SECTION BRAKE CONTROL SYSTEM

А

В

С

D

Ε

CONTENTS

WITHOUT ICC

PRECAUTION7
PRECAUTIONS 7 Precaution for Supplemental Restraint System (SRS) "AIR BAG" and "SEAT BELT PRE-TEN-SIONER" SIONER" 7 Precaution for Procedure without Cowl Top Cover7 Precaution for Brake System 7 Precaution for Brake Control System 8 Precaution for Harness Repair 8
PREPARATION9
PREPARATION 9 Special Service Tool 9 Commercial Service Tools 9
SYSTEM DESCRIPTION10
COMPONENT PARTS10Component Parts Location10Wheel Sensor and Sensor Rotor11ABS Actuator and Electric Unit (Control Unit)12Stop Lamp Switch12Steering Angle Sensor13Brake Fluid Level Switch13Vacuum Sensor13Parking Brake Switch13VDC OFF Switch13
SYSTEM
VDC FUNCTION
TCS FUNCTION
ABS FUNCTION

ABS FUNCTION : System Description	BR
EBD FUNCTION	G
BRAKE ASSIST FUNCTION	Н
HILL START ASSIST FUNCTION	
WARNING/INDICATOR/CHIME LIST	J
DIAGNOSIS SYSTEM [ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)]39 CONSULT Function	K
ECU DIAGNOSIS INFORMATION44	
ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)	L
DTC Inspection Priority Chart49 DTC Index50	
WIRING DIAGRAM52	Ν
BRAKE CONTROL SYSTEM52 Wiring Diagram	0
BASIC INSPECTION60	
	Р
DIAGNOSIS AND REPAIR WORK FLOW60 Work Flow60 Diagnostic Work Sheet61	

Description	. 63
ADJUSTMENT OF STEERING ANGLE SEN-	
SOR NEUTRAL POSITION	
Description Work Procedure	
CALIBRATION OF DECEL G SENSOR	66
Description	
Work Procedure	
CONFIGURATION [ABS ACTUATOR AND	
ELECTRIC UNIT (CONTROL UNIT)]	. 68
Work Procedure	
DTC/CIRCUIT DIAGNOSIS	. 70
C1101, C1102, C1103, C1104 WHEEL SEN-	
SOR DTC Logic	
Diagnosis Procedure	
-	
C1105, C1106, C1107, C1108 WHEEL SEN- SOR	75
DTC Logic	
Diagnosis Procedure	
C1109 POWER AND GROUND SYSTEM	
DTC Logic	
Diagnosis Procedure	
C1110, C1153, C1170 ABS ACTUATOR AND	
ELECTRIC UNIT (CONTROL UNIT)	. 79
DTC Logic	
Diagnosis Procedure	. 79
C1111 PUMP MOTOR	. 80
DTC Logic	~~
	. 80
Diagnosis Procedure	. 80 . 80
C1113, C1145, C1146 YAW RATE/SIDE/DE-	. 80
C1113, C1145, C1146 YAW RATE/SIDE/DE- CEL G SENSOR	. 80 . 82
C1113, C1145, C1146 YAW RATE/SIDE/DE- CEL G SENSOR DTC Logic	. 80 . 82 . 82
C1113, C1145, C1146 YAW RATE/SIDE/DE- CEL G SENSOR DTC Logic Diagnosis Procedure	. 80 . 82 . 82 . 82
C1113, C1145, C1146 YAW RATE/SIDE/DE- CEL G SENSOR DTC Logic Diagnosis Procedure C1115 ABS SENSOR [ABNORMAL SIGNAL].	. 80 . 82 . 82 . 82 . 82
C1113, C1145, C1146 YAW RATE/SIDE/DE- CEL G SENSOR DTC Logic Diagnosis Procedure C1115 ABS SENSOR [ABNORMAL SIGNAL]. DTC Logic	. 80 . 82 . 82 . 82 . 82 . 84
C1113, C1145, C1146 YAW RATE/SIDE/DE- CEL G SENSOR DTC Logic Diagnosis Procedure C1115 ABS SENSOR [ABNORMAL SIGNAL]. DTC Logic Diagnosis Procedure	. 80 . 82 . 82 . 82 . 84 . 84 . 84
C1113, C1145, C1146 YAW RATE/SIDE/DE- CEL G SENSOR DTC Logic Diagnosis Procedure C1115 ABS SENSOR [ABNORMAL SIGNAL]. DTC Logic Diagnosis Procedure C1116 STOP LAMP SWITCH	. 80 . 82 . 82 . 82 . 84 . 84 . 84 . 84
C1113, C1145, C1146 YAW RATE/SIDE/DE- CEL G SENSOR DTC Logic Diagnosis Procedure C1115 ABS SENSOR [ABNORMAL SIGNAL]. DTC Logic Diagnosis Procedure C1116 STOP LAMP SWITCH DTC Logic	. 80 . 82 . 82 . 82 . 84 . 84 . 84 . 84 . 87
C1113, C1145, C1146 YAW RATE/SIDE/DE- CEL G SENSOR DTC Logic Diagnosis Procedure C1115 ABS SENSOR [ABNORMAL SIGNAL]. DTC Logic Diagnosis Procedure DTC Logic DTC Logic DTC Logic DTC Logic DTC Logic DTC Logic	. 80 . 82 . 82 . 82 . 84 . 84 . 84 . 87 . 87
C1113, C1145, C1146 YAW RATE/SIDE/DE- CEL G SENSOR DTC Logic Diagnosis Procedure C1115 ABS SENSOR [ABNORMAL SIGNAL]. DTC Logic Diagnosis Procedure C1116 STOP LAMP SWITCH DTC Logic Diagnosis Procedure Component Inspection	. 80 . 82 . 82 . 82 . 84 . 84 . 84 . 87 . 87
C1113, C1145, C1146 YAW RATE/SIDE/DE- CEL G SENSOR DTC Logic Diagnosis Procedure C1115 ABS SENSOR [ABNORMAL SIGNAL]. DTC Logic Diagnosis Procedure C1116 STOP LAMP SWITCH DTC Logic Diagnosis Procedure Component Inspection C1120, C1122, C1124, C1126 ABS IN VALVE	. 80 . 82 . 82 . 82 . 82 . 82 . 82 . 82 . 82
C1113, C1145, C1146 YAW RATE/SIDE/DE- CEL G SENSOR DTC Logic Diagnosis Procedure C1115 ABS SENSOR [ABNORMAL SIGNAL]. DTC Logic Diagnosis Procedure C1116 STOP LAMP SWITCH DTC Logic Diagnosis Procedure Component Inspection	. 80 . 82 . 82 . 82 . 84 . 84 . 84 . 84 . 87 . 87 . 87 . 88
C1113, C1145, C1146 YAW RATE/SIDE/DE- CEL G SENSOR DTC Logic Diagnosis Procedure C1115 ABS SENSOR [ABNORMAL SIGNAL]. DTC Logic Diagnosis Procedure C1116 STOP LAMP SWITCH DTC Logic Diagnosis Procedure Component Inspection C1120, C1122, C1124, C1126 ABS IN VALVE SYSTEM	. 80 . 82 . 82 . 82 . 84 . 84 . 84 . 87 . 87 . 87 . 88 . 89 . 89
C1113, C1145, C1146 YAW RATE/SIDE/DE- CEL G SENSOR DTC Logic Diagnosis Procedure C1115 ABS SENSOR [ABNORMAL SIGNAL]. DTC Logic Diagnosis Procedure C1116 STOP LAMP SWITCH DTC Logic Diagnosis Procedure Component Inspection C1120, C1122, C1124, C1126 ABS IN VALVE SYSTEM DTC Logic	. 80 . 82 . 82 . 82 . 84 . 84 . 84 . 87 . 87 . 87 . 88 . 89 . 89

DTC Logic91 Diagnosis Procedure91
C1130 ENGINE SIGNAL 93 DTC Logic 93 Diagnosis Procedure 93
C1140 ACTUATOR RELAY SYSTEM
C1142 PRESS SENSOR
C1143 STEERING ANGLE SENSOR
C1144 INCOMPLETE STEERING ANGLE SENSOR ADJUSTMENT
C1154 PNP SWITCH102Description102DTC Logic102Diagnosis Procedure102Special Repair Requirement103
C1155 BR FLUID LEVEL LOW104DTC Logic104Diagnosis Procedure104Component Inspection105
C1160 DECEL G SEN SET
C1164, C1165, C1166, C1167 CV/SV SYS- TEM
C1197 VACUUM SENSOR 109 DTC Logic 109 Diagnosis Procedure 109
C1198 VACUUM SENSOR
C1199 BRAKE BOOSTER
C119A VACUUM SENSOR
U1000 CAN COMM CIRCUIT117 Description

DTC Logic Diagnosis Procedure	117
U1002 SYSTEM COMM (CAN)	
DTC Logic Diagnosis Procedure	
POWER SUPPLY AND GROUND CIRCUIT Diagnosis Procedure	
PARKING BRAKE SWITCH	
Component Function Check Diagnosis Procedure	
Component Inspection	
VDC OFF SWITCH	
Component Function Check Diagnosis Procedure	
Component Inspection	
ABS WARNING LAMP Component Function Check	
Diagnosis Procedure	
BRAKE WARNING LAMP	125
Component Function Check Diagnosis Procedure	
VDC WARNING LAMP	
Component Function Check	127
Diagnosis Procedure	
VDC OFF INDICATOR LAMP Component Function Check	
Diagnosis Procedure	
SYMPTOM DIAGNOSIS	129
EXCESSIVE OPERATION FREQUENCY	129
Description Diagnosis Procedure	
UNEXPECTED BRAKE PEDAL REACTION	
Description	131
Diagnosis Procedure	
THE BRAKING DISTANCE IS LONG Description	
Diagnosis Procedure	
DOES NOT OPERATE	
Description Diagnosis Procedure	
BRAKE PEDAL VIBRATION OR OPERA-	
TION SOUND OCCURS	
Description Diagnosis Procedure	134 134
VEHICLE JERKS DURING	135
Description Diagnosis Procedure	

NORMAL OPERATING CONDITION	А
REMOVAL AND INSTALLATION 137	
WHEEL SENSOR 137	В
FRONT WHEEL SENSOR	С
REAR WHEEL SENSOR	D
SENSOR ROTOR141	
FRONT SENSOR ROTOR	BRC
REAR SENSOR ROTOR	G
ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)	H
VDC OFF SWITCH144Exploded View144Removal and Installation144	J
STEERING ANGLE SENSOR	K
PRECAUTION146	L
PRECAUTIONS	M
SIONER"	Ν
Precaution for Harness Repair147 Precautions for FEB System Service148	0
PREPARATION149	Р
PREPARATION149Special Service Tool149Commercial Service Tools149	
SYSTEM DESCRIPTION 150	
COMPONENT PARTS150	

Component Parts Location	
Wheel Sensor and Sensor Rotor	
ABS Actuator and Electric Unit (Control Unit)	
Stop Lamp Switch	
Steering Angle Sensor	
Brake Fluid Level Switch	
Vacuum Sensor	
Parking Brake Switch	
VDC OFF Switch	
ADAS Control Unit	
ICC Sensor	
Brake Pedal Position Switch / Stop Lamp Switch.	
ICC Brake Hold Relay	
Warning Buzzer	.156
SYSTEM	157
System Description	
Fail-Safe	
	105
VDC FUNCTION	.167
VDC FUNCTION : System Description	.167
TCS FUNCTION	
TCS FUNCTION : System Description	.170
ABS FUNCTION	171
ABS FUNCTION : System Description	
EBD FUNCTION	
EBD FUNCTION : System Description	.173
BRAKE ASSIST (WITHOUT PREVIEW FUNC-	
	474
	.174
BRAKE ASSIST (WITHOUT PREVIEW FUNC-	
BRAKE ASSIST (WITHOUT PREVIEW FUNC-	.175
BRÁKE ASSIST (WITHOUT PREVIEW FUNC- TION) : System Description	.175 . 176
BRÁKE ASSIST (WITHOUT PREVIEW FUNC- TION) : System Description HILL START ASSIST FUNCTION hill start assist FUNCTION : System Description .	.175 . 176 .176
BRÁKE ASSIST (WITHOUT PREVIEW FUNC- TION) : System Description HILL START ASSIST FUNCTION hill start assist FUNCTION : System Description . BRAKE ASSIST (WITH PREVIEW FUNCTION)	.175 . 176 .176
BRÁKE ASSIST (WITHOUT PREVIEW FUNC- TION) : System Description HILL START ASSIST FUNCTION hill start assist FUNCTION : System Description . BRAKE ASSIST (WITH PREVIEW FUNCTION) BRAKE ASSIST (WITH PREVIEW FUNCTION) :	.175 . 176 .176 . 177
BRÁKE ASSIST (WITHOUT PREVIEW FUNC- TION) : System Description	.175 . 176 .176 . 177
BRAKE ASSIST (WITHOUT PREVIEW FUNC- TION) : System Description	.175 . 176 .176 . 177 .177
BRÁKE ASSIST (WITHOUT PREVIEW FUNC- TION) : System Description	.175 . 176 .176 . 177 .177
BRAKE ASSIST (WITHOUT PREVIEW FUNC- TION) : System Description	.175 . 176 .176 . 177 .177 .179
BRÁKE ASSIST (WITHOUT PREVIEW FUNC- TION) : System Description	.175 . 176 .176 . 177 .177 .179
BRAKE ASSIST (WITHOUT PREVIEW FUNC- TION) : System Description	.175 .176 .176 .177 .177 .179 .179
BRAKE ASSIST (WITHOUT PREVIEW FUNC- TION) : System Description	.175 .176 .176 .177 .177 .179 .179 .179
BRÁKE ASSIST (WITHOUT PREVIEW FUNC- TION) : System Description	.175 .176 .176 .177 .177 .179 .179 .179 .179
BRAKE ASSIST (WITHOUT PREVIEW FUNC- TION) : System Description	.175 .176 .176 .177 .177 .179 .179 .179 .179 .180 .180
BRÁKE ASSIST (WITHOUT PREVIEW FUNC- TION) : System Description	.175 .176 .176 .177 .177 .179 .179 .179 .179 .180 .180
BRAKE ASSIST (WITHOUT PREVIEW FUNC- TION) : System Description	175 176 177 177 177 179 179 180 180 180
BRÁKE ASSIST (WITHOUT PREVIEW FUNC- TION) : System Description	175 176 177 177 177 179 179 180 180 180 180
BRAKE ASSIST (WITHOUT PREVIEW FUNC- TION) : System Description	175 176 177 177 177 179 179 180 180 180 180
BRAKE ASSIST (WITHOUT PREVIEW FUNC- TION) : System Description	175 176 177 177 177 179 179 180 180 180 180
BRÁKE ASSIST (WITHOUT PREVIEW FUNC- TION) : System Description	175 176 177 177 179 179 179 180 180 180 182 182
BRÁKE ASSIST (WITHOUT PREVIEW FUNC- TION) : System Description	175 176 177 177 179 179 179 180 180 180 182 182 183
BRÁKE ASSIST (WITHOUT PREVIEW FUNC- TION) : System Description	175 176 177 177 179 179 179 180 180 180 182 182 183 183
BRÁKE ASSIST (WITHOUT PREVIEW FUNC- TION) : System Description	175 176 177 177 179 179 179 180 180 180 182 182 183 183 183

ECU DIAGNOSIS INFORMATION192
(CONTROL UNIT)192Reference Value192Fail-Safe195DTC Inspection Priority Chart197DTC Index198
ADAS CONTROL UNIT200Reference Value200Fail-safe (ADAS Control Unit)204DTC Inspection Priority Chart205DTC Index205
WIRING DIAGRAM207
BRAKE CONTROL SYSTEM
BASIC INSPECTION216
DIAGNOSIS AND REPAIR WORK FLOW216 Work Flow
ADDITIONAL SERVICE WHEN REPLACING ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)
ADDITIONAL SERVICE WHEN REPLACING ICC SENSOR
ADJUSTMENT OF STEERING ANGLE SEN- SOR NEUTRAL POSITION
CALIBRATION OF DECEL G SENSOR222Description222Work Procedure222
CONFIGURATION [ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)]224 Work Procedure
ICC SENSOR INITIAL VERTICAL ALIGN- 226MENT226Description226Required Tools226Preparation226ICC Sensor Initial Vertical Alignment227
ICC SENSOR ALIGNMENT228Description228Required Tools228Preparation229Vehicle Set Up230Setting The ICC Target Board232

ICC Sensor Adjustment	233
ACTION TEST	235
Description	
Inspection Procedure	
DTC/CIRCUIT DIAGNOSIS	236
C1101, C1102, C1103, C1104 WHEEL SEN-	
SOR	236
DTC Logic	236
Diagnosis Procedure	236
C1105, C1106, C1107, C1108 WHEEL SEN-	
SOR	241
DTC Logic	
Diagnosis Procedure	
CAAND DOWER AND CROUND SYSTEM	~ ~ ~
C1109 POWER AND GROUND SYSTEM DTC Logic	
Diagnosis Procedure	
-	
C1111 PUMP MOTOR	
DTC Logic	
Diagnosis Procedure	246
C1113, C1145, C1146 YAW RATE/SIDE/DE-	
CEL G SENSOR	248
DTC Logic	248
Diagnosis Procedure	248
C1115 ABS SENSOR [ABNORMAL SIGNAL].	250
DTC Logic	
Diagnosis Procedure	
C1116 STOP LAMP SWITCH DTC Logic	
Diagnosis Procedure	
Component Inspection	
C1120, C1122, C1124, C1126 ABS IN VALVE	
SYSTEM	
DTC Logic Diagnosis Procedure	255
-	200
C1121, C1123, C1125, C1127 ABS OUT	
VALVE SYSTEM	
DTC Logic	
Diagnosis Procedure	257
C1130 ENGINE SIGNAL	259
DTC Logic	
Diagnosis Procedure	259
C1140 ACTUATOR RELAY SYSTEM	261
DTC Logic	
Diagnosis Procedure	
C C	
C1142 PRESS SENSOR	
DTC Logic Diagnosis Procedure	
บานฐาเบอเอ เ าบบบนนเธ	203

233	C1143 STEERING ANGLE SENSOR265 DTC Logic	А
 235 235	Diagnosis Procedure	
235 . . 236	C1144 INCOMPLETE STEERING ANGLE SENSOR ADJUSTMENT	В
 236 236 236	C1155 BR FLUID LEVEL LOW	C
 241 241 241	C1160 DECEL G SEN SET	E
 244 244 244	C1164, C1165 CV SYSTEM	BRC
 246 246 246	C1170 VARIANT CODING	G
 248 248	C1197 VACUUM SENSOR	H
248]. 250 250	C1198 VACUUM SENSOR	J
250 253 253	C1199 BRAKE BOOSTER	K
253 254	C119A VACUUM SENSOR	L
 255 255 255	U1000 CAN COMM CIRCUIT	Μ
 257 257 257	POWER SUPPLY AND GROUND CIRCUIT 283 Diagnosis Procedure	Ν
 259 259 259	PARKING BRAKE SWITCH284Component Function Check284Diagnosis Procedure284Component Inspection285	O
261 261 261 263	VDC OFF SWITCH286Component Function Check286Diagnosis Procedure286Component Inspection287	
263 263	ABS WARNING LAMP	

Diagnosis Procedure	288
BRAKE WARNING LAMP Component Function Check	289
Diagnosis Procedure	291
Component Function Check Diagnosis Procedure	
VDC OFF INDICATOR LAMP	
Component Function Check Diagnosis Procedure	
FORWARD EMERGENCY BRAKING Diagnosis Procedure	
SYMPTOM DIAGNOSIS	
DRIVER ASSISTANCE SYSTEM SYMP-	
TOMS	294
Symptom Table	
SYSTEM SETTINGS CANNOT BE TURNED ON/OFF ON THE INTEGRAL SWITCH	
Symptom Table	
Description	
Diagnosis Procedure	
EXCESSIVE OPERATION FREQUENCY	
Description	
Diagnosis Procedure	
UNEXPECTED BRAKE PEDAL REACTION	
Description Diagnosis Procedure	
-	
THE BRAKING DISTANCE IS LONG	
Diagnosis Procedure	
DOES NOT OPERATE	
Description	
Diagnosis Procedure	302
BRAKE PEDAL VIBRATION OR OPERA- TION SOUND OCCURS	303

Description	
VEHICLE JERKS DURING	
NORMAL OPERATING CONDITION	
REMOVAL AND INSTALLATION	
WHEEL SENSOR	
FRONT WHEEL SENSOR	
REAR WHEEL SENSOR	
SENSOR ROTOR310	
FRONT SENSOR ROTOR	
REAR SENSOR ROTOR	
ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)	
VDC OFF SWITCH313Exploded View313Removal and Installation313	
STEERING ANGLE SENSOR	

PRECAUTIONS

А

В

Ε

< PRECAUTION > PRECAUTION PRECAUTIONS

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

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

WARNING:

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

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

WARNING:

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

Precaution for Procedure without Cowl Top Cover

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

Precaution for Brake System

WARNING:

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

- Brake fluid use refer to <u>MA-11, "Fluids and Lubricants"</u>.
- Do not reuse drained brake fluid.
- Do not spill or splash brake fluid on painted surfaces. Brake fluid may seriously damage paint. Wipe it off
 P
 immediately and wash with water if it gets on a painted surface.
- Always confirm the specified tightening torque when installing the brake pipes.
- After pressing the brake pedal more deeply or harder than normal driving, such as air bleeding, check each item of brake pedal. Adjust brake pedal if it is outside the standard value.
- Do not use mineral oils such as gasoline or light oil to clean. They may damage rubber parts and cause improper operation.
- · Always loosen the brake tube flare nut with a flare nut wrench.

K L PIIB3706J

INFOID:0000000011241048

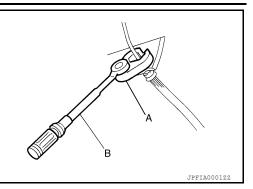
INFOID:000000011241047

PRECAUTIONS

< PRECAUTION >

[WITHOUT ICC]

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



Precaution for Brake Control System

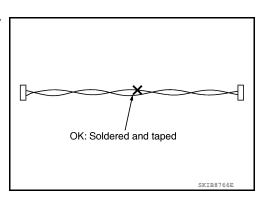
INFOID:000000011241049

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

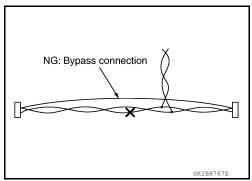
Precaution for Harness Repair

INFOID:000000011241050

• Solder the repair part, and wrap it with tape. [Twisted wire fray must be 110 mm (4.33 in) or less.]



• Do not bypass the repair point with wire. (If it is bypassed, the turnout point cannot be separated and the twisted wire characteristics are lost.)



< PREPARATION >

PREPARATION PREPARATION

Special Service Tool

INFOID:000000011241051

А

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

Tool number (TechMate No.) Tool name		Description	С
KV991J0080		Checking operation of ABS active wheel sen-	
(J-45741)		sors	D
ABS active wheel sensor tester	VFIA0101E		E
			BRC

Commercial Service Tools

INFOID:0000000011241052

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

Μ

Ν

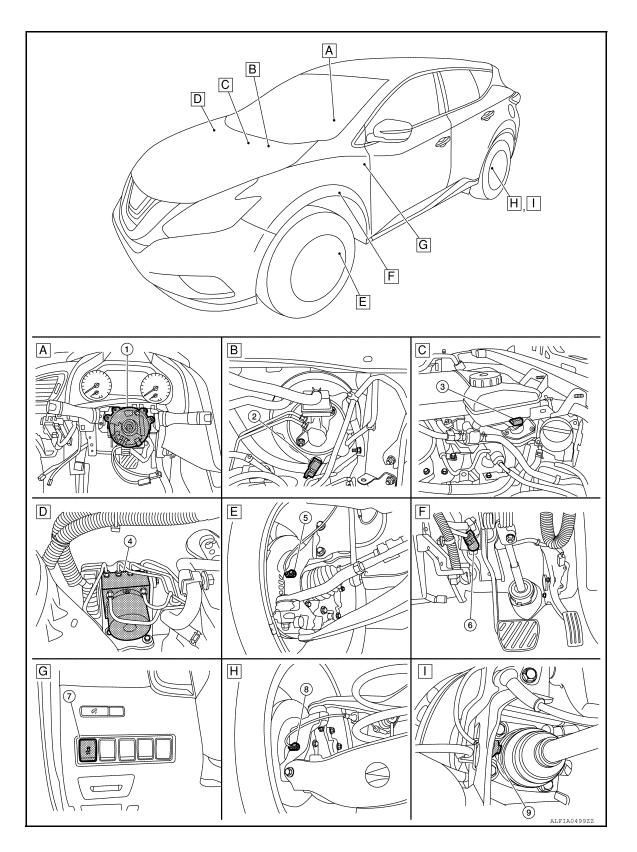
0

Р

SYSTEM DESCRIPTION COMPONENT PARTS

Component Parts Location

INFOID:000000011241053



COMPONENT PARTS

< SYSTEM DESCRIPTION >

[WITHOUT ICC]

INFOID:0000000011241054

А

В

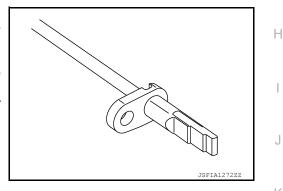
- A. Steering column (view with steering wheel removed)
- D. Engine room right side
- G. Left side of instrument panel
- B. Engine room left side
- E. Right front wheel area
- H. Left rear wheel area (FWD models)
- C. Engine room left side
- F. Brake pedal area
- I. Left rear wheel area (AWD models)

No.	Component parts	Function	
1.	Steering angle sensor	BRC-13, "Steering Angle Sensor"	С
2.	Vacuum sensor	BRC-13, "Vacuum Sensor"	
3.	Brake fluid level switch	BRC-13, "Brake Fluid Level Switch"	
4.	ABS actuator and electric unit (control unit)	BRC-12, "ABS Actuator and Electric Unit (Control Unit)"	
5.	Front LH wheel sensor	BRC-11, "Wheel Sensor and Sensor Rotor"	
6.	Stop lamp switch	BRC-13, "Parking Brake Switch"	E
7.	VDC OFF switch	BRC-13. "VDC OFF Switch"	
8.	Rear LH wheel sensor (FWD models)	BRC-11, "Wheel Sensor and Sensor Rotor"	
9.	Rear LH wheel sensor (AWD models)	BRC-11, "Wheel Sensor and Sensor Rotor"	BR

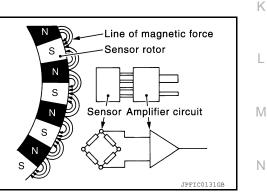
Wheel Sensor and Sensor Rotor

NOTE:

- Wheel sensor of front wheel is installed on steering knuckle.
- Sensor rotor of front wheel is integrated into the wheel hub assembly.
- Wheel sensor of rear wheel is installed on rear final drive.
- Sensor rotor of rear wheel is installed on drive shaft (rear final drive side).
- Never measure resistance and voltage value using a tester because sensor is an active sensor.



- Power supply is supplied to detection portion so that magnetic field line is read. Magnetic field that is detected is converted to current signal.
- When sensor rotor rotates, magnetic field changes. Magnetic field change is converted to current signals (rectangular wave) and is transmitted to ABS actuator and electric unit (control unit). Change of magnetic field is proportional to wheel speed.



< SYSTEM DESCRIPTION >

ABS Actuator and Electric Unit (Control Unit)

Electric unit (control unit) is integrated with actuator and comprehensively controls VDC function, TCS function, ABS function, EBD function, brake assist function and hill start assist function.

ELECTRIC UNIT (CONTROL UNIT)

- Brake fluid pressure, engine and transmission are controlled according to signals from each sensor.
- If malfunction is detected, the system enters fail-safe mode.

ACTUATOR

The following components are integrated with ABS actuator:

Pump

Returns the brake fluid reserved in reservoir to master cylinder by reducing pressure.

Motor

Activates the pump according to signals from ABS actuator and electric unit (control unit).

Motor Relay

Operates the motor ON/OFF according to signals from ABS actuator and electric unit (control unit).

Actuator Relay

Operates each valve ON/OFF according to signals from ABS actuator and electric unit (control unit).

ABS IN Valve and ABS OUT Valve

Increases, holds or decreases the fluid pressure of each caliper according to signals from ABS actuator and electric unit (control unit).

Pressure Sensor

Detects the brake fluid pressure and transmits signal to ABS actuator and electric unit (control unit).

Cut Valve 1 (Primary Line), Cut Valve 2 (Secondary Line)

Shuts off the ordinary brake line from master cylinder when VDC function, TCS function, brake assist function, hill start assist function are activated.

Yaw Rate/Side/Decel G Sensor

Calculates the following information that affects the vehicle and transmits a signal to ABS actuator and electric unit (control unit). [Yaw rate/side/decel G sensor is integrated into the ABS actuator and electric unit (control unit).]

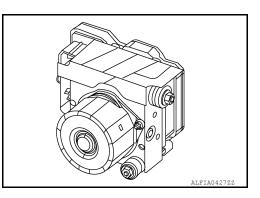
• Vehicle rotation angular velocity (yaw rate signal)

- Vehicle lateral acceleration (side G signal)
- Vehicle longitudinal acceleration (decel G signal)

Stop Lamp Switch

Detects the operation status of brake pedal and transmits converted electric signal to ABS actuator and electric unit (control unit).

JSFIA1143Z2



[WITHOUT ICC]

INFOID:0000000011241055

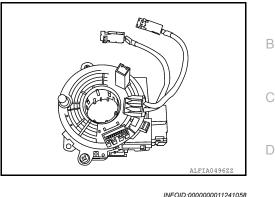
INFOID:000000011241056

< SYSTEM DESCRIPTION >

Steering Angle Sensor

Detects the following information and transmits steering angle signal to ABS actuator and electric unit (control unit) via CAN communication:

- Steering angle sensor malfunction signal
- Steering wheel rotation amount
- · Steering wheel rotation angular velocity
- Steering wheel rotation direction

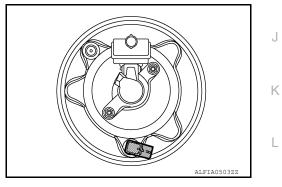


Brake Fluid Level Switch

Detects the brake fluid level in reservoir tank and transmits converted electric signal from combination meter to ABS actuator and electric unit (control unit) via CAN communication when brake fluid level is the specified level or less.



Detects the vacuum in brake booster and transmits converted electric signal to ABS actuator and electric unit (control unit).



Parking Brake Switch

Detects the operation status of parking brake switch and transmits converted electric signal from combination meter to ABS actuator and electric unit (control unit).

VDC OFF Switch

• This is an integrated switch with switches for other functions.



INFOID:0000000011241060

Р

M

Ν

INFOID:000000011241061

ALFIA0434Z

E

ALFTA05022

INFOID:0000000011241059

BRC

G

INFOID:0000000011241057

А

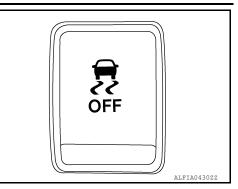
COMPONENT PARTS

< SYSTEM DESCRIPTION >

- Non-operational status or standby status of the following functions can be selected using VDC OFF switch. VDC OFF indicator lamp indicates the operation status of function (ON: Non-operational status, OFF: Standby status).
- Vehicle Dynamic Control function
- Traction Control System function
- Forward Emergency Braking function

NOTE:

- ABS function, EBD function operate.
- VDC OFF indicator lamp turns OFF (standby status) when the engine is started again after it is stopped once while VDC OFF indicator lamp is ON (non-operational status).



[WITHOUT ICC]

[WITHOUT ICC]

INFOID:000000011676134

А

В

J

Κ

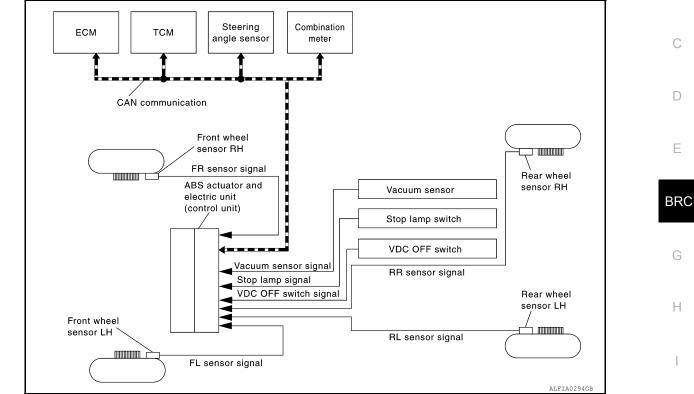
L

SYSTEM

System Description

< SYSTEM DESCRIPTION >

SYSTEM DIAGRAM



- The system switches fluid pressure of each brake caliper to increase, to hold, or to decrease according to signals from control unit in ABS actuator and electric unit (control unit). This control system is applied to VDC, TCS, ABS and EBD, hill start and brake assist functions.
- Fail-safe function is available for each function and is activated by each function when system malfunction occurs.

INPUT SIGNAL AND OUTPUT SIGNAL

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

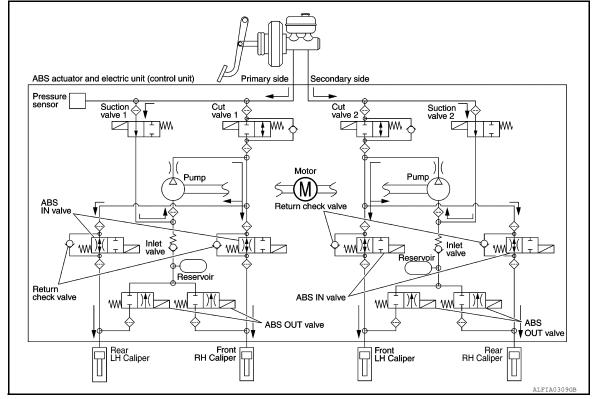
Component	Signal description	
Steering angle sensor	Transmits the steering angle sensor signal to ABS actuator and electric unit (control unit) via CAN communication.	
ECM	 Transmits the following signals to ABS actuator and electric unit (control unit) via CAN communication. Accelerator pedal position signal Engine speed signal Target throttle position signal 	
ТСМ	Transmits the current gear position signal to ABS actuator and electric unit (control unit) via CAN communication.	
Combination meter	 Transmits the following signals to ABS actuator and electric unit (control unit) via CAN communication. Brake fluid level switch signal Parking brake switch signal Receives the following signals from ABS actuator and electric unit (control unit) via CAN communication. ABS warning lamp signal Brake warning lamp signal VDC OFF indicator lamp signal Slip indicator lamp signal 	

< SYSTEM DESCRIPTION >

VALVE OPERATION (VDC AND TCS FUNCTIONS)

The control unit built in the ABS actuator and electric unit (control unit) controls fluid pressure of the brake calipers by operating each valve.

VDC and TCS Functions are Operating (Pressure Increases)



Name	Not activated	Pressure increases
Cut valve 1	Power supply is not supplied (open)	Power supply is supplied (close)
Cut valve 2	Power supply is not supplied (open)	Power supply is supplied (close)
Suction valve 1	Power supply is not supplied (close)	Power supply is supplied (open)
Suction valve 2	Power supply is not supplied (close)	Power supply is supplied (open)
ABS IN valve	Power supply is not supplied (open)	Power supply is not supplied (open)
ABS OUT valve	Power supply is not supplied (close)	Power supply is not supplied (close)
Each brake caliper (fluid pressure)	_	Pressure increases

Front RH brake caliper

• Brake fluid is conveyed to the pump from the master cylinder through suction valve 1 and is pressurized by the pump operation. The pressurized brake fluid is supplied to the front RH brake caliper through the ABS IN valve. For the left caliper, brake fluid pressure is maintained because the pressurization is unnecessary. The pressurization for the left caliper is controlled separately from the right caliper.

Front LH brake caliper

 Brake fluid is conveyed to the pump from the master cylinder through suction valve 2 and is pressurized by the pump operation. The pressurized brake fluid is supplied to the front LH brake caliper through the ABS IN valve. For the right caliper, brake fluid pressure is maintained because the pressurization is unnecessary. The pressurization for the right caliper is controlled separately from the left caliper.

Rear RH brake caliper

 Brake fluid is conveyed to the pump from the master cylinder through suction valve 2 and is pressurized by the pump operation. The pressurized brake fluid is supplied to the rear RH brake caliper through the ABS IN valve. For the left caliper, brake fluid pressure is maintained because the pressurization is unnecessary. The pressurization for the left caliper is controlled separately from the right caliper.

< SYSTEM DESCRIPTION >

[WITHOUT ICC]

А

В

Ε

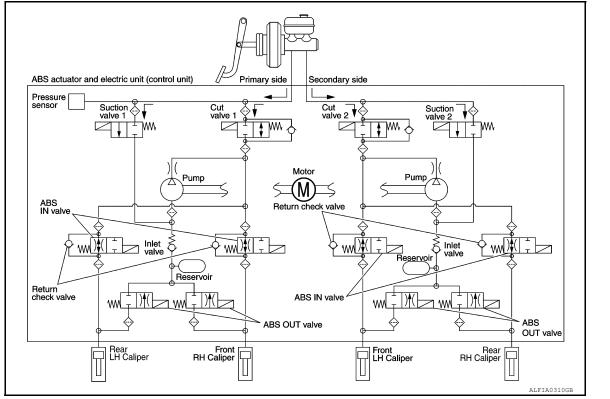
BRC

Н

Rear LH brake caliper

• Brake fluid is conveyed to the pump from the master cylinder through suction valve 1 and is pressurized by the pump operation. The pressurized brake fluid is supplied to the rear LH brake caliper through the ABS IN valve. For the right caliper, brake fluid pressure is maintained because the pressurization is unnecessary. The pressurization for the right caliper is controlled separately from the left caliper.

VDC and TCS Functions Start Operating (Pressure Holds)



Name	Not activated	Pressure holds
Cut valve 1	Power supply is not supplied (open)	Power supply is supplied (close)
Cut valve 2	Power supply is not supplied (open)	Power supply is supplied (close)
Suction valve 1	Power supply is not supplied (close)	Power supply is not supplied (close)
Suction valve 2	Power supply is not supplied (close)	Power supply is not supplied (close)
ABS IN valve	Power supply is not supplied (open)	Power supply is not supplied (open)
ABS OUT valve	Power supply is not supplied (close)	Power supply is not supplied (close)
Each brake caliper (fluid pressure)	_	Pressure holds

Front RH brake caliper

• Since the cut valve 1 and the suction valve 1 are closed, the front RH brake caliper, master cylinder, and reservoir are blocked. This maintains fluid pressure applied on the front RH brake caliper. The pressurization for the left caliper is controlled separately from the right caliper.

Front LH brake caliper

Since the cut valve 2 and the suction valve 2 are closed, the front LH brake caliper, master cylinder, and reservoir are blocked. This maintains fluid pressure applied on the front LH brake caliper. The pressurization for the right caliper is controlled separately from the left caliper.

Rear RH brake caliper

• Since the cut valve 2 and the suction valve 2 are closed, the rear RH brake caliper, master cylinder, and reservoir are blocked. This maintains fluid pressure applied on the rear RH brake caliper. The pressurization for the left caliper is controlled separately from the right caliper.

Rear LH brake caliper

oer

Ν

Ο

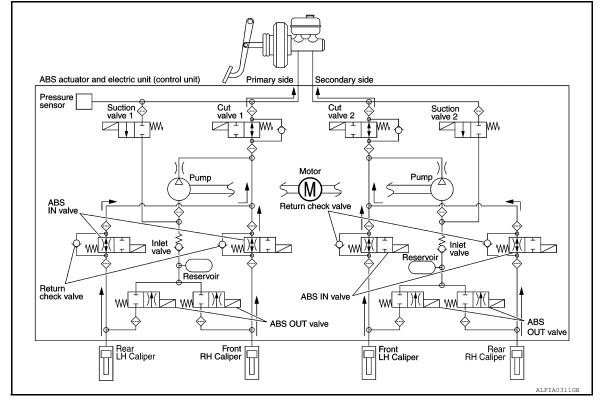
P

< SYSTEM DESCRIPTION >

[WITHOUT ICC]

Since the cut valve 1 and the suction valve 1 are closed, the rear LH brake caliper, master cylinder, and reservoir are blocked. This maintains fluid pressure applied on the rear LH brake caliper. The pressurization for the right caliper is controlled separately from the left caliper.

VDC and TCS Functions Operating (Pressure Decreases)



Name	Not activated	During pressure decreases
Cut valve 1	Power supply is not supplied (open)	Power supply is not supplied (open)
Cut valve 2	Power supply is not supplied (open)	Power supply is not supplied (open)
Suction valve 1	Power supply is not supplied (close)	Power supply is not supplied (close)
Suction valve 2	Power supply is not supplied (close)	Power supply is not supplied (close)
ABS IN valve	Power supply is not supplied (open)	Power supply is not supplied (open)
ABS OUT valve	Power supply is not supplied (close)	Power supply is not supplied (close)
Each brake caliper (fluid pressure)	_	Pressure decreases

Front RH brake caliper

 Since the suction valve 1 and the ABS OUT valve are closed and the cut valve 1 and the ABS IN valve are open, the fluid pressure applied on the front RH brake caliper is reduced by supplying the fluid pressure to the master cylinder via the ABS IN valve and the cut valve 1. The pressurization for the right caliper is controlled separately from the left caliper.

Front LH brake caliper

 Since the suction valve 2 and the ABS OUT valve are closed and the cut valve 2 and the ABS IN valve are open, the fluid pressure applied on the front LH brake caliper is reduced by supplying the fluid pressure to the master cylinder via the ABS IN valve and the cut valve 2. The pressurization for the left caliper is controlled separately from the right caliper.

Rear RH brake caliper

 Since the suction valve 2 and the ABS OUT valve are closed and the cut valve 2 and the ABS IN valve are open, the fluid pressure applied on the rear RH brake caliper is reduced by supplying the fluid pressure to the master cylinder via the ABS IN valve and the cut valve 2. The pressurization for the right caliper is controlled separately from the left caliper.

< SYSTEM DESCRIPTION >

Rear LH brake caliper
Since the suction valve 1 and the ABS OUT valve are closed and the cut valve 1 and the ABS IN valve are open, the fluid pressure applied on the rear LH brake caliper is reduced by supplying the fluid pressure to the master cylinder via the ABS IN valve and the cut valve 1. The pressurization for the left caliper is controlled separately from the right caliper.

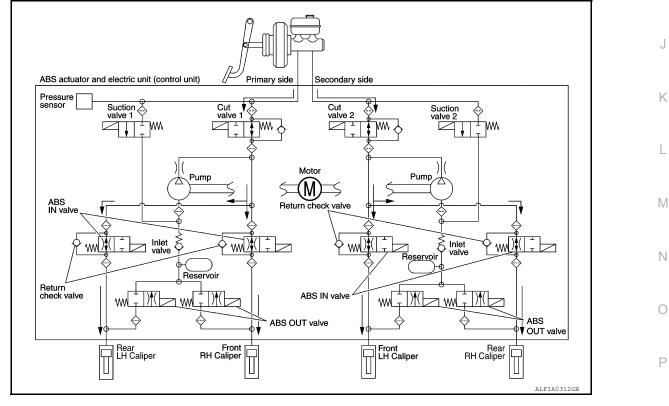
Component	Parts	and	Function
-----------	-------	-----	----------

Component	Function	(
Pump	Returns the brake fluid reserved in reservoir to master cylinder by reducing pressure.	
Motor	Activates the pump according to signals from ABS actuator and electric unit (control unit).	
Cut valve 1 Cut valve 2	Shuts off the ordinary brake line from master cylinder.	
Suction valve 1 Suction valve 2	Supplies the brake fluid from master cylinder to the pump.	E
ABS IN valve	Switches the fluid pressure line to increase or hold according to signals from control unit.	
ABS OUT valve	Switches the fluid pressure line to increase, hold or decrease according to signals from control unit.	
Return check valve	Returns the brake fluid from brake caliper to master cylinder by bypassing orifice of each valve when brake is released.	BF
Reservoir	Temporarily reserves the brake fluid drained from brake caliper, so that pressure efficiently decreases when decreasing pressure of brake caliper.	(
Pressure sensor	Detects the brake fluid pressure and transmits signal to ABS actuator and electric unit (control unit).	

VALVE OPERATION (ABS AND EBD FUNCTIONS)

The control unit built into the ABS actuator and electric unit (control unit) controls fluid pressure of the brake calipers by operating each valve.

Brake Pedal Applied or ABS Function Operating (Pressure Increases)



Name	Not activated	During pressure increases
Cut valve 1	Power supply is not supplied (open)	Power supply is not supplied (open)
Cut valve 2	Power supply is not supplied (open)	Power supply is not supplied (open)
Suction valve 1	Power supply is not supplied (close)	Power supply is not supplied (close)

Revision: October 2014

В

Н

А

< SYSTEM DESCRIPTION >

[WITHOUT ICC]

Name	Not activated	During pressure increases
Suction valve 2	Power supply is not supplied (close)	Power supply is not supplied (close)
ABS IN valve	Power supply is not supplied (open)	Power supply is not supplied (open)
ABS OUT valve	Power supply is not supplied (close)	Power supply is not supplied (close)
Each brake caliper (fluid pressure)		Pressure increases

Front RH brake caliper

 When the cut valve 1 and the ABS IN valve opens, brake fluid is supplied to the front RH brake caliper from the master cylinder through the ABS IN valve. Brake fluid does not flow into the reservoir because the ABS OUT valve is closed.

Front LH brake caliper

· When the cut valve 2 and the ABS IN valve opens, brake fluid is supplied to the front LH brake caliper from the master cylinder through the ABS IN valve. Brake fluid does not flow into the reservoir because the ABS OUT valve is closed.

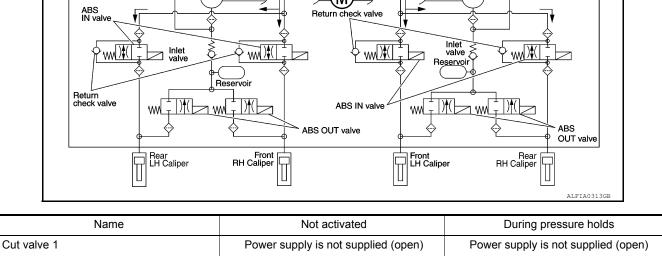
Rear RH brake caliper

 When the cut valve 2 and the ABS IN valve opens, brake fluid is supplied to the rear RH brake caliper from the master cylinder through the ABS IN valve. Brake fluid does not flow into the reservoir because the ABS OUT valve is closed.

Rear LH brake caliper

 When the cut valve 1 and the ABS IN valve opens, brake fluid is supplied to the rear LH brake caliper from the master cylinder through the ABS IN valve. Brake fluid does not flow into the reservoir because the ABS OUT valve is closed.

ABS Function Starts Operating (Pressure Holds) ABS actuator and electric unit (control unit) Primary side Secondary side Pressure senso Cut valve Suction Cut valve 2 Suction valve ww ww Motor Pump Pump M ABS Return check valve Inlet · ww))) ww)**t**(·wv])**‡**(Inlet valve ₩)**\$**(valve \geq Reservoi



Cut valve 2	Power supply is not supplied (open)	Power supply is not supplied (open)	
Suction valve 1	Power supply is not supplied (close)	Power supply is not supplied (close)	
Suction valve 2	Power supply is not supplied (close)	Power supply is not supplied (close)	

Revision: October 2014

< SYSTEM DESCRIPTION >

Name	Not activated	During pressure holds	_
ABS IN valve	Power supply is not supplied (open) Power supply is supplied (close)		A
ABS OUT valve	Power supply is not supplied (close)	Power supply is not supplied (close)	-
Each brake caliper (fluid pressure)	-	Pressure holds	В

Front RH brake caliper

• Since the ABS IN valve and the ABS OUT valve are closed, the front RH brake caliper, master cylinder, and reservoir are blocked. This maintains fluid pressure applied on the front RH brake caliper.

Front LH brake caliper

• Since the ABS IN valve and the ABS OUT valve are closed, the front LH brake caliper, master cylinder, and reservoir are blocked. This maintains fluid pressure applied on the front LH brake caliper.

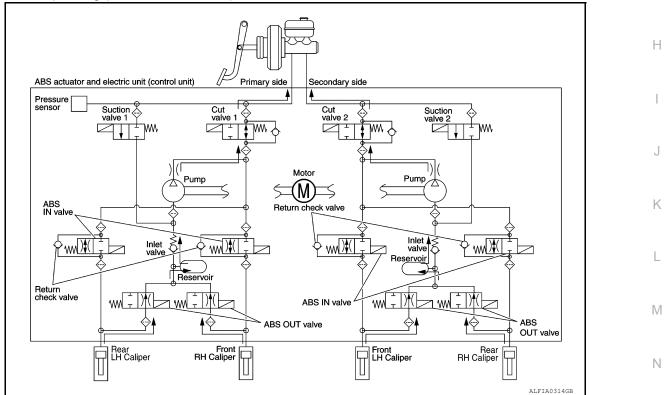
Rear RH brake caliper

• Since the ABS IN valve and the ABS OUT valve are closed, the rear RH brake caliper, master cylinder, and reservoir are blocked. This maintains fluid pressure applied on the rear RH brake caliper.

Rear LH brake caliper

 Since the ABS IN valve and the ABS OUT valve are closed, the rear LH brake caliper, master cylinder, and reservoir are blocked. This maintains fluid pressure applied on the rear LH brake caliper.

ABS Function Operating (Pressure Decreases)



Name	Not activated	During pressure decreases	
Cut valve 1	Power supply is not supplied (open)	Power supply is not supplied (open)	
Cut valve 2	Power supply is not supplied (open)	Power supply is not supplied (open)	
Suction valve 1	Power supply is not supplied (close) Power supply is no		
Suction valve 2	Power supply is not supplied (close)	Power supply is not supplied (close)	
ABS IN valve	Power supply is not supplied (open) Power supply is supplied		
ABS OUT valve	Power supply is not supplied (close) Power supply is supplied		
Each brake caliper (fluid pressure)	_	Pressure decreases	

Revision: October 2014

2015 Murano

[WITHOUT ICC]

D

Ε

BRC

< SYSTEM DESCRIPTION >

Front RH brake caliper

 Since the ABS IN value is closed and the ABS OUT value is opened, fluid pressure applied on the front RH brake caliper is supplied to the reservoir through the ABS OUT value. This fluid pressure decreases when sent to the master cylinder by the pump.

Front LH brake caliper

 Since the ABS IN valve is closed and the ABS OUT valve is opened, fluid pressure applied on the front LH brake caliper is supplied to the reservoir through the ABS OUT valve. This fluid pressure decreases when sent to the master cylinder by the pump.

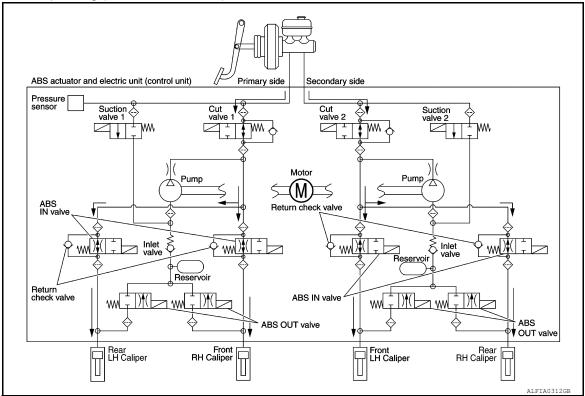
Rear RH brake caliper

 Since the ABS IN value is closed and the ABS OUT value is opened, fluid pressure applied on the rear RH brake caliper is supplied to the reservoir through the ABS OUT value. This fluid pressure decreases when sent to the master cylinder by the pump.

Rear LH brake caliper

• Since the ABS IN valve is closed and the ABS OUT valve is opened, fluid pressure applied on the rear LH brake caliper is supplied to the reservoir through the ABS OUT valve. This fluid pressure decreases when sent to the master cylinder by the pump.

ABS Function Operating (Pressure Increases)



Name	Not activated	During pressure increases	
Cut valve 1	Power supply is not supplied (open)	Power supply is not supplied (open)	
Cut valve 2	Power supply is not supplied (open)	Power supply is not supplied (open)	
Suction valve 1 Power supply is not supplied (close) Po		Power supply is not supplied (close)	
Suction valve 2	Power supply is not supplied (close)	Power supply is not supplied (close)	
ABS IN valve	Power supply is not supplied (open)	Power supply is not supplied (open)	
ABS OUT valve	Power supply is not supplied (close)	Power supply is not supplied (close)	
Each brake caliper (fluid pressure)		Pressure increases	

Front RH brake caliper

 Brake fluid is supplied to the front RH brake caliper from the master cylinder through the cut valve 1 and the ABS IN valve. Since the suction valve 1 and the ABS OUT valve is closed, the fluid does not flow into the

< SYSTEM DESCRIPTION >

[WITHOUT ICC]

А

В

Ε

reservoir. The amount of brake fluid supplied to the front RH brake caliper from the master cylinder is controlled according to time that the ABS IN valve is not energized (time that the ABS IN valve is open).

Front LH brake caliper

 Brake fluid is supplied to the front LH brake caliper from the master cylinder through the cut valve 2 and the ABS IN valve. Since the suction valve 2 and the ABS OUT valve is closed, the fluid does not flow into the reservoir. The amount of brake fluid supplied to the front LH brake caliper from the master cylinder is controlled according to time that the ABS IN valve is not energized (time that the ABS IN valve is open).

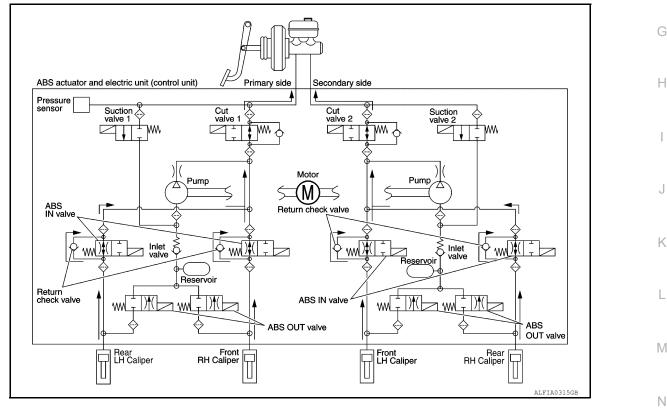
Rear RH brake caliper

 Brake fluid is supplied to the rear RH brake caliper from the master cylinder through the cut valve 2 and the ABS IN valve. Since the suction valve 2 and the ABS OUT valve is closed, the fluid does not flow into the reservoir. The amount of brake fluid supplied to the rear RH brake caliper from the master cylinder is con-D trolled according to time that the ABS IN valve is not energized (time that the ABS IN valve is open).

Rear I H brake caliper

 Brake fluid is supplied to the rear LH brake caliper from the master cylinder through the cut valve 1 and the ABS IN valve. Since the suction valve 1 and the ABS OUT valve is closed, the fluid does not flow into the reservoir. The amount of brake fluid supplied to the rear LH brake caliper from the master cylinder is controlled according to time that the ABS IN valve is not energized (time that the ABS IN valve is open). BRC

Brake Release



Name	Not activated	During brake release
Cut valve 1	Power supply is not supplied (open)	Power supply is not supplied (open)
Cut valve 2	Power supply is not supplied (open)	Power supply is not supplied (open)
Suction valve 1	Power supply is not supplied (close)	Power supply is not supplied (close)
Suction valve 2	Power supply is not supplied (close)	Power supply is not supplied (close)
ABS IN valve	Power supply is not supplied (open)	Power supply is not supplied (open)
ABS OUT valve	Power supply is not supplied (close)	Power supply is not supplied (close)
Each brake caliper (fluid pressure)	_	Pressure decreases

Front RH brake caliper

Revision: October 2014

< SYSTEM DESCRIPTION >

• Brake fluid is supplied to the front RH brake caliper through the return check valve of the ABS IN valve and the cut valve 1, and returns to the master cylinder.

Front LH brake caliper

• Brake fluid is supplied to the front LH brake caliper through the return check valve of the ABS IN valve and the cut valve 2, and returns to the master cylinder.

Rear RH brake caliper

• Brake fluid is supplied to the rear RH brake caliper through the return check valve of the ABS IN valve and the cut valve 2, and returns to the master cylinder.

Rear LH brake caliper

• Brake fluid is supplied to the rear LH brake caliper through the return check valve of the ABS IN valve and the cut valve 1, and returns to the master cylinder.

Component Parts and Function

Component	Function	
Pump	Returns the brake fluid reserved in reservoir to master cylinder by reducing pressure.	
Motor	Activates the pump according to signals from ABS actuator and electric unit (control unit).	
Cut valve 1 Cut valve 2	Shuts off the ordinary brake line from master cylinder.	
Suction valve 1 Suction valve 2	Supplies the brake fluid from master cylinder to the pump.	
ABS IN valve	Switches the fluid pressure line to increase or hold according to signals from control unit.	
ABS OUT valve	Switches the fluid pressure line to increase, hold or decrease according to signals from control unit.	
Return check valve	Returns the brake fluid from brake caliper to master cylinder by bypassing orifice of each valve v brake is released.	
Reservoir	Temporarily reserves the brake fluid drained from brake caliper, so that pressure efficiently decreas- es when decreasing pressure of brake caliper.	
Pressure sensor	Detects the brake fluid pressure and transmits signal to ABS actuator and electric unit (control unit).	

CONDITIONS FOR INDICATOR LAMP ILLUMINATION

- Turns ON when VDC and TCS functions are switched to non-operational status (OFF) by VDC OFF switch.
- Turns ON when ignition switch turns ON and turns OFF when the system is normal, for bulb check purposes.

Condition (status)	VDC OFF indicator lamp	Slip indicator lamp
Ignition switch OFF	OFF	OFF
For approx. 1 second after the ignition switch is turned ON	ON	ON
Approx. 2 seconds after ignition switch is turned ON (when the system is in normal op- eration)	OFF	OFF
When VDC OFF switch is ON (VDC function and TCS function are OFF)	ON	OFF
VDC function is malfunctioning	OFF	ON
TCS function is malfunctioning	OFF	ON

CONDITIONS FOR WARNING LAMP ILLUMINATION

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

Condition (status)	ABS warning lamp	Brake warning lamp
Ignition switch OFF	OFF	OFF
For approx. 1 second after the ignition switch is turned ON	ON	ON

< SYSTEM DESCRIPTION >

[WITHOUT ICC]

Condition (status)	ABS warning lamp	Brake warning lamp	_
Approx. 2 second after ignition switch is turned ON (when the system is in normal op- eration)	OFF	OFF	— A
After engine starts	OFF	OFF	В
When parking brake operates (parking brake switch ON)	OFF	ON	
When brake fluid is less than the specified level (brake fluid level switch ON)	OFF	ON	С
When vacuum sensor is malfunctioning	OFF	ON	
VDC function is malfunctioning	OFF	OFF	D
TCS function is malfunctioning	OFF	OFF	_
ABS function is malfunctioning	ON	OFF	E
EBD function is malfunctioning	ON	ON	
VDC function is operating	OFF	OFF	
TCS function is operating	OFF	OFF	BRC
Hill start assist function	OFF	OFF	
Brake assist	OFF	OFF	G

Fail-safe

INFOID:000000011820454

Н

J

Μ

Ν

Ο

Ρ

VDC AND TCS FUNCTIONS

VDC warning lamp in combination meter turns ON when a malfunction occurs in system [ABS actuator and electric unit (control unit)]. The control is suspended for VDC and TCS functions. However, ABS and EBD functions operate normally.

ABS FUNCTION

ABS warning lamp and SLIP indicator lamp in combination meter turn ON when a malfunction occurs in system [ABS actuator and electric unit (control unit)]. The control is suspended for VDC, TCS and ABS functions. However, EBD functions operate normally.

EBD FUNCTION

ABS warning lamp, brake warning lamp and SLIP indicator lamp in combination meter turn ON when a malfunction occurs in system [ABS actuator and electric unit (control unit)]. The control is suspended for VDC, TCS, ABS and EBD functions.

< SYSTEM DESCRIPTION >

[WITHOUT ICC]

DTC	Malfunction detected condition	Fail-safe condition
C1101	When an open circuit is detected in rear RH wheel sensor circuit.	
C1102	When an open circuit is detected in rear LH wheel sensor circuit.	
C1103	When an open circuit is detected in front RH wheel sensor circuit.	
C1104	When an open circuit is detected in front LH wheel sensor circuit.	
C1105	 When a short circuit is detected in rear RH wheel sensor circuit. When power supply voltage of rear RH wheel sensor is in following state. Rear RH wheel sensor power supply voltage: 7.2 V ≥ Rear RH wheel sensor power supply voltage 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	 When a short circuit is detected in rear LH wheel sensor circuit. When power supply voltage of rear LH wheel sensor is in following state. Rear LH wheel sensor power supply voltage: 7.2 V ≥ Rear LH wheel sensor power supply voltage 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. 	 The following functions are suspended: VDC ABS EBD (only when both rear whee are malfunctioning) Brake assist function Hill start assist function
C1107	 When a short circuit is detected in front RH wheel sensor circuit. When power supply voltage of front RH wheel sensor is in following state. Front RH wheel sensor power supply voltage: 7.2 V ≥ Front RH wheel sensor power supply voltage When distance between front RH wheel sensor and front RH wheel sensor rotor is large. When installation of front RH wheel sensor or front RH wheel sensor rotor is not normal. 	
C1108	 When a short circuit is detected in front LH wheel sensor circuit. When power supply voltage of front LH wheel sensor is in following state. Front LH wheel sensor power supply voltage: 7.2 V ≥ Front LH wheel sensor power supply voltage 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. 	
C1109	 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. 	The following functions are suspended: • VDC
C1110	When there is an internal malfunction in the ABS actuator and electric unit (control unit).	 TCS ABS EBD Brake assist function Hill start assist function
C1111	When a malfunction is detected in motor or motor relay.	The following functions are sus- pended: • VDC • TCS • ABS • Brake assist function • Hill start assist function
C1113	When a malfunction is detected in longitudinal G signal.	The following functions are sus- pended: • VDC • TCS • Brake assist function • Hill start assist function

< SYSTEM DESCRIPTION >

[WITHOUT ICC]

DTC	Malfunction detected condition	Fail-safe condition
C1115	When difference in wheel speed between any wheel and others is detected when the vehicle is driven, because of installation of tires other than specified.	The following functions are sus- pended: • VDC • TCS • ABS • EBD • Brake assist function • Hill start assist function
C1116	When stop lamp switch signal is not input when brake pedal operates.	The following functions are sus- pended: • VDC • TCS • Brake assist function • Hill start assist function
C1120	When a malfunction is detected in front LH ABS IN valve.	
C1121	When a malfunction is detected in front LH ABS OUT valve.	The following functions are sus-
C1122	When a malfunction is detected in front RH ABS IN valve.	pended: • VDC
C1123	When a malfunction is detected in front RH ABS OUT valve.	• TCS
C1124	When a malfunction is detected in rear LH ABS IN valve.	• ABS • EBD
C1125	When a malfunction is detected in rear LH ABS OUT valve.	Brake assist function
C1126	When a malfunction is detected in rear RH ABS IN valve.	Hill start assist function
C1127	When a malfunction is detected in rear RH ABS OUT valve.	
C1130	When a malfunction is detected in ECM system.	The following functions are sus- pended: • VDC • TCS • Hill start assist function
C1140	When a malfunction is detected in actuator relay.	The following functions are sus- pended: • VDC • TCS • ABS • EBD • Brake assist function • Hill start assist function
C1142	When a malfunction is detected in VDC pressure sensor.	
C1143	When a malfunction is detected in steering angle sensor.	The following functions are sus-
C1144	When neutral position adjustment of steering angle sensor is not complete.	• VDC
C1145	When a malfunction is detected in yaw rate signal, or signal line of yaw rate/side/ decel G sensor is open or shorted.	TCS Brake assist function
C1146	When a malfunction is detected in side G signal, or signal line of yaw rate/side/decel G sensor is open or shorted.	Hill start assist function
C1153	When ABS actuator and electric unit (control unit) is malfunctioning. (Pressure increase is too much or too little.)	The following functions are suspended:
C1154	When an open or short is detected between the ABS actuator and electrical unit (control unit) and TCM	 VDC TCS ABS Brake assist function Hill start assist function

< SYSTEM DESCRIPTION >

[WI	тно	UT	ICC]

DTC	Malfunction detected condition	Fail-safe condition	
C1155	When brake fluid level low signal is detected.		
C1160	When calibration of yaw rate/side/decel G sensor is not complete.	The following functions are sus- pended:	
C1164	When a malfunction is detected in cut valve 1.	• VDC	
C1165	When a malfunction is detected in cut valve 2.	TCS Brake assist function	
C1166	When a malfunction is detected in suction valve 1.	Hill start assist function	
C1167	When a malfunction is detected in suction valve 2.		
C1170	When the information in ABS actuator and electric unit (control unit) is not the same.	The following functions are sus- pended: • VDC • TCS • ABS • Brake assist function • Hill start assist function	
C1197	When a malfunction is detected in vacuum sensor.		
C1198	 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. 	Electrical vacuum assistance of brake booster is suspended.	
C1199	When brake booster vacuum is approx. 0 kPa (0 mmHg) during engine running.	_	
C119A	When a malfunction is detected in supply power voltage of vacuum sensor. Electrical vacuum brake booster is s		
U1000	When CAN communication signal is not continuously transmitted or received for 2 seconds or more.	The following functions are suspended:	
U1002	When ABS actuator and electric unit (control unit) is not transmitting or receiving CAN communication signal for 2 seconds or less.	VDCTCSHill start assist function	

VDC FUNCTION

VDC FUNCTION : System Description

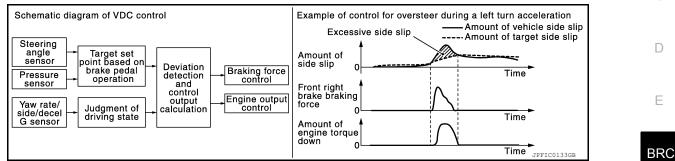
INFOID:000000011241065

SYSTEM DIAGRAM

]
VDC OFF switch]	-	CAN communication line
Stop lamp switch]	-	
Front wheel sensor RH		ABS actuator	тсм
Front wheel sensor LH		and electric unit (control unit)	Steering angle sense
Rear wheel sensor RH		-	
Rear wheel sensor LH		-	Combination meter
Vacuum Sensor]	-	

< SYSTEM DESCRIPTION >

- Side slip or tail slip may occur while driving on a slippery road or intending urgent evasive driving. VDC function detects side slip status using each sensor when side slip or tail slip is about to occur and improves vehicle stability by brake control and engine output control during driving.
- In addition to ABS function, EBD function and TCS function, target side slip amount is calculated according to steering operation amount from steering angle sensor and brake operation amount from brake pressure sensor. By comparing this information with vehicle side slip amount that is calculated from information from yaw rate/side/decel G sensor and wheel sensor, vehicle driving conditions (conditions of understeer or oversteer) are judged and vehicle stability is improved by brake force control on all wheels and engine output control.



- VDC function can be switched to non-operational status (OFF) by operating VDC OFF switch. In this case, VDC OFF indicator lamp turns ON.
- Control unit portion automatically improves driving stability by performing brake force control as well as engine output control, by transmitting drive signal to actuator portion according to difference between target side slip amount and vehicle side slip amount
- VDC warning lamp blinks while VDC function is in operation and indicates to the driver that the function is in operation.
- CONSULT can be used to diagnose the system diagnosis.
- Fail-safe function is adopted. When a malfunction occurs in VDC function, the control is suspended for VDC function, TCS function, brake assist function, hill start assist function and brake force distribution function. The vehicle status becomes the same as models without VDC function, TCS function, brake assist function and hill start assist function. However, ABS function and EBD function are operated normally. Refer to <u>BRC-47, "Fail-Safe"</u>.

INPUT SIGNAL AND OUTPUT SIGNAL

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

Component	Signal description		
ECM	 Mainly transmits the following signals to ABS actuator and electric unit (control unit) via CAN communication: Accelerator pedal position signal Engine speed signal Engine torque signal Mainly receives the following signal from ABS actuator and electric unit (control unit) via CAN communication: Engine torque request signal 		
ТСМ	 Mainly transmits the following signal to ABS actuator and electric unit (control unit) via CAN communication: Current gear position signal 		
Combination meter	 Mainly receives the following signals from ABS actuator and electric unit (control unit) via CAN communication: Brake fluid level switch signal Parking brake switch signal Mainly receives the following signals from ABS actuator and electric unit (control unit) via CAN communication: VDC warning lamp signal VDC OFF indicator lamp signal 		
Steering angle sensor	 Mainly transmits the following signals to ABS actuator and electric unit (control unit) via CAN communication: Steering angle sensor signal Steering angle sensor malfunction signal 		

OPERATION CHARACTERISTICS

А

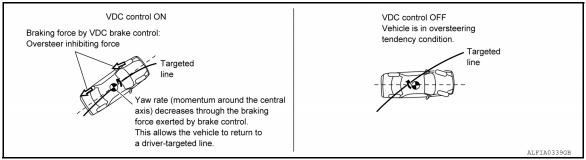
В

Н

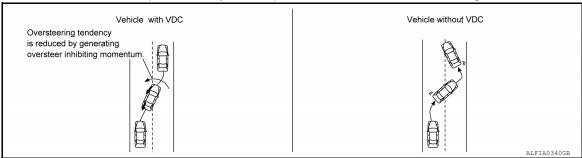
< SYSTEM DESCRIPTION >

VDC Function That Prevents Oversteer Tendency

• During cornering, brake force (brake fluid pressure) is applied on front wheel and rear wheel on the outer side of turn. Momentum directing towards the outer side of turn is generated. Oversteer is prevented.

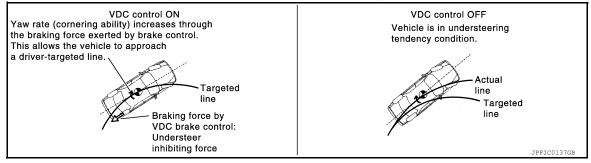


• Changing driving lane on a slippery road when oversteer tendency is judged large, engine output is controlled as well as brake force (brake fluid pressure) of 4 wheels. Oversteer tendency decreases.

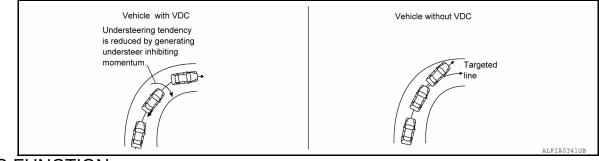


VDC Function That Prevents Understeer Tendency

• During cornering, brake force (brake fluid pressure) is applied on front wheel and rear wheel on the inner side of turn. Momentum directing towards the inner side of turn is generated. Understeer is prevented.



• Applying braking during cornering on a slippery road when understeer tendency is judged large, engine output is controlled as well as brake force (brake fluid pressure) of four wheels. Understeer tendency decreases.



TCS FUNCTION

< SYSTEM DESCRIPTION >

TCS FUNCTION : System Description

[WITHOUT ICC]

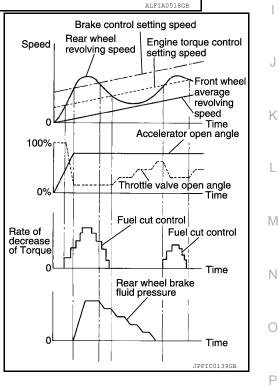
INFOID:000000011241066

А

SYSTEM DIAGRAM

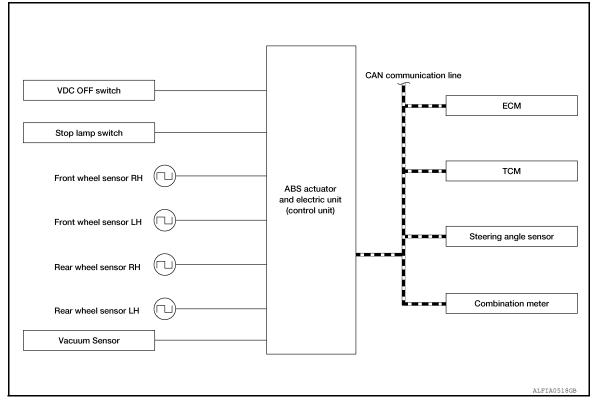
			CAN communication line	
VDC OFF switch]			
	_			ECM
Stop lamp switch				
Front wheel sensor RH		ABS actuator		гсм
ront wheel sensor LH		and electric unit (control unit)	Steering	angle sensor
Rear wheel sensor RH				
Rear wheel sensor LH			Combin	ation meter
Vacuum Sensor]			

- Wheel spin status of drive wheel is detected by wheel sensor of 4 wheels. Engine output and transmission shift status are controlled so that slip rate of drive wheels is in appropriate level. When wheel spin occurs on drive wheel, ABS actuator and electric unit (control unit) performs brake force control of LH and RH drive wheels (applies brake force by increasing brake fluid pressure of drive wheel) and decreases engine torque by engine torque control. Wheel spin amount decreases. Engine torque is controlled to appropriate level.
- TCS function can be switched to non-operational status (OFF) by operating VDC OFF switch. In this case, VDC OFF indicator lamp turns ON.
- VDC warning lamp blinks while TCS function is in operation and indicates to the driver that the function is in operation.
- CONSULT can be used to diagnose the system diagnosis.
- Fail-safe function is adopted. When a malfunction occurs in TCS function, the control is suspended for VDC function, TCS function, brake assist function and hill start assist function. The vehicle status becomes the same as models without VDC function, TCS function, brake assist function and hill start assist function. However, ABS function and EBD function are operated normally. Refer to <u>BRC-47, "Fail-Safe"</u>.



< SYSTEM DESCRIPTION >

SYSTEM DIAGRAM



INPUT SIGNAL AND OUTPUT SIGNAL

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

Component	Signal description		
ECM	 Mainly transmits the following signals to ABS actuator and electric unit (control unit) via CAN communication: Accelerator pedal position signal Engine speed signal Engine torque signal Mainly receives the following signal from ABS actuator and electric unit (control unit) via CAN communication: Engine torque request signal 		
ТСМ	Mainly transmits the following signal to ABS actuator and electric unit (control unit) via CAN communication: Current gear position signal 		
Combination meter	 Mainly receives the following signals from ABS actuator and electric unit (control unit) via CAN communication: Brake fluid level switch signal Parking brake switch signal Mainly receives the following signals from ABS actuator and electric unit (control unit) via CAN communication: VDC warning lamp signal VDC OFF indicator lamp signal 		
Steering angle sensor	 Mainly transmits the following signals to ABS actuator and electric unit (control unit) via CAN communication: Steering angle sensor signal Steering angle sensor malfunction signal 		

ABS FUNCTION

< SYSTEM DESCRIPTION >

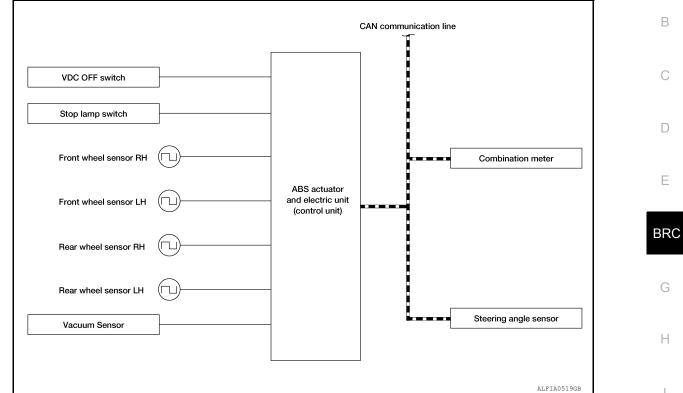
ABS FUNCTION : System Description

INFOID:0000000011241067

А

[WITHOUT ICC]

SYSTEM DIAGRAM

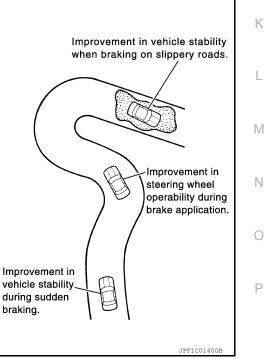


- By preventing wheel lock through brake force (brake fluid pressure) control that is electronically controlled by detecting wheel speed during braking, stability during emergency braking is improved so that obstacles can be easily bypassed by steering operation.
- During braking, control units calculate wheel speed and pseudo-vehicle speed and transmits pressure increase, hold or decrease signals to actuator portion according to wheel slip status.
- The following effects are obtained by preventing wheel lock during braking:
- Vehicle tail slip is prevented during braking when driving straight.
- Understeer and oversteer tendencies are moderated during braking driving on a corner.
- Obstacles may be easily bypassed by steering operation during braking.
- · CONSULT can be used to diagnose the system diagnosis.
- Fail-safe function is adopted. When a malfunction occurs in ABS function, the control is suspended for VDC function, TCS function, ABS function and hill start assist function. The vehicle status becomes the same as models without VDC function, TCS function, ABS function, brake assist function and hill start assist function. However, EBD function is operated normally. Refer to <u>BRC-47</u>, <u>"Fail-Safe"</u>.

