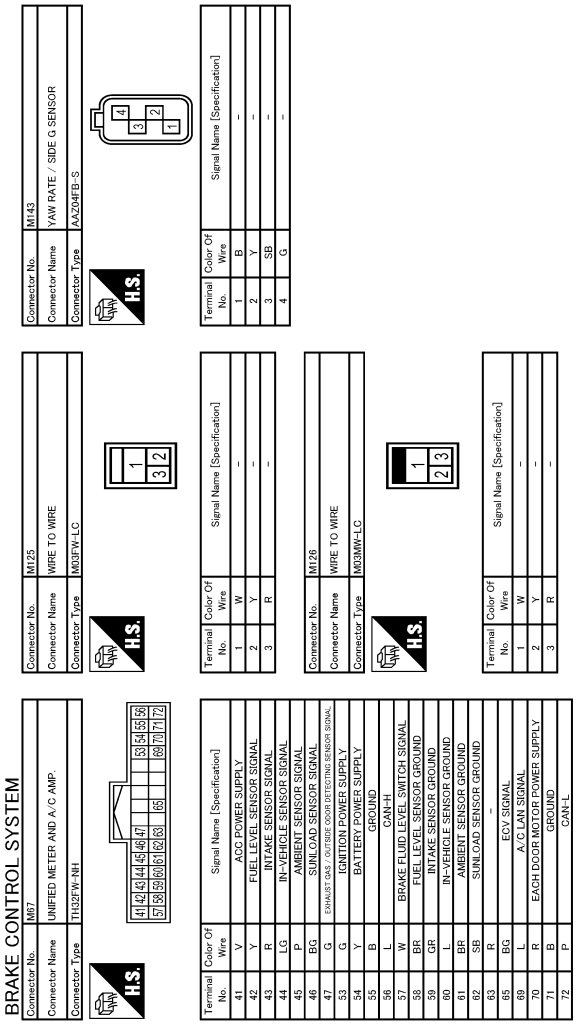


JRFWC1814GB

Fail-Safe

INFOID:0000000010594868

ABS, EBD SYSTEM

If ABS malfunction electrically, ABS warning lamp, VDC warning lamp will turn on. If EBD malfunction electrically, brake warning lamp, ABS warning lamp and VDC warning lamp will turn on. Simultaneously, the VDC/TCS/ABS become one of the following conditions of the fail-safe function.

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

VDC / TCS

If VDC/TCS/ABS system malfunction electrically, VDC warning 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.

LDW/LDP SYSTEM

- In case of malfunction in the LDW/LDP system, lane departure warning lamp is turned ON, and the condition of vehicle is the same as the condition of vehicles without LDW/LDP control.
- In case of malfunction in the VDC/TCS/ABS system, lane departure warning lamp is turned ON, and the condition of vehicle is the same as the condition of vehicles without LDW/LDP control.

DTC No. Index

INFOID:0000000010594869

DTC	Items (CONSULT screen terms)	Reference
C1101	RR RH SENSOR-1	BRC-36, "DTC Logic"
C1102	RR LH SENSOR-1	
C1103	FR RH SENSOR-1	
C1104	FR LH SENSOR-1	
C1105	RR RH SENSOR-2	BRC-41, "DTC Logic"
C1106	RR LH SENSOR-2	
C1107	FR RH SENSOR-2	
C1108	FR LH SENSOR-2	
C1109	BATTERY VOLTAGE [ABNORMAL]	BRC-48, "DTC Logic"
C1110	CONTROLLER FAILURE	BRC-50, "DTC Logic"
C1111	PUMP MOTOR	BRC-52, "DTC Logic"
C1115	ABS SENSOR [ABNORMAL SIGNAL]	BRC-55, "DTC Logic"
C1116	STOP LAMP SW	BRC-62, "DTC Logic"
C1120	FR LH IN ABS SOL	BRC-68, "DTC Logic"
C1121	FR LH OUT ABS SOL	BRC-70, "DTC Logic"
C1122	FR RH IN ABS SOL	BRC-68, "DTC Logic"
C1123	FR RH OUT ABS SOL	BRC-70, "DTC Logic"
C1124	RR LH IN ABS SOL	BRC-68, "DTC Logic"
C1125	RR LH OUT ABS SOL	BRC-70, "DTC Logic"
C1126	RR RH IN ABS SOL	BRC-68, "DTC Logic"
C1127	RR RH OUT ABS SOL	BRC-70, "DTC Logic"
C1130	ENGINE SIGNAL 1	BRC-72, "DTC Logic"
C1140	ACTUATOR RLY	BRC-74, "DTC Logic"
C1142	PRESS SEN CIRCUIT	BRC-76, "DTC Logic"
C1143	ST ANG SEN CIRCUIT	BRC-79, "DTC Logic"
C1144	ST ANG SEN SIGNAL	BRC-83, "DTC Logic"
C1145	YAW RATE SENSOR	BRC-85, "DTC Logic"
C1146	SIDE G-SEN CIRCUIT	

DTC	Items (CONSULT screen terms)	Reference
C1147	USV LINE [FL-RR]	BRC-88, "DTC Logic"
C1148	USV LINE [FR-RL]	
C1149	HSV LINE [FL-RR]	
C1150	HSV LINE [FR-RL]	
C1153	EMERGENCY BRAKE	BRC-50, "DTC Logic"
C1154	PNP POSI SIG	BRC-90, "DTC Logic"
C1155	BR FLUID LEVEL LOW	BRC-92, "DTC Logic"
C1170	VARIANT CORDING	BRC-96, "DTC Logic"
C1185	ACC CONT (Note 1)	BRC-97, "DTC Logic"
C1197	VACUUM SENSOR (Note 1)	BRC-99, "DTC Logic"
C1198	VACUUM SEN CIR (Note 1)	BRC-103, "DTC Logic"
C1199	BRAKE BOOSTER (Note 1)	BRC-106, "DTC Logic"
C119A	VACUUM SEN VOLT (Note 1)	BRC-110, "DTC Logic"
C1B00	LDP) CAMERA MALF (Note 2)	DAS-288, "DTC Logic"
C1B04	LDP) ICC STG SW MALF (Note 2)	DAS-289, "DTC Logic"
C1B05	LDP) APP SEN MALF (Note 2)	DAS-290, "DTC Logic"
C1B06	LDP) TCM MALF (Note 2)	DAS-291, "DTC Logic"
U0100	LDP) ECM CAN CIR2 (Note 2)	DAS-292, "DTC Logic"
U0101	LDP) TCM CAM CAN CIR2 (Note 2)	DAS-293, "DTC Logic"
U0104	LDP) ICC CAM CAN CIR2 (Note 2)	DAS-294, "DTC Logic"
U0405	LDP) ICC CAM CAN CIR1 (Note 2)	DAS-295, "DTC Logic"
U1000	CAN COMM CIRCUIT	BRC-113, "DTC Logic"
U1002	SYSTEM COMM (CAN)	BRC-114, "DTC Logic"
U1100	ACC COMM CIRCUIT (Note 1)	BRC-116, "DTC Logic"
U1500	LDP) CAM CAN CIR1 (Note 2)	DAS-296, "DTC Logic"
U1501	LDP) CAM CAN CIR2 (Note 2)	DAS-297, "DTC Logic"

NOTE:

1: With ICC models.

2: With LDP models.

SYMPTOM DIAGNOSIS

EXCESSIVE ABS FUNCTION OPERATION FREQUENCY

Diagnosis Procedure

INFOID:0000000010594870

1.CHECK START

Check front and rear brake force distribution using a brake tester. Refer to BR-50, "General Specifications".

Is the inspection result normal?

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

2.CHECK FRONT AND REAR AXLE

Make sure that there is no excessive play in the front and rear axles.

- Front
  - 2WD models: Refer to FAX-6, "Inspection".
  - AWD models: Refer to FAX-15, "Inspection".
- Rear: Refer to RAX-5, "Inspection".

Is the inspection result normal?

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

3.CHECK WHEEL SENSOR AND SENSOR ROTOR

Check the following.

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

Is the inspection result normal?

YES >> GO TO 4.
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.
NO >> Normal

UNEXPECTED PEDAL REACTION

Diagnosis Procedure

INFOID:0000000010594871

1.CHECK BRAKE PEDAL STROKE

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

Is the stroke too large?

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

INFOID:0000000010594872

CAUTION:

The stopping distance on slippery road surfaces might be longer when the ABS is 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.

ABS FUNCTION DOES NOT OPERATE

Diagnosis Procedure

INFOID:0000000010594873

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.