NOTE:

- ABS has the characteristics as described here. This is not a device that helps reckless driving.
- To stop vehicle efficiently, ABS does not operate and ordinary brake operates at low speed [approx. 10 km/h (6 MPH) or less, but differs subject to road conditions].
- Self-diagnosis is performed immediately after engine starts and when vehicle initially is driven [by vehicle speed approx. 15 km/h (9 MPH)]. Motor sounds are generated during self-diagnosis. In addi-

tion, brake pedal may be feel heavy when depressing brake pedal lightly. These symptoms are not malfunctions.



Revision: October 2014

INFOID:000000011241068

< SYSTEM DESCRIPTION >

INPUT SIGNAL AND OUTPUT SIGNAL

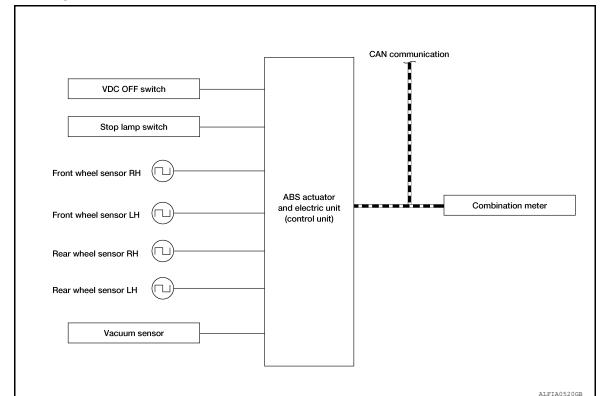
Major signal transmission between each unit via communication lines is shown in the following table:

Component	Signal description	
Combination meter	 Mainly receives the following signals from ABS actuator and electric unit (control unit) via CAN communication: Brake fluid level switch signal Parking brake switch signal Mainly receives the following signals from ABS actuator and electric unit (control unit) via CAN communication: ABS warning lamp signal VDC warning lamp signal VDC OFF indicator lamp signal 	
Steering angle sensor	 Mainly transmits the following signals to ABS actuator and electric unit (control unit) via CAN communication: Steering angle sensor signal Steering angle sensor malfunction signal 	

EBD FUNCTION

EBD FUNCTION : System Description

SYSTEM DIAGRAM

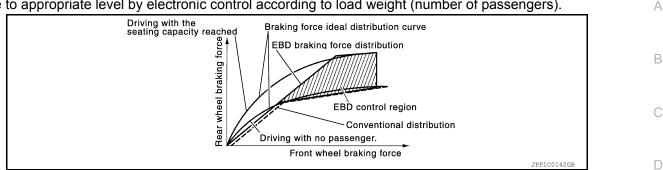


• By preventing rear wheel slip increase through rear wheel brake force (brake fluid pressure) control that is electronically controlled when slight slip on front and rear wheels is detected during braking, stability during braking is improved.

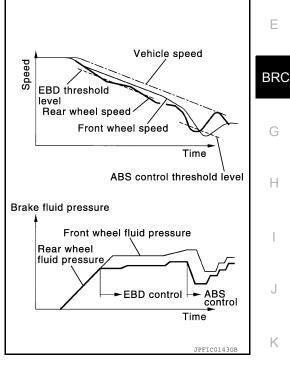
< SYSTEM DESCRIPTION >

[WITHOUT ICC]

EBD function is expanded and developed from conventional ABS function and corrects rear wheel brake force to appropriate level by electronic control according to load weight (number of passengers).



- During braking, control unit portion compares slight slip on front and rear wheels by wheel speed sensor signal, transmits drive signal to actuator portion when rear wheel slip exceeds front wheel slip for the specified value or more, and controls rear wheel brake force (brake fluid pressure) so that increase of rear wheel slip is prevented and slips on front wheel and rear wheel are nearly equalized. ABS control is applied when slip on each wheel increases and wheel speed is the threshold value of ABS control or less.
- CONSULT can be used to diagnose the system diagnosis.
- Fail-safe function is adopted. When a malfunction occurs in EBD function, the control is suspended for VDC function, TCS function, ABS function, EBD function, brake assist function and hill start assist function. The vehicle status becomes the same as models without VDC function, TCS function, ABS function, EBD function, brake assist function and hill start assist function. Refer to <u>BRC-47</u>. <u>"Fail-Safe"</u>.



INPUT SIGNAL AND OUTPUT SIGNAL

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

Component	Signal description	
Combination meter	 Mainly receives the following signals from ABS actuator and electric unit (control unit) via CAN communication: VDC warning lamp signal 	ľ
	ABS warning lamp signalBrake warning lamp signal	ľ

BRAKE ASSIST FUNCTION

О

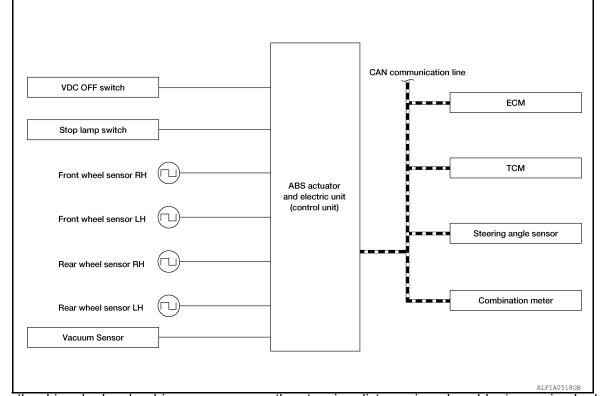
< SYSTEM DESCRIPTION >

BRAKE ASSIST FUNCTION : System Description

INFOID:000000011241070

[WITHOUT ICC]

SYSTEM DIAGRAM



- When the driver brakes hard in an emergency, the stopping distance is reduced by increasing brake fluid pressure.
- Fail-safe function is adopted. When a malfunction occurs in brake assist function, the control is suspended for VDC function, TCS function, brake assist function and hill start assist function. The vehicle status becomes the same as models without VDC function, TCS function, brake assist function and hill start assist function and hill start assist function. However, ABS function and EBD function are operated normally. Refer to <u>BRC-47</u>, "Fail-Safe".

INPUT SIGNAL AND OUTPUT SIGNAL

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

Component	Signal description		
ECM	 Mainly transmits the following signal to ABS actuator and electric unit (control unit) via CAN communication: Accelerator pedal position signal Engine speed signal Engine torque signal Mainly receives the following signal from ABS actuator and electric unit (control unit) via CAN communication: Engine torque request signal 		
ТСМ	 Mainly transmits the following signal to ABS actuator and electric unit (control unit) via CAN communication: Current gear position signal 		

SYSTEM

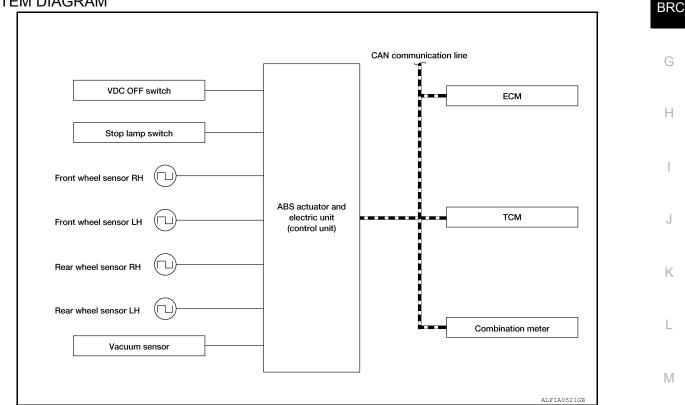
< SYSTEM DESCRIPTION >

Component	Signal description	
Combination meter	 Mainly receives the following signals from ABS actuator and electric unit (control unit) via CAN communication: Brake fluid level switch signal Parking brake switch signal Mainly receives the following signals from ABS actuator and electric unit (control unit) via CAN communication: VDC warning lamp signal VDC OFF indicator lamp signal 	B
Steering angle sensor	 Mainly transmits the following signals to ABS actuator and electric unit (control unit) via CAN communication: Steering angle sensor signal Steering angle sensor malfunction signal 	D

hill start assist FUNCTION

hill start assist FUNCTION : System Description

SYSTEM DIAGRAM



- This function maintains brake fluid pressure so that the vehicle does not move backward even if brake pedal is released to depress accelerator pedal to start the vehicle while it is stopped on an uphill slope by depressing brake pedal.
- This function operates when the vehicle is in stop status on a uphill slope of slope ratio 10% or more and selector lever is in a position other than P or N.
- · Hill start assist function is only for the start aid. It maintains the brake fluid pressure for approximately 2 seconds after releasing the brake pedal and then decreases the pressure gradually. If the vehicle can start by the accelerator operation, the brake is released automatically and a smooth start can be performed.
- Fail-safe function is adopted. When a malfunction occurs in hill start assist function, the control is suspended P for VDC function, TCS function, brake assist function and hill start assist function. The vehicle status becomes the same as models without VDC function, TCS function, brake assist function and hill start assist function. However, ABS function and EBD function are operated normally. Refer to BRC-47, "Fail-Safe".

INPUT SIGNAL AND OUTPUT SIGNAL

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

[WITHOUT ICC]

Ν

< SYSTEM DESCRIPTION >

Component	Signal description
ECM	 Mainly transmits the following signals to ABS actuator and electric unit (control unit) via CAN communication: Accelerator pedal position signal Engine speed signal Engine torque signal Mainly receives the following signal from ABS actuator and electric unit (control unit) via CAN communication: Engine torque request signal
ТСМ	 Mainly transmits the following signal to ABS actuator and electric unit (control unit) via CAN communication: Current gear position signal
Combination meter	 Mainly receives the following signals from ABS actuator and electric unit (control unit) via CAN communication: Brake fluid level switch signal Parking brake switch signal Mainly receives the following signals from ABS actuator and electric unit (control unit) via CAN communication: VDC warning lamp signal VDC OFF indicator lamp signal
WARNING/INDICATOR	CHIME LIST

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

INFOID:000000011241076

Name	Design	Layout/Function
ABS warning lamp	ABS or	For function: Refer to <u>BRC-124, "Component Function Check"</u> .
Brake warning lamp	BRAKE or	For function: Refer to <u>BRC-125, "Component Function Check"</u> .
VDC OFF indicator lamp	OFF	For function: Refer to <u>BRC-128, "Component Function Check"</u> .
VDC warning lamp)	For function: Refer to <u>BRC-127, "Component Function Check"</u> .

< SYSTEM DESCRIPTION >

[WITHOUT ICC]

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

CONSULT Function

INFOID:0000000011241077

А

В

Н

Κ

APPLICATION ITEMS

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

Mode	Function description	
ECU Identification	Part number of ABS actuator and electric unit (control unit) can be read.	
Self Diagnostic Result	Self-diagnostic results and freeze frame data can be read and erased quickly.*	D
Data Monitor	Input/Output data in the ABS actuator and electric unit (control unit) can be read.	
Active Test	Diagnostic Test Mode in which CONSULT drives some actuators apart from the ABS actuator and elec- tric unit (control unit) and also shifts some parameters in a specified range.	E
Work support	Components can be quickly and accurately adjusted.	
Re/programming, Configura- tion	 Read and save the vehicle specification (TYPE ID). Write the vehicle specification (TYPE ID) when replacing ABS actuator and electric unit (control unit). 	BF

*: The following diagnosis information is erased by erasing:

• DTC

Freeze frame data (FFD)

ECU IDENTIFICATION

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

SELF DIAGNOSTIC RESULT Refer to <u>BRC-50, "DTC Index"</u>.

When "CRNT" is displayed on self-diagnosis result

The system is presently malfunctioning.

When "PAST" is displayed on self-diagnosis result

• System malfunction in the past was detected, but the system is presently normal.

Freeze frame data (FFD)

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

Item name	Display item	L
IGN counter (0 – 39)	 The number of times that ignition switch is turned ON after the DTC is detected is displayed. When "0" is displayed: It indicates that the system is presently malfunctioning. When except "0" is displayed: It indicates that system malfunction in the past was detected, but the system is presently normal. NOTE: 	Ν
`	Each time when ignition switch is turned OFF to ON, numerical number increases from $1 \rightarrow 2 \rightarrow 338 \rightarrow 39$. When the operation number of times exceeds 39, the number does not increase and "39" is displayed until self-diagnosis is erased.	Ν

ACTIVE TEST

The active test is used to determine and identify details of a malfunction, based on self-diagnosis test results and data obtained in the Data Monitor. In response to instructions from CONSULT instead of those from ABS actuator and electric unit (control unit) on the vehicle, a drive signal is sent to the actuator to check its operation.

CAUTION:

- Never perform Active Test while driving the vehicle.
- Always bleed air from brake system before active test.
- Never perform active test when system is malfunctioning.

NOTE:

- When active test is performed while depressing the pedal, the pedal depressing stroke may change. This is not a malfunction.
- "TEST IS STOPPED" is displayed approximately 10 seconds after operation start.

< SYSTEM DESCRIPTION >

[WITHOUT ICC]

• When performing active test again after "TEST IS STOPPED" is displayed, select "BACK".

• ABS warning lamp, brake warning lamp and VDC warning lamp may turn ON during active test. This is not a malfunction.

ABS IN Valve and ABS OUT Valve

When "Up", "Keep" or "Down" is selected on display screen, the following items are displayed when system is normal:

Test item	Display Itom	Display		
	Display Item	Up	Keep	Down
FR RH SOL	FR RH IN SOL	Off	On*	On*
FR RH SOL	FR RH OUT SOL	Off	Off	On*
FR LH SOL	FR LH IN SOL	Off	On*	On*
	FR LH OUT SOL	Off	Off	On*
RR RH SOL	RR RH IN SOL	Off	On*	On*
	RR RH OUT SOL	Off	Off	On*
RR LH SOL	RR LH IN SOL	Off	On*	On*
	RR LH OUT SOL	Off	Off	On*

*: Immediately after being selected, status is "On". Status changes to "Off" after approximately 2 seconds.

ABS IN Valve (ACT) and ABS OUT Valve (ACT)

When "Up", "ACT UP" or "ACT KEEP" is selected on display screen, the following items are displayed when system is normal.

Testitem	Display Item	Display		
Test item	Display item	Up	ACT UP	ACT KEEP
	FR RH IN SOL	Off	Off	Off
	FR RH OUT SOL	Off	Off	Off
FR RH SOL (ACT)	CV1	Off	On*	On*
	CV2	Off	On*	On*
	FR LH IN SOL	Off	Off	Off
FR LH SOL (ACT)	FR LH OUT SOL	Off	Off	Off
FR LH SOL (ACT)	CV1	Off	On*	On*
	CV2	Off	On*	On*
	RR RH IN SOL	Off	Off	Off
	RR RH OUT SOL	Off	Off	Off
RR RH SOL (ACT)	CV1	Off	On*	On*
	CV2	Off	On*	On*
	RR LH IN SOL	Off	Off	Off
RR LH SOL (ACT)	RR LH OUT SOL	Off	Off	Off
INIX LET SOL (ACT)	CV1	Off	On*	On*
	CV2	Off	On*	On*

*: Immediately after being selected, status is "On". Status changes to "Off" after approx. 10 seconds.

ABS MOTOR

When "On" or "Off" is selected on display screen, the following items are displayed when system is normal.

Test item	Display Item	Display	
	Display item	On Off	
ABS MOTOR	MOTOR RELAY	On	Off
	ACTUATOR RLY ^(Note)	On	On

< SYSTEM DESCRIPTION >

[WITHOUT ICC]

В

NOTE:

Display occasionally changes On/Off for a moment after ignition switch is turned ON. This is operation for A checking purposes and is not a malfunction.

DATA MONITOR

NOTE:

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

	Monitor item selection		Nista
Item (Unit)	INPUT SIGNALS	MAIN SIGNALS	Note
FR LH SENSOR [km/h (MPH)]	×	×	Wheel speed calculated by front LH wheel sensor is displayed.
FR RH SENSOR [km/h (MPH)]	×	×	Wheel speed calculated by front RH wheel sensor is displayed.
RR LH SENSOR km/h (MPH)]	×	×	Wheel speed calculated by rear LH wheel sensor is displayed.
RR RH SENSOR km/h (MPH)]	×	×	Wheel speed calculated by rear RH wheel sensor is displayed.
DECEL G-SEN m/s ²)	×	×	Decel G detected by decel G sensor is displayed.
FR RH IN SOL On/Off)		×	Operation status of front RH wheel ABS IN valve is displayed.
FR RH OUT SOL On/Off)		×	Operation status of front RH wheel ABS OUT valve is displayed.
FR LH IN SOL On/Off)		×	Operation status of front LH wheel ABS IN valve is displayed.
FR LH OUT SOL On/Off)		×	Operation status of front LH wheel ABS OUT valve is displayed.
RR RH IN SOL On/Off)		×	Operation status of rear RH wheel ABS IN valve is displayed.
RR RH OUT SOL On/Off)		×	Operation status of rear RH wheel ABS OUT valve is displayed.
RR LH IN SOL On/Off)		×	Operation status of rear LH wheel ABS IN valve is displayed.
RR LH OUT SOL On/Off)		×	Operation status of rear LH wheel ABS OUT valve is displayed.
EBD WARN LAMP On/Off)			Brake warning lamp ON/OFF status is displayed. ^(Note 1)
STOP LAMP SW On/Off)	×	×	Stop lamp switch signal input status is displayed.
MOTOR RELAY On/Off)		×	ABS motor and motor relay status is displayed.
ACTUATOR RLY On/Off)		×	ABS actuator relay status is displayed.
ABS WARN LAMP On/Off)		×	ABS warning lamp ON/OFF status is displayed. ^(Note 1)
OFF LAMP On/Off)		×	VDC OFF indicator lamp ON/OFF status is displayed. ^(Note 1)
OFF SW On/Off)	×	×	VDC OFF switch status is displayed.
SLIP/VDC LAMP On/Off)		×	VDC warning lamp ON/OFF status is displayed. ^(Note 1)
BATTERY VOLT V)	×	×	Voltage supplied to ABS actuator and electric unit (control unit) is displayed.

< SYSTEM DESCRIPTION >

[WITHOUT ICC]

Itom (I Init)	Monitor ite	m selection	Neto
Item (Unit)	INPUT SIGNALS	MAIN SIGNALS	Note
GEAR	×	×	Current gear position judged from current gear position sig- nal is displayed.
ENGINE SPEED (tr/min)	×	×	Engine speed status is displayed.
YAW RATE SEN (d/s)	×	×	Yaw rate detected by yaw rate sensor is displayed.
R POSI SIG (On/Off)			R range signal input status judged from R range signal is displayed.
4WD MODE MON ^(Note 2) (AUTO/LOCK/2WD)	×	x	AWD control status is displayed.
N POSI SIG (On/Off)			N range signal input status judged from N range signal is displayed.
P POSI SIG (On/Off)			P range signal input status judged from P range signal is displayed.
CV1 (On/Off)			Cut valve 1 status (On/Off) status is displayed
CV2 (On/Off)			Cut valve 2 status (On/Off) status is displayed
ACCEL POS SIG (%)	×		Displays the Accelerator pedal position
SIDE G-SENSOR (m/s ²))	×		Side G detected by side G sensor is displayed.
STR ANGLE SIG	×		Steering angle detected by steering angle sensor is displayed.
PRESS SENSOR (bar)	×		Brake fluid pressure detected by pressure sensor is displayed.
EBD SIGNAL (On/Off)			EBD operation status is displayed.
ABS SIGNAL (On/Off)			ABS operation status is displayed.
TCS SIGNAL (On/Off)			TCS operation status is displayed.
VDC SIGNAL (On/Off)			VDC operation status is displayed.
EBD FAIL SIG (On/Off)			EBD fail-safe signal status is displayed.
ABS FAIL SIG (On/Off)			ABS fail-safe signal status is displayed.
TCS FAIL SIG (On/Off)			TCS fail-safe signal status is displayed.
VDC FAIL SIG (On/Off)			VDC fail-safe signal status is displayed.
CRANKING SIG (On/Off)			Cranking status is displayed.
FLUID LEV SW (On/Off)	×		Brake fluid level signal input status via CAN communication is displayed.
USS SIG ^(Note 3) (On/Off)			hill start assist operation status is displayed.

Note 1: Refer to <u>MWI-9</u>, "<u>METER SYSTEM</u> : <u>System Description</u>" for ON/OFF conditions of each warning lamp and indicator lamp. Note 2: AWD models

< SYSTEM DESCRIPTION >

Note 3: USS (Hill Start Assist)

WORK SUPPORT

-	Conditions	Description	D
	ST ANGLE SENSOR ADJUSTMENT	Perform neutral position adjustment of steering angle sensor.	D
_	DECEL G SEN CALIBRATION	Perform decel G sensor calibration.	

CONFIGURATION

Configuration includes the following functions.

Function		Description	[
Read/Write Configuration	Before replacing ECU	Allows the reading of vehicle specification (TYPE ID) written in the ABS actuator and electrical unit (control unit) to store the specification in CONSULT.	E
	After replacing ECU	Allows the writing of vehicle information (TYPE ID) stored in the CONSULT into the ABS actuator and elec- trical unit (control unit).	BI
Manual Configuration		Allows the writing of vehicle specification (TYPE ID) stored in the ABS actuator and electrical unit (control unit) by hand.	

CAUTION:

Use "Manual Configuration""TYPE ID" of ABS actuator and electric unit (control unit) cannot be read.

Н

J

Κ

L

Μ

Ν

Ο

Ρ

[WITHOUT ICC]

А

С

< ECU DIAGNOSIS INFORMATION >

ECU DIAGNOSIS INFORMATION ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)

Reference Value

INFOID:000000011822008

VALUES ON THE DIAGNOSIS TOOL

CAUTION:

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

		Data monitor		
Monitor item	Display content	Condition	Reference value in normal operation	
		0 [km/h, mph]	Vehicle stopped	
FR LH SENSOR	Wheel speed	Nearly matches the speed meter display $(\pm 10\% \text{ or less})$	Vehicle running (Note 1)	
		0 [km/h, mph]	Vehicle stopped	
FR RH SENSOR	Wheel speed	Nearly matches the speed meter display $(\pm 10\% \text{ or less})$	Vehicle running (Note 1)	
		0 [km/h, mph]	Vehicle stopped	
RR LH SENSOR	Wheel speed	Nearly matches the speed meter display $(\pm 10\% \text{ or less})$	Vehicle running (Note 1)	
		0 [km/h, mph]	Vehicle stopped	
RR RH SENSOR	Wheel speed	Nearly matches the speed meter display $(\pm 10\% \text{ or less})$	Vehicle running (Note 1)	
	Longitudinal acceleration detected by decel	Vehicle stopped	Approx. 0 G	
DECEL G-SEN	G sensor	Vehicle running	-1.7 to 1.7 G	
FR RH IN SOL		Actuator (solenoid valve) is active ("AC- TIVE TEST" with CONSULT) or actuator relay is inactive (in fail-safe mode)	On	
	Operation status of all solenoid valves	When the actuator (solenoid valve) is not active and actuator relay is active (ignition switch ON)	Off	
		Actuator (solenoid valve) is active ("AC- TIVE TEST" with CONSULT) or actuator relay is inactive (in fail-safe mode)	On	
FR RH OUT SOL	Operation status of all solenoid valves	When the actuator (solenoid valve) is not active and actuator relay is active (ignition switch ON)	Off	
FR LH IN SOL		Actuator (solenoid valve) is active ("AC- TIVE TEST" with CONSULT) or actuator relay is inactive (in fail-safe mode)	On	
	Operation status of all solenoid valves	When the actuator (solenoid valve) is not active and actuator relay is active (ignition switch ON)	Off	
	Operation status of all colonoid values	Actuator (solenoid valve) is active ("AC- TIVE TEST" with CONSULT) or actuator relay is inactive (in fail-safe mode)	On	
FR LH OUT SOL	Operation status of all solenoid valves	When the actuator (solenoid valve) is not active and actuator relay is active (ignition switch ON)	Off	

< ECU DIAGNOSIS INFORMATION >

[WITHOUT ICC]

		Data monitor		
Monitor item	Display content	Condition	Reference value in normal operation	- A
RR RH IN SOL		Actuator (solenoid valve) is active ("AC- TIVE TEST" with CONSULT) or actuator relay is inactive (in fail-safe mode)	On	В
KK KH IN SOL	Operation status of all solenoid valves	When the actuator (solenoid valve) is not active and actuator relay is active (ignition switch ON)	Off	С
RR RH OUT SOL	Operation status of all solenoid valves	Actuator (solenoid valve) is active ("AC- TIVE TEST" with CONSULT) or actuator relay is inactive (in fail-safe mode)	On	D
	Operation status of all solehold valves	When the actuator (solenoid valve) is not active and actuator relay is active (ignition switch ON)	Off	E
		Actuator (solenoid valve) is active ("AC- TIVE TEST" with CONSULT) or actuator relay is inactive (in fail-safe mode)	On	BRC
RR LH IN SOL	Operation status of all solenoid valves	When the actuator (solenoid valve) is not active and actuator relay is active (ignition switch ON)	Off	G
RR LH OUT SOL		Actuator (solenoid valve) is active ("AC- TIVE TEST" with CONSULT) or actuator relay is inactive (in fail-safe mode)	On	Н
	Operation status of all solenoid valves	When the actuator (solenoid valve) is not active and actuator relay is active (ignition switch ON)	Off	
EBD WARN LAMP	EBD warning lamp	When EBD warning lamp is ON	On	-
	(Note 2)	When EBD warning lamp is OFF	Off	-
STOP LAMP SW	Brake pedal operation	When brake pedal is depressed	On	J
STOP LAWF SW		When brake pedal is not depressed	Off	-
MOTOR RELAY	Motor and motor relay operation	When the motor relay and motor are operating	On	K
MOTOR (ILL) (I		When the motor relay and motor are not operating	Off	_
ACTUATOR RLY	Actuator relay operation	When the actuator relay is operating	On	L
No rom on their		When the actuator relay is not operating	Off	_
ABS WARN LAMP	ABS warning lamp	When ABS warning lamp is ON	On	M
	(Note 2)	When ABS warning lamp is OFF	Off	
OFF LAMP	VDC OFF indicator lamp	When VDC OFF indicator lamp is ON	On	_
	(Note 2)	When VDC OFF indicator lamp is OFF	Off	Ν
OFF SW	VDC OFF switch	When VDC OFF switch is ON	On	_
		When VDC OFF switch is OFF	Off	0
SLIP/VDC LAMP	SLIP indicator lamp	When SLIP indicator lamp is ON	On	0
	(Note 2)	When SLIP indicator lamp is OFF	Off	-
BATTERY VOLT	Battery voltage supplied to the ABS actuator and electric unit (control unit)	Ignition switch ON	10 – 16 V	Ρ
GEAR	Manual mode gear position determined by TCM	1st gear 2nd gear 3rd gear 4th gear 5th gear	1 2 3 4 5	

< ECU DIAGNOSIS INFORMATION >

[WITHOUT ICC]

		Data monitor			
Monitor item	Display content	Condition	Reference value in normal operation		
		With engine stopped	0 RPM		
ENGINE SPEED	With engine running	Engine running	Almost in accor- dance with tachome- ter display		
YAW RATE SEN	Yaw rate detected by yaw rate/side G sensor	Vehicle stopped	Approx. 0 d/s		
		Vehicle turning	-75 to 75 d/s		
R POSI SIG	Transmission range switch signal ON/OFF	CVT shift position = R position	On		
111001010	condition	CVT shift position = other than R position	Off		
4WD MODE MON	Always (Note 3)	AUTO, LOCK, 2WD	AUTO, LOCK, 2WD (depending on AWD control status)		
N POSI SIG	Transmission range switch signal ON/OFF	CVT shift position = N position	On		
N POSI SIG	condition	CVT shift position = other than N position	Off		
0)/1	Cut volvo 1 cignol	When out volve 1 is open or closed	On		
CV1	Cut valve 1 signal	When cut valve 1 is open or closed	Off		
0)/2	Outure la cience l		On		
CV2	Cut valve 2 signal	When cut valve 2 is open or closed	Off		
	Throttle actuator opening/closing is dis- played (linked with accelerator pedal)	Accelerator pedal not depressed (ignition switch is ON)	0 %		
ACCEL POS SIG		Depress accelerator pedal (ignition switch is ON)	0 - 100 %		
	Transverse G detected by side G sensor	Vehicle stopped	Approx. 0 m/s ²		
SIDE G-SENSOR		Vehicle turning right	Negative value (m/s ²)		
		Vehicle turning left	Positive value (m/s ²)		
	Steering angle detected by steering angle	Straight-ahead	Approx. 0°		
STR ANGLE SIG	sensor	Steering wheel turned	–720 to 720°		
	Brake fluid pressure detected by pressure	With ignition switch turned ON and brake pedal released	Approx. 0 bar		
PRESS SENSOR	sensor	With ignition switch turned ON and brake pedal depressed	–40 to 300 bar		
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		
100 OIGINAL	TCS operation	TCS is inactive	Off		
VDC SIGNAL	VDC operation	VDC is active	On		
VDC SIGNAL		VDC is inactive	Off		
EBD FAIL SIG	ERD fail safe signal	In EBD fail-safe	On		
LDD FAIL SIG	EBD fail-safe signal	EBD is normal	Off		
ABS FAIL SIG	ABS fail-safe signal	In ABS fail-safe	On		
		ABS is normal	Off		

< ECU DIAGNOSIS INFORMATION >

		Data monitor		
Monitor item	Display content	Condition	Reference value in normal operation	A
TCS FAIL SIG	TCS fail-safe signal	In TCS fail-safe	On	В
TCS FAIL SIG		TCS is normal	Off	D
VDC FAIL SIG		In VDC fail-safe	On	
	VDC fail-safe signal	VDC is normal	Off	С
CRANKING SIG	Crank operation	Crank is active	On	
CRAINNING SIG		Crank is inactive	Off	
FLUID LEV SW	Brake fluid level switch	When brake fluid level switch ON	On	D
FLUID LEV SW	Brake huid level switch	When brake fluid level switch OFF	Off	
USS SIG	Hill start assist status	When hill start assist is active	On	Е
(On/Off)	(Note 4)	When hill start assist is not active	Off	

Note 1: Confirm tire pressure is normal.

Note 2: On and off timing for warning lamps and indicator lamps.

Note 3: AWD models

Note 4: USS (Hill Start Assist)

- Refer to <u>BRC-28</u>, "VDC FUNCTION : System Description".
- · Refer to BRC-31, "TCS FUNCTION : System Description".
- Refer to BRC-33, "ABS FUNCTION : System Description".
- Refer to BRC-34, "EBD FUNCTION : System Description".

Fail-Safe

INFOID:000000011241079

BRC

Н

Κ

L

Μ

Ν

IWITHOUT ICCI

VDC FUNCTION, TCS FUNCTION, BRAKE ASSIST FUNCTION and HILL START ASSIST FUNC-TION

VDC warning lamp in combination meter turn ON when a malfunction occurs in system [ABS actuator and electric unit (control unit)]. The control is suspended for VDC function, TCS function, brake assist function and hill start assist function. The vehicle status becomes the same as models without VDC function, TCS function, brake assist function and hill start assist function. However, ABS function and EBD function are operated normally.

ABS FUNCTION

ABS warning lamp and VDC warning lamp in combination meter turn ON when a malfunction occurs in system [ABS actuator and electric unit (control unit)]. The control is suspended for VDC function, TCS function, ABS function, Brake assist function, hill start assist function and brake force distribution function. The vehicle status becomes the same as models without VDC function, TCS function, ABS function and hill start assist function. However, EBD function is operated normally.

NOTE:

ABS self-diagnosis sound may be heard the same as in the normal condition, because self-diagnosis is performed when ignition switch turns ON and when vehicle initially starts.

EBD FUNCTION

ABS warning lamp, brake warning lamp and VDC warning lamp in combination meter turn ON when a malfunction occurs in system [ABS actuator and electric unit (control unit)]. The control is suspended for VDC function, TCS function, ABS function, EBD function, brake assist function and hill start assist function. The vehicle status becomes the same as models without VDC function, TCS function, ABS function, EBD function, brake assist function and hill start assist function.

Ρ

< ECU DIAGNOSIS INFORMATION >

[WITHOUT ICC]

DTC	Fail-safe condition
C1101	
C1102	
C1103	 The following functions are suspended: VDC function
C1104	• TCS function
C1105	 ABS function EBD function (only when both rear wheels are malfunctioning)
C1106	Brake assist function
C1107	 Hill start assist function
C1108	
C1109	The following functions are suspended:
C1111	 VDC function
C1113	 TCS function ABS function EBD function Brake assist function Hill start assist function
C1115	The following functions are suspended:
C1116	 VDC function TCS function ABS function Brake assist function Hill start assist function
C1120	
C1121	
C1122	 The following functions are suspended: VDC function
C1123	TCS function
C1124	 ABS function EBD function
C1125	Brake assist function
C1126	 Hill start assist function
C1127	
C1130	 The following functions are suspended: VDC function TCS function Hill start assist function
C1140	The following functions are suspended: VDC function TCS function ABS function EBD function Brake assist function Hill start assist function
C1142	The following functions are suspended: VDC function TCS function Brake assist function Hill start assist function
C1143	The following functions are suspended:
C1144	 VDC function TCS function Hill start assist function

< ECU DIAGNOSIS INFORMATION >

[WITHOUT ICC]

DTC	Fail-safe condition	Λ
C1145	The following functions are suspended:	A
C1146	VDC function TCS function	
C1153	ABS function	В
C1154	Brake assist function Hill start assist function	
C1155	The following functions are suspended: VDC function TCS function Brake assist function Hill start assist function 	C
C1160	The following functions are suspended: VDC function TCS function ABS function Brake assist function Hill start assist function 	E
C1164	The following functions are suspended:	BRC
C1165	VDC function TCS function	
C1166	ABS function	
C1167	EBD function Brake assist function Hill start assist function	G
C1170	The following functions are suspended: VDC function TCS function ABS function Brake assist function Hill start assist function 	H
C1197		-
C1198		J
C1199	Electrical vacuum assistance of brake booster is suspended.	
C119A		LZ.
U1000	The following functions are suspended:	K
U1002	VDC function TCS function Hill start assist function	L

DTC Inspection Priority Chart

INFOID:000000011241080

Priority	Detected item (DTC)	
1	U1000 CAN COMM CIRCUIT U1002 SYSTEM COMM (CAN)	
2	C1110 CONTROLLER FAILURE C1153 EMERGENCY BRAKE C1170 VARIANT CODING	
3	C1130 ENGINE SIGNAL 1 C1144 ST ANG SEN SIGNAL	
4	 C1109 BATTERY VOLTAGE [ABNOMAL] C1110 CONTROLLER FAILURE C1111 PUMP MOTOR C1140 ACTUATOR RLY 	

< ECU DIAGNOSIS INFORMATION >

[WITHOUT ICC]

Priority	Detected item (DTC)
5	 C1101 RR RH SENSOR-1 C1102 RR LH SENSOR-1 C1103 FR RH SENSOR-1 C1104 FR LH SENSOR-2 C1105 RR RH SENSOR-2 C1106 RR LH SENSOR-2 C1107 FR RH SENSOR-2 C1108 FR LH SENSOR-2 C1108 FR LH SENSOR-2 C1109 FR LH SENSOR-2 C1109 FR LH SENSOR-2 C1113 G SENSOR C1115 ABS SENSOR [ABNORMAL] C1116 STOP LAMP SW C1120 FR LH IN ABS SOL C1121 FR LH OUT ABS SOL C1122 FR RH OUT ABS SOL C1123 FR RH OUT ABS SOL C1124 RR LH IN ABS SOL C1124 RR LH IN ABS SOL C1126 RR RH IN ABS SOL C1127 RR RH OUT ABS SOL C1127 RR RH OUT ABS SOL C1128 FR RH OUT ABS SOL C1129 FR RH OUT ABS SOL C1129 FR RH OUT ABS SOL C1120 FR LH OUT ABS SOL C1120 FR LH OUT ABS SOL C1121 FR RH OUT ABS SOL C1124 RR LH IN ABS SOL C1126 RR HI NABS SOL C1127 FR RH OUT ABS SOL C1126 RR RH IN ABS SOL C1127 FR RH OUT ABS SOL C1126 RR HI NABS SOL C1127 FR RH OUT ABS SOL C1127 FR RH OUT ABS SOL C1128 CURCUIT C1142 PRESS SEN CIRCUIT C1145 YAW RATE SENSOR C1146 SIDE G SEN CIRCUIT C1146 SIDE G SEN CIRCUIT C1154 PNP POS SIG C1160 DECEL G SEN SET C1160 DECEL G SEN SET C1161 AVAUUM SEN CIR C1167 SV 2 C1198 WACUUM SEN SEN CIR C1199 BRAKE BOOSTER C1199 BRAKE BOOSTER C1199 BRAKE BOOSTER
6	C1155 BR FLUID LEVEL LOW

DTC Index

INFOID:000000011241081

DTC	Display Item	VDC warning lamp	ABS warning lamp	Brake warning lamp	Refer to:
C1101	RR RH SENSOR-1	ON	ON	OFF	
C1102	RR LH SENSOR-1	ON	ON	OFF	BRC-70, "DTC Logic"
C1103	FR RH SENSOR-1	ON	ON	OFF	BRC-70, DTC LOGIC
C1104	FR LH SENSOR-1	ON	ON	OFF	
C1105	RR RH SENSOR-2	ON	ON	OFF	
C1106	RR LH SENSOR-2	ON	ON	OFF	BRC-75, "DTC Logic"
C1107	FR RH SENSOR-2	ON	ON	OFF	BIG-75, DTC LOGIC
C1108	FR LH SENSOR-2	ON	ON	OFF	
C1109	BATTERY VOLTAGE [ABNOMAL]	ON	ON	ON	BRC-77, "DTC Logic"
C1110	CONTROLLER FAILURE	ON	ON	ON	BRC-79, "DTC Logic"
C1111	PUMP MOTOR	ON	ON	ON	BRC-80, "DTC Logic"
C1113	G SENSOR	ON	ON	OFF	BRC-82, "DTC Logic"
C1115	ABS SENSOR [ABNORMAL SIGNAL]	ON	ON	OFF	BRC-84, "DTC Logic"
C1116	STOP LAMP SW				
C1120	FR LH IN ABS SOL	ON	ON	ON	BRC-89, "DTC Logic"

Revision: October 2014

2015 Murano

< ECU DIAGNOSIS INFORMATION >

[WITHOUT ICC]

DTC	Display Item	VDC warning lamp	ABS warning lamp	Brake warning lamp	Refer to:	А
C1121	FR LH OUT ABS SOL	ON	ON	ON	BRC-91, "DTC Logic"	-
C1122	FR RH IN ABS SOL	ON	ON	ON	BRC-89, "DTC Logic"	- B
C1123	FR RH OUT ABS SOL	ON	ON	ON	BRC-91, "DTC Logic"	- D
C1124	RR LH IN ABS SOL	ON	ON	ON	BRC-89, "DTC Logic"	-
C1125	RR LH OUT ABS SOL	ON	ON	ON	BRC-91, "DTC Logic"	С
C1126	RR RH IN ABS SOL	ON	ON	ON	BRC-89, "DTC Logic"	-
C1127	RR RH OUT ABS SOL	ON	ON	ON	BRC-91, "DTC Logic"	
C1130	ENGINE SIGNAL 1	ON	OFF	OFF	BRC-93, "DTC Logic"	- D
C1140	ACTUATOR RLY	ON	ON	ON	BRC-95, "DTC Logic"	-
C1142	PRESS SEN CIRCUIT	ON	OFF	OFF	BRC-97, "DTC Logic"	E
C1143	ST ANG SEN CIRCUIT	ON	OFF	OFF	BRC-99, "DTC Logic"	-
C1144	ST ANG SEN SIGNAL	ON	OFF	OFF	BRC-101, "DTC Logic"	
C1145	YAW RATE SENSOR	ON	ON	OFF	BRC-82, "DTC Logic"	BRC
C1146	SIDE G SEN CIRCUIT	ON	ON	OFF	BRC-02, DTC LOGIC	
C1153	EMERGENCY BRAKE					G
C1154	PNP POS SIG					0
C1155	BR FLUID LEVEL LOW	ON	OFF	OFF	BRC-104, "DTC Logic"	-
C1160	DECEL G SEN SET	ON	ON	OFF	BRC-106, "DTC Logic"	Н
C1164	CV 1	ON	ON	ON	BRC-107, "DTC Logic"	-
C1165	CV 2	ON	ON	ON	BRC-107, DTC LOGIC	1
C1166	SV 1	ON	ON	ON	BRC-107, "DTC Logic"	- 1
C1167	SV 2	ON	ON	ON	BRC-107, DTC LOgic	
C1170	VARIANT CODING	ON	ON	OFF	BRC-273, "DTC Logic"	J
C1197	VACUUM SENSOR	OFF	OFF	ON	BRC-109, "DTC Logic"	-
C1198	VACUUM SEN CIR	OFF	OFF	ON	BRC-111, "DTC Logic"	12
C1199	BRAKE BOOSTER	OFF	OFF	ON	BRC-113, "DTC Logic"	- K
C119A	VACUUM SEN VOLT	OFF	OFF	ON	BRC-115, "DTC Logic"	_
U1000	CAN COMM CIRCUIT	ON	OFF	OFF	BRC-117, "Description"	L

M

Ν

0

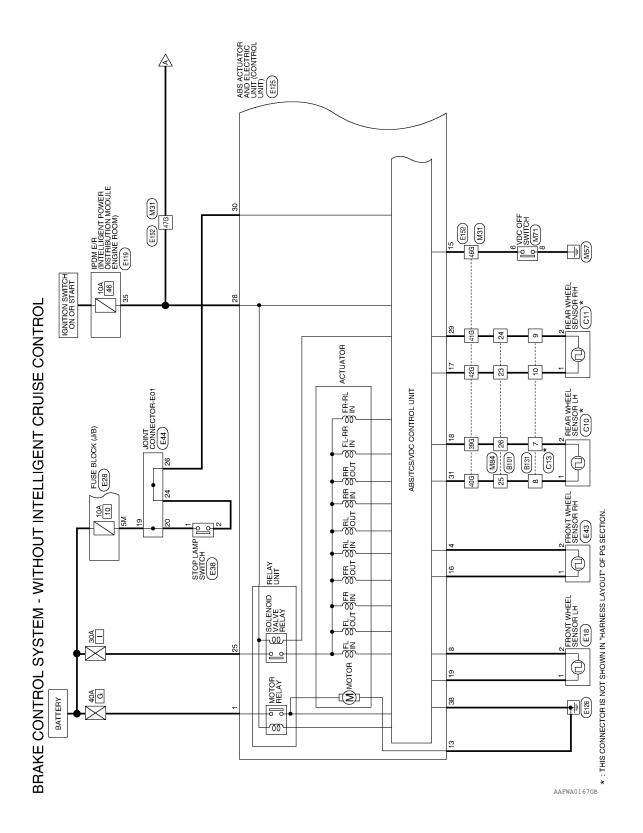
[WITHOUT ICC]

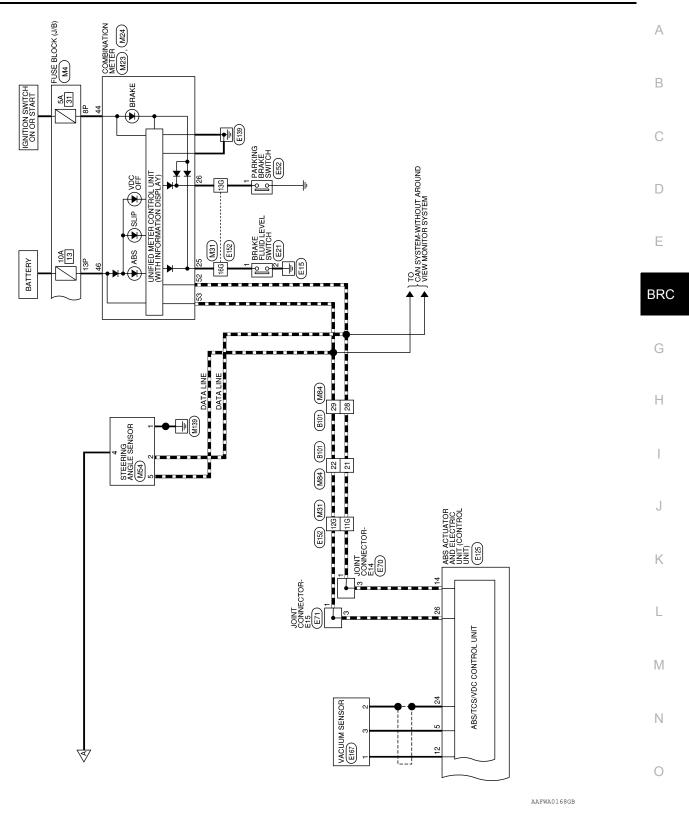
WIRING DIAGRAM

BRAKE CONTROL SYSTEM

Wiring Diagram

INFOID:0000000011552703



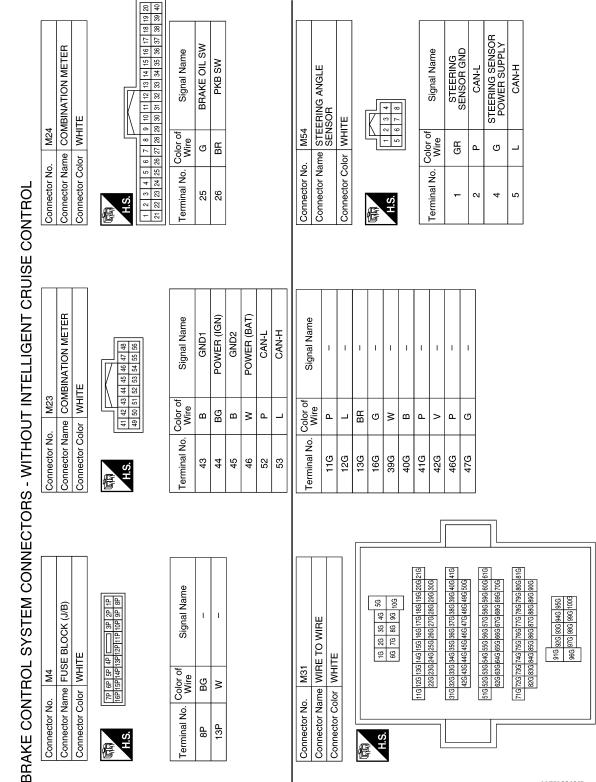


Ρ



< WIRING DIAGRAM >

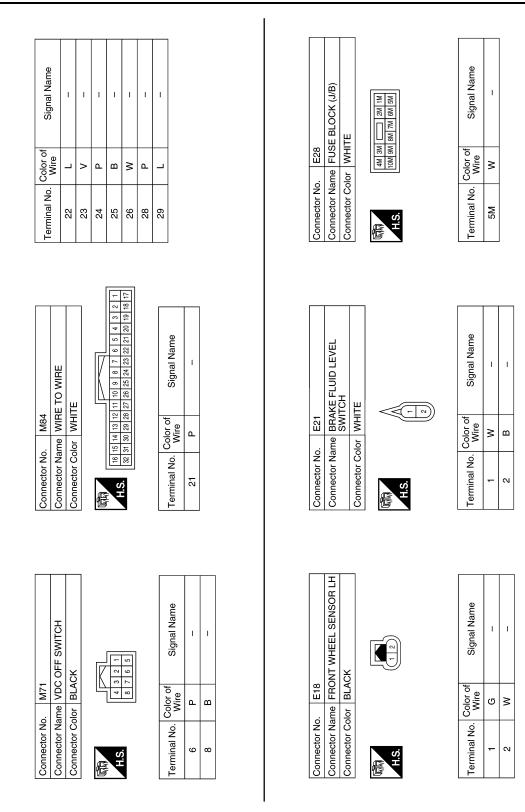
[WI]	гно	UT	ICC]



AAFIA0349GB

< WIRING DIAGRAM >

[WITHOUT ICC]



BRC

G

Н

А

В

С

D

Ε

I

K

J

Ν

0

AAFIA0350GB

Ρ

< WIRING DIAGRAM >

Connector Name JOINT CONNECTOR-E01

Connector No. E44

Connector No. E43 Connector Name FRONT WHEEL SENSOR RH

Connector Color BLACK

Connector Name STOP LAMP SWITCH

E38

Connector No.

Connector Color WHITE

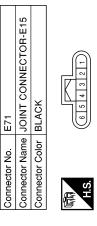
Connector Color WHITE

11 10 8 7 6 5 4 3 2 1 22 21 20 19 18 17 16 15 14 13 12 33 32 31 30 29 28 27 26 25 24 32	Signal Name	I	I	I	I
11 10 9 22 21 20 33 32 31	Color of Wire	×	V	Р	٩
S S T	Terminal No. Color of Wire	19	20	24	26
	Terminal No. Color of Signal Name	1			

13 12 5

3 4	
品. H.S.	

Signal Name	I	I	
Color of Wire	×	٩	
Terminal No.	-	2	

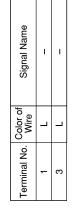


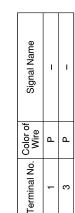
Connector No. E70 Connector Name JOINT CONNECTOR-E14

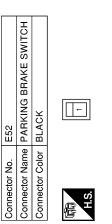
Connector Color BLACK

5 4 3

H.S. 佢







Signal Name T Color of Wire ŋ Terminal No. -

AAFIA0345GB

[WITHOUT ICC]

А

В

С

D

Е

BRC

G

Н

J

Κ

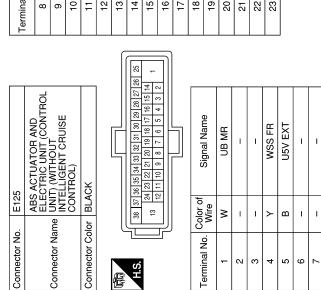
L

Μ

Ν

Ο

	Terminal No.	Color of Wire	Signal Name	Terminal No. Color of Wire	No.	Color of Wire	Signal Name
	8	×	WSS FL	24		SHIELD	GND EXT
NIT) (WITHOUT VTELLIGENT CRUISE	თ	ı	1	25		œ	UB VR
ONTROL)	10	ı	1	26		_	CAN-H
BLACK	11	1	1	27		1	I
	12	×	VAC	28		ВВ	WAU
	13	B/W	GND MR	29		SB	WSS RR
38 37 36 35 34 33 32 31 30 29 28 27 26 25	14	٩	CAN-L	30		٩	BLS
20 19 18 . 20 <u>-</u> 2	15	æ	VDC OFF	31		æ	WSP RL
	16	_	WSP FR	32		1	I
	17	>	WSP RR	ее ЗЗ		1	I
	18	SB	WSS RL	34		1	I
Wire Signal Name	19	σ	WSP FL	35		1	I
UB MR	20	1	1	36		1	I
1	21	1	1	37		1	I
1	22	1	1	88		B	GND ECU
WSS FR	23	1	1				
U5V EXT							
1							



AAFIA0346GB

Ρ

IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)

Connector Name Connector Color

E119

Connector No.

WHITE

H.S.

E

Signal Name

Color of Wire ВВ

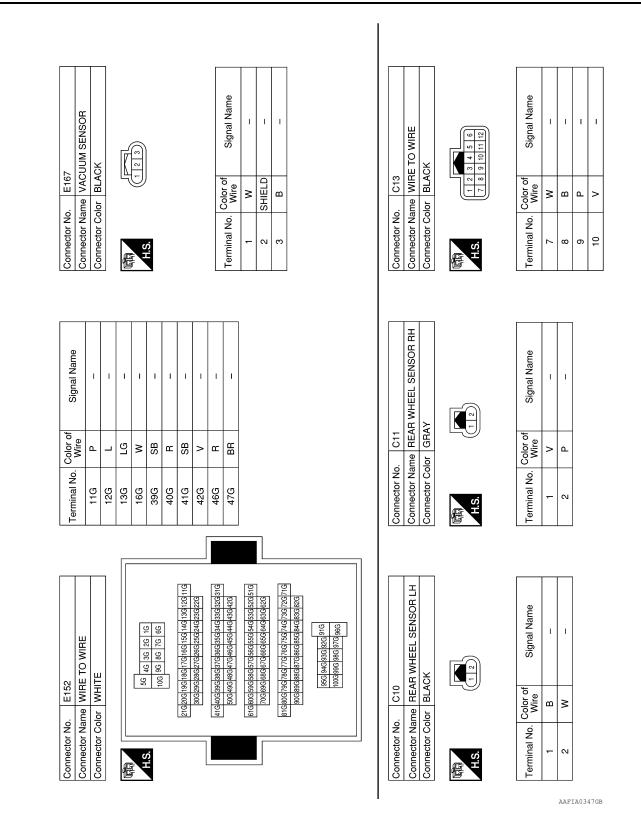
Terminal No.

35

ABS ECU

< WIRING DIAGRAM >

[WITHOUT ICC]



D Е

А

В

С

BRC



G

Н

J

Κ

L

Μ

Ν

0

AAFIA0348GB

Ρ

1 Connector No. B131 E TO WIRE Connector Name WIRE TO WIRE TE Connector Color BLACK	B131	WIRE TO WIRE	BLACK	
		Connector Name	Connector Color	ſ
		TO WIRE		

				10 11 12 13 14 15 16	18 19 20 21 22 23 24 25 26 27 28 29 30 31 32
				÷	27
				10	26
	ш			6	25
	≝			8	24
	$ \geq$			7	23
	IΥ	ш	5	6	22
Ξ	ШШ	E		5	21
B101	1	Υ		4	20
ш	~	~		e	19
	l e	P		~	18
Š	Na	8		-	17
Connector No.	Connector Name WIRE TO WIRE	Connector Color WHITE	E		0 L

Signal Name	I	I	I	I	I	I	I	I
Color of Wire	٩	Г	^	٩	В	Μ	٩	Γ
Terminal No.	21	22	23	24	25	26	28	29

Signal Name

Terminal No. Color of Wire

≥

 \sim ω

10

1 1 Т I.

> ₽ > ш

> > 6 P

Revision: October 2014

< BASIC INSPECTION >

BASIC INSPECTION DIAGNOSIS AND REPAIR WORK FLOW

Work Flow

INFOID:000000011241083

[WITHOUT ICC]

DETAILED FLOW

1.INTERVIEW THE CUSTOMER

Clarify customer complaints before inspection. First of all, perform an interview utilizing <u>BRC-61</u>, "<u>Diagnostic</u> <u>Work Sheet</u>" 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 professionals. Never assume that "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 <u>BRC-47</u>, "Fail-<u>Safe"</u>.

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 DIAGNOSTIC RESULT

CONSULT

1. Turn the ignition switch OFF \rightarrow ON.

CAUTION:

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

- 2. Repeat step 1 two or more times.
- 3. Perform "Self Diagnostic Result" of "ABS".

Is DTC detected?

YES >> Record or print "Self Diagnostic Result" of "ABS" and freeze frame data (FFD). GO TO 4. NO >> GO TO 6.

4.RECHECK THE SYMPTOM

CONSULT

- 1. Erase "Self Diagnostic Result" of "ABS".
- 2. Turn the ignition switch OFF \rightarrow ON \rightarrow OFF. CAUTION:
 - Be sure to wait 10 seconds after turning ignition switch OFF or ON.

3. Perform DTC confirmation procedures for the error-detected system. **NOTE:**

If some DTCs are detected at the same time, determine the order for performing the diagnosis based on <u>BRC-49, "DTC Inspection Priority Chart"</u>.

Is any DTC detected?

- YES >> GO TO 5.
- NO >> Check harness and connectors based on the information obtained by interview. Refer to <u>GI-42</u>. <u>"Intermittent Incident"</u>.

5.REPAIR OR REPLACE ERROR-DETECTED PARTS

- 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" of "ABS".

DIAGNOSIS AND REPAIR WORK FLOW

< BASIC INSPECTION > [WITHOUT	ICC]
 CAUTION: Turn the ignition switch OFF → ON → OFF after erasing "Self Diagnostic Result". Be sure to wait 10 seconds after turning ignition switch OFF or ON. 	A
>> GO TO 7.	В
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?	С
YES >> GO TO 7. NO >> Check harness and connectors based on the information obtained by interview. Refer to <u>G</u> <u>"Intermittent Incident"</u> .	<mark>3I-42.</mark> □
7.FINAL CHECK	
 CONSULT Check the reference value for "ABS". Recheck the symptom and check that the symptom is not reproduced under the same conditions. 	E
Is the symptom reproduced?	BR
YES >> GO TO 3. NO >> Inspection End.	
Diagnostic Work Sheet	011241084
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 and refer to the interview points.
- In some cases, multiple conditions that appear simultaneously may cause a DTC to be detected.

INTERVIEW SHEET SAMPLE

		l	Interview sheet				
Customer MR/MS		Registration number			Initial year registration		
name		Vehicle type			VIN		
Storage date		Engine			Mileage		km (Mile)
		Does not op	perate () function
		□ Warning lamp for () turns ON.) turns ON.	
Symptom	mptom 🗆 Noise 🗆 Vibration						
		□ Other ()
First occurren	се	□ Recently	D Other ()
Frequency of	occurrence	□ Always	Under certain c	onditions	S Some	times (time(s)/day)
		□ Irrelevant					
Climate con-	Weather	□ Fine □	I Cloud □ Rain		Snow □ Oth	ers ()
ditions	Temperature	□ Hot □V	Varm 🛛 Cool		d 🗆 Temper	rature [Approx	°C (°F)]
	Relative humidity	□ High	□ Moderate		Low		
Road conditio	ns	□ Urban area □ Mountainou	□ Suburb ar s road (uphill or dow		□ Highwa □ Rough	•	
Operating condition, etc.		-	ng 🛛 🗆 During a	left curve	:)	onstant speed	driving

Н

I

DIAGNOSIS AND REPAIR WORK FLOW

< BASIC INSPECTION >

[WITHOUT ICC]

		I	Interview sheet		
Customer name	MR/MS	Registration number		Initial year registration	
name		Vehicle type		VIN	
Storage date		Engine		Mileage	km (Mile)
Other conditio	ns				

Memo

ADDITIONAL SERVICE WHEN REPLACING ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)

< BASIC INSPECTION >

[WITHOUT ICC]

ADDITIONAL SERVICE WHEN REPLACING ABS ACTUATOR AND ELEC-TRIC UNIT (CONTROL UNIT)

Description

INFOID:000000011241085

- When replacing the ABS actuator and electric unit (control unit), perform configuration of the ABS actuator and electric unit (control unit). Refer to <u>BRC-68, "Work Procedure"</u>.
- When replacing the ABS actuator and electric unit (control unit), adjust the neutral position of steering angle sensor. Refer to <u>BRC-64</u>, "Work Procedure".
- When replacing the ABS actuator and electric unit (control unit), perform calibration of the decel G sensor. Refer to <u>BRC-66, "Work Procedure"</u>.

D

А

В

Ε

Н

J

Κ

L

Μ

Ν

Ο

Ρ

ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION < BASIC INSPECTION > [WITHOUT ICC]

ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

Description

INFOID:000000011241086

Refer to the table below to determine if adjustment of steering angle sensor neutral position is required.

×: 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	×
Changing tires to new ones	_
Tire rotation	-
Adjusting wheel alignment	x

Work Procedure

INFOID:000000011241087

ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION CAUTION:

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

1.ALIGN THE VEHICLE STATUS

Stop vehicle with front wheels in straight-ahead position.

>> GO TO 2.

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

- 1. On the CONSULT screen, touch "Work support" and "ST ANGLE SENSOR ADJUSTMENT" in order.
- 2. Touch "Start". CAUTION:

Do not touch steering wheel while adjusting steering angle sensor.

- After approximately 10 seconds, touch "End".
 NOTE: After approximately 60 seconds, it ends automatically.
- Turn ignition switch OFF then turn it ON again.
 CAUTION:

Be sure to perform above operation.

>> GO TO 3.

3.CHECK DATA MONITOR

- 1. Run vehicle with front wheels in straight-ahead position then stop.
- 2. Select "Data Monitor". Then make sure "STR ANGLE SIG" is within 0±3.5°.

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 DIAGNOSTIC RESULT MEMORY

Erase the "Self Diagnostic Result" memory of the ABS actuator and electric unit (control unit) and ECM.
 ABS actuator and electric unit (control unit): Refer to <u>BRC-39, "CONSULT Function"</u>.

BRC-64

ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

< BASIC INSPECTION >	[WITHOUT ICC]
 ECM: Refer to EC-71, "CONSULT Function". 	
Are the memories erased?	A
YES >> Inspection End. NO >> Check the items indicated by the "Self Diagnostic Result".	В
	С

Ε

D

BRC

J

Κ

L

M

Ν

Ο

Ρ

G

CALIBRATION OF DECEL G SENSOR

< BASIC INSPECTION >

CALIBRATION OF DECEL G SENSOR

Description

INFOID:000000011241088

[WITHOUT ICC]

CAUTION:

Always perform the decel G sensor calibration before driving when the following operation is performed. NOTE:

Yaw rate/side/decel G sensor calibration is performed when performing the decel G sensor calibration.

X: Required	—: Not required
-------------	-----------------

Procedure	Decel G sensor calibration
Removing/ installing ABS actuator and electric unit (control unit)	
Replacing ABS actuator and electric unit (control unit)	×
Removing/installing steering components	
Replacing steering components	
Removing/installing suspension components	
Replacing suspension components	
Removing/installing tire	
Replacing tire	
Tire rotation	
Adjusting wheel alignment	_

Work Procedure

INFOID:000000011241089

DECEL G SENSOR CALIBRATION

CAUTION:

Always use CONSULT for the decel G sensor calibration. (It cannot be adjusted other than with CON-SULT.) NOTE:

Yaw rate/side/decel G sensor calibration is performed when performing the decel G sensor calibration.

1.CHECK THE VEHICLE STATUS

1. Steer the steering wheel to the straight-ahead position. Stop the vehicle on level surface.

2. Stop the engine.

3. Turn the ignition switch OFF.

Is the vehicle stopped in the straight-ahead position on level surface?

- YES >> GO TO 2.
- NO >> Steer the steering wheel to the straight-ahead position. Stop the vehicle on level surface.

2.PERFORM DECEL G SENSOR CALIBRATION

CAUTION:

• Never allow passenger or load on the vehicle.

Never apply vibration to the vehicle body when opening or closing door during calibration.

CONSULT

1. Turn the ignition switch ON.

CAUTION: Never start engine.

- 2. Select "ABS", "Work support", "DECEL G SEN CALIBRATION" in this order.
- 3. Select "Start".
- 4. After approx. 10 seconds, select "End".
- 5. Turn ignition switch OFF and then turn it ON again. CAUTION:

Be sure to perform the operation above.

>> GO TO 3.

CALIBRATION OF DECEL G SENSOR

< BASIC INSPECTION >

[WITHOUT ICC]

3. CHECK DATA MONITOR

CONSULT

- 1. Drive the vehicle. Steer the steering wheel to the straight-ahead position. Stop the vehicle on level surface.
- Select "ABS", "Data Monitor", "ECU INPUT SIGNALS" and "DECEL G SENSOR" in this order. Check that the signal is within the specified value.

DECEL G SENSOR: Approx. ± 0.01 GIs the inspection result normal?YESYESNO>> GO TO 4.NO>> GO TO 1.

4.ERASE SELF DIAGNOSTIC RESULT MEMORY

CONSULT

Erase "Self Diagnostic Result" of "ABS".

Are the memories erased?

YES >> Inspection End.

NO >> Check the items indicated by the "Self Diagnostic Result".

BRC

А

С

D

Ε

Н

J

Κ

L

Μ

Ν

Ο

Ρ

CONFIGURATION [ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)] [WITHOUT ICC]

< BASIC INSPECTION >

CONFIGURATION JABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)]

Work Procedure

INFOID:000000011815316

NOTE:

- After configuration, turn the ignition switch from OFF to ON and check that the VDC warning lamp turns OFF after staying illuminated for approximately two seconds.
- If an error occurs during configuration, start over from the beginning.

1.CHECK TYPE ID (1)

CONSULT

- Using CONSULT, select "ECU Identification" of "ABS". 1
- Write down "ECU PART NUMBER" displayed on the CONSULT screen. This is the ABS actuator and 2 electric unit (control unit) "Type ID".

Is "Type ID" displayed?

- YES-1 >> When replacing ABS actuator and electric unit (control unit): GO TO 3.
- YES-2 >> When re-configuring existing ABS actuator and electric unit (control unit): GO TO 4.
- NO >> GO TO 2.

2.CHECK TYPE ID (2)

- 1 Use FAST (service parts catalog) to search ABS actuator and electric unit (control unit) of the applicable vehicle and find "Type ID".
- 2. Write down "Type ID".
 - >> When replacing ABS actuator and electric unit (control unit): GO TO 3.
 - When re-configuring existing ABS actuator and electric unit (control unit): GO TO 4.

$\mathbf{3}.$ Replace abs actuator and electric unit (control unit)

Replace ABS actuator and electric unit (control unit). Refer to BRC-142, "Removal and Installation". CAUTION:

Do not perform the following work items at this time. These items must be performed after configuration is complete.

- Air bleeding
- Adjustment of steering angle sensor neutral position
- Calibration of decel G sensor

>> GO TO 4.

4.WRITE CONFIGURATION

(D)CONSULT Configuration

- 1. Select "Manual Configuration".
- Select the "Type ID" found using CONSULT "ECU Identification" or FAST (service parts catalog) to write 2. the "Type ID" into the ABS actuator and electric unit (control unit).

>> GO TO 5.

5.VERIFY TYPE ID

Compare the "Type ID" written into the ABS actuator and electric unit (control unit) with the one found using CONSULT "ECU Identification" or FAST (service parts catalog) to confirm they match.

Do Type IDs match?

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

O.CHECK VDC WARNING LAMP

- 1. Turn the ignition switch OFF.
- Turn the ignition switch ON and check that the VDC warning lamp turns OFF after staying illuminated for 2. approximately two seconds.

CONFIGURATION JABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)1

INFIGURATION LADS ACTUATOR AND	
SIC INSPECTION >	[WITHOUT ICC]
OTE.	

< BASIC INSPECTION >	[WITHOUT ICC]	
NOTE: Do not start the engine.		A
<u>Is the inspection result normal?</u> YES >> GO TO 7.		
NO >> Perform self-diagnosis of "ABS". Refer to <u>BRC-39, "CONSULT Function"</u> . 7.PERFORM SUPPLEMENTARY WORK		В
 Perform air bleeding. Refer to <u>BR-16, "Bleeding Brake System"</u>. Perform adjustment of steering angle sensor neutral position. Refer to <u>BRC-64, "Work</u> Perform calibration of decel G sensor. Refer to <u>BRC-66, "Work Procedure"</u>. Perform self-diagnosis of all systems. 	Procedure".	С
 Fendim self-diagnosis of all systems. Erase self-diagnosis results. 		D
>> Work End.		E
		BR
		G
		Η

J

Κ

L

M

Ν

Ο

Ρ

< DTC/CIRCUIT DIAGNOSIS >

[WITHOUT ICC]

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

DTC Logic

INFOID:0000000011734962

DTC DETECTION LOGIC

NOTE:

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

DTC	Display item	Malfunction detected condition	Possible cause		
DIC	Display item	Manufiction detected condition	Past DTC	Current DTC	
C1101	RR RH SENSOR-1	 When power supply voltage of rear wheel sensor RH is low. When an open or shorted circuit is detected in rear wheel sensor RH circuit. 	Low battery voltageHarness or connector	 Low battery voltage Harness or connector Wheel sensor ABS actuator and electric unit (control unit) 	
C1102	RR LH SENSOR-1	 When power supply voltage of rear wheel sensor LH is low. When an open or shorted circuit is detected in rear wheel sensor LH circuit. 			
C1103	FR RH SENSOR-1	 When power supply voltage of front wheel sensor RH is low. When an open or shorted circuit is detected in front wheel sensor RH circuit. 			
C1104	FR LH SENSOR-1	 When power supply voltage of front wheel sensor LH is low. When an open or shorted circuit is detected in front wheel sensor LH circuit. 			

DTC CONFIRMATION PROCEDURE

1. CHECK SELF DIAGNOSTIC RESULT

1. Start engine and drive vehicle at approximately 21 km/h (13 MPH) or more for approximately 5 minutes.

2. Check for DTC using CONSULT.

Is the DTC detected?

YES (Current DTC)>>Refer to BRC-70, "Diagnosis Procedure".

- YES (Past DTC)>>GO TO 2.
- NO >> Inspection End.

2. ERASE SELF DIAGNOSTIC RESULT

Erase the DTC using CONSULT.

Can the DTC be erased?

YES >> Inspection End.

NO >> Refer to <u>BRC-70, "Diagnosis Procedure"</u>.

Diagnosis Procedure

Regarding Wiring Diagram information, refer to <u>BRC-52, "Wiring Diagram"</u>.

CAUTION:

Do not check between wheel sensor terminals.

1.CONFIRM DTC

INFOID:000000011734963

< DTC/CIRCUIT DIA		C1103, C1104 W	HEEL SENSOR	[WITHOUT ICC]		
With CONSULT				[
1. Perform "Self Diagnostic Result" of "ABS" and record all active DTCs.						
2. Clear all DTCs.	•					
	 Perform DTC confirmation procedure. Refer to <u>BRC-70, "DTC Logic"</u>. <u>Does DTC C1101, C1102, C1103 or C1104 reset?</u> 					
YES >> GO TO 2		<u>reset?</u>			В	
	GI-42, "Intermittent Inc	<u>cident"</u> .				
2.INSPECT WHEEL					С	
Inspect the suspect w		ge or deformation.				
Is the inspection resu		ge ei derenneden.				
YES >> GO TO 3					D	
· · ·	replace as necessary					
3. HARNESS AND C	ONNECTOR INSPEC	TION			Е	
	actuator and electric	unit (control unit) con	nector E125 and whee	el sensor connector of		
suspect wheel. 2. Check harness.	connectors and termin	als for corrosion def	ormation disconnection	on, looseness or dam-	BRC	
age.					BRU	
Is the inspection resu	It normal?			_		
					G	
NO >> Repair or replace as necessary. Refer to <u>GI-42, "Intermittent Incident"</u> . 4. CHECK WHEEL SENSOR OUTPUT SIGNAL						
					Н	
		er (J-45741) to wheel s	sensor using appropria	ite adapter.	Π	
NOTE:	active wheel sensor te	ester power switch.				
				illuminate, replace the		
		tester before proceed		the ABS active wheel		
		tor should flash on and				
NOTE:					J	
If the red SENSC	DR indicator illuminate	es but does not flash,	reverse the polarity of	f the tester leads and		
	wheel sensor tester de	etect a signal?			Κ	
YES >> GO TO 5		<u> </u>				
				Removal and Installa-	I	
		EL SENSOR : Remov	al and Installation".		L	
5.CHECK WIRING H		RT TO VOLTAGE				
 Turn ignition swite Check voltage be 		arness connector tern	ninals of suspect whee	el and ground.	Μ	
	Wheel Sensor				NI	
Wheel	Connector	Terminal	Ground	Voltage	Ν	

Wheel Sensor		Ground	Voltage	Ν	
Wheel	Connector	Terminal	Giouna	voltage	
Front LH	E18	1			-
		2	-		0
Front RH	E43	1			
	L45	2		0V	Р
Rear LH	C10 C11	1			
		2			
Rear RH		1			
		2			

Is the inspection result normal?

YES >> GO TO 6.

C1101, C1102, C1103, C1104 WHEEL SENSOR

< DTC/CIRCUIT DIAGNOSIS >

>> Repair the circuit.

6. CHECK WIRING HARNESS FOR SHORT TO GROUND

1. Turn ignition switch OFF.

NO

2. Check continuity between wheel sensor harness connector terminals of suspect wheel and ground.

Wheel Sensor		Wheel Sensor		Continuity	
Wheel	Connector	Terminal	Ground	Continuity	
Front LH	E19	1			
	ETO	E18 2			
Front RH	E43	1		No	
		2			
Rear LH	C10	1			
		2			
Rear RH	C11	1			
	UII	2			

Is the inspection result normal?

YES >> GO TO 7.

NO >> Repair the circuit.

7.check wiring harness for short between circuits

Check continuity between wheel sensor harness connector terminals of suspect wheel.

Wheel Sensor		(+)	(-)	Continuity
Wheel	Connector	Terminal	Terminal	Continuity
Front LH	E18			_
Front RH	E43		2	No
Rear LH	C10	- I	2	INO
Rear RH	C11			

Is the inspection result normal?

YES >> GO TO 8.

NO >> Repair the circuit.

8.CHECK WIRING HARNESS FOR OPEN CIRCUIT

Check continuity between ABS actuator and electric unit (control unit) connector E125 and wheel sensor connector of wheel with DTC.

Wheel sensor	ABS actuator and ele	ectric unit (control unit)	Wheel sensor		Continuity
Wheel Sensor	Connector	Terminal	Connector	Terminal	
Front LH		8	E18	2	*
		19		1	*
Front RH		4	E43	2	
	– E125	16		1	Yes
Rear LH		18	C10	2	
		31		1	Ť
Rear RH		29	C11	2	
		17	011	1	Ţ

Is the inspection result normal?

YES >> GO TO 9.

NO >> Repair the circuit.

C1101, C1102, C1103, C1104 WHEEL SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[WITHOUT ICC]

А

В

Е

BRC

Κ

Ρ

9. Check abs actuator and electric unit (control unit) power supply circuit

1. Turn ignition switch ON.

2. Check voltage between ABS actuator and electric unit (control unit) harness connector E125 terminal and ground.

	and electric unit ol unit)	Ground	Condition	Voltage (Approx.)	C
Connector	Terminal			(Αρριολ.)	0
E125	E125 28		Ignition switch ON	Battery voltage	
E 125		28 —		Ignition switch OFF	0V

Is the inspection result normal?

YES >> GO TO 10.

NO >> Check the following:

• 10A fuse No. 46 located in the IPDM E/R

• Harness between ABS actuator and electric unit (control unit) and IPDM E/R

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

1. Turn ignition switch OFF.

2. Check continuity between ABS actuator and electric unit (control unit) connector E125 terminals and ground.

ABS actuator and electric unit (control unit)			Continuity	ы
Connector	Terminal		Continuity	
E125	13	Ground	Vaa	
E125	38	Giouria	Yes	

Is the inspection result normal?

YES >> GO TO 11.

NO >> Repair or replace malfunctioning components.

11. CHECK WHEEL SENSOR INPUT VOLTAGE

- 1. Connect ABS actuator and electric unit (control unit) connector E125.
- 2. Turn ignition switch ON.

3. Check voltage between suspect wheel sensor harness connector terminals.

	Sensor	(+)	(-)	Voltage (Approx.)	
Wheel	Connector	Terminal	Terminal	(Appiox.)	
Front LH	E18				M
Front RH	E43	1	2	Battery voltage	
Rear LH	C10		2	Dattery voltage	NI
Rear RH	C11				Ν

Is the inspection result normal?

YES >> Replace wheel sensor. Refer to <u>BRC-137, "FRONT WHEEL SENSOR : Removal and Installation"</u> or <u>BRC-138, "REAR WHEEL SENSOR : Exploded View"</u>. Then, GO TO 12.

NO >> Replace ABS actuator and electric unit (control unit). Refer to <u>BRC-142</u>, "<u>Removal and Installa-</u> tion".

12.CONFIRM REPAIR

With CONSULT

1. Clear all DTCs.

2. Perform DTC confirmation procedure. Refer to <u>BRC-70, "DTC Logic"</u>.

Does DTC C1101, C1102, C1103 or C1104 reset?

C1101, C1102, C1103, C1104 WHEEL SENSOR

< DTC/CIRCUIT DIAGNOSIS >

- YES >> Replace ABS actuator and electric unit (control unit). Refer to <u>BRC-142. "Removal and Installa-</u> tion".
- NO >> Inspection End.

C1105, C1106, C1107, C1108 WHEEL SENSOR

< DTC/CIRCUIT DIAGNOSIS >

C1105, C1106, C1107, C1108 WHEEL SENSOR

DTC Logic

DTC DETECTION LOGIC

NOTE:

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

DTO	Disalau itaa		Possib	le cause		
DTC	Display item	Malfunction detected condition	Past DTC	Current DTC	D	
C1105	RR RH SENSOR-2	 When distance between rear wheel sensor RH and rear wheel sensor RH rotor is large. When installation of rear wheel sensor RH or rear wheel sensor RH rotor is not normal. 	 Tire size Contamination on sensor rotor Position of sensor rotor and wheel sensor Harness or connector 	 Tire size Contamination on sensor rotor Position of sensor rotor and wheel sensor Harness or connector 	E	
C1106	RR LH SENSOR-2	 When distance between rear wheel sensor LH and rear wheel sensor LH rotor is large. When installation of rear wheel sensor LH or rear wheel sensor LH rotor is not normal. 	 Wheel sensor mounting bolt loose Vehicle has been operat- ed on a 2-wheel dyna- mometer or towed using a 2-wheel dolly 	 Wheel sensor Sensor rotor ABS actuator and electric unit (control unit) Wheel sensor mounting bolt loose Vehicle has been operat- 	BR(
C1107	FR RH SENSOR-2	 When distance between front wheel sensor RH and front wheel sensor RH rotor is large. When installation of front wheel sensor RH or front wheel sensor RH rotor is not normal. 		ed on a 2-wheel dyna- mometer or towed using a 2-wheel dolly	H	
C1108	FR LH SENSOR-2	 When distance between front wheel sensor LH and front wheel sensor LH rotor is large. When installation of front wheel sensor LH or front wheel sensor LH rotor is not normal. 			J	
1. CHE 1. Sta 2. Ch	eck for DTC using CO	IC RESULT nicle at approximately 21 km/h	(13 MPH) or more for ap	proximately 5 minutes.	K	
YES (YES (Past DTC)>>GO TO 2	to <u>BRC-75. "Diagnosis Procedu</u>	<u>ıre"</u> .		Μ	
NO 2	>> Inspection End.				Ν	
	Z .ERASE SELF DIAGNOSTIC RESULT					
	he DTC using CONSU <u>e DTC be erased?</u> >> Inspection End. >> Refer to BRC-75.	"Diagnosis Procedure".			0	
	osis Procedure	<u></u> .		INFOID:000000011734965	Ρ	

Regarding Wiring Diagram information, refer to BRC-52, "Wiring Diagram".

CAUTION:

Do not check between wheel sensor terminals.

[WITHOUT ICC]

INFOID:000000011734964

В

С

А

C1105, C1106, C1107, C1108 WHEEL SENSOR

< DTC/CIRCUIT DIAGNOSIS >

1.CONFIRM DTC

- (I) With CONSULT
- 1. Perform "Self Diagnostic Result" of "ABS" and record all active DTCs.
- 2. Clear all DTCs.
- 3. Perform DTC confirmation procedure. Refer to <u>BRC-75, "DTC Logic"</u>.

Does DTC C1105, C1106, C1107 or C1108 reset?

YES >> GO TO 2.

NO >> Refer to <u>GI-42</u>, "Intermittent Incident".

2.CHECK TIRE PRESSURE AND TIRE WEAR

Check tires for excessive wear and proper inflation. Refer to WT-64, "Inspection".

Is the inspection result normal?

YES >> GO TO 3.

- NO >> Repair or replace as necessary.
- 3.CHECK WHEEL SENSOR

Check wheel sensor for the following:

- Proper installation
- Physical damage
- Contamination

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace as necessary. Refer to <u>BRC-137</u>, "FRONT WHEEL SENSOR : Removal and <u>Installation</u>" or <u>BRC-139</u>, "REAR WHEEL SENSOR : Removal and Installation".

4.CHECK SENSOR ROTOR

Check sensor rotor for the following:

- Contamination
- Physical damage (missing teeth, cracks, etc.)
- Foreign material
- Looseness

Is the inspection result normal?

YES >> Replace the wheel sensor. Refer to <u>BRC-137</u>, "FRONT WHEEL SENSOR : Removal and Installation" or <u>BRC-139</u>, "REAR WHEEL SENSOR : Removal and Installation". Then, GO TO 5.

NO >> Repair or replace as necessary.

5.CONFIRM REPAIR

(I) With CONSULT

- 1. Clear all DTCs.
- 2. Perform DTC confirmation procedure. Refer to <u>BRC-75. "DTC Logic"</u>.

Does DTC C1105, C1106, C1107 or C1108 reset?

- YES >> Replace ABS actuator and electric unit (control unit). Refer to <u>BRC-142. "Removal and Installa-</u> tion".
- NO >> Inspection End.

C1109 POWER AND GROUND SYSTEM

< DTC/CIRCUIT DIAGNOSIS >

C1109 POWER AND GROUND SYSTEM

DTC Logic

DTC DETECTION LOGIC

NOTE:

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

DTO	Display item		Possib	ble cause	
DTC	Display item	Malfunction detected condition	Past DTC	Current DTC	D
C1109	BATTERY VOLTAGE [ABNORMAL]	 When ignition voltage is 10 V or less. When ignition voltage is 16 V or more. 	 Battery Harness or connector Intermitten incident 	 Fuse Battery Ignition power supply system Harness or connector ABS actuator and electric unit (control unit) Intermitten incident 	E
DTC C	ONFIRMATION PRO	OCEDURE			
1.сне	ECK SELF DIAGNOST	IC RESULT			G
	rn ignition switch ON.				
	eck for DTC using COI <u>)TC detected?</u>	NSULI.			Н
		to <u>BRC-77, "Diagnosis Proced</u>	ure".		
YES (Past DTC)>>GO TO 2				
	>> Inspection End.				
	he DTC using CONSU				I
	e DTC be erased?	L1.			J
YES	>> Inspection End.				
NO		"Diagnosis Procedure".			K
Diagn	osis Procedure			INFOID:000000011734967	
					L
Regard	ing Wiring Diagram inf	ormation, refer to <u>BRC-52, "Wi</u>	ring Diagram".		
					M
1 .com	NECTOR INSPECTIO	DN			
2. Dis		and electric unit (control unit) or minals for deformation, discon		image.	Ν
<u>Is the ir</u>	nspection result normal	<u> ?</u>			0
YES NO	>> GO TO 2. >> Repair or replace	as necessary			0
-		AND ELECTRIC UNIT (CONTF			
		actuator and electric unit (contr			Ρ
CHECK	Vollage Deliveell ADS a			terminai 20 anu grounu.	

ABS actuator and electric unit (control unit)		Ground	Condition	Voltage
Connector	Terminal			

А

В

С

INFOID:0000000011734966

C1109 POWER AND GROUND SYSTEM

< DTC/CIRCUIT DIAGNOSIS >

[WITHOUT ICC]

E125	28		Ignition switch ON	Battery voltage
	20	—	Ignition switch OFF	0V

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace malfunctioning components.

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

1. Turn ignition switch OFF.

2. Check continuity between ABS actuator and electric unit (control unit) connector E125 terminals 13, 38 and ground.

ABS actuator and ele	ectric unit (control unit)		Continuity
Connector	Terminal	_	Continuity
E125	13	Cround	Yes
E125	38	- Ground	ies

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace malfunctioning components.

4.INTERMITTENT CHECK

Check for intermittent incident. Refer to GI-42, "Intermittent Incident".

Is the inspection result normal?

- YES >> Replace ABS actuator and electric unit (control unit). Refer to <u>BRC-142, "Removal and Installa-</u> tion".
- NO >> Repair or replace malfunctioning components.

C1110, C1153, C1170 ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT) < DTC/CIRCUIT DIAGNOSIS > [WITHOUT ICC]

C1110, C1153, C1170 ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)

DTC Logic

INFOID:000000011734968

А

В

DTC DETECTION LOGIC

NOTE:

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

C1110 CONTROLLER FAILURE When there is an internal malfunc- tion in the ABS actuator and electric unit (control unit). Past DTC Current DTC C1110 CONTROLLER FAILURE When there is an internal malfunc- tion in the ABS actuator and electric unit (control unit). Electromagnetic interfer- ence • Electromagnetic interfer- ence • ABS actuator and electric unit (control unit) C1153 EMERGENCY BRAKE When ABS actuator and electric unit (control unit) Electromagnetic interfer- ence • ABS actuator and electric unit (control unit) C1170 VARIANT CODING In a case where VARIANT CODING Electromagnetic interfer- ence • ABS actuator and electric unit (control unit) DTC CONFIRMATION PROCEDURE 1. CHECK SELF DIAGNOSTIC RESULT • Current DTC) 1. Turn ignition switch ON. 2. Check for DTC using CONSULT. Electromagnetic 1. Stab DTC detected? YES (Current DTC)>>Refer to BRC-79. "Diagnosis Procedure". YES (Current DTC)>>Refer to BRC-79. "Diagnosis Procedure". YES (Past DTC)>>CRESULT Erase the DTC using CONSULT. Each DTC be erased? YES > Inspection End. NO >> Refer to BRC-79. "Diagnosis Procedure". NO >> Refer to BRC-79. "Diagnosis Procedure". Diagnosis Procedure Diagnosis Procedure Image: Procedure "Diagnosis Procedure". Image: Procedure "Diagnosis Procedure". 1. REPLACE ABS ACTUATOR AND	DTC	Dianlovitom	Molfunction datastad sandition	Possil	ole cause
C1110 CONTROLLER FAILURE tion in the ABS actuator and electric unit (control unit). Electromagnetic interference • Electromagnetic interference C1153 EMERGENCY BRAKE When ABS actuator and electric unit (control unit). Electromagnetic interference • ABS actuator and electric unit (control unit) C1170 VARIANT CODING In a case where VARIANT CODING Electromagnetic interference • ABS actuator and electric unit (control unit) C1170 VARIANT CODING In a case where VARIANT CODING Electromagnetic interference • ABS actuator and electric unit (control unit) C1170 VARIANT CODING In a case where VARIANT CODING Electromagnetic interference • ABS actuator and electric unit (control unit) C1170 VARIANT CODING In a case where VARIANT CODING Electromagnetic interference • ABS actuator and electric unit (control unit) C1170 VARIANT CODING In a case where VARIANT CODING Electromagnetic interference • ABS actuator and electric unit (control unit) C1170 VARIANT CODING In a case where VARIANT CODING Electromagnetic interference • ABS actuator and electric unit (control unit) 1 Turn ignition switch ON. Electromagnetic interference • Electromagnetic interference • Electromagnetic interference	DTC	Display item	Malfunction detected condition	Past DTC	Current DTC
C1153 EMERGENCY BRAKE Winit ASS actuator and electric unit (control unit) is malfunctioning. (Pressure increase is too much or too little) Electromagnetic interference • ABS actuator and electric unit (control unit) C1170 VARIANT CODING In a case where VARIANT CODING Electromagnetic interference • ABS actuator and electric unit (control unit) C1170 VARIANT CODING In a case where VARIANT CODING Electromagnetic interference • ABS actuator and electric unit (control unit) DTC CONFIRMATION PROCEDURE In a case where VARIANT CODING In a case where VARIANT CODING • unit (control unit) 1 Turn ignition switch ON. 2. Check for DTC using CONSULT. • Unit (control unit) 1 Turn ignition switch ON. 2. Check for DTC)>>Refer to BRC-79, "Diagnosis Procedure". • YES (Current DTC)>>Refer to BRC-79, "Diagnosis Procedure". YES (Current DTC)>>Refer to BRC-79, "Diagnosis Procedure". • NO >> Inspection End. 2.ERASE SELF DIAGNOSTIC RESULT • Erase the DTC using CONSULT. • Meroprocedure". YES >> Inspection End. • NO >> Refer to BRC-79, "Diagnosis Procedure". • Meroprocedure". Diagnosis Procedure • Meroprocedure". • Meroprocedure". • Meroprocedure". Diagnosis Procedure • Mero	C1110	CONTROLLER FAILURE	tion in the ABS actuator and electric		
C1170 VARIANT CODING is different. DTC CONFIRMATION PROCEDURE 1. CHECK SELF DIAGNOSTIC RESULT 1. Turn ignition switch ON. 2. Check for DTC using CONSULT. Is the DTC detected? YES (Current DTC)>>Refer to BRC-79, "Diagnosis Procedure". YES (Past DTC)>>GO TO 2. NO NO >> Inspection End. 2. ERASE SELF DIAGNOSTIC RESULT Erase the DTC using CONSULT. Can the DTC be erased? YES YES YES NO Proceococcentre I.REPLACE ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT) CAUTION: Replace ABS actuator and electric unit (control unit) when self diagnostic result shows items other	C1153	EMERGENCY BRAKE	(control unit) is malfunctioning. (Pressure increase is too much or	•	ence ABS actuator and electric
1. CHECK SELF DIAGNOSTIC RESULT 1. Turn ignition switch ON. 2. Check for DTC using CONSULT. Is the DTC detected? YES (Current DTC)>>Refer to BRC-79, "Diagnosis Procedure". YES (Past DTC)>>GO TO 2. NO >> Inspection End. 2. ERASE SELF DIAGNOSTIC RESULT Erase the DTC using CONSULT. Can the DTC be erased? YES YES PYES NO NO >> Inspection End. 2. ERASE SELF DIAGNOSTIC RESULT Erase the DTC using CONSULT. Can the DTC be erased? YES YES NO >> Inspection End. NO >> Refer to BRC-79, "Diagnosis Procedure". Diagnosis Procedure VERDED 1. REPLACE ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT) CAUTION: Replace ABS actuator and electric unit (control unit) when self diagnostic result shows items other	C1170	VARIANT CODING		-	
1. Turn ignition switch ON. 2. Check for DTC using CONSULT. Is the DTC detected? YES (Current DTC)>>Refer to BRC-79, "Diagnosis Procedure". YES (Past DTC)>>GO TO 2. NO >> Inspection End. 2.ERASE SELF DIAGNOSTIC RESULT Erase the DTC using CONSULT. Can the DTC be erased? YES YES Pinspection End. NO >> Inspection End. NO YES Pinspection End. NO >> Inspection End. NO >> Refer to BRC-79. "Diagnosis Procedure". Diagnosis Procedure NFORD-00000011734999 1.REPLACE ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT) CAUTION: Replace ABS actuator and electric unit (control unit) when self diagnostic result shows items other	DTC C	ONFIRMATION PRO	CEDURE		
2. Check for DTC using CONSULT. Is the DTC detected? YES (Current DTC)>>Refer to BRC-79, "Diagnosis Procedure". YES (Past DTC)>>GO TO 2. NO >> Inspection End. 2. ERASE SELF DIAGNOSTIC RESULT Erase the DTC using CONSULT. Can the DTC be erased? YES >> Inspection End. NO >> Refer to BRC-79, "Diagnosis Procedure". Diagnosis Procedure I.REPLACE ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT) CAUTION: Replace ABS actuator and electric unit (control unit) when self diagnostic result shows items other	1. CHE	CK SELF DIAGNOST	IC RESULT		
Can the DTC be erased? YES >> Inspection End. NO >> Refer to BRC-79. "Diagnosis Procedure". Diagnosis Procedure Infolio:00000011734969 1.REPLACE ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT) CAUTION: Replace ABS actuator and electric unit (control unit) when self diagnostic result shows items other	Is the D YES (YES (NO	<u>)TC detected?</u> Current DTC)>>Refer t Past DTC)>>GO TO 2. >> Inspection End.	o <u>BRC-79, "Diagnosis Procedu</u>	<u>ıre"</u> .	
YES >> Inspection End. NO >> Refer to BRC-79, "Diagnosis Procedure". Diagnosis Procedure INFOID:00000011734969 1.REPLACE ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT) CAUTION: Replace ABS actuator and electric unit (control unit) when self diagnostic result shows items other		•	LT.		
1.REPLACE ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT) CAUTION: Replace ABS actuator and electric unit (control unit) when self diagnostic result shows items other	YES	>> Inspection End.	"Diagnosis Procedure".		
CAUTION: Replace ABS actuator and electric unit (control unit) when self diagnostic result shows items other	Diagn	osis Procedure			INFOID:000000011734969
Replace ABS actuator and electric unit (control unit) when self diagnostic result shows items other	1.REP	PLACE ABS ACTUATO	R AND ELECTRIC UNIT (CON	ITROL UNIT)	
	Replac	e ABS actuator and	electric unit (control unit) w	hen self diagnostic re	sult shows items other

>> Replace ABS actuator and electric unit (control unit). Refer to <u>BRC-142, "Removal and Installa-</u> <u>tion"</u>.

Ρ

C1111 PUMP MOTOR

< DTC/CIRCUIT DIAGNOSIS >

C1111 PUMP MOTOR

DTC Logic

INFOID:000000011241096

DTC DETECTION LOGIC

DTC	Display Item	Malfunction detected condition	Possible causes
		Diagnosis condition	When ignition is ON.
C1111	C1111 PUMP MOTOR	Signal (terminal)	Motor relay power supply (termi- nal 1) Motor relay ground circuit (termi- nals 13 and 38)
		Threshold	When a malfunction is detected in motor or motor relay
		Diagnosis delay time	_

POSSIBLE CAUSE

- Harness or connector
- ABS actuator and electric unit (control unit)
- Fusible link
- Battery power supply system

FAIL-SAFE

DTC CONFIRMATION PROCEDURE

1.CHECK SELF DIAGNOSTIC RESULT

With CONSULT

- 1. Turn ignition switch OFF.
- 2. Depress brake pedal 20 times or more.
- 3. Start the engine and wait for 3 minutes or more.
- 4. Perform "Self Diagnostic Result" mode of "ABS".

Is DTC C1111 detected?

YES >> Proceed to diagnosis procedure. Refer to <u>BRC-80, "Diagnosis Procedure"</u>.

NO >> Inspection End.

Diagnosis Procedure

INFOID:000000011241097

Regarding Wiring Diagram information, refer to <u>BRC-52, "Wiring Diagram"</u>.

1.CONNECTOR INSPECTION

- 1. Turn ignition switch OFF.
- 2. Disconnect ABS actuator and electric unit (control unit) connectors.
- 3. Check connectors and terminals for deformation, disconnection, looseness or damage.

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace as necessary.

2.CHECK ABS MOTOR AND MOTOR RELAY BATTERY POWER SUPPLY

Check voltage between ABS actuator and electric unit (control unit) connector E125 terminal 1 and ground.

ABS actuator and ele	ectric unit (control unit)		Voltage
Connector	Terminal		(Approx.)
E125	1	Ground	Battery voltage

C1111 PUMP MOTOR

< DTC/CIRCUIT DIAGNOSIS >

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace malfunctioning components.

3. check abs actuator and electric unit (control unit) ground circuit

Check continuity between ABS actuator and electric unit (control unit) connector E125 terminals 13 and 38 and ground.

ABS actuator and ele	ctric unit (control unit)		Continuity	C
Connector	Terminal		Continuity	
E125	13	Ground Yes	Vec	D
	38	Ground	165	

Is the inspection result normal?

YES	>> Replace ABS actuator and electric unit (control unit). Refer to <u>BRC-142, "Removal and Installa-</u>
	tion".

NO >> Repair or replace harness.

BRC

Ε

А

В

G

Н

J

Κ

L

Μ

Ν

Ο

Ρ

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

< DTC/CIRCUIT DIAGNOSIS >

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

DTC Logic

INFOID:000000011569058

[WITHOUT ICC]

DTC DETECTION LOGIC

DTC No.	Display Item	DTC detection co	ndition
		Diagnosis condition	When ignition switch is ON.
		Signal (terminal)	—
C1113	G SENSOR	Threshold	When a malfunction is detected in longitudinal G sensor signal
		Diagnosis delay time	—
		Diagnosis condition	When ignition switch is ON.
		Signal (terminal)	_
C1145	YAW RATE SENSOR	Threshold	 When a malfunction is detected in yaw rate signal. When yaw rate signal is not continuously received for 2 seconds or more When side G signal is not continuously received for 2 seconds or more When decel G signal is not continuously received for 2 seconds or more When decel G signal is not continuously received for 2 seconds or more
		Diagnosis delay time	-
		Diagnosis condition	When ignition switch is ON.
		Signal (terminal)	—
C1146	SIDE G-SEN CIRCUIT	Threshold	When a malfunction is detected in side/decel G signal
		Diagnosis delay time	—

POSSIBLE CAUSE

- Harness or connector
- ABS actuator and electric unit (control unit)
- Fuse
- Yaw rate/side/decel G sensor

FAIL-SAFE

DTC CONFIRMATION PROCEDURE

1. CHECK SELF DIAGNOSTIC RESULT

() With CONSULT

- 1. Turn ignition switch OFF to ON.
- 2. Perform "Self Diagnostic Result" mode of "ABS".
- 3. Check DTC.
- Is DTC C1113, C1145 or C1146 detected?
- YES >> Proceed to diagnosis procedure. Refer to <u>BRC-82, "Diagnosis Procedure"</u>.
- NO >> Inspection End.

Diagnosis Procedure

INFOID:000000011241099

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

BRC-82

Replace ABS actuator and electric unit (control unit).

>> Replace ABS actuator and electric unit (control unit). Refer to <u>BRC-142, "Removal and Installa-</u> tion".

BRC

А

В

С

D

Ε

Н

J

Κ

L

Μ

Ν

Ο

Ρ

G

C1115 ABS SENSOR [ABNORMAL SIGNAL]

< DTC/CIRCUIT DIAGNOSIS >

C1115 ABS SENSOR [ABNORMAL SIGNAL]

DTC Logic

DTC DETECTION LOGIC

NOTE:

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

DTC	Display item	Malfunction detected condition	Possible cause		
DIC	TC Display item Malfunction detected conditi		Past DTC	Current DTC	
C1115	ABS SENSOR [ABNORMAL SIGNAL]	When difference in wheel speed be- tween any wheel and others is de- tected while the vehicle is driven, because of installation of tires other than specified.	 Low battery voltage Tire size Contamination on sensor rotor Position of sensor rotor and wheel sensor Wheel sensor mounting bolt loose Vehicle has been operat- ed on 2-wheel dynamom- eter or towed using a 2- wheel dolly 	 Low battery voltage Tire size Contamination on sensor rotor Position of sensor rotor and wheel sensor Harness or connector Wheel sensor Sensor rotor ABS actuator and electric unit (control unit) Wheel sensor mounting bolt loose Vehicle has been operat- ed on 2-wheel dynamom- eter or towed using a 2- wheel dolly 	

DTC CONFIRMATION PROCEDURE

1. CHECK SELF DIAGNOSTIC RESULT

1. Start engine and drive vehicle at approximately 21 km/h (13 MPH) or more for approximately 5 minutes.

2. Check for DTC using CONSULT.

Is the DTC detected?

YES (Current DTC)>>Refer to BRC-84, "Diagnosis Procedure".

YES (Past DTC)>>GO TO 2.

NO >> Inspection End.

2. ERASE SELF DIAGNOSTIC RESULT

Erase the DTC using CONSULT.

Can the DTC be erased?

- YES >> Inspection End.
- NO >> Refer to <u>BRC-84, "Diagnosis Procedure"</u>.

Diagnosis Procedure

INFOID:000000011734971

Regarding Wiring Diagram information, refer to <u>BRC-52, "Wiring Diagram"</u>.

CAUTION:

Do not check between wheel sensor terminals.

1.CONNECTOR INSPECTION

1. Disconnect ABS actuator and electric unit (control unit) connector E125 and wheel sensor connector of wheel with DTC.

2. Check terminals for deformation, disconnection, looseness or damage.

Is the inspection result normal?

YES >> GO TO 2.

INFOID:000000011734970

[WITHOUT ICC]

А

В

D

Е

BRC

Н

Κ

Μ

Ν

C1115 ABS SENSOR [ABNORMAL SIGNAL]

< DTC/CIRCUIT DIAGNOSIS > NO >> Repair or replace as necessary. 2. CHECK WHEEL SENSOR OUTPUT SIGNAL 1. Connect ABS active wheel sensor tester (J-45741) to wheel sensor using appropriate adapter. Turn on the ABS active wheel sensor tester power switch. 2. NOTE: The green POWER indicator should illuminate. If the POWER indicator does not illuminate, replace the battery in the ABS active wheel sensor tester before proceeding. 3. Spin the wheel of the vehicle by hand and observe the red SENSOR indicator on the ABS active wheel sensor tester. The red SENSOR indicator should flash on and off to indicate an output signal. NOTE: If the red SENSOR indicator illuminates but does not flash, reverse the polarity of the tester leads and retest. Does the ABS active wheel sensor tester detect a signal? YES >> GO TO 5. NO >> GO TO 3. 3.CHECK WHEEL SENSOR Check wheel sensor for the following: · Proper installation Physical damage Contamination Is the inspection result normal? >> GO TO 4. YES NO >> Repair or replace as necessary. 4.CHECK SENSOR ROTOR Check sensor rotor for the following: Contamination Physical damage (missing teeth, cracks, etc.) Foreign material Looseness Is the inspection result normal? >> Replace the wheel sensor. Refer to BRC-137, "FRONT WHEEL SENSOR : Removal and Installa-YES tion" or BRC-139, "REAR WHEEL SENSOR : Removal and Installation". NO >> Repair or replace as necessary. **5.**CHECK TIRES Check the inflation pressure, wear and size of each tire. Is the inspection result normal? YES >> GO TO 6. NO >> Adjust tire pressure, or replace tire(s). **O**.CHECK WIRING HARNESS FOR SHORT CIRCUIT Check continuity between wheel sensor connector terminals and ground of wheel with DTC.

	Wheel Sensor	Ground	Continuity		
Wheel	Connector	Terminal	Giouna	Continuity	0

P

C1115 ABS SENSOR [ABNORMAL SIGNAL]

< DTC/CIRCUIT DIAGNOSIS >

[WITHOUT ICC]

Front LH	E18	1		
	LIU	2		
Front RH	E43	1	*	
		2		No
Rear LH	C10	1		NO
	CIU	2		
Rear RH	C11	1		
	OT	2	-	

Is the inspection result normal?

YES >> GO TO 7.

NO >> Repair the circuit.

7. Check wiring harness for open circuit

Check continuity between ABS actuator and electric unit (control unit) connector E125 and wheel sensor connector of wheel with DTC.

Wheel sensor	ABS actuator and ele	ctric unit (control unit)	Wheel	sensor	Continuity
wheel sensor	Connector	Terminal	Connector	Terminal	
Front LH		8	E18	2	
		19	E IO	1	
Front RH	E125	4	E43 C10	2	Yes
		16		1	
Rear LH	2120	18		2	
		31	010	1	
Rear RH		29	C11	2	
		17	011	1	

Is the inspection result normal?

YES >> Replace the ABS actuator and electric unit (control unit). Refer to <u>BRC-142, "Removal and Instal-</u><u>lation"</u>.

NO >> Repair the circuit.

C1116 STOP LAMP SWITCH

< DTC/CIRCUIT DIAGNOSIS >

C1116 STOP LAMP SWITCH

DTC Logic

DTC DETECTION LOGIC

NOTE:

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

DTO	Display item	Molfunction data atod condition	Possib	ole cause	
DTC	Display item	Malfunction detected condition	Past DTC	Current DTC	D
C1116	STOP LAMP SW	When stop lamp switch circuit is open or stop lamp switch is out of adjustment.	 Harness or connector Stop lamp switch 	 Harness or connector Stop lamp switch Stop lamp relay ABS actuator and electric unit (control unit) 	E
DTC C	ONFIRMATION PRO	CEDURE			BRC
1. CHE	CK SELF DIAGNOST	IC RESULT			BIXO
2. Ch	rn ignition switch ON. eck for DTC using CON	NSULT.			G
YES (YES (NO	Past DTC)>>GO TO 2. >> Inspection End.		<u>ure"</u> .		Н
	SE SELF DIAGNOSTI				I
	he DTC using CONSU	LT.			
YES NO	<u>e DTC be erased?</u> >> Inspection End. >> Refer to <u>BRC-87.</u>	"Diagnosis Procedure".			J
Diagn	osis Procedure			INFCID:000000011734973	K
Regard	ing Wiring Diagram inf	ormation, refer to <u>BRC-52, "Wi</u>	ring Diagram".		1
1 .com	NECTOR INSPECTIC	DN			L
2. Ch		ay connector and ABS actuator mation, disconnection, loosene		I unit) connector.	Μ
YES NO	>> GO TO 2.>> Repair or replace	as necessary.			Ν
2.сне	ECK STOP LAMP SWI	TCH CIRCUIT			\bigcirc
2. Ch	nnect stop lamp switch eck voltage between <i>b</i> ound.	connector. ABS actuator and electric uni	t (control unit) connectc	or E125 terminal 30 and	P

ABS actuator and electric unit (control unit)		Ground	Condition	Voltage	
Connector	Terminal	Ground	Condition	(Approx.)	
E125	30		Brake pedal depressed	Battery voltage	
L 125	50	—	Brake pedal released	0V	

Is the inspection result normal?

2015 Murano

INFOID:000000011734972

А

В

С

C1116 STOP LAMP SWITCH

< DTC/CIRCUIT DIAGNOSIS >

YES >> Adjust stop lamp switch. Refer to <u>BR-15, "Adjustment"</u>.

NO >> GÓ TO 3.

3.CHECK STOP LAMP SWITCH CIRCUIT FOR OPEN

1. Disconnect stop lamp switch connector.

2. Check continuity between ABS actuator and electric unit (control unit) connector E125 terminal 30 and stop lamp switch connector E38 terminal 2.

ABS actuator and ele	ABS actuator and electric unit (control unit)		lamp switch	Continuity	
Connector	Terminal	Connector	Terminal	Continuity	
E125	30	E38	2	Yes	

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace as necessary.

4.CHECK STOP LAMP SWITCH CIRCUIT FOR SHORT

Check continuity between ABS actuator and electric unit (control unit) connector E125 terminal 30 and ground.

ABS actuator and ele	ectric unit (control unit)	Ground	Continuity
Connector	Terminal		
E125	30	_	No

Is the inspection result normal?

YES >> Refer to <u>BRC-60, "Work Flow"</u>.

NO >> Repair harness or connectors.

Component Inspection

1.CHECK STOP LAMP SWITCH

1. Turn the ignition switch OFF.

2. Disconnect stop lamp switch harness connector.

3. Check continuity when stop lamp switch is operated.

Stop lamp switch	Condition	Continuity	
Terminal	Condition	Continuity	
1-2	When stop lamp switch is pressed (When brake pedal is depressed)	Yes	
1 – 2	When stop lamp switch is released (When brake pedal is released)	No	

Is the inspection result normal?

YES >> Inspection End.

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

INFOID:0000000011742498

C1120, C1122, C1124, C1126 ABS IN VALVE SYSTEM

< DTC/CIRCUIT DIAGNOSIS >

C1120, C1122, C1124, C1126 ABS IN VALVE SYSTEM

DTC Logic

DTC DETECTION LOGIC

DTC No.	Display Item	DTC	detection condition	С
		Diagnosis condition	When ignition switch is ON.	
		Signal (terminal)	-	
C1120	FR LH IN ABS SOL	Threshold	When a malfunction is detected in front LH ABS IN valve	D
		Diagnosis delay time	-	_
		Diagnosis condition	When ignition switch is ON.	E
		Signal (terminal)	_	
C1122	FR RH IN ABS SOL	Threshold	When a malfunction is detected in front RH ABS IN valve	BRC
		Diagnosis delay time	_	
	C1124 RR LH IN ABS SOL	Diagnosis condition	When ignition switch is ON.	G
		Signal (terminal)		
C1124		Threshold	When a malfunction is detected in rear LH ABS IN valve	Н
		Diagnosis delay time		
		Diagnosis condition	When ignition switch is ON.	
		Signal (terminal)		
C1126	RR RH IN ABS SOL	Threshold	When a malfunction is detected in rear RH ABS IN valve	I
		Diagnosis delay time	_	J
HarneABS aFusib	-	(control unit)		K
	ry power supply system			L
FAIL-S	AFE			
—				

DTC CONFIRMATION PROCEDURE

1. CHECK SELF DIAGNOSTIC RESULT

(P)With CONSULT

1. Turn ignition switch OFF to ON.

Perform "Self Diagnostic Result" mode of "ABS". 2.

Is DTC C1120, C1122, C1124 or C1126 detected?

YES >> Proceed to diagnosis procedure. Refer to BRC-89, "Diagnosis Procedure".

>> Inspection End. NO

Diagnosis Procedure

Regarding Wiring Diagram information, refer to <u>BRC-52, "Wiring Diagram"</u>.

1.CONNECTOR INSPECTION

INFOID:000000011241103

[WITHOUT ICC]

INFOID:000000011569068

Μ

Ν

Ο

Ρ

А

C1120, C1122, C1124, C1126 ABS IN VALVE SYSTEM

< DTC/CIRCUIT DIAGNOSIS >

1. Turn ignition switch OFF.

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

3. Check connectors and terminals for deformation, disconnection, looseness or damage.

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace as necessary.

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

Check voltage between ABS actuator and electric unit (control unit) connector E125 terminal 25 and ground.

ABS actuator and electric unit (control unit)			Voltage
Connector	Terminal		(Approx.)
E125	25	Ground	Battery voltage

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace malfunctioning components.

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

Check continuity between ABS actuator and electric unit (control unit) connector E125 terminals 13 and 38 and ground.

ABS actuator and electric unit (control unit)			Continuity	
Connector	Terminal		Continuity	
E125	13	Ground	Yes	
L 125	38	Ground	163	

Is the inspection result normal?

YES >> Replace ABS actuator and electric unit (control unit). Refer to <u>BRC-142, "Removal and Installa-</u> tion".

NO >> Repair or replace malfunctioning components.

C1121, C1123, C1125, C1127 ABS OUT VALVE SYSTEM

< DTC/CIRCUIT DIAGNOSIS >

C1121, C1123, C1125, C1127 ABS OUT VALVE SYSTEM

DTC Logic

DTC DETECTION LOGIC

DTC No.	Display Item	DTC o	detection condition	C
		Diagnosis condition	When ignition switch is ON.	C
		Signal (terminal)	_	
C1121 FR LH OUT	FR LH OUT ABS SOL	Threshold	When a malfunction is detected in front LH ABS OUT valve	D
		Diagnosis delay time		_
		Diagnosis condition	When ignition switch is ON.	E
		Signal (terminal)	-	
C1123	FR RH OUT ABS SOL	Threshold	When a malfunction is detected in front RH ABS OUT valve	BR
		Diagnosis delay time		
		Diagnosis condition	When ignition switch is ON	G
C1125 RR LH OUT ABS SOL	Signal (terminal)			
	RR LH OUT ABS SOL	Threshold	When a malfunction is detected in rear LH ABS OUT valve	Н
		Diagnosis delay time	_	
		Diagnosis condition	When ignition switch is ON.	
		Signal (terminal)	—	I
C1127	RR RH OUT ABS SOL	Threshold	When a malfunction is detected in rear RH ABS OUT valve	
		Diagnosis delay time	—	J
Harne ABS a Fusibl Batter	y power supply system	control unit)		K
AIL-S	AFE			
-				M
JIC C	ONFIRMATION PROCI	LUUKE		

1. CHECK SELF DIAGNOSTIC RESULT

With CONSULT

- 1. Turn ignition switch OFF to ON.
- 2. Perform "Self Diagnostic Result" mode of "ABS".

Check DTC.

Is DTC C1121, C1123, C1125 or C1127 detected?

YES >> Proceed to diagnosis procedure. Refer to <u>BRC-91, "Diagnosis Procedure"</u>.

NO >> Inspection End.

Diagnosis Procedure

Regarding Wiring Diagram information, refer to BRC-52, "Wiring Diagram".

INFOID:000000011241105

Ν

Ο

Ρ

[WITHOUT ICC]

INFOID:000000011569073

В

C1121, C1123, C1125, C1127 ABS OUT VALVE SYSTEM

< DTC/CIRCUIT DIAGNOSIS >

[WITHOUT ICC]

1.CONNECTOR INSPECTION

1. Turn ignition switch OFF.

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

3. Check connectors and terminals for deformation, disconnection, looseness or damage.

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace as necessary.

 $2. {\sf CHECK} \ {\sf ABS} \ {\sf ACTUATOR} \ {\sf AND} \ {\sf ELECTRIC} \ {\sf UNIT} \ ({\sf CONTROL} \ {\sf UNIT}) \ {\sf BATTERY} \ {\sf POWER} \ {\sf SUPPLY}$

Check voltage between ABS actuator and electric unit (control unit) connector E125 terminal 25 and ground.

ABS actuator and ele	ectric unit (control unit)		Voltage
Connector	Terminal		(Approx.)
E125	25	Ground	Battery voltage

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace malfunctioning components.

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

Check continuity between ABS actuator and electric unit (control unit) connector E125 terminals 13 and 38 and ground.

ABS actuator and ele	ectric unit (control unit)	_	Continuity	
Connector	Terminal		Continuity	
E125	13	Ground	Yes	
E125	38	Ground	105	

Is the inspection result normal?

YES >> Replace ABS actuator and electric unit (control unit). Refer to <u>BRC-142</u>, "<u>Removal and Installa-</u> <u>tion</u>".

NO >> Repair or replace malfunctioning components.

C1130 ENGINE SIGNAL

< DTC/CIRCUIT DIAGNOSIS >

C1130 ENGINE SIGNAL

DTC Logic

DTC DETECTION LOGIC

NOTE:

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

	Disalau itaa		Possib	le cause	
DTC	Display item	Malfunction detected condition	Past DTC	Current DTC	D
C1130	ENGINE SIGNAL 1	When a malfunction is detected in ECM system.	 Low battery voltage Harness or connector CAN communication line 	 Low battery voltage CAN communication line ECM ABS actuator and electric unit (control unit) 	E
	ONFIRMATION PRO				BRC
1. CHE	CK SELF DIAGNOST	IC RESULT			
	n ignition switch ON. eck for DTC using CO	TIISI			G
	TC detected?	NOULI.			0
	Current DTC)>>Refer t Past DTC)>>GO TO 2. >> Inspection End.	o <u>BRC-93, "Diagnosis Procedu</u>	<u>ure"</u> .		Н
2.era	SE SELF DIAGNOSTI	C RESULT			
Erase t	he DTC using CONSU	LT.			I
Can the DTC be erased?					
YES >> Inspection End. NO >> Refer to BRC-93, "Diagnosis Procedure".					
Diagnosis Procedure					
1. CHECK SELF DIAGNOSTIC RESULT FOR ENGINE SYSTEM					K
With Perform Are any	CONSULT. n "Self Diagnostic Resu v ECM DTCs detected?	ult". Refer to <u>EC-71, "CONSUL"</u>			L
YES NO	>> Refer to <u>EC-107.</u> >> GO TO 2.	DIC INDEX.			\mathbb{M}
2. CHE	CK SELF DIAGNOST	IC RESULT FOR ABS ACTUA	TOR AND ELECTRIC UN	NIT (CONTROL UNIT)	
 Per 1. Per 2. Tur 3. State 	n ignition switch OFF. In engine and drive ver	Result" and erase DTCs. nicle for a short period of time. dicator lamp (MIL) turns OFF.			N
		"Self Diagnostic Result".			
	C1130 detected?				Ρ
YES >> GO TO 3. NO >> Inspection End.					
3. CHECK TERMINALS					
Check pin terminals and connection of connectors for abnormal conditions.					
	spection result normal	?			
YES	>> GO TO 4.				

Revision: October 2014

INFOID:000000011734974

А

В

С

< DTC/CIRCUIT DIAGNOSIS >

NO >> Repair or replace malfunctioning components.

4.CHECK SELF DIAGNOSTIC RESULT FOR ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)

() With CONSULT.

- 1. Perform "Self Diagnostic Result" and erase DTCs.
- 2. Turn ignition switch OFF.
- 3. Start engine and drive vehicle for a short period of time.
- 4. Check that malfunction indicator lamp (MIL) turns OFF.
- 5. Stop vehicle and perform "Self Diagnostic Result".

Is DTC C1130 detected?

YES (Past DTC)>>Inspection End.

YES (Current DTC)>>Replace ABS actuator and electric unit (control unit). Refer to <u>BRC-142. "Removal and</u> <u>Installation"</u>.

NO >> Inspection End.

C1140 ACTUATOR RELAY SYSTEM

< DTC/CIRCUIT DIAGNOSIS >

C1140 ACTUATOR RELAY SYSTEM

DTC Logic

DTC DETECTION LOGIC DTC DTC detection condition **Display Item** Possible causes No. **Diagnosis** condition When ignition switch is ON. Signal (terminal) C1140 ACTUATOR RLY When a malfunction is detected in Threshold actuator relay Diagnosis delay time POSSIBLE CAUSE · Harness or connector · ABS actuator and electric unit (control unit) BRC Fusible link Battery power supply system FAIL-SAFE DTC CONFIRMATION PROCEDURE **1.**CHECK SELF DIAGNOSTIC RESULT CONSULT Turn ignition switch OFF to ON. 1. Perform "Self Diagnostic Result" mode of "ABS". 2. 3. Check DTC. Is DTC C1140 detected? YES >> Proceed to diagnosis procedure. Refer to <u>BRC-95</u>, "Diagnosis Procedure". NO >> Inspection End. Diagnosis Procedure INFOID:000000011241109 Regarding Wiring Diagram information, refer to <u>BRC-52, "Wiring Diagram"</u>. **1.**CONNECTOR INSPECTION 1. Turn ignition switch OFF. Disconnect ABS actuator and electric unit (control unit) connectors. 2. Check connectors and terminals for deformation, disconnection, looseness or damage. 3. Is the inspection result normal? YES >> GO TO 2. NO >> Repair or replace as necessary. 2.CHECK ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT) BATTERY POWER SUPPLY

Check voltage between ABS actuator and electric unit (control unit) connector E125 terminals 1 and 25 and ground.

ABS actuator and electric unit (control unit)			Voltage
Connector	Terminal		(Approx.)
E125	1	_ Ground	Patton voltago
E125	25	Giouria	Battery voltage

Revision: October 2014

2015 Murano

INFOID:000000011569095

В

D

Е

Н

Κ

L

M

Ν

Ρ

А

C1140 ACTUATOR RELAY SYSTEM

< DTC/CIRCUIT DIAGNOSIS >

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace malfunctioning components.

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

Check continuity between ABS actuator and electric unit (control unit) connector E125 terminals 13 and 38 and ground.

ABS actuator and electric unit (control unit)			Continuity	
Connector	Terminal		Continuity	
E125	13	Ground	Yes	
E125	38	Giouna	ies	

Is the inspection result normal?

NO >> Repair or replace malfunctioning components.

YES >> Replace ABS actuator and electric unit (control unit). Refer to <u>BRC-142. "Removal and Installa-</u> tion".

C1142 PRESS SENSOR

< DTC/CIRCUIT DIAGNOSIS >

C1142 PRESS SENSOR

DTC Logic

DTC DETECTION LOGIC

NOTE:

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

DTC	Display item	Malfunction detected condition	Possibl	e cause	
DIC	Display item		Past DTC	Current DTC	D
C1142	PRESS SEN CIRCUIT	When a malfunction is detected in master cylinder pressure sensor.	 Harness or connector Stop lamp switch system Trapped air in hydraulic brake system 	 Stop lamp switch system Brake system Trapped air in hydraulic brake system ABS actuator and electric unit (control unit) 	E
DTC C	ONFIRMATION PRO	CEDURE			BR
1. CHE	ECK SELF DIAGNOST	IC RESULT			
	rn ignition switch ON. eck for DTC using COI	NSULT.			G
	DTC detected?				
	Current DTC)>>Refer 1 Past DTC)>>GO TO 2. >> Inspection End.	o <u>BRC-97, "Diagnosis Proced</u>	<u>ure"</u> .		Η
2.ERA	SE SELF DIAGNOSTI	C RESULT			
Erase the DTC using CONSULT.					
Can the	e DTC be erased?				J
YES NO	>> Inspection End.	"Diagnosis Procedure".			0
	osis Procedure	<u>Blaghoolo i roccaure</u> .		INFOID:000000011734977	K
	ECK STOP LAMP SWI	TCH SYSTEM			
		m. Refer to <u>BRC-87, "Diagnosi</u>	s Procedure".		L
	nspection result normal	_			
YES NO	>> GO TO 2.	molfunctioning components			M
~	ECK BRAKE FLUID LE	malfunctioning components.			
		fer to <u>BR-8, "Inspection"</u> .			NI
	nspection result normal				Ν
YES	>> GO TO 3.				
		malfunctioning components.			0
		ND ADJUST STOP LAMP SW			
	brake pedal and adjust	stop lamp switch. Refer to <u>BR</u>	<u>-15, Aujustment"</u> .		Ρ
YES >> GO TO 4.					
NO					
4. CHE	ECK SELF DIAGNOST	IC RESULT			
With	CONSULT.				

1. Turn ignition switch ON.

INFOID:000000011734976

А

В

С

< DTC/CIRCUIT DIAGNOSIS >

- 2. Perform "Self Diagnostic Result".
- 3. Erase DTCs.
- 4. Start engine and drive vehicle for a short period of time.
- 5. Turn ignition switch ON.
- 6. Perform "Self Diagnostic Result".

Is DTC C1142 detected?

- YES >> Replace ABS actuator and electric unit (control unit). Refer to <u>BRC-142</u>, "<u>Removal and Installa-</u> tion".
- NO >> Inspection End.

C1143 STEERING ANGLE SENSOR

< DTC/CIRCUIT DIAGNOSIS >

C1143 STEERING ANGLE SENSOR

DTC Logic

DTC No.	Display Item	DTC detection condition		
		Diagnosis condition	When ignition switch is ON.	
		Signal (terminal)	_	
C1143	ST ANG SEN CIRCUIT	Threshold	When a malfunction is detected in steering angle sensor	
		Diagnosis delay time	_	
 Harne ABS a Steerin Fuse Ignition 	BLE CAUSE ss or connector ctuator and electric unit (cor ng angle sensor n power supply system communication line	ntrol unit)		
FAIL-SA				
_				
DTC CO	ONFIRMATION PROCED	URE		
1. CHE	CK SELF DIAGNOSTIC RE	SULT		
2. Perl	n ignition switch OFF to ON. form "Self Diagnostic Result eck DTC.	' mode of "ABS".		
	C1143 detected?			
YES NO	>> Proceed to diagnosis pr >> Inspection End.	ocedure. Refer to <u>BRC-99, "Diagnosi</u>	s Procedure".	
Diagno	osis Procedure		INFOID:000000011241113	
Regardi	ng Wiring Diagram informati	on, refer to <u>BRC-52, "Wiring Diagram</u>	<u></u>	
1 .con	NECTOR INSPECTION			
2. Disc 3. Che	eck connectors and terminals	ectric unit (control unit) and steering a s for deformation, disconnection, loos		
	spection result normal?			
YES NO	>> GO TO 2. >> Repair or replace as ne	cessary.		
~		ISOR MOUNTING CONDITION		
	teering angle sensor mounti			
	spection result normal?			
YES	>> GO TO 3.	actioning components		
	>> Repair or replace malfu CK STEERING ANGLE SEN	•		
1. Turr	n ignition switch OFF.			

[WITHOUT ICC]

INFOID:000000011569099

А

В

C1143 STEERING ANGLE SENSOR

< DTC/CIRCUIT DIAGNOSIS >

- 2. Disconnect steering angle sensor connector.
- 3. Turn ignition switch ON.
- 4. Check voltage between steering angle sensor connector M54 terminal 4 and ground.

Steering angle sensor Connector Terminal		_	Voltage
			(Approx.)
M54	4	Ground	Battery voltage

Is the inspection result normal?

YES >> GO TO 5.

NO >> GO TO 4.

4.CHECK STEERING ANGLE SENSOR POWER SUPPLY CIRCUIT

- 1. Turn ignition switch OFF.
- 2. Disconnect IPDM E/R connector E119.
- Check continuity between steering angle sensor connector M54 terminal 4 and IPDM E/R connector E119 terminal 35.

Steering angle sensor		IPDM E/R		Continuity	
Connector	Terminal	Connector	Terminal	Continuity	
M54	4	E119	35	Yes	

4. Check continuity between steering angle sensor connector M54 terminal 4 and ground.

Steering angle sensor			Continuity
Connector	Terminal	—	Continuity
M54	4	Ground	No

Is the inspection result normal?

YES >> Perform trouble diagnosis for ignition power supply.

NO >> Repair or replace malfunctioning components.

5. CHECK STEERING ANGLE SENSOR GROUND CIRCUIT

1. Turn ignition switch OFF.

2. Check continuity between steering angle sensor connector M54 terminal 1 and ground.

Steering angle sensor			Continuity
Connector	Terminal	—	Continuity
M54	1	Ground	Yes

Is the inspection result normal?

YES >> GO TO 6.

NO >> Repair or replace malfunctioning components.

6.CHECK CAN COMMUNICATION LINE

Check "STRG BRANCH LINE CIRCUIT". Refer to <u>LAN-136</u>, "Diagnosis Procedure" (Type 1) or <u>LAN-154</u>, "Diagnosis Procedure" (Type 2).

Is the inspection result normal?

- YES >> Replace ABS actuator and electric unit (control unit). Refer to <u>BRC-142</u>, "<u>Removal and Installa-</u> tion".
- NO >> Repair or replace malfunctioning components.

C1144 INCOMPLETE STEERING ANGLE SENSOR ADJUSTMENT [WITHOUT ICC]

< DTC/CIRCUIT DIAGNOSIS >

C1144 INCOMPLETE STEERING ANGLE SENSOR ADJUSTMENT

DTC Logic

INFOID:000000011569101

А

В

DTC DETECTION LOGIC

DTC No.	Display Item	C	TC detection condition	
		Diagnosis condition	When ignition sw	tch is ON.
		Signal (terminal)	—	
C1144	ST ANG SEN SIGNAL	Threshold	When neutral pos of steering angle complete	
		Diagnosis delay time	_	
 Harne ABS a Steerin Incom 	· · · ·	ontrol unit) stment of steering angle senso	r	
FAIL-SA				
DTC CO	ONFIRMATION PROCE	DURE		
1 .CHE	CK SELF DIAGNOSTIC R	ESULT		
 Per Che 	n ignition switch OFF to Of form "Self Diagnostic Resu eck DTC. <u>C1144 detected?</u> >> Proceed to diagnosis >> Inspection End.		"Diagnosis Procedure".	
Diagno	osis Procedure			INFOID:000000011241115
1.adju	JST THE NEUTRAL POSI	TION OF STEERING ANGLE	SENSOR	
			fer to <u>BRC-101, "Diagnosis Pro</u>	cedure".
2 CHE	>> GO TO 2. CK SELF DIAGNOSTIC R	ESUIT		
	"Self Diagnostic Result" n	node of "ABS".		
	C1144 detected?			
YES NO	> GO TO 3.> Inspection End.			
^	CK STEERING ANGLE SE	NSOR SYSTEM		
		m. Refer to <u>BRC-99, "Diagnos</u>	sis Procedure"	
	spection result normal?			
YES		r and electric unit (control unit	t). Refer to <u>BRC-142, "Remova</u>	and Installa-
NO	 >> Repair or replace mail 	unctioning components.		

< DTC/CIRCUIT DIAGNOSIS >

C1154 PNP SWITCH

Description

The transmission range switch signal is transmitted to the ABS actuator and electric unit (control unit) using the CAN communication lines.

DTC Logic

INFOID:000000011734979

INFOID:000000011734978

DTC DETECTION LOGIC

NOTE:

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

DTC Display item	Display itom	Malfunction detected condition	Possible cause		
		Past DTC	Current DTC		
C1154	PNP POS SIG	Transmission range switch signal or communication line between the ABS actuator and electric unit (con- trol unit) and TCM is open or short- ed.	 Harness or connector Transmission range switch 	 Harness or connector Transmission range switch 	

DTC CONFIRMATION PROCEDURE

1.CHECK SELF DIAGNOSTIC RESULT

- 1. Turn ignition switch ON.
- 2. Check for DTC using CONSULT.

Is the DTC detected?

YES (Current DTC)>>Refer to <u>BRC-102</u>, "Diagnosis Procedure".

YES (Past DTC)>>GO TO 2.

NO >> Inspection End.

2. ERASE SELF DIAGNOSTIC RESULT

Erase the DTC using CONSULT.

Can the DTC be erased?

YES >> Inspection End.

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

Diagnosis Procedure

INFOID:000000011734980

1.CHECK TRANSMISSION RANGE SWITCH

Perform transmission range switch inspection. Refer to <u>TM-13, "CVT CONTROL SYSTEM : Transmission</u> Range Switch".

Is the inspection result normal?

YES >> GO TO 2

NO >> Repair or replace malfunctioning components.

2.CHECK DATA MONITOR

Select "SLCT LVR POSI" in "Data Monitor" and check transmission range switch signal.

Selector lever position	SLCT LVR POSI (Data monitor)
P position	Р
R position	R
N position	Ν
D position	D

Is the inspection result normal?

C1154 PNP SWITCH

< DTC	/CIRCUIT DIAGNOSIS > [WITHOUT ICC]	
YES	>> Replace ABS actuator and electric unit (control unit). Refer to <u>BRC-142</u> , "Removal and Installa- tion".	А
NO	>> Check damage or loose connection of CAN communication line harness connector terminals.	
Speci	al Repair Requirement	В
1. ADJ	USTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION	D
	perform the neutral position adjustment for the steering angle sensor, when replacing the ABS actua- electric unit (control unit). Refer to <u>BRC-64, "Description"</u> .	С
	>> Inspection End.	D

Ε

BRC

- G
- Н

J

Κ

L

M

Ν

0

Ρ

C1155 BR FLUID LEVEL LOW

< DTC/CIRCUIT DIAGNOSIS >

C1155 BR FLUID LEVEL LOW

DTC Logic

DTC DETECTION LOGIC

NOTE:

- · Check brake fluid level in brake reservoir tank before starting inspection.
- Confirm if DTC is PAST or CURRENT. If DTC is CURRENT, proceed with Diagnosis Procedure. If DTC is PAST, clear DTC. Do not replace ABS actuator and electric unit (control unit) for a PAST DTC.

DTC Display item	Display item	Malfunction detected condition	Possible cause		
		Past DTC	Current DTC		
C1155	BR FLUID LEVEL LOW	Brake fluid level is low or communi- cation line between the ABS actua- tor and electric unit (control unit) and brake fluid level switch is open or shorted.	Brake fluid levelHarness or connectorBrake fluid level switch	 Brake fluid level Harness or connector Brake fluid level switch 	

DTC CONFIRMATION PROCEDURE

1.CHECK BRAKE FLUID LEVEL

Check brake fluid level. Refer to BR-8, "Inspection".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Fill brake fluid to proper level. Refer to <u>BR-8</u>, "Inspection". GO TO 2.

2. CHECK SELF DIAGNOSTIC RESULT

1. Turn ignition switch ON.

2. Check for DTC using CONSULT.

Is the DTC detected?

YES (Current DTC)>>Refer to BRC-104, "Diagnosis Procedure".

YES (Past DTC)>>GO TO 3.

NO >> Inspection End.

3. ERASE SELF DIAGNOSTIC RESULT

Erase the DTC using CONSULT.

Can the DTC be erased?

YES >> Inspection End.

NO >> Refer to <u>BRC-104, "Diagnosis Procedure"</u>.

Diagnosis Procedure

INFOID:0000000011734983

Regarding Wiring Diagram information, refer to <u>BRC-52, "Wiring Diagram"</u>.

1.CONNECTOR INSPECTION

1. Turn ignition switch OFF.

2. Disconnect combination meter and brake fluid level switch connectors.

3. Check connectors and terminals for deformation, disconnection, looseness or damage.

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace as necessary.

2. CHECK BRAKE FLUID LEVEL SWITCH

Perform the brake fluid level switch component inspection. Refer to <u>BRC-105</u>, "<u>Component Inspection</u>". <u>Is the inspection result normal?</u>

Revision: October 2014

BRC-104

2015 Murano

INFOID:000000011734982

C1155	BR F	LUID L	LEVEL	LOW
-------	------	--------	-------	-----

< DTC/CIRCUIT DIAGNOSIS >

[WITHOUT ICC]

А

В

D

BRC

J

Κ

Ρ

INFOID:0000000011734984

NO >> Replace brake fluid level switch. Refer to <u>BR-29</u>, "Exploded View".

3.CHECK BRAKE FLUID LEVEL SWITCH HARNESS

1. Check continuity between combination meter connector M24 terminal 25 and brake fluid level switch connector E21 terminal 1.

Combina	tion meter	Brake fluid	level switch	Continuity	-
Connector	Terminal	Connector	Terminal	Continuity	С
M24	25	E21	1	Yes	

2. Check continuity between combination meter connector and ground.

Combination meter			Continuity	
Connector	Terminal	—	Continuity	E
M24	25	Ground	No	

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace malfunctioning components.

4.CHECK BRAKE FLUID LEVEL SWITCH GROUND CIRCUIT

Check continuity between brake fluid level switch connector E21 terminal 2 and ground.

Brake fluid level switch		_	Continuity	Н	
Connector	Terminal	—	Continuity		
E21	2	Ground	Yes		

Is the inspection result normal?

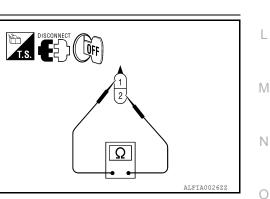
- YES >> Replace ABS actuator and electric unit (control unit). Refer to <u>BRC-142</u>, "<u>Removal and Installa-</u> tion"
- NO >> Repair or replace malfunctioning components.

Component Inspection

1. CHECK BRAKE FLUID LEVEL SWITCH

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

Condition	Continuity
Brake fluid reservoir full	No
Brake fluid reservoir empty	Yes
	Brake fluid reservoir full



Is the inspection result normal?

YES >> Inspection End.

NO >> Replace brake fluid level switch. Refer to <u>BR-29. "Exploded View"</u>.

C1160 DECEL G SEN SET

< DTC/CIRCUIT DIAGNOSIS >

C1160 DECEL G SEN SET

DTC Logic

INFOID:000000011569109

[WITHOUT ICC]

DTC DETECTION LOGIC

DTC No.	Display Item	DTC detection condition	
		Diagnosis condition	When ignition switch is ON.
C1160	DECEL G SEN SET	Signal (terminal)	—
		Threshold	When calibration of yaw rate/ side/decel G sensor is not com- plete
		Diagnosis delay time	—

POSSIBLE CAUSE

- Harness or connector
- · ABS actuator and electric unit (control unit)
- · Yaw rate/side/decel G sensor
- · Decel G sensor calibration is not performed

FAIL-SAFE

DTC CONFIRMATION PROCEDURE

1.CHECK SELF DIAGNOSTIC RESULT

CONSULT

- 1. Turn ignition switch OFF to ON.
- 2. Perform "Self Diagnostic Result" mode of "ABS".
- Check DTC.

Is DTC C1160 detected?

- YES >> Proceed to diagnosis procedure. Refer to <u>BRC-106</u>, "Diagnosis Procedure".
- NO >> Inspection End.

Diagnosis Procedure

1.DECEL G SENSOR CALIBRATION

Perform decel G sensor calibration. Refer to BRC-66, "Work Procedure".

>> GO TO 2.

2. CHECK SELF DIAGNOSTIC RESULT

With CONSULT

Perform "Self Diagnostic Result" mode of "ABS".

Is DTC C1160 detected?

YES >> GO TO 3.

NO >> Inspection End.

3.CHECK YAW RATE/SIDE/DECEL G SENSOR SYSTEM

Check yaw rate/side/decel G sensor system. Refer to BRC-82, "Diagnosis Procedure".

Is the inspection result normal?

- YES >> Replace ABS actuator and electric unit (control unit). Refer to <u>BRC-142</u>, "<u>Removal and Installa-</u> <u>tion</u>".
- NO >> Repair or replace malfunctioning components.

INFOID:000000011241120

C1164, C1165, C1166, C1167 CV/SV SYSTEM

< DTC/CIRCUIT DIAGNOSIS >

C1164, C1165, C1166, C1167 CV/SV SYSTEM

DTC Logic

DTC DETECTION LOGIC

NOTE:

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

	Dianlay item	Molf-motion datastad condition	Possible cause				e cause
DTC	Display item	Malfunction detected condition	Past DTC	Current DTC			
C1164	CV 1	When a malfunction is detected in cut valve 1.	Battery power supply sys- tem	Fusible linkBattery power supply sys-			
C1165	CV 2	When a malfunction is detected in cut valve 2.	Harness or connector	tem Harness or connector ABS actuator and electric 			
C1166	SV 1	When a malfunction is detected in suction valve 1.		unit (control unit)			
C1167	SV 2	When a malfunction is detected in suction valve 2.					
DTC C	CONFIRMATION PRO	DCEDURE					
1. сн	ECK SELF DIAGNOST	IC RESULT					
	rn ignition switch ON. neck for DTC using CO	NSULT.					
	DTC detected?						
YES (Current DTC)>>Refer to <u>BRC-107, "Diagnosis Procedure"</u> . YES (Past DTC)>>GO TO 2.							
	>> Inspection End. ASE SELF DIAGNOST						
	the DTC using CONSU						
	e DTC be erased?	L1.					
YES NO	>> Inspection End.	7, "Diagnosis Procedure".					
	nosis Procedure	<u>, Diagnocio i roccuaro</u> .		INFOID:000000011734986			
Regard	ding Wiring Diagram inf	ormation, refer to <u>BRC-52. "Wi</u>	ring Diagram".				
1. co		DN					
1. Tu	rn ignition switch OFF.						
2. Dis	sconnect ABS actuator	and electric unit (control unit)					
	nspection result norma	ninals for deformation, disconn		lage.			
	>> GO TO 2.	<u></u>					
YES NO	>> Repair or replace	•					
YES NO	>> Repair or replace	as necessary. AND ELECTRIC UNIT (CONT	ROL UNIT) BATTERY PO	OWER SUPPLY			
YES NO 2. СНЕ	>> Repair or replace ECK ABS ACTUATOR	•					

 ABS actuator and ele	ectric unit (control unit)	Voltage	
Connector	Terminal		(Approx.)
E125	25	Ground	Battery voltage

INFOID:000000011734985

А

В

С

C1164, C1165, C1166, C1167 CV/SV SYSTEM

< DTC/CIRCUIT DIAGNOSIS >

[WITHOUT ICC]

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace malfunctioning components.

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

Check continuity between ABS actuator and electric unit (control unit) connector E125 terminals 13, 38 and ground.

ABS actuator and ele	ectric unit (control unit)		Continuity
Connector	Terminal		Continuity
E125	13	Ground	Yes
	38		Tes

Is the inspection result normal?

NO >> Repair or replace malfunctioning components.

YES >> Replace ABS actuator and electric unit (control unit). Refer to <u>BRC-142</u>, "<u>Removal and Installa-</u> tion".

C1197 VACUUM SENSOR

< DTC/CIRCUIT DIAGNOSIS >

C1197 VACUUM SENSOR

DTC Logic

DTC DETECTION LOGIC

NOTE:

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

DTC	Display Item	DTC detect	tion condition
		Diagnosis condition	When ignition switch is ON.
		Signal (terminal)	
C1197	VACUUM SENSOR	Threshold	When the information in ABS ac- tuator and electric unit (control unit) is not the same
		Diagnosis delay time	_
HarneVacuuVacuu	BLE CAUSE ss or connector m sensor (brake booster) m piping ictuator and electric unit (con AFE	ntrol unit)	BR G H
DTC CO	ONFIRMATION PROCED	URF	
	CK SELF DIAGNOSTIC RE		
2. Per 3. Che	n ignition switch OFF to ON. form "Self Diagnostic Result eck DTC. <u>C1197 detected?</u>		J osis Procedure".
Diagno	osis Procedure		INFOID:000000011241126
Regardi	ng Wiring Diagram informati	on, refer to <u>BRC-52, "Wiring Diagran</u>	<u>n")</u> . M
1. CHE	CK BRAKE BOOSTER		
2. Che <u>Is the in</u>	n the ignition switch OFF. eck brake booster. Refer to <u>E</u> spection result normal?	R-10, "Inspection".	N 0
YES NO	>> GO TO 2.>> Replace brake booster.	Refer to BR-32, "Removal and Instal	llation".
2.сне	CK VACUUM PIPING		P
Check v	acuum piping. Refer to BR-2	22, "FRONT : Exploded View" and BI	
	spection result normal?		
YES NO	Removal and Installatio	<u>n"</u> .	al and Installation" or <u>BR-27, "REAR :</u>
3.CHE	CK VACUUM SENSOR CIR	CUIT	

INFOID:000000011569121

В

С

А

C1197 VACUUM SENSOR

< DTC/CIRCUIT DIAGNOSIS >

- 1. Disconnect vacuum sensor harness connector.
- 2. Disconnect ABS actuator and electric unit (control unit) harness connector.
- 3. Check 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	Continuity
	1		12	
E167	2	E125	24	Yes
	3		5	1

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

Vacuun	n sensor		Continuity
Connector	Terminal		Continuity
	1	Ground	No
E167	2		
	3	1	

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace malfunctioning components.

4.CHECK TERMINAL

- Check vacuum sensor pin terminals for damage or loose connection with harness connector.
- Check 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 5.

NO >> Repair or replace malfunctioning components.

5.REPLACE VACUUM SENSOR

With CONSULT

- T. Connect ABS actuator and electric unit (control unit) harness connector.
- Replace vacuum sensor. Refer to <u>BR-32</u>, "Exploded View". CAUTION:

Always replace brake booster because vacuum sensor cannot be disassembled.

- 3. Erase "Self Diagnostic Result" mode of "ABS".
- 4. Turn the ignition switch OFF.
- 5. Start engine.
- 6. Perform "Self Diagnostic Result" mode of "ABS".

Is DTC C1197 detected?

- YES >> Replace ABS actuator and electric unit (control unit). Refer to <u>BRC-142. "Removal and Installa-</u> tion".
- NO >> Inspection End.

C1198 VACUUM SENSOR

< DTC/CIRCUIT DIAGNOSIS >

C1198 VACUUM SENSOR

DTC Logic

DTC DETECTION LOGIC

NOTE:

Before performing Diagnosis Procedure, confirm if DTC is PAST or CURRENT, proceed with Diagnosis Procedure. If DTC is PAST, clear DTC. Do not replace ABS actuator and electric unit (control unit) for a PAST DTC.

DTC No.	Display Item	DTC de	etection condition
		Diagnosis condition	When ignition switch is ON.
		Signal (terminal)	—
C1198	VACUUM SENSOR	Threshold	When an open circuit is detected in vacuum sensor. When a short circuit is detected in vacuum sensor circuit. When a malfunction is detected in vacuum sensor
		Diagnosis delay time	—
	Im sensor (brake booster actuator and electric unit of AFF		
DTC CO	ONFIRMATION PROC	EDURE	
	CK SELF DIAGNOSTIC		
	CONSULT		
1. Turi	n ignition switch OFF to 0 form "Self Diagnostic Res	DN. sult" mode of "ABS"	
3. Che	eck DTC.		
	C1198 detected?		
YES NO	>> Proceed to diagnosis >> Inspection End.	s procedure. Refer to <u>BRC-111, "Diag</u>	gnosis Procedure".
Diagno	osis Procedure		INFOID:0000000112411
Ŭ			
Regardi	ng Wiring Diagram inform	nation, refer to <u>BRC-52, "Wiring Diag</u>	ıram".
	5 ······ 5 = ··· 5 · ··· · · · · · · · ·		<u> </u>
1 .CHE	CK VACUUM SENSOR (CIRCUIT	
	n the ignition switch OFF.		
	connect vacuum sensor l		

3. Disconnect ABS actuator and electric unit (control unit) harness connector.

4. Check continuity between vacuum sensor harness connector and ABS actuator and electric unit (control unit) harness connector.

INFOID:000000011569138

А

В

С

C1198 VACUUM SENSOR

< DTC/CIRCUIT DIAGNOSIS >

Vacuum sensor		ABS actuator and electric unit (control unit)		Continuity
Connector	Terminal	Connector	Terminal	Continuity
	1		12	
E167	2	E125	24	Yes
	3		5	†

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

Vacuum sensor			Continuity
Connector	Connector Terminal		
	1	Ground	No
E167	2		
	3		

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace malfunctioning components.

2. CHECK TERMINAL

· Check vacuum sensor pin terminals for damage or loose connection with harness connector.

• Check 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 3.

- NO >> Repair or replace malfunctioning components.
- 3.REPLACE VACUUM SENSOR

(I) With CONSULT

- 1. Connect ABS actuator and electric unit (control unit) harness connector.
- 2. Replace vacuum sensor. Refer to <u>BR-32</u>, "Exploded View". CAUTION:

Always replace brake booster because vacuum sensor cannot be disassembled.

- 3. Erase "Self Diagnostic Result" mode of "ABS".
- 4. Turn the ignition switch OFF.
- 5. Start engine.
- 6. Perform "Self Diagnostic Result" mode of "ABS".

Is DTC C1198 detected?

- YES >> Replace ABS actuator and electric unit (control unit). Refer to <u>BRC-142</u>, "<u>Removal and Installa-</u> tion".
- NO >> Inspection End.

C1199 BRAKE BOOSTER

< DTC/CIRCUIT DIAGNOSIS >

DTC DETECTION LOGIC

C1199 BRAKE BOOSTER

DTC Logic

INFOID:000000011569139

А

В

D

Е

BRC

Н

Κ

L

Μ

Ν

0

Ρ

DTC No.	Display Item	DTC detection co	ndition
		Diagnosis condition	When ignition switch is ON.
		Signal (terminal)	-
C1199	BRAKE BOOSTER	Threshold	When brake booster vacuum is approx. 0 kPa (0 mm-Hg) during engine running
		Diagnosis delay time	—
 Harne Vacuu Vacuu ABS a FAIL-SA DTC CO 	BLE CAUSE ss or connector im sensor (brake booster) im piping actuator and electric unit (con AFE ONFIRMATION PROCED CK SELF DIAGNOSTIC RE	URE	
 Turi Per Che 	n ignition switch OFF to ON. form "Self Diagnostic Result eck DTC. <u>C1199 detected?</u>		rocedure".
Diagno	osis Procedure		INFOID:00000001124113
Regardi		on, refer to <u>BRC-52, "Wiring Diagram"</u> .	
2. Che	eck brake booster. Refer to	<u>3R-10, "Inspection"</u> .	
Is the in	spection result normal?		

Is the inspection result normal?

YES >> GO TO 2.

NO >> Replace brake booster. Refer to <u>BR-32</u>, "Removal and Installation".

2. CHECK VACUUM PIPING

Check vacuum piping. Refer to BR-22, "FRONT : Exploded View" and BR-26, "REAR : Exploded View".

Is the inspection result normal?

YES >> GO TO 3.

>> Replace vacuum piping. Refer to BR-24, "FRONT : Removal and Installation" or BR-27, "REAR : NO Removal and Installation".

3. CHECK VACUUM SENSOR CIRCUIT

1. Disconnect vacuum sensor harness connector.

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

C1199 BRAKE BOOSTER

< DTC/CIRCUIT DIAGNOSIS >

[WITHOUT ICC]

3. Check continuity between vacuum sensor harness connector and ABS actuator and electric unit (control unit) harness connector.

Vacuur	ABS actuator and electric unit (control unit)		Continuity	
Connector	Terminal	Connector	Terminal	Continuity
	1		12	
E167	2	E125	24	Yes
	3		5	1

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

Vacuum sensor		_	Continuity
Connector	Terminal	—	Continuity
	1	Ground	No
E167	2		
	3		

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace malfunctioning components.

4.CHECK TERMINAL

- Check vacuum sensor pin terminals for damage or loose connection with harness connector.
- Check 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 5.
- NO >> Repair or replace malfunctioning components.

5.REPLACE VACUUM SENSOR

With CONSULT

- T. Connect ABS actuator and electric unit (control unit) harness connector.
- 2. Replace vacuum sensor. Refer to <u>BR-32</u>, "<u>Removal and Installation</u>". CAUTION:

Always replace brake booster because vacuum sensor cannot be disassembled.

- 3. Erase "Self Diagnostic Result" mode of "ABS".
- 4. Turn the ignition switch OFF.
- 5. Start engine.
- 6. Perform "Self Diagnostic Result" mode of "ABS".

Is DTC C1199 detected?

- YES >> Replace ABS actuator and electric unit (control unit). Refer to <u>BRC-142</u>, "<u>Removal and Installa-</u> tion".
- NO >> Inspection End.

C119A VACUUM SENSOR

< DTC/CIRCUIT DIAGNOSIS >

C119A VACUUM SENSOR

DTC Logic

DTC DETECTION LOGIC

NOTE:

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

DTC	Display item	Molfunction data atod condition	Possi	ble cause				
DIC	Display item	Malfunction detected condition	Past DTC	Current DTC	D			
C119A	VACUUM SEN VOLT	When a malfunction is detected in supply power voltage of vacuum sensor.	 Low battery voltage Harness or connector 	 Low battery voltage Harness or connector Vacuum sensor (brake booster) ABS actuator and electric unit (control unit) 	E			
DTC C	DTC CONFIRMATION PROCEDURE							
1. CHE	CK SELF DIAGNOST	IC RESULT						
 Turn ignition switch ON. Check for DTC using CONSULT. 								
Is the DTC detected?								
YES (Current DTC)>>Refer to <u>BRC-115. "Diagnosis Procedure"</u> . YES (Past DTC)>>GO TO 2. NO >> Inspection End.								
2. ERA	SE SELF DIAGNOSTI	C RESULT						
	he DTC using CONSU	LT.						
	<u>e DTC be erased?</u>				J			
YES NO	>> Inspection End. >> Refer to <u>BRC-115</u>	. "Diagnosis Procedure".						
Diagnosis Procedure								
Regard	Regarding Wiring Diagram information, refer to <u>BRC-52. "Wiring Diagram"</u> .							
1.CHECK VACUUM SENSOR POWER SUPPLY								

1. Turn the ignition switch OFF.

2. Disconnect vacuum sensor harness connector.

3. Check voltage between vacuum sensor harness connector and ground.

Vacuun	n sensor		Voltage	-
Connector	Terminal		(Approx.)	0
E167	3	Ground	0 V	-

4. Turn the ignition switch ON.

CAUTION:

Never start engine.

5. Check voltage between vacuum sensor harness connector and ground.

Vacuur	n sensor		Voltage
Connector Terminal			(Approx.)
E167	3	Ground	4.75 V – 5.25 V

BRC-115

2015 Murano

[WITHOUT ICC]

А

В

С

Ν

Ρ

C119A VACUUM SENSOR

< DTC/CIRCUIT DIAGNOSIS >

YES >> GO TO 3.

NO >> GO TO 2.

2. 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 continuity between vacuum sensor harness connector and ABS actuator and electric unit (control unit) harness connector.

Vacuur	n sensor	ABS actuator and ele	ectric unit (control unit)	Continuity	
Connector	Terminal	Connector Terminal		Continuity	
E167	3	E125	21	Yes	

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

Vacuun	n sensor		Continuity
Connector	Connector Terminal		Continuity
E167	3	Ground	No

Is the inspection result normal?

YES >> Perform diagnosis of ABS actuator and electric unit (control unit) power supply and ground circuit. Refer to <u>BRC-77, "Diagnosis Procedure"</u>.

NO >> Repair or replace malfunctioning components.

$\mathbf{3}$.check vacuum sensor ground circuit

1. Turn the ignition switch OFF.

2. Check continuity between vacuum sensor harness connector and ground.

Vacuur	n sensor		Continuity
Connector	Terminal		Continuity
E167	2	Ground	Yes

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace malfunctioning components.

4.CHECK TERMINAL

• Check vacuum sensor pin terminals for damage or loose connection with harness connector.

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

Is the inspection result normal?

YES >> Replace ABS actuator and electric unit (control unit). Refer to <u>BRC-142, "Removal and Installa-</u> tion".

NO >> Repair or replace malfunctioning components.

U1000 CAN COMM CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

U1000 CAN COMM CIRCUIT

Description

CAN communication allows a high rate of information transmission through the two communication lines (CAN-H line and CAN-L line), connecting various control units in the system. Each control unit transmits/ receives data but selectively reads required data only.