PEDAL VIBRATION OR ABS OPERATION SOUND OCCURS

Diagnosis Procedure

INFOID:0000000010594874

CAUTION:

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

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

1.SYMPTOM CHECK 1

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

Do vibrations occur?

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

2.SYMPTOM CHECK 2

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

Do the operation noises occur?

YES >> GO TO 3.
NO >> Perform self-diagnosis for “ABS” with CONSULT.

3.SYMPTOM CHECK 3

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

Do symptoms occur?

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

VEHICLE JERKS DURING VDC/TCS/ABS CONTROL

Diagnosis Procedure

INFOID:0000000010594875

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.

Are self-diagnosis results indicated?

YES >> Check corresponding items, make repairs, and perform self-diagnosis for “ABS” with CONSULT.
NO >> GO TO 3.

3.CHECK CONNECTOR

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

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 A/T SELF-DIAGNOSIS RESULTS

Perform self-diagnosis for “ENGINE” and “TRANSMISSION” with CONSULT.

Are self-diagnosis results indicated?

YES >> Check the corresponding items.
NO >> Replace ABS actuator and electric unit (control unit).

NORMAL OPERATING CONDITION

Description

INFOID:0000000010594876

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

PRECAUTION

PRECAUTIONS

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

INFOID:0000000010594877

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:

Always observe the following items for preventing accidental activation.

- **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:

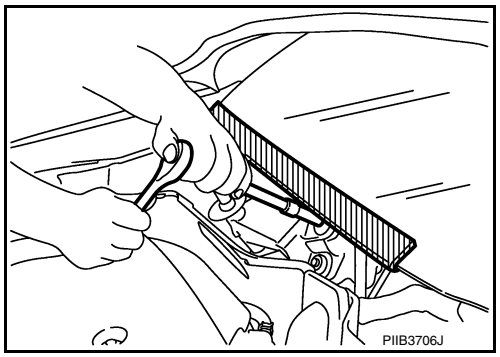
Always observe the following items for preventing accidental activation.

- **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.**

Precaution for Procedure without Cowl Top Cover

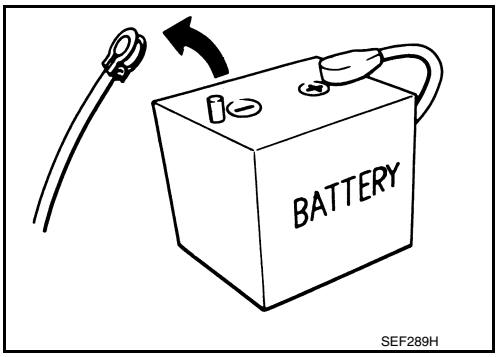
INFOID:0000000010929255

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



Precautions for Removing Battery Terminal

INFOID:0000000010929334



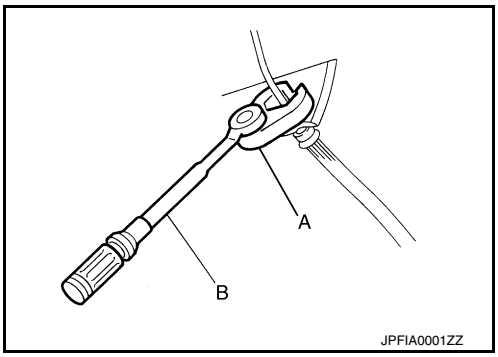
- When removing the 12V battery terminal, turn OFF the ignition switch and wait at least 30 seconds.
  NOTE:
  ECU may be active for several tens of seconds after the ignition switch is turned OFF. If the battery terminal is removed before ECU stops, then a DTC detection error or ECU data corruption may occur.
- For vehicles with the 2-batteries, be sure to connect the main battery and the sub battery before turning ON the ignition switch.
  NOTE:
  If the ignition switch is turned ON with any one of the terminals of main battery and sub battery disconnected, then DTC may be detected.
- After installing the 12V battery, always check "Self Diagnosis Result" of all ECUs and erase DTC.
  NOTE:
  The removal of 12V battery may cause a DTC detection error.

Precaution for Brake System

INFOID:0000000010594878

WARNING:
Since dust covering the front and rear brakes has an affect on human body, the dust must be removed with a dust collector. Never splatter the dust with an air blow gun.

- Brake fluid use refer to MA-10, "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. They may damage rubber parts and cause improper operation.
- Always loosen the brake tube flare nut with a flare nut wrench.
- Tighten the brake tube flare nut to the specified torque with a crowfoot (A) and torque wrench (B).
- Always conform the specified tightening torque when installing the brake pipes.
- Brake system is an important safety part. If a brake fluid leak is detected, always disassemble the affected part. If a malfunction is detected, replace part with a new one.
- 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.



Precaution for Brake Control

INFOID:0000000010594879

- 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 VDC warning lamp may light.
- When replacing the following parts with parts other than genuine parts or making modifications: Suspension related parts (shock absorber, spring, bushing, etc.), tires, wheels (other than specified sizes), brake-related

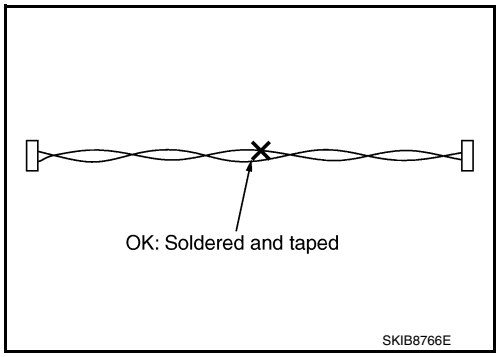
parts (pad, rotor, caliper, etc.), engine-related parts (muffler, ECM, etc.) and body reinforcement-related parts (roll bar, tower bar, etc.).
- When driving with worn or deteriorated suspension, tires and brake-related parts.

Precautions for Harness Repair

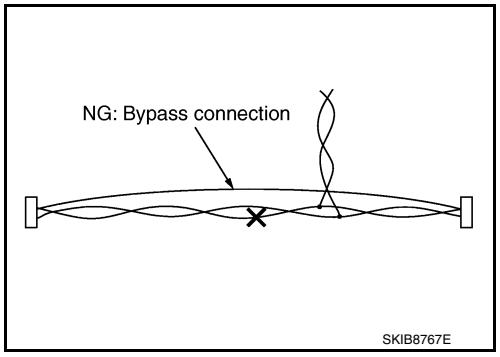
INFOID:0000000010594880

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).



- 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.



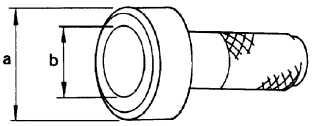
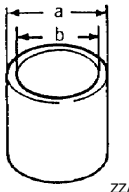
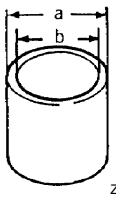
PREPARATION

PREPARATION

Special Service Tool

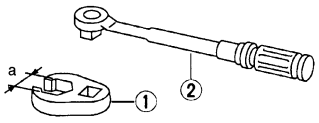
INFOID:0000000010594881

The actual shapes of TechMate tools may differ from those of special service tools illustrated here.

Tool number (TechMate No.) Tool name		Description
ST30720000 (J-25405) Drift a: 77 mm (3.03 in) dia. b: 55.5 mm (2.185 in) dia.	 ZZA0701D	
ST27863000 (—) Drift a: 74.5 mm (2.933 in) dia. b: 62.5 mm (2.461 in) dia.	 ZZA0832D	Installing rear sensor rotor
KV40104710 (—) a: 76.3 mm (3.004 in) dia. b: 67.9 mm (2.673 in) dia.	 ZZA0832D	

Commercial Service Tool

INFOID:0000000010594882

Tool name		Description
1. Flare nut crowfoot a: 10 mm (0.39 in) /12 mm (0.47 in) 2. Torque wrench	 S-NT360	Installing brake tube