DTC Logic

INFOID:000000011569143

А

Μ

Ν

0

Ρ

DTC DETECTION LOGIC

				D
DTC No.	Display Item	DTC	detection condition	
		Diagnosis condition	When ignition switch is ON.	E
		Signal (terminal)		
U1000	CAN COMM CIRCUIT	Threshold	When CAN communication sig- nal is not continuously received for 2 seconds or more.	BRC
		Diagnosis delay time		
	BLE CAUSE communication system m	alfunction		G
FAIL-SA	\FE			Н
—				
Diagno	osis Procedure		INFOID:000000011241135	I

1. CHECK SELF DIAGNOSTIC RESULT

	ISULT	
	rn ignition switch ON.	J
2. Pe	rform "Self Diagnostic Result" mode of "ABS".	
3. Ch	neck DTC.	
<u>Is DTC</u>	U1000 detected?	Κ
YES	>> Proceed to diagnosis procedure. Refer to LAN-21, "Trouble Diagnosis Flow Chart".	
NO	>> Refer to GI-42, "Intermittent Incident".	

U1002 SYSTEM COMM (CAN)

< DTC/CIRCUIT DIAGNOSIS >

U1002 SYSTEM COMM (CAN)

DTC Logic

INFOID:000000011815526

[WITHOUT ICC]

DTC DETECTION LOGIC

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

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

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

>> GO TO 2.

2.DTC REPRODUCTION PROCEDURE

(I) With CONSULT

- 1. Turn the ignition switch ON.
- 2. Perform self diagnosis for "ABS".

Is DTC "U1002" detected?

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

NO >> Inspection End.

Diagnosis Procedure

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
- 1. Select "ABS" and "CAN Diagnosis Support Monitor" in order with CONSULT.
- 2. Check malfunction history between each control unit connected to ABS actuator and electric unit (control unit).

Check the result of "PAST"?

All items are "OK">>Refer to GI-42, "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 14 and 26 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.
- 3.CHECK APPLICABLE CONTROL UNIT

Check damage or loose connection of each CAN communication line harness connector terminals. Is the inspection result normal?

- YES >> Erase self-diagnosis results. Then perform self-diagnosis for applicable control unit with CON-SULT.
- NO >> Recheck terminals for damage or loose connection.

	SIS > AND GROUND CIR		[WITHOUT ICC
		CON	
Diagnosis Procedure			INFOID:0000000115738
Regarding Wiring Diagram	information, refer to PCS-23	3, "Wiring Diagram".	
1. CHECK FUSIBLE LINK	0		
Check that the following fus	adie links are not diown.		
	Signal name		Fusible link No.
			E (80A)
Bat	tery power supply		A (250A), C (80A)
s the fusible link blown?		A (250	DA), B (100A), N (40A)
	CONNECTION CONNECTION CONNECTORS E118 and E120.		
1. Disconnect IPDM E/R		ground.	
 Disconnect IPDM E/R of 2. Check voltage betweer 	connectors E118 and E120.		Voltage
 Disconnect IPDM E/R of 2. Check voltage betweer 	connectors E118 and E120. IPDM E/R connectors and	ground. Ground	Voltage (Approx.)
 Disconnect IPDM E/R (Check voltage betweer IPDM 	Connectors E118 and E120. The IPDM E/R connectors and M E/R Terminal 1		(Approx.)
1. Disconnect IPDM E/R of 2. Check voltage between IPDM Connector E118	Connectors E118 and E120. IPDM E/R connectors and M E/R Terminal 1 2		
1. Disconnect IPDM E/R of 2. Check voltage between IPDM Connector E118 E120	Connectors E118 and E120. IPDM E/R connectors and ME/R Terminal 1 2 3		(Approx.)
2. Check voltage betweer IPDN Connector E118	Connectors E118 and E120. IPDM E/R connectors and ME/R Terminal 1 2 3		(Approx.)
1. Disconnect IPDM E/R of 2. Check voltage betweer IPDM Connector E118 E120 Is the inspection result norr YES >> GO TO 3. NO >> Repair or repla	Connectors E118 and E120. IPDM E/R connectors and ME/R Terminal 1 2 3 nal? ce harness or connectors.		(Approx.)
1. Disconnect IPDM E/R of 2. Check voltage betweer IPDM Connector E118 E120 Is the inspection result norr YES >> GO TO 3. NO >> Repair or repla 3. CHECK GROUND CIRO	Connectors E118 and E120. IPDM E/R connectors and ME/R Terminal 1 2 3 nal? ce harness or connectors. CUIT		(Approx.)
1. Disconnect IPDM E/R of 2. Check voltage betweer IPDM Connector E118 E120 Is the inspection result norr YES >> GO TO 3. NO >> Repair or repla 3. CHECK GROUND CIRO 1. Disconnect IPDM E/R of	Connectors E118 and E120. IPDM E/R connectors and ME/R Terminal 1 2 3 nal? ce harness or connectors.	Ground —	(Approx.)
1. Disconnect IPDM E/R of 2. Check voltage between IPDM Connector E118 E120 Is the inspection result norr YES >> GO TO 3. NO >> Repair or repla 3. CHECK GROUND CIRO 1. Disconnect IPDM E/R of 2. Check continuity between	connectors E118 and E120. n IPDM E/R connectors and ME/R Terminal 1 2 3 nal? ce harness or connectors. CUIT connectors E119 and E121.	Ground 	(Approx.) Battery voltage
1. Disconnect IPDM E/R of 2. Check voltage between IPDM Connector E118 E120 Is the inspection result norr YES >> GO TO 3. NO >> Repair or repla 3. CHECK GROUND CIRO 1. Disconnect IPDM E/R of 2. Check continuity between	connectors E118 and E120. IPDM E/R connectors and ME/R Terminal 1 2 3 nal? ce harness or connectors. CUIT connectors E119 and E121. sen IPDM E/R connectors ar	Ground —	(Approx.)
1. Disconnect IPDM E/R of 2. Check voltage between IPDM Connector E118 E120 Is the inspection result norred YES >> GO TO 3. NO >> Repair or repla 3. CHECK GROUND CIRO 1. Disconnect IPDM E/R of 2. Check continuity between IPDM	connectors E118 and E120. IPDM E/R connectors and ME/R Terminal 1 2 3 nal? ce harness or connectors. CUIT connectors E119 and E121. ten IPDM E/R connectors and DM E/R	Ground 	(Approx.) Battery voltage

PARKING BRAKE SWITCH

Component Function Check

1. CHECK PARKING BRAKE SWITCH OPERATION

Check that brake warning lamp in combination meter turns ON/OFF when parking brake is operated.

Is the inspection result normal?

YES >> Inspection End.

NO >> Proceed to <u>BRC-120, "Diagnosis Procedure"</u>.

Diagnosis Procedure

1. CHECK PARKING BRAKE SWITCH CIRCUIT

- 1. Turn the ignition switch OFF.
- 2. Disconnect parking brake switch harness connector.
- 3. Disconnect combination meter harness connector.
- 4. Check the continuity between parking brake switch harness connector and combination meter harness connector.

Parking bi	Parking brake switch		Combination meter	
Connector	Terminal	Connector	Terminal	Continuity
E52	1	M24	26	Yes

5. Check the continuity between parking brake switch harness connector and ground.

Parking b	rake switch		Continuity
Connector	Terminal		Continuity
E52	E52 1		No

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace error-detected parts.

2. CHECK PARKING BRAKE SWITCH

Check the parking brake switch. Refer to PB-4, "Inspection and Adjustment".

Is the inspection result normal?

YES >> GO TO 3.

NO >> Replace the parking brake switch. Refer to <u>PB-10, "Removal and Installation"</u>.

3.CHECK PARKING BRAKE SWITCH SIGNAL

(I) With CONSULT

1. Select "Data Monitor"

2. Select "PARK BRAKE SW".

3. Check that the function operates normally according to the following conditions:

Condition	Data Monitor
Operate parking brake	On
Release parking brake	Off

Is the inspection result normal?

YES >> Inspection End.

NO >> GO TO 4.

4.CHECK COMBINATION METER

Check the combination meter. Refer to <u>MWI-20, "CONSULT Function (METER/M&A)"</u>. <u>Is the inspection result normal?</u> INFOID:0000000011241137

PARKING BRAKE SWITCH

< DTC/CIRCUIT DIAGNOSIS	6>		[WITHOUT ICC]
YES >> GO TO 5. NO >> Repair or replace	combination m	eter. Refer to <u>MWI-78, "Removal and Ins</u>	stallation".
5. CHECK TERMINAL			
2. Check the parking brake s	switch pin termi	als for damage or loose connection with hind a solution with hind in a solution with the solution with	
<u>s the inspection result normal</u> YES >> Replace the ABS <u>lation"</u> . NO >> Repair or replace	_ actuator and e	lectric unit (control unit). Refer to <u>BRC-14</u> parts.	42. "Removal and Instal-
Component Inspection			INFOID:000000011241139
1.CHECK PARKING BRAKE	SWITCH		
 Turn the ignition switch Ol Disconnect parking brake Check the continuity betw 	switch harness	s connector. ake switch terminal and ground.	
Parking brake switch		Condition	Continuity
Terminal	—	Condition	Continuity
1	Ground	When parking brake switch is pressed	Yes
ľ	Ground	When parking brake switch is released	No
<u>s the inspection result normal</u> YES >> Inspection End. NO >> Replace the parki		n. Refer to <u>PB-10, "Removal and Installa</u> t	tion".

J

Κ

L

Μ

Ν

Ο

Ρ

< DTC/CIRCUIT DIAGNOSIS >

VDC OFF SWITCH

Component Function Check

INFOID:000000011241140

[WITHOUT ICC]

1. CHECK VDC OFF SWITCH OPERATION

Check that VDC OFF indicator lamp in combination meter turns ON/OFF when VDC OFF switch is operated. Is the inspection result normal?

YES >> Inspection End.

NO >> Proceed to <u>BRC-122</u>, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000011241141

1. CHECK VDC OFF SWITCH CIRCUIT

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

Without Intelligent Cruise Control

ABS actuator and ele	ABS actuator and electric unit (control unit)		VDC OFF switch	
Connector	Terminal	Connector	Terminal	Continuity
E125	15	M71	6	Yes

5. 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	— — Continuity	Continuity
E125	15	Ground	No

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace error-detected parts.

2.CHECK VDC OFF SWITCH GROUND CIRCUIT

Check the continuity between VDC OFF switch harness connector and ground.

VDC OFF switch			Continuity	
Connector	Terminal		Continuity	
M71	8	Ground	Yes	

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace error-detected parts.

3.CHECK VDC OFF SWITCH

Check the VDC OFF switch. Refer to <u>BRC-123</u>, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 4.

NO >> Replace the VDC OFF switch. Refer to <u>BRC-144</u>, "Removal and Installation".

4.CHECK VDC OFF SWITCH SIGNAL

() CONSULT

T. Select "Data Monitor" mode of "ABS".

2. Select "OFF SW".

3. Check that the function operates normally according to the following conditions:

BRC-122

VDC OFF SWITCH

< DTC/CIRCUIT DIAGNOSIS >

[WITHOUT ICC]

Co	ndition	Data Monitor
When VDC OFF switch is pressed and meter is in ON status	VDC OFF indicator lamp in combination	On
When VDC OFF switch is pressed and meter is in OFF status	VDC OFF indicator lamp in combination	Off
is the inspection result normal?		
YES >> Inspection End.		
NO >> GO TO 5.		
5.CHECK TERMINAL		
 Check the ABS actuator and harness connector. 	d electric unit (control unit) pin termin	als for damage or loose connection wi
	pin terminals for damage or loose co	nnection with harness connector.
Is the inspection result normal?		
YES >> Replace the ABS ac	tuator and electric unit (control unit).	Refer to BRC-142, "Removal and Insta
NO >> Repair or replace err	ror-detected parts	
	or-detected parts.	
Component Inspection		INFOID:000000011241
1.CHECK VDC OFF SWITCH		
1. Turn the ignition switch OFF.		
 Disconnect VDC OFF switch Check the continuity betwee 	n harness connector. n terminals of VDC OFF switch conn	ector
5. Oneck the continuity betwee		
VDC OFF switch	Condition	Continuity
VDC OFF switch Terminal	Condition	Continuity
Terminal	- Condition When VDC OFF switch is pressed	Continuity Yes
Terminal	When VDC OFF switch is pressed	Yes
Terminal 6–8 Is the inspection result normal? YES >> Inspection End.	When VDC OFF switch is pressed When VDC OFF switch is not pressed	Yes
Terminal 6–8 Is the inspection result normal? YES >> Inspection End.	When VDC OFF switch is pressed	Yes
Terminal 6–8 Is the inspection result normal? YES >> Inspection End.	When VDC OFF switch is pressed When VDC OFF switch is not pressed	Yes
Terminal 6–8 Is the inspection result normal? YES >> Inspection End.	When VDC OFF switch is pressed When VDC OFF switch is not pressed	Yes
Terminal 6–8 Is the inspection result normal? YES >> Inspection End.	When VDC OFF switch is pressed When VDC OFF switch is not pressed	Yes
Terminal 6–8 Is the inspection result normal? YES >> Inspection End.	When VDC OFF switch is pressed When VDC OFF switch is not pressed	Yes
Terminal 6–8 Is the inspection result normal? YES >> Inspection End.	When VDC OFF switch is pressed When VDC OFF switch is not pressed	Yes
Terminal 6–8 Is the inspection result normal? YES >> Inspection End.	When VDC OFF switch is pressed When VDC OFF switch is not pressed	Yes
Terminal 6–8 Is the inspection result normal? YES >> Inspection End.	When VDC OFF switch is pressed When VDC OFF switch is not pressed	Yes
Terminal 6–8 Is the inspection result normal? YES >> Inspection End.	When VDC OFF switch is pressed When VDC OFF switch is not pressed	Yes
Terminal 6–8 Is the inspection result normal? YES >> Inspection End.	When VDC OFF switch is pressed When VDC OFF switch is not pressed	Yes
Terminal 6–8 Is the inspection result normal? YES >> Inspection End.	When VDC OFF switch is pressed When VDC OFF switch is not pressed	Yes
Terminal 6–8 Is the inspection result normal? YES >> Inspection End.	When VDC OFF switch is pressed When VDC OFF switch is not pressed	Yes
Terminal 6–8 s the inspection result normal? YES >> Inspection End.	When VDC OFF switch is pressed When VDC OFF switch is not pressed	Yes

ABS WARNING LAMP

Component Function Check

1.CHECK ABS WARNING LAMP FUNCTION

Check that ABS warning lamp in combination meter turns ON for 1 second after ignition switch is turned ON. CAUTION:

Never start the engine.

Is the inspection result normal?

- YFS >> Inspection End.
- >> Proceed to BRC-124, "Diagnosis Procedure". NO

Diagnosis Procedure

INFOID-000000011241144

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

Perform the trouble diagnosis for ABS actuator and electric unit (control unit) power supply and ground circuit. Refer to BRC-124, "Diagnosis Procedure".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace error-detected parts.

2.PERFORM SELF DIAGNOSTIC RESULT

- Turn the ignition switch OFF \rightarrow ON. 1
 - CAUTION:
 - · Be sure to wait 10 seconds after turning ignition switch OFF or ON.
 - Start the engine.
- 2. Repeat step 1 two or more times.
- 3. Perform "Self Diagnostic Result" for "ABS".

Is any DTC detected?

YES >> Check the DTC. Refer to BRC-50, "DTC Index".

NO >> GO TO 3.

 ${\it 3.}$ CHECK ABS WARNING LAMP SIGNAL

- ĭ. Select "ABS", "Data Monitor" and "ABS WARN LAMP" in this order.
- 2. Turn the ignition switch OFF.
- Check that data monitor displays "On" for 1 second after ignition switch is turned ON and then changes to 3. "Off".

CAUTION:

Never start the engine.

Is the inspection result normal?

- YES >> Replace the combination meter. Refer to MWI-78, "Removal and Installation".
- >> Replace the ABS actuator and electric unit (control unit). Refer to BRC-142, "Removal and Instal-NO lation".

BRAKE WARNING LAMP

ΓW	ΊΤΗΟ	DUT	ICC]
			1001

BRAKE WARNING LAMP	
< DTC/CIRCUIT DIAGNOSIS > [WITHOUT ICC]
BRAKE WARNING LAMP	
Component Function Check	45
1. CHECK BRAKE WARNING LAMP FUNCTION	
Check that brake warning lamp in combination meter turns ON for 1 second after ignition switch is turned ON	<u> </u>
CAUTION: Never start the engine.	
Is the inspection result normal?	
YES >> GO TO 2.	
NO >> Proceed to <u>BRC-125, "Diagnosis Procedure"</u> . 2.CHECK BRAKE WARNING LAMP FUNCTION	
Check that brake warning lamp turns ON/OFF when parking brake is operated.	
NOTE:	
Brake warning lamp turns ON when parking brake is operated (when parking brake switch is ON).	F
<u>Is the inspection result normal?</u> YES >> GO TO 3.	
NO >> Check the parking brake switch system. Refer to <u>BRC-120, "Diagnosis Procedure"</u> .	
3. CHECK BRAKE WARNING LAMP FUNCTION	
Check that brake warning lamp in combination meter turns ON/OFF when brake fluid level switch is operate while brake fluid level in reservoir tank is within the specified level.	d
NOTE:	
Brake warning lamp turns ON when brake fluid is less than the specified level (when brake fluid level switch i ON).	S
Is the inspection result normal?	
YES >> Inspection End. NO >> Check the brake fluid level switch system. Refer to BR-29, "Exploded View".	
· · · · · · · · · · · · · · · · · · ·	
Diagnosis Procedure	46
1. CHECK ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT) POWER SUPPLY AND GROUND CIP	<u>-</u>
CUIT	
Perform the trouble diagnosis for ABS actuator and electric unit (control unit) power supply and ground circui Refer to <u>BRC-119</u> , "Diagnosis Procedure".	ί.
Is the inspection result normal?	
YES >> GO TO 2. NO >> Repair or replace error-detected parts.	
2.PERFORM THE SELF DIAGNOSTIC RESULT	
(F)CONSULT	-
1. Turn the ignition switch OFF \rightarrow ON.	
 CAUTION: Be sure to wait 10 seconds after turning ignition switch OFF or ON. 	
Start the engine.	
 Repeat step 1 two or more times. Perform "Self Diagnostic Result" mode of "ABS". 	
Is any DTC detected?	
YES >> Check the DTC. Refer to <u>BRC-50, "DTC Index"</u> . NO >> GO TO 3.	
3. CHECK BRAKE WARNING LAMP SIGNAL	
	_

CONSULT
Select "ABS", "Data Monitor" and "EBD WARN LAMP" in this order.
Turn the ignition switch OFF.

BRAKE WARNING LAMP

< DTC/CIRCUIT DIAGNOSIS >

3. Check that data monitor displays "On" for 1 second after ignition switch is turned ON and then changes to "Off".

CAUTION:

Never start the engine. Is the inspection result normal?

- YES >> Replace the combination meter. Refer to <u>MWI-78</u>, "<u>Removal and Installation</u>".
- NO >> Replace the ABS actuator and electric unit (control unit). Refer to <u>BRC-142. "Removal and Instal-</u><u>lation"</u>.

VDC WARNING LAMP

< DTC/CIRCUIT DIAGNOSIS >	[WITHOUT ICC]	
VDC WARNING LAMP		А
Component Function Check	INFOID:000000011241147	
1. CHECK VDC WARNING LAMP FUNCTION		В
Check that VDC warning lamp in combination meter turns OI CAUTION:	-	~
Never start the engine. Is the inspection result normal?	,	С
YES >> Inspection End. NO >> Proceed to <u>BRC-127, "Diagnosis Procedure"</u> .	I	D
Diagnosis Procedure	INFOID:000000011241148	
1. CHECK ABS ACTUATOR AND ELECTRIC UNIT (CONTRCUIT	ROL UNIT) POWER SUPPLY AND GROUND CIR-	Е
Perform the trouble diagnosis for ABS actuator and electric u Refer to <u>BRC-119, "Diagnosis Procedure"</u> .	unit (control unit) power supply and ground circuit.	BRC
<u>Is the inspection result normal?</u> YES >> GO TO 2.		(
NO >> Repair or replace error-detected parts.	(G
2.PERFORM THE SELF DIAGNOSTIC RESULT		
2. PERFORM THE SELF DIAGNOSTIC RESULT (CONSULT 1. Turn the ignition switch OFF \rightarrow ON. CAUTION:		Η
		H
 CONSULT 1. Turn the ignition switch OFF → ON. CAUTION: • Be sure to wait 10 seconds after turning ignition sw • Start the engine. 2. Repeat step 1 two or more times. 		H
 CONSULT Turn the ignition switch OFF → ON. CAUTION: Be sure to wait 10 seconds after turning ignition sw Start the engine. Repeat step 1 two or more times. Perform "Self Diagnostic Result" mode of "ABS". 		H I J
 CONSULT Turn the ignition switch OFF → ON. CAUTION: Be sure to wait 10 seconds after turning ignition switch of the engine. Repeat step 1 two or more times. Perform "Self Diagnostic Result" mode of "ABS". Is any DTC detected? YES >> Check the DTC. Refer to BRC-50, "DTC Index". 	witch OFF or ON.	H
 CONSULT Turn the ignition switch OFF → ON. CAUTION: Be sure to wait 10 seconds after turning ignition switch of the engine. Repeat step 1 two or more times. Perform "Self Diagnostic Result" mode of "ABS". Is any DTC detected? YES >> Check the DTC. Refer to BRC-50, "DTC Index". NO >> GO TO 3. 	witch OFF or ON.	H J K
 CONSULT 1. Turn the ignition switch OFF → ON. CAUTION: Be sure to wait 10 seconds after turning ignition switch of the engine. Start the engine. Repeat step 1 two or more times. Perform "Self Diagnostic Result" mode of "ABS". Is any DTC detected? YES >> Check the DTC. Refer to BRC-50, "DTC Index". NO >> GO TO 3. CHECK VDC WARNING LAMP SIGNAL 	witch OFF or ON.	l J
 CONSULT 1. Turn the ignition switch OFF → ON. CAUTION: Be sure to wait 10 seconds after turning ignition sw Start the engine. Repeat step 1 two or more times. Perform "Self Diagnostic Result" mode of "ABS". Is any DTC detected? YES >> Check the DTC. Refer to BRC-50, "DTC Index". 	witch OFF or ON.	l J
 CONSULT Turn the ignition switch OFF → ON. CAUTION: Be sure to wait 10 seconds after turning ignition switch or more times. Repeat step 1 two or more times. Perform "Self Diagnostic Result" mode of "ABS". Is any DTC detected? YES >> Check the DTC. Refer to BRC-50, "DTC Index". NO >> GO TO 3. CHECK VDC WARNING LAMP SIGNAL CONSULT Select "ABS", "Data Monitor" and "SLIP/VDC LAMP" in the ignition switch OFF. Check that data monitor displays "On" for approximately then changes to "Off". CAUTION: 	witch OFF or ON. this order. y 1 second after ignition switch is turned ON and	l J
 CONSULT Turn the ignition switch OFF → ON. CAUTION: Be sure to wait 10 seconds after turning ignition switch of the engine. Repeat step 1 two or more times. Perform "Self Diagnostic Result" mode of "ABS".	witch OFF or ON. this order. y 1 second after ignition switch is turned ON and	I J K L
 CONSULT Turn the ignition switch OFF → ON. CAUTION: Be sure to wait 10 seconds after turning ignition switch of the engine. Repeat step 1 two or more times. Perform "Self Diagnostic Result" mode of "ABS". Is any DTC detected? YES >> Check the DTC. Refer to BRC-50, "DTC Index". NO >> GO TO 3. CHECK VDC WARNING LAMP SIGNAL CONSULT Select "ABS", "Data Monitor" and "SLIP/VDC LAMP" in the ignition switch OFF. Check that data monitor displays "On" for approximately then changes to "Off". CAUTION: 	witch OFF or ON. this order. y 1 second after ignition switch is turned ON and 8. "Removal and Installation".	J K

Ρ

< DTC/CIRCUIT DIAGNOSIS >

VDC OFF INDICATOR LAMP

Component Function Check

1.CHECK VDC OFF INDICATOR LAMP FUNCTION (1)

Check that VDC OFF indicator lamp in combination meter turns ON for 1 second after ignition switch is turned ON.

CAUTION:

Never start the engine.

Is the inspection result normal?

YES >> GO TO 2.

NO >> Proceed to <u>BRC-128</u>, "Diagnosis Procedure".

2.CHECK VDC OFF INDICATOR LAMP FUNCTION (2)

Check that VDC OFF indicator lamp in combination meter turns ON/OFF when VDC OFF switch is operated. <u>Is the inspection result normal?</u>

YES >> Inspection End.

NO >> Check the VDC OFF switch system. Refer to <u>BRC-122</u>, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:000000011241150

 $1. \mbox{check}$ Abs actuator and electric unit (control unit) power supply and ground circuit

Perform the trouble diagnosis for ABS actuator and electric unit (control unit) power supply and ground circuit. Refer to <u>BRC-119</u>, "Diagnosis Procedure".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace error-detected parts.

2.CHECK VDC OFF INDICATOR LAMP SIGNAL

CONSULT

- T. Select "ABS", "Data Monitor" and "OFF LAMP" in this order.
- 2. Turn the ignition switch OFF.
- Check that data monitor displays "On" for 1 second after ignition switch is turned ON and then changes to "Off".

CAUTION:

Never start the engine.

Is the inspection result normal?

YES >> GO TO 3.

NO >> Replace the ABS actuator and electric unit (control unit). Refer to <u>BRC-142. "Removal and Instal-</u><u>lation"</u>.

3.CHECK VDC OFF INDICATOR LAMP SIGNAL

CONSULT

- T. Select "ABS", "Data Monitor" and "OFF LAMP" in this order.
- 2. Check that data monitor displays "On" or "Off" each time VDC OFF switch is operated.

Is the inspection result normal?

- YES >> Replace the combination meter. Refer to <u>MWI-78, "Removal and Installation"</u>.
- NO >> Check the VDC OFF switch system. Refer to <u>BRC-122. "Diagnosis Procedure"</u>.

EXCESSIVE OPERATION FREQUENCY

< SYMPTOM DIAGNOSIS > SYMPTOM DIAGNOSIS EXCESSIVE OPERATION FREQUENCY

Description	1 B
VDC function, TCS function, ABS function, EBD function, brake assist function or hill start assist function oper ates in excessive operation frequency.	
Diagnosis Procedure	C 2
1.CHECK BRAKING FORCE	D
Check brake force using a brake tester.	-
<u>Is the inspection result normal?</u> YES >> GO TO 2.	E
NO >> Check brake system.	
2.CHECK FRONT AND REAR AXLE	BRC
Check that there is no excessive looseness in front and rear axle.	DRU
 2WD: Refer to <u>FAX-7, "Inspection"</u> (front) or <u>RAX-7, "Inspection"</u> (rear). AWD: Refer to <u>FAX-7, "Inspection"</u> (front) or <u>DLN-88, "Inspection"</u> (rear). 	
Is the inspection result normal?	G
YES >> GO TO 3. NO >> Repair or replace error-detected parts.	
3. CHECK WHEEL SENSOR	Η
Check wheel sensor.	-
Check installation and damage of wheel sensor. Check connection of wheel concerned connector.	
 Check connection of wheel sensor harness connector. Check terminal of wheel sensor harness connector. 	
Is the inspection result normal?	J
YES >> GO TO 4. NO >> Repair installation or replace wheel sensor.	
 Front wheel sensor: Refer to <u>BRC-137</u>, "FRONT WHEEL SENSOR : Removal and Installation". 	K
Rear wheel sensor: Refer to <u>BRC-139, "REAR WHEEL SENSOR : Removal and Installation"</u> .	1.
	-
Check that there is no looseness, damage or foreign material on sensor rotor. <u>Is the inspection result normal?</u>	L
YES >> GO TO 5.	
 NO >> Repair installation or replace sensor rotor. Front sensor rotor: Refer to BRC-141, "FRONT SENSOR ROTOR : Removal and Installation - 	Μ
Front Sensor Rotor".	-
 Rear sensor rotor: Refer to <u>BRC-141, "REAR SENSOR ROTOR : Removal and Installation</u> Rear Sensor Rotor". 	Ν
5. CHECK THAT WARNING LAMP TURNS OFF	
Check that ABS warning lamp, brake warning lamp and VDC warning lamp turn OFF approximately 1 second after key switch is turned ON and stay in OFF status during driving.	0
Brake warning lamp turns ON when parking brake is operated (parking brake switch is ON) or brake fluid is less than the specified level (brake fluid level switch is ON).	P
Is the inspection result normal?	

YES >> Normal NO >> GO TO 6.

6. PERFORM THE SELF DIAGNOSTIC RESULT

CONSULT

[WITHOUT ICC]

А

< SYMPTOM DIAGNOSIS >

- 1. Turn the ignition switch OFF \rightarrow ON. CAUTION:
 - Be sure to wait 10 seconds after turning ignition switch OFF or ON.
 - Set the vehicle to READY/Start the engine.
- 2. Repeat step 1 two or more times.
- 3. Perform "Self Diagnostic Result" mode of "ABS".

Is any DTC detected?

- YES >> Check the DTC. Refer to <u>BRC-50, "DTC Index"</u>.
- NO >> Inspection End.

UNEXPECTED BRAKE PEDAL REACTION

UNEXPECTED BRAKE PEDAL REACTION	
< SYMPTOM DIAGNOSIS >	[WITHOUT ICC]
UNEXPECTED BRAKE PEDAL REACTION	
Description	INFOID:000000011241153
A malfunction of brake pedal feel (height or other) is detected when brake pedal is depresse	ed.
Diagnosis Procedure	INFOID:000000011241154
1. CHECK FRONT AND REAR AXLE	
 Check that there is no excessive looseness in front and rear axle. 2WD: Refer to FAX-7, "Inspection" (front) or RAX-7, "Inspection" (rear). AWD: Refer to FAX-7, "Inspection" (front) or DLN-88, "Inspection" (rear). Is the inspection result normal? YES >> GO TO 2. NO >> Repair or replace error-detected parts. 	
2.CHECK DISC ROTOR	r
Check disc rotor runout. Front: Refer to <u>BR-11, "DISC BRAKE ROTOR : Inspection"</u>. Rear: Refer to <u>BR-13, "DISC BRAKE ROTOR : Inspection"</u>. Is the inspection result normal? YES >> GO TO 3.	
NO >> Refinish the disc rotor.	
3.CHECK BRAKE FLUID LEAKAGE	
Check fluid leakage. Refer to <u>BR-8, "Inspection"</u> . <u>Is the inspection result normal?</u> YES >> GO TO 4.	
NO >> Repair or replace error-detected parts.	
4.CHECK BRAKE PEDAL	
Check each item of brake pedal. Refer to <u>BR-7</u> , <u>"Inspection"</u> . <u>Is the inspection result normal?</u> YES >> GO TO 5. NO >> Adjust each item of brake pedal. Refer to <u>BR-15</u> , <u>"Adjustment"</u> .	
5. CHECK BRAKING FORCE	
Check brake force using a brake tester. <u>Is the inspection result normal?</u> YES >> GO TO 6.	
NO >> Check each component of brake system.	
6.CHECK BRAKE PERFORMANCE	
Disconnect ABS actuator and electric unit (control unit) connector so that ABS does not op brake force is normal in this condition. Connect harness connectors after checking.	erate. Check that
<u>Is the inspection result normal?</u> YES >> Normal NO >> Check each component of brake system.	

< SYMPTOM DIAGNOSIS >

THE BRAKING DISTANCE IS LONG

Description

Brake stopping distance is long when ABS function is operated.

Diagnosis Procedure

CAUTION:

Brake stopping distance on a slippery road like a rough road, gravel road or snowy road may become longer when ABS is operated than when ABS is not operated.

1.CHECK BRAKING FORCE

Check brake force using a brake tester.

Is the inspection result normal?

YES >> GO TO 2.

NO >> Check each component of brake system.

2. CHECK BRAKE PERFORMANCE

Disconnect ABS actuator and electric unit (control unit) connector so that ABS does not operate. Check brake stopping distance in this condition. Connect harness connectors after checking.

Is the inspection result normal?

YES >> Normal

NO >> Check each component of brake system.

INFOID:0000000011241155

[WITHOUT ICC]

DOES NOT OPERATE

[WITHOUT ICC]

DOES NOT OPERATE	٨
Description	A
VDC function, TCS function, ABS function, EBD function, brake assist function or hill start assist function does not operate.	В
Diagnosis Procedure	0
 CAUTION: VDC function, TCS function, ABS function, EBD function, brake assist function and hill start assist function never operate when the vehicle speed is 10 km/h (6.2 MPH) or less. However, TCS function, and hill start assist function operate when the vehicle speed is 0 km/h (0 MPH) (the vehicle is in stop status). 	D
• VDC function and TCS function never operate when VDC OFF switch is operated (when VDC OFF indicator lamp turns ON).	Е
1.CHECK ABS WARNING LAMP	
Check that ABS warning lamp, brake warning lamp and VDC warning lamp turn ON and turn OFF approxi- mately 1 second after key switch is turned ON. Check that ABS warning lamp, brake warning lamp and VDC warning lamp stay in OFF status during driving. CAUTION:	BRC
Brake warning lamp turns ON when parking brake is operated (parking brake switch is ON) or brake fluid is less than the specified level (brake fluid level switch is ON).	G
Is the inspection result normal? YES >> Normal NO >> GO TO 2. 2.PERFORM SELF DIAGNOSTIC RESULT	Н
	I
 CONSULT Turn the ignition switch OFF → ON. CAUTION: Be sure to wait 10 seconds after turning ignition switch OFF or ON. 	J
Start the engine.	
 Repeat step 1 two or more times. Perform "Self Diagnostic Result" mode of "ABS" with CONSULT. 	К
<u>Is any DTC detected?</u> YES >> Check the DTC. Refer to <u>BRC-50, "DTC Index"</u> . NO >> Inspection End.	L
	Μ
	Ν
	0
	Ρ

< SYMPTOM DIAGNOSIS >

BRAKE PEDAL VIBRATION OR OPERATION SOUND OCCURS

< SYMPTOM DIAGNOSIS >

BRAKE PEDAL VIBRATION OR OPERATION SOUND OCCURS

Description

- Brake pedal vibrates and motor sound from ABS actuator and electric unit (control unit) occurs when the engine starts.
- Brake pedal vibrates during braking.

CAUTION:

Vibration may be felt when brake pedal is lightly depressed (just placing a foot on it) in the following conditions. This is normal.

- · When shifting gears
- When driving on slippery road
- During cornering at high speeds
- When passing over bumps or grooves [Approx. 50 mm (1.97 in) or more]
- When pulling away just after starting engine [at approx. 10 km/h (6.2 MPH) or higher]

Diagnosis Procedure

INFOID:0000000011241160

[WITHOUT ICC]

INFOID:000000011241159

1.SYMPTOM CHECK 1

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

Do vibrations occur?

YES >> GO TO 2.

NO >> Check brake pedal. Refer to <u>BR-15, "Adjustment"</u>.

2.SYMPTOM CHECK 2

Check that motor sound from ABS actuator abd electric unit occurs when the engine starts.

Does the operation sound occur?

YES >> GO TO 3.

NO >> Perform "Self Diagnostic Result" mode of "ABS" with CONSULT.

3.SYMPTOM CHECK 3

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

Does the symptom occur?

YES >> Check that radio (including wiring), antenna and antenna lead-in wires are not located near ABS actuator and electric unit (control unit). Move them if they are located near ABS actuator and electric unit (control unit).

NO >> GO TO 4.

4.PERFORM SELF DIAGNOSTIC RESULT

1. Turn the ignition switch OFF \rightarrow ON.

CAUTION:

- Be sure to wait 10 seconds after turning ignition switch OFF or ON.
- Start the engine.
- 2. Repeat step 1 two or more times.
- 3. Perform "Self Diagnostic Result" mode of "ABS".

Is any DTC detected?

- YES >> Check the DTC. Refer to <u>BRC-50, "DTC Index"</u>.
- NO >> Inspection End.

VEHICLE JERKS DURING

< SYMPTOM DIAGNOSIS > VEHICLE JERKS DURING

[WITHOUT ICC]

VEHICLE JERKS DURING	Δ
Description	A
The vehicle jerks when VDC function, TCS function, ABS function, EBD function, brake assist function or hill start assist function operates.	В
Diagnosis Procedure	0
1.снеск зумртом	С
Check that the vehicle jerks when VDC function, TCS function, ABS function, EBD function, brake assist func- tion or hill start assist function operates. <u>Is the inspection result normal?</u> YES >> Normal	D
NO >> GO TO 2. 2.PERFORM THE SELF DIAGNOSTIC RESULT	E
 With CONSULT Turn the ignition switch OFF → ON. CAUTION: 	BRC
 Be sure to wait 10 seconds after turning ignition switch OFF or ON. Start the engine. Repeat step 1 two or more times. 	G
 Perform "Self Diagnostic Result" mode of "ABS". <u>Is any DTC detected?</u> 	Н
YES >> Check the DTC. Refer to <u>BRC-50, "DTC Index"</u> . NO >> GO TO 3.	
3.CHECK CONNECTOR 1. Turn the ignition switch OFF.	
 Disconnect ABS actuator and electric unit (control unit) harness connector. Check connector terminal for deformation, disconnection and looseness. 	J
Is the inspection result normal? YES >> GO TO 4.	1Z
NO >> Poor connection of connector terminal. Repair or replace connector terminal.	K
4.PERFORM THE SELF DIAGNOSTIC RESULT	I
CONSULT Connect harness connector.	
 Turn the ignition switch OFF → ON. CAUTION: 	M
 Be sure to wait 10 seconds after turning ignition switch OFF or ON. 	IVI
 Start the engine. Repeat step 2 two or more times. 	Ν
 Perform "Self Diagnostic Result" mode of "ABS". Is any DTC detected? 	IN
YES >> Check the DTC. Refer to <u>BRC-50, "DTC Index"</u> .	\bigcirc
NO >> GO TO 5.	0
5.PERFORM THE SELF DIAGNOSTIC RESULT	D
CONSULT Perform "Self Diagnostic Result" mode of "ENGINE" and "TRANSMISSION".	Ρ
Is any DTC detected?	
 YES >> Check the DTC. NO >> Replace ABS actuator and electric unit (control unit). Refer to <u>BRC-142, "Removal and Installa-tion"</u>. 	

< SYMPTOM DIAGNOSIS >

NORMAL OPERATING CONDITION

Description

Symptom	Result	
Brake pedal slightly vibrates and operation sound (motor sound and sound from suspen- sion) occurs when VDC function, TCS function, ABS function, EBD function, brake assist function, hill start assist function operates.	This is not a malfunction, because it is	
Brake stopping distance may become longer than models without ABS function depending on the road conditions when ABS function is operated on a slippery road, rough road, grav- el road or snowy road.	caused by VDC function, TCS function, ABS function, EBD function, brake assist function, hill start assist function that are	
Brake pedal vibrates and operation sound occurs during sudden acceleration and corner- ing when VDC function, TCS function, brake assist function or brake force distribution func- tion is operated.	normally operated.	
Brake pedal vibrates and motor sound from the engine room occurs when the engine starts or the vehicle starts just after starting the engine.	This is not a malfunction, because it is caused by operation check of ABS actuator and electric unit (control unit).	
Acceleration may feel insufficient depending on the road conditions.	This is not a malfunction, because it is	
TCS function may operate momentarily while driving on a road where friction coefficient varies or when downshifting or fully depressing accelerator pedal.	caused by TCS function that puts the highest priority to obtain the optimum traction (stability).	
ABS warning lamp and VDC OFF indicator lamp may turn ON when the vehicle is on a ro- tating turntable or is given a strong shaking or large vibrations on a ship while the engine is running.		
VDC warning lamp may turn ON and VDC function, TCS function, brake assist function, and brake force distribution function may not normally operate when driving on a special road the is extremely slanted (bank in a circuit course).	In this case, restart the engine on a no mal road. If the normal condition is re- stored, there is no malfunction. In that case, erase "ABS" self-diagnosis result	
A malfunction in yaw rate/side/decel G sensor system may be detected when the vehicle sharply turns during a spin turn, acceleration turn or drift driving while VDC function TCS function are OFF (VDC OFF switch is pressed and VDC OFF indicator lamp is in ON status).	memory with CONSULT.	
The vehicle speed does not increase, when the accelerator pedal is depressed while the vehicle is on a 2-wheel chassis dynamometer for speedometer check.	This is normal. (When checking the vehi- cle on a chassis dynamometer, operate VDC OFF switch so that TCS function is OFF.)	

REMOVAL AND INSTALLATION А WHEEL SENSOR FRONT WHEEL SENSOR В FRONT WHEEL SENSOR : Exploded View INFOID:000000011241164 SEC. 476 D В 0 Е BRC Н 10.0 (1.0, 7) (1 AWFIA1143Z2 1. Front wheel sensor A. Color line (slant line) B. Front wheel sensor harness connector Κ ∠ Front FRONT WHEEL SENSOR : Removal and Installation INFOID:000000011241165 L CAUTION: Do not damage the front wheel sensor or sensor rotor. Μ REMOVAL 1. Remove front wheel and tire using power tool. Refer to WT-65, "Balancing Wheels". 2. Remove fender protector retaining pin to gain access to wheel sensor harness connector. Ν 3. Disconnect harness connector from front wheel sensor. 4. Remove front wheel sensor bolt (A) from wheel hub and bearing. Ο **CAUTION:** Pull out the front wheel sensor being careful to turn it as little as possible. Do not pull on the front wheel sensor har-Ρ ness.

[WITHOUT ICC]

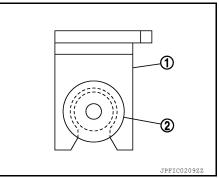
- 5. Remove front wheel sensor from strut bracket.
- 6. Remove front wheel sensor from steering knuckle.

Pull out the front wheel sensor being careful to turn it as little as possible. Do not pull on the front wheel sensor harness.

INSTALLATION

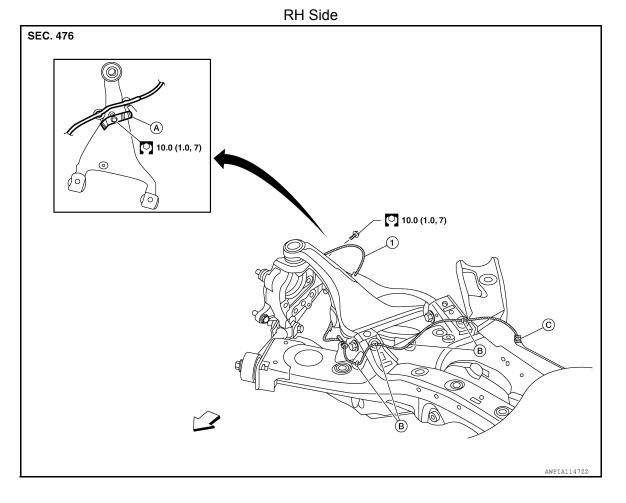
Installation is in the reverse order of removal. **CAUTION:**

- Before installing, make sure there is no foreign material, such as iron fragments, adhered to the pick-up part of the front wheel sensor.
- When installing, make sure there is no foreign material, such as iron fragments, on and in the hole in the steering knuckle for the front wheel sensor. Make sure no foreign material has been caught in the sensor rotor. Remove any foreign material and clean the mount.
- Do not twist front wheel sensor harness when installing front wheel sensor. Check that grommet (2) is fully inserted to bracket (1). Check that front wheel sensor harness is not twisted after installation.



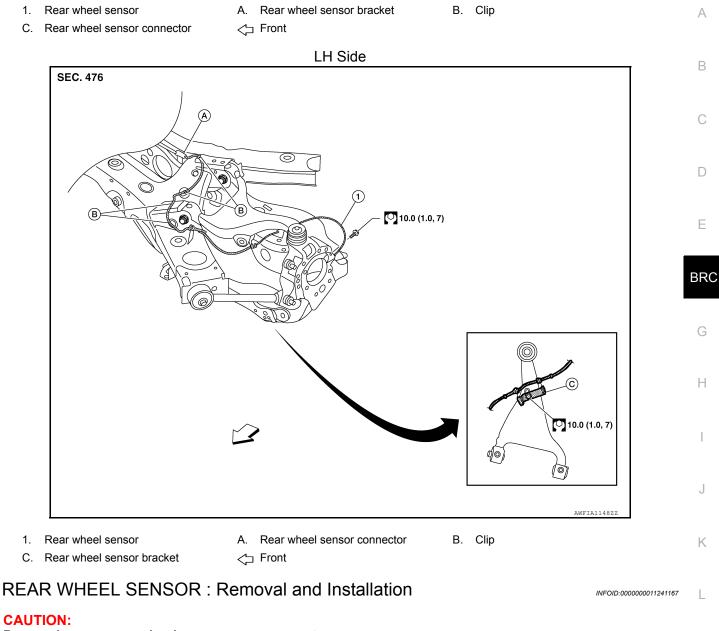
REAR WHEEL SENSOR









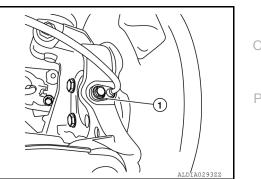


Do not damage rear wheel sensor or sensor rotor.

REMOVAL

- 1. Remove rear under cover. Refer to EXT-40, "REAR UNDER COVER : Removal and Installation"
- 2. Remove rear wheel and tire using power tool. Refer to WT-68, "Removal and Installation".
- Remove rear wheel sensor bolt (1). **CAUTION:**

Pull out the rear wheel sensor being careful to turn it as little as possible. Do not pull on the rear wheel sensor harness.



4. Disconnect harness connector from rear wheel sensor. Μ

Ν

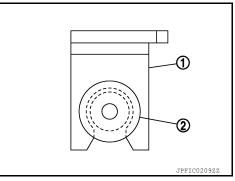
- 5. Remove rear wheel sensor from sensor brackets.
- 6. Remove rear wheel sensor from rear knuckle. CAUTION:

Pull out the rear wheel sensor being careful to turn it as little as possible. Do not pull on the rear wheel sensor harness.

INSTALLATION

Installation is in the reverse order of removal.

- Before installing, make sure there is no foreign material, such as iron fragments, adhered to the pick-up part of the rear wheel sensor.
- When installing, make sure there is no foreign material, such as iron fragments, on and in the hole in the rear knuckle for the rear wheel sensor. Make sure no foreign material has been caught in the sensor rotor. Remove any foreign material and clean the mount.
- Do not twist rear wheel sensor harness when installing rear wheel sensor. Check that grommet (2) is fully inserted to bracket (1). Check that rear wheel sensor harness is not twisted after installation.



SENSOR ROTOR

[WITHOUT ICC]

SENSOR ROTOR FRONT SENSOR ROTOR

< REMOVAL AND INSTALLATION >

FRONT SENSOR ROTOR : Removal and Installation - Front Sensor Rotor INFOID:00000011241168

The front wheel sensor rotor is an integral part of the wheel hub and bearing and cannot be disassembled. Refer to <u>FAX-8, "Removal and Installation"</u>.

REAR SENSOR ROTOR

REAR SENSOR ROTOR : Removal and Installation - Rear Sensor Rotor INFOID:00000011241169

The rear wheel sensor rotor is an integral part of the wheel hub and bearing and cannot be disassembled. Refer to <u>RAX-8</u>, "<u>Removal and Installation</u>".

Ε

А

В

С

BRC

Η

J

Κ

L

Μ

0

Ρ

ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)

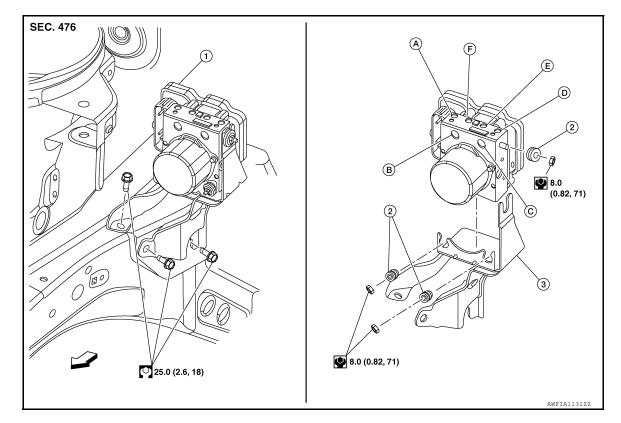
< REMOVAL AND INSTALLATION >

ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)

Exploded View

INFOID:000000011241170

[WITHOUT ICC]



1. ABS actuator and electric unit (control unit) 2. Bushings

- A. To rear RH brake caliper
- D. To rear LH brake caliper

- E. To front RH brake caliper
- 3. Bracket
- B. From master cylinder secondary side C. From master cylinder primary side

INFOID:0000000011241171

F. To front LH brake caliper

∠ Front

Removal and Installation

REMOVAL

CAUTION:

- To remove brake tube, use a flare nut wrench to prevent flare nuts and brake tube from being damaged.
- Do not remove actuator by holding harness.

NOTE:

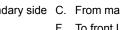
- Before replacing ABS actuator and electric unit (control unit), perform "Before Replace ECU" of "Read / Write Configuration" to save or print current vehicle specification. Refer to BRC-68, "Work Procedure".
- When removing components such as hoses, tubes/lines, etc., cap or plug openings to prevent fluid from spilling.
- Disconnect negative battery terminal. Refer to <u>PG-86, "Exploded View"</u>.
- Remove cowl top cover. Refer to <u>EXT-34, "Removal and Installation Cowl Top Cover"</u>.
- Remove cowl top extension. Refer to <u>EXT-35</u>, "Removal and Installation Cowl Top Extension".
- 4. Separate brake tubes from ABS actuator and electric unit (control unit). Refer to BR-22, "FRONT : Exploded View".
- 5. Disconnect harness connector from ABS actuator and electric unit (control unit).
- 6. Remove ABS actuator and electric unit (control unit) bracket nuts, bolts and bushings.
- 7. Remove ABS actuator and electric unit (control unit) from vehicle.

INSTALLATION

Revision: October 2014

BRC-142

2015 Murano



ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)

< REMOVAL AND INSTALLATION >

CAUTION:

Be sure to perform "After Replace ECU" of "Read / Write Configuration" or "Manual Configuration" when replacing ABS actuator and electric unit (control unit). Refer to <u>BRC-68, "Work Procedure"</u> .	А
Installation is in the reverse order of removal.	
 After work is completed, bleed air from brake tube. Refer to <u>BR-16, "Bleeding Brake System"</u>. 	D
 Adjust the neutral position of steering angle sensor. Refer to <u>BRC-64, "Work Procedure"</u>. 	D
 Perform calibration of the decel G sensor. Refer to <u>BRC-66, "Work Procedure"</u>. 	
CAUTION:	
 To install, use flare nut crowfoot and torque wrench. 	С
 Replace the ABS actuator if it has been dropped or sustained an impact. 	
Do not install actuator by holding harness.	
• After installing harness connector in the ABS actuator and electric unit (control unit), make sure	D
connector is securely locked.	D

Е

- G
- Н

J

Κ

L

Ν

Μ

. .

0

Р

VDC OFF SWITCH

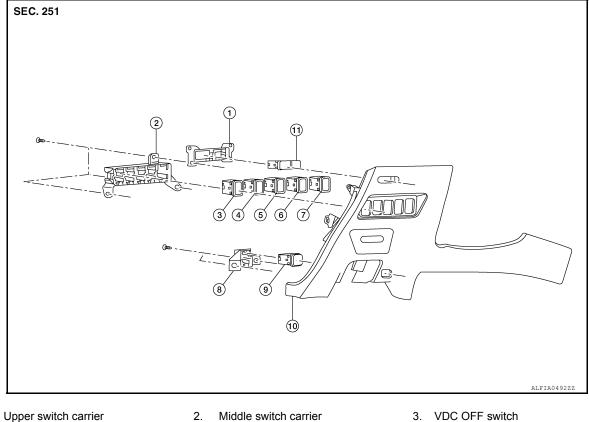
< REMOVAL AND INSTALLATION >

VDC OFF SWITCH

Exploded View

INFOID:000000011544960

[WITHOUT ICC]



4. Mask

1.

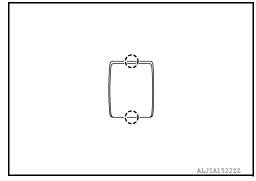
Mask 7.

- 5.
- Automatic back door switch
- 8. Lower switch carrier
- 11. Illumination control switch
- Removal and Installation

10. Instrument lower panel LH

REMOVAL

- 1. Remove instrument lower panel LH. Refer to IP-24, "Removal and Installation".
- 2. Remove screws and middle switch carrier from instrument lower panel LH.
- 3. Release pawls using suitable tool and remove VDC OFF switch from middle switch carrier. (): Pawl



6. Heated steering wheel switch

9. Front power return switch

INSTALLATION

Installation is in the reverse order of removal.

STEERING ANGLE SENSOR

< REMOVAL AND INSTALLATION >

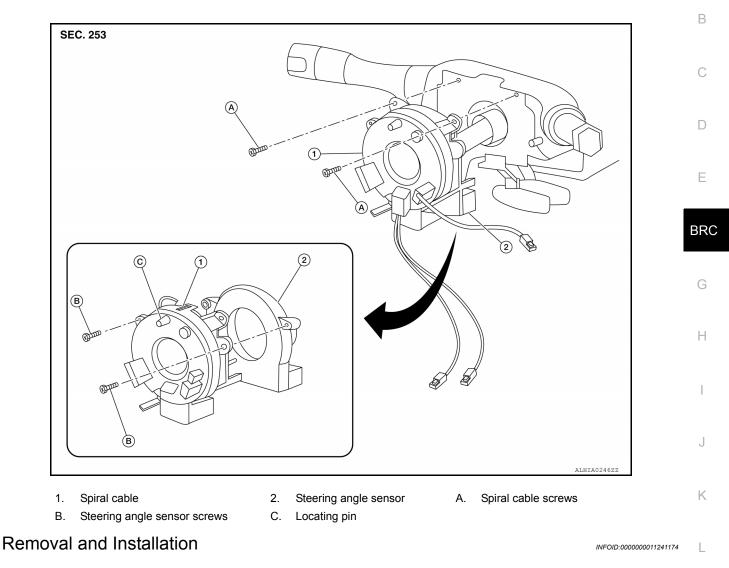
STEERING ANGLE SENSOR

Exploded View

INFOID:000000011241173

А

[WITHOUT ICC]



To remove and install the steering angle sensor, remove and install the spiral cable. Refer to <u>SR-15, "Removal</u> and Installation".

Μ

Ν

0

< PRECAUTION > PRECAUTION

PRECAUTIONS

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

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

WARNING:

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

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

WARNING:

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

Precaution for Procedure without Cowl Top Cover

INFOID:0000000011578453

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

Precaution for Brake System

INFOID:0000000011578454

WARNING:

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

 $\langle \mathcal{A} \rangle$

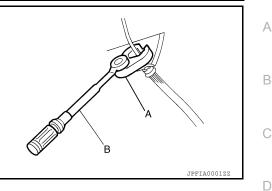
- Brake fluid use refer to <u>BR-8, "Inspection"</u>.
- Do not reuse drained brake fluid.
- Do not spill or splash brake fluid on painted surfaces. Brake fluid may seriously damage paint. Wipe it off immediately and wash with water if it gets on a painted surface.
- Always confirm the specified tightening torque when installing the brake pipes.
- After pressing the brake pedal more deeply or harder than normal driving, such as air bleeding, check each item of brake pedal. Adjust brake pedal if it is outside the standard value.
- Do not use mineral oils such as gasoline or light oil to clean. They may damage rubber parts and cause improper operation.
- · Always loosen the brake tube flare nut with a flare nut wrench.

PRECAUTIONS

< PRECAUTION >

• Tighten the brake tube flare nut to the specified torque with a flare nut crowfoot (A) and torque wrench (B).

- Always connect the battery terminal when moving the vehicle.
- Turn the ignition switch OFF and disconnect the ABS actuator and electric unit (control unit) harness connector or the battery negative terminal before performing the work.
- Check that no brake fluid leakage is present after replacing the parts.

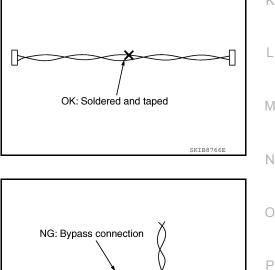


Precaution for Brake Control System

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

Precaution for Harness Repair

• Solder the repair part, and wrap it with tape. [Twisted wire fray must be 110 mm (4.33 in) or less.]



 Do not bypass the repair point with wire. (If it is bypassed, the turnout point cannot be separated and the twisted wire characteristics are lost.)

INFOID:000000011578455

INFOID:0000000011578456

BRC

Е

Н

Revision: October 2014

[WITH ICC]

< PRECAUTION >

Precautions for FEB System Service

[WITH ICC]

CAUTION:

- Never use the ICC sensor removed from vehicle. Never disassemble or remodel.
- Erase DTC when replacing parts of ICC system. Then check the operation of ICC system after radar alignment if necessary.
- Never change FEB system state ON/OFF without the consent of the customer.
- Turn the FEB system OFF in conditions similar to driving, such as free rollers or a chassis dynamometer.

< PREPARATION >

PREPARATION PREPARATION

Special Service Tool

А

[WITH ICC]

INFOID:000000011578457 B

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

Tool number (TechMate No.) Tool name		Description	С
KV991J0080 (J-45741) ABS active wheel sensor tester	HIADIOLE	Checking operation of ABS active wheel sensors	D
 (1-20-2851-1) ICC Alignment Kit	AMOIA001622	Adjusting ICC sensor	G H
 (1-20-2722-1-IF) Wheel Adaptor	AMOIA0017ZZ	Adjusting ICC sensor	- I J

Commercial Service Tools

INFOID:000000011578458

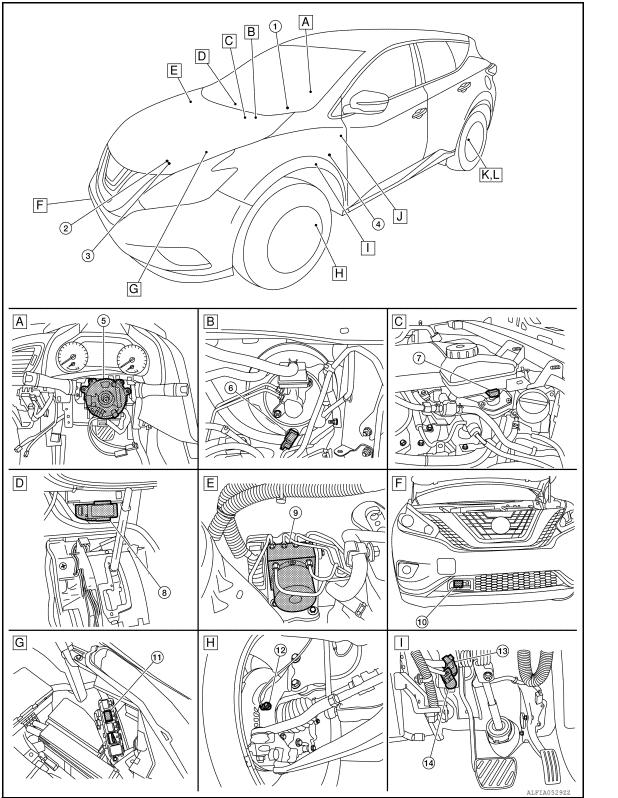
Tool name		Description	
1. Flare nut crowfoot 2. Torque wrench		Tightening brake tube flare nuts a: 10 mm (0.39 in)/12 mm (0.47 in)	
	S-NT360		
Power tool		Loosening nuts, screws and bolts	
	PIIB1407E		

SYSTEM DESCRIPTION

COMPONENT PARTS

Component Parts Location

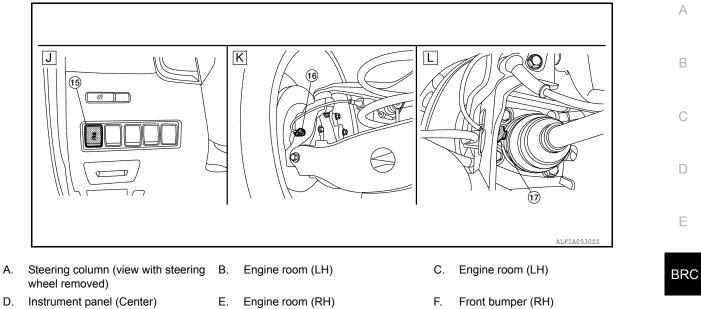
INFOID:000000011555500



< SYSTEM DESCRIPTION >

[WITH ICC]

G



- G. Engine room (LH)
- J. Left side of instrument panel
- Engine room (RH)
- H. Left front wheel area
- K. Left rear wheel area (FWD models) L.
- I. Brake pedal area
 - Left rear wheel area (AWD models)

No.	Component	Description	
1.	Combination meter	 Performs the following operations using the signals received from the ADAS controunit via the CAN communication Displays the FEB system operation status using the meter display signal Illuminates the FEB warning lamp using the FEB warning lamp signal Refer to <u>MWI-5, "METER SYSTEM : Component Parts Location"</u> for detailed installation location. 	
2.	ТСМ	 TCM transmits the signal related to CVT control to ADAS control unit via CAN communication Refer to <u>TM-13</u>. "CVT CONTROL SYSTEM : TCM" for detailed installation location. 	
3.	ECM	 ECM transmits the accelerator pedal position signal via CAN communication Refer to <u>EC-15, "ENGINE CONTROL SYSTEM : Component Parts Location"</u> for de tailed installation location. 	
4.	Driver assistance buzzer	Refer to BRC-156, "Warning Buzzer".	
5.	Steering angle sensor	Refer to BRC-153, "Steering Angle Sensor"	
6.	Vacuum sensor	Refer to BRC-154, "Vacuum Sensor"	
7.	Brake fluid level switch	Refer to BRC-154, "Brake Fluid Level Switch"	
8.	ADAS control unit (view with center console removed)	 Refer to <u>BRC-155. "ADAS Control Unit"</u>. Refer to <u>DAS-6. "Component Parts Location"</u> for detailed installation location. 	
9.	ABS actuator and electric unit (con- trol unit)	 ABS actuator and electric unit (control unit) transmits the vehicle speed signal (wheel speed), stop lamp signal and VDC/TCS/ABS system operation condition to ADAS control unit via CAN communication ABS actuator and electric unit (control unit) controls the brake, based on a brake fluid pressure control signal received from ADAS control unit via CAN communication Refer to <u>BRC-142</u>, "<u>Removal and Installation</u>" for detailed installation location. 	
10.	ICC sensor	Refer to BRC-155, "ICC Sensor".	
11.	ICC brake hold relay	Refer to BRC-156, "ICC Brake Hold Relay".	
12.	Front LH wheel sensor	Refer to BRC-152, "Wheel Sensor and Sensor Rotor"	
13.	Stop lamp switch	Peferte DDC 455, "Drake Dedel Desition Switch / Ston Lemm Switch"	
14.	Brake pedal position switch	Refer to <u>BRC-155</u> , "Brake Pedal Position Switch / Stop Lamp Switch".	
15.	VDC off switch	Refer to BRC-154, "VDC OFF Switch"	

Revision: October 2014

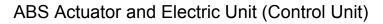
< SYSTEM DESCRIPTION >

No.	Component	Description
16.	Rear LH wheel sensor (FWD mod- els)	Refer to BRC-152, "Wheel Sensor and Sensor Rotor"
17.	Rear LH wheel sensor (AWD mod- els)	Refer to BRC-152, "Wheel Sensor and Sensor Rotor"

Wheel Sensor and Sensor Rotor

NOTE:

- Wheel sensor of front wheel is installed on steering knuckle.
- Sensor rotor of front wheel is integrated into the wheel hub assembly.
- Wheel sensor of rear wheel is installed on rear final drive.
- Sensor rotor of rear wheel is installed on drive shaft (rear final drive side).
- Never measure resistance and voltage value using a tester because sensor is an active sensor.
- Power supply is supplied to detection portion so that magnetic field line is read. Magnetic field that is detected is converted to current signal.
- When sensor rotor rotates, magnetic field changes. Magnetic field change is converted to current signals (rectangular wave) and is transmitted to ABS actuator and electric unit (control unit). Change of magnetic field is proportional to wheel speed.



Electric unit (control unit) is integrated with actuator and comprehensively controls VDC function, TCS function, ABS function, EBD function, brake assist function and hill start assist function.



- Brake fluid pressure, engine and transmission are controlled according to signals from each sensor.
- If malfunction is detected, the system enters fail-safe mode.

ACTUATOR

The following components are integrated with ABS actuator:

Pump

Returns the brake fluid reserved in reservoir to master cylinder by reducing pressure.

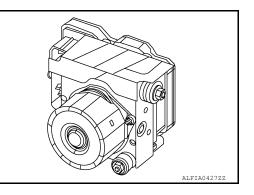
Motor

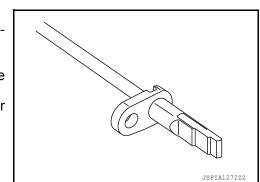
Activates the pump according to signals from ABS actuator and electric unit (control unit).

Motor Relay

Line of magnetic force Sensor rotor Sensor Amplifier circuit

INFOID:0000000011815127





INFOID:000000011815126

< SYSTEM DESCRIPTION >

Operates the motor ON/OFF according to signals from ABS actuator and electric unit (control unit).

Actuator Relay

Operates each valve ON/OFF according to signals from ABS actuator and electric unit (control unit).

ABS IN Valve and ABS OUT Valve

Increases, holds or decreases the fluid pressure of each caliper according to signals from ABS actuator and electric unit (control unit).

Pressure Sensor

Detects the brake fluid pressure and transmits signal to ABS actuator and electric unit (control unit).

Cut Valve 1 (Primary Line), Cut Valve 2 (Secondary Line)

Shuts off the ordinary brake line from master cylinder when VDC function, TCS function, brake assist function, D hill start assist function are activated.

Yaw Rate/Side/Decel G Sensor

Calculates the following information that affects the vehicle and transmits a signal to ABS actuator and electric E unit (control unit). [Yaw rate/side/decel G sensor is integrated into the ABS actuator and electric unit (control unit).]

- Vehicle rotation angular velocity (yaw rate signal)
- Vehicle lateral acceleration (side G signal)
- Vehicle longitudinal acceleration (decel G signal)

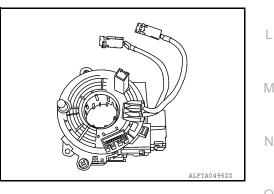
Stop Lamp Switch

Detects the operation status of brake pedal and transmits converted electric signal to ABS actuator and electric unit (control unit).

Steering Angle Sensor

Detects the following information and transmits steering angle signal to ABS actuator and electric unit (control unit) via CAN communication:

- Steering angle sensor malfunction signal
- Steering wheel rotation amount
- Steering wheel rotation angular velocity
- Steering wheel rotation direction





А

Н JSFTA114322

INFOID:000000011815129

INFOID:0000000011815128

[WITH ICC]

Κ

Ρ

Brake Fluid Level Switch

Detects the brake fluid level in reservoir tank and transmits converted electric signal from combination meter to ABS actuator and electric unit (control unit) via CAN communication when brake fluid level is the specified level or less.

Vacuum Sensor

Detects the vacuum in brake booster and transmits converted electric signal to ABS actuator and electric unit (control unit).

Parking Brake Switch

Detects the operation status of parking brake switch and transmits converted electric signal from combination meter to ABS actuator and electric unit (control unit).

VDC OFF Switch

- This is an integrated switch with switches for other functions.
- · Non-operational status or standby status of the following functions can be selected using VDC OFF switch. VDC OFF indicator lamp indicates the operation status of function (ON: Non-operational status, OFF: Standby status).
- Vehicle Dynamic Control function
- Traction Control System function
- Forward Emergency Braking function

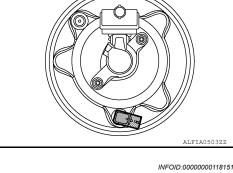
NOTE:

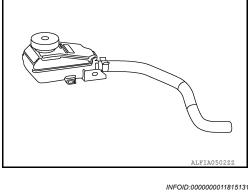
ABS function, EBD function operate.

Revision: October 2014

· VDC OFF indicator lamp turns OFF (standby status) when the engine is started again after it is stopped once while VDC OFF indicator lamp is ON (non-operational status).









INFOID:000000011815130

INFOID:0000000011815132

ALFIA0434Z

INFOID:0000000011815133

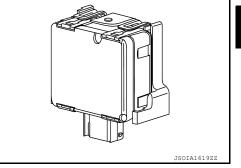
< SYSTEM DESCRIPTION >

ADAS Control Unit

- ADAS control unit is at the front of center console.
- Communicates with each control unit via CAN communication/ITS communication/Chassis communication.
- ADAS control unit included gateway function, and necessary for system control signals are transmitted to each control unit between CAN communication and ITS communication by the ADAS control unit.
- ADAS control unit controls the each system, based on ITS communication signal, CAN communication signal, and chassis communication signal from each control unit.

ICC Sensor

- · ICC sensor is installed on the front of the vehicle and detects a vehicle ahead by using millimeter waves.
- · ICC sensor detects radar reflected from a vehicle ahead by irradiating radar forward and calculates a distance from the vehicle ahead and relative speed, based on the detected signal.
- ICC sensor transmits information for ICC from the vehicle to ADAS control unit via ITS communication.

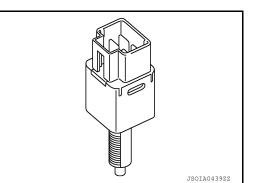


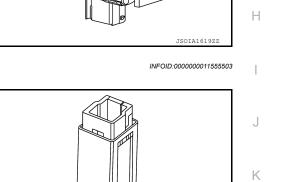
VALAAAAA YA

Brake Pedal Position Switch / Stop Lamp Switch

• Brake pedal position switch is installed at the upper part of the brake pedal and detects a brake operation performed by the driver.

- Brake pedal position switch is turned OFF when depressing the brake pedal.
- Brake pedal position switch signal is input to ECM. Brake pedal position switch signal is transmitted from ECM to ADAS control unit via CAN communication.
- Stop lamp switch is installed at the upper part of the brake pedal and detects a brake operation performed by the driver.
- Stop lamp switch is turned ON, when depressing the brake pedal.
- · Stop lamp switch signal is input to ECM and ABS actuator and electric unit (control unit). Stop lamp switch signals are transmitted from ECM and ABS actuator and electric unit (control unit) to ADAS control unit via CAN communication.





BRC

L

Μ

Ν

P

JSOIA0812ZZ



AWOTA0101Z

INFOID:000000011555502

[WITH ICC]

INFOID:00000001155550

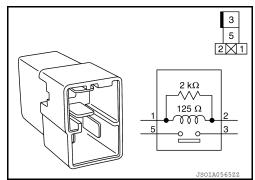
D

Е

А

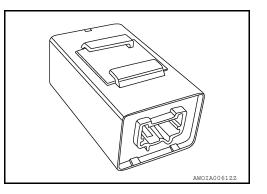
ICC Brake Hold Relay

- ICC brake hold relay is installed in the engine room (right side).
- When the brake is activated by the system, the ICC brake hold relay turns ON the stop lamp by bypassing the circuit of the stop lamp, according to a signal transmitted from the ADAS control unit.



Warning Buzzer

- Warning buzzer is installed behind the finisher to the left of the left knee airbag module.
- When a warning buzzer signal is received from the ADAS control module, the warning buzzer sounds a buzzer.



INFOID:000000011555504

INFOID:000000011555507

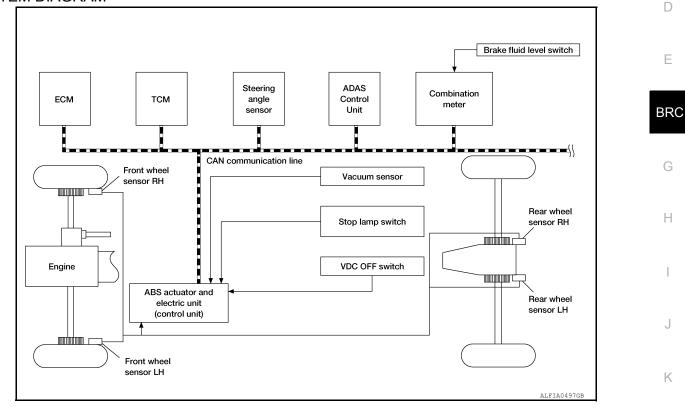
< SYSTEM DESCRIPTION >

SYSTEM

System Description

- The system switches fluid pressure of each brake caliper to increase, hold or decrease according to signals from control unit in ABS actuator and electric unit (control unit). This control system is applied to VDC function, TCS function, ABS function, EBD function, brake assist function, hill start assist function and forward emergency braking function.
- Fail-safe function is available for each function and is activated by each function when system malfunction ^C occurs.

SYSTEM DIAGRAM



INPUT SIGNAL AND OUTPUT SIGNAL

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

Component	Signal description	
ECM	 Mainly transmits the following signals to ABS actuator and electric unit (control unit) via CAN communication: Accelerator pedal position signal Engine speed signal Engine torque signal Mainly receives the following signal from ABS actuator and electric unit (control unit) via CAN communication: Engine torque request signal 	1
ТСМ	 Mainly transmits the following signal to ABS actuator and electric unit (control unit) via CAN communication: Current gear position signal 	[

INFOID:0000000011675172

А

L

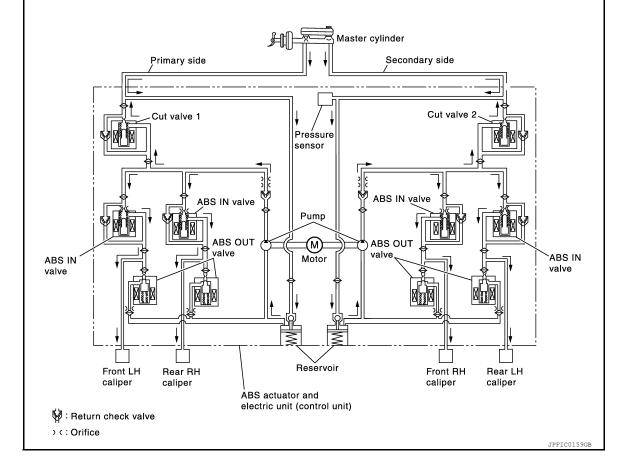
< SYSTEM DESCRIPTION >

Component	Signal description	
Combination meter	 Mainly receives the following signals from ABS actuator and electric unit (control unit) via CAN communication: Brake fluid level switch signal Parking brake switch signal Mainly receives the following signals from ABS actuator and electric unit (control unit) via CAN communication: Brake warning lamp signal ABS warning lamp signal VDC warning lamp signal VDC OFF indicator lamp signal 	
Steering angle sensor	 Mainly transmits the following signals to ABS actuator and electric unit (control unit) via CAN communication: Steering angle sensor signal Steering angle sensor malfunction signal 	

VALVE OPERATION (ABS AND EBD)

Each valve is operated and fluid pressure of brake caliper is controlled.

When ordinary brake is applied and ABS is in operation (when pressure increases).



Name	Not activated	When pressure increases
Cut valve 1	Power supply is not supplied (open)	Power supply is not supplied (open)
Cut valve 2	Power supply is not supplied (open)	Power supply is not supplied (open)
ABS IN valve	Power supply is not supplied (open)	Power supply is not supplied (open)
ABS OUT valve	Power supply is not supplied (close)	Power supply is not supplied (close)
Each caliper (fluid pressure)	_	Pressure increases

When front RH wheel caliper pressure increases

< SYSTEM DESCRIPTION >

Motor is activated. Brake fluid is pressurized by pump and is sent to secondary line through cut valve 2. At the same time, pressurized brake fluid is supplied to front RH caliper through ABS IN valve.

When front LH wheel caliper pressure increases

 Motor is activated. Brake fluid is pressurized by pump and is sent to primary line through cut valve 1. At the same time, pressurized brake fluid is supplied to front LH wheel caliper through ABS IN valve.

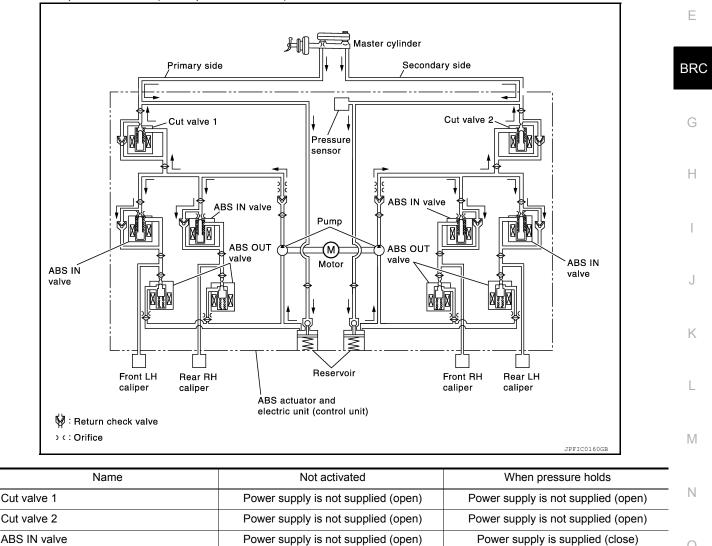
When rear RH wheel caliper pressure increases

 Motor is activated. Brake fluid is pressurized by pump and is sent to primary line through cut valve 1. At the same time, pressurized brake fluid is supplied to rear RH wheel caliper through ABS IN valve.

When rear LH wheel caliper pressure increases

 Motor is activated. Brake fluid is pressurized by pump and is sent to secondary line through cut valve 2. At the same time, pressurized brake fluid is supplied to rear LH wheel caliper through ABS IN valve.

When ABS operation starts (when pressure holds)



 Motor is activated. Brake fluid is pressurized by pump and is sent to secondary line through cut valve 2. At the same time because ABS IN valve and ABS OUT valve are closed, fluid pressure holds.

Power supply is not supplied (open)

Power supply is not supplied (close)

When front LH wheel caliper pressure holds

 Motor is activated. Brake fluid is pressurized by pump and is sent to primary line through cut valve 1. At the same time because ABS IN valve and ABS OUT valve are closed, fluid pressure holds.

Each caliper (fluid pressure)

ABS OUT valve

BRC-159

2015 Murano

Ρ

Power supply is not supplied (close)

Pressure holds

А

В

D

< SYSTEM DESCRIPTION >

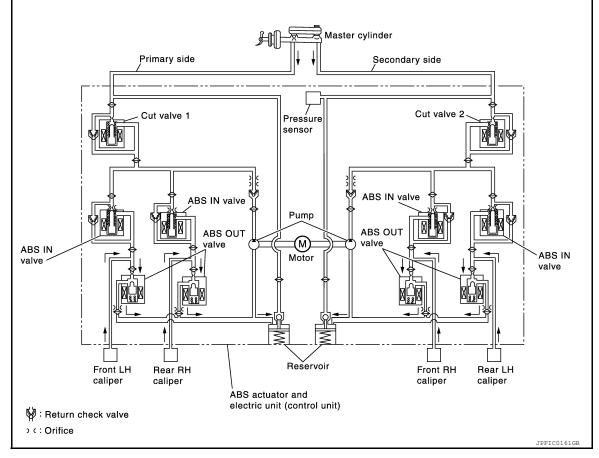
When rear RH wheel caliper pressure holds

• Motor is activated. Brake fluid is pressurized by pump and is sent to primary line through cut valve 1. At the same time because ABS IN valve and ABS OUT valve are closed, fluid pressure holds.

When rear LH wheel caliper pressure holds

• Motor is activated. Brake fluid is pressurized by pump and is sent to secondary line through cut valve 2. At the same time because ABS IN valve and ABS OUT valve are closed, fluid pressure holds.

ABS is in operation (when pressure decreases)



Name	Not activated	When pressure decreases
Cut valve 1	Power supply is not supplied (open)	Power supply is not supplied (open)
Cut valve 2	Power supply is not supplied (open)	Power supply is not supplied (open)
ABS IN valve	Power supply is not supplied (open)	Power supply is supplied (close)
ABS OUT valve	Power supply is not supplied (close)	Power supply is supplied (open)
Each caliper (fluid pressure)	_	Pressure decreases

When front RH wheel caliper pressure decreases

• Being supplied to reservoir through ABS OUT valve, the fluid pressure of brake caliper is decreased.

When front LH wheel caliper pressure decreases

• Being supplied to reservoir through ABS OUT valve, the fluid pressure of brake caliper is decreased.

When rear RH wheel caliper pressure decreases

• Being supplied to reservoir through ABS OUT valve, the fluid pressure of brake caliper is decreased.

When rear LH wheel caliper pressure decreases

• Being supplied to reservoir through ABS OUT valve, the fluid pressure of brake caliper is decreased.

Component Parts and Function

< SYSTEM DESCRIPTION >

Component	Function
Reservoir	Temporarily reserves the brake fluid drained from brake caliper, so that pressure efficiently decreases when decreasing pressure of brake caliper.
Pump	Returns the brake fluid reserved in reservoir to master cylinder by reducing pressure.
Motor	Drives the pump according to signals from control unit.
ABS IN valve	Switches the fluid pressure line to increase or hold according to signals from control unit.
ABS OUT valve	Switches the fluid pressure line to increase, hold or decrease according to signals from control unit.
Return check valve	Returns the brake fluid from brake caliper to master cylinder by bypassing orifice of each valve when brake is released.
Cut valve 1 Cut valve 2	Performs the duty control of fluid pressure increased by pump according to signals from control unit.
Pressure sensor	Detects the brake pedal operation amount.

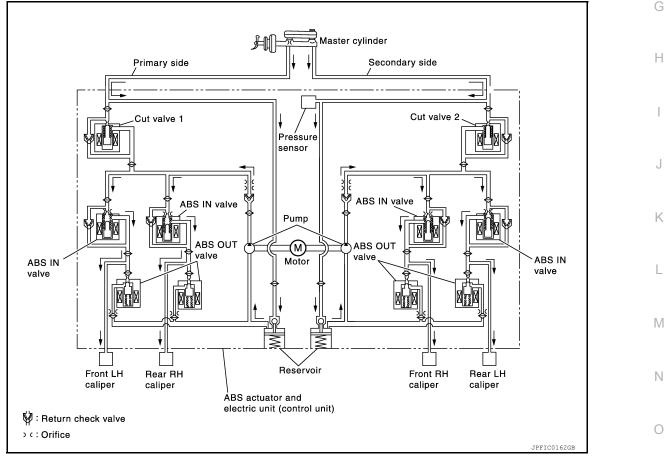
VALVE OPERATION (OTHER THAN ABS AND EBD)

Each valve is operated and fluid pressure of brake caliper is controlled.

NOTE:

There is no operation to hold and increase pressure for functions other than ABS and EBD.

When pressure increases



Ρ

BRC

[WITH ICC]

Name	Not activated	When Pressure Increases
Cut valve 1	Power supply is not supplied (open)	Wheel other than the one that the pressure is to be increased: Power supply is not sup- plied (open) Only wheel that the pressure is to be in- creased: Power supply is supplied (close)
Cut valve 2	Power supply is not supplied (open)	Wheel other than the one that the pressure is to be increased: Power supply is not sup- plied (open)Only wheel that the pressure is to be in- creased: Power supply is supplied (close)
ABS IN valve	Power supply is not supplied (open)	Wheel other than the one that the pressure is to be increased: Power supply is supplied (close) Only wheel that the pressure is to be in- creased: Power supply is not supplied (open)
ABS OUT valve	Power supply is not supplied (close)	Power supply is not supplied (close)
Each caliper (fluid pressure)	_	Pressure increases

When front RH wheel caliper pressure increases

 Motor is activated. Brake fluid from pump is supplied to front RH wheel caliper through ABS IN valve. For other wheels, ABS IN valve is closed and brake fluid is not supplied to caliper.

When front LH wheel caliper pressure increases

 Motor is activated. Brake fluid from pump is supplied to front LH wheel caliper through ABS IN valve. For other wheels, ABS IN valve is closed and brake fluid is not supplied to caliper.

When rear RH wheel caliper pressure increases

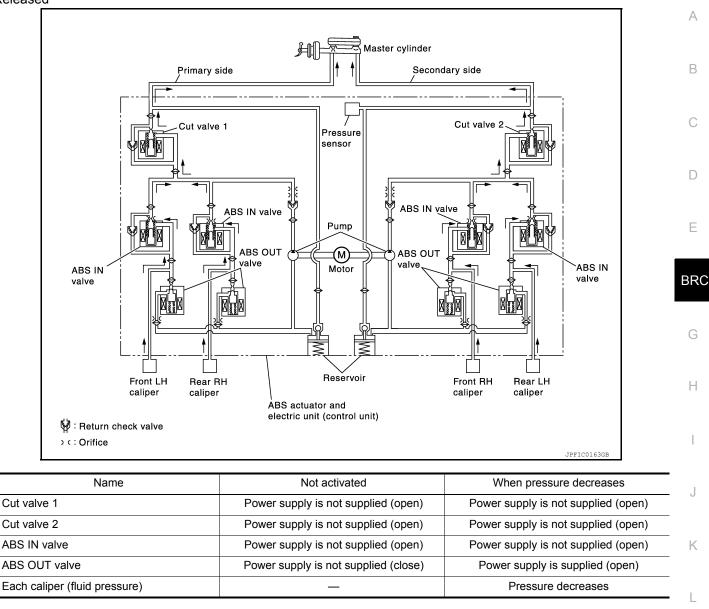
 Motor is activated. Brake fluid from pump is supplied to rear RH wheel caliper through ABS IN valve. For other wheels, ABS IN valve is closed and brake fluid is not supplied to caliper.

When rear LH wheel caliper pressure increases

• Motor is activated. Brake fluid from pump is supplied to rear LH wheel caliper through ABS IN valve. For other wheels, ABS IN valve is closed and brake fluid is not supplied to caliper.

< SYSTEM DESCRIPTION >





When front RH wheel caliper pressure decreases

• Being returned to master cylinder through ABS IN valve, fluid pressure of brake caliper is decreased.

When front LH wheel caliper pressure decreases

• Being returned to master cylinder through ABS IN valve, fluid pressure of brake caliper is decreased.

When rear RH wheel caliper pressure decreases

• Being returned to master cylinder through ABS IN valve, fluid pressure of brake caliper is decreased.

When rear LH wheel caliper pressure decreases

• Being returned to master cylinder through ABS IN valve, fluid pressure of brake caliper is decreased.

Component Parts and Function

Component	Function	
Reservoir	Temporarily reserves the brake fluid drained from brake caliper so that pressure efficiently decreas- es when decreasing pressure of brake caliper.	
Pump	Returns the brake fluid reserved in reservoir to master cylinder by reducing pressure.	
Motor	Drives the pump according to signals from control unit.	
ABS IN valve	Switches the fluid pressure line to increase or hold according to signals from control unit.	

Μ

Ν

[WITH ICC]

< SYSTEM DESCRIPTION >

Component	Function
ABS OUT valve	Switches the fluid pressure line to increase, hold or decrease according to signals from control unit.
Return check valve	Returns the brake fluid from brake caliper to master cylinder by bypassing orifice of each valve when brake is released.
Cut valve 1 Cut valve 2	Performs the duty control of fluid pressure increased by pump according to signals from control unit.
Pressure sensor	Detects the brake pedal operation amount.

CONDITION TO TURN ON THE WARNING LAMP

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

Condition (status)	ABS warning lamp	Brake warning lamp	FEB warning lamp	VDC warning lamp
Ignition switch OFF	OFF	OFF	OFF	OFF
For approx. 1 second after the ignition switch is turned ON	ON	ON	ON	ON
Approx. 2 seconds after ignition switch is turned ON (when the system is in normal operation)	OFF	OFF	OFF	OFF
After engine starts	OFF	OFF	OFF	OFF
When brake fluid is less than the specified level (brake flu- id level switch ON)	OFF	ON	OFF	OFF
When parking brake operates (parking brake switch ON)	OFF	ON	OFF	OFF
VDC function is malfunctioning	OFF	OFF	OFF	ON
TCS function is malfunctioning	OFF	OFF	OFF	ON
ABS function is malfunctioning	ON	OFF	OFF	ON
EBD function is malfunctioning	ON	ON	OFF	ON
FEB function is malfunctioning	OFF	OFF	ON	OFF
Brake assist function is malfunctioning	OFF	OFF	OFF	ON
Hill start assist function is malfunctioning	OFF	OFF	OFF	ON
Brake force distribution function is malfunctioning	OFF	OFF	OFF	ON
When brake booster vacuum decreases	OFF	ON	OFF	OFF
When vacuum sensor is malfunctioning	OFF	ON	OFF	OFF
VDC function is operating	OFF	OFF	OFF	Blinking
TCS function is operating	OFF	OFF	OFF	Blinking
ABS function is operating	OFF	OFF	OFF	OFF
EBD function is operating	OFF	OFF	OFF	OFF
FEB function is operating	OFF	OFF	Blinking	OFF
Brake assist function is operating	OFF	OFF	OFF	OFF
Hill start assist function is operating	OFF	OFF	OFF	OFF

CONDITION TO TURN ON THE INDICATOR LAMP

VDC OFF indicator lamp

- Turns ON when VDC function and TCS function are switched to non-operational status (OFF) by VDC OFF switch.
- Turns ON when ignition switch turns ON and turns OFF when the system is normal for bulb check purposes.

Condition (status)	VDC OFF indicator lamp
Ignition switch OFF	OFF
For approx. 1 second after the ignition switch is turned ON	ON

< SYSTEM DESCRIPTION >

[WITH	ICC]
-------	------

Condition (status)	VDC OFF indicator lamp	
Approx. 1 second after ignition switch is turned ON (when the system is in normal operation).	OFF	P
When VDC OFF switch is ON (VDC function TCS function are OFF)	ON	E

Fail-Safe

INFOID:000000011815825

Н

VDC FUNCTION, TCS FUNCTION, BRAKE ASSIST FUNCTION AND HILL START ASSIST FUNC-TION

VDC warning lamp in combination meter turns ON when a malfunction occurs in system [ABS actuator and electric unit (control unit)]. The control is suspended for VDC function, TCS function, brake assist function and hill start assist function. The vehicle status becomes the same as models without VDC function, TCS function, brake assist function and hill start assist function. However, ABS function and EBD function are operated normally.

ABS FUNCTION

ABS warning lamp and VDC warning lamp in combination meter turn ON when a malfunction occurs in system [ABS actuator and electric unit (control unit)]. The control is suspended for VDC function, TCS function, ABS function, brake assist function and hill start assist function. The vehicle status becomes the same as models without VDC function, TCS function, ABS function, brake assist function, brake assist function. However, EBD function is operated normally.

NOTE:

ABS self-diagnosis sound may be heard the same as in the normal condition, because self-diagnosis is performed when ignition switch turns ON and when vehicle initially starts.

EBD FUNCTION

ABS warning lamp, brake warning lamp and VDC warning lamp in combination meter turn ON when a malfunction occurs in system [ABS actuator and electric unit (control unit)]. The control is suspended for VDC function, TCS function, ABS function, EBD function, brake assist function and hill start assist function. The vehicle status becomes the same as models without VDC function, TCS function, ABS function, EBD function, brake assist function and hill start assist function.

DTC	Fail-safe condition	-
C1101		ĸ
C1102	The following functions are supported:	I.V.
C1103	 The following functions are suspended: VDC function 	
C1104	TCS function	L
C1105	 ABS function EBD function (only when both rear wheels are malfunctioning) 	
C1106	Brake assist function	
C1107	Hill start assist function	M
C1108		
C1109	The following functions are suspended:	N
C1111	 VDC function TCS function ABS function EBD function Brake assist function Hill start assist function 	0
C1113	The following functions are suspended: VDC function TCS function ABS function EBD function Brake assist function Hill start assist function 	P

< SYSTEM DESCRIPTION >

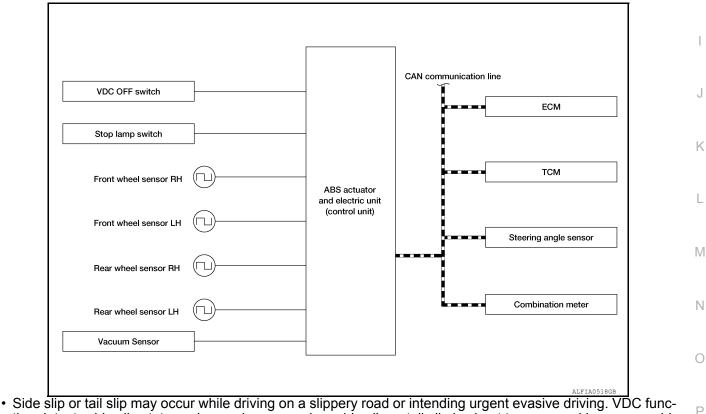
DTC	Fail-safe condition
C1115	The following functions are suspended: VDC function TCS function
C1116	ABS function Brake assist function Hill start assist function
C1120	
C1121	The following functions are suspended:
C1122	VDC function
C1123	TCS function
C1124	 ABS function EBD function
C1125	Brake assist function
C1126	 Hill start assist function
C1127	
C1130	The following functions are suspended: VDC function TCS function Hill start assist function
C1140	The following functions are suspended: VDC function TCS function ABS function EBD function Brake assist function Hill start assist function
C1142	 The following functions are suspended: VDC function TCS function Brake assist function Hill start assist function
C1143	 The following functions are suspended: VDC function TCS function
	Hill start assist function
C1145	 The following functions are suspended: • VDC function
C1146	 TCS function ABS function Brake assist function Hill start assist function
C1153	The following functions are suspended:
C1154	• VDC function • TCS function
C1155	Brake assist function Hill start assist function
C1160	The following functions are suspended: VDC function TCS function ABS function Brake assist function Hill start assist function
C1164	The following functions are suspended:
C1165	• VDC function • TCS function
C1166	ABS function
C1167	• EBD function • Brake assist function • Hill start assist function

DTC	Fail-safe condition	
C1170	 The following functions are suspended: VDC function TCS function ABS function Brake assist function Hill start assist function 	B
C1197	Electrical vacuum assistance of brake begater is succeeded	C
C1198	Electrical vacuum assistance of brake booster is suspended.	0
C1199	—	
C119A	Electrical vacuum assistance of brake booster is suspended.	D
U1000	 The following functions are suspended: VDC function TCS function Hill start assist function 	E
U1002	 The following functions are suspended: VDC function TCS function Hill start assist function 	BRC

VDC FUNCTION

VDC FUNCTION : System Description

SYSTEM DIAGRAM



- Side slip or tail slip may occur while driving on a slippery road or intending urgent evasive driving. VDC function detects side slip status using each sensor when side slip or tail slip is about to occur and improves vehicle stability by brake control and engine output control during driving.
- In addition to ABS function, EBD function and TCS function, target side slip amount is calculated according to steering operation amount from steering angle sensor and brake operation amount from brake pressure sensor. By comparing this information with vehicle side slip amount that is calculated from information from yaw rate/side/decel G sensor and wheel sensor, vehicle driving conditions (conditions of understeer or over-

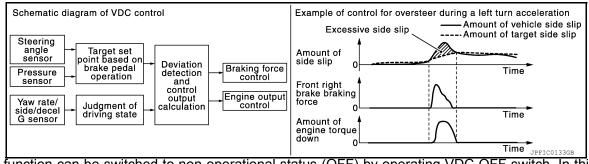
BRC-167

G

Н

INFOID:000000011821275

steer) are judged and vehicle stability is improved by brake force control on all wheels and engine output control.



- VDC function can be switched to non-operational status (OFF) by operating VDC OFF switch. In this case, VDC OFF indicator lamp turns ON.
- Control unit portion automatically improves driving stability by performing brake force control as well as
 engine output control, by transmitting drive signal to actuator portion according to difference between target
 side slip amount and vehicle side slip amount
- VDC warning lamp blinks while VDC function is in operation and indicates to the driver that the function is in operation.
- CONSULT can be used to diagnose the system diagnosis.
- Fail-safe function is adopted. When a malfunction occurs in VDC function, the control is suspended for VDC function, TCS function, brake assist function, hill start assist function and brake force distribution function. The vehicle status becomes the same as models without VDC function, TCS function, brake assist function and hill start assist function. However, ABS function and EBD function are operated normally. Refer to <u>BRC-47, "Fail-Safe"</u>.

INPUT SIGNAL AND OUTPUT SIGNAL

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

Component	Signal description			
ECM	 Mainly transmits the following signals to ABS actuator and electric unit (control unit) via CAN communication: Accelerator pedal position signal Engine speed signal Engine torque signal Mainly receives the following signal from ABS actuator and electric unit (control unit) via CAN communication: Engine torque request signal 			
ТСМ	 Mainly transmits the following signal to ABS actuator and electric unit (control unit) via CAN communication: Current gear position signal 			
Combination meter	 Mainly receives the following signals from ABS actuator and electric unit (control unit) via CAN communication: Brake fluid level switch signal Parking brake switch signal Mainly receives the following signals from ABS actuator and electric unit (control unit) via CAN communication: VDC warning lamp signal VDC OFF indicator lamp signal 			
Steering angle sensor	 Mainly transmits the following signals to ABS actuator and electric unit (control unit) via CAN communication: Steering angle sensor signal Steering angle sensor malfunction signal 			

OPERATION CHARACTERISTICS

VDC Function That Prevents Oversteer Tendency

< SYSTEM DESCRIPTION >

[WITH ICC]

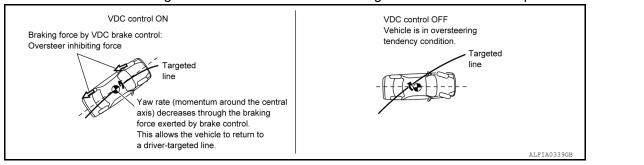
А

В

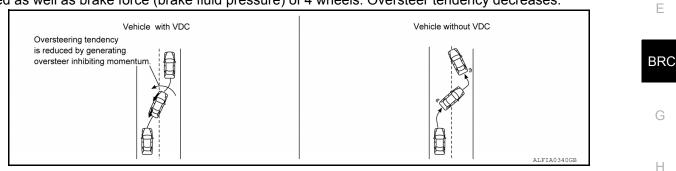
D

Μ

 During cornering, brake force (brake fluid pressure) is applied on front wheel and rear wheel on the outer side of turn. Momentum directing towards the outer side of turn is generated. Oversteer is prevented.

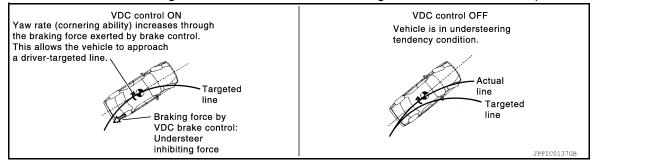


• Changing driving lane on a slippery road when oversteer tendency is judged large, engine output is controlled as well as brake force (brake fluid pressure) of 4 wheels. Oversteer tendency decreases.

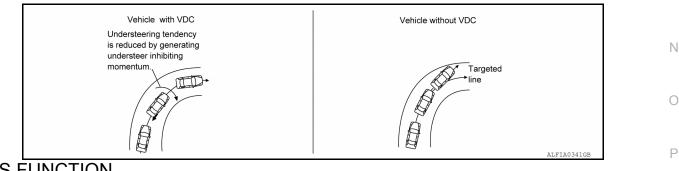


VDC Function That Prevents Understeer Tendency

 During cornering, brake force (brake fluid pressure) is applied on front wheel and rear wheel on the inner side of turn. Momentum directing towards the inner side of turn is generated. Understeer is prevented.



• Applying braking during cornering on a slippery road when understeer tendency is judged large, engine output is controlled as well as brake force (brake fluid pressure) of four wheels. Understeer tendency decreases.



TCS FUNCTION : System Description

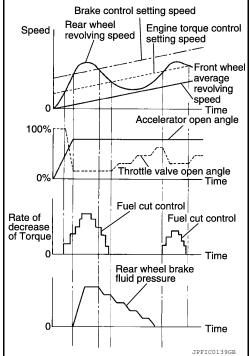
INFOID:0000000011821276

IWITH ICCI

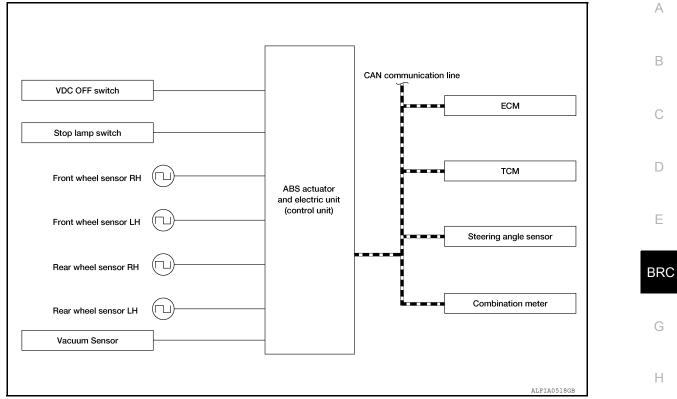
SYSTEM DIAGRAM

VDC OFF switch		-	CAN communication line	
Stop lamp switch		-		ECM
Front wheel sensor RH		ABS actuator and electric unit		ТСМ
Front wheel sensor LH		(control unit)		Steering angle sensor
Rear wheel sensor RH		-		
Rear wheel sensor LH		-		Combination meter
Vacuum Sensor	7	_		

- Wheel spin status of drive wheel is detected by wheel sensor of 4 wheels. Engine output and transmission shift status are controlled so that slip rate of drive wheels is in appropriate level. When wheel spin occurs on drive wheel, ABS actuator and electric unit (control unit) performs brake force control of LH and RH drive wheels (applies brake force by increasing brake fluid pressure of drive wheel) and decreases engine torque by engine torque control. Wheel spin amount decreases. Engine torque is controlled to appropriate level.
- TCS function can be switched to non-operational status (OFF) by operating VDC OFF switch. In this case, VDC OFF indicator lamp turns ON.
- VDC warning lamp blinks while TCS function is in operation and indicates to the driver that the function is in operation.
- CONSULT can be used to diagnose the system diagnosis.
- Fail-safe function is adopted. When a malfunction occurs in TCS function, the control is suspended for VDC function, TCS function, brake assist function and hill start assist function. The vehicle status becomes the same as models without VDC function, TCS function, brake assist function and hill start assist function. However, ABS function and EBD function are operated normally. Refer to <u>BRC-47, "Fail-Safe"</u>.



SYSTEM DIAGRAM



INPUT SIGNAL AND OUTPUT SIGNAL

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

Component	Signal description		
ECM	 Mainly transmits the following signals to ABS actuator and electric unit (control unit) via CAN communication: Accelerator pedal position signal Engine speed signal Engine torque signal Mainly receives the following signal from ABS actuator and electric unit (control unit) via CAN communication: Engine torque request signal 		
ТСМ	 Mainly transmits the following signal to ABS actuator and electric unit (control unit) via CAN communication: Current gear position signal 		
Combination meter	 Mainly receives the following signals from ABS actuator and electric unit (control unit) via CAN communication: Brake fluid level switch signal Parking brake switch signal Mainly receives the following signals from ABS actuator and electric unit (control unit) via CAN communication: VDC warning lamp signal VDC OFF indicator lamp signal 		
Steering angle sensor	 Mainly transmits the following signals to ABS actuator and electric unit (control unit) via CAN communication: Steering angle sensor signal Steering angle sensor malfunction signal 		

ABS FUNCTION

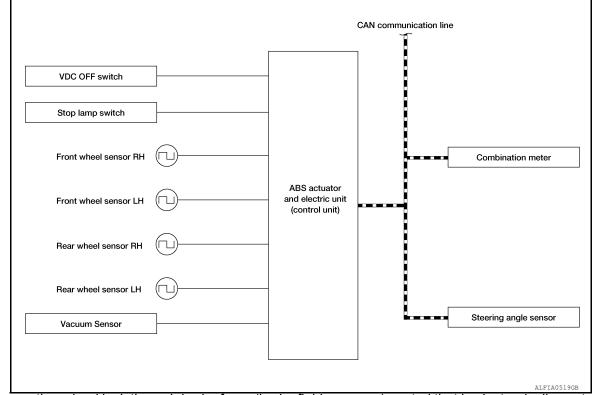
< SYSTEM DESCRIPTION >

ABS FUNCTION : System Description

INFOID:000000011821277

IWITH ICC

SYSTEM DIAGRAM

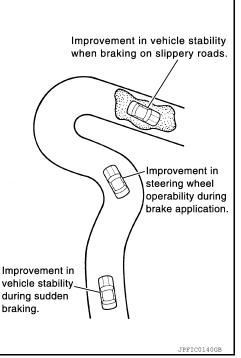


- By preventing wheel lock through brake force (brake fluid pressure) control that is electronically controlled by detecting wheel speed during braking, stability during emergency braking is improved so that obstacles can be easily bypassed by steering operation.
- During braking, control units calculate wheel speed and pseudo-vehicle speed and transmits pressure increase, hold or decrease signals to actuator portion according to wheel slip status.
- The following effects are obtained by preventing wheel lock during braking:
- Vehicle tail slip is prevented during braking when driving straight.
- Understeer and oversteer tendencies are moderated during braking driving on a corner.
- Obstacles may be easily bypassed by steering operation during braking.
- CONSULT can be used to diagnose the system diagnosis.
- Fail-safe function is adopted. When a malfunction occurs in ABS function, the control is suspended for VDC function, TCS function, ABS function and hill start assist function. The vehicle status becomes the same as models without VDC function, TCS function, ABS function, brake assist function and hill start assist function. However, EBD function is operated normally. Refer to <u>BRC-195</u>, <u>"Fail-Safe"</u>.

NOTE:

- ABS has the characteristics as described here. This is not a device that helps reckless driving.
- To stop vehicle efficiently, ABS does not operate and ordinary brake operates at low speed [approx. 10 km/h (6 MPH) or less, but differs subject to road conditions].
- Self-diagnosis is performed immediately after engine starts and when vehicle initially is driven [by vehicle speed approx. 15 km/h (9 MPH)]. Motor sounds are generated during self-diagnosis. In addi-

tion, brake pedal may be feel heavy when depressing brake pedal lightly. These symptoms are not malfunctions.



INPUT SIGNAL AND OUTPUT SIGNAL

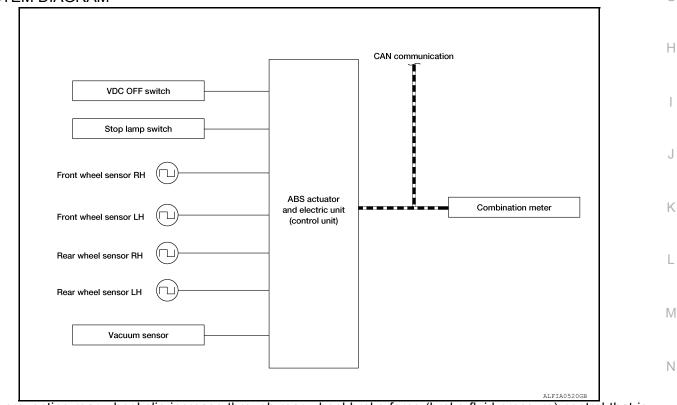
Major signal transmission between each unit via communication lines is shown in the following table:

Component	Signal description
Combination meter	 Mainly receives the following signals from ABS actuator and electric unit (control unit) via CAN communication: Brake fluid level switch signal Parking brake switch signal Mainly receives the following signals from ABS actuator and electric unit (control unit) via CAN communication: ABS warning lamp signal VDC warning lamp signal VDC OFF indicator lamp signal
Steering angle sensor	 Mainly transmits the following signals to ABS actuator and electric unit (control unit) via CAN communication: Steering angle sensor signal Steering angle sensor malfunction signal

EBD FUNCTION

EBD FUNCTION : System Description

SYSTEM DIAGRAM



 By preventing rear wheel slip increase through rear wheel brake force (brake fluid pressure) control that is electronically controlled when slight slip on front and rear wheels is detected during braking, stability during braking is improved.

Р

А

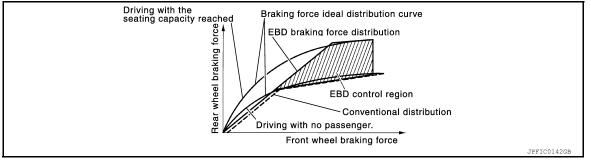
INFOID:000000011821278

[WITH ICC]

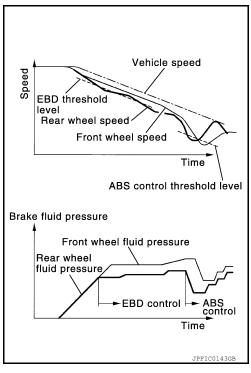
< SYSTEM DESCRIPTION >

[WITH ICC]

EBD function is expanded and developed from conventional ABS function and corrects rear wheel brake force to appropriate level by electronic control according to load weight (number of passengers).



- During braking, control unit portion compares slight slip on front and rear wheels by wheel speed sensor signal, transmits drive signal to actuator portion when rear wheel slip exceeds front wheel slip for the specified value or more, and controls rear wheel brake force (brake fluid pressure) so that increase of rear wheel slip is prevented and slips on front wheel and rear wheel are nearly equalized. ABS control is applied when slip on each wheel increases and wheel speed is the threshold value of ABS control or less.
- CONSULT can be used to diagnose the system diagnosis.
- Fail-safe function is adopted. When a malfunction occurs in EBD function, the control is suspended for VDC function, TCS function, ABS function, EBD function, brake assist function and hill start assist function. The vehicle status becomes the same as models without VDC function, TCS function, ABS function, EBD function, brake assist function and hill start assist function. Refer to <u>BRC-195</u>, "Fail-Safe".



INPUT SIGNAL AND OUTPUT SIGNAL

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

Component	Signal description
Combination meter	 Mainly receives the following signals from ABS actuator and electric unit (control unit) via CAN communication: VDC warning lamp signal ABS warning lamp signal Brake warning lamp signal

BRAKE ASSIST (WITHOUT PREVIEW FUNCTION)

< SYSTEM DESCRIPTION >

[WITH ICC]

А

BRAKE ASSIST (WITHOUT PREVIEW FUNCTION) : System Description INFOLD.00000011821279

SYSTEM DIAGRAM

VDC OFF switch]		CAN communication line	
			ECM	
Stop lamp switch				
Front wheel sensor RH		ABS actuator	тсм	
Front wheel sensor LH		and electric unit (control unit)	Steering angle sensor	
Rear wheel sensor RH				
Rear wheel sensor LH			Combination meter	
Vacuum Sensor]			

- When the driver brakes hard in an emergency, the stopping distance is reduced by increasing brake fluid pressure.
- Fail-safe function is adopted. When a malfunction occurs in brake assist function, the control is suspended for VDC function, TCS function, brake assist function and hill start assist function. The vehicle status becomes the same as models without VDC function, TCS function, brake assist function and hill start assist function. However, ABS function and EBD function are operated normally. Refer to <u>BRC-195</u>, "Fail-Safe".

INPUT SIGNAL AND OUTPUT SIGNAL

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

Component	Signal description
ECM	 Mainly transmits the following signal to ABS actuator and electric unit (control unit) via CAN communication: Accelerator pedal position signal Engine speed signal Engine torque signal Mainly receives the following signal from ABS actuator and electric unit (control unit) via CAN communication: Engine torque request signal
ТСМ	 Mainly transmits the following signal to ABS actuator and electric unit (control unit) via CAN communication: Current gear position signal

Κ

< SYSTEM DESCRIPTION >

Component	Signal description		
Combination meter	 Mainly receives the following signals from ABS actuator and electric unit (control unit) via CAN communication: Brake fluid level switch signal Parking brake switch signal Mainly receives the following signals from ABS actuator and electric unit (control unit) via CAN communication: VDC warning lamp signal VDC OFF indicator lamp signal 		
Steering angle sensor	 Mainly transmits the following signals to ABS actuator and electric unit (control unit) via CAN communication: Steering angle sensor signal Steering angle sensor malfunction signal 		

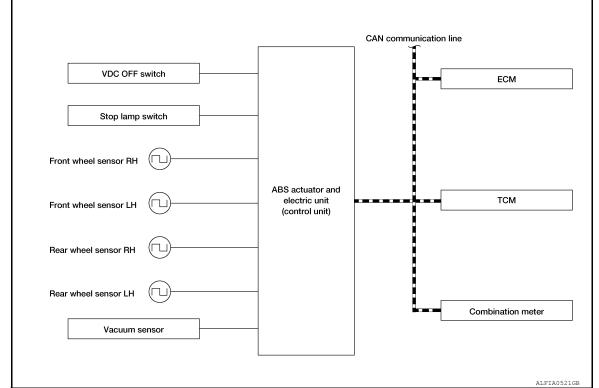
hill start assist FUNCTION

hill start assist FUNCTION : System Description

INFOID:000000011821280

[WITH ICC]

SYSTEM DIAGRAM



- This function maintains brake fluid pressure so that the vehicle does not move backward even if brake pedal is released to depress accelerator pedal to start the vehicle while it is stopped on an uphill slope by depressing brake pedal.
- This function operates when the vehicle is in stop status on a uphill slope of slope ratio 10% or more and selector lever is in a position other than P or N.
- Hill start assist function is only for the start aid. It maintains the brake fluid pressure for approximately 2 seconds after releasing the brake pedal and then decreases the pressure gradually. If the vehicle can start by the accelerator operation, the brake is released automatically and a smooth start can be performed.
- Fail-safe function is adopted. When a malfunction occurs in hill start assist function, the control is suspended for VDC function, TCS function, brake assist function and hill start assist function. The vehicle status becomes the same as models without VDC function, TCS function, brake assist function and hill start assist function. However, ABS function and EBD function are operated normally. Refer to <u>BRC-195</u>, "Fail-Safe".

INPUT SIGNAL AND OUTPUT SIGNAL

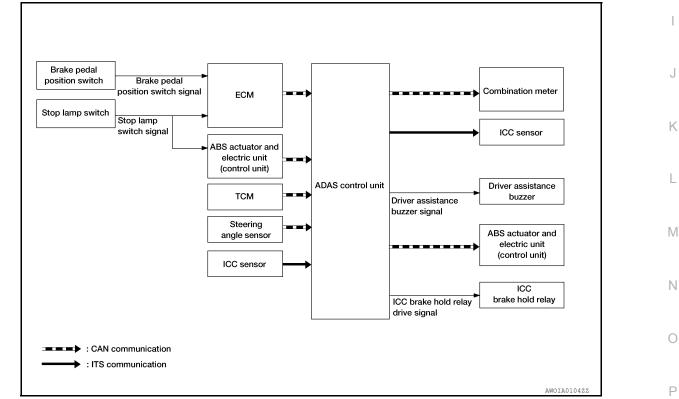
Major signal transmission between each unit via communication lines is shown in the following table:

Н

	Component	Signal description	-
TCM communication: • Current gear position signal Mainly receives the following signals from ABS actuator and electric unit (control unit) via CAN communication: • Brake fluid level switch signal • Parking brake switch signal Mainly receives the following signals from ABS actuator and electric unit (control unit) via CAN communication: • VDC warning lamp signal	ECM	 communication: Accelerator pedal position signal Engine speed signal Engine torque signal Mainly receives the following signal from ABS actuator and electric unit (control unit) via CAN communication: 	-
Combination meter communication: • Brake fluid level switch signal • Parking brake switch signal • Mainly receives the following signals from ABS actuator and electric unit (control unit) via CAN communication: • VDC warning lamp signal	ТСМ	communication:	-
	Combination meter	 communication: Brake fluid level switch signal Parking brake switch signal Mainly receives the following signals from ABS actuator and electric unit (control unit) via CAN communication: 	I

BRAKE ASSIST (WITH PREVIEW FUNCTION) : System Description-Forward Emergency Braking

SYSTEM DIAGRAM



ADAS CONTROL UNIT INPUT/OUTPUT SIGNAL ITEM

Input Signal Item

< SYSTEM DESCRIPTION >

Transmit unit		Signal name	Description
		Closed throttle position signal	Receives idle position state (ON/OFF)
	CAN com-	Accelerator pedal position signal	Receives accelerator pedal position (angle)
ECM	munica- tion	Engine speed signal	Receives engine speed
		Stop lamp switch signal	Receives an operational state of the brake pedal
		Brake pedal position switch signal	Receives an operational state of the brake pedal
		Input speed signal	Receives the number of revolutions of input shaft
ТСМ	CAN com- munica-	Current gear position signal	Receives a current gear position
T CIM	tion	Shift position signal	Receives a selector lever position
		Output shaft revolution signal	Receives the number of revolutions of output shaft
		ABS malfunction signal	Receives a malfunction state of ABS
		ABS operation signal	Receives an operational state of ABS
	CAN com- munica- tion	ABS warning lamp signal	Receives an ON/OFF state of ABS warning lamp
		TCS malfunction signal	Receives a malfunction state of TCS
ABS actuator and electric unit (control unit)		TCS operation signal	Receives an operational state of TCS
		VDC OFF switch signal	Receives an ON/OFF state of VDC
		VDC malfunction signal	Receives a malfunction state of VDC
		VDC operation signal	Receives an operational state of VDC
		Vehicle speed signal (ABS)	Receives wheel speeds of four wheels
		Yaw rate signal	Receives yaw rate acting on the vehicle
		Stop lamp switch signal	Receives an operational state of the brake pedal
	CAN com- munica- tion	Steering angle sensor malfunction signal	Receives a malfunction state of steering angle sensor
Steering angle sensor		Steering angle sensor signal	Receives the number of revolutions, turning direction of the steering wheel
		Steering angle speed signal	Receives the turning angle speed of the steering wheel
ICC sensor	ITS com- munica- tion	ICC sensor signal	Receives detection results, such as the presence or ab- sence of a leading vehicle and distance from the vehicle

Output Signal Item

Reception unit		Signal na	me	Description	
ABS actuator and electric unit (control unit)	CAN commu- nication	Brake fluid pressure control signal		Transmits a brake fluid pressure control signal to activates the brake	
	CAN commu- nication	Meter display signal	Vehicle ahead detection indicator signal		
Combination meter			FEB/PFCW system dis- play signal	Transmits a signal to display a state of the system on the information display	
			FEB warning signal		
ICC sensor	ITS commu-	ITS commu-		Transmits a vehicle speed calculated by the ADAS con- trol unit	
	nication	Steering angle sensor signal		Transmits a steering angle sensor signal received from the steering angle sensor	
ICC brake hold relay	ICC brake hold relay drive signal			Activates the brake hold relay and turns ON the stop lamp	

DESCRIPTION

• Forward emergency braking (FEB) system can assist the driver when there is a forward collision with the vehicle ahead in the traveling lane.

Revision: October 2014

< SYSTEM DESCRIPTION >

FEB system operate at speeds above approximately 5 km/h (3 mph) А FUNCTION DESCRIPTION • The FEB system uses the ICC sensor to measure the distance to the vehicle ahead in the traveling lane. If there is a risk of collision, FEB issues a visual and audible warning signal to the combination meter via В CAN communication. If the driver does not take action, FEB system applies braking command to ABS actuator and electric unit (control unit). If the risk of a collision becomes immunent, FEB system applies braking command to ABS actuator and electric unit (control unit) via CAN communication. **Operation Condition** FEB is ON. D Vehicle speed: approximately 5 km/h (3 mph) and above.. • There is a possibility of a collision with the vehicle ahead. **CAUTION:** Ε 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. BRAKE ASSIST (WITH PREVIEW FUNCTION) : Fail-safe (ICC RADAR) INFOID:000000011675180 BRC

If a malfunction occurs in each system, ADAS control unit cancels each control, sounds a beep, and turns ON the warning or indicator lamp.

System	Buzzer	Warning lamp/Warning dis- play	Description	
Intelligent Cruise Control (ICC)	High- pitched tone	ICC system warning	Cancel	ŀ
Conventional (fixed speed) cruise control mode	High- pitched tone	ICC system warning	Cancel	
Forward Emergency Braking (FEB)	High- pitched tone	FEB warning lamp (Yellow)	Cancel	,
Predictive Forward Collision Warning (PFCW)	High- pitched tone	FEB warning lamp (Yellow)	Cancel	ŀ
Blind Spot Warning (BSW)	Low- pitched tone	BSW system warning (Orange)	Cancel	L

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

Μ

 Name
 Design
 Function
 O

 FEB warning lamp

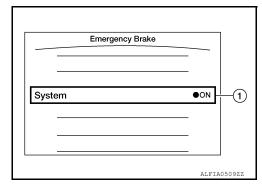
 For layout, refer to <u>MWI-6</u>, "<u>METER SYSTEM : Design</u>".
 P

 P

INFOID:000000011555510

OPERATION

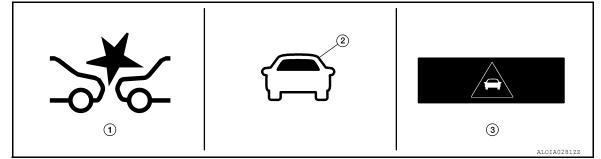
Switch Name and Function



No.	Switch name	Description
1	FEB system setting screen (Integral switch settings screen)	The setting of FEB/PFCW system can be switched between ON and OFF

Menu Displayed by Pressing Each Switch

SYSTEM DISPLAY



No.	Switch name	Description
1.	FEB warning lamp	 FEB warning lamp indicates that an abnormal condition is present in FEB system When the FEB system turns OFF, the FEB warning lamp will illuminate.
2.	Vehicle ahead detection indicator	Indicates whether it detects a vehicle aheadBlinks when approaching vehicle ahead
3.	FEB warning	Displays immediately before the harder brake operates

DISPLAY AND WARNING

Warning Display

System status	Condition	Display on combination meter	FEB warning lamp	Buzzer
FEB/PFCW OFF	_	_	OFF	—

INFOID:000000011555512

[WITH ICC]

OPERATION

< SYSTEM DESCRIPTION >

[WITH ICC]

System status	Condition	Display on combination meter	FEB warning lamp	Buzzer	А
FEB/PFCW ON	System ON	ALFIA05312Z	ON	_	B
FEB/PFCW system malfunc- tion	The FEB/PFCW system is auto- matically canceled. NOTE: The system operates if the igni- tion switch is turned OFF⇒ON after the condition improves	Malfunction See Owner's Manual	ON	Веер	D

Warning Operation

Condition	Action	Display on combination meter	FEB warning lamp	Chime
There is a possibility of a colli- sion with the vehicle ahead	 Accelerator pedal ac- tuation Operates brake (Par- tial) 	ALFIA0532ZZ	FLASHING	Веер
An obstacle ahead is avoided due to the system applying braking.	Operates brake (Emer- gency)	JSOIA0957ZZ	ON	Continuous beeps
Dirt around the ICC sensor	The FEB system is auto- matically canceled. NOTE: The system operates if the ignition switch is turned OFF⇒ON after the condition improves	Unavailable Front radar obstruction	ON	_

HANDLING PRECAUTION

< SYSTEM DESCRIPTION >

HANDLING PRECAUTION

Description

INFOID:0000000011555513

[WITH ICC]

PRECAUTIONS FOR FORWARD EMERGENCY BRAKING

- The forward emergency braking system is a supplemental aid to the driver. It is not a replacement for the driver's attention to traffic conditions or responsibility to drive safely. It cannot prevent accidents due to care-lessness or dangerous driving techniques.
- The forward emergency braking system does not function in all driving, traffic, weather and road conditions.
- The automatic braking will cease under the following conditions:
- When the steering wheel is turned as far as necessary to avoid a collision.
- When the accelerator pedal is depressed.
- When there is no longer a vehicle detected ahead.
- If the forward emergency braking system has stopped the vehicle, the vehicle will remain at a standstill for approximately 2 seconds before the brakes are released.
- The system will not detect the following objects:
- Pedestrians, animals, or obstacles in the roadway
- Oncoming vehicles in the same lane
- Crossing vehicles
- The radar sensor has some performance limitations. For stationary vehicles, the forward emergency braking system can function at speeds up to approximately 80 km/h (50 MPH).
- The radar sensor may not detect a vehicle ahead in the following conditions:
- Dirt, ice, snow or other material covering the radar sensor.
- Interference by other radar sources.
- Snow or road spray from traveling vehicles.
- If the vehicle ahead is narrow (e.g.motorcycle)
- When driving on a steep downhill slope or roads with sharp curves.
- In some road or traffic conditions, the forward emergency braking system may unexpectedly apply partial braking. When acceleration is necessary, continue to depress the accelerator pedal to override the system.
- Braking distances increase on slippery surfaces.
- Excessive noise will interfere with the warning chime sound, and the chime may not be heard.
- · When towing a trailer.

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

< SYSTEM DESCRIPTION >

DIAGNOSIS SYSTEM JABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)]

CONSULT Function

APPLICATION ITEMS

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

Mode	Function description	
ECU Identification	Part number of ABS actuator and electric unit (control unit) can be read.	
Self Diagnostic Result	Self-diagnostic results and freeze frame data can be read and erased quickly.*	D
Data Monitor	Input/Output data in the ABS actuator and electric unit (control unit) can be read.	
Active Test	Diagnostic Test Mode in which CONSULT drives some actuators apart from the ABS actuator and elec- tric unit (control unit) and also shifts some parameters in a specified range.	E
Work support	Components can be quickly and accurately adjusted.	
Re/programming, Configura- tion	 Read and save the vehicle specification (TYPE ID). Write the vehicle specification (TYPE ID) when replacing ABS actuator and electric unit (control unit). 	BR

: The following diagnosis information is erased by erasing:

• DTC

Freeze frame data (FFD)

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

SELF DIAGNOSTIC RESULT Refer to BRC-50, "DTC Index".

When "CRNT" is displayed on self-diagnosis result

The system is presently malfunctioning.

When "PAST" is displayed on self-diagnosis result

System malfunction in the past was detected, but the system is presently normal.

Freeze frame data (FFD)

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

Item name	Display item	L
IGN counter (0 – 39)	 The number of times that ignition switch is turned ON after the DTC is detected is displayed. When "0" is displayed: It indicates that the system is presently malfunctioning. When except "0" is displayed: It indicates that system malfunction in the past was detected, but the system is presently normal. NOTE: 	N
	Each time when ignition switch is turned OFF to ON, numerical number increases from $1 \rightarrow 2 \rightarrow 338 \rightarrow 39$. When the operation number of times exceeds 39, the number does not increase and "39" is displayed until self- diagnosis is erased.	Ν

ACTIVE TEST

The active test is used to determine and identify details of a malfunction, based on self-diagnosis test results Ο and data obtained in the Data Monitor. In response to instructions from CONSULT instead of those from ABS actuator and electric unit (control unit) on the vehicle, a drive signal is sent to the actuator to check its operation. Ρ

CAUTION:

- Never perform Active Test while driving the vehicle.
- Always bleed air from brake system before active test.
- Never perform active test when system is malfunctioning.

NOTE:

- When active test is performed while depressing the pedal, the pedal depressing stroke may change. This is not a malfunction.
- "TEST IS STOPPED" is displayed approximately 10 seconds after operation start.

[WITH ICC]

INFOID:000000011675181

А

В

Н

Κ

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

< SYSTEM DESCRIPTION >

[WITH ICC]

• When performing active test again after "TEST IS STOPPED" is displayed, select "BACK".

• ABS warning lamp, brake warning lamp and VDC warning lamp may turn ON during active test. This is not a malfunction.

ABS IN Valve and ABS OUT Valve

When "Up", "Keep" or "Down" is selected on display screen, the following items are displayed when system is normal:

Test item	Display Itom	Display			
	Display Item	Up	Keep	Down	
FR RH SOL	FR RH IN SOL	Off	On*	On*	
FR RH SOL	FR RH OUT SOL	Off	Off	On*	
FR LH SOL	FR LH IN SOL	Off	On*	On*	
	FR LH OUT SOL	Off	Off	On*	
RR RH SOL	RR RH IN SOL	Off	On*	On*	
RR RH SOL	RR RH OUT SOL	Off	Off	On*	
	RR LH IN SOL	Off	On*	On*	
RR LH SOL	RR LH OUT SOL	Off	Off	On*	

*: Immediately after being selected, status is "On". Status changes to "Off" after approximately 2 seconds.

ABS IN Valve (ACT) and ABS OUT Valve (ACT)

When "Up", "ACT UP" or "ACT KEEP" is selected on display screen, the following items are displayed when system is normal.

Test item	Dianlay Itam		Display		
lest tielli	Display Item	Up	ACT UP	ACT KEEP	
	FR RH IN SOL	Off	Off	Off	
	FR RH OUT SOL	Off	Off	Off	
FR RH SOL (ACT)	CV1	Off	Off	Off	
	CV2	Off	On*	On*	
	FR LH IN SOL	Off	Off	Off	
FR LH SOL (ACT)	FR LH OUT SOL	Off	Off	Off	
	CV1	Off	On*	On*	
	CV2	Off	Off	Off	
	RR RH IN SOL	Off	Off	Off	
RR RH SOL (ACT)	RR RH OUT SOL	Off	Off	Off	
KK KH SOL (ACT)	CV1	Off	On*	On*	
	CV2	Off	Off	Off	
	RR LH IN SOL	Off	Off	Off	
	RR LH OUT SOL	Off	Off	Off	
RR LH SOL (ACT)	CV1	Off	Off	Off	
	CV2	Off	On*	On*	

*: Immediately after being selected, status is "On". Status changes to "Off" after approx. 10 seconds.

ABS MOTOR

When "On" or "Off" is selected on display screen, the following items are displayed when system is normal.

Test item	Display Item	Display	
	Display item	On	Off
ABS MOTOR	MOTOR RELAY	On	Off
	ACTUATOR RLY ^(Note)	On	On

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

< SYSTEM DESCRIPTION >

[WITH ICC]

v. Annlicable

В

NOTE:

Display occasionally changes On/Off for a moment after ignition switch is turned ON. This is operation for A checking purposes and is not a malfunction.

DATA MONITOR

NOTE:

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

Itom (I Init)	Monitor ite	m selection	Neta
Item (Unit)	INPUT SIGNALS	MAIN SIGNALS	Note
FR LH SENSOR [km/h (MPH)]	×	×	Wheel speed calculated by front LH wheel sensor is displayed.
FR RH SENSOR [km/h (MPH)]	×	×	Wheel speed calculated by front RH wheel sensor is displayed.
RR LH SENSOR [km/h (MPH)]	×	×	Wheel speed calculated by rear LH wheel sensor is displayed.
RR RH SENSOR [km/h (MPH)]	×	×	Wheel speed calculated by rear RH wheel sensor is displayed.
DECEL G-SEN (m/s ²)	×	×	Decel G detected by decel G sensor is displayed.
FR RH IN SOL (On/Off)		x	Operation status of front RH wheel ABS IN valve is displayed.
FR RH OUT SOL (On/Off)		×	Operation status of front RH wheel ABS OUT valve is displayed.
FR LH IN SOL (On/Off)		×	Operation status of front LH wheel ABS IN valve is displayed.
FR LH OUT SOL (On/Off)		×	Operation status of front LH wheel ABS OUT valve is displayed.
RR RH IN SOL (On/Off)		×	Operation status of rear RH wheel ABS IN valve is displayed.
RR RH OUT SOL (On/Off)		×	Operation status of rear RH wheel ABS OUT valve is displayed.
RR LH IN SOL (On/Off)		×	Operation status of rear LH wheel ABS IN valve is displayed.
RR LH OUT SOL (On/Off)		×	Operation status of rear LH wheel ABS OUT valve is displayed.
EBD WARN LAMP (On/Off)			Brake warning lamp ON/OFF status is displayed. ^(Note 1)
STOP LAMP SW (On/Off)	×	×	Stop lamp switch signal input status is displayed.
MOTOR RELAY (On/Off)		x	ABS motor and motor relay status is displayed.
ACTUATOR RLY (On/Off)		x	ABS actuator relay status is displayed.
ABS WARN LAMP (On/Off)		×	ABS warning lamp ON/OFF status is displayed. (Note 1)
OFF LAMP (On/Off)		x	VDC OFF indicator lamp ON/OFF status is displayed. ^(Note 1)
OFF SW (On/Off)	×	x	VDC OFF switch status is displayed.
SLIP/VDC LAMP (On/Off)		×	VDC warning lamp ON/OFF status is displayed. ^(Note 1)
BATTERY VOLT (V)	×	×	Voltage supplied to ABS actuator and electric unit (control unit) is displayed.

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

< SYSTEM DESCRIPTION >

[WITH ICC]

Itom (I Init)	Monitor ite	m selection	Noto
Item (Unit)	INPUT SIGNALS	MAIN SIGNALS	Note
GEAR	×	×	Current gear position judged from current gear position signal is displayed.
ENGINE SPEED (tr/min)	×	×	Engine speed status is displayed.
SLCT LVR POSI	×	×	Current gear position judged from current gear position sig- nal is displayed.
YAW RATE SEN (d/s)	×	×	Yaw rate detected by yaw rate sensor is displayed.
R POSI SIG (On/Off)			R range signal input status judged from R range signal is displayed.
4WD MODE MON ^(Note 2) (AUTO/LOCK/2WD)	×	×	AWD control status is displayed.
N POSI SIG (On/Off)			N range signal input status judged from N range signal is displayed.
P POSI SIG (On/Off)			P range signal input status judged from P range signal is displayed.
CV1 (On/Off)			Cut valve 1 (On/Off) status is displayed.
CV2 (On/Off)			Cut valve 2 (On/Off) status is displayed.
ACCEL POS SIG (%)	×		Displays the Accelerator pedal position
SIDE G-SENSOR (m/s ²))	×		Side G detected by side G sensor is displayed.
STR ANGLE SIG	×		Steering angle detected by steering angle sensor is displayed.
PRESS SENSOR (bar)	×		Brake fluid pressure detected by pressure sensor is displayed.
EBD SIGNAL (On/Off)			EBD operation status is displayed.
ABS SIGNAL (On/Off)			ABS operation status is displayed.
TCS SIGNAL (On/Off)			TCS operation status is displayed.
VDC SIGNAL (On/Off)			VDC operation status is displayed.
EBD FAIL SIG (On/Off)			EBD fail-safe signal status is displayed.
ABS FAIL SIG (On/Off)			ABS fail-safe signal status is displayed.
TCS FAIL SIG (On/Off)			TCS fail-safe signal status is displayed.
VDC FAIL SIG (On/Off)			VDC fail-safe signal status is displayed.
CRANKING SIG (On/Off)			Cranking status is displayed.
FLUID LEV SW (On/Off)	×		Brake fluid level signal input status via CAN communication is displayed.
USS SIG ^(Note 3) (On/Off)			hill start assist operation status is displayed.

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

< SYSTEM DESCRIPTION >

Note 1: Refer to BRC-179, "WARNING/INDICATOR/CHIME LIST : Warning Lamp/Indicator Lamp" for ON/ OFF conditions of each warning lamp and indicator lamp. Note 2: AWD models Note 3: USS (Hill Start Assist)

WORK SUPPORT

Conditions	Description	•
ST ANGLE SENSOR ADJUSTMENT	Perform neutral position adjustment of steering angle sensor.	С
DECEL G SEN CALIBRATION	Perform decel G sensor calibration.	-

CONFIGURATION

Configuration inculdes the following functions:

Function		Description	F
Read/Write Configuration	Before replacing ECU	Allows the reading of vehicle specification (Type ID) written in the ABS actuator and electric unit (control unit) to store the specification in CONSULT.	
	After replacing ECU	Allows the writing of vehicle information (Type ID) stored in CONSULT into the ABS actuator and electric unit (control unit).	BRC
Manual Configuration		Allows the writing of vehicle information (Type ID) into the ABS actuator and electric unit (control unit) by hand.	G

CAUTION: Use "Manual Configuration""TYPE ID"

Н

J

Κ

L

Μ

Ν

Ο

Ρ

[WITH ICC]

А

В

D

< SYSTEM DESCRIPTION >

DIAGNOSIS SYSTEM (ICC SENSOR)

CONSULT Function (LASER/RADAR)

CAUTION:

After disconnecting the CONSULT vehicle interface (VI) from the data link connector, the ignition must be cycled OFF \rightarrow ON (for at least 5 seconds) \rightarrow OFF. If this step is not performed, the BCM may not go to "sleep mode", potentially causing a discharged battery and a no-start condition.

APPLICATION ITEMS

CONSULT performs the following functions via CAN communication with ADAS control unit and the communication with ICC sensor.

Diagnosis mode	Description
Self Diagnostic Result	Displays malfunctioning system memorized in ICC sensor
Data Monitor	Displays real-time input/output data of ICC sensor
Work support	It can monitor the adjustment direction indication in order to perform the radar adjustment operation smoothly
ECU Identification	Displays ICC sensor part number
CAN Diag Support Monitor	The results of transmit/receive diagnosis of ITS communication can be read.

SELF DIAGNOSTIC RESULT Refer to <u>CCS-51, "DTC Index"</u>.

DATA MONITOR

Monitored item [Unit]	Description
VHCL SPEED SE [km/h] or [mph]	Vehicle speed judged from a vehicle speed signal read by the ICC sensor via ITS communica- tion is displayed [ADAS control unit receives a vehicle speed signal from ABS actuator and electric unit (control unit) via CAN communication and transmits the calculated vehicle speed to ICC sensor via ITS communication].
YAW RATE [deg/s]	Indicates yaw rate read from ADAS control unit through ITS communication [ADAS control unit receives yaw rate signal from ABS actuator and electric unit (control unit) via CAN communi- cation and transmits yaw rate calculated by the ADAS control unit] Yaw rate judged from a yaw rate signal read by ICC sensor via ITS communication is displayed [ADAS control unit receives a yaw rate signal from ABS actuator and electric unit (control unit) via CAN communication and transmits the calculated yaw rate to ICC sensor via ITS commu- nication].
PWR SUP MONI [V]	Indicates IGN voltage input by ICC sensor
DISTANCE [m]	Indicates the distance from the vehicle ahead
RELATIVE SPD [m/s]	Indicates the relative speed of the vehicle ahead
RADAR OFFSET [m]	NOTE: The item is indicated but not used.
RADAR HEIGHT [m]	NOTE: The item is indicated but not used.
STEERING ANGLE [deg]	The steering angle is displayed.
STRG ANGLE SPEED [deg/s]	The steering angle speed is displayed.
L/R ADJUST [deg]	Indicates a horizontal correction value of the radar
U/D ADJUST [deg]	Indicates a vertical correction value of the radar

[WITH ICC]

INFOID:000000011867256

DIAGNOSIS SYSTEM (ICC SENSOR)

< SYSTEM DESCRIPTION >

[WITH ICC]

Monitored item [Unit]	Description
FCW SYSTEM ON	NOTE: The item is indicated, but not used.
FCW SELECT	NOTE: The item is indicated, but not used.
PFCW SELECT	NOTE: The item is indicated, but not used.
FEB SW	NOTE: The item is indicated, but not used.
FEB SELECT	Indicates [ON/OFF] state of the PFCW system.
MAIN SW	Indicates [ON/OFF] status as judged from ICC steering switch.
ICC/ASCD MODE	NOTE: The item is indicated, but not used.
SET/COAST SW	Indicates [ON/OFF] status as judged from ICC steering switch.
CANCEL SW	Indicates [ON/OFF] status as judged from ICC steering switch.
RESUME/ACC SW	Indicates [ON/OFF] status as judged from ICC steering switch.
DISTANCE SW	Indicates [ON/OFF] status as judged from ICC steering switch.
BRAKE SW	Indicates [ON/OFF] status as judged from brake pedal position switch signal [ECM transmits brake pedal position switch signal through CAN communication].
STOP LAMP SW	Indicates [ON/OFF] status as judged from stop lamp switch signal [ABS actuator and electric unit (control unit) transmits stop lamp switch signal through CAN communication].
IDLE SW	Indicates [ON/OFF] status of idle switch read from ICC sensor through CAN communication (ECM transmits ON/OFF status through CAN communication.
CRUISE LAMP	Indicates [ON/OFF] status of MAIN switch indicator output.
OWN VHCL	NOTE: The item is indicated, but not used.
VHCL AHEAD	Indicates [ON/OFF] status of vehicle ahead detection indicator output.
SET DISTANCE	Indicates set distance memorized in ADAS control unit.
SET VHCL SPD	NOTE:
[km/h] or [mph]	The item is indicated, but not used.
THRTL SENSOR [%]	Indicates throttle position read from ISS sensor through CAN communication (ECM transmits accelerator pedal position signal through CAN communication).
VEHICLE AHEAD DETECT	Indicates [ON/OFF] status of vehicle ahead detection indicator output.
STATIC OBSTACLE DETECT	Indicates [ON/OFF] status of static obstacle detection.
BUZZER O/P	[ON/OFF] Indicates [On/Off] status of warning chime output.
FUNC ITEM (FCW)	NOTE: The item is indicated, but not used.
FUNC ITEM (PFCW)	Indicates systems status
FUNC ITEM (FEB)	Indicates systems status
FUNC ITEM (ICC)	Indicates systems status
PRESS_ORDER [bar]	Indicates status as judged from brake fluid pressure signal [ABS actuator and electric unit (con- trol unit) transmits brake fluid pressure signal through CAN communication].
D RANGE SW	Indicates [ON/OFF] status as judged from D position switch signal (TCM transmits shift position signal through CAN communication).
NP RANGE SW	Indicates [ON/OFF] status as judged from N/P position switch signal (TCM transmits shift po- sition signal through CAN communication).
PKB SW	Parking brake switch status [ON/OFF] judges from the parking brake switch signal that ADAS control unit readout via CAN communication is displayed (combination meter transmits the parking brake switch signal via CAN communication)

Revision: October 2014

DIAGNOSIS SYSTEM (ICC SENSOR)

< SYSTEM DESCRIPTION >

[WITH ICC]

Monitored item [Unit]	Description
VHCL SPD AT	NOTE: The item is indicated, but not used.
Shift position	Indicates shift position read from ADAS control unit though CAN communication (TCM transmits shift position signal through CAN communication).
Turn signal	NOTE: The item is indicated, but not used.
SYSTEM CANCEL MESSAGE	Indicates [ON/OFF] status of system cancel display output.
DISP VHCL SPD [km/h] or [mph]	NOTE: The item is indicated, but not used.
VHCL SPD UNIT	Indicates vehicle speed unit read from ICC sensor through CAN communication (combination meter transmits vehicle speed unit through CAN communications).
ADAS AVAILABLE COND	NOTE: The item is indicated, but not used.
ICC SET STATUS	NOTE: The item is indicated, but not used.
ICC MALF	NOTE: The item is indicated, but not used.
ADAS MALF	Indicates [ON/OFF] status of ADAS malfunction.
STOP LAMP RELAY ON	Indicates [ON/OFF] status of stop lamp relay fixed on.
STOP LAMP RELAY OFF	Indicates [ON/OFF] status of stop lamp relay fixed off.
ICC CANCEL	
ACCEL COM VALUE 1 [m/s2]	Indicates accel command calculated from set speed and information of ahead vehicle.
ICC STATUS	Indicates ICC status.
ACCEL COM VALUE 2	NOTE: The item is indicated, but not used.

WORK SUPPORT

Work support items	Description
MILLIWAVE RADAR ADJUST	Outputs millimeter waves, calculates the displacement in radar direction, and indicates an ad- justment direction
CAUSE OF AUTO-CANCEL	Displays causes of automatic cancellation occurred during Intelligent Cruise Control system.

ICC sensor Adjust Refer to <u>CCS-71, "Description"</u>.

ECU IDENTIFICATION

ICC sensor part number is displayed.

CAUSE OF AUTO CANCEL

Work support items	Description
OPERATING ABS	ABS function was operated.
OPERATING TCS	TCS function was operated.
OPERATING VDC	VDC function was operated.
ECM CIRCUIT	ECM did not permit ICC operation.
OP SW VOLT CIRC	The ICC steering switch input voltage is not within standard range.
OP SW DOUBLE TOUCH	The ICC steering switches were pressed at the same time.
VHCL SPD DOWN	 Vehicle speed is lower than the speed as follows: Vehicle to vehicle control mode is 24 km/h (15 mph). Conventional (fixed speed) cruise control mode is 32 km/h (20 mph).

DIAGNOSIS SYSTEM (ICC SENSOR)

< SYSTEM DESCRIPTION >

[WITH ICC]

Work support items	Description	
WHL SPD ELEC NOISE	Wheel speed sensor signal caught electromagnetic noise.	A
VDC/TCS OFF SW	VDC OFF switch was pressed.	-
VHCL SPD UNMATCH	Wheel speed became different from A/T vehicle speed.	В
TIRE SLIP	Wheel slipped.	-
IGN LOW VOLT	Decrease in ICC sensor ignition voltage.	-
PARKING BRAKE ON	The parking brake is operating.	С
WHEEL SPD UNMATCH	The wheel speed of all four wheels are out of the specified values.	-
INCHING LOST	a vehicle ahead is not detected during the following driving when the vehicle speed is approxi- mately 24 km/h (15mph) or less.	D
CAN COMM ERROR	ICC sensor recieved an abnormal signal with CAN communication.	-
ABS/TCS/VDC CIRC	An abnormal condition occurs in VDC/TCS/ABS system.	E
ECD CIRCUIT	An abnormal condition occurs in ECD system.	-
ASCD VHCL SPD DTAC	Vehicle speed is detatched from the set vehicle speed.	
ASCD DOUBLE COMD	Cancel switch and operation switch are detected simultaneously.	BRC
FEB OPERATED	FEB activated.	-
VHL AHAD LOST (CLSE RANGE)	A vehicle ahead lost close range.	G
NO RECORD	-	=

Н

J

Κ

L

Μ

Ν

Ο

Ρ

< ECU DIAGNOSIS INFORMATION >

[WITH ICC]

ECU DIAGNOSIS INFORMATION ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)

Reference Value

INFOID:000000011821281

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.

	Display content	Data monitor		
Monitor item		Condition	Reference value in normal operation	
		0 [km/h, mph]	Vehicle stopped	
FR LH SENSOR	Wheel speed	Nearly matches the speed meter display $(\pm 10\% \text{ or less})$	Vehicle running (Note 1)	
		0 [km/h, mph]	Vehicle stopped	
FR RH SENSOR	Wheel speed	Nearly matches the speed meter display $(\pm 10\% \text{ or less})$	Vehicle running (Note 1)	
		0 [km/h, mph]	Vehicle stopped	
RR LH SENSOR	Wheel speed	Nearly matches the speed meter display $(\pm 10\% \text{ or less})$	Vehicle running (Note 1)	
		0 [km/h, mph]	Vehicle stopped	
RR RH SENSOR	Wheel speed	Nearly matches the speed meter display $(\pm 10\% \text{ or less})$	Vehicle running (Note 1)	
DECEL G-SEN	Longitudinal acceleration detected by decel	Vehicle stopped	Approx. 0 G	
DECEL G-SEN	G sensor	Vehicle running	-1.7 to 1.7 G	
FR RH IN SOL	Operation status of all solenoid valves	Actuator (solenoid valve) is active ("AC- TIVE TEST" with CONSULT) or actuator relay is inactive (in fail-safe mode)	On	
		When the actuator (solenoid valve) is not active and actuator relay is active (ignition switch ON)	Off	
FR RH OUT SOL	Operation status of all solenoid valves	Actuator (solenoid valve) is active ("AC- TIVE TEST" with CONSULT) or actuator relay is inactive (in fail-safe mode)	On	
		When the actuator (solenoid valve) is not active and actuator relay is active (ignition switch ON)	Off	
	Operation status of all solenoid valves	Actuator (solenoid valve) is active ("AC- TIVE TEST" with CONSULT) or actuator relay is inactive (in fail-safe mode)	On	
FR LH IN SOL		When the actuator (solenoid valve) is not active and actuator relay is active (ignition switch ON)	Off	
FR LH OUT SOL	Operation status of all solenoid valves	Actuator (solenoid valve) is active ("AC- TIVE TEST" with CONSULT) or actuator relay is inactive (in fail-safe mode)	On	
		When the actuator (solenoid valve) is not active and actuator relay is active (ignition switch ON)	Off	

< ECU DIAGNOSIS INFORMATION >

[WITH ICC]

Data monitor				
Monitor item	Display content	Condition	Reference value in normal operation	A
		Actuator (solenoid valve) is active ("AC- TIVE TEST" with CONSULT) or actuator relay is inactive (in fail-safe mode)	On	В
RR RH IN SOL	Operation status of all solenoid valves	When the actuator (solenoid valve) is not active and actuator relay is active (ignition switch ON)	Off	С
RR RH OUT SOL		Actuator (solenoid valve) is active ("AC- TIVE TEST" with CONSULT) or actuator relay is inactive (in fail-safe mode)	On	D
KK KH OUT SOL	Operation status of all solenoid valves	When the actuator (solenoid valve) is not active and actuator relay is active (ignition switch ON)	Off	Е
RR LH IN SOL		Actuator (solenoid valve) is active ("AC- TIVE TEST" with CONSULT) or actuator relay is inactive (in fail-safe mode)	On	BRO
KR LH IN SOL	Operation status of all solenoid valves	When the actuator (solenoid valve) is not active and actuator relay is active (ignition switch ON)	Off	G
	Operation status of all solenoid valves	Actuator (solenoid valve) is active ("AC- TIVE TEST" with CONSULT) or actuator relay is inactive (in fail-safe mode)	On	Н
RR LH OUT SOL		When the actuator (solenoid valve) is not active and actuator relay is active (ignition switch ON)	Off	
EBD WARN LAMP	EBD warning lamp	When EBD warning lamp is ON	On	I
EBD WARN LAWF	(Note 2)	When EBD warning lamp is OFF	Off	
STOP LAMP SW	Brake pedal operation	When brake pedal is depressed	On	J
		When brake pedal is not depressed	Off	
MOTOR RELAY	Motor and motor relay operation	When the motor relay and motor are operating	On	K
MOTOR RELAT		When the motor relay and motor are not operating	Off	
ACTUATOR RLY	Actuator relay operation	When the actuator relay is operating	On	L
ACTOR ICITIES	Actual relay operation	When the actuator relay is not operating	Off	
ABS WARN LAMP	ABS warning lamp	When ABS warning lamp is ON	On	M
	(Note 2)	When ABS warning lamp is OFF	Off	
OFF LAMP	VDC OFF indicator lamp	When VDC OFF indicator lamp is ON	On	
	(Note 2)	When VDC OFF indicator lamp is OFF	Off	N
OFF SW	VDC OFF switch	When VDC OFF switch is ON	On	
		When VDC OFF switch is OFF	Off	0
SLIP/VDC LAMP	SLIP indicator lamp	When SLIP indicator lamp is ON	On	
	(Note 2)	When SLIP indicator lamp is OFF	Off	
BATTERY VOLT	Battery voltage supplied to the ABS actuator and electric unit (control unit)	Ignition switch ON	10 – 16 V	Ρ
GEAR	Manual mode gear position determined by TCM	1st gear 2nd gear 3rd gear 4th gear 5th gear	1 2 3 4 5	

< ECU DIAGNOSIS INFORMATION >

[WITH ICC]

		Data monitor	
Monitor item	Display content	Condition	Reference value in normal operation
		With engine stopped	0 RPM
ENGINE SPEED W	Nith engine running	Engine running	Almost in accor- dance with tachome- ter display
YAW RATE SEN	aw rate detected by yaw rate/side G sensor	Vehicle stopped	Approx. 0 d/s
	Taw fale delected by yaw fale/side G sensor	Vehicle turning	-75 to 75 d/s
R POSI SIG	Fransmission range switch signal ON/OFF	CVT shift position = R position	On
K F 031 310 00	condition	CVT shift position = other than R position	Off
	Always Note 3)	AUTO, LOCK, 2WD	AUTO, LOCK, 2WD (depending on AWD control status)
	Fransmission range switch signal ON/OFF	CVT shift position = N position	On
N POSI SIG	condition	CVT shift position = other than N position	Off
CV1 C		When out value 1 is open or closed	On
	Cut valve 1 signal	When cut valve 1 is open or closed	Off
0)/0			On
CV2 C	Cut valve 2 signal	When cut valve 2 is open or closed	Off
ACCEL POS SIG	Fhrottle actuator opening/closing is dis-	Accelerator pedal not depressed (ignition switch is ON)	0 %
ACCEL POS SIG pl	played (linked with accelerator pedal)	Depress accelerator pedal (ignition switch is ON)	0 - 100 %
		Vehicle stopped	Approx. 0 m/s ²
SIDE G-SENSOR TI	Fransverse G detected by side G sensor	Vehicle turning right	Negative value (m/s ²)
	-	Vehicle turning left	Positive value (m/s ²)
	Steering angle detected by steering angle	Straight-ahead	Approx. 0°
STR ANGLE SIG	sensor	Steering wheel turned	–720 to 720°
BRESS SENSOR B	Brake fluid pressure detected by pressure	With ignition switch turned ON and brake pedal released	Approx. 0 bar
PRESS SENSOR	sensor	With ignition switch turned ON and brake pedal depressed	–40 to 300 bar
EBD SIGNAL E	EBD operation	EBD is active	On
		EBD is inactive	Off
ABS SIGNAL A	ABS operation	ABS is active	On
		ABS is inactive	Off
TCS SIGNAL T	CCS operation	TCS is active	On
		TCS is inactive	Off
VDC SIGNAL V	/DC operation	VDC is active	On
		VDC is inactive	Off
EBD FAIL SIG E	EBD fail-safe signal	In EBD fail-safe	On
	ימו־סמוכ סוערומי	EBD is normal	Off
ABS FAIL SIG A	ABS fail-safe signal	In ABS fail-safe	On
		ABS is normal	Off

< ECU DIAGNOSIS INFORMATION >

[WITH ICC]

		Data monitor		
Monitor item	Display content	Condition	Reference value in normal operation	A
TCS FAIL SIG	TCS fail-safe signal	In TCS fail-safe	On	В
TCS FAIL SIG		TCS is normal	Off	D
		In VDC fail-safe	On	
VDC FAIL SIG	VDC fail-safe signal	VDC is normal	Off	С
CRANKING SIG	Crank energian	Crank is active	On	
CRAINKING SIG	Crank operation	Crank is inactive	Off	_
	Droke fluid lovel owitch	When brake fluid level switch ON	On	D
FLUID LEV SW	Brake fluid level switch	When brake fluid level switch OFF	Off	
USS SIG	Hill start assist status	When hill start assist is active	On	E
(On/Off)	(Note 4)	When hill start assist is not active	Off	

Note 1: Confirm tire pressure is normal.