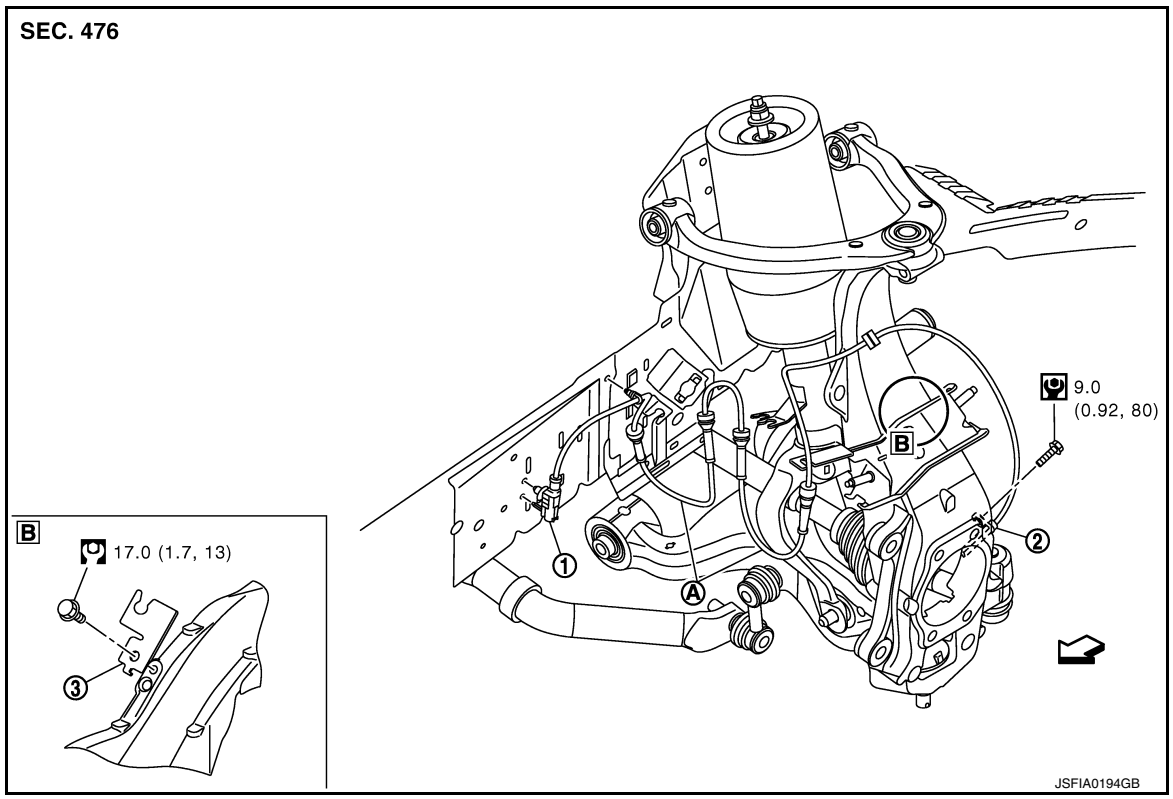
REMOVAL AND INSTALLATION

WHEEL SENSOR

FRONT WHEEL SENSOR

FRONT WHEEL SENSOR : Exploded View

INFOID:0000000010594883



1. Front LH wheel sensor connector
2. Front LH wheel sensor
3. Bracket

A. White line (slant line)

⇦: Vehicle front

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

NOTE:
The above figure shows left side. Right side is the mirror image.

FRONT WHEEL SENSOR : Removal and Installation

INFOID:0000000010594884

REMOVAL

Be careful with the following when removing sensor.

- Do not twist sensor harness as much as possible, when removing it. Pull sensors out without pulling sensor harness.
- Be careful 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

Be careful with the following when installing wheel sensor. Tighten installation bolts to the specified torques. Refer to BRC-153, "FRONT WHEEL SENSOR : Exploded View".

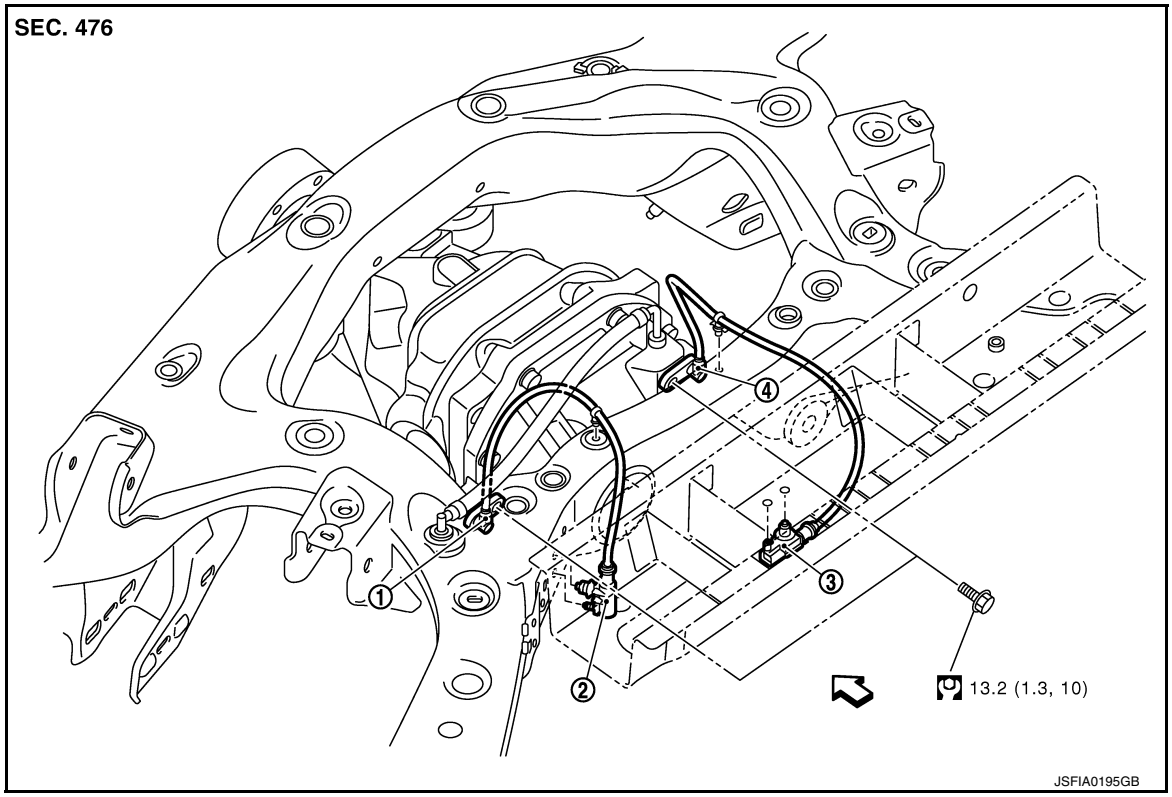
- When installing, make sure there is no foreign material such as iron chips on and in the mounting hole of the wheel sensor. Make sure no foreign material has been caught in the sensor rotor. Remove any foreign material and clean the mount.
- When installing wheel sensor, be sure to press rubber grommets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

- When you see the harness of the wheel sensor from the front side of the vehicle ensure that the white lines (A) are not twisted.

REAR WHEEL SENSOR

REAR WHEEL SENSOR : Exploded View

INFOID:0000000010594885



1. Rear LH wheel sensor
2. Rear LH wheel sensor connector
3. Rear RH wheel sensor connector
4. Rear RH wheel sensor

⇦: Vehicle front

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

REAR WHEEL SENSOR : Removal and Installation

INFOID:0000000010594886

REMOVAL

Be careful with the following when removing sensor.

- Do not twist sensor harness as much as possible, when removing it. Pull sensors out without pulling sensor harness.
- Be careful 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

Be careful with the following when installing wheel sensor. Tighten installation bolts to the specified torques. Refer to BRC-154, "REAR WHEEL SENSOR : Exploded View".

- 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 a rear LH wheel sensor, be sure to pass the wheel sensor harness under the breather hose.

SENSOR ROTOR

FRONT SENSOR ROTOR

FRONT SENSOR ROTOR : Exploded View

INFOID:0000000010594887

Refer to FAX-7, "Exploded View" (2WD models), FAX-17, "Exploded View" (AWD models).

FRONT SENSOR ROTOR : Removal and Installation

INFOID:0000000010594888

REMOVAL

Sensor rotor cannot be disassembled. Remove the sensor rotor together with hub bearing assembly. Refer to FAX-7, "Exploded View" (2WD models), FAX-17, "Exploded View" (AWD models).

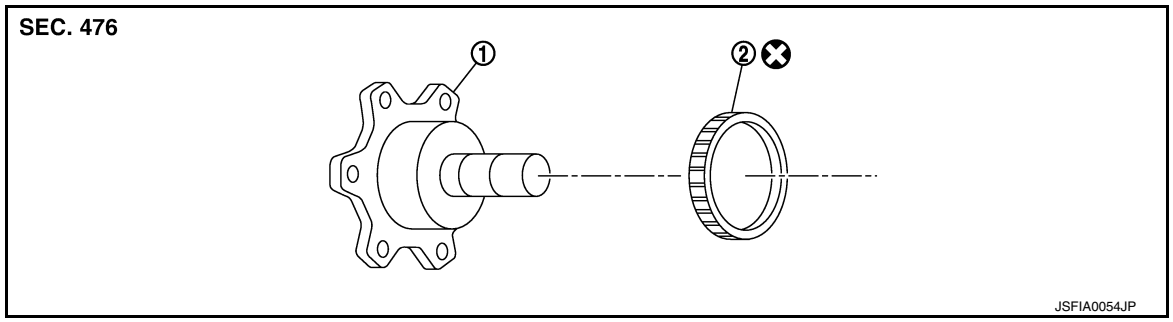
INSTALLATION

Sensor rotor cannot be disassembled. Install the sensor rotor together with hub bearing assembly. Refer to FAX-7, "Exploded View" (2WD models), FAX-17, "Exploded View" (AWD models).