Note 2: On and off timing for warning lamps and indicator lamps.

Note 3: AWD models

Note 4: USS (Hill Start Assist)

- Refer to <u>BRC-28</u>, "VDC FUNCTION : System Description".
- · Refer to BRC-31, "TCS FUNCTION : System Description".
- Refer to BRC-33, "ABS FUNCTION : System Description".
- Refer to BRC-34, "EBD FUNCTION : System Description".

Fail-Safe

INFOID:000000011822463

BRC

Н

Κ

L

Μ

Ν

VDC FUNCTION, TCS FUNCTION, BRAKE ASSIST FUNCTION and HILL START ASSIST FUNC-TION

VDC warning lamp in combination meter turn ON when a malfunction occurs in system [ABS actuator and electric unit (control unit)]. The control is suspended for VDC function, TCS function, brake assist function and hill start assist function. The vehicle status becomes the same as models without VDC function, TCS function, brake assist function and hill start assist function. However, ABS function and EBD function are operated normally.

ABS FUNCTION

ABS warning lamp and VDC warning lamp in combination meter turn ON when a malfunction occurs in system [ABS actuator and electric unit (control unit)]. The control is suspended for VDC function, TCS function, ABS function, Brake assist function, hill start assist function and brake force distribution function. The vehicle status becomes the same as models without VDC function, TCS function, ABS function and hill start assist function. However, EBD function is operated normally.

NOTE:

ABS self-diagnosis sound may be heard the same as in the normal condition, because self-diagnosis is performed when ignition switch turns ON and when vehicle initially starts.

EBD FUNCTION

ABS warning lamp, brake warning lamp and VDC warning lamp in combination meter turn ON when a malfunction occurs in system [ABS actuator and electric unit (control unit)]. The control is suspended for VDC function, TCS function, ABS function, EBD function, brake assist function and hill start assist function. The vehicle status becomes the same as models without VDC function, TCS function, ABS function, EBD function, brake assist function and hill start assist function.

Ρ

< ECU DIAGNOSIS INFORMATION >

[WITH ICC]

DTC	Fail-safe condition
C1101	
C1102	
C1103	 The following functions are suspended: VDC function
C1104	TCS function
C1105	ABS function SDD function
C1106	EBD function (only when both rear wheels are malfunctioning) Brake assist function
C1107	Hill start assist function
C1108	
C1109	The following functions are suspended:
C1110	VDC function
C1110	• TCS function • ABS function
CIIII	• EBD function
C1113	Brake assist function
01110	Hill start assist function
C1115	The following functions are suspended:
	VDC function
C1116	TCS function ABS function
01110	Brake assist function
	Hill start assist function
C1120	
C1121	The following functions are suspended:
C1122	VDC function
C1123	TCS function ABS function
C1124	EBD function
C1125	Brake assist function Hill start assist function
C1126	
C1127	
	The following functions are suspended:
C1130	 VDC function TCS function
	Hill start assist function
	The following functions are suspended:
	VDC function TCS function
C1140	ABS function
	EBD function Brake assist function
	Hill start assist function
	The following functions are suspended:
C1142	VDC function TCS function
01142	Brake assist function
	Hill start assist function
C1143	The following functions are suspended:
C1144	VDC function TCS function
	Hill start assist function

[WITH ICC]

DTC	Fail-safe condition	
C1145	The following functions are suspended:	
C1146	VDC function	
C1153	• TCS function • ABS function	
	Brake assist function	
C1154	Hill start assist function	
	The following functions are suspended:	
C1155	VDC function TCS function	
01100	Brake assist function	
	Hill start assist function	
	The following functions are suspended:	
	VDC function TCS function	
C1160	ABS function	
	Brake assist function	
	Hill start assist function	
C1164	The following functions are suspended:	
C1165	VDC function TCS function	
C1166	ABS function	
	EBD function	
C1167	 Brake assist function Hill start assist function 	
	The following functions are suspended:	
	 VDC function 	
C1170	TCS function	
01110	ABS function Brake assist function	
	Hill start assist function	
C1197		
C1198		
C1199	Electrical vacuum assistance of brake booster is suspended.	
C119A		
U1000	The following functions are suspended:	;
C	VDC function	
U1002	TCS function	
	Hill start assist function	

DTC Inspection Priority Chart

< ECU DIAGNOSIS INFORMATION >

INFOID:000000011675184

Μ

Priority	Detected item (DTC)
1	U1000 CAN COMM CIRCUIT
2	C1170 VARIANT CODING
3	C1130 ENGINE SIGNAL 1 C1144 ST ANG SEN SIGNAL
4	C1109 BATTERY VOLTAGE [ABNORMAL] C1109 BATTERY VOLTAGE [ABNORMAL] C1110 CONTROLLER FAILURE C1140 ACTUATOR RLY

< ECU DIAGNOSIS INFORMATION >

[WITH ICC]

Priority	Detected item (DTC)			
5	 C1101 RR RH SENSOR-1 C1102 RR LH SENSOR-1 C1103 FR RH SENSOR-1 C1104 FR LH SENSOR-1 C1105 RR RH SENSOR-2 C1106 RR LH SENSOR-2 C1107 FR RH SENSOR-2 C1108 FR LH SENSOR-2 C1118 G SENSOR C1115 ABS SENSOR [ABNORMAL] C1116 STOP LAMP SW C1120 FR LH NABS SOL C1121 FR LH OUT ABS SOL C1122 FR RH IN ABS SOL C1122 FR RH OUT ABS SOL C1123 FR RH OUT ABS SOL C1125 RR LH OUT ABS SOL C1126 RR RH IN ABS SOL C1127 RR RH OUT ABS SOL C1127 RR RH OUT ABS SOL C1127 RR RH NABS SOL C1127 RR RH OUT ABS SOL C1127 RR RH OUT ABS SOL C1127 RR RH OUT ABS SOL C1126 RR RH IN ABS SOL C1127 RR RH OUT ABS SOL C1127 RR RH OUT ABS SOL C1126 RR RH IN ABS SOL C1127 RR RH OUT ABS SOL C1127 RR RH OUT ABS SOL C1126 RR RH IN ABS SOL C1127 RR RH OUT ABS SOL C1128 VACUUM SENSOR C1148 SIDE G SEN CIRCUIT C1190 BRAKE BOOSTER C1190 PAKCUUM SEN VOLT 			
6	C1155 BR FLUID LEVEL LOW			

DTC Index

INFOID:000000011675185

DTC	Display Item	VDC warning lamp	ABS warning lamp	Brake warning lamp	Refer to:
C1101	RR RH SENSOR-1	ON	ON	OFF	
C1102	RR LH SENSOR-1	ON	ON	OFF	BRC-70, "DTC Logic"
C1103	FR RH SENSOR-1	ON	ON	OFF	BRC-70, DTC LOGIC
C1104	FR LH SENSOR-1	ON	ON	OFF	
C1105	RR RH SENSOR-2	ON	ON	OFF	
C1106	RR LH SENSOR-2	ON	ON	OFF	BRC-75, "DTC Logic"
C1107	FR RH SENSOR-2	ON	ON	OFF	BIG-73, DTC Logic
C1108	FR LH SENSOR-2	ON	ON	OFF	
C1109	BATTERY VOLTAGE [ABNOMAL]	ON	ON	ON	BRC-77, "DTC Logic"
C1110	CONTROLLER FAILURE	ON	ON	ON	BRC-79, "DTC Logic"
C1111	PUMP MOTOR	ON	ON	ON	BRC-80, "DTC Logic"
C1113	G SENSOR	ON	ON	OFF	BRC-82, "DTC Logic"
C1115	ABS SENSOR [ABNORMAL SIGNAL]	ON	ON	OFF	BRC-84, "DTC Logic"
C1120	FR LH IN ABS SOL	ON	ON	ON	BRC-89, "DTC Logic"
C1121	FR LH OUT ABS SOL	ON	ON	ON	BRC-91, "DTC Logic"
C1122	FR RH IN ABS SOL	ON	ON	ON	BRC-89, "DTC Logic"
C1123	FR RH OUT ABS SOL	ON	ON	ON	BRC-91, "DTC Logic"
C1124	RR LH IN ABS SOL	ON	ON	ON	BRC-89, "DTC Logic"

Revision: October 2014

< ECU DIAGNOSIS INFORMATION >

[WITH ICC]

DTC	Display Item	VDC warning lamp	ABS warning lamp	Brake warning lamp	Refer to:	A
C1125	RR LH OUT ABS SOL	ON	ON	ON	BRC-91, "DTC Logic"	-
C1126	RR RH IN ABS SOL	ON	ON	ON	BRC-89, "DTC Logic"	– B
C1127	RR RH OUT ABS SOL	ON	ON	ON	BRC-91, "DTC Logic"	- D
C1130	ENGINE SIGNAL 1	ON	OFF	OFF	BRC-93, "DTC Logic"	-
C1140	ACTUATOR RLY	ON	ON	ON	BRC-95, "DTC Logic"	С
C1142	PRESS SEN CIRCUIT	ON	OFF	OFF	BRC-97, "DTC Logic"	_
C1143	ST ANG SEN CIRCUIT	ON	OFF	OFF	BRC-99, "DTC Logic"	_
C1144	ST ANG SEN SIGNAL	ON	OFF	OFF	BRC-101, "DTC Logic"	- D
C1145	YAW RATE SENSOR	ON	ON	OFF	BRC-82, "DTC Logic"	-
C1146	SIDE G SEN CIRCUIT	ON	ON	OFF	BRC-02, DTC LOUIC	E
C1155	BR FLUID LEVEL LOW	ON	OFF	OFF	BRC-104, "DTC Logic"	-
C1160	DECEL G SEN SET	ON	ON	OFF	BRC-106, "DTC Logic"	
C1164	CV 1	ON	ON	ON		BR
C1165	CV 2	ON	ON	ON	PDC 107 "DTC Logic"	
C1166	SV 1	ON	ON	ON	BRC-107, "DTC Logic"	G
C1167	SV 2	ON	ON	ON		0
C1170	VARIANT CODING	ON	ON	OFF	BRC-79, "DTC Logic"	-
C1197	VACUUM SENSOR	OFF	OFF	ON	BRC-109, "DTC Logic"	Н
C1198	VACUUM SEN CIR	OFF	OFF	ON	BRC-111, "DTC Logic"	_
C1199	BRAKE BOOSTER	OFF	OFF	ON	BRC-113, "DTC Logic"	-
C119A	VACUUM SEN VOLT	OFF	OFF	ON	BRC-115, "DTC Logic"	- 1
U1000	CAN COMM CIRCUIT	ON	OFF	OFF	BRC-117, "DTC Logic"	_
U1002	SYSTEM COMM (CAN)	ON	OFF	OFF	BRC-118, "DTC Logic"	J

Κ

L

Μ

Ν

Ο

Ρ

< ECU DIAGNOSIS INFORMATION >

ADAS CONTROL UNIT

Reference Value

VALUES ON THE DIAGNOSIS TOOL

NOTE:

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

Monitor item		Condition	Value/Status
MAIN SW	Ignition quitch ON	When MAIN (ON/OFF) switch is pressed.	On
IVIAIN SVV	Ignition switch ON	When MAIN (ON/OFF) switch is not pressed.	Off
	Ignition quitab ON	When SET/COAST switch is pressed.	On
SET/COAST SW	Ignition switch ON	When SET/COAST switch is not pressed.	Off
CANCEL SW	Ignition switch ON	When CANCEL switch is pressed.	On
CANCEL SVV		When CANCEL switch is not pressed.	Off
RESUME/ACC SW	Ignition quitab ON	When RESUME/ACCELERATE switch is pressed.	On
RESUME/ACC SW	Ignition switch ON	When RESUME/ACCELERATE switch is not pressed.	Off
	Ignition quitch ON	When DISTANCE switch is pressed.	On
DISTANCE SW	Ignition switch ON	When DISTANCE switch is not pressed.	Off
	Drive the vehicle and activate	When ICC system is controlling.	On
CRUISE OPE	the vehicle-to-vehicle distance control mode	When ICC system is not controlling.	Off
	Institute excitate ON	When brake or clutch pedal is depressed.	Off
BRAKE SW	Ignition switch ON	When brake or clutch pedal is not depressed.	On
STOP LAMP SW	Institute switch ON	When brake pedal is depressed.	On
	Ignition switch ON	When brake pedal is not depressed.	Off
IDLE SW	Engine running	Idling	On
		Except idling (depress accelerator pedal)	Off
	 Start the engine and turn the ICC system ON Press the DISTANCE switch to change the vehi- cle-to-vehicle distance set- ting 	When set to "long"	Long
		When set to "middle"	Mid
SET DISTANCE		When set to "short"	Short
	Start the engine and press	ICC system ON (MAIN switch indicator ON).	On
CRUISE LAMP	MAIN switch	ICC system OFF (MAIN switch indicator OFF).	Off
OWN VHCL	NOTE: The item is indicated, but not m	nonitored	Off
VHCL AHEAD	Drive the vehicle and activate	When a vehicle ahead is detected (vehicle ahead detection indicator ON).	On
ν ΠΟΕ ΑΠΕΑυ	the vehicle-to-vehicle distance control mode	When a vehicle ahead is not detected (vehicle ahead detection indicator OFF).	Off
ICC WARNING	Start the engine and press	When ICC system is malfunctioning (ICC system malfunction ON).	On
	MAIN switch	When ICC system is normal (ICC system malfunction OFF).	Off

INFOID:000000011581119

< ECU DIAGNOSIS INFORMATION >

[WITH ICC]

Monitor item		Value/Status	
VHCL SPEED SE	While driving	Displays the ve- hicle speed cal- culated by ADAS control unit	
SET VHCL SPD	While driving	When vehicle speed is set.	Displays the set vehicle speed
BUZZER O/P		 When the buzzer of the following system operates: Vehicle-to-vehicle distance control mode. PFCW system FEB system 	On
BUZZER U/P	Engine running	 When the buzzer of the following system not operates: Vehicle-to-vehicle distance control mode PFCW system FEB system 	Off
THRTL SENSOR	NOTE: The item is indicated, but not m	nonitored.	0.0
ENGINE RPM	Engine running		Equivalent to ta- chometer read- ing
	1	Wiper not operating.	Off
WIPER SW	Ignition switch ON	Wiper LO operation.	Low
		Wiper HI operation.	High
YAW RATE	NOTE: The item is indicated, but not m	0.0	
	-	FEB OFF indicator lamp ON.When FEB system is malfunctioning.When FEB system is turned to OFF.	On
BA WARNING	Engine running	FEB OFF indicator lamp OFF.When FEB system is normal.When FEB system is turned to ON.	Off
Drive the vehicle and activate		When ICC brake hold relay is activated.	On
STP LMP DRIVE	the vehicle-to-vehicle distance control mode	When ICC brake hold relay is not activated.	Off
D POSITION SW	Engine running	When the selector lever is in "D" position or manual mode.	On
DIOSITION SW		When the selector lever is in any position other than "D" or manual mode.	Off
		When the selector lever is in "N", "P" position.	On
NP RANGE SW	Engine running	When the selector lever is in any position other than "N", "P".	Off
		When the parking brake is applied.	On
PKB SW	Ignition switch ON	When the parking brake is released.	Off
PWR SUP MONI	Engine running	Power supply voltage value of ADAS control unit	
VHCL SPD AT	While driving	Value of CVT ve- hicle speed sen- sor signal	
THRTL OPENING	Engine running	Depress accelerator pedal.	Displays the throttle position
GEAR	While driving		Displays the gear position

Revision: October 2014

< ECU DIAGNOSIS INFORMATION >

[WITH ICC]

			E		
Monitor item		Condition	Value/Status		
		When clutch or brake pedal is depressed.			
CLUTCH SW SIG	Ignition switch ON	When clutch or brake pedal is not depressed.	Off		
	Ignition quitab ON	When the shift lever is in neutral position.	On		
NP SW SIG	Ignition switch ON	When the shift lever is in any position other than neutral.	Off		
		When ICC system is deactivated.	Off		
MODE SIG	Start the engine and press MAIN switch	When vehicle-to-vehicle distance control mode is activated.	ICC		
		When conventional (fixed speed) cruise control mode is activated.	ASCD		
	Drive the vehicle and acti-	SET switch indicator ON.	On		
SET DISP IND	vate the conventional (fixed speed) cruise control modePress SET/COAST switch	SET switch indicator OFF.	Off		
DISTANCE			Displays the dis- tance from the preceding vehi- cle		
		When a vehicle ahead is not detected.	0.0		
RELATIVE SPD	Drive the vehicle and activate the vehicle-to-vehicle distance	When a vehicle ahead is detected.	Displays the rel- ative speed.		
	control mode	When a vehicle ahead is not detected.	0.0		
ON ROOT GUIDE	NOTE: The item is indicated, but not n	E: tem is indicated, but not monitored.			
FCW SYSTEM ON	Ignition owitch ON	When the PFCW system is ON.	On		
FGW STSTEWION	Ignition switch ON	When the PFCW system is OFF.	Off		
Shift position	Engine runningWhile driving	Displays the shift position			
Turn signal lamps OFF.		Turn signal lamps OFF.			
Turn signal	Turn signal lamp LH blinking.	LH			
Turri Signai	Turn signal lamp RH blinking.	RH			
	Turn signal lamp LH and RH bl	linking.	LH&RH		
SIDE G	While driving	Vehicle turning right.	Negative value		
SIDE G	write driving	Vehicle turning left.	Positive value		
FUNC ITEM	Ignition switch ON		FUNC3		
FUNC ITEM (FCW)	Engine running		On		
FUNC ITEM (BSW)	Engine running		On		
FUNC ITEM (NV-ICC)	NOTE: The item is indicated, but not n	nonitored	Off		
FCW SELECT	Ignition switch ON	"Forward Emergency Braking" set with the integral switch is ON.	On		
		"Forward Emergency Braking" set with the integral switch is OFF.	Off		
BSW SELECT	Ignition switch ON	"Blind Spot Warning" set with the integral switch is ON.	On		
		"Blind Spot Warning" set with the integral switch is OFF.	Off		
NAVI ICC SELECT	NOTE: The item is indicated, but not n	nonitored.	Off		
SYS SELECTABILITY	Ignition switch ON	Items set with the integral switch can be switched nor- mally.	On		
		Items set with the integral switch cannot be switched normally.	Off		

Revision: October 2014

< ECU DIAGNOSIS INFORMATION >

[WITH ICC]

Monitor item		Value/Status	
BSW WARN LMP	Engine running	When the BSW system is malfunctioning.	On
		When the BSW system is normal.	Off
BSW SYSTEM ON	Ignition switch ON	When the BSW system is ON.	On
DOW STOLEN ON		When the BSW system is OFF.	Off
		When the FEB/PFCW system is ON.	On
FCW SYSTEM ON	Engine running	When the FEB/PFCW system is OFF.	Off
BATTERY CIRCUIT OFF	NOTE: The item is indicated, but not u	sed.	Off
SYSTEM CANCEL		System cancel display ON.	On
MESSAGE	Engine running	System cancel display OFF.	Off
		BSW system display ON.	On
BSW ON INDICATOR	Engine running	BSW system display OFF.	Off
SIDE RADAR BLOCK	F	Front bumper or side radar is dirty.	On
COND	Engine running	Front bumper and side radar is clean.	Off
		BSW system OFF.	Nothing
BSW IND BRIGHT-		Blind Spot Warning indicator brightness bright.	Bright
NESS	Ignition switch ON	Blind Spot Warning indicator brightness normal.	Normal
		Blind Spot Warning indicator brightness dark.	Dark
		When speed limiter MAIN switch is pressed.	On
SL MAIN SW	Engine running	When speed limiter MAIN switch is not pressed.	Off
FUNC ITEM (FEB)	Engine running	L	On
		"Forward Emergency Braking" set with the integral switch is ON.	On
FEB SELECT	Ignition switch ON	"Forward Emergency Braking" set with the integral switch is OFF.	Off
		FEB system ON.	On
FEB SW	Engine running	FEB system OFF.	Off
SL TARGET VEHI- CLE SPEED	While driving	When vehicle speed is set.	Displays the set vehicle speed
	Drive the vehicle and acti-	Speed limiter SET indicator ON.	On
SL SET LAMP	vate the speed limiterPress speed limiter MAIN switch	Speed limiter SET indicator OFF.	Off
	Drive the vehicle and acti-	Speed limiter system ON.	On
SL LIMIT LAMP	vate the speed limiterPress speed limiter MAIN switch	Speed limiter system OFF.	Off
ASCD CANCEL	Drive the vehicle and activate	ASCD cancelled by low vehicle speed.	On
(LOW SPEED)	the ASCD	Other than above.	Off
	Drive the vehicle and activate	ASCD cancelled by difference between set speed and vehicle speed.	On
(SPEED DIFF)	the ASCD	Other than above.	Off
	Drive the vehicle and activate	When accelerator pedal is full depressed.	On
KICK DOWN	the speed limiter	Other than above.	Off

< ECU DIAGNOSIS INFORMATION >

[WITH ICC]

TERMINAL LAYOUT PHYSICAL VALUES

	ninal No. re color)	Description		Condition		Value
+	-	Signal name	Input/ Output			(Approx.)
1 (B)		Ground	Input	_		0 V
2 (L)		ITS communication-High	_		_	_
3 (LG)		Ignition power supply	Input	Ignition switch ON		Battery voltage
4				Ignition	Warning buzzer operation	Battery voltage
(V)		Warning buzzer signal	Output	switch ON	Warning buzzer not operating	0 V
5 (Y)	Ground	ITS communication-Low	_	_		_
6 (Y)	Ground	3rd CAN Low	Input	_		_
9 (L)		CAN high	_	_		_
10 (P)		CAN low	_	_		_
14 (L)		ICC brake hold relay drive signal	Output	lgnition switch ON	_	Battery voltage
18 (L)		3rd CAN High	Input	_	_	0 V

Fail-safe (ADAS Control Unit)

INFOID:000000011581120

If a malfunction occurs in each system, ADAS control unit cancels each control, sounds a beep, and turns ON the warning or indicator lamp.

System	Buzzer	Warning lamp/Warning dis- play	Description
Intelligent Cruise Control (ICC)	High-pitched tone	ICC system warning	Cancel
Forward Emergency Braking (FEB)	High-pitched tone	FEB warning lamp (Yellow)	Cancel
Predictive Forward Collision Warning (PFCW)	High-pitched tone	FEB warning lamp (Yellow)	Cancel
Blind Spot Warning (BSW)	Low-pitched tone	BSW system warning	Cancel
Rear Cross Traffic Alert (BSW)	—	BSW system warning	Cancel

< ECU DIAGNOSIS INFORMATION >

DTC Inspection Priority Chart

If multiple DTCs are detected simultaneously, check them one by one depending on the following DTC inspection priority chart.

Priority	Detected items (DTC)	
1	U1507: LOST COMM (SIDE RDR R) U1508: LOST COMM (SIDE RDR L)	G
2	U1000: CAN COMM CIRCUIT U1321: CONFIGURATION	0
3	C1A17: ICC SENSOR MALF C1B53: SIDE RDR R MALF C1B54: SIDE RDR L MALF	D
	C1A01: POWER SUPPLY CIR C1A02: POWER SUPPLY CIR 2 C1A13: STOP LAMP RLY FIX C1A141 FOM OPPOUNT	E
	 C1A14: ECM CIRCUIT C1A34: COMMAND ERROR U0121: VDC CAN CIR 2 U0235: ICC SENSOR CAN CIRC 1 	BRC
4	 U0401: ECM CAN CIR 1 U0402: TCM CAN CIR 1 U0415: VDC CAN CIR 1 U0433: ICC SENSOR CAN CIRC 2 	G
	 U1503: SIDE RDR L CAN CIR 2 U1504: SIDE RDR L CAN CIR 1 U1505: SIDE RDR R CAN CIR 2 U1506: SIDE RDR R CAN CIR 1 	Н
5	C1A03: VHCL SPEED SE CIRC	
6	C1A00: CONTROL UNIT	

DTC Index

- Systems for fail-safe
- A: Intelligent Cruise Control (ICC)
- B: Forward Emergency Braking (FEB)
- C: Predictive Forward Collision Warning (PFCW)
- D: Blind Spot Warning (BSW)
- E: Rear Cross Traffic Alert (RCTA)

DTC	CONSULT display	Fail-safe	Reference	
CONSULT	CONSULT display	System	Relefence	M
NO DTC IS DE- TECTED. FUR- THER TESTING MAY BE RE- QUIRED	NO DTC IS DETECTED. FURTHER TESTING MAY BE REQUIRED		_	Ν
U1507	LOST COMM (SIDE RDR R)	D, E	DAS-81	
U1508	LOST COMM (SIDE RDR L)	D, E	DAS-82	0
U1000 ^{NOTE}	CAN COMM CIRCUIT	A, B, C, D, E	<u>DAS-70</u>	
U1321	CONFIGURATION	A, B, C, D, E	DAS-73	Р
C1A17	ICC SENSOR MALF	A, B, C	DAS-54	
C1B53	SIDE RDR R MALF	D, E	DAS-58	
C1B54	SIDE RDR L MALF	D, E	DAS-59	
C1A01	POWER SUPPLY CIR	A, B, C, D, E	DAS-44	
C1A02	POWER SUPPLY CIR 2	A, B, C, D, E	<u>DAS-44</u>	

INFOID:000000011581121

INFOID:000000011581122

J

Κ

L

А

< ECU DIAGNOSIS INFORMATION >

- Systems for fail-safe
- A: Intelligent Cruise Control (ICC)
- B: Forward Emergency Braking (FEB)
- C: Predictive Forward Collision Warning (PFCW)
- D: Blind Spot Warning (BSW)
- E: Rear Cross Traffic Alert (RCTA)

DTC	CONSULT display	Fail-safe	Reference
CONSULT	CONSOLI UISPIAY	System	Relefence
C1A13	STOP LAMP RLY FIX	A, B, C	<u>DAS-47</u>
C1A14	ECM CIRCUIT	A, B, C	<u>DAS-54</u>
C1A34	COMMAND ERROR	A, B, C	DAS-57
U0121	VDC CAN CIR 2	A, B, C, D, E	<u>DAS-60</u>
U0235	ICC SENSOR CAN CIRC 1	A, C, D, E	DAS-62
U0401	ECM CAN CIR 1	A, B, C, D, E	DAS-63
U0402	TCM CAN CIR 1	A, B, C, D, E	DAS-65
U0415	VDC CAN CIR 1	A, B, C, D, E	DAS-67
U0433	ICC SENSOR CAN CIRC 2	A, B, C	<u>DAS-69</u>
U1503	SIDE RDR L CAN CIR 2	D, E	<u>DAS-73</u>
U1504	SIDE RDR L CAN CIR 1	D, E	DAS-75
U1505	SIDE RDR R CAN CIR 2	D, E	<u>DAS-77</u>
U1506	SIDE RDR R CAN CIR 1	D, E	<u>DAS-79</u>
C1A03	VHCL SPEED SE CIRC	D, E	<u>DAS-45</u>
C1A00	CONTROL UNIT	A, B, C, D, E	<u>DAS-43</u>

NOTE:

With the detection of "U1000" some systems do not perform the fail-safe operation.

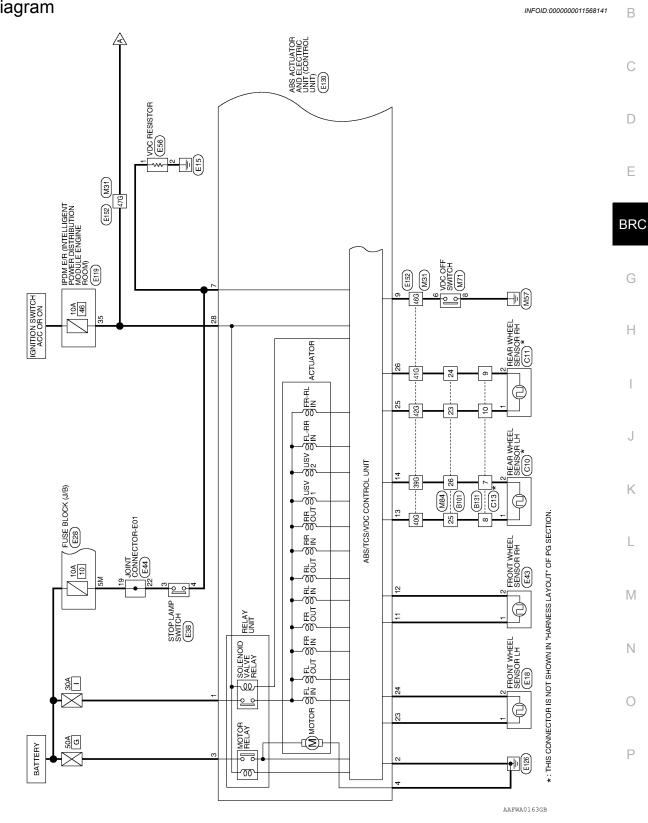
A system controlling based on a signal received from the control unit performs fail-safe operation when the communication with the ADAS control unit becomes inoperable.

[WITH ICC]

А

WIRING DIAGRAM BRAKE CONTROL SYSTEM

Wiring Diagram

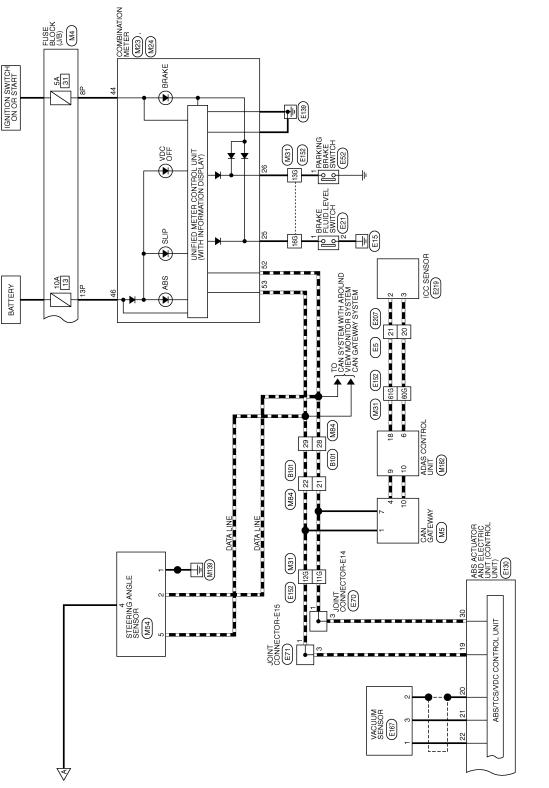


BRAKE CONTROL SYSTEM - WITH INTELLIGENT CRUISE CONTROL

BRAKE CONTROL SYSTEM

< WIRING DIAGRAM >

[WITH ICC]



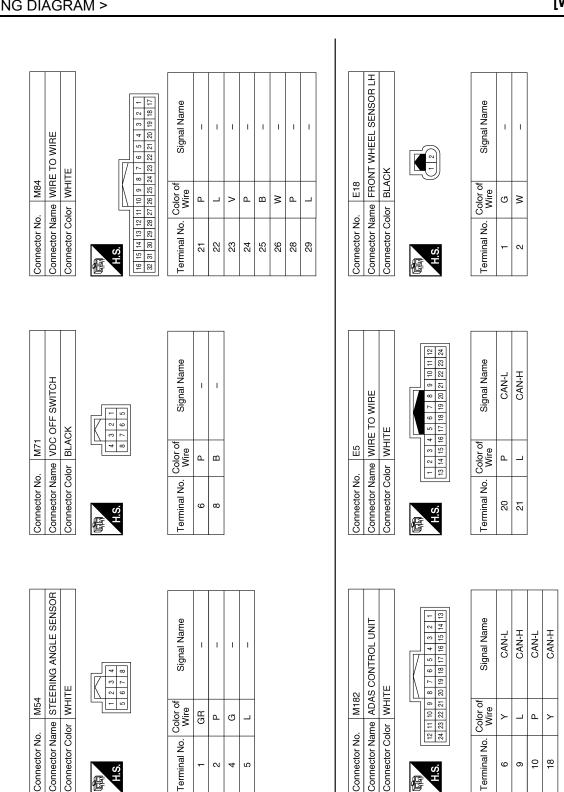
AAFWA0164GB

Connector Co Terminal No. 11G 11G 11G 11G 11G 11G 11G 11	Connector No. Connector Nan	o. M4 ame FUS	Connector No. M4 Connector Name FUSE BLOCK (J/B)	Connector No. Connector Nar	or No.	Connector No. M5 Connector Name CAN GATEWAY		Connector No. Connector Nan	o. M23 ame COM	Connector No. M23 Connector Name COMBINATION METER
Image: Signal Name Image: Signal Name Image: Signal	nnector Co	olor WHI	LE	Connecto	or Color	NHITE		Connector C	olor WHITE	ITE
Imminiativo: Color of	ن	7P 6P 5P 4	99	同 H.S.				同 H.S.	41 42 49 50 1	41 422 433 444 456 468 480 500 511 522 533 544 556 566
Image: Second	minal No.			Terminal			Эс	Terminal No	Color of Wire	Signal Name
A 4 4 4 7 P L 1 4 7 P L 1 4 4 7 P P L 4 4 4 7 P P L 4	8P	BG	1	-				43	B	GND1
A A A A Image: A A A A A Image: A B B	13P	>	1	4				44	BG	POWER (IGN)
10 P - 46 11 11 0 11 12 11 11 11 11 12 11 11 11 11 12 11 12 12 16 <td< td=""><td></td><td></td><td></td><td>7</td><td>₽.</td><td></td><td></td><td>45</td><td>В</td><td>GND2</td></td<>				7	₽.			45	В	GND2
M M				10	₽.			46	N	POWER (BAT)
Market Park								52	٩	CAN-L
Connector No. M31 Connector No. M31 Connector Name WIRE TO WIRE Connector Name M11 Connector Name M11 M11 M11 M11 M11 M11 M11 M11 M11 M11 M11 M11 M11 M11 M11 M11 M11 M11 M11 M12								53	_	CAN-H
A Connector Name WRE TO WRE Connector Name WRE TO WRE Connector Name WRE TO WRE Time in initial Time initial Time initial Time initial	inector Nc	o. M24		Connecto	or No.	M31		Terminal No	Color of	Signal Name
MHIE Competer Color WHIE Competer Color WHIE Competer Color Real Color Color WHIE Color Color Real Color Color Real Color Color Real Color	inector Na	ame CON	ABINATION METER	Connecto	or Name	WIRE TO WIRE		U T		
Image: Signal Name Image: Signal Name Image: Signal	inector Cc		E	Connecto		NHITE		12G		
BR00 Image: Signal Name Image: Signal Name Image: Signal Name Image: Signal Name Image: Signal Name Image: Signal Name Image: Signal Name Image: Signal Name Image: Signal Name Image: Signal Name Image: Signal Name Image: Signal Name Image: Signal Name Image: Signal Name Image: Signal Name Image: Signal Name Image: Signal Name Image: Signal Name Image: Signal Name Image: Signal Name Image: Signal Name Image: Signal Name Image: Signal Name Image: Signal Nam Image: Signal Name <								13G	ВВ	I
								16G	٥	I
BR Image: Signed and	0		K	0°1		66 76 86 96 106		39G	Μ	I
Image: Section (Section (S	ю	6 7 8	3 10 11 12 13 14 15 16 17 18 19 20					40G	В	-
	22 23	26 27 28	9 30 31 32 33 34 35 36 37 38 39 40		11G1	2G 13G 14G 15G 16G 17G 18G 1	1G 20G 21G	41G	٩	I
Color of Nire Signal Name G BRAKE OIL SW G BRAKE OIL SW 1310[320]350[350]350[370]350]380[370]350]380[370]350]380[370]350]380[370]350]380[370]380]380[370]380]380[370]380]380[370]380]380[370]380]380[370]380]380[370]380]380[370]380]380[370]380]380[370]380]380[370]380]380[370]380]380[370]380]380[370]380]380[370]380]380[370]380]380[370]380]380[370]380[380]880[370]380]380[370]380]380[370]380[380]880[370]380]380[370]380[380]380[370]380]380[370]380[380]380[370]380]380[370]380[380]380[370]380]380[370]380[380]380[370]380]380[370]380[370]380[370]380[370]380[380]380[370]380[370]380[380]380[370]380[380]380[370]380[380]380[370]380[380]380[370]380[380]380[370]380[380]380[370]380[380]380[370]380[380]380[370]380[380]380[370]380[380]380[370]380[380]380[370]380[380]380[380]380[370]380[380[380]380						262362462562662762862	1G 30G	42G	>	I
32 3 BRAKE 3 3 3	minal No.				3163	26 336 346 356 366 376 386 3	3G 40G 41G	46G	٩	I
BRG BRG BRG BRG BRG BRG BRG BRG	25	G			4	12G 43G 44G 45G 46G 47G 48G 4	36 506	47G	G	I
	56	BB	PKB SW		5165	26 536 546 556 566 576 586 5	3G 60G 61G	60G	٩	I
Image: Contract of the second seco						2G 63G 64G 65G 66G 67G 68G 6	36 706	ے 61G	_	Ι
BRO G H J K L M					24 8 8	26 736 746 756 766 776 796 7 28 839 84 856 856 877 896 8 916 826 836 946 936 946 956	1000 1000 1000 1000 1000 1000 1000 100			
G H J K L N										
		Ν	L		I		BRO	E	D	B

Ρ

< WIRING DIAGRAM >

[WITH ICC]



BRAKE CONTROL SYSTEM

< WIRING DIAGRAM >

[WITH ICC]

Revision: October 2014

Connector No.

Connector No.

GВ

-N 4 ß

Terminal No.

H.S. F

G

_

۵.

≻

9

Terminal No.

H.S.

F

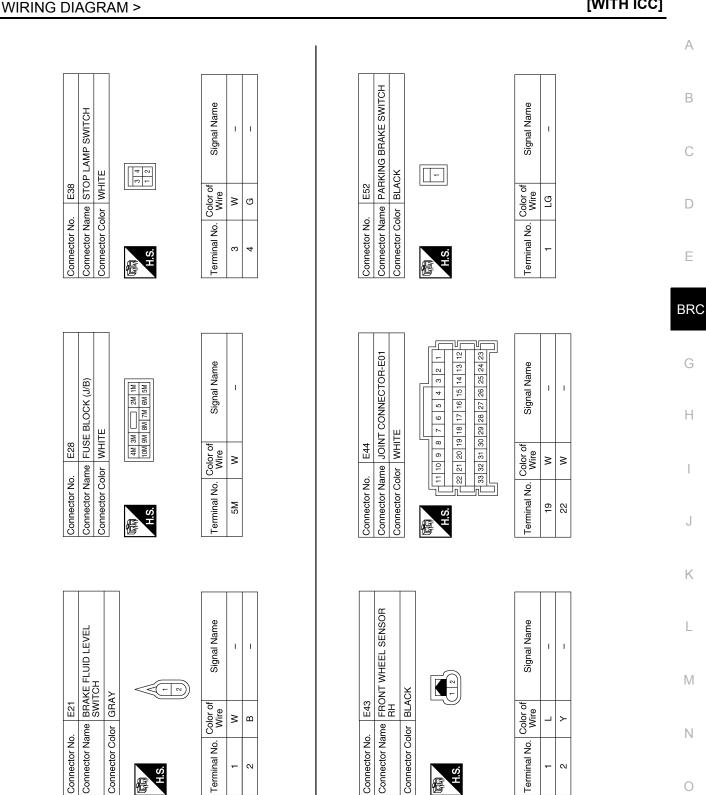
٩ ≻

10 100

AAFIA0336GB

_

6



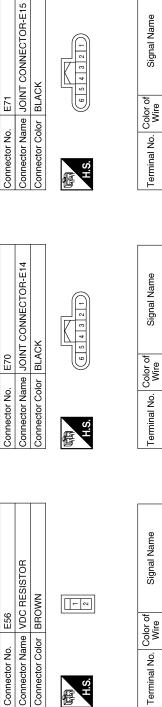
AAFIA0337GB

Ρ

< WIRING DIAGRAM >

[WITH ICC]







1 1

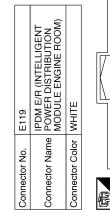
ーー

1 1

<u>م</u>

ო

- ო





ABS ECU

ВВ

35

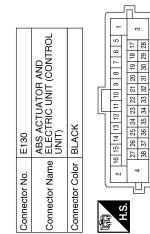
AAFIA0338GB

BRAKE CONTROL SYSTEM

< WIRING DIAGRAM >

216/206/196/186/176/166/156/146/136/126/116 306/296/286/276/266/256/246/236/226 81G800G79G78G77G77G77G77G77G77G 900G89G88G87G86G85G84G83G82G 416406396386376366356346336326316 506496486476486456446436426 61 G 60 G 59 G 57 G 56 G 55 G 54 G 53 G 52 G 51 G 70 G 69 G 68 G 67 G 66 G 65 G 64 G 63 G 62 G Signal Name 5G 4G 3G 2G 1G 10G 9G 8G 7G 6G 95G 94G 93G 92G 91G 100G 99G 98G 97G 96G I. T I. T Т Т Т Т Т Т Т Т Connector Name WIRE TO WIRE Connector Color WHITE E152 Color of Wire SB SB ВВ ŋ ٩ _ ≥ £ > £ ٩ _ Connector No. Terminal No. 11G 39G 40G 41G 42G 46G 47G 60G 61G 12G 13G 16G H.S. E

Signal Name	CAN-H	GND EXT	U5V EXT	VAC	WSP FL	WSS FL	WSP RR	WSS FR	1	WAU	1	CAN-L	I	I	1	I	I	I	I	1
Color of Wire	_	SHIELD	ш	×	σ	3	>	SB	ı	ВВ	I	٩	I	I	I	I	-	I	1	I
Terminal No.	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38



Signal Name	UB VR	GND ECU	UB MR	GND MR	1	1	BLS	1	VDC OFF	I	WSP FR	WSS FR	WSP RL	WSS RL	I	1	1	I
Color of Wire	œ	ш	N	B/W	I	I	U	I	œ	I	L	٢	œ	SB	I	I	I	I
Terminal No.	-	2	e	4	5	9	7	8	6	10	11	12	13	14	15	16	17	18

AAFIA0339GB

А

В

С

D

Е

BRC

G

Н

J

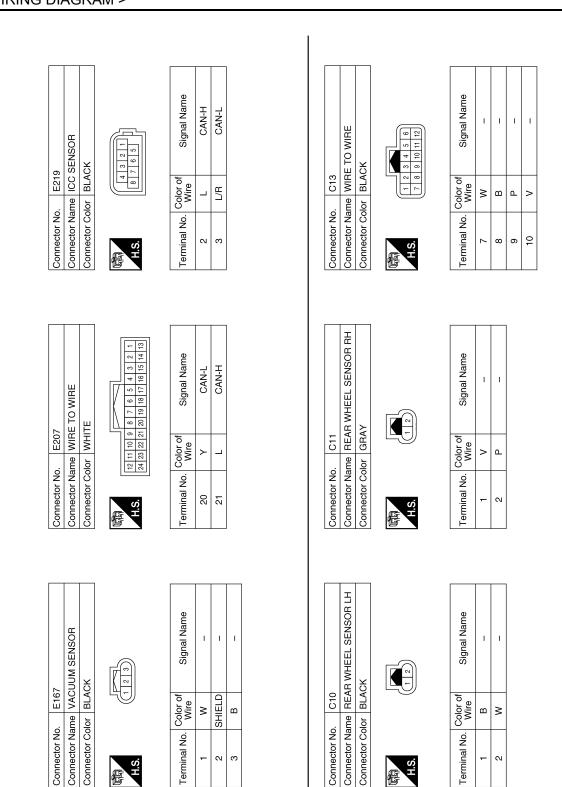
Κ

L

Μ

Ν

Ο



≥

-

Terminal No.

H.S.

E

മ

N ო

BRAKE CONTROL SYSTEM

Revision: October 2014

Connector No.

Connector No.

AAFIA0340GB

___≤

-N

Terminal No.

H.S.

E

< WIRING DIAGRAM >

Connector Name WIRE TO WIRE

Connector Name WIRE TO WIRE

B101

Connector No.

Connector Color WHITE

B131

Connector No.

Connector Color BLACK

Signal Name

Color of Wire

Terminal No.

Signal Name

Color of Wire P

Terminal No.

1 1

≥

0 8 0

>

9

а ч

Т

> 🗅

_

22 23 24

T

6

10

F

12

.S.H

倱.S.H

ø

А

В

С

		1
<u></u> ≥	٩	_
26	28	29

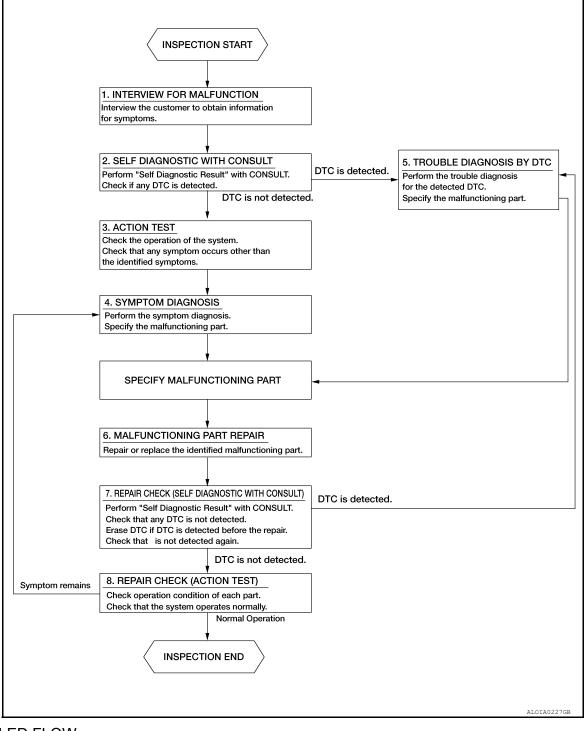
AAFIA0341GB

Ρ

BASIC INSPECTION DIAGNOSIS AND REPAIR WORK FLOW

Work Flow

OVERALL SEQUENCE



DETAILED FLOW

1.INTERVIEW FOR MALFUNCTION

It is also important to clarify the customer concerns before starting the inspection. Interview the customer about the concerns carefully and understand the symptoms fully.

INFOID:000000011583466

DIAGNOSIS AND REPAIR WORK FLOW

< BASIC INSPECTION > [WI	
NOTE: The customers are not professionals. Never assume that "maybe the customer means" or "matomer mentioned this symptom".	aybe the cus- A
>> GO TO 2.	В
2.SELF DIAGNOSTIC RESULT WITH CONSULT	
 Perform "All DTC Reading" with CONSULT. Check if the DTC is detected on the "Self Diagnostic Result" of "LASER/RADAR" Is any DTC detected? 	С
YES >> GO TO 5.	D
NO >> GO TO 3.	D
3.ACTION TEST	
Perform the FEB system action test to check the system operation. Check if any other malfunction	ns occur.
>> GO TO 4.	
4.SYMPTOM DIAGNOSIS	BR
Perform the applicable diagnosis according to the diagnosis chart by symptom. Refer to <u>BRC-29</u> <u>Table</u> ".	4, "Symptom G
>> GO TO 6.	
5. TROUBLE DIAGNOSIS BY DTC	Н
1. Check the DTC in the "Self-Diagnostic Result".	
 Perform trouble diagnosis for the detected DTC. Refer to <u>BRC-198, "DTC Index"</u>. 	I
>> GO TO 6.	
6.MALFUNCTIONING PART REPAIR	J
Repair or replace the identified malfunctioning parts.	
>> GO TO 7.	K
7. REPAIR CHECK (SELF DIAGNOSTIC RESULT WITH CONSULT)	
1. Erases "Self Diagnostic Result".	L
 Perform "All DTC Reading" again after repairing or replacing the specific items. Check if any DTC is detected in "Self Diagnostic Result" of "LASER/RADAR". 	
Is any DTC detected?	M
YES >> GO TO 5. NO >> GO TO 8.	
8. REPAIR CHECK (ACTION TEST)	Ν
Perform the FEB system action test. Check that the malfunction symptom is solved or no other	
occur.	0
<u>Is there a malfunction symptom?</u> YES >> GO TO 4.	0
NO >> Inspection End.	
	P

ADDITIONAL SERVICE WHEN REPLACING ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)

< BASIC INSPECTION >

[WITH ICC]

ADDITIONAL SERVICE WHEN REPLACING ABS ACTUATOR AND ELEC-TRIC UNIT (CONTROL UNIT)

Description

INFOID:000000011804833

- When replacing the ABS actuator and electric unit (control unit), perform configuration of the ABS actuator and electric unit (control unit). Refer to <u>BRC-224</u>, "Work Procedure".
- When replacing the ABS actuator and electric unit (control unit), adjust the neutral position of steering angle sensor. Refer to <u>BRC-220, "Work Procedure"</u>.
- When replacing the ABS actuator and electric unit (control unit), perform calibration of the decel G sensor. Refer to <u>BRC-222</u>, "Work Procedure".

ADDITIONAL SERVICE WHEN REPLACING ICC SENSOR

ADDITIONAL SERVICE WHEN REPLACING ICC SENSO	
< BASIC INSPECTION >	[WITH ICC]
ADDITIONAL SERVICE WHEN REPLACING ICC SENSOR	
Description	INFOID:000000011583489
 Always perform the radar alignment aiming adjustment after removing and installing or sensor. CAUTION: The system does not operate normally unless the ICC sensor is aligned properly. Perform the ICC system action test to check that the ICC system operates normally. 	replacing the ICC
Work Procedure	INFOID:000000011583490
1.RADAR ALIGNMENT ADJUSTMENT	
Adjust the radar alignment. Refer to BRC-228, "Description".	
>> GO TO 2. 2.ICC SYSTEM ACTION TEST	-
 Perform the ICC system action test. Refer to <u>CCS-78, "Description"</u>. 	
2. Check that the ICC system operates normally.	-
>> Inspection End.	

0

ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION [WITH ICC]

< BASIC INSPECTION >

ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

Description

INFOID:000000011804834

Refer to the table below to determine if adjustment of steering angle sensor neutral position is required.

×: 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	x
Removing/Installing steering components	×
Replacing steering components	x
Removing/Installing suspension components	-
Replacing suspension components	x
Changing tires to new ones	-
Tire rotation	-
Adjusting wheel alignment	x

Work Procedure

INFOID:000000011804835

ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION **CAUTION:**

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

1.ALIGN THE VEHICLE STATUS

Stop vehicle with front wheels in straight-ahead position.

>> GO TO 2.

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

- On the CONSULT screen, touch "Work support" and "ST ANGLE SENSOR ADJUSTMENT" in order. 1.
- Touch "Start". 2. **CAUTION:**

Do not touch steering wheel while adjusting steering angle sensor.

- 3. After approximately 10 seconds, touch "End". NOTE: After approximately 60 seconds, it ends automatically.
- Turn ignition switch OFF then turn it ON again. 4. **CAUTION:**

Be sure to perform above operation.

>> GO TO 3.

3. CHECK DATA MONITOR

- Run vehicle with front wheels in straight-ahead position then stop. 1.
- Select "Data Monitor". Then make sure "STR ANGLE SIG" is within 0±3.5°. 2.

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 DIAGNOSTIC RESULT MEMORY

Erase the "Self Diagnostic Result" memory of the ABS actuator and electric unit (control unit) and ECM. ABS actuator and electric unit (control unit): Refer to <u>BRC-39, "CONSULT Function".</u>

BRC-220

ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION < BASIC INSPECTION > [WITH ICC] Colspan="2">Colspan="2">Consult Function". Are the memories erased? A YES >> Inspection End. A NO >> Check the items indicated by the "Self Diagnostic Result". B

Ε

J

Κ

L

Μ

Ν

Ο

Ρ

G

CALIBRATION OF DECEL G SENSOR

< BASIC INSPECTION >

CALIBRATION OF DECEL G SENSOR

Description

INFOID:000000011804836

[WITH ICC]

CAUTION:

Always perform the decel G sensor calibration before driving when the following operation is performed. NOTE:

Yaw rate/side/decel G sensor calibration is performed when performing the decel G sensor calibration.

X: Required	—: Not required
-------------	-----------------

Procedure	Decel G sensor calibration
Removing/ installing ABS actuator and electric unit (control unit)	_
Replacing ABS actuator and electric unit (control unit)	x
Removing/installing steering components	_
Replacing steering components	<u> </u>
Removing/installing suspension components	_
Replacing suspension components	
Removing/installing tire	_
Replacing tire	_
Tire rotation	_
Adjusting wheel alignment	_

Work Procedure

INFOID:000000011804837

Decel G sensor calibration

CAUTION:

Always use CONSULT for the decel G sensor calibration. (It cannot be adjusted other than with CON-SULT.) NOTE:

Yaw rate/side/decel G sensor calibration is performed when performing the decel G sensor calibration.

1.CHECK THE VEHICLE STATUS

1. Steer the steering wheel to the straight-ahead position. Stop the vehicle on level surface.

2. Stop the engine.

3. Turn the ignition switch OFF.

Is the vehicle stopped in the straight-ahead position on level surface?

- YES >> GO TO 2.
- NO >> Steer the steering wheel to the straight-ahead position. Stop the vehicle on level surface.

2.PERFORM DECEL G SENSOR CALIBRATION

CAUTION:

• Never allow passenger or load on the vehicle.

Never apply vibration to the vehicle body when opening or closing door during calibration.

CONSULT

1. Turn the ignition switch ON.

CAUTION: Never start engine.

- 2. Select "ABS", "Work support", "DECEL G SEN CALIBRATION" in this order.
- 3. Select "Start".
- 4. After approx. 10 seconds, select "End".
- 5. Turn ignition switch OFF and then turn it ON again. CAUTION:

Be sure to perform the operation above.

>> GO TO 3.

CALIBRATION OF DECEL G SENSOR

< BASIC INSPECTION >

[WITH ICC]

3. CHECK DATA MONITOR

CONSULT

- 1. Drive the vehicle. Steer the steering wheel to the straight-ahead position. Stop the vehicle on level surface.
- Select "ABS", "Data Monitor", "ECU INPUT SIGNALS" and "DECEL G SENSOR" in this order. Check that the signal is within the specified value.

DECEL G SENSOR: Approx. ± 0.01 GIs the inspection result normal?YESYESNO>> GO TO 4.NO>> GO TO 1.

4.ERASE SELF DIAGNOSTIC RESULT MEMORY

CONSULT

Erase "Self Diagnostic Result" of "ABS".

Are the memories erased?

YES >> Inspection End.

NO >> Check the items indicated by the "Self Diagnostic Result".

BRC

А

С

D

Ε

Н

J

Κ

L

Μ

Ν

Ο

Ρ

CONFIGURATION [ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)] [WITH ICC]

< BASIC INSPECTION >

CONFIGURATION JABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)]

Work Procedure

INFOID:000000011804839

CAUTION:

- Use "Manual Configuration" only when "TYPE ID" of ABS actuator and electric unit (control unit) cannot be read.
- After configuration, turn the ignition switch from OFF to ON and check that the VDC warning lamp turns OFF after staying illuminated for approximately two seconds.
- If an error occurs during configuration, start over from the beginning.

1.CHECKING TYPE ID (1)

Use FAST (service parts catalog) to search ABS actuator and electric unit (control unit) of the applicable vehicle and find "Type ID".

>> Print out "Type ID" and GO TO 2.

2. CHECKING TYPE ID (2)

(R)CONSULT Configuration

Select "Before Replace ECU" of "Read/Write Configuration".

2. Check that "Type ID" is displayed on the CONSULT screen.

Is "Type ID" displayed?

YES >> GO TO 3.

NO >> Configuration must be performed manually. GO TO 7.

3. VERIFYING TYPE ID (1)

CONSULT Configuration

Compare the "Type ID" displayed on the CONSULT screen with the one found using the FAST (service parts catalog) to confirm that they match.

NOTE:

Use the last five digits of the "Type ID" found using the FAST (service parts catalog).

Do the "Type IDs" match?

YES >> GO TO 4.

NO >> Configuration must be performed manually. GO TO 7.

4.SAVING TYPE ID

(P)CONSULT Configuration Save "Type ID" on CONSULT.

>> GO TO 5.

5. REPLACING ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT) (1)

Replace ABS actuator and electric unit (control unit). Refer to BRC-311, "Removal and Installation".

CAUTION:

Do not perform the following work items at this time. These items must be performed after configuration is complete.

Air bleeding

- Adjustment of steering angle sensor neutral position
- Calibration of decel G sensor

>> GO TO 6.

Ó.WRITING (AUTOMATIC WRITING)

(R)CONSULT Configuration

Select "After Replace ECU" of "Read / Write Configuration". 1.

CONFIGURATION [ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)] < BASIC INSPECTION > [WITH ICC]	
 Select the "Type ID" that matches the one stored on CONSULT and the one found using the FAST (service parts catalog) to write the "Type ID" into the ABS actuator and electric unit (control unit). NOTE: 	A
Use the last five digits of the "Type ID" found using the FAST (service parts catalog).	В
>> GO TO 9.	D
7.REPLACING ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT) (2)	С
 Replace ABS actuator and electric unit (control unit). Refer to <u>BRC-311, "Removal and Installation"</u>. CAUTION: Do not perform the following work items at this time. These items must be performed after configuration is complete. Air bleeding Adjustment of steering angle sensor neutral position 	D
Calibration of decel G sensor	Е
>> GO TO 8. 8.WRITING (MANUAL WRITING)	BRC
 CONSULT Configuration Select "Manual Configuration". Select the "Type ID" found using the FAST (service parts catalog) to write the "Type ID" into the ABS actuator and electric unit (control unit). NOTE: 	G
Use the last five digits of the "Type ID" found using the FAST (service parts catalog).	Н
>> GO TO 9.	
9.VERIFYING TYPE ID (2)	I
Compare the "Type ID" written into the ABS actuator and electric unit (control unit) with the one found using the FAST (service parts catalog) to confirm they match. NOTE:	J
Use the last five digits of the "Type ID" found using the FAST (service parts catalog).	
	K
>> GO TO 10. 10.CHECKING VDC WARNING LAMP	
 Turn the ignition switch OFF. Turn the ignition switch ON and check that the VDC warning lamp turns OFF after staying illuminated for approximately two seconds. 	L
CAUTION: Do not start the engine. Is the inspection result normal?	Μ
YES >> GO TO 11. NO >> Perform self-diagnosis of "ABS". Refer to <u>BRC-183, "CONSULT Function"</u> .	Ν
11.PERFORMING SUPPLEMENTARY WORK	
 Perform air bleeding. Refer to <u>BR-16, "Bleeding Brake System"</u>. Perform adjustment of steering angle sensor neutral position. Refer to <u>BRC-220, "Work Procedure"</u>. Perform calibration of decel G sensor. Refer to <u>BRC-222, "Work Procedure"</u>. Perform self-diagnosis of all systems. 	O
5. Erase self-diagnosis results.	

>> Work End.

ICC SENSOR INITIAL VERTICAL ALIGNMENT

< BASIC INSPECTION >

ICC SENSOR INITIAL VERTICAL ALIGNMENT

Description

INFOID:000000011779903

IMITH ICC1

WARNING:

Radio waves could adversely affect electric medical equipment. Those who use a pacemaker should contact the electric medical equipment manufacturer for the possible influences before use.

OUTLINE OF ICC SENSOR INITIAL ALIGNMENT PROCEDURE

• Always perform the ICC sensor initial vertical alignment after removing and installing or replacing the ICC sensor.

CAUTION:

The system does not operate normally unless the ICC sensor is aligned properly.

- 1. Required tools, refer to <u>BRC-226, "Required Tools"</u>.
- 2. Preparation, refer to <u>BRC-226</u>, "Preparation".
- 3. ICC sensor initial vertical alignment, refer to BRC-227, "ICC Sensor Initial Vertical Alignment".

CAUTIONARY POINT FOR DISTANCE SENSOR ALIGNMENT PROCEDURE

- For Distance sensor alignment procedure, choose a level location with a few feet of working space in front and surrounding the vehicle.
- Vehicle must be stationary and unoccupied during the whole alignment procedure.
- Never enter the vehicle during ICC sensor alignment.
- For proper system operation and adjustment, all vehicle wheels must be the original factory size.

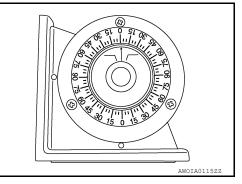
The ICC sensor requires alignment whenever the ICC sensor is removed and reinstalled and whenever front end structural repairs are performed. ICC sensor alignment consists of performing the mechanical vertical alignment (ICC sensor initial vertical alignment) described in the following procedure, followed by the electronic horizontal alignment (ICC sensor alignment) that is performed using CONSULT and the appropriate special service tools.

Required Tools

INFOID:000000011779904

The following tool is necessary to perform the ICC sensor initial vertical alignment:

• Small level or angle meter.



Preparation

INFOID:0000000011779905

1. PREPARATION FOR ICC SENSOR INITIAL VERTICAL ALIGNMENT PROCEDURE

- 1. Verify correct vehicle suspension height. Refer to FSU-26, "Wheelarch Height (Unladen*)".
- 2. Repair or replace any damaged body components.
- 3. Verify proper tire inflation pressures. Refer to WT-74, "Tire Air Pressure".
- 4. Remove any accumulations of mud, snow or ice from the vehicle underbody.
- 5. Verify that there is no load in the vehicle (cargo or passenger).
- 6. Place the vehicle on a known level horizontal surface such as a wheel or frame alignment rack to achieve satisfactory sensor vertical alignment results.

< BASIC INSPECTION >

>> Refer to <u>BRC-227</u>, "ICC Sensor Initial Vertical Alignment".

ICC Sensor Initial Vertical Alignment

NOTE:

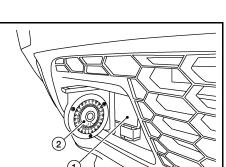
The ICC sensor initial vertical alignment procedure must be performed anytime the Distance sensor is ^B removed and reinstalled.

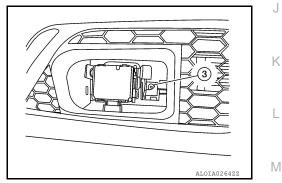
1. The ICC sensor (1) is located near the right front head lamp behind the front bumper fascia.

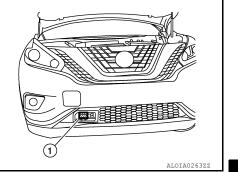
2. Place the small level or angle meter (2) against the face of the ICC sensor (1).

3. Turn the ICC sensor adjustment screw (3) to level the sensor.

- 4. Ensure the ICC sensor electrical connector located on the bottom of the sensor is connected.
- 5. Perform the ICC sensor alignment procedure. Refer to <u>BRC-228, "Description"</u>.







[WITH ICC]

INFOID:000000011779906

А

D

Е

BRC

Н

/1

Ν

Ο

Ρ

Description

INFOID:0000000011863831

[WITH ICC]

WARNING:

Radio waves could adversely affect electric medical equipment. Those who use a pacemaker should contact the electric medical equipment manufacturer for the possible influences before use.

OUTLINE OF ICC SENSOR ALIGNMENT PROCEDURE

- A 4-wheel vehicle alignment must be performed before proceeding with ICC sensor alignment procedure.
- Always perform the ICC sensor alignment after removing and installing or replacing the ICC sensor.
- If the ICC sensor was removed and installed or replaced, first perform ICC Sensor Initial Vertical Alignment, refer to <u>BRC-226</u>, "<u>Description</u>".

CAUTION:

The system does not operate normally unless the ICC sensor is aligned properly.

- 1. Required tools, refer to <u>BRC-228, "Required Tools"</u>.
- 2. Preparation, refer to BRC-229, "Preparation".
- 3. Vehicle set up, refer to BRC-230, "Vehicle Set Up".
- 4. Setting the ICC target board, refer to BRC-232, "Setting The ICC Target Board".
- 5. ICC sensor adjustment, refer to BRC-233, "ICC Sensor Adjustment".

CAUTIONARY POINT FOR ICC SENSOR ALIGNMENT PROCEDURE

CAUTION:

- For ICC sensor alignment procedure, choose a level location with a few feet of working space in front and surrounding the vehicle.
- Vehicle must be stationary and unoccupied during the whole alignment procedure.
- Any slight vibration during the alignment procedure can cause the test to fail. If this happens, you will have to restart the alignment process.
- The ignition switch must be in the ON position.
- The battery voltage must not fall below 12 volts during the whole alignment procedure. Failure to maintain adequate battery voltage will cause the test to fail. If this happens, you will have to restart the alignment process.
- The ICC target board must be set in front of the vehicle facing the sensor.
- Adjust the ICC sensor alignment with CONSULT. (The ICC sensor alignment procedure cannot be adjusted without CONSULT.)
- Never enter the vehicle during ICC sensor alignment.
- Never block the area between the ICC sensor and the ICC target board at any time during the alignment process.
- Never break the laser beam between the laser assembly and front ICC target board or rear reflector at any time during alignment.
- Accurate steering wheel setting is crucial. Once set, do not disturb the steering wheel for the remainder of the alignment procedure.
- To avoid physical damage, the ICC sensor adjustment screw must not be forced to either clockwise or counter-clockwise limit. For proper adjustment procedure, follow the directions of the CONSULT exactly as instructed.
- For proper system operation and adjustment, all vehicle wheels must be of the same size.

Required Tools

INFOID:000000011863832

- ICC alignment kit 1-20-2721-1-IF in addition to one of the following:
 - a) Hunter self-centering wheel adapter (Hunter wheel alignment tool)
 - b) Special Service Tool kit 1-20-2722-1-IF (kit SCA W/Tire Clamp-ICC Aiming)

The following ICC alignment kit 1-20-2721-1-IF is necessary to perform the ICC sensor alignment:

< BASIC INSPECTION >

· ICC target board.

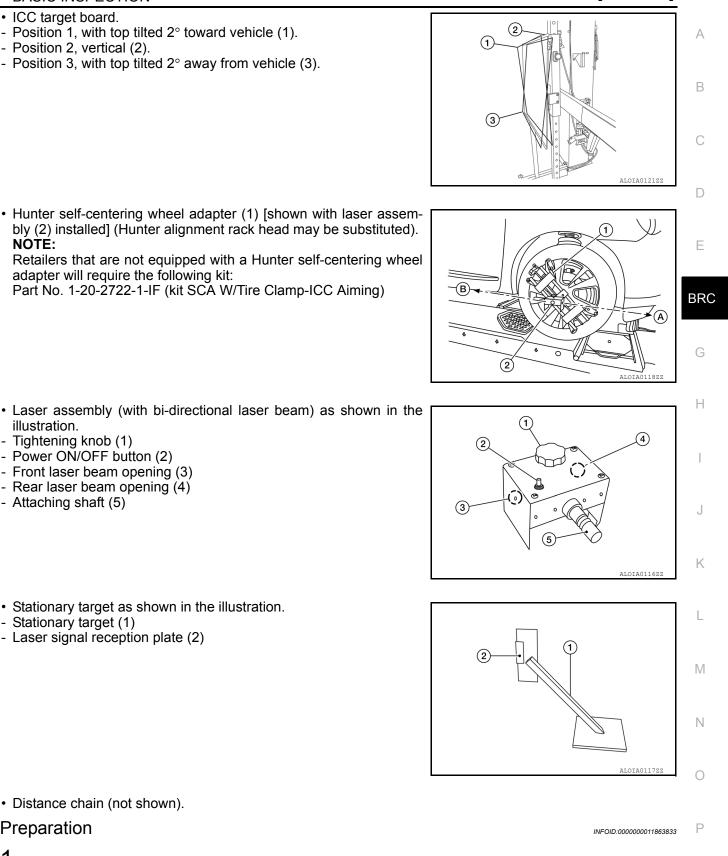
NOTE:

illustration.

- Tightening knob (1)

- Attaching shaft (5)

[WITH ICC]



- Stationary target (1)

Distance chain (not shown).

Preparation

1.ADVANCE PREPARATION FOR ICC SENSOR ALIGNMENT PROCEDURE

- 1. Adjust all tire pressure to the specified value.
- 2. Empty the vehicle. (Remove any luggage from the passenger compartment, luggage room, etc.)
- 3. Shift the selector lever to "P" position, and release the parking brake.
- Fully fill the fuel tank, and then check that the coolant and oils are filled up to correct level. 4.
- 5. Clean off the front of the ICC sensor.

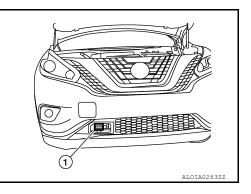
BRC-229

< BASIC INSPECTION >

The ICC sensor is located behind the fascia and it is not exposed to the elements. Therefore it should not require any cleaning.

1 : ICC sensor

>> Refer to BRC-230, "Vehicle Set Up".



Vehicle Set Up

INFOID:000000011863834

[WITH ICC]

DESCRIPTION

Accurate adjustment of the ICC sensor alignment requires that the ICC target board, wheel adapter, laser assembly, and stationary target be properly positioned.

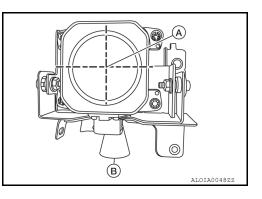
CAUTION:

If the ICC sensor alignment is adjusted with the ICC target board, wheel adapter, laser assembly, or stationary target in the incorrect position, the ICC system will not function properly or the alignment procedure may not be completed successfully.

1.PREPOSITION TARGET BOARD

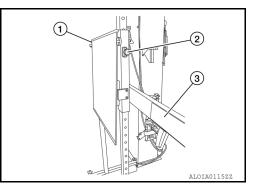
NOTE:

- The center of the sensor wave axis (A) is located at the center of the front lens.
 - B : Up-down direction adjusting screw



• Initial ICC target board setting must be in the center position.

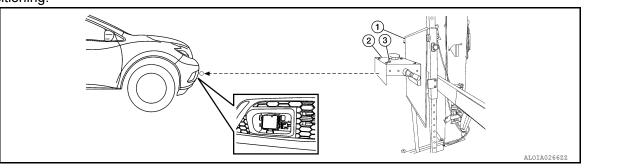
- 1. Position the ICC target board in front facing the right front side of the vehicle:
- Using the full length of the supplied chain for distance, place the marked center of the ICC target board (1) 1200 mm (47.2 in.) ± 625 mm(24.6 in) facing the ICC sensor.
- Adjust the height of the ICC target board using the adjustable nut (2) to achieve the proper height. The up/down tolerance is \pm 80 mm (3.15 in).
- Adjust the ICC target board lateral position aligning the marked center of the board horizontally with the center of the ICC sensor front lens. The right/left tolerance is \pm 80 mm (3.15 in).
- 2. Extend the machined arm of the ICC target board exposing the reflective surface (3) to the right front side of the vehicle.



< BASIC INSPECTION >

[WITH ICC]

3. Place one side of the laser assembly (2) flush against the center of the ICC target board (1) to assist in the positioning.



- 4. Turn the laser assembly ON (3) allowing the laser beam to emit through the opening of the laser assembly toward the center of the ICC sensor.
- 5. Move the ICC target board (1) as necessary so that center of ICC target board aligns with center of ICC sensor.
- 6. Turn the laser assembly OFF when done.

Are you using Hunter alignment equipment?

- YES >> Refer to Hunter's equipment instructions for complete vehicle set up and ICC target board setting. Then, refer to <u>BRC-233</u>, "ICC Sensor Adjustment".
- NO >> GO TO 2.

2.INSTALLING LASER ASSEMBLY

NOTE:

- Insure the steering wheel is positioned in the center straight forward position.
- Insure all 4 vehicle wheels do not contain any physical damage.
- 1. Install the wheel adapter (1) on the right front wheel.
- 2. Mount the laser assembly (2) to the wheel adapter (1) as shown in the figure.

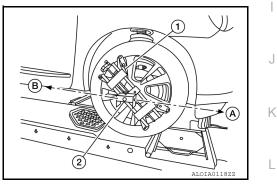
NOTE:

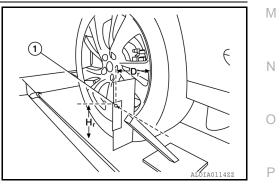
When the power switch is turned ON, the front laser signal (A) will be emitted toward the front ICC target board, and the rear laser signal (B) will be emitted toward the rear of the vehicle.

>> GO TO 3.

3.SETTING UP STATIONARY TARGET

- 1. Place the stationary target next to the right rear tire as shown in the figure.
- 2. Turn the laser assembly ON allowing the laser beam to be emitted through the front and rear laser assembly openings.
- 3. Measure and record the distance (Dr) between the edge of the right rear wheel and the laser beam (1) on the stationary target (horizontal line).
- 4. Measure and record the height (Hr) between the laser beam (1) on the stationary target and ground level (vertical line).





А

В

D

Ε

< BASIC INSPECTION >

- 5. Measure and record the distance (Df) between the edge of the right front wheel and the laser beam signal/opening (1) on the laser assembly (horizontal line).
- Measure and record the height (Hf) between the laser beam signal/opening (1) on the laser assembly and ground level (vertical line).

NOTE:

- Horizontal adjustment [front distance (Df) and rear distance (Dr)] is accomplished by slowly turning the steering wheel until the 2 distances are the same.
- Vertical adjustment [front height (H_f) and rear height (H_r)] is accomplished by rotating the laser assembly around its axis until the two heights are the same.
- Directional arrows (A) and (B) are shown to illustrate the direction of the laser assembly beams.
- 7. Adjust laser beam as necessary until the two distances match and the two heights match. **NOTE:**

You will have to verify both horizontal and vertical adjustments anytime one adjustment is made.

>> Refer to BRC-232, "Setting The ICC Target Board".

Setting The ICC Target Board

INFOID:000000011863835

DESCRIPTION

Accurate adjustment of the ICC sensor alignment requires that the ICC target board be accurately positioned. **CAUTION:**

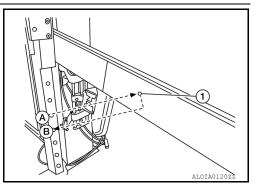
If the ICC sensor alignment is adjusted with the ICC target board in the incorrect position, the ICC system will not function properly or the alignment procedure may not be completed successfully.

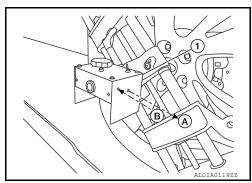
1.ICC TARGET BOARD FINAL SETTING

 With the ICC target board arm extended, the laser beam (1) emitted by the laser assembly (A) will be reflected back (B) toward the laser assembly.
 NOTE:

When adjusted properly, reflected laser beam (B) must align with emitted laser beam (A) and the two laser beams will be seen as one.

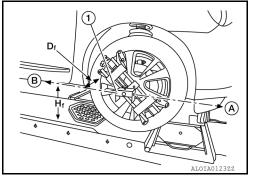
- 2. Rotate the ICC target board to achieve the necessary horizontal adjustment.
- 3. Adjust the ICC target board leveling screws to achieve the necessary vertical adjustment.
- 4. The figure shown illustrates the laser beam (A) emitted by the laser assembly (1) and its reflection (B) off of the ICC target board arm.





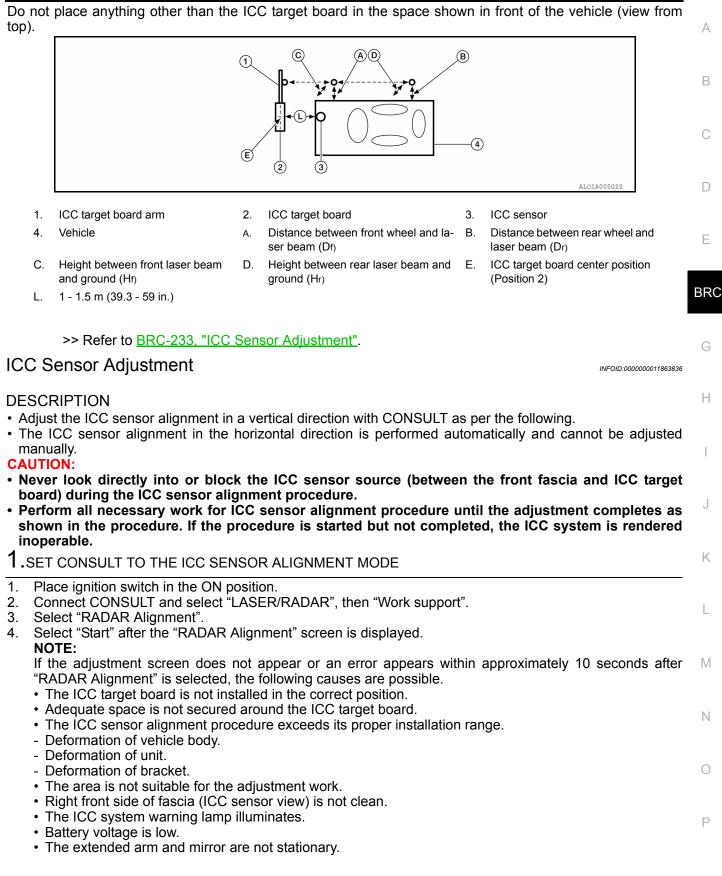
>> GO TO 2. 2.CHECK THE POSITION OF THE ICC TARGET BOARD





< BASIC INSPECTION >

[WITH ICC]

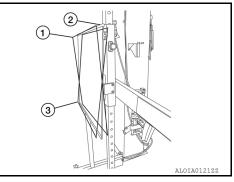


>> GO TO 2.

2.ICC SENSOR ALIGNMENT

< BASIC INSPECTION >

- 1. Once the ICC sensor alignment procedure is started, you will be prompted by the CONSULT for the next instruction.
- 2. Follow all the instructions exactly as requested by the CONSULT which will include the following:
- Adjust ICC target board to position 1 (top tilted toward vehicle)
- Adjust ICC target board to position 2 (vertical position)
- Adjust ICC target board to position 3 (top tilted away from vehicle)



[WITH ICC]

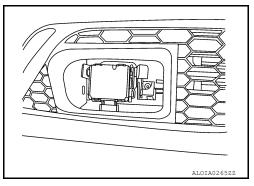
3. You will be prompted with specific instructions to perform physical adjustment to the sensor which may include turning the adjustment screw by a certain number of turns in increments of 0.25 in either direction.

NOTE:

The CONSULT is not live and will not automatically update while turning the tool.

CAUTION:

Be careful not to cover the right front side of the fascia (ICC sensor view) with a hand or any other body part during adjustment.



>> GO TO 3.

3. ICC SENSOR ALIGNMENT CONFIRMATION

- 1. When the "U/D CORRECT" value is executed and the "ADJ VALUE" has been performed, touch "END".
- 2. When "COMPLETED THE VERTICAL AIMING OF LASER BEAM" display appears, touch "END".
 - CAUTION: Always check that the value of "U/D CO

Always check that the value of "U/D CORRECT" remains accurate (within specification) when the ICC sensor is left alone for at least 2 seconds.

- 3. Check that "ADJUSTING AUTOMATIC HORIZONTAL LASER BEAM AIMING" is displayed and wait for a short period of time. (The maximum: Approx. 10 seconds).
- 4. Check that "Normally Completed" is displayed, and select "End" to end "RADAR Alignment". CAUTION:

Once "RADAR Alignment" is started with CONSULT, always continue the work until the ICC sensor alignment is completed successfully. If the job is stopped midway, the ICC sensor alignment is not completed and the ICC system is rendered inoperative.

5. Confirm proper ICC sensor alignment by following CONSULT steps until it shows "ADJ VALUE" to be 0.00 turn.

>> Alignment End.

ACTION TEST

< BASIC INSPECTION >	[WITH ICC]	
ACTION TEST		^
Description	INFOID:000000011583477	Α
 Perform action test to verify the customer's concern. Perform action test and check the system operation after system diagnosis. 		B
Inspection Procedure	INFOID:000000011583478	
1.CHECK FEB SYSTEM SETTING		С
 Start the engine. Check that the FEB system setting can be enabled/disabled on the vehicle information Turn OFF the ignition switch and wait for 30 seconds or more. Check that the previous setting is saved when the engine starts again. 	on display.	
>> GO TO 2.		E
2.CHECK FEB SYSTEM		БГ
 Enable the setting of the FEB system on the vehicle information display. Check FEB warning lamp is OFF. 		BF
>> Inspection End.		0
		ŀ

J

Κ

L

Μ

Ν

Ο

Ρ

< DTC/CIRCUIT DIAGNOSIS >

[WITH ICC]

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

DTC Logic

INFOID:000000011742524

DTC DETECTION LOGIC

NOTE:

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

DTC	Display itom	Malfunction detected condition	Possible cause	
DIC	Display item		Past DTC	Current DTC
C1101	RR RH SENSOR-1	 When power supply voltage of rear wheel sensor RH is low. When an open or shorted circuit is detected in rear wheel sensor RH circuit. 	Low battery voltageHarness or connector	 Low battery voltage Harness or connector Wheel sensor ABS actuator and electric unit (control unit)
C1102	RR LH SENSOR-1	 When power supply voltage of rear wheel sensor LH is low. When an open or shorted circuit is detected in rear wheel sensor LH circuit. 		
C1103	FR RH SENSOR-1	 When power supply voltage of front wheel sensor RH is low. When an open or shorted circuit is detected in front wheel sensor RH circuit. 		
C1104	FR LH SENSOR-1	 When power supply voltage of front wheel sensor LH is low. When an open or shorted circuit is detected in front wheel sensor LH circuit. 		

DTC CONFIRMATION PROCEDURE

1. CHECK SELF DIAGNOSTIC RESULT

1. Start engine and drive vehicle at approximately 21 km/h (13 MPH) or more for approximately 5 minutes.

2. Check for DTC using CONSULT.

Is the DTC detected?

YES (Current DTC)>>Refer to BRC-236, "Diagnosis Procedure".

- YES (Past DTC)>>GO TO 2.
- NO >> Inspection End.

2.ERASE SELF DIAGNOSTIC RESULT

Erase the DTC using CONSULT.

Can the DTC be erased?

YES >> Inspection End.

NO >> Refer to <u>BRC-236</u>, "Diagnosis Procedure".

Diagnosis Procedure

Regarding Wiring Diagram information, refer to <u>BRC-52, "Wiring Diagram"</u>.

CAUTION:

Do not check between wheel sensor terminals.

1.CONFIRM DTC

INFOID:000000011742525

C1101, C1102, C1103, C	1104 WHEEL SENSOR	
< DTC/CIRCUIT DIAGNOSIS >		[WITH ICC]
 With CONSULT Perform "Self Diagnostic Result" of "ABS" and recor Clear all DTCs. 	d all active DTCs.	
 Perform DTC confirmation procedure. Refer to <u>BRC</u> 	-236, "DTC Logic".	
Does DTC C1101, C1102, C1103 or C1104 reset?		
YES >> GO TO 2.		
NO >> Refer to <u>GI-42, "Intermittent Incident"</u> .		
2.INSPECT WHEEL SENSOR		
Inspect the suspect wheel sensor for damage or deform	ation.	
Is the inspection result normal?		
YES >> GO TO 3.		
NO >> Repair or replace as necessary.		
3.HARNESS AND CONNECTOR INSPECTION		
1. Disconnect ABS actuator and electric unit (control	unit) connector E130 and wheel s	ensor connector of
 suspect wheel. Check harness, connectors and terminals for corroage. Refer to <u>GI-42</u>, "Intermittent Incident". 	sion, deformation, disconnection,	looseness or dam-
Is the inspection result normal?		_
YES >> GO TO 4.		
NO >> Repair or replace as necessary.		
4. CHECK WHEEL SENSOR OUTPUT SIGNAL		
 Connect ABS active wheel sensor tester (J-45741) Turn on the ABS active wheel sensor tester power s NOTE: 		adapter.
The green POWER indicator should illuminate. If the battery in the ABS active wheel sensor tester before	e proceeding.	
 Spin the wheel of the vehicle by hand and observe sensor tester. The red SENSOR indicator should fla NOTE: 		
If the red SENSOR indicator illuminates but does	not flash, reverse the polarity of th	ne tester leads and
retest. Does the ABS active wheel sensor tester detect a signa	2	
YES >> GO TO 5.	<u> </u>	
NO >> Replace the wheel sensor. Refer to <u>BRC-13</u> tion" or <u>BRC-139</u> , "REAR WHEEL SENSOR		moval and Installa-
5. CHECK WIRING HARNESS FOR SHORT TO VOLT	\GE	
 Turn ignition switch ON. Check voltage between wheel sensor harness conn 	ector terminals of suspect wheel a	nd ground.
Wheel Sensor		
Wheel Connector Termi	Ground	Voltage

Wheel Sensor		Ground	Voltage	Ν			
Wheel	Connector	Terminal	Ground	voltage			
Front I H	ont LH E18	1					
		2			0		
Front RH	E43	1	-				
	E43	2				0V	Р
Rear LH	C10	1		07			
Real Ell	010	2					
Rear RH	C11	1					
	CIT	2					

Is the inspection result normal?

YES >> GO TO 6.

< DTC/CIRCUIT DIAGNOSIS >

>> Repair the circuit.

6. CHECK WIRING HARNESS FOR SHORT TO GROUND

1. Turn ignition switch OFF.

NO

2. Check continuity between wheel sensor harness connector terminals of suspect wheel and ground.

Wheel Sensor		Ground	Continuity		
Wheel	Connector	Terminal	Ground	Continuity	
Frendlill	E18 -	1			
Front LH		2	_		
Front RH	E43	1			
	E43	2		- 	No
Rear LH	C10	1			
Real LI	010	2			
Rear RH	C11	1			
Real RH	CII	2			

Is the inspection result normal?

YES >> GO TO 7.

NO >> Repair the circuit.

7.check wiring harness for short between circuits

Check continuity between wheel sensor harness connector terminals of suspect wheel.

Whee	l Sensor	(+)	(-)	Continuity
Wheel	Connector	Terminal	Terminal	Continuity
Front LH	E18			
Front RH	E43	1	2	No
Rear LH	C10		2	INO
Rear RH	C11			

Is the inspection result normal?

YES >> GO TO 8.

NO >> Repair the circuit.

8.CHECK WIRING HARNESS FOR OPEN CIRCUIT

Check continuity between ABS actuator and electric unit (control unit) connector E130 and wheel sensor connector of wheel with DTC.

Wheel sensor	ABS actuator and electric unit (control unit)		Wheel sensor		Continuity
Wheel Sensor	Connector	Terminal	Connector	Terminal	
Front LH		24	E18	2	*
		23		1	*
Front RH	E130	12	E43	2	
		11		1	Yes
Rear LH		14	C10	2	
		13		1	Ť
Rear RH		26	C11	2	
		25	011	1	Ţ

Is the inspection result normal?

YES >> GO TO 9.

NO >> Repair the circuit.

< DTC/CIRCUIT DIAGNOSIS >

[WITH ICC]

А

В

Е

BRC

Κ

Ρ

$9. \mathsf{CHECK} \ \mathsf{ABS} \ \mathsf{ACTUATOR} \ \mathsf{AND} \ \mathsf{ELECTRIC} \ \mathsf{UNIT} \ (\mathsf{CONTROL} \ \mathsf{UNIT}) \ \mathsf{POWER} \ \mathsf{SUPPLY} \ \mathsf{CIRCUIT}$

1. Turn ignition switch ON.

2. Check voltage between ABS actuator and electric unit (control unit) harness connector E130 terminal 28 and ground.

	and electric unit ol unit)	Ground	Condition	Voltage (Approx.)	C
Connector	Terminal			(Αρριοχ.)	0
E130	28		Ignition switch ON	Battery voltage	
E130	20	—	Ignition switch OFF	0V	D

Is the inspection result normal?

YES >> GO TO 10.

NO >> Check the following:

• 10A fuse No. 46 located in the IPDM E/R

• Harness between ABS actuator and electric unit (control unit) and IPDM E/R

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

- 1. Turn ignition switch OFF.
- 2. Check continuity between ABS actuator and electric unit (control unit) connector E130 terminals 4,2 and ground.

ABS actuator and ele	ectric unit (control unit)		Continuity	н
Connector	Terminal		Continuity	11
E130	4	Ground	Yes	
E 130	2	Giouria	Tes	

Is the inspection result normal?

YES >> GO TO 11.

NO >> Repair or replace malfunctioning components.

11. CHECK WHEEL SENSOR INPUT VOLTAGE

- 1. Connect ABS actuator and electric unit (control unit) connector E130.
- 2. Turn ignition switch ON.

3. Check voltage between suspect wheel sensor harness connector terminals.

	Sensor	(+)	(-)	Voltage (Approx.)	
Wheel	Connector	Terminal	Terminal	(Appiox.)	
Front LH	E18				M
Front RH	E43	1	2	Battery voltage	
Rear LH	C10		2	Dattery voltage	NI
Rear RH	C11				Ν

Is the inspection result normal?

YES >> Replace wheel sensor. Refer to <u>BRC-137, "FRONT WHEEL SENSOR : Removal and Installation"</u> or <u>BRC-138, "REAR WHEEL SENSOR : Exploded View"</u>. Then, GO TO 12.

NO >> Replace ABS actuator and electric unit (control unit). Refer to <u>BRC-142</u>, "<u>Removal and Installa-</u> tion".

12.CONFIRM REPAIR

With CONSULT

1. Clear all DTCs.

2. Perform DTC confirmation procedure. Refer to <u>BRC-236. "DTC Logic"</u>.

Does DTC C1101, C1102, C1103 or C1104 reset?

< DTC/CIRCUIT DIAGNOSIS >

- YES >> Replace ABS actuator and electric unit (control unit). Refer to <u>BRC-142. "Removal and Installa-</u> tion".
- NO >> Inspection End.

C1105, C1106, C1107, C1108 WHEEL SENSOR

< DTC/CIRCUIT DIAGNOSIS >

C1105, C1106, C1107, C1108 WHEEL SENSOR

DTC Logic

DTC DETECTION LOGIC

NOTE:

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

DTO	Display item		Possib	le cause	
DTC	Display item	Malfunction detected condition	Past DTC	Current DTC	D
C1105	RR RH SENSOR-2	 When distance between rear wheel sensor RH and rear wheel sensor RH rotor is large. When installation of rear wheel sensor RH or rear wheel sensor RH rotor is not normal. 	 Tire size Contamination on sensor rotor Position of sensor rotor and wheel sensor Harness or connector 	 Tire size Contamination on sensor rotor Position of sensor rotor and wheel sensor Harness or connector 	E
C1106	RR LH SENSOR-2	 When distance between rear wheel sensor LH and rear wheel sensor LH rotor is large. When installation of rear wheel sensor LH or rear wheel sensor LH rotor is not normal. 	 Vehicle has been operated on a 2-wheel dynamometer or towed using a 2 wheel dolly Wheel speed sensor mounting bolt loose 	 Wheel sensor Sensor rotor ABS actuator and electric unit (control unit) Vehicle has been operat- ed on a 2-wheel dyna- mometer or towed using a 	BR(
C1107	FR RH SENSOR-2	 When distance between front wheel sensor RH and front wheel sensor RH rotor is large. When installation of front wheel sensor RH or front wheel sensor RH rotor is not normal. 		2 wheel dollyWheel speed sensor mounting bolt loose	H
C1108	FR LH SENSOR-2	 When distance between front wheel sensor LH and front wheel sensor LH rotor is large. When installation of front wheel sensor LH or front wheel sensor LH rotor is not normal. 			J
1. CHE	ONFIRMATION PRO	IC RESULT			K
2. Ch <u>Is the E</u> YES (eck for DTC using COI <u>DTC detected?</u>	o <u>BRC-241, "Diagnosis Procec</u>		proximately 5 minutes.	M
NO	>> Inspection End.				Ν
-	2.ERASE SELF DIAGNOSTIC RESULT				
	he DTC using CONSU <u>e DTC be erased?</u> >> Inspection End. >> Refer to <u>BRC-241</u>	LI.			0
	osis Procedure			INFOID:000000011742527	Ρ

Regarding Wiring Diagram information, refer to BRC-52. "Wiring Diagram".

CAUTION:

Do not check between wheel sensor terminals.

INFOID:000000011742526

А

С

C1105, C1106, C1107, C1108 WHEEL SENSOR

< DTC/CIRCUIT DIAGNOSIS >

1.CONFIRM DTC

- (I) With CONSULT
- 1. Perform "Self Diagnostic Result" of "ABS" and record all active DTCs.
- 2. Clear all DTCs.
- 3. Perform DTC confirmation procedure. Refer to <u>BRC-241, "DTC Logic"</u>.

Does DTC C1105, C1106, C1107 or C1108 reset?

YES >> GO TO 2.

NO >> Refer to <u>GI-42</u>, "Intermittent Incident".

2.CHECK TIRE PRESSURE AND TIRE WEAR

Check tires for excessive wear and proper inflation. Refer to WT-64, "Inspection".

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace as necessary.

 $\mathbf{3}$.check wheel sensor output signal

1. Connect ABS active wheel sensor tester (J-45741) to wheel sensor using appropriate adapter.

- 2. Turn on the ABS active wheel sensor tester power switch.
 - NOTE:

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

 Spin the wheel of the vehicle by hand and observe the red SENSOR indicator on the ABS active wheel sensor tester. The red SENSOR indicator should flash on and off to indicate an output signal. NOTE:

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

Does the ABS active wheel sensor tester detect a signal?

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

4.CHECK WHEEL SENSOR

Check wheel sensor for the following:

- Proper installation
- Physical damage
- Contamination

Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair or replace as necessary. Refer to <u>BRC-306</u>, "FRONT WHEEL SENSOR : Removal and <u>Installation</u>" or <u>BRC-308</u>, "REAR WHEEL SENSOR : Removal and Installation".

5.CHECK SENSOR ROTOR

Check sensor rotor for the following:

- Contamination
- Physical damage (missing teeth, cracks, etc.)
- Foreign material
- Looseness

Is the inspection result normal?

- YES >> Replace the wheel sensor. Refer to <u>BRC-137. "FRONT WHEEL SENSOR : Removal and Installa-</u> tion" or <u>BRC-139. "REAR WHEEL SENSOR : Removal and Installation"</u>. Then, GO TO 6.
- NO >> Repair or replace as necessary.

6.CONFIRM REPAIR

With CONSULT

1. Clear all DTCs.

2. Perform DTC confirmation procedure. Refer to <u>BRC-241, "DTC Logic"</u>.

Does DTC C1105, C1106, C1107 or C1108 reset?

C1105, C1106, C1107, C1108 WHEEL SENSOR

DTC/	CIRCUIT DIAGNOSIS > [WITH ICC]	
/ES	>> Replace ABS actuator and electric unit (control unit). Refer to BRC-142, "Removal and Installa-	_
0	tion". >> Inspection End.	A
		В
		С
		D
		E
		BR
		G
		Н
		I
		J
		K
		L
		M
		Ν
		0
		Ρ

C1109 POWER AND GROUND SYSTEM

< DTC/CIRCUIT DIAGNOSIS >

C1109 POWER AND GROUND SYSTEM

DTC Logic

DTC DETECTION LOGIC

NOTE:

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

DTC	Display item	Malfunction detected condition	Possib	le cause
DIC	Display item	Manufiction detected condition	Past DTC	Current DTC
C1109	BATTERY VOLTAGE [ABNORMAL]	 When ignition voltage is 10 V or less. When ignition voltage is 16 V or more. 	 Battery Harness or connector Intermittent incident 	 Fuse Battery Ignition power supply system Harness or connector ABS actuator and electric unit (control unit) Intermittent incident

DTC CONFIRMATION PROCEDURE

1. CHECK SELF DIAGNOSTIC RESULT

- 1. Turn ignition switch ON.
- 2. Check for DTC using CONSULT.

Is the DTC detected?

YES (Current DTC)>>Refer to <u>BRC-244, "Diagnosis Procedure"</u>.

YES (Past DTC)>>GO TO 2.

NO >> Inspection End.

2. ERASE SELF DIAGNOSTIC RESULT

Erase the DTC using CONSULT.

Can the DTC be erased?

YES >> Inspection End.

NO >> Refer to <u>BRC-244, "Diagnosis Procedure"</u>.

Diagnosis Procedure

INFOID:0000000011742541

Regarding Wiring Diagram information, refer to <u>BRC-52, "Wiring Diagram"</u>.

1.CONNECTOR INSPECTION

1. Turn ignition switch OFF.

- 2. Disconnect ABS actuator and electric unit (control unit) connectors.
- 3. Check connectors and terminals for deformation, disconnection, looseness or damage.

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace as necessary.

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

Check voltage between ABS actuator and electric unit (control unit) connector E130 terminal 28 and ground.

	and electric unit ol unit)	Ground	Condition	Voltage
Connector	Terminal			

INFOID:000000011742540

C1109 POWER AND GROUND SYSTEM

< DTC/CIRCUIT DIAGNOSIS >

[WITH ICC]

		B <i>U</i>
E130 28 —	Ignition switch ON	Battery voltage
e inspection result normal?	Ignition switch OFF	0V
S >> GO TO 3. >> Repair or replace malfunctioning compon HECK ABS ACTUATOR AND ELECTRIC UNIT (Turn ignition switch OFF. Check continuity between ABS actuator and ele- and ground.	(CONTROL UNIT) GROUND	
ABS actuator and electric unit (control unit)		1
Connector Terminal		Continuity
4		
E130 2	Ground	Yes
ck for intermittent incident. Refer to <u>GI-42, "Interm</u> <u>e inspection result normal?</u> S >> Replace ABS actuator and electric unit (<u>tion"</u> . >> Repair or replace malfunctioning compon	control unit). Refer to <u>BRC</u>	142, "Removal and Installa

C1111 PUMP MOTOR

< DTC/CIRCUIT DIAGNOSIS >

C1111 PUMP MOTOR

DTC Logic

INFOID:000000011675192

[WITH ICC]

DTC DETECTION LOGIC

DTC	Display Item	Malfunction detected condition	Possible causes
C1111 PUMP MOTOR		Diagnosis condition	When ignition is ON.
	Signal (terminal)	Motor relay power supply (termi- nal 3) Motor relay ground circuit (termi- nals 4 and 2)	
		Threshold	When a malfunction is detected in motor or motor relay
		Diagnosis delay time	_

POSSIBLE CAUSE

- Harness or connector
- ABS actuator and electric unit (control unit)
- Fusible link
- Battery power supply system

FAIL-SAFE

DTC CONFIRMATION PROCEDURE

1.CHECK SELF DIAGNOSTIC RESULT

(I) With CONSULT

- 1. Turn ignition switch OFF.
- 2. Depress brake pedal 20 times or more.
- 3. Start the engine and wait for 3 minutes or more.
- 4. Perform "Self Diagnostic Result" mode of "ABS".

Is DTC C1111 detected?

YES >> Proceed to diagnosis procedure. Refer to <u>BRC-246, "Diagnosis Procedure"</u>.

NO >> Inspection End.

Diagnosis Procedure

INFOID:000000011675193

Regarding Wiring Diagram information, refer to <u>BRC-207, "Wiring Diagram"</u> with ICC.

1.CONNECTOR INSPECTION

- 1. Turn ignition switch OFF.
- 2. Disconnect ABS actuator and electric unit (control unit) connectors.
- 3. Check connectors and terminals for deformation, disconnection, looseness or damage.

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace as necessary.

2.CHECK ABS MOTOR AND MOTOR RELAY BATTERY POWER SUPPLY

Check voltage between ABS actuator and electric unit (control unit) connector E130 terminal 3 and ground.

ABS actuator and ele	ectric unit (control unit)		Voltage
Connector	Terminal		(Approx.)
E130	3	Ground	Battery voltage

2015 Murano

C1111 PUMP MOTOR

< DTC/CIRCUIT DIAGNOSIS >

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace malfunctioning components.

3. check abs actuator and electric unit (control unit) ground circuit

Check continuity between ABS actuator and electric unit (control unit) connector E130 terminals 4 and 2 and ground.

ABS actuator and ele	ctric unit (control unit)		Continuity	С
Connector	Terminal		Continuity	
E130	4	Ground	Yes	D
L 130	2	Giouna	165	

Is the inspection result normal?

YES	>> Replace ABS actuator and electric unit (control unit). Refer to BRC-142, "Removal and Installa-
	tion".

NO >> Repair or replace harness.

BRC

Ε

А

В

G

Н

J

Κ

L

Μ

Ν

Ο

Ρ

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

< DTC/CIRCUIT DIAGNOSIS >

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

DTC Logic

INFOID:000000011675194

[WITH ICC]

DTC DETECTION LOGIC

DTC No.	Display Item	DTC detection condition		
		Diagnosis condition	When ignition switch is ON.	
	G SENSOR	Signal (terminal)		
C1113		Threshold	When a malfunction is detected in longitudinal G sensor signal	
		Diagnosis delay time		
		Diagnosis condition	When ignition switch is ON.	
		Signal (terminal)	_	
C1145	YAW RATE SENSOR	Threshold	When a malfunction is detected in yaw rate signal.When yaw rate signal is not con- tinuously received for 2 seconds or moreWhen side G signal is not contin- 	
		Diagnosis delay time	-	
	SIDE G-SEN CIRCUIT	Diagnosis condition	When ignition switch is ON.	
		Signal (terminal)	-	
C1146		Threshold	When a malfunction is detected in side/decel G signal	
		Diagnosis delay time	-	

POSSIBLE CAUSE

- · Harness or connector
- ABS actuator and electric unit (control unit)
- Fuse
- Yaw rate/side/decel G sensor

FAIL-SAFE

DTC CONFIRMATION PROCEDURE

1. CHECK SELF DIAGNOSTIC RESULT

() With CONSULT

- 1. Turn ignition switch OFF to ON.
- 2. Perform "Self Diagnostic Result" mode of "ABS".
- Check DTC.

Is DTC C1113, C1145 or C1146 detected?

- YES >> Proceed to diagnosis procedure. Refer to <u>BRC-248</u>, "Diagnosis Procedure".
- NO >> Inspection End.

Diagnosis Procedure

INFOID:000000011675195

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

BRC-248

Replace ABS actuator and electric unit (control unit).

>> Replace ABS actuator and electric unit (control unit). Refer to BRC-142, "Removal and Installation".

А

В

С

D

Ε

BRC

G

Н

J

Κ

L

Μ

Ν

Ο

Ρ

C1115 ABS SENSOR [ABNORMAL SIGNAL]

< DTC/CIRCUIT DIAGNOSIS >

C1115 ABS SENSOR [ABNORMAL SIGNAL]

DTC Logic

DTC DETECTION LOGIC

NOTE:

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

DTC	Diaplay itom	Malfunction detected condition	Possible cause		
DIC	Display item		Past DTC	Current DTC	
C1115	ABS SENSOR [ABNORMAL SIGNAL]	When difference in wheel speed be- tween any wheel and others is de- tected while the vehicle is driven, because of installation of tires other than specified.	 Low battery voltage Tire size Contamination on sensor rotor of sensor rotor and wheel sensor Wheel sensor mounting bolts loose Vehicle has been operated on 2-wheel dynamometer or towed using a 2-wheel dolly 	 Low battery voltage Tire size Contamination on sensor rotor Position of sensor rotor and wheel sensor Harness or connector Wheel sensor Sensor rotor ABS actuator and electric unit (control unit) Wheel sensor mounting bolts loose Vehicle has been operat- ed on 2-wheel dynamom- eter or towed using a 2- wheel dolly 	

DTC CONFIRMATION PROCEDURE

1. CHECK SELF DIAGNOSTIC RESULT

1. Start engine and drive vehicle at approximately 21 km/h (13 MPH) or more for approximately 5 minutes.

2. Check for DTC using CONSULT.

Is the DTC detected?

YES (Current DTC)>>Refer to BRC-250, "Diagnosis Procedure".

YES (Past DTC)>>GO TO 2.

NO >> Inspection End.

2.ERASE SELF DIAGNOSTIC RESULT

Erase the DTC using CONSULT.

Can the DTC be erased?

- YES >> Inspection End.
- NO >> Refer to <u>BRC-250, "Diagnosis Procedure"</u>.

Diagnosis Procedure

INFOID:0000000011742533

Regarding Wiring Diagram information, refer to <u>BRC-52, "Wiring Diagram"</u>.

CAUTION:

Do not check between wheel sensor terminals.

1.CONNECTOR INSPECTION

1. Disconnect ABS actuator and electric unit (control unit) connector E130 and wheel sensor connector of wheel with DTC.

2. Check terminals for deformation, disconnection, looseness or damage.

Is the inspection result normal?

YES >> GO TO 2.

Revision: October 2014

INFOID:000000011742532

C1115 ABS SENSOR [ABNORMAL SIGNAL]

< DTC/CIRCUIT DIAGNOSIS >

[WITH ICC]

NO >> Repair or	replace as necessary	Ι.			
2.CHECK WHEEL S					А
 Connect ABS acti Turn on the ABS activity NOTE: The green POWE battery in the ABS Spin the wheel of sensor tester. The NOTE: 	ive wheel sensor teste active wheel sensor te ER indicator should ill S active wheel sensor the vehicle by hand e red SENSOR indica	er (J-45741) to wheel s ester power switch. uminate. If the POWE tester before proceed and observe the red s tor should flash on and	sensor using appropriat ER indicator does not ill ing. SENSOR indicator on t d off to indicate an outpu reverse the polarity of	uminate, replace the he ABS active wheel ut signal.	B C D
Does the ABS active v	wheel sensor tester de	etect a signal?			
YES >> GO TO 5. NO >> GO TO 3. 3. CHECK WHEEL S		-			E
Check wheel sensor for					BRC
 Proper installation Physical damage Contamination Is the inspection result YES >> GO TO 4. NO >> Repair or 		1			G
4.CHECK SENSOR	ROTOR				11
Check sensor rotor for • Contamination • Physical damage (m • Foreign material • Looseness	-	etc.)			1
Is the inspection resul	t normal?				J
YES >> Replace t tion" or <u>Bl</u>	he wheel sensor. Refe	EL SENSOR : Remov	IT WHEEL SENSOR : F val and Installation".	Removal and Installa-	K
Check the inflation pre	essure wear and size	of each tire			L
Is the inspection resul					
YES >> GO TO 6. NO >> Adjust tire	e pressure, or replace	()			M
6.CHECK WIRING H					
Check continuity betw	een wheel sensor co	nnector terminals and	ground of wheel with D	TC.	Ν
	Wheel Sensor		Ground	Continuity	0
Wheel	Connector	Terminal	Ciouna	Continuity	U

Ρ

C1115 ABS SENSOR [ABNORMAL SIGNAL]

< DTC/CIRCUIT DIAGNOSIS >

[WITH	ICC]
-------	------

Front LH	E18	1	
	LIU	2	
Front RH	E43	1	
		2	No
Rear LH	C10	1	NO
	CIU	2	
Rear RH	C11	1	
	011	2	

Is the inspection result normal?

YES >> GO TO 7.

NO >> Repair the circuit.

7. CHECK WIRING HARNESS FOR OPEN CIRCUIT

Check continuity between ABS actuator and electric unit (control unit) connector E130 and wheel sensor connector of wheel with DTC.

Wheel sensor	ABS actuator and electric unit (control unit)		Wheel sensor		Continuity
	Connector	Terminal	Connector	Terminal	
Front LH		24	E18	2	
		23		1	
Front RH	E130	12	E43	2	
		11	L45	1	Yes
Rear LH		14	C10	2	
		13		1	
Rear RH		26	C11	2	
Real Mi		25	on	1	

Is the inspection result normal?

YES >> Replace the ABS actuator and electric unit (control unit). Refer to <u>BRC-142, "Removal and Instal-</u><u>lation"</u>.

NO >> Repair the circuit.

C1116 STOP LAMP SWITCH

< DTC/CIRCUIT DIAGNOSIS >

C1116 STOP LAMP SWITCH

DTC Logic

DTC DETECTION LOGIC

NOTE:

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

DTO	Disalawitan		Possi	ble cause	
DTC	Display item	Malfunction detected condition	Past DTC	Current DTC	D
C1116	STOP LAMP SW	When stop lamp switch circuit is open or stop lamp switch is out of adjustment.	 Harness or connector Stop lamp switch 	 Harness or connector Stop lamp switch Stop lamp relay ABS actuator and electric unit (control unit) 	E
DTC C	ONFIRMATION PRO	CEDURE			BR
1. CHE	CK SELF DIAGNOST	IC RESULT			
2. Ch	rn ignition switch ON. eck for DTC using COI <u>DTC detected?</u>	NSULT.			G
YES (Past DTC)>>GO TO 2 >> Inspection End.		dure".		Η
2.ERA	SE SELF DIAGNOST	C RESULT			1
	he DTC using CONSU	LT.			
YES NO	<u>e DTC be erased?</u> >> Inspection End. >> Refer to <u>BRC-253</u>	8. "Diagnosis Procedure".			J
Diagn	osis Procedure			INFOID:000000011742535	K
Regard	ling Wiring Diagram inf	ormation, refer to <u>BRC-52. "Wi</u>	ring Diagram".		I
1 .com		DN			
2. Ch	connect stop lamp rela eck terminals for defor aspection result norma	ay connector and ABS actuator mation, disconnection, loosene	and electric unit (controess or damage.	ol unit) connector.	Μ
YES	>> GO TO 2.				Ν
NО 2. СНЕ	>> Repair or replace CK STOP LAMP SWI	•			0
2. Ch	nnect stop lamp switch eck voltage between ound.	connector. ABS actuator and electric un	it (control unit) connec	tor E130 terminal 7 and	P
	C actuator and alactric unit				

ABS actuator and electric unit (control unit)		Ground	Condition	Voltage (Approx.)	
Connector	Terminal		Condition		
E130	7		Brake pedal depressed	Battery voltage	
E130	7	_	Brake pedal released	0V	

Is the inspection result normal?

А

В

С

C1116 STOP LAMP SWITCH

< DTC/CIRCUIT DIAGNOSIS >

INFOID:000000011742536

- YES >> Adjust stop lamp switch. Refer to <u>BR-15, "Adjustment"</u>.
- NO >> GÓ TO 3.

3.CHECK STOP LAMP SWITCH CIRCUIT FOR OPEN

- 1. Disconnect stop lamp switch connector.
- 2. Check continuity between ABS actuator and electric unit (control unit) connector E130 terminal 7 and stop lamp switch connector E38 terminal 4.

ABS actuator and electric unit (control unit)		Stop	lamp switch	Continuity	
Connector	Terminal	Connector	Terminal	Continuity	
E130	7	E38	4	Yes	

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace as necessary.

4.CHECK STOP LAMP SWITCH CIRCUIT FOR SHORT

Check continuity between ABS actuator and electric unit (control unit) connector E130 terminal 7 and ground.

ABS actuator and electric unit (control unit)		Ground	Continuity
Connector	Connector Terminal		
E130	7	—	No

Is the inspection result normal?

- YES >> Refer to <u>BRC-60, "Work Flow"</u>.
- NO >> Repair harness or connectors.

Component Inspection

1.CHECK STOP LAMP SWITCH

1. Turn the ignition switch OFF.

2. Disconnect stop lamp switch harness connector.

3. Check continuity when stop lamp switch is operated.

Stop lamp switch	Condition	Continuity	
Terminal	Conduon		
3-4	When stop lamp switch is pressed (When brake pedal is depressed)	Yes	
5-4	When stop lamp switch is released (When brake pedal is released)	No	

Is the inspection result normal?

YES >> Inspection End.

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

C1120, C1122, C1124, C1126 ABS IN VALVE SYSTEM

< DTC/CIRCUIT DIAGNOSIS >

C1120, C1122, C1124, C1126 ABS IN VALVE SYSTEM

DTC Logic

DTC DETECTION LOGIC

DTC No.	Display Item	D	TC detection condition	С
		Diagnosis condition	When ignition switch is ON.	
	FR LH IN ABS SOL	Signal (terminal)		
C1120		Threshold	When a malfunction is detected in front LH ABS IN valve	D
		Diagnosis delay time	—	_
		Diagnosis condition	When ignition switch is ON.	E
		Signal (terminal)	—	
C1122		Threshold	When a malfunction is detected in front RH ABS IN valve	BRC
		Diagnosis delay time	_	
		Diagnosis condition	When ignition switch is ON.	G
	RR LH IN ABS SOL	Signal (terminal)	_	
C1124		Threshold	When a malfunction is detected in rear LH ABS IN valve	Н
		Diagnosis delay time		
		Diagnosis condition	When ignition switch is ON.	
		Signal (terminal)	_	
C1126	RR RH IN ABS SOL	Threshold	When a malfunction is detected in rear RH ABS IN valve	
		Diagnosis delay time		J
HarneABS aFusibl	BLE CAUSE ss or connector actuator and electric unit of e link y power supply system	control unit)		K
FAIL-S				L

DTC CONFIRMATION PROCEDURE

1. CHECK SELF DIAGNOSTIC RESULT

(P)With CONSULT

- 1. Turn ignition switch OFF to ON.
- Perform "Self Diagnostic Result" mode of "ABS". 2.

Is DTC C1120, C1122, C1124 or C1126 detected?

YES >> Proceed to diagnosis procedure. Refer to <u>BRC-255, "Diagnosis Procedure"</u>.

>> Inspection End. NO

Diagnosis Procedure

Regarding Wiring Diagram information, refer to BRC-207, "Wiring Diagram".

1.CONNECTOR INSPECTION

INFOID:000000011675199

[WITH ICC]

INFOID:000000011675198

А

В

Μ

Ν

Ο

Ρ

C1120, C1122, C1124, C1126 ABS IN VALVE SYSTEM

< DTC/CIRCUIT DIAGNOSIS >

1. Turn ignition switch OFF.

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

3. Check connectors and terminals for deformation, disconnection, looseness or damage.

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace as necessary.

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

Check voltage between ABS actuator and electric unit (control unit) connector E130 terminal 1 and ground.

ABS actuator and electric unit (control unit)			Voltage
Connector	Terminal		(Approx.)
E130	1	Ground	Battery voltage

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace malfunctioning components.

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

Check continuity between ABS actuator and electric unit (control unit) connector E130 terminals 4 and 2 and ground.

ABS actuator and electric unit (control unit)			Continuity
Connector	Terminal		Continuity
E130	4	Ground	Yes
	2	Ground	163

Is the inspection result normal?

YES >> Replace ABS actuator and electric unit (control unit). Refer to <u>BRC-142</u>, "<u>Removal and Installa-</u> tion".

NO >> Repair or replace malfunctioning components.

C1121, C1123, C1125, C1127 ABS OUT VALVE SYSTEM

< DTC/CIRCUIT DIAGNOSIS >

C1121, C1123, C1125, C1127 ABS OUT VALVE SYSTEM

DTC Logic

DTC DETECTION LOGIC

DTC No.	Display Item DTC detection condition				
		Diagnosis condition	When ignition switch is ON.		
C1121 FR LH C		Signal (terminal)	_		
	FR LH OUT ABS SOL	Threshold	When a malfunction is detected in front LH ABS OUT valve		
		Diagnosis delay time	—		
		Diagnosis condition	When ignition switch is ON.		
		Signal (terminal)	—		
C1123	FR RH OUT ABS SOL	Threshold	When a malfunction is detected in front RH ABS OUT valve		
		Diagnosis delay time			
		Diagnosis condition	When ignition switch is ON		
		Signal (terminal)	-		
C1125	C1125 RR LH OUT ABS SOL	Threshold	When a malfunction is detected in rear LH ABS OUT valve		
		Diagnosis delay time	—		
		Diagnosis condition	When ignition switch is ON.		
		Signal (terminal)			
C1127	RR RH OUT ABS SOL	Threshold	When a malfunction is detected in rear RH ABS OUT valve		
		Diagnosis delay time	-		
HarneABS aFusible	ry power supply system	(control unit)			
_					
DTC C	ONFIRMATION PROC	EDURE			
1. CHE	CK SELF DIAGNOSTIC	RESULT			
	CONSULT				
1. Tur 2. Per	n ignition switch OFF to (form "Self Diagnostic Re	DN. sult" mode of "ABS".			
3. Che	eck DTC.				
SIN(.	モココンエーモヨコンス ビヨヨンち ヘビ				

Is DTC C1121, C1123, C1125 or C1127 detected?

>> Proceed to diagnosis procedure. Refer to <u>BRC-257, "Diagnosis Procedure"</u>. YES

NO >> Inspection End.

Diagnosis Procedure

Regarding Wiring Diagram information, refer to <u>BRC-207, "Wiring Diagram"</u> (with ICC).

А

В

INFOID:000000011675200

Ρ

C1121, C1123, C1125, C1127 ABS OUT VALVE SYSTEM

< DTC/CIRCUIT DIAGNOSIS >

1.CONNECTOR INSPECTION

1. Turn ignition switch OFF.

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

3. Check connectors and terminals for deformation, disconnection, looseness or damage.

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace as necessary.

 $2. {\sf CHECK} \ {\sf ABS} \ {\sf ACTUATOR} \ {\sf AND} \ {\sf ELECTRIC} \ {\sf UNIT} \ ({\sf CONTROL} \ {\sf UNIT}) \ {\sf BATTERY} \ {\sf POWER} \ {\sf SUPPLY}$

Check voltage between ABS actuator and electric unit (control unit) connector E130 terminal 1 (with ICC) and ground.

ABS actuator and electric unit (control unit)			Voltage
Connector	Terminal		(Approx.)
E130	1	Ground	Battery voltage

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace malfunctioning components.

 $\mathbf{3}$. CHECK ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT) GROUND CIRCUIT

Check continuity between ABS actuator and electric unit (control unit) connector E130 terminals 4 and 2 (with ICC) and ground.

ABS actuator and ele	ectric unit (control unit)		Continuity
Connector	Terminal		Continuity
E130	4	Ground	Yes
E130	2		

Is the inspection result normal?

YES >> Replace ABS actuator and electric unit (control unit). Refer to <u>BRC-142</u>, "<u>Removal and Installa-</u> tion".

NO >> Repair or replace malfunctioning components.

C1130 ENGINE SIGNAL

< DTC/CIRCUIT DIAGNOSIS >

C1130 ENGINE SIGNAL

DTC Logic

DTC DETECTION LOGIC

NOTE:

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

	Disalau itaa		Possib	le cause	
DTC	Display item	Malfunction detected condition	Past DTC	Current DTC	D
C1130	ENGINE SIGNAL 1	When a malfunction is detected in ECM system.	 Low battery voltage Harness or connector CAN communication line 	 Low battery voltage CAN communication line ECM ABS actuator and electric unit (control unit) 	E
	ONFIRMATION PRO				BRC
1. CHE	CK SELF DIAGNOST	IC RESULT			
	n ignition switch ON.				
	eck for DTC using COI 0 <u>TC detected?</u>	NSULI.			G
		to <u>BRC-259, "Diagnosis Proced</u>	<u>dure"</u> .		
YES (I NO	Past DTC)>>GO TO 2 >> Inspection End.				Н
•	SE SELF DIAGNOST	IC RESULT			
	he DTC using CONSU				Ι
	e DTC be erased?	L1.			
YES	>> Inspection End.				J
NO		 "Diagnosis Procedure". 			
Diagn	osis Procedure			INFOID:000000011742531	К
1 .CHE	CK SELF DIAGNOST	IC RESULT FOR ENGINE SYS	STEM		
	CONSULT.				1
	Self Diagnostic Rest ECM DTCs detected	ult". Refer to <u>EC-71, "CONSUL</u> "	<u>Function"</u> .		
YES	>> Refer to EC-107.				
NO	>> GO TO 2.				Μ
2.CHE	CK SELF DIAGNOST	IC RESULT FOR ABS ACTUA	TOR AND ELECTRIC UN	NIT (CONTROL UNIT)	
	CONSULT.				Ν
	n ignition switch OFF.	Result" and erase DTCs.			
		hicle for a short period of time. dicator lamp (MIL) turns OFF.			0
		"Self Diagnostic Result".			
	C1130 detected?				Р
YES NO	>> GO TO 3. >> Inspection End.				
-	CK TERMINALS				
		ection of connectors for abnorr	nal conditions.		
	spection result norma				
YES	>> GO TO 4.				

Revision: October 2014

BRC-259

А

В

С

< DTC/CIRCUIT DIAGNOSIS >

NO >> Repair or replace malfunctioning components.

4.CHECK SELF DIAGNOSTIC RESULT FOR ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)

() With CONSULT.

- 1. Perform "Self Diagnostic Result" and erase DTCs.
- 2. Turn ignition switch OFF.
- 3. Start engine and drive vehicle for a short period of time.
- 4. Check that malfunction indicator lamp (MIL) turns OFF.
- 5. Stop vehicle and perform "Self Diagnostic Result".

Is DTC C1130 detected?

YES (Past DTC)>>Inspection End.

YES (Current DTC)>>Replace ABS actuator and electric unit (control unit). Refer to <u>BRC-142, "Removal and</u> Installation".

NO >> Inspection End.

C1140 ACTUATOR RELAY SYSTEM

< DTC/CIRCUIT DIAGNOSIS >

C1140 ACTUATOR RELAY SYSTEM

DTC Logic

DTC DETECTION LOGIC

DTC No.	Display Item	DTC	letection condition	Possible causes
		Diagnosis condition		When ignition switch is ON.
		Signal (terminal)		_
C1140	ACTUATOR RLY	Threshold		When a malfunction is detected in actuator relay
		Diagnosis delay time	9	_
Harne ABS a Fusible	BLE CAUSE ss or connector ictuator and electric unit (co e link y power supply system	ontrol unit)		
FAIL-SA	AFE			
	ONFIRMATION PROCED			
		13011		
2. Per	SULI n ignition switch OFF to ON form "Self Diagnostic Resul eck DTC.			
I <u>s DTC (</u> YES NO	C1140 detected? >> Proceed to diagnosis p >> Inspection End.	rocedure. Refer to	BRC-261, "Diagnosis Proc	cedure".
Diagno	osis Procedure			INFOID:000000011675205
Regardi	ng Wiring Diagram informa	tion, refer to <u>BRC-2</u>	207, "Wiring Diagram" (with	ICC).
4				
I.CON	NECTOR INSPECTION			
2. Diso 3. Che	n ignition switch OFF. connect ABS actuator and e eck connectors and termina			or damage.
<u>ls the in</u> YES	spection result normal? >> GO TO 2.			
NO	>> Repair or replace as ne	ecessary.		
2.CHE	CK ABS ACTUATOR AND	ELECTRIC UNIT (CONTROL UNIT) BATTER	Y POWER SUPPLY
Check v ground.	voltage between ABS actua	ator and electric ur	it (control unit) connector	E130 terminals 3 and 1 and
	ABS actuator and electric unit (control unit)		Voltage

ABS actuator and e	ectric unit (control unit)	_	Voltage (Approx.)
Connector	Terminal		
E130	3	- Ground Battery voltage	Battery voltage
LIGO	1		Ballery vollage

INFOID:000000011675204

В

А

C1140 ACTUATOR RELAY SYSTEM

< DTC/CIRCUIT DIAGNOSIS >

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace malfunctioning components.

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

Check continuity between ABS actuator and electric unit (control unit) connector E130 terminals 4 and 2 and ground.

ABS actuator and ele	ectric unit (control unit)	Continuit	Continuity
Connector	Terminal		Continuity
E120	4	Cround	Voc
E130	2	Ground	Yes

Is the inspection result normal?

NO >> Repair or replace malfunctioning components.

YES >> Replace ABS actuator and electric unit (control unit). Refer to <u>BRC-142. "Removal and Installa-</u> tion".

C1142 PRESS SENSOR

< DTC/CIRCUIT DIAGNOSIS >

C1142 PRESS SENSOR

DTC Logic

DTC DETECTION LOGIC

NOTE:

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

DTC Display item Malfunction detected condition Past DTC Current DTC C1142 PRESS SEN CIRCUIT When a malfunction is detected in master cylinder pressure sensor. • Harness or connector • Stop lamp switch system • Trapped air in hydraulic brake system • Stop lamp switch system • Trapped air in hydraulic brake system DTC CONFIRMATION PROCEDURE 1. CHECK SELF DIAGNOSTIC RESULT 1. Turn ignition switch ON. 2. Check for DTC using CONSULT. Is the DTC detected? - Current DTC	D
C1142 PRESS SEN CIRCUIT When a malfunction is detected in master cylinder pressure sensor. • Harness or connector • Stop lamp switch system • Trapped air in hydraulic brake system • Brake system • Trapped air in hydraulic brake system DTC CONFIRMATION PROCEDURE 1. CHECK SELF DIAGNOSTIC RESULT 1. Turn ignition switch ON. 2. Check for DTC using CONSULT.	E
1. CHECK SELF DIAGNOSTIC RESULT 1. Turn ignition switch ON. 2. Check for DTC using CONSULT.	
 Turn ignition switch ON. Check for DTC using CONSULT. 	BR
2. Check for DTC using CONSULT.	
YES (Current DTC)>>Refer to <u>BRC-263, "Diagnosis Procedure"</u> . YES (Past DTC)>>GO TO 2.	G
NO >> Inspection End. 2.ERASE SELF DIAGNOSTIC RESULT	
	I
Erase the DTC using CONSULT. <u>Can the DTC be erased?</u> YES >> Inspection End. NO >> Refer to <u>BRC-263</u> , "Diagnosis Procedure".	J
Diagnosis Procedure	K
1. CHECK STOP LAMP SWITCH SYSTEM	
Check stop lamp switch system. Refer to <u>BRC-253</u> , "Diagnosis Procedure". <u>Is the inspection result normal?</u>	L
YES >> GO TO 2. NO >> Repair or replace malfunctioning components. 2.CHECK BRAKE FLUID LEAKAGE	Μ
Check brake fluid leakage. Refer to <u>BR-8, "Inspection"</u> .	Ν
Is the inspection result normal?	
YES >> GO TO 3. NO >> Repair or replace malfunctioning components.	\cap
3. CHECK BRAKE PEDAL AND ADJUST STOP LAMP SWITCH	0
Check brake pedal and adjust stop lamp switch. Refer to <u>BR-15, "Adjustment"</u> .	
Is the inspection result normal?	Ρ
YES >> GO TO 4. NO >> Repair or replace malfunctioning components.	
4. CHECK SELF DIAGNOSTIC RESULT	
(P)With CONSULT.	

1. Turn ignition switch ON.

А

В

С

< DTC/CIRCUIT DIAGNOSIS >

- 2. Perform "Self Diagnostic Result".
- 3. Erase DTCs.
- 4. Start engine and drive vehicle for a short period of time.
- 5. Turn ignition switch ON.
- 6. Perform "Self Diagnostic Result".

Is DTC C1142 detected?

- YES >> Replace ABS actuator and electric unit (control unit). Refer to <u>BRC-142</u>, "<u>Removal and Installa-</u> tion".
- NO >> Inspection End.

C1143 STEERING ANGLE SENSOR

< DTC/CIRCUIT DIAGNOSIS >

C1143 STEERING ANGLE SENSOR

DTC Logic

DTC No.	Display Item	DTC	detection condition
		Diagnosis condition	When ignition switch is ON.
	ST ANG SEN CIRCUIT	Signal (terminal)	_
C1143 \$		Threshold	When a malfunction is detected in steering angle sensor
		Diagnosis delay time	
 Harne ABS a Steerin Fuse Ignition 	BLE CAUSE ss or connector actuator and electric unit (c ng angle sensor n power supply system communication line	ontrol unit)	
FAIL-SA			
_			
DTC CO	ONFIRMATION PROCE	DURE	
1. CHE	CK SELF DIAGNOSTIC R	ESULT	
2. Perl 3. Che	n ignition switch OFF to Ol form "Self Diagnostic Res eck DTC. <u>C1143 detected?</u>		iagnosis Procedure".
	osis Procedure		INFOID:000000011675209
Pegardi	ng Wiring Diagram inform	ation, refer to <u>BRC-207, "Wiring D</u>	liagram"
rtegarun		alion, refer to <u>brto-207, Wining b</u>	<u>agram</u> .
1.сом	NECTOR INSPECTION		
2. Disc		electric unit (control unit) and stea als for deformation, disconnection	
	spection result normal?		
YES NO	>> GO TO 2.>> Repair or replace as r	ecessary	
-		ENSOR MOUNTING CONDITION	4
	teering angle sensor mou		
	spection result normal?		
YES	>> GO TO 3.	• • • •	
YES NO	>> Repair or replace mat	functioning components. ENSOR POWER SUPPLY	

[WITH ICC]

INFOID:000000011675208

А

В

C1143 STEERING ANGLE SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[WITH ICC]

- 2. Disconnect steering angle sensor connector.
- 3. Turn ignition switch ON.
- 4. Check voltage between steering angle sensor connector M54 terminal 4 and ground.

Steering a	ngle sensor		Voltage
Connector	Terminal		(Approx.)
M54	4	Ground	Battery voltage

Is the inspection result normal?

YES >> GO TO 5.

NO >> GO TO 4.

4.CHECK STEERING ANGLE SENSOR POWER SUPPLY CIRCUIT

- 1. Turn ignition switch OFF.
- 2. Disconnect IPDM E/R connector E119.
- Check continuity between steering angle sensor connector M54 terminal 4 and IPDM E/R connector E119 terminal 35.

Steering angle sensor		IPDM E/R		Continuity	
Connector	Terminal	Connector	Terminal	Continuity	
M54	4	E119	35	Yes	

4. Check continuity between steering angle sensor connector M54 terminal 4 and ground.

Steering a	ngle sensor	_	Continuity
Connector	Terminal		
M54	4	Ground	No

Is the inspection result normal?

YES >> Perform trouble diagnosis for ignition power supply.

NO >> Repair or replace malfunctioning components.

5. CHECK STEERING ANGLE SENSOR GROUND CIRCUIT

1. Turn ignition switch OFF.

2. Check continuity between steering angle sensor connector M54 terminal 1 and ground.

Steering a	ngle sensor		Continuity
Connector	Terminal		Continuity
M54	1	Ground	Yes

Is the inspection result normal?

YES >> GO TO 6.

NO >> Repair or replace malfunctioning components.

6.CHECK CAN COMMUNICATION LINE

Check "STRG BRANCH LINE CIRCUIT". Refer to <u>LAN-136</u>, "Diagnosis Procedure" (Type 1) or <u>LAN-154</u>, "Diagnosis Procedure" (Type 2).

Is the inspection result normal?

- YES >> Replace ABS actuator and electric unit (control unit). Refer to <u>BRC-142</u>, "<u>Removal and Installa-</u> tion".
- NO >> Repair or replace malfunctioning components.

C1144 INCOMPLETE STEERING ANGLE SENSOR ADJUSTMENT [WITH ICC]

< DTC/CIRCUIT DIAGNOSIS >

C1144 INCOMPLETE STEERING ANGLE SENSOR ADJUSTMENT

DTC Logic

INFOID:000000011675210

А

В

DTC DETECTION LOGIC

DTC No.	No. Display Item Dic detection condition		
		Diagnosis condition	When ignition switch is ON.
		Signal (terminal)	_
C1144	ST ANG SEN SIGNAL	Threshold	When neutral position adjustmer of steering angle sensor is not complete
		Diagnosis delay time	—
HarneABS aSteering	· · · ·	control unit) ustment of steering angle sensor	
—			
DTC CO	ONFIRMATION PROC	EDURE	
1. CHE	CK SELF DIAGNOSTIC	RESULT	
	n ignition switch OFF to C		
 Per Che 	form "Self Diagnostic Res eck DTC. <u>C1144 detected?</u>		Diagnosis Procedure".
2. Per 3. Che Is DTC (YES NO	form "Self Diagnostic Res eck DTC. <u>C1144 detected?</u> >> Proceed to diagnosis	sult" mode of "ABS".	Diagnosis Procedure".
2. Per 3. Che Is DTC 0 YES NO Diagno	form "Self Diagnostic Res eck DTC. <u>C1144 detected?</u> >> Proceed to diagnosis >> Inspection End. DSIS Procedure	sult" mode of "ABS".	INFOID:000000011678
2. Per 3. Che Is DTC 0 YES NO Diagno 1.ADJU	form "Self Diagnostic Res eck DTC. <u>C1144 detected?</u> >> Proceed to diagnosis >> Inspection End. DSIS Procedure	sult" mode of "ABS". s procedure. Refer to <u>BRC-267. "D</u> SITION OF STEERING ANGLE SE	INFOID:000000011678
2. Per 3. Che Is DTC 0 YES NO Diagno 1.ADJU	form "Self Diagnostic Res eck DTC. <u>C1144 detected?</u> >> Proceed to diagnosis >> Inspection End. DSIS Procedure JST THE NEUTRAL POS neutral position adjustm	sult" mode of "ABS". s procedure. Refer to <u>BRC-267. "D</u> SITION OF STEERING ANGLE SE	INFOID:000000011676
2. Per 3. Che Is DTC 0 YES NO Diagno 1.ADJU Perform	form "Self Diagnostic Research DTC. <u>C1144 detected?</u> >> Proceed to diagnosis >> Inspection End. DSIS Procedure JST THE NEUTRAL POS neutral position adjustman >> GO TO 2.	sult" mode of "ABS". s procedure. Refer to <u>BRC-267. "D</u> SITION OF STEERING ANGLE SE ent of steering angle sensor. Refer	INFOID:000000011676
2. Per 3. Che Is DTC of YES NO Diagno 1.ADJU Perform 2.CHE	form "Self Diagnostic Res eck DTC. <u>C1144 detected?</u> >> Proceed to diagnosis >> Inspection End. DSIS Procedure JST THE NEUTRAL POS neutral position adjustm >> GO TO 2. CK SELF DIAGNOSTIC	sult" mode of "ABS". s procedure. Refer to <u>BRC-267. "D</u> SITION OF STEERING ANGLE SE ent of steering angle sensor. Refer	INFOID:000000011676
2. Per 3. Che Is DTC of YES NO Diagno 1.ADJU Perform 2.CHE	form "Self Diagnostic Res eck DTC. <u>C1144 detected?</u> >> Proceed to diagnosis >> Inspection End. DSIS Procedure JST THE NEUTRAL POS neutral position adjustm >> GO TO 2. CK SELF DIAGNOSTIC	sult" mode of "ABS". s procedure. Refer to <u>BRC-267. "D</u> SITION OF STEERING ANGLE SE ent of steering angle sensor. Refer	INFOID:000000011676
2. Per 3. Che Is DTC (YES NO Diagno 1.ADJU Perform 2.CHE Perform Is DTC (form "Self Diagnostic Res eck DTC. <u>C1144 detected?</u> >> Proceed to diagnosis >> Inspection End. DSIS Procedure JST THE NEUTRAL POS neutral position adjustm >> GO TO 2. CK SELF DIAGNOSTIC SULT "Self Diagnostic Result" <u>C1144 detected?</u>	sult" mode of "ABS". s procedure. Refer to <u>BRC-267. "D</u> SITION OF STEERING ANGLE SE ent of steering angle sensor. Refer	INFOID:000000011676
2. Per 3. Che Is DTC of YES NO Diagno 1.ADJU Perform 2.CHE Perform Is DTC of YES	form "Self Diagnostic Res eck DTC. <u>C1144 detected?</u> >> Proceed to diagnosis >> Inspection End. DSIS Procedure JST THE NEUTRAL POS neutral position adjustm >> GO TO 2. CK SELF DIAGNOSTIC SULT "Self Diagnostic Result" <u>C1144 detected?</u> >> GO TO 3.	sult" mode of "ABS". s procedure. Refer to <u>BRC-267. "D</u> SITION OF STEERING ANGLE SE ent of steering angle sensor. Refer	INFOID:000000011676
2. Per 3. Che Is DTC of YES NO Diagno 1.ADJU Perform Perform Is DTC of YES NO	form "Self Diagnostic Res eck DTC. <u>C1144 detected?</u> >> Proceed to diagnosis >> Inspection End. DSIS Procedure JST THE NEUTRAL POS neutral position adjustm >> GO TO 2. CK SELF DIAGNOSTIC SULT "Self Diagnostic Result" <u>C1144 detected?</u> >> GO TO 3. >> Inspection End.	sult" mode of "ABS". s procedure. Refer to <u>BRC-267. "D</u> SITION OF STEERING ANGLE SE ent of steering angle sensor. Refer RESULT mode of "ABS".	INFOID:000000011676
2. Per 3. Che Is DTC (YES NO Diagno 1.ADJU Perform Perform Is DTC (YES NO 3.CHE	form "Self Diagnostic Res eck DTC. <u>C1144 detected?</u> >> Proceed to diagnosis >> Inspection End. DSIS Procedure JST THE NEUTRAL POS neutral position adjustm >> GO TO 2. CK SELF DIAGNOSTIC SULT "Self Diagnostic Result" <u>C1144 detected?</u> >> GO TO 3. >> Inspection End. CK STEERING ANGLE S	sult" mode of "ABS". s procedure. Refer to <u>BRC-267. "D</u> SITION OF STEERING ANGLE SE ent of steering angle sensor. Refer RESULT mode of "ABS".	ENSOR r to <u>BRC-267. "Diagnosis Procedure"</u> .
2. Per 3. Che Is DTC (YES NO Diagno 1.ADJU Perform Is DTC (YES NO 3.CHE Check s	form "Self Diagnostic Res eck DTC. <u>C1144 detected?</u> >> Proceed to diagnosis >> Inspection End. DSIS Procedure JST THE NEUTRAL POS neutral position adjustm >> GO TO 2. CK SELF DIAGNOSTIC SULT "Self Diagnostic Result" <u>C1144 detected?</u> >> GO TO 3. >> Inspection End. CK STEERING ANGLE S	sult" mode of "ABS". s procedure. Refer to <u>BRC-267. "D</u> SITION OF STEERING ANGLE SE ent of steering angle sensor. Refer RESULT mode of "ABS".	ENSOR r to <u>BRC-267. "Diagnosis Procedure"</u> .
2. Per 3. Che Is DTC (YES NO Diagno 1.ADJU Perform Is DTC (YES NO 3.CHE Check s	form "Self Diagnostic Res eck DTC. <u>C1144 detected?</u> >> Proceed to diagnosis >> Inspection End. DSIS Procedure JST THE NEUTRAL POS neutral position adjustm >> GO TO 2. CK SELF DIAGNOSTIC SULT "Self Diagnostic Result" <u>C1144 detected?</u> >> GO TO 3. >> Inspection End. CK STEERING ANGLE S steering angle sensor sys spection result normal?	sult" mode of "ABS". s procedure. Refer to <u>BRC-267. "D</u> <u>SITION OF STEERING ANGLE SE</u> ent of steering angle sensor. Refer <u>RESULT</u> mode of "ABS". <u>SENSOR SYSTEM</u> tem. Refer to <u>BRC-265, "Diagnosis</u>	ENSOR r to <u>BRC-267. "Diagnosis Procedure"</u> .

C1155 BR FLUID LEVEL LOW

< DTC/CIRCUIT DIAGNOSIS >

C1155 BR FLUID LEVEL LOW

DTC Logic

DTC DETECTION LOGIC

NOTE:

- · Check brake fluid level in brake reservoir tank before starting inspection.
- Confirm if DTC is PAST or CURRENT. If DTC is CURRENT, proceed with Diagnosis Procedure. If DTC is PAST, clear DTC. Do not replace ABS actuator and electric unit (control unit) for a PAST DTC.

DTC	Display item	Malfunction detected condition	Possible cause		
DIC			Past DTC	Current DTC	
C1155	BR FLUID LEVEL LOW	Brake fluid level is low or communi- cation line between the ABS actua- tor and electric unit (control unit) and brake fluid level switch is open or shorted.	Brake fluid levelHarness or connectorBrake fluid level switch	 Brake fluid level Harness or connector Brake fluid level switch 	

DTC CONFIRMATION PROCEDURE

1.CHECK BRAKE FLUID LEVEL

Check brake fluid level. Refer to BR-8, "Inspection".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Fill brake fluid to proper level. Refer to <u>BR-8</u>, "Inspection". GO TO 2.

2. CHECK SELF DIAGNOSTIC RESULT

1. Turn ignition switch ON.

2. Check for DTC using CONSULT.

Is the DTC detected?

YES (Current DTC)>>Refer to BRC-268, "Diagnosis Procedure".

YES (Past DTC)>>GO TO 3.

NO >> Inspection End.

3. ERASE SELF DIAGNOSTIC RESULT

Erase the DTC using CONSULT.

Can the DTC be erased?

YES >> Inspection End.

NO >> Refer to <u>BRC-268, "Diagnosis Procedure"</u>.

Diagnosis Procedure

INFOID:000000011742538

Regarding Wiring Diagram information, refer to BRC-52, "Wiring Diagram".

1.CONNECTOR INSPECTION

1. Turn ignition switch OFF.

2. Disconnect combination meter and brake fluid level switch connectors.

3. Check connectors and terminals for deformation, disconnection, looseness or damage.

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace as necessary.

2. CHECK BRAKE FLUID LEVEL SWITCH

Perform the brake fluid level switch component inspection. Refer to <u>BRC-269</u>, "Component Inspection". <u>Is the inspection result normal?</u>

Revision: October 2014

BRC-268

C1155	BR FLU	JID LEVEL	LOW
-------	--------	-----------	-----

< DTC/CIRCUIT DIAGNOSIS >

YES >> GO TO 3.

NO >> Replace brake fluid level switch. Refer to <u>BR-29</u>, "Exploded View".

3.CHECK BRAKE FLUID LEVEL SWITCH HARNESS

1. Check continuity between combination meter connector M24 terminal 25 and brake fluid level switch connector E24 terminal 1.

Combination meter		Brake fluid level switch		Continuity	
Connector	Terminal	Connector	Terminal	Continuity	С
M24	25	E21	1	Yes	

2. Check continuity between combination meter connector and ground.

Combination meter			Continuity	•
Connector	Terminal		Continuity	E
M24	25	Ground	No	-

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace malfunctioning components.

4.CHECK BRAKE FLUID LEVEL SWITCH GROUND CIRCUIT

Check continuity between brake fluid level switch connector E24 terminal 2 and ground.

Brake fluid level switch		Continuity	H	
Connector	Terminal	Continuity		
E24	2	Ground	Yes	1

Is the inspection result normal?

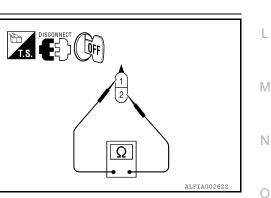
- YES >> Replace ABS actuator and electric unit (control unit). Refer to <u>BRC-142</u>, "<u>Removal and Installa-</u> tion"
- NO >> Repair or replace malfunctioning components.

Component Inspection

1. CHECK BRAKE FLUID LEVEL SWITCH

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

Condition	Continuity
Brake fluid reservoir full	No
Brake fluid reservoir empty	Yes
	Brake fluid reservoir full



Is the inspection result normal?

YES >> Inspection End.

NO >> Replace brake fluid level switch. Refer to <u>BR-29</u>, "Exploded View".

Revision: October 2014

[WITH ICC]

А

В

D

BRC

J

Κ

Ρ

C1160 DECEL G SEN SET

< DTC/CIRCUIT DIAGNOSIS >

C1160 DECEL G SEN SET

DTC Logic

INFOID:000000011675215

[WITH ICC]

DTC DETECTION LOGIC

DTC No.	Display Item	DTC detection condit	ion
		Diagnosis condition	When ignition switch is ON.
		Signal (terminal)	—
C1160	DECEL G SEN SET	Threshold	When calibration of yaw rate/ side/decel G sensor is not com- plete
		Diagnosis delay time	_

POSSIBLE CAUSE

- Harness or connector
- · ABS actuator and electric unit (control unit)
- · Yaw rate/side/decel G sensor
- · Decel G sensor calibration is not performed

FAIL-SAFE

DTC CONFIRMATION PROCEDURE

1.CHECK SELF DIAGNOSTIC RESULT

CONSULT

- 1. Turn ignition switch OFF to ON.
- 2. Perform "Self Diagnostic Result" mode of "ABS".
- 3. Check DTC.

Is DTC C1160 detected?

- YES >> Proceed to diagnosis procedure. Refer to <u>BRC-270, "Diagnosis Procedure"</u>.
- NO >> Inspection End.

Diagnosis Procedure

1.DECEL G SENSOR CALIBRATION

Perform decel G sensor calibration. Refer to BRC-66, "Work Procedure".

>> GO TO 2.

2. CHECK SELF DIAGNOSTIC RESULT

With CONSULT

Perform "Self Diagnostic Result" mode of "ABS".

Is DTC C1160 detected?

YES >> GO TO 3.

NO >> Inspection End.

3.CHECK YAW RATE/SIDE/DECEL G SENSOR SYSTEM

Check yaw rate/side/decel G sensor system. Refer to BRC-248, "Diagnosis Procedure".

Is the inspection result normal?

- YES >> Replace ABS actuator and electric unit (control unit). Refer to <u>BRC-142</u>, "<u>Removal and Installa-</u> <u>tion</u>".
- NO >> Repair or replace malfunctioning components.

C1164, C1165 CV SYSTEM

< DTC/CIRCUIT DIAGNOSIS >

C1164, C1165 CV SYSTEM

DTC Logic

INFOID:000000011675217

А

В

DTC DETECTION LOGIC

DTC No.	Display Item	DTC	detection condition
		Diagnosis condition	When ignition switch is ON.
		Signal (terminal)	-
C1164	CV 1	Threshold	When a malfunction is detected i cut valve 1
		Diagnosis delay time	-
		Diagnosis condition	When ignition switch is ON.
		Signal (terminal)	—
C1165	CV 2	Threshold	When a malfunction is detected i cut valve 2
		Diagnosis delay time	-
AIL-S/		EDURE	
	ONFIRMATION PROC		
	CONSULT		
2. Per	n ignition switch OFF to 0 form "Self Diagnostic Res eck DTC.		
	C1164 or 1165 detected?	-	
YES NO	>> Proceed to diagnosis >> Inspection End.	s procedure. Refer to <u>BRC-271, "D</u>	iagnosis Procedure".
Diagno	osis Procedure		INFOID:000000011675
	ng Wiring Diagram infor <u>1"</u> (without ICC).	mation, refer to <u>BRC-207, "Wiring</u>	Diagram" (with ICC) or BRC-52, "Wirir
1.сом	NECTOR INSPECTION		
2. Dise 3. Che		d electric unit (control unit) connection nals for deformation, disconnection	

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace as necessary.

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

Check voltage between ABS actuator and electric unit (control unit) connector E130 terminals 3 and 1 and ground.

Revision: October 2014

BRC-271

C1164, C1165 CV SYSTEM

< DTC/CIRCUIT DIAGNOSIS >

[WITH ICC]

ABS actuator and e	ectric unit (control unit)	_	Voltage
Connector	Terminal		(Approx.)
E130	3	Ground	Battery voltage
L150	1	Ground	Dattery Voltage

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace malfunctioning components.

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

Check continuity between ABS actuator and electric unit (control unit) connector E130 terminals 4 and 2 (with ICC) and ground.

ABS actuator and ele	ABS actuator and electric unit (control unit)		Continuity
Connector	Terminal		Continuity
E130	4	Ground	Yes
L 130	2	Ground	103

Is the inspection result normal?

YES >> Replace ABS actuator and electric unit (control unit). Refer to <u>BRC-142</u>, "<u>Removal and Installa-</u> <u>tion</u>".

NO >> Repair or replace malfunctioning components.

C1170 VARIANT CODING

< DTC/CIRCUIT DIAGNOSIS >

C1170 VARIANT CODING

DTC Logic

INFOID:000000011675219

А

DTC No.	Display Item	DTC detection condition	Possible causes
		Diagnosis condition	When ignition switch is ON.
		Signal (terminal)	—
C1170	VARIANT CODING	Threshold	When the information in ABS ac tuator and electric unit (control unit) is not the same
		Diagnosis delay time	_
	BLE CAUSE actuator and electric unit (c AFE	ontrol unit)	
	ONFIRMATION PROCE		
1. Tur 2. Per	CONSULT n ignition switch OFF to Of form "Self Diagnostic Resu eck DTC.		
	C1170 detected?		
YES	>> Proceed to diagnosis	procedure. Refer to <u>BRC-273, "Diagnosis</u>	<u>Procedure"</u> .
NO	>> Inspection End.		
Diagn	osis Procedure		INFOID:000000011675
1.REP	LACE ABS ACTUATOR A	ND ELECTRIC UNIT (CONTROL UNIT)	
	e ABS actuator and electric self diagnostic result.	c unit (control unit) even if other DTCs a	re displayed with "VARIANT COI
	>> Replace ABS actuato tion".	r and electric unit (control unit). Refer to	BRC-142, "Removal and Install

< DTC/CIRCUIT DIAGNOSIS >

C1197 VACUUM SENSOR

DTC Logic

DTC DETECTION LOGIC

NOTE:

Before performing Diagnosis Procedure, confirm if DTC is PAST or CURRENT. If DTC is CURRENT, proceed with Diagnosis Procedure. If DTC is PAST, clear DTC. Do not replace ABS actuator and electric unit (control unit) for a PAST DTC.

DTC	Display Item	DTC o	letection condition
		Diagnosis condition	When ignition switch is ON.
		Signal (terminal)	-
C1197	VACUUM SENSOR	Threshold	When the information in ABS ac- tuator and electric unit (control unit) is not the same
		Diagnosis delay time	-

POSSIBLE CAUSE

- · Harness or connector
- Vacuum sensor (brake booster)
- Vacuum piping
- ABS actuator and electric unit (control unit)

FAIL-SAFE

DTC CONFIRMATION PROCEDURE

1. CHECK SELF DIAGNOSTIC RESULT

CONSULT.

- 1. Turn ignition switch OFF to ON.
- 2. Perform "Self Diagnostic Result" mode of "ABS".
- 3. Check DTC.

Is DTC C1197 detected?

YES >> Proceed to diagnosis procedure. Refer to <u>BRC-274, "Diagnosis Procedure"</u>.

NO >> Inspection End.

Diagnosis Procedure

INFOID:000000011675222

Regarding Wiring Diagram information, refer to <u>BRC-207, "Wiring Diagram"</u>.

1.CHECK BRAKE BOOSTER

- 1. Turn the ignition switch OFF.
- 2. Check brake booster. Refer to <u>BR-10, "Inspection"</u>.

Is the inspection result normal?

YES >> GO TO 2.

- NO >> Replace brake booster. Refer to <u>BR-32, "Removal and Installation"</u>.
- 2.CHECK VACUUM PIPING

Check vacuum piping. Refer to <u>BR-22, "FRONT : Exploded View"</u> and <u>BR-26, "REAR : Exploded View"</u>. Is the inspection result normal?

YES >> GO TO 3.

NO >> Replace vacuum piping. Refer to <u>BR-24</u>, "FRONT : Removal and Installation" or <u>BR-27</u>, "REAR : <u>Removal and Installation</u>".

BRC-274

C1197 VACUUM SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[WITH ICC]

А

Ε

Н

Ρ

3. CHECK VACUUM SENSOR CIRCUIT

- 1. Disconnect vacuum sensor harness connector.
- 2. Disconnect ABS actuator and electric unit (control unit) harness connector.
- 3. Check continuity between vacuum sensor harness connector and ABS actuator and electric unit (control В unit) harness connector.