REAR SENSOR ROTOR

REAR SENSOR ROTOR : Exploded View

INFOID:0000000010594889



1. Side flange
2. Rear wheel sensor rotor

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

REAR SENSOR ROTOR : Removal and Installation

INFOID:0000000010594890

REMOVAL

- Follow the procedure below to remove rear sensor rotor.
- Remove side flange. Refer to DLN-180, "2WD : Exploded View" (2WD), DLN-192, "AWD : Exploded View" (AWD).
- Using a bearing replacer (suitable tool) and puller (suitable tool), remove sensor rotor from side flange.

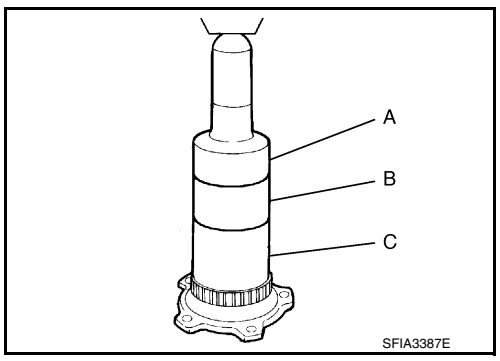
INSTALLATION

CAUTION:

Do not reuse sensor rotor.

- Follow the procedure below to install rear sensor rotor.
- Using a drifts, press rear sensor rotor onto side flange.

A: Drift [SST: ST30720000 (J-25405)]
B: Drift [SST: ST27863000 (—)]
C: Drift [SST: KV40104710 (—)]

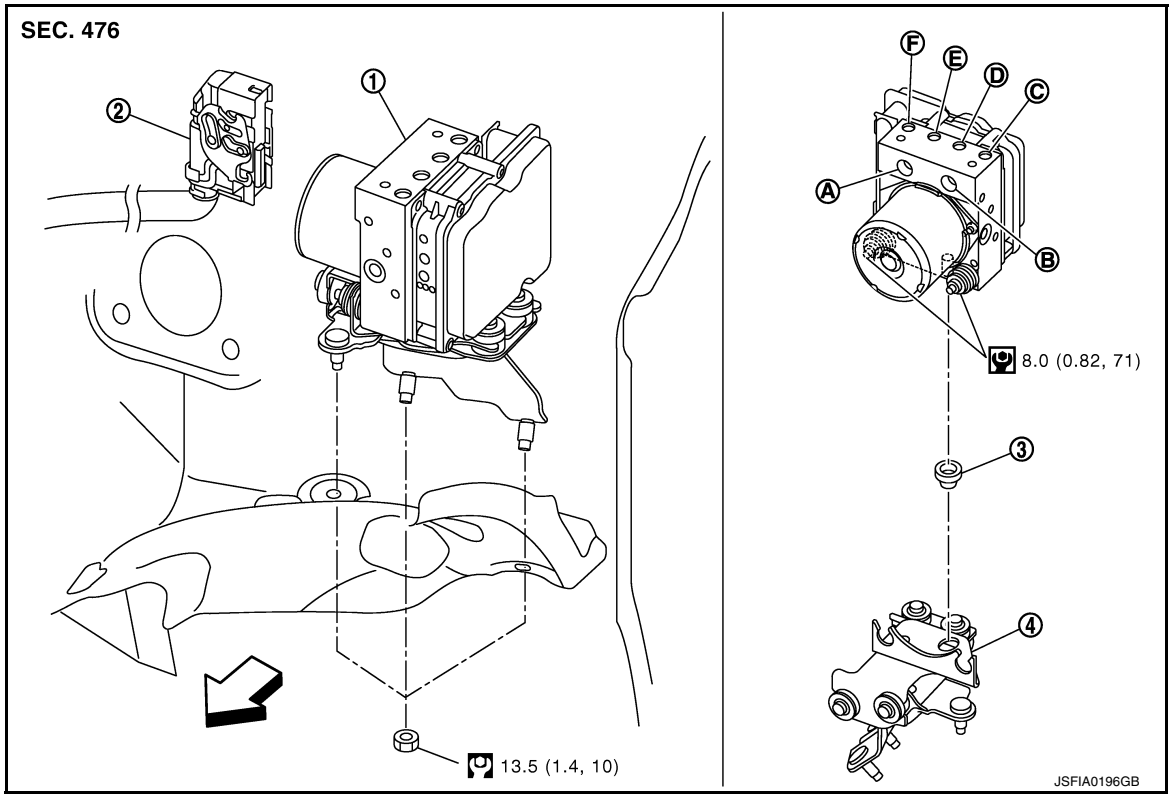


- Install side flange. Refer to DLN-180, "2WD : Exploded View" (2WD), DLN-192, "AWD : Exploded View" (AWD).

ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)

Exploded View

INFOID:0000000010594891



1.	ABS actuator and electric unit (control unit)	2.	Connector	3.	Bushing
4.	Bracket				
A.	From master cylinder secondary side	B.	From master cylinder primary side	C.	To front LH brake caliper
D.	To rear RH brake caliper	E.	To Rear LH brake caliper	F.	To front RH brake caliper

⇦: Vehicle front

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

Removal and Installation

INFOID:0000000010594892

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.**
- **Do not apply excessive impact to ABS actuator and electric unit (control unit), such as dropping it.**
- **Do not remove and install actuator by holding harness.**
- **After work is completed, bleed air from brake tube. Refer to BR-13, "Bleeding Brake System".**

1. Remove hoodledge cover LH. Refer to EXT-22, "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-25, "FENDER PROTECTOR : Exploded View".
6. Remove ABS actuator and electric unit (control unit) bracket mounting nuts.
7. Remove ABS actuator and electric unit (control unit) from vehicle.

INSTALLATION

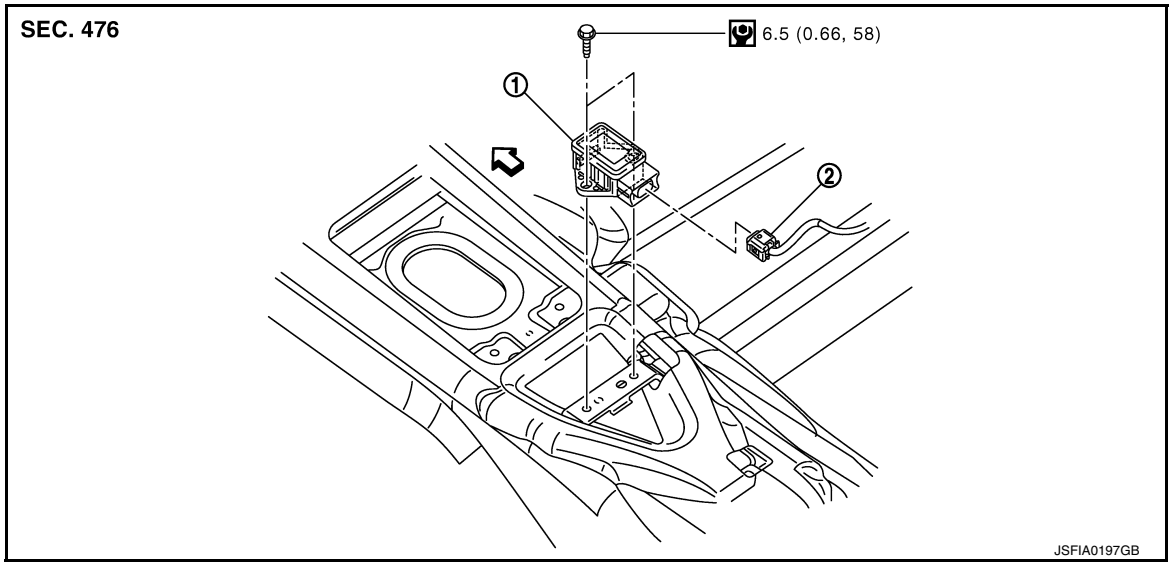
Note the following, and install in the reverse order of removal.

- 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.
- Do not apply excessive impact to ABS actuator and electric unit (control unit), such as dropping it.
- Do not remove and install actuator by holding harness.
- After work is completed, bleed air from brake tube. Refer to BR-13, "Bleeding Brake System".
- After installing harness connector in the ABS actuator and electric unit (control unit), make sure connector is securely locked.
- When replacing ABS actuator and electric unit (control unit), make sure to adjust neutral position of steering angle sensor. Refer to BRC-8, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION : Description".

YAW RATE/SIDE G SENSOR

Exploded View

INFOID:0000000010594893



1. Yaw rate/side G sensor
2. Connector

⇦: Vehicle front

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

Removal and Installation

INFOID:0000000010594894

REMOVAL

CAUTION:

Do not drop or strike yaw rate/side G sensor, or do not use power tool etc., because yaw rate/side G sensor is sensitive to the impact.

1. Remove center console. Refer to IP-23, "Exploded View".
2. Disconnect yaw rate/side G sensor harness connector.
3. Remove mounting bolts. Remove yaw rate/side G sensor.

INSTALLATION

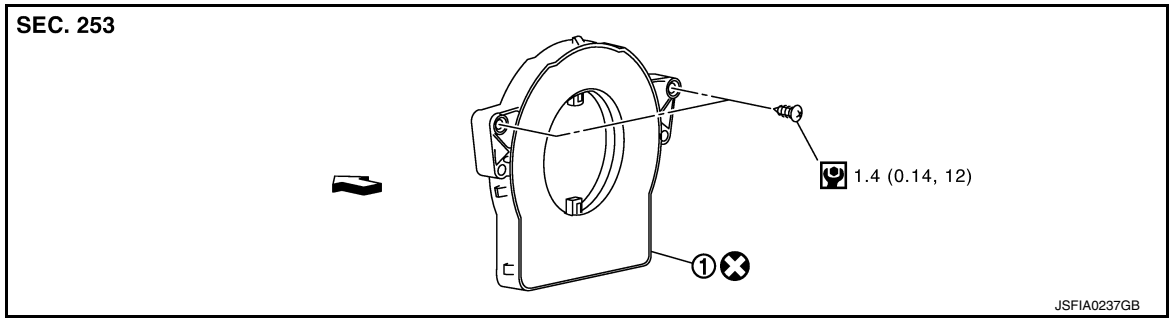
Note the following, and install in the reverse order of removal.

- Do not drop or strike yaw rate/side G sensor, or do not use power tool etc., because yaw rate/side G sensor is sensitive to the impact.

STEERING ANGLE SENSOR

Exploded View

INFOID:0000000010594895



1. Steering angle sensor

⇦: Vehicle front

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

Removal and Installation

INFOID:0000000010594896

REMOVAL

1. Remove spiral cable assembly. Refer to SR-14, "Exploded View".
2. Remove steering angle sensor from spiral cable assembly.

INSTALLATION

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

- Never reuse steering angle sensor.
- When installing steering angle sensor, tighten it to the specified torque with an electric screwdriver. Be sure to tighten it completely with no floating and tilting.
- After work, make sure to adjust neutral position of steering angle sensor. Refer to BRC-8, "ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION : Description".

SYSTEM DESCRIPTION

PREVIEW FUNCTION

System Description

INFOID:0000000010594897

FUNCTION DESCRIPTION

When the Preview Function identifies the need to apply emergency braking by sensing a vehicle ahead in the same lane and the distance and relative speed from it, it applies the brake pre-pressure before the driver depress the brake pedal and helps improve brake response by reducing pedal free play.
The Preview Function shares component parts and diagnosis with the ICC (Intelligent Cruise Control) system.
CAUTION:
This system is only an aid to assist braking operation and is not a collision warning or avoidance device. It is the driver′s responsibility to stay alert, drive safely and be in control of the vehicle at all times.

OPERATION DESCRIPTION

Operation

- The system detects the distance to the vehicle in front with the ICC sensor integrated unit of ICC (Full Speed Range) and judges the necessity of emergency braking.
- The system detects the accelerator pedal release operation of the driver by the accelerator pedal position sensor and estimates the driver's brake operation intention.
- If the system is judged that the emergency braking is necessary or that the driver has the intention to operate the brake it supplies the power supply to the brake booster to apply pre-pressure and adjusts the brake play.

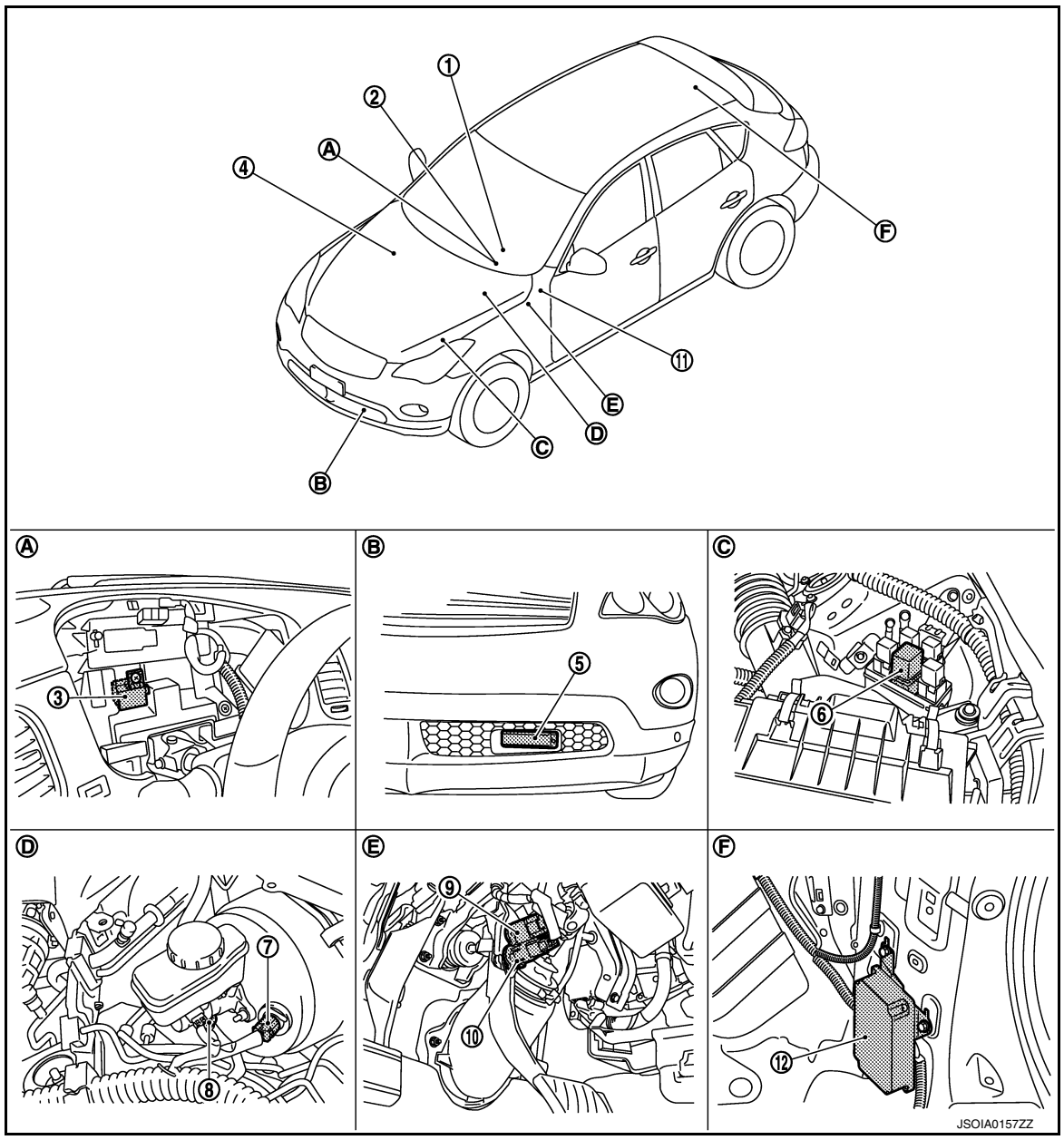
NOTE:
This system will not operate when the vehicle is moving at approximately 32 km/h (20 MPH) or less.

End of Operation

The pre-pressure function ceases when the following conditions are met:
1. When the driver depresses the accelerator pedal or the brake pedal.
2. If the driver does not operate the accelerator pedal or brake pedal within approximately 1 second.