Continuity	ABS actuator and electric unit (control unit)		Vacuum sensor	
Continuity	Terminal	Connector	Terminal	Connector
	22		1	
Yes	20	E130	2	E167
	21	-	3	-

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

Vacuum sensor			Continuity	
Connector	Terminal		Continuity	BRC
	1			
E167	2	Ground	No	
	3	-		G

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace malfunctioning components.

4.CHECK TERMINAL

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

- 42 41-. ... k

Is the inspection result normal?	J
YES >> GO TO 5.	
NO >> Repair or replace malfunctioning components.	
5. REPLACE VACUUM SENSOR	Κ
(P)With CONSULT	
1. Connect ABS actuator and electric unit (control unit) harness connector.	
Replace vacuum sensor. Refer to <u>BR-32</u>, "Exploded View".	L
CAUTION:	
Always replace brake booster because vacuum sensor cannot be disassembled.	
3. Erase "Self Diagnostic Result" mode of "ABS".	M
4. Turn the ignition switch OFF.	
5. Start engine.	
6. Perform "Self Diagnostic Result" mode of "ABS".	Ν
Is DTC C1197 detected?	
YES >> Replace ABS actuator and electric unit (control unit). Refer to <u>BRC-142, "Removal and Installa-</u>	
tion".	\bigcirc
NO >> Inspection End	0

NO >> Inspection End.

< DTC/CIRCUIT DIAGNOSIS >

C1198 VACUUM SENSOR

DTC Logic

DTC DETECTION LOGIC

NOTE:

Before performing Diagnosis Procedure, confirm if DTC is PAST or CURRENT. If DTC is CURRENT, proceed with Diagnosis Procedure. If DTC is PAST, clear DTC. Do not replace ABS actuator and electric unit (control unit) for a PAST DTC.

DTC No.	Display Item	DTC detection condit	ion
-		Diagnosis condition	When ignition switch is ON.
		Signal (terminal)	_
C1198	VACUUM SENSOR	Threshold	When an open circuit is detected in vacuum sensor. When a short circuit is detected in vacuum sensor circuit. When a malfunction is detected in vacuum sensor
		Diagnosis delay time	_

POSSIBLE CAUSE

- Harness or connector
- Vacuum sensor (brake booster)
- ABS actuator and electric unit (control unit)

FAIL-SAFE

DTC CONFIRMATION PROCEDURE

1. CHECK SELF DIAGNOSTIC RESULT

()With CONSULT

- 1. Turn ignition switch OFF to ON.
- 2. Perform "Self Diagnostic Result" mode of "ABS".
- 3. Check DTC.

Is DTC C1198 detected?

YES >> Proceed to diagnosis procedure. Refer to <u>BRC-276, "Diagnosis Procedure"</u>.

NO >> Inspection End.

Diagnosis Procedure

INFOID:000000011675224

Regarding Wiring Diagram information, refer to <u>BRC-207, "Wiring Diagram"</u>.

1. 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 continuity between vacuum sensor harness connector and ABS actuator and electric unit (control unit) harness connector.

C1198 VACUUM SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[WITH ICC]

Connector Terminal Connector Terminal Terminal 1 2 E130 20 Yes 3 20 21 Yes Check continuity between vacuum sensor harness connector and ground. Vacuum sensor		sensor	ABS actuator and electric unit (control unit)		Continuit
E167 2 E130 20 Yes Check continuity between vacuum sensor harness connector and ground. Vacuum sensor Continuity Connector Terminal - Continuity E167 2 Ground No E167 2 Ground No E167 2 Ground No Continuity Ite inspection result normal? YES >> GO TO 2. No >> Repair or replace malfunctioning components. .CHECK TERMINAL Check vacuum sensor pin terminals for damage or loose connection with harness connector. Check ABS actuator and electric unit (control unit) pin terminals for damage or loose connection with ness connector. Check VacUUM SENSOR With CONSULT Connect ABS actuator and electric unit (control unit) harness connector.	Connector	Terminal	Connector	Terminal	Continuity
3 21 Check continuity between vacuum sensor harness connector and ground. Vacuum sensor Continuity Iterminal Continuity Iterminal Continuity Continuity Continuity Iterminal Continuity Iterminal Content colspan="2">Content colspan="2">Content colspan="2">Content colspan="2">Content colspan="2">Content colspan="2">Content colspan="2">Content colspan="2">Content colspan="2"Contecolspan="2"Content colspan="2"Content colspan="2"Contec		1		22	
Check continuity between vacuum sensor harness connector and ground. Vacuum sensor Continuity Contract Contract Contract Content colspanotic replace malfunctioning components. <td>E167</td> <td>2</td> <td>E130</td> <td colspan="2">130 20</td>	E167	2	E130	130 20	
Vacuum sensor Continuity Connector Terminal	-	3		21	
Connector Terminal 1 1 E167 2 Ground No the inspection result normal? YES >> GO TO 2. NO >> Repair or replace malfunctioning components. .CHECK TERMINAL Check vacuum sensor pin terminals for damage or loose connection with harness connector. Check ABS actuator and electric unit (control unit) pin terminals for damage or loose connection with ness connector. the inspection result normal? YES >> GO TO 3. VO >> Repair or replace malfunctioning components. .REPLACE VACUUM SENSOR With CONSULT Connect ABS actuator and electric unit (control unit) harness connector. Replace vacuum sensor. Refer to <u>BR-32. "Exploded View".</u> CAUTION: Always replace brake booster because vacuum sensor cannot be disassembled. Erase "Self Diagnostic Result" mode of "ABS". Turn the ignition switch OFF. Start engine. Perform "Self Diagnostic Result" mode of "ABS". DTC C1198 detected? YES >> Replace ABS actuator and electric unit (control unit). Refer to <u>BRC-142. "Removal and Inst tion".</u>	Check continuit	-	sensor harness conne	ector and ground.	0
E167 2 Ground No the inspection result normal? 3 S <td>Connector</td> <td>Teri</td> <td>minal</td> <td>_</td> <td>Continuity</td>	Connector	Teri	minal	_	Continuity
3 the inspection result normal? YES >> GO TO 2. NO >> Repair or replace malfunctioning components. CHECK TERMINAL Check ABS actuator and electric unit (control unit) pin terminals for damage or loose connection with harness connector. Check ABS actuator and electric unit (control unit) pin terminals for damage or loose connection with ness connector. the inspection result normal? YES >> GO TO 3. NO >> Repair or replace malfunctioning components. REPLACE VACUUM SENSOR With CONSULT Connect ABS actuator and electric unit (control unit) harness connector. Replace vacuum sensor. Refer to <u>BR-32, "Exploded View".</u> CAUTION: Always replace brake booster because vacuum sensor cannot be disassembled. Erase "Self Diagnostic Result" mode of "ABS". Turn the ignition switch OFF. Start engine. Perform "Self Diagnostic Result" mode of "ABS". DTC C1198 detected? YES >> Replace ABS actuator and electric unit (control unit). Refer to <u>BRC-142. "Removal and Instition".</u>			1		
the inspection result normal? YES >> GO TO 2. NO >> Repair or replace malfunctioning components. .CHECK TERMINAL Check vacuum sensor pin terminals for damage or loose connection with harness connector. Check ABS actuator and electric unit (control unit) pin terminals for damage or loose connection with ness connector. the inspection result normal? YES >> GO TO 3. NO >> Repair or replace malfunctioning components. .REPLACE VACUUM SENSOR With CONSULT Connect ABS actuator and electric unit (control unit) harness connector. Replace vacuum sensor. Refer to <u>BR-32, "Exploded View".</u> CAUTION: Always replace brake booster because vacuum sensor cannot be disassembled. Erase "Self Diagnostic Result" mode of "ABS". Turn the ignition switch OFF. .Start engine. Perform "Self Diagnostic Result" mode of "ABS". DTC C1198 detected? YES >> Replace ABS actuator and electric unit (control unit). Refer to <u>BRC-142, "Removal and Inst tion".</u>	E167		2	Ground	No
 YES >> GO TO 2. YO >> Repair or replace malfunctioning components. CHECK TERMINAL Check vacuum sensor pin terminals for damage or loose connection with harness connector. Check ABS actuator and electric unit (control unit) pin terminals for damage or loose connection with ness connector. the inspection result normal? YES >> GO TO 3. YO >> Repair or replace malfunctioning components. .REPLACE VACUUM SENSOR With CONSULT Connect ABS actuator and electric unit (control unit) harness connector. Replace vacuum sensor. Refer to <u>BR-32, "Exploded View"</u>. CAUTION: Always replace brake booster because vacuum sensor cannot be disassembled. Erase "Self Diagnostic Result" mode of "ABS". DTC C1198 detected? YES >> Replace ABS actuator and electric unit (control unit). Refer to <u>BRC-142, "Removal and Instition"</u>. 			3		
 NO >> Repair or replace malfunctioning components. .CHECK TERMINAL Check vacuum sensor pin terminals for damage or loose connection with harness connector. Check ABS actuator and electric unit (control unit) pin terminals for damage or loose connection with ness connector. the inspection result normal? YES >> GO TO 3. NO >> Repair or replace malfunctioning components. .REPLACE VACUUM SENSOR With CONSULT Connect ABS actuator and electric unit (control unit) harness connector. Replace vacuum sensor. Refer to <u>BR-32, "Exploded View"</u>. CAUTION: Always replace brake booster because vacuum sensor cannot be disassembled. Erase "Self Diagnostic Result" mode of "ABS". DTC C1198 detected? YES >> Replace ABS actuator and electric unit (control unit). Refer to <u>BRC-142. "Removal and Instition"</u>. 	the inspection res	ult normal?			
Check ABS actuator and electric unit (control unit) pin terminals for damage or loose connection with ness connector. the inspection result normal? YES >> GO TO 3. NO >> Repair or replace malfunctioning components. .REPLACE VACUUM SENSOR With CONSULT Connect ABS actuator and electric unit (control unit) harness connector. Replace vacuum sensor. Refer to <u>BR-32</u> , "Exploded View". CAUTION: Always replace brake booster because vacuum sensor cannot be disassembled. Erase "Self Diagnostic Result" mode of "ABS". Turn the ignition switch OFF. Start engine. Perform "Self Diagnostic Result" mode of "ABS". DTC C1198 detected? YES >> Replace ABS actuator and electric unit (control unit). Refer to <u>BRC-142</u> , "Removal and Inst tion".	NO >> Repair	or replace malfunction	oning components.		
Connect ABS actuator and electric unit (control unit) harness connector. Replace vacuum sensor. Refer to <u>BR-32, "Exploded View"</u> . CAUTION: Always replace brake booster because vacuum sensor cannot be disassembled. Erase "Self Diagnostic Result" mode of "ABS". Turn the ignition switch OFF. Start engine. Perform "Self Diagnostic Result" mode of "ABS". <u>DTC C1198 detected?</u> YES >> Replace ABS actuator and electric unit (control unit). Refer to <u>BRC-142, "Removal and Inst</u> <u>tion"</u> .	the inspection res YES >> GO TO NO >> Repair	3. or replace malfunction	oning components.		
Always replace brake booster because vacuum sensor cannot be disassembled. Erase "Self Diagnostic Result" mode of "ABS". Turn the ignition switch OFF. Start engine. Perform "Self Diagnostic Result" mode of "ABS". <u>DTC C1198 detected?</u> YES >> Replace ABS actuator and electric unit (control unit). Refer to <u>BRC-142. "Removal and Instation"</u> .	With CONSULT				
Perform "Self Diagnostic Result" mode of "ABS". <u>DTC C1198 detected?</u> YES >> Replace ABS actuator and electric unit (control unit). Refer to <u>BRC-142. "Removal and Inst</u> <u>tion"</u> .	Connect ABS a Replace vacuur				
YES >> Replace ABS actuator and electric unit (control unit). Refer to <u>BRC-142, "Removal and Inst</u> tion".	Connect ABS a Replace vacuur CAUTION: Always replace Erase "Self Dia Turn the ignition	m sensor. Refer to <u>B</u> e brake booster bee gnostic Result" mode	R-32, "Exploded View	<u>/"</u> .	bled.
	Connect ABS a Replace vacuur CAUTION: Always replace Erase "Self Dia Turn the ignition Start engine. Perform "Self D	m sensor. Refer to <u>B</u> e brake booster bee gnostic Result" mode n switch OFF. iagnostic Result" mo	<u>R-32, "Exploded View</u> cause vacuum sense e of "ABS".	<u>/"</u> .	bled.
	Connect ABS a Replace vacuur CAUTION: Always replace Erase "Self Dia Turn the ignition Start engine. Perform "Self D DTC C1198 detect YES >> Replace tion".	m sensor. Refer to <u>B</u> e brake booster bee gnostic Result" mode n switch OFF. iagnostic Result" mo <u>cted?</u> e ABS actuator and	<u>R-32, "Exploded View</u> cause vacuum sense e of "ABS". ode of "ABS".	<u>ر"</u> . or cannot be disassem	
	Connect ABS a Replace vacuur CAUTION: Always replace Erase "Self Dia Turn the ignition Start engine. Perform "Self D DTC C1198 detect YES >> Replace tion".	m sensor. Refer to <u>B</u> e brake booster bee gnostic Result" mode n switch OFF. iagnostic Result" mo <u>cted?</u> e ABS actuator and	<u>R-32, "Exploded View</u> cause vacuum sense e of "ABS". ode of "ABS".	<u>ر"</u> . or cannot be disassem	
	Connect ABS a Replace vacuur CAUTION: Always replace Erase "Self Dia Turn the ignition Start engine. Perform "Self D DTC C1198 detect YES >> Replace tion".	m sensor. Refer to <u>B</u> e brake booster bee gnostic Result" mode n switch OFF. iagnostic Result" mo <u>cted?</u> e ABS actuator and	<u>R-32, "Exploded View</u> cause vacuum sense e of "ABS". ode of "ABS".	<u>ر"</u> . or cannot be disassem	

Ρ

C1199 BRAKE BOOSTER

< DTC/CIRCUIT DIAGNOSIS >

C1199 BRAKE BOOSTER

DTC Logic

INFOID:000000011675225

[WITH ICC]

DTC DETECTION LOGIC

DTC No.	Display Item	DTC detection condit	ion
		Diagnosis condition	When ignition switch is ON.
		Signal (terminal)	_
C1199	BRAKE BOOSTER	Threshold	When brake booster vacuum is approx. 0 kPa (0 mm-Hg) during engine running
		Diagnosis delay time	_

POSSIBLE CAUSE

- · Harness or connector
- Vacuum sensor (brake booster)
- Vacuum piping
- ABS actuator and electric unit (control unit)

FAIL-SAFE

DTC CONFIRMATION PROCEDURE

1. CHECK SELF DIAGNOSTIC RESULT

CONSULT

- 1. Turn ignition switch OFF to ON.
- 2. Perform "Self Diagnostic Result" mode of "ABS".
- Check DTC.

Is DTC C1199 detected?

- YES >> Proceed to diagnosis procedure. Refer to <u>BRC-278, "Diagnosis Procedure"</u>.
- NO >> Inspection End.

Diagnosis Procedure

INFOID:000000011675226

Regarding Wiring Diagram information, refer to BRC-207, "Wiring Diagram".

1.CHECK BRAKE BOOSTER

- 1. Turn the ignition switch OFF.
- 2. Check brake booster. Refer to <u>BR-10, "Inspection"</u>.

Is the inspection result normal?

NO >> Replace brake booster. Refer to <u>BR-32, "Removal and Installation"</u>.

2. CHECK VACUUM PIPING

Check vacuum piping. Refer to <u>BR-22, "FRONT : Exploded View"</u> and <u>BR-26, "REAR : Exploded View"</u>.

Is the inspection result normal?

YES >> GO TO 3.

NO >> Replace vacuum piping. Refer to <u>BR-24, "FRONT : Removal and Installation"</u> or <u>BR-27, "REAR :</u> <u>Removal and Installation"</u>.

3.CHECK VACUUM SENSOR CIRCUIT

1. Disconnect vacuum sensor harness connector.

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

BRC-278

C1199 BRAKE BOOSTER

< DTC/CIRCUIT DIAGNOSIS >

3. Check continuity between vacuum sensor harness connector and ABS actuator and electric unit (control unit) harness connector.

Vacuun	n sensor	ABS actuator and el	ectric unit (control unit)	Continuity
Connector	Terminal	Connector	Terminal	Continuity
	1		22	
E167	2	E130	20	
	3		21	
Check continui	ty between vacuum s	sensor harness connect	or and ground.	
	Vacuum sensor		_	Continuity
Connector	Ter	minal		
		1		
E167		2	Ground	No
		3		
Check vacuum se Check ABS actua ness connector.	ensor pin terminals fo ator and electric unit	oning components. or damage or loose conr (control unit) pin termir		
Check ABS actua ness connector. the inspection re (ES >> GO TC NO >> Repair	ensor pin terminals fo ator and electric unit <u>sult normal?</u> 5. or replace malfunctio	or damage or loose conr (control unit) pin termir		
Check vacuum se Check ABS actua ness connector. <u>the inspection re</u> (ES >> GO TC NO >> Repair .REPLACE VAC	ensor pin terminals fo ator and electric unit <u>sult normal?</u> 5. or replace malfunctio	or damage or loose conr (control unit) pin termir		
Check vacuum se Check ABS actua ness connector. <u>the inspection re</u> (ES >> GO TC NO >> Repair .REPLACE VACE With CONSULT Connect ABS a	ensor pin terminals fo ator and electric unit <u>sult normal?</u> 5. or replace malfunctio JUM SENSOR	or damage or loose conr (control unit) pin termir	als for damage or loo	
Check vacuum se Check ABS actua ness connector. the inspection re (ES >> GO TC NO >> Repair .REPLACE VAC With CONSULT Connect ABS a Replace vacuu CAUTION: Always replace Erase "Self Dia Turn the ignitio Start engine.	ensor pin terminals fo ator and electric unit <u>sult normal?</u> 9 5. or replace malfunctio JUM SENSOR actuator and electric m sensor. Refer to <u>B</u> te brake booster be to gnostic Result" mod n switch OFF.	or damage or loose conr (control unit) pin termin oning components. unit (control unit) harnes BR-32. "Removal and Ins cause vacuum sensor e of "ABS".	als for damage or loo ss connector. stallation".	se connection with ha
Check vacuum se Check ABS actua tess connector. The inspection re ES >> GO TC IO >> Repair REPLACE VACI With CONSULT Connect ABS a Replace vacuu CAUTION: Always replace Erase "Self Dia Turn the ignitio Start engine. Perform "Self E DTC C1199 dete	ensor pin terminals fo ator and electric unit sult normal? 5. or replace malfunctio JUM SENSOR actuator and electric m sensor. Refer to <u>B</u> te brake booster be ignostic Result" mod n switch OFF. Diagnostic Result" mod	or damage or loose conr (control unit) pin termin oning components. unit (control unit) harnes BR-32. "Removal and Ins cause vacuum sensor e of "ABS".	aals for damage or loo s connector. stallation". cannot be disassem	bled.

0

Ρ

[WITH ICC]

C119A VACUUM SENSOR

< DTC/CIRCUIT DIAGNOSIS >

C119A VACUUM SENSOR

DTC Logic

DTC DETECTION LOGIC

NOTE:

Before performing Diagnosis Procedure, confirm if DTC is PAST or CURRENT. If DTC is CURRENT, proceed with Diagnosis Procedure. If DTC is PAST, clear DTC. Do not replace ABS actuator and electric unit (control unit) for a PAST DTC.

DTC No.	Display Item	DTC detection condit	ion
		Diagnosis condition	When ignition switch is ON.
		Signal (terminal)	_
C119A	VACUUM SEN VOLT	Threshold	When a malfunction is detected in supply in power voltage of vacu- um
		Diagnosis delay time	_

POSSIBLE CAUSE

Harness or connector

• Vacuum sensor (brake booster)

ABS actuator and electric unit (control unit)

FAIL-SAFE

DTC CONFIRMATION PROCEDURE

1.CHECK SELF DIAGNOSTIC RESULT

CONSULT

- 1. Turn ignition switch OFF to ON.
- 2. Perform "Self Diagnostic Result" mode of "ABS".
- 3. Check DTC.

Is DTC C119A detected?

YES >> Proceed to diagnosis procedure. Refer to <u>BRC-280, "Diagnosis Procedure"</u>.

NO >> Inspection End.

Diagnosis Procedure

INFOID:000000011675228

Regarding Wiring Diagram information, refer to BRC-207. "Wiring Diagram".

1.CHECK VACUUM SENSOR POWER SUPPLY

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

Vacuur	n sensor		Voltage
Connector	Connector Terminal		(Approx.)
E167	3	Ground	0 V

4. Turn the ignition switch ON. CAUTION:

Never start engine.

5. Check voltage between vacuum sensor harness connector and ground.

C119A VACUUM SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[WITH ICC]

<u> </u>	Vacuum sensor			_	Voltage
Connector		Terminal			(Approx.)
E167		3		Ground	4.75 V – 5.25 V
<u>s the inspection res</u> YES >> GO TO NO >> GO TO	3. 2.				
CHECK VACUU	M SENSOR POWE	R SUPPLY CIR	CUIT		
	S actuator and elect y between vacuum				r and electric unit (contr
Vacuum	sensor	ABS actu	uator and elec	ctric unit (control unit)	
Connector	Terminal	Connect	tor	Terminal	Continuity
E167	3	E130		21	Yes
4. Check continuit	y between vacuum	sensor harness	s connector	and ground.	
	Vacuum sensor				Continuity
Connector	Те	erminal			Continuity
E167		3		Ground	No
	•	ioning compone	ents.		
CHECK VACUU	M SENSOR GROU	ND CIRCUIT		and ground.	
3. CHECK VACUU	M SENSOR GROU	ND CIRCUIT		and ground.	Ocriticuitu
3. CHECK VACUUN	M SENSOR GROU n switch OFF. y between vacuum	ND CIRCUIT		and ground. —	Continuity
3.CHECK VACUUN 1. Turn the ignition 2. Check continuit	VI SENSOR GROU n switch OFF. y between vacuum Vacuum sensor	ND CIRCUIT		and ground. — Ground	Continuity Yes

U1000 CAN COMM CIRCUIT

Description

CAN communication allows a high rate of information transmission through the two communication lines (CAN-H line and CAN-L line), connecting various control units in the system. Each control unit transmits/ receives data but selectively reads required data only.

DTC Logic

INFOID:000000011675230

INFOID:000000011675229

DTC DETECTION LOGIC

DTC No.	Display Item	DTC detection condit	ion
		Diagnosis condition	When ignition switch is ON.
		Signal (terminal)	—
U1000	CAN COMM CIRCUIT	Threshold	When CAN communication sig- nal is not continuously received for 2 seconds or more.
		Diagnosis delay time	_

POSSIBLE CAUSE

CAN communication system malfunction

FAIL-SAFE

Diagnosis Procedure

INFOID:000000011675231

1. CHECK SELF DIAGNOSTIC RESULT

CONSULT

- 1. Turn ignition switch ON.
- 2. Perform "Self Diagnostic Result" mode of "ABS".
- 3. Check DTC.

Is DTC U1000 detected?

- YES >> Proceed to diagnosis procedure. Refer to LAN-21, "Trouble Diagnosis Flow Chart".
- NO >> Refer to <u>GI-42, "Intermittent Incident"</u>.

P < DTC/CIRCUIT DIAGNOS	OWER SUPPLY ANI	O GROUND CIRCUIT	[[WITH ICC]
POWER SUPPLY A		CUIT	
Diagnosis Procedure			INFOID:000000011675232
Regarding Wiring Diagram ir	nformation, refer to PCS-23	, "Wiring Diagram".	
	· · ·		
1. CHECK FUSIBLE LINKS	6		
Check that the following fusi	ble links are not blown.		
	Signal name	F	Fusible link No.
			E (80A)
Batte	ery power supply	A	(250A), C (80A)
		A (250A	A), B (100A), N (40A)
	Y CIRCUIT onnectors E118 and E120. IPDM E/R connectors and	ground.	
IPDM	E/P		No. Han a s
Connector	Terminal	Ground	Voltage (Approx.)
	1		
E118 –	2	—	Battery voltage
E120	3		
3. CHECK GROUND CIRC 1. Disconnect IPDM E/R co	e harness or connectors.	d ground.	
IPDI	M E/R	Ground	Continuity
Connector	Terminal		
E121	7		Yes
E119	41		
Is the inspection result norm YES >> Inspection End. NO >> Repair or replac	e harness or connectors.		

PARKING BRAKE SWITCH

Component Function Check

1. CHECK PARKING BRAKE SWITCH OPERATION

Check that brake warning lamp in combination meter turns ON/OFF when parking brake is operated.

Is the inspection result normal?

YES >> Inspection End.

NO >> Proceed to <u>BRC-284, "Diagnosis Procedure"</u>.

Diagnosis Procedure

1. CHECK PARKING BRAKE SWITCH CIRCUIT

- 1. Turn the ignition switch OFF.
- 2. Disconnect parking brake switch harness connector.
- 3. Disconnect combination meter harness connector.
- 4. Check the continuity between parking brake switch harness connector and combination meter harness connector.

Parking bi	Parking brake switch		Combination meter		
Connector	Terminal	Connector Terminal		- Continuity	
E52	1	M24	26	Yes	

5. Check the continuity between parking brake switch harness connector and ground.

Parking b	rake switch		Continuity
Connector	Terminal		Continuity
E52	1	Ground	No

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace error-detected parts.

2. CHECK PARKING BRAKE SWITCH

Check the parking brake switch. Refer to PB-4, "Inspection and Adjustment".

Is the inspection result normal?

YES >> GO TO 3.

NO >> Replace the parking brake switch. Refer to <u>PB-10, "Removal and Installation"</u>.

3.CHECK PARKING BRAKE SWITCH SIGNAL

(I) With CONSULT

1. Select "Data Monitor"

2. Select "PARK BRAKE SW".

3. Check that the function operates normally according to the following conditions:

Condition	Data Monitor
Operate parking brake	On
Release parking brake	Off

Is the inspection result normal?

YES >> Inspection End.

NO >> GO TO 4.

4.CHECK COMBINATION METER

Check the combination meter. Refer to <u>MWI-20, "CONSULT Function (METER/M&A)"</u>. <u>Is the inspection result normal?</u> INFOID:000000011675233

PARKING BRAKE SWITCH

< DTC/CIRCUIT DIAGNOSIS > [WITH ICC]	
YES >> GO TO 5. NO >> Repair or replace combination meter. Refer to <u>MWI-78, "Removal and Installation"</u> .	А
5.CHECK TERMINAL	
 Check the combination meter pin terminals for damage or loose connection with harness connector. Check the parking brake switch pin terminals for damage or loose connection with harness connector. 	В
Is the inspection result normal?	
YES >> Replace the ABS actuator and electric unit (control unit). Refer to <u>BRC-142</u> , "Removal and Instal <u>lation"</u> .	С
NO >> Repair or replace error-detected parts.	
Component Inspection	5 D
1. CHECK PARKING BRAKE SWITCH	
 Turn the ignition switch OFF. Disconnect parking brake switch harness connector. Check the continuity between parking brake switch terminal and ground. 	E

BRC Parking brake switch Condition Continuity Terminal When parking brake switch is pressed Yes G 1 Ground When parking brake switch is released No Is the inspection result normal? Н

YES >> Inspection End.

NO >> Replace the parking brake switch. Refer to PB-10, "Removal and Installation".

J

Κ

Μ

Ν

Ο

Ρ

< DTC/CIRCUIT DIAGNOSIS >

VDC OFF SWITCH

Component Function Check

INFOID:000000011675236

[WITH ICC]

1. CHECK VDC OFF SWITCH OPERATION

Check that VDC OFF indicator lamp in combination meter turns ON/OFF when VDC OFF switch is operated. Is the inspection result normal?

YES >> Inspection End.

NO >> Proceed to <u>BRC-286, "Diagnosis Procedure"</u>.

Diagnosis Procedure

INFOID:0000000011675237

1. CHECK VDC OFF SWITCH CIRCUIT

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

ABS actuator and ele	ABS actuator and electric unit (control unit)		FF switch	Continuity
Connector	Terminal	Connector	Terminal	Continuity
E130	9	M71	6	Yes

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

ABS actuator and ele	ectric unit (control unit)		Continuity
Connector	Terminal		Continuity
E130	9	Ground	No

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace error-detected parts.

2. CHECK VDC OFF SWITCH GROUND CIRCUIT

Check the continuity between VDC OFF switch harness connector and ground.

VDC OF	FF switch	_	Continuity
Connector	Terminal		Continuity
M71	8	Ground	Yes

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace error-detected parts.

3.CHECK VDC OFF SWITCH

Check the VDC OFF switch. Refer to <u>BRC-287, "Component Inspection"</u>.

Is the inspection result normal?

YES >> GO TO 4.

NO >> Replace the VDC OFF switch. Refer to <u>BRC-144</u>, "Removal and Installation".

4.CHECK VDC OFF SWITCH SIGNAL

CONSULT

T. Select "Data Monitor" mode of "ABS".

2. Select "OFF SW".

3. Check that the function operates normally according to the following conditions:

BRC-286

VDC OFF SWITCH

< DTC/CIRCUIT DIAGNOSIS >

[WITH ICC]

	ndition		Data Monitor
When VDC OFF switch is pressed and meter is in ON status	VDC OFF indicator lamp in combination		On
When VDC OFF switch is pressed and meter is in OFF status	VDC OFF indicator lamp in combination		Off
Is the inspection result normal?			
YES >> Inspection End. NO >> GO TO 5.			
5.CHECK TERMINAL			
harness connector.	l electric unit (control unit) pin term pin terminals for damage or loose o		-
Is the inspection result normal?			
	tuator and electric unit (control unit)). Refer to <u>E</u>	RC-142, "Removal and Insta
NO >> Repair or replace er	ror-detected parts.		
Component Inspection			INFOID:0000000116752
1. CHECK VDC OFF SWITCH			
 Turn the ignition switch OFF. Disconnect VDC OFF switch Check the continuity betwee 		nector.	
VDC OFF switch	Condition		Continuity
VDC OFF switch Terminal	- Condition		Continuity
Terminal	Condition When VDC OFF switch is pressed		Continuity Yes
Terminal 6– 8 Is the inspection result normal? YES >> Inspection End.	When VDC OFF switch is pressed	oval and In	Yes
Terminal 6– 8 Is the inspection result normal? YES >> Inspection End.	When VDC OFF switch is pressed When VDC OFF switch is not pressed	oval and In	Yes
Terminal 6– 8 Is the inspection result normal? YES >> Inspection End.	When VDC OFF switch is pressed When VDC OFF switch is not pressed	oval and In	Yes
Terminal 6– 8 Is the inspection result normal? YES >> Inspection End.	When VDC OFF switch is pressed When VDC OFF switch is not pressed	oval and In	Yes
Terminal 6– 8 Is the inspection result normal? YES >> Inspection End.	When VDC OFF switch is pressed When VDC OFF switch is not pressed	oval and In	Yes

ABS WARNING LAMP

Component Function Check

1. CHECK ABS WARNING LAMP FUNCTION

Check that ABS warning lamp in combination meter turns ON for 1 second after ignition switch is turned ON. CAUTION:

Never start the engine.

Is the inspection result normal?

- YES >> Inspection End.
- NO >> Proceed to <u>BRC-288. "Diagnosis Procedure"</u>.

Diagnosis Procedure

INFOID:000000011675240

 $1. \mbox{check}$ abs actuator and electric unit (control unit) power supply and ground circuit

Perform the trouble diagnosis for ABS actuator and electric unit (control unit) power supply and ground circuit. Refer to <u>BRC-288</u>, "Diagnosis Procedure".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace error-detected parts.

2.PERFORM SELF DIAGNOSTIC RESULT

CONSULT

- $\check{1}$. Turn the ignition switch OFF \rightarrow ON.
 - CAUTION:
 - Be sure to wait 10 seconds after turning ignition switch OFF or ON.
 - Start the engine.
- 2. Repeat step 1 two or more times.
- 3. Perform "Self Diagnostic Result" for "ABS".

Is any DTC detected?

YES >> Check the DTC. Refer to <u>BRC-50, "DTC Index"</u>.

NO >> GO TO 3.

3.CHECK ABS WARNING LAMP SIGNAL

- T. Select "ABS", "Data Monitor" and "ABS WARN LAMP" in this order.
- 2. Turn the ignition switch OFF.
- 3. Check that data monitor displays "On" for 1 second after ignition switch is turned ON and then changes to "Off".

CAUTION:

Never start the engine.

Is the inspection result normal?

- YES >> Replace the combination meter. Refer to <u>MWI-78, "Removal and Installation"</u>.
- NO >> Replace the ABS actuator and electric unit (control unit). Refer to <u>BRC-142. "Removal and Instal-</u><u>lation"</u>.

BRAKE WARNING LAMP

< DTC/CIRCUIT DIAGNOSIS >	[WITH ICC]
BRAKE WARNING LAMP	A
Component Function Check	NFOID:000000011675241
1. CHECK BRAKE WARNING LAMP FUNCTION	В
Check that brake warning lamp in combination meter turns ON for 1 second after ignition switch CAUTION:	is turned ON.
Never start the engine.	С
Is the inspection result normal?	
YES >> GO TO 2. NO >> Proceed to <u>BRC-289, "Diagnosis Procedure"</u> .	D
2. CHECK BRAKE WARNING LAMP FUNCTION	
Check that brake warning lamp turns ON/OFF when parking brake is operated.	
NOTE:	E
Brake warning lamp turns ON when parking brake is operated (when parking brake switch is OI Is the inspection result normal?	N).
YES $>>$ GO TO 3.	BRO
NO >> Check the parking brake switch system. Refer to <u>BRC-284, "Diagnosis Procedure"</u> .	
3. CHECK BRAKE WARNING LAMP FUNCTION	G
Check that brake warning lamp in combination meter turns ON/OFF when brake fluid level swit while brake fluid level in reservoir tank is within the specified level. NOTE:	tch is operated
Brake warning lamp turns ON when brake fluid is less than the specified level (when brake fluid ON).	l level switch is
Is the inspection result normal?	
YES >> Inspection End.	I
NO >> Check the brake fluid level switch system. Refer to <u>BR-29, "Exploded View"</u> .	
Diagnosis Procedure	INFOID:000000011675242 J
1. CHECK ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT) POWER SUPPLY AND COULT	
CUIT	K
Perform the trouble diagnosis for ABS actuator and electric unit (control unit) power supply and Refer to <u>BRC-283</u> , "Diagnosis Procedure".	ground circuit.
Is the inspection result normal?	L
YES >> GO TO 2.	
NO >> Repair or replace error-detected parts.	M
2.PERFORM THE SELF DIAGNOSTIC RESULT	
CAUTION:	Ν
 Be sure to wait 10 seconds after turning ignition switch OFF or ON. Start the engine. 	
 Repeat step 1 two or more times. Perform "Self Diagnostic Result" mode of "ABS". 	0
Is any DTC detected?	
YES >> Check the DTC. Refer to <u>BRC-50, "DTC Index"</u> . NO >> GO TO 3.	Р
3. CHECK BRAKE WARNING LAMP SIGNAL	
BCONSULT	

CONSULT
Select "ABS", "Data Monitor" and "EBD WARN LAMP" in this order.
Turn the ignition switch OFF.

BRAKE WARNING LAMP

< DTC/CIRCUIT DIAGNOSIS >

3. Check that data monitor displays "On" for 1 second after ignition switch is turned ON and then changes to "Off".

CAUTION:

Never start the engine. Is the inspection result normal?

- YES >> Replace the combination meter. Refer to <u>MWI-78</u>, "<u>Removal and Installation</u>".
- NO >> Replace the ABS actuator and electric unit (control unit). Refer to <u>BRC-142. "Removal and Instal-</u><u>lation"</u>.

VDC WARNING LAMP

	ARNING LAMP
< DTC/CIRCUIT DIAGNOSIS >	
VDC WARNING LAMP	
Component Function Check	INFOID:000000011675243
1. CHECK VDC WARNING LAMP FUNCTION	
CAUTION:	er turns ON for 1 second after ignition switch is turned ON.
Never start the engine. Is the inspection result normal?	
YES >> Inspection End.	
NO >> Proceed to <u>BRC-291, "Diagnosis Proc</u>	<u>edure"</u> .
Diagnosis Procedure	INFOID:000000011675244
1. CHECK ABS ACTUATOR AND ELECTRIC UNIT	T (CONTROL UNIT) POWER SUPPLY AND GROUND CIR-
Refer to BRC-283, "Diagnosis Procedure".	d electric unit (control unit) power supply and ground circuit.
<u>Is the inspection result normal?</u> YES >> GO TO 2.	
NO >> Repair or replace error-detected parts.	
2. PERFORM THE SELF DIAGNOSTIC RESULT	
 CONSULT Turn the ignition switch OFF → ON. CAUTION: 	
 Be sure to wait 10 seconds after turning i Start the engine. 	gnition switch OFF or ON.
 Repeat step 1 two or more times. Perform "Self Diagnostic Result" mode of "ABS" 	S".
Is any DTC detected?	
YES >> Check the DTC. Refer to <u>BRC-50, "DT</u> NO >> GO TO 3.	<u>'C Index"</u> .
3. CHECK VDC WARNING LAMP SIGNAL	
 CONSULT Select "ABS", "Data Monitor" and "SLIP/VDC L Turn the ignition switch OFF. 	AMP" in this order.
0	proximately 1 second after ignition switch is turned ON and
Never start the engine.	
	to MWI-78 "Removal and Installation"
· · · · · · · · · · · · · · · · · · ·	c unit (control unit). Refer to <u>BRC-142, "Removal and Instal-</u>

< DTC/CIRCUIT DIAGNOSIS >

VDC OFF INDICATOR LAMP

Component Function Check

1.CHECK VDC OFF INDICATOR LAMP FUNCTION (1)

Check that VDC OFF indicator lamp in combination meter turns ON for 1 second after ignition switch is turned ON.

CAUTION:

Never start the engine.

Is the inspection result normal?

YES >> GO TO 2.

NO >> Proceed to <u>BRC-292</u>, "Diagnosis Procedure".

2.CHECK VDC OFF INDICATOR LAMP FUNCTION (2)

Check that VDC OFF indicator lamp in combination meter turns ON/OFF when VDC OFF switch is operated. <u>Is the inspection result normal?</u>

YES >> Inspection End.

NO >> Check the VDC OFF switch system. Refer to <u>BRC-286, "Diagnosis Procedure"</u>.

Diagnosis Procedure

INFOID:000000011675246

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

Perform the trouble diagnosis for ABS actuator and electric unit (control unit) power supply and ground circuit. Refer to <u>BRC-283, "Diagnosis Procedure"</u>.

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace error-detected parts.

2.CHECK VDC OFF INDICATOR LAMP SIGNAL

CONSULT

- T. Select "ABS", "Data Monitor" and "OFF LAMP" in this order.
- 2. Turn the ignition switch OFF.
- Check that data monitor displays "On" for 1 second after ignition switch is turned ON and then changes to "Off".

CAUTION:

Never start the engine.

Is the inspection result normal?

YES >> GO TO 3.

NO >> Replace the ABS actuator and electric unit (control unit). Refer to <u>BRC-142. "Removal and Instal-</u><u>lation"</u>.

3.CHECK VDC OFF INDICATOR LAMP SIGNAL

CONSULT

- T. Select "ABS", "Data Monitor" and "OFF LAMP" in this order.
- 2. Check that data monitor displays "On" or "Off" each time VDC OFF switch is operated.

Is the inspection result normal?

- YES >> Replace the combination meter. Refer to <u>MWI-78, "Removal and Installation"</u>.
- NO >> Check the VDC OFF switch system. Refer to <u>BRC-286. "Diagnosis Procedure"</u>.

INFOID:000000011675245

FORWARD EMERGENCY BRAKING	Λ
Diagnosis Procedure	A
1.FORWARD EMERGENCY BRAKING DIAGNOSIS	В
 The system will be cancelled automatically with a beep sound and FEB warning lamp on the combination meter will illuminate, when the system will not operate properly. When the FEB warning lamp continues to illuminate even if the FEB system is turned on after the engine restarts, perform the trouble-diagnosis. 	
>> Go to ICC. Refer to <u>CCS-66, "Work Flow"</u> .	D
	_
	E

BRC

G

Н

J

Κ

L

Μ

Ν

Ο

Ρ

Revision: October 2014

< DTC/CIRCUIT DIAGNOSIS >

[WITH ICC]

SYMPTOM DIAGNOSIS DRIVER ASSISTANCE SYSTEM SYMPTOMS

Symptom Table

INFOID:000000011583493

Before performing diagnosis, check that it is not a symptom caused by normal operation. Refer to <u>BRC-177</u>, <u>"BRAKE ASSIST (WITH PREVIEW FUNCTION) : System Description-Forward Emergency Braking"</u>.

Symptom	Confirmation item	Inspection item/Reference page
FEB system display does not il- luminate	All of system display does not illuminate	System settings cannot be turned ON/OFF Refer to <u>BRC-295, "Diagnosis</u> <u>Procedure"</u>
	Other information display is not illuminated	Combination meter Refer to <u>MWI-29, "DTC Index"</u>
FEB warning lamp does not illu- minate	All of system display does not illuminate	System settings cannot be turned ON/OFF Refer to <u>BRC-295, "Diagnosis</u> <u>Procedure"</u>
	Other information display is not illuminated	Combination meter Refer to <u>MWI-29, "DTC Index"</u>
FEB warning buzzer is not sounding (Warning display is functioning normally)	_	Chime does not sound. Refer to <u>CCS-138, "Description"</u> .

SYSTEM SETTINGS CANNOT BE TURNED ON/OFF ON THE INTEGRAL SWITCH

< SYMPTOM DIAGNOSIS >

[WITH ICC]

SYSTEM SETTINGS CANNOT BE TURNED ON/OFF ON THE INTEGRAL SWITCH

Symptom Table

INFOID:000000011555519

А

В

С

CAUTION:

Perform the "Self Diagnostic Result" with CONSULT before the symptom diagnosis. Perform the trouble diagnosis if any DTC is detected.

	Symptom		Inspection item/Reference page
FEB system does not tur		warning lamp is not turned ON⇔OFF n operating integral switch	BRC-295, "Diagnosis Procedure"
Description			INFOID:000000011555520
illuminated.	does not illuminate e		ated when FEB warning lamp is not
nated.		n if the integral switch is operate morized even if the ignition switcl	d when FEB warning lamp is illumi-
Diagnosis Proce			INFOID:000000011555521
		JLT (LASER/RADAR)	
1. Perform "Self Dia	ignostic Result" mod C is detected in "Sel	e of "ICC/ADAS" with CONSULT	C/ADAS" with CONSULT. Refer to
<u>Is any DTC detected?</u> YES >> GO TO 9	_		
NO >> GO TO 2			
NO >> GO TO 2 2.STEERING SWITC			
2.STEERING SWITC 1. Start the engine.	CH INSPECTION	normally in "Data Monitor" of "LA	SER/RADAR" with CONSULT.
2.STEERING SWITC 1. Start the engine. 2. Check that "FEB Is inspection result no	CH INSPECTION SELECT" operates r ormal?	normally in "Data Monitor" of "LA	SER/RADAR" with CONSULT.
2.STEERING SWITC 1. Start the engine. 2. Check that "FEB Is inspection result no YES >> GO TO 6	CH INSPECTION SELECT" operates r ormal?	normally in "Data Monitor" of "LA	SER/RADAR" with CONSULT.
2.STEERING SWITC 1. Start the engine. 2. Check that "FEB Is inspection result no YES >> GO TO 6	CH INSPECTION SELECT" operates r ormal?		SER/RADAR" with CONSULT.
2.STEERING SWITC 1. Start the engine. 2. Check that "FEB Is inspection result no YES >> GO TO 6 NO >> GO TO 3 3.CHECK STEERIN	CH INSPECTION SELECT" operates i ormal? G SWITCH RESIST.		SER/RADAR" with CONSULT.
2.STEERING SWITC 1. Start the engine. 2. Check that "FEB Is inspection result no YES >> GO TO 6 NO >> GO TO 3 3.CHECK STEERIN Check resistance betw	CH INSPECTION SELECT" operates r ormal? G SWITCH RESIST, ween the following s	ANCE	
2.STEERING SWITC 1. Start the engine. 2. Check that "FEB Is inspection result no YES >> GO TO 6 NO >> GO TO 3 3.CHECK STEERIN Check resistance betw	CH INSPECTION SELECT" operates i ormal? G SWITCH RESIST.	ANCE	SER/RADAR" with CONSULT. Resistance (Ω) (Approx.)
2.STEERING SWITC 1. Start the engine. 2. Check that "FEB Is inspection result no YES >> GO TO 6 NO >> GO TO 3 3.CHECK STEERIN Check resistance betw Steering	CH INSPECTION SELECT" operates in ormal? G SWITCH RESIST ween the following s	ANCE teering switch terminals:	Resistance (Ω) (Approx.)

19

YES >> GO TO 4.

16

NO >> Replace steering wheel switch. Refer to <u>AV-66, "Removal and Installation"</u>.

Enter

Menu Up

Menu Down

4.CHECK SPIRAL CABLE

Depress OK switch.

Depress Δ switch.

Depress ∇ switch.

2023

121

321

SYSTEM SETTINGS CANNOT BE TURNED ON/OFF ON THE INTEGRAL SWITCH

< SYMPTOM DIAGNOSIS >

[WITH ICC]

Check continuity between the following spiral cable terminals:

Spi	ral cable	Continuity
Te	erminal	Continuity
16	9	
17	8	Yes
19	11	

Is the inspection result normal?

YES >> GO TO 5.

NO >> Replace spiral cable. Refer to <u>SR-15, "Removal and Installation"</u>.

5. CHECK STEERING SWITCH CIRCUIT

- 1. Turn ignition switch OFF.
- 2. Disconnect combination meter harness connector M24 and spiral cable harness connector M30.
- Check continuity between combination meter harness connector M24 and spiral cable harness connector M30.

Combinati	on meter		Spiral cable	Continuity
Connector	Terminal	Connector	Terminal	Continuity
	21		11	
M24	22	M30	9	Yes
	23		8	

4. Check continuity between combination meter harness connector M24 and ground.

Со	mbination meter		Continuity
Connector	Terminal		Continuity
	21	Ground	
M24	22		No
	23		

Is the inspection result normal?

YES >> GO TO 6.

NO >> Repair or replace harness or connector.

O.PERFORM THE DIAGNOSTIC RESULT (METER/M&A)

- 1. Perform "Self Diagnostic Result" mode of "METER/M&A" with CONSULT.
- Check if the DTC is detected in "Self Diagnostic Result" mode of "METER/M&A" with CONSULT. Refer to <u>CCS-51, "DTC Index"</u>.

Is any DTC detected?

NO >> GO TO 7.

7.FEB WARNING LAMP

1. Select the active test item "METER LAMP" of "ICC/ADAS".

2. Check if the FEB warning lamp illuminates when the test item is operated.

Is inspection result normal?

YES >> Refer to <u>CCS-66, "Work Flow"</u>.

NO >> GO TO 8.

8.CHECK DATA MONITOR OF COMBINATION METER

Check that "BA W/L operates normally in "Data Monitor""METER/M&A".

Is inspection result normal?

YES >> Replace the combination meter. Refer to <u>MWI-78, "Removal and Installation"</u>.

NO >> Replace the ICC sensor. Refer to <u>MWI-78, "Removal and Installation"</u>.

BRC-296

SYSTEM SETTINGS CANNOT BE TURNED ON/OFF ON THE INTEGRAL SWITCH

 < SYMPTOM DIAGNOSIS >
 [WITH ICC]

 9.REPAIR OR REPLACE MALFUNCTIONING PARTS
 A

 Repair or replace malfunctioning parts.
 A

 >> GO TO 10.
 B

 10.CHECK FEB SYSTEM
 C

 Check that FEB warning lamp turned ON⇔OFF, when operating steering switch.
 C

 >> Inspection End.
 D

BRC

Ε

G

Н

J

Κ

L

Μ

Ν

Ο

EXCESSIVE OPERATION FREQUENCY

< SYMPTOM DIAGNOSIS >

EXCESSIVE OPERATION FREQUENCY

Description

VDC function, TCS function, ABS function, EBD function, brake assist function or hill start assist function operates in excessive operation frequency.

Diagnosis Procedure

1.CHECK BRAKIN	G FORCE
----------------	---------

Check brake force using a brake tester.

Is the inspection result normal?

YES >> GO TO 2.

NO >> Check brake system.

2.CHECK FRONT AND REAR AXLE

Check that there is no excessive looseness in front and rear axle.

- 2WD: Refer to <u>FAX-7, "Inspection"</u> (front) or <u>RAX-7, "Inspection"</u> (rear).
 AWD: Refer to <u>FAX-7, "Inspection"</u> (front) or <u>DLN-88, "Inspection"</u> (rear).

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace error-detected parts.

 ${
m 3.}$ Check wheel sensor

Check wheel sensor.

- Check installation and damage of wheel sensor.
- Check connection of wheel sensor harness connector.
- Check terminal of wheel sensor harness connector.

Is the inspection result normal?

YES >> GO TO 4. NO

- >> Repair installation or replace wheel sensor.
 - Front wheel sensor: Refer to BRC-137, "FRONT WHEEL SENSOR : Removal and Installation".
 - Rear wheel sensor: Refer to BRC-139, "REAR WHEEL SENSOR : Removal and Installation".

4.CHECK SENSOR ROTOR

Check that there is no looseness, damage or foreign material on sensor rotor.

Is the inspection result normal?

- YES >> GO TO 5. NO
 - >> Repair installation or replace sensor rotor.
 - · Front sensor rotor: Refer to BRC-141, "FRONT SENSOR ROTOR : Removal and Installation -Front Sensor Rotor".
 - · Rear sensor rotor: Refer to BRC-141, "REAR SENSOR ROTOR : Removal and Installation -Rear Sensor Rotor".

5.CHECK THAT WARNING LAMP TURNS OFF

Check that ABS warning lamp, brake warning lamp and VDC warning lamp turn OFF approximately 1 second after key switch is turned ON and stay in OFF status during driving. CAUTION:

Brake warning lamp turns ON when parking brake is operated (parking brake switch is ON) or brake fluid is less than the specified level (brake fluid level switch is ON).

Is the inspection result normal?

YES >> Normal

NO >> GO TO 6.

 $\mathbf{0}$.PERFORM THE SELF DIAGNOSTIC RESULT

1. Turn the ignition switch OFF \rightarrow ON. CAUTION:

INFOID:000000011804840

INFOID-0000000011804841

EXCESSIVE OPERATION FREQUENCY		
< SYMPTOM DIAGNOSIS >	[WITH ICC]	
 Be sure to wait 10 seconds after turning ignition switch OFF or ON. Set the vehicle to READY/Start the engine. Repeat step 1 two or more times. Perform "Self Diagnostic Result" mode of "ABS". 		А
Is any DTC detected?		В
YES >> Check the DTC. Refer to <u>BRC-50, "DTC Index"</u> . NO >> Inspection End.		С
		D
		E
		BRC

G

Н

J

Κ

L

M

Ν

0

Р

UNEXPECTED BRAKE PEDAL REACTION

< SYMPTOM DIAGNOSIS >

UNEXPECTED BRAKE PEDAL REACTION

Description

A malfunction of brake pedal feel (height or other) is detected when brake pedal is depressed.

Diagnosis Procedure

1.CHECK FRONT AND REAR AXLE

Check that there is no excessive looseness in front and rear axle.

- 2WD: Refer to <u>FAX-7, "Inspection"</u> (front) or <u>RAX-7, "Inspection"</u> (rear).
- AWD: Refer to FAX-7, "Inspection" (front) or DLN-88, "Inspection" (rear).

Is the inspection result normal?

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

Check disc rotor runout.

- · Front: Refer to BR-11, "DISC BRAKE ROTOR : Inspection".
- Rear: Refer to <u>BR-13</u>, "DISC BRAKE ROTOR : Inspection".

Is the inspection result normal?

- YES >> GO TO 3.
- NO >> Refinish the disc rotor.

3.CHECK BRAKE FLUID LEAKAGE

Check fluid leakage.

Refer to <u>BR-8, "Inspection"</u>.

Is the inspection result normal?

- YES >> GO TO 4.
- NO >> Repair or replace error-detected parts.
- **4.**CHECK BRAKE PEDAL

Check each item of brake pedal. Refer to BR-7, "Inspection".

Is the inspection result normal?

- YES >> GO TO 5.
- NO >> Adjust each item of brake pedal. Refer to <u>BR-15, "Adjustment"</u>.

5.CHECK BRAKING FORCE

Check brake force using a brake tester.

Is the inspection result normal?

YES >> GO TO 6.

NO >> Check each component of brake system.

6.CHECK BRAKE PERFORMANCE

Disconnect ABS actuator and electric unit (control unit) connector so that ABS does not operate. Check that brake force is normal in this condition. Connect harness connectors after checking.

Is the inspection result normal?

- YES >> Normal
- NO >> Check each component of brake system.

INFOID:000000011804843

INFOID:000000011804842

THE BRAKING DISTANCE IS LONG

THE BRAKING DISTANCE IS LONG	
< SYMPTOM DIAGNOSIS >	[WITH ICC]
THE BRAKING DISTANCE IS LONG	
Description	INFOID:000000011804844
Brake stopping distance is long when ABS function is operated.	
Diagnosis Procedure	INFOID:000000011804845
CAUTION: Brake stopping distance on a slippery road like a rough road, gravel road or snowy rolonger when ABS is operated than when ABS is not operated. 1.CHECK BRAKING FORCE Check brake force using a brake tester.	oad may become
Is the inspection result normal?	
YES >> GO TO 2.	
NO >> Check each component of brake system. 2.CHECK BRAKE PERFORMANCE	
Disconnect ABS actuator and electric unit (control unit) connector so that ABS does not ope stopping distance in this condition. Connect harness connectors after checking. Is the inspection result normal?	rate. Check brake
YES >> Normal NO >> Check each component of brake system.	
	l

< SYMPTOM DIAGNOSIS >

DOES NOT OPERATE

Description

VDC function, TCS function, ABS function, EBD function, brake assist function or hill start assist function does not operate.

Diagnosis Procedure

INFOID:000000011804847

CAUTION:

- VDC function, TCS function, ABS function, EBD function, brake assist function and hill start assist function never operate when the vehicle speed is 10 km/h (6.2 MPH) or less. However, TCS function, brake limited slip differential (BLSD) function and hill start assist function operate when the vehicle speed is 0 km/h (0 MPH) (the vehicle is in stop status).
- VDC function and TCS function never operate when VDC OFF switch is operated (when VDC OFF indicator lamp turns ON).
- **1.**CHECK ABS WARNING LAMP

Check that ABS warning lamp, brake warning lamp and VDC warning lamp turn ON and turn OFF approximately 1 second after key switch is turned ON. Check that ABS warning lamp, brake warning lamp and VDC warning lamp stay in OFF status during driving.

CAUTION:

Brake warning lamp turns ON when parking brake is operated (parking brake switch is ON) or brake fluid is less than the specified level (brake fluid level switch is ON).

Is the inspection result normal?

YES >> Normal NO >> GO TO 2.

2.PERFORM SELF DIAGNOSTIC RESULT

- 1. Turn the ignition switch OFF \rightarrow ON.
 - CAUTION:
 - Be sure to wait 10 seconds after turning ignition switch OFF or ON.
 - Start the engine.
- 2. Repeat step 1 two or more times.
- 3. Perform "Self Diagnostic Result" mode of "ABS" with CONSULT.

Is any DTC detected?

- YES >> Check the DTC. Refer to <u>BRC-50, "DTC Index"</u>.
- NO >> Inspection End.

INFOID:000000011804846

BRAKE PEDAL VIBRATION OR OPERATION SOUND OCCURS

[WITH ICC] < SYMPTOM DIAGNOSIS > BRAKE PEDAL VIBRATION OR OPERATION SOUND OCCURS А Description INFOID:000000011804848 Brake pedal vibrates and motor sound from ABS actuator and electric unit (control unit) occurs when the В engine starts. Brake pedal vibrates during braking. CAUTION: Vibration may be felt when brake pedal is lightly depressed (just placing a foot on it) in the following conditions. This is normal. When shifting gears When driving on slippery road D During cornering at high speeds When passing over bumps or grooves [Approx. 50 mm (1.97 in) or more] When pulling away just after starting engine [at approx. 10 km/h (6.2 MPH) or higher] Е Diagnosis Procedure INFOID:0000000011804849 **1.**SYMPTOM CHECK 1 BRC Check that there are pedal vibrations when the engine is started. Do vibrations occur? YES >> GO TO 2. NO >> Check brake pedal. Refer to <u>BR-15, "Adjustment"</u>. 2.SYMPTOM CHECK 2 Н Check that motor sound from ABS actuator abd electric unit occurs when the engine starts. Does the operation sound occur? YES >> GO TO 3. NO >> Perform "Self Diagnostic Result" mode of "ABS" with CONSULT. 3.SYMPTOM CHECK 3 Check symptoms when electrical component (headlamps, etc.) switches are operated. Does the symptom occur? >> Check that radio (including wiring), antenna and antenna lead-in wires are not located near ABS YES Κ actuator and electric unit (control unit). Move them if they are located near ABS actuator and electric unit (control unit). NO >> GO TO 4.

4.PERFORM SELF DIAGNOSTIC RESULT

NO >> Inspection End.

L

< SYMPTOM DIAGNOSIS >

VEHICLE JERKS DURING

Description

The vehicle jerks when VDC function, TCS function, ABS function, EBD function, brake assist function or hill start assist function operates.

Diagnosis Procedure

1.CHECK SYMPTOM

Check that the vehicle jerks when VDC function, TCS function, ABS function, EBD function, brake assist function or hill start assist function operates.

Is the inspection result normal?

YES >> Normal NO >> GO TO 2.

2.PERFORM THE SELF DIAGNOSTIC RESULT

With CONSULT

- 1. Turn the ignition switch OFF \rightarrow ON.
 - CAUTION:
 - Be sure to wait 10 seconds after turning ignition switch OFF or ON.
 - Start the engine.
- 2. Repeat step 1 two or more times.
- 3. Perform "Self Diagnostic Result" mode of "ABS".

Is any DTC detected?

- YES >> Check the DTC. Refer to <u>BRC-50, "DTC Index"</u>.
- NO >> GO TO 3.

3.CHECK CONNECTOR

- 1. Turn the ignition switch OFF.
- 2. Disconnect ABS actuator and electric unit (control unit) harness connector.
- 3. Check connector terminal for deformation, disconnection and looseness.

Is the inspection result normal?

YES >> GO TO 4.

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

PERFORM THE SELF DIAGNOSTIC RESULT

CONSULT

- 1. Connect harness connector.
- 2. Turn the ignition switch OFF \rightarrow ON. CAUTION:
 - Be sure to wait 10 seconds after turning ignition switch OFF or ON.
 - Start the engine.
- 3. Repeat step 2 two or more times.
- 4. Perform "Self Diagnostic Result" mode of "ABS".

Is any DTC detected?

YES >> Check the DTC. Refer to <u>BRC-50, "DTC Index"</u>.

NO >> GO TO 5.

5.PERFORM THE SELF DIAGNOSTIC RESULT

CONSULT

Perform "Self Diagnostic Result" mode of "ENGINE" and "TRANSMISSION".

Is any DTC detected?

- YES >> Check the DTC.
- NO >> Replace ABS actuator and electric unit (control unit). Refer to <u>BRC-142, "Removal and Installa-</u> tion".

INFOID:000000011804850

INFOID-000000011804851

< SYMPTOM DIAGNOSIS >

NORMAL OPERATING CONDITION

Description

А

INFOID:000000011804852

[WITH ICC]

Symptom	Result	
Brake pedal slightly vibrates and operation sound (motor sound and sound from suspen- sion) occurs when VDC function, TCS function, ABS function, EBD function, brake assist function, hill start assist function operates.	function, hill start assist function that are normally operated.	
Brake stopping distance may become longer than models without ABS function depending on the road conditions when ABS function is operated on a slippery road, rough road, gravel road or snowy road.		
Brake pedal vibrates and operation sound occurs during sudden acceleration and corner- ing when VDC function, TCS function, brake assist function or brake force distribution func- tion is operated.		
Brake pedal vibrates and motor sound from the engine room occurs when the engine starts or the vehicle starts just after starting the engine.	This is not a malfunction, because it is caused by operation check of ABS actuator and electric unit (control unit).	
Acceleration may feel insufficient depending on the road conditions.	This is not a malfunction, because it is	
TCS function may operate momentarily while driving on a road where friction coefficient varies or when downshifting or fully depressing accelerator pedal.	caused by TCS function that puts the highest priority to obtain the optimum traction (stability).	
ABS warning lamp and VDC OFF indicator lamp may turn ON when the vehicle is on a ro- tating turntable or is given a strong shaking or large vibrations on a ship while the engine is running.		
VDC warning lamp may turn ON and VDC function, TCS function, brake assist function, and brake force distribution function may not normally operate when driving on a special road the is extremely slanted (bank in a circuit course).	In this case, restart the engine on a nor- mal road. If the normal condition is re- stored, there is no malfunction. In that case, erase "ABS" self-diagnosis result memory with CONSULT.	
A malfunction in yaw rate/side/decel G sensor system may be detected when the vehicle sharply turns during a spin turn, acceleration turn or drift driving while VDC function TCS function are OFF (VDC OFF switch is pressed and VDC OFF indicator lamp is in ON status).		
The vehicle speed does not increase, when the accelerator pedal is depressed while the vehicle is on a 2-wheel chassis dynamometer for speedometer check.	This is normal. (When checking the vehi- cle on a chassis dynamometer, operate VDC OFF switch so that TCS function is OFF.)	

L

M

Ν

0

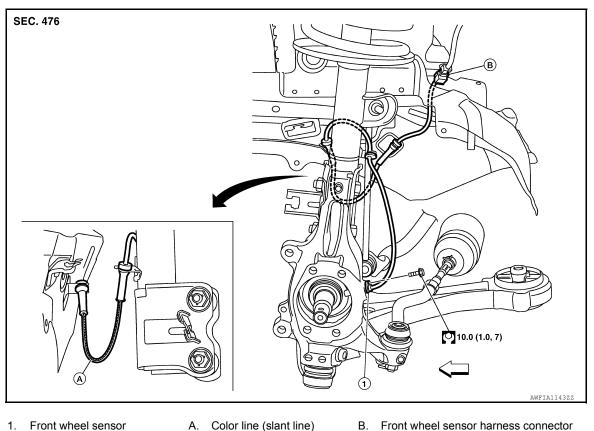
< REMOVAL AND INSTALLATION >

[WITH ICC]

REMOVAL AND INSTALLATION WHEEL SENSOR FRONT WHEEL SENSOR

FRONT WHEEL SENSOR : Exploded View

INFOID:000000011578387



1. Front wheel sensor

∠⊐ Front

FRONT WHEEL SENSOR : Removal and Installation

INFOID:000000011578388

CAUTION:

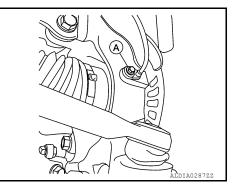
Do not damage the front wheel sensor or sensor rotor.

REMOVAL

- 1. Remove front wheel and tire using power tool. Refer to WT-65, "Balancing Wheels".
- 2. Remove fender protector retaining pin to gain access to wheel sensor harness connector.
- Disconnect harness connector from front wheel sensor. 3.
- 4. Remove front wheel sensor bolt (A) from wheel hub and bearing.

CAUTION:

Pull out the front wheel sensor being careful to turn it as little as possible. Do not pull on the front wheel sensor harness.



WHEEL SENSOR

< REMOVAL AND INSTALLATION >

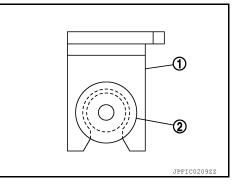
- 5. Remove front wheel sensor from strut bracket.
- 6. Remove front wheel sensor from steering knuckle.

Pull out the front wheel sensor being careful to turn it as little as possible. Do not pull on the front wheel sensor harness.

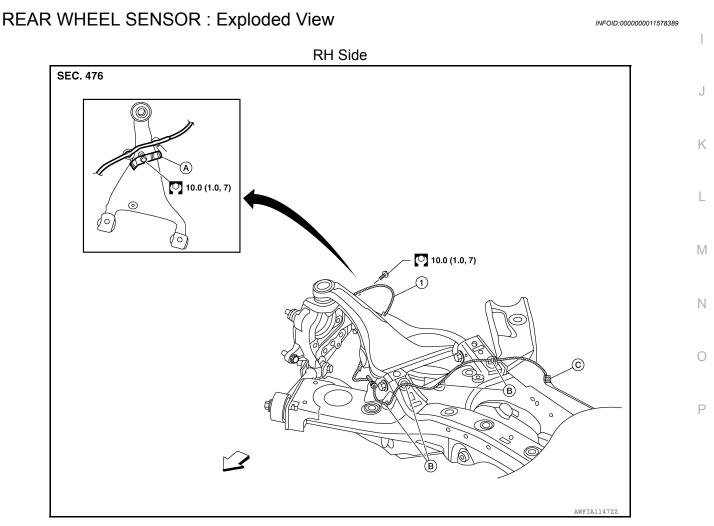
INSTALLATION

Installation is in the reverse order of removal. CAUTION:

- Before installing, make sure there is no foreign material, such as iron fragments, adhered to the pick-up part of the front wheel sensor.
- When installing, make sure there is no foreign material, such as iron fragments, on and in the hole in the steering knuckle for the front wheel sensor. Make sure no foreign material has been caught in the sensor rotor. Remove any foreign material and clean the mount.
- Do not twist front wheel sensor harness when installing front wheel sensor. Check that grommet (2) is fully inserted to bracket (1). Check that front wheel sensor harness is not twisted after installation.



REAR WHEEL SENSOR



2015 Murano

А

В

D

Е

BRC

Н

WHEEL SENSOR

< REMOVAL AND INSTALLATION >

C. Rear wheel sensor connector

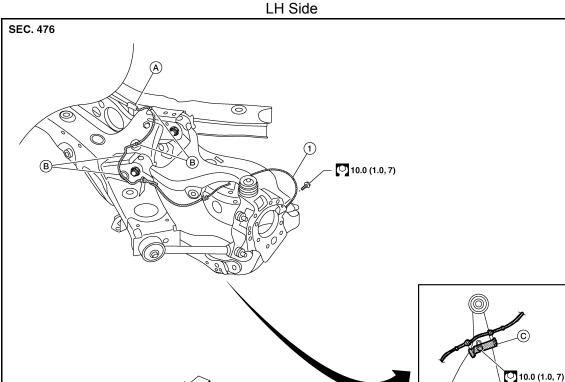
- 1. Rear wheel sensor
- A. Rear wheel sensor bracket

<□ Front

B. Clip

Ø0

B. Clip



REAR WHEEL SENSOR : Removal and Installation

<□ Front

INFOID:000000011578390

CAUTION:

1. Rear wheel sensor

C. Rear wheel sensor bracket

Do not damage rear wheel sensor or sensor rotor.

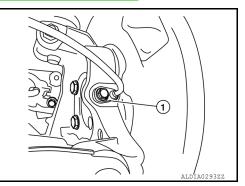
REMOVAL

1. Remove rear under cover. Refer to EXT-40, "REAR UNDER COVER : Removal and Installation".

A. Rear wheel sensor connector

- 2. Remove rear wheel and tire using power tool. Refer to WT-68, "Removal and Installation".
- 3. Remove rear wheel sensor bolt (1). CAUTION:

Pull out the rear wheel sensor being careful to turn it as little as possible. Do not pull on the rear wheel sensor harness.



õ

AWFIA1148Z2

4. Disconnect harness connector from rear wheel sensor.

BRC-308

WHEEL SENSOR

< REMOVAL AND INSTALLATION >

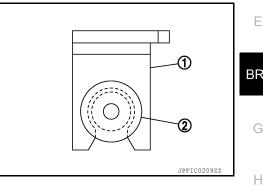
- 5. Remove rear wheel sensor from sensor brackets.
- 6. Remove rear wheel sensor from rear knuckle. **CAUTION:**

Pull out the rear wheel sensor being careful to turn it as little as possible. Do not pull on the rear wheel sensor harness.

INSTALLATION

Installation is in the reverse order of removal. CAUTION:

- Before installing, make sure there is no foreign material, such as iron fragments, adhered to the pick-up part of the rear wheel sensor
- When installing, make sure there is no foreign material, such as iron fragments, on and in the hole in the rear knuckle for the rear wheel sensor. Make sure no foreign material has been caught in the sensor rotor. Remove any foreign material and clean the mount.
- Do not twist rear wheel sensor harness when installing rear wheel sensor. Check that grommet (2) is fully inserted to bracket (1). Check that rear wheel sensor harness is not twisted after installation.





D

А

В

L

Μ

Ν

Ο

< REMOVAL AND INSTALLATION >

SENSOR ROTOR FRONT SENSOR ROTOR

FRONT SENSOR ROTOR : Removal and Installation - Front Sensor Rotor INFOID:000000011578391

The front wheel sensor rotor is an integral part of the wheel hub and bearing and cannot be disassembled. Refer to FAX-8, "Removal and Installation".

REAR SENSOR ROTOR

REAR SENSOR ROTOR : Removal and Installation - Rear Sensor Rotor INFOID:00000011578392

The rear wheel sensor rotor is an integral part of the wheel hub and bearing and cannot be disassembled. Refer to RAX-8, "Removal and Installation".

ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)

< REMOVAL AND INSTALLATION >

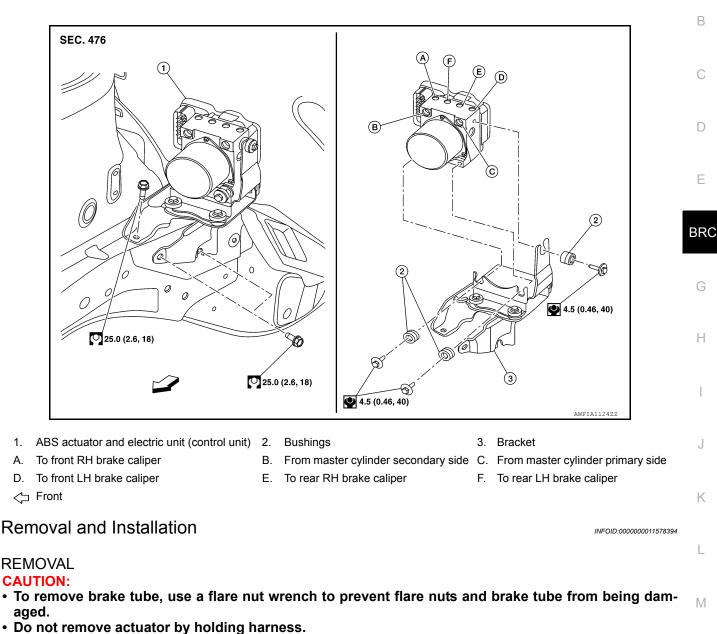
ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)

Exploded View

INFOID:000000011578393

А

[WITH ICC]



NOTE:

- Before replacing ABS actuator and electric unit (control unit), perform "Before Replace ECU" of "Read / N Write Configuration" to save or print current vehicle specification. Refer to <u>BRC-224</u>, "Work Procedure".
- When removing components such as hoses, tubes/lines, etc., cap or plug openings to prevent fluid from spilling.
- 1. Disconnect negative battery terminal. Refer to PG-86, "Exploded View".
- 2. Remove cowl top cover. Refer to EXT-34, "Removal and Installation Cowl Top Cover".
- 3. Remove cowl top extension. Refer to EXT-35, "Removal and Installation Cowl Top Extension".
- 4. Separate brake tubes from ABS actuator and electric unit (control unit). Refer to <u>BR-22, "FRONT</u>: <u>Exploded View"</u>.
- 5. Disconnect harness connector from ABS actuator and electric unit (control unit).
- 6. Remove ABS actuator and electric unit (control unit) bracket bolts and bushings.
- 7. Remove ABS actuator and electric unit (control unit) from vehicle.

INSTALLATION

Ο

ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)

< REMOVAL AND INSTALLATION >

CAUTION:

Be sure to perform "After Replace ECU" of "Read / Write Configuration" or "Manual Configuration" when replacing ABS actuator and electric unit (control unit). Refer to <u>BRC-224</u>, "Work Procedure". Installation is in the reverse order of removal.

- After work is completed, bleed air from brake tube. Refer to <u>BR-16, "Bleeding Brake System"</u>.
- Adjust the neutral position of steering angle sensor. Refer to BRC-64, "Work Procedure".
- Perform calibration of the decel G sensor. Refer to BRC-66, "Work Procedure".

CAUTION:

- To install, use flare nut crowfoot and torque wrench.
- Replace the ABS actuator if it has been dropped or sustained an impact.
- Do not install actuator by holding harness.
- After installing harness connector in the ABS actuator and electric unit (control unit), make sure connector is securely locked.

VDC OFF SWITCH

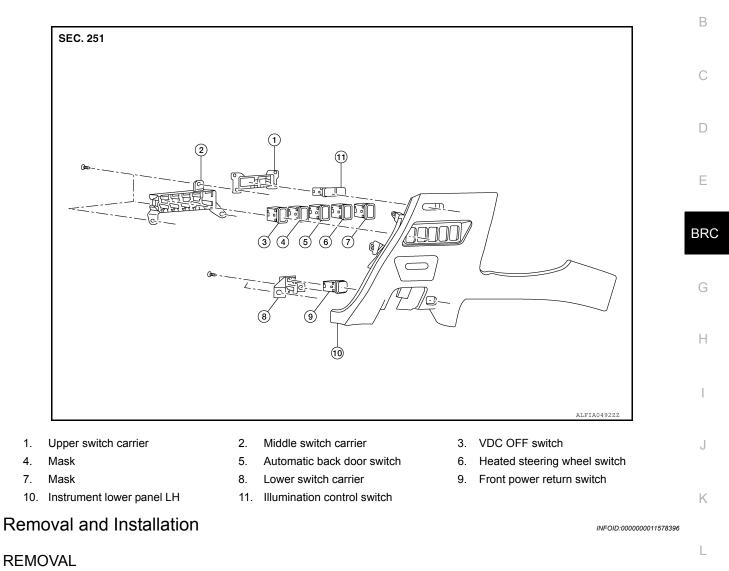
< REMOVAL AND INSTALLATION >

VDC OFF SWITCH

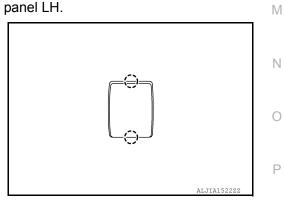
Exploded View

INFOID:000000011578395

А



- 1. Remove instrument lower panel LH. Refer to IP-24, "Removal and Installation".
- 2. Remove screws and middle switch carrier from instrument lower panel LH.
- Release pawls using suitable tool and remove VDC OFF switch from the middle switch carrier.
 (⁻): Pawl



INSTALLATION

Installation is in the reverse order of removal.

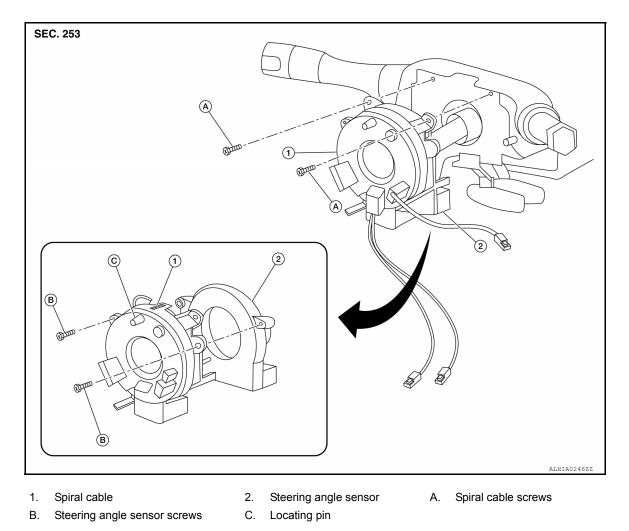
STEERING ANGLE SENSOR

< REMOVAL AND INSTALLATION >

STEERING ANGLE SENSOR

Exploded View

INFOID:000000011578397



Removal and Installation

INFOID:000000011578398

To remove and install the steering angle sensor, remove and install the spiral cable. Refer to <u>SR-15, "Removal</u> and Installation".