Component Parts Location

INFOID:0000000010594898



1. ICC steering switch	2. Information display, ICC system warning lamp (On the combination meter)	3. ICC warning chime
4. ECM Refer to EC-39, "Component Parts Location".	5. ICC sensor integrated unit	6. ICC brake hold relay
7. Booster solenoid/Release switch	8. Brake pressure sensor	9. Stop lamp switch
10. ICC brake switch	11. IBA OFF switch	12. Brake booster control unit
A. Behind the combination meter	B. Front bumper (LH)	C. Engine room (LH)
D. Inside brake master cylinder cover	E. Upper side of brake pedal	F. Luggage room (RH)

Component Description

INFOID:0000000010594899

×: Applicable

Component	Function Description			Description
	*1	*2	*3	
ICC sensor integrated unit	×	×	×	Refer to CCS-47, "Description".
ECM	×	×	×	Refer to CCS-82, "Description".
ABS actuator and electric unit (control unit)	×	×	×	Refer to CCS-53, "Description".
BCM	×			Transmits the front wiper request signal to ICC sensor integrated unit via CAN communication.
TCM	×	×		Refer to CCS-123, "Description".
Unified meter and A/C amp.	×	×	×	Receives the meter display signal, ICC warning lamp signal, and IBA OFF indicator lamp signal from ICC sensor integrated unit via CAN communication and transmits them to the combination meter via the communication line.
Combination meter	×	×	×	Performs the following operations using the signals received from the unified meter and A/C amp. via the communication line. • Displays the ICC system operation status using the meter display signal. • Illuminates the ICC system warning lamp using the ICC warning lamp signal. • Illuminates the IBA OFF indicator lamp using the IBA OFF indicator lamp signal.
ICC brake switch	×	×	×	Refer to CCS-55, "Description".
Stop lamp switch	×	×	×	
ICC brake hold relay	×		×	Refer to CCS-75, "Description".
Brake booster control unit	×	×	×	Refer to CCS-93, "Description".
Brake booster	×		×	Refer to CCS-93, "Description".
Brake pressure sensor	×		×	Refer to CCS-63, "Description".
Booster solenoid/Release switch	×		×	• Refer to CCS-65, "Description" for booster solenoid. • Refer to CCS-68, "Description" for release switch.
ICC warning chime	×	×	×	Refer to CCS-136, "Description".
Steering angle sensor	×			Refer to CCS-117, "Description".
IBA OFF switch			×NOTE	Refer to CCS-112, "Description".

*1: Vehicle-to-vehicle distance control mode

*2: Conventional (fixed speed) cruise control mode

*3: IBA system and Brake Assist (With Preview Function)

NOTE:

Only IBA system uses

DTC/CIRCUIT DIAGNOSIS

PREVIEW FUNCTION

Diagnosis Procedure

INFOID:0000000010594900

1.BRAKE ASSIST (PREVIEW FUNCTION) DIAGNOSIS

When the preview function is not operating properly, the buzzer sounds and the preview function warning lamp will come on.

NOTE:

The preview function warning lamp shares the ICC system warning lamp.

>> Go to ICC (Full Speed Range). Refer to CCS-5, "Work Flow".

SYMPTOM DIAGNOSIS

NORMAL OPERATING CONDITION

Description

INFOID:0000000010594901

PRECAUTIONS FOR PREVIEW FUNCTION

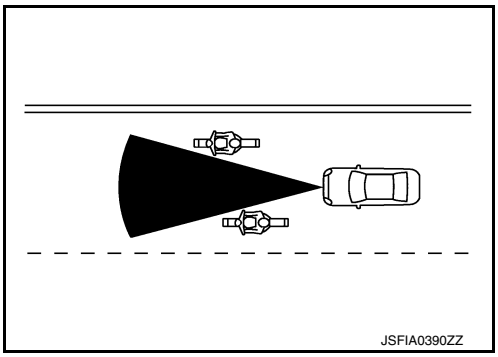
- This system is only an aid to assist braking operation and is not a collision warning or avoidance device. It is the driver′s responsibility to stay alert, drive safely and be in control of the vehicle at all times.
- As there is a performance limit to the Preview Function, never rely solely on this system. This system does not correct careless inattentive or absent-minded driving, or overcome poor visibility in rain, fog, or other bad weather. Reduce vehicle speed by depressing the brake, in order to maintain a safe distance between vehicles.
- The system may not detect a vehicle ahead, depending on road or weather conditions. While the vehicle still travels and the Brake Assist System operates under normal conditions, the Preview Function may operate improperly under the following conditions:

- When rain, snow or dirt adhere to the system sensor
- When strong light (for example, at sunrise or sunset) is directly shining on the front of the vehicle
- Winding or hilly roads may cause the sensor to temporarily not detect a vehicle in the same lane or may detect objects or vehicles in other lanes.
- Vehicle position in the lane may cause the sensor to temporarily not detect a vehicle in the same lane or may detect objects or vehicles in other lanes.

- The system will not detect:

- Pedestrians or objects in the roadway
- Oncoming vehicles in the same lane
- Motorcycles traveling offset in the travel lane as illustrated

- When the Preview Function operates, the brake pedal may move slightly and may make a small noise. This is not a system malfunction.

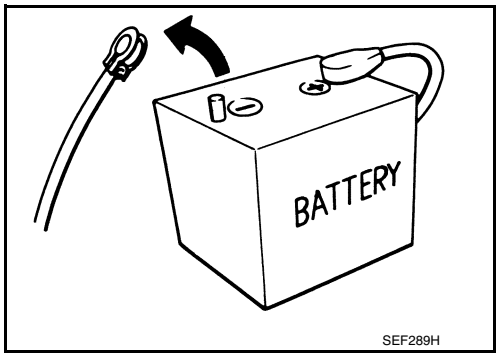


PRECAUTION

PRECAUTIONS

Precautions for Removing Battery Terminal

INFOID:0000000011002927



- When removing the 12V battery terminal, turn OFF the ignition switch and wait at least 30 seconds.
  NOTE:
  ECU may be active for several tens of seconds after the ignition switch is turned OFF. If the battery terminal is removed before ECU stops, then a DTC detection error or ECU data corruption may occur.
- For vehicles with the 2-batteries, be sure to connect the main battery and the sub battery before turning ON the ignition switch.
  NOTE:
  If the ignition switch is turned ON with any one of the terminals of main battery and sub battery disconnected, then DTC may be detected.
- After installing the 12V battery, always check "Self Diagnosis Result" of all ECUs and erase DTC.
  NOTE:
  The removal of 12V battery may cause a DTC detection error.

Precautions for Preview Function Service

INFOID:0000000010594902

- Never look straight into the laser beam discharger when adjusting laser beam aiming.
- Never use the ICC sensor integrated unit removed from vehicle. Never disassemble or remodel.

SYSTEM DESCRIPTION

INTELLIGENT BRAKE ASSIST

System Description

INFOID:0000000010594903

FUNCTION DESCRIPTION

Intelligent Brake Assist (IBA) system warns the driver by a warning lamp and chime when there is a risk of a collision with the vehicle ahead in the traveling lane and the driver must take avoidance action immediately. The system helps reduce the rear-end collision speed by applying the brakes when it judges a collision can not be avoided.

CAUTION:

The IBA system is a not collision avoidance system. It is the driver′s responsibility to stay alert, drive safely and be in control of the vehicle at all times. As there is a performance limit, it may not provide a warning or brake in certain conditions.

NOTE:

- The IBA system shares component parts and diagnosis with the ICC (Intelligent Cruise Control) system. New parts added to the IBA system is the IBA OFF indicator lamp in the combination meter and the IBA OFF switch on the inside instrument driver lower panel.
- The ICC sensor integrated unit shares the parts with the ICC, but the IBA system will operate even when the ICC system is turned to OFF.

OPERATION DESCRIPTION

The IBA system uses a distance sensor located below the front bumper to measure the distance to a vehicle ahead. When the system judges that the distance gets shorter, the vehicle ahead detection indicator lamp on the combination meter blinks and the warning chime sounds.

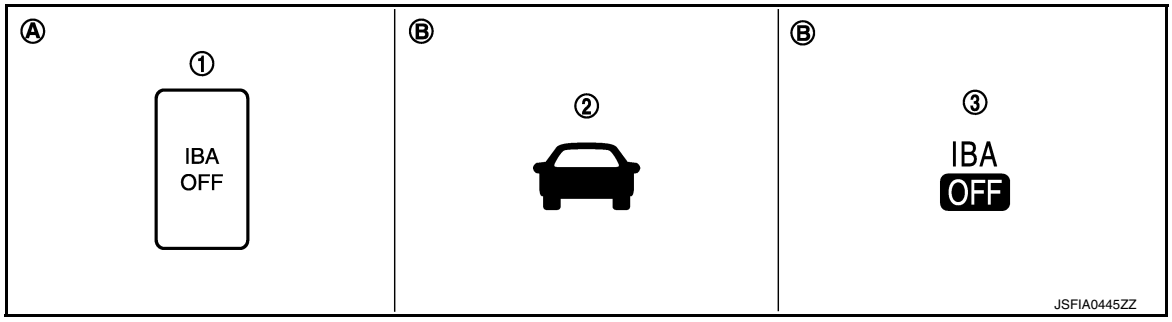
To turn the system OFF/ON, push and hold the IBA OFF switch after starting the engine for more than 1 second.

NOTE:

- The system ON/OFF condition will be memorized even if the ignition switch turns OFF.
- The IBA system operates under the following conditions.

- The IBA system will function when the vehicle is driven at speeds of approximately 15 km/h (10 MPH) and above, and when the vehicle′s speed is approximately 15 km/h (10 MPH) faster than that of the vehicle ahead.

Switch and Indicators



1. IBA OFF switch
2. Vehicle ahead detection indicator lamp
3. IBA OFF indicator lamp

A. On the instrument lower panel LH
B. On the combination meter

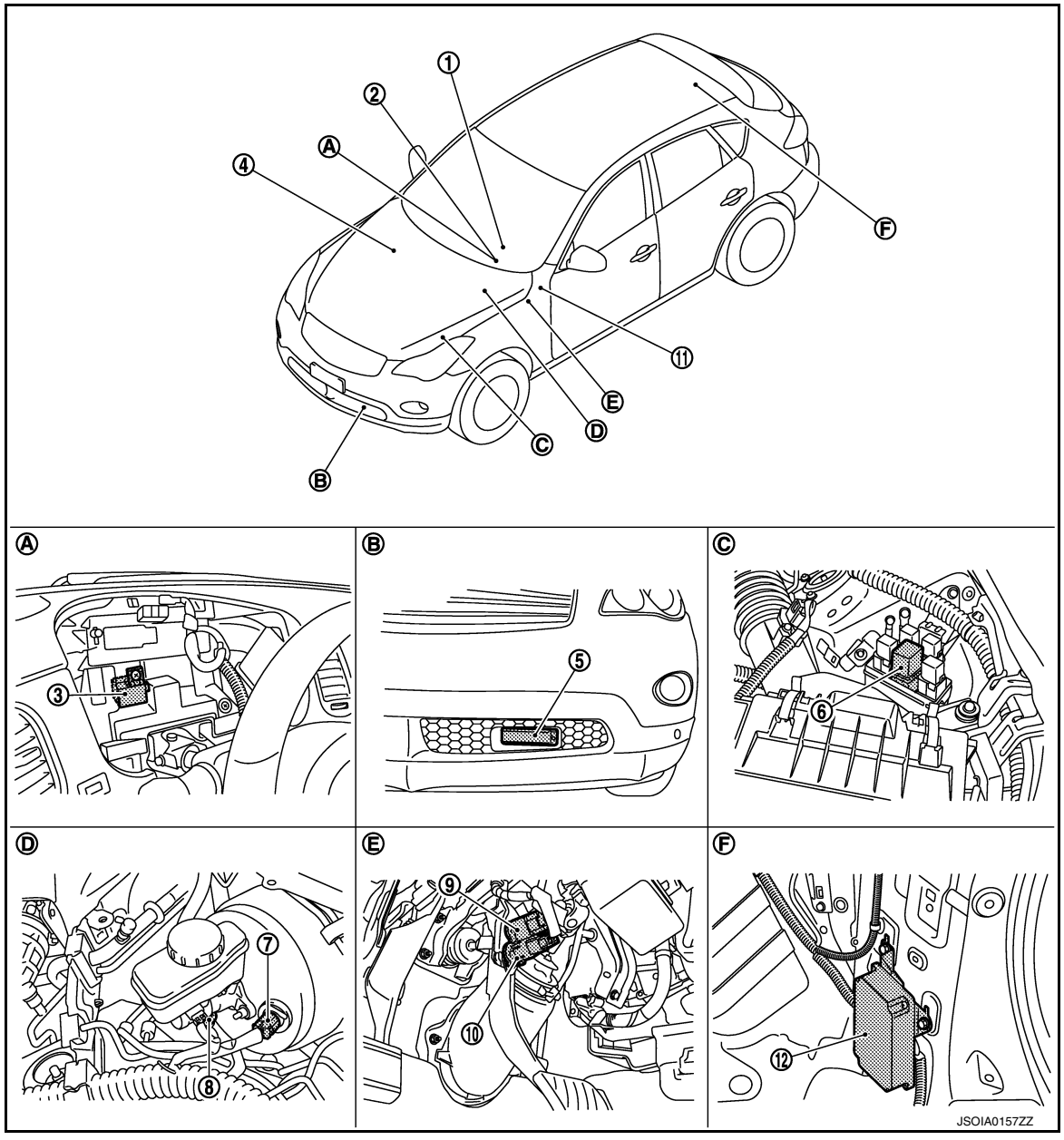
Fail-safe Indication

Condition	Description	Indication on the combination meter
• When the sensor window is dirty • When the system malfunction	The system will be cancelled automatically with a beep sound.	IBA OFF JSFIA0392ZZ
When driving into a strong light (i.e. sunlight)	The system is temporary unavailable. (Without the warning chime)	

NOTE:
When the IBA turns OFF, the IBA OFF indicator lamp will illuminate.

Component Parts Location

INFOID:0000000010594904



1. ICC steering switch	2. Information display, ICC system warning lamp (On the combination meter)	3. ICC warning chime
4. ECM Refer to EC-39, "Component Parts Location".	5. ICC sensor integrated unit	6. ICC brake hold relay
7. Booster solenoid/Release switch	8. Brake pressure sensor	9. Stop lamp switch
10. ICC brake switch	11. IBA OFF switch	12. Brake booster control unit
A. Behind the combination meter	B. Front bumper (LH)	C. Engine room (LH)
D. Inside brake master cylinder cover	E. Upper side of brake pedal	F. Luggage room (RH)

Component Description

INFOID:0000000010594905

×: Applicable

Component	Function Description			Description
	*1	*2	*3	
ICC sensor integrated unit	×	×	×	Refer to CCS-47, "Description".
ECM	×	×	×	Refer to CCS-82, "Description".
ABS actuator and electric unit (control unit)	×	×	×	Refer to CCS-53, "Description".
BCM	×			Transmits the front wiper request signal to ICC sensor integrated unit via CAN communication.
TCM	×	×		Refer to CCS-123, "Description".
Unified meter and A/C amp.	×	×	×	Receives the meter display signal, ICC warning lamp signal, and IBA OFF indicator lamp signal from ICC sensor integrated unit via CAN communication and transmits them to the combination meter via the communication line.
Combination meter	×	×	×	Performs the following operations using the signals received from the unified meter and A/C amp. via the communication line. • Displays the ICC system operation status using the meter display signal. • Illuminates the ICC system warning lamp using the ICC warning lamp signal. • Illuminates the IBA OFF indicator lamp using the IBA OFF indicator lamp signal.
ICC brake switch	×	×	×	Refer to CCS-55, "Description".
Stop lamp switch	×	×	×	
ICC brake hold relay	×		×	Refer to CCS-75, "Description".
Brake booster control unit	×	×	×	Refer to CCS-93, "Description".
Brake booster	×		×	Refer to CCS-93, "Description".
Brake pressure sensor	×		×	Refer to CCS-63, "Description".
Booster solenoid/Release switch	×		×	• Refer to CCS-65, "Description" for booster solenoid. • Refer to CCS-68, "Description" for release switch.
ICC warning chime	×	×	×	Refer to CCS-136, "Description".
Steering angle sensor	×			Refer to CCS-117, "Description".
IBA OFF switch			×NOTE	Refer to CCS-112, "Description".

*1: Vehicle-to-vehicle distance control mode

*2: Conventional (fixed speed) cruise control mode

*3: IBA system and Brake Assist (With Preview Function)

NOTE:

Only IBA system uses

DTC/CIRCUIT DIAGNOSIS

INTELLIGENT BRAKE ASSIST

Diagnosis Procedure

INFOID:0000000010594906

1.INTELLIGENT BRAKE ASSIST DIAGNOSIS

- The system will be cancelled automatically with a beep sound and IBA OFF indicator lamp on the combination meter will illuminate, when the system will not operate properly.
- When the IBA OFF indicator lamp continues to illuminate even if the IBA system is turned ON after the engine restarts, perform the trouble-diagnosis.

NOTE:
IBA system automatically returns to ON, when erasing self-diagnosis result for “ICC/ADAS” with CONSULT.

>> Go to ICC (Full Speed Range). Refer to CCS-5, "Work Flow".

SYMPTOM DIAGNOSIS

SWITCH DOES NOT TURN ON / SWITCH DOES NOT TURN OFF

Symptom Table

INFOID:0000000010594907

CAUTION:
Perform the self-diagnosis with CONSULT before the symptom diagnosis. Perform the trouble diagnosis if any DTC is detected.

Symptom		Inspection item/Reference page
IBA system does not turn ON/OFF	IBA OFF indicator lamp is not turned ON⇔OFF when operating IBA OFF switch	BRC-170, "Diagnosis Procedure"

Description

INFOID:0000000010594908

IBA system does not turn ON/OFF.
- IBA OFF indicator lamp does not illuminate even if the IBA OFF switch is depressed when IBA OFF indicator lamp is not illuminated.
- IBA OFF indicator lamp does not turn OFF even if the IBA OFF switch is depressed when IBA OFF indicator lamp is illuminated.

NOTE:
- To turn the system OFF⇔ON, push and hold the IBA OFF switch after starting the engine for more than 1 second.
- The system ON/OFF condition will be memorized even if the ignition switch turns OFF.

Diagnosis Procedure

INFOID:0000000010594909

1.PERFORM THE SELF-DIAGNOSIS

1. Perform “All DTC Reading” with CONSULT.
2. Check if the DTC is detected in self-diagnosis results for “ICC/ADAS” with CONSULT. Refer to CCS-152, "DTC Index".

Is any DTC detected?

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

2.IBA OFF SWITCH INSPECTION

1. Start the engine.
2. Check that “IBA SW” operates normally in “DATA MONITOR” for “ICC/ADAS” with CONSULT.

Is the inspection result normal?

YES >> GO TO 3.
NO >> GO TO 5.

3.CHECK IBA OFF INDICATOR CIRCUIT

1. Start the engine.
2. Select the active test item “METER LAMP” for “ICC/ADAS” with CONSULT.
3. Check if the IBA OFF indicator lamp illuminates when the test item is operated.

Is the inspection result normal?

YES >> Refer to GI-41, "Work Flow".
NO >> GO TO 4.

4.CHECK DATA MONITOR OF “UNIFIED METER AND A/C AMP.”

Check that “BA W/L” operates normally in “DATA MONITOR” for “METER/M&A” with CONSULT, when the IBA OFF switch is pushed and hold for more than 1 second.

Is the inspection result normal?

YES >> Replace the combination meter. Refer to MWI-136, "Exploded View".
NO >> Replace the unified meter and A/C amp. Refer to MWI-137, "Exploded View".

5.CHECK IBA OFF SWITCH

Check IBA OFF switch. Refer to CCS-113, "Component Inspection (IBA OFF Switch)".

Is the inspection result normal?

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

6.REPAIR OR REPLACE MALFUNCTIONING PARTS

Repair or replace malfunctioning parts.

>> GO TO 7.

7.CHECK IBA SYSTEM

Check that IBA OFF indicator lamp turned ON⇔OFF, when operating IBA OFF switch.

>> INSPECTION END

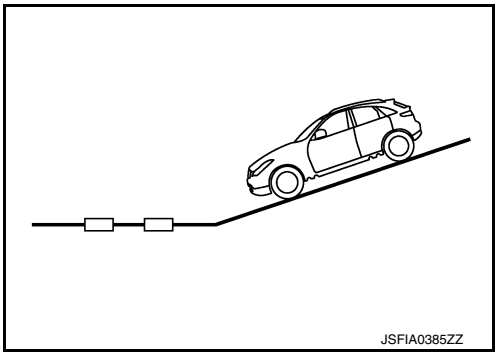
NORMAL OPERATING CONDITION

Description

INFOID:0000000010594910

PRECAUTIONS FOR INTELLIGENT BRAKE ASSIST

- The IBA system is a not collision avoidance system. It is the driver′s responsibility to stay alert, drive safely and be in control of the vehicle at all times.
- As there is a performance limit, it may not provide a warning or brake in certain conditions.
- The system will not detect the following objects:
- Pedestrians, animals, or obstacles in the roadway
- Oncoming vehicles in the same lane
- The system will not detect under the following conditions:
- When the sensor gets dirty and it is impossible to detect the distance from the vehicle ahead.
- When driving into a strong light (i.e. sunlight)
- The sensor generally detects the signals returned from the reflectors on a vehicle ahead. Therefore, the system may not function properly under the following conditions:
- When the reflectors of the vehicle ahead are positioned high or close each other (including a small vehicle such as motorcycles).
- When the sensor gets dirty or and it is impossible to detect the distance from the vehicle ahead.
- When the reflectors on the vehicle ahead is missing, damaged or covered.
- When the reflector of the vehicle ahead is covered with dirt, snow and road spray.
- When visibility is low (such as rain, fog, snow, etc.).
- When snow or road spray from traveling vehicles are raised up.
- When dense exhaust or other smoke (black smoke) from vehicles reduces the sensor visibility.
- When excessively heavy baggage is loaded in the rear seat or the luggage room of vehicle.
- When abruptly accelerating or decelerating.
- On steep downhill or roads with sharp curves.
- When there is a highly reflective object near the vehicle ahead (ie,) very close to other vehicle, signboard, etc.
- While towing a trailer.
- Depending on certain road conditions (curved, beginning of a curve), vehicle conditions (steering position, vehicle position), or preceding vehicle′s conditions (position in lane, etc.), the system may not function properly.
- The system may not function in offset conditions.
- The system may not function when the distance to the vehicle ahead is extremely close.
- The system detect highly reflective objects such as reflectors, signs, white markers, and other stationary objects on the road or near the traveling lane, and when in extreme conditions, detection of these objects may cause the system to function.
- The system is designed to automatically check the sensor′s functionality. If the sensor is covered with ice, a transparent or translucent plastic bag, etc., the system may not detect them. In these instances the system may not be able to warn properly. Be sure to check and clean the sensor regularly.
- Excessive noise will interfere with the warning chime sound, and the chime may not be heard.
- Never step in under the brake pedal to avoid an accident when IBA system turns on.



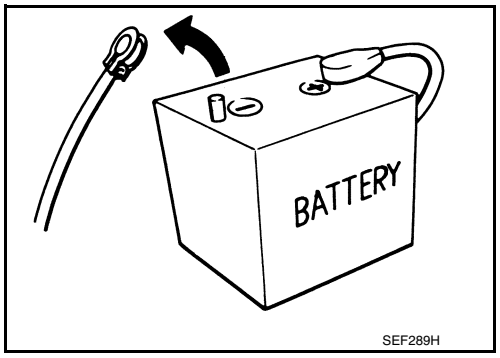
- Sudden appearance of the vehicle in front (ie, it abruptly cuts in) may not be detected and the system may not warn soon enough.
- The system will be cancelled automatically with a beep sound and the IBA OFF indicator lamp will illuminate under the following conditions:
- When the sensor window is dirty
- When the system malfunctions

PRECAUTION

PRECAUTIONS

Precautions for Removing Battery Terminal

INFOID:0000000011002928



- When removing the 12V battery terminal, turn OFF the ignition switch and wait at least 30 seconds.
  NOTE:
  ECU may be active for several tens of seconds after the ignition switch is turned OFF. If the battery terminal is removed before ECU stops, then a DTC detection error or ECU data corruption may occur.
- For vehicles with the 2-batteries, be sure to connect the main battery and the sub battery before turning ON the ignition switch.
  NOTE:
  If the ignition switch is turned ON with any one of the terminals of main battery and sub battery disconnected, then DTC may be detected.
- After installing the 12V battery, always check "Self Diagnosis Result" of all ECUs and erase DTC.
  NOTE:
  The removal of 12V battery may cause a DTC detection error.

Precautions for IBA System Service

INFOID:0000000010594911

- Never look straight into the laser beam discharger when adjusting laser beam aiming.
- Turn the IBA system OFF in conditions similar to driving, such as free rollers or a chassis dynamometer.
- Never use the ICC sensor integrated unit removed from vehicle. Never disassemble or remodel.
- Erase DTC when replacing parts of ICC system. Then check the operation of ICC system after adjusting laser beam aiming if necessary.
- Never change IBA system state ON/OFF without the consent of the customer.

NOTE:
IBA system automatically returns to ON, when erasing self-diagnosis result for “ICC/ADAS” with CONSULT.

REMOVAL AND INSTALLATION

IBA OFF SWITCH

Removal and Installation

INFOID:0000000010594912

REMOVAL

1. Remove instrument lower panel LH. Refer to IP-13, "Removal and Installation".
2. Disengage the pawl. Then remove IBA OFF switch.

INSTALLATION

Install in the reverse order of removal.